TRAFFIC STUDY

HOAG HOSPITAL IRVINE

IRVINE, CALIFORNIA

PLANNING AREA 13

IRVINE SPECTRUM 4

CASE FILE NUMBER
00816357-PCPM

This Traffic Study has been prepared under the supervision of
Ambarish Mukherjee, P.E.

LSA

October 2020

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Prepared by:

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LSA Project No. LPX1904

October 2020

EXECUTIVE SUMMARY

The purpose of this Traffic Study is to determine short-term and long-range traffic deficiencies (level of service [LOS]) and California Environmental Quality Act (CEQA) transportation impacts (vehicle miles traveled [VMT]) resulting from the proposed expansion (project) of the Hoag Hospital Irvine (HHI) site at 16200 and 16300 Sand Canyon Avenue in Planning Area 13, Irvine, California.

The existing HHI site (in Traffic Analysis Zone 178) includes a 154-bed (239,594-square-foot [sf]) hospital (not including a 10,200 sf central plant), with an additional 12 labor, delivery, recovery, and postpartum beds (5,627 sf) currently under construction, and 115,762 sf of medical office building. The proposed project would expand the hospital and add 225 additional beds (436,740 sf), and move a number of services into free-standing ambulatory care buildings, known as Hospital Support Facilities (HSF) (268,000 sf including an 8,000 sf auditorium and excluding a 47,550 sf central plant). Full buildout of the project would result in a 391-bed hospital with a total of 949,961 sf (including beds, HSF and auditorium), 57,750 sf of central plant, and 115,762 sf of medical office building.

Access to the project site would be provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine – Kaiser Permanente/Alton Parkway, and a new ingress-only unsignalized driveway along Alton Parkway.

The project would be completed in two phases. Phase 1 is scheduled for completion by 2025, and Phase 2 would be completed 10 to 15 years after completion of Phase 1. However, for the purposes of this traffic study, the entire project will be evaluated as a single phase.

This study focuses on the a.m. peak-hour, p.m. peak-hour, and daily LOS at 15 intersections and 14 roadway segments. Project LOS impacts were determined based on an analysis of the following scenarios:

1. Existing
2. Existing Plus Project (Phases 1 and 2)
3. Short-Term Interim-Year Approved Baseline
4. Short-Term Interim-Year Approved Baseline Plus Project (Phases 1 and 2)
5. Long-Range Approved Baseline
6. Long-Range Approved Baseline Plus Project (Phases 1 and 2)
7. Buildout Approved Baseline
8. Buildout Approved Baseline Plus Project (Phases 1 and 2)

Based on the results of this analysis, the proposed expansion of HHI would result in a peak-hour LOS impact at one study area intersection (Sand Canyon Avenue/Interstate 405 [I-405] southbound ramps) in the Long-Range and Buildout Approved conditions. The project would contribute its fair share responsibility to improve the LOS at this intersection.

A daily LOS impact would occur at two study area roadway segments (Sand Canyon Avenue between Alton Parkway and I-405 northbound off-ramp and between I-405 northbound off-ramp and the I-405 southbound ramps) in the Existing and Short-Term Interim-Year Approved conditions. However,

a peak-hour link analysis shows that each segment would operate at satisfactory LOS in both directions during both peak hours. Therefore, no improvement is necessary for the study area roadway segments.

Project access was analyzed based on the City of Irvine's (City) Transportation Design Procedures (TDPs; adopted in February 2007). As a result, no impacts to vehicle access were identified using the following TDPs:

- **TDP-1:** Turn lane pocket lengths
- **TDP-10:** Distance between driveways and intersections
- **TDP-14:** Driveway lengths

The project meets the intent of TDP-4, Right-Turn Lanes at Uncontrolled Driveways. However, as the project does not provide a dedicated right-turn lane at the new project driveway along Alton Parkway, a request for deviation from TDP-4 has been prepared. Appendix F provides the deviation request from TDP-4 reviewed and approved by City staff.

The project incorporates design features to accommodate pedestrian circulation on site. Pedestrian traffic is afforded safe travel via paths and sidewalks that connect to the public street system. Transit facilities are accessible to and from the project site with Orange County Transportation Authority (OCTA) and Irvine Shuttle (iShuttle) bus stops along Sand Canyon Avenue and Alton Parkway. In the vicinity of the project site, bicycle travel is possible in the on-street (Class II) bike lanes along Sand Canyon Avenue and Alton Parkway, in the bicycle paths (class I) along San Diego Creek Trail north of the project site and Hospital Trail east of the project site. The project would provide long-term bicycle storage facilities for employees in the two parking structures. Short-term bicycle racks for visitors would also be provided in five locations on site. The project would provide a total of 100 bicycle spaces, which would meet the City Code requirements. These would comprise both bicycle storage facilities and bicycle racks. The storage facilities would be within the parking structures, and the bicycle racks would be strategically placed throughout the campus.

As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a VMT analysis was conducted. Based on the VMT analysis, the project VMT is well below the City's VMT threshold. Therefore, the project meets the requirements of the City's *Traffic Study Guidelines* (April 2020) regarding VMT, and the project would not create significant CEQA impacts.

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LIST OF ABBREVIATIONS AND ACRONYMS

ADT	average daily traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
City	City of Irvine
CMP	Congestion Management Program
ft	foot/feet
HCM	*Highway Capacity Manual*
HHI	Hoag Hospital Irvine
HSF	Hospital Support Facility
I-5	Interstate 5
I-405	Interstate 405
ICU	intersection capacity utilization
iShuttle	Irvine Shuttle
ITAM	Irvine Transportation Analysis Model
ITE	Institute of Transportation Engineers
LOS	level(s) of service
mph	miles per hour
OCTA	Orange County Transportation Authority
project	Hoag Hospital Irvine Expansion Project
sf	square feet
TAZ	Traffic Analysis Zone
TDP	Transportation Design Procedure
v/c	volume-to-capacity
VMT	vehicle miles traveled
vph	vehicles per hour

TRAFFIC STUDY
HOAG HOSPITAL IRVINE

LSA has prepared the following Traffic Study to identify the short-term and long-range traffic deficiencies (level of service [LOS]) and California Environmental Quality Act (CEQA) transportation impacts (vehicle miles traveled [VMT]) resulting from the proposed expansion (project) of the Hoag Hospital Irvine (HHI) site at 16200 and 16300 Sand Canyon Avenue in Planning Area 13, Irvine, California. LSA has prepared this analysis consistent with the approved scope of work, August 10, 2020 (Appendix A). This Traffic Study was prepared in accordance with the applicable sections of the City of Irvine's (City's) Traffic Study Guidelines (adopted by the City Council on June 23, 2020) and the City's Transportation Design Procedures (TDPs; adopted in February 2007).

INTRODUCTION

Project Site

Figure 1 shows the project site location. The existing site (located in Traffic Analysis Zone [TAZ] 178) includes a 154-bed (239,594-square-foot [sf]) hospital (not including a 10,200 sf central plant), with an additional 12 labor, delivery, recovery and postpartum beds (5,627 sf) currently under construction, and 115,762 sf of medical office building. The proposed project would expand the hospital and add 225 additional beds (436,740 sf), and move a number of services into free-standing ambulatory care buildings, known as Hospital Support Facilities (268,000 sf including an 8,000 sf auditorium and excluding a 47,550 sf central plant). The project site is bounded by medical office and hotel uses to the north, Alton Parkway to the south, Irvine Medical and Science Complex buildings to the east, and Sand Canyon Avenue to the west.

Access to the project site will be provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine—Kaiser Permanente/Alton Parkway, and a new ingress-only, unsignalized driveway along Alton Parkway. Figure 2 illustrates the proposed site plan of the project at build out.

Study Area Boundary

As shown on Figure 1, the study area includes the following intersections in the Irvine Transportation Analysis Model (ITAM):

1. Jeffrey Road/Alton Parkway
2. Sand Canyon Avenue/Interstate 5 (I-5) northbound ramps
3. Sand Canyon Avenue/Marine Way
4. Sand Canyon Avenue/I-5 southbound ramps
5. Sand Canyon Avenue/Burt Road
6. Sand Canyon Avenue/Laguna Canyon Road
7. Sand Canyon Avenue/Irvine Center Drive
8. Sand Canyon Avenue/Waterworks Way
9. Sand Canyon Avenue/Barranca Parkway

LSA

LEGEND

- Project Boundary

- Study Area Intersection

N

0 750 1500

FEET

SOURCE: ESRI

FIGURE 1

Hoag Hospital Irvine

Project Location and Study Area Intersections

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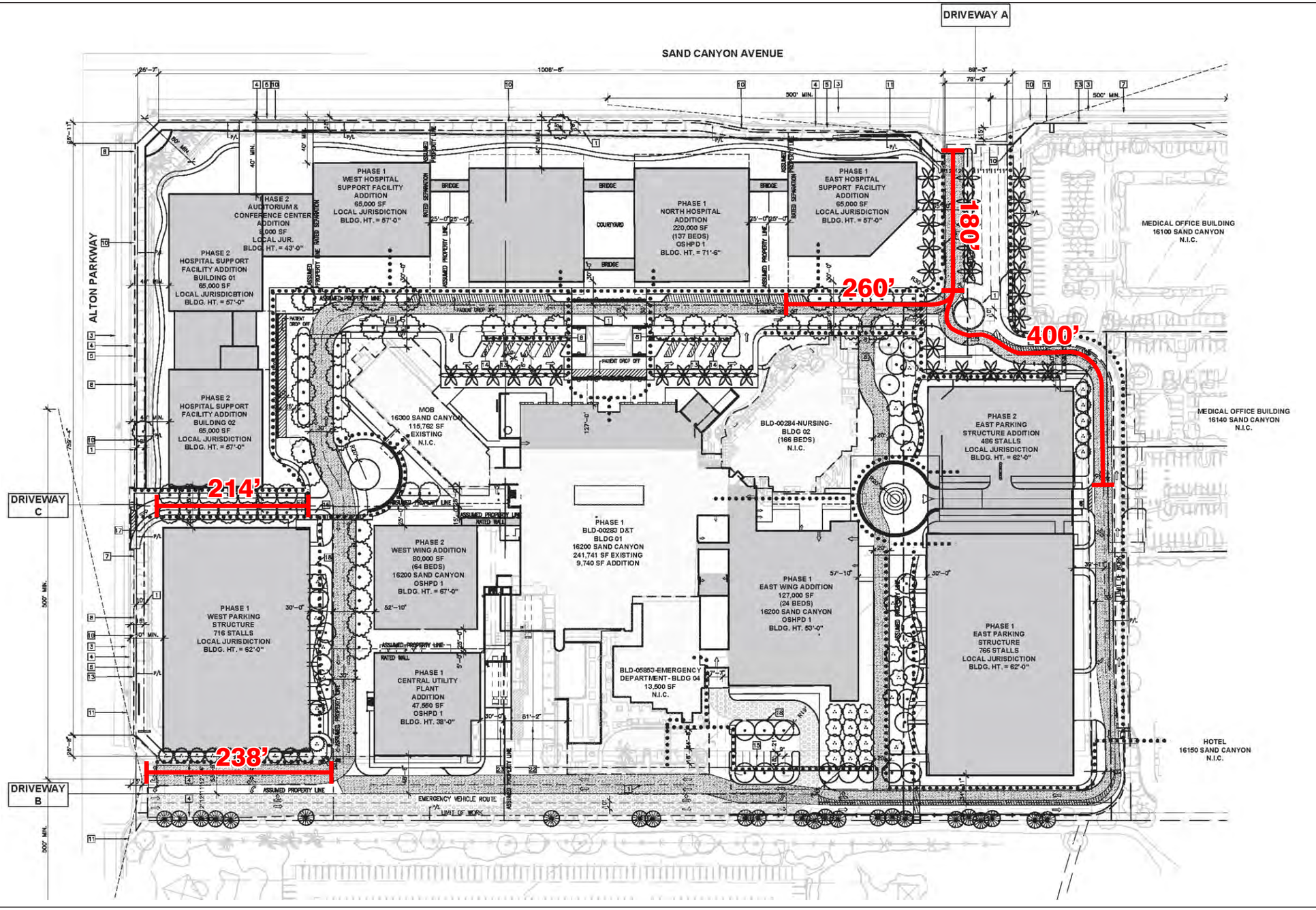


FIGURE 2

LSA

0 65 130
FEET

SOURCE: LPA

I:\LPX1904\G\Traffic\Site Plan.cdr (9/28/2020)

Hoag Hospital Irvine
Site Plan

10. Sand Canyon Avenue/Hoag Irvine
11. Sand Canyon Avenue/Alton Parkway
12. Sand Canyon Avenue/Interstate 405 (I-405) northbound off-ramp
13. Sand Canyon Avenue/I-405 southbound ramps
14. Hoag Irvine—Kaiser Permanente/Alton Parkway
15. Laguna Canyon Road/Alton Parkway

This study analyzes roadway segments between each study area intersection. The project access points at Sand Canyon Avenue/Hoag Irvine, Hoag Irvine—Kaiser Permanente/Alton Parkway, and the new right in-only driveway on Alton Parkway are also evaluated as part of the access analysis.

The current City of Irvine General Plan (2015) designation for the site is Research and Industrial. The current zoning is 5.5: Medical and Science.

PERFORMANCE CRITERIA

To determine the peak-hour operations at signalized intersections within the study area, LSA used the intersection capacity utilization (ICU) methodology. The ICU methodology compares the volume-to-capacity (v/c) ratios of conflicting turn movements at an intersection, sums these critical conflicting v/c ratios for each intersection approach, and determines the overall ICU. The resulting ICU is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. This analysis includes parameters set by the City for ICU calculations, including lane capacity, right-turn treatment, and clearance intervals.

According to the City's *Traffic Study Guidelines* (April 2020) and consistent with the City's General Plan (2015), LOS at an intersection or roadway is considered to be unsatisfactory when the ICU exceeds 0.90 (i.e., LOS E or F). The following table demonstrates the relationship of ICU to LOS.

Levels of Service	ICU
A	0.00–0.60
B	0.61–0.70
C	0.71–0.80
D	0.81–0.90
E	0.91–1.00
F	> 1.00

Source: City of Irvine *Traffic Study Guidelines* (April 2020).
ICU = intersection capacity utilization

In addition to the ICU methodology of calculating intersection LOS, an operational analysis was also prepared based on the *Highway Capacity Manual* (HCM 6th Edition; Transportation Research Board 2017) methodology to determine the LOS at signalized California Department of Transportation (Caltrans) intersections within the study area. The HCM 6th Edition signalized intersection methodology presents LOS in terms of total intersection delay (in seconds per vehicle). The resulting delay is expressed in terms of LOS, similar to the ICU methodology. The following table demonstrates the relationship of delay to LOS.

Levels of Service	Signalized Intersection Delay (seconds)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Source: *Highway Capacity Manual* (Transportation Research Board 2017).

Roadway link v/c ratios were determined using the City's theoretical daily capacities. Facility types were taken from the City's General Plan. The following table illustrates theoretical daily capacities (as contained in the City's *Traffic Study Guidelines*) for roadways within the study area:

Facility Type	Number of Lanes	Theoretical Capacity
Major Highway	8	72,000
	7	63,000
	6	54,000
Primary Highway	4	32,000
Secondary Highway	4	28,000
Commuter	2	13,000

Sources: General Plan (City of Irvine 2015) and *Traffic Study Guidelines* (City of Irvine 2020b).
Note: Theoretical capacity of a seven-lane Major Highway is interpolated from the theoretical capacities of six-lane and eight-lane Major Highways.

Using the City's adopted methodologies (ICU for signalized intersections and v/c ratios for roadway links), a project LOS impact occurs when the project causes a signalized intersection or roadway link to exceed the acceptable LOS or when the signalized intersection or roadway link in question exceeds the acceptable LOS and the impact of development is greater than or equal to 0.02.

The City's peak-hour link analysis (per the adopted *Traffic Study Guidelines*) is used to evaluate roadway capacity conditions and the need for improvement, if necessary. The peak-hour link analysis determines directional a.m. and p.m. peak-hour v/c ratios for each link that is projected to exceed LOS standards. The peak-hour capacity is determined by multiplying the midblock number of lanes for each direction by a lane capacity of 1,600 vehicles per hour (vph). Where the distance between controlled intersections is 1 mile or more, the midblock number of lanes shall be multiplied by a lane capacity of 2,000 vph. Project improvements will be required to bring the LOS back to 0.90 or to the LOS baseline, if the baseline is greater than 0.90.

The project access points at Sand Canyon Avenue/Hoag Irvine, Hoag Irvine—Kaiser Permanente/ Alton Parkway, and the new ingress-only driveway on Alton Parkway are analyzed based on the design criteria recommended in the City's TDPs. The TDPs establish uniform policies and procedures for reviewing traffic design plans within Irvine. The TDPs were used to evaluate the roadway design features that may be impacted by the project. A description and an analysis of each applicable design criterion are provided later in this Traffic Study.

ANALYSIS METHODOLOGY AND APPROACH

The ITAM (model version 15) was used to forecast Short-Term Interim-Year, Long-Range, and Buildout Approved conditions with and without the project. The Approved condition includes each application for development currently approved by the City.

The Existing Plus Project scenario was determined by considering the traffic volume differential between the Existing No Project and Existing Plus Project ITAM runs. This differential was added to existing counts conducted at study area intersections and roadway segments to determine existing plus project conditions. It should be noted that the existing traffic counts have been adjusted due to COVID-19, as described later in this study.

The future conditions are based on the funded roadway network and land use assumptions envisioned to be in place by the respective horizon year. This future traffic analysis requires six ITAM runs. These ITAM runs are examined with and without the project in the Approved development scenarios. It should be noted that land use and roadway network changes were updated in ITAM to represent the approved uses and roadway extension in TAZ 156 (Traveland site).

LSA prepared the forecast data for this project based on the ITAM. The scenarios examined for each future condition are as follows:

1. **Short-Term Interim-Year Approved Baseline:** The ITAM Short-Term Interim-Year Approved Baseline run (Y23-15 or higher) includes the impacts of each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM were deleted for the analysis of this scenario. The baseline includes 245,221 sf hospital use and 115,762 sf medical office use in TAZ 178.

2. **Short-Term Interim-Year Approved Plus Project:** The ITAM Short-Term Interim-Year Approved Plus Project run (Y23-15 or higher) includes the impacts of each application for development approved by the City. The total plus project land uses include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

3. **Long-Range Approved Baseline:** The ITAM Long-Range Approved Baseline run (Y40-15 or higher) includes the impacts of each application for development approved by the City. The baseline includes 565,359 sf hospital use and 120,000 sf medical office use.

4. **Long-Range Approved Plus Project:** The ITAM Long-Range Approved Plus Project run (Y40-15 or higher) includes the impacts of each application for development approved by the City. The total plus project land uses include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

5. **Buildout Approved Baseline:** The ITAM Buildout Approved Baseline run (P40-15 or higher) includes the impacts of each application for development approved by the City. The baseline includes 565,359 sf hospital use and 120,000 sf medical office use.

6. **Buildout Approved Plus Project:** The ITAM Buildout Approved Plus Project run (P40-15 or higher) includes the impacts of each application for development approved by the City. The total plus project land uses include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

Project LOS deficiencies are identified at study area intersections for the Short-Term Interim-Year, Long-Range, and Buildout Approved conditions, assuming improvements to the circulation system identified by the City. Daily traffic volumes and v/c ratios are also presented in the analysis for the study area roadway segments for each scenario. Traffic volumes and calculations for the Short-Term Interim-Year, Long-Range, and Buildout Approved scenarios are referenced throughout this Traffic Study and are provided in Appendix B.

PROPOSED PROJECT TRAFFIC

Trip Generation

Traffic volume forecasts were prepared using ITAM (Model No. 15) for the project consisting of 704,740 sf of new hospital use. The ITAM integrates trip generation, distribution, and assignment into the methodology used to forecast trips. The ITAM does not base trip generation on land use, but rather on socioeconomic data. The socioeconomic approach to traffic modeling is premised on more precise demographic assumptions that look beyond the simple land uses reflected in the City's Zoning Code. As a result, the current ITAM does not contain land use-based trip rates that can easily determine the trip generation of a land development proposal.

The project trips assigned to the study area intersections and the roadway segments for the Existing, Short-Term Interim-Year, Long-Range, and Buildout Approved conditions are based on the ITAM, which is the OCTA sanctioned subarea model for the City. All modeling protocols (including trip generation, distribution, and assignment) are consistent with local, regional, and national guidance for such features. All project trip generation is accounted for in the ITAM, and the impacts of the project reflect the contribution of its trips to the local street system. All project traffic, as well as cumulative traffic and growth within Irvine and adjacent cities, is accounted for. The ITAM is the appropriate tool to evaluate discrete project-related circulation impacts for Irvine.

The socioeconomic trip rates contained in the ITAM are different from the land use-based trip rates in the Institute of Transportation Engineers (ITE) *Trip Generation Manual,* 10th Edition (2017). The ITAM socioeconomic trip rates are used for traffic study purposes (i.e., evaluation of study area intersections and roadway segments under Existing, Short-Term Interim-Year, Long-Range, and Buildout Approved conditions).

For the purpose of disclosing the approximate net number of trips generated by the proposed project expansion of 704,740 sf of hospital use, this analysis used trip rates contained in the ITE *Trip Generation Manual*. The land-use-based trip generation is used for evaluation of the City's TDPs; that evaluation is provided later in this Traffic Study.

Table A presents the project trip generation using the ITE trip rates. As Table A indicates, the existing HHI site generates 6,658 average daily trips (ADT), including 540 trips in the a.m. peak hour (401 inbound and 139 outbound) and 639 trips in the p.m. peak hour (188 inbound and 451 outbound).

LSA

Table A: Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Hospital		TSF	10.72	0.61	0.28	0.89	0.31	0.66	0.97
Medical-Dental Office Building		TSF	34.80	2.17	0.61	2.78	0.97	2.49	3.46
Existing Trip Generation									
Existing Hospital[2]	245.221	TSF	2,629	150	68	218	76	162	238
Medical Office Building	115.762	TSF	4,029	251	71	322	112	289	401
Total Existing			6,658	401	139	540	188	451	639
Entitled Trip Generation									
Hospital[2]	565.359	TSF	6,061	345	158	503	175	373	548
Medical Office Building	120.000	TSF	4,176	260	74	334	116	299	415
Total Entitled			10,237	605	232	837	291	672	963
Project Trip Generation									
Hospital[3]	704.740	TSF	7,555	430	197	627	218	466	684
Hoag Campus Build Out Trip Generation									
Hospital[3]	949.961	TSF	10,184	579	266	845	294	627	921
Medical Office Building	115.762	TSF	4,029	251	71	322	112	289	401
Total Proposed			14,213	830	337	1,167	406	916	1,322

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 10th Edition (2017).

Land Use Code 610 - Hospital

Land Use Code 720 - Medical-Dental Office Building

[2] Existing and Entitled do not include the existing central plant facilities (10,200 sf).

[3] The Project and Hoag Campus Buildout do not include the proposed central plant facilities (47,550 sf).

ADT = average daily trips

sf = square feet

TSF = thousand square feet

The proposed project is forecast to generate 7,555 ADT, including 627 trips in the a.m. peak hour (430 inbound and 197 outbound) and 684 trips in the p.m. peak hour (218 inbound and 466 outbound). At project buildout, the HHI site is forecast to generate 14,213 ADT, including 1,167 trips in the a.m. peak hour (830 inbound and 337 outbound) and 1,322 trips in the p.m. peak hour (406 inbound and 916 outbound).

Trip Distribution and Assignment

Directions of approach to and departure from the site are based on the ITAM's select zone assignments (TAZ 178) for a.m. peak-hour, p.m. peak-hour, and daily conditions under each horizon year. The model data, prepared by LSA, represent the baseline traffic volumes plus the trips generated by the project under each project scenario.

For the purposes of the access analysis, the a.m. peak-hour and p.m. peak-hour ITAM Buildout Approved Baseline Plus Project select zone assignments for TAZ 178 were used to distribute and assign ITE-based project trips in and out of the site. Appendix C provides the ITAM Buildout Approved Baseline Plus Project select zone assignments. The results of the access analysis are discussed later in this report.

It should be noted that the trip distribution at the project access point at Hoag Irvine—Kaiser Permanente/Alton Parkway and the intersection of Sand Canyon Avenue/Alton Parkway was adjusted to reflect the existing trip distribution patterns at these locations. In addition, it was assumed that 25 percent of the existing and future eastbound left-turn volume would make a U-turn to enter the project site at the new driveway on Alton Parkway. It was also assumed that 50 percent of the westbound Alton Parkway volume destined to the project site would enter at the Hoag Irvine—Kaiser Permanente/Alton Parkway driveway and 50 percent would enter via the new right-turn-in-only driveway on Alton Parkway.

These minor adjustments were discussed with and approved by City staff.

EXISTING CONDITIONS

Existing Site Uses

The existing HHI site includes a 154-bed hospital (239,594 sf of hospital use excluding 10,200 sf central plant), with an additional 12 labor, delivery, recovery and postpartum beds (5,627 sf) currently under construction, and 115,762 sf of medical office building. The project site is bounded by medical office and hotel uses to the north, Alton Parkway to the south, Irvine Medical and Science Complex buildings to the east, and Sand Canyon Avenue to the west. Access to the existing HHI site is provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine—Kaiser Permanente/Alton Parkway.

Existing Roadways and Intersections

Key roadways in the project vicinity are as follows:

- **Sand Canyon Avenue:** According to the City's General Plan Circulation Element (2015), Sand Canyon Avenue is a divided, six-lane, north-south Major Highway located directly west of the project site. The posted speed limit is 50 miles per hour (mph). On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the vicinity of the project site. On-street parking is not permitted.

- **Laguna Canyon Road/Oak Canyon:** According to the City's General Plan Circulation Element, Laguna Canyon Road is a divided, four-lane, Primary Highway south of Sand Canyon Avenue, and a Local Street north of Sand Canyon Avenue. Located east of the project site, Laguna Canyon Road is a north-south roadway south of Irvine Center Drive, and an east-west roadway north of Irvine Center Drive. The posted speed limit is 45 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the vicinity of the project site. On-street parking is not permitted.

- **Alton Parkway:** According to the City's General Plan Circulation Element, Alton Parkway is a divided, four-to- six-lane, east-west Primary Highway located directly south of the project site. Alton Parkway is a four-lane roadway east of Hoag Irvine, and a six-lane roadway between Hoag Irvine and Valley Oak Drive. The posted speed limit is 50 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the vicinity of the project site. On-street parking is not permitted.

- **Barranca Parkway:** According to the City's General Plan Circulation Element, Barranca Parkway is a divided, four-lane, east-west Primary Highway located north of the project site. The posted speed limit is 55 mph. On-street (Class II) bicycle lanes and sidewalks are provided on both sides of the street in the vicinity of the project site. On-street parking is not permitted.

Existing Baseline and Plus Project Traffic Volumes and Levels of Service

Intersection turning movement volumes for the a.m. (7:00 a.m. to 9:00 a.m.) and p.m. (4:00 p.m. to 6:00 p.m.) peak hours and 24-hour roadway volumes were collected at 13 study area intersections and all roadway segments in 2018. Intersection turning movement volumes for the remaining two study area intersections (project driveways) were collected in January 2020. All counts were conducted by Counts Unlimited, when schools were in session and before the COVID-19 pandemic. As local schools are closed and existing traffic conditions are atypical due to the pandemic, a 4-percent growth factor (2 percent per year) has been applied to the 2018 traffic counts to represent 2020 conditions. Appendix D provides the existing traffic counts and adjustments.

As previously discussed, the ICU methodology was used to determine the LOS at signalized intersections, and the HCM methodology was used to determine the LOS at Caltrans freeway ramp intersections. The Existing (Baseline and Plus Project) ICU and HCM worksheets are provided in Appendix B and Appendix E, respectively.

Table B presents a summary of existing (Baseline and Plus Project) intersection LOS. As Table B indicates, all study area intersections currently operate at satisfactory LOS. With the addition of the project in the existing setting, all study area intersections would continue to operate at satisfactory LOS. Therefore, the project can be implemented in an existing setting with no peak-hour LOS impacts at study intersections.

Table C presents existing (Baseline and Plus Project) ADT volumes and v/c ratios. As Table C indicates, all study area roadway segments currently operate at satisfactory LOS, with the exception of Sand Canyon Avenue between Alton Parkway and the I-405 northbound off-ramp (LOS F). With the addition of the project in the existing setting, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segment and Sand Canyon Avenue between I-405 northbound off-ramp and I-405 southbound ramps (LOS E). The v/c ratio for Sand Canyon Avenue between Alton Parkway and I-405 northbound off-ramp and between I-405 northbound off-ramp and I-405 southbound ramps would increase by 0.04 and 0.03, respectively. Although a daily LOS impact would occur at these two study area roadway segments, a peak-hour link analysis was conducted per the City's Traffic Study guidelines. Table C shows that each segment would operate at satisfactory LOS in both directions during both peak hours.

FUTURE CONDITIONS

The following discussion presents the results of the future analysis (Short-term Interim-Year, Long Range, and Buildout) with and without the proposed project.

Short-Term Interim-Year Approved Baseline and Plus Project Traffic Volumes and LOS

Table D presents a summary of the intersection LOS for the Short-Term Interim-Year Approved (Baseline and Plus Project) conditions. As Table D indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the project in the Short-Term Interim-Year Approved condition, all study area intersections would continue to operate at satisfactory LOS. Therefore, the project can be implemented in a Short-Term Interim-Year Approved condition with no peak-hour LOS impacts at study intersections.

Table E presents the ADT volumes and v/c ratios for the Short-Term Interim-Year Approved (Baseline and Plus Project) conditions. As Table E indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of the following segments:

- Sand Canyon Avenue between the I-5 northbound off-ramp and Marine Way (LOS E)
- Sand Canyon Avenue between Marine Way and the I-5 southbound off-ramp (LOS F)
- Sand Canyon Avenue between Alton Parkway to the I-405 northbound off-ramp (LOS F)
- Sand Canyon Avenue between the I-405 northbound off-ramp and I-405 southbound ramps (LOS E)

LSA

Table B: Existing Intersection Level of Service Summary

Int No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	291	Jeffrey Road/Alton Parkway	0.90	D	0.79	C	0.89	D	0.81	D	(0.01)	0.02	No
2	303	Sand Canyon Avenue/I-5 Northbound Ramps	0.57	A	0.63	B	0.58	A	0.64	B	0.01	0.01	No
		HCM	*25.2*	C	*49.6*	D	*25.7*	C	*51.0*	D	-	-	*N/A*
3	304	Sand Canyon Avenue/Marine Way	0.59	A	0.53	A	0.60	A	0.54	A	0.01	0.01	No
4	305	Sand Canyon Avenue/I-5 Southbound Ramps	0.60	A	0.53	A	0.62	B	0.54	A	0.02	0.01	No
		HCM	*30.1*	C	*26.0*	C	*32.5*	C	*26.0*	C	-	-	*N/A*
5	444	Sand Canyon Avenue/Burt Road	0.62	B	0.55	A	0.64	B	0.56	A	0.02	0.01	No
6	306	Sand Canyon Avenue/Laguna Canyon Road - Oak Canyon	0.45	A	0.54	A	0.47	A	0.56	A	0.02	0.02	No
7	307	Sand Canyon Avenue/Irvine Center Drive	0.54	A	0.49	A	0.56	A	0.50	A	0.02	0.01	No
8	308	Sand Canyon Avenue/Waterworks Way	0.36	A	0.44	A	0.40	A	0.46	A	0.04	0.02	No
9	309	Sand Canyon Avenue/Barranca Parkway	0.47	A	0.52	A	0.53	A	0.52	A	0.06	0.00	No
10	500	Sand Canyon Avenue/Hoag Irvine	0.32	A	0.35	A	0.31	A	0.34	A	(0.01)	(0.01)	No
11	310	Sand Canyon Avenue/Alton Parkway	0.58	A	0.63	B	0.65	B	0.65	B	0.07	0.02	No
12	311	Sand Canyon Avenue/I-405 Northbound Off-Ramp	0.55	A	0.41	A	0.58	A	0.41	A	0.03	0.00	No
		HCM	*0.7*	A	*7.8*	A	*0.7*	A	*7.9*	A	-	-	*N/A*
13	312	Sand Canyon Avenue/I-405 Southbound Ramps	0.78	C	0.48	A	0.80	C	0.48	A	0.02	0.00	No
		HCM	*58.0*	E	*19.1*	B	*50.0*	D	*18.5*	B	-	-	*N/A*
14	501	Hoag Irvine – Kaiser Permanente/Alton Parkway	0.48	A	0.42	A	0.54	A	0.49	A	0.06	0.07	No
15	315	Laguna Canyon Road/Alton Parkway	0.56	A	0.44	A	0.57	A	0.46	A	0.01	0.02	No

Δ = change

Delay is reported in seconds.

HCM = *Highway Capacity Manual*

Int = Intersection

I-405 = Interstate 405

I-5 = Interstate 5

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

LSA

Table C: Existing ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	Ratio	
793	Alton Parkway	Jeffrey Road to Sand Canyon Avenue	32,000	22,900	0.72	C	23,100	0.72	C	0.00	No
797		Sand Canyon Avenue to Hoag Irvine	49,500	27,100	0.55	A	28,400	0.57	A	0.02	No
798		Hoag Irvine to Laguna Canyon Road	32,000	19,400	0.61	B	20,200	0.63	B	0.02	No
647	Sand Canyon Avenue	I-5 Northbound Off-Ramp to Marine Way	54,000	41,800	0.77	C	42,600	0.79	C	0.02	No
1217		Marine Way to I-5 Southbound Off-Ramp	63,000	45,700	0.73	C	46,500	0.74	C	0.01	No
310		I-5 Southbound Off-Ramp to Burt Road	63,000	37,200	0.59	A	38,400	0.61	B	0.02	No
311		Burt Road to Laguna Canyon Road	54,000	37,200	0.69	B	38,400	0.71	C	0.02	No
314		Laguna Canyon Road to Irvine Center Drive	54,000	37,200	0.69	B	38,600	0.71	C	0.02	No
317		Irvine Center Drive to Waterworks Way	54,000	27,100	0.50	A	28,900	0.54	A	0.04	No
318		Waterworks Way to Barranca Parkway	54,000	27,100	0.50	A	29,000	0.54	A	0.04	No
319		Barranca Parkway to Hoag Irvine	54,000	27,900	0.52	A	30,200	0.56	A	0.04	No
320		Hoag Irvine to Alton Parkway	58,500	27,900	0.48	A	28,600	0.49	A	0.01	No
321		Alton Parkway to I-405 Northbound Off-Ramp	36,000	38,100	1.06	F	39,600	1.10	F	0.04	-
		AM Peak Hour northbound	*3,200*	*1,624*	*0.51*	*A*	*1,721*	*0.54*	*A*	*0.03*	*No*
		southbound	*4,000*	*1,511*	*0.38*	*A*	*1,512*	*0.38*	*A*	*0.00*	*No*
		PM Peak Hour northbound	*3,200*	*965*	*0.30*	*A*	*954*	*0.30*	*A*	*0.00*	*No*
		southbound	*4,000*	*1,872*	*0.47*	*A*	*1,973*	*0.49*	*A*	*0.02*	*No*
961		I-405 Northbound Off-Ramp to I-405 Southbound Ramps	32,000	28,500	0.89	D	29,300	0.92	E	0.03	-
		AM Peak Hour northbound	*3,200*	*2,215*	*0.69*	*B*	*2,270*	*0.71*	*C*	*0.02*	*No*
		southbound	*3,200*	*547*	*0.17*	*A*	*565*	*0.18*	*A*	*0.01*	*No*
		PM Peak Hour northbound	*3,200*	*887*	*0.28*	*A*	*875*	*0.27*	*A*	*(0.01)*	*No*
		southbound	*3,200*	*956*	*0.30*	*A*	*1,001*	*0.31*	*A*	*0.01*	*No*

Δ = change

= exceeds City of Irvine level of service criteria

ADT = average daily trips

I-405 = Interstate 405

I-5 = Interstate 5

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

LSA

Table D: Short-Term Interim-Year Approved Intersection Level of Service Summary

Int No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	291	Jeffrey Road/Alton Parkway	0.85	D	0.84	D	0.86	D	0.84	D	0.01	0.00	No
2	303	Sand Canyon Avenue/I-5 Northbound Ramps	0.71	C	0.70	B	0.72	C	0.71	C	0.01	0.01	No
		HCM	*38.0*	*D*	*40.2*	*D*	*40.2*	*D*	*41.7*	*D*	-	-	*N/A*
3	304	Sand Canyon Avenue/Marine Way	0.76	C	0.74	C	0.77	C	0.75	C	0.01	0.01	No
4	305	Sand Canyon Avenue/I-5 Southbound Ramps	0.67	B	0.74	C	0.68	B	0.75	C	0.01	0.01	No
		HCM	*29.7*	*C*	*77.3*	*E*	*31.0*	*C*	*74.7*	*E*	-	-	*N/A*
5	444	Sand Canyon Avenue/Burt Road	0.73	C	0.65	B	0.75	C	0.66	B	0.02	0.01	No
6	306	Sand Canyon Avenue/Laguna Canyon Road - Oak Canyon	0.62	B	0.56	A	0.64	B	0.57	A	0.02	0.01	No
7	307	Sand Canyon Avenue/Irvine Center Drive	0.57	A	0.56	A	0.59	A	0.57	A	0.02	0.01	No
8	308	Sand Canyon Avenue/Waterworks Way	0.44	A	0.52	A	0.47	A	0.52	A	0.03	0.00	No
9	309	Sand Canyon Avenue/Barranca Parkway	0.59	A	0.57	A	0.61	B	0.58	A	0.02	0.01	No
10	500	Sand Canyon Avenue/Hoag Irvine	0.42	A	0.50	A	0.43	A	0.60	A	0.01	0.10	No
11	310	Sand Canyon Avenue/Alton Parkway	0.65	B	0.71	C	0.76	C	0.73	C	0.11	0.02	No
12	311	Sand Canyon Avenue/I-405 Northbound Off-Ramp	0.59	A	0.52	A	0.62	B	0.52	A	0.03	0.00	No
		HCM	*0.7*	*A*	*11.5*	*B*	*0.8*	*A*	*11.5*	*B*	-	-	*N/A*
13	312	Sand Canyon Avenue/I-405 Southbound Ramps	0.88	D	0.55	A	0.90	D	0.55	A	0.02	0.00	No
		HCM	*>80.0*	*F*	*27.8*	*C*	*>80.0*	*F*	*27.7*	*C*	-	-	*N/A*
14	501	Hoag Irvine – Kaiser Permanente/Alton Parkway	0.49	A	0.45	A	0.54	A	0.48	A	0.05	0.03	No
15	315	Laguna Canyon Road/Alton Parkway	0.63	B	0.45	A	0.65	B	0.45	A	0.02	0.00	No

Δ = change

Delay is reported in seconds.

HCM = *Highway Capacity Manual*

Int = Intersection

I-405 = Interstate 405

I-5 = Interstate 5

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

LSA

Table E: Short-Term Interim-Year Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	Ratio	
793	Alton Parkway	Jeffrey Road to Sand Canyon Avenue	32,000	23,200	0.73	C	23,300	0.73	C	0.00	No
797		Sand Canyon Avenue to Hoag Irvine	49,500	27,500	0.56	A	28,800	0.58	A	0.02	No
798		Hoag Irvine to Laguna Canyon Road	32,000	19,600	0.61	B	20,300	0.63	B	0.02	No
647	Sand Canyon Avenue	I-5 Northbound Off-Ramp to Marine Way	54,000	51,900	0.96	E	52,100	0.96	E	0.00	No
1217		Marine Way to I-5 Southbound Off-Ramp	63,000	63,800	1.01	F	64,000	1.02	F	0.01	No
310		I-5 Southbound Off-Ramp to Burt Road	63,000	33,600	0.53	A	34,300	0.54	A	0.01	No
311		Burt Road to Laguna Canyon Road	54,000	33,000	0.61	B	33,600	0.62	B	0.01	No
314		Laguna Canyon Road to Irvine Center Drive	54,000	32,900	0.61	B	34,100	0.63	B	0.02	No
317		Irvine Center Drive to Waterworks Way	54,000	34,500	0.64	B	36,000	0.67	B	0.03	No
318		Waterworks Way to Barranca Parkway	54,000	33,500	0.62	B	35,000	0.65	B	0.03	No
319		Barranca Parkway to Hoag Irvine	54,000	34,800	0.64	B	36,800	0.68	B	0.04	No
320		Hoag Irvine to Alton Parkway	58,500	33,800	0.58	A	34,100	0.58	A	0.00	No
321		Alton Parkway to I-405 Northbound Off-Ramp	36,000	43,800	1.22	F	44,900	1.25	F	0.03	-
		AM Peak Hour northbound	*3,200*	*1,795*	*0.56*	*A*	*1,886*	*0.59*	*A*	*0.03*	*No*
		southbound	*4,000*	*1,946*	*0.49*	*A*	*1,896*	*0.47*	*A*	*(0.02)*	*No*
		PM Peak Hour northbound	*3,200*	*1,360*	*0.43*	*A*	*1,346*	*0.42*	*A*	*(0.01)*	*No*
		southbound	*4,000*	*2,194*	*0.55*	*A*	*2,275*	*0.57*	*A*	*0.02*	*No*
961		I-405 Northbound Off-Ramp to I-405 Southbound Ramps	32,000	31,600	0.99	E	32,200	1.01	F	0.02	-
		AM Peak Hour northbound	*3,200*	*2,460*	*0.77*	*C*	*2,526*	*0.79*	*C*	*0.02*	*No*
		southbound	*3,200*	*500*	*0.16*	*A*	*490*	*0.15*	*A*	*(0.01)*	*No*
		PM Peak Hour northbound	*3,200*	*1,241*	*0.39*	*A*	*1,241*	*0.39*	*A*	*0.00*	*No*
		southbound	*3,200*	*1,091*	*0.34*	*A*	*1,109*	*0.35*	*A*	*0.01*	*No*

Δ = change

= exceeds City of Irvine level of service criteria

ADT = average daily trips

I-405 = Interstate 405

I-5 = Interstate 5

Italics = peak hour link analysis

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

With the addition of the project in the Short-Term Interim-Year Approved condition, all study area roadway segments would continue to operate at satisfactory LOS, with the exception of the previously stated roadway segments. However, the v/c for Sand Canyon Avenue between the I-5 northbound off-ramp and Marine Way and between Marine Way and I-5 southbound off-ramp would not increase by 0.02 or greater. The v/c ratio for Sand Canyon Avenue between Alton Parkway and I-405 northbound off-ramp and between I-405 northbound off-ramp and I-405 southbound ramps would increase by 0.03 and 0.02, respectively. Although a daily LOS impact would occur at two study area roadway segments (Sand Canyon Avenue between Alton Parkway and the I-405 northbound off-ramp and between the I-405 northbound off-ramp and the I-405 southbound ramps), a peak-hour link analysis shows (Table E) that each segment would operate at satisfactory LOS in both directions during both peak hours. Therefore, no improvements are required at these locations.

Long-Range Approved Baseline and Plus Project Traffic Volumes and LOS

Table F presents a summary of the intersection LOS for Long-Range Approved (Baseline and Plus Project) conditions. As Table F indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Sand Canyon Avenue/I-405 southbound ramps (LOS E in the a.m. peak hour).

With the addition of the project in the Long-Range Interim-Year Approved condition, the previously stated intersection would continue to operate at unsatisfactory LOS, and the ICU increases by 0.02 at this intersection. Therefore, a peak-hour LOS impact would occur at one study area intersection in the Long-Range Approved condition. The project would be responsible for improvement at Sand Canyon Avenue/I-405 southbound ramps, as discussed later in the study.

Table G presents the ADT volumes and v/c ratios for the Long-Range Interim-Year Approved (Baseline and Plus Project) conditions. As Table G indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of the following roadway segments:

- Sand Canyon Avenue between the I-5 northbound off-ramp and Marine Way (LOS F)
- Sand Canyon Avenue between Marine Way and the I-5 southbound off-ramp (LOS E)
- Sand Canyon Avenue between Alton Parkway to the I-405 northbound off-ramp (LOS F)
- Sand Canyon Avenue between the I-405 northbound off-ramp and I-405 southbound ramps (LOS F)

With the addition of the project in the Long-Range Interim-Year Approved condition, the previously stated roadway segments would continue to operate at unsatisfactory LOS. However, the roadway segment v/c ratio would not increase by 0.02 or greater at these locations. Therefore, project implementation would not create daily LOS impacts on roadway segments in the Long-Range Approved condition.

LSA

Table F: Long-Range Approved Intersection Level of Service Summary

Int No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	291	Jeffrey Road/Alton Parkway	0.88	D	0.88	D	0.89	D	0.89	D	0.01	0.01	No
2	303	Sand Canyon Avenue/I-5 Northbound Ramps	0.70	B	0.73	C	0.71	C	0.74	C	0.01	0.01	No
		HCM	*60.8*	*E*	*57.5*	*E*	*60.6*	*E*	*57.5*	*E*	-	-	*N/A*
3	304	Sand Canyon Avenue/Marine Way	0.40	A	0.43	A	0.40	A	0.43	A	0.00	0.00	No
4	305	Sand Canyon Avenue/I-5 Southbound Ramps	0.74	C	0.66	B	0.75	C	0.66	B	0.01	0.00	No
		HCM	*31.0*	*C*	*24.0*	*C*	*32.6*	*C*	*24.3*	*C*	-	-	*N/A*
5	444	Sand Canyon Avenue/Burt Road	0.78	C	0.74	C	0.80	C	0.74	C	0.02	0.00	No
6	306	Sand Canyon Avenue/Laguna Canyon Road - Oak Canyon	0.68	B	0.63	B	0.68	B	0.63	B	0.00	0.00	No
7	307	Sand Canyon Avenue/Irvine Center Drive	0.62	B	0.68	B	0.63	B	0.69	B	0.01	0.01	No
8	308	Sand Canyon Avenue/Waterworks Way	0.45	A	0.56	A	0.47	A	0.55	A	0.02	(0.01)	No
9	309	Sand Canyon Avenue/Barranca Parkway	0.64	B	0.67	B	0.66	B	0.68	B	0.02	0.01	No
10	500	Sand Canyon Avenue/Hoag Irvine	0.47	A	0.55	A	0.47	A	0.61	B	0.00	0.06	No
11	310	Sand Canyon Avenue/Alton Parkway	0.71	C	0.78	C	0.71	C	0.78	C	0.00	0.00	No
12	311	Sand Canyon Avenue/I-405 Northbound Off-Ramp	0.54	A	0.44	A	0.56	A	0.44	A	0.02	0.00	No
		HCM	*3.4*	*A*	*5.5*	*A*	*3.5*	*A*	*5.5*	*A*	-	-	*N/A*
13	312	Sand Canyon Avenue/I-405 Southbound Ramps	0.94	E	0.57	A	0.96	E	0.57	A	0.02	0.00	Yes
		HCM	*>80.0*	*F*	*22.7*	*C*	*>80.0*	*F*	*23.5*	*C*	-	-	*N/A*
14	501	Hoag Irvine – Kaiser Permanente/Alton Parkway	0.53	A	0.58	A	0.55	A	0.60	A	0.02	0.02	No
15	315	Laguna Canyon Road/Alton Parkway	0.71	C	0.51	A	0.72	C	0.51	A	0.01	0.00	No

Δ = change

= exceeds City's level of service criteria

Delay is reported in seconds.

HCM = *Highway Capacity Manual*

Int = Intersection

I-405 = Interstate 405

I-5 = Interstate 5

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

LSA

Table G: Long-Range Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	Ratio	
793	Alton Parkway	Jeffrey Road to Sand Canyon Avenue	32,000	26,200	0.82	D	26,300	0.82	D	0.00	No
797		Sand Canyon Avenue to Hoag Irvine	49,500	33,600	0.68	B	34,300	0.69	B	0.01	No
798		Hoag Irvine to Laguna Canyon Road	32,000	22,800	0.71	C	23,100	0.72	C	0.01	No
647	Sand Canyon Avenue	I-5 Northbound Off-Ramp to Marine Way	54,000	54,400	1.01	F	54,600	1.01	F	0.00	No
1217		Marine Way to I-5 Southbound Off-Ramp	63,000	59,900	0.95	E	60,100	0.95	E	0.00	No
310		I-5 Southbound Off-Ramp to Burt Road	63,000	35,900	0.57	A	36,200	0.57	A	0.00	No
311		Burt Road to Laguna Canyon Road	54,000	35,100	0.65	B	35,400	0.66	B	0.01	No
314		Laguna Canyon Road to Irvine Center Drive	54,000	32,800	0.61	B	33,400	0.62	B	0.01	No
317		Irvine Center Drive to Waterworks Way	54,000	34,300	0.64	B	35,200	0.65	B	0.01	No
318		Waterworks Way to Barranca Parkway	54,000	34,100	0.63	B	35,000	0.65	B	0.02	No
319		Barranca Parkway to Hoag Irvine	54,000	35,300	0.65	B	36,300	0.67	B	0.02	No
320		Hoag Irvine to Alton Parkway	58,500	33,600	0.57	A	33,500	0.57	A	0.00	No
321		Alton Parkway to I-405 Northbound Off-Ramp	36,000	45,800	1.27	F	46,100	1.28	F	0.01	No
961		I-405 Northbound Off-Ramp to I-405 Southbound Ramps	32,000	32,500	1.02	F	32,600	1.02	F	0.00	No

Δ = change

= exceeds City of Irvine level of service criteria

ADT = average daily trips

I-405 = Interstate 405

I-5 = Interstate 5

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

Buildout Approved Baseline and Plus Project Traffic Volumes and LOS

Table H presents a summary of the intersection LOS for the Buildout Approved (Baseline and Plus Project) conditions. As Table H indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jeffrey Road/Alton Parkway (LOS E in the a.m. peak hour) and Sand Canyon Avenue/I-405 southbound ramps (LOS E in the a.m. peak hour).

