State Clearinghouse Number 2002041161

Physical Education Project (Phase 1, 2)

Draft Subsequent Project EIR to
2015 Facilities Master Plan Update and Physical Education Projects Final Program/Project EIR (SCH 2002041161)

Volume 2: Appendices

MT. SAN ANTONIO COLLEGE
Facilities Planning & Management
Walnut, California

SID LINDMARK, AICP
Planning . Environmental . Policy
May 2017

Appendices

A. Notice of Preparation and Responses
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D. MSAC Response to Comments (6-3.1 to 6-3.5)
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H. 2017 PEP Mitigation Monitoring Program (draft)

MT. SAC
Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue • Walnut, CA 91789
909-274-4850 • www.mtsac.edu

TO: Responsible and Concerned Agencies

SUBJECT: Notice of Preparation (NOP) of a Draft Subsequent Project EIR for the Mt. San Antonio College Physical Education Project (Phase 1, 2)

FROM: Rebecca Mitchell, Manager, Facilities Support Services
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789-1399

Responsible and Concerned Agencies

The Mt. San Antonio Community College District (District) is the Lead Agency and will prepare a Draft Subsequent Project Environmental Impact Report (Draft SEIR) for the Physical Education Project (Phase 1, 2) and for hosting the 2020 Olympic Track & Field Trials at Hilmer Lodge Stadium.

We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed update. Your agency will need to use the Draft SEIR prepared by the District when considering your input for the project described in the Draft SEIR.

The prior 2002, 2005, 2008, 2012 and 2015 Facility Master Plans were evaluated in the Final Program EIRs (SCH 2002041161) that were certified in December 2002, January 2006, September 2008, December 2013 and October 2016. The Physical Education Project (PEP) was previously evaluated in the 2015 Facilities Master Plan Update and Physical Education Projects Program/Project Final EIR and the project description is unchanged.

This Draft SEIR will address only those issues needed to make the prior 2002–2015 documentation adequate for the project. The project-specific environmental effects may include additional impacts at the Campus/Temple and Kellogg/Interstate 10 intersection that were not evaluated in the prior Final Program/Project EIR (SCH 2002041161). The Draft SEIR will also evaluate any new impacts, or revisions required to make the prior documentation adequate for the project. The California Division of the State Architect (DSA) submittals for the project remains unchanged, and the plans for hosting the 2020 Olympic Trials remain unchanged.

Prior Document Available for Reference:

The prior document (2015 Facilities Master Plan Update and Physical Education Projects Program/Project Draft and Final EIR) is posted on the District's website for reference. The Draft Subsequent EIR will use tiering, streamlining and focusing from materials in the certified Program/Project EIR:

http://www.mtsac.edu/construction/reports-and-publications/environmental-impact-reports.html

The previous documents may also be reviewed at the following locations:

Walnut Public Library Reference Desk 21155 La Puente Avenue Walnut, California 91789	Mt. San Antonio College Library Building 6, Library, 2nd floor, Reference Desk 1100 North Grand Avenue Walnut, California 91789

Time for Review:

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this Notice. We will also need the name for a contact person in your agency.

Please send your response to Rebecca Mitchell at the address below:

Project Title:	Mt. San Antonio College Physical Education Project (Phase 1, 2)
Project Applicant:	Mt. San Antonio Community College District
Date:	April 14, 2016
Contact:	Rebecca Mitchell, Manager, Facilities Support Services
Telephone:	(909) 274-5175
Facsimile:	(909) 274-2931
E-Mail Address:	facilitiesplanning@mtsac.edu

PROJECT DESCRIPTION

Mt. San Antonio College (over 420 acres) is the largest single-campus public community college in California with an estimated 2014–2015 fall enrollment of 35,986 students (headcount). The campus location is shown in Exhibit 1. The Mt. San Antonio Community College District (District) serves sixteen cities and unincorporated areas in the eastern part of Los Angeles County. However, the college's larger effective service area extends beyond the District's boundaries. The District includes ten (10) unified school districts. The District passed a Measure R Bond ($221 million) in November 2001 and a Measure RR Bond ($353 million) in November 2008 to fund its facilities programs.

The Mt. San Antonio College Facilities Planning & Management Department (FP&M) projects the campus will have a fall student enrollment of 39,731 (headcount) in 2020. The District certified the 2015 Facilities Master Plan Update Program and Physical Educations Program/Project Final EIR in October 2016.

The Subsequent Project EIR will address any new impact or revised impacts for the project (Exhibit 3). The project-specific environmental effects may include additional impacts at the Campus/Temple and Kellogg/Interstate 10 intersection that were not evaluated in the prior Final Program/Project EIR (SCH 2002041161). The Draft SEIR will also evaluate any new impacts, or revisions required to make the prior documentation adequate for the project. The California Division of the State Architect (DSA) submittals for the project remains unchanged, and the plans for hosting the 2020 Olympic Trials remain unchanged.

Exhibit 4 is the Existing Campus Plan (dated January 7, 2016) and is provided for comparison purposes.

Physical Education Project (Phase 1)

When completed, the 32.2 acre PEP (Phase 1) will include a 9-lane 400 meter track and 10,912 permanent seats, scoreboard, lighting standards, two pedestrian bridges, five athletic fields, 6.90 acres of landscaping and support facilities (i.e. concessions, restrooms, etc.). The track and field lanes will comply with the International Association of Athletic Federations (IAAF) Compliant Track and Field, Competition Category 1 standards. Portions of the structures onsite will be below the existing ground surface. All buildings onsite at buildout will total 91,727 gsf. Existing facilities are 43,240 gsf. At buildout of Phase 1, there will be 1,014 parking spaces onsite (765 temporary spaces and 249 permanent spaces).

Fixed bleachers (10,912 seats) will comply with the American Disabilities Act (ADA) requirements. The new Hilmer Lodge Stadium (HLS) design is open to the north, and additional temporary bleachers may be installed in this area for 8,840 additional seats (a total capacity of 19,752 seats). The temporary bleachers occupy three locations—the turf seating area, the hill east of the Stadium and the immediately area south of the Stadium.

Practice Field A is near the southern end of the new HLS. Approximately 249 parking spaces are located onsite (i.e. PEP (Phase 2), 1,557 spaces in Lot F (i.e. without any new development) and Lot S has 268 spaces. Approximately 8,308 total parking spaces may be available on campus in 2020 without Parking Structure J.

Prior to PEP (Phase 2), the Temporary Parking area in Phase 1 will be graded and stabilized with an acrylic binder. Some adjacent landscaping, hardscape (walkways and curbs) and lighting will be installed in Phase 1 but removed when final Phase 2 improvements are constructed.

The project replaces the existing facilities built in the 1940s and renovated in 1957. The existing facilities have hosted the Mt. SAC Relays since 1959. The 2017 Relays (April 13-15, 2016) will be held offsite.

Five athletic fields will be completed onsite during Phase 1: Main field and 400m Track (i. e. inside the new HLS), Flex Field, Natural Turf Practice Fields and a Synthetic Turf Practice Field & Track. The square footage of each field is shown in Exhibit 2.2. The Natural Turf Practice Field west of the Field House will become tennis courts in Phase 2.

The Field House includes men's and women's locker rooms, offices, restrooms, two weight rooms, two lecture halls, conference/meeting rooms, learning labs, and team/wet rooms, etc. The facilities include a synthetic track and natural turf in-field. The Press Box is located above the western bleachers. The four auxiliary buildings provide ticketing, food service, restrooms, and telecommunications services.

Two interior pedestrian bridges provide safe pedestrian passage across the service road and south of the Flex Field during Relay events. An overpass over Temple Avenue will provide pedestrian access to the project site from Lot F. Facilities that are not identified above are the eight lighting standards for the new HLS. There are currently eight lighting standards onsite.

Physical Education Project (Phase 2)

The PEP (Phase 2) will occupy the northwest parking lot within the PEP (Phase 1) project site. The PEP (Phase 2) has three elements: (1) Physical Education, Kinesiology and Wellness building (117,898 gsf), (2) Rooftop bleachers (2,800 seats) and, (3) a 50-meter Pool and a Diving Pool. All three elements total 87,167 gsf. The parking lot near the tennis courts will have 249 spaces.

When existing physical education buildings on campus north of Temple Avenue are demolished (Buildings 3, 27A-27C) the net increase for the PEP project is 33,541 sf.

With permanent stadium seating (9,321) temporary bleachers (8,840) or turf seating (1,706) and rooftop pool-side bleachers (2,800) the total seating capacity onsite at buildout of Phase 2 is 22,552 seats. However, it is unlikely that a capacity stadium event and an aquatics event would occur simultaneously. Therefore, the total is 19,752 seats for stadium events is available without using the pool-side bleachers.

Phase 2 will house the basketball, volleyball, weight training, adaptive physical education, core training and provide support to a variety of physical education programs. Three recently approved programs, which currently lack facility space, will also be housed there: men's volleyball, adaptive wheelchair sports and core training.

Pedestrians would cross Temple Avenue from Lot F to the PEP using the pedestrian bridge. The bridge ends on the second floor of the project. The bridge will be completed currently with Phase 2 construction.

Table 1
PEP Project Statistics (January 2016)

PHYSICAL EDUCATION PROJECT (PHASE 1)	Existing Facilities	Buildout Facilities
Total Site (acres)	32.2	32.2
Athletic Fields (acres)	6.14	7.64
Landscaping (acres)	1.45	6.90
Parking (acres)	6.75	2.47
Field House & Stadium Press Box (gsf.)	24,552	69,183
Auxiliary Buildings (sq. ft.)	4,530	10,200
Bldg 51 to Remain (gsf)	14,158	14,158
All Facilities w/ Bldg 51 (gsf)	43,210	91,727
Track Running Lanes[1]	9	9
Track Distance	400m	400 m
Existing Aluminum/Wood Seats	4,620/7,320	--
Total HLS Permanent Bleachers (seats)	11,940	10,912
Temporary Bleacher (seats)	---	8,840
Alternative Lawn Seating Capacity (persons)	0	1,706
Total Seats w/o Turf Seating (seats)	11,940	19,752[2]
PHYSICAL EDUCATION PROJECT (PHASE 2)	Existing Facilities	Buildout Facilities

Tennis Courts	0 on BCT site	9
PE, Kinesiology & Wellness (gsf)	84,357	117,898[4]
PE, Kinesiology & Wellness (ASF))	62,249	87,167
Aquatic Center/Rooftop Bleachers (seats)	800	2,800
PHYSICAL EDUCATON PROJECT (PHASES 1, 2)		
Project w/o Building 51 (gsf)	---	195,467
Project w/Building 51 (gsf)	---	209,625
Total Parking Spaces/ with Lot 50G		401
SPECIAL EVENTS		
2015/20 Number of PEP Events per Year w/o Special Events	9	10
2015/20 Football (home games/largest attendance)	5/5,000	5/5,300
2015/20 Graduation (total attendance)	12,000	13,000
2015/20 Soccer (games/largest attendance)	22/200	22/210
2015/20 CIF XC Preliminary (Saturday)	10,000	10,500
2015/20 CIF XC Final (Saturday)	4,000	4,200
2015/20 Foot Locker XC Championships (Saturday)	6,000	6,300
2015/19 Mt. SAC XC Invitational (daily attendance	17,000	17,000
2015/19 Mt. SAC XC Invitational (total attendance)	36,000	36,000
2015/19 Brooks/Mt. SAC Relays (max daily attendance)	12,000	13,000
2015/19 Brooks/Mt. SAC Relays (total attendance)	27,000	28,500
2020 Olympic Trials (max daily attendance) 10 day event (Fri –Su, T, W off = 8 days) during Summer Intersession	---	20,000

2020 Olympic Trials (total attendance)	---	112,000
[1] IAAF Competition Category 1 - Table 1.3.2, IAAF Track and Field Facilities Manual 2008 [2] Temporary bleachers occupy Turf Seating area. [3] HMC Architects: 820 spaces at buildout in Lot F with Zone 5 in 2025 [4] Net increase of 33,541 since demolitions of existing facilities occur on campus (Bldg 03, 27A-27C) after 2020		
Source: Mt. SAC Facilities Division and Marc Ruh (Aquatics), Simon Solis (HMC) , and Joe Jennum (Athletics) , February 2016		

Competition Category 1 conforms to IAAF Rule 1.1 and Rule 2.7 for World Championships and Olympic Games. These events usually comprise 9 days, and include up to 75 athletes, 100 completion officials and 75 auxiliary personnel at any one time (Table 1.3.2, IAAF Track and Facilities Field Manual, 2008 Edition, p. 18).

Special annual events that will continue to be held on campus include the Mt. SAC Relays and the Mt. SAC Cross-Country Invitational (XC Invite). The District is also filing an application to host the 8-day 2020 Olympic Track & Field Trials in late July or August 2020. The maximum daily attendance is projected as 20,000.

An Initial Study checklist for the project is attached. The Draft SEIR will address the potential significant effects that are peculiar to the project or site (Section 15183) and potential significant effects that were not addressed in the previous 2016 Final EIR certified by the District in October 2016.

All of the documents referenced in this report are available for public review during normal business hours at Mt. San Antonio College, Facilities Planning & Management, Facilities Management (Building 47), at 1100 N. Grand Avenue, Walnut, California 91789-1399. For an appointment, please call Rebecca Mitchell at (909) 274-5175 or send an e-mail request to facilitiesplanning@mtsac.edu

Exhibit 1
REGIONAL LOCATION

Exhibit 2

MT. SAN ANTONIO COLLEGE
LAND USE PLAN

MT. SAC Mt. San Antonio College

BUILDING KEY

ID No.	Building Name
1A	Art Center
1B/C	Art Center/Gallery
2	Performing Arts Center
3	Gymnasium (to be demolished)
4	Administration
6	Library / Learning Technology Center
6A	Information Kiosk
7	Science South
9A	Bookstore / The Center for Deaf and Hard of Hearing (DHH)
9B	Student Services Center
9C	Student Life Center (to be demolished)
9D	Student Services
10	Founders Hall
11	Science North
12	Building 12*
13	Design Technology
16A	Express Stop (to be demolished)
16B	Aces + Arise (to be demolished)
16C	Veterans Resource Center (VRC) (to be demolished)
16D	High Tech Center (HTC) (to be demolished)
17	Building 17* (to be demolished)
18	Building 18* (to be demolished)
18A	Modular Building 18A* (to be demolished)
18B	Modular Building 18B* (to be demolished)
18C	Technical Education Resource Center (TERC) (to be demolished)
18D	Instructional Modular (to be demolished)
19A	Building 19A* (to be demolished)
19B	Building 19B* (to be demolished)
19C	Mountie Grill (to be demolished)
20	Building 20* (to be demolished)
21A-21D	Modular Classroom Buildings* (to be demolished)
21E	Modular Toilet Room Building* (to be demolished)
21F-21J	Modular Classroom Buildings* (to be demolished)
23	College Services
23A	Data Center
26A	Humanities / Social Sciences North
26B	Humanities / Social Sciences East
26C	Planetarium
26D	Humanities / Social Sciences South
27A	Exercise Science / Wellness Center (to be demolished)
27B	Pool (to be demolished)
27C	Physical Education Center (to be demolished)
28A/B	Technology Center
29	Central Plant
29B	Central Plant Office
30	Adult Basic Education Center
31A/B	Continuing Education ESL*
31C	Continuing Education Toilet Room Building*
32	Continuing Education ESL*
35	Continuing Education ESL*
36	Continuing Education ESL*
38A	Community Education Center* (to be demolished)
38B	Community Education Center* (to be demolished)
40	Building 40*
43	Tilden Coil Constructors (TCC) / Vinewood Company
44	Athletics Modular
45	Kinesiology / Athletics / Dance
46	Emergency Operations Center
46A	Document Storage Modular
47	Facilities Planning + Management (FP+M) and Maintenance + Operations (M+O)
48	Receiving / Transportation
50F	Stadium Press Box (to be demolished)
50G	Physical Education Center Field House (to be demolished)
50H	Stadium Concessions (to be demolished)
51	Athletic Storage Building
60	Science Laboratories
61	Math and Science
66	Language Center
67A	Health Careers Center
67B	Health Careers Center
69	Welding, Heating / Air Conditioning
70-73	Child Development Complex
80	Agricultural Science
104	Brackett Field (Off Campus)
F1	Horticulture Unit
F1A	Sherman Park Picnic Area / Restrooms
F2A	Farm Offices
F2B	Horticulture Storage
F2C	Irrigation + Landscape Construction
F3	Equipment Barn
F3A	Old Dairy Unit
F4A	Swine Market Pens
F4B	Swine Farrowing House
F5A	Vivarium
F5B	Small Animal Care Unit
F6A	Equine Breeding Barn
F6B	Equine Mare Motel
F6C	Equine Hay Barn
F7	Equipment Technology
F8	Hay Barn
F9	Livestock Pavilion
F10	43th Agricultural District Office
G1	Greenhouse
G2	Greenhouse
G3	Greenhouse
G4	Greenhouse
G5	Greenhouse
BH	Block House
CCT	Chiller Cooling Tower (CCT)
J	North Parking Structure
TES	Thermal Energy System (TES)
WPS	West Parcel Solar Project
WSE	Wildlife Sanctuary Expansion
WT	Water Tower
WW	Irrigation Water

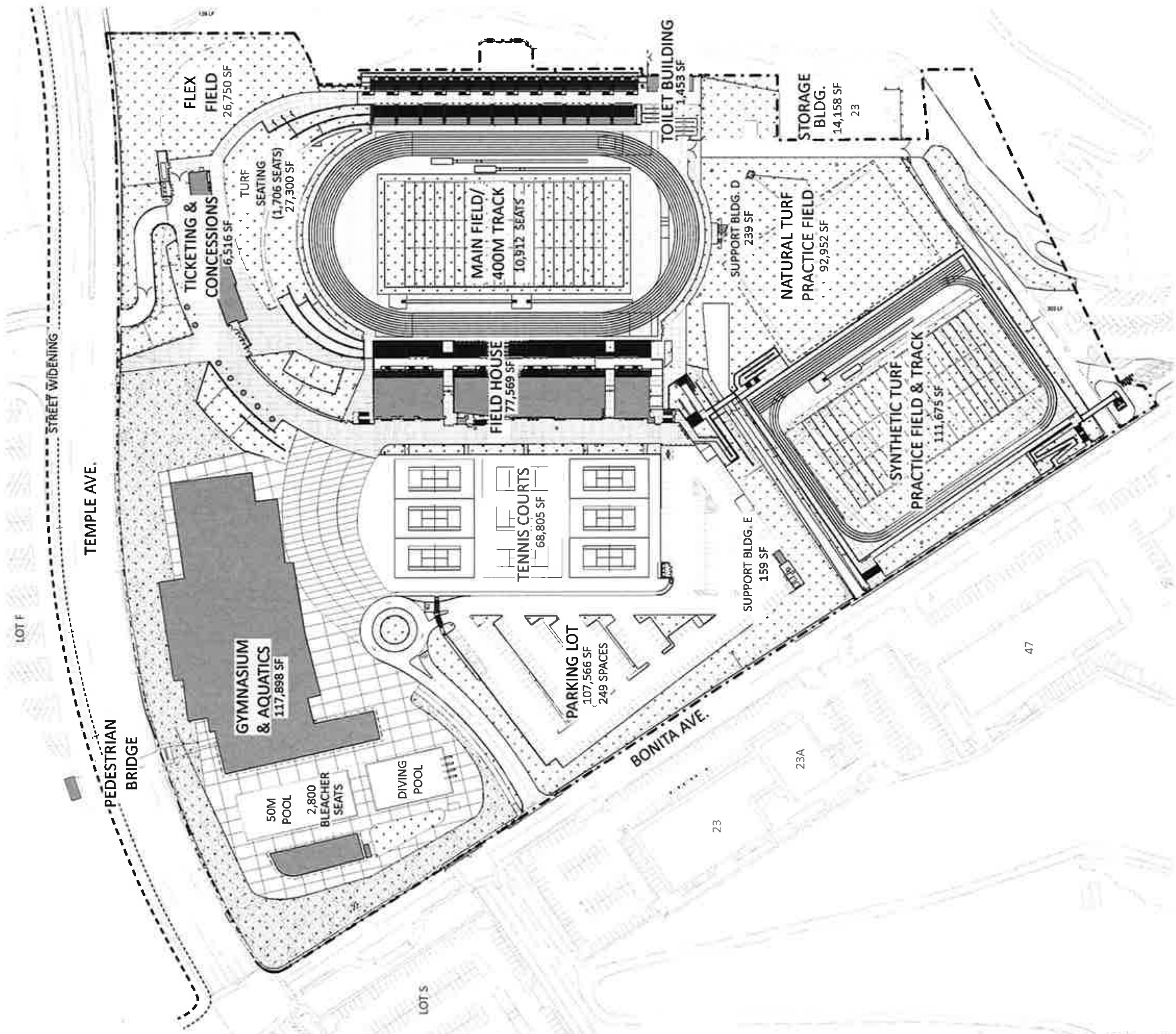
* No official building name exists

BOND PROJECT KEY

ID No.	Bond Project Name
A	Library / Campus Center
D	Athletic Concessions & Restrooms
D1/D2/D3	Physical Education Complex (PEC)
D4	Tennis Courts
D5	Practice Fields
D6	Stadium
E	Career & Technical Education Building Renovation & Expansion
F2	Classroom Building Renovation
G	Laboratory Building Expansion
H	Fire Training Academy
I	Public Transit Center
J	Parking Structure (2,300 spaces)
L7-A	Building 9A Renovation
L7-C15	Building 40 Continuing Education Remodel
1	Future Instructional Building Zone (two-story, 35,000 sf)
2	Future Adult Education Zone
3	Auditorium Zone (1,200 seats)
4	Future Instructional Building Zone
5	Future Instructional Building Zone
--	Retail Zone
BCT	Business & Computer Technology (BCT) (Bond ID B, G, L7-C3)
EC	Equity Center
FS	Food Services Building (Bond ID L7-C2)
HH	Heritage Hall
SSC	Student Success Center (Bond ID L7-C8)

0 ft 600

Exhibit 3
PHYSICAL EDUCATION PROJECTS (Phases 1, 2)



HMC Architects
November 10, 2015

Exhibit 4

MT. SAN ANTONIO COLLEGE
EXISTING CAMPUS PLAN

MT. SAC
Mt. San Antonio College

BUILDING KEY

ID No.	Building Name
1A	Art Center
1B/C	Art Center/Gallery
2	Performing Arts Center
3	Gymnasium
4	Administration
6	Library / Learning Technology Center
6A	Information Kiosk
7	Science South
8	Campus Cafe (to be demolished)
9A	Bookstore / The Center for Deaf and Hard of Hearing (DHH)
9B	Student Services Center
9C	Student Life Center
9D	Student Services
10	Founders Hall
11	Science North
12	Building 12*
12A	Oden House (to be demolished)
12B	Garage (to be demolished)
13	Design Technology
16A	Express Stop
16B	ACES + Arise
16C	Veterans Resource Center (VRC)
16D	High Tech Center (HTC)
17	Building 17*
18	Building 18*
18A	Modular Building 18A*
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18C	Technical Education Resource Center (TERC)
18D	Instructional Modular
19A	Building 19A*
19B	Building 19B*
19C	Mountie Grill
20	Building 20*
21A-21D	Modular Classroom Buildings*
21E	Modular Toilet Room Building*
21F-21J	Modular Classroom Buildings*
23	College Services
23A	Data Center
26A	Humanities / Social Sciences North

ID No.	Building Name
26B	Humanities / Social Sciences East
26C	Planetarium
26D	Humanities / Social Sciences South
27A	Exercise Science / Wellness Center
27B	Pool
27C	Physical Education Center
28A/B	Technology Center
29	Central Plant
29A	Lease Space (to be demolished)
29B	Central Plant Office
30	Adult Basic Education Center
31A/B	Continuing Education ESL*
31C	Continuing Education Toilet Room Building*
32	Continuing Education ESL*
35	Continuing Education ESL*
36	Continuing Education ESL*
38A	Community Education Center*
38B	Community Education Center*
40	Building 40*
43	Tilden Coil Constructors (TCC) / Vinewood Company
44	Athletics Modular
45	Kinesiology / Athletics / Dance
46	Emergency Operations Center
46A	Document Storage Modular
47	Facilities Planning + Management (FP+M) and Maintenance + Operations (M+O)
48	Receiving / Transporatation
50A	Stadium Ticket Office (to be demolished)
50B	Stadium Restroom (to be demolished)
50C	Stadium Restroom (to be demolished)
50D	Stadium Restroom (to be demolished)
50E	Stadium Restroom (to be demolished)
50F	Stadium Press Box (to be demolished)
50G	Physical Education Center Field House (to be demolished)
50H	Stadium Concessions (to be demolished)
51	Athletic Storage Building
60	Science Laboratories

ID No.	Building Name
61	Math and Science
66	Language Center
67A	Health Careers Center
67B	Health Careers Center
69	Welding, Heating / Air Conditioning
70-73	Child Development Complex
80	Agricultural Science
104	Brackett Field (Off Campus)
F1	Horticulture Unit
F1A	Sherman Park Picnic Area / Restrooms
F2A	Farm Offices
F2B	Horticulture Storage
F2C	Irrigation + Landscape Construction
F3	Equipment Barn
F3A	Old Dairy Unit
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F4B	Swine Farrowing House
F5A	Vivarium
F5B	Small Animal Care Unit
F6A	Equine Breeding Barn
F6B	Equine Mare Motel
F6C	Equine Hay Barn
F7	Equipment Technology
F8	Hay Barn
F9	Livestock Pavilion
F10	48th Agricultural District Office
G1	Greenhouse
G2	Greenhouse
G3	Greenhouse
G4	Greenhouse
G5	Greenhouse
BH	Block House
EC	Equity Center
FS	Food Services Building (Bond ID L7-C2)
SSC	Student Success Center (Bond ID L7-C8)
WT	Water Tower

* No official building name exists

LEGEND

PROPERTY LINE
EXISTING FACILITIES
(R) RECENTLY RENOVATED FACILITIES
(PR) PARTIALLY RENOVATED FACILITIES
FACILITIES UNDER CONSTRUCTION
FACILITIES TO BE DEMOLISHED
CROSS COUNTRY COURSE

0 500

Exhibit 5
STADIUM PERSPECTIVE

Appendix G

ENVIRONMENTAL CHECKLIST FORM
Revised 2009

1. Project Title:	Physical Education Project (Phase 1, 2)
2. Lead Agency Name and Address:	Mt. San Antonio College, 1100 North Grand Avenue, Walnut, California 91789
3. Contact Person and Phone Number:	Rebecca Mitchell, Facilities Planning & Management (909) 274-5175
4. Project Location:	City of Walnut, County of Los Angeles
5. Project Sponsor's Name and Address:	Mt. San Antonio College, 1100 North Grand Avenue, Walnut, California 91789
6. General Plan Designation:	Schools (City of Walnut)
7. Zoning:	Athletics Zone (Mt. SAC) Residential Plan Development 61,700 (0.6 du) with a Civic Center Overlay Zone (City of Walnut) Exempt from City Zoning per California Government Code 53094: Subdivisions (a), (b)

8. Description of the Projects: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. (Attach additional sheets if necessary)

   The PEP project includes the removal of the existing Hilmer Lodge Stadium, construction of a new Stadium, with 10,912 permanent seats, a field house, a new Physical Education Complex (diving pools, and a 117,898 gsf building), that replaces existing Buildings 03, 27A – 27C) north of Temple Avenue, five athletics fields, parking and ancillary facilities. The total project (Phase 1, 2) will total 290,625 gsf nd 401 parking spaces.

9. Surrounding Land Uses and Setting: (Briefly describe the project's surroundings)

   The PEP project site is located south of Temple Avenue and east of Bonita Drive. The 32.2-acre site is surrounded by Parking S to the wet, by non-classroom support buildings west of Bonita Drive, and by open space (i.e. zoned Land Management) to the east and south. Three additional parking lots (R, R South and 50G) are immediately east of Bonita Drive.

