Appendix K

Local Mobility Analysis (November 9, 2020)

Local Mobility Analysis Encompass Health Chula Vista
City of Chula Vista
San Diego County, California

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1 Introduction

1.1 Purpose and Scope of the LMA

The purpose of this Local Mobility Analysis (LMA) is to provide an analysis of the consistency of Encompass Health Chula Vista (proposed project) with relevant programs, plans, ordinances, and/or policies relating to transit, roadway, bicycle, and pedestrian facilities. Specific to roadway conflicts, the proposed project's consistency with the City of Chula Vista's (City's) General Plan Land Use and Transportation Element (City of Chula Vista 2017) will be addressed, as well as consistency with the City's Traffic Impact Threshold Standards document (Barker pers. comm. 2019). A component of this analysis includes consideration of whether level of service (LOS) targets identified in the General Plan for Transportation Element roadways and Traffic Impact Threshold Standards would be achieved or whether the proposed project would conflict with such targets, resulting in substantial roadway and intersection operation effects.

This LMA has been prepared per City of Chula Vista procedures for transportation impact analysis and the City of Chula Vista General Plan Land use and Transportation Element adopted in 2005 and as amended in 2017 (City of Chula Vista 2017). The City of Chula Vista's Traffic Impact Threshold Standards document was provided via email to Dudek by the Senior Transportation Engineer (Barker pers. comm. 2019). The scope of analysis has been approved by the City's Development Services and Engineering & Capital Projects Department.

The objectives of this LMA are as follows:

- Document existing traffic conditions, including roadway segment and intersection levels of service in the study area
- Estimate trip generation, distribution, and assignment characteristics for the proposed project
- Analyze the traffic impacts that would occur as a result of project traffic under the Existing and Buildout Year (2035) conditions
- Describe the significance of the potential impacts and conflicts with General Plan policies under the Existing and Buildout conditions
- Identify mitigation measures for any significantly impacted transportation facilities
- Describe the adequacy of project access location
- Describe active transportation and transit facilities in the vicinity of the project site

Dudek analyzed study area roadway segments and intersections for the following study scenarios:

Existing Condition

The LMA includes a description of existing traffic conditions in the site vicinity, including existing roadway system, existing weekday AM and PM peak-hour traffic volumes, existing roadway segment daily traffic volumes, and traffic operations. The existing condition is representative of the year 2019.

Existing plus Project

This condition includes analysis of traffic operations under existing conditions with project-related traffic added to the existing roadway segment daily traffic volumes and AM and PM peak-hour traffic volumes. The traffic impacts specific to the project under this condition were used as the basis for determining project's impacts.

Buildout Year (2035)

This condition includes analysis of traffic operations under Buildout Year (2035) conditions within a long-term horizon period where the proposed project is constructed and fully occupied. Buildout Year traffic volumes were derived from the San Diego Association of Governments (SANDAG) Series 12 Model.

Buildout Year (2035) plus Project

This condition includes analysis of traffic operations under Buildout Year (2035) conditions with project-related traffic added to the Buildout Year (2035) roadway segment daily traffic volumes and AM and PM peak-hour traffic volumes. The traffic impacts specific to the project under this condition were used as the basis for determining project's impacts.

1.2 Project Description, Location and Study Area

The proposed project consists of an 80-bed rehabilitation hospital on a vacant 9.79-acre parcel located on at the western terminus of Shinohara Lane in the City of Chula Vista. The project site is located in east of Interstate 805, north of Main Street and west of Brandywine Avenue. Primary vehicular site access would be provided via entrance/exit from Shinohara Lane via the Brandywine Avenue and Shinohara Lane intersection.

Figure 1 shows the project location and study area, and Figures 2a and 2b illustrate the project's site plan. The applicant proposes to construct the project as two phases that would consist of 50 bed and 30 bed facility, respectively, however the traffic study has been prepared to analyze the buildout of the project that would comprise of an 80-bed facility.

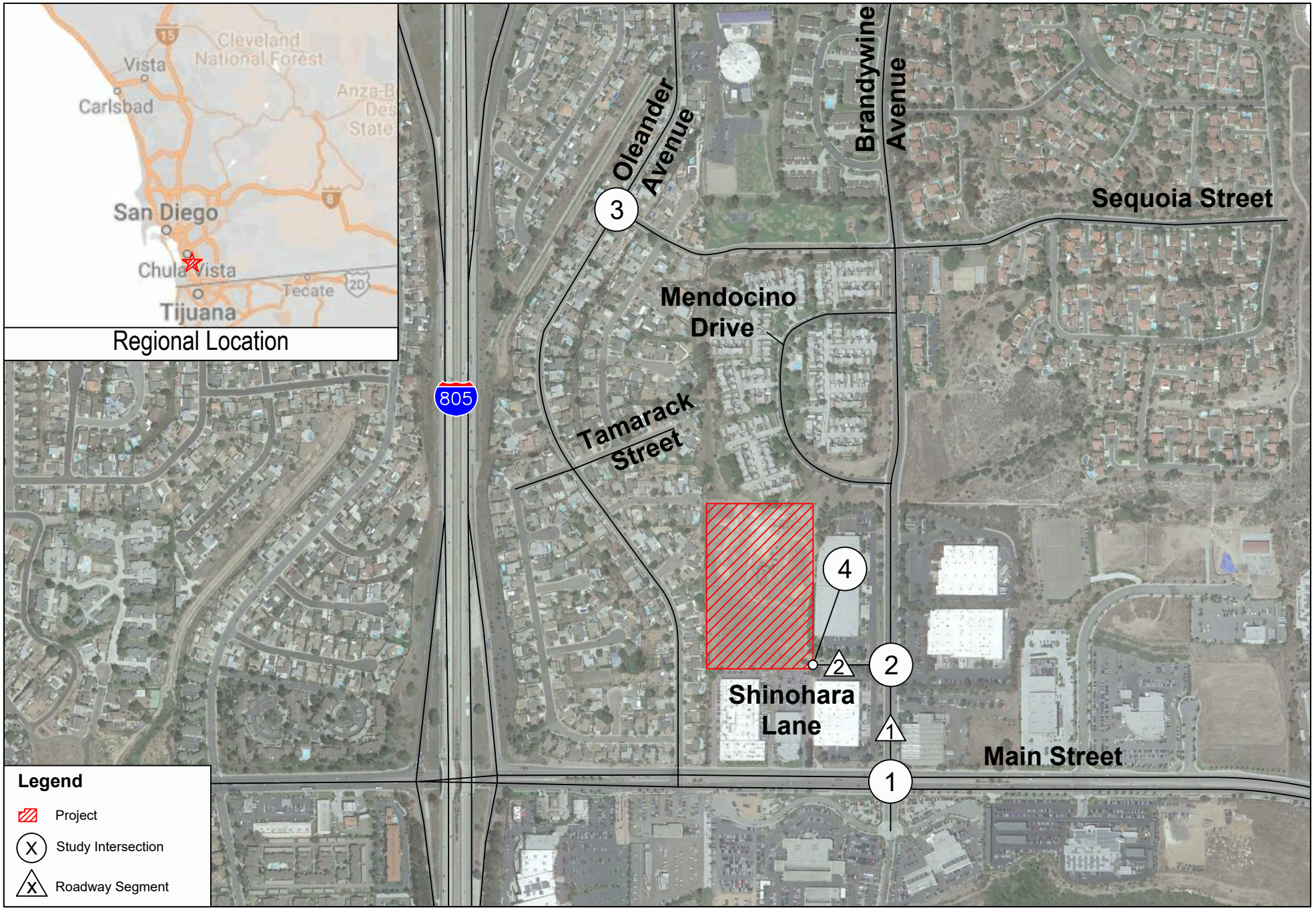
The study area for the project was determined based on the Trip Generation Analysis (see Appendix B) submitted to the City on May 15, 2019, prior to initiation of the transportation analysis for the project. As shown in Section 3, Project Traffic, and Appendix B of this report, since the project would generate less than 500 average daily trips and more than 20 peak-hour trips, it warrants a focused or local transportation analysis of the roadway facilities in its vicinity. Therefore, as illustrated in Figure 1, the study area is comprised of the following two roadway segments and three intersections, under City jurisdiction:

Roadway Segments

1. Brandywine Avenue, between Shinohara Lane and Main Street
2. Shinohara Lane, west of Brandywine Avenue

Intersections

1. Brandywine Avenue/Main Street
2. Brandywine Avenue/Shinohara Lane
3. Oleander Avenue/Sequoia Lane



Source: Google Maps 2018

FIGURE 1

Project Location and Study Area

Encompass Health Chula Vista

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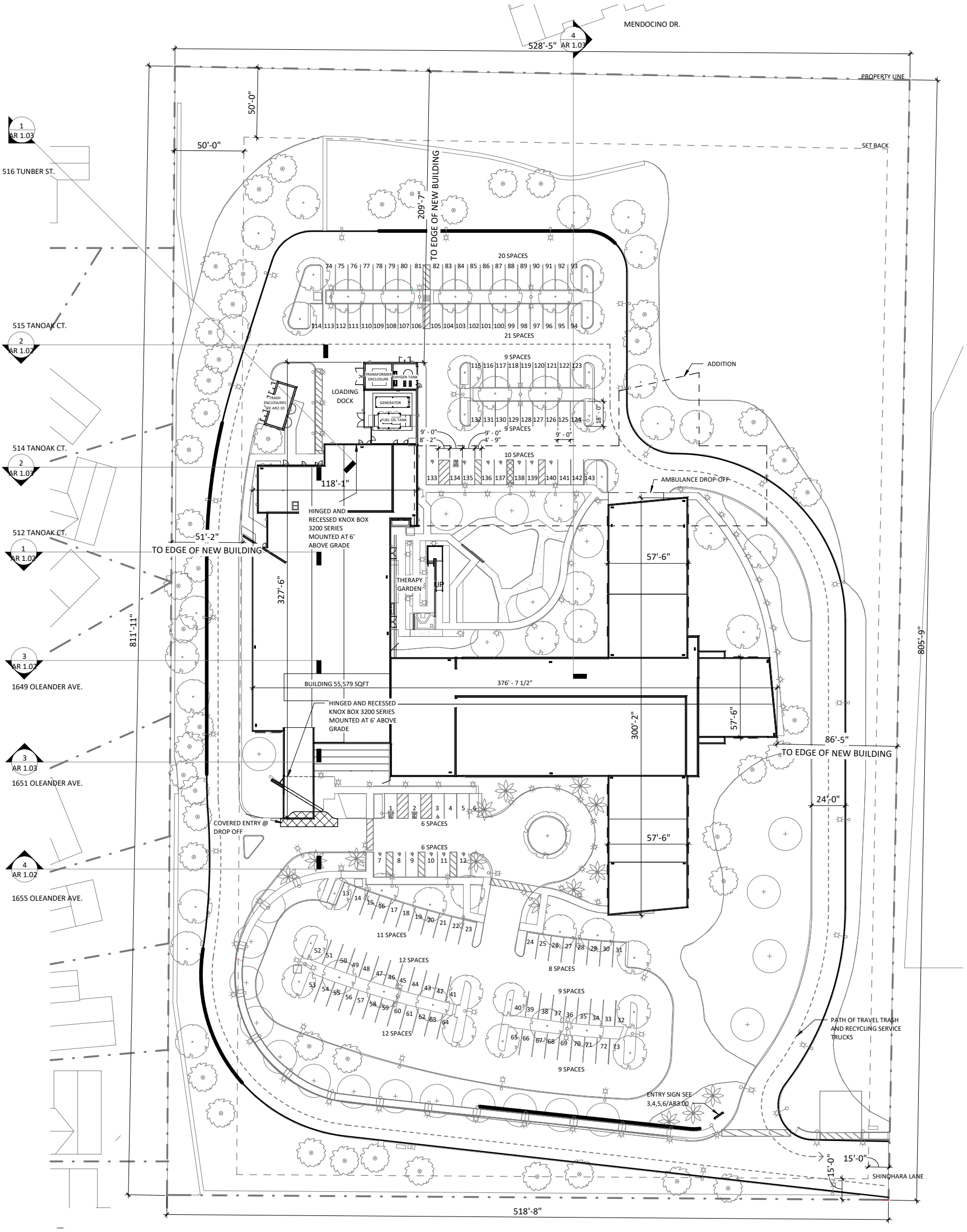

SOURCE: Boulder Associates 2020

FIGURE 2a

Site Plan - Phase 1

Encompass Health Chula Vista

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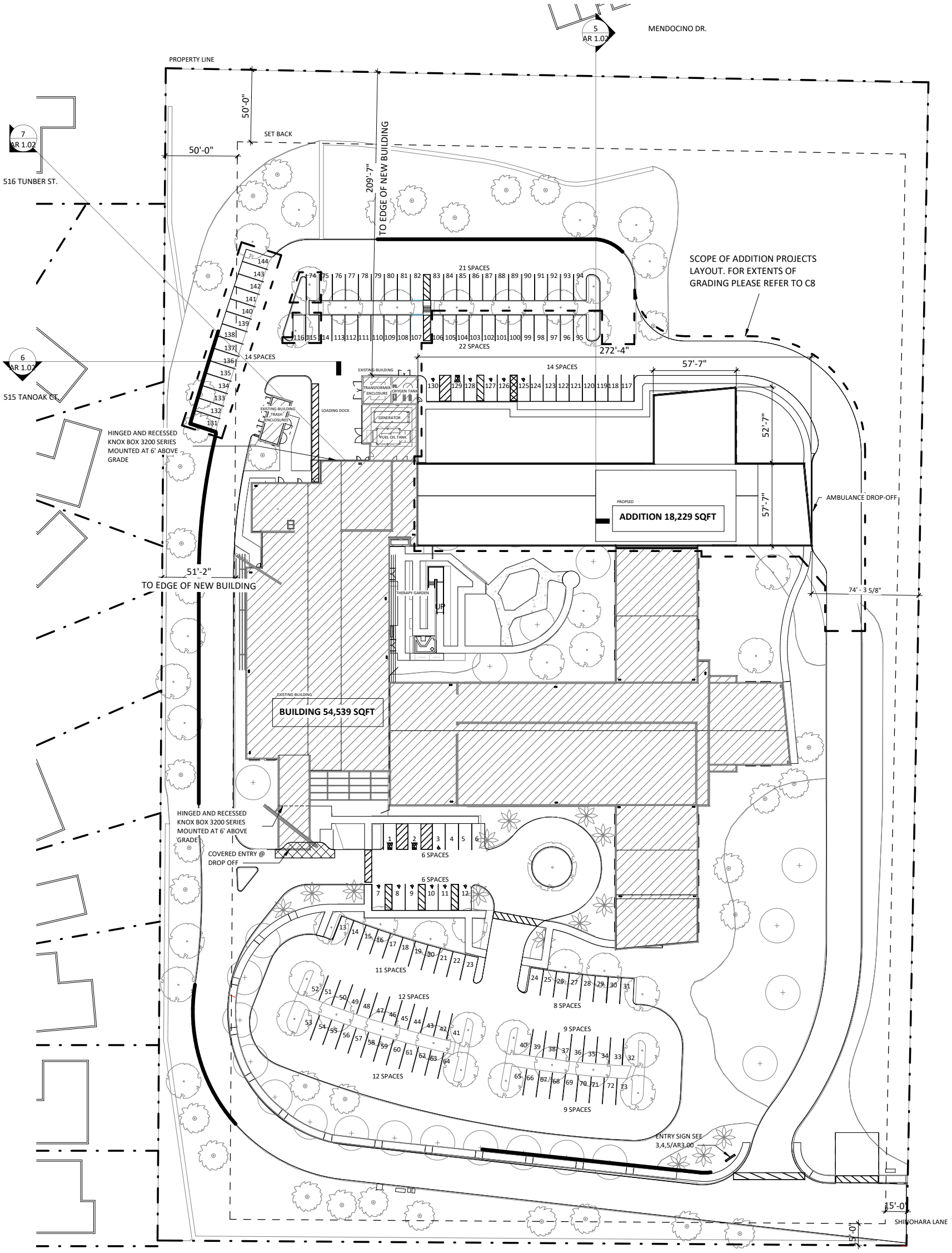
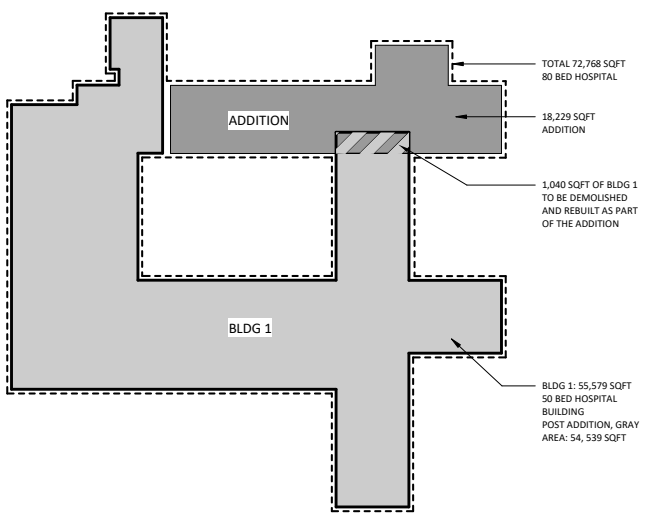


HOSPITAL AND ADDITION DIAGRAM



BUILDING LEGEND

BUILDING BUILDING 1
(NOT IN THE SCOPE OF ADDITION PROJECT)

ADDITION PARKING COUNTS

NORTH LOT		SOUTH LOT	
ACC. CAR	5	ACC. CAR	7
ACC. VAN	1	ACC. VAN	2
REGULAR	65	REGULAR	64
TOTAL	71	TOTAL	73
		TOTAL SITE PARKING	144

SOURCE: Boulder Associates 2020

FIGURE 2b

Site Plan - Phase 2

Encompass Health Chula Vista

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1.3 Level of Service and Significance Thresholds

The study area intersections and roadway segments are located within the jurisdiction of the City of Chula Vista. The level of service and significance criteria for the City of Chula Vista per Traffic Impact Threshold Standards document provided via email to Dudek by the Senior Transportation Engineer (Barker pers. comm. 2019)are described in the section below.

1.3.1 City of Chula Vista

City of Chula Vista utilizes long-term and short-term horizon years to determine whether additional traffic due to a proposed project would result in a substantial effect to roadway and intersection operations. For purposes of the short-term analysis required for the City, roadway sections may be defined as either links or segments. A link is typically that section of roadway between two adjacent Circulation Element intersections, and a segment is defined as a combination of contiguous links used in the Chula Vista Growth Management Plan Traffic Monitoring Program. Analysis of roadway links under short-term conditions may require a more detailed analysis using the Growth Management Oversight Committee (GMOC) methodology if the typical planning analysis using volume-to-capacity ratios on an individual link indicates a potential impact to that link. The GMOC analysis uses the Highway Capacity Manual (HCM) methodology of average travel speed based on actual measurements on the segments as listed in the Growth Management Plan Traffic Monitoring Program. The project did not warrant a short term horizon or GMOC analysis and utilized the long term horizon for analysis of potential substantial direct and cumulative effects.

The City's criteria for determining whether a proposed project would result in substantial project-specific effects (substantial direct effects) or substantial cumulative effects on freeway segments, roadway segments, or intersections for long-term horizon year are described below.

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

For purposes of the long-term analysis roadway segments, the planning analysis uses the V/C ratio methodology only. The GMOC analysis methodology is not applicable beyond a 4-year horizon. The following criteria are used to analyze long-term conditions:

Roadway Segments

A. Substantial project-specific effect if all three of the following criteria are met:
   i. Level of service is LOS D, LOS E, or LOS F
   ii. Project trips comprise 5% or more of total segment volume
   iii. Project adds greater than 800 ADT to the segment
B. Substantial cumulative effect if only (A) is met. However, if the intersections along an 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, impact is significant regardless of intersection LOS.
C. Notwithstanding the foregoing, if the substantial effect identified in paragraph (A), above, occurs at study horizon Year 10 or later, and is off site and not adjacent to the project, the substantial effect is considered cumulative. Study horizon Year 10 may be that typical SANDAG model year that is between 8 and 13 years in the future. In this case of a traffic study being performed in a model year not divisible

by 5 (i.e., 2005, 2010, 2015, and 2020), study horizon Year 10 would correspond to the SANDAG model for year 2010 and would be 8 years in the future. If the model year is less than 7 years in the future, study horizon year 10 would be 13 years in the future.

D. In the event a direct identified project-specific substantial effect in paragraph (A), above, occurs at study horizon Year 5 or earlier, and the substantial effect is off site and not adjacent to this project, but the property immediately adjacent to the identified substantial project-specific effect is also proposed to be developed in approximately the same time frame, an additional analysis may be required to determine whether or not the identified substantial project-specific effect would still occur if the development of the adjacent property does not take place. If the additional analysis concludes that the identified substantial project-specific effect is no longer a substantial direct effect, then the substantial effect would be considered cumulative.

Signalized and Unsignalized Intersection Substantial Effects

A. Substantial 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. Substantial cumulative effect if only (i) is met.

Freeways

A. Substantial project-specific effect if both the following criteria are met:
   i. Freeway segment LOS is LOS E or LOS F.
   ii. Project comprises 5% or more of the total forecasted ADT on that freeway segment.
B. Substantial cumulative effect if only (i) is met.

1.3.2 SANTEC/ITE Guidelines

The City of Chula Vista uses the San Diego Traffic Engineers' Council (SANTEC)/Institute of Traffic Engineers (ITE) Guidelines for Traffic Impact Studies in the San Diego Region (SANTEC/ITE 2000) to evaluate the operations of facilities under the jurisdiction of Caltrans that are located within San Diego County. Significance thresholds are shown in Table 1. If the project's traffic impact causes the value in this table to be exceeded, effects would be considered substantial and operational improvements may be required. It should be noted that the study area does not include any facilities that are under the jurisdiction of Caltrans, therefore these guidelines are provided for information purposes only.

If LOS with Project is at E or F or ramp metering delays are above 15 minutes, then allowable change is:

- Freeways: 0.01 V/C or 1 mph
- Roadway Segments: 0.02 V/C or 1 mph
- Intersection: 2-second delay
- Ramp Metering delay: increase of 2 minutes

Table 1. Measures of Substantial Effects

Level of Service with Project	Allowable Change due to Project [b]					
	Freeways		*Roadway Segments*		*Intersections*	*Ramp Metering*
	V/C	*Speed (mph)*	*V/C*	*Speed (mph)*	*Delay (sec.)*	*Delay (min.)*
E and F	0.01	1	0.02	1	2	2

Source: SANTEC/ITE 2000.

[a] All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume basis (using Table 2 I or a similar LOS chart for each jurisdiction). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

[b] If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be substantial. These changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible improvements that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note "a" above), the project applicant shall be responsible for operational improvements.

General Notes:

1 V/C = Volume to Capacity Ratio
2 Speed = Arterial speed measured in miles per hour
3 Delay = Average stopped delay per vehicle measured in seconds for intersections.
4 LOS = Level of Service

1.4 Operational Improvement Measures

The City has established Transportation Development Impact Fee (TDIF) to fund the construction of facilities needed to alleviate potential substantial direct and cumulative effects, and to spread the costs associated with construction of the facilities equitably among the developing properties.

The City also has a Traffic Signal Fee under its Capital Improvement Budget Program which is a trip-based development impact fee that is charged with the issuance of building permits for new construction. The fee can be utilized for the installation and upgrade of traffic signals throughout the City.

Additionally, SANTEC/ITE (2000) guidelines mention that not all operational improvements can be new lanes or new capacity. Therefore, financing towards an Intelligent Transportation Systems (ITS) project, and/or recommending Transportation Demand Management (TDM) measures that include transit facilities, bike facilities, walkability, telecommuting, traffic rideshare programs, flex-time, carpool incentives, parking cash-out, and others would also be acceptable operational improvements for substantial project effects, subject to City discretion.

1.5 Analysis Methodology

LOS is commonly used as a qualitative description of roadway segments and intersection operations and is based on the design capacity of the roadway segment or intersection configuration, compared to the volume of traffic using the roadway segment or intersection.

1.5.1 Roadway Segments

Roadway segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the City of Chula Vista's Roadway Classification, Level of Service, and ADT Table. This table provides level of service thresholds for different

street classifications, based on traffic volumes, and travel lanes. Table 2 presents the roadway segment LOS thresholds by facility type in the study area per the City of Chula Vista's standards.

Table 2. City of Chula Vista Roadway Segment LOS Thresholds

Roadway Classification	No. of Travel Lanes	Cross Section[1]	Levels of Service				
			LOS A	*LOS B*	*LOS C*	*LOS D*	*LOS E*
Expressway	8	104'/128'	52,500	61,300	70,000	78,800	87,500
Prime Arterial	6	104'/128'	37,500	43,800	50,000	56,300	62,500
Major Street	6	104'/128'	30,000	35,000	40,000	45,000	50,000
Major Street	4	80'/104'	22,500	26,300	30,000	33,800	37,500
Class I Collector	4	74'/94'	16,500	19,300	22,000	24,800	27,500
Class II Collector	2	52'/72'	9,000	10,500	12,000	13,500	15,000
Class III Collector	2	40'/60'	5,600	6,600	7,500	8,400	9,400
Residential Street	2	36'/56'	-	-	1,200	-	-
Industrial Road	2	52'/72'	-	-	2,000	-	-

Source: City of Chula Vista 2012, 2017.