With the addition of the project in the Buildout Approved condition, all study area intersections would continue to operate at satisfactory LOS, with the exception of the previously stated intersections. However, the ICU would not increase by 0.02 or greater at Jeffrey Road/Alton Parkway. The ICU would increase by 0.02 at Sand Canyon Avenue/I-405 southbound ramps. Therefore, a peak-hour LOS impact would occur at one study area intersection in the Buildout Approved condition. The project would be responsible for improvements at Sand Canyon Avenue/I-405 southbound ramps, as discussed later in the study.

Table I presents the ADT volumes and v/c ratios for the Buildout Approved (Baseline and Plus Project) conditions. As Table I indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of the following roadway segments:

- Sand Canyon Avenue between the I-5 northbound off-ramp and Marine Way (LOS F)
- Sand Canyon Avenue between Marine Way and the I-5 southbound off-ramp (LOS F)
- Sand Canyon Avenue between Alton Parkway to the I-405 northbound off-ramp (LOS F)
- Sand Canyon Avenue between I-405 northbound off-ramp and I-405 southbound ramps (LOS F)

With the addition of the project in the Buildout Approved condition, the previously stated roadway segments would continue to operate at unsatisfactory LOS. However, the roadway segment v/c ratio would not increase by 0.02 or greater at these locations. Therefore, project implementation would not create daily LOS impacts on roadway segments.

SPECIAL ISSUES

Site Access Analysis

Access to the HHI site is currently provided via signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine—Kaiser Permanente/Alton Parkway. Access to the proposed HHI site will be provided via the existing access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine—Kaiser Permanente/Alton Parkway, and a new ingress-only unsignalized driveway along Alton Parkway.

As previously discussed, project trips were generated using ITE trip rates (from Table A). The project trip generation (627 trips in the a.m. peak hour and 684 trips in the p.m. peak hour) represent 704,740 sf of hospital use. The trip distribution percentages at the project driveways were derived from the ITAM Buildout Approved Baseline Plus Project select zone assignments and trip distribution adjustments at the project access point at Hoag Irvine—Kaiser Permanente/Alton Parkway and Sand Canyon Avenue/Alton Parkway, as discussed previously.

LSA

Table H: Buildout Approved Intersection Level of Service Summary

Int No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	291	Jeffrey Road/Alton Parkway	0.91	E	0.87	D	0.91	E	0.87	D	0.00	0.00	No
2	303	Sand Canyon Avenue/I-5 Northbound Ramps	0.78	C	0.87	D	0.79	C	0.87	D	0.01	0.00	No
		HCM	*>80.0*	*F*	*>80.0*	*F*	*>80.0*	*F*	*>80.0*	*F*	-	-	*N/A*
3	304	Sand Canyon Avenue/Marine Way	0.43	A	0.44	A	0.43	A	0.44	A	0.00	0.00	No
4	305	Sand Canyon Avenue/I-5 Southbound Ramps	0.82	D	0.76	C	0.84	D	0.76	C	0.02	0.00	No
		HCM	*45.5*	*D*	*31.6*	*C*	*48.0*	*D*	*32.3*	*C*	-	-	*N/A*
5	444	Sand Canyon Avenue/Burt Road	0.88	D	0.83	D	0.90	D	0.84	D	0.02	0.01	No
6	306	Sand Canyon Avenue/Laguna Canyon Road - Oak Canyon	0.84	D	0.76	C	0.84	D	0.77	C	0.00	0.01	No
7	307	Sand Canyon Avenue/Irvine Center Drive	0.64	B	0.68	B	0.65	B	0.68	B	0.01	0.00	No
8	308	Sand Canyon Avenue/Waterworks Way	0.49	A	0.65	B	0.51	A	0.66	B	0.02	0.01	No
9	309	Sand Canyon Avenue/Barranca Parkway	0.63	B	0.70	B	0.65	B	0.72	C	0.02	0.02	No
10	500	Sand Canyon Avenue/Hoag Irvine	0.53	A	0.55	A	0.53	A	0.60	A	0.00	0.05	No
11	310	Sand Canyon Avenue/Alton Parkway	0.77	C	0.84	D	0.76	C	0.86	D	(0.01)	0.02	No
12	311	Sand Canyon Avenue/I-405 Northbound Off-Ramp	0.66	B	0.43	A	0.67	B	0.43	A	0.01	0.00	No
		HCM	*4.3*	*A*	*5.2*	*A*	*4.6*	*A*	*5.2*	*A*	-	-	*N/A*
13	312	Sand Canyon Avenue/I-405 Southbound Ramps	0.95	E	0.48	A	0.97	E	0.48	A	0.02	0.00	Yes
		HCM	*34.7*	*C*	*8.2*	*A*	*37.3*	*D*	*8.1*	*A*	-	-	*N/A*
14	501	Hoag Irvine – Kaiser Permanente/Alton Parkway	0.51	A	0.58	A	0.55	A	0.59	A	0.04	0.01	No
15	315	Laguna Canyon Road/Alton Parkway	0.70	B	0.52	A	0.71	C	0.52	A	0.01	0.00	No

Δ = change

= exceeds City's level of service criteria

Delay is reported in seconds.

HCM = *Highway Capacity Manual*

Int = Intersection

I-405 = Interstate 405

I-5 = Interstate 5

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

LOS = level of service

N/A = not applicable

LSA

Table I: Buildout Approved ADT Volumes and V/C Ratios

ITAM Post No.	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	LOS Impact?
				ADT	V/C Ratio	LOS	ADT	V/C Ratio	LOS	Ratio	
793	Alton Parkway	Jeffrey Road to Sand Canyon Avenue	32,000	25,200	0.79	C	25,100	0.78	C	(0.01)	No
797		Sand Canyon Avenue to Hoag Irvine	49,500	33,200	0.67	B	33,700	0.68	B	0.01	No
798		Hoag Irvine to Laguna Canyon Road	32,000	22,200	0.69	B	22,500	0.70	B	0.01	No
647	Sand Canyon Avenue	I-5 Northbound Off-Ramp to Marine Way	54,000	64,100	1.19	F	64,200	1.19	F	0.00	No
1217		Marine Way to I-5 Southbound Off-Ramp	63,000	70,500	1.12	F	70,700	1.12	F	0.00	No
310		I-5 Southbound Off-Ramp to Burt Road	63,000	41,900	0.67	B	42,200	0.67	B	0.00	No
311		Burt Road to Laguna Canyon Road	54,000	41,300	0.76	C	41,600	0.77	C	0.01	No
314		Laguna Canyon Road to Irvine Center Drive	54,000	37,500	0.69	B	38,000	0.70	B	0.01	No
317		Irvine Center Drive to Waterworks Way	54,000	38,900	0.72	C	39,700	0.74	C	0.02	No
318		Waterworks Way to Barranca Parkway	54,000	39,800	0.74	C	40,600	0.75	C	0.01	No
319		Barranca Parkway to Hoag Irvine	54,000	40,300	0.75	C	41,100	0.76	C	0.01	No
320		Hoag Irvine to Alton Parkway	58,500	38,000	0.65	B	37,700	0.64	B	(0.01)	No
321		Alton Parkway to I-405 Northbound Off-Ramp	36,000	50,800	1.41	F	50,900	1.41	F	0.00	No
961		I-405 Northbound Off-Ramp to I-405 Southbound Ramps	32,000	35,300	1.10	F	35,400	1.11	F	0.01	No

Δ = change

= exceeds City of Irvine level of service criteria

ADT = average daily trips

I-405 = Interstate 405

I-5 = Interstate 5

ITAM = Irvine Transportation Analysis Model

LOS = level of service

V/C = volume-to-capacity ratio

The TDP evaluation of both project access points and the new project driveway on Alton Parkway is based on the Existing and Existing Plus Project conditions. Figure 3 illustrates the Existing peak-hour volumes, the project trip distribution and assignment, and the Existing Plus Project peak-hour volumes at the project access points.

This analysis has been conducted consistent with the approved scope of work and the TDPs. Applicable design criteria for this project include TDP-1 (Turn Lane Pocket Lengths), TDP-4 (Right-Turn Lanes at Uncontrolled Driveways), TDP-10 (Distances Between Driveways and Intersections), and TDP-14 (Driveway Lengths).

TDP-1: Turn Lane Pocket Lengths

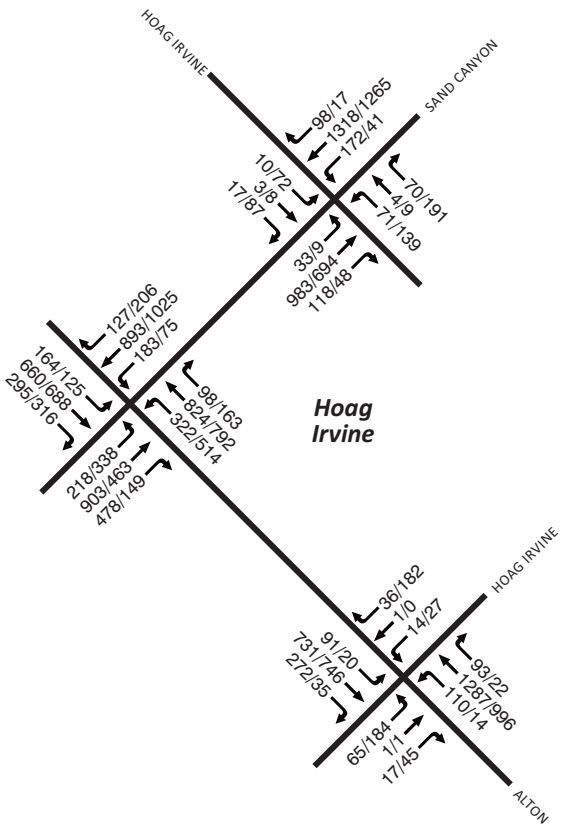
The length of left-turn pockets at signalized intersections is based on several parameters, including traffic control, turn volume, and cycle length. The purpose of the turn-pocket length is to allow the turning vehicle to exit the through movement and decelerate into the turn pocket without impacting the through movement. The minimum single turn pocket length for Major, Primary, and Secondary Highways (e.g., Sand Canyon Avenue and Alton Parkway) is 150 feet (ft), and the minimum single turn pocket length for Commuter and Local streets (i.e., Hoag Irvine) is 90 ft.

Sand Canyon Avenue/Hoag Irvine (Southbound and Westbound). The dual southbound left-turn lanes at the signalized intersection of Sand Canyon Avenue/Hoag Irvine are approximately 200 ft each with a 120 ft taper (approximately 400 ft total southbound left-turn storage). The Existing southbound left-turn demand is 172 vehicles during the a.m. peak hour and 41 vehicles during the p.m. peak hour. Based on TDP-1, the dual southbound left-turn lanes meet the 240 ft required to accommodate the 172 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 340 a.m. and 102 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 430 ft of southbound left-turn storage capacity is required for the 340 a.m. peak-hour vehicles. The 60 ft of transition storage would be sufficient to accommodate at least two vehicles. Therefore, as in the Existing condition, the 400 ft of total southbound left-turn pocket length (200 ft per lane with a 120 ft taper) will continue to meet TDP-1.

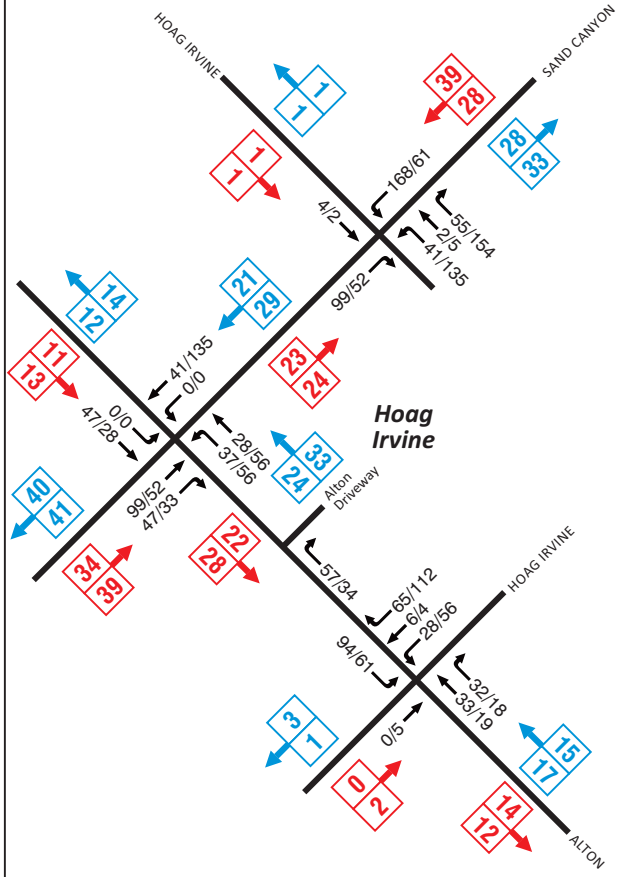
The dual westbound left-turn lanes at the signalized intersection of Sand Canyon Avenue/Hoag Irvine are 180 ft each, (360 ft total westbound left-turn storage). The Existing westbound left-turn demand is 71 vehicles during the a.m. peak hour and 139 vehicles during the p.m. peak hour. Based on TDP-1, the dual westbound left-turn lanes meet the 170 ft required to accommodate the 139 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 112 a.m. and 274 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 350 ft of westbound left-turn storage capacity is required for the 274 p.m. peak-hour vehicles. As in the Existing condition, the 360 ft of total westbound left-turn pocket length (180 ft per lane) will continue to meet TDP-1.

Sand Canyon Avenue/Alton Parkway (Southbound, Eastbound, and Westbound). The dual southbound left-turn lanes at the signalized intersection of Sand Canyon Avenue/Alton Parkway are 240 ft each (480 ft total southbound left-turn storage). The Existing southbound left-turn demand is 183 vehicles during the a.m. peak hour and 75 vehicles during the p.m. peak hour. Based on TDP-1,

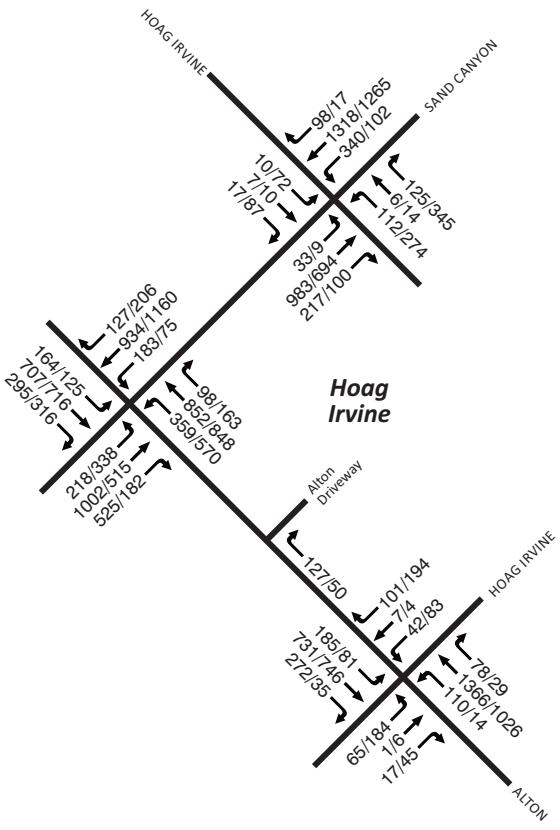
EXISTING



PROJECT TRIP DISTRIBUTION AND ASSIGNMENT



EXISTING PLUS PROJECT



Note: 25% of the eastbound left-turn volumes at Hoag Irvine/Alton Parkway would make a U-turn.

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LEGEND

XX/YY - AM/PM Peak Hour Volumes

AM / PM - Inbound Trip Distribution Percentages

AM / PM - Outbound Trip Distribution Percentages

SCHEMATIC - NOT TO SCALE

FIGURE 3

Hoag Hospital Irvine

Existing and Existing Plus Project Peak Hour Volumes

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the dual southbound left-turn lanes meet the 230 ft required to accommodate the 183 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 183 a.m. and 75 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 230 ft of southbound left-turn storage capacity is required for the 183 a.m. peak-hour vehicles. As in the Existing condition, the 480 ft of total southbound left-turn pocket length (240 ft per lane) will continue to meet TDP-1.

The dual eastbound left-turn lanes at the signalized intersection of Sand Canyon Avenue/Alton Parkway are 255 ft each (510 ft total eastbound left-turn storage). The Existing eastbound left-turn demand is 164 vehicles during the a.m. peak hour and 125 vehicles during the p.m. peak hour. Based on TDP-1, the dual eastbound left-turn lanes meet the 200 ft required to accommodate the 164 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 164 a.m. and 125 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 200 ft of eastbound left-turn storage capacity is required for the 164 a.m. peak-hour vehicles. As in the Existing condition, the 510 ft of total eastbound left-turn pocket length (255 ft per lane) will continue to meet TDP-1.

The dual westbound left-turn lanes at the signalized intersection of Sand Canyon Avenue/Alton Parkway are 395 ft each (790 ft total westbound left-turn storage). The Existing westbound left-turn demand is 322 vehicles during the a.m. peak hour and 514 vehicles during the p.m. peak hour. Based on TDP-1, the dual westbound left-turn lanes meet the 640 ft required to accommodate the 514 p.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 359 a.m. and 570 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 710 ft of westbound left-turn storage capacity is required for the 570 p.m. peak-hour vehicles. As in the Existing condition, the 790 ft of total westbound left-turn pocket length (395 ft per lane) will continue to meet TDP-1.

Hoag Irvine—Kaiser Permanente/Alton Parkway (Southbound and Eastbound). The existing southbound left-turn lane at the signalized intersection of Hoag Irvine—Kaiser Permanente/Alton Parkway provides 420 ft of storage length. The Existing southbound left-turn demand is 14 vehicles during the a.m. peak hour and 27 vehicles during the p.m. peak hour. Based on TDP-1, the southbound left-turn lane meets the 90 ft required to accommodate the 27 p.m. peak-hour vehicles. With the project, the southbound left-turn lane at Hoag Irvine—Kaiser Permanente/Alton Parkway would provide 225 ft of storage length (measured from the crosswalk to the new Medical Office Building access road). The Existing Plus Project left-turn demand at this location is 42 a.m. and 83 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 100 ft of southbound left-turn storage capacity is required for the 83 p.m. peak-hour vehicles. As in the Existing condition, the southbound left-turn pocket meets TDP-1.

The dual eastbound left-turn lanes at the signalized intersection of Hoag Irvine—Kaiser Permanente/Alton Parkway are 160 ft each (320 ft total eastbound left-turn storage). The Existing eastbound left-turn demand is 91 vehicles during the a.m. peak hour and 20 vehicles during the p.m. peak hour. Based on TDP-1, the dual eastbound left-turn lanes meet the 150 ft required to accommodate the 91 p.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 185 a.m. and 81 p.m. peak-hour vehicles, as shown on Figure 3. According to TDP-1, 230 ft of southbound left-turn storage capacity is required for the 185 a.m. peak-hour vehicles. As in the Existing condition, the 320 ft of total eastbound left-turn pocket length (160 ft per lane) will continue to meet TDP-1.

TDP-4: Right-Turn Lanes at Uncontrolled Driveways

TDP-4 states that right-turn lanes are required for uncontrolled driveways on the Primary Highways (i.e., Alton Parkway) where the peak hour volumes exceed 100 vehicles. If required, a right-turn lane on a Primary Highway should be 200 ft long with a 90 ft bay taper.

As shown in Figure 3, the inbound project volumes at the new driveway along Alton Parkway are 127 a.m. and 50 p.m. peak hour trips. Although this exceeds the City's threshold for requiring a dedicated right turn lane, there are several reasons why a deceleration lane is not warranted at this location:

1. The entrance to the new project driveway is at the end of a transition of the third westbound through lane on Alton Parkway to a dedicated westbound right turn lane (400 ft east of Sand Canyon Avenue). Therefore, vehicles in the outside lane are already anticipated to slow down and not affect through traffic on Alton Parkway.

2. The outside lane on Alton Parkway is 20 ft (12 ft travel lane and 8 ft bicycle lane) as verified in the field. This lane can be used as a de-facto right turn-lane into the proposed driveway and would not impede vehicles traveling in the westbound through lanes.

3. The proposed driveway is a one-way, right-turn-in-only driveway with a radius that would allow inbound vehicles to enter without stopping along Alton Parkway. There would be 214 feet from the back of the sidewalk to the internal drive aisle, which meets TDP-14. As such, vehicles are not anticipated to back out onto Alton Parkway.

Based on these critical elements, the project meets the intent of TDP-4. However, as the project does not provide a dedicated right-turn lane at the new project driveway along Alton Parkway, a request for deviation from TDP-4 has been prepared. The deviation request from TDP-4 reviewed and approved by City staff is provided as Appendix F.

TDP-10: Distances Between Driveways and Intersections

The criteria contained in TDP-10 recommend a minimum of 230 ft between a driveway and an intersection (or between two driveways) on Primary Highways (i.e., Alton Parkway). The distance between driveways should be measured from the centerline of each driveway. The distance between an intersection and a driveway should be measured from the curb face of the street to the curb face of the driveway.

Access to the project site will be provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine—Kaiser Permanente/Alton Parkway, and a new ingress-only driveway along Alton Parkway. Figure 4 illustrates the distances between the project driveway along Alton Parkway and adjacent intersections.

As shown on Figure 4, the new driveway along Alton Parkway would be 490 ft east of Sand Canyon Avenue/Alton Parkway, and 325 ft west of Hoag Irvine—Kaiser Permanente/Alton Parkway. Therefore, new project driveway along Alton Parkway would satisfy the TDP-10 criteria for distance between driveways and intersections.

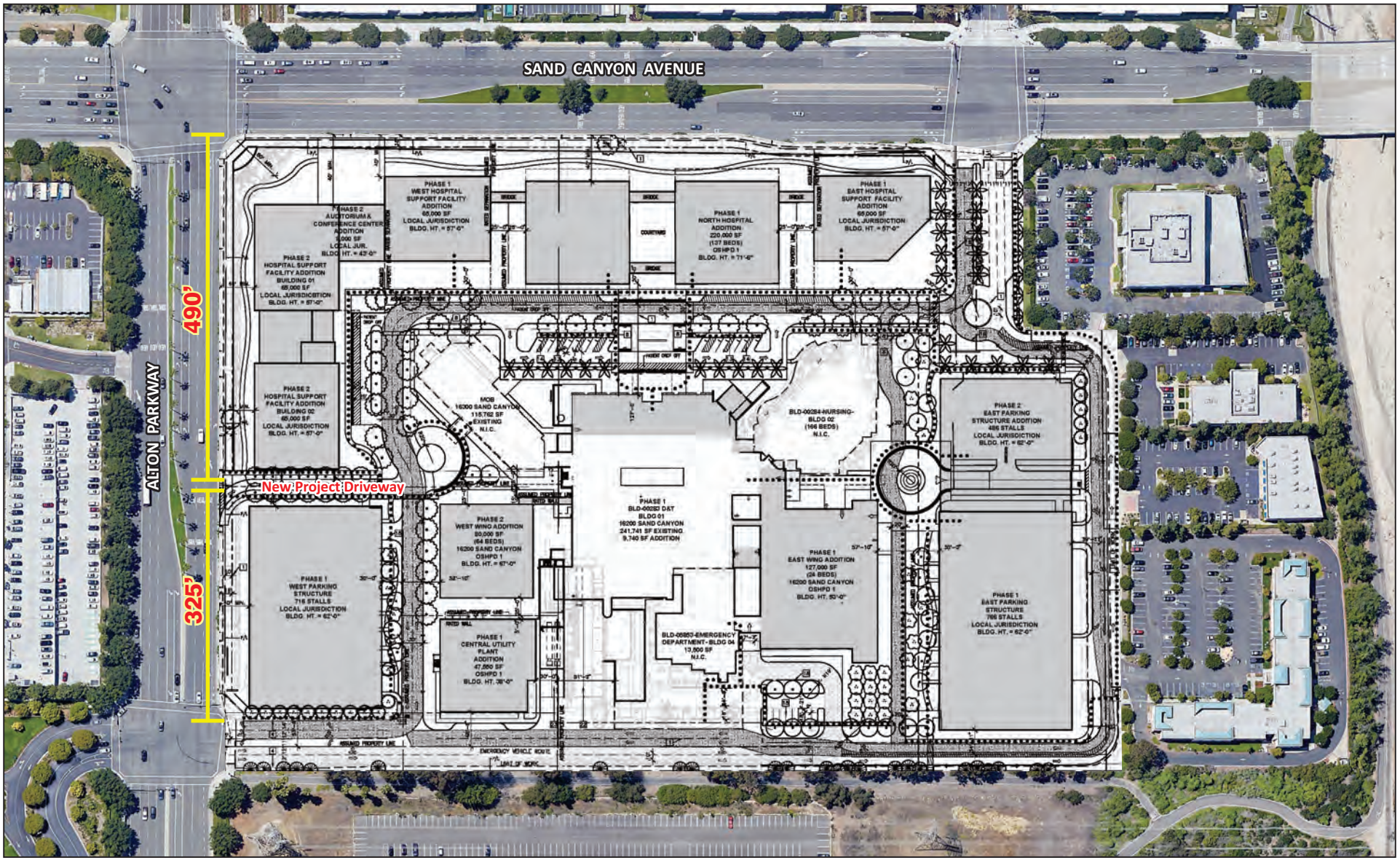

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FIGURE 4

N

0 100 200

FEET

SOURCE: LPA

Hoag Hospital Irvine

Driveway Distances

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TDP-14: Driveway Lengths

TDP-14 provides guidance regarding a sufficient driveway length to allow vehicles "to enter the parking area without causing subsequent vehicles to back out on the City street system." The measurement of sufficient length is based on the distance from the back of the sidewalk or stop bar to the first intersecting parking space or traffic control measure on site. The minimum signalized driveway length should be 75 ft and should increase at a rate of 1 ft of storage per peak-hour vehicle (in 25 ft increments). The minimum unsignalized driveway length should be 25 ft and should increase at a rate of 1 ft of storage per peak-hour vehicle (in 25 ft increments).

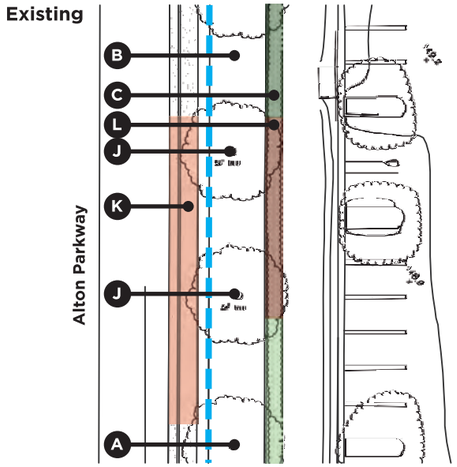
The project access point at Sand Canyon Avenue/Hoag Irvine provides 360 ft of total throat length (180 ft of throat length per lane, measured from back of Sand Canyon Avenue sidewalk to the entrance to the internal roundabout, plus an additional 260 ft from the internal roundabout to the first internal stop sign south of project site, and an additional 400 ft from the internal roundabout to the entrance of the first parking structure north of the project site. A total storage length of 1,020 ft would be provided, as shown on Figure 2. The existing HHI site generates an inbound volume of 293 vehicles in the a.m. peak hour and 97 vehicles in the p.m. peak hour. The Existing Plus Project inbound volumes are 564 a.m. and 212 p.m. peak-hour vehicles. TDP-14 criteria require a driveway throat length of 625 ft. As such, the project access point at Sand Canyon Avenue/Hoag Irvine meets TDP-14 criteria.

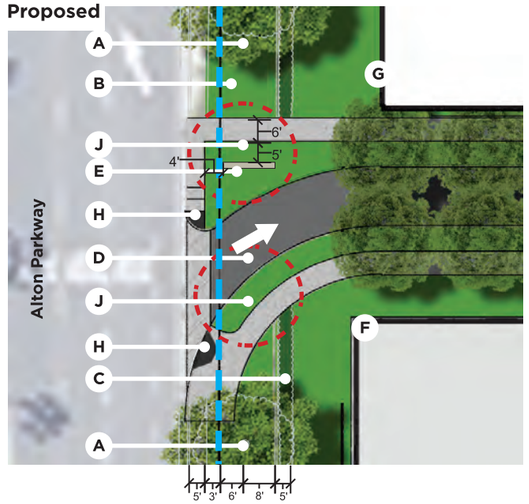
The project access point at Hoag Irvine—Kaiser Permanente/Alton Parkway provides 476 ft of total throat length (238 ft of throat length per lane, measured from the back of the Alton Parkway sidewalk to the new Medical Office Building access road along Hoag Irvine), as shown on Figure 2. The existing HHI site generates 185 vehicles in the a.m. peak hour and 43 vehicles in the p.m. peak hour. The Existing Plus Project inbound volumes at Hoag Irvine—Kaiser Permanente/Alton Parkway would be 218 a.m. and 97 p.m. peak-hour vehicles. TDP-14 criteria require a driveway throat length of 275 ft. As such, the project access point at Hoag Irvine—Kaiser Permanente/Alton Parkway meets TDP-14 criteria.

The new project driveway along Alton Parkway would provide 214 ft of throat length (measured from the back of the Alton Parkway sidewalk to the first drive aisle), as shown on Figure 2. The Existing Plus Project inbound volumes at the driveway along Alton Parkway would be 127 a.m. and 50 p.m. peak-hour vehicles. TDP-14 criteria require a driveway throat length of 150 ft. As such, the new driveway along Alton Parkway would meet TDP-14 criteria. Figure 5 shows the striping plan for the new project driveway along Alton Parkway. A "No Truck Access" sign would be installed at the new project driveway along Alton Parkway, as all trucks would use the existing access point at Hoag Irvine – Kaiser Permanente/Alton Parkway.

Circulation Phasing

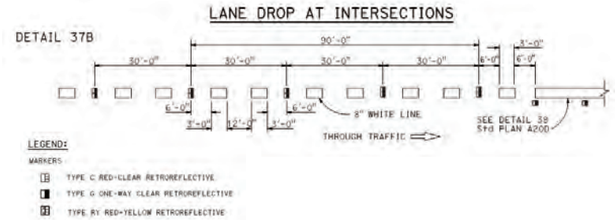
LSA reviewed the City's *2020 Circulation Phasing Analysis Report* (March 2020) to identify any impacted locations within the project study area. The City's analysis identified three locations that recommended improvements. However, none of these locations are within the project study area. Based on the results presented in this Traffic Study, the project would result in LOS deficiencies at one study area intersection. The project would be responsible for improvements at Sand Canyon Avenue/I-405 southbound ramps, as discussed later in the study.

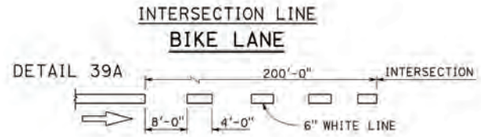


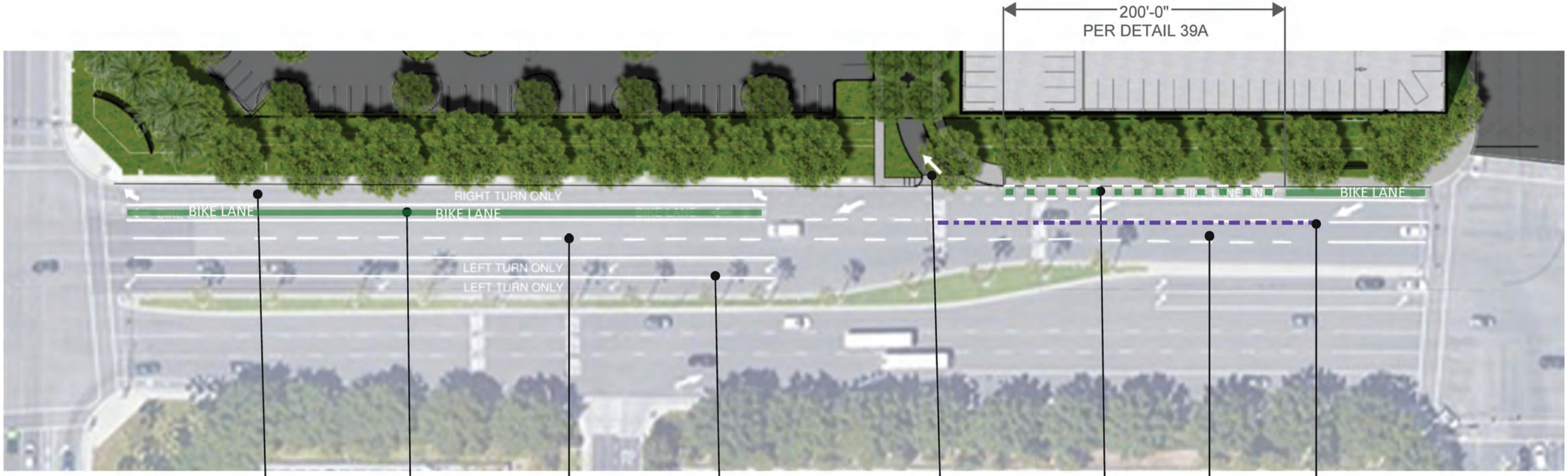


Alton Parkway New Entry Drive Intersection Enlargement

- **A** Existing Ficus r. 'Florida' to remain, typ.
- **B** Existing planting to remain, typ.
- **C** Existing hedge to remain, typ.
- **D** New 15' wide driveway (entry only)
- **E** New freestanding directional sign
- **F** New parking structure
- **G** New Hospital support facility
- **H** New curb ramp
- **J** Existing Ficus r. 'Florida' to be removed (TIC approved)
- **K** Existing sidewalk to be removed
- **L** Existing hedge to be removed







LSA

SOURCE: LPA

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FIGURE 5

Congestion Management Program Consistency Requirements

As presented in Table A, the project is forecast to generate 7,555 net new daily trips. The project would generate more than 2,400 daily trips, and would not take access to a Congestion Management Program (CMP) facility (i.e., Irvine Center Drive). The City's CMP Monitoring Checklist: Land Use Coordinator Component is provided in Appendix G.

Pedestrian Circulation

Objective B-3 of the City's General Plan Circulation Element is "to establish a pedestrian circulation system to support and encourage walking as a mode of transportation." The City has established the following three policies to support Objective B-3:

1. Link residences with schools, shopping centers, and other public facilities, both within a planning area and to adjacent planning areas, through an internal system of trails.

2. Require development to provide safe, convenient, and direct pedestrian access to surrounding land uses and transit stops. Issues such as anticipated interaction between pedestrians and vehicles, proposed infrastructure improvements, and design standards shall be considered.

3. Design and locate land uses to encourage access to them by nonautomotive means.

In support of Objective B-3, the project incorporates a continuous system of sidewalks within the project site. The pedestrian amenities within the site and at its adjacencies have been designed to comply with the City's objective. Safe access to the public street system (via Sand Canyon Avenue and Alton Parkway) is provided. Where modes intersect (i.e., streets and sidewalks), accessible ramps are incorporated.

Land uses near the project site include other office and medical uses, employment centers, all of which are accessible by nonautomotive means. Pedestrians could use the sidewalks along both sides of Sand Canyon Avenue and Alton Parkway, as well as crosswalks at the signalized intersections of Sand Canyon Avenue/Hoag Irvine, Sand Canyon Avenue/Alton Parkway, and Hoag Irvine—Kaiser Permanente/Alton Parkway, to access neighboring uses.

Bicycle Circulation

The City's General Plan includes a list of goals and objectives for bicycle planning. As stated in the General Plan, the bicycle circulation objective is: "To plan, provide and maintain a comprehensive bicycle trail network that, together with the regional trail system, encourages increased use of bicycle trails for commuters and recreational purposes." Sand Canyon Avenue and Alton Parkway provide on-street (Class II) bicycle lanes on both sides of the street. San Diego Creek Trail and Hospital Trail provide bicycle paths (Class I) north of the project site and east of the project site, respectively. Bicycle travel is possible along these routes to employment, shopping, or recreational destinations. The project would provide long-term bicycle storage facilities for employees in the two parking structures. Short-term bicycle racks for visitors would also be provided in five locations on site. The project would provide a total of 100 bicycle spaces, which would meet the City Code requirements. These would comprise both bicycle storage facilities and bicycle racks. The storage

facilities would be within the parking structures, and the bicycle racks would be strategically placed throughout the campus.

Transit Facilities

Transit facilities would be accessible from nearby the project site. This is an important feature because OCTA bus stops are provided at the northwest and southeast corners of Sand Canyon Avenue/Alton Parkway, approximately 1,400 walkable ft from the project site, northwest and southeast corners of Hoag Irvine—Kaiser Permanente/Alton Parkway adjacent to the project site, and the northeast and southwest corners of Sand Canyon Avenue/Hoag Irvine adjacent to the project site. OCTA Route 86 provides transportation between Costa Mesa and Mission Viejo. iShuttle Route 403D provides transportation between Irvine Station and Sand Canyon Avenue/Waterworks Way. Appendix H provides OCTA and iShuttle bus system maps and bus stop locations.

VEHICLE MILES TRAVELED ANALYSIS

Background

On December 28, 2018, the California Office of Administrative Law cleared the revised CEQA guidelines for use. Among the changes to the guidelines was removal of vehicle delay and LOS from consideration under CEQA. As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a VMT analysis has been prepared in accordance with the City's adopted *Traffic Study Guidelines*.

Project Description

For purposes of the VMT calculation, the project includes the existing land uses on site and adds 704,740 sf of hospital use to the Hoag Campus. In addition, to improve an intersection deficiency and be consistent with the City's General Plan Circulation Element, the project would contribute its fair share responsibility towards improvement of the intersection of Sand Canyon Road/I-405 southbound ramps to include three eastbound left-turn lanes. The project would also improve Sand Canyon Road between the I-405 southbound ramps and north of the Sand Canyon Road/I-405 NB ramps to include a third northbound through lane as part of this fair share improvement. This VMT analysis includes both the project land use changes as well as the increases in roadway capacity attributed to the project.

Methodology

The latest City's VMT traffic model (ITAM TransCAD 2018 VMT) was used to estimate both the regional (Irvine) and project VMT. Based on the City's Guidelines, for nonresidential projects, the project's nonresidential VMT per employee rate is evaluated against the non-residential VMT per employee threshold. If the project's nonresidential VMT rate is less than or equal to the City's adopted nonresidential VMT rate threshold, the project does not have a VMT impact, and no mitigation is required. If the project's nonresidential VMT rate is greater than the City's adopted nonresidential VMT rate threshold, the project has a VMT impact, and requires mitigation.

Furthermore, based on the City's Guidelines for transportation projects, if a land use project would implement transportation improvements to address LOS operational deficiencies and these

improvements are not screened out, the improvements must be analyzed as part of the land use project's VMT impact analysis.

The City's goal and associated significance criteria for new nonresidential projects are to generate 15 percent less VMT per employee compared to existing conditions, which is consistent with the Office of Planning and Research's Technical Advisory recommendations.

Vehicle Miles Traveled Analysis

Table J illustrates the VMT per employee comparison between the project and the City's nonresidential threshold goal (15 percent reduction). As shown in Table J, the VMT for the Hoag Hospital Irvine project is less than the City's VMT rate under existing (2020) conditions. Appendix I provides the VMT calculation worksheet. Therefore, the project meets the requirements of the City's Traffic Study Guidelines regarding VMT, and the project would not create significant CEQA impacts. As described above, these results include both the land use changes and the roadway network changes required for the Hoag expansion project.

Table J: Existing (2020) Regional and Project VMT Per Employee Comparison

Land Use	City	Project
Non-Residential	41.33	28.43

Source: Irvine Transportation Analysis Model.
VMT = vehicle miles traveled

REQUIRED IMPROVEMENTS AND/OR RECOMMENDATIONS

Based on the results presented in this Traffic Study, the proposed expansion of the HHI site would result in peak-hour LOS impacts at one study area intersection in the Long-Range and Buildout Approved Conditions (Sand Canyon Avenue/I-405 southbound ramps).The following discusses the proposed study area improvement.

The intersection of Sand Canyon Avenue/I-405 southbound ramps is forecast to operate at LOS E in the Long-Range and Buildout, No Project and Plus Project conditions during the a.m. peak hour, and would contribute 0.02 of ICU. There is a planned improvement to add an additional eastbound left-turn lane in the Buildout condition. However, the project would still contribute to this deficiency in the Buildout condition with the planned improvement. The Project would be subject to a condition of approval requiring the Project Applicant to contribute a fair share to improvements at the intersection that include adding an eastbound left-turn lane (so there would be a total of three left-turn lanes) and adding an additional northbound through lane to accommodate the three left-turn lanes. Figure 6 shows the proposed improvement at this intersection. Appendix J provides the ICU worksheet for this proposed improvement. The total estimated cost for this improvement is approximately $16.3 million. Appendix K provides a detailed cost estimate for this improvement. Based on the City's Traffic Study Guidelines, the project would be responsible for a fair share contribution of 1.2 percent to this proposed improvement, which would be equal to $195,500.

LSA

FIGURE 6

N

SOURCE: LPA

Hoag Hospital Irvine

Sand Canyon Avenue/I-405 Southbound Ramps Improvement Plan

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The project's fair share contribution would be the highest of the contribution between Long-Range and Buildout Approved conditions as follows:

- (3,740 Long-Range Plus Project a.m. vehicles – 3,720 Long-Range No Project a.m. vehicles) / 3,740 Long-Range Plus Project a.m. vehicles = 0.53%
- (4,330 Buildout Plus Project a.m. vehicles – 4,280 Buildout No Project a.m. vehicles) / 4,330 Buildout Plus Project a.m. vehicles = 1.2%

The existing access points, the new project driveway, and surrounding intersections have been analyzed using the City's TDPs. The project meets the intent of TDP-4. However, as the project does not provide a dedicated right-turn lane at the new project driveway along Alton Parkway, a request for deviation from TDP-4 has been prepared. The deviation request from TDP-4 reviewed and approved by City staff is provided as Appendix F. No other access or circulation improvements are required or recommended.

CONCLUSIONS

Based on the results of this analysis, the proposed expansion of the HHI site would result in a peak-hour LOS impact at one study area intersection (Sand Canyon Avenue/I-405 southbound ramps) in the Long-Range and Buildout Approved conditions.

The intersection of Sand Canyon Avenue/I-405 southbound ramps is forecast to operate at LOS E in the Long-Range and Buildout, No Project and Plus Project conditions during the a.m. peak hour, and would contribute 0.02 of ICU. There is a planned improvement to add an additional eastbound left-turn lane in the Buildout condition. However, the project would still contribute to this deficiency in the Buildout condition with the planned improvement. The Project would be subject to a condition of approval requiring the Project Applicant to contribute a fair share to improvements at the intersection that include adding an eastbound left-turn lane (there would be a total of three left-turn lanes), and adding an additional northbound through lane to accommodate the three left-turn lanes.

Although a daily LOS impact would occur at two study area roadway segments (Sand Canyon Avenue between Alton Parkway and the I-405 northbound off-ramp and between the I-405 northbound off-ramp and I-405 southbound ramps) in the Existing and Short-Term Interim-Year Approved conditions, a peak-hour link analysis shows that each segment would operate at satisfactory LOS in both directions during both peak hours. Therefore, no improvement is necessary for the roadway segments.

A site access analysis, consistent with the City's TDPs, was conducted for the proposed project. Based on this analysis, the project would meet the requirements of TDP-1, TDP-10, and TDP-14. The project meets the intent of TDP-4. However, as the project does not provide a dedicated right-turn lane at the new project driveway along Alton Parkway, a request for deviation from TDP-4 has been prepared. The deviation request from TDP-4 reviewed and approved by City staff is provided as Appendix F. The deviation would not result in an unsafe condition for the project site.

The existing site incorporates design features to accommodate modes of active transit (i.e., pedestrian, bicycle, and public transportation). In the vicinity of the project site, bicycle travel is possible in the on-street (Class II) bicycle lanes on Sand Canyon Avenue and Alton Parkway, and on the bicycle paths (Class I) on San Diego Creek Trail north of the project site and on Hospital Trail east of the project site. The project would provide long-term bicycle storage facilities for employees in the two parking structures. Short-term bicycle racks for visitors would also be provided in five locations on site. The project would provide a total of 100 bicycle spaces, which would meet the City Code requirements. These would comprise both bicycle storage facilities and bicycle racks. The storage facilities would be located within the parking structures, and the bicycle racks would be strategically places throughout the campus. Transit facilities are accessible to and from the project site with OCTA and iShuttle stops near the project site. The lines serviced by these stops provide direct access to regional transportation hubs.

As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a VMT analysis was conducted. Based on the VMT analysis, the project VMT would be less than the City's VMT rate under existing (2020 conditions. Therefore, the project meets the requirements of the City's *Traffic Study Guidelines* regarding VMT, and the project would not create significant CEQA impacts.

REFERENCES

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APPENDIX A

APPROVED SCOPE OF WORK

SCOPE OF WORK
HOAG HOSPITAL IRVINE
TRAFFIC STUDY
(CASE FILE NO. 00816357-PCPM)

The purpose of this analysis is to determine the short-term and long-range traffic deficiencies (LOS) and CEQA transportation impacts (VMT) resulting from the proposed expansion of the Hoag Hospital Irvine (HHI) site at 16200 and 16300 Sand Canyon Avenue in Planning Area 13 of Irvine, California. The existing site (located in Traffic Analysis Zone [TAZ] 178) includes a 154-bed (239,594 square feet [sf]) hospital (not including a 10,200 sf central plant), with an additional 12 labor, delivery, recovery and postpartum beds (5,627 sf) currently under construction, and approximately 115,762 sf of medical office building. The proposed project will include expanding the hospital and adding 225 additional beds (436,740 sf), and moving a number of services into free-standing ambulatory care buildings, known as Hospital Support Facilities (HSF) (268,000 sf including an 8,000 sf auditorium and excluding a 47,550 sf central plant). Full buildout of the project will result in a 391-bed hospital with a total of 949,961 sf (including beds, HSF and auditorium), 57,750 sf of central plant, and approximately 115,762 sf of medical office building.

Access to the project site will be provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine – Kaiser Permanente/Alton Parkway, and a new ingress-only driveway along Alton Parkway.

The project will be completed in two phases. Phase 1 will be completed by year 2025, and Phase 2 will be completed 10 to 15 years after completion of Phase 1. However, for the purposes of this traffic study, the entire project will be evaluated within a single phase.

Phase 1 of the project would include the following modifications, as shown in the attached site plan:

- Expand the front entry of the hospital to include a café and servery, registration and admitting, gift shop, worship center, discharge lounge
- Relocate ancillary hospital services, in-patient pharmacy, in-patient clinical laboratory, surgical suite, medical records, cashier, and lobby; and add 24 new Intensive Care Unit (ICU) beds
- Construct a 137-bed hospital building
- Construct two HSF totaling 130,000 sf – relocate non-critical care services, radiographic imaging, elective surgery, infusion, gastroenterology, alternative birthing, research offices, urgent care, laboratory and pharmaceutical services
- Construct a new east parking structure that would provide 766 parking spaces in five levels
- Construct a new west parking structure that would provide 716 parking spaces in five levels
- Construct a new central utility plant and yard
- Expand the loading area, and add two new loading dock lanes and receiving area

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Approved by DAC

- Add a new wellness park

Phase 2 of the project would consist of the following modifications, as shown in the attached site plan:

- Construct two HSF totaling 130,000 sf – relocate non-critical care services, which may include radiographic imaging, elective surgery, infusion, gastroenterology, research offices, urgent care, and laboratory services
- Relocate conference rooms and auditorium
- Construct a 64-bed hospital building
- Construct a new east parking structure that would provide 460 parking spaces in five levels

This Traffic Study (TS) will be developed in accordance with the City of Irvine (City) Traffic Study Guidelines (adopted by the City Council on June 23, 2020), and the City's Transportation Design Procedures (TDPs) (adopted in February 2007) and will include the following key elements.

I. EXECUTIVE SUMMARY

This section of the TS will provide a short, clear, and concise description of the proposed project and analysis findings. The project recommendations and mitigation measures will also be included in this section, if necessary.

II. INTRODUCTION

This section will include a comprehensive description of the project and key elements of the TS, including planning area description, general terrain features, and existing/proposed uses on site. The specific surrounding land uses on each adjacent parcel will also be described. The following elements are identified for the purpose of conducting the TS.

A. Project Site

The project location and study area intersection map (Figure 1) and the site plans for both project phases have been attached to this scope of work and will be provided in the TS. The project site is bounded by medical office and hotel uses to the north, Alton Parkway to the south, Irvine Medical and Science Complex buildings to the east, and Sand Canyon Avenue to the west. Access to the project site will be provided via existing signalized access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine – Kaiser Permanente/Alton Parkway, and a new ingress-only driveway along Alton Parkway.