10. Other public agencies whose approval is required (e.g. permits, financing approval, or participation agreement).

    City of Walnut (truck hauling and grading permits)
    California Department of Fish and Wildlife

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below (X) would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

	Aesthetics		Hazards & Hazardous Materials		Recreation
	Agricultural and Forest Resources		Hydrology/Water Quality	X	Transportation/Traffic
	Air Quality	X	Land Use/Planning		Utilities/Service Systems
	Biological Resources		Mineral Resources		Mandatory Findings of Significance
X	Cultural Resources		Noise		
	Geology/Soils		Population/Housing		
	Greenhouse Gas Emissions		Public Services		

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	No
I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.	No
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	No
I find that the proposed project MAY have a "potential significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measutr3es based on the earlier analysis as describ4ed on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.	Yes
I find that although the proposed projects could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed projects, nothing further is required.	No

Rebecca Mitchell

Signature

APRIL 14, 2017

Date

REBECCA MITCHELL

Printed Name

MT. SAN ANTONIO COLLEGE

For

EVALUATION OF ENVIRONMENTAL IMPACTS

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analysis," as described in (5) below, may be cross-referenced).

5) Earlier analysis may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (D). In this case, a brief discussion should identify the following:

   (a) Earlier Analysis Used. Identify and state where they are available for review.

   (b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.

   (c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g. general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The analysis of each issue should identify: (a) the significance criteria or threshold used to evaluate each question; and (b) the mitigation measure identified, if any, to reduce the impact to less than significance.

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
1. **AESTHETICS:** Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
There are no designated scenic vistas in the Project area. The Land Management area south of the stadium is open space but has not protected status or scenic vistas. The views of the stadium area from Temple Avenue are not protected scenic vistas and Temple Avenue is not designated as a scenic highway.				
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
The Project does damage scenic resources. Temple Avenue is not a scenic highway.				
c) Substantially degrade the existing visual character or quality of the site and its surroundings?				X
The Project is part of the Athletics Zone on campus and its design will be distinct, yet harmonious with other campus buildings. Exhibit 3.2.1 in the Draft EIR is a perspective of the completed project. Please refer to the Cultural Resource section for other comments on visual character..				
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X		
New lighting standards for the Stadium will be for the project and field lighting are part of the project. The required mitigation measures and lighting standards will result in a Less than Significant Impact with Mitigation Incorporated. See Table 3.8.20 in the Draft EIR for PEP lighting standards and page 326 ff of the Draft EIR for analysis of stadium light and glare. The *Lighting Plan for PEP (Phase 1),* Musco Lighting, Inc., April 2016 for the stadium is posted on the District's website for the 2015 FMPU/PEP Update EIR in the Appendices.				
2. **AGRICULTURE AND FOREST RESOURCES**: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project?				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency to non-agricultural use?				X
The Project is located in the Athletic Zone and not the Agricultural Zone (Exhibit 3.1 in the Draft EIR).				
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
The Project is not located in the campus Agricultural Zone (Exhibit 3.1 in the Draft EIR).				
c) Conflict with existing zoning for, or cause rezoning of, forestland (as defined in Public Resources Code Section 12220 (g), timberland (as defined in Public Resources Code Section 4526) or timberland zoned Timberland Production (as defined in Government Code Section 511040 (g)??	X			
The Project does not conflict with the Athletic or Land Management Zoning Districts (Exhibit 3.1 of the Draft EIR). The Project uses are consistent with the Athletic Zone. The City of Walnut has a Schools General Plan designation and a zoning designation of Residential Plan Development 61,700 (0.6 du) with a Civic Center Overlay Zone for the Projects site. The General Plan and Zoning are not consistent. This may be considered an adverse impact if the General Plan Update does not rectify the inconsistency. The responsible agency is the City of Walnut and not the District. See the discussion in the Fact & Findings (Significant Effect #13) for the 2015 FMPU/PEP Final EIR.				
d) Result in loss of forestland or conversion of forestland to non-forest use?				X
The Project is not located on forestland.				
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use?				X
The Project is located in the Athletics Zone, not the Agricultural Zone.				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
3. **AIR QUALITY:** Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	X			
The site-specific air quality analysis did not identify any violations of local air quality standards for the Project that cannot be mitigated to Less than Significant (*Air Quality Assessment for the Mt. San Antonio College Facilities Mater Plan Update and Physical Education Projects, Report #16-002AQ, Greve and Associates, LLC, April 15, 201)..* All mitigation measures for the Project are included in the 2016 Mitigation Monitoring Program (2016 MMP)				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.		X		
Greve & Associates evaluated the Project in relationship to SCAQMD construction thresholds. They also evaluated the Projects in relationship to the SCAQMD Localized Significance Thresholds (LST) requirements. This is a special analysis that estimated air quality emissions on residential areas nearest the Project. No LST thresholds were exceeded.. The study also evaluated air quality impacts along area roadways for the 2020 Olympic Trials. All mitigation measures for the Project are included in the 2016 Mitigation Monitoring Program. The report, Significant (*Air Quality Assessment for the Mt. San Antonio College Facilities Mater Plan Update and Physical Education Projects, Report #16-002AQ, Greve and Associates, LLC, April 15, 20,* is posted on the District's website in the Draft EIR Appendices..				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			X	
The Project's contribution to cumulative regional emission violations is less than cumulatively considerable.				
d) Expose sensitive receptors to substantial pollutant concentrations?				X
The Project does not violate SCAQMD construction LST thresholds of significance offsite. Therefore, it does not expose residents to substantial pollutant concentrations. The PEP site is over 1,600 feet from the Snow Creek residential community.				
e) Create objectionable odors affecting a substantial number of people?				X
The Project does not produce substantial odors. The site requires minimal grading since it was tennis courts.				
4. **BIOLOGICAL RESOURCES**. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U. S. Fish and Wildlife Service?		X		
Helix Environmental Planners completed a biological resource survey for the project (*Mt. San Antonio College 2015 Facilities Master Plan Update Biological Technical Report,* Helix Environmental Planning, Inc., April 14, 2016). The report is posted on the District's website in the 2016 FMPU/PEP Update EIR Appendices. The Detention Basin area is a potential habitat for Burrowing Owls.				
b) Have a substantially adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U. S. Wildlife Service?		X		
There is no riparian area associated with the Project site. The Detention Basin is not a jurisdictional riparian area.				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				X
There are no jurisdictional wetlands associated with the Project site.				
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident migratory wildlife corridors, or impede the use of native wildlife nursery sites?		X		
Some migratory birds may inhabit portions of the Project site. Mitigation Measure BIO-02 in the 2016 MMP requires biologists survey trees for active nesting sites during March – May if trees are being removed.				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The campus has no tree preservation ordinance but has a Land Use Management Plan to minimize impacts on California Black Walnuts on campus (Mitigation Measure 9d in the Final EIR). There are no California Black Walnut trees onsite.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, other approved local, regional, or state habitat conservation plan?				X
The Project will not impact habitat conservation plans. The District policies and regulations for the Land Management Zone are not part of a HCP or NCCP.				
5. **CULTURAL RESOURCES**. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	X			
Hilmer Lodge Stadium is a designated historic resource within a designated Historic District. The historic resource study for the Project is posted on the District's website in the 2015 FMPU/PEP Appendices (*Cultural Resource Evaluation Report for Mt. SAC SEIR for 2015 Facilities Master Plan Update and Physical Education Projects, Walnut, Los Angeles County, California, ASM Affiliates, April 2016).* As noted in the Statement of Overriding Considerations for the 2015 FMPU/PEP Update Final EIR, the demolition of Hilmer Lodge Stadium will result in adverse direct and indirect visual impacts to the Mt. SAC Historic District, which is individually eligible for the *California Register of Historical Resources and a contributing resource to the Mt. SAC Historic District.*				
b) Cause a substantial adverse change in the significance of archaeological resources pursuant to Section 15064.5?		X		
Mitigation Measure CR-01 in the 2016 MMP addresses potential paleontological finds when grading occurs for the Project.				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		X		
Mitigation Measure MR-02 in the 2016 MMP adequately addresses potential paleontological finds when grading occurs for the Project				
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
See Items c, d above. There are no known cemeteries on or near campus and the Projects sites have been graded previously.				
e) Cause a substantial adverse change in the significance of a tribal cultural resource (TCR) such as a site, feature, place, cultural landscape, sacred place or object with cultural value to a California Native American tribe,: that is either on, or eligible for inclusion in, the California Historic Register or a local historic register, or is a resource that the Lead Agency, at its discretion and supported by substantial evidence, determines should be treated as a Tribal Cultural Resource (PRC 21074 (a) (1-2)?				X
The Project area has been previously graded and there is no evidence of tribal cultural resources onsite or in the surrounding area.				
6. **GEOLOGY AND SOILS**. Would the project: a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury or death involving:				
(i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
The Project is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface rupture. No surface faults are known to extend through or towards the site (Final Geotechnical Study Report , Proposed Athletic Complex East, Mt. San Antonio College, Walnut, California, Converse Consultants, January 23, 2015). The geology report is posted on the District's website in the Appendices for the 2015 FMPU/PEP Update EIR				
(ii) Strong seismic ground shaking?			X	
A Summary of Regional Faults and projection of potential seismic ground shaking on the Project site is included in the geology report. See Item (i) above. All project construction will comply with the 2013 California Building Code to assure seismic safety.				
(iii) Seismic-related ground failure, including liquefaction?				X
The soils at the Projects site are not susceptible to liquefaction (Converse, Ibid)				
(iv) Landslides?				X
The Projects site has no major in elevation changes and is not subject to landslides.				
(b) Result in substantial soil erosion or the loss of topsoil?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
There is no loss of topsoil or substantial soil erosion of the site since it has been previously graded. No substantial erosion or loss of topsoil will occur for the Project.				
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the s, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
The soils at the Project site are not susceptible to liquefaction (Converse, Ibid., p. iiii)				
(d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X
The soils at the Projects sites have a very low to low expansive potential and mitigation is not required (Converse, Ibid., page iv)				
(e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
No septic tanks or alternative waste water disposals are proposed. The Projects sites are served by public sewers.				
7. **GREENHOUSE GAS EMISSIONS**. Would the project?				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant effect on the environment?			X	
The project does not generate greenhouse gases during construction or operation in excess of SCAQMD standards (Greenhouse Gas Assessment for the Mt. San Antonio College Facilities Master Plan Update and Physical Education Projects, Report #16-002GHG, Greve and Associates, LLC, April 15, 2016). The report is posted on the District's website in the Appendices for the 2015 FMPU/PEP Update EIR.				
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X
The Projects do not conflict with any GHG plan or regulation. See Item a above.				
8. **HAZARDS AND HAZARDOUS MATERIALS.** Would the project?				
a) Create a significant hazard to the public or the environment through the routine transport, use or disposal of hazardous materials?				X
Since the Project site has been previously graded, it is improbable that there are hazardous materials onsite. The building will not have hazardous materials issues and any disposal of building materials (i.e. asbestos or lead paint) will be done in accordance with local and state regulations. The Project is not associated with the transport of hazardous materials.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?				X
There is no use of hazardous materials onsite other than cleaning supplies. See Item a.				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				
No public schools are located within one-quarter mile of the Project site. However, the Child Development Complex is located approximately ½ mile north of the Project site. The Project emits no hazardous emissions and store only routine cleaning supplies, which are not hazardous materials.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result would it create a significant hazard to the public or the environment?				X
The Project site is not located in Section 65962.5 databases.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
The Project sites is not within two miles of an airport.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
The Projects sites are not within two miles of a private airstrip.				
g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project will not interfere with emergency plans. Emergency vehicles have access from Temple Avenue in both directions.. Special traffic management and safety plans will be operational during the 2020 Olympic Trials.				
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
There are no wildland areas near the Projects sites.				
9. **HYDROLOGY AND WATER QUALITY**. Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
The hydrology study for the campus is posted on the District's *website (Mt. San Antonio College – Measure RR Hydrology Study*, Psomas, April 2016) in the Appendices for the 2015 FMPU/PEP Update EIR. The District is required to submit a Grading Plan to the City of Walnut for approval. No water quality standards will be violated by the Project. The Project will comply with an approved Stormwater Pollution Prevention Plan (SWPPP). (The Projects are not required to complete a Water Quality Management Plan because the California State Water Quality Control Board has not designated community colleges as a non-traditional MS-4 permittee).				
b) Substantially degrade groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?			X	
All water is obtained from the Three Valleys Municipal Water District. The District has ample supplies and facilities to serve the campus.				
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?			X	
Only minor grade elevation changes are necessary for the Project. The existing drainage pattern is not substantially altered. No streams are impacted by the Project. Landscaping onsite will increase by 5.5 acres.				
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate of surface runoff in a manner which would result in flooding on- or off site?				X
No streams are impacted by the Projects.				
e) Create or contribute runoff which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?		X		
The Project site is already graded and no major change in drainage occurs with the Project's completion. The Erosion Control Plan for the Project is shown in Exhibit 3.16 of the Draft EIR. Since the Projects will comply with an approved SWPPP, no polluted runoff will occur. Mitigation measure HYD-01 in the 2016 MMP requires the Project install the required infrastructure for drainage.				
f) Otherwise substantially degrade water quality?				X
The Project will comply with an approved SWPPP. There will be no Project impacts on water quality. The Project sites is part of the Campus Master Plan Drainage Study and have no impact on campus area drainage.				
g) Place housing within a 100-year floodplain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
The Project does not propose new housing.				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
The Project area is not located within a flood hazard area.				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
The Project is not located near, or exposed to flooding from a dam.				
j) Inundation by seiche, tsunami, or mudflow?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The Projects site is not near oceans or subject to landslides and mudflows.				
10. **LAND USE AND PLANNING.** Would the project:				
a) Physically divide an established community?				X
The Project is located within the campus and does not divide a community.				
b) Conflict with an applicable land use plan, policy or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	X			
The Project is located in the Athletics Zone. The City of Walnut has retained the zone of Residential Plan Development 61,700 (0.6 du) with a Civic Center Overlay Zone. The District is not subject to the City's Zoning Ordinance. Per California Government Code 53094: Subdivision (a): Local zoning ordinances do not apply to school districts unless the City zoning ordinance makes provision for the location of public schools and unless the City has adopted a General Plan. Section 53094: Subdivision (b) states: Notwithstanding Subdivision (a), a school district may exempt local zoning for classroom facilities if by vote of two-thirds of members. The City of Walnut has designated the campus "Schools" in the General Plan. The City has not designated the campus "public school" in the zoning ordinance but has a designation of Residential Plan Development 61,700 (0.6 du) with a Civic Center Overlay Zone. This inconsistency may be considered an adverse impact if not reconciled in their General Plan Update.				
c) Conflict with any applicable habitat conservation plan or natural communities' conservation plan?				X
The Project doe not impact a conservation plan.				
11. **MINERAL RESOURCES.** Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
There are no known mineral resources on the Project site.				
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X
No plans designate the Project area as a mineral resource recovery site.				
12. **NOISE.** Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
The construction and operational noise for the he Project, including the hosting of the 2012 Olympic Track & Field Trials has been evaluated in two reports*: Noise Analysis for the Mt. San Antonio College Facilities Master Plan Update and Physical Education Projects, Report #16-002NZ, Greve and Associates, LLC, April 15, 2016 and Stadium Noise Measurements – Cerritos College (Report #15-110B), Greve and Associates, October 13, 2015.* The reports are posted on the District's website and the reports are in the Appendices to the 2015 FMPU/PEP Update EIR. The District is not subject to the City's Noise Ordinance or noise standards. Per California Government Code 53094: Subdivision (a): Local zoning ordinances do not apply to school districts unless the City zoning ordinance makes provision for the location of public schools and unless the City has adopted a General Plan. Section 53094: Subdivision (b) states: Notwithstanding Subdivision (a), a school district may exempt local zoning for classroom facilities if by vote of two-thirds of members. The City of Walnut has designated the campus "Schools" in the General Plan. The City has not designated the campus "public school" in the zoning ordinance but has a designation of Residential Plan Development 61,700 (0.6 du) with a Civic Center Overlay Zone. Since the project will result in non-excepted construction occurring outside the permitted hours of the City's Noise Ordinance, the project's construction activities would not be in compliance with the Ordinance.				
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The only potential construction noise or vibration exposure is to persons in adjacent campus buildings, not to residential areas offsite.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?		X		
Upon buildout, the ambient noise level will not increase substantially. Noise from players or spectators at the Stadium is at least 1,600 feet from residential areas in the Snow Creek neighborhood. While construction noise impacts are temporary in nature, the magnitude and duration of the noise impacts are Less than Significant. However, Mitigation Measure NO-01 in the 2016 MMP does regulate the hours of construction. The Project's noise impact during construction is Less than Significant with Mitigation Incorporated.				
d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
Upon buildout, the ambient noise level will not increase substantially. Noise from players or spectators at the Project site will be similar to existing noise levels, except for the hosting of the 2020 Olympic Track & Field Trials. Noise levels for football games is evaluated in Table 3.8.16 and peak noise levels for the Trials for four residential areas was evaluated in Table 3.11.2. No significant noise impacts occurred in either situation. The 2015 FMPU/PEP Update EIR is posted on the District's website. Mitigation Measure NO-02 in the 2016 MMP does regulate the noise levels for stadium audio equipment. The most effective means of reducing temporary construction noise impacts during Projects construction on- and off-campus is to minimize the time construction occurs (i.e. complete it quickly to limit the noise duration or limit the hours of construction). Measure Measure NO-01, referenced above, does that.				
e) For a project located within an airport land use plan, or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
The Project site is not located within two miles of an airport.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
The Project site is not within two miles of an air strip.				
13. **POPULATION AND HOUSING.** Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
The Project does not induce population growth. Temporary minor increases in employment on campus may due to the Project will occur but do not induce significant population growth.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
The Project does not include housing or displace housing.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
The Project does not displace people.				
14. **PUBLIC SERVICES**. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
a) Fire protection?				X
Existing County of Los Angeles fire services can protect the Project without new facilities per their review prior to adoption of the 2015 Final EIR.				
b) Police protection?				X
Campus security is responsible for the Project and special security operations will occur for the 2020 Olympic Track & Field Trials. The campus is also served by the County of Los Angeles Sheriff Department.				
c) Schools?				X
The Project has no impact on public schools.				
d) Parks?				X
The Project has no impact on public parks.				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Other public facilities?				X
The Project has no impact on other public facilities (e.g. libraries, community center, etc.)				
15. **RECREATION.**				
a) Would the project increase the use of existing neighborhood or regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				X
The Project has no residents and no impacts on parks or recreational facilities.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?				X
The Project does not include public recreational facilities (i.e. parks or recreation centers).				
16. **TRANSPORTATION/TRAFFIC.** Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing a measure of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	X			
The traffic impacts of the Project, including the hosting of the 2020 Olympics Track & Field Trials was evaluated in *the Mt. SAC Facilities Master Plan Update and Physical Education Projects Traffic Impact Study – Draft Report, Iteris, April 1, 2016.* The report is posted on the District's website in the Appendices for the 2015 FMPU/PEP Update EIR. As noted in the *Statement of Overriding Considerations* for the 2015 FMPU/PEP Update EIR, Additional lane improvements are not feasible at six (6) locations within the traffic study area for one or more traffic scenarios: (1) Grand Avenue/Mountaineer Road, (2) Grand Avenue/San Jose Hills Road, (3) Valley Boulevard/Temple Avenue, (4) Grand Avenue/Valley Boulevard, (5) Grand Avenue/Temple Avenue and (6) Grand Avenue/Baker Parkway. Locations 1–2 are adverse with the project in 2020, and locations 1–5 in 2025 with the project. With cumulative projects, locations 1–6 are adverse in 2020 and in 2025 (i.e. Tables 10, 15, 17 in Appendix B1). Although lane and traffic signal improvements are required at nine (9) locations for project buildout of the 2015 FMPU in 2020, additional improvements are not feasible at three (3) locations and the traffic impact will be unavoidably adverse. For cumulative conditions in 2020, improvements are required at thirteen (13) locations, but feasible at only nine (9) locations. PM peak weekday traffic during the 2020 Olympic Track & Field Trials (OTFT), when event traffic is combined with pm peak commuter traffic, will result in significant traffic impacts at 18 locations for two weekdays. Providing feasible improvements for only two days is not practical or cost effective. The pm peak congestion is limited to two or three hours for two weekday evenings during Session 1. Future schedule event changes may reduce the congestion duration. Although the shuttle system will reduce event trips near campus, and the required vehicle occupancy minimums will reduce trips and the need for parking, event traffic for hosting the 2020 Olympic Track & Field Trials is adverse for two weekday pm peak periods. Higher patron shuttle participation rates and higher vehicle occupancy limits are not feasible. The traffic impacts of the Project are summarized in Section 3.8.2 (B) in the 2015 FMPU/PEP Update EIR and the traffic impacts of the 2020 Olympic Trials are included in Section 3.11. The quantities of earth and concrete for the Project are summarized in Table 3.8.4 of the 2015 FMPU/PEP Update EIR. The quantities of earth and concrete for the Project are summarized in Table 3.8.4 of the 2015 FMPU/PEP Update EIR. THE DATA IN TABLE 3.8.4 IS THE FINISH GRADING FOR THE PROJECT AND DOES NOT INCLUDE THE REQUIRED EARTH EXPORT TO THE WEST PARCEL SOLAR PROJECT. Mitigation Measure TR-53 in the 2016 MMP limits the hours for truck hauling FOR PEP (PHASE 2). The District is required to submit a Truck Hauling Plan to the City of Walnut for approval.				
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
roads or highways?				
The Project have no impact on CMP intersections.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that result in substantial safety risks?				X
The Project does not impact air traffic patterns.				
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?	X			
The Project has no impact on the design of Temple Avenue near campus but may have an impact on the Campus Drive/Temple Avenue or Kellogg Drive/Inerstate-10 intersections.				
e) Result in inadequate emergency access?				X
The Project will not result in inadequate emergency access. Emergency vehicles have access via Temple Avenue in both directions..				
f) Conflict with adopted policies, plans, or programs regarding public transit, bikeways, or pedestrian facilities, or otherwise substantially decrease the performance or safety of such facilities?				X
The Project has no impacts on the facilities cited and do not decrease the performance or safety of such facilities.				
17. **UTILITIES AND SERVICE SYSTEMS.** Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
The Project does not result in exceeding any RWQCB standard. The Project will comply with all recommendations of the S*tormwater Pollution Prevention Plan for the Physical Education Projects (Phase 1, 2),* Psomas, September 3, 2015. The report is included in the Appendices of the 2015 FMPU/PEP Update EIR on the District's website.				
b) Require or result in construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
No new or expanded water or wastewater treatment facilities are needed for the Project.				
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
. The Project will comply with the Master Utilities Infrastructure Plan . The new Project drainage faculties will not cause significant effects.				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
The Three Valleys Municipal Water District has ample facilities and supplies for the Project. The District has reduced its water use from approximately 598 acre feet of water per year in 2006 by 30 percent in 2015 and may realize a 50 percent reduction in domestic water use in less than ten years. District efforts are implemented through the Water Resource Conservation Program.				
e) Result in a determination by the wastewater treatment provider which services or may serve the project determined that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
The Project produces minimal wastewater and LACSD has ample capacity to serve the Project.				
f)) Be served by a landfill with sufficient permitted capacity to accommodate the projects solid waste disposal needs?			X	
The increase in solid waste for the Project is not substantial and there is minimal constructions debris that must be disposed of in area landfills. Special operations will be imposed to collect solid waste during the 2020 Olympic Trials.				
g) Comply with federal, state, and local statues and regulations related to solid waste?				X
The Project will comply with all applicable statues and regulations for solid waste.				
18. **MANDATORY FINDINGS OF SIGNIFICANCE.**				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?		X		

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
The Project have no impact on all issues listed, except for the potential impact on migratory birds, which is reduced to Less than Significant by Mitigation Measure BIO-02.				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of the past projects, the effects of other current projects, and the effects of probable future projects)?				X
The Project's incremental impacts are either No Impact or Less than Significant with Mitigation Incorporated. Please note that the issue of cumulatively considerable impacts for the Project (i.e. when a single issue is not significant) is not the same issue of considering cumulative traffic impacts of multiple projects, which is adverse (see Item 17).				
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X
The air quality, greenhouse gas and noise studies have not identified any adverse effects on human beings.				
Note: Authority cited: Sections 21083, 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code: Sections 21080, 21083.05, 21095,Public Resources Code; Eureka Citizens for Responsible Government v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans' Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact

2012 FINAL EIR APPLICABLE MITIGATION MEASURES

All mitigation measures required for the project re included in the 2016 MMP, which is posted on the District's website.

Notice of Preparation (NOP) of a Draft Subsequent Project EIR for the Mt. San Antonio College Physical Education Project (Phase 1, 2)

Responsible and Concerned Agencies

The Mt. San Antonio Community College District (District) is the Lead Agency and will prepare a Draft Subsequent Project Environmental Impact Report (Draft SEIR) for the Physical Education Project (Phase 1, 2) and hosting the 2020 Olympics Track & Field Trials at Hilmer Lodge Stadium. The project will result in the replacement of the existing Hilmer Lodge Stadium with a new stadium and ancillary facilities.

We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed update. Your agency will need to use the Draft SEIR prepared by the District when considering your input for the project described in the Draft SEIR.

The project description, location and the probable environmental effects are included in the complete NOP document which is posted on the college's website (see below).

The prior 2002, 2005, 2008, 2012 and 2015 Facility Master Plans were evaluated in the Final Program EIRs (SCH 2002041161) that were certified in December 2002, January 2006, September 2008, December 2013 and October 2016. The Physical Education Project (PEP) was previously evaluated in the 2015 Facilities Master Plan Update and Physical Education Projects Final EIR and the project description is unchanged. The certified 2015 FMPU/PEP Final EIR is posted on the District's website.

This Draft SEIR will address only those issues needed to make the prior 2002–2015 documentation adequate for the project. The project-specific environmental effects may include additional impacts at the Campus/Temple and Kellogg/Interstate 10 intersection that were not evaluated in the prior Final Program/Project EIR (SCH 2002041161). The Draft SEIR will also evaluate any new impacts, or revisions required to make the prior documentation adequate for the project. The California Division of the State Architect (DSA) submittals for the project remains unchanged, and the plans for hosting the 2020 Olympic Trails remain unchanged.

Document Available for Review:

The complete NOP document is posted on the District's website:
http://www.mtsac.edu/construction/reports-and-publications/environmental-impact-reports.html

The NOP document may also be reviewed at the following locations:

Walnut Public Library
Reference Desk
21155 La Puente Avenue
Walnut, California 91789

Mt. San Antonio College Library
Building 6, Library, 2nd floor, Reference Desk
1100 North Grand Avenue
Walnut, California 91789

Time for Review:

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days after receipt of this Notice. We will also need the name for a contact person in your agency.