1.5.2 Intersections

The HCM intersection analysis methodology was used to analyze the operation of signalized and unsignalized study intersections. The HCM analysis methodology describes the operation of an intersection using a range of LOS from LOS A (free-flow conditions) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle for signalize and unsignalized intersections. The Synchro 10 LOS software was used to determine intersection LOS. Synchro is consistent with the HCM 6th methodology (Transportation Research Board 2016).

Table 3 shows the LOS values by delay ranges for unsignalized and signalized intersections under the HCM methodology.

Table 3. Levels of Service for Intersections using HCM Methodology

Level of Service	Unsignalized Intersections Control Delay (in seconds)	Signalized Intersections Control Delay (in seconds)
A	< 10.0	< 10.0
B	> 10.0 to < 15.0	> 10.0 to < 20.0
C	> 15.0 to < 25.0	> 20.0 to < 35.0
D	> 25.0 to < 35.0	> 35.0 to < 55.0
E	> 35.0 to < 50.0	> 55.0 to < 80.0
F	> 50.0	> 80.0

Source: Transportation Research Board 2016.

2 Existing Conditions

This section describes existing conditions within the study area. Characteristics are provided for the existing roadway system, daily roadway segment traffic volumes, peak-hour traffic volumes, and traffic operations.

2.1 Roadway System

The existing traffic controls and geometrics at the study area intersections are shown in Figure 3, Existing Roadway Conditions. Characteristics of the existing street system in the study are described below.

Brandywine Avenue is classified as a four-lane Class I Collector in the City of Chula Vista General Plan. It is constructed as a four-lane roadway with two-way-left-turn lane between Main Street and Mendocino Court. Bike lanes exist on both sides of Brandywine Avenue and curbside parking is prohibited. The posted speed limit is 35 miles per hour.

Shinohara Lane is an unclassified two-lane undivided roadway between Brandywine Avenue and the project site with a cross-section corresponding to a Class III Collector in the City of Chula Vista General Plan. There are no bike lanes along this short segment and there is a paved sidewalk along north side of Shinohara Lane. There is no posted speed limit and there are parking restrictions along the roadway.

2.2 Transit System

The Metropolitan Transit System (MTS) provides public bus transit service in the study area. The nearest bus stop is located along Brandywine Avenue near its intersection with Main Street. MTS bus route 704 operates in the project's vicinity. Route 704 operates in the City of Chula Vista and connects E Street transit Center with Palomar Street transit Center. It operates on weekdays and weekends and has a frequency of approximately 30 minutes.

2.3 Pedestrian and Bicycle Facilities

2.3.1 Pedestrian Facilities

Brandywine Avenue is constructed with curbs, gutters, and sidewalks along both sides of the street. Shinohara Lane is constructed with sidewalk along north side of the street.

2.3.2 Bicycle Facilities

As defined by bikeway Master Plan, the following classes are used to identify bicycle facilities within the City of Chula Vista:

> **Class 1 Bike Paths** are paved routes within an exclusive right-of-way physically separated from vehicular roadways and intended specifically for non-motorized use.

Class 2 Bike Lanes are striped and signed bicycle lanes within a street-of-way

Class 3 Bike Routes are marked by a series of signs within the right-of-way with street vehicles.

Undesignated an additional category defined as locally recommended on-street routes that appear on area bikeway maps only.

Around the project area, there are Class 2 bike lanes along Brandywine Avenue and Main Street.

2.3.3 Pedestrian and Bicycle Volumes

1. Traffic counts conducted in the study area in June 2019, during a typical non-holiday week while area schools were in session indicate nominal pedestrians and bike users The traffic count worksheets are provided in Appendix A. Brandywine Avenue/Main Street Intersection: At this intersection, only one pedestrian and approximately 11 pedestrians were observed during the AM and the PM peak hours, respectively. No bicyclists were observed during the AM peak hour and approximately 6 bicyclists were counted during the PM peak hour.
2. Brandywine Avenue/Shinohara Lane: At this intersection, two pedestrians and only one pedestrian were observed during the AM and the PM peak hours, respectively. Only one bicyclists was observed during the AM peak hour and two bicyclists were counted during the PM peak hour.
3. Oleander Avenue/Sequoia Lane: At this intersection, four pedestrians and approximately 10 pedestrians were observed during the AM and the PM peak hours, respectively. Only one bicyclists was observed during the AM peak hour and no bicyclists were observed during the PM peak hour.

2.4 Traffic Volumes

Existing weekday average daily traffic (ADT) counts at the study roadway segments and peak hour turn movement counts at the study intersections were conducted in June 2019, during a typical non-holiday week while area schools were in-session. The traffic count worksheets are provided in Appendix A. This analysis focuses on the weekday daily, AM (7:00 a.m. to 9:00 a.m.) and the PM (4:00 p.m. to 6:00 p.m.) peak periods. The peak periods represent the highest volume of traffic for the adjacent street system.

Existing weekday ADT and AM and PM peak hour volumes are summarized on Figure 4, Existing Traffic Volumes.

2.5 Roadway Operations

A roadway segment LOS analysis was prepared for the existing conditions using the roadway segment LOS methodologies as discussed in Section 1.4, Operational Improvement Measures. Table 4 shows the results of the existing conditions LOS analysis for the study roadway segments. As shown in the table, both the study area roadway segments of Brandywine Avenue and Shinohara Lane are currently operating LOS A under existing conditions.

Table 4. Existing Daily Roadway Segment Level of Service

Roadway Segment	Classification	LOS "C" ADT	Existing Conditions	
			ADT[1]	*LOS*[2]
Brandywine Avenue				
Shinohara Lane to Main Street	Class I Collector	22,000	9,599	A
Shinohara Lane				
West of Brandywine Avenue	Class III Collector	7,500	58	A

Notes: LOS is based on City of Chula Vista Roadway Segment LOS Thresholds
1 ADT – Average Daily Traffic
2 LOS – Level of Service

2.5.1 Oleander Avenue

Per City's request, average daily traffic counts were collected along Oleander Avenue in June 2019, during a typical non-holiday week while area schools were in-session, north of Sequoia Street near Valle Lindo Elementary School to assess the volume of project traffic along this roadway and to determine the background traffic on the segment during school drop-off and pick-up hours.

Oleander Avenue is estimated to carry 2,754 ADT on a typical weekday. The peak daily volumes were observed to be 290 vehicles between 7:00 a.m. and 8:00 a.m. during the morning peak hour, 282 vehicles between 2:00 p.m. and 3:00 p.m. during the afternoon peak hour and 261 vehicles between 5:00 p.m. and 6:00 p.m. during the evening peak hour.

As shown in Section 3, the project is estimated to add approximately 48 ADT to this segment of Oleander Avenue and 3 AM and 3 PM peak-hour trips to the Oleander Avenue/Sequoia Road intersection.

2.6 Intersection Operations

An intersection LOS analysis was prepared for the existing conditions using HCM 6th methodology via the Synchro LOS software as discussed in Section 1.4. Table 5 shows the results of the existing conditions LOS analysis. LOS worksheets are provided in Appendix C.

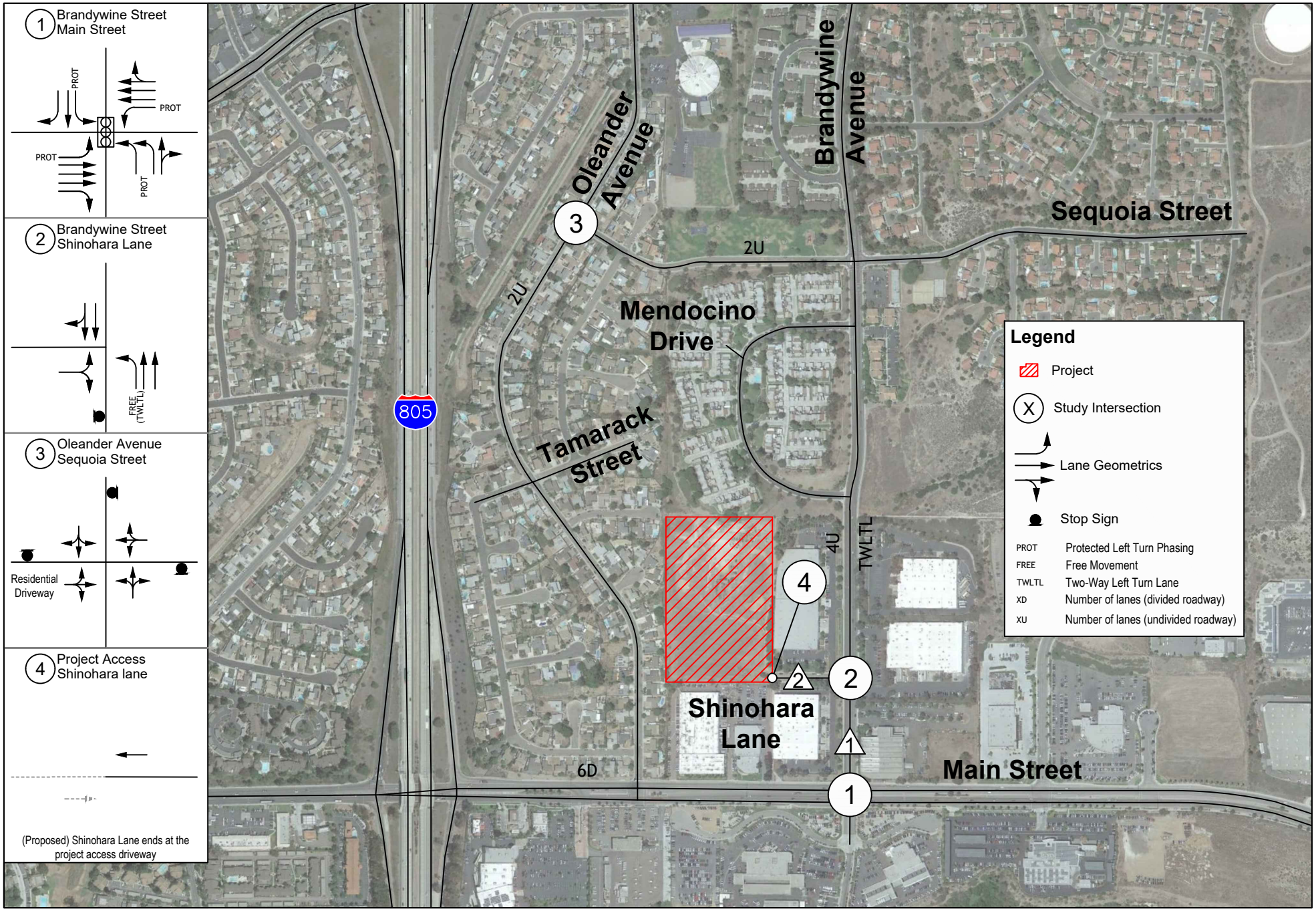
Table 5. Existing Weekday Peak Hour Intersection LOS

No.	Intersection	Control	LOS Method	AM Peak		PM Peak	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
1	Brandywine Avenue/Main Street	Signalized	HCM	35.4	D	42.8	D
2	Brandywine Avenue/Shinohara Lane	Unsignalized	HCM	9.6	A	9.4	A
3	Oleander Avenue/Sequoia Street	Unsignalized	HCM	9.1	A	7.9	A

Notes:
HCM = Highway Capacity Manual;
1 Delay in seconds per vehicle
2 Level of Service (LOS)

For the signalized intersection of Brandywine Avenue/Main Street, the City provided the traffic signal timing and phasing sheet that was used for the LOS analysis. As shown in Table 5, the Brandywine Avenue/Main Street

intersection operates at D during both the peak hours, under existing conditions. The Brandywine Avenue/Shinohara Lane and Oleander Avenue/Sequoia Street intersections currently operate at LOS A during both the peak hours, under existing conditions.



Source: Google Maps 2018

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FIGURE 3

Existing Roadway Conditions

Encompass Health Chula Vista

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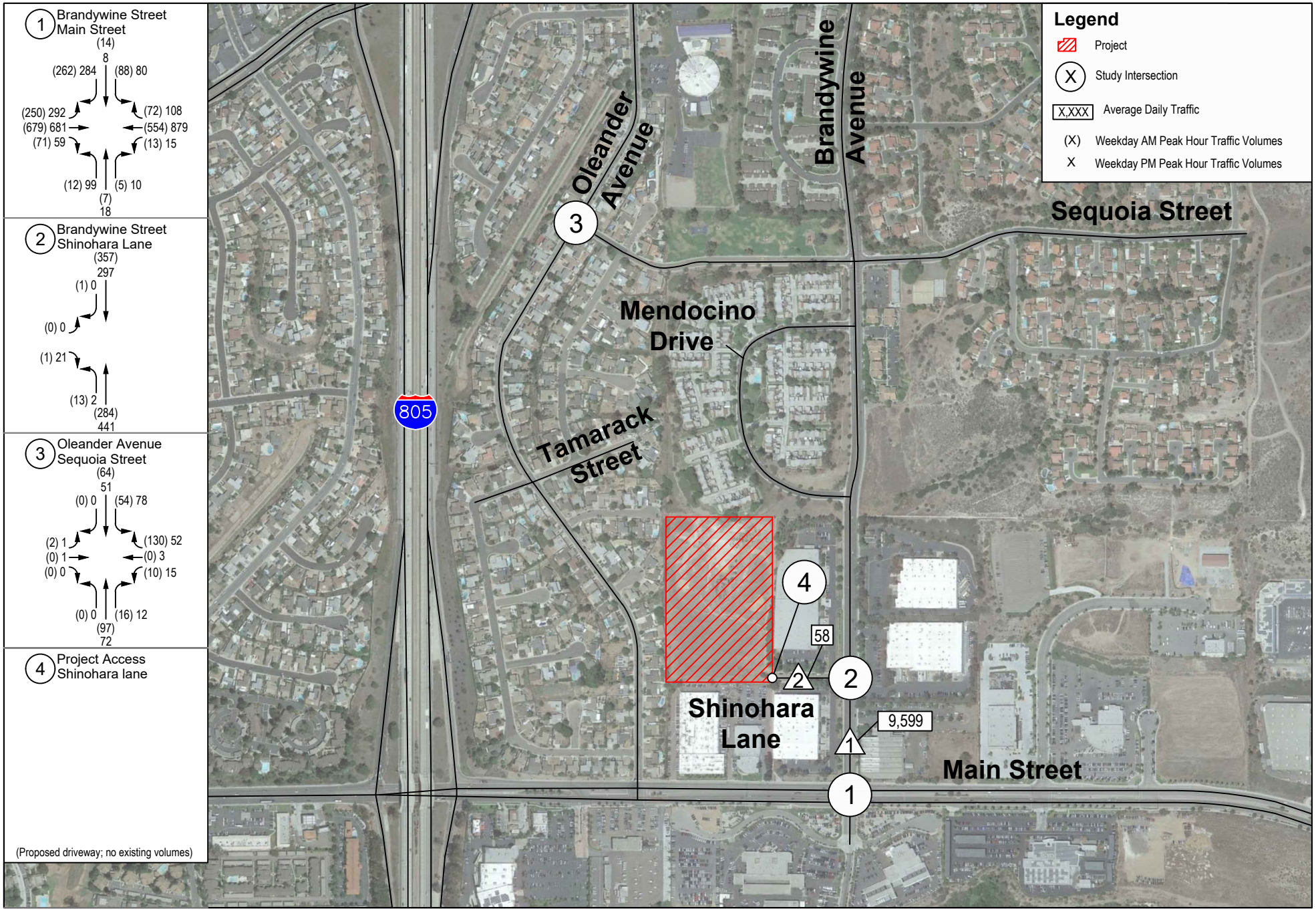

Source: Google Maps 2018

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FIGURE 4

Existing Traffic Volumes

Encompass Health Chula Vista

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3 Project Traffic

This section documents the trip generation, distribution, and assignment of project traffic.

3.1 Trip Generation

Dudek reviewed the trip generation rates for healthcare-related uses in the City of San Diego (2003) Trip Generation Manual, SANDAG (2002) Brief Guide of Vehicular Trip Generation Rates for the San Diego Region, and the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th Edition (ITE 2017). Trip generation estimates for the proposed project are based on Trip Generation Analysis Memorandum for the project submitted to the City in May 2019 and is provided in Appendix B.

As shown in the trip generation analysis, since the proposed project is a rehabilitation hospital, it would not generate as much traffic as a general hospital use. Patients are expected to stay at the facility for an average of 14 days to recover and receive rehabilitation services. The proposed facility is anticipated to have similar characteristics as a convalescent/nursing care facility. Further, the project does not propose any outpatient services. A similar Encompass Heath facility proposed in the City of Murrieta was approved utilizing the ITE Trip Generation, 9th Edition rates for a Nursing Home (ITE 2012). That study concluded that the peak hour trip generation for that similar 80-bed facility would generate 17.6 (18) peak hour trips.

Using the SANDAG trip rates, the proposed project would generate approximately 240 daily trips, 17 AM peak hour trips (10 inbound and 7 outbound), and 17 PM peak hour trips (7 inbound and 10 outbound). As previously discussed, similar to other existing Encompass Health facilities, the proposed City of Chula Vista facility would have two employee shifts. The day shift would operate from 7:00 a.m. to 7:00 p.m. with 170 employees; and, the night shift would operate from 7:00 p.m. to 7:00 a.m. with 40 employees. Based on the work-shift times, most of the employees would travel during non-peak hours to the project site before the start of their work-shift, and leave the site at the end of their work-shift, also during the non-peak hours. Therefore, the 17 AM peak hour trips, and 17 PM peak hour trips generated by the proposed project would likely be from the small number of administrative staff and visitors of patients. However, the minimum daily trips generated by the project would be, at least, 420 daily trips generated by the 210 employees (one inbound trip, and one outbound trip per employee). If you doubled the 240 daily trip generation estimate (using the SANDAG rate) to 480 daily trips, those 480 trips could comprise the 420 daily trips generated by employees, and the remaining 60 daily trips could be generated by administrative staff and visitors of patients.

Therefore, based on the project description, specifically, the employee work-shift times which make a majority of the 210 daily employees commute to the project site outside of the AM and PM peak hours, Dudek recommended doubling of the SANDAG "Hospital: Convalescent/Nursing" rates to represent the trip rates for the proposed rehabilitation hospital. Trip generation rates and resulting trip generation estimates for the project are summarized in Table 6.

Table 6. Project Trip Generation

Trip Generation Rates									
				AM Peak Hour			PM Peak Hour		
Land Use	*Size/Unit*		*Daily*	*% In*	*% Out*	*Total*	*% In*	*% Out*	*Total*
Hospital: Convalescent/Nursing [1]	per bed		3.00	60%	40%	7%	40%	60%	7%
Hospital: Convalescent/Nursing (modified)[2]	per bed		6.00	60%	40%	7%	40%	60%	7%
Trip Generation									
Standard SANDAG Trip Rate[1]									
Hospital: Convalescent/Nursing [1]	80	beds	240	10	7	17	7	10	17
Modified Trip Rate[2] (Used for the Project)									
Hospital: Convalescent/Nursing (modified) [2]	80	beds	480	20	14	34	14	20	34

Notes:
1 Trip Generation rates are the "Hospital: Convalescent/Nursing" rates from SANDAG 2002.
2 Trip Generation rates are the "Hospital: Convalescent/Nursing" rates X 2 (doubled) from SANDAG 2002.

As shown in the Table 6, using the modified SANDAG trip rates for "Hospital: Convalescent/Nursing" (doubled), the proposed project would generate approximately 480 daily trips, 34 AM peak hour trips (20 inbound and 14 outbound), and 34 PM peak hour trips (14 inbound and 20 outbound).

3.2 Trip Distribution and Assignment

Project trip distribution percentages were based on logical travel paths to commute corridors in the study area; Appendix B includes the figure showing the project's study area and trip distribution percentages that the City staff approved prior to the initiation of the traffic analysis.

Project traffic will utilize the project access from Shinohara Lane to access project site. Approximately 70% of the traffic would travel south and 30% would travel north along Brandywine Avenue. Of the 70% traffic traveling south along Brandywine Avenue, approximately 60% and 5% was assumed to be destined to/from the north and south along Interstate 805, respectively, and 5% of traffic was assumed to travel west, along Main Street.

Of the 30% of traffic travelling north along Brandywine Avenue from the site, approximately 10% was estimated to travel along Oleander Avenue and the remaining 20% along Brandywine Avenue.

Project trips were assigned to the study area intersections by applying the above-referenced project trip generation estimates to the trip distribution percentages at each study area roadway segment and intersection. The project trip distribution percentages are shown on Figure 5, Project Trip Distribution, and the resulting project trip assignment is shown in Figure 6, Project Trip Assignment.

Source: Google Maps 2018

FIGURE 5

Project Trip Distribution

Encompass Health Chula Vista

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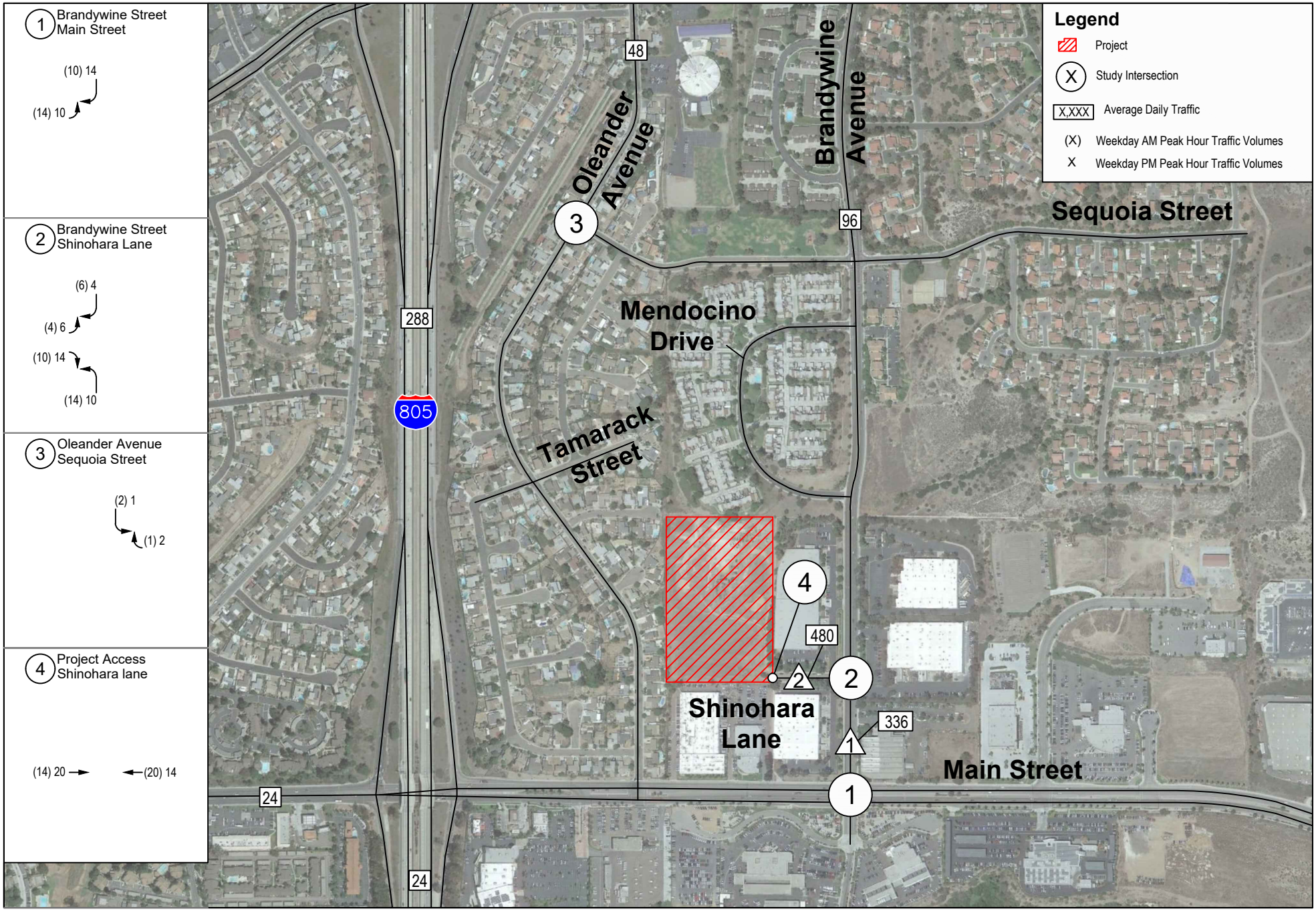

Source: Google Maps 2018

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FIGURE 6

Project Trip Assignment

Encompass Health Chula Vista

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4 Existing Plus Project Conditions

This section describes project-specific direct and cumulative effects under Existing plus Project conditions within the study area for roadway segment and intersection operations, and analyzes whether effects would be substantial based on the threshold criteria.

4.1 Traffic Volumes

Project traffic volumes shown in Figure 6 were added to the Existing traffic volumes shown in Figure 4 to derive the Existing plus Project traffic condition. Figure 7 shows the Existing plus Project traffic volumes.

4.2 Roadway Operations

As shown in Table 7, with the addition of project traffic, the study area roadway segments of Brandywine Avenue and Shinohara Lane would continue to operate with LOS A under Existing plus Project conditions. Per City's applicable criteria, the project would not cause a substantial direct or cumulative effect to the roadway segments under Existing plus Project conditions.