B. Study Area Boundary

The study area will include the following intersections (and roadway links between each intersection) in the City's traffic model (Irvine Transportation Analysis Model [ITAM]):

1. Jeffrey Road/Alton Parkway
2. Sand Canyon Avenue/I-5 northbound ramps

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3. Sand Canyon Avenue/Marine Way
4. Sand Canyon Avenue/I-5 southbound ramps
5. Sand Canyon Avenue/Burt Road
6. Sand Canyon Avenue/Laguna Canyon Road
7. Sand Canyon Avenue/Irvine Center Drive
8. Sand Canyon Avenue/Waterworks Way
9. Sand Canyon Avenue/Barranca Parkway
10. Sand Canyon Avenue/Hoag Irvine
11. Sand Canyon Avenue/Alton Parkway
12. Sand Canyon Avenue/I-405 northbound off-ramp
13. Sand Canyon Avenue/I-405 southbound off-ramp
14. Hoag Irvine – Kaiser Permanente/Alton Parkway
15. Laguna Canyon Road/Alton Parkway

Roadway segments in-between the study area intersections will be analyzed. The project access points at Sand Canyon Avenue/Hoag Irvine, Hoag Irvine – Kaiser Permanente/Alton Parkway, and the new right in-only driveway on Alton Parkway will also be evaluated as part of the access analysis. If significant project traffic distribution is identified at the boundary of the initial study area, the analysis area will be expanded accordingly.

C. Existing, General Plan, and Proposed Site Uses

Existing site uses and zoning shall be described, including the current occupancy of the HHI site and the medical office building. Proposed land uses shall be described and tabulated.

III. PERFORMANCE CRITERIA

The performance criteria to determine potential project impacts and mitigation related to VMT will be consistent with the City's criteria, as approved by the City Council on June 23, 2020. Improvements required to offset level of service deficiencies will also be identified based on the City's latest guidelines. Also, the peak-hour link capacity methodology will be utilized for evaluating roadway capacity conditions and the need for mitigation measures (if necessary). The City's TDPs will be used as the performance criteria to evaluate the design features of the proposed project accesses and internal circulation.

IV. EXISTING CONDITIONS

A. Existing Site Uses

Existing land uses on the site and in the vicinity of the project site will be identified. The existing HHI site includes a 154-bed hospital (239,594 sf of hospital use excluding 10,200 sf central plant), with an additional 12 labor, delivery, recovery and postpartum beds (5,627 sf) currently under construction, and approximately 115,762 sf of medical office building.

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B. Existing Roadways and Intersections

The characteristics of the site's surrounding roadway network will be surveyed to verify the existing number of lanes, traffic signal locations, intersection configurations, and other visible factors that may have to be included in the analysis.

Existing roadway volumes, volume-to-capacity (v/c) ratios, and level of service (LOS) at intersections will be included for the above roadways and intersections. The LOS analysis tables will include ITAM intersection numbers and average daily traffic (ADT) post locations for each study area intersection and roadway segment.

V. LOS ANALYSIS METHODOLOGY/APPROACH

As local schools are currently closed and existing traffic conditions are atypical, the traffic analysis will be based on existing counts collected in 2018. A 4 percent growth factor (2 percent per year) will be applied to represent 2020 conditions for study area roadways and intersections.

Study area intersections will be analyzed using the adopted Intersection Capacity Utilization (ICU) methodology for signalized intersections and the Highway Capacity Manual (HCM) methodology for unsignalized intersections. The roadway segments between the intersections will also be analyzed in the report. Daily traffic volumes and v/c ratios will be presented in the analysis for these roadway segments. A peak-hour link analysis will be conducted for roadway segments where the "plus project" LOS is LOS E or F.

To disclose the effect of adding the project land use in an existing setting, the following analyses will be conducted:

- Existing
- Existing Plus Project

For purposes of the Existing Plus Project analysis, the project trips will be determined by considering the traffic volume differential between the Existing No Project and Existing Plus Project ITAM runs. The entire project (225-bed/704,740 sf hospital) will be assumed in the Existing Plus Project ITAM run. This differential will be added to the existing counts to determine Existing Plus Project conditions. The Existing No Project ITAM run will be provided by City staff.

The approved version (Model Number 15 or higher) of the ITAM will be used for conducting all runs. The following ITAM runs will be conducted for the study:

- Short-Term Interim-Year Approved Baseline
- Short-Term Interim-Year Approved Baseline Plus Project (Phases 1 and 2)
- Long-Range Approved Baseline
- Long-Range Approved Baseline Plus Project (Phases 1 and 2)
- Buildout Approved Baseline
- Buildout Approved Baseline Plus Project (Phases 1 and 2)

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The future conditions described above are based on the roadway network and land use assumptions envisioned to be in place by the respective horizon years.

City staff will make all necessary land use and network changes for the baseline scenarios and will provide LSA with the baseline ITAM files. LSA will prepare the forecast "plus project" ITAM data. A description of any changes to the ITAM for this project will be provided to the City for review. The ITAM data will be post-processed and used in the LOS analysis.

VI. FUTURE TRAFFIC CONDITIONS

LSA will analyze the effects of the proposed land use changes on the study area intersections and roadway segments for existing, short-term interim-year, long-range, and buildout conditions.

LSA will request the future baseline ITAM from City staff. LSA will revise the land use and incorporate network changes related to the "plus project" scenarios. These ITAM runs will include the following scenarios:

1. **Short-Term Interim-Year Approved Baseline:** The ITAM Short-Term Interim-Year Approved Baseline run (Y23-15 or higher) will include the impacts of each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM will be deleted for the analysis of this scenario. The baseline will include 245,221 sf hospital use and 115,762 sf medical office use in TAZ 178.

2. **Short-Term Interim-Year Approved Plus Project:** The ITAM Short-Term Interim-Year Approved Plus Project run (Y23-15 or higher) will include the impacts of each application for development approved by the City. The total plus project uses will include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

3. **Long-Range Approved Baseline:** The ITAM Long-Range Approved Baseline run (Y40-15 or higher) will include the impacts of each application for development approved by the City. The baseline will include 565,359 sf hospital use and 120,000 sf medical office use.

4. **Long-Range Approved Plus Project:** The ITAM Long-Range Approved Plus Project run (Y40-15 or higher) will include the impacts of each application for development approved by the City. The total plus project uses will include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

5. **Buildout Approved Baseline:** The ITAM Buildout Approved Baseline run (P40-15 or higher) will include the impacts of each application for development approved by the City. The baseline will include 565,359 sf hospital use and 120,000 sf medical office use.

6. **Buildout Approved Plus Project:** The ITAM Buildout Approved Plus Project run (P40-15 or higher) will include the impacts of each application for development approved by the City. The total plus project uses will include 949,961 sf hospital use and 115,762 sf medical office use in TAZ 178.

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LSA will utilize the approved version of the ITAM forecasts to analyze these conditions at study area intersections and roadway segments. In addition, City staff will review the ITAM network and land uses for the baseline and "plus project" scenarios to ensure that they accurately reflect the project impacts. LSA will provide a copy of the "plus project" ITAM runs with the TS to the City's Project Manager for review.

Project deficiencies will be identified at study area intersections for the short-term interim-year, long-range, and buildout (approved and pending) conditions. Daily traffic volumes and v/c ratios will also be presented in the analysis for the study area roadway segments for each scenario. The City's peak-hour link analysis (per the adopted City Traffic Study Guidelines) will be utilized for evaluating roadway capacity conditions and the need for mitigation measures (if necessary). The peak-hour link analysis will determine directional a.m. and p.m. peak-hour v/c ratios for each link projected to exceed LOS standards under "plus project" conditions. The peak-hour capacity will be determined by multiplying the mid-block number of lanes for each direction by a lane capacity of 1,600 vehicles per hour. Where the distance between controlled intersections is 1 or more miles, the mid-block number of lanes shall be multiplied by a lane capacity of 2,000 vehicles per hour.

VII. PROPOSED PROJECT IMPACTS

A. Trip Generation

LSA will generate a.m. peak-hour trips, p.m. peak-hour trips, and ADT for the proposed project using trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 10th Edition. Table A (attached) presents the trip generation of the project. As the ITAM traffic model (version 15) generates trips based on hospital square footage (not beds), the ITE trip rates will be based on hospital square footage. This information will be provided in tabular form. The trip generation discussion will include a table that compares the proposed trip generation of the project to the existing trip generation for the site.

B. Adjustments to Trip Generation

No adjustments to the trip generation shall be made without prior written approval from the City.

C. Trip Distribution and Trip Assignment

The directions of approach to and departure from the site will be obtained based on the ITAM distribution. A map indicating regional directions of trip distribution will be presented in the TS. The project trip distribution and assignment will be based on the ITAM select zone analysis performed for Buildout Approved Baseline Plus Project a.m. peak-hour, p.m. peak-hour, and daily conditions.

D. Planning Area Trip Budget

Based on the City of Irvine Municipal Code Chapter 9-13 (Planning Area 13), the maximum amount of development permitted within the Irvine Spectrum 4 is the square footage of a variety of permitted uses which will generate a maximum of 8,799 trips during the p.m. peak hour. The trip budget for a hospital within the Irvine Spectrum 4 is based on trip rates per bed (1.7 trips/bed). The trip budget allocated to the Hoag Irvine site is 850 p.m. peak hour trips for the hospital (16200 Sand

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Canyon) and 720 p.m. peak hour trips for the medical office building 16300 Sand Canyon), for a total trip budget of 1,570 p.m. peak hour trips. Upon completion of the project, the entire Hoag Hospital campus will include 1,244 p.m. trips, with a trip budget surplus of 326 p.m. peak hour trips. As such, the overall trip budget for the Planning Area will not be exceeded with the project. This information will be included in the traffic study.

VIII. PHASING

The proposed project will be constructed in two phases (as detailed in the Introduction). Phase 1 will be completed by year 2025, and Phase 2 will be completed 10 to 15 years after completion of Phase 1. However, for purposes of this traffic study, the entire project will be evaluated within a single phase.

IX. SPECIAL ANALYSES/ISSUES

A. Access Analysis

An access analysis of the project access points will be performed. LSA will review project volumes at the access locations and determine the adequacy of the interface with the arterial street system using the City's TDPs.

The project peak-hour trips, per ITE trip rates, will be assigned in and out of the project access locations. Trip distribution and driveway allocation will be determined using the distribution patterns from the most recent version of the ITAM. An exhibit will be provided that shows the existing without project and existing plus project turning volumes at the project access locations to the project site. An exhibit will also be provided to depict the project access point and driveways.

The internal circulation analysis will address specific design requirements of the City based on the proposed access plan and the project trip assignment. This analysis is to ensure that the project will continue to meet or exceed the requirements within the City's TDP. Specific design features to be evaluated include turn-lane pocket lengths (TDP-1) at Sand Canyon Avenue/Hoag Irvine (southbound left-turn and westbound left-turn), at Sand Canyon Avenue/Alton Parkway (southbound left-turn, eastbound left-turn, and westbound left-turn), and at Hoag Irvine - Kaiser Permanente/Alton Parkway (southbound left-turn and eastbound left-turn), right-turn lanes at uncontrolled driveways (TDP-4) at the new project driveway along Alton Parkway, distance between driveways and intersections (TDP-10) at the new project driveway along Alton Parkway, and driveway lengths (TDP-14) at the project access points at Sand Canyon Avenue/Hoag Irvine and Hoag Irvine/Alton Parkway, and the new project driveway along Alton Parkway.

A summary of the proposed project and results of the analysis will be prepared. Based upon these results, recommendations will be presented for the design of the project access driveways and interface with adjacent streets. These recommendations will be consistent with the City's TDPs.

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B. Circulation Phasing

An analysis of any impacted intersections identified in the City's 2020 Circulation Phasing Analysis Report within the project study area (if any) will be included in this section.

C. Pedestrian Circulation

The pedestrian circulation on site and connection to the adjacent public facilities and corresponding traffic control measures within the project site will be discussed in this section. The TS will include a discussion of how Policies A, B, and C of General Plan Objective B-3 will be met with implementation of this project.

D. Bicycle Circulation

Bicycle circulation on site and connection to adjacent bicycle facilities will be discussed in this section. LSA will document how the project will conform to applicable policies of Objective B-4 of the City's General Plan.

E. Transit Facilities

The TS will identify the transit facilities (e.g., train services and bus services, routes, and stops) within the project vicinity. LSA will discuss pedestrian access to the transit facilities in the project vicinity.

X. VMT ANALYSIS

LSA will conduct a VMT analysis for the proposed project based on the City's adopted Traffic Study Guidelines (2020). This will define the VMT methodology and thresholds required by the City to determine whether the project will create a significant transportation impact.

The VMT analysis will calculate the project's VMT based on the latest Irvine Transportation Analysis Model (ITAM). The project VMT will be compared to the regional VMT to determine potential CEQA impacts.

The results of this analysis will identify if the proposed project will have a less than significant impact, or, if mitigation is required to reduce the VMT.

XI. REQUIRED MITIGATION MEASURES AND/OR RECOMMENDATIONS

Based on the results and in accordance with the adopted City Traffic Study Guidelines, physical and/or operational improvements to alleviate an LOS deficiency and/or mitigation measure improvements required to mitigate VMT impacts due to the proposed project will be identified. These improvements will be consistent with the City's TDPs. If the project does not meet specific design criteria, a deviation request will be prepared and submitted to City staff for consideration.

XII. CONCLUSIONS

A summary of the results of the analysis and recommendations will be prepared.

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XIII. REVISIONS TO ANALYSIS

Revisions to the TS will be provided in response to the City's comments.

XIV. SIGNATURE

The TS will be prepared under the supervision of, and signed, stamped, and dated by, a registered traffic engineer or a registered professional civil engineer with appropriate engineering and/or planning credentials.

Attachments: Figure 1 - Project Location and Study Area Intersections
Figure 2 - Site Plan
Table A - Trip Generation Summary

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LSA

LEGEND

- Project Boundary

- Study Area Intersection

FIGURE 1

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FEET

SOURCE: ESRI

Hoag Irvine

Project Location and Study Area Intersections

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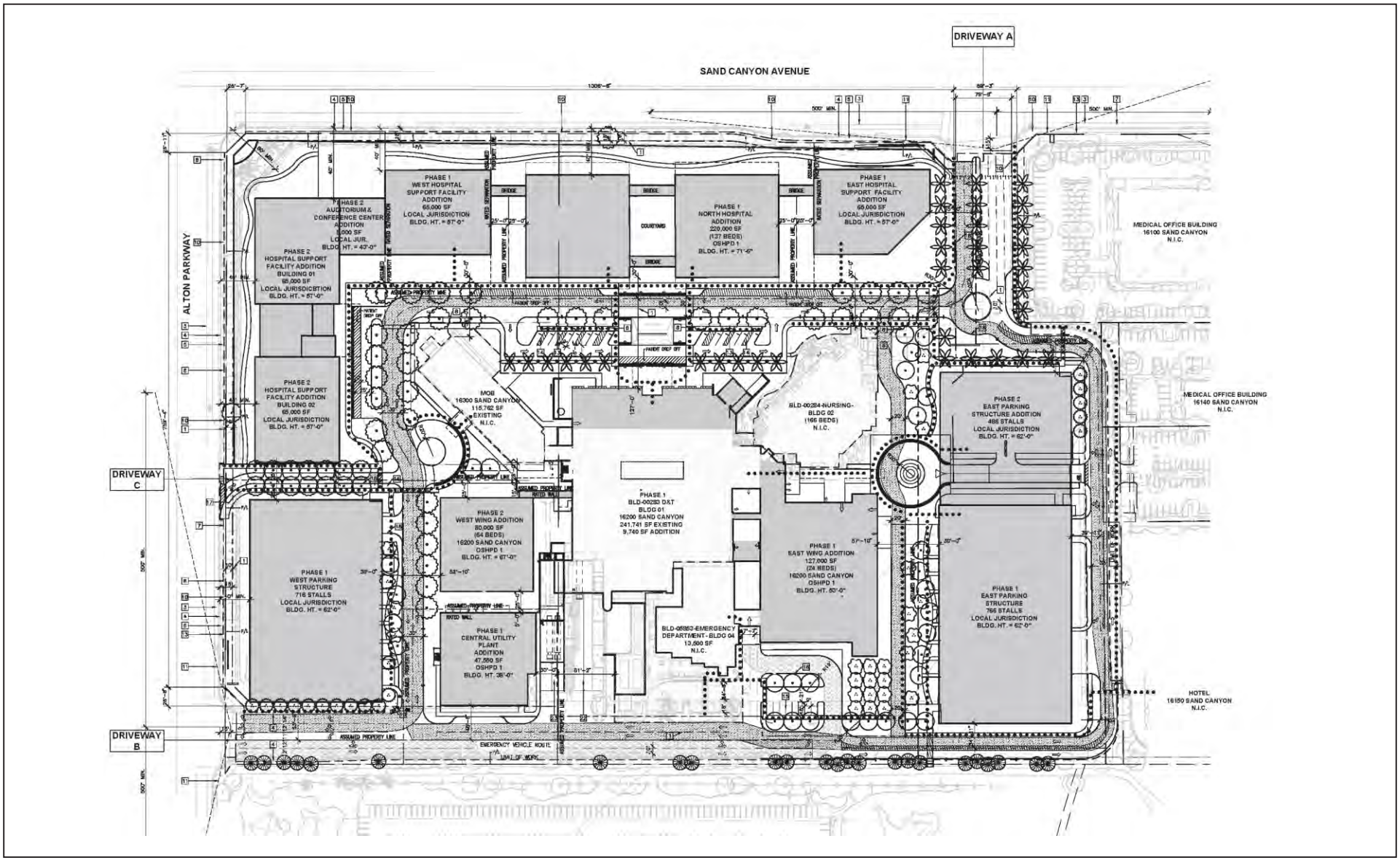

LSA

FIGURE 2

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FEET

SOURCE: LPA

Hoag Irvine

Site Plan

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Sun Sun T. Murillo 8/7/20

Table A: Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates[1]									
Hospital		TSF	10.72	0.61	0.28	0.89	0.31	0.66	0.97
Medical-Dental Office Building		TSF	34.80	2.17	0.61	2.78	0.97	2.49	3.46
Existing Trip Generation									
Existing Hospital[2]	245.221	TSF	2,629	150	68	218	76	162	238
Medical Office Building	115.762	TSF	4,029	251	71	322	112	289	401
Total Existing			6,658	401	139	540	188	451	639
Entitled Trip Generation									
Hospital[2]	565.359	TSF	6,061	345	158	503	175	373	548
Medical Office Building	120.000	TSF	4,176	260	74	334	116	299	415
Total Entitled			10,237	605	232	837	291	672	963
Project Trip Generation									
Hospital[3]	704.740	TSF	7,555	430	197	627	218	466	684
Hoag Campus Buildout Trip Generation									
Hospital[3]	949.961	TSF	10,184	579	266	845	294	627	921
Medical Office Building	115.762	TSF	4,029	251	71	322	112	289	401
Total Proposed			14,213	830	337	1,167	406	916	1,322

[1] Trip rates referenced from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 10th Edition (2017).

Land Use Code 610 - Hospital

Land Use Code 720 - Medical-Dental Office Building

[2] Existing and Entitled do not include the existing central plant facilities (10,200 sf).

[3] The Project and Hoag Campus Buildout do not include the proposed central plant facilities (47,550 sf).

ADT = average daily trips

TSF = thousand square feet

Sun-Sun T. Murillo 8/7/20
Approved by Development Review

8/10/20
Approved by DAC

APPENDIX B

ITAM TRAFFIC FORECASTS

291 . Jeffrey Rd. at Alton Pkwy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	330	.10*	410	.12*
NBT	3	5100	851	.17	1291	.25
NBR	f		230		318	
SBL	2	3400	168	.05	269	.08
SBT	3	5100	1874	.37*	1248	.24*
SBR	d	1700	121	.07	214	.13
EBL	2	3400	214	.06	250	.07
EBT	2	3400	740	.22*	898	.26*
EBR	d	1700	538	.32	357	.21
WBL	2	3400	431	.13*	395	.12*
WBT	2	3400	836	.25	894	.26
WBR	d	1700	105	.06	132	.08
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .90 .79

303 . Sand Canyon. Av. at I-5 NB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	228	.07*	509	.15
NBT	3	5100	409	.08	1654	.32*
NBR	d	1700	0	.00	10	.01
SBL	1	1700	1	.00	2	.00
SBT	3	5100	1805	.35*	734	.14
SBR	1	1700	489	.29	178	.10
EBL	1.5		252		876	
EBT	0.5	3400	0	.07*	0	.26*
EBR	2	3400	497	.15	198	.06
WBL	1	1700	2	.00	1	.00
WBT	1	1700	0	.00*	0	.00*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .57 .63

304 . Sand Canyon. Av. at Marine Wy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	483	.09	2051	.40*
NBR	1	1700	181	.11	353	.21
SBL	2	3400	89	.03	108	.03*
SBT	3	5100	2138	.42*	809	.16
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	420	.12*	162	.05*
WBT	0	0	0		0	
WBR	1	1700	125	.07	92	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .59 .53

305 . Sand Canyon. Av. at I-5 SB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	413	.06	1789	.26*
NBR	1	1700	122	.07	392	.23
SBL	2	3400	707	.21	347	.10*
SBT	4	6800	1868	.27*	584	.09
SBR	0	0	0		0	
EBL	2.5		237	.07*	601	.12*
EBT	0	6800	4		1	
EBR	1.5		940	.28	277	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.21*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .60 .53

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	48	.03*	50	.03
NBT	3	5100	406	.08	1187	.23*
NBR	1	1700	71	.04	19	.01
SBL	2	3400	625	.18	73	.02*
SBT	3	5100	1745	.34*	704	.14
SBR	d	1700	486	.29	73	.04
EBL	2	3400	52	.02*	372	.11*
EBT	1	1700	20	.01	50	.03
EBR	d	1700	29	.02	66	.04
WBL	2	3400	23	.01	133	.04
WBT	1.5	5100	50	{.01}*	20	.01*
WBR	1.5		79		514	.15
Right Turn Adjustment					WBR	.12*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .45 .54

307 . Sand Canyon. Av. at ICD

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	138	.04*	176	.05
NBT	3	5100	430	.08	727	.14*
NBR	1	1700	124	.07	41	.02
SBL	2	3400	288	.08	157	.05*
SBT	3	5100	1359	.27*	645	.13
SBR	1	1700	243	.14	215	.13
EBL	2	3400	149	.04	201	.06*
EBT	3	5100	757	.15*	471	.09
EBR	1	1700	113	.07	105	.06
WBL	2	3400	90	.03*	165	.05
WBT	3	5100	424	.08	971	.19*
WBR	1	1700	94	.06	209	.12
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .54 .49

308 . Sand Canyon. Av. at Waterworks Wy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	83	.05*	15	.01
NBT	3	5100	765	.15	764	.15*
NBR	1	1700	227	.13	92	.05
SBL	1	1700	123	.07	77	.05*
SBT	3	5100	1086	.21*	872	.17
SBR	d	1700	71	.04	8	.00
EBL	1	1700	7	.00	72	.04
EBT	1	1700	2	.00*	17	.01*
EBR	1	1700	6	.00	68	.04
WBL	1	1700	90	.05*	297	.17*
WBT	1	1700	35	.02	5	.00
WBR	1	1700	42	.02	171	.10
Right Turn Adjustment					EBR	.01*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .36 .44

309 . Sand Canyon. Av. at Barranca Pkwy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	99	.03*	164	.05*
NBT	3	5100	855	.17	653	.13
NBR	d	1700	96	.06	98	.06
SBL	2	3400	41	.01	56	.02
SBT	3	5100	1017	.20*	950	.19*
SBR	d	1700	127	.07	254	.15
EBL	2	3400	152	.04*	96	.03*
EBT	2	3400	475	.14	428	.13
EBR	1	1700	142	.08	115	.07
WBL	2	3400	178	.05	162	.05
WBT	2	3400	513	.15*	680	.20*
WBR	1	1700	96	.06	52	.03
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .47 .52

310 . Sand Canyon. Av. at Alton Pkwy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	218	.06*	338	.10*
NBT	3	5100	903	.18	463	.09
NBR	1	1700	478	.28	149	.09
SBL	2	3400	183	.05	75	.02
SBT	3	5100	893	.18*	1025	.20*
SBR	1	1700	127	.07	206	.12
EBL	2	3400	164	.05*	125	.04
EBT	3	5100	660	.13	688	.13*
EBR	1	1700	295	.17	316	.19
WBL	2	3400	322	.09	514	.15*
WBT	2	3400	824	.24*	792	.23
WBR	1	1700	98	.06	163	.10
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .58 .63

311 . Sand Canyon. Av. at I-405 NB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1429	.42*	642	.19
NBR	f		780		252	
SBL	0	0	0		0	
SBT	2	3400	508	.15	813	.24*
SBR	f		1003		1075	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0.5		40		121	
WBT	0	3400	0	.08*	0	{.12}*
WBR	1.5		220		338	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .55 .41

312 . Sand Canyon. Av. at I-405 SB Ramps

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	152	.09	149	.09*
NBT	2	3400	1173	.35*	588	.17
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	264	.08	569	.17*
SBR	f		282		408	
EBL	1.5		1048	{.38}*	291	.17*
EBT	0	3400	0	.38	0	
EBR	0.5		248		346	.20
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .78 .48

315 . Laguna Canyon Rd. at Alton Pkwy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	19	.01	75	.04
NBT	2	3400	87	.03*	173	.05*
NBR	d	1700	25	.01	74	.04
SBL	1	1700	191	.11*	126	.07*
SBT	2	3400	164	.05	94	.03
SBR	d	1700	70	.04	61	.04
EBL	2	3400	140	.04	83	.02
EBT	2	3400	1169	.34*	890	.26*
EBR	1	1700	46	.03	31	.02
WBL	2	3400	89	.03*	19	.01*
WBT	2	3400	678	.20	753	.22
WBR	1	1700	156	.09	175	.10
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .44

444 . Sand Canyon Av. at Burt Rd.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	4	.00	0	.00
NBT	3	5100	474	.10	2016	.41*
NBR	0	0	56		62	
SBL	1	1700	116	.07	108	.06*
SBT	3	5100	2710	.53*	790	.15
SBR	1	1700	8	.00	2	.00
EBL	1	1700	6	.00	4	.00
EBT	1	1700	2	.00*	1	.00*
EBR	d	1700	2	.00	0	.00
WBL	1	1700	62	.04*	48	.03*
WBT	1	1700	0	.00	1	.00
WBR	1	1700	58	.03	121	.07
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .62 .55

500 . Sand Canyon Av. at Hoag Irvine

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	33	.01	9	.00
NBT	3	5100	983	.19*	694	.14
NBR	1	1700	118	.07	48	.03
SBL	2	3400	172	.05*	41	.01
SBT	4	6800	1318	.21	1265	.19*
SBR	0	0	98		17	
EBL	1	1700	10	.01	72	.04
EBT	1	1700	3	.01*	8	.06*
EBR	0	0	17		87	
WBL	2	3400	71	.02*	139	.04*
WBT	1	1700	4	.00	9	.01
WBR	1	1700	70	.04	191	.11
Right Turn Adjustment				WBR		.01*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .32 .35

501 . Hoag - Kaiser at Alton Pkwy.

Existing NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	65	.02*	184	.05*
NBT	0.5	1700	1	.01	1	.03
NBR	0.5		17		45	
SBL	1	1700	14	.01	27	.02
SBT	0.5	3400	1	.00*	0	.02*
SBR	1.5		36		82	
EBL	2	3400	91	.03*	20	.01*
EBT	3	5100	731	.14	746	.15
EBR	1	1700	272	.16	35	.02
WBL	2	3400	110	.03	14	.00
WBT	2	3400	1287	.38*	996	.29*
WBR	d	1700	93	.05	22	.01
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .48 .42

291 . Jeffrey Rd. at Alton Pkwy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	330	.10*	426	.13*
NBT	3	5100	863	.17	1290	.25
NBR	f		270		318	
SBL	2	3400	168	.05	269	.08
SBT	3	5100	1876	.37*	1259	.25*
SBR	d	1700	122	.07	215	.13
EBL	2	3400	211	.06	260	.08
EBT	2	3400	763	.22*	886	.26*
EBR	d	1700	537	.32	355	.21
WBL	2	3400	422	.12*	410	.12*
WBT	2	3400	815	.24	893	.26
WBR	d	1700	109	.06	137	.08
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .89 .81

303 . Sand Canyon. Av. at I-5 NB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	238	.07*	544	.16
NBT	3	5100	403	.08	1682	.33*
NBR	d	1700	0	.00	10	.01
SBL	1	1700	1	.00	2	.00
SBT	3	5100	1855	.36*	738	.14
SBR	1	1700	486	.29	178	.10
EBL	1.5		251		875	
EBT	0.5	3400	0	.07*	0	.26*
EBR	2	3400	494	.15	198	.06
WBL	1	1700	2	.00	1	.00
WBT	1	1700	1	.00*	0	.00*
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.03*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .58 .64

304 . Sand Canyon. Av. at Marine Wy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	488	.10	2113	.41*
NBR	1	1700	179	.11	353	.21
SBL	2	3400	90	.03	108	.03*
SBT	3	5100	2184	.43*	814	.16
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	420	.12*	162	.05*
WBT	0	0	0		0	
WBR	1	1700	125	.07	92	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .60 .54

305 . Sand Canyon. Av. at I-5 SB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	417	.06	1854	.27*
NBR	1	1700	122	.07	392	.23
SBL	2	3400	707	.21	347	.10*
SBT	4	6800	1913	.28*	589	.09
SBR	0	0	0		0	
EBL	2.5		235	.07*	598	.12*
EBT	0	6800	4		1	
EBR	1.5		1002	.29	288	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.22*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .62 .54

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	48	.03*	50	.03
NBT	3	5100	411	.08	1255	.25*
NBR	1	1700	71	.04	19	.01
SBL	2	3400	604	.18	65	.02*
SBT	3	5100	1857	.36*	715	.14
SBR	d	1700	504	.30	84	.05
EBL	2	3400	52	.02*	369	.11*
EBT	1	1700	21	.01	49	.03
EBR	d	1700	29	.02	66	.04
WBL	2	3400	22	.01	135	.04
WBT	1.5	5100	48	{.01}*	20	.01*
WBR	1.5		79		512	.15
Right Turn Adjustment					WBR	.12*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .47 .56

307 . Sand Canyon. Av. at ICD

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	126	.04*	202	.06
NBT	3	5100	452	.09	795	.16*
NBR	1	1700	125	.07	43	.03
SBL	2	3400	286	.08	152	.04*
SBT	3	5100	1483	.29*	675	.13
SBR	1	1700	233	.14	203	.12
EBL	2	3400	129	.04	202	.06*
EBT	3	5100	744	.15*	467	.09
EBR	1	1700	158	.09	119	.07
WBL	2	3400	90	.03*	161	.05
WBT	3	5100	413	.08	981	.19*
WBR	1	1700	94	.06	208	.12
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .50

308 . Sand Canyon. Av. at Waterworks Wy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	84	.05*	15	.01
NBT	3	5100	777	.15	864	.17*
NBR	1	1700	229	.13	97	.06
SBL	1	1700	108	.06	75	.04*
SBT	3	5100	1271	.25*	914	.18
SBR	d	1700	69	.04	7	.00
EBL	1	1700	7	.00	72	.04
EBT	1	1700	2	.00*	17	.01*
EBR	1	1700	6	.00	69	.04
WBL	1	1700	93	.05*	299	.18*
WBT	1	1700	34	.02	5	.00
WBR	1	1700	42	.02	168	.10
Right Turn Adjustment					EBR	.01*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .40 .46

309 . Sand Canyon. Av. at Barranca Pkwy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	88	.03*	166	.05*
NBT	3	5100	852	.17	767	.15
NBR	d	1700	94	.06	99	.06
SBL	2	3400	41	.01	56	.02
SBT	3	5100	1235	.24*	990	.19*
SBR	d	1700	96	.06	259	.15
EBL	2	3400	172	.05*	88	.03*
EBT	2	3400	480	.14	438	.13
EBR	1	1700	150	.09	120	.07
WBL	2	3400	178	.05	162	.05
WBT	2	3400	535	.16*	695	.20*
WBR	1	1700	96	.06	52	.03
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .53 .52

310 . Sand Canyon. Av. at Alton Pkwy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	214	.06*	318	.09*
NBT	3	5100	861	.17	416	.08
NBR	1	1700	621	.37	205	.12
SBL	2	3400	181	.05	73	.02
SBT	3	5100	907	.18*	1139	.22*
SBR	1	1700	126	.07	200	.12
EBL	2	3400	164	.05*	125	.04*
EBT	3	5100	718	.14	661	.13
EBR	1	1700	306	.18	322	.19
WBL	2	3400	299	.09	495	.15
WBT	2	3400	790	.23*	841	.25*
WBR	1	1700	97	.06	162	.10
Right Turn Adjustment			NBR	.08*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .65 .65

311 . Sand Canyon. Av. at I-405 NB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1485	.44*	629	.19
NBR	f		779		253	
SBL	0	0	0		0	
SBT	2	3400	525	.15	858	.25*
SBR	f		987		1131	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0.5		41		121	
WBT	0	3400	0	.09*	0	{.11}*
WBR	1.5		260		339	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .58 .41

312 . Sand Canyon. Av. at I-405 SB Ramps

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	152	.09	144	.08*
NBT	2	3400	1174	.35*	567	.17
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	264	.08	573	.17*
SBR	f		300		449	
EBL	1.5		1102	{.40}*	300	.18*
EBT	0	3400	0	.40	0	
EBR	0.5		248		345	.20
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .80 .48

315 . Laguna Canyon Rd. at Alton Pkwy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	43	.03	78	.05
NBT	2	3400	93	.03*	172	.05*
NBR	d	1700	24	.01	73	.04
SBL	1	1700	191	.11*	125	.07*
SBT	2	3400	166	.05	73	.02
SBR	d	1700	78	.05	66	.04
EBL	2	3400	143	.04	86	.03
EBT	2	3400	1188	.35*	938	.28*
EBR	1	1700	40	.02	54	.03
WBL	2	3400	86	.03*	19	.01*
WBT	2	3400	721	.21	766	.23
WBR	1	1700	157	.09	174	.10
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .57 .46

444 . Sand Canyon Av. at Burt Rd.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	4	.00	0	.00
NBT	3	5100	478	.10	2079	.42*
NBR	0	0	56		62	
SBL	1	1700	117	.07	108	.06*
SBT	3	5100	2818	.55*	805	.16
SBR	1	1700	8	.00	2	.00
EBL	1	1700	6	.00	4	.00
EBT	1	1700	2	.00*	1	.00*
EBR	d	1700	2	.00	0	.00
WBL	1	1700	62	.04*	47	.03*
WBT	1	1700	0	.00	1	.00
WBR	1	1700	58	.03	122	.07
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .64 .56

500 . Sand Canyon Av. at Hoag Irvine

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	33	.01	9	.00
NBT	3	5100	925	.18*	644	.13
NBR	1	1700	118	.07	48	.03
SBL	2	3400	172	.05*	41	.01
SBT	4	6800	1295	.20	1230	.18*
SBR	0	0	98		17	
EBL	1	1700	10	.01	72	.04
EBT	1	1700	3	.01*	8	.06*
EBR	0	0	17		87	
WBL	2	3400	71	.02*	139	.04*
WBT	1	1700	4	.00	9	.01
WBR	1	1700	70	.04	191	.11
Right Turn Adjustment					WBR	.01*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .31 .34

501 . Hoag - Kaiser at Alton Pkwy.

Existing WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	63	.02	182	.05
NBT	0.5	1700	5	.01*	7	.03*
NBR	0.5		16		40	
SBL	1	1700	56	.03*	169	.10*
SBT	0.5	3400	6	.00	6	{.04}
SBR	1.5		56		151	
EBL	2	3400	313	.09*	110	.03*
EBT	3	5100	710	.14	686	.13
EBR	1	1700	268	.16	31	.02
WBL	2	3400	107	.03	14	.00
WBT	2	3400	1211	.36*	959	.28*
WBR	d	1700	258	.15	82	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .54 .49

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	383	.11*	580	.17
NBT	3	5100	1237	.24	1722	.34*
NBR	1	1700	263	.15	348	.20
SBL	2	3400	274	.08	392	.12*
SBT	3	5100	1871	.37*	1492	.29
SBR	d	1700	183	.11	327	.19
EBL	2	3400	227	.07*	284	.08
EBT	2	3400	705	.21	840	.25*
EBR	d	1700	509	.30	345	.20
WBL	3	5100	505	.10	403	.08*
WBT	2	3400	836	.25*	783	.23
WBR	d	1700	129	.08	164	.10
Clearance Interval				.05*		.05*
Note: Assumes Right-Turn Overlap for NBR						

TOTAL CAPACITY UTILIZATION .85 .84

303 . Sand Canyon. Av. at I-5 NB Ramps

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	231	.07*	604	.18*
NBT	3	5100	728	.14	2011	.39
NBR	d	1700	2	.00	2	.00
SBL	1	1700	6	.00	5	.00
SBT	3	5100	2285	.45*	1232	.24*
SBR	1	1700	587	.35	236	.14
EBL	1.5		413		789	
EBT	0.5	3400	3	.12*	3	.23*
EBR	2	3400	634	.19	198	.06
WBL	1	1700	1	.00	1	.00
WBT	1	1700	2	.00*	2	.00*
WBR	0	0	1		1	
Right Turn Adjustment		EBR		.02*		
Clearance Interval				.05*		.05*
Note: Assumes E/W Split Phasing						

TOTAL CAPACITY UTILIZATION .71 .70

304 . Sand Canyon. Av. at Marine Wy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	780	.15	2598	.51*
NBR	1	1700	238	.14	549	.32
SBL	2	3400	72	.02	241	.07*
SBT	3	5100	2959	.58*	1227	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	441	.13*	363	.11*
WBT	0	0	0		0	
WBR	1	1700	160	.09	92	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .76 .74

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	701	.10	2461	.36*
NBR	1	1700	114	.07	255	.15
SBL	2	3400	754	.22	655	.19*
SBT	4	6800	2558	.38*	1017	.15
SBR	0	0	0		0	
EBL	2.5		389	.11*	715	.14*
EBT	0	6800	2		2	
EBR	1.5		812	.24	225	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment		EBR		.13*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .67 .74

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	100	.06*	69	.04
NBT	3	5100	495	.10	1440	.28*
NBR	1	1700	142	.08	151	.09
SBL	2	3400	967	.28	194	.06*
SBT	3	5100	1881	.37*	800	.16
SBR	d	1700	317	.19	115	.07
EBL	2	3400	95	.03*	290	.09
EBT	1	1700	111	.07	225	.13*
EBR	d	1700	93	.05	96	.06
WBL	2	3400	56	.02	124	.04*
WBT	1	1700	183	.11*	115	.07
WBR	f		210		790	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .62 .56

307 . Sand Canyon. Av. at ICD

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	257	.08*	284	.08
NBT	3	5100	527	.10	911	.18*
NBR	1	1700	136	.08	67	.04
SBL	2	3400	269	.08	205	.06*
SBT	3	5100	1332	.26*	742	.15
SBR	1	1700	339	.20	302	.18
EBL	2	3400	230	.07*	230	.07*
EBT	3	5100	765	.15	619	.12
EBR	1	1700	205	.12	168	.10
WBL	2	3400	74	.02	142	.04
WBT	3	5100	554	.11*	1007	.20*
WBR	1	1700	103	.06	191	.11
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .57 .56

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	106	.06*	46	.03
NBT	3	5100	932	.18	930	.18*
NBR	1	1700	174	.10	128	.08
SBL	1	1700	105	.06	100	.06*
SBT	3	5100	1356	.27*	1001	.20
SBR	d	1700	67	.04	15	.01
EBL	1	1700	9	.01	87	.05
EBT	1	1700	2	.00*	32	.02*
EBR	1	1700	19	.01	141	.08
WBL	1	1700	110	.06*	308	.18*
WBT	1	1700	47	.03	8	.00
WBR	1	1700	43	.03	233	.14
Right Turn Adjustment					EBR	.03*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .44 .52

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	87	.03*	282	.08*
NBT	3	5100	890	.17	903	.18
NBR	d	1700	137	.08	126	.07
SBL	2	3400	33	.01	63	.02
SBT	3	5100	1298	.25*	1076	.21*
SBR	d	1700	153	.09	200	.12
EBL	2	3400	133	.04*	106	.03*
EBT	2	3400	570	.17	563	.17
EBR	1	1700	206	.12	170	.10
WBL	2	3400	236	.07	176	.05
WBT	2	3400	760	.22*	691	.20*
WBR	1	1700	77	.05	63	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .59 .57

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	242	.07	406	.12*
NBT	3	5100	961	.19*	716	.14
NBR	1	1700	567	.33	207	.12
SBL	2	3400	306	.09*	77	.02
SBT	3	5100	1091	.21	1233	.24*
SBR	1	1700	133	.08	178	.10
EBL	2	3400	180	.05*	126	.04
EBT	3	5100	707	.14	686	.13*
EBR	1	1700	353	.21	358	.21
WBL	2	3400	496	.15	563	.17*
WBT	2	3400	915	.27*	717	.21
WBR	1	1700	89	.05	209	.12
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .65 .71

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1469	.43*	872	.26
NBR	f		990		350	
SBL	0	0	0		0	
SBT	2	3400	472	.14	984	.29*
SBR	f		1480		1250	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0.5		28		136	
WBT	0	3400	0	.11*	0	{.18}*
WBR	1.5		351		518	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .59 .52

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	187	.11	103	.06*
NBT	2	3400	1333	.39*	712	.21
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	237	.07	544	.16*
SBR	f		263		517	
EBL	1.5		1127	{.44}*	548	{.28}*
EBT	0	3400	0	.44	0	.28
EBR	0.5		363		416	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .88 .55

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	223	.13*	154	.09*
NBT	2	3400	197	.06	132	.04
NBR	d	1700	120	.07	136	.08
SBL	1	1700	33	.02	50	.03
SBT	2	3400	102	.03*	163	.05*
SBR	d	1700	26	.02	47	.03
EBL	2	3400	97	.03*	24	.01*
EBT	2	3400	798	.23	708	.21
EBR	1	1700	155	.09	124	.07
WBL	2	3400	153	.05	155	.05
WBT	2	3400	1311	.39*	833	.25*
WBR	1	1700	76	.04	55	.03
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .63 .45

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	62	.02*	57	.02
NBT	3	5100	711	.15	2507	.50*
NBR	0	0	38		55	
SBL	1	1700	68	.04	76	.04*
SBT	3	5100	3104	.61*	1028	.20
SBR	1	1700	144	.08	76	.04
EBL	2	3400	28	.01*	92	.03*
EBT	1	1700	54	.03	48	.03
EBR	1	1700	49	.03	78	.05
WBL	1	1700	17	.01	46	.03
WBT	1	1700	64	.04*	47	.03*
WBR	1	1700	41	.02	87	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .73 .65

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	72	.02*	49	.01*
NBT	3	5100	1179	.23	1022	.20
NBR	1	1700	149	.09	53	.03
SBL	2	3400	212	.06	43	.01
SBT	4	6800	1668	.28*	1464	.23*
SBR	0	0	209		87	
EBL	1	1700	29	.02	158	.09
EBT	1	1700	9	.04*	13	.10*
EBR	0	0	53		158	
WBL	2	3400	90	.03*	152	.04*
WBT	1	1700	9	.01	44	.03
WBR	1	1700	82	.05	254	.15
Right Turn Adjustment					WBR	.07*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .42 .50

501 . Hoag - Kaiser at Alton Pkwy.

ITAM 15 2023 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	59	.02*	183	.05*
NBT	0.5	1700	1	.01	2	.03
NBR	0.5		20		46	
SBL	1	1700	20	.01	28	.02
SBT	0.5	3400	1	.00*	0	.02*
SBR	1.5		39		83	
EBL	2	3400	98	.03*	49	.01*
EBT	3	5100	871	.17	786	.15
EBR	1	1700	269	.16	35	.02
WBL	2	3400	120	.04	15	.00
WBT	2	3400	1322	.39*	1104	.32*
WBR	d	1700	111	.07	59	.03
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .49 .45

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	391	.12*	585	.17*
NBT	3	5100	1262	.25	1738	.34
NBR	1	1700	279	.16	346	.20
SBL	2	3400	274	.08	387	.11
SBT	3	5100	1878	.37*	1507	.30*
SBR	d	1700	176	.10	327	.19
EBL	2	3400	223	.07*	284	.08
EBT	2	3400	717	.21	828	.24*
EBR	d	1700	520	.31	348	.20
WBL	3	5100	512	.10	415	.08*
WBT	2	3400	813	.24*	798	.23
WBR	d	1700	125	.07	167	.10
Right Turn Adjustment			EBR	.01*		
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .86 .84

303 . Sand Canyon. Av. at I-5 NB Ramps

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	230	.07*	632	.19*
NBT	3	5100	719	.14	2023	.40
NBR	d	1700	2	.00	2	.00
SBL	1	1700	6	.00	5	.00
SBT	3	5100	2325	.46*	1229	.24*
SBR	1	1700	588	.35	239	.14
EBL	1.5		412		793	
EBT	0.5	3400	3	.12*	3	.23*
EBR	2	3400	646	.19	203	.06
WBL	1	1700	1	.00	1	.00
WBT	1	1700	2	.00*	2	.00*
WBR	0	0	1		1	
Right Turn Adjustment			EBR	.02*		
Clearance Interval				.05*		.05*

Note: Assumes E/W Split Phasing

TOTAL CAPACITY UTILIZATION .72 .71

304 . Sand Canyon. Av. at Marine Wy.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	3	5100	768	.15	2641	.52*
NBR	1	1700	229	.13	548	.32
SBL	2	3400	71	.02	243	.07*
SBT	3	5100	3003	.59*	1222	.24
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	447	.13*	361	.11*
WBT	0	0	0		0	
WBR	1	1700	162	.10	94	.06
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .77 .75

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	687	.10	2498	.37*
NBR	1	1700	115	.07	262	.15
SBL	2	3400	754	.22	646	.19*
SBT	4	6800	2612	.38*	1020	.15
SBR	0	0	0		0	
EBL	2.5		385	.11*	712	.14*
EBT	0	6800	2		2	
EBR	1.5		845	.25	230	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment			EBR	.14*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .68 .75

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	98	.06*	72	.04
NBT	3	5100	478	.09	1502	.29*
NBR	1	1700	140	.08	157	.09
SBL	2	3400	971	.29	194	.06*
SBT	3	5100	1968	.39*	811	.16
SBR	d	1700	317	.19	115	.07
EBL	2	3400	93	.03*	285	.08
EBT	1	1700	110	.06	220	.13*
EBR	d	1700	96	.06	95	.06
WBL	2	3400	60	.02	124	.04*
WBT	1	1700	187	.11*	113	.07
WBR	f		211		783	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .64 .57

307 . Sand Canyon. Av. at ICD

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	262	.08*	298	.09
NBT	3	5100	514	.10	973	.19*
NBR	1	1700	135	.08	71	.04
SBL	2	3400	260	.08	206	.06*
SBT	3	5100	1432	.28*	753	.15
SBR	1	1700	338	.20	300	.18
EBL	2	3400	227	.07*	234	.07*
EBT	3	5100	765	.15	623	.12
EBR	1	1700	227	.13	172	.10
WBL	2	3400	81	.02	145	.04
WBT	3	5100	560	.11*	1002	.20*
WBR	1	1700	99	.06	193	.11
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .59 .57

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	106	.06*	46	.03
NBT	3	5100	921	.18	1005	.20*
NBR	1	1700	172	.10	118	.07
SBL	1	1700	106	.06	93	.05*
SBT	3	5100	1477	.29*	1030	.20
SBR	d	1700	69	.04	16	.01
EBL	1	1700	8	.00	92	.05
EBT	1	1700	2	.00*	29	.02*
EBR	1	1700	20	.01	139	.08
WBL	1	1700	114	.07*	301	.18*
WBT	1	1700	46	.03	8	.00
WBR	1	1700	41	.02	243	.14
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .47 .52

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	83	.02*	315	.09*
NBT	3	5100	872	.17	980	.19
NBR	d	1700	130	.08	145	.09
SBL	2	3400	33	.01	63	.02
SBT	3	5100	1432	.28*	1092	.21*
SBR	d	1700	155	.09	194	.11
EBL	2	3400	140	.04*	101	.03*
EBT	2	3400	586	.17	573	.17
EBR	1	1700	233	.14	175	.10
WBL	2	3400	255	.08	185	.05
WBT	2	3400	752	.22*	694	.20*
WBR	1	1700	78	.05	61	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .61 .58

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 2023 Approved WP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	256	.08*	401	.12*
NBT	3	5100	895	.18	688	.13
NBR	1	1700	710	.42	223	.13
SBL	2	3400	332	.10	89	.03
SBT	3	5100	1047	.21*	1314	.26*
SBR	1	1700	121	.07	189	.11
EBL	2	3400	147	.04	113	.03
EBT	3	5100	779	.15*	688	.13*
EBR	1	1700	343	.20	332	.20
WBL	2	3400	502	.15*	584	.17*
WBT	2	3400	882	.26	739	.22
WBR	1	1700	75	.04	209	.12
Right Turn Adjustment			NBR	.12*		
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .76 .73

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 2023 Approved WP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	0	0	0		0	
NBT	2	3400	1532	.45*	861	.25
NBR	f		990		360	
SBL	0	0	0		0	
SBT	2	3400	460	.14	1010	.30*
SBR	f		1440		1310	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	0.5		30		130	
WBT	0	3400	0	.12*	0	{.17}*
WBR	1.5		378		519	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .62 .52

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 2023 Approved WP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	181	.11	109	.06*
NBT	2	3400	1339	.39*	712	.21
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	231	.07	537	.16*
SBR	f		259		541	
EBL	1.5		1191	{.46}*	548	{.28}*
EBT	0	3400	0	.46	0	.28
EBR	0.5		369		413	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .90 .55

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 2023 Approved WP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	246	.14*	159	.09*
NBT	2	3400	194	.06	136	.04
NBR	d	1700	120	.07	125	.07
SBL	1	1700	35	.02	47	.03
SBT	2	3400	104	.03*	163	.05*
SBR	d	1700	31	.02	50	.03
EBL	2	3400	96	.03*	28	.01*
EBT	2	3400	804	.24	748	.22
EBR	1	1700	148	.09	140	.08
WBL	2	3400	138	.04	147	.04
WBT	2	3400	1373	.40*	841	.25*
WBR	1	1700	71	.04	56	.03
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .65 .45

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	61	.02*	62	.02
NBT	3	5100	701	.14	2554	.51*
NBR	0	0	38		57	
SBL	1	1700	68	.04	75	.04*
SBT	3	5100	3193	.63*	1033	.20
SBR	1	1700	145	.09	78	.05
EBL	2	3400	28	.01*	91	.03*
EBT	1	1700	54	.03	48	.03
EBR	1	1700	50	.03	81	.05
WBL	1	1700	18	.01	47	.03
WBT	1	1700	64	.04*	49	.03*
WBR	1	1700	41	.02	85	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.75		.66

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	47	.01	38	.01*
NBT	3	5100	1086	.21*	960	.19
NBR	1	1700	158	.09	82	.05
SBL	2	3400	389	.11*	77	.02
SBT	4	6800	1636	.27	1478	.23*
SBR	0	0	233		79	
EBL	1	1700	36	.02	156	.09
EBT	1	1700	13	.03*	21	.10*
EBR	0	0	41		145	
WBL	2	3400	93	.03*	248	.07*
WBT	1	1700	10	.01	64	.04
WBR	1	1700	138	.08	444	.26
Right Turn Adjustment					WBR	.14*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.43		.60

501 . Hoag - Kaiser at Alton Pkwy.