Please send your response to Becky Mitchell, Assistant Director at the address below:

Project Title:	Mt. San Antonio College Physical Education Project (Phase 1, 2)
Project Applicant:	Mt. San Antonio Community College District
Date:	April 14, 2016
Contact:	Becky Mitchell, Assistant Director
Telephone:	(909) 274-5175
Facsimile:	(909) 468-3931
E-Mail Address:	facilitiesplanning@mtsac.edu

NEWS PAPER NOTICE – DRAFT 1 – MARCH 31, 2017 – PUBLISH APRIL 7

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2002041161

Project Title: Physical Education Project (Phse 1, 2) Subsequent Project EIR

Lead Agency: Mt. San Antonio Community College District — Contact Person: Rebecca Mitchell
Mailing Address: 1100 North Grand Avenue, Facilities Division — Phone: (909) 274-5175
City: Walnut — Zip: 91789 — County: Los Angeles

Project Location: County: Los Angeles — City/Nearest Community: Walnut/Pomona
Cross Streets: North Grand Avenue and Temple Avenue — Zip Code: 91789
Longitude/Latitude (degrees, minutes and seconds): 34 ° 44 ′ 30 ″ N / 117 ° 50 ′ 45 ″ W Total Acres: 420 ga
Assessor's Parcel No.: ______ Section: ______ Twp.: ______ Range: ______ Base: ______
Within 2 Miles: State Hwy #: 57/60 — Waterways: ______
Airports: ______ Railways: ______ Schools: Westhoff/Collegewood

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Document Type:

CEQA: [x] NOP [ ] Early Cons [ ] Neg Dec [ ] Mit Neg Dec [ ] Draft EIR [ ] Supplement/Subsequent EIR (Prior SCH No.) ______ Other: ______

NEPA: [ ] NOI [ ] EA [ ] Draft EIS [ ] FONSI

Other: [ ] Joint Document [ ] Final Document [ ] Other: ______

Local Action Type:

[ ] General Plan Update [ ] General Plan Amendment [ ] General Plan Element [ ] Community Plan
[ ] Specific Plan [ ] Master Plan [ ] Planned Unit Development [x] Site Plan
[ ] Rezone [ ] Prezone [ ] Use Permit [ ] Land Division (Subdivision, etc.)
[ ] Annexation [ ] Redevelopment [ ] Coastal Permit [ ] Other: ______

Development Type:

[ ] Residential: Units ______ Acres ______
[ ] Office: Sq.ft. ______ Acres ______ Employees ______
[ ] Commercial: Sq.ft. ______ Acres ______ Employees ______
[ ] Industrial: Sq.ft. ______ Acres ______ Employees ______
[ ] Educational: ______
[ ] Recreational: ______
[ ] Water Facilities: Type ______ MGD ______
[ ] Transportation: Type ______
[ ] Mining: Mineral ______
[ ] Power: Type ______ MW ______
[ ] Waste Treatment: Type ______ MGD ______
[ ] Hazardous Waste: Type ______
[x] Other: New Stadium (11,940 seats) & 2020 Olympic Trials

Project Issues Discussed in Document:

[ ] Aesthetic/Visual [ ] Agricultural Land [ ] Air Quality [ ] Archeological/Historical [ ] Biological Resources [ ] Coastal Zone [ ] Drainage/Absorption [ ] Economic/Jobs
[ ] Fiscal [ ] Flood Plain/Flooding [ ] Forest Land/Fire Hazard [ ] Geologic/Seismic [ ] Minerals [ ] Noise [ ] Population/Housing Balance [ ] Public Services/Facilities
[ ] Recreation/Parks [ ] Schools/Universities [ ] Septic Systems [ ] Sewer Capacity [ ] Soil Erosion/Compaction/Grading [ ] Solid Waste [ ] Toxic/Hazardous [x] Traffic/Circulation
[ ] Vegetation [ ] Water Quality [ ] Water Supply/Groundwater [ ] Wetland/Riparian [ ] Growth Inducement [ ] Land Use [x] Cumulative Effects [ ] Other: ______

Present Land Use/Zoning/General Plan Designation:

City of Pomona - (O) Publicly Owned Land, General Plan (City of Pomona) - Special Campus

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Project Description: *(please use a separate page if necessary)*

The PEP Subsequent SEIR will study the impact of PEP (Phase 1, 2) and hosting the 2020 Olympics Track & Field Trials on two intersections located in the City of Pomona. The intersections were not previously included in the 2015 Facilities Master Plan and Physical Education Projects Program/Project EIR certified in October 2016. The SEIR will address any revised impacts or new impacts not addressed in the prior document.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

Reviewing Agencies Checklist

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "**X**".
If you have already sent your document to the agency please denote that with an "**S**".

____	Air Resources Board	____	Office of Historic Preservation
____	Boating & Waterways, Department of	____	Office of Public School Construction
____	California Emergency Management Agency	____	Parks & Recreation, Department of
____	California Highway Patrol	____	Pesticide Regulation, Department of
s	Caltrans District # 7	____	Public Utilities Commission
____	Caltrans Division of Aeronautics	____	Regional WQCB # ____
____	Caltrans Planning	____	Resources Agency
____	Central Valley Flood Protection Board	____	Resources Recycling and Recovery, Department of
____	Coachella Valley Mtns. Conservancy	____	S.F. Bay Conservation & Development Comm.
____	Coastal Commission	____	San Gabriel & Lower L.A. Rivers & Mtns. Conservancy
____	Colorado River Board	____	San Joaquin River Conservancy
____	Conservation, Department of	____	Santa Monica Mtns. Conservancy
____	Corrections, Department of	____	State Lands Commission
____	Delta Protection Commission	____	SWRCB: Clean Water Grants
____	Education, Department of	____	SWRCB: Water Quality
____	Energy Commission	____	SWRCB: Water Rights
____	Fish & Game Region # 5	____	Tahoe Regional Planning Agency
____	Food & Agriculture, Department of	____	Toxic Substances Control, Department of
____	Forestry and Fire Protection, Department of	____	Water Resources, Department of
____	General Services, Department of		
____	Health Services, Department of	s	Other: Community College Chancellor's Office
____	Housing & Community Development	s	Other: SCAQMD
____	Native American Heritage Commission		

Local Public Review Period (to be filled in by lead agency)

Starting Date April 14, 2017 Ending Date May 15, 2017

Lead Agency (Complete if applicable):

Consulting Firm: SID LINDMARK, AICP
Address: 10 Aspen Creek Lane
City/State/Zip: Laguna Hills, CA 92653
Contact: Sid Lindmark, AICP
Phone: (949) 855-0416

Applicant: Mt. San Antonio Community College District
Address: 1100 North Grand Avenue
City/State/Zip: Walnut, California 91789
Phone: (909) 274-5175 facilitiesplanning@mtsac.edu

Signature of Lead Agency Representative: Rebecca Mitchell **Date:** April 14, 2017

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

STATE OF CALIFORNIA

Edmund G. Brown Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710

April 18, 2017

Rebecca Mitchell
Mt. San Antonio College
1100 North Grade Avenue
Walnut, CA 91789

sent via e-mail to: facilitiesplanning@mtsac.edu

RE: SCH# 2002041161; Physical Education Project (Phase 1, 2) Subsequent Project EIR Project, Los Angeles County, California

Dear Ms. Mitchell:

The Native American Heritage Commission has received the Notice of Preparation (NOP) for Draft Environmental Impact Report for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code § 21000 et seq.), specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b) (CEQA Guidelines Section 15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared. (Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1) (CEQA Guidelines § 15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a **separate category of cultural resources**, "tribal cultural resources" (Pub. Resources Code § 21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code § 21084.2). Please reference California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf. Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code § 21084.3 (a)). **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements**. If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. § 800 et seq.) may also apply.

The NAHC recommends **lead agencies consult with all California Native American tribes** that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments. **Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.**

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:
    a. A brief description of the project.
    b. The lead agency contact information.
    c. Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code § 21080.3.1 (d)).
    d. A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code § 21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code § 21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or environmental impact report. (Pub. Resources Code § 21080.3.1(b)).
    a. For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18). (Pub. Resources Code § 21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:
    a. Alternatives to the project.
    b. Recommended mitigation measures.
    c. Significant effects. (Pub. Resources Code § 21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:
    a. Type of environmental review necessary.
    b. Significance of the tribal cultural resources.
    c. Significance of the project's impacts on tribal cultural resources.
    d. If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code § 21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code § 21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:
    a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
    b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code § 21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:
    a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
    b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code § 21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code § 21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code section 21084.3 (b). (Pub. Resources Code § 21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:
    a. Avoidance and preservation of the resources in place, including, but not limited to:
        i. Planning and construction to avoid the resources and protect the cultural and natural context.
        ii. Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
    b. Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
        i. Protecting the cultural character and integrity of the resource.
        ii. Protecting the traditional use of the resource.
        iii. Protecting the confidentiality of the resource.
    c. Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
    d. Protecting the resource. (Pub. Resource Code § 21084.3 (b)).
    e. Please note that a federally recognized California Native American tribe or a nonfederally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code § 815.3 (c)).
    f. Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code § 5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An environmental impact report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:
    a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
    b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
    c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code § 21082.3 (d)).

    This process should be documented in the Cultural Resources section of your environmental document.

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires **local governments** to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code § 65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code § 65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code section 65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction. (Gov. Code § 65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    a. The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    b. Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    a. If part or all of the APE has been previously surveyed for cultural resources.
    b. If any known cultural resources have been already been recorded on or adjacent to the APE.
    c. If the probability is low, moderate, or high that cultural resources are located in the APE.
    d. If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    a. The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.

   b. The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:
   a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
   b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.
   a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
   b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
   c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

Please contact me if you need any additional information at gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, M.A., PhD.
Associate Governmental Program Analyst

cc: State Clearinghouse

P.O. Box 682, Walnut, CA 91788-0682
21201 La Puente Road
Walnut, CA 91789-2018
Telephone (909) 595-7543
FAX (909) 595-6095
www.ci.walnut.ca.us

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APR 26 2017
MT SAC FACILITIES

CITY OF WALNUT

April 25, 2017

Rebecca Mitchell, Manager, Facilities Support Services
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789

SUBJECT: Notice of Preparation (NOP) of a Draft Subsequent Project EIR for the Mt. San Antonio College Physical Education Project (Phase 1, 2)

Dear Ms. Mitchell,

The City of Walnut has received (via Certified Mail dated April 18, 2017) the Notice of Preparation (NOP) of a Draft Subsequent Project EIR for the Mt. San Antonio College Physical Education Project (Phase 1 & 2).

In an effort to maintain an open and effective communication between the City of Walnut and Mt. SAC, this letter serves as a response to the NOP. The City of Walnut appreciates the efforts by neighboring public agencies and school districts to disseminate reports and documentation on projects that could have significant impacts to the City and our residents at large. In light of the Court's recent decision in the *United Walnut Taxpayer's v Mt. Sac et. al.* case (Los Angeles County Superior Court Case #BC576587), the City is eager to engage in further discussion of the proposed Physical Education Project (Phase 1, 2).

The City submitted a comment letter dated July 28, 2016 identifying the inadequacies of the Draft Subsequent/Project EIR for the Project. We appreciate Mt. SAC's efforts to address those issues needed to make the prior documentation adequate for the project and look forward to continuing consultation in that regard with Mt. Sac on this NOP and the Draft SEIR for the Physical Education Project (Phase 1, 2) as well as any future documents for projects within our community. Thank you for giving the City of Walnut the opportunity to comment on the NOP for this project. If you have any questions, please feel free to contact me at (909) 505-7543.

Sincerely,

Tom Weiner
Community Development Director

Justin Carlson
City Planner

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

RECEIVED
APR 20 2017
MT SAC FACILITIES

Notice of Preparation

April 14, 2017

To: Reviewing Agencies

Re: Physical Education Project (Phse 1, 2) Subsequent Project EIR
SCH# 2002041161

Attached for your review and comment is the Notice of Preparation (NOP) for the Physical Education Project (Phse 1, 2) Subsequent Project EIR draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Rebecca Mitchell
Mt. San Antonio College
1100 North Grade Avenue
Walnut, CA 91789

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# **2002041161**
Project Title Physical Education Project (Phse 1, 2) Subsequent Project EIR
Lead Agency Mt. San Antonio Community College

Type **NOP** Notice of Preparation

Description The PEP Subsequent SEIR will study the impact of PEP (Phase 1, 2) and hosting the 2020 Olympics Track & Field Trials on two intersections located in the City of Pomona. The intersections were not previously included in the 2015 Facilities Master Plan and Physical Education Projects Program/Project EIR certified in Oct. 2016. The SEIR will address any revised impacts or new impacts not addressed in the prior document.

Lead Agency Contact

Name Rebecca Mitchell
Agency Mt. San Antonio College
Phone 909-274-5175 ***Fax***
email
Address 1100 North Grade Avenue
City Walnut ***State*** CA ***Zip*** 91789

Project Location

County Los Angeles
City Walnut
Region
Cross Streets N. Grande Avenue and Temple Avenue
Lat / Long 34° 44' 30" N / 117° 50' 45" W
Parcel No.
Township ***Range*** ***Section*** ***Base***

Proximity to:

Highways Hwy 57, 60
Airports
Railways
Waterways
Schools Westhoff, Collegewood
Land Use City - School, RPD - 61,700 and 28,500
District - Primary Educational, Athletics and Ag and Open Space

Project Issues Traffic/Circulation; Cumulative Effects

Reviewing Agencies Resources Agency; Office of Historic Preservation; Department of Parks and Recreation; Resources, Recycling and Recovery; Department of Water Resources; Department of Fish and Wildlife, Region 5; Native American Heritage Commission; California Highway Patrol; Caltrans, District 7; Air Resources Board, Transportation Projects; Regional Water Quality Control Board, Region 4

Date Received 04/14/2017 ***Start of Review*** 04/14/2017 ***End of Review*** 05/15/2017

Note: Blanks in data fields result from insufficient information provided by lead agency.

Print Form

Appendix C

Notice of Completion & Environmental Document Transmittal

Mail to: State Clearinghouse, P.O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # 2002041161

Project Title: Physical Education Project (Phse 1, 2) Subsequent Project EIR

Lead Agency: Mt. San Antonio Community College District — Contact Person: Rebecca Mitchell
Mailing Address: 1100 North Grand Avenue, Facilities Division — Phone: (909) 274-5175
City: Walnut — Zip: 91789 — County: Los Angeles

Project Location: County: Los Angeles — City/Nearest Community: Walnut/Pomona
Cross Streets: North Grand Avenue and Temple Avenue — Zip Code: 91789
Longitude/Latitude (degrees, minutes and seconds): 34 ° 44 ′ 30 ″ N / 117 ° 50 ′ 45 ″ W Total Acres: 420 ga
Assessor's Parcel No.: ___ Section: ___ Twp.: ___ Range: ___ Base: ___
Within 2 Miles: State Hwy #: 57/60 — Waterways: ___
Airports: ___ Railways: ___ Schools: Westhoff/Collegewood

Document Type:

CEQA: [x] NOP [ ] Draft EIR [ ] Early Cons [ ] Supplement/Subsequent EIR [ ] Neg Dec (Prior SCH No.) ___ [ ] Mit Neg Dec Other: ___

NEPA: [ ] NOI [ ] EA [ ] Draft EIS [ ] FONSI

Other: [ ] Joint Document [ ] Final Document [ ] Other: ___

Governor's Office of Planning & Research

APR 13 2017

STATE CLEARINGHOUSE

Local Action Type:

[ ] General Plan Update [ ] Specific Plan [ ] Rezone [ ] Annexation
[ ] General Plan Amendment [ ] Master Plan [ ] Prezone [ ] Redevelopment
[ ] General Plan Element [ ] Planned Unit Development [ ] Use Permit [ ] Coastal Permit
[ ] Community Plan [x] Site Plan [ ] Land Division (Subdivision, etc.) [ ] Other: ___

Development Type:

[ ] Residential: Units ___ Acres ___
[ ] Office: Sq.ft. ___ Acres ___ Employees ___
[ ] Commercial: Sq.ft. ___ Acres ___ Employees ___
[ ] Industrial: Sq.ft. ___ Acres ___ Employees ___
[ ] Educational: ___
[ ] Recreational: ___
[ ] Water Facilities: Type ___ MGD ___
[ ] Transportation: Type ___
[ ] Mining: Mineral ___
[ ] Power: Type ___ MW ___
[ ] Waste Treatment: Type ___ MGD ___
[ ] Hazardous Waste: Type ___
[x] Other: New Stadium (11,940 seats) & 2020 Olympic Trials

Project Issues Discussed in Document:

[ ] Aesthetic/Visual [ ] Fiscal [ ] Recreation/Parks [ ] Vegetation
[ ] Agricultural Land [ ] Flood Plain/Flooding [ ] Schools/Universities [ ] Water Quality
[ ] Air Quality [ ] Forest Land/Fire Hazard [ ] Septic Systems [ ] Water Supply/Groundwater
[ ] Archeological/Historical [ ] Geologic/Seismic [ ] Sewer Capacity [ ] Wetland/Riparian
[ ] Biological Resources [ ] Minerals [ ] Soil Erosion/Compaction/Grading [ ] Growth Inducement
[ ] Coastal Zone [ ] Noise [ ] Solid Waste [ ] Land Use
[ ] Drainage/Absorption [ ] Population/Housing Balance [ ] Toxic/Hazardous [x] Cumulative Effects
[ ] Economic/Jobs [ ] Public Services/Facilities [x] Traffic/Circulation [ ] Other: ___

Present Land Use/Zoning/General Plan Designation:

City of Pomona - (O) Publicly Owned Land, General Plan (City of Pomona) - Special Campus

Project Description: *(please use a separate page if necessary)*

The PEP Subsequent SEIR will study the impact of PEP (Phase 1, 2) and hosting the 2020 Olympics Track & Field Trials on two intersections located in the City of Pomona. The intersections were not previously included in the 2015 Facilities Master Plan and Physical Education Projects Program/Project EIR certified in October 2016. The SEIR will address any revised impacts or new impacts not addressed in the prior document.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2010

NOP Distribution List

County: Los Angeles

SCH# 2002041151

Resources Agency

- [x] **Resources Agency**
  Nadell Gayou
- [ ] **Dept. of Boating & Waterways**
  Denise Peterson
- [ ] **California Coastal Commission**
  Elizabeth A. Fuchs
- [ ] **Colorado River Board**
  Lisa Johansen
- [ ] **Dept. of Conservation**
  Crina Chan
- [ ] **California Energy Commission**
  Eric Knight
- [ ] **Cal Fire**
  Dan Foster
- [ ] **Central Valley Flood Protection Board**
  James Herota
- [x] **Office of Historic Preservation**
  Ron Parsons
- [x] **Dept of Parks & Recreation**
  Environmental Stewardship Section
- [x] **California Department of Resources, Recycling & Recovery**
  Sue O'Leary
- [ ] **S.F. Bay Conservation & Dev't. Comm.**
  Steve Goldbeck
- [x] **Dept. of Water Resources**
  Resources Agency
  Nadell Gayou

Fish and Game

- [ ] **Depart. of Fish & Wildlife**
  Scott Flint
  Environmental Services Division
- [ ] **Fish & Wildlife Region 1**
  Curt Babcock
- [ ] **Fish & Wildlife Region 1E**
  Laurie Harnsberger
- [ ] **Fish & Wildlife Region 2**
  Jeff Drongesen
- [ ] **Fish & Wildlife Region 3**
  Craig Weightman
- [ ] **Fish & Wildlife Region 4**
  Julie Vance
- [x] **Fish & Wildlife Region 5**
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6**
  Tiffany Ellis
  Habitat Conservation Program
- [ ] **Fish & Wildlife Region 6 I/M**
  Heidi Calvert
  Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Wildlife M**
  William Paznokas
  Marine Region

Other Departments

- [ ] **Food & Agriculture**
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] **Dept. of General Services**
  Cathy Buck
  Environmental Services Section
- [ ] **Delta Stewardship Council**
  Kevan Samsam
- [ ] **Housing & Comm. Dev.**
  CEQA Coordinator
  Housing Policy Division

Independent Commissions, Boards

- [ ] **Delta Protection Commission**
  Erik Vink
- [ ] **OES (Office of Emergency Services)**
  Monique Wilber
- [x] **Native American Heritage Comm.**
  Debbie Treadway
- [ ] **Public Utilities Commission**
  Supervisor
- [ ] **Santa Monica Bay Restoration**
  Guangyu Wang
- [ ] **State Lands Commission**
  Jennifer Deleong
- [ ] **Tahoe Regional Planning Agency (TRPA)**
  Cherry Jacques

Cal State Transportation Agency CalSTA

- [ ] **Caltrans - Division of Aeronautics**
  Philip Crimmins
- [ ] **Caltrans – Planning HQ LD-IGR**
  Christian Bushong
- [x] **California Highway Patrol**
  Suzann Ikeuchi
  Office of Special Projects

Dept. of Transportation

- [ ] **Caltrans, District 1**
  Rex Jackman
- [ ] **Caltrans, District 2**
  Marcelino Gonzalez
- [ ] **Caltrans, District 3**
  Eric Federicks – South
  Susan Zanchi - North
- [ ] **Caltrans, District 4**
  Patricia Maurice
- [ ] **Caltrans, District 5**
  Larry Newland
- [ ] **Caltrans, District 6**
  Michael Navarro
- [x] **Caltrans, District 7**
  Dianna Watson
- [ ] **Caltrans, District 8**
  Mark Roberts
- [ ] **Caltrans, District 9**
  Gayle Rosander
- [ ] **Caltrans, District 10**
  Tom Dumas
- [ ] **Caltrans, District 11**
  Jacob Armstrong
- [ ] **Caltrans, District 12**
  Maureen El Harake

Cal EPA

Air Resources Board

- [ ] Airport & Freight
  Cathi Slaminski
- [x] Transportation Projects
  Nesamani Kalandiyur
- [ ] Industrial/Energy Projects
  Mike Tollstrup
- [ ] **State Water Resources Control Board**
  Regional Programs Unit
  Division of Financial Assistance
- [ ] **State Water Resources Control Board**
  Cindy Forbes – Asst Deputy
  Division of Drinking Water
- [ ] **State Water Resources Control Board**
  Div. Drinking Water #________
- [ ] **State Water Resources Control Board**
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] **State Water Resouces Control Board**
  Phil Crader
  Division of Water Rights
- [ ] **Dept. of Toxic Substances Control**
  CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1**
  Cathleen Hudson
  North Coast Region (1)
- [ ] **RWQCB 2**
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] **RWQCB 3**
  Central Coast Region (3)
- [x] **RWQCB 4**
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] **RWQCB 5S**
  Central Valley Region (5)
  - [ ] **RWQCB 5F**
    Central Valley Region (5)
    Fresno Branch Office
  - [ ] **RWQCB 5R**
    Central Valley Region (5)
    Redding Branch Office
- [ ] **RWQCB 6**
  Lahontan Region (6)
  - [ ] **RWQCB 6V**
    Lahontan Region (6)
    Victorville Branch Office
- [ ] **RWQCB 7**
  Colorado River Basin Region (7)
- [ ] **RWQCB 8**
  Santa Ana Region (8)
- [ ] **RWQCB 9**
  San Diego Region (9)

- [ ] **Other** ________________
- [ ] ________________
  Conservancy

Last Updated 1/17/17

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
South Coast AQMD
(909) 396-2000 • www.aqmd.gov

SENT VIA USPS AND E-MAIL:
facilitiesplanning@mtsac.edu
Rebecca Mitchell, Manager, Facilities Support Services
Facilities Planning & Management
Mt. San Antonio College
100 North Grand Avenue
Walnut, CA 91789-1399

May 5, 2017

Notice of Preparation of a Draft Subsequent Project Environmental Impact Report for the Mt. San Antonio College Physical Education Project (Phase 1, 2)

The South Coast Air Quality Management District (SCAQMD) staff appreciates the opportunity to comment on the above-mentioned document. The SCAQMD staff's comments are recommendations regarding the analysis of potential air quality impacts from the proposed project that should be included in the Draft Subsequent Project Environmental Impact Report (EIR). Please send SCAQMD a copy of the Draft Subsequent Project EIR upon its completion. Note that copies of the Draft Subsequent Project EIR that are submitted to the State Clearinghouse are not forwarded to SCAQMD. Please forward a copy of the Draft Subsequent Project EIR directly to SCAQMD at the address shown in the letterhead. **In addition, please send with the Draft Subsequent Project EIR all appendices or technical documents related to the air quality, health risk, and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include emission calculation spreadsheets and modeling input and output files (not PDF files). Without all files and supporting documentation, SCAQMD staff will be unable to complete our review of the air quality analyses in a timely manner. Any delays in providing all supporting documentation will require additional time for review beyond the end of the comment period.**

Air Quality Analysis

The SCAQMD adopted its California Environmental Quality Act (CEQA) Air Quality Handbook in 1993 to assist other public agencies with the preparation of air quality analyses. The SCAQMD recommends that the Lead Agency use this Handbook as guidance when preparing its air quality analysis. Copies of the Handbook are available from the SCAQMD's Subscription Services Department by calling (909) 396-3720. More recent guidance developed since this Handbook was published is also available on SCAQMD's website at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/ceqa-air-quality-handbook-(1993). SCAQMD staff also recommends that the Lead Agency use the CalEEMod land use emissions software. This software has recently been updated to incorporate up-to-date state and locally approved emission factors and methodologies for estimating pollutant emissions from typical land use development. CalEEMod is the only software model maintained by the California Air Pollution Control Officers Association (CAPCOA) and replaces the now outdated URBEMIS. This model is available free of charge at: www.caleemod.com.

The SCAQMD has also developed both regional and localized significance thresholds. The SCAQMD staff requests that the Lead Agency quantify criteria pollutant emissions and compare the results to the recommended regional significance thresholds found here: http://www.aqmd.gov/docs/default-source/ceqa/handbook/scaqmd-air-quality-significance-thresholds.pdf. In addition to analyzing regional air quality impacts, the SCAQMD staff recommends calculating localized air quality impacts and comparing the results to localized significance thresholds (LSTs). LSTs can be used in addition to the recommended regional significance thresholds as a second indication of air quality impacts when preparing a CEQA document. Therefore, when preparing the air quality analysis for the proposed project, it is recommended that the Lead Agency perform a localized analysis by either using the LSTs developed by the SCAQMD or performing dispersion modeling as necessary. Guidance for performing a localized air quality analysis can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/localized-significance-thresholds.

The Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the proposed project and all air pollutant sources related to the proposed project. Air quality impacts from both construction (including demolition, if any) and operations should be calculated. Construction-related air quality impacts typically include, but are not limited to, emissions from the use of heavy-duty equipment from grading, earth-loading/unloading, paving, architectural coatings, off-road mobile sources (e.g., heavy-duty construction equipment) and on-road mobile sources (e.g., construction worker vehicle trips, material transport trips). Operation-related air quality impacts may include, but are not limited to, emissions from stationary sources (e.g., boilers), area sources (e.g., solvents and coatings), and vehicular trips (e.g., on- and off-road tailpipe emissions and entrained dust). Air quality impacts from indirect sources, such as sources that generate or attract vehicular trips, should be included in the analysis.

In the event that the proposed project generates or attracts vehicular trips, especially heavy-duty diesel-fueled vehicles, it is recommended that the lead agency perform a mobile source health risk assessment. Guidance for performing a mobile source health risk assessment ("*Health Risk Assessment Guidance for Analyzing Cancer Risk from Mobile Source Diesel Idling Emissions for CEQA Air Quality Analysis*") can be found at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mobile-source-toxics-analysis. An analysis of all toxic air contaminant impacts due to the use of equipment potentially generating such air pollutants should also be included.

In addition, guidance on siting incompatible land uses (such as placing homes near freeways) can be found in the California Air Resources Board's *Air Quality and Land Use Handbook: A Community Health Perspective*, which can be found at: http://www.arb.ca.gov/ch/handbook.pdf. CARB's Land Use Handbook is a general reference guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Guidance[1] on strategies to reduce air pollution exposure near high-volume roadways can be found at: https://www.arb.ca.gov/ch/rd_technical_advisory_final.PDF.

Mitigation Measures

In the event that the proposed project generates significant adverse air quality impacts, CEQA requires that all feasible mitigation measures that go beyond what is required by law be utilized during project construction and operation to minimize these impacts. Pursuant to CEQA Guidelines §15126.4 (a)(1)(D), any impacts resulting from mitigation measures must also be discussed. Several resources are available to assist the Lead Agency with identifying potential mitigation measures for the proposed project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages available here: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions and Rule 1403 – Asbestos Emissions from Demolition/Renovation Activities

[1] In April 2017, ARB published a technical advisory, *Strategies to Reduce Air Pollution Exposure Near High-Volume Roadways: Technical Advisory*, to supplement ARB's Air Quality and Land Use Handbook: A Community Health Perspective. This Technical Advisory is intended to provide information on strategies to reduce exposures to traffic emissions near high-volume roadways to assist land use planning and decision-making in order to protect public health and promote equity and environmental justice. Available at: https://www.arb.ca.gov/ch/landuse.htm.

- SCAQMD's Mitigation Monitoring and Reporting Plan (MMRP) for the 2016 AQMP available here (starting on page 86): http://www.aqmd.gov/docs/default-source/Agendas/Governing-Board/2017/2017-mar3-035.pdf?sfvrsn=5
- CAPCOA's *Quantifying Greenhouse Gas Mitigation Measures* available here: http://www.capcoa.org/wp-content/uploads/2010/11/CAPCOA-Quantification-Report-9-14-Final.pdf

Alternatives

In the event that the proposed project generates significant adverse air quality and health risks impacts, CEQA requires the consideration and discussion of alternatives to the project or its location which are capable of avoiding or substantially lessening any of the significant effects of the project. The discussion of a reasonable range of potentially feasible alternatives, including a "no project" alternative, is intended to foster informed decision-making and public participation. Pursuant to CEQA Guidelines § 15126.6 (d), the Draft Subsequent Project EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project.

