

TRANSPORTATION IMPACT ANALYSIS
RANCHO SPRINGS MEDICAL CENTER
EXPANSION
Murrieta, California
January 29, 2021

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APPENDIX

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TRANSPORTATION IMPACT ANALYSIS
RANCHO SPRINGS MEDICAL CENTER EXPANSION
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1.0 INTRODUCTION

The Rancho Springs Medical Center Expansion project (“project”) is a proposed expansion of the existing medical center. The project site is located at 25500 Medical Center Drive, north of Murrieta Hot Springs Road between I-15 and I-215 in the City of Murrieta.

This Transportation Impact Analysis report has been prepared in compliance with the City of Murrieta *Transportation Impact Analysis Preparation Guidelines*, May 2020, to evaluate the effects of the project on the local transportation system. Per the City’s guidelines, two analyses are presented in this report: 1) a Level of Service assessment to review the operational performance of the local transportation system consistent with the City of Murrieta General Plan, and 2) a Vehicle Miles Traveled assessment to evaluate significant Project impacts under the California Environmental Quality Act (CEQA).

This report has been organized as follows:

- Project Description
- Level of Service (LOS) Assessment (General Plan Consistency Analysis)
 - Study Area, Analysis Scenarios, Approach and Methodology
 - LOS Impact Thresholds
 - Existing Conditions
 - Analysis of Existing Conditions
 - Project Trip Generation / Distribution / Assignment
 - Near-Term Opening Year 2023 Conditions and Cumulative Projects
 - Analysis of Near-Term Opening Year 2023 Scenarios
 - Site Access Review
 - Active Transportation and Public Transit Review
 - Improvements and Recommendations
- Vehicle Miles Traveled Assessment (CEQA Analysis)
 - VMT Background
 - VMT Impact Thresholds
 - VMT Analysis Methodology
 - Project VMT Analysis
 - Significant VMT Impacts and Mitigation Measures

2.0 PROJECT DESCRIPTION

2.1 Project Location

The proposed project is located in the City of Murrieta. The site is generally bordered to the south by Murrieta Hot Springs Road, to the east by Interstate 215 (I-215), Hancock Avenue to the west, and to the north by undeveloped parcels.

Figure 2–1 and *Figure 2–2* depicts the Project Vicinity Map and Project Area Map

2.2 Project Description

The Rancho Springs Medical Center Expansion project proposes to expand the existing 170,995-square foot hospital/medical center by an additional 36,000 square feet as well a series of site improvement, renovation, and new work packages. Each of the packages will be designed and documented in separate Make-Ready, New Construction, and Post Construction packages.

Under the “Make-Ready” Package is the following project component:

- Helipad Relocation - A new elevated platform helipad will be constructed in the East parking lot to replace the existing grass landing area.

Under the “New Construction” Package are the following project components:

- Expansion Building – The Expansion building is a 2-story, approximately 36,000-square foot addition to the existing Women’s Center and Emergency Department (ED) building. This package will also include the remodel of the ED Waiting room and reception within the Women’s Center building.
- Kitchen Renovation – This includes the renovation and expansion of the existing kitchen.

Under the “Post Construction” Package are the following project components:

- Entry Canopy – A new freestanding Entry Canopy will be built on the West face of the Women’s Center and serve the new primary hospital drop-off.
- Site Improvements – Civil and landscape improvements will include infrastructure upgrades to the site in order to facilitate other construction phases as well as the reconfiguration of parking in the South, West, and East surface parking lots and new site vehicular and pedestrian circulation.

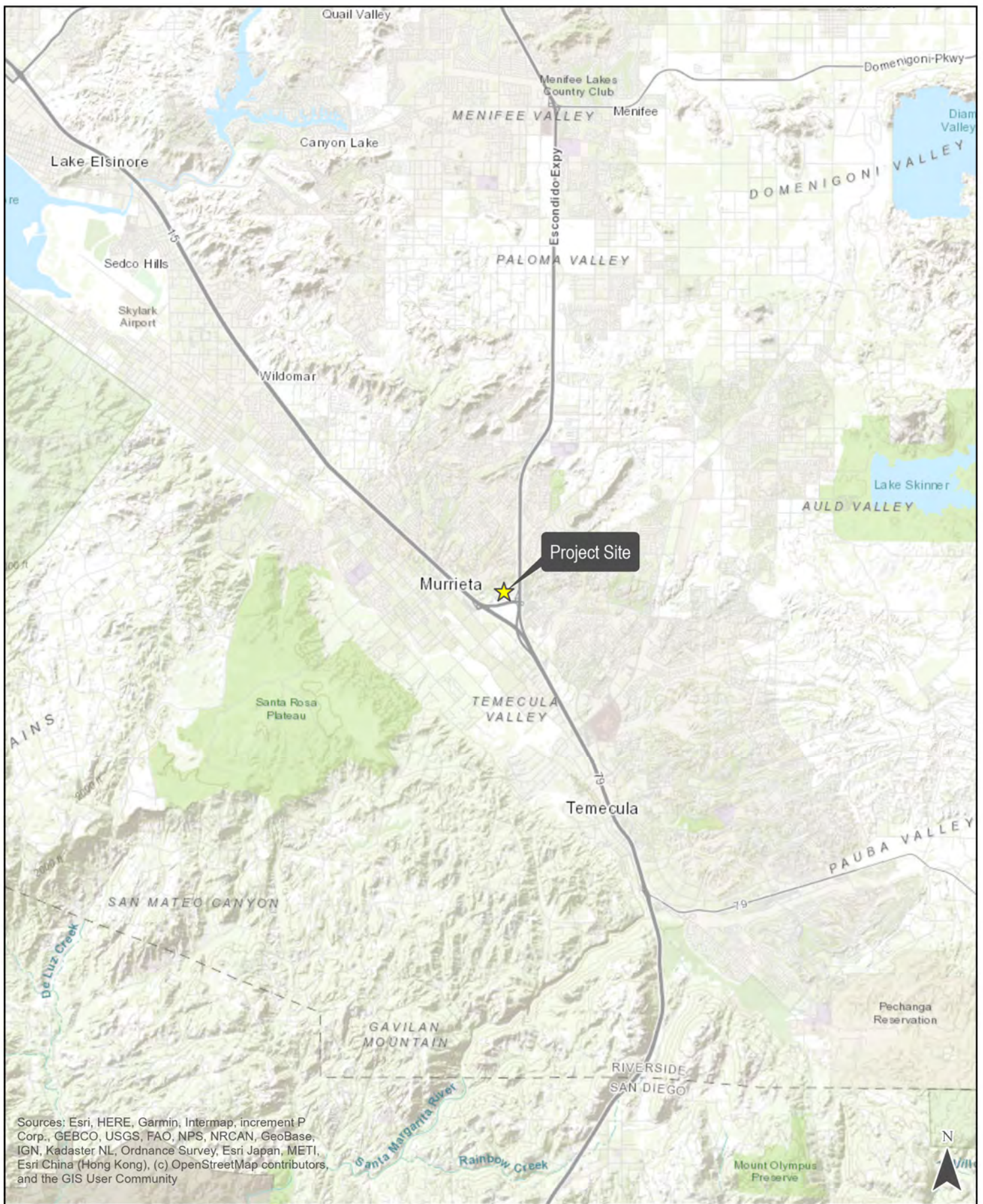
Opening year for the completion of the expansion project was assumed to be Year 2023.

Figure 2–3 depicts the Project Site Plan.

2.3 Project Access

Regional access is available to the site via Interstate 15 and Interstate 215, utilizing the Murrieta Hot Springs Road interchange. The main project entrance is located on Medical Center Drive, north of Murrieta Hot Springs Road, east of Hancock Avenue.

A northerly access is provided for ambulances and service vehicles. A detailed discussion on project access is provided in *Section 10.0* of this report.







3.0 STUDY AREA, ANALYSIS SCENARIOS, APPROACH AND METHODOLOGY

3.1 Study Area

The study area for this project encompasses locations affected by proposed project access. The scope of the study area was developed in coordination with City staff using existing traffic volumes, the proposed project distribution, and a working knowledge of the local transportation. *Appendix A* contains the scoping agreement.

The intersections and segments included in the study area are listed below:

INTERSECTIONS

1. Hancock Avenue / Murrieta Hot Springs Road
2. Hancock Avenue / Medical Center Drive
3. Hancock Avenue / Walsh Center Drive

SEGMENTS

1. Hancock Avenue: Murrieta Hot Springs Road to Medical Center Drive
2. Hancock Avenue: Medical Center Drive to Walsh Drive

3.2 Analysis Scenarios

This traffic analysis assesses the study area intersections and street segments in the project study area to determine and evaluate the traffic effects on the local circulation system due to the proposed project. A total of three (3) scenarios are analyzed in this study, including:

- Existing
- Near-Term Opening Year 2023
- Near-Term Opening Year 2023 + Project

3.3 Analysis Approach

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

There are various methodologies used to analyze signalized intersections, unsignalized intersections, and street segments. The measure of effectiveness for intersection and segment operations is level of service (LOS), which denotes the operating conditions which occur at a given intersection or on a given roadway segment under various traffic volume loads.

LOS is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Levels of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

In the Highway Capacity Manual 6th Edition, (HCM 6), Level of Service for signalized intersections is defined in terms of delay. The level of service analysis results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

3.3.1 Signalized Intersections

For signalized intersections, LOS criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Table 3–1 summarizes the signalized intersections levels of service descriptions. **Table 3–2** depicts the intersection LOS and corresponding delay ranges, which are based on overall intersection delay (signalized intersections) and the average control delay for any minor movement (unsignalized intersections), respectively. LOS relative to signalized and unsignalized intersection is further described below.

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

TABLE 3-1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

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

TABLE 3-2
INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: Highway Capacity Manual 6th edition

3.3.2 Unsignalized Intersections

For unsignalized intersections, LOS is determined by the computed or measured control delay and is defined for each minor movement: LOS is not defined for the intersection. Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

3.3.3 Street Segments

Street segment analysis is based upon the comparison of daily traffic volumes (ADTs) to the City of Murrieta's *Roadway Classification, Level of Service, and ADT Table*. **Table 3–3** provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics.

TABLE 3–3
CITY OF MURRIETA
DAILY ROADWAY CAPACITY VALUES

Facility	Number of Lanes	Maximum Two-Way Volume (ADT)		
		LOS C	LOS D	LOS E
Freeway	4	61,200	68,900	76,500
Freeway	6	94,000	105,800	117,500
Freeway	8	128,400	144,500	160,500
Freeway	10	160,500	180,500	200,600
Expressway	4	32,700	36,800	40,900
Expressway	6	49,000	55,200	61,300
Multi-Modal Corridor	4	28,700	32,300	35,900
Multi-Modal Corridor	6	43,100	48,500	53,900
Augmented Urban Arterial	8	57,400	64,600	71,800
Urban Arterial	6	43,100	48,500	53,900
Arterial	4	28,700	32,300	35,900
Arterial	6	43,100	48,500	53,900
Major	4	27,300	30,700	34,100
Secondary	4	20,700	23,300	25,900
Collector	2	10,400	11,700	13,000

Notes:

1. All capacity figures are based on optimum conditions and are intended as guidelines for planning purposes only.
2. Maximum two-way ADT values are based on the 1999 Modified Highway Capacity Manual Level of Service Tables, as defined in the Riverside County Congestion Management Program.

4.0 LEVEL OF SERVICE IMPACT THRESHOLDS

4.1 Intersections

Consistent with the acceptable LOS in the City of Murrieta's General Plan, the *2020 City of Murrieta Traffic Impact Analysis Preparation Guidelines* considers the following criteria for application in a traffic study to identify infrastructure improvements required to provide acceptable operations.

Signalized Intersections

- Any signalized study intersection operating at an acceptable LOS D or better without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increases delay by 5.0 or more seconds shall identify improvements to offset the increase in delay.

Unsignalized Intersections

- The addition of project related traffic causes the intersection to degrade from an acceptable LOS D or better to LOS E or F.
OR
- The project adds 5.0 seconds or more of delay to an intersection that is already projected to operate without project traffic at a LOS E or F,
AND
- The intersection meets the peak hour traffic signal warrant after the addition of project traffic.

4.2 Roadway Segments

According to the same guidelines, consistent with the acceptable LOS for the City, the following roadway segment requirements should be considered, and improvements recommended if the project exceeds the noted operational goals:

- Any study roadway segment operating at a LOS C or better without project traffic in which the addition of project traffic causes the segment to degrade to LOS E or F should identify improvements to achieve LOS C.
- As an exception, LOS D may be allowed in the North Murrieta Business Corridor, Clinton Keith/Mitchell, Golden Triangle North (Central Murrieta), South Murrieta Business Corridor, or other Focus Areas, or other employment centers.
- Any roadway segment that operates unacceptably in the no project scenario where the project adds traffic in excess of 5% of the roadway capacity (e.g. a volume-to-capacity ratio increase of 0.05) should identify improvements to add capacity to the segment.

5.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed Project requires an understanding of the existing transportation system within the project area.

Figure 5–1 shows an existing conditions diagram, including existing signalized intersections and lane configurations.

5.1 Existing Street Network

The following is a description of the existing street network in the study area.

Hancock Avenue

Hancock Avenue is classified as a 4-Lane Major Road in the City of Murrieta. It is currently built as a four-lane road with a center two-way-left-turn-lane (TWLTL). Curb, gutter, and sidewalks are provided along both curbs. Bike lanes are provided north of Medical Center Drive. The posted speed limit is 45 mph.

Medical Center Drive

Medical Center Drive is an unclassified roadway in the City of Murrieta. It is currently built as a two-lane undivided road providing access east of Hancock Avenue to the Rancho Springs Medical Center and to commercial/employment opportunities west of Hancock Avenue.

Walsh Center Drive

Walsh Center Drive is an unclassified roadway in the City of Murrieta. It is currently built as a two-lane undivided road providing access to multi-family residential and commercial retail uses via its intersection with Hancock Avenue in the east and Sparkman Court in the west.

Murrieta Hot Springs Road

Murrieta Hot Springs Road is classified as an augmented Urban Arterial in the City of Murrieta Circulation Element. Currently it is built as a 7-lane divided road with three lanes westbound and four lanes eastbound and a raised median. Curb, gutter and sidewalks are provided along both curbs. The posted speed limit is 45 mph.

Bicycle, pedestrian, and transit conditions are described in more detail in *Section 11.0*, Active Transportation Review.

5.2 Existing Traffic Volumes

Table 5–1 is a summary of the most recent available average daily traffic volumes (ADTs) from LLG counts in December 2019 when area schools were in session. Manual counts at the study area intersections, including bicycle and pedestrian counts, were also conducted at the same time.

Figure 5–2 depicts the Existing Traffic Volumes. **Appendix B** contains the manual count sheets.

TABLE 5–1
EXISTING TRAFFIC VOLUMES

Street Segment	ADT ^a
Hancock Ave	
1. Murrieta Hot Springs Road to Medical Center Drive ^b	14,927
2. Medical Center Drive to Walsh Drive	13,193

Footnotes:

- a. Average Daily Traffic Volumes.
- b. The raw ADT collected on Hancock Avenue between Murrieta Hot Springs Road and Medical Center Drive was observed as 11,713 ADT. Approaching Murrieta Hot Springs Road from the north on Hancock Avenue would likely result in an increase in volume from adjacent land uses. Therefore, this volume was increased using peak hour intersection volumes on Hancock Avenue at its intersection with Murrieta Hot Springs Road based on professional engineering judgment.



Figure 5-1
Existing Conditions Diagram



6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Levels of Service

Table 6–1 summarizes the Existing peak hour intersection operations. As seen in *Table 6–1*, all intersections are calculated to operate at acceptable LOS D or better.

Appendix C provides the Existing peak hour intersection analysis worksheets.

**TABLE 6–1
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Delay ^a	LOS ^b
1. Hancock Avenue / Murrieta Hot Springs Rd	Signal	AM	11.4	B
		PM	10.3	B
2. Hancock Avenue / Medical Center Drive	Signal	AM	16.2	B
		PM	21.4	C
3. Hancock Avenue / Walsh Center Drive	TWSC ^c	AM	17.1	C
		PM	17.1	C

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

6.2 Daily Street Segment Levels of Service

Table 6–2 summarizes the Existing segment operations. As seen in *Table 6–2*, both study area segments are calculated to currently operate at LOS C or better.

TABLE 6–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Classification	Capacity (LOS E) ^a	ADT ^b	LOS ^c	V/C ^d
Hancock Avenue					
1. Murrieta Hot Springs Road to Medical Center Drive	4-lane Major Road	34,100	14,927	C+	0.438
2. Medical Center Drive to Walsh Drive	4-lane Major Road	34,100	13,193	C+	0.387

Footnotes:

- a. Capacities based on City of Murrieta Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service. “C+” represents a LOS of C or better.
- d. Volume to Capacity.

7.0 PROJECT TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

7.1 Trip Generation

The trip generation rates for the “Hospital” land use from the *Institute of Transportation Engineer Trip Generation Manual, 10th Edition* were used to develop the trip generation for the proposed project.

It should be noted that following the completion of this traffic analysis, the conceptual site plan was reduced from 43,000 square feet to 36,000 square feet. Therefore, this analysis represents a conservative assessment of the project’s effect on traffic conditions by approximately 16%.

Table 7–1 tabulates the total project traffic generation. The total project is calculated to generate approximately 461 ADT with 38 AM peak hour trips (26 inbound / 12 outbound) and 42 PM peak hour trips (13 inbound / 29 outbound).

**TABLE 7–1
PROJECT TRIP GENERATION**

Land Use	Size	Daily Trip Ends (ADTs) ^a		Peak Hour	Rate ^b	In:Out	Volume		
		Rate ^b	Volume			% Split ^b	In	Out	Total
Hospital	43 KSF	10.72 /KSF	461	AM	0.89	68:32	26	12	38
				PM	0.97	32:68	13	29	42

Footnotes:

- a. ADT = Average Daily Traffic.
- b. Rates taken from the Institute of Transportation Engineers Trip Generation Handbook, 10th Ed.