ITAM 15 2023 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	60	.02	169	.05*
NBT	0.5	1700	3	.01*	6	.04
NBR	0.5		17		56	
SBL	1	1700	38	.02*	99	.06
SBT	0.5	3400	2	.00	0	{.05}*
SBR	1.5		91		223	
EBL	2	3400	350	.10*	106	.03*
EBT	3	5100	846	.17	755	.15
EBR	1	1700	285	.17	32	.02
WBL	2	3400	102	.03	18	.01
WBT	2	3400	1239	.36*	1018	.30*
WBR	d	1700	317	.19	158	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.54		.48

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	402	.12*	626	.18*
NBT	3	5100	1309	.26	1713	.34
NBR	1	1700	369	.22	399	.23
SBL	2	3400	289	.09	400	.12
SBT	3	5100	1796	.35*	1527	.30*
SBR	d	1700	145	.09	313	.18
EBL	2	3400	207	.06	253	.07
EBT	2	3400	852	.25*	862	.25*
EBR	d	1700	560	.33	354	.21
WBL	3	5100	583	.11*	502	.10*
WBT	2	3400	793	.23	912	.27
WBR	d	1700	123	.07	176	.10
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .88 .88

303 . Sand Canyon. Av. at I-5 NB Ramps-Marine Way

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	269	.08*	665	.20
NBT	4	6800	622	.09	2196	.32*
NBR	1	1700	418	.25	558	.33
SBL	2	3400	513	.15	387	.11*
SBT	4	6800	2067	.30*	570	.08
SBR	1	1700	251	.15	64	.04
EBL	2	3400	130	.04	298	.09
EBT	1.5	5100	249	{.14}*	355	.10*
EBR	1.5		572		127	
WBL	2	3400	452	.13*	523	.15*
WBT	2	3400	610	.18	541	.16
WBR	1	1700	208	.12	277	.16
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .70 .73

304 . Sand Canyon. Av. at Old Marine Wy.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	490	.07	1880	.28*
NBR	d	1700	110	.06	101	.06
SBL	0	0	90		111	{.07}*
SBT	4	6800	2221	.34*	578	.10
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	49	.01*	87	.03*
WBT	0	0	0		0	
WBR	1	1700	40	.02	84	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .40 .43

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	822	.12	2915	.43*
NBR	1	1700	83	.05	252	.15
SBL	2	3400	496	.15	237	.07*
SBT	4	6800	2639	.39*	998	.15
SBR	0	0	0		0	
EBL	2.5		498	.15*	565	.11*
EBT	0	6800	1		1	
EBR	1.5		1011	.30	402	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment		EBR	.15*			
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .74 .66

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 2040 Approved NP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	106	.06	79	.05
NBT	3	5100	510	.10*	1464	.29*
NBR	1	1700	212	.12	201	.12
SBL	2	3400	1260	.37*	271	.08*
SBT	3	5100	1922	.38	844	.17
SBR	d	1700	293	.17	137	.08
EBL	2	3400	124	.04*	274	.08
EBT	1	1700	209	.12	278	.16*
EBR	d	1700	137	.08	90	.05
WBL	2	3400	71	.02	186	.05*
WBT	1	1700	211	.12*	194	.11
WBR	f		236		1193	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .68 .63

307 . Sand Canyon. Av. at ICD

ITAM 15 2040 Approved NP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	319	.09*	350	.10*
NBT	3	5100	533	.10	847	.17
NBR	1	1700	158	.09	57	.03
SBL	2	3400	268	.08	197	.06
SBT	3	5100	1271	.25*	765	.15*
SBR	1	1700	361	.21	420	.25
EBL	2	3400	265	.08*	345	.10*
EBT	3	5100	1014	.20	846	.17
EBR	1	1700	260	.15	248	.15
WBL	2	3400	89	.03	138	.04
WBT	3	5100	740	.15*	1310	.26*
WBR	1	1700	112	.07	188	.11
Right Turn Adjustment					SBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .62 .68

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 2040 Approved NP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	1	1700	118	.07*	55	.03*
NBT	3	5100	1021	.20	964	.19
NBR	1	1700	206	.12	123	.07
SBL	1	1700	81	.05	89	.05
SBT	3	5100	1393	.27*	1112	.22*
SBR	d	1700	49	.03	17	.01
EBL	1	1700	9	.01	80	.05
EBT	1	1700	2	.00*	28	.02*
EBR	1	1700	28	.02	152	.09
WBL	1	1700	108	.06*	316	.19*
WBT	1	1700	33	.02	8	.00
WBR	1	1700	29	.02	205	.12
Right Turn Adjustment					EBR	.05*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .45 .56

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 2040 Approved NP

			AM PK HOUR		PM PK HOUR	
	LANES	CAPACITY	VOL	V/C	VOL	V/C
NBL	2	3400	102	.03*	314	.09*
NBT	3	5100	991	.19	925	.18
NBR	d	1700	133	.08	132	.08
SBL	2	3400	32	.01	71	.02
SBT	3	5100	1269	.25*	1158	.23*
SBR	d	1700	182	.11	240	.14
EBL	2	3400	191	.06*	121	.04*
EBT	2	3400	709	.21	658	.19
EBR	1	1700	257	.15	191	.11
WBL	2	3400	220	.06	201	.06
WBT	2	3400	860	.25*	876	.26*
WBR	1	1700	82	.05	74	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .64 .67

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	229	.07	384	.11*
NBT	3	5100	1066	.21*	651	.13
NBR	2	3400	735	.22	230	.07
SBL	2	3400	366	.11*	106	.03
SBT	3	5100	947	.19	1321	.26*
SBR	1	1700	116	.07	208	.12
EBL	2	3400	215	.06	124	.04
EBT	3	5100	988	.19*	824	.16*
EBR	1	1700	358	.21	336	.20
WBL	2	3400	515	.15*	683	.20*
WBT	2	3400	955	.28	948	.28
WBR	1	1700	109	.06	265	.16
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .71 .78

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1606	.47*	763	.22
NBR	f		990		400	
SBL	0	0	0		0	
SBT	2	3400	468	.14	1023	.30*
SBR	f		1390		1400	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	42	.02*	157	.09*
WBT	0	0	0		0	
WBR	f		474		567	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .54 .44

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	179	.11	132	.08*
NBT	2	3400	1361	.40*	759	.22
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	248	.07	600	.18*
SBR	f		262		518	
EBL	1.5		1266	{.49}*	441	{.26}*
EBT	0	3400	0	.49	0	.26
EBR	0.5		404		440	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .94 .57

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	238	.14*	204	.12*
NBT	2	3400	198	.06	190	.06
NBR	d	1700	93	.05	116	.07
SBL	1	1700	49	.03	55	.03
SBT	2	3400	158	.05*	195	.06*
SBR	d	1700	53	.03	80	.05
EBL	2	3400	143	.04*	44	.01*
EBT	2	3400	908	.27	769	.23
EBR	1	1700	184	.11	148	.09
WBL	2	3400	128	.04	117	.03
WBT	2	3400	1449	.43*	905	.27*
WBR	1	1700	79	.05	66	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .71 .51

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	71	.02*	88	.03
NBT	3	5100	772	.16	2885	.58*
NBR	0	0	35		56	
SBL	1	1700	57	.03	75	.04*
SBT	3	5100	3379	.66*	1142	.22
SBR	1	1700	153	.09	113	.07
EBL	2	3400	43	.01*	125	.04*
EBT	1	1700	69	.04	58	.03
EBR	1	1700	80	.05	106	.06
WBL	1	1700	21	.01	42	.02
WBT	1	1700	76	.04*	58	.03*
WBR	1	1700	45	.03	80	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.78		.74

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	68	.02	43	.01*
NBT	3	5100	1257	.25*	979	.19
NBR	1	1700	236	.14	83	.05
SBL	2	3400	340	.10*	77	.02
SBT	4	6800	1547	.26	1558	.24*
SBR	0	0	201		89	
EBL	1	1700	30	.02	148	.09
EBT	1	1700	14	.04*	20	.10*
EBR	0	0	47		142	
WBL	2	3400	106	.03*	210	.06*
WBT	1	1700	10	.01	58	.03
WBR	1	1700	113	.07	363	.21
Right Turn Adjustment					WBR	.09*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.47		.55

501 . Hoag - Kaiser at Alon Pkwy.

ITAM 15 2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	143	.04	485	.14*
NBT	0.5	1700	4	.03*	9	.08
NBR	0.5		53		124	
SBL	1	1700	27	.02*	48	.03
SBT	0.5	3400	3	.00	0	{.03}*
SBR	1.5		49		141	
EBL	2	3400	143	.04*	71	.02*
EBT	3	5100	1013	.20	790	.15
EBR	1	1700	604	.36	186	.11
WBL	2	3400	255	.08	85	.03
WBT	2	3400	1322	.39*	1150	.34*
WBR	d	1700	153	.09	89	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.53		.58

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	400	.12*	639	.19*
NBT	3	5100	1318	.26	1708	.33
NBR	1	1700	373	.22	401	.24
SBL	2	3400	289	.09	391	.12
SBT	3	5100	1798	.35*	1529	.30*
SBR	d	1700	143	.08	310	.18
EBL	2	3400	208	.06	249	.07
EBT	2	3400	858	.25*	859	.25*
EBR	d	1700	564	.33	361	.21
WBL	3	5100	588	.12*	513	.10*
WBT	2	3400	788	.23	923	.27
WBR	d	1700	124	.07	174	.10
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .89 .89

303 . Sand Canyon. Av. at I-5 NB Ramps-Marine Way

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	264	.08*	668	.20
NBT	4	6800	625	.09	2216	.33*
NBR	1	1700	410	.24	563	.33
SBL	2	3400	523	.15	382	.11*
SBT	4	6800	2102	.31*	566	.08
SBR	1	1700	257	.15	63	.04
EBL	2	3400	133	.04	297	.09
EBT	1.5	5100	248	{.14}*	355	.10*
EBR	1.5		570		128	
WBL	2	3400	449	.13*	526	.15*
WBT	2	3400	609	.18	538	.16
WBR	1	1700	212	.12	276	.16
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .71 .74

304 . Sand Canyon. Av. at Old Marine Wy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	490	.07	1880	.28*
NBR	d	1700	110	.06	101	.06
SBL	0	0	90		111	{.07}*
SBT	4	6800	2221	.34*	578	.10
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	49	.01*	87	.03*
WBT	0	0	0		0	
WBR	1	1700	40	.02	84	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .40 .43

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	818	.12	2939	.43*
NBR	1	1700	86	.05	253	.15
SBL	2	3400	503	.15	236	.07*
SBT	4	6800	2672	.39*	996	.15
SBR	0	0	0		0	
EBL	2.5		492	.14*	571	.11*
EBT	0	6800	1		1	
EBR	1.5		1038	.31	404	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment		EBR	.17*			
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .75 .66

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	106	.06	80	.05
NBT	3	5100	509	.10*	1500	.29*
NBR	1	1700	211	.12	200	.12
SBL	2	3400	1264	.37*	267	.08*
SBT	3	5100	1984	.39	855	.17
SBR	d	1700	298	.18	138	.08
EBL	2	3400	123	.04*	277	.08
EBT	1	1700	207	.12	273	.16*
EBR	d	1700	139	.08	90	.05
WBL	2	3400	71	.02	185	.05*
WBT	1	1700	207	.12*	192	.11
WBR	f		229		1193	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .68 .63

307 . Sand Canyon. Av. at ICD

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	317	.09*	365	.11*
NBT	3	5100	532	.10	888	.17
NBR	1	1700	160	.09	58	.03
SBL	2	3400	268	.08	196	.06
SBT	3	5100	1338	.26*	766	.15*
SBR	1	1700	354	.21	427	.25
EBL	2	3400	263	.08*	353	.10*
EBT	3	5100	1022	.20	846	.17
EBR	1	1700	275	.16	248	.15
WBL	2	3400	97	.03	136	.04
WBT	3	5100	758	.15*	1309	.26*
WBR	1	1700	115	.07	188	.11
Right Turn Adjustment					SBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .63 .69

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	118	.07*	55	.03
NBT	3	5100	1035	.20	1023	.20*
NBR	1	1700	199	.12	125	.07
SBL	1	1700	80	.05	88	.05*
SBT	3	5100	1487	.29*	1122	.22
SBR	d	1700	50	.03	17	.01
EBL	1	1700	9	.01	82	.05
EBT	1	1700	2	.00*	27	.02*
EBR	1	1700	29	.02	150	.09
WBL	1	1700	109	.06*	312	.18*
WBT	1	1700	32	.02	8	.00
WBR	1	1700	29	.02	209	.12
Right Turn Adjustment					EBR	.05*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .47 .55

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	92	.03*	326	.10*
NBT	3	5100	978	.19	989	.19
NBR	d	1700	127	.07	137	.08
SBL	2	3400	34	.01	70	.02
SBT	3	5100	1360	.27*	1161	.23*
SBR	d	1700	179	.11	238	.14
EBL	2	3400	196	.06*	124	.04*
EBT	2	3400	710	.21	654	.19
EBR	1	1700	262	.15	192	.11
WBL	2	3400	233	.07	206	.06
WBT	2	3400	841	.25*	887	.26*
WBR	1	1700	89	.05	77	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .66 .68

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	235	.07	379	.11*
NBT	3	5100	1033	.20*	642	.13
NBR	2	3400	804	.24	230	.07
SBL	2	3400	379	.11*	108	.03
SBT	3	5100	928	.18	1342	.26*
SBR	1	1700	112	.07	210	.12
EBL	2	3400	196	.06	123	.04
EBT	3	5100	1017	.20*	822	.16*
EBR	1	1700	348	.20	335	.20
WBL	2	3400	514	.15*	693	.20*
WBT	2	3400	943	.28	951	.28
WBR	1	1700	102	.06	266	.16
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .71 .78

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1646	.48*	762	.22
NBR	f		990		400	
SBL	0	0	0		0	
SBT	2	3400	457	.13	1025	.30*
SBR	f		1370		1430	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	43	.03*	155	.09*
WBT	0	0	0		0	
WBR	f		474		558	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .56 .44

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	176	.10	134	.08*
NBT	2	3400	1348	.40*	761	.22
NBR	0	0	0		0	
SBL	0	0	0		0	
SBT	2	3400	238	.07	596	.18*
SBR	f		254		526	
EBL	1.5		1312	{.51}*	449	{.26}*
EBT	0	3400	0	.51	0	.26
EBR	0.5		412		444	
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .96 .57

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	252	.15*	207	.12*
NBT	2	3400	203	.06	197	.06
NBR	d	1700	96	.06	116	.07
SBL	1	1700	49	.03	52	.03
SBT	2	3400	157	.05*	189	.06*
SBR	d	1700	55	.03	78	.05
EBL	2	3400	140	.04*	46	.01*
EBT	2	3400	896	.26	782	.23
EBR	1	1700	179	.11	153	.09
WBL	2	3400	125	.04	117	.03
WBT	2	3400	1474	.43*	904	.27*
WBR	1	1700	78	.05	67	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .72 .51

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	67	.02*	89	.03
NBT	3	5100	768	.16	2925	.58*
NBR	0	0	33		57	
SBL	1	1700	56	.03	76	.04*
SBT	3	5100	3443	.68*	1152	.23
SBR	1	1700	149	.09	113	.07
EBL	2	3400	46	.01*	125	.04*
EBT	1	1700	71	.04	58	.03
EBR	1	1700	85	.05	106	.06
WBL	1	1700	22	.01	42	.02
WBT	1	1700	74	.04*	58	.03*
WBR	1	1700	47	.03	80	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.80		.74

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	57	.02	38	.01*
NBT	3	5100	1193	.23*	957	.19
NBR	1	1700	249	.15	108	.06
SBL	2	3400	454	.13*	107	.03
SBT	4	6800	1535	.26	1546	.24*
SBR	0	0	211		83	
EBL	1	1700	32	.02	137	.08
EBT	1	1700	17	.03*	25	.09*
EBR	0	0	42		128	
WBL	2	3400	114	.03*	267	.08*
WBT	1	1700	12	.01	69	.04
WBR	1	1700	146	.09	475	.28
Right Turn Adjustment					WBR	.14*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.47		.61

501 . Hoag - Kaiser at Alon Pkwy.

ITAM 15 2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	142	.04	463	.14*
NBT	0.5	1700	6	.03*	13	.09
NBR	0.5		50		133	
SBL	1	1700	40	.02*	81	.05
SBT	0.5	3400	5	.00	0	{.05}*
SBR	1.5		75		209	
EBL	2	3400	262	.08*	91	.03*
EBT	3	5100	993	.19	777	.15
EBR	1	1700	614	.36	180	.11
WBL	2	3400	244	.07	90	.03
WBT	2	3400	1266	.37*	1108	.33*
WBR	d	1700	264	.16	126	.07
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.55		.60

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	362	.11*	539	.16*
NBT	3	5100	1279	.25	1688	.33
NBR	1	1700	313	.18	342	.20
SBL	2	3400	282	.08	416	.12
SBT	3	5100	1930	.38*	1578	.31*
SBR	d	1700	150	.09	327	.19
EBL	2	3400	245	.07	284	.08
EBT	2	3400	875	.26*	842	.25*
EBR	1	1700	632	.37	345	.20
WBL	3	5100	568	.11*	487	.10*
WBT	2	3400	748	.22	895	.26
WBR	d	1700	126	.07	198	.12
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR EBR

TOTAL CAPACITY UTILIZATION .91 .87

303 . Sand Canyon. Av. at I-5 NB Ramps-Marine Way

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	295	.09*	773	.23
NBT	4	6800	888	.13	2477	.36*
NBR	1	1700	554	.33	681	.40
SBL	2	3400	700	.21	444	.13*
SBT	4	6800	2407	.35*	720	.11
SBR	1	1700	284	.17	70	.04
EBL	2	3400	167	.05	282	.08
EBT	1.5	5100	297	{.15}*	365	.11*
EBR	1.5		585		144	
WBL	2	3400	473	.14*	746	.22*
WBT	2	3400	621	.18	667	.20
WBR	1	1700	275	.16	331	.19
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .78 .87

304 . Sand Canyon. Av. at Old Marine Wy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	551	.08	1995	.29*
NBR	d	1700	114	.07	105	.06
SBL	0	0	94		113	{.07}*
SBT	4	6800	2359	.36*	675	.12
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	53	.02*	89	.03*
WBT	0	0	0		0	
WBR	1	1700	44	.03	84	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .43 .44

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	1173	.17	3373	.50*
NBR	1	1700	114	.07	262	.15
SBL	2	3400	564	.17	317	.09*
SBT	4	6800	3018	.44*	1304	.19
SBR	0	0	0		0	
EBL	2.5		577	.17*	617	.12*
EBT	0	6800	1		1	
EBR	1.5		1132	.33	386	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment		EBR	.16*			
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .82 .76

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	157	.09	89	.05
NBT	3	5100	723	.14*	1651	.32*
NBR	1	1700	220	.13	214	.13
SBL	2	3400	1495	.44*	366	.11*
SBT	3	5100	1965	.39	968	.19
SBR	d	1700	499	.29	196	.12
EBL	2	3400	174	.05*	406	.12
EBT	1	1700	215	.13	389	.23*
EBR	d	1700	121	.07	106	.06
WBL	2	3400	54	.02	165	.05*
WBT	1	1700	264	.16*	215	.13
WBR	f		282		1323	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .84 .76

307 . Sand Canyon. Av. at ICD

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	313	.09*	394	.12*
NBT	3	5100	699	.14	1092	.21
NBR	1	1700	139	.08	76	.04
SBL	2	3400	281	.08	225	.07
SBT	3	5100	1342	.26*	842	.17*
SBR	1	1700	425	.25	401	.24
EBL	2	3400	415	.12*	308	.09*
EBT	3	5100	1062	.21	788	.15
EBR	1	1700	272	.16	222	.13
WBL	2	3400	68	.02	156	.05
WBT	3	5100	634	.12*	1285	.25*
WBR	1	1700	128	.08	211	.12
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .64 .68

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	134	.08*	93	.05
NBT	3	5100	1141	.22	1206	.24*
NBR	1	1700	316	.19	213	.13
SBL	1	1700	148	.09	121	.07*
SBT	3	5100	1386	.27*	1145	.22
SBR	d	1700	66	.04	22	.01
EBL	1	1700	16	.01	95	.06
EBT	1	1700	6	.00*	46	.03*
EBR	1	1700	38	.02	188	.11
WBL	1	1700	147	.09*	417	.25*
WBT	1	1700	60	.04	14	.01
WBR	1	1700	53	.03	259	.15
Right Turn Adjustment					EBR	.01*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .49 .65

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	117	.03*	266	.08*
NBT	3	5100	1356	.27	1013	.20
NBR	d	1700	156	.09	113	.07
SBL	2	3400	32	.01	69	.02
SBT	3	5100	1371	.27*	1330	.26*
SBR	d	1700	173	.10	230	.14
EBL	2	3400	218	.06*	147	.04*
EBT	2	3400	702	.21	628	.18
EBR	1	1700	281	.17	215	.13
WBL	2	3400	218	.06	255	.08
WBT	2	3400	750	.22*	925	.27*
WBR	1	1700	86	.05	100	.06
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .63 .70

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	285	.08	423	.12*
NBT	3	5100	1431	.28*	710	.14
NBR	2	3400	855	.25	257	.08
SBL	2	3400	345	.10*	106	.03
SBT	3	5100	1108	.22	1547	.30*
SBR	1	1700	116	.07	206	.12
EBL	2	3400	225	.07	116	.03
EBT	3	5100	900	.18*	788	.15*
EBR	1	1700	405	.24	376	.22
WBL	2	3400	527	.16*	752	.22*
WBT	3	5100	839	.16	883	.17
WBR	1	1700	104	.06	245	.14
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .77 .84

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	1999	.59*	891	.26
NBR	f		1082		450	
SBL	0	0	0		0	
SBT	2	3400	465	.14	1029	.30*
SBR	f		1583		1740	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	36	.02*	141	.08*
WBT	0	0	0		0	
WBR	f		625		559	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .66 .43

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	1301	.38*	725	.21*
NBR	f		310		310	
SBL	0	0	0		0	
SBT	2	3400	266	.08	582	.17
SBR	f		240		510	
EBL	2	3400	1769	.52*	675	.20*
EBT	0	0	0		0	
EBR	1	1700	394	.23	418	.25
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .95 .48

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	256	.15*	194	.11*
NBT	2	3400	271	.08	173	.05
NBR	d	1700	114	.07	115	.07
SBL	1	1700	50	.03	58	.03
SBT	2	3400	174	.05*	313	.09*
SBR	d	1700	48	.03	81	.05
EBL	2	3400	154	.05*	36	.01*
EBT	2	3400	876	.26	687	.20
EBR	1	1700	190	.11	202	.12
WBL	2	3400	147	.04	184	.05
WBT	2	3400	1366	.40*	886	.26*
WBR	1	1700	95	.06	62	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .70 .52

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	84	.02*	96	.03
NBT	3	5100	1100	.22	3332	.66*
NBR	0	0	35		56	
SBL	1	1700	58	.03	82	.05*
SBT	3	5100	3842	.75*	1400	.27
SBR	1	1700	184	.11	134	.08
EBL	2	3400	67	.02	152	.04*
EBT	1	1700	77	.05*	61	.04
EBR	1	1700	99	.06	126	.07
WBL	1	1700	19	.01*	44	.03
WBT	1	1700	72	.04	59	.03*
WBR	1	1700	52	.03	86	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .08 .03

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	76	.02	42	.01*
NBT	3	5100	1641	.32*	1029	.20
NBR	1	1700	212	.12	77	.05
SBL	2	3400	296	.09*	78	.02
SBT	4	6800	1690	.28	1806	.28*
SBR	0	0	215		94	
EBL	1	1700	37	.02	124	.07
EBT	1	1700	12	.04*	15	.08*
EBR	0	0	51		122	
WBL	2	3400	99	.03*	212	.06*
WBT	1	1700	10	.01	53	.03
WBR	1	1700	122	.07	357	.21
Right Turn Adjustment					WBR	.07*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .53 .55

501 . Hoag - Kaiser at Alton Pkwy.

ITAM 15 P2040 Approved NP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	137	.04	499	.15*
NBT	0.5	1700	5	.04*	11	.08
NBR	0.5		57		120	
SBL	1	1700	33	.02*	47	.03
SBT	0.5	3400	4	.00	0	{.03}*
SBR	1.5		53		144	
EBL	2	3400	173	.05*	82	.02*
EBT	3	5100	990	.19	763	.15
EBR	1	1700	608	.36	195	.11
WBL	2	3400	268	.08	85	.03
WBT	2	3400	1199	.35*	1117	.33*
WBR	d	1700	193	.11	97	.06
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .51 .58

291 . Jeffrey Rd. at Alton Pkwy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	365	.11*	533	.16*
NBT	3	5100	1280	.25	1699	.33
NBR	1	1700	316	.19	337	.20
SBL	2	3400	286	.08	409	.12
SBT	3	5100	1943	.38*	1588	.31*
SBR	d	1700	152	.09	323	.19
EBL	2	3400	246	.07	287	.08*
EBT	2	3400	887	.26*	834	.25
EBR	1	1700	636	.37	349	.21
WBL	3	5100	561	.11*	502	.10
WBT	2	3400	743	.22	904	.27*
WBR	d	1700	124	.07	204	.12
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR EBR

TOTAL CAPACITY UTILIZATION .91 .87

303 . Sand Canyon. Av. at I-5 NB Ramps-Marine Way

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	299	.09*	786	.23
NBT	4	6800	896	.13	2481	.36*
NBR	1	1700	553	.33	679	.40
SBL	2	3400	700	.21	438	.13*
SBT	4	6800	2423	.36*	713	.10
SBR	1	1700	288	.17	71	.04
EBL	2	3400	168	.05	290	.09
EBT	1.5	5100	296	{.15}*	373	.11*
EBR	1.5		585		148	
WBL	2	3400	471	.14*	740	.22*
WBT	2	3400	623	.18	673	.20
WBR	1	1700	275	.16	329	.19
Clearance Interval				.05*		.05*

Note: Assumes Right-Turn Overlap for NBR

TOTAL CAPACITY UTILIZATION .79 .87

304 . Sand Canyon. Av. at Old Marine Wy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	551	.08	1995	.29*
NBR	d	1700	114	.07	105	.06
SBL	0	0	94		113	{.07}*
SBT	4	6800	2359	.36*	675	.12
SBR	0	0	0		0	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	2	3400	53	.02*	89	.03*
WBT	0	0	0		0	
WBR	1	1700	44	.03	84	.05
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .43 .44

305 . Sand Canyon. Av. at I-5 SB Ramps

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	4	6800	1177	.17	3390	.50*
NBR	1	1700	114	.07	265	.16
SBL	2	3400	564	.17	314	.09*
SBT	4	6800	3049	.45*	1297	.19
SBR	0	0	0		0	
EBL	2.5		583	.17*	620	.12*
EBT	0	6800	1		1	
EBR	1.5		1151	.34	393	{.00}
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment		EBR	.17*			
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .84 .76

306 . Sand Canyon. Av. at Oak Cyn./Laguna Cyn. R

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	157	.09	89	.05
NBT	3	5100	725	.14*	1673	.33*
NBR	1	1700	225	.13	219	.13
SBL	2	3400	1493	.44*	371	.11*
SBT	3	5100	2012	.39	970	.19
SBR	d	1700	488	.29	196	.12
EBL	2	3400	171	.05*	404	.12
EBT	1	1700	214	.13	390	.23*
EBR	d	1700	124	.07	105	.06
WBL	2	3400	57	.02	164	.05*
WBT	1	1700	266	.16*	214	.13
WBR	f		285		1322	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .84 .77

307 . Sand Canyon. Av. at ICD

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	316	.09*	403	.12*
NBT	3	5100	704	.14	1121	.22
NBR	1	1700	141	.08	81	.05
SBL	2	3400	283	.08	224	.07
SBT	3	5100	1391	.27*	859	.17*
SBR	1	1700	425	.25	387	.23
EBL	2	3400	411	.12*	298	.09*
EBT	3	5100	1059	.21	785	.15
EBR	1	1700	280	.16	227	.13
WBL	2	3400	70	.02	164	.05
WBT	3	5100	632	.12*	1280	.25*
WBR	1	1700	127	.07	211	.12
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .65 .68

308 . Sand Canyon. Av. at Waterworks Wy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	136	.08*	94	.06
NBT	3	5100	1163	.23	1247	.24*
NBR	1	1700	313	.18	221	.13
SBL	1	1700	142	.08	123	.07*
SBT	3	5100	1460	.29*	1173	.23
SBR	d	1700	65	.04	22	.01
EBL	1	1700	16	.01	95	.06
EBT	1	1700	5	.00*	46	.03*
EBR	1	1700	39	.02	189	.11
WBL	1	1700	151	.09*	418	.25*
WBT	1	1700	58	.03	14	.01
WBR	1	1700	51	.03	258	.15
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .51 .66

309 . Sand Canyon. Av. at Barranca Pkwy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	111	.03*	276	.08*
NBT	3	5100	1364	.27	1045	.20
NBR	d	1700	152	.09	111	.07
SBL	2	3400	33	.01	70	.02
SBT	3	5100	1444	.28*	1352	.27*
SBR	d	1700	175	.10	246	.14
EBL	2	3400	227	.07*	155	.05*
EBT	2	3400	706	.21	629	.19
EBR	1	1700	285	.17	216	.13
WBL	2	3400	225	.07	242	.07
WBT	2	3400	745	.22*	928	.27*
WBR	1	1700	91	.05	100	.06
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .65 .72

310 . Sand Canyon. Av. at Alton Pkwy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	293	.09	428	.13*
NBT	3	5100	1398	.27*	683	.13
NBR	2	3400	960	.28	258	.08
SBL	2	3400	351	.10*	110	.03
SBT	3	5100	1080	.21	1575	.31*
SBR	1	1700	108	.06	215	.13
EBL	2	3400	203	.06	110	.03
EBT	3	5100	928	.18*	782	.15*
EBR	1	1700	400	.24	367	.22
WBL	2	3400	539	.16*	747	.22*
WBT	3	5100	823	.16	897	.18
WBR	1	1700	96	.06	236	.14
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .76 .86

311 . Sand Canyon. Av. at I-405 NB Ramps

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	0	0	0		0	
NBT	2	3400	2055	.60*	881	.26
NBR	f		1080		450	
SBL	0	0	0		0	
SBT	2	3400	454	.13	1029	.30*
SBR	f		1560		1760	
EBL	0	0	0		0	
EBT	0	0	0		0	
EBR	0	0	0		0	
WBL	1	1700	36	.02*	141	.08*
WBT	0	0	0		0	
WBR	f		645		559	
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .67 .43

312 . Sand Canyon. Av. at I-405 SB Ramps

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	0	.00	0	.00
NBT	2	3400	1300	.38*	732	.22*
NBR	f		310		301	
SBL	0	0	0		0	
SBT	2	3400	256	.08	582	.17
SBR	f		240		512	
EBL	2	3400	1820	.54*	652	.19*
EBT	0	0	0		0	
EBR	1	1700	404	.24	421	.25
WBL	0	0	0		0	
WBT	0	0	0		0	
WBR	0	0	0		0	
Right Turn Adjustment					EBR	.02*
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .97 .48

315 . Laguna Canyon Rd. at Alton Pkwy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	1	1700	268	.16*	194	.11*
NBT	2	3400	268	.08	173	.05
NBR	d	1700	114	.07	113	.07
SBL	1	1700	51	.03	58	.03
SBT	2	3400	178	.05*	310	.09*
SBR	d	1700	51	.03	82	.05
EBL	2	3400	151	.04*	37	.01*
EBT	2	3400	875	.26	701	.21
EBR	1	1700	189	.11	204	.12
WBL	2	3400	143	.04	179	.05
WBT	2	3400	1391	.41*	888	.26*
WBR	1	1700	91	.05	61	.04
Clearance Interval				.05*		.05*

TOTAL CAPACITY UTILIZATION .71 .52

444 . Sand Canyon Av. at Burt Rd.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	86	.03*	98	.03
NBT	3	5100	1100	.22	3346	.67*
NBR	0	0	35		58	
SBL	1	1700	56	.03	81	.05*
SBT	3	5100	3875	.76*	1406	.28
SBR	1	1700	182	.11	132	.08
EBL	2	3400	68	.02	149	.04*
EBT	1	1700	78	.05*	61	.04
EBR	1	1700	106	.06	129	.08
WBL	1	1700	19	.01*	46	.03
WBT	1	1700	72	.04	59	.03*
WBR	1	1700	51	.03	85	.05
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.90		.84

500 . Sand Canyon Av. at Hoag Irvine

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	60	.02	37	.01*
NBT	3	5100	1605	.31*	966	.19
NBR	1	1700	213	.13	91	.05
SBL	2	3400	384	.11*	100	.03
SBT	4	6800	1678	.28	1795	.28*
SBR	0	0	220		89	
EBL	1	1700	42	.02	123	.07
EBT	1	1700	14	.03*	19	.08*
EBR	0	0	45		118	
WBL	2	3400	98	.03*	267	.08*
WBT	1	1700	10	.01	64	.04
WBR	1	1700	153	.09	461	.27
Right Turn Adjustment					WBR	.10*
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.53		.60

501 . Hoag - Kaiser at Alton Pkwy.

ITAM 15 P2040 Approved WP

	LANES	CAPACITY	AM PK HOUR VOL	AM PK HOUR V/C	PM PK HOUR VOL	PM PK HOUR V/C
NBL	2	3400	140	.04	466	.14*
NBT	0.5	1700	8	.04*	16	.08
NBR	0.5		53		128	
SBL	1	1700	49	.03*	84	.05
SBT	0.5	3400	6	.00	0	{.06}*
SBR	1.5		87		227	
EBL	2	3400	311	.09*	113	.03*
EBT	3	5100	978	.19	738	.14
EBR	1	1700	627	.37	189	.11
WBL	2	3400	247	.07	91	.03
WBT	2	3400	1163	.34*	1067	.31*
WBR	d	1700	311	.18	151	.09
Clearance Interval				.05*		.05*
TOTAL CAPACITY UTILIZATION				.55		.59

Adt Refinement Summary

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2015	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/31/2020
Future Analysis Year:	2015		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	37,200	38,884	40,167	Ratio	1,227	3%	3%	-100%	3%	1,227	38,400
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	37,200	38,398	39,681	Ratio	1,243	3%	3%	-100%	3%	1,243	38,400
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	37,200	25,847	27,209	Increment	1,362	4%	4%	-100%	4%	1,362	38,600
314	Sand Canyon. Av.	n/o ICD	37,200	25,583	26,944	Increment	1,361	4%	4%	-100%	4%	1,361	38,600
317	Sand Canyon. Av.	s/o ICD	27,100	23,676	25,430	Increment	1,754	6%	6%	-100%	6%	1,754	28,900
318	Sand Canyon. Av.	s/o Waterworks Wy.	27,100	25,605	27,525	Increment	1,920	7%	7%	-100%	7%	1,920	29,000
319	Sand Canyon. Av.	s/o Barranca Pkwy.	27,900	26,456	28,710	Increment	2,254	8%	8%	-100%	8%	2,254	30,200
320	Sand Canyon. Av.	n/o Alton Pkwy.	27,900	26,062	26,727	Increment	665	2%	2%	-100%	2%	665	28,600
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	38,100	41,102	42,712	Ratio	1,492	4%	4%	-100%	4%	1,492	39,600
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Mari	41,800	37,038	37,831	Increment	793	2%	2%	-100%	2%	793	42,600
727	Sand Canyon. Av.	s/o I-5 NB Ramps	41,800	37,038	37,831	Increment	793	2%	2%	-100%	2%	793	42,600
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	22,900	35,364	35,618	Ratio	164	1%	1%	-100%	1%	164	23,100
795	Alton Pkwy.	e/o Valley Oak Dr.	22,900	34,677	34,925	Ratio	164	1%	1%	-100%	1%	164	23,100
796	Alton Pkwy.	w/o Sand Canyon Av.	22,900	34,677	34,925	Ratio	164	1%	1%	-100%	1%	164	23,100
797	Alton Pkwy.	e/o Sand Canyon. Av.	27,100	31,654	33,135	Ratio	1,268	5%	5%	-100%	5%	1,268	28,400
798	Alton Pkwy.	w/o Laguna Canyon Rd.	19,400	28,055	29,149	Ratio	756	4%	4%	-100%	4%	756	20,200
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps	28,500	27,454	28,210	Increment	756	3%	3%	-100%	3%	756	29,300
1216	Sand Canyon Av.	n/o Old Marine Way	41,800	37,038	37,831	Increment	793	2%	2%	-100%	2%	793	42,600
1217	Sand Canyon Av.	s/o Old Marine Way	45,700	37,048	37,835	Increment	787	2%	2%	-100%	2%	787	46,500
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	45,700	37,048	37,835	Increment	787	2%	2%	-100%	2%	787	46,500
4002	Sand Canyon. Av.	n/o Waterworks Wy.	27,100	23,645	25,407	Increment	1,762	7%	7%	-100%	7%	1,762	28,900
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	27,100	25,590	27,521	Increment	1,931	7%	7%	-100%	7%	1,931	29,000

Adt Refinement Summary

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/27/2020
Future Analysis Year:	2023 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	58,463	Ratio	11,279	50%	50%	-100%	50%	11,279	33,600
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	56,587	Ratio	10,612	47%	47%	-100%	47%	10,612	33,000
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	37,773	Ratio	10,330	46%	46%	-100%	46%	10,330	32,700
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	37,664	Ratio	10,573	47%	47%	-100%	47%	10,573	32,900
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	33,754	Increment	10,078	41%	41%	-100%	41%	10,078	34,500
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	35,191	Ratio	9,137	37%	37%	-100%	37%	9,137	33,500
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	37,132	Ratio	10,006	40%	40%	-100%	40%	10,006	34,800
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	35,516	Ratio	8,989	36%	36%	-100%	36%	8,989	33,800
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	50,079	Ratio	7,843	22%	22%	-100%	22%	7,843	43,800
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Mari	33,627	37,031	57,120	Ratio	18,242	54%	54%	-100%	54%	18,242	51,900
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	57,120	Ratio	18,242	54%	54%	-100%	54%	18,242	51,900
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	38,964	Ratio	2,147	10%	10%	-100%	10%	2,147	23,200
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	39,129	Ratio	2,220	13%	13%	-100%	13%	2,220	19,500
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	37,686	Ratio	1,641	9%	9%	-100%	9%	1,641	20,500
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	34,739	Ratio	2,440	10%	10%	-100%	10%	2,440	27,500
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	30,192	Ratio	1,390	8%	8%	-100%	8%	1,390	19,600
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	31,597	Increment	4,161	0%	0%	-100%	0%	0	31,600
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	57,120	Ratio	16,112	54%	54%	-100%	54%	16,112	45,800
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	63,786	Increment	26,736	0%	0%	-100%	0%	0	63,800
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	63,786	Ratio	24,266	72%	72%	-100%	72%	24,266	57,900
4002	Sand Canyon. Av.	n/o Waterworks Wy.	24,409	23,643	33,699	Increment	10,056	41%	41%	-100%	41%	10,056	34,500
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	24,806	25,592	35,127	Ratio	9,242	37%	37%	-100%	37%	9,242	34,000
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,931	Increment	3,931	0%	0%	-100%	0%	0	3,900
5002	Hoag Hospital	e/o Sand Canyon Av.		5,076	6,596	Increment	1,520	0%	0%	-100%	0%	0	6,600
5003	Hoag Irvine Road	n/o Alon Pkwy.		3,391	4,026	Increment	635	0%	0%	-100%	0%	0	4,000

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/27/2020
Future Analysis Year:	2023 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alon Pkwy.		9,335	9,319	Increment	-16	0%	0%	-100%	0%	0	9,300
5005	Alton Pkwy.	e/o Hoag - Kaiser		28,622	31,091	Increment	2,469	0%	0%	-100%	0%	0	31,100

Adt Refinement Summary

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/27/2020
Future Analysis Year:	2023 Approved WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	59,539	Ratio	11,898	53%	53%	-100%	53%	11,898	34,300
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	57,701	Ratio	11,262	50%	50%	-100%	50%	11,262	33,600
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	39,125	Ratio	11,500	51%	51%	-100%	51%	11,500	33,900
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	39,019	Ratio	11,758	53%	53%	-100%	53%	11,758	34,100
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	35,228	Increment	11,552	47%	47%	-100%	47%	11,552	36,000
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	36,756	Ratio	10,629	44%	44%	-100%	44%	10,629	35,000
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	39,239	Ratio	11,982	48%	48%	-100%	48%	11,982	36,800
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	35,793	Ratio	9,253	37%	37%	-100%	37%	9,253	34,100
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	51,309	Ratio	8,919	25%	25%	-100%	25%	8,919	44,900
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Mari	33,627	37,031	57,380	Ratio	18,478	55%	55%	-100%	55%	18,478	52,100
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	57,380	Ratio	18,478	55%	55%	-100%	55%	18,478	52,100
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	39,127	Ratio	2,244	11%	11%	-100%	11%	2,244	23,300
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	39,378	Ratio	2,345	14%	14%	-100%	14%	2,345	19,600
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	37,907	Ratio	1,761	9%	9%	-100%	9%	1,761	20,700
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	36,277	Ratio	3,659	15%	15%	-100%	15%	3,659	28,800
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	31,251	Ratio	2,077	11%	11%	-100%	11%	2,077	20,300
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	32,209	Increment	4,773	0%	0%	-100%	0%	0	32,200
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	57,380	Ratio	16,321	55%	55%	-100%	55%	16,321	46,000
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	64,038	Increment	26,988	0%	0%	-100%	0%	0	64,000
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	64,038	Ratio	24,495	73%	73%	-100%	73%	24,495	58,100
2001	Ridge Valley	s/o Portola Pkwy.	2,894	2,580	5,664	Increment	3,084	107%	107%	-100%	107%	3,084	6,000
2004	Ridge Valley	n/o Irvine Bl.	8,616	0	0	Increment	0	0%	0%	-100%	0%	0	8,600
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,916	Increment	3,916	0%	0%	-100%	0%	0	3,900
5002	Hoag Hospital	e/o Sand Canyon Av.		5,076	10,559	Increment	5,483	0%	0%	-100%	0%	0	10,600
5003	Hoag Irvine Road	n/o Alon Pkwy.		3,391	8,813	Increment	5,422	0%	0%	-100%	0%	0	8,800

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2023	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/27/2020
Future Analysis Year:	2023 Approved WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alon Pkwy.		9,335	9,331	Increment	-4	0%	0%	-100%	0%	0	9,300
5005	Alton Pkwy.	e/o Hoag - Kaiser		28,622	32,216	Increment	3,594	0%	0%	-100%	0%	0	32,200

Adt Refinement Summary

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/26/2020
Future Analysis Year:	2040 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	62,313	Ratio	13,494	60%	60%	-100%	60%	13,494	35,900
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	60,235	Ratio	12,738	57%	57%	-100%	57%	12,738	35,100
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	38,374	Ratio	10,850	49%	49%	-100%	49%	10,850	33,200
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	37,562	Ratio	10,484	47%	47%	-100%	47%	10,484	32,800
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	33,579	Increment	9,903	41%	41%	-100%	41%	9,903	34,300
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	35,735	Ratio	9,656	40%	40%	-100%	40%	9,656	34,100
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	37,699	Ratio	10,538	42%	42%	-100%	42%	10,538	35,300
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	35,262	Ratio	8,748	35%	35%	-100%	35%	8,748	33,600
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	52,380	Ratio	9,855	27%	27%	-100%	27%	9,855	45,800
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Marin	33,627	37,031	59,893	Ratio	20,760	62%	62%	-100%	62%	20,760	54,400
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	59,893	Ratio	20,760	62%	62%	-100%	62%	20,760	54,400
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	43,960	Ratio	5,122	24%	24%	-100%	24%	5,122	26,200
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	44,023	Ratio	4,660	27%	27%	-100%	27%	4,660	21,900
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	43,074	Ratio	4,576	24%	24%	-100%	24%	4,576	23,500
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	42,381	Ratio	8,499	34%	34%	-100%	34%	8,499	33,600
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	35,133	Ratio	4,593	25%	25%	-100%	25%	4,593	22,800
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	32,478	Increment	5,042	0%	0%	-100%	0%	0	32,500
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	59,893	Ratio	18,336	62%	62%	-100%	62%	18,336	48,000
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	59,893	Increment	22,843	0%	0%	-100%	0%	0	59,900
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	59,893	Ratio	20,733	62%	62%	-100%	62%	20,733	54,400
4002	Sand Canyon. Av.	n/o Waterworks Wy.	24,409	23,643	33,401	Increment	9,758	40%	40%	-100%	40%	9,758	34,200
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	24,806	25,592	35,550	Ratio	9,652	39%	39%	-100%	39%	9,652	34,500
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,237	Increment	3,237	0%	0%	-100%	0%	0	3,200
5002	Hoag Hospital	e/o Sand Canyon Av.		5,076	9,306	Increment	4,230	0%	0%	-100%	0%	0	9,300
5003	Hoag Irvine Rd.	n/o Alton Pkwy.		3,391	5,687	Increment	2,296	0%	0%	-100%	0%	0	5,700

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/26/2020
Future Analysis Year:	2040 Approved NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alton Pkwy.		9,335	16,627	Increment	7,292	0%	0%	-100%	0%	0	16,600
5005	Alton Pkwy.	e/o Hoag-Kaiser		28,622	36,031	Increment	7,409	0%	0%	-100%	0%	0	36,000

Adt Refinement Summary

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/26/2020
Future Analysis Year:	2040 Approved WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	62,834	Ratio	13,794	62%	62%	-100%	62%	13,794	36,200
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	60,770	Ratio	13,050	58%	58%	-100%	58%	13,050	35,400
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	38,987	Ratio	11,380	51%	51%	-100%	51%	11,380	33,700
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	38,191	Ratio	11,034	49%	49%	-100%	49%	11,034	33,400
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	34,471	Increment	10,795	44%	44%	-100%	44%	10,795	35,200
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	36,671	Ratio	10,548	43%	43%	-100%	43%	10,548	35,000
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	38,738	Ratio	11,512	46%	46%	-100%	46%	11,512	36,300
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	35,158	Ratio	8,649	35%	35%	-100%	35%	8,649	33,500
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	52,737	Ratio	10,167	28%	28%	-100%	28%	10,167	46,100
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Marin	33,627	37,031	60,104	Ratio	20,952	62%	62%	-100%	62%	20,952	54,600
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	60,104	Ratio	20,952	62%	62%	-100%	62%	20,952	54,600
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	44,075	Ratio	5,191	25%	25%	-100%	25%	5,191	26,300
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	44,067	Ratio	4,682	27%	27%	-100%	27%	4,682	22,000
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	43,137	Ratio	4,611	24%	24%	-100%	24%	4,611	23,500
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	43,257	Ratio	9,193	37%	37%	-100%	37%	9,193	34,300
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	35,621	Ratio	4,909	27%	27%	-100%	27%	4,909	23,100
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	32,639	Increment	5,203	0%	0%	-100%	0%	0	32,600
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	60,104	Ratio	18,505	62%	62%	-100%	62%	18,505	48,200
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	60,104	Increment	23,054	0%	0%	-100%	0%	0	60,100
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	60,104	Ratio	20,924	62%	62%	-100%	62%	20,924	54,600
4002	Sand Canyon. Av.	n/o Waterworks Wy.	24,409	23,643	34,289	Increment	10,646	44%	44%	-100%	44%	10,646	35,100
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	24,806	25,592	36,492	Ratio	10,565	43%	43%	-100%	43%	10,565	35,400
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,191	Increment	3,191	0%	0%	-100%	0%	0	3,200
5002	Hoag Hospital	e/o Sand Canyon Av.		5,076	11,451	Increment	6,375	0%	0%	-100%	0%	0	11,500
5003	Hoag Irvine Rd.	n/o Alton Pkwy.		3,391	8,196	Increment	4,805	0%	0%	-100%	0%	0	8,200