4.3 Intersection Operations

An intersection LOS analysis was prepared for the Existing plus Project condition using the HCM 6th methodology for signalized and unsignalized intersections. Table 8 summarizes the results of the Existing plus Project intersection analysis for the AM and PM peak hours. Detailed LOS calculation worksheets are included in Appendix C.

As shown in Table 8, all of the study area intersections are forecast to continue to operate with satisfactory LOS, at LOS D or better, under Existing plus Project conditions during both peak hours. Since all study area intersections are forecast to operate at LOS D or better, the project would not cause a substantial direct or cumulative effect to intersection operations under the Existing plus Project conditions.

Table 7. Existing plus Project Roadway Segment Level of Service

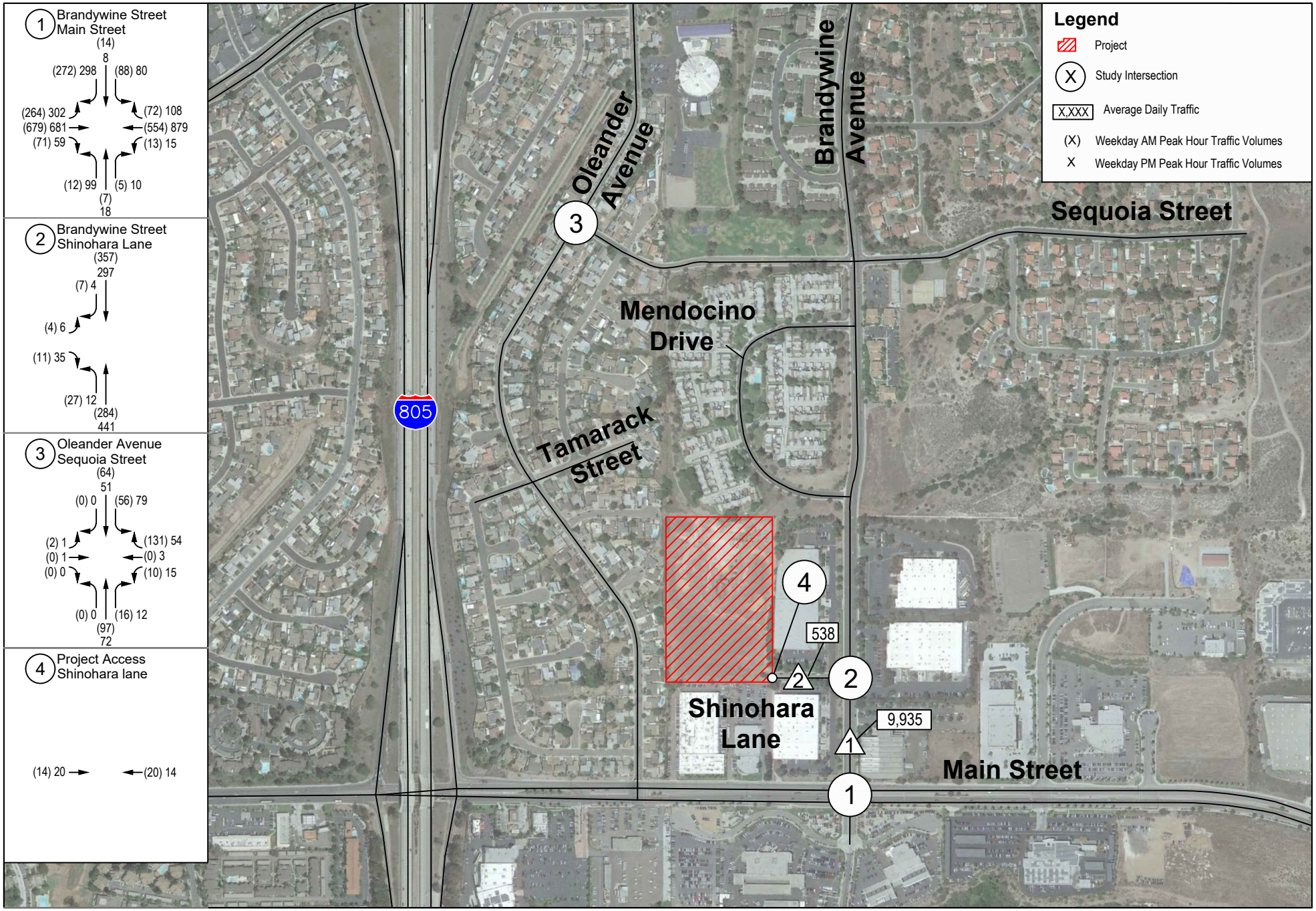
Roadway Segment	Classification	LOS "C" ADT	Existing		Existing plus Project		Substantial Effect Criteria		Substantial Effect?
			ADT[1]	*LOS*[2]	*ADT*[1]	*LOS*[2]	*Project ADT >800*	*Project Contribution %*	
Brandywine Avenue									
Shinohara Lane to Main Street	Class I Collector	22,000	9,599	A	9,935	A	336	3.4%	No
Shinohara Lane									
West of Brandywine Avenue	Class III Collector	7,500	58	A	538	A	480	89.2%	No

Notes: LOS is based on City of Chula Vista Roadway Segment LOS Thresholds
1 ADT – Average Daily Traffic
2 LOS – Level of Service

Table 8. Existing plus Project Peak Hour Intersection Level of Service

No.	Intersection	Control	LOS Method	Existing				Existing plus Project				Project % of Entering Volume		Substantial Effect?	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*AM*	*PM*	*AM*	*PM*
1	Brandywine Avenue/Main Street	Signalized	HCM	35.4	D	42.8	D	37.3	D	44.0	D	0.9%	0.9%	No	No
2	Brandywine Avenue/Shinohara Lane	Unsignalized	HCM	9.6	A	9.4	A	10.6	B	9.9	A	4.9%	4.3%	No	No
3	Oleander Avenue/Sequoia Street	Unsignalized	HCM	9.1	A	7.9	A	9.1	A	7.9	A	0.8%	1.0%	No	No
4	Shinohara Lane/Project Access	Unsignalized	HCM	Does not exist				No delay reported due to intersection configuration - Operates at LOS A				100%	100 %	No	No

Notes: HCM = Highway Capacity Manual; Int. = Intersection
1 Delay in seconds per vehicle
2 Level of Service (LOS)



Source: Google Maps 2018

FIGURE 7

Existing plus Project Traffic Volumes

Encompass Health Chula Vista

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5 Buildout Year (2035) Conditions

This section presents the results of a buildout conditions analysis that was conducted for a long-term horizon year where the proposed project is constructed and fully occupied. The year 2035 is the horizon year for buildout conditions analysis.

5.1 Traffic Volumes

As discussed with the transportation engineer during the scoping meeting in February 2019 and per requirements of the City's Traffic Impact Threshold Standards to have the traffic study consistent with SANDAG's traffic model and horizon year, Series 12 average daily traffic volumes available from the SANDAG Transportation Forecast Information Center (TFIC) website were utilized for the roadway segment traffic volumes for the year 2035.

The year 2035 intersection volumes were forecasted using a growth factor calculated from Series 12 transportation forecasts available for the year 2008 and year 2035 for average daily roadway segment volumes. The growth factors were averaged along each roadway segment.

Figure 8, Buildout Year (2035) Traffic Volumes, illustrates the Buildout Year (2035) traffic volumes for the daily and peak hour conditions. The existing roadway segment and intersection configurations (shown in Figure 3) have been assumed to be preserved under the Buildout Year conditions

5.2 Roadway Operations

A roadway segment operations analysis was prepared for the Buildout Year conditions using the roadway capacity thresholds for average daily traffic as discussed in Section 1, Introduction. Table 9 shows the results of the Buildout Year (2035) conditions analysis for the study area roadway segments.

All studied roadway segments operate at LOS C or better under Buildout Year (2035) conditions.

Table 9. Buildout Year (2035) Daily Roadway Segment Level of Service

Roadway Segment	Classification	LOS "C" ADT	Buildout Conditions	
			ADT[1]	*LOS*[2]
Brandywine Avenue				
Shinohara Lane to Main Street	Class I Collector	22,000	19,300	C
Shinohara Lane				
West of Brandywine Avenue	Class III Collector	7,500	85	A

Source: SANDAG 2012.
Note: LOS is based on City of Chula Vista Roadway Segment LOS Thresholds
1 ADT – Average Daily Traffic
2 LOS – Level of Service

5.3 Intersection Operations

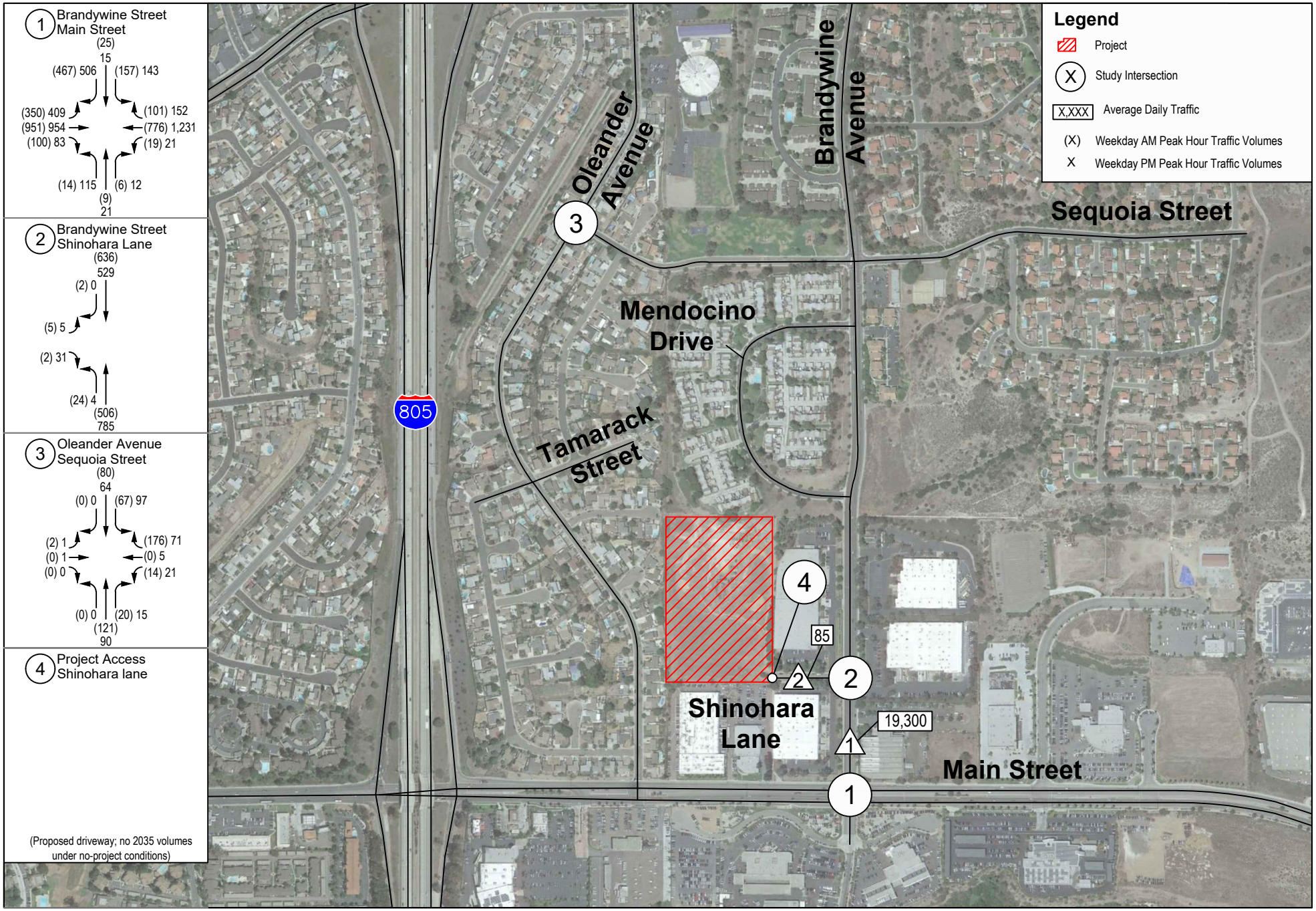
An intersection LOS analysis was prepared for the Buildout Year (2035) conditions (no project) using the HCM 6th methodology for unsignalized and signalized intersections. As described in Chapter 1, Synchro (version 10) was utilized to calculate delay for unsignalized intersections. Table 15 shows the results of the Buildout Year conditions LOS analysis, detailed LOS worksheets are included in Appendix C.

As shown in Table 10, with the exception of Brandywine Avenue/Main Street intersection, all other study area intersections are forecast to operate at LOS B or better under Buildout Year (2035) during both peak hour conditions. The Brandywine Avenue/Main Street intersection operates at LOS D during the AM peak hour and LOS F during the PM peak hour under Buildout Year (2035) conditions.

Table 10. Buildout Year (2035) Weekday Peak Hour Intersection LOS

No.	Intersection	Control	LOS Method	AM Peak		PM Peak	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
1	Brandywine Avenue/Main Street	Signalized	HCM	46.7	D	**80.6**	**F**
2	Brandywine Avenue/Shinohara Lane	Unsignalized	HCM	14.3	B	11.1	B
3	Oleander Avenue/Sequoia Street	Unsignalized	HCM	10.4	B	8.3	A

Notes:
HCM = Highway Capacity Manual;
1 Delay in seconds per vehicle
2 Level of Service (LOS)



Source: Google Maps 2018

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FIGURE 8

Buildout Year (2035) Traffic Volumes

Encompass Health Chula Vista

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6 Buildout Year (2035) plus Project Conditions

This section describes project-specific direct and cumulative effects under Buildout Year (2035) plus Project conditions within the study area for roadway segment and intersection operations, and analyzes whether effects would be substantial based on the threshold criteria.

6.1 Traffic Volumes

The project trip assignment, as shown in Figure 6, was added to the Buildout Year (2035) traffic volumes, as shown in Figure 8, to derive the Buildout Year (2035) plus Project traffic volumes. Figure 9 shows the Buildout Year (2035) plus Project traffic volumes.

As with Buildout Year (without project) conditions, the existing roadway and intersection geometrics in the study area have been assumed to be maintained through the Buildout Year traffic scenario, as shown in Figure 3.

6.2 Roadway Operations

As shown in Table 11, with the addition of project traffic, the study area roadway segments of Brandywine Avenue and Shinohara Lane would continue to operate under LOS C and LOS A under Buildout plus Project conditions. Therefore, the project would not cause substantial direct or cumulative effects to the roadway segments under Buildout plus Project conditions.

6.3 Intersection Operations

An intersection LOS analysis was prepared for the Buildout Year plus Project condition using the HCM 6th methodology for signalized and unsignalized intersections. Table 12 summarizes the results of the Buildout plus Project intersection analysis for the AM and PM peak hours. Detailed LOS calculation worksheets are included in Appendix C.

As shown in Table 12, with the exception of Brandywine Avenue/Main Street intersection, all other study area intersections are forecast to operate at LOS B or better under Buildout Year (2035) during both peak hour conditions. The Brandywine Avenue/Main Street intersection continues to operate at LOS D during the AM peak hour and LOS F during the PM peak hour with the addition of project traffic under Buildout Year (2035) conditions.

Since the project does not add more than 5% traffic of the total entering traffic at the Brandywine Avenue/Main Street intersection (which operates at LOS F), the project's addition of traffic would be considered a cumulative contribution, resulting in a substantial cumulative effect. The project would include an operational improvement in the form of signal timing modification to the Brandywine Avenue/Main Street intersection through the implementation of Project Design Feature 1 **(PDF-TRA-1)**, which would alleviate the substantial cumulative effect.

PDF-TRA-1 Prior to issuance of an occupancy permit, the project applicant shall implement the traffic signal modification at the Brandywine Avenue/Main Street intersection and receive Traffic Signal Fee credits from the City.

Table 14 in Section 8.3, summarizes the results of the Buildout plus Project intersection analysis for the AM and PM peak hour under the signal timing modification scenario. With this operational improvement, the intersection would operate at LOS D during the AM and the PM peak hour under Buildout Year (2035) plus Project conditions. LOS worksheets for under the operational improvement condition are provided in Appendix C.

With the implementation of the operational improvement identified as **PDF-TRA-1**, the Brandywine Avenue/Main Street intersection would operate at LOS D during the AM and the PM peak hour under Buildout Year (2035) plus Project conditions, and no substantial cumulative effect would occur.

Table 11. Buildout Year plus Project Roadway Segment Level of Service

Roadway Segment	Classification	LOS "C" ADT	Buildout		Buildout plus Project		Substantial Effect Criteria		Substantial Effect?
			ADT[1]	*LOS*[2]	*ADT*[1]	*LOS*[2]	*Project ADT >800*	*Project Contribution %*	
Brandywine Avenue									
Shinohara Lane to Main Street	Class I Collector	22,000	19,300	C	19,636	C	336	1.7%	No
Shinohara Lane									
West of Brandywine Avenue	Class III Collector	7,500	85	A	565	A	480	85.0%	No

Notes: LOS is based on City of Chula Vista Roadway Segment LOS Thresholds
1 ADT – Average Daily Traffic
2 LOS – Level of Service

Table 12. Buildout Year plus Project Weekday Peak Hour Level of Service

No.	Intersection	Control	LOS Method	Buildout				Buildout plus Project				Project % of Entering Volume		Substantial Effect?	
				AM Peak		*PM Peak*		*AM Peak*		*PM Peak*					
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]	*AM*	*PM*	*AM*	*PM*
1	Brandywine Avenue/ Main Street	Signalized	HCM	46.7	D	**80.6**	**F**	48.6	D	**83.3**	**F**	0.8%	0.7%	Cumu.	Cumu.
2	Brandywine Avenue/ Shinohara Lane	Unsignalized	HCM	14.3	B	11.1	B	13.3	B	11.8	B	2.8%	2.4%	No	No
3	Oleander Avenue/ Sequoia Street	Unsignalized	HCM	10.4	B	8.3	A	10.4	B	8.3	A	0.6%	0.8%	No	No
4	Shinohara Lane/ Project Access	Unsignalized	HCM	Does not exist				No delay reported due to intersection configuration - Operates at LOS A				100%	100 %	No	No

Notes: HCM = Highway Capacity Manual; Int. = Intersection, Cumu. = Cumulative Impacts
1 Delay in seconds per vehicle
2 Level of Service (LOS)

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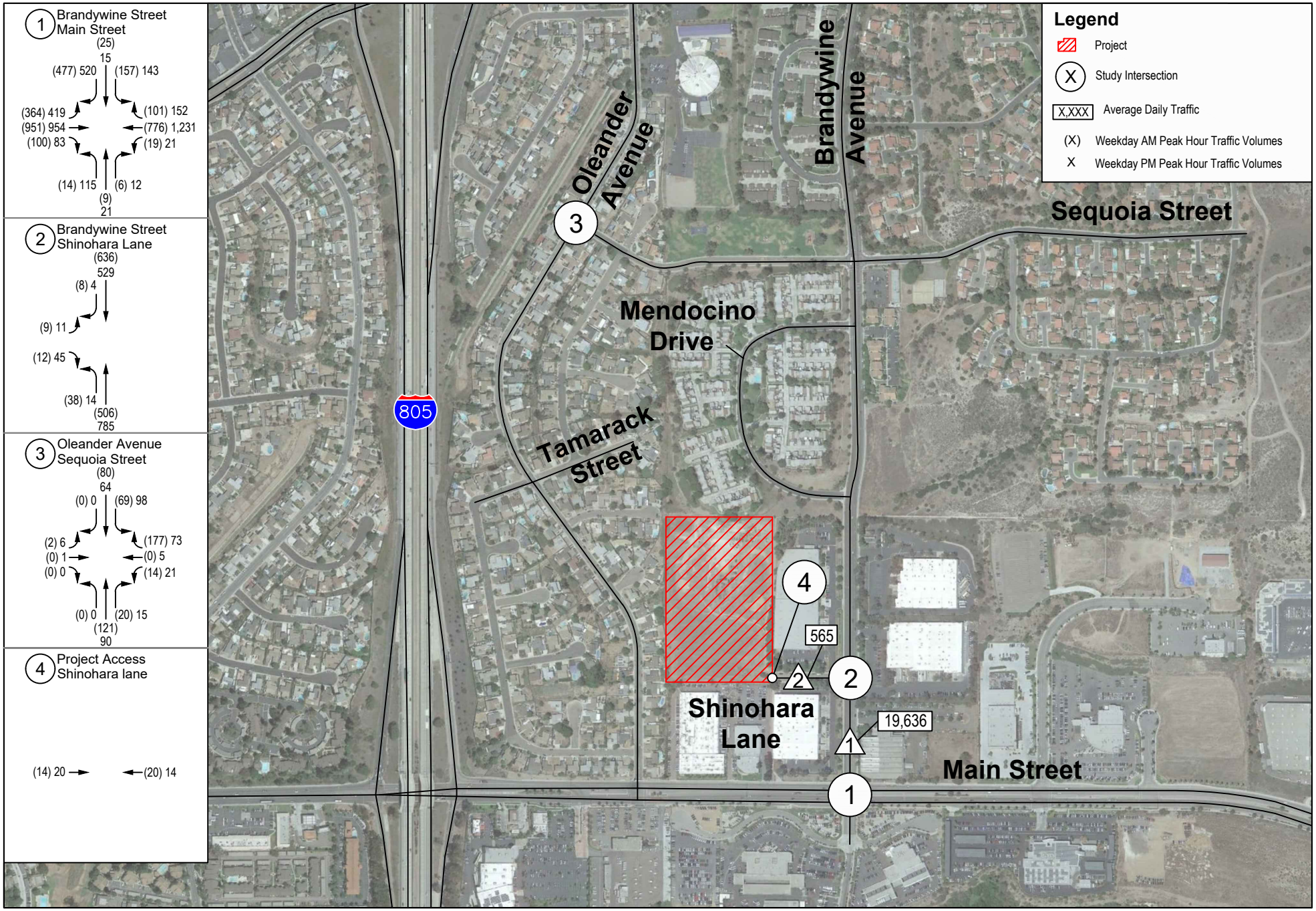

Source: Google Maps 2018

FIGURE 9

Buildout Year (2035) plus Project Traffic Volumes

Encompass Health Chula Vista

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7 Project Access and Queuing Analysis

7.1 Project Access

As shown on the site plan (Figure 2a), primary site access, will be from Shinohara Lane. The 40-foot-wide Shinohara Lane transitions into a 24-foot-wide project access roadway that loops around the project site (Figures 2a and 2b), providing vehicular access to the site and the parking areas. The site plan illustrates two phases of the project, Phase 1 includes parking spaces located to both the north and south of the building within surface lots, and a drop-off circle. With the construction of Phase 2, layout of the parking areas to the north and east side of the project site and the non-emergency ambulance drop-off would be reorganized.

As shown in Table 8, Existing plus Project Peak Hour Intersection Level of Service, and Table 12, Buildout Year plus Project Weekday Peak Hour Level of Service, the project access driveway is forecast to operate with satisfactory LOS, at LOS B or better, during both peak hours under all study scenarios. The detailed LOS worksheets for project access intersections are included in Appendix C.

7.2 Queuing Analysis

A queuing analysis was conducted per City's request for the signalized intersection of Brandywine Avenue and Main Street in the study area. Queuing reports are provided in Appendix C.

As shown in Table 13, the calculated 95th percentile (design) queue for the eastbound left movement exceeds the storage length available for this movement, under all scenarios analyzed. The addition of project traffic under Existing plus Project and Buildout plus Project conditions, increases the queue length (in feet) nominally (assuming 25 feet per car) and is therefore not considered significant. The calculated 95th percentile (design) queue for the southbound left movement exceeds the storage length available for this movement, under Existing plus Project conditions during the PM peak hour, and under the Buildout and Buildout plus Project conditions during both the AM and PM peak hours. The addition of project traffic increases the queue length (in feet) nominally (assuming 25 feet per car) and is therefore, not considered significant. For the southbound right movement, the 95th percentile (design) queue exceeds the storage length under the Buildout conditions during the PM peak hour and under the Buildout plus Project conditions during both the AM and PM peak hour. However, the increase in queue length is equivalent to one to two cars under any scenario shown in Table 13. Although, the average queue (50th percentile) for these locations is well within the storage length under most of the scenarios analyzed for queuing, based on the results of the 95th percentile queuing analysis, the proposed project would substantially increase hazards due to a geometric design feature. To address this potentially significant impact, the project would implement Mitigation Measures described in Section 8, Project Impacts and Mitigation Measures.

Table 13. Project Queuing Summary

Intersection	Movement	Vehicle Storage Length[2]	Queue Length[1]							
			Existing		*Existing plus Project*		*Buildout*		*Buildout plus Project*	
			AM	*PM*	*AM*	*PM*	*AM*	*PM*	*AM*	*PM*
Brandywine Avenue/Main Street	EBL	230	**250**	**272**	**257**	**279**	**293**	**287**	**297**	**292**
	EBR	150	31	28	29	26	35	31	46	32
	WBL	210	32	99	35	51	92	168	111	176
	NBL	130	32	82	37	84	34	92	40	92
	NBL	130	*	44	*	40	5	77	*	84
	SBL	140	128	137	124	**141**	**176**	**190**	**181**	**185**
	SBR	140	92	106	90	114	136	**169**	**143**	**167**

Notes:
1 Based on 95th percentile (design) queue length in SimTraffic 10.
2 Measured in feet.
XX Queue exceeds storage length

8 Operational Deficiencies, Improvement Measures and Development Impact Fees

8.1 Operational Deficiencies

8.1.1 Direct

As shown in queuing analysis, the project traffic would add to the existing and future deficiency of storage length along eastbound left and southbound left turn lanes at the Brandywine Avenue/Main Street intersection under Existing plus Project and Buildout Year (2035) plus Project conditions.