Permits

In the event that the proposed project requires a permit from SCAQMD, SCAQMD should be identified as a responsible agency for the proposed project. For more information on permits, please visit the SCAQMD webpage at: http://www.aqmd.gov/home/permits. Questions on permits can be directed to the SCAQMD's Engineering and Permitting staff at (909) 396-3385.

Data Sources

SCAQMD rules and relevant air quality reports and data are available by calling the SCAQMD's Public Information Center at (909) 396-2039. Much of the information available through the Public Information Center is also available at the SCAQMD's webpage (http://www.aqmd.gov).

SCAQMD staff is available to work with the Lead Agency to ensure that project air quality and health risk impacts are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at lsun@aqmd.gov or call me at (909) 396-3308.

Sincerely,

Lijin Sun

Lijin Sun, J.D.
Program Supervisor, CEQA IGR
Planning, Rule Development & Area Sources

LS
LAC170413-04
Control Number

May 8, 2017

VIA E-MAIL

Mt. San Antonio College
Attn: Ms. Rebecca Mitchell
1100 N. Grand Avenue
Walnut, CA 91789-1399

RE: Physical Education Project (Phase 1, 2) Subsequent Project EIR

Dear. Ms. Mitchell:

Pursuant to your letter dated April 24, 2017 and California Water Code Sections 10910-10915 and Sections 79560-79565, Three Valleys Municipal Water District (TVMWD) recognizes the additional supply of water required by the above-referenced project. TVMWD further acknowledges that the amount specified by Mt. SAC in its EIR document can be served by the existing water connection (designated as PM-1) on Metropolitan Water District's (MWD) Orange County Feeder without additional construction or expansion of the connection.

Mt. SAC's current Tier 1 allocation appears sufficient to cover the additional water demand of 48,000 gallons per day and no need for new or expanded entitlements are warranted at this time. It should be noted, however, that during years of drought or limited water availability, all of TVMWD's member agencies (including Mt. SAC) are subject to a decrease in their annual allocations. While these conditional changes in allocation do not necessarily limit the amount of water that an agency can take, exceeding the established amount will result in additional fees and costs to the agency.

Please contact TVMWD if you require any clarifications or have any additional questions.

Very truly yours,

Mario C. Garcia
Manager of Engineering & Operations

1021 E. Miramar Avenue • Claremont, California 91711-2052
Telephone (909) 621-5568 • Fax (909) 625-5470 • http://www.threevalleys.com

Response to MT SAC NOP dated April 14, 2017

Responder: United Walnut Taxpayers (UWT)

Date May 14, 2017

---

1) Project submitted to DSA as Application number 03-11612 as ACE (Athletic Complex East), there was no updated submittal for PEP (Physical Education Project).
2) An SEIR was prepared on the above mentioned project after obtaining DSA approval. This practice was clearly admonished in judge Chalfant's Preliminary ruling of March 14, 2017.
3) The ACE (PEP) is NOT exempt from City zoning under 53094; the ACE or PEP is not a class room facility neither is the 91,727 gsf buildout of supporting buildings.
4) Mt SAC needs to apply for a conditional use permit (CUP) prior to proceeding with the project in addition to obtaining all necessary permits including hauling and grading.
5) Hilmer Lodge Stadium is designated a historic resource within a designated historic district; the board has waived the historic status of the stadium with a statement of overriding considerations without obtaining the necessary approvals from the State to demolish this historic structure. The stadium is eligible for the California Register of Historical Resources and is a historic landmark in the City of Walnut.
6) The project is subject to the City's noise as well as any other City ordinance and standards since it is a non-classroom facility.
7) The ACE (PEP) necessarily includes removal and disposal of remaining earthen materials from the stadium hill as an integral component of this project. These required earthmoving activities, including the timing of hauling and disposal in relation to other campus projects must be included, and related environmental impacts addressed as a part the ACE.
8) The NOP states that the ACE project is not subject to City zoning ordinances. However, as stated in Judge James Chalfont's Preliminary ruling of March 14. The grading component of such projects would not be exempt from City of Walnut permitting ordinances, and should be so stated in this environmental document.
9) UWT strongly objects to the use of approximately $90 million in taxpayers' money on a project that was not part of the so called 2008 "Master Plan" referenced in Measure RR and approved by voters.

DEPARTMENT OF TRANSPORTATION
District 7 – Office of Regional Planning
100 S. MAIN STREET, MS 16
LOS ANGELES, CA 90012
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May 15, 2017

Ms. Rebecca Mitchell
Mt. San Antonio College
Facilities Planning & Management
1100 North Grand Avenue
Walnut, CA 91789

RE: Physical Education Project Subsequent
Project EIR - Notice of Preparation
SCH#2002041161
GTS#07-LA-2016-00855-FL
Vic. LA/ 10/ PM 41.85
LA/ 57/ PM R6.489

Dear Ms. Mitchell:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the above referenced project. The project includes the study of the impact of Physical Education Project and hosting the 2020 Olympics Track & Field Trials on two intersections located in the City of the Pomona.

The nearest State facilities to the proposed project is I-10 and SR-57. To assist us in our efforts to evaluate the impacts of this project on State transportation facilities, a traffic study should be prepared. Please refer the Project's traffic consultant to Caltrans' traffic study guide website: http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf. If one has already been prepared for the project, please forward a copy to Caltrans for review and comment.

Listed below are some elements of what is generally expected in the traffic study:

1. Presentations of assumptions and methods used to develop trip generation, trip assignments, and choice of travel mode to I-10 and SR-57. An analysis of the freeway mainline, all on/off-ramps, parallel roadways, and freeway connector. Also, specifically as indicated by the proposed project to include additional impacts at Kellogg Drive at I-10 and Temple Avenue at SR-57.

2. Caltrans is concerned that additional traffic existing on the freeway may potentially back into the mainline through lanes if the queue exceeds the storage capacity on the off-ramps. A queuing analysis should be performed using HCM methodology. The capacity of the off-ramp should be calculated by the actual length of the off-ramp between the terminuses to the gore point with some safety factor. The queue length should be calculated from the traffic

counts, actual signal timing and the percent of truck assignments to the ramp with a passenger car equivalent factor of 3.0 (worst case scenario). The analyzed result may determine whether project-related plus cumulative traffic is expected to cause long queues on the on- and off-ramps.

3. Analysis of ADT, AM and PM peak-hour volumes for both the existing and future conditions in the affected area with and without the project. Future conditions including built-out and plan-horizon years. It is also recommended that the report include AM/PM peak hour volumes for bicycle under the existing conditions.

4. A cumulative traffic analysis, which includes existing traffic, traffic generated by the project, cumulative traffic generated from all specific approved developments in the area, and traffic growth other than from the project and developments.

5. A discussion of multi-modal mitigation measures, including possible Active Transportation enhancements, appropriate to alleviate anticipated traffic impacts. Any mitigation involving transit or Transportation Demand Management (TDM) should be justified and the results conservatively estimated.

6. Fair share contributions toward pre-established or future improvements on the State Highway System is considered to be an acceptable form of mitigation. Please use the following ratio when estimating project equitable share responsibility: additional traffic volume due to project implementation is divided by the total increase in the traffic volume (see Appendix "B" of the Guide).

Caltrans continues to strive to improve its standards and processes to provide flexibility while maintaining the safety and integrity of the State's transportation system. It is our goal to implement strategies that are in keeping with our mission statement, which is to *"provide a safe, sustainable, integrated, and efficient transportation system to enhance California's economy and livability."*

Good geometric and traffic engineering design to accommodate bicyclists and pedestrians are critical at every on and off ramp and freeway terminus intersection with local streets. Caltrans recommends the traffic study to include the impact of the traffic from pedestrians and bicyclists and will work with the lead agency to look for every opportunity to develop projects that improve safety and connectivity for pedestrians and bicyclists.

In view of SB 743, the Governor's Office of Planning and Research (OPR) is working to develop an alternative to LOS for evaluating transportation impacts pursuant to CEQA. Such as using Vehicle Miles Traveled (VMT) as the primary metric in identifying transportation impacts for all future development projects. Once OPR provides new guidance, Caltrans hopes to collaborate with the lead agency to adopt methods of traffic analysis and new thresholds that are mutually acceptable.

As a reminder, transportation of heavy construction equipment and/or materials, which requires the use of oversized-transport vehicles on State highways, will require a Caltrans transportation permit. Caltrans recommends that large size truck trips be limited to off-peak commute periods.

Storm water run-off is a sensitive issue for Los Angeles and Ventura counties. Please be mindful that project needs to be designed to discharge clean run-off water and it is not permitted to discharge onto State highway facilities.

If you have any questions or concerns regarding these comments, please feel free to contact the project coordinator, Frances Lee at (213) 897-0673 or electronically at frances.lee@dot.ca.gov.

Sincerely,

Dianna Watson

DIANNA WATSON
Branch Chief, LD-IGR/CEQA Review

cc: Scott Morgan, State Clearinghouse

Submitted by:

iteris

Traffic Study Update FOR PEP PHASE I AND II

Draft Report

Submitted to:

Mt. San Antonio College

May 3, 2017

17J16-17A8

iteris

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801 South Grand Avenue, Suite 530
Los Angeles, CA 90017

TRAFFIC STUDY UPDATE FOR PHYSICAL EDUCATION PROJECT (PHASE I AND II)

To: Gary Nellesen, Mt San Antonio College

From: Deepak Kaushik, P.E., Iteris Inc.

Date: May 3, 2017

Subject: PEP Phase I and II Traffic Study Update

1. Introduction

This memorandum presents Iteris' supplemental analysis of the potential traffic impacts in the City of Pomona related to the proposed 2015 Facilities Master Plan Update (FMPU) and Physical Education Projects (PEP) of Mt. San Antonio College (Mt. SAC), located in the City of Walnut. This supplemental analysis has been developed as part of a response to comments provided by the City of Pomona on the project's 2015 Traffic Impact Study referenced below.

The following two (2) intersections, located in the City of Pomona, are analyzed as part of this memorandum:

1. Campus Drive/Temple Avenue (signalized); and
2. Kellogg Drive/I-10 Westbound Ramps (stop-controlled).

Baseline analysis conditions for project trip generation, trip distribution, and trip assignment are based on the "Mt. SAC 2015 Facilities Master Plan Update & Physical Education Projects – Traffic Impact Study Draft Report." Traffic operations for this memorandum were evaluated for each of the following scenarios during the weekday a.m. and p.m. peak hours:

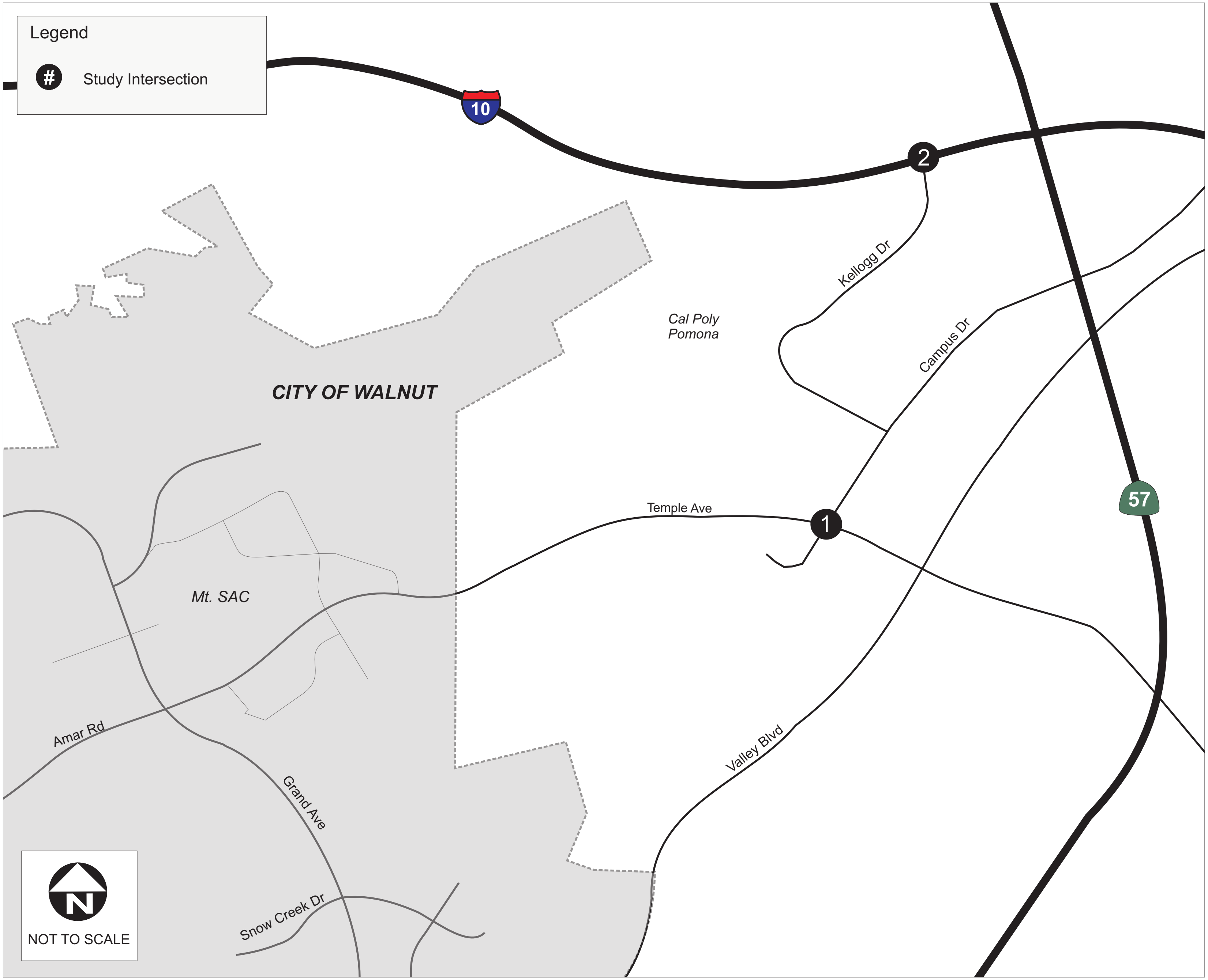
- Existing Conditions (2016);
- Existing Plus 2020 Project Conditions;
- Existing Plus 2025 Project Conditions;
- Existing Plus 2020 Project Plus Cumulative Conditions;
- Existing Plus 2025 Project Plus Cumulative Conditions;
- Existing Plus 2020 Olympic Track and Field Trials Plan A Parking Conditions;
- Existing Plus 2020 Olympic Track and Field Trials Plan B Parking Conditions;
- Existing Plus 2020 Cumulative Plus Olympic Track and Field Trials Plan A Parking Conditions; and
- Existing Plus 2020 Cumulative Plus Olympic Track and Field Trials Plan B Parking Conditions.

The Existing 2016 conditions refer to conditions during the fall term in November, with the new Cal Poly Pomona parking structure operational. **Figure 1** shows the location of the intersections analyzed in this memorandum.

1. TRAFFIC OPERATIONS METHODOLOGY

The quality of traffic operations is characterized using the concept of level of service (LOS). Level of service is defined by a range of grades from A (best) to F (worst). At intersections, LOS “A” represents relatively free operating conditions with little or no delay. LOS “F” is characterized by extremely unstable flow conditions and severe congestion with volumes at or near the intersection’s design capacity. This results in long queues backing up from all approaches to intersections.

In this report, analysis of traffic operations at the Campus Drive/Temple Avenue intersection was conducted according to the Los Angeles County traffic impact analysis guidelines. Utilizing these guidelines, intersection operating conditions were quantified using the Intersection Capacity Utilization (ICU) method. Volume-to-capacity (V/C) ratios and corresponding levels of service (LOS) were calculated at study intersections during the weekday a.m. and p.m. peak hours most closely matching the construction time periods. LOS analyses for all study intersections were conducted using TRAFFIX software. **Table 1** presents a brief description of each level of service letter grade, as well as the range of V/C ratios associated with each grade for signalized intersections.



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Mt San Antonio College
2015 Facilities Master Plan Update / Physical Education Projects
Traffic Impact Analysis

FIGURE 1
Study Intersections

TABLE 1: INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Intersection Volume to Capacity (V/C) Ratio
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	0.000-0.600
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>0.600-0.700
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>0.700-0.800
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>0.800-0.900
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>0.900-1.000
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 1.000

For intersections operated under Caltrans' jurisdiction, such as the Kellogg Drive/I-10 Westbound Ramps intersection, analysis of traffic operations was conducted utilizing the Highway Capacity Manual (HCM) methodology for evaluation of intersection operating conditions. **Table 2** presents a brief description of each level of service letter grade, as well as the range of HCM average intersection delay associated with each grade for unsignalized intersections.

TABLE 2: INTERSECTION LEVEL OF SERVICE DEFINITIONS – HCM METHODOLOGY

Level of Service	Description	Signalized Intersection Delay (seconds per vehicle)
A	Excellent operation. All approaches to the intersection appear quite open, turning movements are easily made, and nearly all drivers find freedom of operation.	$\leq$ 10
B	Very good operation. Many drivers begin to feel somewhat restricted within platoons of vehicles. This represents stable flow. An approach to an intersection may occasionally be fully utilized and traffic queues start to form.	>10 and $\leq$ 15
C	Good operation. Occasionally drivers may have to wait more than 60 seconds, and back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted.	>15 and $\leq$ 25
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>25 and $\leq$ 35
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>35 and $\leq$ 50
F	Forced flow. Represents jammed conditions. Backups form locations downstream or on the cross street may restrict or prevent movement of vehicles out of the intersection approach lanes; therefore, volumes carried are not predictable. Potential for stop and go type traffic flow.	> 50

Source: Highway Capacity Manual 2000, Transportation Research Board, Washington, D.C., 2000.

This analysis conservatively utilizes the Los Angeles County Public Works traffic impact review guidelines, which state that a project's traffic impact is evaluated based on ICU and is considered significant if the change in volume to capacity ratio (V/C) relative to the "without project" signalized intersection level of service (LOS) meets or exceeds the thresholds contained in **Table 3**. These guidelines are more stringent than the Los Angeles County Metropolitan Transportation Authority (LACMTA) guidelines which were used in the 2008 traffic impact analysis for the Mt. SAC Master Plan Update EIR.

TABLE 3: INTERSECTION SIGNIFICANT IMPACT CRITERIA

Intersection LOS in Pre-Project Conditions	V/C	Project V/C Increase
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E / F	0.91 or more	0.01 or more

In addition, a project impact is considered significant to a Caltrans facility if the project traffic results in a worsening level of service from LOS D or better to LOS E or F. In addition, a project impact is considered significant if a Caltrans facility is currently operating at LOS E or F and the project traffic results in an increase in average vehicle delay.

2. EXISTING CONDITIONS

This section presents the existing conditions of the study area. Existing intersection traffic counts were collected on November 9, 2016 during the a.m. peak period (7:00 – 9:00 a.m.) and the p.m. peak period (4:00 – 6:00 p.m.). These counts include traffic associated with the new Cal Poly parking structure, located along Temple Avenue between University Drive and Campus Drive, which opened in September 2016. The traffic impact analysis is based on the highest single hour of traffic during each time period at each location. Existing traffic count data is provided in **Appendix A**.

A level of service analysis was conducted to evaluate existing intersection operations during the a.m. and p.m. peak hours at the two study intersections. The configuration of the Campus Drive/Temple Avenue intersection was recently modified, with improvements completed before September 2016. This analysis includes the current, modified configuration for the intersection. The modifications consist of an additional southbound right-turn lane and an additional eastbound left-turn lane. **Table 4** summarizes the existing LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**. **Figure 2** shows the existing peak hour volumes at the study intersections. Since all movements are free flowing at the Kellogg Drive/I-10 Eastbound off-ramp intersection (i.e. no traffic signal control, no stop sign control), no LOS analysis is needed at the Eastbound off-ramp. The traffic study update studied the Kellogg Drive/Westbound Ramps intersection only. As shown in **Table 4**, the Kellogg Drive/I-10 Westbound Ramps study intersection is currently operating at LOS F in the p.m. peak hour.

TABLE 4: EXISTING INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Control Type	AM Peak Hour			PM Peak Hour		
			Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS
1	Campus Dr/Temple Ave	Signalized	-	0.849	D	-	0.660	B
2	Kellogg Dr/I-10 WB Ramps*	Stop Control	16.4	0.547	C	81.9	1.098	F

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

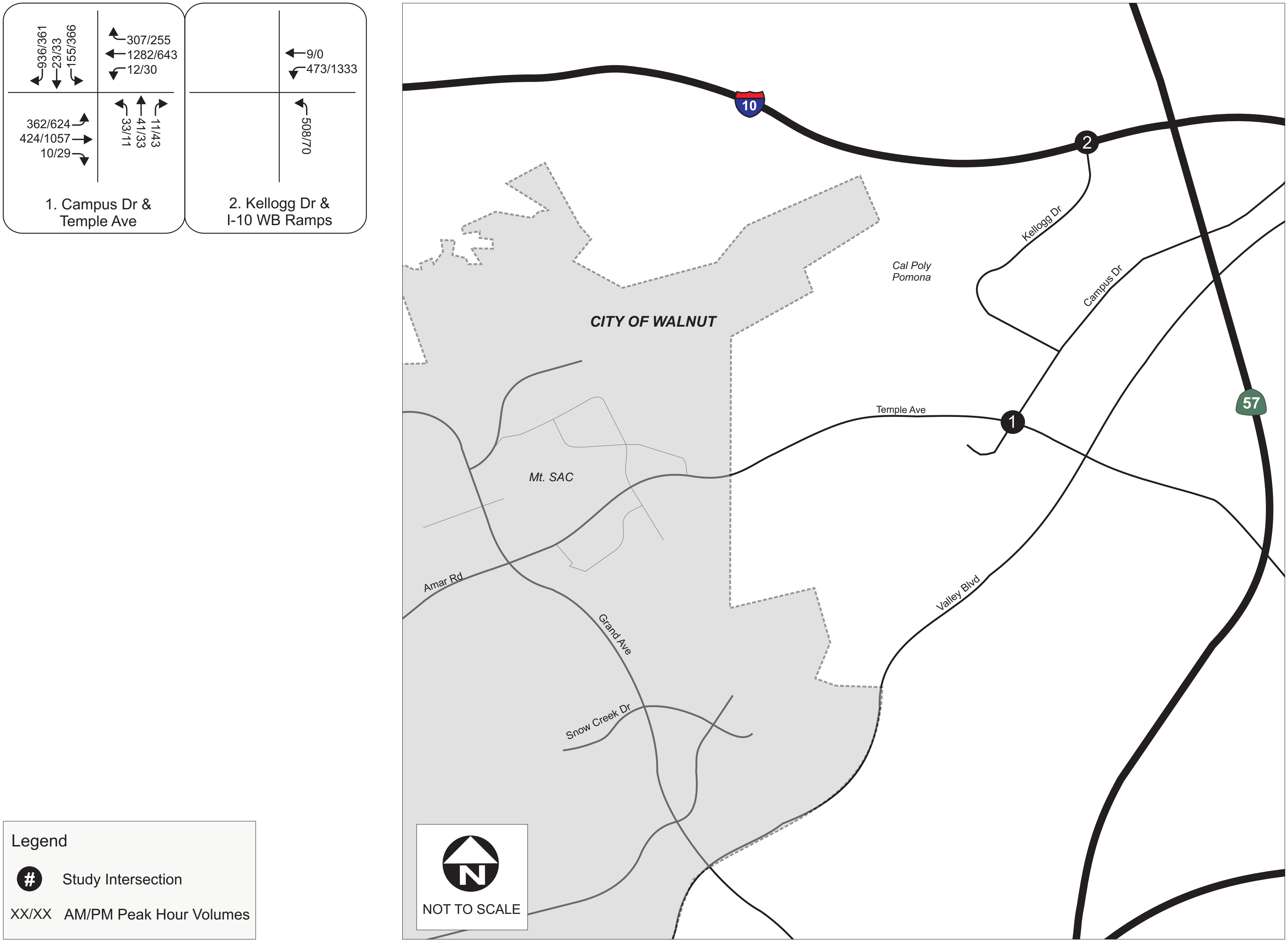


FIGURE 2
Existing Peak Hour Intersection Volumes

3. Proposed Project Traffic

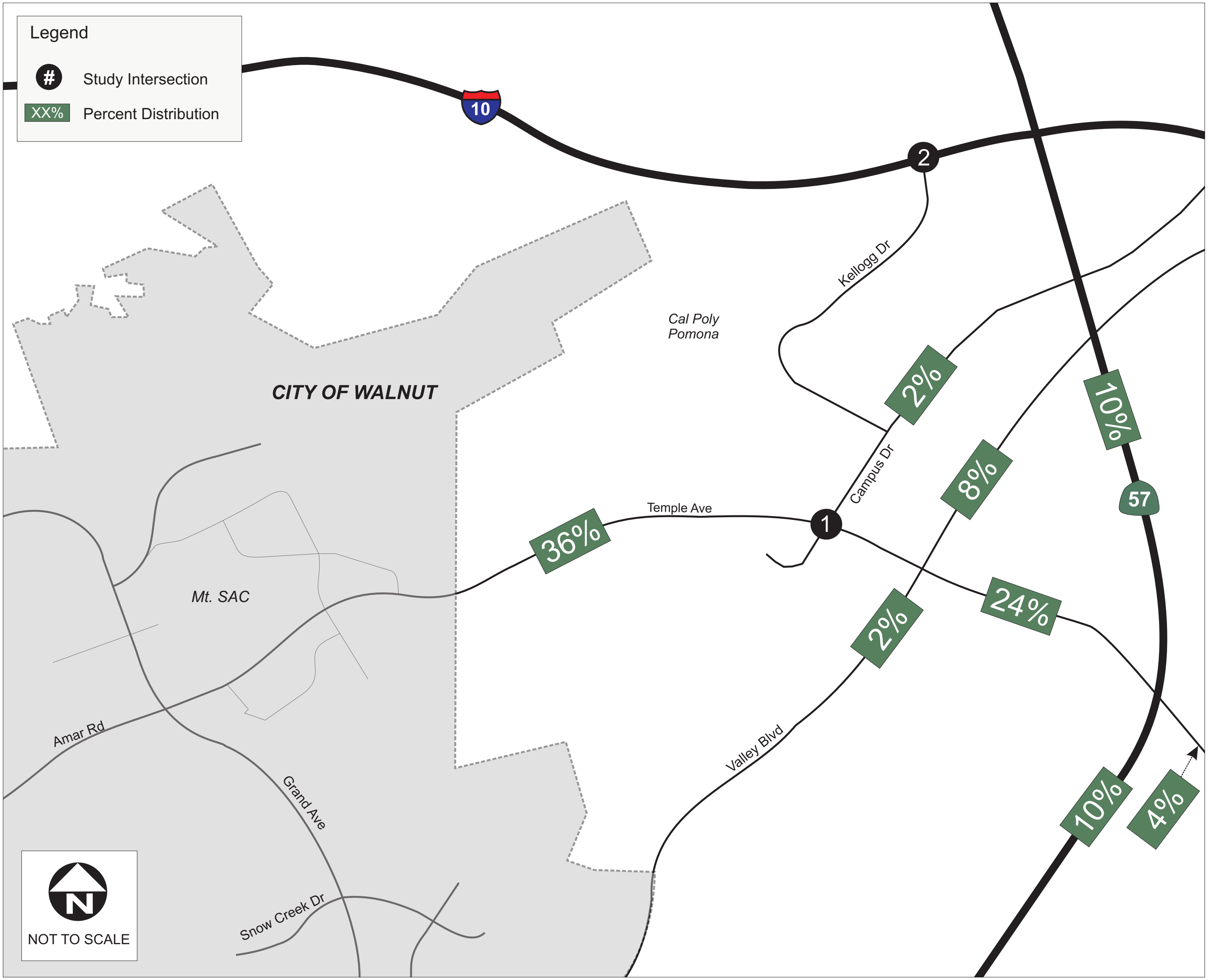
Details of the traffic generated by the proposed buildout of the FMPU & PEP project, including trip generation, trip distribution and trip assignment for years 2020 and 2025, can be found in the "Mt. SAC 2015 Facilities Master Plan Update & Physical Education Projects – Traffic Impact Study Final Report."