Scenario:		*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/26/2020
Future Analysis Year:	2040 Approved WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alton Pkwy.		9,335	16,599	Increment	7,264	0%	0%	-100%	0%	0	16,600
5005	Alton Pkwy.	e/o Hoag-Kaiser		28,622	36,544	Increment	7,922	0%	0%	-100%	0%	0	36,500

Adt Refinement Summary

Scenario: Approved
Project: LPX1904
Existing Model RunID: 2015
JobNumber:
Future Model RunID: P2040
Analyst: Deb Sinha
Existing Validation Year: 2015
Date: 8/25/2020
Future Analysis Year: Buildout Aprvd NP

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	72,832	Ratio	19,546	87%	87%	-100%	87%	19,546	41,900
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	70,819	Ratio	18,905	85%	85%	-100%	85%	18,905	41,300
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	43,045	Ratio	14,892	67%	67%	-100%	67%	14,892	37,300
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	42,885	Ratio	15,138	68%	68%	-100%	68%	15,138	37,500
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	38,205	Increment	14,529	60%	60%	-100%	60%	14,529	38,900
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	41,705	Ratio	15,347	63%	63%	-100%	63%	15,347	39,800
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	42,997	Ratio	15,505	63%	63%	-100%	63%	15,505	40,300
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	39,932	Ratio	13,192	53%	53%	-100%	53%	13,192	38,000
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	58,076	Ratio	14,835	41%	41%	-100%	41%	14,835	50,800
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Mari	33,627	37,031	70,545	Ratio	30,433	91%	91%	-100%	91%	30,433	64,100
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	70,545	Ratio	30,433	91%	91%	-100%	91%	30,433	64,100
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	42,275	Ratio	4,118	20%	20%	-100%	20%	4,118	25,200
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	42,301	Ratio	3,801	22%	22%	-100%	22%	3,801	21,100
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	41,655	Ratio	3,803	20%	20%	-100%	20%	3,803	22,700
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	41,828	Ratio	8,060	32%	32%	-100%	32%	8,060	33,200
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	34,269	Ratio	4,033	22%	22%	-100%	22%	4,033	22,200
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	35,288	Increment	7,852	0%	0%	-100%	0%	0	35,300
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	70,545	Ratio	26,879	91%	91%	-100%	91%	26,879	56,600
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	70,545	Increment	33,495	0%	0%	-100%	0%	0	70,500
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	70,545	Ratio	30,400	90%	90%	-100%	90%	30,400	64,000
4002	Sand Canyon. Av.	n/o Waterworks Wy.	24,409	23,643	38,159	Increment	14,516	59%	59%	-100%	59%	14,516	38,900
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	24,806	25,592	40,861	Ratio	14,800	60%	60%	-100%	60%	14,800	39,600
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,152	Increment	3,152	0%	0%	-100%	0%	0	3,200
5002	Hoag Hospial	e/o Sand Canyon Av.		5,076	9,015	Increment	3,939	0%	0%	-100%	0%	0	9,000
5003	Hoag Irvine Rd.	n/o Alon Pkwy.		3,391	5,979	Increment	2,588	0%	0%	-100%	0%	0	6,000

Scenario:	Approved	*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	P2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/25/2020
Future Analysis Year:	Buildout Aprvd NP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alon Pkwy.		9,335	16,750	Increment	7,415	0%	0%	-100%	0%	0	16,800
5005	Alton Pkwy.	e/o Hoag-Kaiser		28,622	35,142	Increment	6,520	0%	0%	-100%	0%	0	35,100

Adt Refinement Summary

Scenario: Approved
Project: LPX1904
Existing Model RunID: 2015
JobNumber:
Future Model RunID: P2040
Analyst: Deb Sinha
Existing Validation Year: 2015
Date: 8/25/2020
Future Analysis Year: Buildout Aprvd WP

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
310	Sand Canyon. Av.	b/w I-5 SB Ramps and Burt	22,360	38,861	73,324	Ratio	19,829	89%	89%	-100%	89%	19,829	42,200
311	Sand Canyon. Av.	b/w Burt Rd. and Oak Cyn./L	22,360	38,374	71,314	Ratio	19,194	86%	86%	-100%	86%	19,194	41,600
312	Sand Canyon. Av.	s/o Oak Cyn./Laguna Cyn. R	22,360	25,837	43,647	Ratio	15,413	69%	69%	-100%	69%	15,413	37,800
314	Sand Canyon. Av.	n/o ICD	22,360	25,572	43,485	Ratio	15,663	70%	70%	-100%	70%	15,663	38,000
317	Sand Canyon. Av.	s/o ICD	24,409	23,676	38,989	Increment	15,313	63%	63%	-100%	63%	15,313	39,700
318	Sand Canyon. Av.	s/o Waterworks Wy.	24,410	25,606	42,555	Ratio	16,157	66%	66%	-100%	66%	16,157	40,600
319	Sand Canyon. Av.	s/o Barranca Pkwy.	24,806	26,459	43,832	Ratio	16,288	66%	66%	-100%	66%	16,288	41,100
320	Sand Canyon. Av.	n/o Alton Pkwy.	24,810	26,070	39,641	Ratio	12,915	52%	52%	-100%	52%	12,915	37,700
321	Sand Canyon. Av.	b/w Alton Pkwy.and I-405 N	35,940	41,108	58,251	Ratio	14,988	42%	42%	-100%	42%	14,988	50,900
647	Sand Canyon. Av.	b/w I-5 NB Ramps and Mari	33,627	37,031	70,659	Ratio	30,537	91%	91%	-100%	91%	30,537	64,200
727	Sand Canyon. Av.	s/o I-5 NB Ramps	33,627	37,031	70,659	Ratio	30,537	91%	91%	-100%	91%	30,537	64,200
793	Alton Pkwy.	b/w Jeffrey Rd. and Royal O	21,060	35,360	42,169	Ratio	4,055	19%	19%	-100%	19%	4,055	25,100
795	Alton Pkwy.	e/o Valley Oak Dr.	17,282	34,674	42,184	Ratio	3,743	22%	22%	-100%	22%	3,743	21,000
796	Alton Pkwy.	w/o Sand Canyon Av.	18,890	34,674	41,499	Ratio	3,718	20%	20%	-100%	20%	3,718	22,600
797	Alton Pkwy.	e/o Sand Canyon. Av.	25,100	31,661	42,546	Ratio	8,629	34%	34%	-100%	34%	8,629	33,700
798	Alton Pkwy.	w/o Laguna Canyon Rd.	18,180	28,047	34,684	Ratio	4,302	24%	24%	-100%	24%	4,302	22,500
961	Sand Canyon. Av.	b/w I-405 NB and SB Ramps		27,436	35,381	Increment	7,945	0%	0%	-100%	0%	0	35,400
1216	Sand Canyon Av.	n/o Old Marine Way	29,700	37,031	70,659	Ratio	26,971	91%	91%	-100%	91%	26,971	56,700
1217	Sand Canyon Av.	s/o Old Marine Way		37,050	70,659	Increment	33,609	0%	0%	-100%	0%	0	70,700
1641	Sand Canyon. Av.	n/o I-5 SB Ramps	33,627	37,050	70,659	Ratio	30,504	91%	91%	-100%	91%	30,504	64,100
4002	Sand Canyon. Av.	n/o Waterworks Wy.	24,409	23,643	38,944	Increment	15,301	63%	63%	-100%	63%	15,301	39,700
4004	Sand Canyon. Av.	n/o Barranca Pkwy.	24,806	25,592	41,676	Ratio	15,590	63%	63%	-100%	63%	15,590	40,400
5001	Hoag Urgent Care	w/o Sand Canyon Av.		0	3,129	Increment	3,129	0%	0%	-100%	0%	0	3,100
5002	Hoag Hospial	e/o Sand Canyon Av.		5,076	11,027	Increment	5,951	0%	0%	-100%	0%	0	11,000
5003	Hoag Irvine Rd.	n/o Alon Pkwy.		3,391	8,634	Increment	5,243	0%	0%	-100%	0%	0	8,600

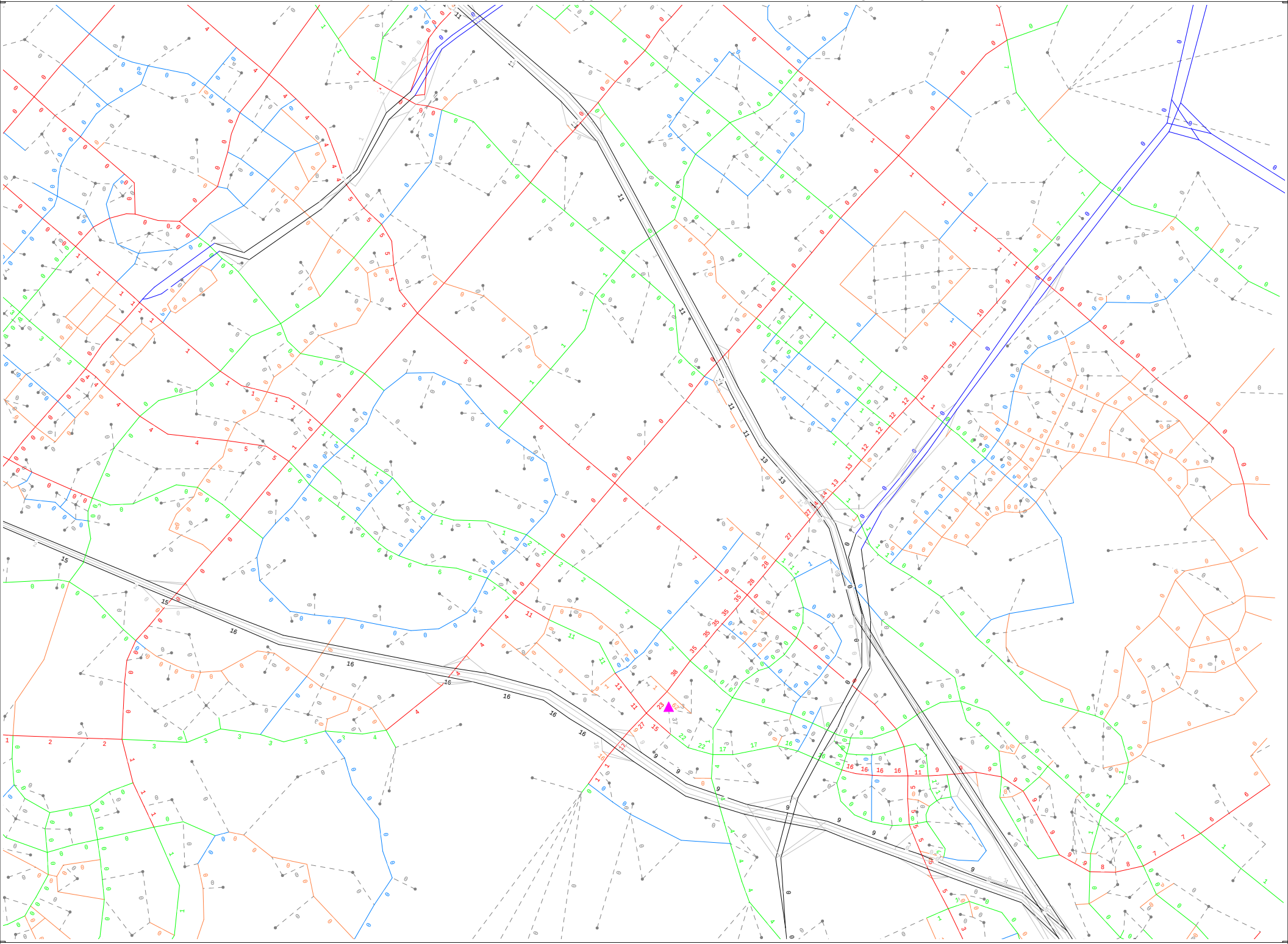
Scenario:	Approved	*Project:*	LPX1904
Existing Model RunID:	2015	*JobNumber:*	
Future Model RunID:	P2040	*Analyst:*	Deb Sinha
Existing Validation Year:	2015	*Date:*	8/25/2020
Future Analysis Year:	Buildout Aprvd WP		

Adt Post Location	Adt Post Location Description		Existing Count Adt	Existing Model Adt	Future Model Adt	Procedure Type	InterimRaw Growth	Interim Raw Growth %	Smooth Raw Growth %	Minimum Growth % (User Input)	Final Growth %	Final Growth	Refined Adt
5004	Kaiser Av.	s/o Alon Pkwy.		9,335	16,695	Increment	7,360	0%	0%	-100%	0%	0	16,700
5005	Alton Pkwy.	e/o Hoag-Kaiser		28,622	35,588	Increment	6,966	0%	0%	-100%	0%	0	35,600

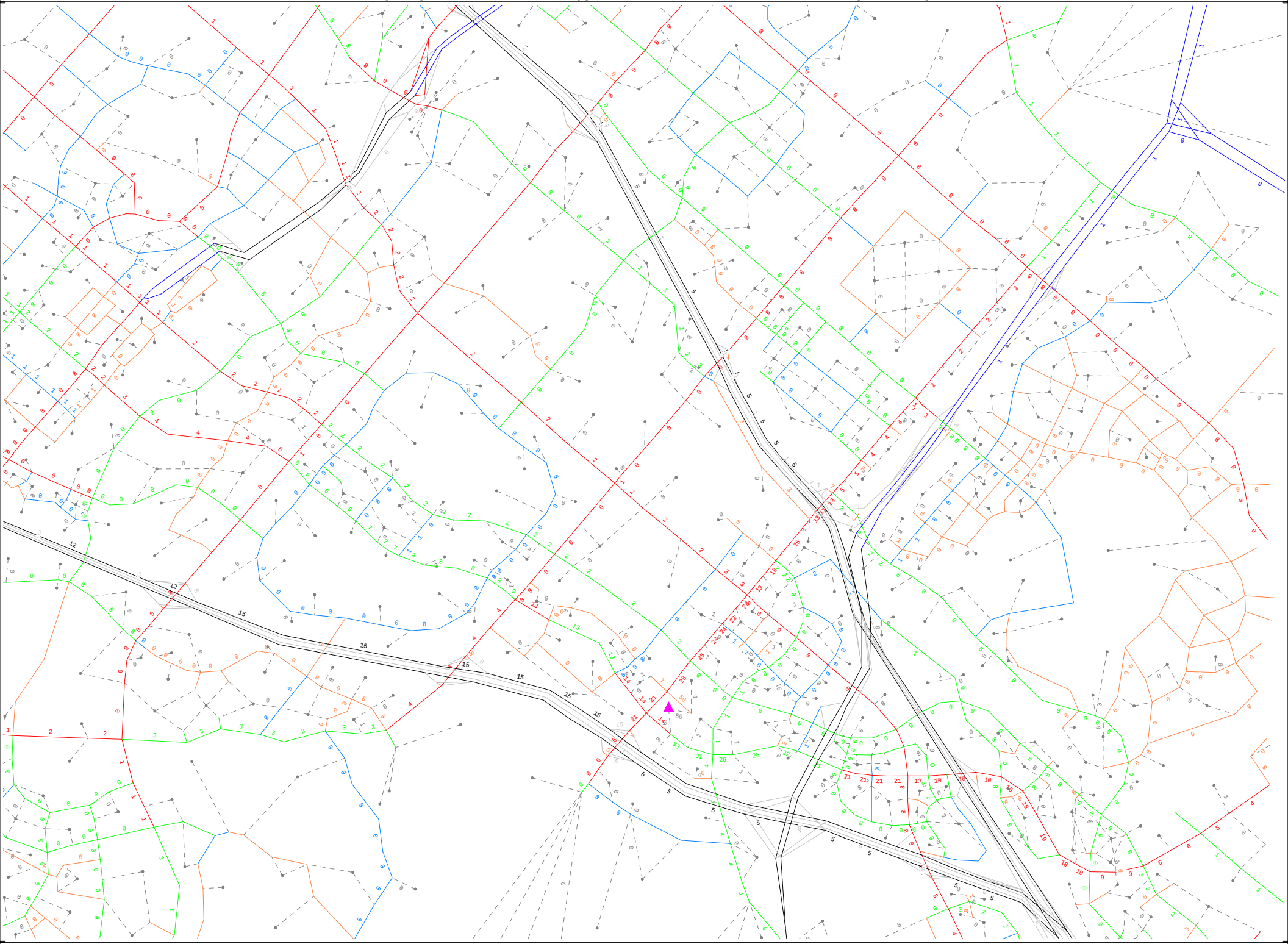
APPENDIX C

ITAM SELECT ZONE ASSIGNMENTS

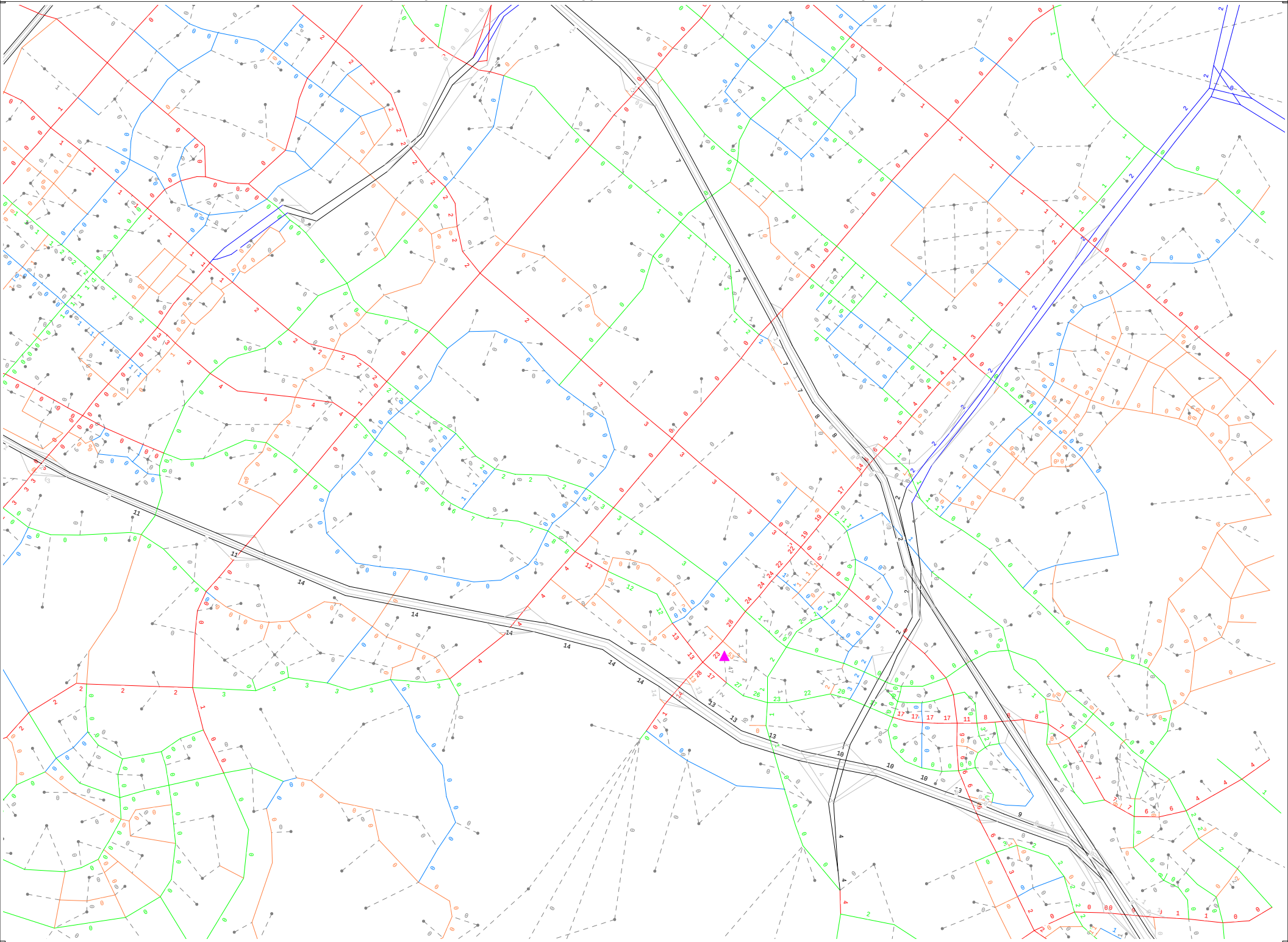
Hoag Hospital, Irvine - Buildout Approved AM Peak Select Zone Distribution (Inbound)



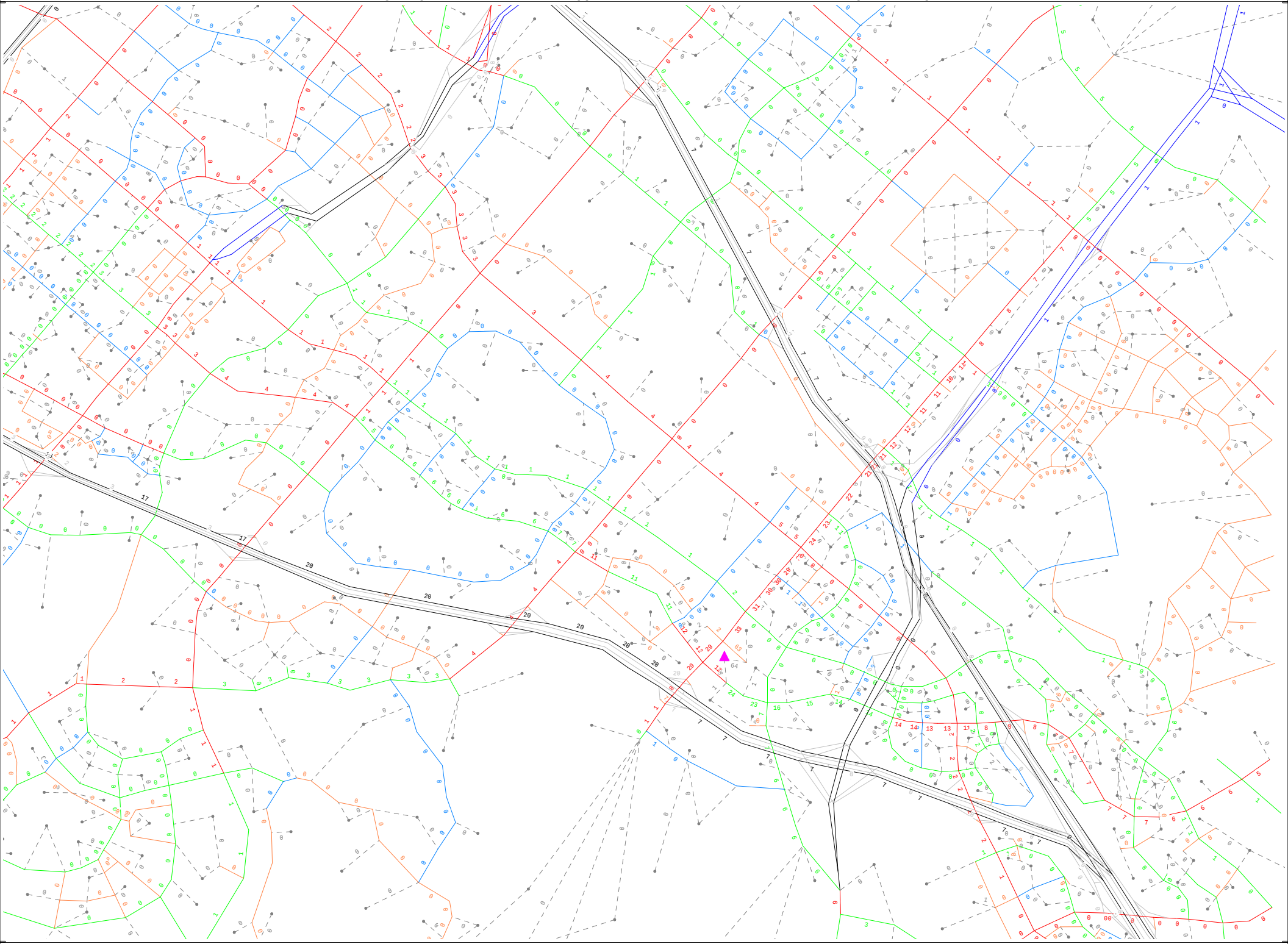
Hoag Hospital, Irvine - Buildout Approved AM Peak Select Zone Distribution (Outbound)



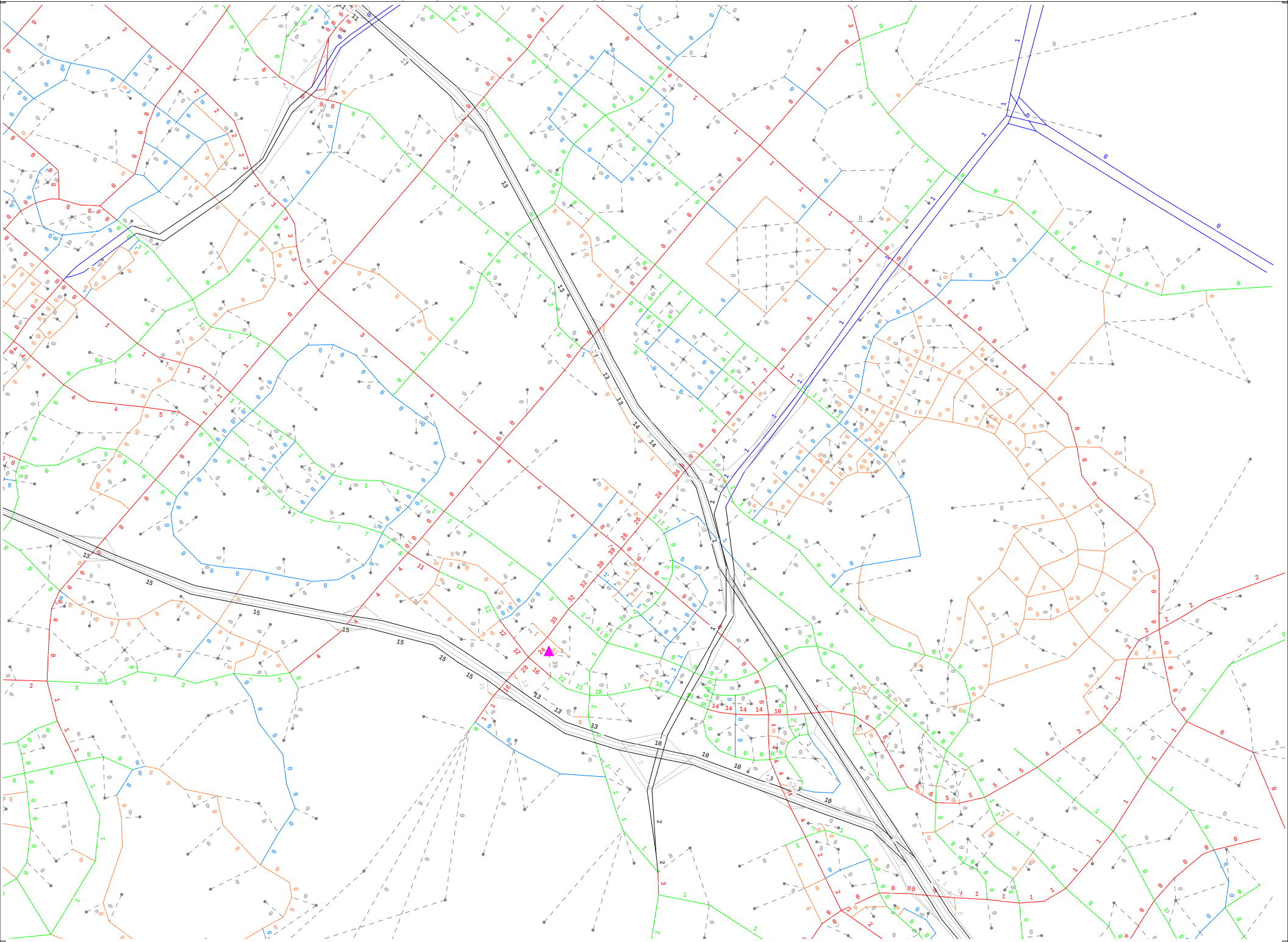
Hoag Hospital, Irvine - Buildout Approved PM Peak Select Zone Distribution (Inbound)



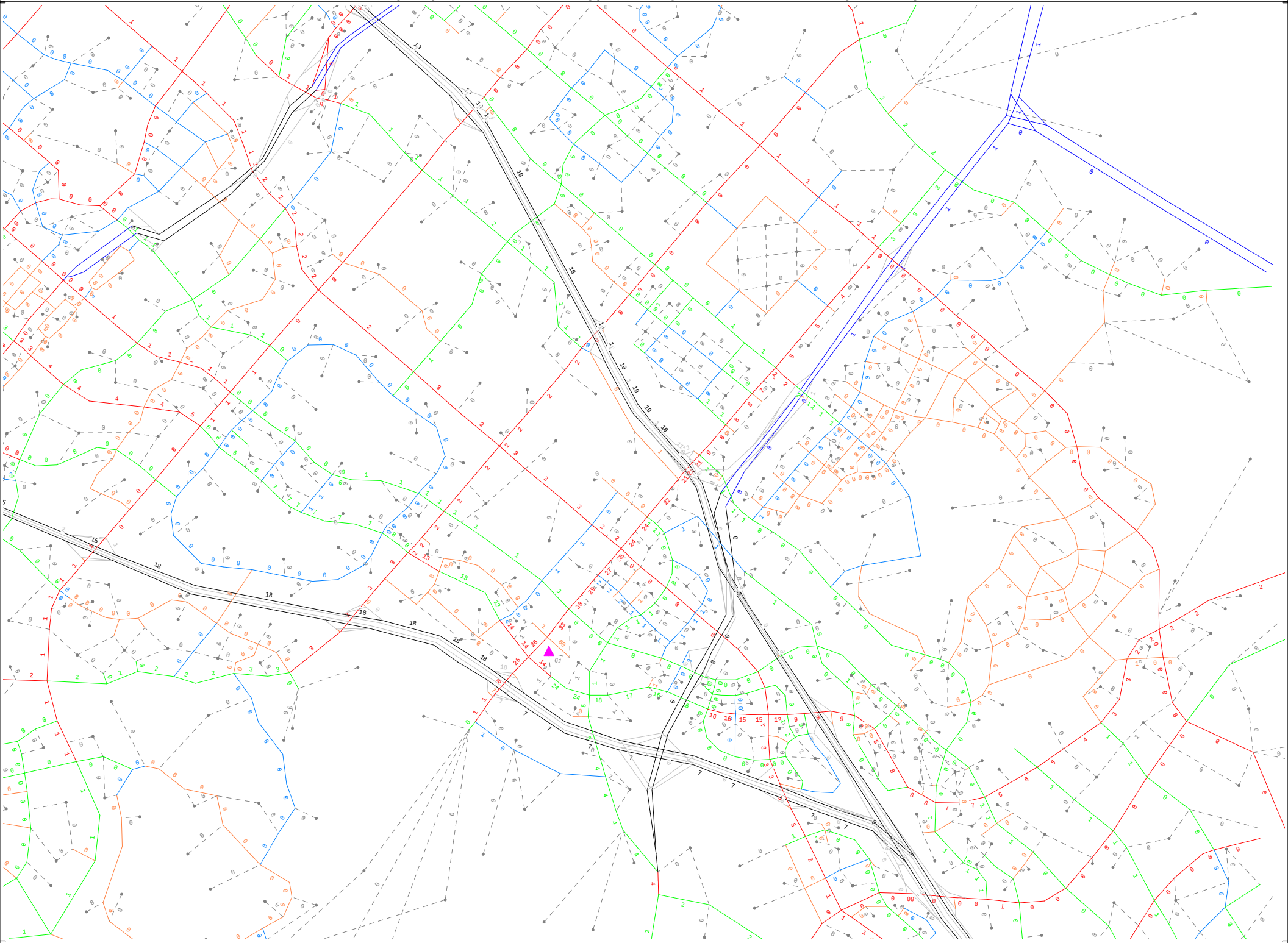
Hoag Hospital, Irvine - Buildout Approved PM Peak Select Zone Distribution (Outbound)



Hoag Hospital, Irvine - Buildout Approved Daily Select Zone Distribution (Inbound)



Hoag Hospital, Irvine - Buildout Approved Daily Select Zone Distribution (Outbound)



APPENDIX D

EXISTING INTERSECTION TURNING MOVEMENT COUNTS

Existing Intersection Turning Movement Counts

		Turn Movements																						
		AM Peak Hour												PM Peak Hour										
	Intersection	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	EBL	EBT	EBR	WBL	WBT	WBR
1	**Jeffrey Road/Alton Parkway**																								
	2018	317	818	221	162	1,802	116	206	712	517	414	804	101	394	1,241	306	259	1,200	206	240	863	343	380	860	127
	2020	**330**	**851**	**230**	**168**	**1,874**	**121**	**214**	**740**	**538**	**431**	**836**	**105**	**410**	**1,291**	**318**	**269**	**1,248**	**214**	**250**	**898**	**357**	**395**	**894**	**132**
2	**Sand Canyon Avenue/I-5 Northbound Ramps**																								
	2018	219	393	0	1	1,736	470	242	0	478	2	0	0	489	1,590	10	2	706	171	842	0	190	1	0	0
	2020	**228**	**409**	**0**	**1**	**1,805**	**489**	**252**	**0**	**497**	**2**	**0**	**0**	**509**	**1,654**	**10**	**2**	**734**	**178**	**876**	**0**	**198**	**1**	**0**	**0**
3	**Sand Canyon Avenue/Marine Way**																								
	2018	0	464	174	86	2,056	0	0	0	0	404	0	120	0	1,972	339	104	778	0	0	0	0	156	0	88
	2020	**0**	**483**	**181**	**89**	**2,138**	**0**	**0**	**0**	**0**	**420**	**0**	**125**	**0**	**2,051**	**353**	**108**	**809**	**0**	**0**	**0**	**0**	**162**	**0**	**92**
4	**Sand Canyon Avenue/I-5 Southbound Ramps**																								
	2018	0	397	117	680	1,796	0	228	4	904	0	0	0	0	1,720	377	334	562	0	578	1	266	0	0	0
	2020	**0**	**413**	**122**	**707**	**1,868**	**0**	**237**	**4**	**940**	**0**	**0**	**0**	**0**	**1,789**	**392**	**347**	**584**	**0**	**601**	**1**	**277**	**0**	**0**	**0**
5	**Sand Canyon Avenue/Burt Road**																								
	2018	4	456	54	112	2,606	8	6	2	2	60	0	56	0	1,938	60	104	760	2	4	1	0	46	1	116
	2020	**4**	**474**	**56**	**116**	**2,710**	**8**	**6**	**2**	**2**	**62**	**0**	**58**	**0**	**2,016**	**62**	**108**	**790**	**2**	**4**	**1**	**0**	**48**	**1**	**121**
6	**Sand Canyon Avenue/Laguna Canyon Road - Oak Canyon**																								
	2018	46	390	68	601	1,678	467	50	19	28	22	48	76	48	1,141	18	70	677	70	358	48	63	128	19	494
	2020	**48**	**406**	**71**	**625**	**1,745**	**486**	**52**	**20**	**29**	**23**	**50**	**79**	**50**	**1,187**	**19**	**73**	**704**	**73**	**372**	**50**	**66**	**133**	**20**	**514**
7	**Sand Canyon Avenue/Irvine Center Drive**																								
	2018	133	413	119	277	1,307	234	143	728	109	87	408	90	169	699	39	151	620	207	193	453	101	159	934	201
	2020	**138**	**430**	**124**	**288**	**1,359**	**243**	**149**	**757**	**113**	**90**	**424**	**94**	**176**	**727**	**41**	**157**	**645**	**215**	**201**	**471**	**105**	**165**	**971**	**209**
8	**Sand Canyon Avenue/Waterworks Way**																								
	2018	80	736	218	118	1,044	68	7	2	6	87	34	40	14	735	88	74	838	8	69	16	65	286	5	164
	2020	**83**	**765**	**227**	**123**	**1,086**	**71**	**7**	**2**	**6**	**90**	**35**	**42**	**15**	**764**	**92**	**77**	**872**	**8**	**72**	**17**	**68**	**297**	**5**	**171**
9	**Sand Canyon Avenue/Barranca Parkway**																								
	2018	95	822	92	39	978	122	146	457	137	171	493	92	158	628	94	54	913	244	92	412	111	156	654	50
	2020	**99**	**855**	**96**	**41**	**1,017**	**127**	**152**	**475**	**142**	**178**	**513**	**96**	**164**	**653**	**98**	**56**	**950**	**254**	**96**	**428**	**115**	**162**	**680**	**52**
10	**Sand Canyon Avenue/Hoag Irvine**																								
	2018																								
	2020	**33**	**983**	**118**	**172**	**1,318**	**98**	**10**	**3**	**17**	**71**	**4**	**70**	**9**	**694**	**48**	**41**	**1,265**	**17**	**72**	**8**	**87**	**139**	**9**	**191**
11	**Sand Canyon Avenue/Alton Parkway**																								
	2018	210	868	460	176	859	122	158	635	284	310	792	94	325	445	143	72	986	198	120	662	304	494	762	157
	2020	**218**	**903**	**478**	**183**	**893**	**127**	**164**	**660**	**295**	**322**	**824**	**98**	**338**	**463**	**149**	**75**	**1,025**	**206**	**125**	**688**	**316**	**514**	**792**	**163**
12	**Sand Canyon Avenue/I-405 Northbound Off-Ramp**																								
	2018	0	1,374	750	0	488	964	0	0	0	38	0	212	0	617	242	0	782	1,034	0	0	0	116	0	325
	2020	**0**	**1,429**	**780**	**0**	**508**	**1,003**	**0**	**0**	**0**	**40**	**0**	**220**	**0**	**642**	**252**	**0**	**813**	**1,075**	**0**	**0**	**0**	**121**	**0**	**338**
13	**Sand Canyon Avenue/I-405 Southbound Off-Ramp**																								
	2018	146	1,128	0	0	254	271	1,008	0	238	0	0	0	143	565	0	0	547	392	280	0	333	0	0	0
	2020	**152**	**1,173**	**0**	**0**	**264**	**282**	**1,048**	**0**	**248**	**0**	**0**	**0**	**149**	**588**	**0**	**0**	**569**	**408**	**291**	**0**	**346**	**0**	**0**	**0**

14	**Hoag Irvine – Kaiser Permanente/Alton Parkway**																								
	2018																								
	2020	**65**	**1**	**17**	**14**	**1**	**36**	**91**	**731**	**272**	**110**	**1,287**	**93**	**184**	**1**	**45**	**27**	**0**	**82**	**20**	**746**	**35**	**14**	**996**	**22**
15	**Laguna Canyon Road/Alton Parkway**																								
	2018	18	84	24	184	158	67	135	1,124	44	86	652	150	72	166	71	121	90	59	80	856	30	18	724	168
	2020	**19**	**87**	**25**	**191**	**164**	**70**	**140**	**1,169**	**46**	**89**	**678**	**156**	**75**	**173**	**74**	**126**	**94**	**61**	**83**	**890**	**31**	**19**	**753**	**175**

Existing Roadway ADT Counts

	Roadway Segment	2018 ADT	2020 ADT
1	**Alton Parkway from Jeffrey Road to Sand Canyon Avenue**	22,000	**22,900**
2	**Alton Parkway from Sand Canyon Avenue to Hoag Irvine**	26,100	**27,100**
3	**Alton Parkway from Hoag Irvine to Laguna Canyon Road**	18,700	**19,400**
4	**Sand Canyon Avenue from I-5 NB Off-ramp to Marine Way**	40,200	**41,800**
5	**Sand Canyon Avenue from Marine Way to I-5 SB Off-ramp**	43,900	**45,700**
6	**Sand Canyon Avenue from I-5 SB Off-ramp to Burt Road**	35,800	**37,200**
7	**Sand Canyon Avenue from Burt Road to Laguna Canyon Roac**	35,800	**37,200**
8	**Sand Canyon Avenue from Laguna Canyon Road to ICD**	35,800	**37,200**
9	**Sand Canyon Avenue from ICD to Waterworks Way**	26,100	**27,100**
10	**Sand Canyon Avenue from Waterworks Way to Barranca**	26,100	**27,100**
11	**Sand Canyon Avenue from Barranca to Hoag Irvine**	26,800	**27,900**
12	**Sand Canyon Avenue from Hoag Irvine to Alton Parkway**	26,800	**27,900**
13	**Sand Canyon Avenue from Alton Parkway to I-405 NB Off-rar**	36,600	**38,100**
14	**Sand Canyon Avenue from I-405 NB Off-ramp to I-405 SB Off-**	27,400	**28,500**

*2018 counts obtained from the 2020 Citywide Circulation Phasing Analysis.

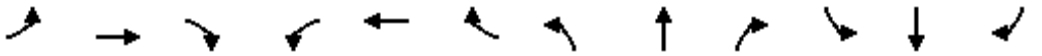
A 2 percent per year growth rate has been applied to the 2018 counts (4 percent total growth) to represent 2020 conditions.

APPENDIX E

HCM WORKSHEETS

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/03/2020



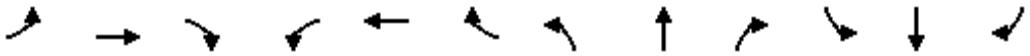
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	252	0	497	2	0	0	228	409	0	1	1805	489
Future Volume (veh/h)	252	0	497	2	0	0	228	409	0	1	1805	489
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	274	0	540	2	0	0	248	445	0	1	1962	532
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	686	0	610	5	5	0	325	3121	969	2	2648	822
Arrive On Green	0.19	0.00	0.19	0.00	0.00	0.00	0.09	0.61	0.00	0.00	0.52	0.52
Sat Flow, veh/h	3563	0	3170	1781	1870	0	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	274	0	540	2	0	0	248	445	0	1	1962	532
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1870	0	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	6.3	0.0	15.5	0.1	0.0	0.0	6.6	3.5	0.0	0.1	28.1	22.8
Cycle Q Clear(g_c), s	6.3	0.0	15.5	0.1	0.0	0.0	6.6	3.5	0.0	0.1	28.1	22.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	686	0	610	5	5	0	325	3121	969	2	2648	822
V/C Ratio(X)	0.40	0.00	0.88	0.41	0.00	0.00	0.76	0.14	0.00	0.41	0.74	0.65
Avail Cap(c_a), veh/h	715	0	636	433	455	0	435	3121	969	527	2648	822
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.1	0.0	36.8	46.7	0.0	0.0	41.4	7.8	0.0	46.8	17.6	16.3
Incr Delay (d2), s/veh	0.4	0.0	13.7	48.3	0.0	0.0	5.5	0.0	0.0	83.9	1.9	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	7.0	0.1	0.0	0.0	3.0	1.2	0.0	0.1	10.7	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.5	0.0	50.5	95.0	0.0	0.0	47.0	7.8	0.0	130.7	19.5	20.3
LnGrp LOS	C	A	D	F	A	A	D	A	A	F	B	C
Approach Vol, veh/h		814			2			693			2495	
Approach Delay, s/veh		44.7			95.0			21.8			19.7	
Approach LOS		D			F			C			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	61.8		22.5	13.3	53.1		4.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	2.1	5.5		17.5	8.6	30.1		2.1				
Green Ext Time (p_c), s	0.0	3.2		0.5	0.3	15.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	25.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



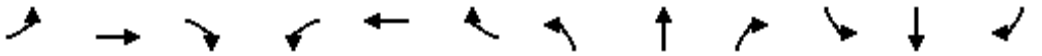
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	237	4	940	0	0	0	0	413	122	707	1868	0
Future Volume (veh/h)	237	4	940	0	0	0	0	413	122	707	1868	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	208	0	1078				0	449	133	768	2030	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1324	0	1179				0	1620	399	772	3385	0
Arrive On Green	0.37	0.00	0.37				0.00	0.25	0.25	0.22	0.53	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	208	0	1078				0	449	133	768	2030	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	3.4	0.0	28.5				0.0	5.0	6.0	19.6	19.3	0.0
Cycle Q Clear(g_c), s	3.4	0.0	28.5				0.0	5.0	6.0	19.6	19.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1324	0	1179				0	1620	399	772	3385	0
V/C Ratio(X)	0.16	0.00	0.91				0.00	0.28	0.33	0.99	0.60	0.00
Avail Cap(c_a), veh/h	1398	0	1244				0	1620	399	772	3385	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.5	0.0	26.4				0.0	26.5	26.9	34.2	14.5	0.0
Incr Delay (d2), s/veh	0.1	0.0	10.2				0.0	0.4	2.2	31.0	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	11.9				0.0	1.9	2.5	11.3	6.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.5	0.0	36.6				0.0	27.0	29.2	65.2	15.3	0.0
LnGrp LOS	B	A	D				A	C	C	E	B	A
Approach Vol, veh/h		1286						582			2798	
Approach Delay, s/veh		33.7						27.5			29.0	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.2	26.7		37.3		50.9
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4
Max Q Clear Time (g_c+I1), s	21.6	8.0		30.5		21.3
Green Ext Time (p_c), s	0.0	3.0		2.2		17.8

Intersection Summary	
HCM 6th Ctrl Delay	30.1
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	40	0	220	0	1429	780	0	508	1003
Future Volume (veh/h)	0	0	0	40	0	220	0	1429	780	0	508	1003
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				0	0	0	0	1553	0	0	552	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				0	3		0	3276		0	3276	
Arrive On Green				0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.92	0.00
Sat Flow, veh/h				0	1870	3170	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				0	0	0	0	1553	0	0	552	0
Grp Sat Flow(s),veh/h/ln				0	1870	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.8	0.0
Cycle Q Clear(g_c), s				0.0	0.0	0.0	0.0	3.5	0.0	0.0	0.8	0.0
Prop In Lane				0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	3		0	3276		0	3276	
V/C Ratio(X)				0.00	0.00		0.00	0.47		0.00	0.17	
Avail Cap(c_a), veh/h				0	586		0	3276		0	3276	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0
LnGrp LOS				A	A		A	A		A	A	
Approach Vol, veh/h					0	A		1553	A		552	A
Approach Delay, s/veh					0.0			0.8			0.3	
Approach LOS								A			A	

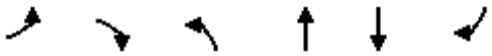
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		0.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	5.5		2.8		0.0			
Green Ext Time (p_c), s	18.9		4.3		0.0			

Intersection Summary		
HCM 6th Ctrl Delay	0.7	
HCM 6th LOS	A	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1048	248	152	1173	264	282
Future Volume (veh/h)	1048	248	152	1173	264	282
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	704	736	165	1275	287	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	872	788	85	1509	1187	
Arrive On Green	0.49	0.49	0.05	0.42	0.33	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	704	736	165	1275	287	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	35.0	45.0	5.0	33.7	6.1	0.0
Cycle Q Clear(g_c), s	35.0	45.0	5.0	33.7	6.1	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	872	788	85	1509	1187	
V/C Ratio(X)	0.81	0.93	1.94	0.84	0.24	
Avail Cap(c_a), veh/h	961	868	85	1509	1187	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.6	25.2	49.9	27.0	25.3	0.0
Incr Delay (d2), s/veh	4.8	16.0	463.4	6.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.1	35.8	13.2	15.0	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.4	41.1	513.3	33.0	25.8	0.0
LnGrp LOS	C	D	F	C	C	
Approach Vol, veh/h	1440			1440	287	A
Approach Delay, s/veh	34.4			88.1	25.8	
Approach LOS	C			F	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		55.8	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		35.7		47.0	7.0	8.1
Green Ext Time (p_c), s		5.6		4.2	0.0	1.9

Intersection Summary		
HCM 6th Ctrl Delay	58.0	
HCM 6th LOS	E	

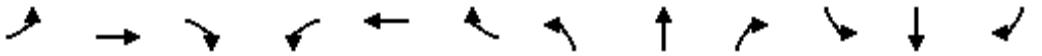
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/03/2020



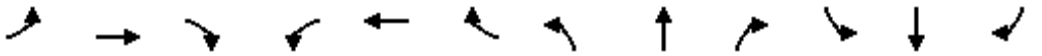
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	876	0	198	1	0	0	509	1654	10	2	734	178
Future Volume (veh/h)	876	0	198	1	0	0	509	1654	10	2	734	178
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	952	0	215	1	0	0	553	1798	11	2	798	193
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	751	0	669	2	3	0	693	2931	910	5	1921	596
Arrive On Green	0.21	0.00	0.21	0.00	0.00	0.00	0.20	0.57	0.57	0.00	0.38	0.38
Sat Flow, veh/h	3563	0	3170	1781	1870	0	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	952	0	215	1	0	0	553	1798	11	2	798	193
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1870	0	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	18.0	0.0	4.9	0.0	0.0	0.0	13.0	19.8	0.3	0.1	9.9	7.4
Cycle Q Clear(g_c), s	18.0	0.0	4.9	0.0	0.0	0.0	13.0	19.8	0.3	0.1	9.9	7.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	751	0	669	2	3	0	693	2931	910	5	1921	596
V/C Ratio(X)	1.27	0.00	0.32	0.41	0.00	0.00	0.80	0.61	0.01	0.41	0.42	0.32
Avail Cap(c_a), veh/h	751	0	669	699	734	0	1960	3638	1129	411	1921	596
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.7	0.0	28.5	42.6	0.0	0.0	32.5	11.9	7.8	42.5	19.7	18.9
Incr Delay (d2), s/veh	130.6	0.0	0.3	83.7	0.0	0.0	2.2	0.2	0.0	48.1	0.7	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.2	0.0	1.9	0.1	0.0	0.0	5.5	6.7	0.1	0.1	3.9	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	164.3	0.0	28.8	126.3	0.0	0.0	34.6	12.2	7.8	90.5	20.3	20.3
LnGrp LOS	F	A	C	F	A	A	C	B	A	F	C	C
Approach Vol, veh/h		1167			1			2362			993	
Approach Delay, s/veh		139.3			126.3			17.4			20.5	
Approach LOS		F			F			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	53.5		22.5	21.6	36.6		4.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	2.1	21.8		20.0	15.0	11.9		2.0				
Green Ext Time (p_c), s	0.0	20.4		0.0	2.1	6.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		49.6	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.