8.1.2 Cumulative

As shown in queuing analysis, the project traffic would add to the existing and future deficiency of storage length along eastbound left, southbound left and southbound right turn lanes at the Brandywine Avenue/Main Street intersection under Existing plus Project and Buildout Year (2035) plus Project conditions.

8.2 Improvement Measures

8.2.1 Direct and Cumulative Deficiencies

To provide additional storage length for vehicles at the Brandywine Avenue/ Main Street intersection, the project proposes following improvement measures:

- Re-stripe the eastbound left-turn lane to accommodate additional vehicle storage. The existing median along Main Street can be re-striped to extend the eastbound left-turn lane to approximately 300 feet to provide adequate storage under the Existing plus Project and Buildout Year (2035) plus Project conditions.
- Although the southbound left and right turn lanes at the Brandywine Avenue/Main Street intersection cannot be extended due to an existing commercial driveway north of the intersection, KEEP CLEAR pavement markings can be installed on Brandywine Avenue, in front of the driveway, to allow vehicles to access the commercial use north of the KEEP CLEAR pavement markings, the southbound approach can be re-striped to accommodate additional storage for the southbound left- and right-turn lanes.

8.3 Development Impact Fees

The project's substantial cumulative effect at the Brandywine Avenue/Main Street intersection would be alleviated through the implementation of an operational improvement in the form of a traffic signal modification that would include overlap of the southbound right movement with the eastbound left movement. Table 14 summarizes the

results of the Buildout plus Project intersection analysis for the AM and PM peak hour under the signal timing modification scenario. With this operational improvement, the intersection would operate at LOS D during the AM and the PM peak hour under Buildout Year (2035) plus Project conditions. LOS worksheets for under the operational improvement condition are provided in Appendix C.

Table 14. Operational Improvement Buildout Year (2035) plus Project Weekday Peak Hour Intersection LOS

No.	Intersection	Control	LOS Method	AM Peak		PM Peak	
				Delay[1]	*LOS*[2]	*Delay*[1]	*LOS*[2]
1	Brandywine Avenue/Main Street	Signalized	HCM	43.6	D	54.2	D

Notes: HCM = Highway Capacity Manual.
1 Delay in seconds per vehicle
2 Level of Service (LOS)

Substantial cumulative effects on the City's roadway segments are alleviated through the payment of TDIF fees or contribution to City's Capital Improvement Budget Program (CIP). Since the Brandywine Avenue and Main Street are currently built to their General Plan classification and no specific intersection improvements are proposed in the current TDIF, the project proposes to contribute to the City's CIP.

As mentioned in Section 1, the City's CIP, includes provision of Traffic Signal Fee that can be utilized for upgrade of traffic signals throughout the City. Therefore, the project will pay the required trip based development impact fee for signal modification at the Brandywine Avenue/Main Street intersection at the time of the issuance of building permits.

9 Findings and Recommendations

Based on the traffic analysis of the proposed project, the following findings on study area roadway segment and intersection levels of service, project trip generation, project access, and project effects are made:

- The proposed project would generate approximately 480 daily trips, 34 AM peak hour trips (20 inbound and 14 outbound), and 34 PM peak hour trips (14 inbound and 20 outbound).
- Under Existing plus Project conditions, the study area roadway segments and intersections operate at LOS C and LOS D or better, respectively. Per City's applicable criteria, no substantial project-specific or cumulative effect would occur in the Existing plus Project conditions for roadway segments and intersections.
- Under Buildout Year (2035) plus Project conditions, the roadway segments operate at LOS C or better and the project does not have a substantial project-specific or cumulative effect. The Brandywine Avenue/Main Street intersection operates at LOS F during the PM peak hour under buildout conditions. Per City's applicable criteria, the project has a substantial cumulative effect at the Brandywine Avenue/Main Street intersection under Buildout Year (2035) plus Project conditions.
- To provide additional storage length for vehicles at the Brandywine Avenue/ Main Street intersection, the project proposes following improvement measures:
    - Re-stripe the eastbound left-turn lane to accommodate additional vehicle storage. The existing median along Main Street can be re-striped to extend the eastbound left-turn lane to approximately 300 feet to provide adequate storage under the Existing plus Project and Buildout Year (2035) plus Project conditions.
    - Although the southbound left and ~~or~~ right turn lanes at the Brandywine Avenue/Main Street intersection cannot be extended due to an existing commercial driveway north of the intersection, KEEP CLEAR pavement markings can be installed on Brandywine Avenue, in front of the driveway, to allow vehicles to access the commercial use. North of the KEEP CLEAR pavement markings, the southbound approach can be re-striped to accommodate additional storage for the southbound left- and right turn lanes.
- The project's substantial cumulative effect at the Brandywine Avenue/Main Street intersection can be alleviated through the implementation of an operational improvement in the form of a traffic signal modification that would include overlap of the southbound right movement with the eastbound left movement.
- For the project's substantial cumulative effect at the Brandywine Avenue/Main Street intersection, the project will pay the required trip-based development impact fee for signal modification at the time of the issuance of building permits.

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Appendix A

Traffic Counts

Prepared by NDS/ATD

VOLUME

Brandywine Ave Bet. Shinohara Ln & Main St

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_001

DAILY TOTALS	NB	SB	EB	WB	Total
	4,877	4,722	0	0	9,599

AM Period	NB		SB		EB		WB		TOTAL	
00:00	8		12						20	
00:15	11		3						14	
00:30	10		3						13	
00:45	7	36	0	18					7	54
01:00	5		2						7	
01:15	9		4						13	
01:30	6		1						7	
01:45	4	24	1	8					5	32
02:00	3		1						4	
02:15	9		1						10	
02:30	5		2						7	
02:45	10	27	6	10					16	37
03:00	7		5						12	
03:15	4		9						13	
03:30	9		8						17	
03:45	2	22	11	33					13	55
04:00	9		7						16	
04:15	5		7						12	
04:30	11		10						21	
04:45	17	42	14	38					31	80
05:00	18		24						42	
05:15	22		37						59	
05:30	28		42						70	
05:45	38	106	40	143					78	249
06:00	29		42						71	
06:15	39		45						84	
06:30	65		50						115	
06:45	99	232	59	196					158	428
07:00	66		74						140	
07:15	46		93						139	
07:30	94		98						192	
07:45	93	299	120	385					213	684
08:00	76		71						147	
08:15	68		81						149	
08:30	81		75						156	
08:45	40	265	91	318					131	583
09:00	48		73						121	
09:15	56		60						116	
09:30	45		63						108	
09:45	49	198	46	242					95	440
10:00	32		54						86	
10:15	61		62						123	
10:30	53		65						118	
10:45	41	187	61	242					102	429
11:00	69		48						117	
11:15	58		57						115	
11:30	59		55						114	
11:45	58	244	69	229					127	473
TOTALS		1682		1862						3544
SPLIT %		47.5%		52.5%						36.9%

PM Period	NB		SB		EB		WB		TOTAL	
12:00	80		75						155	
12:15	76		69						145	
12:30	86		76						162	
12:45	92	334	68	288					160	622
13:00	62		76						138	
13:15	74		79						153	
13:30	78		71						149	
13:45	80	294	60	286					140	580
14:00	85		66						151	
14:15	84		65						149	
14:30	82		85						167	
14:45	92	343	120	336					212	679
15:00	93		103						196	
15:15	104		98						202	
15:30	104		149						253	
15:45	99	400	113	463					212	863
16:00	116		108						224	
16:15	108		88						196	
16:30	95		101						196	
16:45	98	417	76	373					174	790
17:00	122		78						200	
17:15	135		75						210	
17:30	102		80						182	
17:45	89	448	74	307					163	755
18:00	110		79						189	
18:15	86		66						152	
18:30	78		55						133	
18:45	68	342	56	256					124	598
19:00	68		64						132	
19:15	50		52						102	
19:30	50		45						95	
19:45	39	207	52	213					91	420
20:00	53		37						90	
20:15	42		32						74	
20:30	58		39						97	
20:45	42	195	31	139					73	334
21:00	30		32						62	
21:15	35		31						66	
21:30	20		22						42	
21:45	23	108	19	104					42	212
22:00	16		19						35	
22:15	20		14						34	
22:30	20		16						36	
22:45	13	69	13	62					26	131
23:00	14		12						26	
23:15	11		11						22	
23:30	7		4						11	
23:45	6	38	6	33					12	71
TOTALS		3195		2860						6055
SPLIT %		52.8%		47.2%						63.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	4,877	4,722	0	0	9,599

AM Peak Hour	07:30	07:00			07:30
AM Pk Volume	331	385			701
Pk Hr Factor	0.880	0.802			0.823
7 - 9 Volume	564	703	0	0	1267
7 - 9 Peak Hour	07:30	07:00			07:30
7 - 9 Pk Volume	331	385	0	0	701
Pk Hr Factor	0.880	0.802	0.000	0.000	0.823

PM Peak Hour	16:45	14:45			15:15
PM Pk Volume	457	470			891
Pk Hr Factor	0.846	0.789			0.880
4 - 6 Volume	865	680	0	0	1545
4 - 6 Peak Hour	16:45	16:00			16:00
4 - 6 Pk Volume	457	373	0	0	790
Pk Hr Factor	0.846	0.863	0.000	0.000	0.882

Prepared by NDS/ATD

VOLUME

Brandywine Ave Bet. Mendocino Dr & Shinohara Ln

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_002

DAILY TOTALS	NB	SB	EB	WB	Total
	4,487	4,246	0	0	8,733

AM Period	NB		SB		EB		WB		TOTAL	
00:00	12		6						18	
00:15	11		4						15	
00:30	9		3						12	
00:45	7	39	0	13					7	52
01:00	6		2						8	
01:15	8		2						10	
01:30	6		2						8	
01:45	4	24	0	6					4	30
02:00	3		1						4	
02:15	10		1						11	
02:30	4		2						6	
02:45	8	25	5	9					13	34
03:00	6		6						12	
03:15	3		7						10	
03:30	8		8						16	
03:45	2	19	10	31					12	50
04:00	6		7						13	
04:15	2		8						10	
04:30	5		11						16	
04:45	7	20	17	43					24	63
05:00	9		16						25	
05:15	16		33						49	
05:30	15		46						61	
05:45	20	60	41	136					61	196
06:00	19		37						56	
06:15	24		51						75	
06:30	47		45						92	
06:45	66	156	58	191					124	347
07:00	50		73						123	
07:15	40		88						128	
07:30	76		85						161	
07:45	78	244	119	365					197	609
08:00	66		82						148	
08:15	59		75						134	
08:30	77		77						154	
08:45	36	238	79	313					115	551
09:00	46		71						117	
09:15	48		55						103	
09:30	36		56						92	
09:45	50	180	42	224					92	404
10:00	33		45						78	
10:15	56		55						111	
10:30	48		58						106	
10:45	38	175	50	208					88	383
11:00	68		50						118	
11:15	45		45						90	
11:30	57		51						108	
11:45	50	220	60	206					110	426
TOTALS		1400		1745						3145
SPLIT %		44.5%		55.5%						36.0%

PM Period	NB		SB		EB		WB		TOTAL	
12:00	72		71						143	
12:15	69		61						130	
12:30	81		69						150	
12:45	86	308	61	262					147	570
13:00	61		69						130	
13:15	67		70						137	
13:30	73		70						143	
13:45	75	276	62	271					137	547
14:00	81		59						140	
14:15	75		54						129	
14:30	82		74						156	
14:45	93	331	81	268					174	599
15:00	97		89						186	
15:15	93		92						185	
15:30	104		94						198	
15:45	95	389	96	371					191	760
16:00	117		82						199	
16:15	99		80						179	
16:30	91		90						181	
16:45	93	400	66	318					159	718
17:00	116		68						184	
17:15	129		65						194	
17:30	105		73						178	
17:45	90	440	76	282					166	722
18:00	101		69						170	
18:15	87		58						145	
18:30	80		51						131	
18:45	64	332	55	233					119	565
19:00	60		55						115	
19:15	50		48						98	
19:30	48		45						93	
19:45	40	198	46	194					86	392
20:00	55		34						89	
20:15	41		27						68	
20:30	56		36						92	
20:45	40	192	25	122					65	314
21:00	36		25						61	
21:15	37		28						65	
21:30	21		23						44	
21:45	24	118	15	91					39	209
22:00	16		17						33	
22:15	19		13						32	
22:30	20		15						35	
22:45	13	68	13	58					26	126
23:00	14		12						26	
23:15	11		10						21	
23:30	6		4						10	
23:45	4	35	5	31					9	66
TOTALS		3087		2501						5588
SPLIT %		55.2%		44.8%						64.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	4,487	4,246	0	0	8,733

AM Peak Hour	07:45	07:15			07:30
AM Pk Volume	280	374			640
Pk Hr Factor	0.897	0.786			0.812
7 - 9 Volume	482	678	0	0	1160
7 - 9 Peak Hour	07:45	07:15			07:30
7 - 9 Pk Volume	280	374	0	0	640
Pk Hr Factor	0.897	0.786	0.000	0.000	0.812

PM Peak Hour	16:45	15:00			15:15
PM Pk Volume	443	371			773
Pk Hr Factor	0.859	0.966			0.971
4 - 6 Volume	840	600	0	0	1440
4 - 6 Peak Hour	16:45	16:00			17:00
4 - 6 Pk Volume	443	318	0	0	722
Pk Hr Factor	0.859	0.883	0.000	0.000	0.930

Prepared by National Data & Surveying Services

VOLUME

Shinohara Ln W/O Brandywine Ave

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	32	26	58

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00					0		0		0		12:00					1		0		1	
00:15					1		0		1		12:15					0		0		0	
00:30					0		0		0		12:30					0		1		1	
00:45					0	1	0		0	1	12:45					0	1	0	1	0	2
01:00					0		0		0		13:00					0		0		0	
01:15					1		1		2		13:15					0		0		0	
01:30					0		0		0		13:30					0		0		0	
01:45					0	1	0	1	0	2	13:45					0		0		0	
02:00					0		0		0		14:00					0		0		0	
02:15					0		0		0		14:15					0		0		0	
02:30					0		0		0		14:30					1		0		1	
02:45					0		0		0		14:45					0	1	1	1	1	2
03:00					0		0		0		15:00					1		0		1	
03:15					0		0		0		15:15					0		0		0	
03:30					0		0		0		15:30					4		1		5	
03:45					0		0		0		15:45					0	5	0	1	0	6
04:00					0		0		0		16:00					0		0		0	
04:15					0		0		0		16:15					0		0		0	
04:30					0		1		1		16:30					2		0		2	
04:45					0		0	1	0	1	16:45					3	5	0		3	5
05:00					0		1		1		17:00					7		0		7	
05:15					0		0		0		17:15					0		0		0	
05:30					0		0		0		17:30					2		0		2	
05:45					0		0	1	0	1	17:45					1	10	0		1	10
06:00					0		0		0		18:00					0		0		0	
06:15					0		1		1		18:15					0		0		0	
06:30					1		2		3		18:30					0		0		0	
06:45					0	1	3	6	3	7	18:45					0		0		0	
07:00					0		1		1		19:00					0		0		0	
07:15					0		0		0		19:15					0		0		0	
07:30					0		1		1		19:30					0		0		0	
07:45					0		2	4	2	4	19:45					0		0		0	
08:00					0		0		0		20:00					0		1		1	
08:15					0		1		1		20:15					0		0		0	
08:30					0		0		0		20:30					0		0		0	
08:45					1	1	1	2	2	3	20:45					0		0	1	0	1
09:00					0		0		0		21:00					0		0		0	
09:15					0		2		2		21:15					0		0		0	
09:30					1		0		1		21:30					1		0		1	
09:45					0	1	0	2	0	3	21:45					0	1	0		0	1
10:00					0		0		0		22:00					0		0		0	
10:15					0		0		0		22:15					0		0		0	
10:30					0		0		0		22:30					0		0		0	
10:45					0		1	1	1	1	22:45					0		0		0	
11:00					1		0		1		23:00					0		0		0	
11:15					0		1		1		23:15					0		0		0	
11:30					2		0		2		23:30					0		0		0	
11:45					1	4	3	4	4	8	23:45					0		0		0	
TOTALS						9		22		31	TOTALS						23		4		27
SPLIT %						29.0%		71.0%		53.4%	SPLIT %						85.2%		14.8%		46.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	32	26	58

AM Peak Hour			11:00	06:15	06:15	PM Peak Hour			16:15	14:45	16:15
AM Pk Volume			4	7	8	PM Pk Volume			12	2	12
Pk Hr Factor			0.500	0.583	0.667	Pk Hr Factor			0.429	0.500	0.429
7 - 9 Volume	0	0	1	6	7	4 - 6 Volume	0	0	15	0	15
7 - 9 Peak Hour			08:00	07:00	07:00	4 - 6 Peak Hour			16:15		16:15
7 - 9 Pk Volume	0	0	1	4	4	4 - 6 Pk Volume	0	0	12	0	12
Pk Hr Factor	0.000	0.000	0.250	0.500	0.500	Pk Hr Factor	0.000	0.000	0.429	0.000	0.429

Prepared by National Data & Surveying Services

VOLUME

Oleander Ave N/O Sequoia St

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_004

DAILY TOTALS	NB	SB	EB	WB	Total
	1,283	1,471	0	0	2,754

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	1		3						4		12:00	13		16						29	
00:15	0		1						1		12:15	22		26						48	
00:30	0		2						2		12:30	10		22						32	
00:45	0	1	1	7					1	8	12:45	14	59	15	79					29	138
01:00	1		1						2		13:00	16		19						35	
01:15	0		1						1		13:15	12		23						35	
01:30	1		2						3		13:30	15		21						36	
01:45	0	2	0	4					0	6	13:45	12	55	20	83					32	138
02:00	0		3						3		14:00	35		14						49	
02:15	0		1						1		14:15	51		29						80	
02:30	4		2						6		14:30	41		63						104	
02:45	0	4	1	7					1	11	14:45	15	142	34	140					49	282
03:00	1		1						2		15:00	20		26						46	
03:15	0		0						0		15:15	16		34						50	
03:30	2		0						2		15:30	19		23						42	
03:45	0	3	3	4					3	7	15:45	14	69	35	118					49	187
04:00	3		1						4		16:00	22		33						55	
04:15	5		4						9		16:15	21		33						54	
04:30	7		1						8		16:30	19		41						60	
04:45	4	19	2	8					6	27	16:45	29	91	27	134					56	225
05:00	10		1						11		17:00	32		24						56	
05:15	5		2						7		17:15	37		40						77	
05:30	10		3						13		17:30	29		28						57	
05:45	6	31	4	10					10	41	17:45	28	126	43	135					71	261
06:00	7		5						12		18:00	14		28						42	
06:15	3		5						8		18:15	9		21						30	
06:30	7		3						10		18:30	15		31						46	
06:45	11	28	4	17					15	45	18:45	9	47	31	111					40	158
07:00	13		11						24		19:00	23		21						44	
07:15	22		9						31		19:15	14		29						43	
07:30	55		27						82		19:30	9		13						22	
07:45	107	197	46	93					153	290	19:45	12	58	20	83					32	141
08:00	48		42						90		20:00	8		11						19	
08:15	27		26						53		20:15	8		12						20	
08:30	20		11						31		20:30	7		12						19	
08:45	15	110	17	96					32	206	20:45	1	24	16	51					17	75
09:00	23		36						59		21:00	6		18						24	
09:15	10		16						26		21:15	4		10						14	
09:30	13		11						24		21:30	9		15						24	
09:45	14	60	14	77					28	137	21:45	3	22	7	50					10	72
10:00	13		13						26		22:00	5		6						11	
10:15	19		12						31		22:15	1		7						8	
10:30	17		11						28		22:30	1		7						8	
10:45	14	63	15	51					29	114	22:45	2	9	7	27					9	36
11:00	17		21						38		23:00	3		8						11	
11:15	13		18						31		23:15	1		2						3	
11:30	15		17						32		23:30	0		2						2	
11:45	11	56	14	70					25	126	23:45	3	7	4	16					7	23
TOTALS		574		444						1018	TOTALS		709		1027						1736
SPLIT %		56.4%		43.6%						37.0%	SPLIT %		40.8%		59.2%						63.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,283	1,471	0	0	2,754

AM Peak Hour	07:30	07:30			07:30	PM Peak Hour	14:00	14:30			14:00
AM Pk Volume	237	141			378	PM Pk Volume	142	157			282
Pk Hr Factor	0.554	0.766			0.618	Pk Hr Factor	0.696	0.623			0.678
7 - 9 Volume	307	189	0	0	496	4 - 6 Volume	217	269	0	0	486
7 - 9 Peak Hour	07:30	07:30			07:30	4 - 6 Peak Hour	16:45	17:00			17:00
7 - 9 Pk Volume	237	141	0	0	378	4 - 6 Pk Volume	127	135	0	0	261
Pk Hr Factor	0.554	0.766	0.000	0.000	0.618	Pk Hr Factor	0.858	0.785	0.000	0.000	0.847

Prepared by NDS/ATD

VOLUME

Oleander Ave S/O Tamarack St

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_005

DAILY TOTALS	NB	SB	EB	WB	Total
	818	885	0	0	1,703

AM Period	NB		SB		EB		WB		TOTAL		PM Period	NB		SB		EB		WB		TOTAL	
00:00	0		2						2		12:00	10		13						23	
00:15	1		0						1		12:15	12		14						26	
00:30	1		0						1		12:30	10		18						28	
00:45	0	2	1	3					1	5	12:45	10	42	10	55					20	97
01:00	1		0						1		13:00	8		18						26	
01:15	0		1						1		13:15	9		12						21	
01:30	0		0						0		13:30	13		10						23	
01:45	1	2	1	2					2	4	13:45	11	41	14	54					25	95
02:00	0		0						0		14:00	17		17						34	
02:15	1		1						2		14:15	30		10						40	
02:30	1		1						2		14:30	26		29						55	
02:45	0	2	1	3					1	5	14:45	16	89	19	75					35	164
03:00	1		0						1		15:00	11		16						27	
03:15	0		1						1		15:15	9		14						23	
03:30	0		0						0		15:30	15		14						29	
03:45	1	2	2	3					3	5	15:45	13	48	17	61					30	109
04:00	0		3						3		16:00	16		9						25	
04:15	0		2						2		16:15	26		18						44	
04:30	0		3						3		16:30	16		13						29	
04:45	2	2	5	13					7	15	16:45	22	80	16	56					38	136
05:00	1		2						3		17:00	20		11						31	
05:15	2		8						10		17:15	20		11						31	
05:30	2		4						6		17:30	19		10						29	
05:45	5	10	10	24					15	34	17:45	27	86	19	51					46	137
06:00	3		7						10		18:00	12		18						30	
06:15	2		10						12		18:15	16		9						25	
06:30	3		7						10		18:30	11		15						26	
06:45	4	12	12	36					16	48	18:45	15	54	11	53					26	107
07:00	7		15						22		19:00	13		12						25	
07:15	8		19						27		19:15	15		15						30	
07:30	27		18						45		19:30	7		11						18	
07:45	36	78	30	82					66	160	19:45	4	39	6	44					10	83
08:00	18		26						44		20:00	10		2						12	
08:15	6		19						25		20:15	10		8						18	
08:30	4		11						15		20:30	11		6						17	
08:45	3	31	14	70					17	101	20:45	6	37	10	26					16	63
09:00	6		16						22		21:00	14		6						20	
09:15	10		12						22		21:15	2		6						8	
09:30	3		10						13		21:30	12		8						20	
09:45	6	25	8	46					14	71	21:45	3	31	5	25					8	56
10:00	10		11						21		22:00	7		5						12	
10:15	9		10						19		22:15	3		1						4	
10:30	7		8						15		22:30	5		1						6	
10:45	11	37	15	44					26	81	22:45	1	16	3	10					4	26
11:00	15		14						29		23:00	2		2						4	
11:15	17		11						28		23:15	1		0						1	
11:30	7		12						19		23:30	0		1						1	
11:45	7	46	8	45					15	91	23:45	3	6	1	4					4	10
TOTALS		249		371						620	TOTALS		569		514						1083
SPLIT %		40.2%		59.8%						36.4%	SPLIT %		52.5%		47.5%						63.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	818	885	0	0	1,703

AM Peak Hour	07:15	07:15				07:15	PM Peak Hour	14:00	14:30				14:00
AM Pk Volume	89	93				182	PM Pk Volume	89	78				164
Pk Hr Factor	0.618	0.775				0.689	Pk Hr Factor	0.742	0.672				0.745
7 - 9 Volume	109	152	0	0		261	4 - 6 Volume	166	107	0	0		273
7 - 9 Peak Hour	07:15	07:15				07:15	4 - 6 Peak Hour	17:00	16:15				16:15
7 - 9 Pk Volume	89	93	0	0		182	4 - 6 Pk Volume	86	58	0	0		142
Pk Hr Factor	0.618	0.775	0.000	0.000		0.689	Pk Hr Factor	0.796	0.806	0.000	0.000		0.807