General Notes:

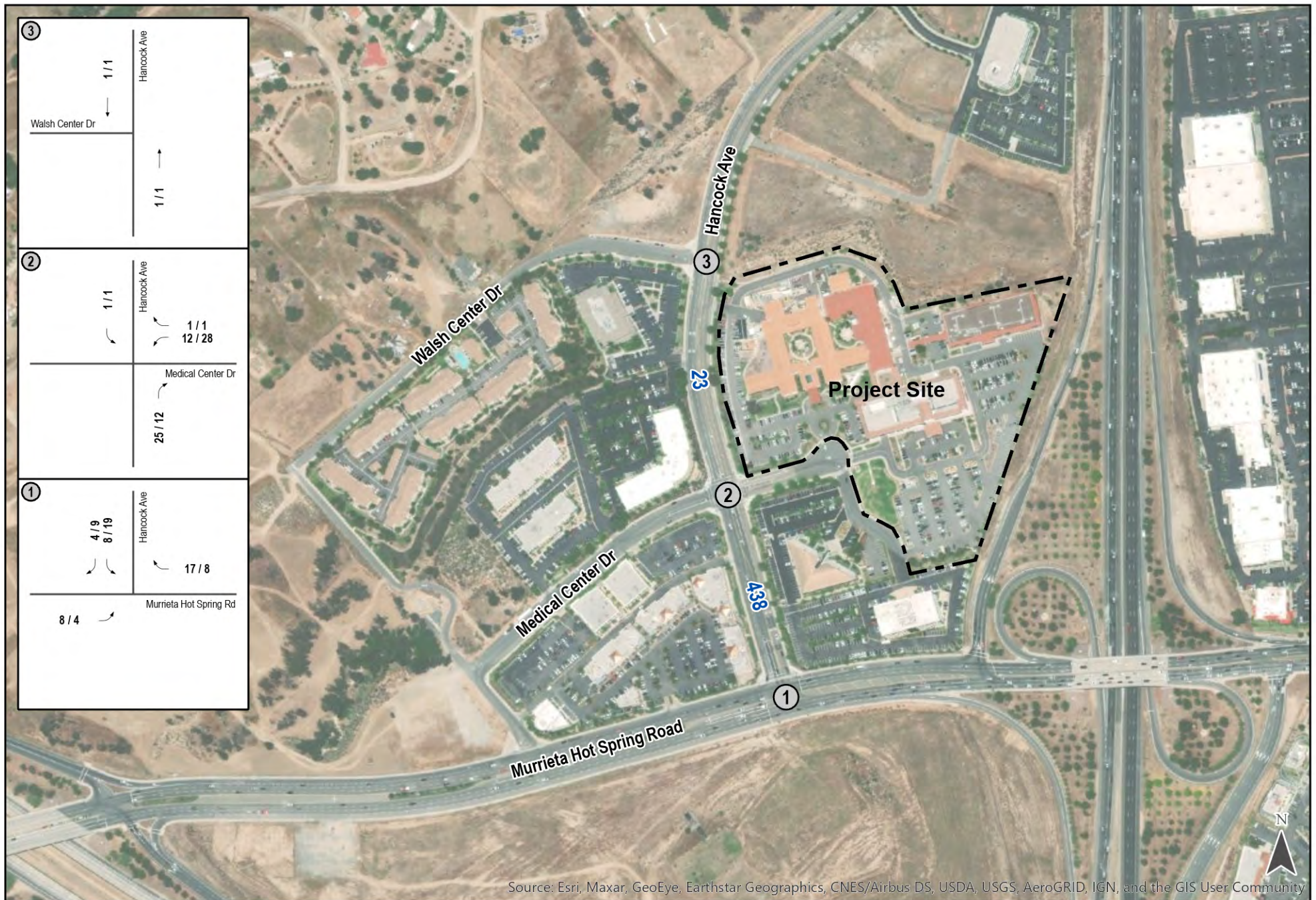
- 1. KSF = Thousand square feet.

7.2 Trip Distribution and Assignment

Trip distribution is the process of determining traffic percentage splits on the regional and local roadway network. Trip distribution for the project was based upon the existing traffic patterns, the land use characteristics of the project, the roadway network and the general location of other land uses to which project trips would originate or terminate.

Figure 7–1 depicts the Project Trip Distribution and **Figure 7–2** depicts the Project Trip Assignment.





8.0 NEAR-TERM OPENING YEAR 2023 AND CUMULATIVE PROJECTS CONDITIONS

8.1 Cumulative Projects

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near-future. LLG coordinated with City of Murrieta staff to identify relevant, pending cumulative projects in the study area that could be constructed and generating traffic in the study area vicinity by the time of project opening. Based on this research, following cumulative projects are planned nearby that would add traffic to study area intersections and street segments.

Table 8–1 lists a summary of all cumulative projects.

1. Los Alamos Community (DP-2014-490)

The proposed Los Alamos Community project includes the development of approximately 542 multi-family residential dwelling units. The site is located south of Los Alamos Road and east of Monroe Avenue in the City of Murrieta. The project is estimated to generate 3,604 daily trips with 276 AM peak hour trips (54 inbound and 222 outbound) and 336 PM peak hour trips (217 inbound and 119 outbound).

2. The Ranch (previously called Jefferson & Ivy) (DP-2017-1397)

The Ranch project is proposed to be developed with approximately 333 multi-family residential dwelling units by 2021. The site is located northwest corner of Jefferson Avenue / Ivy Street intersection in the City of Murrieta. The project is estimated to generate 2,214 daily trips with 170 AM peak hour trips (33 inbound and 137 outbound) and 206 PM peak hour trips (133 inbound and 73 outbound).

3. Tentative Tract Map (TTM) No. 36848 (SPA-011-3144)

The proposed Tentative Tract Map No. 36848 includes the development of up to 86 single family residential units. The site is located south of Ivy Street between Washington Avenue and Adams Avenue in the City of Murrieta. The project is estimated to generate 819 daily trips with 64 AM peak hour trips (16 inbound and 48 outbound) and 86 PM peak hour trips (54 inbound and 32 outbound).

4. Golden Eagle Apartments (DP-2012-3267)

The Golden Eagle Apartments project is proposed to be developed with approximately 112 apartment dwelling units. The site is located north of Murrieta Hot springs Road and east of Via Princesa in the City of Murrieta. The project is estimated to generate 745 daily trips with 57 AM peak hour trips (11 inbound and 46 outbound) and 69 PM peak hour trips (45 inbound and 24 outbound).

5. Murrieta 196 (Murrieta 180) Apartments (DPO-2013-3335)

The Murrieta 196 Apartments project is proposed to be developed with 196 apartment dwelling units. The site is located south of Murrieta Hot Springs Road, approximately 250 feet east of Princesa (East), in the City of Murrieta. The project is estimated to generate 1,303 daily trips with 100 AM peak hour trips (20 inbound and 80 outbound) and 121 PM peak hour trips (78 inbound and 43 outbound).

6. Sial Medical Plaza (DP-2016-785)

The Sial Medical Plaza project is proposed to consist of 20,826 square feet of medical office use. The project is located at 25142 Hancock Avenue, in the City of Murrieta. The project is estimated to generate 725 daily trips with 58 AM peak hour trips (45 inbound and 13 outbound) and 72 PM peak hour trips (20 inbound and 52 outbound).

7. Corporate Crossroads/Whittaker Office Complex (DP-02-474/RPO-007-2570)

The proposed Corporate Crossroad/Whittaker Office Complex project includes the development of four buildings with a total of 273,120 square feet. The site is located on a vacant parcel between Hancock Avenue and I-215, in the “Golden Triangle” area of the City of Murrieta. The project is estimated to generate 2,871 daily trips with 415 AM peak hour trips (365 inbound and 50 outbound) and 386 PM peak hour trips (66 inbound and 320 outbound).

8. Holiday Inn Express Hotel (DP-2016-1010)

The Holiday Inn Express Hotel project is proposed to consist of a 104-room hotel, 8,500 square feet of retail uses, 12,100 square feet of quality restaurant, 4,000 square feet of fast food restaurant with drive-thru, and 2,000 square feet of coffee shop with drive-thru. The project site is located along Monroe Avenue, east of I-15 and north of Los Alamos Road, in the City of Murrieta. The project is estimated to generate 4,062 daily trips with 312 AM peak hour trips (166 inbound and 146 outbound) and 277 PM peak hour trips (150 inbound and 127 outbound).

9. Jimmy’s Carwash (DP-2016-1236)

The proposed Jimmy’s Carwash project includes the development of a 3,656-square foot car wash facility. The site is located between Avenida Acacias and Los Alamos Road, southwesterly of Whitewood Road in the City of Murrieta. The project is estimated to generate 709 daily trips with 38 AM peak hour trips (20 inbound and 18 outbound) and 68 PM peak hour trips (33 inbound and 35 outbound).

10. Murrieta Gateway (DP-2017-1391)

The Murrieta Gateway project is proposed to consist of a 188,910-square foot industrial park, 131,255-square foot business park, a 158-room all suites hotel, and a gas station/convenience store/car wash with 16 fueling positions. The site is located on the southwest quadrant of Jefferson Avenue and the future Hawthorn Street in the City of Murrieta, California. The project is estimated to generate 5,439 daily trips with 333 AM peak hour trips (199 inbound and 134 outbound) and 356 PM peak hour trips (153 inbound and 203 outbound).

11. American Tire Depot (DP-2016-1146)

The American Tire Depot project is proposed to construct 4,640 square feet for tire and minor auto repair services. The site is located on the south side of Los Alamos and westerly of Whitewood Road. The project is estimated to generate 132 daily trips with 13 AM peak hour trips (8 inbound and 5 outbound) and 18 PM peak hour trips (8 inbound and 10 outbound).

12. Prestige Golf Cars (DP-2017-1440)

The proposed Prestige Golf Cars project includes the development of a 22,660-square foot golf cart sales and RV storage facility. The site is located on the west side of Whitewood Road and north of Los Alamos Road. The project is estimated to generate 113 daily trips with 10 AM peak hour trips (9 inbound and 1 outbound) and 17 PM peak hour trips (5 inbound and 12 outbound).

13. Gas Station on MHSR (DP-2018-1682)

The proposed Gas Station on MHSR includes the development of a 7,200-square foot convenience store with 20 fueling stations and a car wash. The site is located at 40175 Murrieta Hot Springs in the City of Murrieta. The project is estimated to generate 4,208 daily trips with 283 AM peak hour trips (144 inbound and 139 outbound) and 280 PM peak hour trips (143 inbound and 137 outbound).

14. Walsh Center Apartments (DP number currently unknown)

The Walsh Center Apartments project is a proposed residential development consisting of 380 multi-family residential units. The project site is located north of Murrieta Hot Springs Road along Walsh Center Drive between I-15 and I-215 in the City of Murrieta. The project is calculated to generate 2,782 daily trips with 175 AM peak hour trips (40 inbound and 135 outbound) and 213 PM peak hour trips (134 inbound and 79 outbound)

Figure 8-1 and *Figure 8-2* depict the Cumulative Projects Location Map and Cumulative Projects Traffic Volumes, respectively.

Cumulative projects traffic volumes were then added to the existing baseline traffic volumes to arrive at Near-Term Opening Year 2023 conditions.

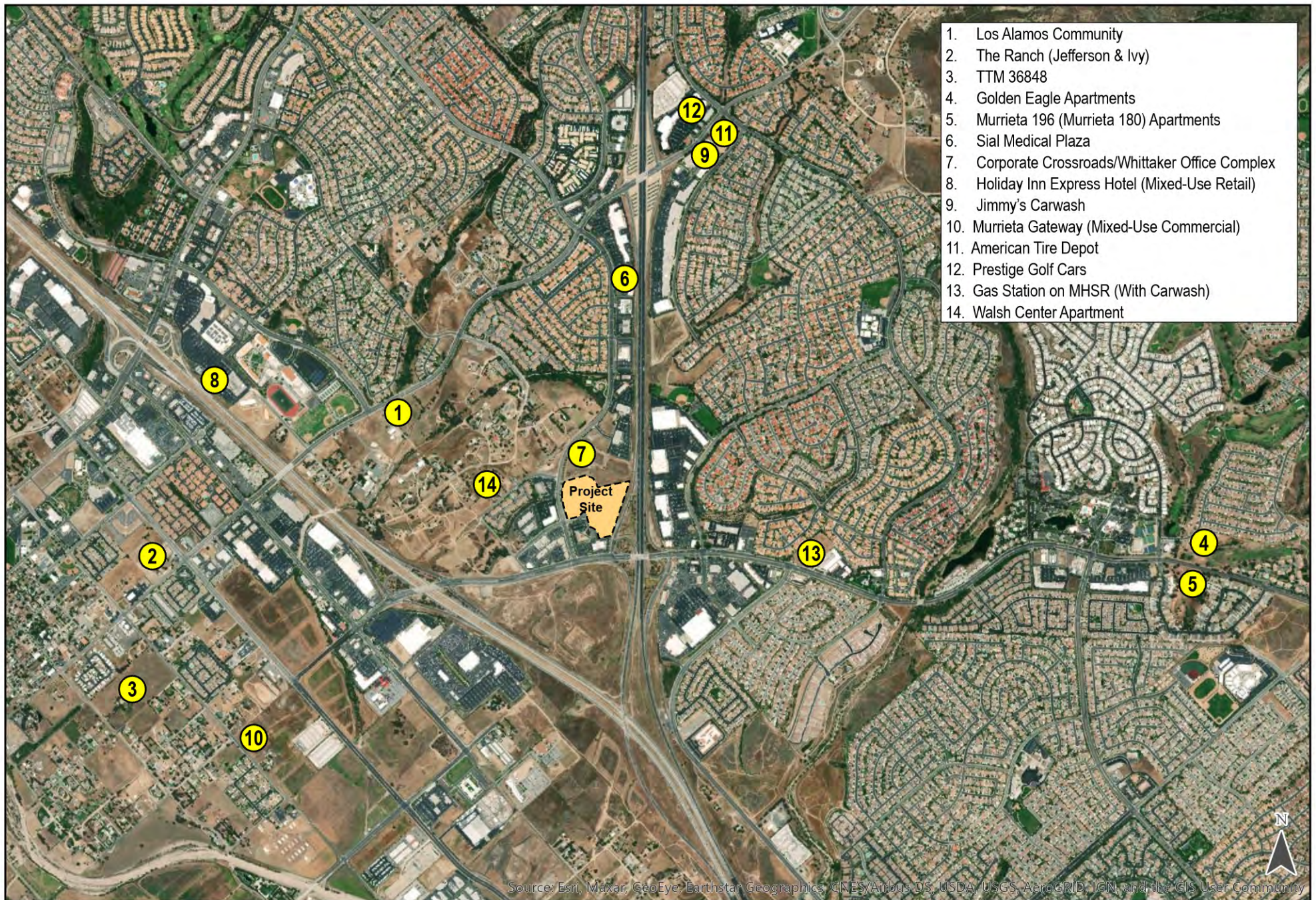
Figure 8-3 and *Figure 8-4* depict the Near-Term Opening Year 2023 Traffic Volumes without and with the Project, respectively.

TABLE 8-1
CUMULATIVE PROJECTS TRIP GENERATION SUMMARY

Cumulative Project	Size	ADT	AM Peak Hour Volume			PM Peak Hour Volume		
			In	Out	Total	In	Out	Total
1. Los Alamos Community ^a	542 DU	3,604	54	222	276	217	119	336
2. The Ranch (Jefferson & Ivy) ^a	333 DU	2,214	33	137	170	133	73	206
3. TTM 36848 ^a	86 DU	819	16	48	64	54	32	86
4. Golden Eagle Apartments ^a	112 DU	745	11	46	57	45	24	69
5. Murrieta 196 (Murrieta 180) Apartments ^a	196 DU	1,303	20	80	100	78	43	121
6. Sial Medical Plaza ^a	20.826 KSF	725	45	13	58	20	52	72
7. Corporate Crossroads/Whittaker Office Complex ^a	273.120 KSF	2,871	365	50	415	66	320	386
8. Holiday Inn Express Hotel (Mixed-Use Retail) ^a	Various	4,062	166	146	312	150	127	277
9. Jimmy's Carwash ^a	1 No.	709	20	18	38	33	35	68
10. Murrieta Gateway (Mixed-Use Commercial) ^a	Various	5,439	199	134	333	153	203	356
11. American Tire Depot ^b	4.640 KSF	132	8	5	13	8	10	18
12. Prestige Golf Cars ^c	22.7 KSF	113	9	1	10	5	12	17
13. Gas Station on MHSR (With Carwash) ^d	20 Pumps	4,208	144	139	283	143	137	280
14. Walsh Center Apartment	380 DU	2,782	40	135	175	134	79	212

Footnotes:

- a. Trip rates obtained from City of Murrieta traffic studies.
- b. Trip rates based on land use 848 - Tire Store, obtained from ITE Trip Generation Manual, 10th edition.
- c. Trip rates based on land use 842 - Recreational Vehicle Sales, obtained from ITE Trip Generation Manual, 10th edition.
- d. Trip rates based on land use 945 - Gasoline/Service with Convenience Market, obtained from ITE Trip Generation Manual, 10th edition.



1. Los Alamos Community
2. The Ranch (Jefferson & Ivy)
3. TTM 36848
4. Golden Eagle Apartments
5. Murrieta 196 (Murrieta 180) Apartments
6. Sial Medical Plaza
7. Corporate Crossroads/Whittaker Office Complex
8. Holiday Inn Express Hotel (Mixed-Use Retail)
9. Jimmy's Carwash
10. Murrieta Gateway (Mixed-Use Commercial)
11. American Tire Depot
12. Prestige Golf Cars
13. Gas Station on MHSR (With Carwash)
14. Walsh Center Apartment







9.0 ANALYSIS OF NEAR-TERM OPENING YEAR 2023 SCENARIOS

9.1 Near-Term Opening Year 2023

9.1.1 Intersection Analysis

Table 9–1 summarizes the Near-Term Opening Year 2023 peak hour intersection operations. According to this table, all intersections are calculated to operate at LOS D or better the following:

- Hancock Ave / Walsh Center Drive (LOS F during the PM peak hour)

The eastbound shared left/right-turning movement delay is reported for the above intersection. Given the high southbound volumes in the PM peak hour along Hancock Avenue, the eastbound minor street left-turn experiences a high delay turning onto northbound Hancock Avenue.

Appendix D provides the Near-Term Opening Year 2023 peak hour intersection analysis worksheets.

9.1.2 Segment Operations

Table 9–2 summarizes the Near-Term Opening Year 2023 segment operations. Based on this table, all study area segments are calculated to continue to operate at LOS C or better.

9.2 Near-Term Opening Year 2023 + Project

9.2.1 Intersection Analysis

Table 9–1 summarizes the Near-Term Opening Year 2023 + Project peak hour intersection operations. Based on this table, with the addition of project traffic volumes all intersections are calculated to continue to operate at LOS D or better except the following:

- Hancock Ave / Walsh Center Drive (LOS F during the PM peak hour)

The eastbound shared left/right-turning movement delay is reported for the above intersection. Given the high southbound volumes in the PM peak hour along Hancock Avenue, the eastbound minor street left-turn experiences a high delay turning onto northbound Hancock Avenue.

Appendix E provides the Near-Term Opening Year 2023 peak hour intersection analysis worksheets.

9.2.2 Segment Operations

Table 9–2 summarizes the Near-Term Opening Year 2023 + Project segment operations. As seen in **Table 9–2**, with the addition of project traffic, both study area segments are calculated to continue to operate at LOS C or better.

Using the City's applied LOS impact threshold, no deficiencies at study area intersection or segments are the direct result of project traffic, nor does the project reduce pre-existing deficiencies beyond acceptable levels.

TABLE 9-1
NEAR-TERM OPENING YEAR 2023 INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Near-Term Opening Year 2023		Near-Term Opening Year 2023 + Project		Δ^c	LOS Threshold Exceeded?
			Delay ^a	LOS ^b	Delay	LOS	Delay	LOS		
1. Hancock Avenue / Murrieta Hot Springs Rd	Signal	AM	11.4	B	15.3	B	15.6	B	0.3	No
		PM	10.3	B	16.6	B	17.6	B	1.1	No
2. Hancock Avenue / Medical Center Drive	Signal	AM	16.2	B	18.8	B	19.8	B	1.0	No
		PM	21.4	C	24.6	C	29.3	C	4.7	No
3. Hancock Avenue / Walsh Center Drive	TWSC ^d	AM	17.1	C	32.9	D	32.9	D	0.0	No
		PM	17.1	C	61.2	F	61.2	F	0.0	No

Footnotes:

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Increase in delay due to Project Traffic
- d. TWSC – Two-Way Stop Controlled intersection. Minor critical movement delay is reported.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 9-2
NEAR-TERM OPENING YEAR 2023 STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E) ^a	Existing			Near-Term Opening Year 2023			Near-Term Opening Year 2023 + Project			Δ^e	LOS Threshold Exceeded?
		ADT ^b	LOS ^c	V/C ^d	ADT	LOS	V/C	ADT	LOS	V/C		
Hancock Avenue												
1. Murrieta Hot Springs Rd to Medical Center Dr	34,100	14,927	C+	0.438	18,887	C+	0.554	19,325	C+	0.567	0.013	No
2. Medical Center Dr to Walsh Center Dr	34,100	13,193	C+	0.387	17,253	C+	0.506	17,276	C+	0.507	0.001	No

Footnotes:

- a. Capacities based on City of Murrieta Roadway Classification Table.
- b. Average Daily Traffic Volumes.
- c. Level of Service. "C+" represents a LOS of C or better.
- d. Volume to Capacity.
- e. Increase in delay due to Project Traffic

10.0 SITE ACCESS REVIEW

10.1 Existing Site Access

The main access to the project site is provided from Medical Center Drive via a signalized intersection with Hancock Avenue serving both employees and visitors. Medical Center Drive terminates in a cul-de-sac providing access north to the east and west wing, east to main hospital entrance and emergency area. The same cul-de-sac provides access south to the adjacent property. This access configuration can overwhelm driver navigation options and make visitor wayfinding difficult.