Trip generation rates for the proposed project were calculated based on those published in the *Institute of Transportation Engineers (ITE), Trip Generation, 9th Edition*. The land use category representing the proposed project was identified as Junior/Community College. The increase in traffic is based on student headcount. In year 2020, it is anticipated that an additional 3,745 students would be enrolled at the college. In year 2025, it is anticipated that an additional 7,153 students would be enrolled at the college when compared to existing conditions.

Trip distribution assumptions are used to determine the origin and destination of new vehicle trips associated with the project. The geographic distribution of project trips is based on the locations of local activity centers and the street system that serves the site. The trip distribution routes utilized in this analysis were determined based on the patterns of existing campus traffic and the distribution of student residences provided by Mt SAC. **Figure 3** shows the trip distribution used within the study area of the FMPU during the a.m. and p.m. peak hours. The project trips were assigned based on distribution inputs to the TRAFFIX network.

4. Existing Plus 2020 Project Conditions

This section summarizes the traffic operations of the study intersections for existing conditions with the proposed project year 2020 trips. The official buildout date of the 2015 FMPU and of the PEP is 2020. Existing plus 2020 project conditions were developed by adding trips generated by the proposed 2020 project buildout to the existing volumes at the two intersections, using the distribution shown in the 2015 FMPU & PEP Traffic Impact Study. A level of service analysis was conducted to evaluate existing plus 2020 project intersection operations during the a.m. and p.m. peak hours at the study intersections. The 2020 analysis assumes the same intersection configurations as existing conditions. **Table 5** summarizes the existing plus 2020 project level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.



Mt San Antonio College
2015 Facilities Master Plan Update / Physical Education Projects
Traffic Impact Analysis

FIGURE 3
Project Trip Distribution

TABLE 5: EXISTING PLUS 2020 PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Existing Plus 2020 Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.894	D	-	0.694	B	0.045	0.034	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	16.4	0.547	C	81.9	1.098	F	0	0	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 5**, based on the thresholds of significance, the Campus Drive/Temple Avenue intersection is forecast to be significantly impacted by the proposed 2020 project during the a.m. peak hour. The intersection of Kellogg Drive/I-10 Westbound ramps is not impacted by the project based on the significant impact criteria described in Section 1 for Caltrans facilities.

In order to alleviate the project traffic impact at the Campus Drive/Temple Avenue intersection, the following mitigation measure is recommended:

- **Campus Drive/Temple Avenue** – Re-stripe the westbound approach to convert the westbound right-turn lane to a shared through/right-turn lane.

Table 6 shows the mitigated existing plus 2020 project LOS at the Campus Drive/Temple Avenue intersection.

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TABLE 6: MITIGATED EXISTING PLUS 2020 PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Mitigated Existing Plus 2020 Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.807	D	-	0.669	B	-0.042	0.009	No

Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

5. Existing Plus 2025 Project Conditions

This section summarizes the traffic operations of the study intersections for existing conditions with the proposed project year 2025 trips. Existing plus 2025 project conditions were developed by adding trips generated by the proposed 2025 project buildout to the existing volumes at the two intersections, using the distribution shown in the 2015 FMPU & PEP Traffic Impact Study. A level of service analysis was conducted to evaluate existing plus 2025 project intersection operations during the a.m. and p.m. peak hours at the study intersections. The 2025 analysis assumes the same intersection configurations as existing conditions. **Table 7** summarizes the existing plus 2025 project level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 7: EXISTING PLUS 2025 PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

	Intersection	Existing Conditions						Existing Plus 2025 Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.933	E	-	0.724	C	0.084	0.064	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	16.4	0.547	C	81.9	1.098	F	0	0	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 7**, based on the thresholds of significance, the Campus Drive/Temple Avenue intersection is forecast to be significantly impacted by the proposed 2025 project during the a.m. peak hour. The intersection of Kellogg Drive/I-10 Westbound ramps is not affected by the project.

Similar to 2020 conditions, in order to alleviate the project traffic impact at the Campus Drive/Temple Avenue intersection, the following mitigation measure is recommended:

- **Campus Drive/Temple Avenue** – Re-stripe the westbound approach to convert the westbound right-turn lane to a shared through/right-turn lane.

Table 8 shows the mitigated existing plus 2025 project LOS at the Campus Drive/Temple Avenue intersection.

TABLE 8: MITIGATED EXISTING PLUS 2025 PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Mitigated Existing Plus 2025 Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.834	D	-	0.689	B	-0.015	0.029	No

Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

6. Cumulative Conditions

The following sections summarize the forecast increase in traffic due to specific, known development projects in the area surrounding the study locations that may affect traffic circulation. The projected buildout year of the FMPU is 2020 and the County General Plan buildout is 2025. Details of the traffic generated by these projects in the area surrounding the study locations can be found in the "Mt. SAC 2015 Facilities Master Plan Update & Physical Education Projects – Traffic Impact Study Final Report." A list of cumulative projects within the region, expected to be built by 2020 and 2025, with detailed trip generation, trip distribution, and location of the projects are illustrated in the Final Report as well. The detailed list of cumulative projects and their trip generation are provided in **Appendix C**. **Table 9** summarizes the p.m. peak hour and daily cumulative trip totals for each lead agency and shows the share of total trip growth in the area that the 2015 FMPU accounts for.

Table 9: Summary of Future Trip Growth Within Study Area

Lead Agency	Trip Growth Within Study Area			
	2020 PM Peak Hour Trips	2020 ADT Peak Hour Trips	2025 PM Peak Hour Trips	2025 ADT Peak Hour Trips
Walnut	87	888	87	888
Industry[1]	96	1,383	1,561	14,982
Pomona	703	5,436	703	5,436
Diamond Bar	51	575	51	575
Cal Poly	695	6,992	1,511	15,200
Sub Total	*1,632*	*15,274*	*3,913*	*37,081*
2015 FMPU	449	4,606	858	8,798
TOTAL	**2,081**	**19,880**	**4,771**	**45,879**
2015 FMPU Percent of Total Growth	21.6%	23.2%	18.0%	19.2%

1 = Includes Industry Business Complex (IBC) partial buildout in 2025 only (20 percent of 4,779,000 gsf and 67,993 daily trip buildout total).

As shown in **Table 9**, the 2015 FMPU trips are forecast to account for approximately 22% of the overall p.m. peak hour traffic growth in the study in year 2020. In year 2025, the FMPU trips are forecast to account for approximately 18% of the overall p.m. peak hour traffic growth in the study area.

Existing Plus 2020 Project Plus Cumulative Conditions

This section summarizes the traffic operations of the study intersections for existing conditions plus 2020 project plus cumulative volumes. The volumes were developed by adding the trips generated by the proposed 2020 project to the existing plus 2020 cumulative volumes (without project), as described in the 2015 FMPU & PEP Traffic Impact Study. A level of service analysis was conducted to evaluate existing plus 2020 project plus cumulative intersection operations during the a.m. and p.m. peak hours at the study intersections. The 2020 analysis assumes the same intersection configurations as existing conditions. **Table 10** summarizes the existing plus 2020 project plus cumulative level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 10: EXISTING PLUS 2020 CUMULATIVE PLUS PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Existing Plus 2020 Cumulative Plus Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.902	E	-	0.784	C	0.053	0.124	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	18.1	0.619	C	124.1	1.250	F	1.7	42.2	Yes (p.m. only)

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 10**, based on the thresholds of significance, the Campus Drive/Temple Avenue intersection is forecast to be significantly impacted by the proposed 2020 cumulative plus project conditions during the a.m. peak hour by the identified cumulative projects. The intersection of Kellogg Drive/I-10 Westbound ramps is forecast to be significantly impacted, during the p.m. peak hour only, by the identified cumulative projects.

As mentioned in Section 4 and 5, the impact at the Campus Drive/Temple Avenue intersection can be reduced by re-striping the westbound approach to convert the westbound right-turn lane into a shared through/right-turn lane. However, the impact would not be fully mitigated by this improvement in cumulative conditions. In order to fully mitigate the impact, an additional westbound right-turn lane would be required. This improvement is not considered feasible, though, due to the high cost of widening the Temple Avenue bridge over the wash/river. As a result, the a.m. peak hour impact is considered significant and unavoidable in cumulative conditions.

The Kellogg Drive/I-10 Westbound Ramps intersection is currently stop-controlled. A potential mitigation to reduce project impacts is to consider construction of a traffic signal. This mitigation would require coordination with Caltrans. **Table 11** shows the mitigated existing plus 2020 cumulative plus project LOS at the two intersections.

TABLE 11: MITIGATED EXISTING PLUS 2020 CUMULATIVE PLUS PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

	Intersection	Existing Conditions						Mitigated Existing Plus 2025 Cumulative Plus Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	0.872	D	-	0.779	C	0.023	0.119	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	17.9	0.394	B	10.8	0.542	B	1.5	-71.1	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

Existing Plus 2025 Project Plus Cumulative Conditions

This section summarizes the traffic operations of the study intersections for existing conditions plus 2025 project plus cumulative volumes. The volumes were developed by adding the trips generated by the proposed 2025 project to the existing plus 2025 cumulative volumes (without project), as described in the 2015 FMPU & PEP Traffic Impact Study. A level of service analysis was conducted to evaluate existing plus 2025 project plus cumulative intersection operations during the a.m. and p.m. peak hours at the study intersections. The 2025 analysis assumes the same intersection configurations as existing conditions. **Table 12** summarizes the existing plus 2025 project plus cumulative level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 12: EXISTING PLUS 2025 CUMULATIVE PLUS PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

	Intersection	Existing Conditions						Existing Plus 2025 Cumulative Plus Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	1.025	F	-	0.947	E	0.176	0.287	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	20.9	0.703	C	159.7	1.402	F	4.5	77.8	Yes (p.m. only)

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 12**, based on the thresholds of significance, the Campus Drive/Temple Avenue intersection is forecast to be significantly impacted by the proposed 2025 cumulative plus project conditions during the a.m. peak hour. The intersection of Kellogg Drive/I-10 Westbound ramps is forecast to be significantly impacted, during the p.m. peak hour only, by the identified cumulative projects. The 2015 Mt. SAC FMPU project trips are not forecast to impact the Kellogg Drive/I-10 Westbound Ramps intersection, thus the "fair-share" of improvement costs to Mt. SAC would be zero.

As mentioned in Section 4 and 5, the impact at the Campus Drive/Temple Avenue intersection can be reduced by re-striping the westbound approach to convert the westbound right-turn lane into a shared through/right-turn lane. However, the impact would not be fully mitigated by this improvement in cumulative conditions. In order to fully mitigate the impact, an additional westbound right-turn lane would be required. This improvement is not considered feasible, though, due to the high cost of widening the Temple Avenue bridge over the wash/river. As a result, the a.m. peak hour impact is considered significant and unavoidable in cumulative conditions.

The Kellogg Drive/I-10 Westbound Ramps intersection is currently stop-controlled. A potential mitigation to reduce project impacts is to consider construction of a traffic signal. This mitigation would require coordination with Caltrans. **Table 13** shows the mitigated existing plus 2025 cumulative plus project LOS at the intersections.

TABLE 13: MITIGATED EXISTING PLUS 2025 CUMULATIVE PLUS PROJECT INTERSECTION PEAK HOUR LEVEL OF SERVICE

	Intersection	Existing Conditions						Mitigated Existing Plus 2025 Cumulative Plus Project Conditions						Change in AM V/C or Delay (s)	Change in PM V/C or Delay (s)	Significant Impact?
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour					
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS			
1	Campus Dr/Temple Ave	-	0.849	D	-	0.660	B	-	1.025	F	-	0.947	E	0.176	0.287	Yes (a.m. only)
2	Kellogg Dr/I-10 WB Ramps*	16.4	0.547	C	81.9	1.098	F	17.9	0.422	B	16.7	0.622	B	1.5	-65.2	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As previously mentioned, the 2015 Mt. SAC FMPU project trips are not forecast to impact the Kellogg Drive/I-10 Westbound Ramps intersection, thus the “fair-share” of improvement costs to Mt. SAC for this potential mitigation measure would be zero.

7. Olympic Track and Field Trials Traffic

This section documents the assessment of traffic impacts related to the 2020 Olympic Track and Field Trials (OTFT), to potentially be held at the new stadium on the campus of Mt. SAC, at the two Pomona intersections. The weekday p.m. peak hour is analyzed, representing the worst-case time period when the last OTFT event of the day would conclude. The analysis includes the evaluation of traffic impacts without cumulative traffic conditions (E + P) and with cumulative traffic conditions (E + P + C).

The traffic related to the OTFT full capacity event during a weekday has two traffic/parking scenarios. The first scenario, Plan A, assumes that approximately 30% of the event attendees park off campus at remote parking lots and hotels, and take shuttles to and from the stadium. The other 70% of attendees would park on campus. The second scenario, Plan B, assumes that approximately 50% of event attendees park off campus, with the remaining 50% of attendees parking on campus.

Various parking lots in the region are considered when analyzing the trip distribution for both Plan A and B. The trip distribution routes utilized in this analysis were determined based on the occupancy of average vehicles and parking capacities in each lot. Trip distribution is documented in the "2020 Olympic Track and Field Trials Focused Traffic Study" prepared by Iteris.

Existing Plus OTFT Off-Campus Parking Plan A Conditions

This section summarizes the traffic operations of the study intersections for existing plus OTFT Plan A parking conditions. **Table 14** summarizes the existing plus OTFT Plan A parking level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B.**

Table 14: Existing Plus OTFT Parking Plan A Intersection Peak Hour Level of Service

Intersection		Existing Conditions			Existing Plus 2020 Plus OTFT Plan A Conditions			Change in PM V/C or Delay (s)	Significant Impact?
		PM Peak Hour			PM Peak Hour				
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS		
1	Campus Dr/Temple Ave	-	0.660	B	-	1.348	F	0.688	Yes
2	Kellogg Dr/I-10 WB Ramps*	81.9	1.098	F	84.4	1.106	F	2.5	Yes

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 14**, based on the thresholds of significance, the both intersections are forecast to be significantly impacted by the proposed OTFT Plan A traffic during the p.m. peak hour.

Existing Plus OTFT Off-Campus Parking Plan B Conditions

This section summarizes the traffic operations of the study intersections for existing plus OTFT Plan B parking conditions. **Table 15** summarizes the existing plus OTFT Plan B parking level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B.**

TABLE 15: EXISTING PLUS OTFT PARKING PLAN B INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions			Existing Plus 2020 Plus OTFT Plan B Conditions			Change in PM V/C or Delay (s)	Significant Impact?
		PM Peak Hour			PM Peak Hour				
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS		
1	Campus Dr/Temple Ave	-	0.660	B	-	1.010	F	0.350	Yes
2	Kellogg Dr/I-10 WB Ramps*	81.9	1.098	F	84.4	1.106	F	2.5	Yes

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 15**, based on the thresholds of significance, the both intersections are forecast to be significantly impacted by the proposed OTFT Plan A traffic during the p.m. peak hour.

Existing Plus 2020 Cumulative Plus OTFT Off-Campus Parking Plan A Conditions

This section summarizes the traffic operations of the study intersections for existing plus 2020 cumulative plus OTFT Plan A parking conditions. **Table 16** summarizes the existing plus 2020 cumulative plus OTFT Plan A parking level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B.**

TABLE 16: EXISTING PLUS 2020 CUMULATIVE PLUS OTFT PARKING PLAN A INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions			Existing Plus 2020 Cumulative Plus Plus OTFT Plan A Conditions			Change in PM V/C or Delay (s)	Significant Impact?
		PM Peak Hour			PM Peak Hour				
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS		
1	Campus Dr/Temple Ave	-	0.660	B	-	1.429	F	0.769	Yes
2	Kellogg Dr/I-10 WB Ramps*	81.9	1.098	F	126.6	1.259	F	44.7	Yes

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 16**, based on the thresholds of significance, the both intersections are forecast to be significantly impacted by the proposed OTFT Plan A traffic during the p.m. peak hour with cumulative conditions.

Existing Plus 2020 Cumulative Plus OTFT Off-Campus Parking Plan B Conditions

This section summarizes the traffic operations of the study intersections for existing plus 2020 cumulative plus OTFT Plan B parking conditions. **Table 17** summarizes the existing plus 2020 cumulative plus OTFT Plan B parking level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B.**

TABLE 17: EXISTING PLUS 2020 CUMULATIVE PLUS OTFT PARKING PLAN B INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions			Existing Plus 2020 Cumulative Plus Plus OTFT Plan B Conditions			Change in PM V/C or Delay (s)	Significant Impact?
		PM Peak Hour			PM Peak Hour				
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS		
1	Campus Dr/Temple Ave	-	0.660	B	-	1.094	F	0.434	Yes
2	Kellogg Dr/I-10 WB Ramps*	81.9	1.098	F	126.6	1.259	F	44.7	Yes

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 17**, based on the thresholds of significance, the both intersections are forecast to be significantly impacted by the proposed OTFT Plan A traffic during the p.m. peak hour with cumulative conditions.

Given the significant impacts shown, it should be noted that no public agency has the responsibility to provide mitigation for temporary traffic impacts for two weekdays for an event that occurs once; mitigation is not practical, legally required, feasible or cost effective. This is true for regional shopping centers that experience holiday traffic, major sporting events, or major musical concerts.

8. CONCLUSIONS

This memorandum presented Iteris' supplemental analysis of the potential traffic impacts in the City of Pomona related to the proposed 2015 Facilities Master Plan Update (FMPU) and Physical Education Projects (PEP) of Mt. San Antonio College (Mt. SAC), located in the City of Walnut. The Campus Drive/Temple Avenue intersection is currently operating at LOS D or better during peak hours, while the unsignalized Kellogg Drive/I-10 Westbound Ramps intersection is currently operating at LOS F in the p.m. peak hour.

Using the project trip distribution shown in the 2015 FMPU & PEP Traffic Impact Study, traffic operations at the Kellogg Drive/I-10 Westbound Ramps intersection are forecast to remain unchanged by the proposed project, but would be impacted during Cumulative conditions during the p.m. peak hour only. The Campus Drive/Temple Avenue intersection is forecast to be significantly impacted by the proposed project in 2020 and 2025, as well as Cumulative conditions, based on the thresholds of significance. This significant impact is forecast to occur during the a.m. peak hour only.

An assessment of traffic impacts at the two Pomona intersections related to the 2020 Olympic Track and Field Trials, to potentially be held at the new stadium on the campus of Mt. SAC, was also provided. Both study intersections are forecast to be significantly impacted by either of the two event parking plans. The significant impact is worsened in the cumulative conditions (E + P + C).

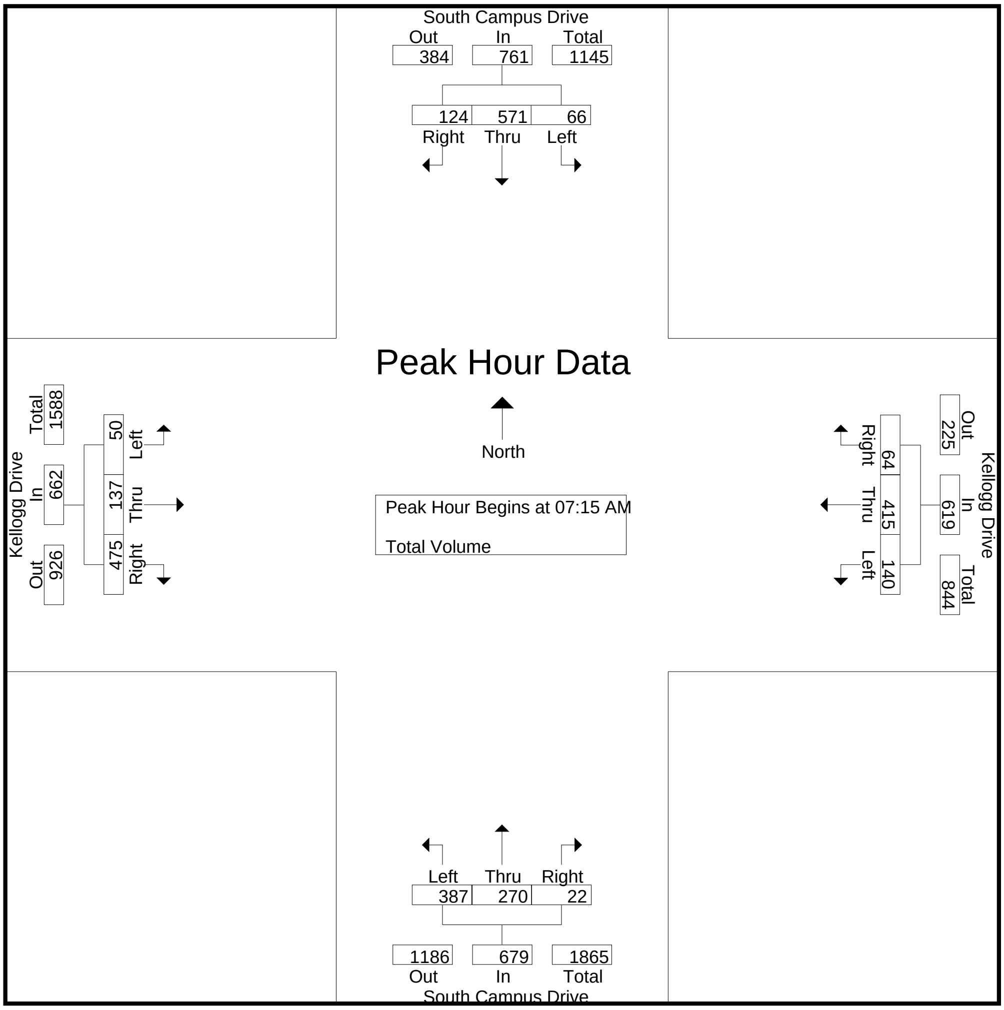
While information cannot dictate driver behavior, it can influence behavior. All publicity materials for the Olympic Trials should not identify the Kellogg Drive/I-10 Westbound Ramps as a route to reach the Cal Poly Pomona shuttle lots or Mt. SAC.

APPENDIX A – TRAFFIC COUNTS

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Pomona
N/S: South Campus Drive
E/W: Kellogg Drive
Weather: Clear

File Name : POMCAKEAM
Site Code : 04216606
Start Date : 11/9/2016
Page No : 2



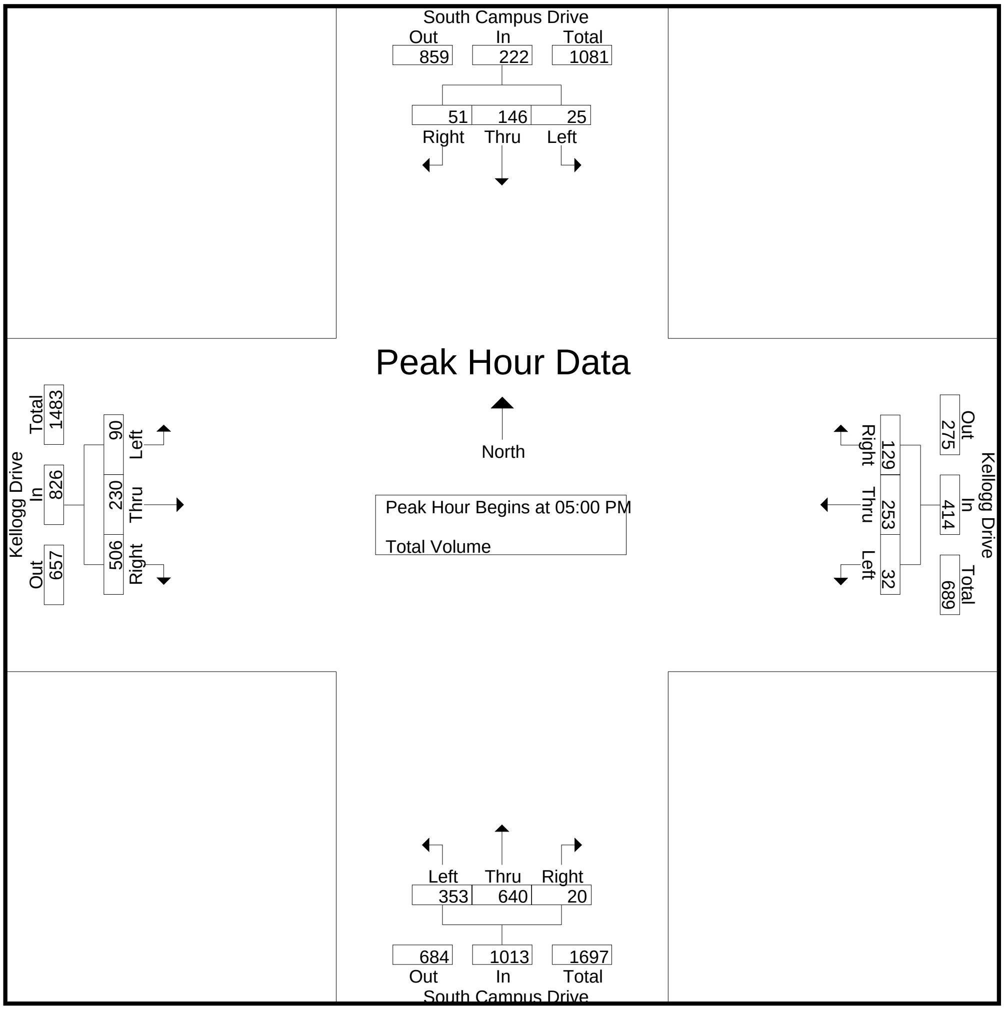
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:30 AM				07:00 AM			
+0 mins.	9	116	18	143	36	99	10	145	**114**	**84**	5	**203**	6	**39**	125	**170**
+15 mins.	16	159	32	207	41	109	19	169	96	68	6	170	4	23	**133**	160
+30 mins.	11	**180**	**42**	**233**	**43**	**139**	**20**	**202**	74	55	4	133	**20**	24	124	168
+45 mins.	**27**	138	25	190	20	68	15	103	94	78	**7**	179	20	29	121	170
Total Volume	63	593	117	773	140	415	64	619	378	285	22	685	50	115	503	668
% App. Total	8.2	76.7	15.1		22.6	67	10.3		55.2	41.6	3.2		7.5	17.2	75.3	
PHF	.583	.824	.696	.829	.814	.746	.800	.766	.829	.848	.786	.844	.625	.737	.945	.982

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Pomona
N/S: South Campus Drive
E/W: Kellogg Drive
Weather: Clear