Prepared by NDS/ATD

VOLUME

Mendocino Dr/(Mid-Block In Loop) W/O Brandywine Ave

Day: Tuesday
Date: 6/4/2019

City: Chula Vista
Project #: CA19_4122_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	158	269	427

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		8		9		12:00			4		2		6	
00:15			0		6		6		12:15			2		5		7	
00:30			1		0		1		12:30			0		2		2	
00:45			0	2	0	14	0	16	12:45			1	7	4	13	5	20
01:00			1		1		2		13:00			2		2		4	
01:15			3		1		4		13:15			0		3		3	
01:30			0		0		0		13:30			1		3		4	
01:45			0	4	0	2	0	6	13:45			2	5	3	11	5	16
02:00			0		0		0		14:00			3		4		7	
02:15			1		1		2		14:15			3		6		9	
02:30			0		0		0		14:30			3		4		7	
02:45			0	1	0	1	0	2	14:45			3	12	2	16	5	28
03:00			0		0		0		15:00			2		5		7	
03:15			0		0		0		15:15			2		3		5	
03:30			1		0		1		15:30			6		5		11	
03:45			0	1	1	1	1	2	15:45			4	14	5	18	9	32
04:00			0		0		0		16:00			2		6		8	
04:15			0		0		0		16:15			5		7		12	
04:30			0		2		2		16:30			3		5		8	
04:45			1	1	1	3	2	4	16:45			1	11	4	22	5	33
05:00			1		2		3		17:00			2		8		10	
05:15			1		4		5		17:15			3		4		7	
05:30			1		0		1		17:30			2		3		5	
05:45			1	4	10	16	11	20	17:45			4	11	5	20	9	31
06:00			0		5		5		18:00			0		5		5	
06:15			1		1		2		18:15			5		8		13	
06:30			1		0		1		18:30			1		7		8	
06:45			2	4	3	9	5	13	18:45			4	10	3	23	7	33
07:00			3		4		7		19:00			4		1		5	
07:15			3		7		10		19:15			2		7		9	
07:30			3		4		7		19:30			4		4		8	
07:45			3	12	2	17	5	29	19:45			1	11	3	15	4	26
08:00			4		1		5		20:00			4		7		11	
08:15			1		0		1		20:15			3		3		6	
08:30			2		2		4		20:30			1		3		4	
08:45			0	7	5	8	5	15	20:45			3	11	5	18	8	29
09:00			2		4		6		21:00			0		6		6	
09:15			1		2		3		21:15			4		2		6	
09:30			1		2		3		21:30			0		1		1	
09:45			2	6	4	12	6	18	21:45			2	6	3	12	5	18
10:00			1		6		7		22:00			0		1		1	
10:15			0		2		2		22:15			0		1		1	
10:30			1		1		2		22:30			1		1		2	
10:45			5	7	1	10	6	17	22:45			0	1	0	3	0	4
11:00			1		0		1		23:00			1		1		2	
11:15			2		1		3		23:15			0		0		0	
11:30			0		1		1		23:30			0		1		1	
11:45			6	9	1	3	7	12	23:45			0	1	0	2	0	3
TOTALS				58		96		154	TOTALS				100		173		273
SPLIT %				37.7%		62.3%		36.1%	SPLIT %				36.6%		63.4%		63.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	158	269	427

AM Peak Hour				07:15		05:15		06:45	PM Peak Hour				15:30		17:45		15:30
AM Pk Volume				13		19		29	PM Pk Volume				17		25		40
Pk Hr Factor				0.813		0.475		0.725	Pk Hr Factor				0.708		0.781		0.833
7 - 9 Volume	0	0		19		25		44	4 - 6 Volume	0	0		22		42		64
7 - 9 Peak Hour				07:15		07:00		07:00	4 - 6 Peak Hour				16:00		16:15		16:15
7 - 9 Pk Volume	0	0		13		17		29	4 - 6 Pk Volume	0	0		11		24		35
Pk Hr Factor	0.000	0.000		0.813		0.607		0.725	Pk Hr Factor	0.000	0.000		0.550		0.750		0.729

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Main St
City: Chula Vista
Control: Signalized

Project ID: 19-04121-001
Date: 6/4/2019

Total

NS/EW Streets:	Brandywine Ave				Brandywine Ave				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0.5	0.5	0	1	1	1	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	0	0	12	4	55	0	52	126	15	0	0	114	10	0	391
7:15 AM	1	0	2	0	17	2	73	0	36	132	12	0	1	155	9	0	440
7:30 AM	3	0	2	0	17	5	66	0	72	131	12	0	4	153	21	0	486
7:45 AM	1	2	0	0	31	5	87	0	63	211	24	2	3	145	26	0	600
8:00 AM	6	3	1	0	24	2	61	0	61	166	18	0	4	137	13	0	496
8:15 AM	2	2	2	0	16	2	48	0	51	171	17	1	2	119	12	0	445
8:30 AM	10	2	3	0	13	6	65	0	59	146	23	0	2	131	19	0	479
8:45 AM	12	1	1	0	33	4	52	0	30	191	22	0	1	113	8	0	468
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	35	13	11	0	163	30	507	0	424	1274	143	3	17	1067	118	0	3805
APPROACH %'s :	59.32%	22.03%	18.64%	0.00%	23.29%	4.29%	72.43%	0.00%	22.99%	69.09%	7.75%	0.16%	1.41%	88.77%	9.82%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	12	7	5	0	88	14	262	0	247	679	71	3	13	554	72	0	2027
PEAK HR FACTOR :	0.500	0.583	0.625	0.000	0.710	0.700	0.753	0.000	0.858	0.805	0.740	0.375	0.813	0.905	0.692	0.000	0.845
	0.600				0.740				0.833				0.897				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0.5	0.5	0	1	1	1	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	28	3	6	0	19	2	77	0	78	181	17	0	6	259	36	0	712
4:15 PM	21	4	1	0	17	0	72	0	72	153	16	0	3	203	29	0	591
4:30 PM	20	5	0	0	20	3	85	0	67	190	13	0	2	213	27	0	645
4:45 PM	30	6	3	0	24	3	50	0	74	157	13	1	4	204	16	0	585
5:00 PM	31	7	4	0	11	3	68	0	75	141	20	0	1	232	39	0	632
5:15 PM	21	7	5	0	10	1	65	0	105	141	12	0	1	201	23	0	592
5:30 PM	26	4	7	0	14	1	68	0	80	130	11	0	3	176	19	0	539
5:45 PM	17	2	6	0	13	0	66	0	68	115	4	0	5	139	18	0	453
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	194	38	32	0	128	13	551	0	619	1208	106	1	25	1627	207	0	4749
APPROACH %'s :	73.48%	14.39%	12.12%	0.00%	18.50%	1.88%	79.62%	0.00%	32.01%	62.46%	5.48%	0.05%	1.34%	87.52%	11.14%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	99	18	10	0	80	8	284	0	291	681	59	1	15	879	108	0	2533
PEAK HR FACTOR :	0.825	0.750	0.417	0.000	0.833	0.667	0.835	0.000	0.933	0.896	0.868	0.250	0.625	0.848	0.750	0.000	0.889
	0.814				0.861				0.935				0.832				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Main St
City: Chula Vista
Control: Signalized

Project ID: 19-04121-001
Date: 6/4/2019

Bikes

NS/EW Streets:	Brandywine Ave				Brandywine Ave				Main St				Main St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0.5	0.5	0	1	1	1	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	2	0.5	0.5	0	1	1	1	0	1	3	1	0	1	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	2
4:15 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
5:00 PM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	1	0	1	0	0	0	3	0	2	0	0	0	0	2	0	0	9
APPROACH %'s :	50.00%	0.00%	50.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	
PEAK HR :	04:00 PM - 05:00 PM																TOTAL
PEAK HR VOL :	0	0	1	0	0	0	3	0	2	0	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.00	0.000	0.250	0.000	0.000	0.000	0.750	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.750
		0.250				0.750				0.500							

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Main St
City: Chula Vista
Project ID: 19-04121-001
Date: 6/4/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Brandywine Ave		Brandywine Ave		Main St		Main St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	1	0	0	0	0	0	1
7:15 AM	0	0	0	1	0	0	0	0	1
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	1	0	0	0	0	1
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	1	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	2	2	0	0	0	0	4
APPROACH %'s :			50.00%	50.00%					
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	0	1	0	0	0	0	1
PEAK HR FACTOR :				0.250					0.250
			0.250						

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	2	0	2	0	0	4
4:15 PM	1	2	0	0	0	0	0	0	3
4:30 PM	1	0	0	1	0	0	0	0	2
4:45 PM	0	2	0	0	0	0	0	0	2
5:00 PM	0	0	1	0	1	0	0	0	2
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	1	1	0	0	0	0	0	2
5:45 PM	0	1	0	1	0	0	0	0	2
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	2	6	2	4	1	2	0	0	17
APPROACH %'s :	25.00%	75.00%	33.33%	66.67%	33.33%	66.67%			
PEAK HR :	04:00 PM - 05:00 PM								TOTAL
PEAK HR VOL :	2	4	0	3	0	2	0	0	11
PEAK HR FACTOR :	0.500	0.500		0.375		0.250			0.688
	0.500		0.375		0.250				

Prepared by National Data & Surveying Services

Brandywine Ave & Main St

Peak Hour Turning Movement Count

ID: 19-04121-001
City: Chula Vista

Day: Tuesday
Date: 06/04/2019

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Brandywine Ave — SOUTHBOUND

AM	262	14	88	0	326	AM
NOON	0	0	0	0	0	NOON
PM	284	8	80	0	417	PM

Main St — EASTBOUND

AM	NOON	PM		
831	0	1263		
3	0	1	0	
247	0	291	1	
679	0	681	3	
71	0	59	1	

CONTROL

Signalized

TEV	2027	0	2533
	AM	NOON	PM
PHF	0.84		0.89

Main St — WESTBOUND

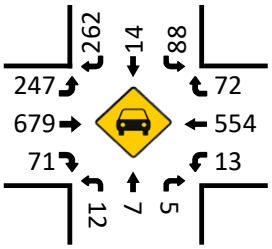
	PM	NOON	AM
0	108	0	72
3	879	0	554
1	15	0	13
0	0	0	0
	771	0	772

Brandywine Ave — NORTHBOUND

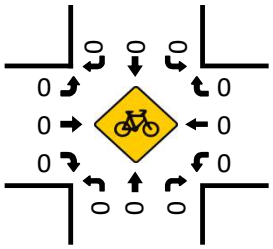
PM	82	0	99	18	10	PM
NOON	0	0	0	0	0	NOON
AM	98	0	12	7	5	AM

1 1 1 0 — 0 2 0.5 0.5

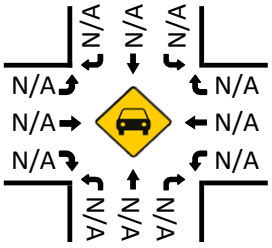
Total Vehicles (AM)



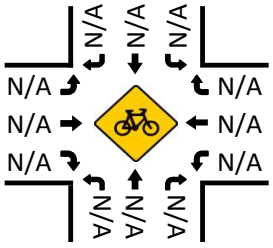
Bikes (AM)



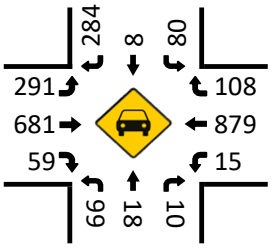
Total Vehicles (Noon)



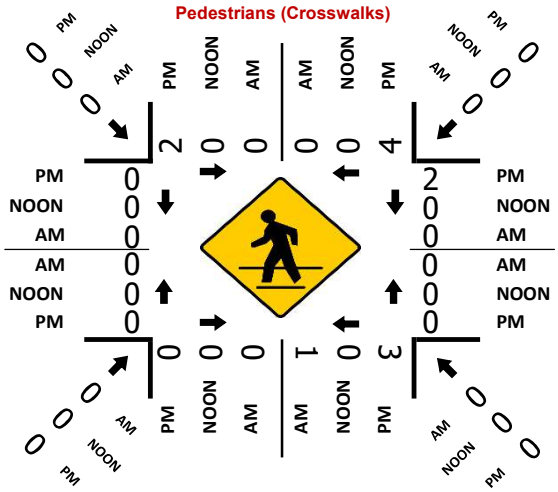
Bikes (NOON)



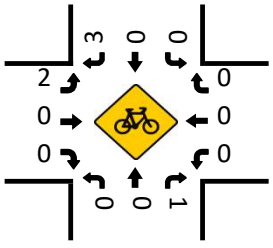
Total Vehicles (PM)



Pedestrians (Crosswalks)



Bikes (PM)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Shinohara Ln
City: Chula Vista
Control: 1-Way Stop(EB)

Project ID: 19-04121-002
Date: 6/4/2019

Total

NS/EW Streets:	Brandywine Ave				Brandywine Ave				Shinohara Ln				Shinohara Ln				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	3	46	0	0	0	73	0	0	0	0	0	0	0	0	0	0	122
7:15 AM	0	38	0	0	0	97	0	0	0	0	2	0	0	0	0	0	137
7:30 AM	5	79	0	0	0	91	0	0	0	0	0	0	0	0	0	0	175
7:45 AM	6	77	0	0	0	115	1	0	0	0	0	0	0	0	0	0	199
8:00 AM	0	67	0	0	0	76	0	0	0	0	1	0	0	0	0	0	144
8:15 AM	2	61	0	0	0	75	0	0	0	0	0	0	0	0	0	0	138
8:30 AM	1	75	0	1	0	75	0	0	0	0	0	0	0	0	0	0	152
8:45 AM	1	36	0	0	0	84	0	0	0	0	1	0	0	0	0	0	122
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	18	479	0	1	0	686	1	0	0	0	4	0	0	0	0	0	1189
APPROACH %'s :	3.61%	96.18%	0.00%	0.20%	0.00%	99.85%	0.15%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	13	284	0	0	0	357	1	0	0	0	1	0	0	0	0	0	656
PEAK HR FACTOR :	0.542	0.899	0.000	0.000	0.000	0.776	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.824
	0.884				0.772				0.250								

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	1	115	0	0	0	95	0	0	0	0	5	0	0	0	0	0	216
4:15 PM	1	103	0	1	0	76	0	0	0	0	7	0	0	0	0	0	188
4:30 PM	0	92	0	0	0	90	0	0	0	0	7	0	0	0	0	0	189
4:45 PM	1	93	0	0	0	67	0	0	0	0	4	0	0	0	0	0	165
5:00 PM	0	122	0	0	0	69	0	0	0	0	10	0	0	0	0	0	201
5:15 PM	1	134	0	0	0	71	0	0	0	0	0	0	0	0	0	0	206
5:30 PM	0	104	0	0	0	78	0	0	0	0	2	0	0	0	0	0	184
5:45 PM	0	90	0	0	0	73	0	0	0	0	2	0	0	0	0	0	165
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	4	853	0	1	0	619	0	0	0	0	37	0	0	0	0	0	1514
APPROACH %'s :	0.47%	99.42%	0.00%	0.12%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%					
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	2	441	0	0	0	297	0	0	0	0	21	0	0	0	0	0	761
PEAK HR FACTOR :	0.500	0.823	0.000	0.000	0.000	0.825	0.000	0.000	0.000	0.000	0.525	0.000	0.000	0.000	0.000	0.000	0.924
	0.820				0.825				0.525								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Shinohara Ln
City: Chula Vista
Control: 1-Way Stop(EB)

Project ID: 19-04121-002
Date: 6/4/2019

Bikes

NS/EW Streets:	Brandywine Ave				Brandywine Ave				Shinohara Ln				Shinohara Ln				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
APPROACH %'s :					0.00%	100.00%	0.00%	0.00%									
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250
						0.250											

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	2	0	0	0	2	0	0	0	1	0	0	0	0	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
4:30 PM	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	3
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%									
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
PEAK HR FACTOR :	0.00	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.500
		0.250				0.250											

National Data & Surveying Services

Intersection Turning Movement Count

Location: Brandywine Ave & Shinohara Ln
City: Chula Vista
Project ID: 19-04121-002
Date: 6/4/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Brandywine Ave		Brandywine Ave		Shinohara Ln		Shinohara Ln		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	2	2
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	1	1
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	3	3
APPROACH %'s :							0.00%	100.00%	
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	2	2
PEAK HR FACTOR :								0.250	0.250
							0.250		

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	2	0	2
4:15 PM	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	1	1
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	2	0	2
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	4	1	5
APPROACH %'s :							80.00%	20.00%	
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	1	1
PEAK HR FACTOR :								0.250	0.250
							0.250		

Prepared by National Data & Surveying Services

Brandywine Ave & Shinohara Ln

Peak Hour Turning Movement Count

ID: 19-04121-002
City: Chula Vista

Day: Tuesday
Date: 06/04/2019

PEAK HOURS		COUNT PERIODS
AM	07:30 AM - 08:30 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:30 PM - 05:30 PM	04:00 PM - 06:00 PM

Brandywine Ave — SOUTHBOUND

	Right	Thru	Left	U-Turn	Departing
AM	1	357	0	0	284
NOON	0	0	0	0	0
PM	0	297	0	0	441
(red)	0	2	0	0	

Shinohara Ln — EASTBOUND

	AM	NOON	PM	(red)
Departing	14	0	2	
U-Turn	0	0	0	0
Left	0	0	0	0
Thru	0	0	0	1
Right	1	0	21	0

Shinohara Ln — WESTBOUND

	(red)	PM	NOON	AM
Right	0	0	0	0
Thru	0	0	0	0
Left	0	0	0	0
U-Turn	0	0	0	0
Departing		0	0	0

Brandywine Ave — NORTHBOUND

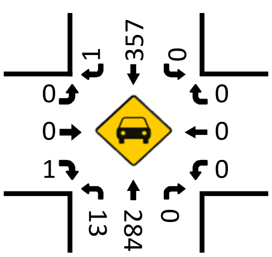
	Departing	U-Turn	Left	Thru	Right
(red)		0	0	2	0
PM	318	0	2	441	0
NOON	0	0	0	0	0
AM	358	0	13	284	0

CONTROL

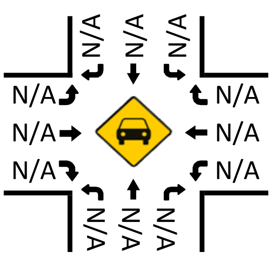
1-Way Stop(EB)

	AM	NOON	PM
TEV	656	0	761
PHF	0.82		0.92

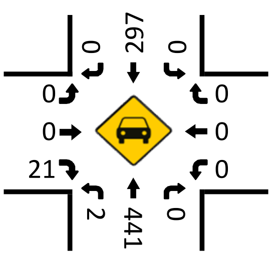
Total Vehicles (AM)



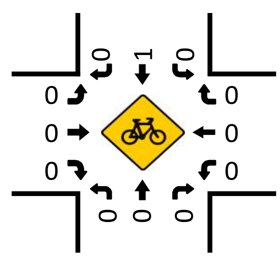
Total Vehicles (Noon)



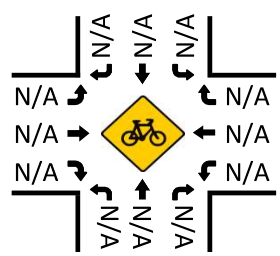
Total Vehicles (PM)



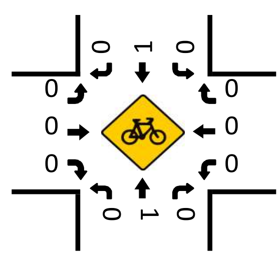
Bikes (AM)



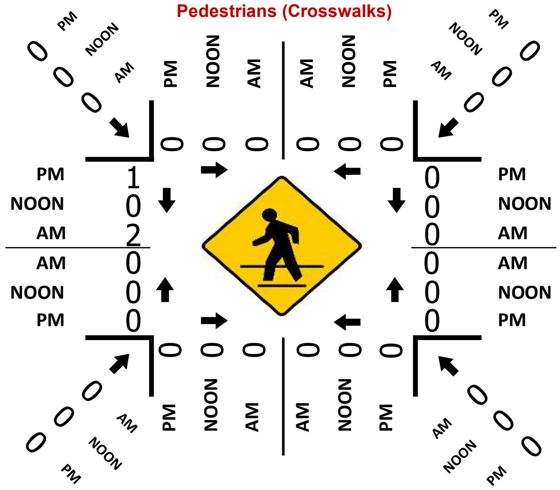
Bikes (NOON)



Bikes (PM)



Pedestrians (Crosswalks)



National Data & Surveying Services

Intersection Turning Movement Count

Location: Oleander Ave & Sequoia St
City: Chula Vista
Control: 3-Way Stop(NB/SB/WB)

Project ID: 19-04121-003
Date: 6/4/2019

Total

NS/EW Streets:	Oleander Ave				Oleander Ave				Sequoia St				Sequoia St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	3	4	0	6	5	0	0	0	0	0	0	4	0	9	0	31
7:15 AM	0	6	8	0	6	3	0	0	0	0	0	0	3	0	15	0	41
7:30 AM	0	26	6	0	10	15	0	0	0	0	0	0	5	0	26	0	88
7:45 AM	0	45	4	0	13	19	0	1	1	0	0	0	2	0	66	0	151
8:00 AM	0	16	2	0	18	19	0	1	1	0	0	0	2	0	24	0	83
8:15 AM	0	10	4	0	11	11	0	0	0	0	0	0	1	0	14	0	51
8:30 AM	0	6	2	0	5	8	0	0	0	0	0	0	2	0	12	0	35
8:45 AM	0	3	3	0	8	6	1	0	0	0	0	0	3	0	7	0	31
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	115	33	0	77	86	1	2	2	0	0	0	22	0	173	0	511
APPROACH %'s :	0.00%	77.70%	22.30%	0.00%	46.39%	51.81%	0.60%	1.20%	100.00%	0.00%	0.00%	0.00%	11.28%	0.00%	88.72%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	97	16	0	52	64	0	2	2	0	0	0	10	0	130	0	373
PEAK HR FACTOR :	0.000	0.539	0.667	0.000	0.722	0.842	0.000	0.500	0.500	0.000	0.000	0.000	0.500	0.000	0.492	0.000	0.618
	0.577				0.776				0.500				0.515				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	10	3	0	27	7	0	0	0	0	0	0	1	0	9	0	57
4:15 PM	0	13	4	0	13	17	0	0	0	0	0	0	1	1	8	0	57
4:30 PM	0	10	3	0	21	18	0	0	0	0	0	0	3	0	9	0	64
4:45 PM	0	14	2	0	16	10	0	0	0	0	1	0	6	0	11	0	60
5:00 PM	0	21	3	0	15	8	0	0	0	1	0	0	4	2	11	0	65
5:15 PM	0	17	2	0	22	12	0	0	0	0	0	0	3	0	21	0	77
5:30 PM	0	16	4	0	12	12	0	0	0	0	0	0	6	1	11	0	62
5:45 PM	0	18	3	0	29	19	0	0	1	0	0	0	2	0	9	0	81
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	119	24	0	155	103	0	0	1	1	1	0	26	4	89	0	523
APPROACH %'s :	0.00%	83.22%	16.78%	0.00%	60.08%	39.92%	0.00%	0.00%	33.33%	33.33%	33.33%	0.00%	21.85%	3.36%	74.79%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	72	12	0	78	51	0	0	1	1	0	0	15	3	52	0	285
PEAK HR FACTOR :	0.000	0.857	0.750	0.000	0.672	0.671	0.000	0.000	0.250	0.250	0.000	0.000	0.625	0.375	0.619	0.000	0.880
	0.875				0.672				0.500				0.729				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Oleander Ave & Sequoia St
City: Chula Vista
Control: 3-Way Stop(NB/SB/WB)

Project ID: 19-04121-003
Date: 6/4/2019

Bikes

NS/EW Streets:	Oleander Ave				Oleander Ave				Sequoia St				Sequoia St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
APPROACH %'s :													0.00%	0.00%	100.00%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.250
															0.250		

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
	0	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
APPROACH %'s :																	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :	0.00	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

National Data & Surveying Services

Intersection Turning Movement Count

Location: Oleander Ave & Sequoia St
City: Chula Vista
Project ID: 19-04121-003
Date: 6/4/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Oleander Ave		Oleander Ave		Sequoia St		Sequoia St		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
7:00 AM	0	0	0	0	0	1	0	0	1
7:15 AM	0	0	0	0	1	1	0	0	2
7:30 AM	0	0	0	0	1	0	0	0	1
7:45 AM	0	1	0	0	0	0	0	0	1
8:00 AM	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	2	0	0	0	0	0	2
8:30 AM	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	1	2	0	2	2	0	0	7
APPROACH %'s :	0.00%	100.00%	100.00%	0.00%	50.00%	50.00%			
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0	1	2	0	1	0	0	0	4
PEAK HR FACTOR :		0.250	0.250		0.250				0.500
	0.250		0.250		0.250				

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	1	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	1	0	0	1
5:00 PM	0	0	0	0	3	0	0	0	3
5:15 PM	0	0	0	1	0	3	0	0	4
5:30 PM	0	0	2	1	0	0	0	0	3
5:45 PM	0	0	0	0	0	0	0	0	0
	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
TOTAL VOLUMES :	0	0	2	2	4	4	0	0	12
APPROACH %'s :			50.00%	50.00%	50.00%	50.00%			
PEAK HR :	05:00 PM - 06:00 PM								TOTAL
PEAK HR VOL :	0	0	2	2	3	3	0	0	10
PEAK HR FACTOR :			0.250	0.500	0.250	0.250			0.625
			0.333		0.500				