A secondary access is also provided at the northwest corner of the site. This access point is restricted to ambulance and shipping/receiving vehicles only. However, based on field observations, visitors and employees also use this access point at times. This may be a potential issue, particularly during more congested times, given the higher speeds on Hancock Avenue and uncontrolled intersection. As traffic volumes increase due to cumulative background traffic, the situation may be exacerbated.

10.2 Proposed Site Access

The project proposes a number of site circulation and access improvements to address existing deficiencies. Such improvements include an enhanced cul-de-sac that will help formalize turning movements as drivers approach the terminus of the Health Center Drive. The enhanced cul-de-sac is proposed to have a landscaped center median.

The main hospital entrance will also be reconfigured to provide better line of sight and more efficient circulation. A new entry monument sign will also provide clear wayfinding for visitors.

No improvements are proposed at the secondary access point that serves ambulance and shipping/receiving.

10.2.1 Recommended Site Access Improvements

Based on the review of existing conditions and the proposed site plan, the following additional improvements are recommended:

- The secondary access shall be evaluated to ensure adequate sight distance is provided to the satisfaction of the City engineer.
- Provide enhanced signage to improve visibility indicating the use of this access strictly for ambulance and service vehicles.
- To facilitate emergency vehicle access, the project should verify that Emergency Vehicle Preemption (EVP) equipment is installed and operational at the signalized intersections along Hancock Avenue at Murrieta Hot Springs Road and Medical Center Drive. Emergency Vehicle Preemption technology is utilized to override signal operations and provide priority to approaching emergency responders. EVP is typically a requirement for all traffic signals.

11.0 ACTIVE TRANSPORTATION REVIEW

This section presents the pedestrian, bicycle, and transit conditions in the Project area.

11.1 Pedestrian Traffic Review

Continuous sidewalks are provided along both sides of Hancock Avenue, Medical Center Drive, and Murrieta Hot Springs Road.

ADA compliant curb ramps are provided at the signalized intersections of Murrieta Hot Springs Road/ Hancock Avenue and Medical Center Drive/ Hancock Avenue.

The signalized intersection of Murrieta Hot Springs Road/ Hancock Avenue currently only allows pedestrian crossing along the north leg of the intersection. There are no land uses on the south side of Murrieta Springs Road that pedestrians are currently destined to or oriented from that would necessitate a crossing along Murrieta Hot Springs Road. A flashing pedestrian signal is provided for the existing striped crosswalk.

The signalized intersection of Medical Center Drive/ Hancock Avenue provides striped pedestrian crossings on all four legs of the intersection controlled by flashing pedestrian signals.

11.2 Bicycle Traffic Review

Currently, there is a Class II bike lane on Hancock Avenue from Medical Center Drive to Los Alamos Road. South of Medical Center Drive, there are no bike lanes approaching Murrieta Hot Springs Road.

Per the City of Murrieta General Plan, Class II bike lanes are planned for the entirety of Hancock Avenue. Additionally, a Class II bike lane is planned for Murrieta Hot Springs Road.

Figure 11-1 illustrates the Active Transportation conditions in the study area.

11.3 Transit Traffic Review

Bus stops providing route signage and benches are located near the intersection of Hancock Avenue and Medical Center Drive on both sides of the street. Routes 23 and 61 serve the project study area along Hancock Avenue. Route 23 operates hourly between 7:00 AM and 8:00 PM on weekdays. Route 61 operates hourly between 5:00 AM and 7:30 PM on weekdays.

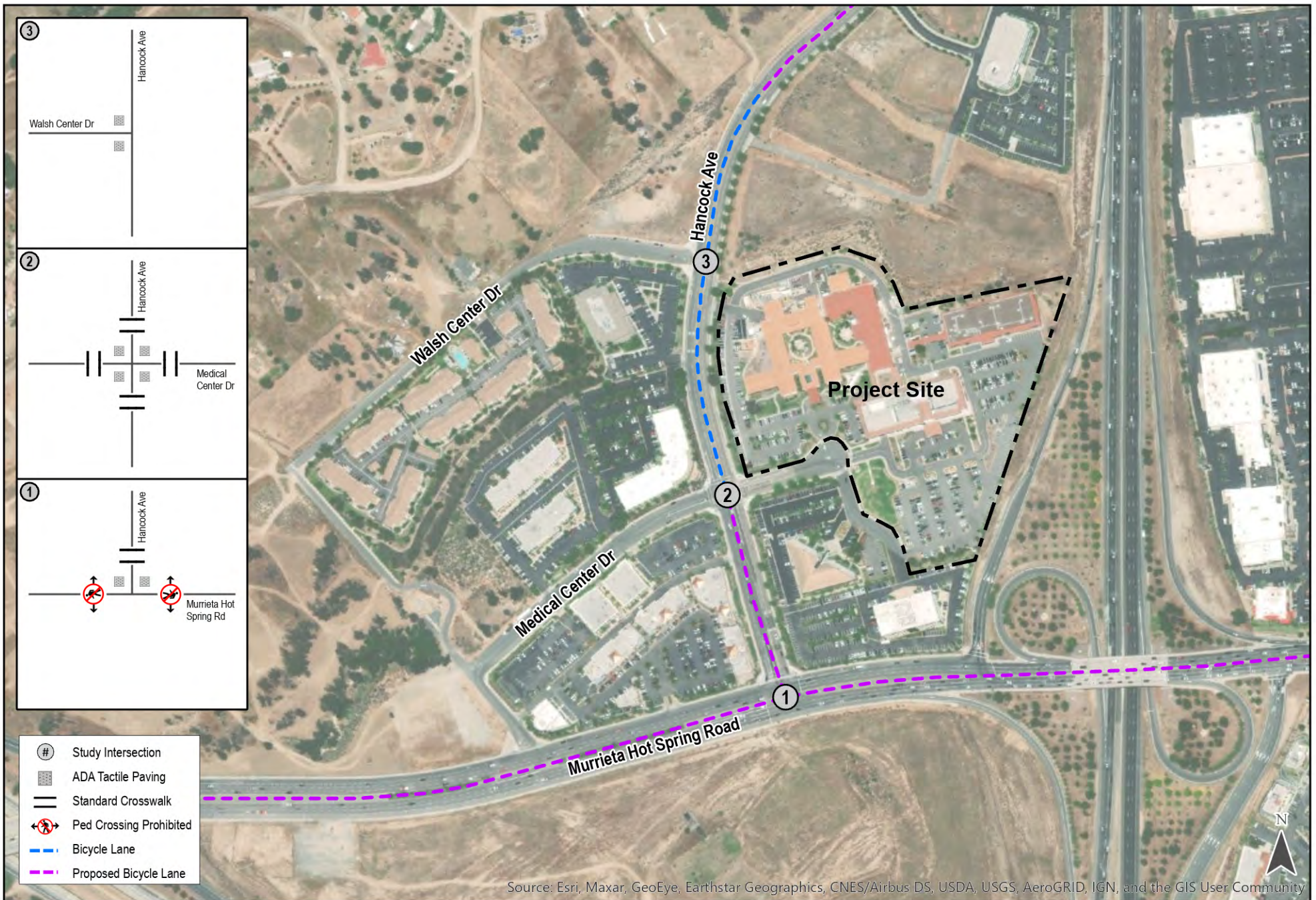
Based on information provided by the Riverside Transit Authority (RTA), ridership at these stops is low with a daily average of five boardings/ five alightings northbound along the route and six boardings/ six alightings in the southerly direction.

Figure 11-2 illustrates the Transit Conditions in the study area.

11.4 Active Transportation Recommendations

The following active transportation improvements are recommended:

- Hancock Avenue/ Medical Center Drive
 - Restripe the existing crosswalks with high visibility continental markings to the satisfaction of the City engineer.
- Hancock Avenue/ Secondary Access Driveway
 - Reconstruct the existing curb returns to meet ADA compliance standards.
- Hancock Avenue between Medical Center Drive and Murrieta Springs Road
 - If feasible within the existing curb-to-curb roadway width, stripe a Class II bike lane between Medical Center Drive and Murrieta Hot Springs Road.
- Enhance the existing bus stop located along the project frontage a with a bus shelter and trash receptacle consistent with Riverside Transit Authority (RTA) design standards outside the sidewalk area.
- Provide short-term bicycle parking on-site to current City standards.





12.0 IMPROVEMENTS AND RECOMMENDATIONS

12.1 Operational Deficiencies

Based on the intersection and segment analyses provided in this report, no LOS impact thresholds were exceeded with the addition of project traffic.

However, the unsignalized intersection of Hancock Avenue/ Walsh Center Drive is shown to operate at LOS F conditions under Near-Term Opening Year 2023 conditions, both without and with the project. In coordination with the City, the signalization of this intersection is being reviewed, however a Capital Improvement Project (CIP) has not yet been established.

As part of the transportation review, a signal warrant analysis was completed. A signal warrant analysis is provided in *Appendix F*. As shown in *Appendix F*, the intersection meets the MUTCD peak hour warrant, however the project does not add any measurable traffic or delay to the intersection. Despite the project not contributing to operational deficiencies at this location, signalization may provide operational improvements to the secondary access by enhancing vehicle platooning/gaps. Therefore, if warranted and deemed beneficial to overall vehicle operations by the City engineer, the project may contribute to towards the future signalization. The project's fair share contribution is calculated below. However, if 100% cost participation is provided then any cost above the fair share contribution may offset other development fees.

12.2 Fair Share Calculations

It is recommended that the project make a fair share contribution towards providing a traffic signal and other related improvements at the intersection of Hancock Avenue/ Walsh Center Drive.

Table 12-1 summarizes the fair share calculations for this location. The higher of the AM and PM fair share percentages is 0.39% at the Hancock Street / Walsh Center Drive. It is recommended that the project pay a fair share contribution towards the future improvements at this intersection discussed above.

**TABLE 12-1
FAIR SHARE CALCULATIONS**

Intersection	Peak Hour	Existing	Project	Near-Term Opening Year 2023 + Project	Increase	Fair Share %
		A	B	C	D = C-A	E = B/D%
3. Hancock Ave / Walsh Center Dr	AM	1,093	2	1,606	513	0.39%
	PM	1,155	2	1,721	566	0.35%

Note:

It should be noted that the fair share calculations are currently based on the 43,000 SF analyzed in this report. The 36,000 SF project would result in a lower fair share contribution than calculated in this table.

12.3 Summary of Recommended Improvements

The following off-site improvements are recommended:

- Hancock Avenue/ Walsh Center Drive intersection: Contribute a fair share towards installing a traffic signal and related improvements at this intersection to the satisfaction of the City traffic engineer.

The following site access improvements are recommended:

- The secondary access shall be evaluated to ensure adequate sight distance is provided to the satisfaction of the City engineer.
- Provide enhanced signage to improve visibility indicating the use of this access strictly for ambulance and service vehicles.
- To facilitate emergency vehicle access, the project should verify that Emergency Vehicle Preemption (EVP) equipment is installed and operational at the signalized intersections along Hancock Avenue at Murrieta Hot Springs Road and Medical Center Drive. Emergency Vehicle Preemption technology is utilized to override signal operations and provide priority to approaching emergency responders. EVP is typically a requirement for all traffic signals.

In addition, the following active transportation improvements should be considered:

- Hancock Avenue/ Medical Center Drive
 - Restripe the existing crosswalks with high visibility continental markings to the satisfaction of the City engineer.
- Hancock Avenue/ Secondary Access Driveway
 - Reconstruct the existing curb returns to meet ADA compliance standards.
- Hancock Avenue between Medical Center Drive and Murrieta Springs Road
 - If feasible within the existing curb-to-curb roadway width, stripe a Class II bike lane between Medical Center Drive and Murrieta Hot Springs Road.
- Enhance the existing bus stop located along the project frontage with a bus shelter and trash receptacle consistent with Riverside Transit Authority (RTA) design standards outside the sidewalk area.
- Provide short-term bicycle parking on-site to current City standards.

13.0 VEHICLE MILES TRAVELED

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

13.1 VMT Background

VMT is defined as the “amount and distance of automobile travel attributable to a project” per CEQA Guidelines Section 15064.3. VMT is a measure of the use and efficiency of the transportation network as well land uses in a region. VMTs are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (roundtrip) travel and is estimated for a typical weekday for the purposes of measuring transportation impacts.

13.2 Senate Bill 743

In September 2013, the Governor’s Office signed SB 743 into law, starting a process that fundamentally changes the way transportation impact analysis is conducted under CEQA. These changes include the elimination of auto delay, level of service (LOS), and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. The guidance identifies VMT as the most appropriate CEQA transportation metric, along with the elimination of Auto Delay/LOS for CEQA purposes statewide. The justification for this paradigm shift is that Auto Delay/LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions.

In December 2018, after over five years of stakeholder-driven development, the California Natural Resource Agency certified and adopted the CEQA Statute. Effective July 1, 2020, the VMT guidelines shall apply statewide.

13.3 CEQA Statute

The following is an excerpt from *Section 15064.3 Determining the Significance of Transportation Impacts*.

Subdivision (a): Purpose

This section describes specific considerations for evaluating a project’s transportation impacts. Generally, vehicle miles traveled is the most appropriate measure of transportation impacts. For the purposes of this section, “vehicle miles traveled” refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Except as provided in subdivision (b)(2) below (regarding roadway capacity), a project’s effect on automobile delay shall not constitute a significant environmental impact.

Subdivision (b): Criteria for Analyzing Transportation Impacts

While subdivision (a) sets forth general principles related to transportation analysis, subdivision (b) focuses on specific criteria for determining the significance of transportation

impacts. It is further divided into four subdivisions: (1) land use projects, (2) transportation projects, (3) qualitative analysis, and (4) methodology.

Subdivision (b)(1): Land Use Projects

Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

Subdivision (b)(2): Transportation Projects

Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

Subdivision (b)(3): Qualitative Analysis

If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

Subdivision (b)(4): Methodology

A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

Subdivision (c): Applicability

The provisions of this section shall apply prospectively as described in section 15007. A lead agency may elect to be governed by the provisions of this section immediately. Beginning on July 1, 2020, the provisions of this section shall apply statewide.

13.4 Local / Regional Agency Transition to SB743

The City of Murrieta has formally published the *Traffic Impact Analysis Preparation Guidelines* in May 2020. The analysis approach, methodology and significance criteria from this document has been utilized in this report.

14.0 VMT IMPACT THRESHOLDS

14.1 CEQA Thresholds

The City of Murrieta has selected VMT thresholds of significance based on the guidance/substantial evidence prepared in the City's General Plan Update and EIR as well as the Western Riverside Council of Governments (WRCOG) Implementation Study. Related to the City's approach to VMT in comparing a project to the City's General Plan Update and EIR and the potential analysis of CEQA VMT Impact Thresholds, two sections of CEQA are important to consider first:

1. Section 15183. Projects Consistent with a Community Plan or Zoning

(a) CEQA mandates that projects which are consistent with the development density established by existing zoning, community plan, or general plan policies for which an EIR was certified shall not require additional environmental review, except as might be necessary to examine whether there are project-specific significant effects which are peculiar to the project or its site. This streamlines the review of such projects and reduces the need to prepare repetitive environmental studies.

2. Section 15130. Discussion of Cumulative Impacts

(e) If a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact, as provided in CEQA Section 15183(j).

As such, and as noted above projects that are consistent with the General Plan Update EIR do not typically require additional environmental review, except in certain situations. Therefore impacts, whether in the local context or cumulative would start with consideration of the land use in the General Plan. Additionally, projects should consider whether a potential impact is addressed in the City's General Plan.

14.2 City Thresholds

A project would result in a significant project-generated VMT impact if either of the following conditions are satisfied:

- The baseline project-generated VMT per service population exceeds the City's baseline VMT per service population, or
- The cumulative project-generated VMT per service population exceeds the City's baseline VMT per service population.

The project's effect on VMT would be considered significant if it resulted in either of the following conditions to be satisfied:

- The baseline link-level boundary VMT per service population (City or subregional boundary) to increase under the plus project condition compared to the no project condition), or
- The cumulative link-level boundary VMT per service population (City or subregional boundary) to increase under the plus project condition compared to the no project condition).

The cumulative no project condition shall reflect the adopted Regional Transportation Plan Sustainable Communities Strategy; as such, if a project is consistent with the regional RTP/SCS, then the cumulative impacts shall be considered less than significant subject to consideration of other substantial evidence.

15.0 VMT ANALYSIS METHODOLOGY

Per the City's guidelines, a project-level VMT analysis should be conducted for land use projects, when deemed necessary by the Public Works/Engineering Department. The first step in the process is to conduct a screening assessment. For projects that do not screen out of VMT analysis the project generated VMT is compared to the VMT expected to be generated by the General Plan land use assumed for the project site. It is the City's intent to analyze project VMT to address impacts at the General Plan level.

The City's guidelines are reflective of the guidelines developed for Riverside County, through the regional WRCOG guidelines. The methodologies and significance thresholds presented below are based on the General Plan Update and the WRCOG regional recommendations; the City may modify these thresholds with alternative thresholds of significance and methodologies as appropriate.

15.1 Project Screening

According to the City's guidelines, a project that meets at least one of the following screening criteria would have less than significant VMT impact due to project characteristics and/or location.

1. Local serving retail projects less than 50,000 square feet may be presumed to have a less than significant impact absent substantial evidence to the contrary. Local serving retail generally improves the convenience of shopping close to home and has the effect of reducing vehicle travel.
2. Projects generating less than 110 daily vehicle trips regardless of whether consistent with the General Plan or not¹. This generally corresponds to the following "typical" development potentials:
 - a. A residential parcel map
 - b. 11 single-family housing units
 - c. 16 multi-family, condominiums, or townhouse housing units
 - d. 10,000 SF of office
 - e. 15,000 SF of light industrial²
 - f. 63,000 SF of warehouse²
3. Local-serving retail that primarily serves the City and/or adjacent cities

¹ This threshold ties directly to the OPR technical advisory and notes that CEQA provides a categorical exemption for existing facilities, including additions to existing structures of up to 10,000 square feet, so long as the project is in an area where public infrastructure is available to allow for maximum planned development and the project is not in an environmentally sensitive area. (CEQA Guidelines, § 15301, subd. (e)(2).) Typical project types for which trip generation increases relatively linearly with building footprint (i.e., general office building, single tenant office building, office park, and business park) generate or attract an additional 110-124 trips per 10,000 square feet. Therefore, absent substantial evidence otherwise, it is reasonable to conclude that the addition of 110 or fewer trips could be considered not to lead to a significant impact.