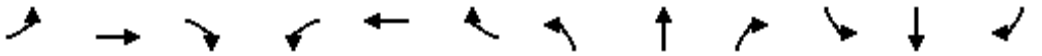
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	601	1	277	0	0	0	0	1789	392	347	584	0
Future Volume (veh/h)	601	1	277	0	0	0	0	1789	392	347	584	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	747	0	201				0	1945	426	377	635	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	893	0	265				0	3791	934	369	4771	0
Arrive On Green	0.17	0.00	0.17				0.00	0.59	0.59	0.11	0.74	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	747	0	201				0	1945	426	377	635	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	13.3	0.0	11.9				0.0	17.5	14.9	10.5	2.8	0.0
Cycle Q Clear(g_c), s	13.3	0.0	11.9				0.0	17.5	14.9	10.5	2.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	893	0	265				0	3791	934	369	4771	0
V/C Ratio(X)	0.84	0.00	0.76				0.00	0.51	0.46	1.02	0.13	0.00
Avail Cap(c_a), veh/h	977	0	290				0	3791	934	369	4771	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.7	0.0	39.1				0.0	11.9	11.4	44.0	3.6	0.0
Incr Delay (d2), s/veh	6.0	0.0	10.2				0.0	0.5	1.6	52.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	5.3				0.0	6.0	5.3	7.1	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.0	49.3				0.0	12.4	13.0	96.8	3.7	0.0
LnGrp LOS	D	A	D				A	B	B	F	A	A
Approach Vol, veh/h		948						2371			1012	
Approach Delay, s/veh		46.5						12.5			38.4	
Approach LOS		D						B			D	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.0	62.5		20.9		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	12.5	19.5		15.3		4.8						
Green Ext Time (p_c), s	0.0	25.3		1.1		5.2						

Intersection Summary			
HCM 6th Ctrl Delay			26.0
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	121	0	338	0	642	252	0	813	1075
Future Volume (veh/h)	0	0	0	121	0	338	0	642	252	0	813	1075
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				132	176	0	0	698	0	0	884	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				178	238		0	1974		0	1974	
Arrive On Green				0.23	0.23	0.00	0.00	0.56	0.00	0.00	0.56	0.00
Sat Flow, veh/h				785	1046	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				308	0	0	0	698	0	0	884	0
Grp Sat Flow(s),veh/h/ln				1831	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				6.5	0.0	0.0	0.0	4.5	0.0	0.0	6.1	0.0
Cycle Q Clear(g_c), s				6.5	0.0	0.0	0.0	4.5	0.0	0.0	6.1	0.0
Prop In Lane				0.43		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				416	0		0	1974		0	1974	
V/C Ratio(X)				0.74	0.00		0.00	0.35		0.00	0.45	
Avail Cap(c_a), veh/h				796	0		0	1974		0	1974	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.9	0.0	0.0	0.0	5.1	0.0	0.0	5.4	0.0
Incr Delay (d2), s/veh				2.6	0.0	0.0	0.0	0.5	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	0.0	0.0	1.1	0.0	0.0	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.5	0.0	0.0	0.0	5.6	0.0	0.0	6.2	0.0
LnGrp LOS				B	A		A	A		A	A	
Approach Vol, veh/h					308	A		698	A		884	A
Approach Delay, s/veh					17.5			5.6			6.2	
Approach LOS					B			A			A	

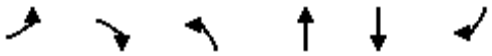
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		13.9			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.5		8.1		8.5			
Green Ext Time (p_c), s	4.4		5.5		1.2			

Intersection Summary		
HCM 6th Ctrl Delay	7.8	
HCM 6th LOS	A	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	291	346	149	588	569	408
Future Volume (veh/h)	291	346	149	588	569	408
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	316	376	162	639	618	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	500	452	173	1934	1278	
Arrive On Green	0.28	0.28	0.10	0.54	0.36	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	316	376	162	639	618	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	8.0	11.3	4.6	5.1	6.9	0.0
Cycle Q Clear(g_c), s	8.0	11.3	4.6	5.1	6.9	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	500	452	173	1934	1278	
V/C Ratio(X)	0.63	0.83	0.94	0.33	0.48	
Avail Cap(c_a), veh/h	623	563	173	1934	1278	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.2	17.4	23.1	6.5	12.8	0.0
Incr Delay (d2), s/veh	1.4	8.5	49.9	0.5	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	1.1	4.2	1.5	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	17.6	25.8	73.0	7.0	14.1	0.0
LnGrp LOS	B	C	E	A	B	
Approach Vol, veh/h	692			801	618	A
Approach Delay, s/veh	22.1			20.3	14.1	
Approach LOS	C			C	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		18.9	9.5	23.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		7.1		13.3	6.6	8.9
Green Ext Time (p_c), s		4.4		1.2	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	19.1
HCM 6th LOS	B

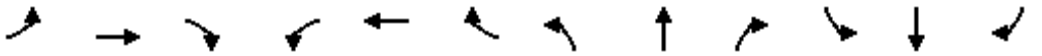
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/03/2020



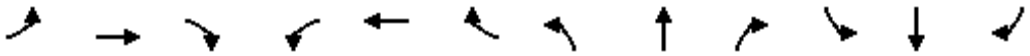
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	0	494	2	1	0	238	403	0	1	1855	486
Future Volume (veh/h)	251	0	494	2	1	0	238	403	0	1	1855	486
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	273	0	537	2	1	0	259	438	0	1	2016	528
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	683	0	607	7	7	0	335	3124	970	2	2636	818
Arrive On Green	0.19	0.00	0.19	0.00	0.00	0.00	0.10	0.61	0.00	0.00	0.52	0.52
Sat Flow, veh/h	3563	0	3170	1781	1870	0	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	273	0	537	2	1	0	259	438	0	1	2016	528
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1870	0	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	6.3	0.0	15.5	0.1	0.1	0.0	6.9	3.4	0.0	0.1	29.7	22.7
Cycle Q Clear(g_c), s	6.3	0.0	15.5	0.1	0.1	0.0	6.9	3.4	0.0	0.1	29.7	22.7
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	683	0	607	7	7	0	335	3124	970	2	2636	818
V/C Ratio(X)	0.40	0.00	0.88	0.28	0.13	0.00	0.77	0.14	0.00	0.41	0.76	0.65
Avail Cap(c_a), veh/h	711	0	633	431	453	0	433	3124	970	524	2636	818
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	0.00	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	33.3	0.0	37.0	46.7	46.7	0.0	41.5	7.8	0.0	47.0	18.2	16.5
Incr Delay (d2), s/veh	0.4	0.0	13.7	20.0	7.8	0.0	6.4	0.0	0.0	83.9	2.2	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0	7.1	0.1	0.0	0.0	3.2	1.2	0.0	0.1	11.4	8.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	33.7	0.0	50.7	66.7	54.6	0.0	47.9	7.8	0.0	130.9	20.4	20.4
LnGrp LOS	C	A	D	E	D	A	D	A	A	F	C	C
Approach Vol, veh/h		810			3			697			2545	
Approach Delay, s/veh		45.0			62.7			22.7			20.4	
Approach LOS		D			E			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	62.1		22.5	13.6	53.1		4.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	2.1	5.4		17.5	8.9	31.7		2.1				
Green Ext Time (p_c), s	0.0	3.1		0.5	0.3	14.1		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		25.7	
HCM 6th LOS		C	

Notes

User approved volume balancing among the lanes for turning movement.



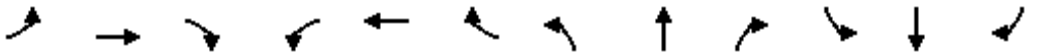
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	4	1002	0	0	0	0	417	122	707	1913	0
Future Volume (veh/h)	235	4	1002	0	0	0	0	417	122	707	1913	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	206	0	1145				0	453	133	768	2079	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1359	0	1209				0	1595	393	760	3334	0
Arrive On Green	0.38	0.00	0.38				0.00	0.25	0.25	0.22	0.52	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	206	0	1145				0	453	133	768	2079	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	3.4	0.0	31.3				0.0	5.1	6.2	19.7	20.6	0.0
Cycle Q Clear(g_c), s	3.4	0.0	31.3				0.0	5.1	6.2	19.7	20.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1359	0	1209				0	1595	393	760	3334	0
V/C Ratio(X)	0.15	0.00	0.95				0.00	0.28	0.34	1.01	0.62	0.00
Avail Cap(c_a), veh/h	1376	0	1225				0	1595	393	760	3334	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.2	0.0	26.8				0.0	27.2	27.6	34.9	15.4	0.0
Incr Delay (d2), s/veh	0.1	0.0	14.8				0.0	0.4	2.3	35.2	0.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	13.7				0.0	2.0	2.6	11.8	7.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.2	0.0	41.6				0.0	27.7	30.0	70.1	16.3	0.0
LnGrp LOS	B	A	D				A	C	C	F	B	A
Approach Vol, veh/h		1351						586			2847	
Approach Delay, s/veh		38.0						28.2			30.8	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.2	26.7		38.7		50.9
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4
Max Q Clear Time (g_c+I1), s	21.7	8.2		33.3		22.6
Green Ext Time (p_c), s	0.0	3.0		0.8		17.5

Intersection Summary	
HCM 6th Ctrl Delay	32.5
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	41	0	260	0	1485	779	0	525	987
Future Volume (veh/h)	0	0	0	41	0	260	0	1485	779	0	525	987
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				0	0	0	0	1614	0	0	571	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				0	3		0	3276		0	3276	
Arrive On Green				0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.92	0.00
Sat Flow, veh/h				0	1870	3170	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				0	0	0	0	1614	0	0	571	0
Grp Sat Flow(s),veh/h/ln				0	1870	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.9	0.0
Cycle Q Clear(g_c), s				0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.9	0.0
Prop In Lane				0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	3		0	3276		0	3276	
V/C Ratio(X)				0.00	0.00		0.00	0.49		0.00	0.17	
Avail Cap(c_a), veh/h				0	586		0	3276		0	3276	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.3	0.0
LnGrp LOS				A	A		A	A		A	A	
Approach Vol, veh/h					0	A		1614	A		571	A
Approach Delay, s/veh					0.0			0.9			0.3	
Approach LOS								A			A	

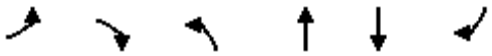
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		0.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	5.7		2.9		0.0			
Green Ext Time (p_c), s	20.1		4.5		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	0.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1102	248	152	1174	264	300
Future Volume (veh/h)	1102	248	152	1174	264	300
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	1450	0	165	1276	287	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	1629	736	90	1605	1262	
Arrive On Green	0.46	0.00	0.05	0.45	0.36	0.00
Sat Flow, veh/h	3563	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	1450	0	165	1276	287	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	36.7	0.0	5.0	30.3	5.6	0.0
Cycle Q Clear(g_c), s	36.7	0.0	5.0	30.3	5.6	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	1629	736	90	1605	1262	
V/C Ratio(X)	0.89	0.00	1.83	0.80	0.23	
Avail Cap(c_a), veh/h	2042	923	90	1605	1262	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.5	0.0	46.8	23.1	22.3	0.0
Incr Delay (d2), s/veh	4.5	0.0	411.4	4.2	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	0.0	12.5	13.0	2.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	29.0	0.0	458.2	27.3	22.7	0.0
LnGrp LOS	C	A	F	C	C	
Approach Vol, veh/h	1450			1441	287	A
Approach Delay, s/veh	29.0			76.6	22.7	
Approach LOS	C			E	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		49.6	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		32.3		38.7	7.0	7.6
Green Ext Time (p_c), s		7.1		6.3	0.0	1.9

Intersection Summary	
HCM 6th Ctrl Delay	50.0
HCM 6th LOS	D

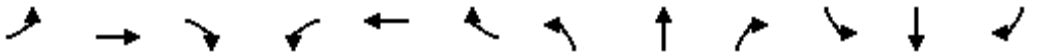
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/03/2020



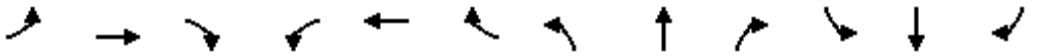
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	875	0	198	1	0	0	544	1682	10	2	738	178
Future Volume (veh/h)	875	0	198	1	0	0	544	1682	10	2	738	178
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	951	0	215	1	0	0	591	1828	11	2	802	193
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	741	0	659	2	3	0	733	2962	920	5	1893	588
Arrive On Green	0.21	0.00	0.21	0.00	0.00	0.00	0.21	0.58	0.58	0.00	0.37	0.37
Sat Flow, veh/h	3563	0	3170	1781	1870	0	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	951	0	215	1	0	0	591	1828	11	2	802	193
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	1870	0	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	18.0	0.0	5.0	0.0	0.0	0.0	14.1	20.3	0.3	0.1	10.2	7.6
Cycle Q Clear(g_c), s	18.0	0.0	5.0	0.0	0.0	0.0	14.1	20.3	0.3	0.1	10.2	7.6
Prop In Lane	1.00		1.00	1.00		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	741	0	659	2	3	0	733	2962	920	5	1893	588
V/C Ratio(X)	1.28	0.00	0.33	0.41	0.00	0.00	0.81	0.62	0.01	0.41	0.42	0.33
Avail Cap(c_a), veh/h	741	0	659	689	724	0	1932	3585	1113	405	1893	588
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.3	0.0	29.1	43.2	0.0	0.0	32.4	11.9	7.7	43.1	20.3	19.5
Incr Delay (d2), s/veh	138.0	0.0	0.3	83.8	0.0	0.0	2.2	0.2	0.0	48.1	0.7	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.7	0.0	1.9	0.1	0.0	0.0	5.9	6.9	0.1	0.1	4.0	2.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	172.3	0.0	29.4	127.0	0.0	0.0	34.6	12.1	7.7	91.2	21.0	21.0
LnGrp LOS	F	A	C	F	A	A	C	B	A	F	C	C
Approach Vol, veh/h		1166			1			2430			997	
Approach Delay, s/veh		146.0			127.0			17.6			21.2	
Approach LOS		F			F			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	54.7		22.5	22.9	36.6		4.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	2.1	22.3		20.0	16.1	12.2		2.0				
Green Ext Time (p_c), s	0.0	20.7		0.0	2.3	6.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		51.0	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.



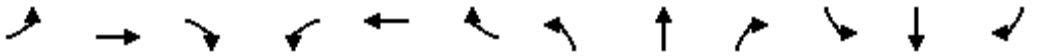
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	598	1	288	0	0	0	0	1854	392	347	589	0
Future Volume (veh/h)	598	1	288	0	0	0	0	1854	392	347	589	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	748	0	209				0	2015	426	377	640	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	894	0	265				0	3790	934	368	4770	0
Arrive On Green	0.17	0.00	0.17				0.00	0.59	0.59	0.11	0.74	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	748	0	209				0	2015	426	377	640	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	13.3	0.0	12.5				0.0	18.5	14.9	10.5	2.8	0.0
Cycle Q Clear(g_c), s	13.3	0.0	12.5				0.0	18.5	14.9	10.5	2.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	894	0	265				0	3790	934	368	4770	0
V/C Ratio(X)	0.84	0.00	0.79				0.00	0.53	0.46	1.02	0.13	0.00
Avail Cap(c_a), veh/h	977	0	290				0	3790	934	368	4770	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.7	0.0	39.3				0.0	12.1	11.4	44.0	3.7	0.0
Incr Delay (d2), s/veh	6.0	0.0	12.6				0.0	0.5	1.6	52.9	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	5.7				0.0	6.3	5.3	7.1	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.7	0.0	51.9				0.0	12.6	13.0	96.9	3.7	0.0
LnGrp LOS	D	A	D				A	B	B	F	A	A
Approach Vol, veh/h		957						2441			1017	
Approach Delay, s/veh		47.1						12.7			38.3	
Approach LOS		D						B			D	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	15.0	62.5		21.0		77.5
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0
Max Q Clear Time (g_c+I1), s	12.5	20.5		15.3		4.8
Green Ext Time (p_c), s	0.0	25.9		1.1		5.2

Intersection Summary	
HCM 6th Ctrl Delay	26.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	121	0	339	0	629	253	0	858	1131
Future Volume (veh/h)	0	0	0	121	0	339	0	629	253	0	858	1131
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				132	177	0	0	684	0	0	933	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				178	239		0	1972		0	1972	
Arrive On Green				0.23	0.23	0.00	0.00	0.55	0.00	0.00	0.55	0.00
Sat Flow, veh/h				782	1049	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				309	0	0	0	684	0	0	933	0
Grp Sat Flow(s),veh/h/ln				1831	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				6.5	0.0	0.0	0.0	4.4	0.0	0.0	6.6	0.0
Cycle Q Clear(g_c), s				6.5	0.0	0.0	0.0	4.4	0.0	0.0	6.6	0.0
Prop In Lane				0.43		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				417	0		0	1972		0	1972	
V/C Ratio(X)				0.74	0.00		0.00	0.35		0.00	0.47	
Avail Cap(c_a), veh/h				795	0		0	1972		0	1972	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.9	0.0	0.0	0.0	5.1	0.0	0.0	5.6	0.0
Incr Delay (d2), s/veh				2.6	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				2.5	0.0	0.0	0.0	1.1	0.0	0.0	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				17.5	0.0	0.0	0.0	5.6	0.0	0.0	6.4	0.0
LnGrp LOS				B	A		A	A		A	A	
Approach Vol, veh/h					309	A		684	A		933	A
Approach Delay, s/veh					17.5			5.6			6.4	
Approach LOS					B			A			A	

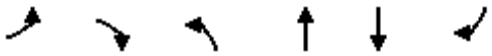
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		13.9			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.4		8.6		8.5			
Green Ext Time (p_c), s	4.3		5.7		1.2			

Intersection Summary	
HCM 6th Ctrl Delay	7.9
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	300	345	144	567	573	449
Future Volume (veh/h)	300	345	144	567	573	449
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	326	375	157	616	623	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	500	452	173	1935	1278	
Arrive On Green	0.28	0.28	0.10	0.54	0.36	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	326	375	157	616	623	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	8.3	11.2	4.5	4.9	7.0	0.0
Cycle Q Clear(g_c), s	8.3	11.2	4.5	4.9	7.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	500	452	173	1935	1278	
V/C Ratio(X)	0.65	0.83	0.91	0.32	0.49	
Avail Cap(c_a), veh/h	623	564	173	1935	1278	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	16.3	17.4	23.0	6.5	12.8	0.0
Incr Delay (d2), s/veh	1.7	8.3	42.7	0.4	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	1.0	3.8	1.5	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	18.0	25.7	65.7	6.9	14.1	0.0
LnGrp LOS	B	C	E	A	B	
Approach Vol, veh/h	701			773	623	A
Approach Delay, s/veh	22.1			18.8	14.1	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		18.9	9.5	23.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		6.9		13.2	6.5	9.0
Green Ext Time (p_c), s		4.2		1.2	0.0	2.9

Intersection Summary	
HCM 6th Ctrl Delay	18.5
HCM 6th LOS	B

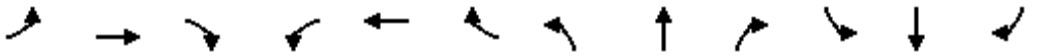
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/02/2020



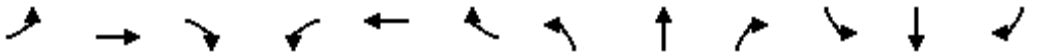
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	413	3	634	1	2	1	231	728	2	6	2285	587
Future Volume (veh/h)	413	3	634	1	2	1	231	728	2	6	2285	587
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	451	0	689	1	2	1	251	791	2	7	2484	638
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	706	0	628	9	6	3	327	3053	948	16	2616	812
Arrive On Green	0.20	0.00	0.20	0.01	0.01	0.01	0.09	0.60	0.60	0.01	0.51	0.51
Sat Flow, veh/h	3563	0	3170	1781	1176	588	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	451	0	689	1	0	3	251	791	2	7	2484	638
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1764	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.0	0.0	18.8	0.1	0.0	0.2	6.7	7.0	0.0	0.4	43.8	31.2
Cycle Q Clear(g_c), s	11.0	0.0	18.8	0.1	0.0	0.2	6.7	7.0	0.0	0.4	43.8	31.2
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	706	0	628	9	0	9	327	3053	948	16	2616	812
V/C Ratio(X)	0.64	0.00	1.10	0.11	0.00	0.32	0.77	0.26	0.00	0.44	0.95	0.79
Avail Cap(c_a), veh/h	706	0	628	428	0	424	430	3053	948	520	2616	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	38.0	47.0	0.0	47.0	41.9	9.1	7.7	46.8	22.0	18.9
Incr Delay (d2), s/veh	1.9	0.0	65.2	4.9	0.0	18.7	6.0	0.0	0.0	18.2	9.2	7.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	12.8	0.0	0.0	0.1	3.1	2.4	0.0	0.2	18.3	12.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.9	0.0	103.3	51.8	0.0	65.8	47.9	9.1	7.7	65.0	31.2	26.4
LnGrp LOS	D	A	F	D	A	E	D	A	A	E	C	C
Approach Vol, veh/h		1140			4			1044			3129	
Approach Delay, s/veh		77.0			62.3			18.4			30.3	
Approach LOS		E			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	61.2		23.3	13.5	53.1		5.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	2.4	9.0		20.8	8.7	45.8		2.2				
Green Ext Time (p_c), s	0.0	5.9		0.0	0.3	2.7		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		38.0	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.



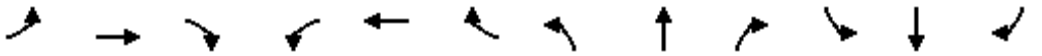
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	389	2	812	0	0	0	0	701	114	754	2558	0
Future Volume (veh/h)	389	2	812	0	0	0	0	701	114	754	2558	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	339	0	974				0	762	124	820	2780	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1259	0	1121				0	1667	411	794	3484	0
Arrive On Green	0.35	0.00	0.35				0.00	0.26	0.26	0.23	0.54	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	339	0	974				0	762	124	820	2780	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	5.8	0.0	24.6				0.0	8.5	5.4	19.7	29.9	0.0
Cycle Q Clear(g_c), s	5.8	0.0	24.6				0.0	8.5	5.4	19.7	29.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1259	0	1121				0	1667	411	794	3484	0
V/C Ratio(X)	0.27	0.00	0.87				0.00	0.46	0.30	1.03	0.80	0.00
Avail Cap(c_a), veh/h	1439	0	1280				0	1667	411	794	3484	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	25.9				0.0	26.7	25.5	33.0	15.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	6.1				0.0	0.9	1.9	40.5	2.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.0	9.7				0.0	3.3	2.2	12.4	10.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.9	0.0	31.9				0.0	27.6	27.4	73.5	17.9	0.0
LnGrp LOS	B	A	C				A	C	C	F	B	A
Approach Vol, veh/h		1313						886			3600	
Approach Delay, s/veh		28.8						27.6			30.5	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	24.2	26.7		34.8		50.9						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4						
Max Q Clear Time (g_c+I1), s	21.7	10.5		26.6		31.9						
Green Ext Time (p_c), s	0.0	4.4		3.7		13.6						

Intersection Summary												
HCM 6th Ctrl Delay			29.7									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	28	0	351	0	1469	990	0	472	1480
Future Volume (veh/h)	0	0	0	28	0	351	0	1469	990	0	472	1480
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				0	0	0	0	1597	0	0	513	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				0	3		0	3276		0	3276	
Arrive On Green				0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.92	0.00
Sat Flow, veh/h				0	1870	3170	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				0	0	0	0	1597	0	0	513	0
Grp Sat Flow(s),veh/h/ln				0	1870	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.8	0.0
Cycle Q Clear(g_c), s				0.0	0.0	0.0	0.0	3.7	0.0	0.0	0.8	0.0
Prop In Lane				0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	3		0	3276		0	3276	
V/C Ratio(X)				0.00	0.00		0.00	0.49		0.00	0.16	
Avail Cap(c_a), veh/h				0	586		0	3276		0	3276	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.3	0.0
LnGrp LOS				A	A		A	A		A	A	
Approach Vol, veh/h					0	A		1597	A		513	A
Approach Delay, s/veh					0.0			0.8			0.3	
Approach LOS								A			A	

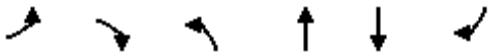
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		0.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	5.7		2.8		0.0			
Green Ext Time (p_c), s	19.8		4.0		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	0.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1127	363	187	1333	237	263
Future Volume (veh/h)	1127	363	187	1333	237	263
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	810	840	203	1449	258	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	915	827	81	1438	1131	
Arrive On Green	0.51	0.51	0.05	0.40	0.32	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	810	840	203	1449	258	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	44.6	56.5	5.0	44.5	5.9	0.0
Cycle Q Clear(g_c), s	44.6	56.5	5.0	44.5	5.9	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	915	827	81	1438	1131	
V/C Ratio(X)	0.89	1.02	2.51	1.01	0.23	
Avail Cap(c_a), veh/h	915	827	81	1438	1131	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	23.9	26.8	52.5	32.8	27.6	0.0
Incr Delay (d2), s/veh	10.4	35.3	713.4	25.7	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	20.4	45.6	18.3	23.6	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.2	62.0	765.9	58.4	28.0	0.0
LnGrp LOS	C	F	F	F	C	
Approach Vol, veh/h	1650			1652	258	A
Approach Delay, s/veh	48.4			145.4	28.0	
Approach LOS	D			F	C	

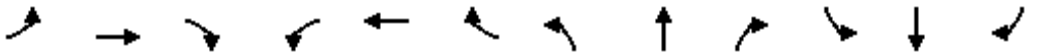
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		61.0	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		46.5		58.5	7.0	7.9
Green Ext Time (p_c), s		0.0		0.0	0.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	91.9
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.



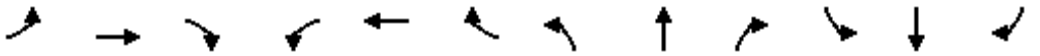
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	789	3	198	1	2	1	604	2011	2	5	1232	236
Future Volume (veh/h)	789	3	198	1	2	1	604	2011	2	5	1232	236
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	860	0	215	1	2	1	657	2186	2	5	1339	257
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	718	0	639	9	6	3	801	2986	927	12	1836	570
Arrive On Green	0.20	0.00	0.20	0.01	0.01	0.01	0.23	0.58	0.58	0.01	0.36	0.36
Sat Flow, veh/h	3563	0	3170	1781	1176	588	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	860	0	215	1	0	3	657	2186	2	5	1339	257
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1764	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	18.0	0.0	5.2	0.0	0.0	0.2	16.1	27.7	0.0	0.2	20.3	11.1
Cycle Q Clear(g_c), s	18.0	0.0	5.2	0.0	0.0	0.2	16.1	27.7	0.0	0.2	20.3	11.1
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	718	0	639	9	0	9	801	2986	927	12	1836	570
V/C Ratio(X)	1.20	0.00	0.34	0.11	0.00	0.32	0.82	0.73	0.00	0.43	0.73	0.45
Avail Cap(c_a), veh/h	718	0	639	669	0	662	1874	3478	1080	393	1836	570
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.6	0.0	30.5	44.2	0.0	44.2	32.5	13.5	7.7	44.2	24.8	21.8
Incr Delay (d2), s/veh	101.9	0.0	0.3	4.8	0.0	18.6	2.2	0.7	0.0	23.1	2.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.8	0.0	2.0	0.0	0.0	0.1	6.8	9.6	0.0	0.2	8.3	4.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	137.5	0.0	30.8	49.0	0.0	62.8	34.7	14.1	7.7	67.3	27.4	24.4
LnGrp LOS	F	A	C	D	A	E	C	B	A	E	C	C
Approach Vol, veh/h		1075			4			2845			1601	
Approach Delay, s/veh		116.2			59.4			18.9			27.0	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	56.7		22.5	25.2	36.6		5.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	2.2	29.7		20.0	18.1	22.3		2.2				
Green Ext Time (p_c), s	0.0	22.4		0.0	2.6	6.6		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	40.2	
HCM 6th LOS	D	

Notes

User approved volume balancing among the lanes for turning movement.



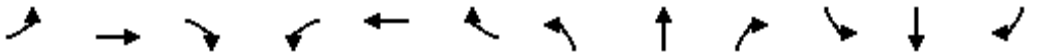
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	715	2	225	0	0	0	0	2461	255	655	1017	0
Future Volume (veh/h)	715	2	225	0	0	0	0	2461	255	655	1017	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	854	0	164				0	2675	277	712	1105	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	953	0	283				0	3739	921	364	4706	0
Arrive On Green	0.18	0.00	0.18				0.00	0.58	0.58	0.11	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	854	0	164				0	2675	277	712	1105	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	15.6	0.0	9.5				0.0	29.7	8.9	10.5	5.6	0.0
Cycle Q Clear(g_c), s	15.6	0.0	9.5				0.0	29.7	8.9	10.5	5.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	953	0	283				0	3739	921	364	4706	0
V/C Ratio(X)	0.90	0.00	0.58				0.00	0.72	0.30	1.96	0.23	0.00
Avail Cap(c_a), veh/h	964	0	286				0	3739	921	364	4706	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.1	0.0	37.6				0.0	15.0	10.6	44.7	4.3	0.0
Incr Delay (d2), s/veh	10.8	0.0	2.9				0.0	1.2	0.8	441.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	3.9				0.0	10.3	3.1	26.7	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	40.4				0.0	16.2	11.4	485.8	4.5	0.0
LnGrp LOS	D	A	D				A	B	B	F	A	A
Approach Vol, veh/h		1018						2952			1817	
Approach Delay, s/veh		49.2						15.7			193.1	
Approach LOS		D						B			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.0	62.5		22.3		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	12.5	31.7		17.6		7.6						
Green Ext Time (p_c), s	0.0	23.6		0.2		10.8						

Intersection Summary												
HCM 6th Ctrl Delay			77.3									
HCM 6th LOS			E									

Notes

User approved volume balancing among the lanes for turning movement.

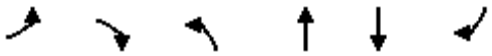


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	136	0	518	0	872	350	0	984	1250
Future Volume (veh/h)	0	0	0	136	0	518	0	872	350	0	984	1250
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				148	311	0	0	948	0	0	1070	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				180	378		0	1779		0	1779	
Arrive On Green				0.30	0.30	0.00	0.00	0.50	0.00	0.00	0.50	0.00
Sat Flow, veh/h				594	1247	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				459	0	0	0	948	0	0	1070	0
Grp Sat Flow(s),veh/h/ln				1841	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				10.6	0.0	0.0	0.0	8.3	0.0	0.0	9.9	0.0
Cycle Q Clear(g_c), s				10.6	0.0	0.0	0.0	8.3	0.0	0.0	9.9	0.0
Prop In Lane				0.32		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				558	0		0	1779		0	1779	
V/C Ratio(X)				0.82	0.00		0.00	0.53		0.00	0.60	
Avail Cap(c_a), veh/h				721	0		0	1779		0	1779	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.8	0.0	0.0	0.0	7.8	0.0	0.0	8.2	0.0
Incr Delay (d2), s/veh				6.0	0.0	0.0	0.0	1.1	0.0	0.0	1.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	0.0	0.0	2.5	0.0	0.0	3.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.8	0.0	0.0	0.0	9.0	0.0	0.0	9.7	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					459	A		948	A		1070	A
Approach Delay, s/veh					20.8			9.0			9.7	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		18.4			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	10.3		11.9		12.6			
Green Ext Time (p_c), s	5.4		5.6		1.3			

Intersection Summary		
HCM 6th Ctrl Delay	11.5	
HCM 6th LOS	B	

Notes
User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	548	416	103	712	544	517
Future Volume (veh/h)	548	416	103	712	544	517
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	524	529	112	774	591	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	583	527	143	1809	1233	
Arrive On Green	0.33	0.33	0.08	0.51	0.35	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	524	529	112	774	591	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	15.4	18.0	3.4	7.5	7.2	0.0
Cycle Q Clear(g_c), s	15.4	18.0	3.4	7.5	7.2	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	583	527	143	1809	1233	
V/C Ratio(X)	0.90	1.00	0.78	0.43	0.48	
Avail Cap(c_a), veh/h	583	527	162	1809	1233	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.6	18.5	24.8	8.5	14.1	0.0
Incr Delay (d2), s/veh	16.8	40.2	19.5	0.7	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	19.3	2.1	2.5	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.5	58.7	44.3	9.2	15.4	0.0
LnGrp LOS	C	F	D	A	B	
Approach Vol, veh/h	1053			886	591	A
Approach Delay, s/veh	46.6			13.7	15.4	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		22.5	8.9	23.6
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		9.5		20.0	5.4	9.2
Green Ext Time (p_c), s		5.2		0.0	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	27.8
HCM 6th LOS	C

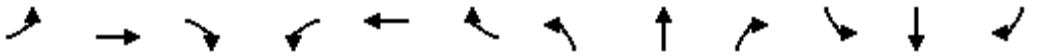
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/02/2020



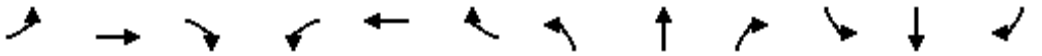
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	412	3	646	1	2	1	230	719	2	6	2325	588
Future Volume (veh/h)	412	3	646	1	2	1	230	719	2	6	2325	588
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	450	0	702	1	2	1	250	782	2	7	2527	639
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	706	0	628	9	6	3	326	3053	948	16	2617	812
Arrive On Green	0.20	0.00	0.20	0.01	0.01	0.01	0.09	0.60	0.60	0.01	0.51	0.51
Sat Flow, veh/h	3563	0	3170	1781	1176	588	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	450	0	702	1	0	3	250	782	2	7	2527	639
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1764	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	11.0	0.0	18.8	0.1	0.0	0.2	6.7	6.9	0.0	0.4	45.3	31.2
Cycle Q Clear(g_c), s	11.0	0.0	18.8	0.1	0.0	0.2	6.7	6.9	0.0	0.4	45.3	31.2
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	706	0	628	9	0	9	326	3053	948	16	2617	812
V/C Ratio(X)	0.64	0.00	1.12	0.11	0.00	0.32	0.77	0.26	0.00	0.44	0.97	0.79
Avail Cap(c_a), veh/h	706	0	628	428	0	424	430	3053	948	520	2617	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.9	0.0	38.0	46.9	0.0	47.0	41.9	9.1	7.7	46.8	22.3	18.9
Incr Delay (d2), s/veh	1.9	0.0	72.5	4.9	0.0	18.7	5.9	0.0	0.0	18.2	11.2	7.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	0.0	13.5	0.0	0.0	0.1	3.1	2.4	0.0	0.2	19.3	12.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	36.8	0.0	110.6	51.8	0.0	65.7	47.9	9.1	7.7	65.0	33.5	26.5
LnGrp LOS	D	A	F	D	A	E	D	A	A	E	C	C
Approach Vol, veh/h		1152			4			1034			3173	
Approach Delay, s/veh		81.8			62.3			18.5			32.2	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	61.2		23.3	13.4	53.1		5.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	2.4	8.9		20.8	8.7	47.3		2.2				
Green Ext Time (p_c), s	0.0	5.8		0.0	0.3	1.3		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		40.2	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.



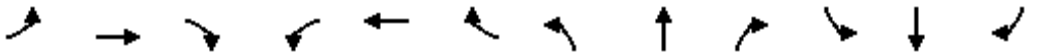
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	385	2	845	0	0	0	0	687	115	754	2612	0
Future Volume (veh/h)	385	2	845	0	0	0	0	687	115	754	2612	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	335	0	1008				0	747	125	820	2839	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1284	0	1142				0	1649	406	786	3447	0
Arrive On Green	0.36	0.00	0.36				0.00	0.26	0.26	0.23	0.54	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	335	0	1008				0	747	125	820	2839	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	5.8	0.0	25.8				0.0	8.5	5.5	19.7	31.8	0.0
Cycle Q Clear(g_c), s	5.8	0.0	25.8				0.0	8.5	5.5	19.7	31.8	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1284	0	1142				0	1649	406	786	3447	0
V/C Ratio(X)	0.26	0.00	0.88				0.00	0.45	0.31	1.04	0.82	0.00
Avail Cap(c_a), veh/h	1423	0	1266				0	1649	406	786	3447	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.6	0.0	26.0				0.0	27.1	26.0	33.5	16.7	0.0
Incr Delay (d2), s/veh	0.1	0.0	7.1				0.0	0.9	2.0	43.9	2.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	0.0	10.4				0.0	3.3	2.3	12.8	11.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.7	0.0	33.1				0.0	28.0	28.0	77.4	19.1	0.0
LnGrp LOS	B	A	C				A	C	C	F	B	A
Approach Vol, veh/h		1343						872			3659	
Approach Delay, s/veh		29.7						28.0			32.1	
Approach LOS		C						C			C	

Timer - Assigned Phs	1	2		4		6
Phs Duration (G+Y+Rc), s	24.2	26.7		35.7		50.9
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4
Max Q Clear Time (g_c+I1), s	21.7	10.5		27.8		33.8
Green Ext Time (p_c), s	0.0	4.4		3.4		12.0

Intersection Summary	
HCM 6th Ctrl Delay	31.0
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	30	0	378	0	1532	990	0	460	1440
Future Volume (veh/h)	0	0	0	30	0	378	0	1532	990	0	460	1440
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				0	0	0	0	1665	0	0	500	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				0	3		0	3276		0	3276	
Arrive On Green				0.00	0.00	0.00	0.00	0.92	0.00	0.00	0.92	0.00
Sat Flow, veh/h				0	1870	3170	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				0	0	0	0	1665	0	0	500	0
Grp Sat Flow(s),veh/h/ln				0	1870	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.7	0.0
Cycle Q Clear(g_c), s				0.0	0.0	0.0	0.0	4.0	0.0	0.0	0.7	0.0
Prop In Lane				0.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				0	3		0	3276		0	3276	
V/C Ratio(X)				0.00	0.00		0.00	0.51		0.00	0.15	
Avail Cap(c_a), veh/h				0	586		0	3276		0	3276	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.2	0.0
Incr Delay (d2), s/veh				0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.3	0.0
LnGrp LOS				A	A		A	A		A	A	
Approach Vol, veh/h					0	A		1665	A		500	A
Approach Delay, s/veh					0.0			0.9			0.3	
Approach LOS								A			A	

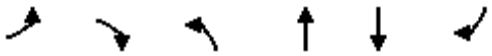
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		0.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	6.0		2.7		0.0			
Green Ext Time (p_c), s	21.2		3.8		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	0.8
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1191	369	181	1339	231	259
Future Volume (veh/h)	1191	369	181	1339	231	259
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	848	880	197	1455	251	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	915	827	81	1438	1131	
Arrive On Green	0.51	0.51	0.05	0.40	0.32	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	848	880	197	1455	251	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	48.6	56.5	5.0	44.5	5.7	0.0
Cycle Q Clear(g_c), s	48.6	56.5	5.0	44.5	5.7	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	915	827	81	1438	1131	
V/C Ratio(X)	0.93	1.06	2.43	1.01	0.22	
Avail Cap(c_a), veh/h	915	827	81	1438	1131	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	24.8	26.8	52.5	32.8	27.5	0.0
Incr Delay (d2), s/veh	15.1	49.8	680.6	26.8	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	23.2	49.0	17.5	23.8	2.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	40.0	76.5	733.1	59.5	28.0	0.0
LnGrp LOS	D	F	F	F	C	
Approach Vol, veh/h	1728			1652	251	A
Approach Delay, s/veh	58.6			139.8	28.0	
Approach LOS	E			F	C	

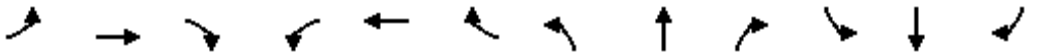
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		61.0	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		46.5		58.5	7.0	7.7
Green Ext Time (p_c), s		0.0		0.0	0.0	1.6

Intersection Summary	
HCM 6th Ctrl Delay	93.4
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.



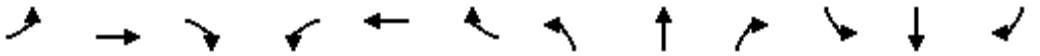
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	793	3	203	1	2	1	632	2023	2	5	1229	239
Future Volume (veh/h)	793	3	203	1	2	1	632	2023	2	5	1229	239
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	864	0	221	1	2	1	687	2199	2	5	1336	260
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	710	0	632	9	6	3	832	3010	934	12	1815	563
Arrive On Green	0.20	0.00	0.20	0.01	0.01	0.01	0.24	0.59	0.59	0.01	0.36	0.36
Sat Flow, veh/h	3563	0	3170	1781	1176	588	3456	5106	1585	1781	5106	1585
Grp Volume(v), veh/h	864	0	221	1	0	3	687	2199	2	5	1336	260
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1764	1728	1702	1585	1781	1702	1585
Q Serve(g_s), s	18.0	0.0	5.4	0.1	0.0	0.2	17.0	28.0	0.0	0.3	20.6	11.4
Cycle Q Clear(g_c), s	18.0	0.0	5.4	0.1	0.0	0.2	17.0	28.0	0.0	0.3	20.6	11.4
Prop In Lane	1.00		1.00	1.00		0.33	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	710	0	632	9	0	9	832	3010	934	12	1815	563
V/C Ratio(X)	1.22	0.00	0.35	0.11	0.00	0.32	0.83	0.73	0.00	0.43	0.74	0.46
Avail Cap(c_a), veh/h	710	0	632	661	0	655	1852	3438	1067	389	1815	563
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.2	0.0	31.1	44.7	0.0	44.8	32.5	13.4	7.6	44.7	25.4	22.4
Incr Delay (d2), s/veh	110.1	0.0	0.3	4.8	0.0	18.6	2.2	0.7	0.0	23.2	2.7	2.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	18.5	0.0	2.1	0.0	0.0	0.1	7.2	9.7	0.0	0.2	8.5	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	146.3	0.0	31.4	49.6	0.0	63.4	34.7	14.1	7.6	67.8	28.1	25.1
LnGrp LOS	F	A	C	D	A	E	C	B	A	E	C	C
Approach Vol, veh/h		1085			4			2888			1601	
Approach Delay, s/veh		122.9			59.9			19.0			27.8	
Approach LOS		F			E			B			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	57.7		22.5	26.2	36.6		5.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	2.3	30.0		20.0	19.0	22.6		2.2				
Green Ext Time (p_c), s	0.0	22.4		0.0	2.7	6.4		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		41.7	
HCM 6th LOS		D	

Notes

User approved volume balancing among the lanes for turning movement.



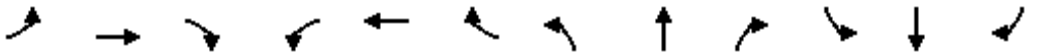
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	712	2	230	0	0	0	0	2498	262	646	1020	0
Future Volume (veh/h)	712	2	230	0	0	0	0	2498	262	646	1020	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	853	0	167				0	2715	285	702	1109	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	953	0	283				0	3739	921	364	4707	0
Arrive On Green	0.18	0.00	0.18				0.00	0.58	0.58	0.11	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	853	0	167				0	2715	285	702	1109	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	15.6	0.0	9.7				0.0	30.5	9.2	10.5	5.6	0.0
Cycle Q Clear(g_c), s	15.6	0.0	9.7				0.0	30.5	9.2	10.5	5.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	953	0	283				0	3739	921	364	4707	0
V/C Ratio(X)	0.90	0.00	0.59				0.00	0.73	0.31	1.93	0.24	0.00
Avail Cap(c_a), veh/h	964	0	286				0	3739	921	364	4707	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	40.1	0.0	37.7				0.0	15.1	10.7	44.6	4.3	0.0
Incr Delay (d2), s/veh	10.8	0.0	3.1				0.0	1.3	0.9	428.8	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	4.0				0.0	10.6	3.2	26.1	1.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.9	0.0	40.8				0.0	16.4	11.5	473.5	4.5	0.0
LnGrp LOS	D	A	D				A	B	B	F	A	A
Approach Vol, veh/h		1020						3000			1811	
Approach Delay, s/veh		49.2						15.9			186.3	
Approach LOS		D						B			F	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.0	62.5		22.3		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	12.5	32.5		17.6		7.6						
Green Ext Time (p_c), s	0.0	23.2		0.2		10.9						

Intersection Summary												
HCM 6th Ctrl Delay			74.7									
HCM 6th LOS			E									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	130	0	519	0	861	360	0	1010	1310
Future Volume (veh/h)	0	0	0	130	0	519	0	861	360	0	1010	1310
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	1870	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				141	317	0	0	936	0	0	1098	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	2	2	0	2	2	0	2	2
Cap, veh/h				172	386		0	1781		0	1781	
Arrive On Green				0.30	0.30	0.00	0.00	0.50	0.00	0.00	0.50	0.00
Sat Flow, veh/h				567	1275	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				458	0	0	0	936	0	0	1098	0
Grp Sat Flow(s),veh/h/ln				1842	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				10.6	0.0	0.0	0.0	8.2	0.0	0.0	10.2	0.0
Cycle Q Clear(g_c), s				10.6	0.0	0.0	0.0	8.2	0.0	0.0	10.2	0.0
Prop In Lane				0.31		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				558	0		0	1781		0	1781	
V/C Ratio(X)				0.82	0.00		0.00	0.53		0.00	0.62	
Avail Cap(c_a), veh/h				722	0		0	1781		0	1781	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				14.8	0.0	0.0	0.0	7.8	0.0	0.0	8.3	0.0
Incr Delay (d2), s/veh				5.9	0.0	0.0	0.0	1.1	0.0	0.0	1.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.6	0.0	0.0	0.0	2.5	0.0	0.0	3.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.7	0.0	0.0	0.0	8.9	0.0	0.0	9.9	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					458	A		936	A		1098	A
Approach Delay, s/veh					20.7			8.9			9.9	
Approach LOS					C			A			A	

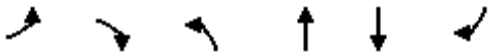
Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		18.4			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	10.2		12.2		12.6			
Green Ext Time (p_c), s	5.4		5.6		1.4			

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	548	413	109	712	537	541
Future Volume (veh/h)	548	413	109	712	537	541
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	522	528	118	774	584	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	583	527	151	1809	1218	
Arrive On Green	0.33	0.33	0.08	0.51	0.34	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	522	528	118	774	584	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	15.3	18.0	3.6	7.5	7.1	0.0
Cycle Q Clear(g_c), s	15.3	18.0	3.6	7.5	7.1	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	583	527	151	1809	1218	
V/C Ratio(X)	0.90	1.00	0.78	0.43	0.48	
Avail Cap(c_a), veh/h	583	527	162	1809	1218	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.6	18.5	24.7	8.5	14.2	0.0
Incr Delay (d2), s/veh	16.4	39.7	20.5	0.7	1.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	19.3	2.3	2.5	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	34.0	58.2	45.1	9.2	15.6	0.0
LnGrp LOS	C	F	D	A	B	
Approach Vol, veh/h	1050			892	584	A
Approach Delay, s/veh	46.2			14.0	15.6	
Approach LOS	D			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		22.5	9.2	23.3
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		9.5		20.0	5.6	9.1
Green Ext Time (p_c), s		5.2		0.0	0.0	2.7

Intersection Summary	
HCM 6th Ctrl Delay	27.7
HCM 6th LOS	C

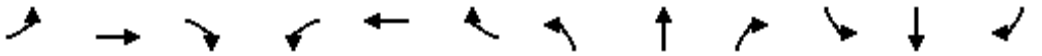
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



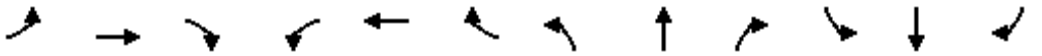
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	130	249	572	452	610	208	269	622	418	513	2067	251
Future Volume (veh/h)	130	249	572	452	610	208	269	622	418	513	2067	251
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	141	271	622	491	663	226	292	676	454	558	2247	273
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	558	293	497	657	675	301	340	2052	506	637	2606	642
Arrive On Green	0.16	0.16	0.16	0.19	0.19	0.19	0.10	0.32	0.32	0.18	0.41	0.41
Sat Flow, veh/h	3563	1870	3170	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	141	271	622	491	663	226	292	676	454	558	2247	273
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	4.2	17.1	18.8	16.1	22.3	16.2	10.0	9.6	32.8	18.8	38.3	14.9
Cycle Q Clear(g_c), s	4.2	17.1	18.8	16.1	22.3	16.2	10.0	9.6	32.8	18.8	38.3	14.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	293	497	657	675	301	340	2052	506	637	2606	642
V/C Ratio(X)	0.25	0.92	1.25	0.75	0.98	0.75	0.86	0.33	0.90	0.88	0.86	0.43
Avail Cap(c_a), veh/h	558	293	497	657	675	301	340	2052	506	798	2606	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	49.9	50.6	45.9	48.4	45.9	53.3	31.1	39.0	47.6	32.6	25.7
Incr Delay (d2), s/veh	0.2	33.5	129.4	4.7	30.0	10.0	19.3	0.1	18.7	9.1	4.1	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	10.7	16.3	7.3	12.6	7.2	5.2	3.8	15.2	8.9	15.4	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	83.4	180.0	50.6	78.4	56.0	72.6	31.2	57.7	56.7	36.7	27.7
LnGrp LOS	D	F	F	D	E	E	E	C	E	E	D	C
Approach Vol, veh/h		1034			1380			1422			3078	
Approach Delay, s/veh		136.2			64.8			48.2			39.5	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	26.6	42.8		23.3	16.3	53.1		27.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	20.8	34.8		20.8	12.0	40.3		24.3				
Green Ext Time (p_c), s	1.3	0.0		0.0	0.0	7.6		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	60.8
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.