Prepared by National Data & Surveying Services

Oleander Ave & Sequoia St

Peak Hour Turning Movement Count

ID: 19-04121-003
City: Chula Vista

Day: Tuesday
Date: 06/04/2019

PEAK HOURS

AM: 07:30 AM - 08:30 AM
NOON: NONE
PM: 05:00 PM - 06:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Oleander Ave

SOUTHBOUND

AM	0	64	52	2	231	AM
NOON	0	0	0	0	0	NOON
PM	0	51	78	0	125	PM

Sequoia St — EASTBOUND

AM	NOON	PM	
0	0	3	
0	0	0	0
2	0	1	0
0	0	1	1
0	0	0	0
AM	NOON	PM	

WESTBOUND — Sequoia St

PM	NOON	AM	
52	0	130	0
3	0	0	1
15	0	10	0
0	0	0	0
91	0	68	
PM	NOON	AM	

CONTROL

3-Way Stop(NB/SB/WB)

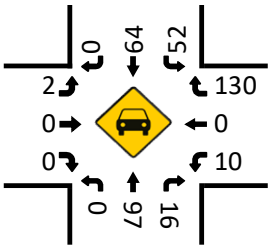
TEV	373 AM	0 NOON	285 PM
PHF	0.62		0.88

NORTHBOUND

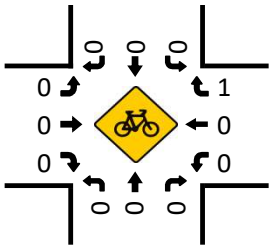
PM	66	0	0	72	12	PM
NOON	0	0	0	0	0	NOON
AM	74	0	0	97	16	AM

Oleander Ave

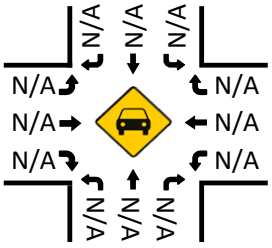
Total Vehicles (AM)



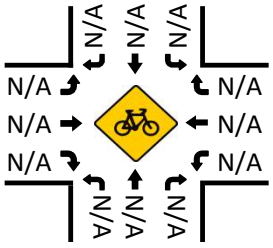
Bikes (AM)



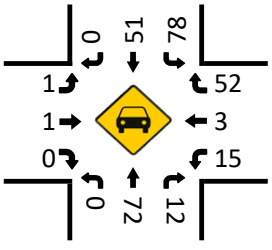
Total Vehicles (Noon)



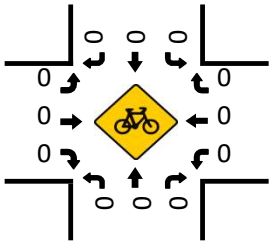
Bikes (NOON)



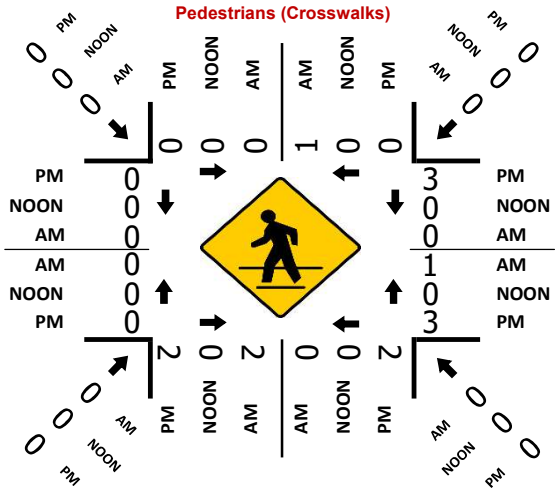
Total Vehicles (PM)



Bikes (PM)



Pedestrians (Crosswalks)



Prepared by National Data & Surveying Services

Signal Phasing and Timing

Location: Brandywine Ave & Main St
City: Chula Vista

Date: 6/4/2019
Day: Tuesday

7:00 am - 09:00 am

Cycle	Phase	Duration
1	NL/SL	0:00:08
	NT/ST	0:00:21
	EL/ET	0:00:37
	ET/WT	0:00:37
2	NL/SL	0:00:08
	NT/ST	0:00:10
	EL/WL	0:00:08
	EL/ET	0:00:14
	ET/WT	0:00:24
3	NL/SL	0:00:09
	EL/ET	0:00:15
	ET/WT	0:01:29
4	NL/SL	0:00:14
	EL/ET	0:00:29
	ET/WT	0:00:45
5	NL/SL	0:00:21
	EL/ET	0:00:16
	ET/WT	0:00:37
6	NT/ST	0:00:15
	EL/WL	0:00:08
	ET/WT	0:01:47
7	NL/SL	0:00:21
	EL/ET	0:00:17
	ET/WT	0:00:38
8	NL/SL	0:00:11
	EL/ET	0:00:15
	ET/WT	0:00:46
9	NL/SL	0:00:12
	NT/ST	0:00:15
	EL/ET	0:00:20
	ET/WT	0:00:26
10	NL/NT	0:00:10
	EL/ET	0:00:11
	ET/WT	0:00:38

16:00 am - 18:00 am

	Cycle	Phase	Duration
	1	NL/SL	0:00:35
		EL/WL	0:00:11
		ET/WT	0:00:46
0:01:43	2	NL/SL	0:00:26
		EL/ET	0:00:37
		ET/WT	0:00:35
	3	NL/SL	0:00:37
		EL/WL	0:00:09
0:01:04		EL/ET	0:00:15
		ET/WT	0:00:56
	4	NL/SL	0:00:18
0:01:53		EL/ET	0:00:23
		ET/WT	0:00:23
	5	NL/SL	0:00:19
0:01:28		EL/ET	0:00:24
		ET/WT	0:00:53
	6	NL/SL	0:00:23
0:01:14		EL/WL	0:00:16
		ET/WT	0:00:44
	7	NL/SL	0:00:30
0:02:10		EL/WL	0:00:11
		EL/ET	0:00:12
		ET/WT	0:00:32
0:01:16	8	NL/SL	0:00:35
		EL/ET	0:00:32
		ET/WT	0:00:57
0:01:12	9	NL/SL	0:00:19
		EL/ET	0:00:25
		ET/WT	0:00:44

0:01:13

0:00:59

0:01:25

0:01:32

0:01:38

0:01:57

0:01:04

0:01:36

0:01:23

0:00:55

0:02:04

0:01:28

0:01:31

TRAFFIC SIGNAL TIMING SHEET -- CITY OF CHULA VISTA

BRANDYWINE / MAIN

SCN: 137 **ADDRESS: 1**

Program:233; SET CLOCK: SET DATE:81=ddyym ; SET TIME:80=hhmms [day]; 8F=mmss.s ; E KEY ENABLE: F-9-E = 9 ;SET MODE:{C-0-C=0} C-A-1=0 ; F-C-0=3.0 ; 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=[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=[3,5] ; F-0-8=F-0-9=2 ; F-E-2=F-E-4=F-E-6=F-E-8=2 ;

PHASE FLAGS {C-0-F = 1} (F-F-X)

PHASE	0	1	2	3	4	6	7	8	9	A	B	C	D	E	F
1	X														
→ 2	X			X											X
3	X														
↓ 4	X														
5	X														
← 6	X			X											X
7	X														
↑ 8	X														

PHASE TIMING BANK 1 {C-0-F = 1} (F-PHASE-X)

PHASE	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
1			2		0.0	1.2	1.2	1.2	22						3.0	0.5
→ 2	7	13	8		1.2	5.5	6.4	2.0	50			3		0.9	4.3	1.7
3			2		0.0	1.2	1.2	1.2	22						3.0	0.5
↓ 4			3		0.0	2.0	2.0	2.0	23						4.0	1.0
5			2		0.0	1.2	1.2	1.2	42						3.0	0.5
← 6	7	13	8		1.2	5.5	6.4	2.0	50			3		0.9	4.7	1.7
7			2		0.0	1.2	1.2	1.2	32						3.0	0.5
↑ 8	7	22	3		0.0	2.0	2.0	2.0	23			4			4.0	1.0

LOCAL SCHEDULER{C-0-9 = 0.1}(PAGE 1)
9-EVENT TIME PLAN/OS [DAY]

0 = 0000 E A [1,2,3,4,5,6,7]
1 = A
2 = A
3 = A
4 = A
5 = A
6 = A
7 = A
8 = A
9 = A
A = A
B = A
C = A
D = A
E = A
F = A

NOTE:Plan E=Free ; Plan F=Flash

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] ;

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-1-7 = 10.0 ; D-2-7 = 10.0 ; D-1-8 = 3.0 ; D-3-8 = 1.5 ; D-1-9 = 2.0 ; D-3-9 = 1.5 ;

COORDINATION TIMING PLAN {C-0-C = 1} (C-PLAN-X)

PLAN	CYCLE	FORCE-OFF 0	1	2	3	4	5	6	7	OFFSET 8	9	A	B	C	D	E	F	[SYNC ϕ s] C-E-PLAN	[LAG ϕ s] C-F-PLAN
1																			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			

TIMING PLAN FUNCTIONS {C-0-C = 2} (C-PLAN-X)

PLAN	PED-ADJ	RSRV-TIME	[RESERVED ϕs] 0	5	6	[PRETIMED ϕs] 8	[MAX RECALL ϕs] 9
1							
2							
3							
4							
5							
6							
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 : May 15, 2007 VERSION: 2.2

NOTES ON THE TRAFFIC SIGNAL TIMING SHEET - FOR Bi-Tran 233 PROGRAM
CITY OF CHULA VISTA

PHASE FLAG -- X shows the 'On' state of phase flags
i.e. the flag is set to the active status

FLAG	FUNCTION
0	PERMIT
1	RED LOCK (vehicle detector)
2	YELLOW LOCK (vehicle detector)
3	VEHICLE PHASE MINIMUM RECALL
4	PEDESTRIAN PHASE RECALL
6	REST IN WALK
7	RED REST
8	DOUBLE ENTRY
9	VEHICLE MAXIMUM RECALL
A	SOFT RECALL
B	MAX II (vehicle maximum recall II)
C	CONDITIONAL SERVICE
D	RECALL DURING MANUAL OPERATION
E	START UP PHASE WITH YELLOW
F	FIRST PHASE GREEN FOR ALL RED START UP

PHASE TIMING BANK (1-3) -- all data are decimal numbers

TIMING	INTERVAL NAME
0	WALK
1	FLASHING DON'T WALK
2	MINIMUM GREEN
3	TYPE 3 CALL DETECTOR MAXIMUM LIMIT
4	VARIABLE INITIAL (added per vehicle actuation)
5	VEHICLE EXTENSION
6	MAXIMUM GAP
7	MINIMUM GAP
8	MAXIMUM LIMIT
9	MAXIMUM LIMIT II
A	ADVANCE/DELAYED WALK
B	MINIMUM PED CLEARANCE DURING PREEMPTION
C	CONDITIONAL SERVICE MINIMUM GREEN TIME
D	REDUCED EVERY
E	AMBER (yellow)
F	ALL RED

LOCAL SCHEDULER

A, B, or C are OFFSET (OS) for the timing plan
'DAY' is the day of the week
with day 1 = Sunday and day 7 = Saturday.
'PLAN' is the coordination timing plan

COORDINATION TIMING PLAN

PLAN DATA

0	is the Cycle length in seconds
1 to 8	are the FORCE OFF time in the cycle for phase 1 to 8 respectively.
9	is the Ring Offset
A,B & C	are Offsets for this timing plan
D	is the Permissive Period
E	is HOLD RELEASE
F	is the Zone Offset

TIMING PLAN FUNCTIONS

FUNCTION	NAME
0	Pedestrian clearance time compensation
5	Re-serviced time for non-sync phases
6	Re-serviced phases
8	Phase(s) running on pre-time (with both vehicle and pedestrian demands on recall)
9	Phase(s) running on maximum recall

LOCAL T.O.D. FUNCTIONS

FUNCTION	NAME
0	PERMIT
1	RED LOCK (vehicle detector)
2	YELLOW LOCK (vehicle detector)
3	VEHICLE PHASE MINIMUM RECALL
4	PEDESTRIAN PHASE RECALL
6	REST IN WALK
7	RED REST
8	DOUBLE ENTRY
9	VEHICLE MAXIMUM RECALL
A	VEHICLE 'Soft' RECALL
B	VEHICLE MAXIMUM LIMIT II
C	CONDITIONAL SERVICE
D	LOCAL TOD LAG FREE
E	Bit1=LOCAL TOD OVERRIDE
E	Bit4=DISABLE DET (OFF MONITOR)
E	Bit7=COUNT DET RECORDING
E	Bit8=REAL TIME SPLIT MONITOR
F	TIME-OF-DAY OUTPUT Bits (1-8) FOR SPECIAL FUNCTIONS

HOLIDAY EVENTS SCHEDULER

Same as the Local Scheduler except that each event is programmed for the day and month of the year through the use of 'Type' in both tables.

HOLIDAY T.O.D. FUNCTIONS

Same as the Local Functions except that each event is programmed for the day and month of the year through the use of 'Type' in both tables.

OTHER INPUTS

C-A-1 Manual operation modes selection
F-C-0 sets the time for the ALL RED START UP
F-0-F sets the time for Red Revert
F-0-8 sets Minimum green overwrite during preempt
F-0-9 sets Maximum Preempt time
E-E-E sets up the TIME BASE COORDINATION mode, daylight Saving Time, and Expanded Status Reporting.
C-F-0 sets the LAG phases during FREE OPERATION
E-E-4 sets the protected/permissive phases
F-E-0 to F-E-B set the RR/EV pre-emption parameters
E-E-1 to E-E-B set the phases for preemption
E-F-5 to E-F-8 set the pedestrian phases
E-F-F disables check for 4 sec. min. WALK and ignore protected/permissive during preemption
{C-0-E = 126} E-1-8 to E-1-B set input files attributes and then E-6-A to E-6-B set input phases assignment
{C-0-E = 125} E-D-0 switch pack redirection switch
{C-0-E = 127} E-3-0 to E-7-1 output redirection
{C-0-F = 2} F-F-6 sets advance WALK phases
F-F-7 sets delayed WALK phases
{C-0-E = 125} F-E-2 to F-E-8 set EVPE delay

DETECTOR PARAMETERS

D-1-0 to D-2-B set the vehicle detectors delay
D-3-0 to D-2-B set the detection carryover time

Legend:

{ } Inside the brackets it shows the CONTROL KEY
[ ] Inside the brackets it shows Binary data
( ) Inside the brackets it shows the INPUT key sequence or additional information. "X" means from left to right.
9-EVENT or 7-EVENT are the INPUT key sequence.

REMARKS:

The Local and Holiday Functions, Local Scheduler Page 2, and Timing Banks 2 & 3 tables printed on the back of the Timing Sheet are omitted whenever they are not being used by the local traffic control program.

Appendix B

Trip Generation Analysis Memorandum

605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 760.942.5147 F 760.632.0164

MEMORANDUM

To:	Scott Barker, City of Chula Vista
	Eddie Flores, City of Chula Vista
From:	Dennis Pascua, Transportation Services Manager
	Sabita Tewani, AICP, Transportation Planner
Subject:	Encompass Health Chula Vista, Revised Trip Generation Analysis
Date:	May 15, 2019
cc:	Dawna Marshall, Project Manager
Attachment:	Figure 1 – Proposed Study Area (revised)

The following memorandum has been prepared to substantiate the revised trip generation estimates for the proposed Encompass Health (formerly known as HealthSouth) project, an 80–bed rehabilitation hospital (proposed project). This memorandum is intended to supplement the *Scope of Work for Encompass Health TIS* memorandum that was submitted to the City of Chula Vista on March 5, 2019. Based on our scoping discussion with City staff, and further discussions with the applicant, it was determined that our original trip generation estimates in the March 2019 TIA scope of work did not accurately reflect the operations of the proposed project. The following memorandum provides our revised project trip generation estimates, and our revised (proposed) study area.

Project Description

The project site is a vacant 9.7 acre parcel located at the western terminus of Shinohara Lane in the City of Chula Vista. Figure 1 (attached) illustrates the project site location (and proposed revised study area and trip distribution).

The proposed project would develop a new 80-bed rehabilitation hospital (i.e., long-term hospital care) with 210 employees on a vacant parcel in Chula Vista. Patients are expected to stay at the facility for an average of 14 days to recover and receive rehabilitation services. Consistent with Encompass Health's other existing facilities, there would be two employee work-shifts, with the day shift starting at 7:00 a.m. and ending at 7:00 p.m.; and, the night shift starting at 7:00 p.m. and ending at 7:00 a.m. The day shift would have 170 employees, and the night shift would have 40 employees, for a total of 210 daily employees on site. Based on these work-shift timings, most of the employees would travel during non-peak hours to the project site before the start of their shift, and also, leave at the end of the shift during non-peak hours. Also, consistent with other existing Encompass Health facilities, there will be no outpatient services offered or proposed (in the future) at this facility.

Primary vehicular access to the project site is proposed at the western terminus of Shinohara Lane, with its intersection with Brandywine Avenue. A secondary, emergency-only vehicle access is also proposed (but yet, still to be determined as the site plan is currently under development).

Trip Generation (revised)

As part of the March 2019 TIA scope of work memorandum, trip generation rates for Health Care related uses were reviewed in the City of San Diego's *Trip Generation Manual* (2001), SANDAG's *Brief Guide of Vehicular Trip Generation Rates for the San Diego Region* (2002), and the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition* (2017). Based on review of trip rates, Dudek originally proposed to utilize the ITE Hospital trip rates (ITE Code 610) based on the number of employees (120 employees proposed, originally). Applying those rates to 210 employees (recently revised from 120 employees), the proposed project would generate approximately 796 daily trips, 58 AM peak hour trips, and 59 PM peak hour trips.

However, since the proposed project is a rehabilitation hospital, it would not generate as much traffic as a general hospital use, as originally assumed. Patients are expected to stay at the facility for an average of 14 days to recover and receive rehabilitation services. The proposed facility is anticipated to have similar characteristics as a convalescent/nursing care facility. A similar Encompass facility proposed in the City of Murrieta was approved utilizing the ITE *Trip Generation, 9th Edition* rates for a Nursing Home (ITE Code 620). A copy of *HealthSouth Murrieta Rehab Hospital – Trip Generation Estimates*, prepared by Kimley-Horn, September 13, 2016, is attached for reference. That study concluded that the peak hour trip generation for that similar 80-bed facility would generate 17.6 (18) peak hour trips.

Table 1 below, shows the revised trip generation analysis using the SANDAG "Hospital: Convalescent/Nursing" per bed rates, and the ITE "Nursing Home" (ITE Code 620) per bed trip rates. Both sets of rates yield similar trip generation estimates.

Table 1 – Trip Generation Rates and Estimates

Trip Generation Rates								
			AM Peak Hour			**PM Peak Hour**		
Land Use	**Size/Unit**	**Daily**	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Trip Rates								
Hospital: Convalescent/Nursing (SANDAG)[1]	per bed	3.00	60%	40%	7%	40%	60%	7%
Nursing Home (ITE 620)[2]	per bed	2.74	--	--	0.17	33%	67%	0.22
Trip Generation								
Hospital: Convalescent/Nursing (SANDAG)	80 beds	240	10	7	17	7	10	17
Nursing Home (ITE 620)	80 beds	220	--	--	14	6	12	18

Notes:
[1] Trip Generation rates are from SANDAG *Brief Guide of Vehicular Trip Generation Rates for the San Diego Region*, April 2002.
[2] Trip Generation rates are from ITE, *Trip Generation, 9th Edition*, 2012, and are consistent with *HealthSouth Murrieta Rehab Hospital – Trip Generation Estimates*, Kimley-Horn, September 13, 2016.

Using the SANDAG trip rates, the proposed project would generate approximately 240 daily trips, 17 AM peak hour trips (10 inbound and 7 outbound), and 17 PM peak hour trips (7 inbound and 10 outbound).

As previously discussed, similar to other existing Encompass Health facilities, the proposed Chula Vista facility would have two employee shifts. The day shift would operate from 7:00 a.m. to 7:00 p.m. with 170 employees; and, the night shift would operate from 7:00 p.m. to 7:00 a.m. with 40 employees. Based on the work-shift times, most of the employees would travel during non-peak hours to the project site before the start of their work-shift, and

leave the site at the end of their work-shift, also during the non-peak hours. Therefore, the 17 AM peak hour trips, and 17 PM peak hour trips generated by the proposed project would likely be from the small number of administrative staff and visitors of patients.

However, the minimum daily trips generated by the project would be, at least, 420 daily trips generated by the 210 employees (one inbound trip, and one outbound trip per employee). If you doubled the 240 daily trip generation estimate (using the SANDAG rate) to 480 daily trips, those 480 trips could comprise the 420 daily trips generated by employees, and the remaining 60 daily trips could be generated by administrative staff and visitors of patients.

Therefore, based on the project description, specifically, the employee work-shift times which make a majority of the 210 daily employees commute to the project site outside of the AM and PM peak hours, Dudek is recommending doubling of the SANDAG "Hospital: Convalescent/Nursing" rates to represent the trip rates for the proposed rehabilitation hospital. Table 2 presents the (revised) trip generation rates and estimates for the proposed project.

Table 2 – Revised Project Trip Generation Rates and Estimates

Trip Generation Rates								
			AM Peak Hour			**PM Peak Hour**		
Land Use	**Size/Unit**	**Daily**	*In*	*Out*	*Total*	*In*	*Out*	*Total*
Trip Rates								
Hospital: Convalescent/Nursing (modified)[1]	per bed	6.00	60%	40%	7%	40%	60%	7%
Trip Generation								
Hospital: Convalescent/Nursing (modified)	80 beds	480	20	14	34	14	20	34

Notes:
[1] Trip Generation rates are the "Hospital: Convalescent/Nursing" rates X 2 (doubled) from SANDAG *Brief Guide of Vehicular Trip Generation Rates for the San Diego Region*, April 2002.

Using the modified SANDAG trip rates for "Hospital: Convalescent/Nursing" (doubled), the proposed project would generate approximately 480 daily trips, 34 AM peak hour trips (20 inbound and 14 outbound), and 34 PM peak hour trips (14 inbound and 20 outbound).

Study Area (revised)

Since the project generates less than 500 average daily trips, a traffic impact study is not warranted per SANTEC/ITE *Guidelines for Traffic Impact Studies in the San Diego Region*. However, it would generate more than 20 peak hour trips, and therefore, a Local Transportation Analysis (LTA) is proposed to assess project's potential impacts to local roadway facilities in its vicinity.

Based on the proposed project's reduced trip generation estimates (from the original March 2019 trip generation estimates), the proposed study area has been revised. Figure 1 illustrates the project's proposed (revised) study area roadway segments and intersections.

Roadway Segments (revised)

Roadway segments will be counted primarily for disclosure of existing daily volumes, and for use by Dudek's Noise technicians for their noise analysis. City's criteria for long-term planning analysis of roadway segments will be utilized to assess if any of the roadway segments listed below need to be included in the traffic analysis.