² Threshold may be higher depending on the tenant and the use of the site. This number was estimated using rates from ITE's Trip Generation Manual.

4. Office and other employment-related land uses reducing commutes outside the local area
5. Local-serving day care centers, pre-K and K-12 schools
6. Local parks and civic uses
7. Local-serving gas stations, banks and hotels (e.g. non-destination hotels)
8. Local serving community colleges that are consistent with SCAG RTP/SCS assumptions
9. Student housing projects

15.2 Non-Screened Development

As previously mentioned, a General Plan land use comparison analysis should be performed to evaluate a project's VMT impacts. Projects that do not screen out using the criteria noted above, shall conduct an analysis resulting in one of two outcomes:

1. VMT is less than the land use assumed in the General Plan – Less than Significant VMT impact and no need for further analysis in a TIA for VMT
2. VMT is more than the land use assumed in the General Plan – Likely Significant VMT impact and need for full analysis in a TIA for VMT

If a project's VMT is less than that assumed in the General Plan, a brief analysis comparing the data between the project and land use in the General Plan is required.

If a project's VMT is greater than that assumed in the General Plan, a complete analysis using the City's model or RIVCOM model shall be used to determine if the project would result in a significant VMT impact. This analysis should include "project generated VMT" and "project effect on VMT" estimates for the project traffic analysis zone(s) (or TAZs) under the following scenarios:

- Baseline conditions – Data to be obtained from the online screening map.
- Baseline plus project – The project is added to the model TAZ and a full base year without and with the project model run would determine VMT changes to the network. If this result is Less than Significant, then a cumulative analysis may not be required.
- Cumulative no project – If a cumulative analysis is required, this information can be obtained from WRCOG.
- Cumulative plus project – The project is added to the model TAZ and the General Plan land uses assumed for the site are reallocated in a nearby TAZ. If this is not possible and the project land uses are simply added into the TAZ with no reallocation of General Plan land uses, the limitations in the methodology should be acknowledged that the analysis may overstate the project's effect on VMT.

The VMT efficiency metrics for evaluating significant impacts from the model runs above should be summarized as follows:

1. Project generated VMT per service population compared to the City threshold as noted in the significance criteria section of this report.
2. Project effect on VMT; i.e. compare the no project Citywide or Regional VMT to the plus project total.

16.0 PROJECT VMT ANALYSIS

Based on the City of Murrieta's VMT screening criteria, the project falls under the "office and other employment-related land uses reducing commutes outside the local area" category that presumes a less than significant VMT impact would occur with the proposed land use. Therefore, no further analysis is required.

Per CEQA Section 15064.3 "Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be considered to have a less than significant transportation impact." The expansion of the Rancho Springs Medical Center will provide additional employment opportunities for area residents that may otherwise commute farther distances outside the region in search of employment.

Although the project is not located within a Transit Priority Area, there are two bus stops serving two routes in the area that are within ¼-mile walking distance of the site access which have the potential for increased ridership and/or service in the future that would further reduce project VMT.

Additionally, further support for this finding of less than significant is shown on the WRCOG VMT screening map which identifies the project site (noted as Traffic Analysis Zone – TAZ) as having a lower VMT per service population than the jurisdictional average for the County. **Appendix G** provides a screenshot of the screening map.

It is therefore concluded that the project would not result in a significant CEQA impact.

17.0 SIGNIFICANT VMT IMPACTS AND MITIGATION MEASURES

Given the project is presumed less than significant as proposed, no mitigation measures are required.

Recommendations are made in this report to facilitate improved non-auto centric circulation around the site. Improvements to the existing crosswalk at the Hancock Avenue/ Medical Center Drive intersection to restripe the crossing with high visibility continental crossings, striping a Class II bike lane, if feasible within the current cur-to-curb roadway width on Hancock Avenue between Medical Center Drive and Murrieta Hot Springs Road, providing on-site short-term bicycle parking, and enhancing the bus stop along the project frontage with a bus shelter and trash receptacle would encourage active transportation modes surrounding the project site further reducing project VMT.

TECHNICAL APPENDICES
RANCHO SPRINGS MEDICAL CENTER
EXPANSION
Murrieta, California
January 29, 2021

LLG Ref. 3-19-3093

APPENDIX A

SCOPING AGREEMENT

Exhibit A

SCOPING AGREEMENT FOR TRAFFIC IMPACT ANALYSIS

This letter acknowledges the City of Murrieta Public Works/Engineering Department requirements for traffic impact analysis of the following project. The analysis must follow the City Traffic Impact Analysis Preparation Guidelines dated May 2020.

Case No. (Required for submittal) _____
Related Cases - _____
SP No. _____
EIR No. _____
GPA No. _____
CZ No. _____
Project Name: Rancho Springs Medical Center Expansion
Project Address: 25500 Medical Center Drive, Murrieta, CA 92562
Project Description: 43,000 SF hospital expansion

	Consultant	Developer
Name:	<u>Lisncott, Law & Greenspan Engineers</u>	<u>HOK</u>
Address:	<u>4542 Ruffner Street, Ste 100 San Diego 92111</u>	<u>9530 Jefferson Boulevard, Culver City 90232</u>
Telephone:	<u>858-300-8800</u>	<u>310-838-9555</u>

A. Trip Generation Source: (ITE 9th Edition or other)

Current GP Land Use Office/Research Park
Current Zoning _____

Proposed Land Use Hospital
Proposed Zoning _____

	Current Trip Generation			Proposed Trip Generation		
	In	Out	Total	In	Out	Total
AM Trips	_____	_____	_____	<u>26</u>	<u>12</u>	<u>38</u>
PM Trips	_____	_____	_____	<u>13</u>	<u>29</u>	<u>42</u>

Internal Trip Allowance ☐ Yes ☒ No (_____ % Trip Discount)
Pass-By Trip Allowance ☐ Yes ☒ No (_____ % Trip Discount)

A pass-by trip discount of up to 25% is allowed for appropriate land uses. The pass-by trips at adjacent study area intersections and project driveways shall be indicated on a report figure.

B. Trip Geographic Distribution: N 55 % S 30 % E 10 % W 5 %

(attach exhibit for detailed assignment)

C. Background Traffic

Project Build-out Year: 2023 Annual Ambient Growth Rate: % _____ Cumulative Projects _____

Phase Year(s) See attached

Other area projects to be analyzed: _____

Model/Forecast methodology: _____

D. Study intersections: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

- | | |
|---|-----------|
| 1. <u>Murrieta Hot Springs Rd/ Hancock Avenue</u> | 6. _____ |
| 2. <u>Hancock Avenue/ Medical Center Drive</u> | 7. _____ |
| 3. <u>Hancock Avenue/ Walsh Center Drive</u> | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

E. Study Roadway Segments: (NOTE: Subject to revision after other projects, trip generation and distribution are determined, or comments from other agencies.)

- | | |
|---|-----------|
| 1. <u>Hancock Avenue: Murrieta Hot Springs Rd to Medical Center Drive</u> | 6. _____ |
| 2. <u>Hancock Avenue: north of Medical Center Drive</u> | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

F. Site Plan (please attach reduced copy)

G. Specific issues to be addressed in the Study (in addition to the standard analysis described in the Guideline) (To be filled out by Engineering Department)

H. Existing Conditions

Traffic count data must be new or recent. Provide traffic count dates if using other than new counts.

Date of counts December 2019

I. Potential Screening Checks

Is your project screened from specific analyses (see Pages 6-13 of the guidelines related to LOS assessment and Pages 14-18 related to VMT assessment)

Is the project screened from LOS assessment? ☐ Yes ☒ No

LOS screening justification (see Pages 6-13 of the guidelines):

Is the project screened from VMT assessment? ☒ Yes ☐ No

VMT screening justification (see Pages 14-18 of the guidelines):

Per discussion with City staff, this project qualifies as a "office or other employment-related land use reducing commutes outside the local area."

J. VMT Scoping

For projects that are not screened, identify the following:

- Travel Demand Forecasting Model Used: _____
- Attach proposed Model Land Use Inputs and Assumed Conversion Factors (attach)

Recommended by:

Consultant's Representative

Date

Scoping Agreement Submitted on _____

Revised on _____

Approved Scoping Agreement:

City Of Murrieta Engineering
Department

Date

The program calls for the addition of patient beds with access from the existing building level two to the north. The footprint of the new hospital expansion is the result of these added beds and the required support spaces. The first level of the expansion will include a new emergency drop-off entry to the east.

One of the best opportunities for improving the Rancho Springs Medical Center campus will be the modification and clarification of the site access and visibility of the main entry.



Figure 7 – Site Opportunities and Building Replacement Diagram

Trip Generation

RANCHO SPRINGS MEDICAL CENTER EXPANSION TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs) ^a		Peak Hour	Rate ^b	In:Out	Volume		
		Rate ^b	Volume			% Split ^b	In	Out	Total
Hospital	43 KSF	10.72 /KSF	461	AM	0.89	68:32	26	12	38
				PM	0.97	32:68	13	29	42

Footnotes:

a. ADT = Average Daily Traffic.

b. Rates taken from the Institute of Transportation Engineers Trip Generation Handbook, 10th Ed.

General Notes:

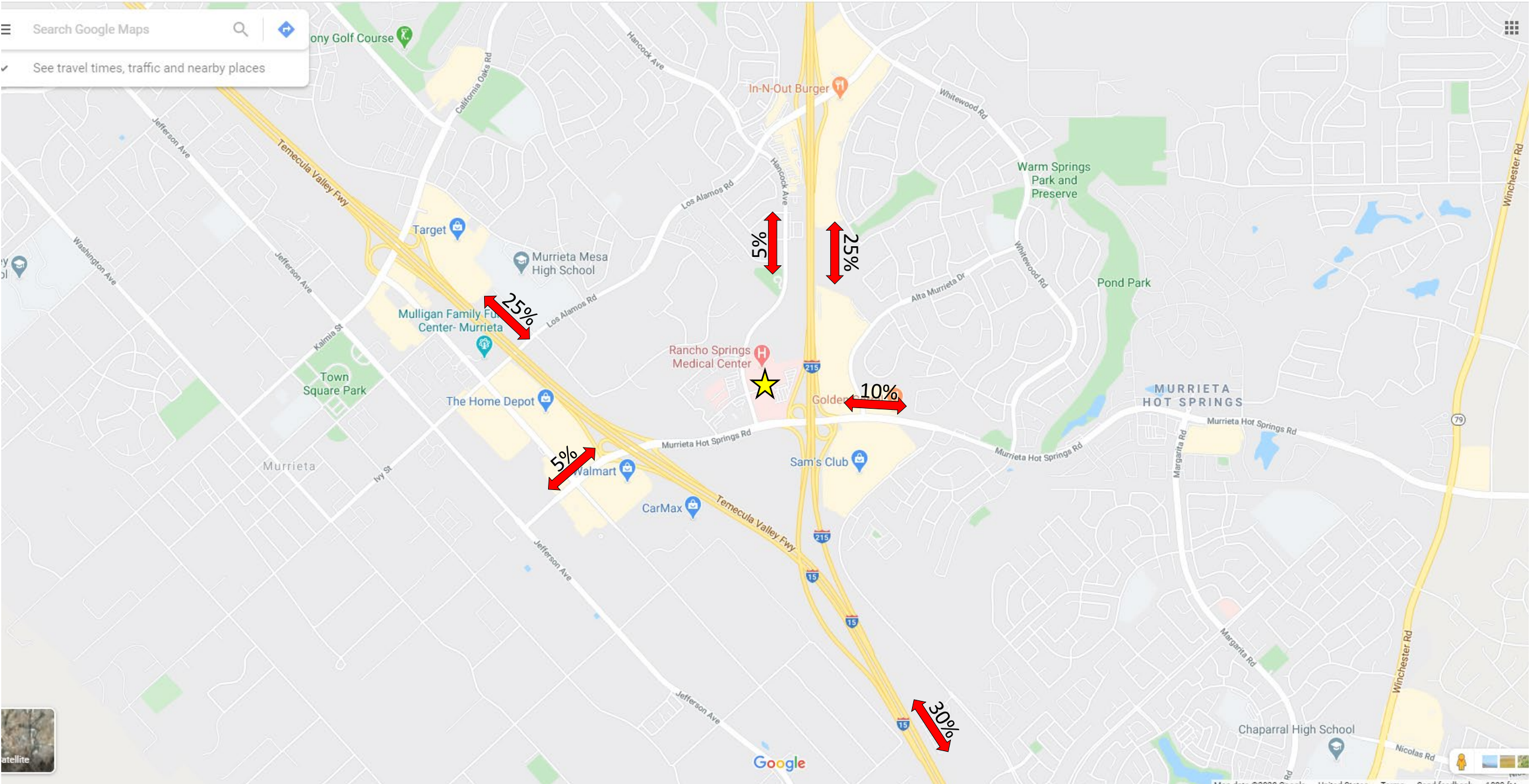
1. KSF = Thousand square feet.

Analysis Scenarios

- Existing
- Background Conditions (Year 2023): assumes year 2019 plus cumulative project traffic.
- Background Conditions (Year 2023) + Project

Cumulative Projects

1. Los Alamos Community
2. The Ranch
3. TTM 36848
4. Golden Eagle Apartments
5. Sial Medical Plaza
6. Corporate Crossroads/Whittaker Office Complex
7. Holiday Inn Express
8. Jimmy's Carwash
9. Murrieta Gateway
10. American Tire Depot
11. Prestige Golf Cars
12. Gas Station on MHSR
13. Wash Center Apartments



APPENDIX B

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS

National Data & Surveying Services

Intersection Turning Movement Count

Location: Hancock Ave & Murrieta Hot Springs Rd
City: Murrieta
Control: Signalized

Project ID: 19-06181-004
Date: 12/17/2019

Total

NS/EW Streets:		Hancock Ave				Hancock Ave				Murrieta Hot Springs Rd				Murrieta Hot Springs Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	0 NR	0 NU	2 SL	0 ST	2 SR	0 SU	2 EL	4 ET	0 ER	0 EU	0 WL	3 WT	1 WR	0 WU	
	7:00 AM	0	0	0	0	38	0	16	0	19	180	0	0	0	360	60	0	673
	7:15 AM	0	0	0	0	59	0	20	0	34	203	0	0	0	413	94	0	823
	7:30 AM	0	0	0	0	117	0	31	0	44	263	0	1	0	291	102	0	849
	7:45 AM	0	0	0	0	102	0	43	0	70	229	0	2	0	380	114	0	940
	8:00 AM	0	0	0	0	75	0	46	0	50	255	0	0	0	328	117	0	871
	8:15 AM	0	0	0	0	78	0	32	0	55	304	0	2	0	365	112	0	948
	8:30 AM	0	0	0	0	90	0	36	0	55	315	0	1	0	390	114	0	1001
	8:45 AM	0	0	0	0	97	0	46	0	48	281	0	1	0	429	102	0	1004
TOTAL VOLUMES:		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s:		0	0	0	0	656	0	270	0	375	2030	0	7	0	2956	815	0	7109
						70.84%	0.00%	29.16%	0.00%	15.55%	84.16%	0.00%	0.29%	0.00%	78.39%	21.61%	0.00%	
PEAK HR:		08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL:		0	0	0	0	340	0	160	0	208	1155	0	4	0	1512	445	0	3824
PEAK HR FACTOR:		0.000	0.000	0.000	0.000	0.876	0.000	0.870	0.000	0.945	0.917	0.000	0.500	0.000	0.881	0.951	0.000	0.952
								0.874				0.921				0.921		

PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	0 NR	0 NU	2 SL	0 ST	2 SR	0 SU	2 EL	4 ET	0 ER	0 EU	0 WL	3 WT	1 WR	0 WU	
	4:00 PM	0	0	0	0	114	0	58	0	29	420	0	1	0	428	101	0	1151
	4:15 PM	0	0	0	0	121	0	48	0	34	422	0	1	0	451	114	0	1191
	4:30 PM	0	0	0	0	129	0	52	0	39	445	0	4	0	433	96	0	1198
	4:45 PM	0	0	0	0	135	0	63	0	26	417	0	3	0	467	96	0	1207
	5:00 PM	0	0	0	0	141	0	88	0	11	412	0	1	0	411	81	0	1145
	5:15 PM	0	0	0	0	143	0	59	0	17	426	0	0	0	461	104	0	1210
	5:30 PM	0	0	0	0	107	0	50	0	33	447	0	3	0	431	92	0	1163
	5:45 PM	0	0	0	0	95	0	36	0	20	388	0	3	0	375	83	0	1000
TOTAL VOLUMES:		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s:		0	0	0	0	985	0	454	0	209	3377	0	16	0	3457	767	0	9265
						68.45%	0.00%	31.55%	0.00%	5.80%	93.75%	0.00%	0.44%	0.00%	81.84%	18.16%	0.00%	
PEAK HR:		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL:		0	0	0	0	548	0	262	0	93	1700	0	8	0	1772	377	0	4760
PEAK HR FACTOR:		0.000	0.000	0.000	0.000	0.958	0.000	0.744	0.000	0.596	0.955	0.000	0.500	0.000	0.949	0.906	0.000	0.983
								0.884				0.923				0.951		

Project ID: 19-06181-004
Date: 12/17/2019

NS/EW Streets:		Hancock Ave				Hancock Ave				Murrieta Hot Springs Rd				Murrieta Hot Springs Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	0 NL	0 NT	0 NR	0 NU	2 SL	0 ST	2 SR	0 SU	2 EL	4 ET	0 ER	0 EU	0 WL	3 WT	1 WR	0 WU		
	7:00 AM	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
	7:30 AM	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
	8:00 AM	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
	8:30 AM	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	1	0	0	0	0	0	0	1	
TOTAL VOLUMES :	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	
APPROACH %'s :									0.00% 100.00% 0.00% 0.00%									
PEAK HR :		08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :		0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	

[illegible]

National Data & Surveying Services

Intersection Turning Movement Count

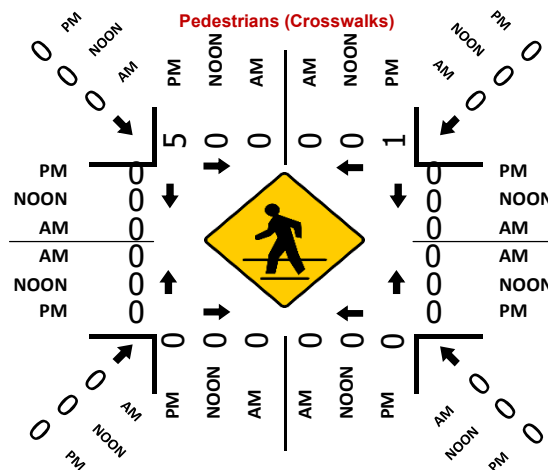
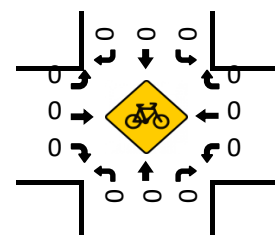
Location: Hancock Ave & Murrieta Hot Springs Rd
City: Murrieta

Project ID: 19-00181-004
Date: 12/17/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Hancock Ave		Hancock Ave		Murrieta Hot Springs Rd		Murrieta Hot Springs Rd		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
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	0	0
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	0	0
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	0	0	0	0	0	0	0	0	0
PEAK HR :	08:00 AM - 09:00 AM								TOTAL
PEAK HR VOL :	0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :									

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	1	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0
5:00 PM	3	0	0	0	0	0	0	0	3
5:15 PM	2	1	0	0	0	0	0	0	3
5:30 PM	1	1	0	0	0	0	0	0	2
5:45 PM	1	1	0	0	0	0	0	0	2
TOTAL VOLUMES :	EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :	7	4	0	0	0	0	0	0	11
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	5	1	0	0	0	0	0	0	6
PEAK HR FACTOR :	0.417	0.250							0.500