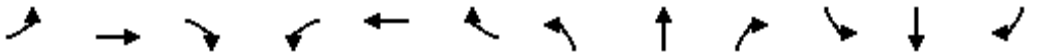
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	498	1	1011	0	0	0	0	822	83	496	2639	0
Future Volume (veh/h)	498	1	1011	0	0	0	0	822	83	496	2639	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	433	0	1215				0	893	90	539	2868	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1370	0	1219				0	1819	448	632	3317	0
Arrive On Green	0.38	0.00	0.38				0.00	0.28	0.28	0.18	0.52	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	433	0	1215				0	893	90	539	2868	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	7.7	0.0	34.4				0.0	10.4	3.9	13.6	35.1	0.0
Cycle Q Clear(g_c), s	7.7	0.0	34.4				0.0	10.4	3.9	13.6	35.1	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1370	0	1219				0	1819	448	632	3317	0
V/C Ratio(X)	0.32	0.00	1.00				0.00	0.49	0.20	0.85	0.86	0.00
Avail Cap(c_a), veh/h	1370	0	1219				0	1819	448	756	3317	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.4	0.0	27.6				0.0	26.9	24.5	35.6	19.1	0.0
Incr Delay (d2), s/veh	0.1	0.0	25.0				0.0	0.9	1.0	8.1	3.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	16.5				0.0	4.0	1.6	6.3	12.7	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	0.0	52.6				0.0	27.8	25.5	43.7	22.3	0.0
LnGrp LOS	B	A	D				A	C	C	D	C	A
Approach Vol, veh/h		1648						983			3407	
Approach Delay, s/veh		43.9						27.6			25.7	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	20.9	30.0		39.1		50.9						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4						
Max Q Clear Time (g_c+I1), s	15.6	12.4		36.4		37.1						
Green Ext Time (p_c), s	0.9	4.5		0.0		9.0						

Intersection Summary												
HCM 6th Ctrl Delay			31.0									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



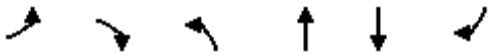
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	42	0	474	0	1606	990	0	468	1390
Future Volume (veh/h)	0	0	0	42	0	474	0	1606	990	0	468	1390
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				46	0	0	0	1746	0	0	509	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				77	0		0	2906		0	2906	
Arrive On Green				0.04	0.00	0.00	0.00	0.82	0.00	0.00	0.82	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				46	0	0	0	1746	0	0	509	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				1.6	0.0	0.0	0.0	11.4	0.0	0.0	2.0	0.0
Cycle Q Clear(g_c), s				1.6	0.0	0.0	0.0	11.4	0.0	0.0	2.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				77	0		0	2906		0	2906	
V/C Ratio(X)				0.59	0.00		0.00	0.60		0.00	0.18	
Avail Cap(c_a), veh/h				495	0		0	2906		0	2906	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				30.4	0.0	0.0	0.0	2.1	0.0	0.0	1.3	0.0
Incr Delay (d2), s/veh				7.1	0.0	0.0	0.0	0.9	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.8	0.0	0.0	0.0	1.1	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				37.5	0.0	0.0	0.0	3.0	0.0	0.0	1.4	0.0
LnGrp LOS				D	A		A	A		A	A	
Approach Vol, veh/h					46	A		1746	A		509	A
Approach Delay, s/veh					37.5			3.0			1.4	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		7.3			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	13.4		4.0		3.6			
Green Ext Time (p_c), s	21.1		3.9		0.1			

Intersection Summary		
HCM 6th Ctrl Delay	3.4	
HCM 6th LOS	A	

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1266	404	179	1361	248	262
Future Volume (veh/h)	1266	404	179	1361	248	262
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	908	941	195	1479	270	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	915	827	81	1438	1131	
Arrive On Green	0.51	0.51	0.05	0.40	0.32	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	908	941	195	1479	270	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	55.6	56.5	5.0	44.5	6.2	0.0
Cycle Q Clear(g_c), s	55.6	56.5	5.0	44.5	6.2	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	915	827	81	1438	1131	
V/C Ratio(X)	0.99	1.14	2.41	1.03	0.24	
Avail Cap(c_a), veh/h	915	827	81	1438	1131	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.5	26.8	52.5	32.8	27.7	0.0
Incr Delay (d2), s/veh	27.8	76.6	669.7	31.4	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	29.2	55.1	17.3	24.7	2.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	54.3	103.3	722.2	64.2	28.2	0.0
LnGrp LOS	D	F	F	F	C	
Approach Vol, veh/h	1849			1674	270	A
Approach Delay, s/veh	79.3			140.8	28.2	
Approach LOS	E			F	C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		61.0	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		46.5		58.5	7.0	8.2
Green Ext Time (p_c), s		0.0		0.0	0.0	1.8

Intersection Summary		
HCM 6th Ctrl Delay	102.8	
HCM 6th LOS	F	

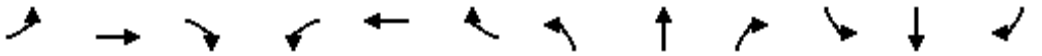
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



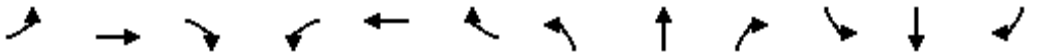
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	298	355	127	523	541	277	665	2196	558	387	570	64
Future Volume (veh/h)	298	355	127	523	541	277	665	2196	558	387	570	64
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	324	386	138	568	588	301	723	2387	607	421	620	70
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	421	442	187	746	768	342	808	2641	651	461	1995	491
Arrive On Green	0.12	0.12	0.12	0.22	0.22	0.22	0.23	0.41	0.41	0.13	0.31	0.31
Sat Flow, veh/h	3563	3741	1585	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	324	386	138	568	588	301	723	2387	607	421	620	70
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	13.0	15.0	12.4	22.8	23.0	27.1	29.9	51.4	54.0	17.8	10.9	4.7
Cycle Q Clear(g_c), s	13.0	15.0	12.4	22.8	23.0	27.1	29.9	51.4	54.0	17.8	10.9	4.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	421	442	187	746	768	342	808	2641	651	461	1995	491
V/C Ratio(X)	0.77	0.87	0.74	0.76	0.77	0.88	0.89	0.90	0.93	0.91	0.31	0.14
Avail Cap(c_a), veh/h	434	456	193	784	806	360	1132	2649	653	461	1995	491
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.2	64.0	62.9	54.3	54.4	56.0	54.8	40.8	41.6	63.2	38.9	36.8
Incr Delay (d2), s/veh	7.9	16.4	13.3	4.2	4.3	20.7	7.1	4.9	20.4	22.5	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	8.2	5.7	10.4	10.8	12.8	13.8	21.1	24.7	9.3	4.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	71.1	80.4	76.2	58.5	58.6	76.7	61.9	45.7	62.0	85.7	39.3	37.4
LnGrp LOS	E	F	E	E	E	E	E	D	E	F	D	D
Approach Vol, veh/h		848			1457			3717			1111	
Approach Delay, s/veh		76.2			62.3			51.5			56.8	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.2	65.1		22.0	39.0	50.3		36.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	19.8	56.0		17.0	31.9	12.9		29.1				
Green Ext Time (p_c), s	0.0	4.6		0.5	2.6	4.4		2.8				

Intersection Summary												
HCM 6th Ctrl Delay			57.5									
HCM 6th LOS			E									

Notes

User approved volume balancing among the lanes for turning movement.



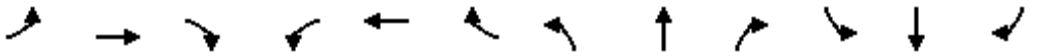
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	565	1	402	0	0	0	0	2915	252	237	998	0
Future Volume (veh/h)	565	1	402	0	0	0	0	2915	252	237	998	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	761	0	281				0	3168	274	258	1085	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	962	0	285				0	3802	937	325	4697	0
Arrive On Green	0.18	0.00	0.18				0.00	0.59	0.59	0.09	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	761	0	281				0	3168	274	258	1085	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	13.6	0.0	17.7				0.0	39.7	8.6	7.3	5.5	0.0
Cycle Q Clear(g_c), s	13.6	0.0	17.7				0.0	39.7	8.6	7.3	5.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	962	0	285				0	3802	937	325	4697	0
V/C Ratio(X)	0.79	0.00	0.98				0.00	0.83	0.29	0.79	0.23	0.00
Avail Cap(c_a), veh/h	962	0	285				0	3802	937	363	4697	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.2	0.0	40.9				0.0	16.5	10.1	44.3	4.4	0.0
Incr Delay (d2), s/veh	4.5	0.0	49.0				0.0	2.3	0.8	10.4	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	0.0	10.7				0.0	13.9	3.0	3.6	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	43.7	0.0	89.8				0.0	18.8	10.9	54.8	4.5	0.0
LnGrp LOS	D	A	F				A	B	B	D	A	A
Approach Vol, veh/h		1042						3442			1343	
Approach Delay, s/veh		56.2						18.2			14.2	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	13.9	63.6		22.5		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	9.3	41.7		19.7		7.5						
Green Ext Time (p_c), s	0.1	15.9		0.0		10.5						

Intersection Summary												
HCM 6th Ctrl Delay			24.0									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



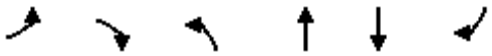
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	157	0	567	0	763	400	0	1023	1400
Future Volume (veh/h)	0	0	0	157	0	567	0	763	400	0	1023	1400
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				171	0	0	0	829	0	0	1112	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				230	0		0	2224		0	2224	
Arrive On Green				0.13	0.00	0.00	0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				171	0	0	0	829	0	0	1112	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				3.4	0.0	0.0	0.0	4.2	0.0	0.0	6.3	0.0
Cycle Q Clear(g_c), s				3.4	0.0	0.0	0.0	4.2	0.0	0.0	6.3	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				230	0		0	2224		0	2224	
V/C Ratio(X)				0.74	0.00		0.00	0.37		0.00	0.50	
Avail Cap(c_a), veh/h				873	0		0	2224		0	2224	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				15.4	0.0	0.0	0.0	3.4	0.0	0.0	3.7	0.0
Incr Delay (d2), s/veh				4.7	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.4	0.0	0.0	0.0	0.7	0.0	0.0	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.1	0.0	0.0	0.0	3.8	0.0	0.0	4.5	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					171	A		829	A		1112	A
Approach Delay, s/veh					20.1			3.8			4.5	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		9.2			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.2		8.3		5.4			
Green Ext Time (p_c), s	5.4		7.0		0.4			

Intersection Summary	
HCM 6th Ctrl Delay	5.5
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	441	440	132	759	600	518
Future Volume (veh/h)	441	440	132	759	600	518
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	478	479	143	825	652	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	579	523	162	1815	1199	
Arrive On Green	0.33	0.33	0.09	0.51	0.34	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	478	479	143	825	652	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	13.6	15.7	4.3	8.1	8.2	0.0
Cycle Q Clear(g_c), s	13.6	15.7	4.3	8.1	8.2	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	579	523	162	1815	1199	
V/C Ratio(X)	0.83	0.92	0.88	0.45	0.54	
Avail Cap(c_a), veh/h	585	529	162	1815	1199	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	17.8	24.6	8.5	14.7	0.0
Incr Delay (d2), s/veh	9.4	20.5	38.6	0.8	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.3	3.0	3.4	2.7	3.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	26.4	38.3	63.2	9.4	16.5	0.0
LnGrp LOS	C	D	E	A	B	
Approach Vol, veh/h	957			968	652	A
Approach Delay, s/veh	32.4			17.3	16.5	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		22.3	9.5	23.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		10.1		17.7	6.3	10.2
Green Ext Time (p_c), s		5.6		0.2	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C

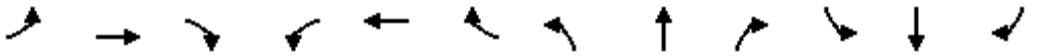
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



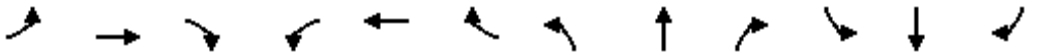
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	133	248	570	449	609	212	264	625	410	523	2102	257
Future Volume (veh/h)	133	248	570	449	609	212	264	625	410	523	2102	257
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	145	270	620	488	662	230	287	679	446	568	2285	279
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	558	293	497	657	675	301	340	2035	501	647	2606	642
Arrive On Green	0.16	0.16	0.16	0.19	0.19	0.19	0.10	0.32	0.32	0.19	0.41	0.41
Sat Flow, veh/h	3563	1870	3170	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	145	270	620	488	662	230	287	679	446	568	2285	279
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	4.3	17.1	18.8	16.0	22.3	16.5	9.8	9.7	32.1	19.2	39.3	15.3
Cycle Q Clear(g_c), s	4.3	17.1	18.8	16.0	22.3	16.5	9.8	9.7	32.1	19.2	39.3	15.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	293	497	657	675	301	340	2035	501	647	2606	642
V/C Ratio(X)	0.26	0.92	1.25	0.74	0.98	0.76	0.84	0.33	0.89	0.88	0.88	0.43
Avail Cap(c_a), veh/h	558	293	497	657	675	301	340	2035	501	798	2606	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.5	49.9	50.6	45.8	48.4	46.0	53.2	31.4	39.0	47.4	32.9	25.8
Incr Delay (d2), s/veh	0.2	32.8	127.7	4.6	29.7	11.0	17.4	0.1	17.7	9.4	4.5	2.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	10.6	16.2	7.3	12.6	7.4	5.1	3.8	14.8	9.1	15.8	6.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.7	82.6	178.3	50.4	78.0	57.1	70.6	31.5	56.7	56.9	37.5	27.9
LnGrp LOS	D	F	F	D	E	E	E	C	E	E	D	C
Approach Vol, veh/h		1035			1380			1412			3132	
Approach Delay, s/veh		134.6			64.8			47.4			40.1	
Approach LOS		F			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	27.0	42.4		23.3	16.3	53.1		27.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	21.2	34.1		20.8	11.8	41.3		24.3				
Green Ext Time (p_c), s	1.3	0.0		0.0	0.0	6.7		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	60.6
HCM 6th LOS	E

Notes

User approved volume balancing among the lanes for turning movement.



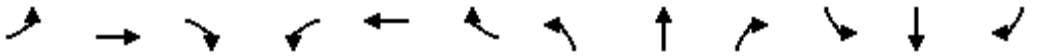
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	492	1	1038	0	0	0	0	818	86	503	2672	0
Future Volume (veh/h)	492	1	1038	0	0	0	0	818	86	503	2672	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	428	0	1243				0	889	93	547	2904	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1370	0	1219				0	1806	445	639	3317	0
Arrive On Green	0.38	0.00	0.38				0.00	0.28	0.28	0.18	0.52	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	428	0	1243				0	889	93	547	2904	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	7.6	0.0	34.6				0.0	10.4	4.0	13.8	35.9	0.0
Cycle Q Clear(g_c), s	7.6	0.0	34.6				0.0	10.4	4.0	13.8	35.9	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1370	0	1219				0	1806	445	639	3317	0
V/C Ratio(X)	0.31	0.00	1.02				0.00	0.49	0.21	0.86	0.88	0.00
Avail Cap(c_a), veh/h	1370	0	1219				0	1806	445	756	3317	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.4	0.0	27.7				0.0	27.0	24.7	35.5	19.2	0.0
Incr Delay (d2), s/veh	0.1	0.0	30.9				0.0	1.0	1.1	8.4	3.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.0	17.6				0.0	4.0	1.6	6.4	13.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.5	0.0	58.6				0.0	28.0	25.8	43.9	22.8	0.0
LnGrp LOS	B	A	F				A	C	C	D	C	A
Approach Vol, veh/h		1671						982			3451	
Approach Delay, s/veh		48.6						27.8			26.2	
Approach LOS		D						C			C	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	21.1	29.8		39.1		50.9						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4						
Max Q Clear Time (g_c+I1), s	15.8	12.4		36.6		37.9						
Green Ext Time (p_c), s	0.8	4.5		0.0		8.2						

Intersection Summary			
HCM 6th Ctrl Delay			32.6
HCM 6th LOS			C

Notes

User approved volume balancing among the lanes for turning movement.



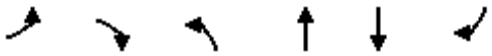
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	43	0	474	0	1646	990	0	457	1370
Future Volume (veh/h)	0	0	0	43	0	474	0	1646	990	0	457	1370
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				47	0	0	0	1789	0	0	497	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				78	0		0	2904		0	2904	
Arrive On Green				0.04	0.00	0.00	0.00	0.82	0.00	0.00	0.82	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				47	0	0	0	1789	0	0	497	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				1.7	0.0	0.0	0.0	12.0	0.0	0.0	1.9	0.0
Cycle Q Clear(g_c), s				1.7	0.0	0.0	0.0	12.0	0.0	0.0	1.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				78	0		0	2904		0	2904	
V/C Ratio(X)				0.60	0.00		0.00	0.62		0.00	0.17	
Avail Cap(c_a), veh/h				494	0		0	2904		0	2904	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				30.4	0.0	0.0	0.0	2.2	0.0	0.0	1.3	0.0
Incr Delay (d2), s/veh				7.1	0.0	0.0	0.0	1.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.8	0.0	0.0	0.0	1.1	0.0	0.0	0.2	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				37.6	0.0	0.0	0.0	3.2	0.0	0.0	1.4	0.0
LnGrp LOS				D	A		A	A		A	A	
Approach Vol, veh/h					47	A		1789	A		497	A
Approach Delay, s/veh					37.6			3.2			1.4	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		7.4			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	14.0		3.9		3.7			
Green Ext Time (p_c), s	21.7		3.8		0.1			

Intersection Summary	
HCM 6th Ctrl Delay	3.5
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	1312	412	176	1348	238	254
Future Volume (veh/h)	1312	412	176	1348	238	254
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	937	972	191	1465	259	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	915	827	81	1438	1131	
Arrive On Green	0.51	0.51	0.05	0.40	0.32	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	937	972	191	1465	259	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	56.5	56.5	5.0	44.5	5.9	0.0
Cycle Q Clear(g_c), s	56.5	56.5	5.0	44.5	5.9	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	915	827	81	1438	1131	
V/C Ratio(X)	1.02	1.18	2.36	1.02	0.23	
Avail Cap(c_a), veh/h	915	827	81	1438	1131	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	26.7	26.8	52.5	32.8	27.6	0.0
Incr Delay (d2), s/veh	36.0	91.5	648.0	28.6	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.7	58.5	16.8	24.2	2.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	62.8	118.2	700.5	61.4	28.1	0.0
LnGrp LOS	F	F	F	F	C	
Approach Vol, veh/h	1909			1656	259	A
Approach Delay, s/veh	91.0			135.1	28.1	
Approach LOS	F			F	C	

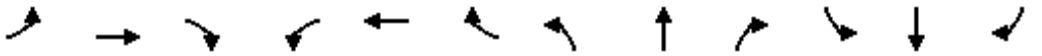
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.0		61.0	9.5	39.5
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		44.5		56.5	5.0	35.0
Max Q Clear Time (g_c+I1), s		46.5		58.5	7.0	7.9
Green Ext Time (p_c), s		0.0		0.0	0.0	1.7

Intersection Summary		
HCM 6th Ctrl Delay	105.8	
HCM 6th LOS	F	

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.



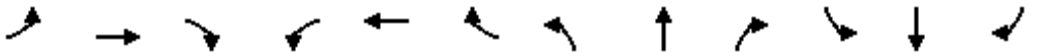
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	297	355	128	526	538	276	668	2216	563	382	566	63
Future Volume (veh/h)	297	355	128	526	538	276	668	2216	563	382	566	63
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	323	386	139	572	585	300	726	2409	612	415	615	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	422	443	188	746	767	342	811	2647	652	457	1988	490
Arrive On Green	0.12	0.12	0.12	0.22	0.22	0.22	0.23	0.41	0.41	0.13	0.31	0.31
Sat Flow, veh/h	3563	3741	1585	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	323	386	139	572	585	300	726	2409	612	415	615	68
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	13.0	15.0	12.5	22.9	22.8	27.0	30.0	51.9	54.6	17.5	10.8	4.6
Cycle Q Clear(g_c), s	13.0	15.0	12.5	22.9	22.8	27.0	30.0	51.9	54.6	17.5	10.8	4.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	422	443	188	746	767	342	811	2647	652	457	1988	490
V/C Ratio(X)	0.77	0.87	0.74	0.77	0.76	0.88	0.89	0.91	0.94	0.91	0.31	0.14
Avail Cap(c_a), veh/h	435	457	194	785	807	360	1134	2653	654	462	1988	490
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.0	63.9	62.8	54.3	54.3	55.9	54.7	40.8	41.6	63.1	38.9	36.8
Incr Delay (d2), s/veh	7.8	16.3	13.7	4.4	4.1	20.3	7.1	5.2	21.4	21.5	0.4	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	8.1	5.8	10.5	10.7	12.7	13.9	21.4	25.0	9.1	4.4	1.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.8	80.2	76.5	58.7	58.4	76.2	61.8	46.0	63.0	84.6	39.3	37.4
LnGrp LOS	E	F	E	E	E	E	E	D	E	F	D	D
Approach Vol, veh/h		848			1457			3747			1098	
Approach Delay, s/veh		76.0			62.2			51.9			56.3	
Approach LOS		E			E			D			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.0	65.2		22.0	39.1	50.1		36.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	19.5	56.6		17.0	32.0	12.8		29.0				
Green Ext Time (p_c), s	0.0	4.1		0.5	2.6	4.4		2.8				

Intersection Summary			
HCM 6th Ctrl Delay		57.5	
HCM 6th LOS		E	

Notes

User approved volume balancing among the lanes for turning movement.



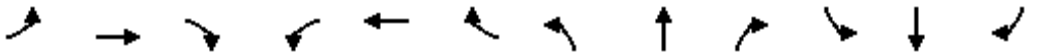
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	571	1	404	0	0	0	0	2939	253	236	996	0
Future Volume (veh/h)	571	1	404	0	0	0	0	2939	253	236	996	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	768	0	282				0	3195	275	257	1083	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	962	0	285				0	3803	937	324	4697	0
Arrive On Green	0.18	0.00	0.18				0.00	0.59	0.59	0.09	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	768	0	282				0	3195	275	257	1083	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	13.8	0.0	17.7				0.0	40.3	8.6	7.3	5.5	0.0
Cycle Q Clear(g_c), s	13.8	0.0	17.7				0.0	40.3	8.6	7.3	5.5	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	962	0	285				0	3803	937	324	4697	0
V/C Ratio(X)	0.80	0.00	0.99				0.00	0.84	0.29	0.79	0.23	0.00
Avail Cap(c_a), veh/h	962	0	285				0	3803	937	363	4697	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.3	0.0	40.9				0.0	16.6	10.1	44.4	4.4	0.0
Incr Delay (d2), s/veh	4.8	0.0	49.9				0.0	2.4	0.8	10.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	0.0	10.8				0.0	14.1	3.0	3.6	1.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	44.1	0.0	90.8				0.0	19.0	10.9	54.7	4.5	0.0
LnGrp LOS	D	A	F				A	B	B	D	A	A
Approach Vol, veh/h		1050						3470			1340	
Approach Delay, s/veh		56.6						18.4			14.1	
Approach LOS		E						B			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	13.9	63.6		22.5		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	9.3	42.3		19.7		7.5						
Green Ext Time (p_c), s	0.1	15.3		0.0		10.5						

Intersection Summary												
HCM 6th Ctrl Delay			24.3									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



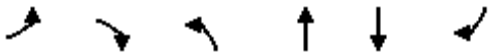
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	155	0	558	0	762	400	0	1025	1430
Future Volume (veh/h)	0	0	0	155	0	558	0	762	400	0	1025	1430
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				168	0	0	0	828	0	0	1114	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				226	0		0	2230		0	2230	
Arrive On Green				0.13	0.00	0.00	0.00	0.63	0.00	0.00	0.63	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				168	0	0	0	828	0	0	1114	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				3.3	0.0	0.0	0.0	4.1	0.0	0.0	6.2	0.0
Cycle Q Clear(g_c), s				3.3	0.0	0.0	0.0	4.1	0.0	0.0	6.2	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				226	0		0	2230		0	2230	
V/C Ratio(X)				0.74	0.00		0.00	0.37		0.00	0.50	
Avail Cap(c_a), veh/h				875	0		0	2230		0	2230	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				15.4	0.0	0.0	0.0	3.3	0.0	0.0	3.7	0.0
Incr Delay (d2), s/veh				4.8	0.0	0.0	0.0	0.5	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.4	0.0	0.0	0.0	0.6	0.0	0.0	1.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.2	0.0	0.0	0.0	3.8	0.0	0.0	4.5	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					168	A		828	A		1114	A
Approach Delay, s/veh					20.2			3.8			4.5	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		9.2			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.1		8.2		5.3			
Green Ext Time (p_c), s	5.4		7.0		0.3			

Intersection Summary		
HCM 6th Ctrl Delay	5.5	
HCM 6th LOS	A	

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	449	444	134	761	596	526
Future Volume (veh/h)	449	444	134	761	596	526
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1900	1870	1870	1870	1870
Adj Flow Rate, veh/h	486	486	146	827	648	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	583	527	162	1809	1195	
Arrive On Green	0.33	0.33	0.09	0.51	0.34	0.00
Sat Flow, veh/h	1781	1610	1781	3647	3647	1585
Grp Volume(v), veh/h	486	486	146	827	648	0
Grp Sat Flow(s),veh/h/ln	1781	1610	1781	1777	1777	1585
Q Serve(g_s), s	13.9	16.0	4.5	8.2	8.1	0.0
Cycle Q Clear(g_c), s	13.9	16.0	4.5	8.2	8.1	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	583	527	162	1809	1195	
V/C Ratio(X)	0.83	0.92	0.90	0.46	0.54	
Avail Cap(c_a), veh/h	583	527	162	1809	1195	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	17.1	17.8	24.8	8.6	14.8	0.0
Incr Delay (d2), s/veh	10.1	21.9	43.5	0.8	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.6	15.6	3.7	2.7	3.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	27.2	39.7	68.2	9.5	16.6	0.0
LnGrp LOS	C	D	E	A	B	
Approach Vol, veh/h	972			973	648	A
Approach Delay, s/veh	33.5			18.3	16.6	
Approach LOS	C			B	B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		32.5		22.5	9.5	23.0
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.0		18.0	5.0	18.5
Max Q Clear Time (g_c+I1), s		10.2		18.0	6.5	10.1
Green Ext Time (p_c), s		5.6		0.0	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	23.5
HCM 6th LOS	C

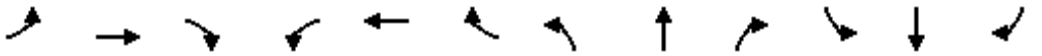
Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBT, SBR] is excluded from calculations of the approach delay and intersection delay.

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



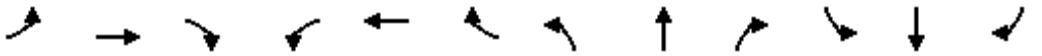
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	297	585	473	621	275	295	888	554	700	2407	284
Future Volume (veh/h)	167	297	585	473	621	275	295	888	554	700	2407	284
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	182	323	636	514	675	299	321	965	602	761	2616	309
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
Arrive On Green	0.16	0.16	0.16	0.19	0.19	0.19	0.10	0.27	0.27	0.23	0.41	0.41
Sat Flow, veh/h	3563	1870	3170	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	182	323	636	514	675	299	321	965	602	761	2616	309
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	5.4	18.8	18.8	17.0	22.8	22.6	11.1	15.4	32.7	26.1	48.6	17.3
Cycle Q Clear(g_c), s	5.4	18.8	18.8	17.0	22.8	22.6	11.1	15.4	32.7	26.1	48.6	17.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
V/C Ratio(X)	0.33	1.10	1.28	0.78	1.00	0.99	0.94	0.55	1.39	0.95	1.00	0.48
Avail Cap(c_a), veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	50.6	50.6	46.2	48.6	48.5	53.8	37.4	43.6	45.5	35.7	26.4
Incr Delay (d2), s/veh	0.3	82.8	141.1	6.1	34.6	49.8	34.6	0.4	190.9	21.4	18.6	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	15.5	17.2	7.8	13.3	13.0	6.4	6.1	35.6	13.5	21.9	7.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.3	133.4	191.7	52.4	83.2	98.3	88.3	37.7	234.5	66.9	54.3	29.0
LnGrp LOS	D	F	F	D	F	F	F	D	F	E	F	C
Approach Vol, veh/h		1141			1488			1888			3686	
Approach Delay, s/veh		151.8			75.6			109.1			54.8	
Approach LOS		F			E			F			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.2	37.2		23.3	16.3	53.1		27.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	28.1	34.7		20.8	13.1	50.6		24.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		84.5	
HCM 6th LOS		F	

Notes

User approved volume balancing among the lanes for turning movement.



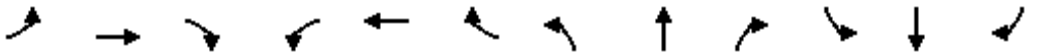
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	577	1	1132	0	0	0	0	1173	114	564	3018	0
Future Volume (veh/h)	577	1	1132	0	0	0	0	1173	114	564	3018	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	502	0	1365				0	1275	124	613	3280	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1370	0	1219				0	1701	419	695	3317	0
Arrive On Green	0.38	0.00	0.38				0.00	0.26	0.26	0.20	0.52	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	502	0	1365				0	1275	124	613	3280	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	9.1	0.0	34.6				0.0	16.4	5.6	15.5	45.3	0.0
Cycle Q Clear(g_c), s	9.1	0.0	34.6				0.0	16.4	5.6	15.5	45.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1370	0	1219				0	1701	419	695	3317	0
V/C Ratio(X)	0.37	0.00	1.12				0.00	0.75	0.30	0.88	0.99	0.00
Avail Cap(c_a), veh/h	1370	0	1219				0	1701	419	756	3317	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.8	0.0	27.7				0.0	30.4	26.4	34.9	21.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	65.4				0.0	3.1	1.8	11.2	13.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	23.4				0.0	6.5	2.3	7.4	18.5	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.0	0.0	93.1				0.0	33.4	28.2	46.1	34.8	0.0
LnGrp LOS	C	A	F				A	C	C	D	C	A
Approach Vol, veh/h		1867						1399			3893	
Approach Delay, s/veh		73.4						33.0			36.6	
Approach LOS		E						C			D	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.6	28.3		39.1		50.9						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4						
Max Q Clear Time (g_c+I1), s	17.5	18.4		36.6		47.3						
Green Ext Time (p_c), s	0.6	2.8		0.0		0.0						

Intersection Summary												
HCM 6th Ctrl Delay			45.5									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.



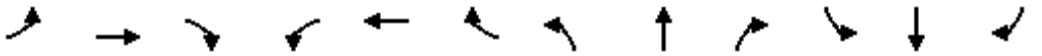
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	36	0	625	0	1999	1082	0	465	1583
Future Volume (veh/h)	0	0	0	36	0	625	0	1999	1082	0	465	1583
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				39	0	0	0	2173	0	0	505	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				69	0		0	2919		0	2919	
Arrive On Green				0.04	0.00	0.00	0.00	0.82	0.00	0.00	0.82	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				39	0	0	0	2173	0	0	505	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				1.4	0.0	0.0	0.0	18.1	0.0	0.0	1.9	0.0
Cycle Q Clear(g_c), s				1.4	0.0	0.0	0.0	18.1	0.0	0.0	1.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				69	0		0	2919		0	2919	
V/C Ratio(X)				0.56	0.00		0.00	0.74		0.00	0.17	
Avail Cap(c_a), veh/h				497	0		0	2919		0	2919	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				30.5	0.0	0.0	0.0	2.6	0.0	0.0	1.2	0.0
Incr Delay (d2), s/veh				6.9	0.0	0.0	0.0	1.8	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.7	0.0	0.0	0.0	1.6	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				37.4	0.0	0.0	0.0	4.4	0.0	0.0	1.3	0.0
LnGrp LOS				D	A		A	A		A	A	
Approach Vol, veh/h					39	A		2173	A		505	A
Approach Delay, s/veh					37.4			4.4			1.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		7.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	20.1		3.9		3.4			
Green Ext Time (p_c), s	24.8		3.9		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	4.3
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

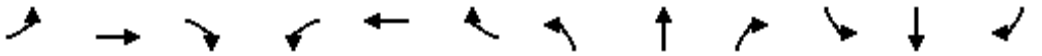


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1769	0	394	0	0	0	0	1301	310	0	266	240
Future Volume (vph)	1769	0	394	0	0	0	0	1301	310	0	266	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	250		0	0		0
Storage Lanes	2		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		313			280			452			532	
Travel Time (s)		7.1			6.4			10.3			12.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	10%		10%									
Act Effct Green (s)	56.5	0.0	56.5					44.5	110.0		44.5	110.0
Actuated g/C Ratio	0.51	0.00	0.51					0.40	1.00		0.40	1.00
v/c Ratio	0.98	2.26	0.40					0.99	0.21		0.20	0.16
Control Delay	44.4	0.0	4.4					54.2	0.3		21.7	0.2
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	0.0
Total Delay	44.4	0.0	4.4					54.2	0.3		21.7	0.2
LOS	D	A	A					D	A		C	A
Approach Delay		33.4						43.8			11.5	
Approach LOS		C						D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.26			
Intersection Signal Delay: 34.7		Intersection LOS: C	
Intersection Capacity Utilization 93.5%		ICU Level of Service F	
Analysis Period (min) 15			

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



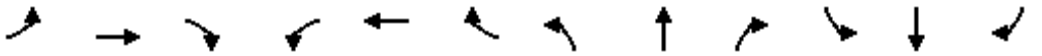
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	282	365	144	746	667	331	773	2477	681	444	720	70
Future Volume (veh/h)	282	365	144	746	667	331	773	2477	681	444	720	70
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	307	397	157	811	725	360	840	2692	740	483	783	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	424	445	189	773	795	354	922	2611	643	454	1741	429
Arrive On Green	0.12	0.12	0.12	0.22	0.22	0.22	0.27	0.41	0.41	0.13	0.27	0.27
Sat Flow, veh/h	3563	3741	1585	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	307	397	157	811	725	360	840	2692	740	483	783	76
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	12.4	15.7	14.5	33.5	29.8	33.5	35.3	60.8	60.8	19.7	15.1	5.5
Cycle Q Clear(g_c), s	12.4	15.7	14.5	33.5	29.8	33.5	35.3	60.8	60.8	19.7	15.1	5.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	424	445	189	773	795	354	922	2611	643	454	1741	429
V/C Ratio(X)	0.72	0.89	0.83	1.05	0.91	1.02	0.91	1.03	1.15	1.06	0.45	0.18
Avail Cap(c_a), veh/h	428	449	190	773	795	354	1116	2611	643	454	1741	429
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.6	65.0	64.5	58.2	56.7	58.2	53.2	44.5	44.5	65.1	45.4	41.9
Incr Delay (d2), s/veh	5.9	19.4	25.6	46.2	14.8	51.9	9.9	26.2	84.8	60.0	0.8	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	8.7	7.2	19.6	15.0	18.5	16.6	28.8	38.8	12.5	6.2	2.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	69.5	84.5	90.1	104.4	71.6	110.1	63.1	70.7	129.3	125.0	46.2	42.8
LnGrp LOS	E	F	F	F	E	F	E	F	F	F	D	D
Approach Vol, veh/h		861			1896			4272			1342	
Approach Delay, s/veh		80.2			92.9			79.4			74.4	
Approach LOS		F			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.2	65.3		22.3	44.5	45.0		38.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	21.7	62.8		17.7	37.3	17.1		35.5				
Green Ext Time (p_c), s	0.0	0.0		0.2	2.7	5.0		0.0				

Intersection Summary	
HCM 6th Ctrl Delay	81.7
HCM 6th LOS	F

Notes

User approved volume balancing among the lanes for turning movement.



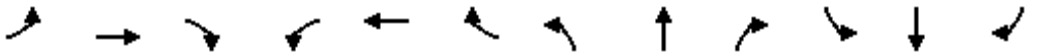
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	617	1	386	0	0	0	0	3373	262	317	1304	0
Future Volume (veh/h)	617	1	386	0	0	0	0	3373	262	317	1304	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	804	0	278				0	3666	285	345	1417	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	962	0	285				0	3732	919	363	4697	0
Arrive On Green	0.18	0.00	0.18				0.00	0.58	0.58	0.10	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	804	0	278				0	3666	285	345	1417	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	14.5	0.0	17.4				0.0	55.6	9.2	9.9	7.6	0.0
Cycle Q Clear(g_c), s	14.5	0.0	17.4				0.0	55.6	9.2	9.9	7.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	962	0	285				0	3732	919	363	4697	0
V/C Ratio(X)	0.84	0.00	0.97				0.00	0.98	0.31	0.95	0.30	0.00
Avail Cap(c_a), veh/h	962	0	285				0	3732	919	363	4697	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	0.0	40.8				0.0	20.5	10.8	44.5	4.7	0.0
Incr Delay (d2), s/veh	6.5	0.0	46.1				0.0	11.2	0.9	34.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.8	0.0	10.4				0.0	21.6	3.3	5.9	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.1	0.0	86.9				0.0	31.7	11.6	79.0	4.8	0.0
LnGrp LOS	D	A	F				A	C	B	E	A	A
Approach Vol, veh/h		1082						3951			1762	
Approach Delay, s/veh		56.6						30.2			19.4	
Approach LOS		E						C			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.0	62.5		22.5		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	11.9	57.6		19.4		9.6						
Green Ext Time (p_c), s	0.0	0.4		0.0		16.1						

Intersection Summary												
HCM 6th Ctrl Delay			31.6									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



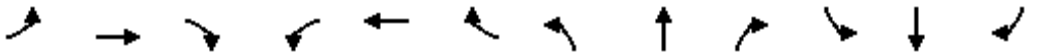
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	141	0	559	0	891	450	0	1029	1740
Future Volume (veh/h)	0	0	0	141	0	559	0	891	450	0	1029	1740
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				153	0	0	0	968	0	0	1118	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				205	0		0	2260		0	2260	
Arrive On Green				0.12	0.00	0.00	0.00	0.64	0.00	0.00	0.64	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				153	0	0	0	968	0	0	1118	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				3.0	0.0	0.0	0.0	4.9	0.0	0.0	6.0	0.0
Cycle Q Clear(g_c), s				3.0	0.0	0.0	0.0	4.9	0.0	0.0	6.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				205	0		0	2260		0	2260	
V/C Ratio(X)				0.74	0.00		0.00	0.43		0.00	0.49	
Avail Cap(c_a), veh/h				886	0		0	2260		0	2260	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				15.5	0.0	0.0	0.0	3.3	0.0	0.0	3.5	0.0
Incr Delay (d2), s/veh				5.3	0.0	0.0	0.0	0.6	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	0.0	0.0	0.7	0.0	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.8	0.0	0.0	0.0	3.9	0.0	0.0	4.3	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					153	A		968	A		1118	A
Approach Delay, s/veh					20.8			3.9			4.3	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		8.7			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.9		8.0		5.0			
Green Ext Time (p_c), s	6.3		7.1		0.3			

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

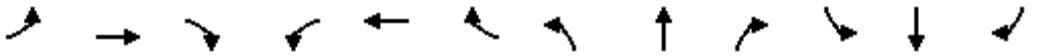


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	675	0	418	0	0	0	0	725	310	0	582	510
Future Volume (vph)	675	0	418	0	0	0	0	725	310	0	582	510
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	250		0	0		0
Storage Lanes	2		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		313			280			452			532	
Travel Time (s)		7.1			6.4			10.3			12.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	10%		10%									
Act Effct Green (s)	15.4	0.0	15.4					28.1	52.5		28.1	52.5
Actuated g/C Ratio	0.29	0.00	0.29					0.54	1.00		0.54	1.00
v/c Ratio	0.66	0.57	0.60					0.42	0.21		0.33	0.35
Control Delay	19.6	0.0	8.8					8.6	0.3		8.0	0.6
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	0.0
Total Delay	19.6	0.0	8.8					8.6	0.3		8.0	0.6
LOS	B	A	A					A	A		A	A
Approach Delay		13.9						6.1			4.6	
Approach LOS		B						A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 52.5			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



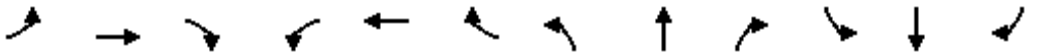
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	168	296	585	471	623	275	299	896	553	700	2423	288
Future Volume (veh/h)	168	296	585	471	623	275	299	896	553	700	2423	288
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	183	322	636	512	677	299	325	974	601	761	2634	313
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
Arrive On Green	0.16	0.16	0.16	0.19	0.19	0.19	0.10	0.27	0.27	0.23	0.41	0.41
Sat Flow, veh/h	3563	1870	3170	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	183	322	636	512	677	299	325	974	601	761	2634	313
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	5.5	18.8	18.8	16.9	22.8	22.6	11.2	15.6	32.7	26.1	48.6	17.6
Cycle Q Clear(g_c), s	5.5	18.8	18.8	16.9	22.8	22.6	11.2	15.6	32.7	26.1	48.6	17.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
V/C Ratio(X)	0.33	1.10	1.28	0.78	1.00	0.99	0.96	0.56	1.39	0.95	1.01	0.49
Avail Cap(c_a), veh/h	558	293	497	657	675	301	340	1753	432	798	2606	642
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	45.0	50.6	50.6	46.2	48.6	48.5	53.8	37.4	43.6	45.5	35.7	26.5
Incr Delay (d2), s/veh	0.3	81.7	141.1	6.0	35.3	49.8	37.3	0.4	189.9	21.4	20.3	2.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.5	15.4	17.2	7.8	13.4	13.0	6.6	6.2	35.5	13.5	22.2	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	45.3	132.3	191.7	52.2	83.9	98.3	91.2	37.8	233.5	66.9	56.0	29.1
LnGrp LOS	D	F	F	D	F	F	F	D	F	E	F	C
Approach Vol, veh/h		1141			1488			1900			3708	
Approach Delay, s/veh		151.4			75.9			108.8			56.0	
Approach LOS		F			E			F			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.2	37.2		23.3	16.3	53.1		27.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	27.7	32.7		18.8	11.8	48.6		22.8				
Max Q Clear Time (g_c+I1), s	28.1	34.7		20.8	13.2	50.6		24.8				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.0				

Intersection Summary		
HCM 6th Ctrl Delay	85.0	
HCM 6th LOS	F	

Notes

User approved volume balancing among the lanes for turning movement.



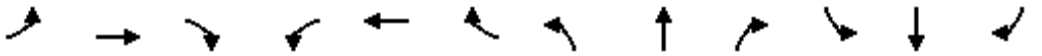
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	583	1	1151	0	0	0	0	1177	114	564	3049	0
Future Volume (veh/h)	583	1	1151	0	0	0	0	1177	114	564	3049	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	508	0	1387				0	1279	124	613	3314	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	1370	0	1219				0	1701	419	695	3317	0
Arrive On Green	0.38	0.00	0.38				0.00	0.26	0.26	0.20	0.52	0.00
Sat Flow, veh/h	3563	0	3170				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	508	0	1387				0	1279	124	613	3314	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	9.2	0.0	34.6				0.0	16.4	5.6	15.5	46.3	0.0
Cycle Q Clear(g_c), s	9.2	0.0	34.6				0.0	16.4	5.6	15.5	46.3	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	1370	0	1219				0	1701	419	695	3317	0
V/C Ratio(X)	0.37	0.00	1.14				0.00	0.75	0.30	0.88	1.00	0.00
Avail Cap(c_a), veh/h	1370	0	1219				0	1701	419	756	3317	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	19.9	0.0	27.7				0.0	30.4	26.4	34.9	21.8	0.0
Incr Delay (d2), s/veh	0.2	0.0	72.6				0.0	3.1	1.8	11.2	15.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	24.7				0.0	6.6	2.3	7.4	19.3	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.1	0.0	100.3				0.0	33.5	28.2	46.1	37.2	0.0
LnGrp LOS	C	A	F				A	C	C	D	D	A
Approach Vol, veh/h		1895						1403			3927	
Approach Delay, s/veh		78.8						33.0			38.6	
Approach LOS		E						C			D	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	22.6	28.3		39.1		50.9						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	19.7	22.2		34.6		46.4						
Max Q Clear Time (g_c+I1), s	17.5	18.4		36.6		48.3						
Green Ext Time (p_c), s	0.6	2.8		0.0		0.0						

Intersection Summary			
HCM 6th Ctrl Delay			48.0
HCM 6th LOS			D

Notes

User approved volume balancing among the lanes for turning movement.