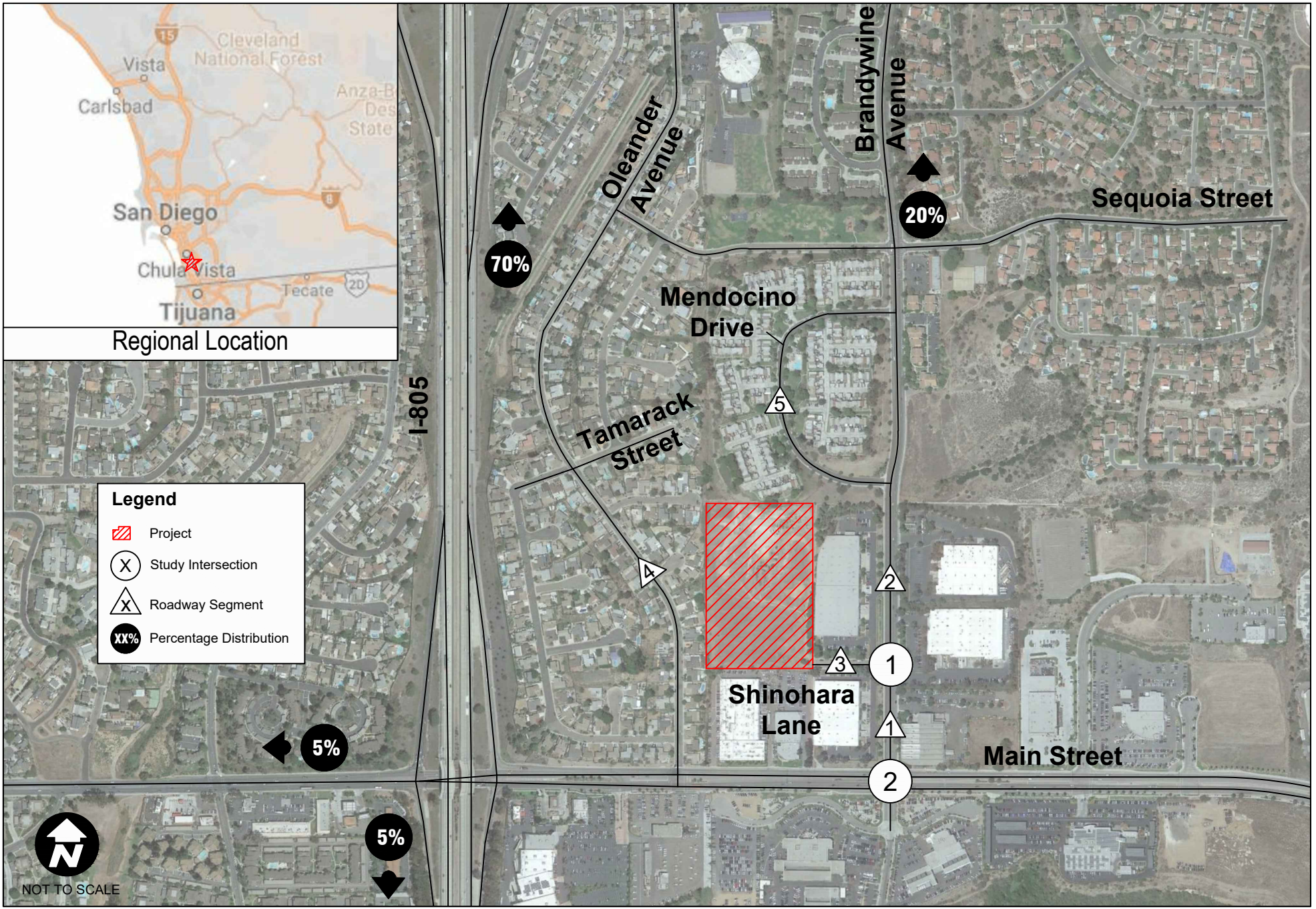
1. Brandywine Avenue, between Shinohara Lane and Main Street (for traffic and noise analyses)
2. Brandywine Avenue, between Shinohara Lane and Mendocino Drive (for noise analysis)
3. Shinohara Lane, west of Brandywine Avenue (for traffic and noise analyses)
4. Oleander Avenue, south of Tamarack Street (for noise analysis)
5. Mendocino Drive, west of Brandywine Avenue (for noise analysis)

Intersections (revised)

AM and PM peak hour traffic counts (including pedestrian and bicycle users) will be collected at the study area intersections. The following intersections would be analyzed in the TIS per City's recently updated Traffic Impact Threshold Standards:

1. Brandywine Avenue/Main Street
2. Brandywine Avenue/Shinohara Lane

All other TIS components scoped in the March 5, 2019 *Scope of Work for Encompass Health TIS* memorandum would remain in-place.



Source: Google Maps 2018

FIGURE 1

Study Area

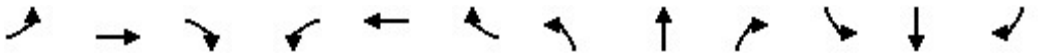
Encompass Health, Chula Vista

DUDEK

Appendix C

LOS Worksheets

- Existing Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	250	679	71	13	554	72	12	7	5	88	14	262
Future Volume (veh/h)	250	679	71	13	554	72	12	7	5	88	14	262
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	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	298	808	85	15	660	86	14	8	6	105	17	312
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	2094	649	31	1097	141	56	313	235	120	686	582
Arrive On Green	0.18	0.41	0.41	0.02	0.25	0.25	0.02	0.32	0.32	0.07	0.37	0.37
Sat Flow, veh/h	1781	5106	1583	1781	4415	569	3456	992	744	1781	1870	1585
Grp Volume(v), veh/h	298	808	85	15	507	239	14	0	14	105	17	312
Grp Sat Flow(s),veh/h/ln	1781	1702	1583	1781	1702	1580	1728	0	1736	1781	1870	1585
Q Serve(g_s), s	15.7	10.5	3.2	0.8	12.5	12.7	0.4	0.0	0.5	5.5	0.6	14.7
Cycle Q Clear(g_c), s	15.7	10.5	3.2	0.8	12.5	12.7	0.4	0.0	0.5	5.5	0.6	14.7
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	319	2094	649	31	846	393	56	0	548	120	686	582
V/C Ratio(X)	0.93	0.39	0.13	0.49	0.60	0.61	0.25	0.00	0.03	0.87	0.02	0.54
Avail Cap(c_a), veh/h	319	2094	649	98	846	393	189	0	548	120	686	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	19.6	17.5	46.3	31.5	31.6	46.2	0.0	22.4	43.9	19.2	23.7
Incr Delay (d2), s/veh	33.8	0.5	0.4	11.6	3.1	6.9	2.3	0.0	0.1	46.3	0.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	3.9	1.2	0.4	5.2	5.3	0.2	0.0	0.2	4.0	0.2	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	72.3	20.2	17.9	57.9	34.7	38.5	48.4	0.0	22.5	90.2	19.2	24.7
LnGrp LOS	E	C	B	E	C	D	D	A	C	F	B	C
Approach Vol, veh/h		1191			761			28			434	
Approach Delay, s/veh		33.0			36.3			35.5			40.3	
Approach LOS		C			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	43.5	6.0	39.4	21.5	28.1	10.9	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.2	35.4	5.2	31.2	17.0	23.6	6.4	30.0
Max Q Clear Time (g_c+I1), s	2.8	12.5	2.4	16.7	17.7	14.7	7.5	2.5
Green Ext Time (p_c), s	0.0	5.4	0.0	1.0	0.0	2.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	35.4
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1	13	284	357	1
Future Vol, veh/h	0	1	13	284	357	1
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	1	16	346	435	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	643	220	438	0	-	0
Stage 1	438	-	-	-	-	-
Stage 2	205	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	406	784	1118	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	809	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	399	783	1116	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	608	-	-	-	-	-
Stage 2	807	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.6	0.4	0
HCM LOS	A		

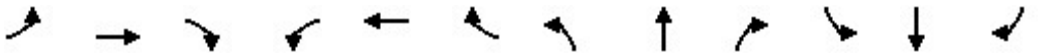
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1116	-	783	-	-
HCM Lane V/C Ratio	0.014	-	0.002	-	-
HCM Control Delay (s)	8.3	-	9.6	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	10	0	130	0	97	16	54	64	0
Future Vol, veh/h	2	0	0	10	0	130	0	97	16	54	64	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	0	16	0	210	0	156	26	87	103	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.9	9	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	46%
Vol Thru, %	86%	0%	0%	54%
Vol Right, %	14%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	113	2	140	118
LT Vol	0	2	10	54
Through Vol	97	0	0	64
RT Vol	16	0	130	0
Lane Flow Rate	182	3	226	190
Geometry Grp	1	1	1	1
Degree of Util (X)	0.232	0.005	0.268	0.25
Departure Headway (Hd)	4.579	5.285	4.266	4.738
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	782	675	842	756
Service Time	2.621	3.336	2.297	2.782
HCM Lane V/C Ratio	0.233	0.004	0.268	0.251
HCM Control Delay	9	8.4	8.9	9.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0	1.1	1



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	292	681	59	15	879	108	99	18	10	80	8	284
Future Volume (veh/h)	292	681	59	15	879	108	99	18	10	80	8	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	328	765	66	17	988	121	111	20	11	90	9	319
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	2139	659	34	1159	142	174	358	197	101	603	510
Arrive On Green	0.19	0.42	0.42	0.02	0.25	0.25	0.05	0.32	0.32	0.06	0.32	0.32
Sat Flow, veh/h	1781	5106	1574	1781	4606	563	3456	1133	623	1781	1870	1582
Grp Volume(v), veh/h	328	765	66	17	730	379	111	0	31	90	9	319
Grp Sat Flow(s),veh/h/ln	1781	1702	1574	1781	1702	1764	1728	0	1757	1781	1870	1582
Q Serve(g_s), s	17.4	9.7	2.4	0.9	19.4	19.5	3.0	0.0	1.2	4.8	0.3	16.3
Cycle Q Clear(g_c), s	17.4	9.7	2.4	0.9	19.4	19.5	3.0	0.0	1.2	4.8	0.3	16.3
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	332	2139	659	34	856	444	174	0	555	101	603	510
V/C Ratio(X)	0.99	0.36	0.10	0.50	0.85	0.85	0.64	0.00	0.06	0.89	0.01	0.63
Avail Cap(c_a), veh/h	332	2139	659	98	856	444	251	0	555	101	603	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	18.9	16.7	46.2	33.9	33.9	44.3	0.0	22.6	44.5	21.9	27.3
Incr Delay (d2), s/veh	46.1	0.5	0.3	11.0	10.5	18.6	3.9	0.0	0.2	55.6	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	11.3	3.6	0.9	0.5	8.7	10.0	1.4	0.0	0.5	3.6	0.1	6.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.6	19.3	17.0	57.2	44.3	52.5	48.1	0.0	22.8	100.1	21.9	29.7
LnGrp LOS	F	B	B	E	D	D	D	A	C	F	C	C
Approach Vol, veh/h		1159			1126			142			418	
Approach Delay, s/veh		37.7			47.3			42.6			44.7	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	44.3	9.3	35.1	22.2	28.4	9.9	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.2	36.4	6.9	28.5	17.7	23.9	5.4	30.0
Max Q Clear Time (g_c+I1), s	2.9	11.7	5.0	18.3	19.4	21.5	6.8	3.2
Green Ext Time (p_c), s	0.0	5.1	0.0	0.8	0.0	1.5	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	42.8
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	21	2	441	297	0
Future Vol, veh/h	0	21	2	441	297	0
Conflicting Peds, #/hr	0	0	1	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	23	2	479	323	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	569	164	325	0	-	0
Stage 1	325	-	-	-	-	-
Stage 2	244	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	452	852	1231	-	-	-
Stage 1	705	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	449	850	1229	-	-	-
Mov Cap-2 Maneuver	539	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	772	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1229	-	850	-	-
HCM Lane V/C Ratio	0.002	-	0.027	-	-
HCM Control Delay (s)	7.9	-	9.4	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

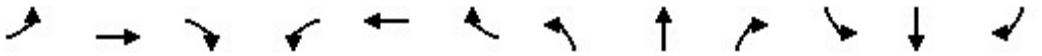
Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	15	3	52	0	72	12	78	51	0
Future Vol, veh/h	1	1	0	15	3	52	0	72	12	78	51	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	0	17	3	59	0	82	14	89	58	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.5	7.7	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	50%	21%	60%
Vol Thru, %	86%	50%	4%	40%
Vol Right, %	14%	0%	74%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	84	2	70	129
LT Vol	0	1	15	78
Through Vol	72	1	3	51
RT Vol	12	0	52	0
Lane Flow Rate	95	2	80	147
Geometry Grp	1	1	1	1
Degree of Util (X)	0.109	0.003	0.09	0.174
Departure Headway (Hd)	4.104	4.661	4.074	4.272
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	862	772	885	833
Service Time	2.182	2.664	2.074	2.333
HCM Lane V/C Ratio	0.11	0.003	0.09	0.176
HCM Control Delay	7.7	7.7	7.5	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0	0.3	0.6

- Existing plus Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	264	679	71	13	554	72	12	7	5	88	14	272
Future Volume (veh/h)	264	679	71	13	554	72	12	7	5	88	14	272
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	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	314	808	85	15	660	86	14	8	6	105	17	324
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	319	2094	649	31	1097	141	56	313	235	120	686	582
Arrive On Green	0.18	0.41	0.41	0.02	0.25	0.25	0.02	0.32	0.32	0.07	0.37	0.37
Sat Flow, veh/h	1781	5106	1583	1781	4415	569	3456	992	744	1781	1870	1585
Grp Volume(v), veh/h	314	808	85	15	507	239	14	0	14	105	17	324
Grp Sat Flow(s),veh/h/ln	1781	1702	1583	1781	1702	1580	1728	0	1736	1781	1870	1585
Q Serve(g_s), s	16.7	10.5	3.2	0.8	12.5	12.7	0.4	0.0	0.5	5.5	0.6	15.5
Cycle Q Clear(g_c), s	16.7	10.5	3.2	0.8	12.5	12.7	0.4	0.0	0.5	5.5	0.6	15.5
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.43	1.00		1.00
Lane Grp Cap(c), veh/h	319	2094	649	31	846	393	56	0	548	120	686	582
V/C Ratio(X)	0.99	0.39	0.13	0.49	0.60	0.61	0.25	0.00	0.03	0.87	0.02	0.56
Avail Cap(c_a), veh/h	319	2094	649	98	846	393	189	0	548	120	686	582
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.9	19.6	17.5	46.3	31.5	31.6	46.2	0.0	22.4	43.9	19.2	23.9
Incr Delay (d2), s/veh	46.2	0.5	0.4	11.6	3.1	6.9	2.3	0.0	0.1	46.3	0.0	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	10.9	3.9	1.2	0.4	5.2	5.3	0.2	0.0	0.2	4.0	0.2	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	85.1	20.2	17.9	57.9	34.7	38.5	48.4	0.0	22.5	90.2	19.2	25.1
LnGrp LOS	F	C	B	E	C	D	D	A	C	F	B	C
Approach Vol, veh/h		1207			761			28			446	
Approach Delay, s/veh		36.9			36.3			35.5			40.2	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.1	43.5	6.0	39.4	21.5	28.1	10.9	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.2	35.4	5.2	31.2	17.0	23.6	6.4	30.0
Max Q Clear Time (g_c+I1), s	2.8	12.5	2.4	17.5	18.7	14.7	7.5	2.5
Green Ext Time (p_c), s	0.0	5.4	0.0	1.0	0.0	2.8	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	37.3
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	11	27	284	357	7
Future Vol, veh/h	4	11	27	284	357	7
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	13	33	346	435	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	681	224	446	0	-	0
Stage 1	442	-	-	-	-	-
Stage 2	239	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	384	779	1111	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	778	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	371	778	1109	-	-	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	595	-	-	-	-	-
Stage 2	776	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	0.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1109	-	662	-	-
HCM Lane V/C Ratio	0.03	-	0.028	-	-
HCM Control Delay (s)	8.3	-	10.6	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	9.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	0	10	0	131	0	97	16	56	64	0
Future Vol, veh/h	2	0	0	10	0	131	0	97	16	56	64	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	0	16	0	211	0	156	26	90	103	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.4	8.9	9	9.4
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	47%
Vol Thru, %	86%	0%	0%	53%
Vol Right, %	14%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	113	2	141	120
LT Vol	0	2	10	56
Through Vol	97	0	0	64
RT Vol	16	0	131	0
Lane Flow Rate	182	3	227	194
Geometry Grp	1	1	1	1
Degree of Util (X)	0.232	0.005	0.27	0.255
Departure Headway (Hd)	4.586	5.295	4.272	4.744
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	780	673	839	755
Service Time	2.63	3.348	2.306	2.788
HCM Lane V/C Ratio	0.233	0.004	0.271	0.257
HCM Control Delay	9	8.4	8.9	9.4
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0	1.1	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	20	0	0	0
Future Vol, veh/h	0	14	20	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	22	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	37	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	15	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1593	-	-	-	975	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	1008	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	975	1055
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	1008	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1593	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	302	681	59	15	879	108	99	18	10	80	8	298
Future Volume (veh/h)	302	681	59	15	879	108	99	18	10	80	8	298
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	339	765	66	17	988	121	111	20	11	90	9	335
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	332	2139	659	34	1159	142	174	358	197	101	603	510
Arrive On Green	0.19	0.42	0.42	0.02	0.25	0.25	0.05	0.32	0.32	0.06	0.32	0.32
Sat Flow, veh/h	1781	5106	1574	1781	4606	563	3456	1133	623	1781	1870	1582
Grp Volume(v), veh/h	339	765	66	17	730	379	111	0	31	90	9	335
Grp Sat Flow(s),veh/h/ln	1781	1702	1574	1781	1702	1764	1728	0	1757	1781	1870	1582
Q Serve(g_s), s	17.7	9.7	2.4	0.9	19.4	19.5	3.0	0.0	1.2	4.8	0.3	17.3
Cycle Q Clear(g_c), s	17.7	9.7	2.4	0.9	19.4	19.5	3.0	0.0	1.2	4.8	0.3	17.3
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.35	1.00		1.00
Lane Grp Cap(c), veh/h	332	2139	659	34	856	444	174	0	555	101	603	510
V/C Ratio(X)	1.02	0.36	0.10	0.50	0.85	0.85	0.64	0.00	0.06	0.89	0.01	0.66
Avail Cap(c_a), veh/h	332	2139	659	98	856	444	251	0	555	101	603	510
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.7	18.9	16.7	46.2	33.9	33.9	44.3	0.0	22.6	44.5	21.9	27.7
Incr Delay (d2), s/veh	55.0	0.5	0.3	11.0	10.5	18.6	3.9	0.0	0.2	55.6	0.0	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	12.3	3.6	0.9	0.5	8.7	10.0	1.4	0.0	0.5	3.6	0.1	6.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	93.6	19.3	17.0	57.2	44.3	52.5	48.1	0.0	22.8	100.1	21.9	30.7
LnGrp LOS	F	B	B	E	D	D	D	A	C	F	C	C
Approach Vol, veh/h		1170			1126			142			434	
Approach Delay, s/veh		40.7			47.3			42.6			44.9	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	44.3	9.3	35.1	22.2	28.4	9.9	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.2	36.4	6.9	28.5	17.7	23.9	5.4	30.0
Max Q Clear Time (g_c+I1), s	2.9	11.7	5.0	19.3	19.7	21.5	6.8	3.2
Green Ext Time (p_c), s	0.0	5.1	0.0	0.9	0.0	1.5	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	44.0
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	35	12	441	297	4
Future Vol, veh/h	6	35	12	441	297	4
Conflicting Peds, #/hr	0	0	1	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	38	13	479	323	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	593	166	329	0	-	0
Stage 1	327	-	-	-	-	-
Stage 2	266	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	437	849	1227	-	-	-
Stage 1	703	-	-	-	-	-
Stage 2	754	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	430	847	1225	-	-	-
Mov Cap-2 Maneuver	525	-	-	-	-	-
Stage 1	694	-	-	-	-	-
Stage 2	752	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.9	0.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1225	-	777	-	-
HCM Lane V/C Ratio	0.011	-	0.057	-	-
HCM Control Delay (s)	8	-	9.9	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	7.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	1	0	15	3	54	0	72	12	79	51	0
Future Vol, veh/h	1	1	0	15	3	54	0	72	12	79	51	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	0	17	3	61	0	82	14	90	58	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.7	7.5	7.7	8.3
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	50%	21%	61%
Vol Thru, %	86%	50%	4%	39%
Vol Right, %	14%	0%	75%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	84	2	72	130
LT Vol	0	1	15	79
Through Vol	72	1	3	51
RT Vol	12	0	54	0
Lane Flow Rate	95	2	82	148
Geometry Grp	1	1	1	1
Degree of Util (X)	0.109	0.003	0.093	0.175
Departure Headway (Hd)	4.108	4.666	4.07	4.276
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	861	771	886	832
Service Time	2.189	2.669	2.07	2.339
HCM Lane V/C Ratio	0.11	0.003	0.093	0.178
HCM Control Delay	7.7	7.7	7.5	8.3
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.4	0	0.3	0.6

Intersection	
Int Delay, s/veh	0

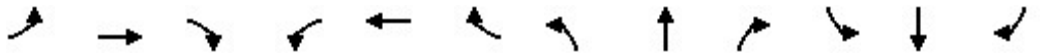
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	14	0	0	0
Future Vol, veh/h	0	20	14	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	15	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	15	0	-	0	37	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1603	-	-	-	975	1065
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1603	-	-	-	975	1065
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

- Buildout Year (2035) Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	350	951	100	19	776	101	14	9	6	157	25	467
Future Volume (veh/h)	350	951	100	19	776	101	14	9	6	157	25	467
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	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	380	1034	109	21	843	110	15	10	7	171	27	508
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	382	2145	665	39	1004	130	58	293	205	180	692	586
Arrive On Green	0.21	0.42	0.42	0.02	0.23	0.23	0.02	0.29	0.29	0.10	0.37	0.37
Sat Flow, veh/h	1781	5106	1583	1781	4411	572	3456	1024	717	1781	1870	1585
Grp Volume(v), veh/h	380	1034	109	21	649	304	15	0	17	171	27	508
Grp Sat Flow(s),veh/h/ln	1781	1702	1583	1781	1702	1579	1728	0	1741	1781	1870	1585
Q Serve(g_s), s	22.4	15.5	4.5	1.2	19.1	19.3	0.5	0.0	0.7	10.0	1.0	31.2
Cycle Q Clear(g_c), s	22.4	15.5	4.5	1.2	19.1	19.3	0.5	0.0	0.7	10.0	1.0	31.2
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	382	2145	665	39	775	360	58	0	498	180	692	586
V/C Ratio(X)	1.00	0.48	0.16	0.54	0.84	0.84	0.26	0.00	0.03	0.95	0.04	0.87
Avail Cap(c_a), veh/h	382	2145	665	93	775	360	171	0	498	180	692	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.2	22.1	19.0	50.8	38.7	38.8	51.0	0.0	27.1	46.9	21.2	30.7
Incr Delay (d2), s/veh	44.8	0.8	0.5	11.2	10.5	20.9	2.3	0.0	0.1	52.8	0.0	13.0
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	14.0	5.8	1.7	0.6	8.7	9.1	0.2	0.0	0.3	7.1	0.4	13.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	86.0	22.9	19.5	62.0	49.2	59.7	53.3	0.0	27.2	99.7	21.2	43.7
LnGrp LOS	F	C	B	E	D	E	D	A	C	F	C	D
Approach Vol, veh/h		1523			974			32			706	
Approach Delay, s/veh		38.4			52.8			39.4			56.4	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	48.6	6.3	43.3	27.0	28.4	15.1	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	40.9	5.2	35.4	22.5	23.9	10.6	30.0
Max Q Clear Time (g_c+I1), s	3.2	17.5	2.5	33.2	24.4	21.3	12.0	2.7
Green Ext Time (p_c), s	0.0	7.3	0.0	0.5	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	46.7
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	2	24	506	636	2
Future Vol, veh/h	5	2	24	506	636	2
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	2	26	550	691	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1021	349	695	0	-	0
Stage 1	694	-	-	-	-	-
Stage 2	327	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	232	647	897	-	-	-
Stage 1	457	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	224	646	895	-	-	-
Mov Cap-2 Maneuver	342	-	-	-	-	-
Stage 1	443	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.4	0
HCM LOS	B		

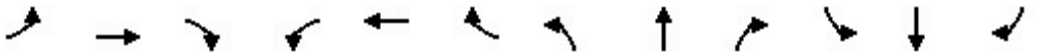
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	895	-	395	-	-
HCM Lane V/C Ratio	0.029	-	0.019	-	-
HCM Control Delay (s)	9.1	-	14.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	2	0	0	14	0	176	0	121	20	67	80	0
Future Vol, veh/h	2	0	0	14	0	176	0	121	20	67	80	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	0	23	0	284	0	195	32	108	129	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	10.4	10.1	10.6
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	46%
Vol Thru, %	86%	0%	0%	54%
Vol Right, %	14%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	2	190	147
LT Vol	0	2	14	67
Through Vol	121	0	0	80
RT Vol	20	0	176	0
Lane Flow Rate	227	3	306	237
Geometry Grp	1	1	1	1
Degree of Util (X)	0.307	0.005	0.384	0.33
Departure Headway (Hd)	4.863	5.78	4.513	5.018
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	732	623	791	709
Service Time	2.941	3.78	2.572	3.096
HCM Lane V/C Ratio	0.31	0.005	0.387	0.334
HCM Control Delay	10.1	8.8	10.4	10.6
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	1.3	0	1.8	1.4



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	409	954	83	21	1231	152	115	21	12	143	15	506
Future Volume (veh/h)	409	954	83	21	1231	152	115	21	12	143	15	506
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	445	1037	90	23	1338	165	125	23	13	155	16	550
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	458	2735	844	38	1380	170	173	249	141	156	486	411
Arrive On Green	0.26	0.54	0.54	0.02	0.30	0.30	0.05	0.22	0.22	0.09	0.26	0.26
Sat Flow, veh/h	1781	5106	1576	1781	4601	567	3456	1121	633	1781	1870	1581
Grp Volume(v), veh/h	445	1037	90	23	990	513	125	0	36	155	16	550
Grp Sat Flow(s),veh/h/ln	1781	1702	1576	1781	1702	1764	1728	0	1754	1781	1870	1581
Q Serve(g_s), s	33.4	16.0	3.8	1.7	38.8	38.8	4.8	0.0	2.2	11.7	0.9	35.0
Cycle Q Clear(g_c), s	33.4	16.0	3.8	1.7	38.8	38.8	4.8	0.0	2.2	11.7	0.9	35.0
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	458	2735	844	38	1021	529	173	0	390	156	486	411
V/C Ratio(X)	0.97	0.38	0.11	0.60	0.97	0.97	0.72	0.00	0.09	1.00	0.03	1.34
Avail Cap(c_a), veh/h	458	2735	844	79	1021	529	174	0	390	156	486	411
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.7	18.3	15.4	65.5	46.6	46.6	63.2	0.0	41.7	61.6	37.3	50.0
Incr Delay (d2), s/veh	34.7	0.4	0.3	14.4	21.7	32.2	13.7	0.0	0.5	70.7	0.0	168.5
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	18.7	6.0	1.4	0.9	18.7	21.0	2.5	0.0	1.0	8.4	0.4	33.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	84.4	18.7	15.7	79.8	68.3	78.9	76.9	0.0	42.2	132.3	37.3	218.5
LnGrp LOS	F	B	B	E	E	E	E	A	D	F	D	F
Approach Vol, veh/h		1572			1526			161			721	
Approach Delay, s/veh		37.1			72.0			69.1			195.9	
Approach LOS		D			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	76.8	11.3	39.5	39.2	45.0	16.3	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.0	69.2	6.8	35.0	34.7	40.5	11.8	30.0
Max Q Clear Time (g_c+I1), s	3.7	18.0	6.8	37.0	35.4	40.8	13.7	4.2
Green Ext Time (p_c), s	0.0	8.4	0.0	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	80.6
HCM 6th LOS	F