National Data & Surveying Services

Intersection Turning Movement Count

Location: Hancock Ave & Medical Center Dr
City: Murrieta
Control: Signalized

Project ID: 19-06181-008
Date: 12/17/2019

Total

NS/EW Streets:	Hancock Ave				Hancock Ave				Medical Center Dr				Medical Center Dr					
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	1 WR	0 WU		
	7:00 AM	8	43	23	0	2	48	8	0	5	7	2	0	5	3	1		0
	7:15 AM	14	82	37	0	5	69	9	0	8	4	5	0	10	0	4		0
	7:30 AM	20	87	30	0	16	120	20	0	10	9	5	0	19	4	3		0
	7:45 AM	24	96	61	0	15	127	29	0	13	8	8	0	19	0	2		0
	8:00 AM	16	102	58	0	20	89	30	1	10	9	8	0	18	1	1		0
	8:15 AM	11	109	40	0	26	89	12	0	15	6	10	0	10	1	2		0
	8:30 AM	18	111	41	0	15	104	19	0	6	9	4	0	9	1	2		0
	8:45 AM	15	88	46	0	17	109	22	0	13	5	10	0	21	5	6		0
TOTAL VOLUMES :	NL 126	NT 718	NR 336	NU 0	SL 116	ST 755	SR 149	SU 1	EL 80	ET 57	ER 52	EU 0	WL 111	WT 15	WR 21	WU 0	TOTAL 2537	
APPROACH %'s :	10.68%	60.85%	28.47%	0.00%	11.36%	73.95%	14.59%	0.10%	42.33%	30.16%	27.51%	0.00%	75.51%	10.20%	14.29%	0.00%		
PEAK HR :	07:30 AM - 08:30 AM																	TOTAL 1439
PEAK HR VOL :	71	394	189	0	77	425	91	1	48	32	31	0	66	6	8	0		
PEAK HR FACTOR :	0.740	0.904	0.775	0.000	0.740	0.837	0.758	0.250	0.800	0.889	0.775	0.000	0.868	0.375	0.667	0.000	0.895	
	0.903				0.868				0.895				0.769					

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL	
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	1 WR	0 WU		
	4:00 PM	6	103	26	0	1	114	11	0	30	6	19	0	39	8	16		0
	4:15 PM	11	105	28	1	7	105	11	0	24	3	27	0	29	3	13		0
	4:30 PM	9	103	19	0	2	115	5	0	33	1	30	0	34	8	16		0
	4:45 PM	6	93	20	0	11	115	15	0	30	2	25	0	44	5	12		0
	5:00 PM	2	76	17	0	5	140	12	0	40	2	42	0	52	15	29		0
	5:15 PM	7	93	13	2	4	115	14	0	37	6	31	0	39	4	11		0
	5:30 PM	5	94	18	1	4	91	5	0	42	4	17	0	34	7	18		0
	5:45 PM	5	82	17	0	6	77	1	1	25	3	15	0	17	1	10		0
TOTAL VOLUMES :	NL 51	NT 749	NR 158	NU 4	SL 40	ST 872	SR 74	SU 1	EL 261	ET 27	ER 206	EU 0	WL 288	WT 51	WR 125	WU 0	TOTAL 2907	
APPROACH %'s :	5.30%	77.86%	16.42%	0.42%	4.05%	88.35%	7.50%	0.10%	52.83%	5.47%	41.70%	0.00%	62.07%	10.99%	26.94%	0.00%		
PEAK HR :	04:30 PM - 05:30 PM																	TOTAL 1561
PEAK HR VOL :	24	365	69	2	22	485	46	0	140	11	128	0	169	32	68	0		
PEAK HR FACTOR :	0.667	0.886	0.863	0.250	0.500	0.866	0.767	0.000	0.875	0.458	0.762	0.000	0.813	0.533	0.586	0.000	0.903	
	0.878				0.881				0.830				0.701					

National Data & Surveying Services

Intersection Turning Movement Count

Location: Hancock Ave & Medical Center Dr
City: Murrieta

Project ID: 19-00181-008
Date: 12/17/2019

Pedestrians (Crosswalks)

NS/EW Streets:	Hancock Ave		Hancock Ave		Medical Center Dr		Medical Center Dr		
AM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
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	0	0
8:00 AM	0	1	0	0	0	0	0	0	1
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	2	2
TOTAL VOLUMES :	EB 0	WB 1	EB 0	WB 0	NB 0	SB 0	NB 0	SB 2	TOTAL 3
APPROACH %'s :	0.00% 100.00%						0.00% 100.00%		
PEAK HR :	07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :	0 1		0 0		0 0		0 0		1
PEAK HR FACTOR :	0.250								0.250

PM	NORTH LEG		SOUTH LEG		EAST LEG		WEST LEG		TOTAL
	EB	WB	EB	WB	NB	SB	NB	SB	
4:00 PM	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	1	1	2
4:30 PM	0	0	0	0	0	0	0	0	0
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	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	EB 0	WB 0	EB 0	WB 0	NB 0	SB 0	NB 1	SB 1	TOTAL 2
APPROACH %'s :							50.00% 50.00%		
PEAK HR :	04:30 PM - 05:30 PM								TOTAL
PEAK HR VOL :	0 0		0 0		0 0		0 0		0
PEAK HR FACTOR :									

National Data & Surveying Services

Intersection Turning Movement Count

Location: Hancock Ave & Walsh Center Dr
City: Murrieta
Control: 1-Way Stop(EB)

Project ID: 19-06181-009
Date: 12/17/2019

Total

NS/EW Streets:		Hancock Ave				Hancock Ave				Walsh Center Dr				Walsh Center Dr				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	7:00 AM	1	44	0	0	0	58	3	0	4	0	3	0	0	0	0	0	113
	7:15 AM	3	74	0	0	0	96	5	0	5	0	3	0	0	0	0	0	186
	7:30 AM	4	88	0	1	0	173	4	0	7	0	4	0	0	0	0	0	281
	7:45 AM	3	84	0	0	0	163	14	0	9	0	3	0	0	0	0	0	276
	8:00 AM	3	99	0	0	0	143	17	0	3	0	7	0	0	0	0	0	272
	8:15 AM	2	106	0	0	0	135	9	0	9	0	3	0	0	0	0	0	264
	8:30 AM	3	93	0	0	0	133	6	0	2	0	7	0	0	0	0	0	244
	8:45 AM	1	86	0	0	0	145	10	0	9	0	7	0	0	0	0	0	258
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		2.88%	96.98%	0.00%	0.14%	0.00%	93.90%	6.10%	0.00%	56.47%	0.00%	43.53%	0.00%	0	0	0	0	1894
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		12	377	0	1	0	614	44	0	28	0	17	0	0	0	0	0	1093
PEAK HR FACTOR :		0.750	0.889	0.000	0.250	0.000	0.887	0.647	0.000	0.778	0.000	0.607	0.000	0.000	0.000	0.000	0.000	0.972
		0.903				0.929				0.938								
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU	
	4:00 PM	2	139	0	0	0	114	9	0	6	0	1	0	0	0	0	0	271
	4:15 PM	0	139	0	0	0	103	1	0	5	0	6	0	0	0	0	0	254
	4:30 PM	9	152	0	0	0	112	3	0	7	0	2	0	0	0	0	0	285
	4:45 PM	4	136	0	0	0	121	6	0	11	0	4	0	0	0	0	0	282
	5:00 PM	3	144	0	1	0	131	3	0	13	0	10	0	0	0	0	0	305
	5:15 PM	3	148	0	1	0	121	1	0	3	0	5	0	0	0	0	0	282
	5:30 PM	7	145	0	0	0	66	4	0	5	0	5	0	0	0	0	0	232
	5:45 PM	3	115	0	0	0	75	4	0	2	0	5	0	0	0	0	0	204
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		31	1118	0	2	0	843	31	0	52	0	38	0	0	0	0	0	2115
		2.69%	97.13%	0.00%	0.17%	0.00%	96.45%	3.55%	0.00%	57.78%	0.00%	42.22%	0.00%					
PEAK HR :		04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :		19	580	0	2	0	485	13	0	34	0	21	0	0	0	0	0	1154
PEAK HR FACTOR :		0.528	0.954	0.000	0.500	0.000	0.926	0.542	0.000	0.654	0.000	0.525	0.000	0.000	0.000	0.000	0.000	0.946
		0.933				0.929				0.598								

National Data & Surveying Services

Intersection Turning Movement Count

Location: Hancock Ave & Walsh Center Dr
City: Murrieta
Control: 1-Way Stop(EB)

Project ID: 19-06181-009
Date: 12/17/2019

Bikes

NS/EW Streets:	Hancock Ave				Hancock Ave				Walsh Center Dr				Walsh Center Dr			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU
7:00 AM	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
7:30 AM	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
8:00 AM	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
8:30 AM	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
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 0	EU 0	WL 0	WT 0	WR 0	WU 0
APPROACH %'s :	07:30 AM - 08:30 AM															
PEAK HR :																
PEAK HR VOL :	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
TOTAL																
TOTAL																
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1 NL	2 NT	0 NR	0 NU	0 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	0 WL	0 WT	0 WR	0 WU
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
4:15 PM	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
4:45 PM	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
5:15 PM	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
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES :	NL 0	NT 0	NR 0	NU 0	SL 0	ST 0	SR 0	SU 0	EL 0	ET 0	ER 1	EU 0	WL 0	WT 0	WR 0	WU 0
APPROACH %'s :									0.00%	0.00%	100.00%	0.00%				
PEAK HR :	04:30 PM - 05:30 PM															
PEAK HR VOL :	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
TOTAL																
TOTAL																

National Data & Surveying Services

Intersection Turning Movement Count

Project ID: 19-06181-009
Date: 12/17/2019

Pedestrians (Crosswalks)

NS/EW Streets:		Hancock Ave		Hancock Ave		Walsh Center Dr		Walsh Center Dr		
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	
	7:15 AM	0	0	0	0	0	0	0	0	
	7:30 AM	0	0	0	0	0	0	0	0	
	7:45 AM	0	0	0	0	0	0	0	0	
	8:00 AM	0	0	0	0	0	0	0	0	
	8:15 AM	0	0	0	0	0	0	0	0	
	8:30 AM	0	0	0	0	0	0	0	0	
8:45 AM	0	0	0	0	0	0	0	0		
TOTAL VOLUMES :		EB	WB	EB	WB	NB	SB	NB	SB	TOTAL
APPROACH %'s :		0	0	0	0	0	0	0	0	0
PEAK HR :		07:30 AM - 08:30 AM								TOTAL
PEAK HR VOL :		0	0	0	0	0	0	0	0	0
PEAK HR FACTOR :										

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

Hancock Ave & Walsh Center Dr

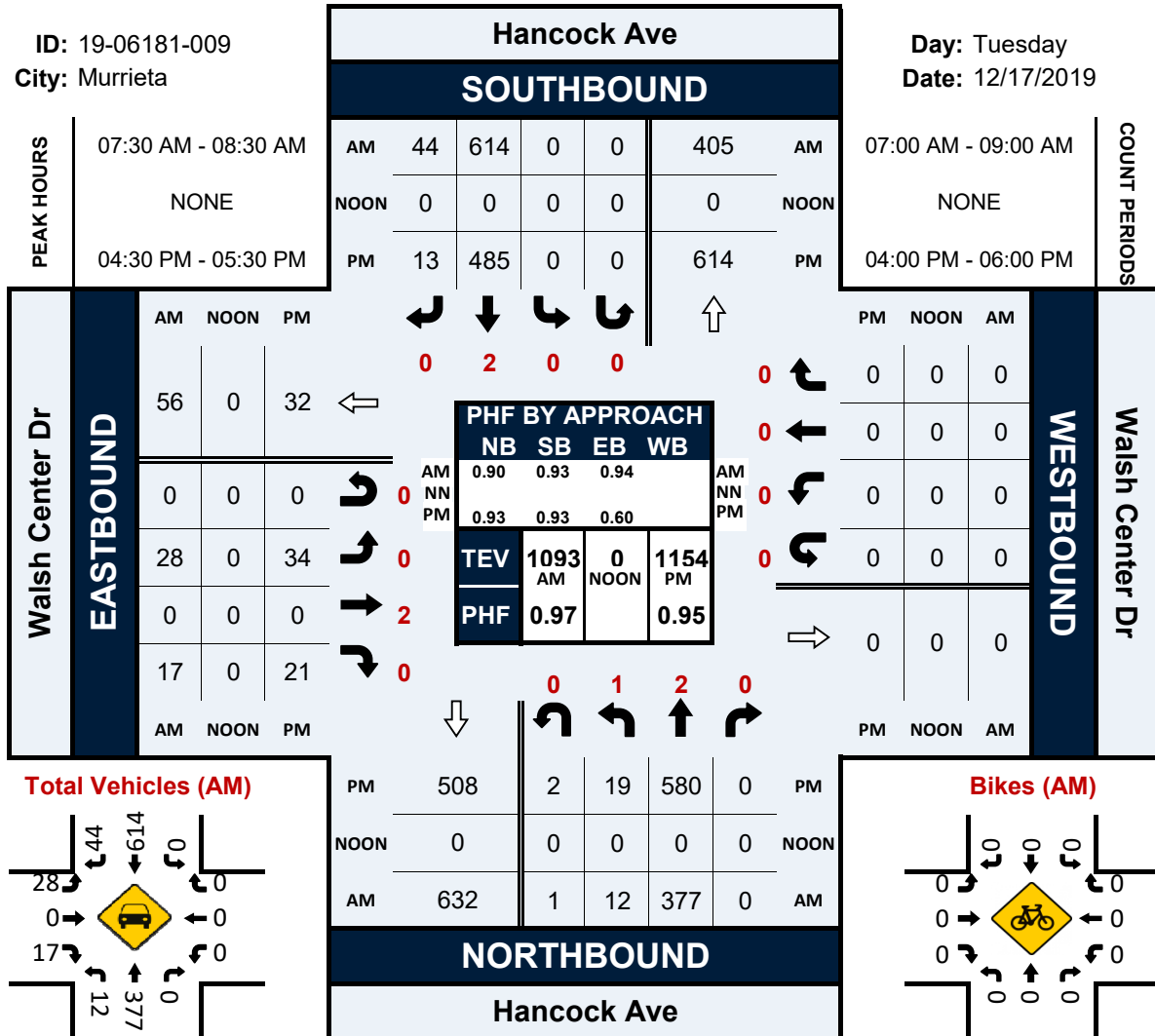
Peak Hour Turning Movement Count

ID: 19-06181-009

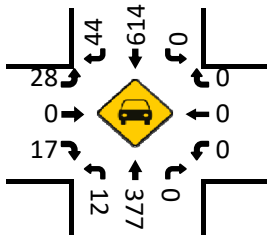
City: Murrieta

Day: Tuesday

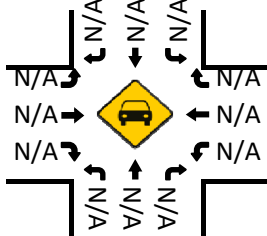
Date: 12/17/2019



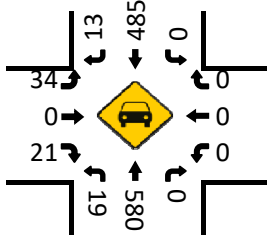
Total Vehicles (AM)



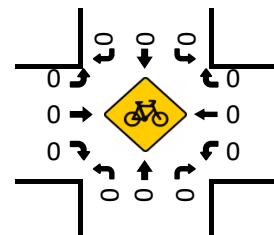
Total Vehicles (Noon)



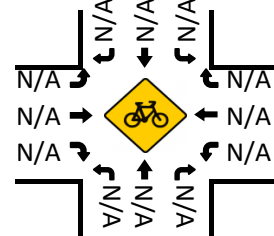
Total Vehicles (PM)



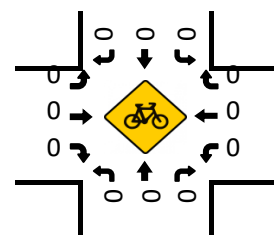
Bikes (AM)



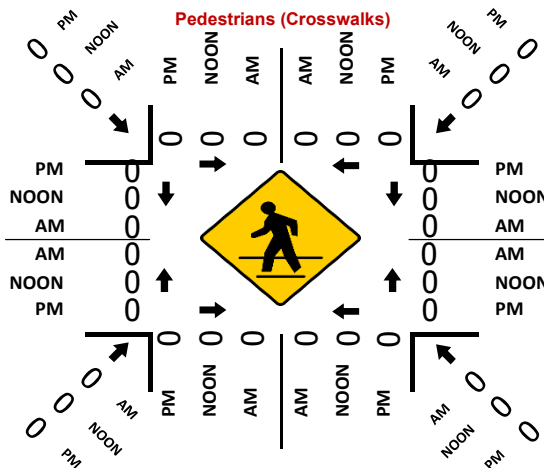
Bikes (Noon)



Bikes (PM)



Pedestrians (Crosswalks)



VOLUME

Hancock Ave S/O Walsh Center Dr

Day: Thursday
Date: 12/12/2019City: Murrieta
Project #: CA19_6180_003

DAILY TOTALS					NB	SB	EB					WB	Total	
					6,383	6,810						0		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00	6	6			12		12:00	95	148			243		
00:15	7	3			10		12:15	92	122			214		
00:30	4	3			7		12:30	92	118			210		
00:45	8	25	2	14	10	39	12:45	107	386	122	510	229	896	
01:00	3	5			8		13:00	118	133			251		
01:15	6	3			9		13:15	128	123			251		
01:30	4	4			8		13:30	109	123			232		
01:45	3	16	1	13	4	29	13:45	128	483	130	509	258	992	
02:00	2	1			3		14:00	119	120			239		
02:15	3	2			5		14:15	116	127			243		
02:30	1	2			3		14:30	120	121			241		
02:45	0	6	3	8	3	14	14:45	140	495	132	500	272	995	
03:00	3	2			5		15:00	107	136			243		
03:15	4	5			9		15:15	139	122			261		
03:30	0	6			6		15:30	122	102			224		
03:45	5	12	10	23	15	35	15:45	129	497	119	479	248	976	
04:00	3	13			16		16:00	135	133			268		
04:15	3	10			13		16:15	162	118			280		
04:30	3	18			21		16:30	147	120			267		
04:45	7	16	29	70	36	86	16:45	145	589	126	497	271	1086	
05:00	11	50			61		17:00	173	171			344		
05:15	7	41			48		17:15	168	95			263		
05:30	8	43			51		17:30	163	107			270		
05:45	19	45	44	178	63	223	17:45	143	647	75	448	218	1095	
06:00	11	42			53		18:00	122	74			196		
06:15	20	44			64		18:15	108	73			181		
06:30	27	45			72		18:30	90	90			180		
06:45	39	97	87	218	126	315	18:45	82	402	46	283	128	685	
07:00	59	56			115		19:00	83	57			140		
07:15	80	98			178		19:15	74	45			119		
07:30	91	153			244		19:30	72	53			125		
07:45	122	352	167	474	289	826	19:45	71	300	47	202	118	502	
08:00	97	126			223		20:00	70	39			109		
08:15	103	133			236		20:15	53	27			80		
08:30	96	128			224		20:30	46	31			77		
08:45	130	426	153	540	283	966	20:45	61	230	25	122	86	352	
09:00	73	118			191		21:00	53	25			78		
09:15	89	104			193		21:15	54	16			70		
09:30	85	115			200		21:30	26	31			57		
09:45	86	333	116	453	202	786	21:45	32	165	46	118	78	283	
10:00	81	125			206		22:00	22	52			74		
10:15	87	110			197		22:15	18	19			37		
10:30	90	121			211		22:30	22	11			33		
10:45	100	358	138	494	238	852	22:45	21	83	13	95	34	178	
11:00	80	129			209		23:00	13	10			23		
11:15	84	115			199		23:15	17	5			22		
11:30	103	124			227		23:30	12	8			20		
11:45	99	366	165	533	264	899	23:45	12	54	6	29	18	83	
TOTALS	2052	3018			5070		TOTALS	4331	3792			8123		
SPLIT %	40.5%	59.5%			38.4%		SPLIT %	53.3%	46.7%			61.6%		