File Name : POMCAKEPM
Site Code : 04216606
Start Date : 11/9/2016
Page No : 2



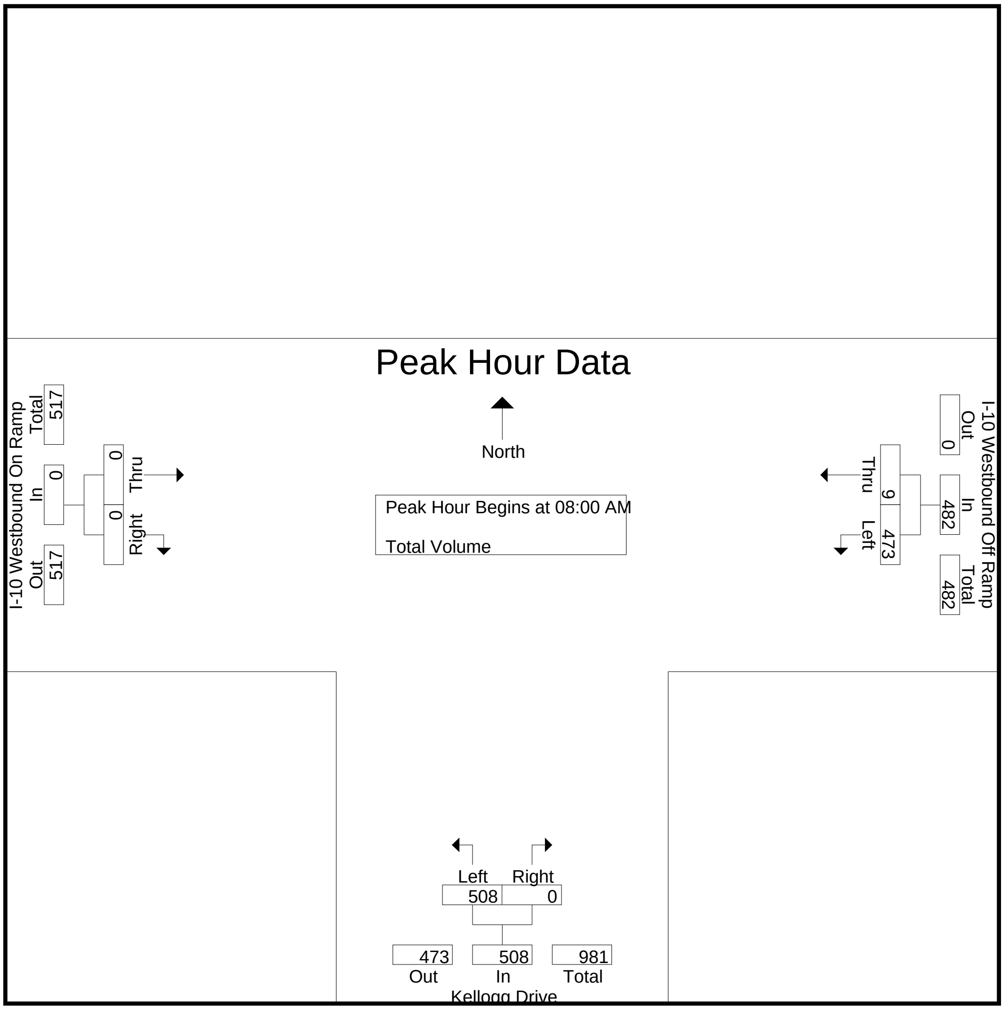
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**7**	43	10	**60**	9	60	**42**	**111**	49	134	4	187	**28**	**62**	110	200
+15 mins.	3	**47**	8	58	**10**	56	27	93	87	163	4	254	24	56	125	205
+30 mins.	7	41	10	58	8	**71**	26	105	101	**174**	3	278	18	56	101	175
+45 mins.	6	34	**14**	54	5	66	34	105	**116**	169	**9**	**294**	20	56	**170**	**246**
Total Volume	23	165	42	230	32	253	129	414	353	640	20	1013	90	230	506	826
% App. Total	10	71.7	18.3		7.7	61.1	31.2		34.8	63.2	2		10.9	27.8	61.3	
PHF	.821	.878	.750	.958	.800	.891	.768	.932	.761	.920	.556	.861	.804	.927	.744	.839

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Pomona
N/S: Kellogg Drive
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : POMKE10WAM
Site Code : 04216606
Start Date : 11/9/2016
Page No : 2



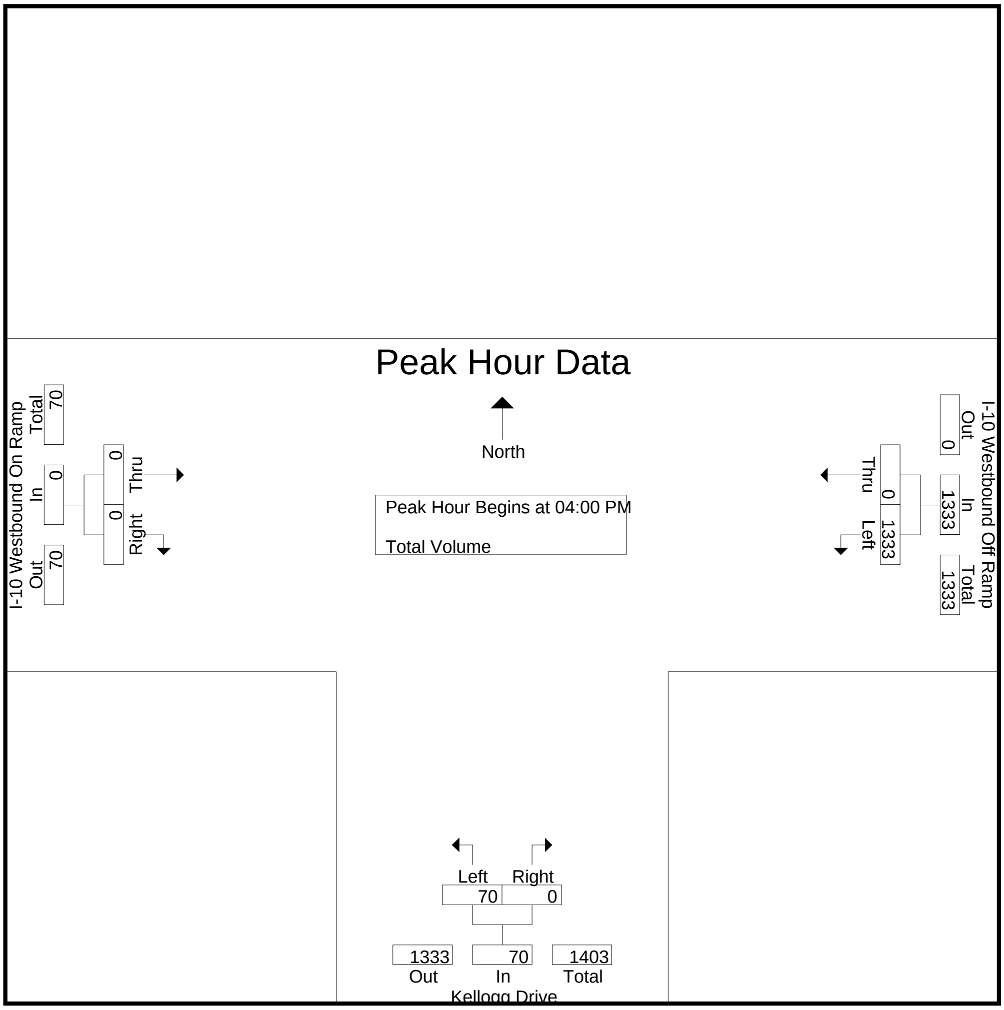
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM			07:00 AM			07:00 AM		
+0 mins.	80	1	81	**162**	0	**162**	0	0	0
+15 mins.	104	**5**	109	138	0	138	0	0	0
+30 mins.	130	2	132	131	0	131	0	0	0
+45 mins.	**159**	1	**160**	111	0	111	0	0	0
Total Volume	473	9	482	542	0	542	0	0	0
% App. Total	98.1	1.9		100	0		0	0	
PHF	.744	.450	.753	.836	.000	.836	.000	.000	.000

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Pomona
N/S: Kellogg Drive
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : POMKE10WPM
Site Code : 04216606
Start Date : 11/9/2016
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:30 PM			04:00 PM		
+0 mins.	263	0	263	23	0	23	0	0	0
+15 mins.	357	0	357	**32**	0	**32**	0	0	0
+30 mins.	**370**	0	**370**	17	0	17	0	0	0
+45 mins.	343	0	343	15	0	15	0	0	0
Total Volume	1333	0	1333	87	0	87	0	0	0
% App. Total	100	0		100	0		0	0	
PHF	.901	.000	.901	.680	.000	.680	.000	.000	.000

APPENDIX B – LOS CALCULATION SHEETS

EXISTING CONDITIONS

```
--------------------------------------------------------------------------------
                                    Mt SAC
                       Campus Ave/Temple Ave Analysis
                                 AM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.849
Loss Time (sec):     10              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       80              Level Of Service:                 D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Split Phase      Split Phase        Protected        Protected
Rights:          Include           Ovl             Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Y+R:         4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33   41   11  155   23  936  362  424   10   12 1282  307
Growth 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
Initial Bse:   33   41   11  155   23  936  362  424   10   12 1282  307
Added Vol:      0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   33   41   11  155   23  936  362  424   10   12 1282  307
User 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
PHF Adj:     0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95
PHF Volume:    35   43   12  163   24  982  380  445   10   13 1345  322
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   35   43   12  163   24  982  380  445   10   13 1345  322
PCE 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
MLF 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
FinalVolume:   35   43   12  163   24  982  380  445   10   13 1345  322
OvlAdjVol:                                602
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       1.00 1.58 0.42 1.74 0.26 2.00 2.00 2.93 0.07 1.00 2.00 1.00
Final Sat.:  1600 2523  677 2787  413 3200 3200 4689  111 1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.02 0.02 0.06 0.06 0.31 0.12 0.09 0.09 0.01 0.42 0.20
OvlAdjV/S:                                0.19
Crit Moves:  ****                         **** ****                **** 
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                    Mt SAC
                       Campus Ave/Temple Ave Analysis
                                 AM Peak Hour
--------------------------------------------------------------------------------
                       Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.547
Loss Time (sec):      0              Average Delay (sec/veh):       16.4
Optimal Cycle:        0              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     508    0    0    0    0    0    0    0    0  473    9    0
Growth 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
Initial Bse:  508    0    0    0    0    0    0    0    0  473    9    0
Added Vol:      0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:  508    0    0    0    0    0    0    0    0  473    9    0
User 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
PHF Adj:     0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86 0.86
PHF Volume:   589    0    0    0    0    0    0    0    0  549   10    0
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  589    0    0    0    0    0    0    0    0  549   10    0
PCE 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
MLF 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
FinalVolume:  589    0    0    0    0    0    0    0    0  549   10    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 1.96 0.04 0.00
Final Sat.:  1077    0    0    0    0    0    0    0    0 1046   20    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.55 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 0.52 0.52 xxxx
Crit Moves:  ****                                         ****
Delay/Veh:   16.7  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 16.1 16.1  0.0
Delay 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
AdjDel/Veh:  16.7  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 16.1 16.1  0.0
LOS by Move:    C    *    *    *    *    *    *    *    *    C    C    *
ApproachDel:      16.7           xxxxxx           xxxxxx           16.1
Delay Adj:        1.00            xxxxx            xxxxx           1.00
ApprAdjDel:       16.7           xxxxxx           xxxxxx           16.1
LOS by Appr:         C                *                *              C
AllWayAvgQ:   1.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  1.0  1.0  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

```
--------------------------------------------------------------------------------
                                   Mt SAC
                        Campus Ave/Temple Ave Analysis
                                PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):        100                Critical Vol./Cap.(X):        0.660
Loss Time (sec):     10                Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       45                Level Of Service:                 B
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Split Phase      Split Phase       Protected        Protected
Rights:          Include           Ovl            Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Y+R:         4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0
Lanes:       1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     11   33   43  366   33  361  624 1057   29   30  643  255
Growth 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
Initial Bse:  11   33   43  366   33  361  624 1057   29   30  643  255
Added Vol:     0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:  11   33   43  366   33  361  624 1057   29   30  643  255
User 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
PHF Adj:    0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98
PHF Volume:   11   34   44  375   34  369  639 1082   30   31  658  261
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  11   34   44  375   34  369  639 1082   30   31  658  261
PCE 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
MLF 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
FinalVolume:  11   34   44  375   34  369  639 1082   30   31  658  261
OvlAdjVol:                              0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:      1.00 1.00 1.00 1.83 0.17 2.00 2.00 2.92 0.08 1.00 2.00 1.00
Final Sat.: 1600 1600 1600 2935  265 3200 3200 4672  128 1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.01 0.02 0.03 0.13 0.13 0.12 0.20 0.23 0.23 0.02 0.21 0.16
OvlAdjV/S:                              0.00
Crit Moves:           ****      ****     ****                     ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                   Mt SAC
                        Campus Ave/Temple Ave Analysis
                                PM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):        100                Critical Vol./Cap.(X):        1.098
Loss Time (sec):      0                Average Delay (sec/veh):       81.9
Optimal Cycle:        0                Level Of Service:                 F
********************************************************************************
Approach:     North Bound      South Bound      East Bound       West Bound
Movement:    L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       2  0  0  0  0   0  0  0  0  0   0  0  0  0  0   1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     70    0    0    0    0    0    0    0    0 1333    0    0
Growth 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
Initial Bse:  70    0    0    0    0    0    0    0    0 1333    0    0
Added Vol:     0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:   0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:  70    0    0    0    0    0    0    0    0 1333    0    0
User 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
PHF Adj:    0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume:   78    0    0    0    0    0    0    0    0 1494    0    0
Reduct Vol:    0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  78    0    0    0    0    0    0    0    0 1494    0    0
PCE 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
MLF 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
FinalVolume:  78    0    0    0    0    0    0    0    0 1494    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:      2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 2.00 0.00 0.00
Final Sat.:  949    0    0    0    0    0    0    0    0 1361    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.08 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 1.10 xxxx xxxx
Crit Moves: ****                                         ****
Delay/Veh:  11.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 85.6  0.0  0.0
Delay 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
AdjDel/Veh: 11.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 85.6  0.0  0.0
LOS by Move:   B    *    *    *    *    *    *    *    *    F    *    *
ApproachDel:      11.0           xxxxxx           xxxxxx             85.6
Delay Adj:        1.00            xxxxx            xxxxx             1.00
ApprAdjDel:       11.0           xxxxxx           xxxxxx             85.6
LOS by Appr:         B                *                *                F
AllWayAvgQ:  0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 14.7 14.7  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

EXISTING PLUS 2020 PROJECT CONDITIONS

```
--------------------------------------------------------------------------------
                                  Mt SAC
                      Campus Ave/Temple Ave Analysis
                         EX+2020Proj AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.894
Loss Time (sec):     10              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       97              Level Of Service:                 D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Y+R:          4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33   41   11   155   23  936   362  424   10    12 1282  307
Growth 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
Initial Bse:   33   41   11   155   23  936   362  424   10    12 1282  307
Added Vol:      0    0    0     0    0    8     1   25    0     0  128    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:   33   41   11   155   23  944   363  449   10    12 1410  307
User 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
PHF Adj:     0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95
PHF Volume:    35   43   12   163   24  991   381  471   10    13 1480  322
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   35   43   12   163   24  991   381  471   10    13 1480  322
PCE 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
MLF 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
FinalVolume:   35   43   12   163   24  991   381  471   10    13 1480  322
OvlAdjVol:                                610
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 1.58 0.42  1.74 0.26 2.00  2.00 2.93 0.07  1.00 2.00 1.00
Final Sat.:  1600 2523  677  2787  413 3200  3200 4695  105  1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.02 0.02  0.06 0.06 0.31  0.12 0.10 0.10  0.01 0.46 0.20
OvlAdjV/S:                              0.19
Crit Moves:  ****                       ****  ****                  ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                  Mt SAC
                      Campus Ave/Temple Ave Analysis
                         EX+2020Proj AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.547
Loss Time (sec):      0              Average Delay (sec/veh):       16.4
Optimal Cycle:        0              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     508    0    0     0    0    0     0    0    0   473    9    0
Growth 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
Initial Bse:  508    0    0     0    0    0     0    0    0   473    9    0
Added Vol:      0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:    0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  508    0    0     0    0    0     0    0    0   473    9    0
User 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
PHF Adj:     0.86 0.86 0.86  0.86 0.86 0.86  0.86 0.86 0.86  0.86 0.86 0.86
PHF Volume:   589    0    0     0    0    0     0    0    0   549   10    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  589    0    0     0    0    0     0    0    0   549   10    0
PCE 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
MLF 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
FinalVolume:  589    0    0     0    0    0     0    0    0   549   10    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       2.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  1.96 0.04 0.00
Final Sat.:  1077    0    0     0    0    0     0    0    0  1046   20    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.55 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  0.52 0.52 xxxx
Crit Moves:  ****                                            ****
Delay/Veh:   16.7  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  16.1 16.1  0.0
Delay 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
AdjDel/Veh:  16.7  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  16.1 16.1  0.0
LOS by Move:    C    *    *     *    *    *     *    *    *     C    C    *
ApproachDel:       16.7           xxxxxx           xxxxxx           16.1
Delay Adj:         1.00            xxxxx            xxxxx           1.00
ApprAdjDel:        16.7           xxxxxx           xxxxxx           16.1
LOS by Appr:          C                *                *              C
AllWayAvgQ:   1.1  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0   1.0  1.0  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

```
--------------------------------------------------------------------------------
                                   Mt SAC
                        Campus Ave/Temple Ave Analysis
                           EX+2020 Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.694
Loss Time (sec):      10               Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49               Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:          Include            Ovl            Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Y+R:         4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0
Lanes:       1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     11   33   43   366   33  361   624 1057   29    30  643  255
Growth 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
Initial Bse:  11   33   43   366   33  361   624 1057   29    30  643  255
Added Vol:     0    0    0     0    0    6     3   51    0     0  102    0
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  11   33   43   366   33  367   627 1108   29    30  745  255
User 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
PHF Adj:    0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
PHF Volume:   11   34   44   375   34  376   642 1134   30    31  763  261
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  11   34   44   375   34  376   642 1134   30    31  763  261
PCE 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
MLF 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
FinalVolume:  11   34   44   375   34  376   642 1134   30    31  763  261
OvlAdjVol:                                0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:   1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:      1.00 1.00 1.00  1.83 0.17 2.00  2.00 2.92 0.08  1.00 2.00 1.00
Final Sat.: 1600 1600 1600  2935  265 3200  3200 4678  122  1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.01 0.02 0.03  0.13 0.13 0.12  0.20 0.24 0.24  0.02 0.24 0.16
OvlAdjV/S:                            0.00
Crit Moves:           ****       ****       ****                     ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                   Mt SAC
                        Campus Ave/Temple Ave Analysis
                           EX+2020 Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         1.098
Loss Time (sec):       0               Average Delay (sec/veh):        81.9
Optimal Cycle:         0               Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:          Include          Include          Include          Include
Min. Green:    0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  0  0  0   0  0  0  0  0   0  0  0  0  0   1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     70    0    0     0    0    0     0    0    0  1333    0    0
Growth 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
Initial Bse:  70    0    0     0    0    0     0    0    0  1333    0    0
Added Vol:     0    0    0     0    0    0     0    0    0     0    0    0
PasserByVol:   0    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  70    0    0     0    0    0     0    0    0  1333    0    0
User 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
PHF Adj:    0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89
PHF Volume:   78    0    0     0    0    0     0    0    0  1494    0    0
Reduct Vol:    0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  78    0    0     0    0    0     0    0    0  1494    0    0
PCE 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
MLF 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
FinalVolume:  78    0    0     0    0    0     0    0    0  1494    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment: 1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:      2.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  2.00 0.00 0.00
Final Sat.:  949    0    0     0    0    0     0    0    0  1361    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:    0.08 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  1.10 xxxx xxxx
Crit Moves: ****                                            ****
Delay/Veh:  11.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  85.6  0.0  0.0
Delay 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
AdjDel/Veh: 11.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  85.6  0.0  0.0
LOS by Move:   B    *    *     *    *    *     *    *    *     F    *    *
ApproachDel:      11.0           xxxxxx           xxxxxx            85.6
Delay Adj:        1.00            xxxxx            xxxxx            1.00
ApprAdjDel:       11.0           xxxxxx           xxxxxx            85.6
LOS by Appr:         B                *                *               F
AllWayAvgQ:  0.1  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  14.7 14.7  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

MITIGATED CONDITIONS

Mt SAC
Campus Ave/Temple Ave Analysis
EX+2020Proj AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #100 Campus Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.807
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	68	Level Of Service:	D

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 1 0 0 2			2 0 2 1 0			1 0 2 1 0		
Volume Module:												
Base Vol:	33	41	11	155	23	936	362	424	10	12	1282	307
Growth 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
Initial Bse:	33	41	11	155	23	936	362	424	10	12	1282	307
Added Vol:	0	0	0	0	0	8	1	25	0	0	128	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	33	41	11	155	23	944	363	449	10	12	1410	307
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	35	43	12	163	24	991	381	471	10	13	1480	322
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	43	12	163	24	991	381	471	10	13	1480	322
PCE 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
MLF 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
FinalVolume:	35	43	12	163	24	991	381	471	10	13	1480	322
OvlAdjVol:						610						
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.58	0.42	1.74	0.26	2.00	2.00	2.93	0.07	1.00	2.46	0.54
Final Sat.:	1600	2523	677	2787	413	3200	3200	4695	105	1600	3942	858
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.02	0.06	0.06	0.31	0.12	0.10	0.10	0.01	0.38	0.38
OvlAdjV/S:						0.19						
Crit Moves:	****					****	****				****	

```
--------------------------------------------------------------------------------
                                   Mt SAC
                        Campus Ave/Temple Ave Analysis
                           EX+2020 Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100               Critical Vol./Cap.(X):         0.669
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        46               Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33    43   366   33   361   624 1057    29    30  643   255
Growth 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
Initial Bse:   11   33    43   366   33   361   624 1057    29    30  643   255
Added Vol:      0    0     0     0    0     6     3   51     0     0  102     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   11   33    43   366   33   367   627 1108    29    30  745   255
User 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
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    11   34    44   375   34   376   642 1134    30    31  763   261
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11   34    44   375   34   376   642 1134    30    31  763   261
PCE 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
MLF 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
FinalVolume:   11   34    44   375   34   376   642 1134    30    31  763   261
OvlAdjVol:                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.83 0.17  2.00  2.00 2.92  0.08  1.00 2.23  0.77
Final Sat.:  1600 1600  1600  2935  265  3200  3200 4678   122  1600 3576  1224
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02  0.03  0.13 0.13  0.12  0.20 0.24  0.24  0.02 0.21  0.21
OvlAdjV/S:                                0.00
Crit Moves:            ****       ****        ****                    ****
********************************************************************************
```

EXISTING PLUS 2025 PROJECT CONDITIONS

```
--------------------------------------------------------------------------------
                                  Mt SAC
                      Campus Ave/Temple Ave Analysis
                         EX+2025Proj AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.933
Loss Time (sec):     10              Average Delay (sec/veh):     xxxxxx
Optimal Cycle:      120              Level Of Service:                 E
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include           Ovl             Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Y+R:         4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0  4.0  4.0   4.0
Lanes:       1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     33   41    11  155   23   936  362  424    10   12 1282   307
Growth 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
Initial Bse:  33   41    11  155   23   936  362  424    10   12 1282   307
Added Vol:     0    0     0    0    0    14    3   49     0    0  243     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut:  33   41    11  155   23   950  365  473    10   12 1525   307
User 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
PHF Adj:     0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95 0.95 0.95  0.95
PHF Volume:   35   43    12  163   24   997  383  496    10   13 1600   322
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol:  35   43    12  163   24   997  383  496    10   13 1600   322
PCE 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
MLF 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
FinalVolume:  35   43    12  163   24   997  383  496    10   13 1600   322
OvlAdjVol:                                614
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600  1600
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       1.00 1.58  0.42 1.74 0.26  2.00 2.00 2.94  0.06 1.00 2.00  1.00
Final Sat.:  1600 2523   677 2787  413  3200 3200 4701    99 1600 3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.02  0.02 0.06 0.06  0.31 0.12 0.11  0.11 0.01 0.50  0.20
OvlAdjV/S:                              0.19
Crit Moves:  ****                       **** ****                  ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                  Mt SAC
                      Campus Ave/Temple Ave Analysis
                         EX+2025Proj AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        0.547
Loss Time (sec):      0              Average Delay (sec/veh):       16.4
Optimal Cycle:        0              Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:    0    0     0    0    0     0    0    0     0    0    0     0
Lanes:       2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:    508    0     0    0    0     0    0    0     0  473    9     0
Growth 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
Initial Bse: 508    0     0    0    0     0    0    0     0  473    9     0
Added Vol:     0    0     0    0    0     0    0    0     0    0    0     0
PasserByVol:   0    0     0    0    0     0    0    0     0    0    0     0
Initial Fut: 508    0     0    0    0     0    0    0     0  473    9     0
User 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
PHF Adj:     0.86 0.86  0.86 0.86 0.86  0.86 0.86 0.86  0.86 0.86 0.86  0.86
PHF Volume:  589    0     0    0    0     0    0    0     0  549   10     0
Reduct Vol:    0    0     0    0    0     0    0    0     0    0    0     0
Reduced Vol: 589    0     0    0    0     0    0    0     0  549   10     0
PCE 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
MLF 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
FinalVolume: 589    0     0    0    0     0    0    0     0  549   10     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00
Lanes:       2.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  0.00 1.96 0.04  0.00
Final Sat.:  1077    0     0    0    0     0    0    0     0 1046   20     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.55 xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  xxxx 0.52 0.52  xxxx
Crit Moves:  ****                                            ****
Delay/Veh:   16.7  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0 16.1 16.1   0.0
Delay 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
AdjDel/Veh:  16.7  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0 16.1 16.1   0.0
LOS by Move:    C    *     *    *    *     *    *    *     *    C    C     *
ApproachDel:      16.7           xxxxxx           xxxxxx            16.1
Delay Adj:        1.00            xxxxx            xxxxx            1.00
ApprAdjDel:       16.7           xxxxxx           xxxxxx            16.1
LOS by Appr:         C                *                *               C
AllWayAvgQ:   1.1  0.0   0.0  0.0  0.0   0.0  0.0  0.0   0.0  1.0  1.0   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

```
--------------------------------------------------------------------------------
                                   Mt SAC
                       Campus Ave/Temple Ave Analsis
                          EX+2025Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):          0.724
Loss Time (sec):       10              Average Delay (sec/veh):       xxxxxx
Optimal Cycle:         53              Level Of Service:                   C
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Y+R:          4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0  4.0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33   43  366   33  361  624 1057   29   30  643  255
Growth 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
Initial Bse:   11   33   43  366   33  361  624 1057   29   30  643  255
Added Vol:      0    0    0    0    0   11    6   97    0    0  194    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   11   33   43  366   33  372  630 1154   29   30  837  255
User 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
PHF Adj:     0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98
PHF Volume:    11   34   44  375   34  381  645 1181   30   31  857  261
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   11   34   44  375   34  381  645 1181   30   31  857  261
PCE 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
MLF 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
FinalVolume:   11   34   44  375   34  381  645 1181   30   31  857  261
OvlAdjVol:                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       1.00 1.00 1.00 1.83 0.17 2.00 2.00 2.93 0.07 1.00 2.00 1.00
Final Sat.:  1600 1600 1600 2935  265 3200 3200 4682  118 1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02 0.03 0.13 0.13 0.12 0.20 0.25 0.25 0.02 0.27 0.16
OvlAdjV/S:                             0.00
Crit Moves:            ****      ****       ****                     ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                                   Mt SAC
                       Campus Ave/Temple Ave Analsis
                          EX+2025Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #101 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):          100              Critical Vol./Cap.(X):          1.098
Loss Time (sec):        0              Average Delay (sec/veh):         81.9
Optimal Cycle:          0              Level Of Service:                   F
********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0    0    0    0    0    0    0    0 1333    0    0
Growth 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
Initial Bse:   70    0    0    0    0    0    0    0    0 1333    0    0
Added Vol:      0    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   70    0    0    0    0    0    0    0    0 1333    0    0
User 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
PHF Adj:     0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume:    78    0    0    0    0    0    0    0    0 1494    0    0
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   78    0    0    0    0    0    0    0    0 1494    0    0
PCE 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
MLF 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
FinalVolume:   78    0    0    0    0    0    0    0    0 1494    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 2.00 0.00 0.00
Final Sat.:   949    0    0    0    0    0    0    0    0 1361    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.08 xxxx xxxx xxxx xxxx xxxx xxxx xxxx xxxx 1.10 xxxx xxxx
Crit Moves:  ****                                         ****
Delay/Veh:   11.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 85.6  0.0  0.0
Delay 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
AdjDel/Veh:  11.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 85.6  0.0  0.0
LOS by Move:    B    *    *    *    *    *    *    *    *    F    *    *
ApproachDel:      11.0           xxxxxx           xxxxxx            85.6
Delay Adj:        1.00            xxxxx            xxxxx            1.00
ApprAdjDel:       11.0           xxxxxx           xxxxxx            85.6
LOS by Appr:         B                *                *               F
AllWayAvgQ:   0.1  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0 14.7 14.7  0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