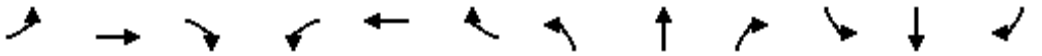
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	36	0	645	0	2055	1080	0	454	1560
Future Volume (veh/h)	0	0	0	36	0	645	0	2055	1080	0	454	1560
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				39	0	0	0	2234	0	0	493	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				69	0		0	2919		0	2919	
Arrive On Green				0.04	0.00	0.00	0.00	0.82	0.00	0.00	0.82	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				39	0	0	0	2234	0	0	493	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				1.4	0.0	0.0	0.0	19.5	0.0	0.0	1.9	0.0
Cycle Q Clear(g_c), s				1.4	0.0	0.0	0.0	19.5	0.0	0.0	1.9	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				69	0		0	2919		0	2919	
V/C Ratio(X)				0.56	0.00		0.00	0.77		0.00	0.17	
Avail Cap(c_a), veh/h				497	0		0	2919		0	2919	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				30.5	0.0	0.0	0.0	2.8	0.0	0.0	1.2	0.0
Incr Delay (d2), s/veh				6.9	0.0	0.0	0.0	2.0	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				0.7	0.0	0.0	0.0	1.8	0.0	0.0	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				37.4	0.0	0.0	0.0	4.7	0.0	0.0	1.3	0.0
LnGrp LOS				D	A		A	A		A	A	
Approach Vol, veh/h					39	A		2234	A		493	A
Approach Delay, s/veh					37.4			4.7			1.3	
Approach LOS					D			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	57.5		57.5		7.0			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	53.0		53.0		18.0			
Max Q Clear Time (g_c+I1), s	21.5		3.9		3.4			
Green Ext Time (p_c), s	24.7		3.8		0.0			

Intersection Summary	
HCM 6th Ctrl Delay	4.6
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

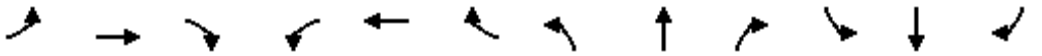


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1820	0	404	0	0	0	0	1300	310	0	256	240
Future Volume (vph)	1820	0	404	0	0	0	0	1300	310	0	256	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	250		0	0		0
Storage Lanes	2		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		313			280			452			532	
Travel Time (s)		7.1			6.4			10.3			12.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)	10%		10%									
Act Effct Green (s)	56.5	0.0	56.5					44.5	110.0		44.5	110.0
Actuated g/C Ratio	0.51	0.00	0.51					0.40	1.00		0.40	1.00
v/c Ratio	1.01	2.33	0.41					0.99	0.21		0.19	0.16
Control Delay	51.1	0.0	4.7					54.0	0.3		21.6	0.2
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	0.0
Total Delay	51.1	0.0	4.7					54.0	0.3		21.6	0.2
LOS	D	A	A					D	A		C	A
Approach Delay		38.4						43.7			11.3	
Approach LOS		D						D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.33			
Intersection Signal Delay: 37.3		Intersection LOS: D	
Intersection Capacity Utilization 94.9%		ICU Level of Service F	
Analysis Period (min) 15			

HCM 6th Signalized Intersection Summary
2: Sand Canyon Ave & I-5 NB On/Off-Ramp

09/01/2020



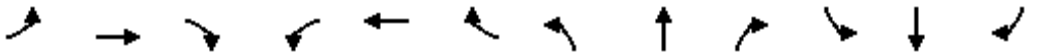
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	290	373	148	740	673	329	786	2481	679	438	713	71
Future Volume (veh/h)	290	373	148	740	673	329	786	2481	679	438	713	71
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	315	405	161	804	732	358	854	2697	738	476	775	77
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	428	449	190	772	794	354	935	2608	642	454	1713	422
Arrive On Green	0.12	0.12	0.12	0.22	0.22	0.22	0.27	0.41	0.41	0.13	0.27	0.27
Sat Flow, veh/h	3563	3741	1585	3456	3554	1585	3456	6434	1585	3456	6434	1585
Grp Volume(v), veh/h	315	405	161	804	732	358	854	2697	738	476	775	77
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1728	1777	1585	1728	1609	1585	1728	1609	1585
Q Serve(g_s), s	12.8	16.0	14.9	33.5	30.2	33.5	35.9	60.8	60.8	19.7	15.1	5.6
Cycle Q Clear(g_c), s	12.8	16.0	14.9	33.5	30.2	33.5	35.9	60.8	60.8	19.7	15.1	5.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	428	449	190	772	794	354	935	2608	642	454	1713	422
V/C Ratio(X)	0.74	0.90	0.85	1.04	0.92	1.01	0.91	1.03	1.15	1.05	0.45	0.18
Avail Cap(c_a), veh/h	428	449	190	772	794	354	1115	2608	642	454	1713	422
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	63.7	65.1	64.6	58.2	57.0	58.3	53.0	44.6	44.6	65.2	45.9	42.4
Incr Delay (d2), s/veh	6.6	21.2	28.1	43.8	16.2	50.7	10.2	27.2	84.1	55.6	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	9.0	7.5	19.3	15.4	18.4	16.9	28.9	38.7	12.2	6.2	2.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	70.3	86.3	92.8	102.0	73.1	109.0	63.2	71.8	128.7	120.8	46.8	43.4
LnGrp LOS	E	F	F	F	E	F	E	F	F	F	D	D
Approach Vol, veh/h		881			1894			4289			1328	
Approach Delay, s/veh		81.8			92.2			79.9			73.1	
Approach LOS		F			F			E			E	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.2	65.3		22.5	45.1	44.4		38.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	19.7	60.8		18.0	48.4	32.1		33.5				
Max Q Clear Time (g_c+I1), s	21.7	62.8		18.0	37.9	17.1		35.5				
Green Ext Time (p_c), s	0.0	0.0		0.0	2.6	5.0		0.0				

Intersection Summary			
HCM 6th Ctrl Delay		81.8	
HCM 6th LOS		F	

Notes

User approved volume balancing among the lanes for turning movement.



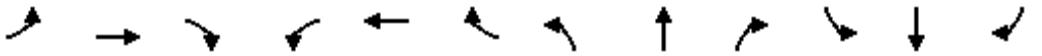
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	620	1	393	0	0	0	0	3390	265	314	1297	0
Future Volume (veh/h)	620	1	393	0	0	0	0	3390	265	314	1297	0
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00				1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No						No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870				0	1870	1870	1870	1870	0
Adj Flow Rate, veh/h	810	0	282				0	3685	288	341	1410	0
Peak Hour Factor	0.92	0.92	0.92				0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2				0	2	2	2	2	0
Cap, veh/h	962	0	285				0	3732	919	363	4697	0
Arrive On Green	0.18	0.00	0.18				0.00	0.58	0.58	0.10	0.73	0.00
Sat Flow, veh/h	5344	0	1585				0	6696	1585	3456	6696	0
Grp Volume(v), veh/h	810	0	282				0	3685	288	341	1410	0
Grp Sat Flow(s),veh/h/ln	1781	0	1585				0	1609	1585	1728	1609	0
Q Serve(g_s), s	14.6	0.0	17.7				0.0	56.3	9.3	9.8	7.6	0.0
Cycle Q Clear(g_c), s	14.6	0.0	17.7				0.0	56.3	9.3	9.8	7.6	0.0
Prop In Lane	1.00		1.00				0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	962	0	285				0	3732	919	363	4697	0
V/C Ratio(X)	0.84	0.00	0.99				0.00	0.99	0.31	0.94	0.30	0.00
Avail Cap(c_a), veh/h	962	0	285				0	3732	919	363	4697	0
HCM Platoon Ratio	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				0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	39.6	0.0	40.9				0.0	20.6	10.8	44.4	4.7	0.0
Incr Delay (d2), s/veh	6.8	0.0	49.9				0.0	12.1	0.9	32.1	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	10.8				0.0	22.0	3.3	5.8	2.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	46.5	0.0	90.8				0.0	32.7	11.7	76.5	4.8	0.0
LnGrp LOS	D	A	F				A	C	B	E	A	A
Approach Vol, veh/h		1092						3973			1751	
Approach Delay, s/veh		57.9						31.2			18.8	
Approach LOS		E						C			B	

Timer - Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	15.0	62.5		22.5		77.5						
Change Period (Y+Rc), s	4.5	4.5		4.5		4.5						
Max Green Setting (Gmax), s	10.5	58.0		18.0		73.0						
Max Q Clear Time (g_c+I1), s	11.8	58.3		19.7		9.6						
Green Ext Time (p_c), s	0.0	0.0		0.0		16.0						

Intersection Summary												
HCM 6th Ctrl Delay			32.3									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



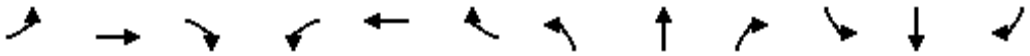
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	141	0	559	0	881	450	0	1029	1760
Future Volume (veh/h)	0	0	0	141	0	559	0	881	450	0	1029	1760
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach					No			No			No	
Adj Sat Flow, veh/h/ln				1870	0	1870	0	1870	1870	0	1870	1870
Adj Flow Rate, veh/h				153	0	0	0	958	0	0	1118	0
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				2	0	2	0	2	2	0	2	2
Cap, veh/h				205	0		0	2260		0	2260	
Arrive On Green				0.12	0.00	0.00	0.00	0.64	0.00	0.00	0.64	0.00
Sat Flow, veh/h				1781	0	1585	0	3647	1585	0	3647	1585
Grp Volume(v), veh/h				153	0	0	0	958	0	0	1118	0
Grp Sat Flow(s),veh/h/ln				1781	0	1585	0	1777	1585	0	1777	1585
Q Serve(g_s), s				3.0	0.0	0.0	0.0	4.9	0.0	0.0	6.0	0.0
Cycle Q Clear(g_c), s				3.0	0.0	0.0	0.0	4.9	0.0	0.0	6.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				205	0		0	2260		0	2260	
V/C Ratio(X)				0.74	0.00		0.00	0.42		0.00	0.49	
Avail Cap(c_a), veh/h				886	0		0	2260		0	2260	
HCM Platoon Ratio				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	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				15.5	0.0	0.0	0.0	3.3	0.0	0.0	3.5	0.0
Incr Delay (d2), s/veh				5.3	0.0	0.0	0.0	0.6	0.0	0.0	0.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				1.3	0.0	0.0	0.0	0.7	0.0	0.0	0.9	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh				20.8	0.0	0.0	0.0	3.9	0.0	0.0	4.3	0.0
LnGrp LOS				C	A		A	A		A	A	
Approach Vol, veh/h					153	A		958	A		1118	A
Approach Delay, s/veh					20.8			3.9			4.3	
Approach LOS					C			A			A	

Timer - Assigned Phs	2		6		8			
Phs Duration (G+Y+Rc), s	27.5		27.5		8.7			
Change Period (Y+Rc), s	4.5		4.5		4.5			
Max Green Setting (Gmax), s	23.0		23.0		18.0			
Max Q Clear Time (g_c+I1), s	6.9		8.0		5.0			
Green Ext Time (p_c), s	6.3		7.1		0.3			

Intersection Summary	
HCM 6th Ctrl Delay	5.2
HCM 6th LOS	A

Notes

Unsignalized Delay for [NBR, WBR, SBR] is excluded from calculations of the approach delay and intersection delay.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	652	0	421	0	0	0	0	732	301	0	582	512
Future Volume (vph)	652	0	421	0	0	0	0	732	301	0	582	512
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	0		0
Storage Lanes	2		1	0		0	1		1	0		1
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		313			280			452			532	
Travel Time (s)		7.1			6.4			10.3			12.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)	10%		10%									
Act Effct Green (s)	15.2	0.0	15.2					28.1	52.3		28.1	52.3
Actuated g/C Ratio	0.29	0.00	0.29					0.54	1.00		0.54	1.00
v/c Ratio	0.64	0.56	0.61					0.42	0.21		0.33	0.35
Control Delay	19.3	0.0	9.0					8.6	0.3		7.9	0.6
Queue Delay	0.0	0.0	0.0					0.0	0.0		0.0	0.0
Total Delay	19.3	0.0	9.0					8.6	0.3		7.9	0.6
LOS	B	A	A					A	A		A	A
Approach Delay		13.7						6.2			4.5	
Approach LOS		B						A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 55			
Actuated Cycle Length: 52.3			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay: 8.1		Intersection LOS: A	
Intersection Capacity Utilization 49.7%		ICU Level of Service A	
Analysis Period (min) 15			

APPENDIX F

APPROVED REQUEST FOR DEVIATION FROM TDP-4

CARLSBAD
FRESNO
IRVINE
LOS ANGELES
PALM SPRINGS
POINT RICHMOND
RIVERSIDE
ROSEVILLE
SAN LUIS OBISPO

October 8, 2020

APPROVED 10/8/20
Sun-Sun T. Murillo

Sun-Sun Murillo, P.E.
Transportation Department
City of Irvine
One Civic Center Plaza
P.O. Box 19575
Irvine, CA 92623-9575

Subject: Hoag Hospital Irvine (Case File No. 00816357-PCPM): Request for Deviation from Transportation Design Procedure 4 (Right-Turn Lanes at Uncontrolled Driveways) for the New Ingress-Only Driveway on Alton Parkway

Dear Ms. Murillo:

LSA has prepared the following request for deviation from Transportation Design Procedure 4 (TDP-4)(Right-Turn Lanes at Uncontrolled Driveways) for the new ingress-only driveway on Alton Parkway.

Based on the City's classification of Alton Parkway as a Primary Highway, the new driveway along Alton Parkway requires a dedicated westbound right-turn lane due to the existing plus project right-turn volumes exceeding 100 peak-hour vehicles. Based on TDP-4, a 200-foot (ft) westbound right-turn lane with a 90 ft taper should be provided at the proposed Alton Parkway driveway.

Several factors contribute to why a dedicated right-turn lane is not recommended at the proposed project driveway on Alton Parkway. This request for deviation is based on data and analysis provided in the Hoag Hospital Irvine (project) Traffic Study.

Reasons for Requesting the Deviation

As part of the Access Study, the City of Irvine (City) TDPs were reviewed to ensure that the proposed project is consistent with the City's design criteria. TDP-4 states that right-turn lanes at driveways are required when the turn volumes and through volumes could conflict and increase the potential for accidents. The length of the right-turn lane is based on the typical operating speeds of the highway from which the right turn is to be made. Recommendations for both need and length are based on highway type.

Alton Parkway is a Primary Highway. TDP-4 recommends a right-turn lane for driveways on Primary Highways when the peak-hour right-turn volume is greater than 100 vehicles.

As shown on Figure 3 of the Traffic Study (all figures attached), the existing plus project right-turn volumes at the new driveway along Alton Parkway are 127 a.m. and 50 p.m. peak-hour vehicles. Based on TDP-4, a 200 ft westbound right-turn lane with a 90 ft taper is recommended. However, based on the existing conditions along Alton Parkway immediately east and west of the project driveway, and the design and operation of the driveway itself, a deviation from TDP-4 is requested.

Specific Justification for Requesting the Proposed Design Feature

Based on the configuration of Alton Parkway and the location of the new driveway along Alton Parkway, a dedicated westbound right-turn lane cannot be provided without a complete revision to the project site plan. The provision of a 200 ft westbound right-turn lane at the new Alton parkway driveway would require removal of the existing landscaping, reconfiguration of the on-street bicycle lane, removal and replacement of the existing sidewalk, and removal and relocation of the existing bus stop (with shelter) and the fire hydrant.

Explanation of How the Proposal Meets the Intent of TDP-4 and Would Not Create Any Traffic Operations or Safety Issues

The intent of TDP-4 is to provide sufficient length to allow a vehicle traveling at the prevailing speed to decelerate before entering the driveway and avoid through-lane queueing from blocking the right-turn lane.

Alton Parkway is a Primary Highway. At the location of the proposed project driveway, Alton Parkway has a 20 ft outer westbound lane (12 ft lane with an 8 ft bicycle lane). The posted speed limit is 45 miles per hour (mph).

As described in TDP-4, the City currently permits a de facto right-turn lane, provided the curb lane is a minimum of 19 ft. Although a 200 ft right-turn lane with a 90 ft taper cannot be accommodated, the existing 12 ft outside lane plus the 8 ft bicycle lane provides for a 20 ft curb lane to allow sufficient width for right-turning traffic to decelerate on Alton Parkway without negatively affecting the westbound through traffic. As such, the existing configuration of Alton Parkway meets the intent of TDP-4. Figure 5 of the Traffic Study shows the striping plan for the new project driveway along Alton Parkway.

The entrance to the new project driveway is at the end of a transition of the third westbound through lane on Alton Parkway to a dedicated westbound right turn lane (400 ft east of Sand Canyon Avenue). Therefore, vehicles in the outside lane are already anticipated to slow down and not affect through traffic on Alton Parkway.

The proposed driveway is a one-way, right-turn-in-only driveway with a radius that would allow inbound vehicles to enter without stopping along Alton Parkway. There would be 214 ft from the back of the sidewalk to the internal drive aisle, which meets TDP-14 (Driveway Lengths). As such, vehicles are not anticipated to back out onto Alton Parkway.

Supporting Documentation and Justification for the Rationale of the Requested Deviation

The project was designed to conform to the City's standards; however, it is unable to provide a 200 ft westbound right-turn lane at the new Alton Parkway driveway.

Because a de facto westbound right-turn lane is provided along Alton Parkway, and based on the configuration of Alton Parkway at the location of the proposed project driveway, it is recommended that a deviation from TDP-4 for the Alton Parkway driveway be granted for the project.

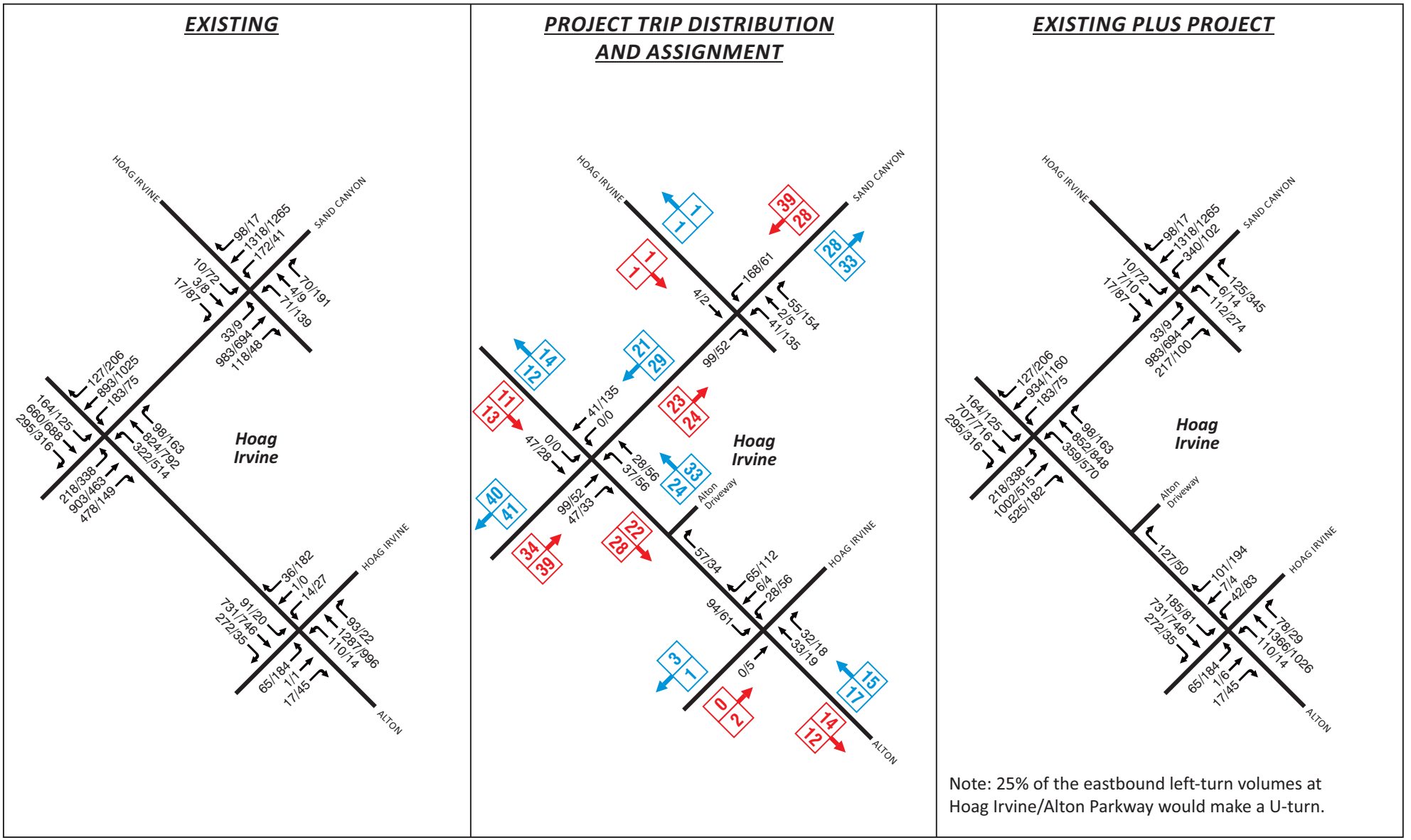
Thank you for your consideration of this TDP-4 deviation request for the new project driveway on Alton Parkway. If you have any questions, please call me at (949) 553-0666.

Sincerely,

LSA Associates, Inc.

Ken Wilhelm
Principal

Attachments: Figures 3 and 5 of the Traffic Study



LSA

LEGEND

XX/YY - AM/PM Peak Hour Volumes

AM / PM - Inbound Trip Distribution Percentages

AM / PM - Outbound Trip Distribution Percentages

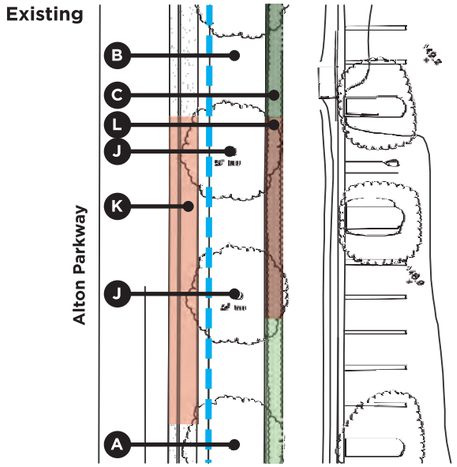
SCHEMATIC - NOT TO SCALE

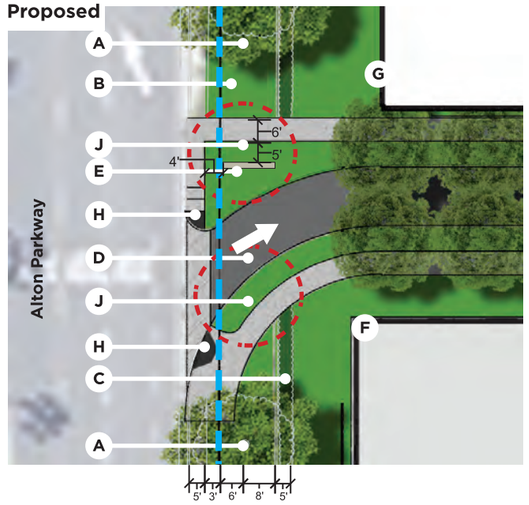
FIGURE 3

Hoag Hospital Irvine

Existing and Existing Plus Project Peak Hour Volumes

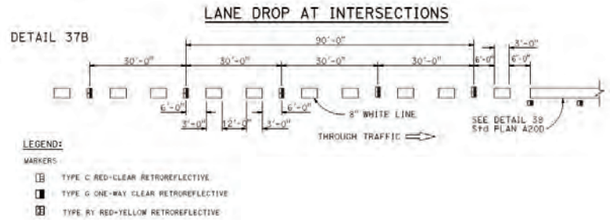
I:\LPX1904\G\Traffic\Ex+Project Volumes.cdr (9/15/2020)

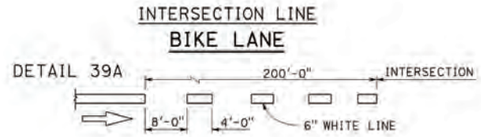


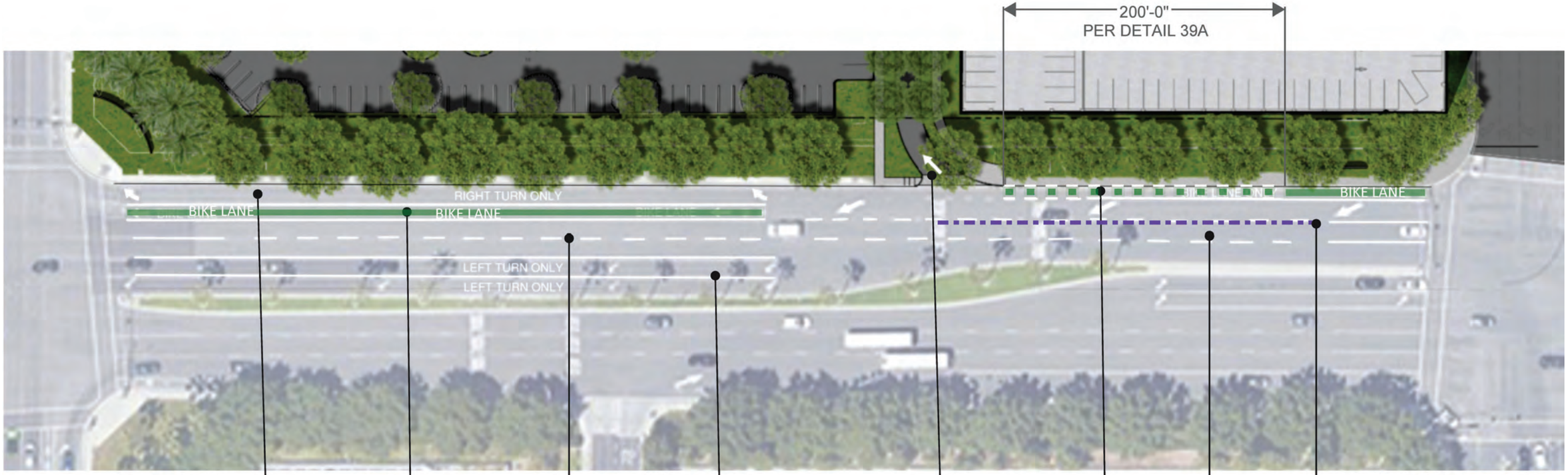


Alton Parkway New Entry Drive Intersection Enlargement

A	Existing Ficus r. 'Florida' to remain, typ.
B	Existing planting to remain, typ.
C	Existing hedge to remain, typ.
D	New 15' wide driveway (entry only)
E	New freestanding directional sign
F	New parking structure
G	New Hospital support facility
H	New curb ramp
J	Existing Ficus r. 'Florida' to be removed (TIC approved)
K	Existing sidewalk to be removed
L	Existing hedge to be removed







LSA

SOURCE: LPA

I:\LPX1904\G\Traffic\Alton Striping Plan.cdr (10/7/2020)

FIGURE 5

Hoag Hospital Irvine
Alton Parkway Striping Plan

APPENDIX G

CMP MONITORING CHECKLIST

Exhibit 5: CMP Monitoring Checklist

CONGESTION MANAGEMENT PROGRAM
(CMP) MONITORING CHECKLIST
LAND USE COORDINATOR COMPONENT

The CMP legislation requires that the CMP Agency monitor the implementation of the Orange County CMP, including CMP land use coordination component requirements. The following is a CMP Monitoring Checklist for the Land Use Coordination Component which has been developed to monitor impacts on CMP Highway System (CMPHS) links and intersections.

1. Project Applicant: Hoag

2. Project Name: Hoag Hospital Irvine

3. Project Description (Describe proposed land uses, square footage, # of dwelling units, size of parcel, etc.): 704,740 sf of hospital

4. Previous Approvals: December 1, 1983 – Preliminary Site Design 83-SD-0990 and Conditional Use Permit (CUP)-83-0465

5. Address/Location: 16200-16300 Sand Canyon Avenue Irvine, CA 92618

6. Case Number: 00816357-PCPM

7. Date of Case Submittal: 5/2020

8. Total Average Daily Trips: 7,555

9. Level of Service at CMP intersection: N/A

Development Project Submittal:

10. Does the proposed development project generate 2,400 or more Average Daily Trips?

X Yes ____ No

11. Does the proposed development project generate more than 1,600 Average Daily Trips with direct access to, or in close proximity to, a CMP Highway System? Sand Canyon Avenue and Alton Parkway are not CMP facilities.

____ Yes X No

** If you have answered NO to Items 10 and 11, a CMP Traffic Study is not required.

** If you have answered YES to Items 10 and 11, a CMP Traffic Study is required. Please continue.

CMP Traffic Impact Analysis:

12. Did the Traffic Study identify whether any CMP Highway System links/intersections would exceed their established Level of Service standard as a result of project related traffic? N/A

____ Yes ____ No

13. If so, which CMPHS links/intersections and proposed mitigation? N/A

_____
_____
_____
_____

14. Which, if any, of these impacted CMPHS links/intersections are located outside the boundaries of the City of Irvine? N/A

_____
_____
_____
_____

15. Did the City of Irvine participate in interjurisdictional discussions with the affected jurisdictions to develop a mitigation strategy for each impacted link/intersection? N/A

____ Yes ____ No

If Yes to 15, briefly explain:_____

Projects Exempt From CMP Requirements:

16. Is the proposed development project exempt from CMP requirements?
____ Yes __X__ No

17. If so, please identify why the project was exempt from CMP requirements. N/A
_____
_____
_____
_____

** A brief explanation to those items answered NO should be provided by the Transportation Engineer/Analyst.

Checklist Reviewed By:

_____ _____

Director of Public Works and Transportation Date

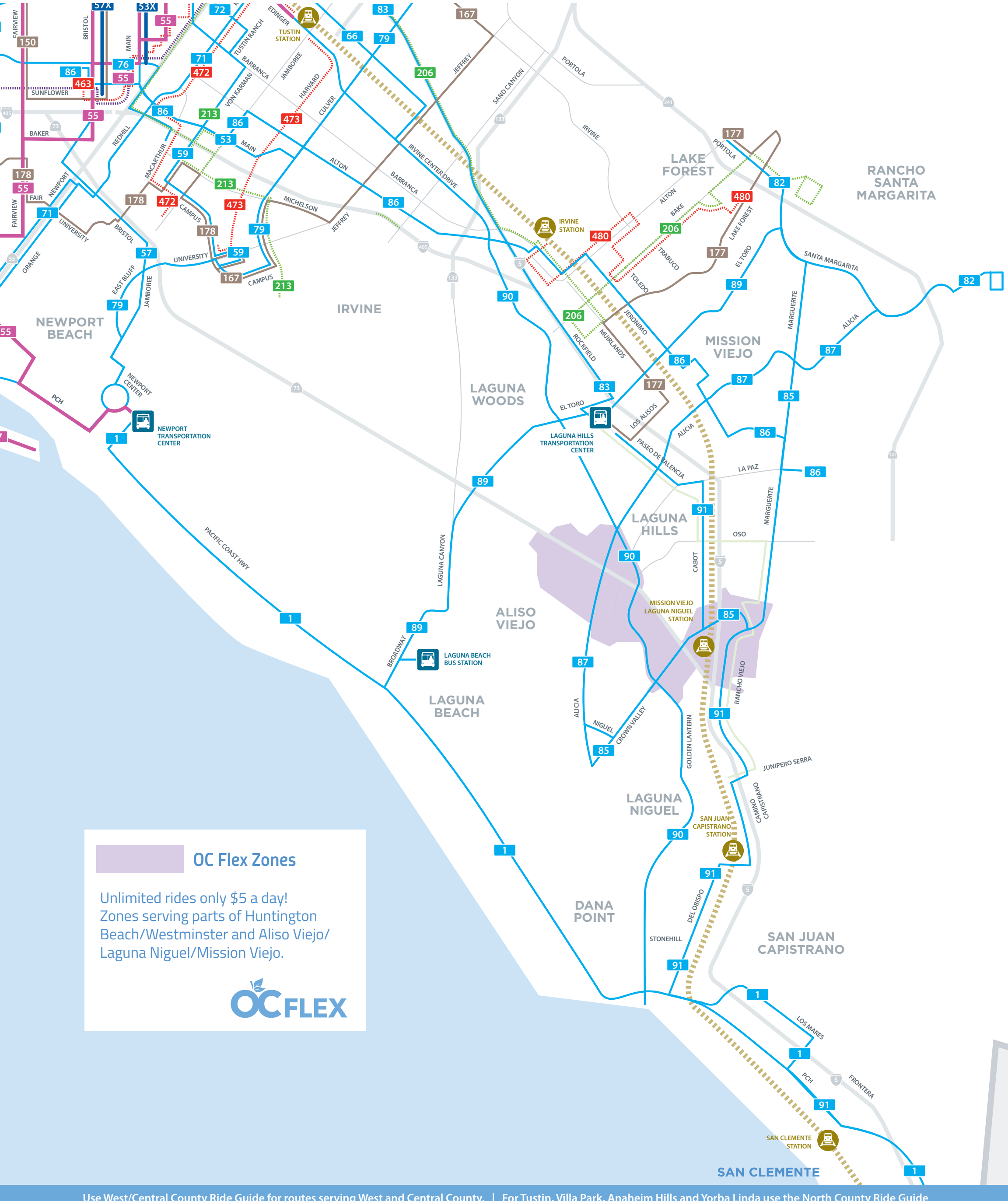
APPENDIX H

OCTA AND iSHUTTLE INFORMATION

South County System Map

OCBUS
OCbus.com

- Routes offering 15 minutes (or less) weekday rush hour frequency
- Local Routes (1-99)
- Community Routes (100-199)
- OC Express Routes (200-299) — Weekday Rush Hour Only
- Metrolink Stationlink Routes (400-499) — Weekday Rush Hour Only
- Bravo Limited Stop Service (500-599)
- Xpress Stop Service
- Express Service (700-799) — Weekday Rush Hour Only
- City Shuttle (800-899)
- Rail Stations
- OC Bus Transit Centers



OC Flex Zones

Unlimited rides only $5 a day!
Zones serving parts of Huntington Beach/Westminster and Aliso Viejo/ Laguna Niguel/Mission Viejo.

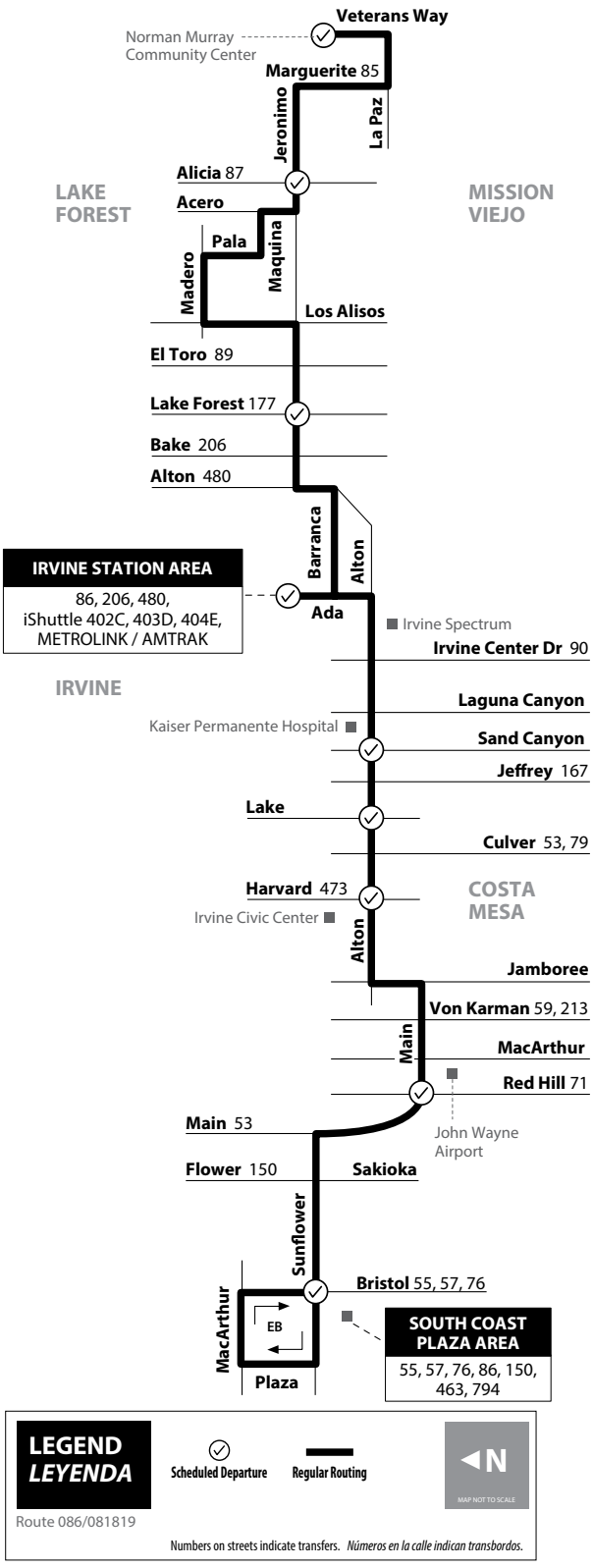
OCFLEX

Use West/Central County Ride Guide for routes serving West and Central County. | For Tustin, Villa Park, Anaheim Hills and Yorba Linda use the North County Ride Guide

NOTE: No weekend service.
***NOTA:** No hay servicio los fines de semana.*

Costa Mesa to Mission Viejo
via Alton Pkwy / Jeronimo Rd

86



Monday - Friday
EASTBOUND To: Mission Viejo

Sunflower & Bristol	Main & Red Hill	Alton & Harvard	Alton & Lake	Alton & Sand Canyon	Irvine Station	Jeronimo & Lake Forest	Jeronimo & Alicia	Murray ommunity Center
5:42	5:51	6:01	6:07	6:15	6:25	6:36	6:47	6:56
6:35	6:47	7:00	7:06	7:15	7:29	7:40	7:57	8:06
7:35	7:49	8:02	8:09	8:18	8:32	8:43	8:56	9:04
8:37	8:51	9:04	9:11	9:20	9:34	9:44	9:57	10:06
9:47	9:59	10:12	10:19	10:28	10:42	10:52	11:06	11:14
10:47	10:58	11:11	11:17	11:23	11:36	11:46	11:59	**12:09**
11:45	11:56	**12:09**	**12:15**	**12:23**	**12:36**	**12:46**	**12:59**	**1:09**
12:53	**1:05**	**1:18**	**1:24**	**1:34**	**1:47**	**1:56**	**2:12**	**2:22**
1:52	**2:04**	**2:17**	**2:23**	**2:30**	**2:42**	**2:52**	**3:06**	**3:16**
2:51	**3:03**	**3:16**	**3:22**	**3:29**	**3:41**	**3:51**	**4:05**	**4:15**
4:04	**4:16**	**4:28**	**4:35**	**4:45**	**4:58**	**5:09**	**5:22**	**5:32**
5:07	**5:19**	**5:31**	**5:38**	**5:48**	**6:01**	**6:12**	**6:25**	**6:35**
6:11	**6:25**	**6:36**	**6:44**	**6:52**	**7:02**	**7:11**	**7:21**	**7:31**
7:11	**7:25**	**7:36**	**7:44**	**7:52**	**8:02**	**8:11**	**8:21**	**8:31**

Monday - Friday
WESTBOUND To: Costa Mesa

Murray Community Center	Jeronimo & Alicia	Jeronimo & Lake Forest	Irvine Station	Alton & Sand Canyon	Alton & Lake	Alton & Harvard	Main & Red Hill	Sunflower & Bristol
6:11	6:20	6:31	6:40	6:52	6:58	7:04	7:18	7:24
7:06	7:16	7:31	7:40	7:53	8:02	8:08	8:21	8:27
8:16	8:26	8:41	8:50	9:03	9:12	9:18	9:31	9:37
9:18	9:30	9:42	9:50	10:02	10:10	10:17	10:30	10:36
10:16	10:28	10:40	10:48	11:00	11:08	11:15	11:28	11:34
11:25	11:37	11:49	11:57	**12:09**	**12:17**	**12:24**	**12:37**	**12:43**
12:19	**12:31**	**12:45**	**12:53**	**1:07**	**1:14**	**1:21**	**1:34**	**1:41**
1:19	**1:31**	**1:45**	**1:53**	**2:07**	**2:14**	**2:21**	**2:34**	**2:41**
2:32	**2:44**	**2:58**	**3:06**	**3:20**	**3:27**	**3:34**	**3:47**	**3:54**
3:26	**3:38**	**3:52**	**4:01**	**4:16**	**4:28**	**4:35**	**4:49**	**4:57**
4:30	**4:42**	**4:56**	**5:05**	**5:20**	**5:32**	**5:39**	**5:53**	**6:01**
5:43	**5:53**	**6:04**	**6:13**	**6:25**	**6:34**	**6:41**	**6:55**	**7:01**
6:46	**6:57**	**7:06**	**7:13**	**7:25**	**7:33**	**7:40**	**7:51**	**7:57**
7:46	**7:56**	**8:05**	**8:13**	**8:24**	**8:31**	**8:36**	**8:47**	**8:53**

iSHUTTLE ROUTE 403D

Monday - Friday
EASTBOUND To: Irvine Station

Sand Canyon & Waterworks	Alton & Laguna Canyon	The Village & Park	Gateway & Alton	Irvine Station
6:26	6:30	6:35	6:39	6:46
6:40	6:44	6:49	6:53	7:00
6:56	7:00	7:05	7:09	7:16
7:14	•••••	•••••	•••••	7:24
7:31	7:35	7:40	7:44	7:51
7:45	7:49	7:54	7:58	8:05
7:57	8:01	8:06	8:10	8:17
8:19	8:23	8:28	8:32	8:39
8:32	8:36	8:41	8:45	8:52
8:46	8:50	8:55	8:59	9:06
9:01	9:05	9:10	9:14	9:21
9:13	9:17	9:22	9:26	9:33
9:32	9:36	9:41	9:45	9:52
3:04	**3:08**	**3:13**	**3:17**	**3:24**
3:23	**3:27**	**3:32**	**3:36**	**3:43**
3:36	**3:40**	**3:45**	**3:49**	**3:56**
4:00	**4:04**	**4:09**	**4:13**	**4:20**
4:10	**4:14**	**4:19**	**4:23**	**4:30**
4:27	**4:31**	**4:36**	**4:40**	**4:47**
4:49	**4:53**	**4:58**	**5:02**	**5:09**
5:08	**5:12**	**5:17**	**5:21**	**5:28**
5:30	**5:34**	**5:39**	**5:43**	**5:50**
5:40	**5:44**	**5:49**	**5:53**	**6:00**
6:07	**6:11**	**6:16**	**6:20**	**6:27**
6:15	**6:19**	**6:24**	**6:28**	**6:35**

Monday - Friday
WESTBOUND To: Water Works

Connecting Metrolink Trains	Irvine Station	Gateway & Alton	The Village & Park	Alton & Laguna Canyon	Sand Canyon & Waterworks
ML 603, 803	6:07	6:14	6:18	6:22	6:25
ML 605	6:29	6:36	6:40	6:44	6:47
ML 805	6:55	7:02	7:06	7:10	7:13
ML 683	7:10	7:17	7:21	7:25	7:28
ML 607, 807	7:26	7:33	7:37	7:41	7:44
ML 682, 807	7:35	7:42	7:46	7:50	7:53
ML 685, 809	8:13	8:20	8:24	8:28	8:31
ML 800	8:27	8:34	8:38	8:42	8:45
ML 811	8:42	8:49	8:53	8:57	9:00
ML 687	8:54	9:01	9:05	9:09	9:12
ML 600	9:08	9:15	9:19	9:23	9:26
ML 802	9:23	9:30	9:34	9:38	9:41
ML 633	9:40	9:47	9:51	9:55	9:58
	3:32	**3:39**	**3:43**	**3:47**	**3:50**
	3:50	**3:57**	**4:01**	**4:05**	**4:08**
	4:04	**4:11**	**4:15**	**4:19**	**4:22**
	4:27	**4:34**	**4:38**	**4:42**	**4:45**
	4:43	**4:50**	**4:54**	**4:58**	**5:01**
	4:56	**5:03**	**5:07**	**5:11**	**5:14**
	5:18	**5:25**	**5:29**	**5:33**	**5:36**
	5:41	**5:48**	**5:52**	**5:56**	**5:59**
	5:54	**6:01**	**6:05**	**6:09**	**6:12**
	6:07	**6:14**	**6:18**	**6:22**	**6:25**

PM times are in **BOLD**

iShuttle Fares

$1.00	Peak Commute Hours
FREE	Riders Presenting Valid Metrolink Pass/Ticket
FREE	Riders Presenting Valid OCTA Pre-paid Day Pass or Multi-day Pass
$5.00	Pre-Paid 10-Ride Card (Available for purchase from shuttle driver)

APPENDIX I

ITAM PROJECT VMT SUMMARY REPORT

ITAM PROJECT VMT SUMMARY REPORT

V 1.1-071820

PROJECT INFORMATION	
Project #:	**Baseline+Hoag+SandCanyon Widening2**
Name:	**Hoag Hospital Traffic Analysis**
Description:	**Existing (071820) + Project + Sand Canyon Widening2**
Type:	**Non-Residential**

			Baseline	Project
Vehicle Miles Travelled (VMT)	ORANGE COUNTY	Total	139,318,384	139,358,810
		Population	56,348,927	56,324,195
		Employment	82,969,450	83,034,615
Population and Employment		Population	3,219,593	3,219,593
		Employment	1,706,388	1,708,680
Δ VMT (With Project - No Project)		Total		40,426
		Population		(24,732)
		Employment		65,165
Δ Population & Employment Caused by Project		Population		-
		Employment		2,292
VMT Rate Threshold Goal[1]		Residential	**14.88**	
		Non-Residential	**41.33**	
Project Δ VMT Rate[1]		Residential		
		Non-Residential		28.43
			Applicable Measure(s)	**No Impact**
			Threshold Goal	**41.33**
			Net VMT Rate Percentage Increase[2]	
			Mitigation required?	**No**

MITIGATION MEASURES	
On-Site	☐ 2.5%
Off-Site	☐ 5.0%
Additional Mitigation[3]	☐
Significant VMT Impact?	**NO**

Notes:

1- Both Residential and Non-Residential VMT Rates are calculated based on the County VMT and SED.

2- For Mixed-Use projects, the "Net VMT Rate Percentage Increase" is based on the higher of Residential or Non-Residential VMT rate.

3- Sufficient justification must be provided to support additional mitigation.

APPENDIX J

ICU IMPROVEMENT WORKSHEET

LSA

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NO.: **13**
NORTH/SOUTH: **Sand Canyon Avenue**
EAST/WEST: **I-405 Southbound Ramps**

	Long-Range Approved Plus Project with Improvement						
Move-ment	Lane		Capacity	Volume AM	Volume PM	V/C Ratio AM	V/C Ratio PM
NBL	1		1,700	176	134	0.10	0.08 *
NBT	3		5,100	1,348	761	0.26 *	0.15
NBR	1	f	1,700	0	0	0.00	0.00
SBL	0		0	0	0	0.00 *	0.00
SBT	2		3,400	238	596	0.07	0.18 *
SBR	1	f	1,700	254	526	0.00	0.00
EBL	3		5,100	1,312	449	0.26 *	0.09 *
EBT	0		0	0	0	0.00	0.00
EBR	1	U	1,700	412	444	0.00	0.11 *
WBL	0		0	0	0	0.00	0.00
WBT	0		0	0	0	0.00 *	0.00 *
WBR	0		0	0	0	0.00	0.00
N/S Critical Movements						0.26	0.26
E/W Critical Movements						0.26	0.09
Right Turn Critical Movement						0.00	0.11
Clearance Interval						0.05	0.05
ICU						0.57	0.51
Level of Service (LOS)						A	A

Notes:

ICU - Intersection Capacity Utilization
V/C - Volume to Capacity Ratio
Right Turn Conditions:

- P - Protected right turn movement
- U - Unprotected right turn movement
- D - Defacto right turn movement
- N - No right turn on red
- F - Free right turn lane

LSA

INTERSECTION CAPACITY UTILIZATION

INTERSECTION NO.: **13**
NORTH/SOUTH: **Sand Canyon Avenue**
EAST/WEST: **I-405 Southbound Ramps**

	Buildout Approved Plus Project with Improvement						
Move-				Volume		V/C Ratio	
ment	Lane		Capacity	AM	PM	AM	PM
NBL	1		1,700	0	0	0.00	0.00 *
NBT	3		5,100	1,300	732	0.25 *	0.14
NBR	1	f	1,700	310	301	0.00	0.00
SBL	0		0	0	0	0.00 *	0.00
SBT	2		3,400	256	582	0.08	0.17 *
SBR	1	f	1,700	240	512	0.00	0.00
EBL	3		5,100	1,820	652	0.36 *	0.13 *
EBT	0		0	0	0	0.00	0.00
EBR	1	U	1,700	404	421	0.00	0.12 *
WBL	0		0	0	0	0.00	0.00
WBT	0		0	0	0	0.00 *	0.00 *
WBR	0		0	0	0	0.00	0.00
N/S Critical Movements						0.25	0.17
E/W Critical Movements						0.36	0.13
Right-Turn Critical Movement						0.00	0.12
Clearance Interval						0.05	0.05
ICU						0.66	0.47
Level of Service (LOS)						B	A

Notes:

ICU - Intersection Capacity Utilization
V/C - Volume to Capacity Ratio
Right Turn Conditions:

- P - Protected right-turn movement
- U - Unprotected right-turn movement
- D - Defacto right-turn movement
- N - No right turn on red
- F - Free right-turn lane

APPENDIX K

COST ESTIMATE FOR THE IMPROVEMENT

Sand Canyon Overpass
Conceptual Estimate 10/7/2020

Notes:
- Estimate is based on conceptual information as provided in attached sketch
- Estimate is provided only to provide conceptual idea of potential costs
- No Design or Structural Requirements have been provided
- Assumes Existing Overpass can be widened to accommodate additional lane
- No Escalation is factored into this estimate

Improvements to SB 405 Off-Ramp & Intersection

Description	Qty	Unit	
Retaining Wall (Avg - 8Ft)	2400 LF	225	$540,000
Fill Slope	4000 CY	675	$2,700,000
Grading/Base	8400 SF	75	$630,000
Asphalt	8400 SF	85	$714,000
Striping		LS	$45,000
New Signage		LS	$15,000
Turn Signal		LS	$300,000
		subtotal	**$4,404,000**

Additional EB Lane on Sand Canyon Blvd.

Description	Qty	Unit	
Widen Overpass	4560 SF	$600	$2,736,000
Widen Road (North of 405)	520 LF		
Fill Slope	924 CY	675	$624,000
Grading/Base	6240 SF	75	$468,000
Asphalt	6240 SF	85	$530,400
Striping		LS	$35,000
Widen Road (South of 405)	375 LF		
Fill Slope	1000 CY	675	$675,000
Grading/Base	5250 SF	75	$393,750
Asphalt	5250 SF	85	$446,250
Signage		LS	$60,000
Striping		LS	$35,000
		subtotal	**$6,003,400**

Direct Cost Estimate:	$10,407,400
Design Contingency (20%*)	$2,081,480
Markup Subtotal	**$12,488,880**
**per City of Irvine*	
General Condtions (10%)	$1,248,888
Contractor OH&P (15%)	$1,873,332
GC Fee (3%)	$374,666
Insurance (1.35%)	$168,600
P&P Bond (1.1%)	$137,378
Estimate TOTAL	**$16,291,744**