DAILY TOTALS					NB	SB					EB	WB	Total	
					6,383	6,810					0	0	13,193	
AM Peak Hour	08:00	07:30			07:30		PM Peak Hour	16:45	16:15			16:15		
AM Pk Volume	426	579			992		PM Pk Volume	649	535			1162		
Pk Hr Factor	0.819	0.867			0.858		Pk Hr Factor	0.938	0.782			0.844		
7 - 9 Volume	778	1014	0	0	1792		4 - 6 Volume	1236	945	0	0	2181		
7 - 9 Peak Hour	08:00	07:30			07:30		4 - 6 Peak Hour	16:45	16:15			16:15		
7 - 9 Pk Volume	426	579	0	0	992		4 - 6 Pk Volume	649	535	0	0	1162		
Pk Hr Factor	0.819	0.867	0.000	0.000	0.858		Pk Hr Factor	0.938	0.782	0.000	0.000	0.844		

VOLUME

Hancock Ave Bet. Murrieta Hot Springs Rd & Medical Center Dr

Day: Thursday
Date: 1/9/2020City: Murrieta
Project #: CA20_6000_004

DAILY TOTALS					NB	SB	EB					WB	Total
					5,977	5,736						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	10	5			15		12:00	107	131			238	
00:15	12	3			15		12:15	100	103			203	
00:30	5	3			8		12:30	116	95			211	
00:45	3	30	0	11	3	41	12:45	102	425	117	446	219	871
01:00	8	4			12		13:00	116	101			217	
01:15	1	4			5		13:15	113	93			206	
01:30	4	6			10		13:30	106	92			198	
01:45	3	16	1	15	4	31	13:45	120	455	109	395	229	850
02:00	4	6			10		14:00	114	100			214	
02:15	4	4			8		14:15	115	105			220	
02:30	0	1			1		14:30	110	98			208	
02:45	4	12	5	16	9	28	14:45	138	477	107	410	245	887
03:00	6	4			10		15:00	119	107			226	
03:15	1	7			8		15:15	136	102			238	
03:30	5	8			13		15:30	108	123			231	
03:45	2	14	9	28	11	42	15:45	120	483	113	445	233	928
04:00	6	17			23		16:00	114	120			234	
04:15	1	12			13		16:15	109	111			220	
04:30	4	19			23		16:30	129	109			238	
04:45	8	19	20	68	28	87	16:45	144	496	118	458	262	954
05:00	11	25			36		17:00	142	137			279	
05:15	7	36			43		17:15	128	93			221	
05:30	10	33			43		17:30	151	97			248	
05:45	18	46	31	125	49	171	17:45	112	533	74	401	186	934
06:00	12	38			50		18:00	90	65			155	
06:15	13	27			40		18:15	80	61			141	
06:30	19	32			51		18:30	87	56			143	
06:45	48	92	60	157	108	249	18:45	61	318	54	236	115	554
07:00	41	58			99		19:00	70	55			125	
07:15	55	63			118		19:15	65	46			111	
07:30	91	102			193		19:30	65	48			113	
07:45	119	306	114	337	233	643	19:45	46	246	43	192	89	438
08:00	109	80			189		20:00	39	24			63	
08:15	102	92			194		20:15	49	20			69	
08:30	90	95			185		20:30	35	25			60	
08:45	99	400	108	375	207	775	20:45	29	152	22	91	51	243
09:00	98	102			200		21:00	37	25			62	
09:15	91	102			193		21:15	32	33			65	
09:30	88	98			186		21:30	33	20			53	
09:45	97	374	125	427	222	801	21:45	31	133	35	113	66	246
10:00	100	112			212		22:00	27	47			74	
10:15	104	94			198		22:15	18	19			37	
10:30	88	82			170		22:30	17	10			27	
10:45	97	389	109	397	206	786	22:45	13	75	14	90	27	165
11:00	111	104			215		23:00	21	8			29	
11:15	107	120			227		23:15	11	9			20	
11:30	102	138			240		23:30	12	5			17	
11:45	112	432	113	475	225	907	23:45	10	54	6	28	16	82
TOTALS	2130	2431			4561		TOTALS	3847	3305			7152	
SPLIT %	46.7%	53.3%			38.9%		SPLIT %	53.8%	46.2%			61.1%	

DAILY TOTALS					NB	SB	EB					WB	Total	
					5,977	5,736						0		
AM Peak Hour	11:45	11:15			11:15		PM Peak Hour	16:45	16:15			16:45		
AM Pk Volume	435	502			930		PM Pk Volume	565	475			1010		
Pk Hr Factor	0.938	0.909			0.969		Pk Hr Factor	0.935	0.867			0.905		
7 - 9 Volume	706	712	0	0	1418		4 - 6 Volume	1029	859	0	0	1888		
7 - 9 Peak Hour	07:30	07:30			07:30		4 - 6 Peak Hour	16:45	16:15			16:45		
7 - 9 Pk Volume	421	388	0	0	809		4 - 6 Pk Volume	565	475	0	0	1010		
Pk Hr Factor	0.884	0.851	0.000	0.000	0.868		Pk Hr Factor	0.935	0.867	0.000	0.000	0.905		

APPENDIX C

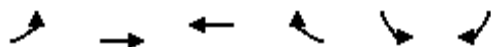
PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

EXISTING

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	212	1155	1512	445	340	160
Future Volume (vph)	212	1155	1512	445	340	160
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	10.7	90.7	75.4	75.4	18.9	75.4
Actuated g/C Ratio	0.09	0.76	0.63	0.63	0.16	0.63
v/c Ratio	0.73	0.25	0.50	0.43	0.66	0.10
Control Delay	66.9	4.8	13.5	4.5	53.4	1.8
Queue Delay	0.0	0.0	0.3	0.3	0.0	0.0
Total Delay	66.9	4.8	13.8	4.8	53.4	1.8
LOS	E	A	B	A	D	A
Approach Delay		14.4	11.8		37.0	
Approach LOS		B	B		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 16.0

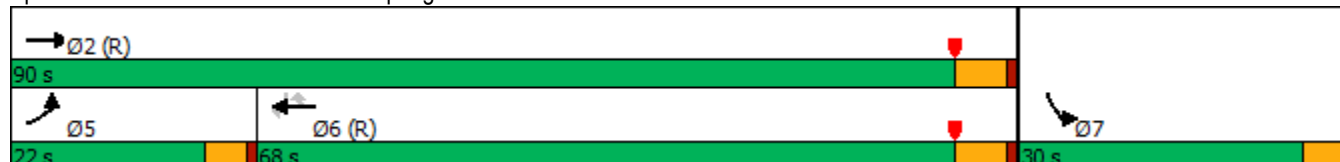
Intersection LOS: B

Intersection Capacity Utilization 63.0%

ICU Level of Service B

Analysis Period (min) 15

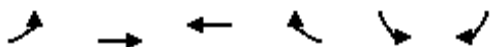
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	212	1155	1512	445	340	160
Future Volume (veh/h)	212	1155	1512	445	340	160
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	223	1216	1592	468	358	168
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	278	4990	3353	1007	476	384
Arrive On Green	0.08	0.78	1.00	1.00	0.14	0.14
Sat Flow, veh/h	3456	6696	5274	1533	3456	2790
Grp Volume(v), veh/h	223	1216	1592	468	358	168
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1533	1728	1395
Q Serve(g_s), s	7.6	6.3	0.0	0.0	12.0	6.6
Cycle Q Clear(g_c), s	7.6	6.3	0.0	0.0	12.0	6.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	278	4990	3353	1007	476	384
V/C Ratio(X)	0.80	0.24	0.47	0.46	0.75	0.44
Avail Cap(c_a), veh/h	501	4990	3353	1007	731	590
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.96	0.96
Uniform Delay (d), s/veh	54.2	3.7	0.0	0.0	49.8	47.5
Incr Delay (d2), s/veh	2.0	0.1	0.5	1.5	3.7	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	1.8	0.2	16.0	5.4	5.3
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.3	3.8	0.5	1.5	53.4	48.7
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		1439	2060		526	
Approach Delay, s/veh		12.0	0.7		51.9	
Approach LOS		B	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		98.9		21.1	14.3	84.6
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		8.3		14.0	9.6	2.0
Green Ext Time (p_c), s		12.7		2.6	0.1	39.4
Intersection Summary						
HCM 6th Ctrl Delay			11.4			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	48	32	66	6	8	71	394	78	425	91
Future Volume (vph)	48	32	66	6	8	71	394	78	425	91
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	6.8	10.8	7.1	10.6	10.6	7.4	24.6	7.6	24.7	24.7
Actuated g/C Ratio	0.12	0.19	0.13	0.19	0.19	0.13	0.44	0.14	0.45	0.45
v/c Ratio	0.25	0.20	0.33	0.02	0.02	0.34	0.43	0.37	0.30	0.14
Control Delay	33.2	14.6	34.3	20.8	0.1	33.3	16.6	34.1	17.8	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	14.6	34.3	20.8	0.1	33.3	16.6	34.1	17.8	2.7
LOS	C	B	C	C	A	C	B	C	B	A
Approach Delay		22.6		29.9			18.4		17.6	
Approach LOS		C		C			B		B	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 55.4

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.43

Intersection Signal Delay: 19.1









Intersection LOS: B

Intersection Capacity Utilization 48.8%

ICU Level of Service A

Analysis Period (min) 15
























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
Ø1	Ø2	Ø3	Ø4
12 s	29.2 s	11.2 s	32.6 s
			
Ø5	Ø6	Ø7	Ø8
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary






2: Hancock Ave & Medical Center Dr

01/27/2021

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	32	31	66	6	8	71	394	189	78	425	91
Future Volume (veh/h)	48	32	31	66	6	8	71	394	189	78	425	91
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.95	1.00		0.95	1.00		0.95
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	54	36	35	74	7	9	80	443	212	88	478	102
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	114	93	90	139	232	186	146	734	347	154	1149	489
Arrive On Green	0.06	0.11	0.11	0.08	0.12	0.12	0.08	0.32	0.32	0.09	0.32	0.32
Sat Flow, veh/h	1781	846	822	1781	1870	1501	1781	2300	1088	1781	3554	1511
Grp Volume(v), veh/h	54	0	71	74	7	9	80	341	314	88	478	102
Grp Sat Flow(s),veh/h/ln	1781	0	1668	1781	1870	1501	1781	1777	1611	1781	1777	1511
Q Serve(g_s), s	1.4	0.0	1.9	1.9	0.2	0.3	2.1	7.8	7.9	2.3	5.1	2.4
Cycle Q Clear(g_c), s	1.4	0.0	1.9	1.9	0.2	0.3	2.1	7.8	7.9	2.3	5.1	2.4
Prop In Lane	1.00		0.49	1.00		1.00	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	114	0	183	139	232	186	146	567	514	154	1149	489
V/C Ratio(X)	0.47	0.00	0.39	0.53	0.03	0.05	0.55	0.60	0.61	0.57	0.42	0.21
Avail Cap(c_a), veh/h	229	0	970	244	1102	885	274	863	783	274	1726	734
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.8	0.0	19.9	21.4	18.6	18.6	21.3	13.8	13.9	21.2	12.7	11.8
Incr Delay (d2), s/veh	1.1	0.0	1.8	1.2	0.1	0.1	1.2	1.6	1.9	1.3	0.4	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.0	0.8	0.8	0.1	0.1	0.8	2.9	2.7	0.9	1.8	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.9	0.0	21.8	22.5	18.6	18.7	22.5	15.5	15.7	22.4	13.1	12.2
LnGrp LOS	C	A	C	C	B	B	C	B	B	C	B	B
Approach Vol, veh/h		125			90			735			668	
Approach Delay, s/veh		22.3			21.8			16.3			14.2	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	21.2	8.4	9.9	8.5	21.4	7.7	10.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	4.3	9.9	3.9	3.9	4.1	7.1	3.4	2.3				
Green Ext Time (p_c), s	0.0	5.0	0.0	0.4	0.0	4.8	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			16.2									
HCM 6th LOS			B									

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection						
Int Delay, s/veh	0.8					
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	28	17	13	377	614	44
Future Vol, veh/h	28	17	13	377	614	44
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	18	13	389	633	45

Major/Minor	Minor2	Major1	Major2			
Conflicting Flow All	897	359	688	0	-	0
Stage 1	666	-	-	-	-	-
Stage 2	231	-	-	-	-	-
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	279	638	902	-	-	-
Stage 1	472	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	269	626	893	-	-	-
Mov Cap-2 Maneuver	269	-	-	-	-	-
Stage 1	460	-	-	-	-	-
Stage 2	777	-	-	-	-	-

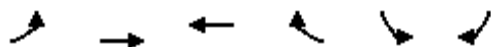
Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	893	-	343	-	-
HCM Lane V/C Ratio	0.015	-	0.135	-	-
HCM Control Delay (s)	9.1	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←←	↑↑↑	↑↑↑	↑	←←	↑↑
Traffic Volume (vph)	101	1700	1772	377	548	262
Future Volume (vph)	101	1700	1772	377	548	262
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	7.0	85.7	74.0	74.0	23.9	74.0
Actuated g/C Ratio	0.06	0.71	0.62	0.62	0.20	0.62
v/c Ratio	0.52	0.38	0.58	0.37	0.82	0.15
Control Delay	63.8	7.1	14.9	4.9	56.4	1.4
Queue Delay	0.0	0.0	0.5	0.0	0.0	0.0
Total Delay	63.8	7.1	15.5	4.9	56.4	1.4
LOS	E	A	B	A	E	A
Approach Delay		10.3	13.6		38.6	
Approach LOS		B	B		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 32 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 16.6

Intersection LOS: B

Intersection Capacity Utilization 68.1%

ICU Level of Service C

Analysis Period (min) 15

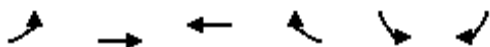
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←←	↑↑↑	↑↑↑	↑	←←	↑↑
Traffic Volume (veh/h)	101	1700	1772	377	548	262
Future Volume (veh/h)	101	1700	1772	377	548	262
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	1735	1808	385	559	267
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	167	4647	3245	974	660	533
Arrive On Green	0.10	1.00	1.00	1.00	0.19	0.19
Sat Flow, veh/h	3456	6696	5274	1532	3456	2790
Grp Volume(v), veh/h	103	1735	1808	385	559	267
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1532	1728	1395
Q Serve(g_s), s	3.4	0.0	0.0	0.0	18.7	10.3
Cycle Q Clear(g_c), s	3.4	0.0	0.0	0.0	18.7	10.3
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	167	4647	3245	974	660	533
V/C Ratio(X)	0.62	0.37	0.56	0.40	0.85	0.50
Avail Cap(c_a), veh/h	501	4647	3245	974	731	590
HCM Platoon Ratio	2.00	2.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.82	0.82
Uniform Delay (d), s/veh	53.1	0.0	0.0	0.0	46.8	43.4
Incr Delay (d2), s/veh	1.4	0.2	0.7	1.2	7.7	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.1	0.2	13.2	8.7	8.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.5	0.2	0.7	1.2	54.5	44.4
LnGrp LOS	D	A	A	A	D	D
Approach Vol, veh/h		1838	2193		826	
Approach Delay, s/veh		3.3	0.8		51.2	
Approach LOS		A	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		92.5		27.5	10.4	82.1
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		2.0		20.7	5.4	2.0
Green Ext Time (p_c), s		24.6		2.2	0.0	43.4
Intersection Summary						
HCM 6th Ctrl Delay			10.3			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	140	11	169	32	68	26	365	22	485	46
Future Volume (vph)	140	11	169	32	68	26	365	22	485	46
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	10.2	10.4	7.6	10.7	10.7	7.1	17.4	7.1	15.5	15.5
Actuated g/C Ratio	0.20	0.21	0.15	0.21	0.21	0.14	0.35	0.14	0.31	0.31
v/c Ratio	0.43	0.35	0.70	0.09	0.17	0.12	0.40	0.10	0.49	0.09
Control Delay	34.5	7.8	46.1	19.5	0.8	29.3	15.2	29.4	18.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.5	7.8	46.1	19.5	0.8	29.3	15.2	29.4	18.7	0.3
LOS	C	A	D	B	A	C	B	C	B	A
Approach Delay		21.2		31.4			16.0		17.6	
Approach LOS		C		C			B		B	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 50.2

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.70

Intersection Signal Delay: 20.1









Intersection LOS: C

Intersection Capacity Utilization 56.8%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
Ø1	Ø2	Ø3	Ø4
12 s	29.2 s	11.2 s	32.6 s
			
Ø5	Ø6	Ø7	Ø8
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary

2: Hancock Ave & Medical Center Dr

01/27/2021





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	11	128	169	32	68	26	365	69	22	485	46
Future Volume (veh/h)	140	11	128	169	32	68	26	365	69	22	485	46
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.95	1.00		0.95
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	156	12	142	188	36	76	29	406	77	24	539	51
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	198	20	236	233	348	284	71	829	156	61	976	413
Arrive On Green	0.11	0.17	0.17	0.13	0.19	0.19	0.04	0.28	0.28	0.03	0.27	0.27
Sat Flow, veh/h	1781	120	1420	1781	1870	1523	1781	2958	555	1781	3554	1504
Grp Volume(v), veh/h	156	0	154	188	36	76	29	242	241	24	539	51
Grp Sat Flow(s),veh/h/ln	1781	0	1540	1781	1870	1523	1781	1777	1736	1781	1777	1504
Q Serve(g_s), s	4.3	0.0	4.7	5.2	0.8	2.2	0.8	5.7	5.9	0.7	6.5	1.3
Cycle Q Clear(g_c), s	4.3	0.0	4.7	5.2	0.8	2.2	0.8	5.7	5.9	0.7	6.5	1.3
Prop In Lane	1.00		0.92	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	198	0	256	233	348	284	71	498	486	61	976	413
V/C Ratio(X)	0.79	0.00	0.60	0.81	0.10	0.27	0.41	0.49	0.50	0.40	0.55	0.12
Avail Cap(c_a), veh/h	219	0	855	233	1053	857	261	824	805	261	1648	698
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.9	0.0	19.5	21.3	17.0	17.6	23.6	15.1	15.2	23.9	15.6	13.7
Incr Delay (d2), s/veh	14.0	0.0	3.1	17.3	0.2	0.7	1.4	1.2	1.2	1.6	0.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	1.7	3.1	0.3	0.7	0.3	2.2	2.2	0.3	2.4	0.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.9	0.0	22.6	38.6	17.2	18.3	25.1	16.3	16.4	25.4	16.4	14.0
LnGrp LOS	D	A	C	D	B	B	C	B	B	C	B	B
Approach Vol, veh/h		310			300			512			614	
Approach Delay, s/veh		29.3			30.9			16.8			16.6	
Approach LOS		C			C			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.3	19.9	11.2	13.0	6.6	19.7	10.2	14.0				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	2.7	7.9	7.2	6.7	2.8	8.5	6.3	4.2				
Green Ext Time (p_c), s	0.0	3.9	0.0	1.2	0.0	4.8	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			21.4									
HCM 6th LOS			C									