MITIGATED CONDITIONS

```
--------------------------------------------------------------------------------
                                    Mt SAC
                         Campus Ave/Temple Ave Analysis
                           EX+2025Proj AM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.834
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        75                Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33   41    11   155   23   936   362  424    10    12 1282   307
Growth 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
Initial Bse:   33   41    11   155   23   936   362  424    10    12 1282   307
Added Vol:      0    0     0     0    0    14     3   49     0     0  243     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   33   41    11   155   23   950   365  473    10    12 1525   307
User 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
PHF Adj:     0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95  0.95 0.95  0.95
PHF Volume:    35   43    12   163   24   997   383  496    10    13 1600   322
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   35   43    12   163   24   997   383  496    10    13 1600   322
PCE 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
MLF 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
FinalVolume:   35   43    12   163   24   997   383  496    10    13 1600   322
OvlAdjVol:                                614
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.58  0.42  1.74 0.26  2.00  2.00 2.94  0.06  1.00 2.50  0.50
Final Sat.:  1600 2523   677  2787  413  3200  3200 4701    99  1600 3996   804
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.02  0.02  0.06 0.06  0.31  0.12 0.11  0.11  0.01 0.40  0.40
OvlAdjV/S:                                0.19
Crit Moves:  ****                         ****  ****                 ****
********************************************************************************
```

```
--------------------------------------------------------------------------------
                                  Mt SAC
                         Campus Ave/Temple Ave Analsis
                           EX+2025Proj PM Peak Hour
--------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #100 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.689
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        49              Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33    43   366   33   361   624 1057    29    30  643   255
Growth 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
Initial Bse:   11   33    43   366   33   361   624 1057    29    30  643   255
Added Vol:      0    0     0     0    0    11     6   97     0     0  194     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   11   33    43   366   33   372   630 1154    29    30  837   255
User 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
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    11   34    44   375   34   381   645 1181    30    31  857   261
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11   34    44   375   34   381   645 1181    30    31  857   261
PCE 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
MLF 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
FinalVolume:   11   34    44   375   34   381   645 1181    30    31  857   261
OvlAdjVol:                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.83 0.17  2.00  2.00 2.93  0.07  1.00 2.30  0.70
Final Sat.:  1600 1600  1600  2935  265  3200  3200 4682   118  1600 3679  1121
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02  0.03  0.13 0.13  0.12  0.20 0.25  0.25  0.02 0.23  0.23
OvlAdjV/S:                                0.00
Crit Moves:             ****       ****        ****                    ****
********************************************************************************
```

EXISTING PLUS 2020 PROJECT PLUS CUMULATIVE CONDITIONS

```
-----------------------------------------------------------------------------
                     Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                              AM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*****************************************************************************
Intersection #111 Campus Ave / Temple Ave
*****************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.902
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       101              Level Of Service:                 E
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include           Ovl             Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33   41   11   155   23   936   362  424   10    12 1282   307
Growth 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
Initial Bse:   33   41   11   155   23   936   362  424   10    12 1282   307
Added Vol:      0    0    0    82    0    24    55   38    0     0  137   266
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:   33   41   11   237   23   960   417  462   10    12 1419   573
User 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
PHF Adj:     0.95 0.95 0.95  0.95 0.95  0.95  0.95 0.95 0.95  0.95 0.95  0.95
PHF Volume:    35   43   12   249   24  1007   438  485   10    13 1489   601
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:   35   43   12   249   24  1007   438  485   10    13 1489   601
PCE 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
MLF 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
FinalVolume:   35   43   12   249   24  1007   438  485   10    13 1489   601
OvlAdjVol:                               570
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600  1600  1600 1600 1600  1600 1600  1600
Adjustment:  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00
Lanes:       1.00 1.58 0.42  1.82 0.18  2.00  2.00 2.94 0.06  1.00 2.00  1.00
Final Sat.:  1600 2523  677  2917  283  3200  3200 4698  102  1600 3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02 0.02 0.02  0.09 0.09  0.31  0.14 0.10 0.10  0.01 0.47  0.38
OvlAdjV/S:                               0.18
Crit Moves:  ****                        ****  ****                 ****
*****************************************************************************
```



```
-----------------------------------------------------------------------------
                     Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                              AM Peak Hour
-----------------------------------------------------------------------------
                    Level Of Service Computation Report
          2000 HCM 4-Way Stop Method (Future Volume Alternative)
*****************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
*****************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):        0.619
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):       18.1
Optimal Cycle:         0              Level Of Service:                 C
*****************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:       2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     508    0    0     0    0     0     0    0    0   473    9     0
Growth 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
Initial Bse:  508    0    0     0    0     0     0    0    0   473    9     0
Added Vol:     65    0    0     0    0     0     0    0    0     0    0     0
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:  573    0    0     0    0     0     0    0    0   473    9     0
User 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
PHF Adj:     0.86 0.86 0.86  0.86 0.86  0.86  0.86 0.86 0.86  0.86 0.86  0.86
PHF Volume:   665    0    0     0    0     0     0    0    0   549   10     0
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:  665    0    0     0    0     0     0    0    0   549   10     0
PCE 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
MLF 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
FinalVolume:  665    0    0     0    0     0     0    0    0   549   10     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00
Lanes:       2.00 0.00 0.00  0.00 0.00  0.00  0.00 0.00 0.00  1.96 0.04  0.00
Final Sat.:  1074    0    0     0    0     0     0    0    0  1020   19     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.62 xxxx xxxx  xxxx xxxx  xxxx  xxxx xxxx xxxx  0.54 0.54  xxxx
Crit Moves:  ****                                              ****
Delay/Veh:   19.1  0.0  0.0   0.0  0.0   0.0   0.0  0.0  0.0  16.9 16.8   0.0
Delay 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
AdjDel/Veh:  19.1  0.0  0.0   0.0  0.0   0.0   0.0  0.0  0.0  16.9 16.8   0.0
LOS by Move:   C    *    *     *    *     *     *    *    *     C    C     *
ApproachDel:      19.1           xxxxxx           xxxxxx            16.9
Delay Adj:        1.00            xxxxx            xxxxx            1.00
ApprAdjDel:       19.1           xxxxxx           xxxxxx            16.9
LOS by Appr:        C                *                *                C
AllWayAvgQ:   1.5  0.0  0.0   0.0  0.0   0.0   0.0  0.0  0.0   1.1  1.1   0.0
*****************************************************************************
Note: Queue reported is the number of cars per lane.
```

```
--------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                                PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #111 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.784
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:        63                Level Of Service:                  C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33    43   366   33   361   624 1057    29    30  643   255
Growth 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
Initial Bse:   11   33    43   366   33   361   624 1057    29    30  643   255
Added Vol:      0    0     0   246    0    55    23   65     0     0  118   102
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:   11   33    43   612   33   416   647 1122    29    30  761   357
User 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
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    11   34    44   626   34   426   662 1148    30    31  779   365
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11   34    44   626   34   426   662 1148    30    31  779   365
PCE 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
MLF 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
FinalVolume:   11   34    44   626   34   426   662 1148    30    31  779   365
OvlAdjVol:                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.90 0.10  2.00  2.00 2.92  0.08  1.00 2.00  1.00
Final Sat.:  1600 1600  1600  3036  164  3200  3200 4679   121  1600 3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02  0.03  0.21 0.21  0.13  0.21 0.25  0.25  0.02 0.24  0.23
OvlAdjV/S:                               0.00
Crit Moves:             ****  ****              ****                   ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                                PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.250
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):       124.1
Optimal Cycle:         0                Level Of Service:                  F
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0    0    0     0    0    0     0    0    0     0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0     0     0    0     0     0    0     0  1333    0     0
Growth 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
Initial Bse:   70    0     0     0    0     0     0    0     0  1333    0     0
Added Vol:    196    0     0     0    0     0     0    0     0     0    0     0
PasserByVol:    0    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  266    0     0     0    0     0     0    0     0  1333    0     0
User 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
PHF Adj:     0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89
PHF Volume:   298    0     0     0    0     0     0    0     0  1494    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  298    0     0     0    0     0     0    0     0  1494    0     0
PCE 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
MLF 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
FinalVolume:  298    0     0     0    0     0     0    0     0  1494    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  2.00 0.00  0.00
Final Sat.:   950    0     0     0    0     0     0    0     0  1195    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.31 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  1.25 xxxx  xxxx
Crit Moves:  ****                                              ****
Delay/Veh:   13.7  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0 146.1  0.0   0.0
Delay 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
AdjDel/Veh:  13.7  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0 146.1  0.0   0.0
LOS by Move:   B    *     *     *    *     *     *    *     *     F    *     *
ApproachDel:      13.7           xxxxxx           xxxxxx            146.1
Delay Adj:        1.00            xxxxx            xxxxx             1.00
ApprAdjDel:       13.7           xxxxxx           xxxxxx            146.1
LOS by Appr:        B                *                *                F
AllWayAvgQ:   0.5  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0  22.8 22.8   0.0
********************************************************************************
Note: Queue reported is the number of cars per lane.
```

MITIGATED CONDITIONS

```
--------------------------------------------------------------------------------
                        Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                                AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #111 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.872
Loss Time (sec):      10 (Y+R=4.0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:        88              Level Of Service:                  D
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:      Split Phase      Split Phase       Protected        Protected
Rights:          Include           Ovl            Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33    41    11   155    23   936   362   424    10    12  1282   307
Growth 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
Initial Bse:   33    41    11   155    23   936   362   424    10    12  1282   307
Added Vol:      0     0     0    82     0    24    55    38     0     0   137   266
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:   33    41    11   237    23   960   417   462    10    12  1419   573
User 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
PHF Adj:     0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95
PHF Volume:    35    43    12   249    24  1007   438   485    10    13  1489   601
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   35    43    12   249    24  1007   438   485    10    13  1489   601
PCE 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
MLF 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
FinalVolume:   35    43    12   249    24  1007   438   485    10    13  1489   601
OvlAdjVol:                                  570
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       1.00  1.58  0.42  1.82  0.18  2.00  2.00  2.94  0.06  1.00  2.14  0.86
Final Sat.:  1600  2523   677  2917   283  3200  3200  4698   102  1600  3419  1381
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02  0.02  0.02  0.09  0.09  0.31  0.14  0.10  0.10  0.01  0.44  0.44
OvlAdjV/S:                                 0.18
Crit Moves:  ****                          ****  ****                    ****
********************************************************************************
```



```
--------------------------------------------------------------------------------
                        Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                                AM Peak Hour
--------------------------------------------------------------------------------
                     Level Of Service Computation Report
             2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         0.394
Loss Time (sec):       8 (Y+R=4.0 sec) Average Delay (sec/veh):       17.9
Optimal Cycle:        27              Level Of Service:                  B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:          Include          Include          Include          Include
Min. Green:    0     0     0    0     0     0    0     0     0    0     0     0
Lanes:       2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     508     0     0     0     0     0     0     0     0   473     9     0
Growth 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
Initial Bse:  508     0     0     0     0     0     0     0     0   473     9     0
Added Vol:     65     0     0     0     0     0     0     0     0     0     0     0
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:  573     0     0     0     0     0     0     0     0   473     9     0
User 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
PHF Adj:     0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86
PHF Volume:   665     0     0     0     0     0     0     0     0   549    10     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  665     0     0     0     0     0     0     0     0   549    10     0
PCE 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
MLF 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
FinalVolume:  665     0     0     0     0     0     0     0     0   549    10     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900  1900
Adjustment:  0.92  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.85  0.85  1.00
Lanes:       2.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  1.96  0.04  0.00
Final Sat.:  3502     0     0     0     0     0     0     0     0  3181    61     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.19  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.17  0.17  0.00
Crit Moves:  ****                                                ****
Green/Cycle: 0.48  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.44  0.44  0.00
Volume/Cap:  0.39  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.39  0.39  0.00
Delay/Veh:   16.7   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  19.3  19.3   0.0
User DelAdj: 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
AdjDel/Veh:  16.7   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  19.3  19.3   0.0
LOS by Move:    B     A     A     A     A     A     A     A     A     B     B     A
HCM2kAvgQ:      7     0     0     0     0     0     0     0     0     6     6     0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
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--------------------------------------------------------------------------------
                       Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                               PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
********************************************************************************
Intersection #111 Campus Ave / Temple Ave
********************************************************************************
Cycle (sec):        100               Critical Vol./Cap.(X):        0.779
Loss Time (sec):     10 (Y+R=4.0 sec) Average Delay (sec/veh):     xxxxxx
Optimal Cycle:       62               Level Of Service:                 C
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33   43  366   33  361  624 1057   29   30  643  255
Growth 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
Initial Bse:   11   33   43  366   33  361  624 1057   29   30  643  255
Added Vol:      0    0    0  246    0   55   23   65    0    0  118  102
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:   11   33   43  612   33  416  647 1122   29   30  761  357
User 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
PHF Adj:     0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98 0.98
PHF Volume:    11   34   44  626   34  426  662 1148   30   31  779  365
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:   11   34   44  626   34  426  662 1148   30   31  779  365
PCE 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
MLF 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
FinalVolume:   11   34   44  626   34  426  662 1148   30   31  779  365
OvlAdjVol:                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600 1600
Adjustment:  1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Lanes:       1.00 1.00 1.00 1.90 0.10 2.00 2.00 2.92 0.08 1.00 2.04 0.96
Final Sat.:  1600 1600 1600 3036  164 3200 3200 4679  121 1600 3267 1533
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02 0.03 0.21 0.21 0.13 0.21 0.25 0.25 0.02 0.24 0.24
OvlAdjV/S:                                0.00
Crit Moves:            **** ****               ****                ****
********************************************************************************
```



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--------------------------------------------------------------------------------
                       Mt SAC Campus-Temple Analysis
         Existing Plus 2020 Project Conditions And Cumulative Projects
                               PM Peak Hour
--------------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
********************************************************************************
Cycle (sec):        100               Critical Vol./Cap.(X):        0.542
Loss Time (sec):      8 (Y+R=4.0 sec) Average Delay (sec/veh):       10.8
Optimal Cycle:       34               Level Of Service:                 B
********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  0  0   0  0  0  0  0   0  0  0  0  0   1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0    0    0    0    0    0    0    0 1333    0    0
Growth 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
Initial Bse:   70    0    0    0    0    0    0    0    0 1333    0    0
Added Vol:    196    0    0    0    0    0    0    0    0    0    0    0
PasserByVol:    0    0    0    0    0    0    0    0    0    0    0    0
Initial Fut:  266    0    0    0    0    0    0    0    0 1333    0    0
User 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
PHF Adj:     0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89 0.89
PHF Volume:   298    0    0    0    0    0    0    0    0 1494    0    0
Reduct Vol:     0    0    0    0    0    0    0    0    0    0    0    0
Reduced Vol:  298    0    0    0    0    0    0    0    0 1494    0    0
PCE 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
MLF 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
FinalVolume:  298    0    0    0    0    0    0    0    0 1494    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900
Adjustment:  0.92 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.95 1.00 1.00
Lanes:       2.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 2.00 0.00 0.00
Final Sat.:  3502    0    0    0    0    0    0    0    0 3618    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.41 0.00 0.00
Crit Moves:  ****                                          ****
Green/Cycle: 0.16 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.76 0.00 0.00
Volume/Cap:  0.54 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.54 0.00 0.00
Delay/Veh:   39.9  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  5.0  0.0  0.0
User DelAdj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
AdjDel/Veh:  39.9  0.0  0.0  0.0  0.0  0.0  0.0  0.0  0.0  5.0  0.0  0.0
LOS by Move:    D    A    A    A    A    A    A    A    A    A    A    A
HCM2kAvgQ:      5    0    0    0    0    0    0    0    0   10    0    0
********************************************************************************
Note: Queue reported is the number of cars per lane.
********************************************************************************
```

EXISTING PLUS 2025 PROJECT PLUS CUMULATIVE CONDITIONS

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---------------------------------------------------------------------------------
                         Mt SAC Campus-Temple Alalysis
         Existing Plus 2025 Project Conditions And Cumulative Projects
                                  AM Peak Hour
---------------------------------------------------------------------------------
                       Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*********************************************************************************
Intersection #111 Campus Ave / Temple Ave
*********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.025
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                  F
*********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl             Include          Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      33    41    11   155    23   936   362   424    10    12  1282   307
Growth 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
Initial Bse:   33    41    11   155    23   936   362   424    10    12  1282   307
Added Vol:      0     0     0   178     0    50   118    62     0     0   253   578
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:   33    41    11   333    23   986   480   486    10    12  1535   885
User 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
PHF Adj:     0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95  0.95
PHF Volume:    35    43    12   349    24  1035   504   510    10    13  1611   929
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:   35    43    12   349    24  1035   504   510    10    13  1611   929
PCE 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
MLF 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
FinalVolume:   35    43    12   349    24  1035   504   510    10    13  1611   929
OvlAdjVol:                                  531
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600  1600
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       1.00  1.58  0.42  1.87  0.13  2.00  2.00  2.94  0.06  1.00  2.00  1.00
Final Sat.:  1600  2523   677  2993   207  3200  3200  4703    97  1600  3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.02  0.02  0.02  0.12  0.12  0.32  0.16  0.11  0.11  0.01  0.50  0.58
OvlAdjV/S:                                 0.17
Crit Moves:  ****                          ****  ****                          ****
*********************************************************************************
```



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---------------------------------------------------------------------------------
                         Mt SAC Campus-Temple Alalysis
         Existing Plus 2025 Project Conditions And Cumulative Projects
                                  AM Peak Hour
---------------------------------------------------------------------------------
                       Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
*********************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.703
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):        20.9
Optimal Cycle:         0                Level Of Service:                  C
*********************************************************************************
Approach:      North Bound      South Bound      East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:    0     0     0     0     0     0     0     0     0     0     0     0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:     508     0     0     0     0     0     0     0     0   473     9     0
Growth 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
Initial Bse:  508     0     0     0     0     0     0     0     0   473     9     0
Added Vol:    142     0     0     0     0     0     0     0     0     0     0     0
PasserByVol:    0     0     0     0     0     0     0     0     0     0     0     0
Initial Fut:  650     0     0     0     0     0     0     0     0   473     9     0
User 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
PHF Adj:     0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86  0.86
PHF Volume:   754     0     0     0     0     0     0     0     0   549    10     0
Reduct Vol:     0     0     0     0     0     0     0     0     0     0     0     0
Reduced Vol:  754     0     0     0     0     0     0     0     0   549    10     0
PCE 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
MLF 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
FinalVolume:  754     0     0     0     0     0     0     0     0   549    10     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00
Lanes:       2.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  0.00  1.96  0.04  0.00
Final Sat.:  1073     0     0     0     0     0     0     0     0   992    19     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.70  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  xxxx  0.55  0.55  xxxx
Crit Moves:  ****                                                  ****
Delay/Veh:   23.2   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  17.7  17.7   0.0
Delay 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
AdjDel/Veh:  23.2   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0  17.7  17.7   0.0
LOS by Move:   C     *     *     *     *     *     *     *     *     C     C     *
ApproachDel:       23.2            xxxxxx           xxxxxx            17.7
Delay Adj:         1.00             xxxxx            xxxxx            1.00
ApprAdjDel:        23.2            xxxxxx           xxxxxx            17.7
LOS by Appr:         C                *                *                C
AllWayAvgQ:   2.1   0.0   0.0   0.0   0.0   0.0   0.0   0.0   0.0   1.1   1.1   0.0
*********************************************************************************
Note: Queue reported is the number of cars per lane.
```

Mt SAC Campus-Temple Analysis
Existing Plus 2025 Project Conditions And Cumulative Projects
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #111 Campus Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.947
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	130	Level Of Service:	E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 1 0 0 2			2 0 2 1 0			1 0 2 0 1		
Volume Module:												
Base Vol:	11	33	43	366	33	361	624	1057	29	30	643	255
Growth 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
Initial Bse:	11	33	43	366	33	361	624	1057	29	30	643	255
Added Vol:	0	0	0	534	0	118	50	112	0	0	210	222
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	11	33	43	900	33	479	674	1169	29	30	853	477
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	11	34	44	921	34	490	690	1197	30	31	873	488
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	34	44	921	34	490	690	1197	30	31	873	488
PCE 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
MLF 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
FinalVolume:	11	34	44	921	34	490	690	1197	30	31	873	488
OvlAdjVol:						0						
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.93	0.07	2.00	2.00	2.93	0.07	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3087	113	3200	3200	4684	116	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.01	0.02	0.03	0.30	0.30	0.15	0.22	0.26	0.26	0.02	0.27	0.31
OvlAdjV/S:						0.00						
Crit Moves:			****	****			****					****

Mt SAC Campus-Temple Analysis
Existing Plus 2025 Project Conditions And Cumulative Projects
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #112 Kellogg Dr/I-10 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.402
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	159.7
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 0 0 0			0 0 0 0 0			0 0 0 0 0			1 1 0 0 0		
Volume Module:												
Base Vol:	70	0	0	0	0	0	0	0	0	1333	0	0
Growth 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
Initial Bse:	70	0	0	0	0	0	0	0	0	1333	0	0
Added Vol:	427	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	497	0	0	0	0	0	0	0	0	1333	0	0
User 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
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	557	0	0	0	0	0	0	0	0	1494	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	557	0	0	0	0	0	0	0	0	1494	0	0
PCE 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
MLF 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
FinalVolume:	557	0	0	0	0	0	0	0	0	1494	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Final Sat.:	949	0	0	0	0	0	0	0	0	1066	0	0
Capacity Analysis Module:												
Vol/Sat:	0.59	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	1.40	xxxx	xxxx
Crit Moves:	****									****		
Delay/Veh:	20.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.6	0.0	0.0
Delay 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
AdjDel/Veh:	20.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	211.6	0.0	0.0
LOS by Move:	C	*	*	*	*	*	*	*	*	F	*	*
ApproachDel:	20.5			xxxxxx			xxxxxx			211.6		
Delay Adj:	1.00			xxxxx			xxxxx			1.00		
ApprAdjDel:	20.5			xxxxxx			xxxxxx			211.6		
LOS by Appr:	C			*			*			F		
AllWayAvgQ:	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.9	29.9	0.0

Note: Queue reported is the number of cars per lane.

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MITIGATED CONDITIONS

Mt SAC Campus-Temple Alalysis
Existing Plus 2025 Project Conditions And Cumulative Projects
AM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #111 Campus Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.025
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 1 0 0 2			2 0 2 1 0			1 0 2 1 0		
Volume Module:												
Base Vol:	33	41	11	155	23	936	362	424	10	12	1282	307
Growth 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
Initial Bse:	33	41	11	155	23	936	362	424	10	12	1282	307
Added Vol:	0	0	0	178	0	50	118	62	0	0	253	578
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	33	41	11	333	23	986	480	486	10	12	1535	885
User 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
PHF Adj:	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
PHF Volume:	35	43	12	349	24	1035	504	510	10	13	1611	929
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	35	43	12	349	24	1035	504	510	10	13	1611	929
PCE 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
MLF 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
FinalVolume:	35	43	12	349	24	1035	504	510	10	13	1611	929
OvlAdjVol:						531						
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.58	0.42	1.87	0.13	2.00	2.00	2.94	0.06	1.00	2.00	1.00
Final Sat.:	1600	2523	677	2993	207	3200	3200	4703	97	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.02	0.02	0.12	0.12	0.32	0.16	0.11	0.11	0.01	0.50	0.58
OvlAdjV/S:						0.17						
Crit Moves:	****					****	****					****

Mt SAC Campus-Temple Alalysis
Existing Plus 2025 Project Conditions And Cumulative Projects
AM Peak Hour

Level Of Service Computation Report
2000 HCM Operations Method (Future Volume Alternative)

Intersection #112 Kellogg Dr/I-10 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.422
Loss Time (sec):	8 (Y+R=4.0 sec)	Average Delay (sec/veh):	17.9
Optimal Cycle:	28	Level Of Service:	B

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 0 0 0			0 0 0 0 0			0 0 0 0 0			1 1 0 0 0		
Volume Module:												
Base Vol:	508	0	0	0	0	0	0	0	0	473	9	0
Growth 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
Initial Bse:	508	0	0	0	0	0	0	0	0	473	9	0
Added Vol:	142	0	0	0	0	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	650	0	0	0	0	0	0	0	0	473	9	0
User 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
PHF Adj:	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
PHF Volume:	754	0	0	0	0	0	0	0	0	549	10	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	754	0	0	0	0	0	0	0	0	549	10	0
PCE 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
MLF 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
FinalVolume:	754	0	0	0	0	0	0	0	0	549	10	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.92	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.85	0.85	1.00
Lanes:	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.96	0.04	0.00
Final Sat.:	3502	0	0	0	0	0	0	0	0	3181	61	0
Capacity Analysis Module:												
Vol/Sat:	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.17	0.17	0.00
Crit Moves:	****									****		
Green/Cycle:	0.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.41	0.00
Volume/Cap:	0.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.42	0.00
Delay/Veh:	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	21.3	0.0
User DelAdj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
AdjDel/Veh:	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.3	21.3	0.0
LOS by Move:	B	A	A	A	A	A	A	A	A	C	C	A
HCM2kAvgQ:	7	0	0	0	0	0	0	0	0	6	6	0

Note: Queue reported is the number of cars per lane.

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-------------------------------------------------------------------------------
                        Mt SAC Campus-Temple Analysis
         Existing Plus 2025 Project Conditions And Cumulative Projects
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*******************************************************************************
Intersection #111 Campus Ave / Temple Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.947
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       130                Level Of Service:                  E
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include           Ovl             Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  1  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33   43   366   33   361   624 1057   29    30  643   255
Growth 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
Initial Bse:   11   33   43   366   33   361   624 1057   29    30  643   255
Added Vol:      0    0    0   534    0   118    50  112    0     0  210   222
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:   11   33   43   900   33   479   674 1169   29    30  853   477
User 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
PHF Adj:     0.98 0.98 0.98  0.98 0.98  0.98  0.98 0.98 0.98  0.98 0.98  0.98
PHF Volume:    11   34   44   921   34   490   690 1197   30    31  873   488
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:   11   34   44   921   34   490   690 1197   30    31  873   488
PCE 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
MLF 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
FinalVolume:   11   34   44   921   34   490   690 1197   30    31  873   488
OvlAdjVol:                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600  1600  1600 1600 1600  1600 1600  1600
Adjustment:  1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00
Lanes:       1.00 1.00 1.00  1.93 0.07  2.00  2.00 2.93 0.07  1.00 2.00  1.00
Final Sat.:  1600 1600 1600  3087  113  3200  3200 4684  116  1600 3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02 0.03  0.30 0.30  0.15  0.22 0.26 0.26  0.02 0.27  0.31
OvlAdjV/S:                              0.00
Crit Moves:            ****  ****             ****                         ****
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                        Mt SAC Campus-Temple Analysis
         Existing Plus 2025 Project Conditions And Cumulative Projects
                                PM Peak Hour
-------------------------------------------------------------------------------
                      Level Of Service Computation Report
            2000 HCM Operations Method (Future Volume Alternative)
*******************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         0.622
Loss Time (sec):       8 (Y+R=4.0 sec)  Average Delay (sec/veh):        16.7
Optimal Cycle:        40                Level Of Service:                  B
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Protected        Protected        Protected        Protected
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0    0     0    0     0     0    0    0  1333    0     0
Growth 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
Initial Bse:   70    0    0     0    0     0     0    0    0  1333    0     0
Added Vol:    427    0    0     0    0     0     0    0    0     0    0     0
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:  497    0    0     0    0     0     0    0    0  1333    0     0
User 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
PHF Adj:     0.89 0.89 0.89  0.89 0.89  0.89  0.89 0.89 0.89  0.89 0.89  0.89
PHF Volume:   557    0    0     0    0     0     0    0    0  1494    0     0
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:  557    0    0     0    0     0     0    0    0  1494    0     0
PCE 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
MLF 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
FinalVolume:  557    0    0     0    0     0     0    0    0  1494    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1900 1900 1900  1900 1900  1900  1900 1900 1900  1900 1900  1900
Adjustment:  0.92 1.00 1.00  1.00 1.00  1.00  1.00 1.00 1.00  0.95 1.00  1.00
Lanes:       2.00 0.00 0.00  0.00 0.00  0.00  0.00 0.00 0.00  2.00 0.00  0.00
Final Sat.:  3502    0    0     0    0     0     0    0    0  3618    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.16 0.00 0.00  0.00 0.00  0.00  0.00 0.00 0.00  0.41 0.00  0.00
Crit Moves:  ****                                             ****
Green/Cycle: 0.26 0.00 0.00  0.00 0.00  0.00  0.00 0.00 0.00  0.66 0.00  0.00
Volume/Cap:  0.62 0.00 0.00  0.00 0.00  0.00  0.00 0.00 0.00  0.62 0.00  0.00
Delay/Veh:   34.3  0.0  0.0   0.0  0.0   0.0   0.0  0.0  0.0  10.1  0.0   0.0
User DelAdj: 1.00 1.00 1.00  1.00 1.00  1.00  1.00 1.00 1.00  1.00 1.00  1.00
AdjDel/Veh:  34.3  0.0  0.0   0.0  0.0   0.0   0.0  0.0  0.0  10.1  0.0   0.0
LOS by Move:    C    A    A     A    A     A     A    A    A     B    A     A
HCM2kAvgQ:      9    0    0     0    0     0     0    0    0    13    0     0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
*******************************************************************************
```