Notes

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

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	31	4	785	529	0
Future Vol, veh/h	5	31	4	785	529	0
Conflicting Peds, #/hr	0	0	1	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	34	4	853	575	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1012	290	577	0	-	0
Stage 1	577	-	-	-	-	-
Stage 2	435	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	236	707	993	-	-	-
Stage 1	525	-	-	-	-	-
Stage 2	620	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	234	706	991	-	-	-
Mov Cap-2 Maneuver	364	-	-	-	-	-
Stage 1	522	-	-	-	-	-
Stage 2	619	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	991	-	625	-	-
HCM Lane V/C Ratio	0.004	-	0.063	-	-
HCM Control Delay (s)	8.6	-	11.1	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

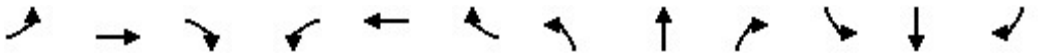
Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	0	21	5	71	0	90	15	97	64	0
Future Vol, veh/h	1	1	0	21	5	71	0	90	15	97	64	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	0	24	6	81	0	102	17	110	73	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	7.9	8	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	50%	22%	60%
Vol Thru, %	86%	50%	5%	40%
Vol Right, %	14%	0%	73%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	2	97	161
LT Vol	0	1	21	97
Through Vol	90	1	5	64
RT Vol	15	0	71	0
Lane Flow Rate	119	2	110	183
Geometry Grp	1	1	1	1
Degree of Util (X)	0.142	0.003	0.129	0.221
Departure Headway (Hd)	4.293	4.846	4.223	4.344
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	839	741	853	814
Service Time	2.303	2.857	2.229	2.44
HCM Lane V/C Ratio	0.142	0.003	0.129	0.225
HCM Control Delay	8	7.9	7.9	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0	0.4	0.8

- Buildout Year (2035) plus Project Conditions



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	951	100	19	776	101	14	9	6	157	25	477
Future Volume (veh/h)	364	951	100	19	776	101	14	9	6	157	25	477
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	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	396	1034	109	21	843	110	15	10	7	171	27	518
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	382	2145	665	39	1004	130	58	293	205	180	692	586
Arrive On Green	0.21	0.42	0.42	0.02	0.23	0.23	0.02	0.29	0.29	0.10	0.37	0.37
Sat Flow, veh/h	1781	5106	1583	1781	4411	572	3456	1024	717	1781	1870	1585
Grp Volume(v), veh/h	396	1034	109	21	649	304	15	0	17	171	27	518
Grp Sat Flow(s),veh/h/ln	1781	1702	1583	1781	1702	1579	1728	0	1741	1781	1870	1585
Q Serve(g_s), s	22.5	15.5	4.5	1.2	19.1	19.3	0.5	0.0	0.7	10.0	1.0	32.1
Cycle Q Clear(g_c), s	22.5	15.5	4.5	1.2	19.1	19.3	0.5	0.0	0.7	10.0	1.0	32.1
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	382	2145	665	39	775	360	58	0	498	180	692	586
V/C Ratio(X)	1.04	0.48	0.16	0.54	0.84	0.84	0.26	0.00	0.03	0.95	0.04	0.88
Avail Cap(c_a), veh/h	382	2145	665	93	775	360	171	0	498	180	692	586
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	22.1	19.0	50.8	38.7	38.8	51.0	0.0	27.1	46.9	21.2	31.0
Incr Delay (d2), s/veh	56.1	0.8	0.5	11.2	10.5	20.9	2.3	0.0	0.1	52.8	0.0	14.9
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	15.2	5.8	1.7	0.6	8.7	9.1	0.2	0.0	0.3	7.1	0.4	14.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.3	22.9	19.5	62.0	49.2	59.7	53.3	0.0	27.2	99.7	21.2	45.8
LnGrp LOS	F	C	B	E	D	E	D	A	C	F	C	D
Approach Vol, veh/h		1539			974			32			716	
Approach Delay, s/veh		41.8			52.8			39.4			57.8	
Approach LOS		D			D			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	48.6	6.3	43.3	27.0	28.4	15.1	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	40.9	5.2	35.4	22.5	23.9	10.6	30.0
Max Q Clear Time (g_c+I1), s	3.2	17.5	2.5	34.1	24.5	21.3	12.0	2.7
Green Ext Time (p_c), s	0.0	7.3	0.0	0.3	0.0	1.4	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	48.6
HCM 6th LOS	D

Notes

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

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	12	38	506	636	8
Future Vol, veh/h	9	12	38	506	636	8
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	13	41	550	691	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1055	352	702	0	-	0
Stage 1	698	-	-	-	-	-
Stage 2	357	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	221	644	891	-	-	-
Stage 1	455	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	210	643	889	-	-	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	433	-	-	-	-	-
Stage 2	678	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	889	-	457	-	-
HCM Lane V/C Ratio	0.046	-	0.05	-	-
HCM Control Delay (s)	9.2	-	13.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	0	0	14	0	177	0	121	20	69	80	0
Future Vol, veh/h	2	0	0	14	0	177	0	121	20	69	80	0
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62	0.62
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	3	0	0	23	0	285	0	195	32	111	129	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	8.8	10.4	10.1	10.7
HCM LOS	A	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	100%	7%	46%
Vol Thru, %	86%	0%	0%	54%
Vol Right, %	14%	0%	93%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	141	2	191	149
LT Vol	0	2	14	69
Through Vol	121	0	0	80
RT Vol	20	0	177	0
Lane Flow Rate	227	3	308	240
Geometry Grp	1	1	1	1
Degree of Util (X)	0.308	0.005	0.387	0.336
Departure Headway (Hd)	4.874	5.798	4.521	5.026
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	730	621	789	709
Service Time	2.953	3.798	2.584	3.105
HCM Lane V/C Ratio	0.311	0.005	0.39	0.339
HCM Control Delay	10.1	8.8	10.4	10.7
HCM Lane LOS	B	A	B	B
HCM 95th-tile Q	1.3	0	1.8	1.5

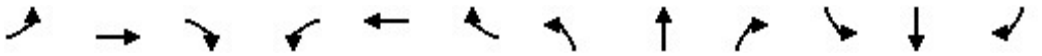
Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	14	20	0	0	0
Future Vol, veh/h	0	14	20	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	15	22	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	22	0	-	0	37	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	15	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1593	-	-	-	975	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	1008	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1593	-	-	-	975	1055
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	1008	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1593	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	419	954	83	21	1231	152	115	21	12	143	15	520
Future Volume (veh/h)	419	954	83	21	1231	152	115	21	12	143	15	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	455	1037	90	23	1338	165	125	23	13	155	16	565
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	458	2709	836	38	1356	167	173	249	141	165	495	419
Arrive On Green	0.26	0.53	0.53	0.02	0.29	0.29	0.05	0.22	0.22	0.09	0.26	0.26
Sat Flow, veh/h	1781	5106	1576	1781	4601	567	3456	1121	633	1781	1870	1581
Grp Volume(v), veh/h	455	1037	90	23	990	513	125	0	36	155	16	565
Grp Sat Flow(s),veh/h/ln	1781	1702	1576	1781	1702	1764	1728	0	1754	1781	1870	1581
Q Serve(g_s), s	34.4	16.2	3.8	1.7	39.0	39.0	4.8	0.0	2.2	11.7	0.9	35.7
Cycle Q Clear(g_c), s	34.4	16.2	3.8	1.7	39.0	39.0	4.8	0.0	2.2	11.7	0.9	35.7
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	458	2709	836	38	1004	520	173	0	390	165	495	419
V/C Ratio(X)	0.99	0.38	0.11	0.60	0.99	0.99	0.72	0.00	0.09	0.94	0.03	1.35
Avail Cap(c_a), veh/h	458	2709	836	79	1004	520	192	0	390	165	495	419
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.0	18.7	15.8	65.5	47.3	47.3	63.2	0.0	41.7	60.9	36.8	49.6
Incr Delay (d2), s/veh	40.3	0.4	0.3	14.4	25.3	36.3	11.2	0.0	0.5	52.5	0.0	172.6
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	19.8	6.1	1.5	0.9	19.3	21.6	2.4	0.0	1.0	7.7	0.4	34.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	90.4	19.1	16.0	79.8	72.7	83.6	74.4	0.0	42.2	113.4	36.8	222.2
LnGrp LOS	F	B	B	E	E	F	E	A	D	F	D	F
Approach Vol, veh/h		1582			1526			161			736	
Approach Delay, s/veh		39.4			76.4			67.2			195.3	
Approach LOS		D			E			E			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	76.1	11.3	40.2	39.2	44.3	17.0	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.0	68.5	7.5	35.0	34.7	39.8	12.5	30.0
Max Q Clear Time (g_c+I1), s	3.7	18.2	6.8	37.7	36.4	41.0	13.7	4.2
Green Ext Time (p_c), s	0.0	8.4	0.0	0.0	0.0	0.0	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	83.3
HCM 6th LOS	F

Notes

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

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	45	14	785	529	4
Future Vol, veh/h	11	45	14	785	529	4
Conflicting Peds, #/hr	0	0	1	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	50	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	49	15	853	575	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1036	292	581	0	-	0
Stage 1	579	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Critical Hdwy	6.84	6.94	4.14	-	-	-
Critical Hdwy Stg 1	5.84	-	-	-	-	-
Critical Hdwy Stg 2	5.84	-	-	-	-	-
Follow-up Hdwy	3.52	3.32	2.22	-	-	-
Pot Cap-1 Maneuver	227	704	989	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	223	703	987	-	-	-
Mov Cap-2 Maneuver	354	-	-	-	-	-
Stage 1	515	-	-	-	-	-
Stage 2	603	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.8	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	987	-	589	-	-
HCM Lane V/C Ratio	0.015	-	0.103	-	-
HCM Control Delay (s)	8.7	-	11.8	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.3	-	-

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	1	1	0	21	5	73	0	90	15	98	64	0
Future Vol, veh/h	1	1	0	21	5	73	0	90	15	98	64	0
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	1	0	24	6	83	0	102	17	111	73	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	7.9	7.9	8	8.7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	0%	50%	21%	60%
Vol Thru, %	86%	50%	5%	40%
Vol Right, %	14%	0%	74%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	105	2	99	162
LT Vol	0	1	21	98
Through Vol	90	1	5	64
RT Vol	15	0	73	0
Lane Flow Rate	119	2	112	184
Geometry Grp	1	1	1	1
Degree of Util (X)	0.143	0.003	0.132	0.222
Departure Headway (Hd)	4.3	4.851	4.221	4.348
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	838	740	853	812
Service Time	2.31	2.863	2.228	2.447
HCM Lane V/C Ratio	0.142	0.003	0.131	0.227
HCM Control Delay	8	7.9	7.9	8.7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.5	0	0.5	0.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	20	14	0	0	0
Future Vol, veh/h	0	20	14	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	22	15	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	15	0	-	0	37	15
Stage 1	-	-	-	-	15	-
Stage 2	-	-	-	-	22	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1603	-	-	-	975	1065
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	1001	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1603	-	-	-	975	1065
Mov Cap-2 Maneuver	-	-	-	-	975	-
Stage 1	-	-	-	-	1008	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1603	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

- Improvement - Buildout Year (2035) plus Project Conditions

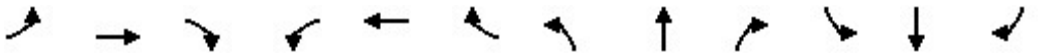
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	364	951	100	19	776	101	14	9	6	157	25	477
Future Volume (veh/h)	364	951	100	19	776	101	14	9	6	157	25	477
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	0.90	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	396	1034	109	21	843	110	15	10	7	171	27	518
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	382	2160	670	39	1017	132	58	293	205	175	686	921
Arrive On Green	0.21	0.42	0.42	0.02	0.23	0.23	0.02	0.29	0.29	0.10	0.37	0.37
Sat Flow, veh/h	1781	5106	1583	1781	4411	572	3456	1024	717	1781	1870	1585
Grp Volume(v), veh/h	396	1034	109	21	649	304	15	0	17	171	27	518
Grp Sat Flow(s),veh/h/ln	1781	1702	1583	1781	1702	1579	1728	0	1741	1781	1870	1585
Q Serve(g_s), s	22.5	15.4	4.5	1.2	19.0	19.2	0.5	0.0	0.7	10.1	1.0	21.3
Cycle Q Clear(g_c), s	22.5	15.4	4.5	1.2	19.0	19.2	0.5	0.0	0.7	10.1	1.0	21.3
Prop In Lane	1.00		1.00	1.00		0.36	1.00		0.41	1.00		1.00
Lane Grp Cap(c), veh/h	382	2160	670	39	785	364	58	0	498	175	686	921
V/C Ratio(X)	1.04	0.48	0.16	0.54	0.83	0.83	0.26	0.00	0.03	0.98	0.04	0.56
Avail Cap(c_a), veh/h	382	2160	670	93	785	364	171	0	498	175	686	921
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	21.9	18.8	50.8	38.4	38.5	51.0	0.0	27.1	47.2	21.3	13.7
Incr Delay (d2), s/veh	56.1	0.8	0.5	11.2	9.8	19.7	2.3	0.0	0.1	61.6	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	15.2	5.8	1.7	0.6	8.6	9.0	0.2	0.0	0.3	7.4	0.4	7.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	97.3	22.7	19.3	62.0	48.2	58.1	53.3	0.0	27.2	108.8	21.4	14.5
LnGrp LOS	F	C	B	E	D	E	D	A	C	F	C	B
Approach Vol, veh/h		1539			974			32			716	
Approach Delay, s/veh		41.7			51.6			39.4			37.3	
Approach LOS		D			D			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.8	48.9	6.3	43.0	27.0	28.7	14.8	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	5.5	41.2	5.2	35.1	22.5	24.2	10.3	30.0
Max Q Clear Time (g_c+I1), s	3.2	17.4	2.5	23.3	24.5	21.2	12.1	2.7
Green Ext Time (p_c), s	0.0	7.3	0.0	1.7	0.0	1.6	0.0	0.0

Intersection Summary	
HCM 6th Ctrl Delay	43.6
HCM 6th LOS	D

Notes

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	419	954	83	21	1231	152	115	21	12	143	15	520
Future Volume (veh/h)	419	954	83	21	1231	152	115	21	12	143	15	520
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	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	455	1037	90	23	1338	165	125	23	13	155	16	565
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	442	2709	836	38	1397	172	175	249	141	165	494	811
Arrive On Green	0.25	0.53	0.53	0.02	0.30	0.30	0.05	0.22	0.22	0.09	0.26	0.26
Sat Flow, veh/h	1781	5106	1576	1781	4601	567	3456	1121	633	1781	1870	1581
Grp Volume(v), veh/h	455	1037	90	23	990	513	125	0	36	155	16	565
Grp Sat Flow(s),veh/h/ln	1781	1702	1576	1781	1702	1764	1728	0	1754	1781	1870	1581
Q Serve(g_s), s	33.5	16.2	3.8	1.7	38.5	38.5	4.8	0.0	2.2	11.7	0.9	35.7
Cycle Q Clear(g_c), s	33.5	16.2	3.8	1.7	38.5	38.5	4.8	0.0	2.2	11.7	0.9	35.7
Prop In Lane	1.00		1.00	1.00		0.32	1.00		0.36	1.00		1.00
Lane Grp Cap(c), veh/h	442	2709	836	38	1034	536	175	0	390	165	494	811
V/C Ratio(X)	1.03	0.38	0.11	0.60	0.96	0.96	0.71	0.00	0.09	0.94	0.03	0.70
Avail Cap(c_a), veh/h	442	2709	836	79	1034	536	246	0	390	165	494	811
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.8	18.7	15.8	65.5	46.1	46.1	63.1	0.0	41.7	60.9	36.9	25.0
Incr Delay (d2), s/veh	50.5	0.4	0.3	14.4	19.5	29.7	5.7	0.0	0.5	52.5	0.0	2.6
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	20.6	6.1	1.5	0.9	18.4	20.6	2.3	0.0	1.0	7.7	0.4	14.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	101.3	19.1	16.0	79.8	65.6	75.8	68.8	0.0	42.2	113.4	36.9	27.6
LnGrp LOS	F	B	B	E	E	E	E	A	D	F	D	C
Approach Vol, veh/h		1582			1526			161			736	
Approach Delay, s/veh		42.6			69.3			62.8			45.9	
Approach LOS		D			E			E			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.4	76.1	11.3	40.2	38.0	45.5	17.0	34.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	6.0	68.5	9.6	32.9	33.5	41.0	12.5	30.0
Max Q Clear Time (g_c+I1), s	3.7	18.2	6.8	37.7	35.5	40.5	13.7	4.2
Green Ext Time (p_c), s	0.0	8.4	0.1	0.0	0.0	0.4	0.0	0.1

Intersection Summary	
HCM 6th Ctrl Delay	54.2
HCM 6th LOS	D

Notes

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

- SimTraffic Worksheets

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	T	R	L	T	T	TR	L	TR	L
Maximum Queue (ft)	254	336	306	116	48	38	248	221	122	39	27	146
Average Queue (ft)	154	114	95	27	12	10	153	107	40	9	6	66
95th Queue (ft)	250	247	218	81	31	32	223	201	96	32	21	128
Link Distance (ft)		941	941	941			800	800	800			152
Upstream Blk Time (%)												1
Queuing Penalty (veh)												2
Storage Bay Dist (ft)	230				150	210				130		
Storage Blk Time (%)	4			0			1					
Queuing Penalty (veh)	11			0			0					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	39	105
Average Queue (ft)	6	57
95th Queue (ft)	27	92
Link Distance (ft)	152	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		140
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	254	429	328	103	46	234	360	338	242	88	64	47
Average Queue (ft)	174	147	99	23	11	22	243	201	120	49	10	11
95th Queue (ft)	272	333	247	68	28	99	341	300	220	82	44	33
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	9	0					17					
Queuing Penalty (veh)	22	0					3					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	143	64	116
Average Queue (ft)	71	9	66
95th Queue (ft)	137	38	106
Link Distance (ft)	152	152	
Upstream Blk Time (%)	4		
Queuing Penalty (veh)	8		
Storage Bay Dist (ft)			140
Storage Blk Time (%)			0
Queuing Penalty (veh)			0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	T	R	L	T	T	TR	L	TR	L
Maximum Queue (ft)	254	420	337	135	31	55	262	217	136	52	23	130
Average Queue (ft)	160	136	102	26	12	10	158	114	36	12	5	68
95th Queue (ft)	257	300	235	79	29	35	231	200	88	37	19	124
Link Distance (ft)		941	941	941			800	800	800			152
Upstream Blk Time (%)												2
Queuing Penalty (veh)												4
Storage Bay Dist (ft)	230				150	210				130		
Storage Blk Time (%)	6	0		0			2					
Queuing Penalty (veh)	16	0		0			0					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	43	107
Average Queue (ft)	10	54
95th Queue (ft)	35	90
Link Distance (ft)	152	
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		140
Storage Blk Time (%)		0
Queuing Penalty (veh)		0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	250	424	350	108	37	87	371	334	222	90	76	49
Average Queue (ft)	188	165	125	25	10	12	236	200	119	50	9	12
95th Queue (ft)	279	383	315	68	26	51	325	291	212	84	40	33
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	14	0					14					
Queuing Penalty (veh)	33	0					2					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	152	82	125
Average Queue (ft)	77	9	70
95th Queue (ft)	141	44	114
Link Distance (ft)	152	152	
Upstream Blk Time (%)	1	0	0
Queuing Penalty (veh)	3	0	0
Storage Bay Dist (ft)			140
Storage Blk Time (%)		0	0
Queuing Penalty (veh)		0	0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	254	582	562	176	46	195	339	287	219	43	9	44
Average Queue (ft)	219	253	197	69	16	21	221	186	114	10	0	7
95th Queue (ft)	293	515	442	147	35	92	307	267	208	34	5	27
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	22	0		0		0	11					
Queuing Penalty (veh)	70	1		0		0	2					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	164	160	140
Average Queue (ft)	116	24	90
95th Queue (ft)	176	91	136
Link Distance (ft)	152	152	
Upstream Blk Time (%)	12	0	0
Queuing Penalty (veh)	42	0	0
Storage Bay Dist (ft)			140
Storage Blk Time (%)		0	1
Queuing Penalty (veh)		1	0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	254	614	607	161	43	234	612	586	450	97	91	56
Average Queue (ft)	239	313	224	63	12	44	384	343	266	65	28	15
95th Queue (ft)	287	570	481	141	31	168	523	490	393	92	77	40
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)										0		
Queuing Penalty (veh)										0		
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	28	0		0		0	41			0		
Queuing Penalty (veh)	88	0		0		0	9			0		

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	163	194	152
Average Queue (ft)	131	80	122
95th Queue (ft)	190	208	169
Link Distance (ft)	152	152	
Upstream Blk Time (%)	23	5	6
Queuing Penalty (veh)	74	15	0
Storage Bay Dist (ft)			140
Storage Blk Time (%)		5	10
Queuing Penalty (veh)		24	2

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	T	R	L	T	T	TR	L	TR	L
Maximum Queue (ft)	255	734	676	248	69	197	335	307	235	63	32	164
Average Queue (ft)	231	414	354	65	18	25	235	200	125	12	8	117
95th Queue (ft)	297	853	781	166	46	111	307	274	229	40	26	181
Link Distance (ft)		941	941	941			800	800	800			152
Upstream Blk Time (%)		2	0									11
Queuing Penalty (veh)		0	0									37
Storage Bay Dist (ft)	230				150	210				130		
Storage Blk Time (%)	42	0		0	0		15					
Queuing Penalty (veh)	133	1		0	0		3					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	160	150
Average Queue (ft)	25	94
95th Queue (ft)	93	143
Link Distance (ft)	152	
Upstream Blk Time (%)	0	1
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		140
Storage Blk Time (%)	0	1
Queuing Penalty (veh)	2	0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	255	690	627	152	49	234	610	581	473	88	90	61
Average Queue (ft)	240	408	320	61	12	47	412	374	286	67	34	16
95th Queue (ft)	292	742	665	132	32	176	576	538	434	92	84	43
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	37	0		0			46					
Queuing Penalty (veh)	119	0		0			10					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	162	197	152
Average Queue (ft)	126	89	125
95th Queue (ft)	185	221	167
Link Distance (ft)	152	152	
Upstream Blk Time (%)	18	6	7
Queuing Penalty (veh)	62	19	0
Storage Bay Dist (ft)			140
Storage Blk Time (%)		6	13
Queuing Penalty (veh)		29	2

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	T	T	R	L	T	T	TR	L	TR	L
Maximum Queue (ft)	254	633	556	172	68	197	367	312	228	46	57	162
Average Queue (ft)	215	295	246	65	17	19	247	207	131	10	8	116
95th Queue (ft)	289	642	569	144	45	84	333	288	227	33	32	176
Link Distance (ft)		941	941	941			800	800	800			152
Upstream Blk Time (%)		0										8
Queuing Penalty (veh)		0										27
Storage Bay Dist (ft)	230				150	210				130		
Storage Blk Time (%)	24	0		0	0	0	17					
Queuing Penalty (veh)	75	1		0	0	0	3					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	151	144
Average Queue (ft)	23	81
95th Queue (ft)	84	136
Link Distance (ft)	152	
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	1	0
Storage Bay Dist (ft)		140
Storage Blk Time (%)	0	0
Queuing Penalty (veh)	1	0

Intersection: 1: Main St & Brandywine Ave

Movement	EB	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB
Directions Served	L	T	T	T	R	L	T	T	TR	L	L	TR
Maximum Queue (ft)	254	758	654	185	71	234	608	571	445	91	86	50
Average Queue (ft)	242	364	268	69	15	38	415	370	281	60	23	13
95th Queue (ft)	287	690	583	156	46	151	588	541	419	93	69	38
Link Distance (ft)		941	941	941			800	800	800			
Upstream Blk Time (%)		0										
Queuing Penalty (veh)		0										
Storage Bay Dist (ft)	230				150	210				130	130	
Storage Blk Time (%)	34	0		0		0	45					
Queuing Penalty (veh)	109	1		0		0	9					

Intersection: 1: Main St & Brandywine Ave

Movement	SB	SB	SB
Directions Served	L	T	R
Maximum Queue (ft)	163	205	152
Average Queue (ft)	134	85	122
95th Queue (ft)	190	216	169
Link Distance (ft)	152	152	
Upstream Blk Time (%)	25	5	6
Queuing Penalty (veh)	87	18	0
Storage Bay Dist (ft)			140
Storage Blk Time (%)		5	11
Queuing Penalty (veh)		27	2