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	21	21	580	485	13
Future Vol, veh/h	34	21	21	580	485	13
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	22	22	611	511	14

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	888	283	535
Stage 1	528	-	-
Stage 2	360	-	-
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	283	714	1029
Stage 1	556	-	-
Stage 2	677	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	271	700	1019
Mov Cap-2 Maneuver	271	-	-
Stage 1	538	-	-
Stage 2	670	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.1	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1019	-	354	-	-
HCM Lane V/C Ratio	0.022	-	0.164	-	-
HCM Control Delay (s)	8.6	-	17.1	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-

APPENDIX D

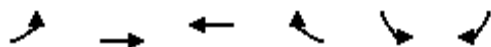
PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

NEAR-TERM OPENING YEAR 2023

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	243	1195	1558	468	410	187
Future Volume (vph)	243	1195	1558	468	410	187
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	11.9	88.4	71.9	71.9	21.2	71.9
Actuated g/C Ratio	0.10	0.74	0.60	0.60	0.18	0.60
v/c Ratio	0.75	0.27	0.54	0.46	0.71	0.12
Control Delay	66.5	5.6	15.9	5.5	53.1	2.0
Queue Delay	0.0	0.0	0.4	0.3	0.0	0.0
Total Delay	66.5	5.6	16.2	5.8	53.1	2.0
LOS	E	A	B	A	D	A
Approach Delay		15.9	13.8		37.1	
Approach LOS		B	B		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 18.0

Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

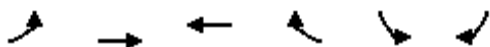
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	243	1195	1558	468	410	187
Future Volume (veh/h)	243	1195	1558	468	410	187
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	256	1258	1640	493	432	197
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	311	4851	3195	958	551	444
Arrive On Green	0.09	0.75	1.00	1.00	0.16	0.16
Sat Flow, veh/h	3456	6696	5274	1532	3456	2790
Grp Volume(v), veh/h	256	1258	1640	493	432	197
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1532	1728	1395
Q Serve(g_s), s	8.7	7.2	0.0	0.0	14.4	7.7
Cycle Q Clear(g_c), s	8.7	7.2	0.0	0.0	14.4	7.7
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	311	4851	3195	958	551	444
V/C Ratio(X)	0.82	0.26	0.51	0.51	0.78	0.44
Avail Cap(c_a), veh/h	501	4851	3195	958	731	590
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.94	0.94
Uniform Delay (d), s/veh	53.7	4.5	0.0	0.0	48.5	45.6
Incr Delay (d2), s/veh	2.6	0.1	0.6	2.0	4.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	2.1	0.2	17.0	6.6	6.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.3	4.6	0.6	2.0	53.4	46.7
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		1514	2133		629	
Approach Delay, s/veh		13.4	0.9		51.3	
Approach LOS		B	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		96.3		23.7	15.4	80.9
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		9.2		16.4	10.7	2.0
Green Ext Time (p_c), s		13.4		2.7	0.1	41.1
Intersection Summary						
HCM 6th Ctrl Delay			12.7			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	48	32	66	6	8	71	736	78	518	94
Future Volume (vph)	48	32	66	6	8	71	736	78	518	94
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	8.9	10.7	6.6	10.6	10.6	7.0	30.5	7.1	30.6	30.6
Actuated g/C Ratio	0.14	0.17	0.10	0.16	0.16	0.11	0.47	0.11	0.48	0.48
v/c Ratio	0.22	0.28	0.41	0.02	0.02	0.41	0.64	0.45	0.35	0.14
Control Delay	32.4	13.9	39.3	21.8	0.1	38.2	22.7	39.5	18.1	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	13.9	39.3	21.8	0.1	38.2	22.7	39.5	18.1	3.0
LOS	C	B	D	C	A	D	C	D	B	A
Approach Delay		20.8		34.1			23.8		18.5	
Approach LOS		C		C			C		B	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 64.4

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 22.1









Intersection LOS: C

Intersection Capacity Utilization 58.1%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
Ø1	Ø2	Ø3	Ø4
12 s	29.2 s	11.2 s	32.6 s
			
Ø5	Ø6	Ø7	Ø8
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary

2: Hancock Ave & Medical Center Dr

01/27/2021





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	32	49	66	6	8	71	736	189	78	518	94
Future Volume (veh/h)	48	32	49	66	6	8	71	736	189	78	518	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.96	1.00		0.96
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	54	36	55	74	7	9	80	827	212	88	582	106
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	109	73	111	131	235	189	136	1056	271	143	1367	584
Arrive On Green	0.06	0.11	0.11	0.07	0.13	0.13	0.08	0.38	0.38	0.08	0.38	0.38
Sat Flow, veh/h	1781	642	982	1781	1870	1502	1781	2772	710	1781	3554	1518
Grp Volume(v), veh/h	54	0	91	74	7	9	80	530	509	88	582	106
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	1870	1502	1781	1777	1705	1781	1777	1518
Q Serve(g_s), s	1.6	0.0	2.9	2.2	0.2	0.3	2.4	14.7	14.7	2.7	6.7	2.6
Cycle Q Clear(g_c), s	1.6	0.0	2.9	2.2	0.2	0.3	2.4	14.7	14.7	2.7	6.7	2.6
Prop In Lane	1.00		0.60	1.00		1.00	1.00		0.42	1.00		1.00
Lane Grp Cap(c), veh/h	109	0	184	131	235	189	136	677	650	143	1367	584
V/C Ratio(X)	0.50	0.00	0.49	0.57	0.03	0.05	0.59	0.78	0.78	0.62	0.43	0.18
Avail Cap(c_a), veh/h	198	0	817	211	954	766	237	747	717	237	1493	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	23.2	24.9	21.4	21.4	24.9	15.2	15.2	24.8	12.6	11.3
Incr Delay (d2), s/veh	1.3	0.0	2.8	1.4	0.1	0.1	1.5	5.6	5.8	1.6	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.2	0.9	0.1	0.1	1.0	6.1	5.9	1.1	2.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.6	0.0	26.0	26.4	21.4	21.6	26.4	20.8	21.0	26.4	12.9	11.6
LnGrp LOS	C	A	C	C	C	C	C	C	C	C	B	B
Approach Vol, veh/h		145			90			1119			776	
Approach Delay, s/veh		26.2			25.5			21.3			14.3	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	27.0	8.7	10.9	8.9	27.2	8.0	11.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	4.7	16.7	4.2	4.9	4.4	8.7	3.6	2.3				
Green Ext Time (p_c), s	0.0	4.6	0.0	0.6	0.0	5.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			19.3									
HCM 6th LOS			B									

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	83	43	708	662	53
Future Vol, veh/h	48	83	43	708	662	53
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	86	44	730	682	55

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1183	389	747
Stage 1	720	-	-
Stage 2	463	-	-
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	182	610	857
Stage 1	443	-	-
Stage 2	600	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	169	598	849
Mov Cap-2 Maneuver	169	-	-
Stage 1	416	-	-
Stage 2	594	-	-

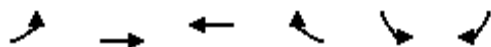
Approach	EB	NB	SB
HCM Control Delay, s	25.3	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	849	-	310	-	-
HCM Lane V/C Ratio	0.052	-	0.436	-	-
HCM Control Delay (s)	9.5	-	25.3	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	2.1	-	-

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	174	1748	1815	436	714	408
Future Volume (vph)	174	1748	1815	436	714	408
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	9.2	84.2	70.4	70.4	25.4	70.4
Actuated g/C Ratio	0.08	0.70	0.59	0.59	0.21	0.59
v/c Ratio	0.68	0.40	0.62	0.44	1.00	0.24
Control Delay	66.7	7.7	17.6	6.1	81.8	1.5
Queue Delay	0.0	0.0	0.7	0.4	0.0	0.0
Total Delay	66.7	7.7	18.3	6.5	81.8	1.5
LOS	E	A	B	A	F	A
Approach Delay		13.1	16.0		52.6	
Approach LOS		B	B		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 32 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.00

Intersection Signal Delay: 22.7

Intersection LOS: C

Intersection Capacity Utilization 72.9%

ICU Level of Service C

Analysis Period (min) 15

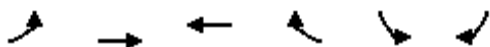
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←←	↑↑↑	↑↑↑	↑	←←	↑↑
Traffic Volume (veh/h)	174	1748	1815	436	714	408
Future Volume (veh/h)	174	1748	1815	436	714	408
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	178	1784	1852	445	729	416
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	232	4515	3044	912	731	590
Arrive On Green	0.09	0.93	1.00	1.00	0.21	0.21
Sat Flow, veh/h	3456	6696	5274	1531	3456	2790
Grp Volume(v), veh/h	178	1784	1852	445	729	416
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1531	1728	1395
Q Serve(g_s), s	6.0	3.5	0.0	0.0	25.3	16.6
Cycle Q Clear(g_c), s	6.0	3.5	0.0	0.0	25.3	16.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	232	4515	3044	912	731	590
V/C Ratio(X)	0.77	0.40	0.61	0.49	1.00	0.70
Avail Cap(c_a), veh/h	501	4515	3044	912	731	590
HCM Platoon Ratio	1.33	1.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.63	0.63
Uniform Delay (d), s/veh	53.7	1.3	0.0	0.0	47.3	43.8
Incr Delay (d2), s/veh	2.0	0.3	0.9	1.9	25.6	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	0.8	0.3	15.3	13.4	12.6
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.7	1.6	0.9	1.9	72.8	46.6
LnGrp LOS	E	A	A	A	E	D
Approach Vol, veh/h		1962	2297		1145	
Approach Delay, s/veh		6.5	1.1		63.3	
Approach LOS		A	A		E	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		90.0		30.0	12.7	77.3
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		5.5		27.3	8.0	2.0
Green Ext Time (p_c), s		25.8		0.0	0.0	45.4
Intersection Summary						
HCM 6th Ctrl Delay			16.2			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	140	11	169	32	68	26	544	22	792	62
Future Volume (vph)	140	11	169	32	68	26	544	22	792	62
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	9.6	10.3	7.0	10.6	10.6	6.6	23.1	6.6	21.2	21.2
Actuated g/C Ratio	0.17	0.18	0.12	0.18	0.18	0.11	0.40	0.11	0.37	0.37
v/c Ratio	0.53	0.40	0.88	0.11	0.19	0.14	0.49	0.12	0.68	0.11
Control Delay	41.2	8.6	71.7	21.5	1.0	31.6	16.2	31.5	21.7	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.2	8.6	71.7	21.5	1.0	31.6	16.2	31.5	21.7	0.3
LOS	D	A	E	C	A	C	B	C	C	A
Approach Delay		24.8		47.8			16.8		20.4	
Approach LOS		C		D			B		C	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 57.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.5









Intersection LOS: C

Intersection Capacity Utilization 57.3%

ICU Level of Service B

Analysis Period (min) 15























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
Ø1	Ø2	Ø3	Ø4
12 s	29.2 s	11.2 s	32.6 s
			
Ø5	Ø6	Ø7	Ø8
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary

2: Hancock Ave & Medical Center Dr

01/27/2021





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	140	11	131	169	32	68	26	544	69	22	792	62
Future Volume (veh/h)	140	11	131	169	32	68	26	544	69	22	792	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.96
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	156	12	146	188	36	76	29	604	77	24	880	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	190	19	236	203	323	262	69	1101	140	59	1222	521
Arrive On Green	0.11	0.17	0.17	0.11	0.17	0.17	0.04	0.35	0.35	0.03	0.34	0.34
Sat Flow, veh/h	1781	117	1422	1781	1870	1519	1781	3152	401	1781	3554	1514
Grp Volume(v), veh/h	156	0	158	188	36	76	29	340	341	24	880	69
Grp Sat Flow(s),veh/h/ln	1781	0	1539	1781	1870	1519	1781	1777	1776	1781	1777	1514
Q Serve(g_s), s	5.0	0.0	5.5	6.1	0.9	2.5	0.9	8.9	9.0	0.8	12.5	1.8
Cycle Q Clear(g_c), s	5.0	0.0	5.5	6.1	0.9	2.5	0.9	8.9	9.0	0.8	12.5	1.8
Prop In Lane	1.00		0.92	1.00		1.00	1.00		0.23	1.00		1.00
Lane Grp Cap(c), veh/h	190	0	255	203	323	262	69	621	620	59	1222	521
V/C Ratio(X)	0.82	0.00	0.62	0.93	0.11	0.29	0.42	0.55	0.55	0.41	0.72	0.13
Avail Cap(c_a), veh/h	190	0	743	203	916	744	227	717	717	227	1434	611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.4	0.0	22.5	25.5	20.2	20.9	27.2	15.2	15.2	27.5	16.6	13.1
Incr Delay (d2), s/veh	22.4	0.0	3.3	42.7	0.2	0.8	1.5	1.2	1.2	1.7	1.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	0.0	2.1	4.8	0.4	0.9	0.4	3.4	3.4	0.3	4.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	47.8	0.0	25.8	68.1	20.4	21.7	28.8	16.4	16.4	29.1	18.4	13.3
LnGrp LOS	D	A	C	E	C	C	C	B	B	C	B	B
Approach Vol, veh/h	314			300			710			973		
Approach Delay, s/veh	36.7			50.7			16.9			18.3		
Approach LOS	D			D			B			B		
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.5	26.1	11.2	14.2	6.8	25.7	10.8	14.6				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	2.8	11.0	8.1	7.5	2.9	14.5	7.0	4.5				
Green Ext Time (p_c), s	0.0	4.9	0.0	1.2	0.0	5.3	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay	24.6											
HCM 6th LOS	C											

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection

Int Delay, s/veh 3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	46	52	122	662	780	49
Future Vol, veh/h	46	52	122	662	780	49
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	55	128	697	821	52

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1472	457	883
Stage 1	857	-	-
Stage 2	615	-	-
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	118	551	762
Stage 1	376	-	-
Stage 2	502	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	96	541	755
Mov Cap-2 Maneuver	96	-	-
Stage 1	309	-	-
Stage 2	497	-	-

Approach	EB	NB	SB
HCM Control Delay, s	54.4	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	755	-	170	-	-
HCM Lane V/C Ratio	0.17	-	0.607	-	-
HCM Control Delay (s)	10.7	-	54.4	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.6	-	3.3	-	-

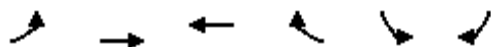
APPENDIX E

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS NEAR-TERM OPENING YEAR 2023 + PROJECT

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	251	1195	1558	485	418	191
Future Volume (vph)	251	1195	1558	485	418	191
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	12.2	88.2	71.4	71.4	21.4	71.4
Actuated g/C Ratio	0.10	0.74	0.60	0.60	0.18	0.60
v/c Ratio	0.76	0.27	0.54	0.48	0.72	0.12
Control Delay	66.5	5.6	16.2	5.6	53.2	2.0
Queue Delay	0.0	0.0	0.4	0.4	0.0	0.0
Total Delay	66.5	5.6	16.5	6.0	53.2	2.0
LOS	E	A	B	A	D	A
Approach Delay		16.2	14.0		37.1	
Approach LOS		B	B		D	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 99 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 18.2

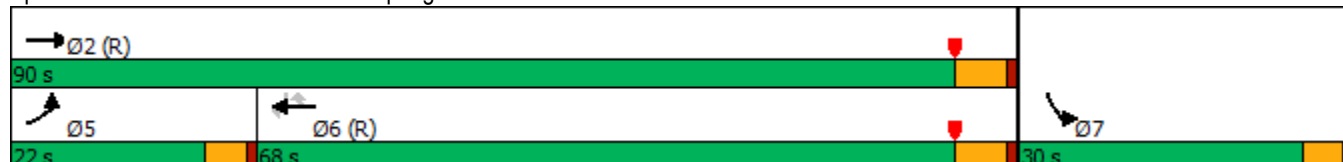
Intersection LOS: B

Intersection Capacity Utilization 63.9%

ICU Level of Service B

Analysis Period (min) 15

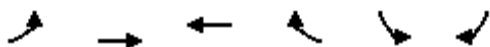
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	←←	↑↑↑	↑↑↑	↑	←←	↑↑
Traffic Volume (veh/h)	251	1195	1558	485	418	191
Future Volume (veh/h)	251	1195	1558	485	418	191
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	264	1258	1640	511	440	201
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	319	4837	3172	951	558	451
Arrive On Green	0.09	0.75	1.00	1.00	0.16	0.16
Sat Flow, veh/h	3456	6696	5274	1531	3456	2790
Grp Volume(v), veh/h	264	1258	1640	511	440	201
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1531	1728	1395
Q Serve(g_s), s	9.0	7.2	0.0	0.0	14.7	7.8
Cycle Q Clear(g_c), s	9.0	7.2	0.0	0.0	14.7	7.8
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	319	4837	3172	951	558	451
V/C Ratio(X)	0.83	0.26	0.52	0.54	0.79	0.45
Avail Cap(c_a), veh/h	501	4837	3172	951	731	590
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.94	0.94
Uniform Delay (d), s/veh	53.5	4.6	0.0	0.0	48.3	45.5
Incr Delay (d2), s/veh	3.4	0.1	0.6	2.2	5.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	2.1	0.2	17.6	6.7	6.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	56.9	4.7	0.6	2.2	53.4	46.5
LnGrp LOS	E	A	A	A	D	D
Approach Vol, veh/h		1522	2151		641	
Approach Delay, s/veh		13.8	1.0		51.3	
Approach LOS		B	A		D	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		96.0		24.0	15.7	80.3
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		9.2		16.7	11.0	2.0
Green Ext Time (p_c), s		13.4		2.7	0.1	41.4
Intersection Summary						
HCM 6th Ctrl Delay			13.0			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	48	32	78	6	9	71	736	79	518	94
Future Volume (vph)	48	32	78	6	9	71	736	79	518	94
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	8.9	10.7	6.7	10.6	10.6	7.0	30.5	7.2	30.6	30.6
Actuated g/C Ratio	0.14	0.17	0.10	0.16	0.16	0.11	0.47	0.11	0.47	0.47
v/c Ratio	0.22	0.28	0.48	0.02	0.03	0.41	0.66	0.45	0.35	0.14
Control Delay	32.4	13.9	42.2	21.8	0.1	38.2	23.1	39.7	18.2	3.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.4	13.9	42.2	21.8	0.1	38.2	23.1	39.7	18.2	3.0
LOS	C	B	D	C	A	D	C	D	B	A
Approach Delay		20.8		36.8			24.1		18.6	
Approach LOS		C		D			C		B	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 64.5

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 22.5









Intersection LOS: C

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
12 s	29.2 s	11.2 s	32.6 s
			
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary

2: Hancock Ave & Medical Center Dr

01/27/2021





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	32	49	78	6	9	71	736	214	79	518	94
Future Volume (veh/h)	48	32	49	78	6	9	71	736	214	79	518	94
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.96	1.00		0.96
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	54	36	55	88	7	10	80	827	240	89	582	106
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	108	72	110	141	245	197	135	1028	298	142	1374	587
Arrive On Green	0.06	0.11	0.11	0.08	0.13	0.13	0.08	0.38	0.38	0.08	0.39	0.39
Sat Flow, veh/h	1781	642	981	1781	1870	1505	1781	2687	779	1781	3554	1518
Grp Volume(v), veh/h	54	0	91	88	7	10	80	547	520	89	582	106
Grp Sat Flow(s),veh/h/ln	1781	0	1624	1781	1870	1505	1781	1777	1689	1781	1777	1518
Q Serve(g_s), s	1.7	0.0	3.0	2.7	0.2	0.3	2.5	15.6	15.6	2.7	6.8	2.6
Cycle Q Clear(g_c), s	1.7	0.0	3.0	2.7	0.2	0.3	2.5	15.6	15.6	2.7	6.8	2.6
Prop In Lane	1.00		0.60	1.00		1.00	1.00		0.46	1.00		1.00
Lane Grp Cap(c), veh/h	108	0	183	141	245	197	135	680	646	142	1374	587
V/C Ratio(X)	0.50	0.00	0.50	0.62	0.03	0.05	0.59	0.80	0.81	0.63	0.42	0.18
Avail Cap(c_a), veh/h	195	0	802	207	937	754	233	734	697	233	1467	627
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.8	0.0	23.6	25.3	21.5	21.5	25.3	15.6	15.6	25.3	12.8	11.5
Incr Delay (d2), s/veh	1.3	0.0	2.9	1.7	0.1	0.1	1.5	6.7	7.1	1.7	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	1.2	1.1	0.1	0.1	1.0	6.7	6.4	1.2	2.4	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	27.1	0.0	26.5	26.9	21.5	21.7	26.9	22.3	22.7	26.9	13.1	11.7
LnGrp LOS	C	A	C	C	C	C	C	C	C	C	B	B
Approach Vol, veh/h		145			105			1147			777	
Approach Delay, s/veh		26.7			26.1			22.8			14.5	
Approach LOS		C			C			C			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	27.5	9.1	11.0	8.9	27.7	8.0	12.0				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	4.7	17.6	4.7	5.0	4.5	8.8	3.7	2.3				
Green Ext Time (p_c), s	0.0	4.1	0.0	0.6	0.0	5.4	0.0	0.0				
Intersection Summary												
HCM 6th Ctrl Delay			20.3									
HCM 6th LOS			C									

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection

Int Delay, s/veh 2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	48	83	43	708	664	53
Future Vol, veh/h	48	83	43	708	664	53
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	49	86	44	730	685	55

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1186	390	750
Stage 1	723	-	-
Stage 2	463	-	-
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	181	609	855
Stage 1	441	-	-
Stage 2	600	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	168	597	847
Mov Cap-2 Maneuver	168	-	-
Stage 1	414	-	-
Stage 2	594	-	-

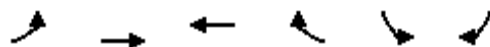
Approach	EB	NB	SB
HCM Control Delay, s	25.5	0.5	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	847	-	308	-	-
HCM Lane V/C Ratio	0.052	-	0.438	-	-
HCM Control Delay (s)	9.5	-	25.5	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0.2	-	2.1	-	-

Timings

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	203	1748	1815	469	733	416
Future Volume (vph)	203	1748	1815	469	733	416
Turn Type	Prot	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		7	
Permitted Phases				6		6
Detector Phase	5	2	6	6	7	6
Switch Phase						
Minimum Initial (s)	6.0	10.0	10.0	10.0	3.0	10.0
Minimum Split (s)	10.6	15.8	34.8	34.8	7.6	34.8
Total Split (s)	22.0	90.0	68.0	68.0	30.0	68.0
Total Split (%)	18.3%	75.0%	56.7%	56.7%	25.0%	56.7%
Yellow Time (s)	3.6	4.8	4.8	4.8	3.6	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	5.8	5.8	5.8	4.6	5.8
Lead/Lag	Lead		Lag	Lag		Lag
Lead-Lag Optimize?			Yes	Yes		Yes
Recall Mode	None	C-Min	C-Min	C-Min	None	C-Min
Act Effect Green (s)	10.2	84.2	69.4	69.4	25.4	69.4
Actuated g/C Ratio	0.08	0.70	0.58	0.58	0.21	0.58
v/c Ratio	0.71	0.40	0.63	0.47	1.03	0.24
Control Delay	66.8	7.7	18.3	6.6	87.8	1.5
Queue Delay	0.0	0.0	0.7	0.4	0.0	0.0
Total Delay	66.8	7.7	19.0	7.0	87.8	1.5
LOS	E	A	B	A	F	A
Approach Delay		13.9	16.6		56.6	
Approach LOS		B	B		E	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 32 (27%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.03

Intersection Signal Delay: 24.1

Intersection LOS: C

Intersection Capacity Utilization 74.3%

ICU Level of Service D

Analysis Period (min) 15

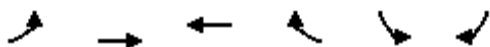
Splits and Phases: 1: Murietta Hot Springs Rd & Hancock Ave



HCM 6th Signalized Intersection Summary

1: Murietta Hot Springs Rd & Hancock Ave

01/27/2021























Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations	↰↰	↑↑↑	↑↑↑	↰	↰↰	↰↰
Traffic Volume (veh/h)	203	1748	1815	469	733	416
Future Volume (veh/h)	203	1748	1815	469	733	416
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			0.97	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	207	1784	1852	479	748	424
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	261	4515	3001	899	731	590
Arrive On Green	0.10	0.93	1.00	1.00	0.21	0.21
Sat Flow, veh/h	3456	6696	5274	1530	3456	2790
Grp Volume(v), veh/h	207	1784	1852	479	748	424
Grp Sat Flow(s),veh/h/ln	1728	1609	1702	1530	1728	1395
Q Serve(g_s), s	7.0	3.5	0.0	0.0	25.4	17.0
Cycle Q Clear(g_c), s	7.0	3.5	0.0	0.0	25.4	17.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	261	4515	3001	899	731	590
V/C Ratio(X)	0.79	0.40	0.62	0.53	1.02	0.72
Avail Cap(c_a), veh/h	501	4515	3001	899	731	590
HCM Platoon Ratio	1.33	1.33	2.00	2.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.65	0.65
Uniform Delay (d), s/veh	53.1	1.3	0.0	0.0	47.3	44.0
Incr Delay (d2), s/veh	2.1	0.3	1.0	2.3	32.7	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.8	0.3	16.5	14.2	12.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	55.1	1.6	1.0	2.3	80.0	47.1
LnGrp LOS	E	A	A	A	F	D
Approach Vol, veh/h		1991	2331		1172	
Approach Delay, s/veh		7.1	1.2		68.1	
Approach LOS		A	A		E	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		90.0		30.0	13.7	76.3
Change Period (Y+Rc), s		5.8		4.6	4.6	5.8
Max Green Setting (Gmax), s		84.2		25.4	17.4	62.2
Max Q Clear Time (g_c+I1), s		5.5		27.4	9.0	2.0
Green Ext Time (p_c), s		25.8		0.0	0.0	45.9
Intersection Summary						
HCM 6th Ctrl Delay			17.6			
HCM 6th LOS			B			

Timings

2: Hancock Ave & Medical Center Dr

01/27/2021

										
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	143	11	197	32	69	26	549	23	797	62
Future Volume (vph)	143	11	197	32	69	26	549	23	797	62
Turn Type	Prot	NA	Prot	NA	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases					8					6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0	6.0	10.0	6.0	10.0	10.0
Minimum Split (s)	10.6	32.6	10.6	32.6	32.6	10.6	26.8	10.6	26.8	26.8
Total Split (s)	10.8	32.6	11.2	33.0	33.0	12.0	29.2	12.0	29.2	29.2
Total Split (%)	12.7%	38.4%	13.2%	38.8%	38.8%	14.1%	34.4%	14.1%	34.4%	34.4%
Yellow Time (s)	3.6	3.6	3.6	3.6	3.6	3.6	4.8	3.6	4.8	4.8
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.6	4.6	4.6	4.6	4.6	4.6	5.8	4.6	5.8	5.8
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	Min	None	Min	Min
Act Effect Green (s)	7.0	10.4	7.3	10.7	10.7	6.8	21.9	6.8	21.9	21.9
Actuated g/C Ratio	0.13	0.19	0.13	0.19	0.19	0.12	0.39	0.12	0.39	0.39
v/c Ratio	0.72	0.38	0.95	0.10	0.18	0.13	0.51	0.12	0.64	0.10
Control Delay	53.2	8.5	83.3	21.4	1.0	31.4	17.6	31.3	20.4	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.2	8.5	83.3	21.4	1.0	31.4	17.6	31.3	20.4	0.3
LOS	D	A	F	C	A	C	B	C	C	A
Approach Delay		31.2		57.5			18.1		19.3	
Approach LOS		C		E			B		B	

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 55.9

Natural Cycle: 85

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 25.9









Intersection LOS: C

Intersection Capacity Utilization 58.8%

ICU Level of Service B

Analysis Period (min) 15
























Splits and Phases: 2: Hancock Ave & Medical Center Dr

			
Ø1	Ø2	Ø3	Ø4
12 s	29.2 s	11.2 s	32.6 s
			
Ø5	Ø6	Ø7	Ø8
12 s	29.2 s	10.8 s	33 s

HCM 6th Signalized Intersection Summary

2: Hancock Ave & Medical Center Dr

01/27/2021





												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	143	11	128	197	32	69	26	549	81	23	797	62
Future Volume (veh/h)	143	11	128	197	32	69	26	549	81	23	797	62
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.96	1.00		0.96	1.00		0.96
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	159	12	142	219	36	77	29	610	90	26	886	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	191	20	231	203	317	258	69	1077	158	63	1228	523
Arrive On Green	0.11	0.16	0.16	0.11	0.17	0.17	0.04	0.35	0.35	0.04	0.35	0.35
Sat Flow, veh/h	1781	120	1419	1781	1870	1518	1781	3086	454	1781	3554	1514
Grp Volume(v), veh/h	159	0	154	219	36	77	29	351	349	26	886	69
Grp Sat Flow(s),veh/h/ln	1781	0	1539	1781	1870	1518	1781	1777	1764	1781	1777	1514
Q Serve(g_s), s	5.1	0.0	5.4	6.6	0.9	2.6	0.9	9.3	9.3	0.8	12.6	1.8
Cycle Q Clear(g_c), s	5.1	0.0	5.4	6.6	0.9	2.6	0.9	9.3	9.3	0.8	12.6	1.8
Prop In Lane	1.00		0.92	1.00		1.00	1.00		0.26	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	250	203	317	258	69	620	615	63	1228	523
V/C Ratio(X)	0.83	0.00	0.61	1.08	0.11	0.30	0.42	0.57	0.57	0.41	0.72	0.13
Avail Cap(c_a), veh/h	191	0	745	203	918	746	228	719	713	228	1438	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	25.3	0.0	22.5	25.6	20.3	21.0	27.2	15.3	15.3	27.3	16.5	13.0
Incr Delay (d2), s/veh	24.5	0.0	3.4	85.2	0.2	0.9	1.5	1.3	1.3	1.6	1.9	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	2.0	7.4	0.4	0.9	0.4	3.5	3.5	0.4	4.8	0.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	49.8	0.0	25.9	110.9	20.5	21.9	28.7	16.6	16.6	28.9	18.3	13.2
LnGrp LOS	D	A	C	F	C	C	C	B	B	C	B	B
Approach Vol, veh/h		313			332			729			981	
Approach Delay, s/veh		38.0			80.4			17.1			18.3	
Approach LOS		D			F			B			B	
Timer - Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	26.0	11.2	14.0	6.8	25.8	10.8	14.4				
Change Period (Y+Rc), s	4.6	5.8	4.6	4.6	4.6	5.8	4.6	4.6				
Max Green Setting (Gmax), s	7.4	23.4	6.6	28.0	7.4	23.4	6.2	28.4				
Max Q Clear Time (g_c+I1), s	2.8	11.3	8.6	7.4	2.9	14.6	7.1	4.6				
Green Ext Time (p_c), s	0.0	4.9	0.0	1.2	0.0	5.3	0.0	0.6				
Intersection Summary												
HCM 6th Ctrl Delay			29.3									
HCM 6th LOS			C									

HCM 6th TWSC
3: Hancock Ave & Walsh Center Dr

01/27/2021

Intersection

Int Delay, s/veh 4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	49	49	122	667	786	49
Future Vol, veh/h	49	49	122	667	786	49
Conflicting Peds, #/hr	10	10	10	0	0	10
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	150	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	52	52	128	702	827	52

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1480	460	889
Stage 1	863	-	-
Stage 2	617	-	-
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	116	548	758
Stage 1	373	-	-
Stage 2	501	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	94	538	751
Mov Cap-2 Maneuver	94	-	-
Stage 1	307	-	-
Stage 2	496	-	-

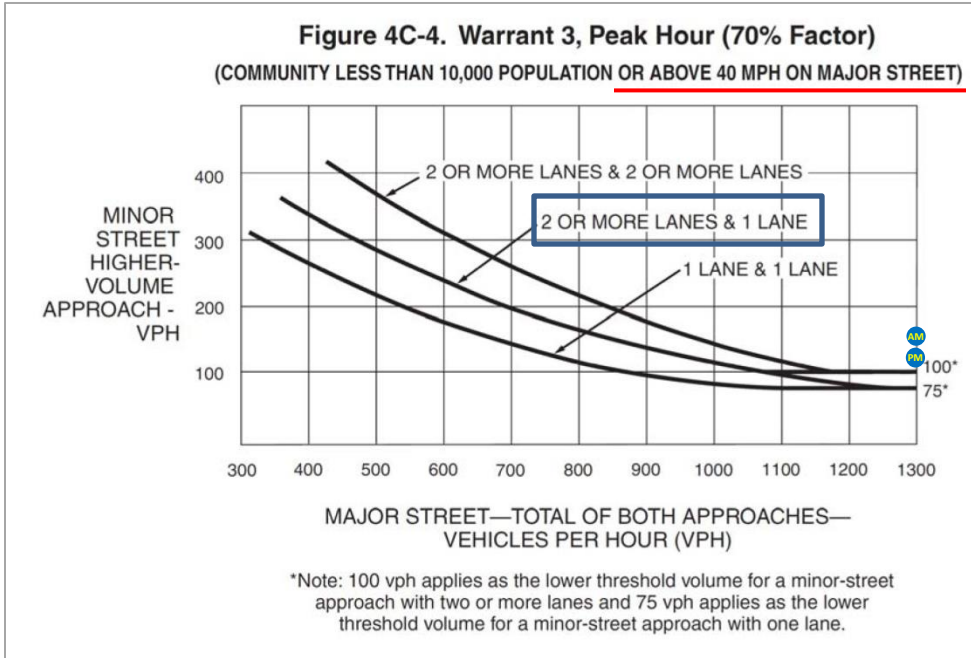
Approach	EB	NB	SB
HCM Control Delay, s	61.2	1.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	751	-	160	-	-
HCM Lane V/C Ratio	0.171	-	0.645	-	-
HCM Control Delay (s)	10.8	-	61.2	-	-
HCM Lane LOS	B	-	F	-	-
HCM 95th %tile Q(veh)	0.6	-	3.6	-	-

APPENDIX F

SIGNAL WARRANT ANALYSIS WORKSHEET

Intersection #3
Hancock Avenue & Walsh Center Dr
Warrant 3, Peak Hour: 70% Factor Table^a
 Near-Term Opening Year 2023 + Project



Near-Term Opening Year 2023 + Project



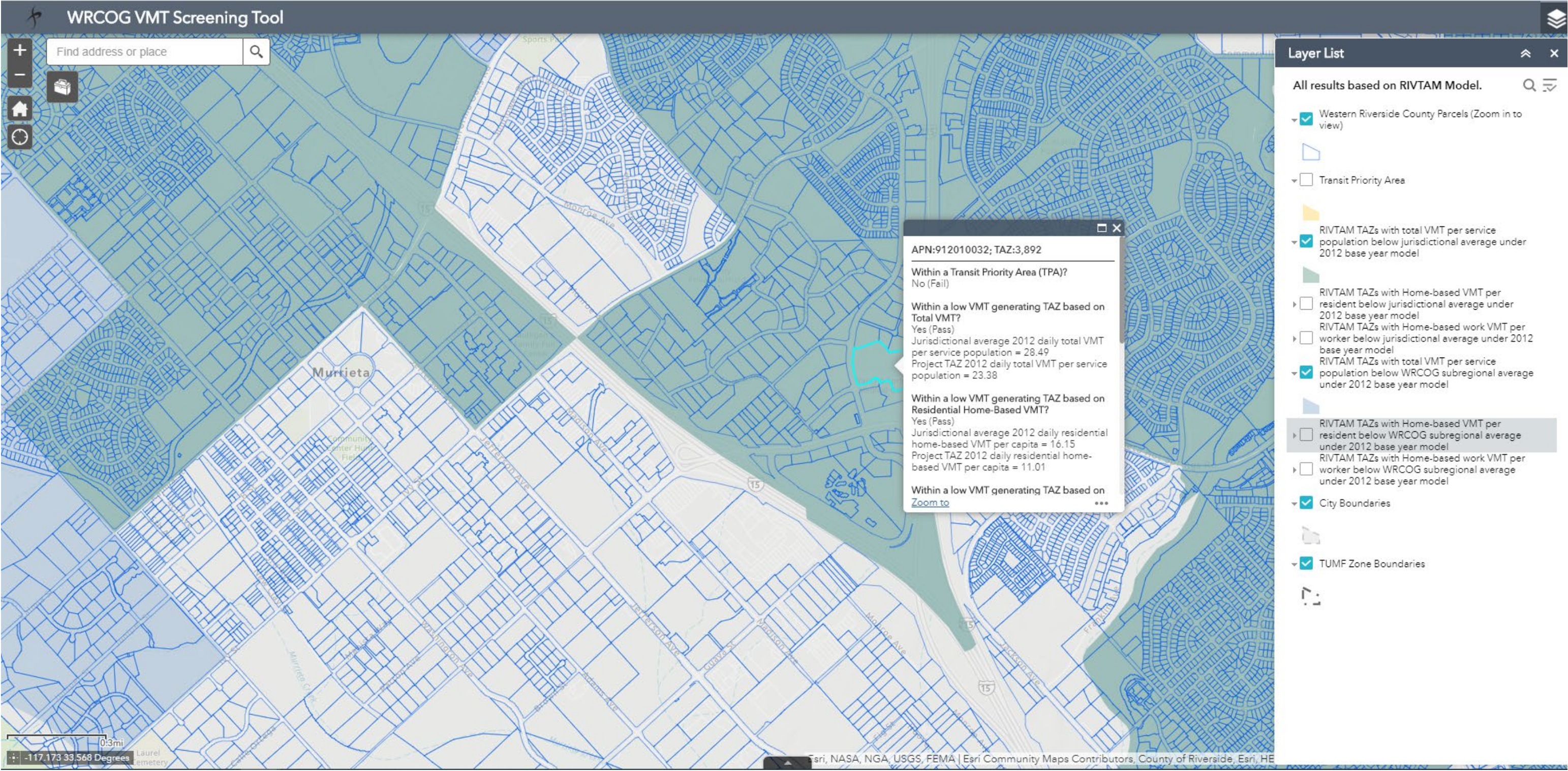
Footnotes:

- a. The posted speed limit on the Major Street (Hancock Avenue) is 45 MPH. Therefore the 70% Table (Table 4C-4) may be used to determine if a signal at the intersection is warranted.

RESULT: SIGNAL WARRANTED

APPENDIX G

WRCOG SCREENING MAP EXCERPTS



VMT per Service Population TAZ 3,892 = 23.38

VMT per Service Population Jurisdictional Average = 28.49

Project is therefore lower than jurisdictional average by 17.9%