EXISTING PLUS OTFT PARKING PLAN A CONDITIONS

```
-----------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
                       Olympics Trials 30% Plan A
                              PM Peak Hour
-----------------------------------------------------------------------------------
                    Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
***********************************************************************************
Intersection #111 Campus Ave / Temple Ave
***********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         1.348
Loss Time (sec):      10 (Y+R=4.0 sec) Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180              Level Of Service:                  F
***********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase       Protected        Protected
Rights:           Include           Ovl            Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        1  0  1  1  0   1  1  0  0  2   2  0  2  1  0   1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33   43   366   33   361   624 1057   29    30  643   255
Growth 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
Initial Bse:   11   33   43   366   33   361   624 1057   29    30  643   255
Added Vol:      0    0    0  1300    0     5     5 1999    0     0   10     0
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:   11   33   43  1666   33   366   629 3056   29    30  653   255
User 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
PHF Adj:     0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
PHF Volume:    11   34   44  1705   34   375   644 3128   30    31  668   261
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:   11   34   44  1705   34   375   644 3128   30    31  668   261
PCE 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
MLF 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
FinalVolume:   11   34   44  1705   34   375   644 3128   30    31  668   261
OvlAdjVol:                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 1.00 1.00  1.96 0.04 2.00  2.00 2.97 0.03  1.00 2.00 1.00
Final Sat.:  1600 1600 1600  3138   62 3200  3200 4755   45  1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02 0.03  0.54 0.54 0.12  0.20 0.66 0.66  0.02 0.21 0.16
OvlAdjV/S:                              0.00
Crit Moves:            ****       ****            ****        ****
***********************************************************************************
```



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-----------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
                       Olympics Trials 30% Plan A
                              PM Peak Hour
-----------------------------------------------------------------------------------
                    Level Of Service Computation Report
            2000 HCM 4-Way Stop Method (Future Volume Alternative)
***********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
***********************************************************************************
Cycle (sec):         100              Critical Vol./Cap.(X):         1.106
Loss Time (sec):       0 (Y+R=4.0 sec) Average Delay (sec/veh):       84.4
Optimal Cycle:         0              Level Of Service:                  F
***********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R   L  -  T  -  R   L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:    0    0    0    0    0    0    0    0    0    0    0    0
Lanes:        2  0  0  0  0   0  0  0  0  0   0  0  0  0  0   1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0    0     0    0     0     0    0    0  1333    0     0
Growth 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
Initial Bse:   70    0    0     0    0     0     0    0    0  1333    0     0
Added Vol:      5    0    0     0    0     0     0    0    0     5    0     0
PasserByVol:    0    0    0     0    0     0     0    0    0     0    0     0
Initial Fut:   75    0    0     0    0     0     0    0    0  1338    0     0
User 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
PHF Adj:     0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89
PHF Volume:    84    0    0     0    0     0     0    0    0  1500    0     0
Reduct Vol:     0    0    0     0    0     0     0    0    0     0    0     0
Reduced Vol:   84    0    0     0    0     0     0    0    0  1500    0     0
PCE 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
MLF 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
FinalVolume:   84    0    0     0    0     0     0    0    0  1500    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       2.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  2.00 0.00 0.00
Final Sat.:   950    0    0     0    0     0     0    0    0  1356    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.09 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  1.11 xxxx xxxx
Crit Moves:  ****                                            ****
Delay/Veh:   11.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  88.5  0.0  0.0
Delay 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
AdjDel/Veh:  11.0  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  88.5  0.0  0.0
LOS by Move:    B    *    *     *    *    *     *    *    *     F    *    *
ApproachDel:      11.0           xxxxxx          xxxxxx           88.5
Delay Adj:        1.00            xxxxx           xxxxx           1.00
ApprAdjDel:       11.0           xxxxxx          xxxxxx           88.5
LOS by Appr:        B               *               *               F
AllWayAvgQ:   0.1  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  15.2 15.2  0.0
***********************************************************************************
Note: Queue reported is the number of cars per lane.
```

EXISTING PLUS OTFT PARKING PLAN B CONDITIONS

Mt SAC Campus Temple Analysis
Olympics Trials Plan B
PM Peak Hour

Level Of Service Computation Report
ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)

Intersection #111 Campus Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.010
Loss Time (sec):	10 (Y+R=4.0 sec)	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	180	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase			Split Phase			Protected			Protected		
Rights:	Include			Ovl			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	1 0 1 1 0			1 1 0 0 2			2 0 2 1 0			1 0 2 0 1		
Volume Module:												
Base Vol:	11	33	43	366	33	361	624	1057	29	30	643	255
Growth 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
Initial Bse:	11	33	43	366	33	361	624	1057	29	30	643	255
Added Vol:	0	0	0	1000	0	5	5	863	0	0	10	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	11	33	43	1366	33	366	629	1920	29	30	653	255
User 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
PHF Adj:	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
PHF Volume:	11	34	44	1398	34	375	644	1965	30	31	668	261
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	11	34	44	1398	34	375	644	1965	30	31	668	261
PCE 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
MLF 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
FinalVolume:	11	34	44	1398	34	375	644	1965	30	31	668	261
OvlAdjVol:						0						
Saturation Flow Module:												
Sat/Lane:	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	1.00	1.00	1.00	1.95	0.05	2.00	2.00	2.96	0.04	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3125	75	3200	3200	4729	71	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.01	0.02	0.03	0.45	0.45	0.12	0.20	0.42	0.42	0.02	0.21	0.16
OvlAdjV/S:						0.00						
Crit Moves:			****		****			****		****		

Mt SAC Campus Temple Analysis
Olympics Trials Plan B
PM Peak Hour

Level Of Service Computation Report
2000 HCM 4-Way Stop Method (Future Volume Alternative)

Intersection #112 Kellogg Dr/I-10 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.106
Loss Time (sec):	0 (Y+R=4.0 sec)	Average Delay (sec/veh):	84.4
Optimal Cycle:	0	Level Of Service:	F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Stop Sign			Stop Sign			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Min. Green:	0	0	0	0	0	0	0	0	0	0	0	0
Lanes:	2 0 0 0 0			0 0 0 0 0			0 0 0 0 0			1 1 0 0 0		
Volume Module:												
Base Vol:	70	0	0	0	0	0	0	0	0	1333	0	0
Growth 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
Initial Bse:	70	0	0	0	0	0	0	0	0	1333	0	0
Added Vol:	5	0	0	0	0	0	0	0	0	5	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	75	0	0	0	0	0	0	0	0	1338	0	0
User 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
PHF Adj:	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
PHF Volume:	84	0	0	0	0	0	0	0	0	1500	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	84	0	0	0	0	0	0	0	0	1500	0	0
PCE 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
MLF 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
FinalVolume:	84	0	0	0	0	0	0	0	0	1500	0	0
Saturation Flow Module:												
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Lanes:	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	0.00
Final Sat.:	950	0	0	0	0	0	0	0	0	1356	0	0
Capacity Analysis Module:												
Vol/Sat:	0.09	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx	1.11	xxxx	xxxx
Crit Moves:	****									****		
Delay/Veh:	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.5	0.0	0.0
Delay 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
AdjDel/Veh:	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88.5	0.0	0.0
LOS by Move:	B	*	*	*	*	*	*	*	*	F	*	*
ApproachDel:	11.0			xxxxxx			xxxxxx			88.5		
Delay Adj:	1.00			xxxxx			xxxxx			1.00		
ApprAdjDel:	11.0			xxxxxx			xxxxxx			88.5		
LOS by Appr:	B			*			*			F		
AllWayAvgQ:	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.2	15.2	0.0

Note: Queue reported is the number of cars per lane.

EXISTING PLUS 2020 CUMULATIVE PLUS OTFT PARKING PLAN A CONDITIONS

```
-------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
                 Olympics Trials 30% Plan A - Cumulative
                              PM Peak Hour
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*******************************************************************************
Intersection #111 Campus Ave / Temple Ave
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.429
Loss Time (sec):      10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:       180                Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include            Ovl             Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:         1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33    43   366   33   361   624 1057    29    30  643   255
Growth 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
Initial Bse:   11   33    43   366   33   361   624 1057    29    30  643   255
Added Vol:      0    0     0  1300    0     5     5 1999     0     0   10     0
Cumulative:     0    0     0   246    0    49    35    9     0     0    6   102
Initial Fut:   11   33    43  1912   33   415   664 3065    29    30  659   357
User 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
PHF Adj:     0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98  0.98 0.98  0.98
PHF Volume:    11   34    44  1957   34   425   680 3137    30    31  675   365
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:   11   34    44  1957   34   425   680 3137    30    31  675   365
PCE 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
MLF 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
FinalVolume:   11   34    44  1957   34   425   680 3137    30    31  675   365
OvlAdjVol:                                  0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600  1600  1600 1600  1600  1600 1600  1600  1600 1600  1600
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       1.00 1.00  1.00  1.97 0.03  2.00  2.00 2.97  0.03  1.00 2.00  1.00
Final Sat.:  1600 1600  1600  3146   54  3200  3200 4755    45  1600 3200  1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02  0.03  0.62 0.62  0.13  0.21 0.66  0.66  0.02 0.21  0.23
OvlAdjV/S:                               0.00
Crit Moves:             ****       ****             ****        ****
*******************************************************************************
```



```
-------------------------------------------------------------------------------
                      Mt SAC Campus-Temple Analysis
                 Olympics Trials 30% Plan A - Cumulative
                              PM Peak Hour
-------------------------------------------------------------------------------
                    Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
*******************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
*******************************************************************************
Cycle (sec):         100                Critical Vol./Cap.(X):         1.259
Loss Time (sec):       0 (Y+R=4.0 sec)  Average Delay (sec/veh):       126.6
Optimal Cycle:         0                Level Of Service:                  F
*******************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R   L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0     0     0    0     0     0    0     0     0    0     0
Lanes:         2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0     0     0    0     0     0    0     0  1333    0     0
Growth 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
Initial Bse:   70    0     0     0    0     0     0    0     0  1333    0     0
Added Vol:      5    0     0     0    0     0     0    0     0     5    0     0
PasserByVol:  196    0     0     0    0     0     0    0     0     0    0     0
Initial Fut:  271    0     0     0    0     0     0    0     0  1338    0     0
User 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
PHF Adj:     0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89  0.89 0.89  0.89
PHF Volume:   304    0     0     0    0     0     0    0     0  1500    0     0
Reduct Vol:     0    0     0     0    0     0     0    0     0     0    0     0
Reduced Vol:  304    0     0     0    0     0     0    0     0  1500    0     0
PCE 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
MLF 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
FinalVolume:  304    0     0     0    0     0     0    0     0  1500    0     0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00  1.00 1.00  1.00
Lanes:       2.00 0.00  0.00  0.00 0.00  0.00  0.00 0.00  0.00  2.00 0.00  0.00
Final Sat.:   949    0     0     0    0     0     0    0     0  1192    0     0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.32 xxxx  xxxx  xxxx xxxx  xxxx  xxxx xxxx  xxxx  1.26 xxxx  xxxx
Crit Moves:  ****                                               ****
Delay/Veh:   13.8  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0 149.5  0.0   0.0
Delay 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
AdjDel/Veh:  13.8  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0 149.5  0.0   0.0
LOS by Move:   B    *     *     *    *     *     *    *     *     F    *     *
ApproachDel:      13.8           xxxxxx           xxxxxx            149.5
Delay Adj:        1.00            xxxxx            xxxxx             1.00
ApprAdjDel:       13.8           xxxxxx           xxxxxx            149.5
LOS by Appr:        B                *                *                F
AllWayAvgQ:   0.5  0.0   0.0   0.0  0.0   0.0   0.0  0.0   0.0  23.3 23.3   0.0
*******************************************************************************
Note: Queue reported is the number of cars per lane.
```

EXISTING PLUS 2020 CUMULATIVE PLUS OTFT PARKING PLAN B CONDITIONS

```
---------------------------------------------------------------------------------
                       Mt SAC Campus Temple Analysis
                  Olympics Trials Plan B Plus Cumulative
                               PM Peak Hour
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
       ICU 1(Loss as Cycle Length %) Method (Future Volume Alternative)
*********************************************************************************
Intersection #111 Campus Ave / Temple Ave
*********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        1.094
Loss Time (sec):     10 (Y+R=4.0 sec)  Average Delay (sec/veh):      xxxxxx
Optimal Cycle:      180              Level Of Service:                 F
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:       Split Phase      Split Phase        Protected        Protected
Rights:           Include           Ovl             Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        1  0  1  1  0    1  1  0  0  2    2  0  2  1  0    1  0  2  0  1
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      11   33   43   366   33  361   624 1057   29    30  643  255
Growth 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
Initial Bse:   11   33   43   366   33  361   624 1057   29    30  643  255
Added Vol:      0    0    0  1000    0    5     5  863    0     0   10    0
Cumulative:     0    0    0   246    0   49    35    9    0     0    6  102
Initial Fut:   11   33   43  1612   33  415   664 1929   29    30  659  357
User 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
PHF Adj:     0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98  0.98 0.98 0.98
PHF Volume:    11   34   44  1650   34  425   680 1974   30    31  675  365
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:   11   34   44  1650   34  425   680 1974   30    31  675  365
PCE 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
MLF 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
FinalVolume:   11   34   44  1650   34  425   680 1974   30    31  675  365
OvlAdjVol:                                 0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Sat/Lane:    1600 1600 1600  1600 1600 1600  1600 1600 1600  1600 1600 1600
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       1.00 1.00 1.00  1.96 0.04 2.00  2.00 2.96 0.04  1.00 2.00 1.00
Final Sat.:  1600 1600 1600  3136   64 3200  3200 4729   71  1600 3200 1600
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.01 0.02 0.03  0.53 0.53 0.13  0.21 0.42 0.42  0.02 0.21 0.23
OvlAdjV/S:                               0.00
Crit Moves:            ****       ****       ****                        ****
*********************************************************************************
```



```
---------------------------------------------------------------------------------
                       Mt SAC Campus Temple Analysis
                  Olympics Trials Plan B Plus Cumulative
                               PM Peak Hour
---------------------------------------------------------------------------------
                      Level Of Service Computation Report
           2000 HCM 4-Way Stop Method (Future Volume Alternative)
*********************************************************************************
Intersection #112 Kellogg Dr/I-10 WB Ramps
*********************************************************************************
Cycle (sec):        100              Critical Vol./Cap.(X):        1.259
Loss Time (sec):      0 (Y+R=4.0 sec)  Average Delay (sec/veh):      126.6
Optimal Cycle:        0              Level Of Service:                 F
*********************************************************************************
Approach:      North Bound      South Bound       East Bound       West Bound
Movement:     L  -  T  -  R    L  -  T  -  R    L  -  T  -  R    L  -  T  -  R
------------|---------------||---------------||---------------||---------------|
Control:        Stop Sign        Stop Sign        Stop Sign        Stop Sign
Rights:           Include          Include          Include          Include
Min. Green:     0    0    0     0    0    0     0    0    0     0    0    0
Lanes:        2  0  0  0  0    0  0  0  0  0    0  0  0  0  0    1  1  0  0  0
------------|---------------||---------------||---------------||---------------|
Volume Module:
Base Vol:      70    0    0     0    0    0     0    0    0  1333    0    0
Growth 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
Initial Bse:   70    0    0     0    0    0     0    0    0  1333    0    0
Added Vol:      5    0    0     0    0    0     0    0    0     5    0    0
Cumulative:   196    0    0     0    0    0     0    0    0     0    0    0
Initial Fut:  271    0    0     0    0    0     0    0    0  1338    0    0
User 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
PHF Adj:     0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89  0.89 0.89 0.89
PHF Volume:   304    0    0     0    0    0     0    0    0  1500    0    0
Reduct Vol:     0    0    0     0    0    0     0    0    0     0    0    0
Reduced Vol:  304    0    0     0    0    0     0    0    0  1500    0    0
PCE 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
MLF 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
FinalVolume:  304    0    0     0    0    0     0    0    0  1500    0    0
------------|---------------||---------------||---------------||---------------|
Saturation Flow Module:
Adjustment:  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00  1.00 1.00 1.00
Lanes:       2.00 0.00 0.00  0.00 0.00 0.00  0.00 0.00 0.00  2.00 0.00 0.00
Final Sat.:   949    0    0     0    0    0     0    0    0  1192    0    0
------------|---------------||---------------||---------------||---------------|
Capacity Analysis Module:
Vol/Sat:     0.32 xxxx xxxx  xxxx xxxx xxxx  xxxx xxxx xxxx  1.26 xxxx xxxx
Crit Moves:  ****                                            ****
Delay/Veh:   13.8  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0 149.5  0.0  0.0
Delay 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
AdjDel/Veh:  13.8  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0 149.5  0.0  0.0
LOS by Move:    B    *    *     *    *    *     *    *    *     F    *    *
ApproachDel:      13.8            xxxxxx           xxxxxx           149.5
Delay Adj:        1.00             xxxxx            xxxxx            1.00
ApprAdjDel:       13.8            xxxxxx           xxxxxx           149.5
LOS by Appr:        B                *                *                F
AllWayAvgQ:   0.5  0.0  0.0   0.0  0.0  0.0   0.0  0.0  0.0  23.3 23.3  0.0
*********************************************************************************
Note: Queue reported is the number of cars per lane.
```

APPENDIX C – CUMULATIVE PROJECTS TRIP GENERATION

Mt SAC PEP EIR - Cumulative Project Trip Generation 2020

Agency	ID	Project Name	ITE Code	Land Use	Size	Unit	AM peak Hour Trips In	AM Out	AM Total	PM Peak Hour Trips In	PM Out	PM Total	Daily
Walnut	1	Shea Homes Project	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					37	du	7	21	28	23	14	37	352
			230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					61	du	4	23	27	21	11	32	354
	2	Salamone Subdivision	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					6	du	0	3	3	2	1	3	35
			412	County Park		Rates	0.01	0.01	0.02	0.05	0.04	0.09	2.28
					1.55	acres	0	0	0	0	0	0	4
	3	Gregorian Subdivision	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					7	du	1	4	5	4	3	7	67
	4	The Olson Company Project	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					8	du	2	4	6	5	3	8	76
Pomona	5	22122 W. Valley Blvd.	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					141	tsf	114	16	130	17	120	137	983
	6	2001 W. Mission Blvd.	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					432.843	tsf	351	47	398	52	368	420	3,017
	7	2-16 Village Loop Rd.	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					124	du	24	69	93	78	46	124	1,180
			820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					6	tsf	4	2	6	11	11	22	256
	8	92 Rio Rancho Rd.	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					56	du	4	21	25	20	9	29	325
	9	1943 S Towne Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					48	du	9	27	36	30	18	48	457
	10	715 E Phillips Rd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					4	du	0	2	2	1	1	2	23
	11	1041 S White Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					20	du	4	11	15	13	7	20	190
	12	701 S Garvey Ave	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					37	tsf	22	14	36	66	71	137	1,580
	13	1439 S Palomares St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					6	du	0	3	3	2	1	3	35
	14	1390 S Palomares St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					12	du	1	4	5	4	2	6	70
	15	Rio Rancho Towne Center Phase II	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					64.717	tsf	39	23	62	115	125	240	2,763
	16	600 Dudley Ave	252	Senior Adult Housing - Attached		Rates	0.18	0.21	0.39	0.19	0.16	0.35	3.44
					84	du	15	18	33	16	13	29	289
	17	855 E Phillips Blvd	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					37	du	7	21	28	23	14	37	352
	18	675 E Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					38	du	3	14	17	13	7	20	221
	19	22 Rio Rancho Rd	841	Automobile Sales		Rates	0.89	1.33	2.22	1.32	1.48	2.80	32.30
					5.75	tsf	5	8	13	8	8	16	186
	20	888 W Mission Blvd	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					20.239	tsf	12	7	19	36	39	75	864
	21	1368 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					36	du	3	13	16	13	6	19	209
	22	1932/1936 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					17	du	1	6	7	6	3	9	99
	23	1300 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					33	du	2	13	15	12	5	17	192
	24	1365/1367 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					2	du	0	1	1	1	0	1	12
	25	1940 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					10	du	1	3	4	4	1	5	58
	26	424-446 W Commercial St	252	Senior Adult Housing - Attached		Rates	0.18	0.21	0.39	0.19	0.16	0.35	3.44
					61	du	11	13	24	12	9	21	210
	27	952 E 9th St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					11	du	1	4	5	4	2	6	64
	28	1344 W Grand Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					7	du	0	3	3	2	2	4	41
	29	1363 S Buena Vista Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					3	du	0	1	1	1	1	2	17
	30	1480 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					24	du	2	9	11	8	4	12	139
	31	1455 S White Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					2	du	0	1	1	1	0	1	12
	32	1302 Hansen Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					2	du	0	2	2	1	1	2	19
	33	Rio Rancho Towne Center Hotel (White & Rancho Valley)	310	Hotel		Rates	0.31	0.22	0.53	0.31	0.29	0.60	8.17
					149	Rooms	46	33	79	46	43	89	1,217
	34	1145 W 10th St	560	Church		Rates	0.48	0.39	0.87	0.51	0.43	0.94	9.11
					6.019	tsf	3	2	5	3	3	6	55
	35	40 Rio Rancho Rd	932	High-Turnover (Sit-Down) Restaurant		Rates	5.41	5.40	10.81	5.91	3.94	9.85	127.15
					1.608	tsf	9	8	17	10	6	16	204
	36	1491 E 9th St	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					193.5	tsf	157	21	178	23	165	188	1,349
Diamond Bar	37	TR 63623	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					99	du	7	37	44	35	16	51	575
	38	TR 72295	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					47	du	9	26	35	30	17	47	447
			230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					135	du	9	50	59	47	23	70	784
Industry	39	15000 Nelson: DP 15-7	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					125.344	tsf	102	13	115	15	107	122	874
	40	489 & 499 Parriott Place: DP 15-10 & ZE 15-2	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					130.17	tsf	105	15	120	16	110	126	907
	41	SE corner Azusa and Chestnut	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					614.597	tsf	498	67	565	74	522	596	4,284
	42	18421 Railroad Ave.: DP 15-13 & ZE 15-3	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					8.85	tsf	7	1	8	1	8	9	62
	43	12851 Crossroads Parkway South: DP 15-14 & ZE 15-4	710	General Office Building		Rates	1.37	0.19	1.56	0.25	1.24	1.49	11.03
					77.25	tsf	106	15	121	19	96	115	852
	44	3718 Capitol Ave.: DP 15-15 & ZE TBD	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					36.666	tsf	30	4	34	4	32	36	256
	45	Echelon	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					326.7	tsf	265	36	301	39	278	317	2,277
	46	14700 Nelson	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					232.45	tsf	188	26	214	28	197	225	1,620
	47	19782 Walnut Drive North: DP-15-17	934	Fast-food With Drive-Thru		Rates	23.16	22.26	45.42	16.98	15.67	32.65	496.12
					2.662	tsf	62	59	121	45	42	87	1,321
	48	1552 Azusa Ave.: DP 15-18	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					20.621	tsf	12	8	20	37	40	77	881
	49	17225 Arenth Avenue: DP 15-19	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					6.76	tsf	5	1	6	1	6	7	47
	50	Castleton: DP 15-20/CUP 15-19	934	Fast-food With Drive-Thru		Rates	23.16	22.26	45.42	16.98	15.67	32.65	496.12
					2.492	tsf	58	55	113	42	39	81	1,236
	51	16801 Gale Ave: DP 15-21	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					39.15	tsf	32	4	36	5	33	38	273
Cal Poly Pomona	52	Cal Poly Enrollment Increase	550	University/College		Rates	0.13	0.04	0.17	0.05	0.12	0.17	1.71
					4,089	student	532	163	695	204	491	695	6,992
						Total	**2,891**	**1,075**	**3,966**	**1,349**	**3,200**	**4,549**	**41,264**

Mt SAC PEP EIR - Cumulative Project Trip Generation 2025													
							AM peak Hour Trips			PM Peak Hour Trips			
Agency	ID	Project Name	ITE Code	Land Use	Size	Unit	In	Out	Total	In	Out	Total	Daily
Walnut	1	Shea Homes Project	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					37	du	7	21	28	23	14	37	352
			230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					61	du	4	23	27	21	11	32	354
	2	Salamone Subdivision	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					6	du	0	3	3	2	1	3	35
			412	County Park		Rates	0.01	0.01	0.02	0.05	0.04	0.09	2.28
					1.55	acres	0	0	0	0	0	0	4
	3	Gregorian Subdivision	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					7	du	1	4	5	4	3	7	67
	4	The Olson Company Project	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					8	du	2	4	6	5	3	8	76
Pomona	5	22122 W. Valley Blvd.	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					141	tsf	114	16	130	17	120	137	983
	6	2001 W. Mission Blvd.	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					432.843	tsf	351	47	398	52	368	420	3,017
	7	2-16 Village Loop Rd.	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					124	du	24	69	93	78	46	124	1,180
			820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					6	tsf	4	2	6	11	11	22	256
	8	92 Rio Rancho Rd.	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					56	du	4	21	25	20	9	29	325
	9	1943 S Towne Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					48	du	9	27	36	30	18	48	457
	10	715 E Phillips Rd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					4	du	0	2	2	1	1	2	23
	11	1041 S White Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					20	du	4	11	15	13	7	20	190
	12	701 S Garvey Ave	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					37	tsf	22	14	36	66	71	137	1,580
	13	1439 S Palomares St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					6	du	0	3	3	2	1	3	35
	14	1390 S Palomares St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					12	du	1	4	5	4	2	6	70
	15	Rio Rancho Towne Center Phase II	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					64.717	tsf	39	23	62	115	125	240	2,763
	16	600 Dudley Ave	252	Senior Adult Housing - Attached		Rates	0.18	0.21	0.39	0.19	0.16	0.35	3.44
					84	du	15	18	33	16	13	29	289
	17	855 E Phillips Blvd	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					37	du	7	21	28	23	14	37	352
	18	675 E Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					38	du	3	14	17	13	7	20	221
	19	22 Rio Rancho Rd	841	Automobile Sales		Rates	0.89	1.33	2.22	1.32	1.48	2.80	32.30
					5.75	tsf	5	8	13	8	8	16	186
	20	888 W Mission Blvd	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					20.239	tsf	12	7	19	36	39	75	864
	21	1368 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					36	du	3	13	16	13	6	19	209
	22	1932/1936 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					17	du	1	6	7	6	3	9	99
	23	1300 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					33	du	2	13	15	12	5	17	192
	24	1365/1367 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					2	du	0	1	1	1	0	1	12
	25	1940 S Garvey Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					10	du	1	3	4	4	1	5	58
	26	424-446 W Commercial St	252	Senior Adult Housing - Attached		Rates	0.18	0.21	0.39	0.19	0.16	0.35	3.44
					61	du	11	13	24	12	9	21	210
	27	952 E 9th St	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					11	du	1	4	5	4	2	6	64
	28	1344 W Grand Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					7	du	0	3	3	2	2	4	41
	29	1363 S Buena Vista Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					3	du	0	1	1	1	1	2	17
	30	1480 W Mission Blvd	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					24	du	2	9	11	8	4	12	139
	31	1455 S White Ave	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					2	du	0	1	1	1	0	1	12
	32	1302 Hansen Ave	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					2	du	0	2	2	1	1	2	19
	33	Rio Rancho Towne Center Hotel (White & Rancho Valley)	310	Hotel		Rates	0.31	0.22	0.53	0.31	0.29	0.60	8.17
					149	Rooms	46	33	79	46	43	89	1,217
	34	1145 W 10th St	560	Church		Rates	0.48	0.39	0.87	0.51	0.43	0.94	9.11
					6.019	tsf	3	2	5	3	3	6	55
	35	40 Rio Rancho Rd	932	High-Turnover (Sit-Down) Restaurant		Rates	5.41	5.40	10.81	5.91	3.94	9.85	127.15
					1.608	tsf	9	8	17	10	6	16	204
	36	1491 E 9th St	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					193.5	tsf	157	21	178	23	165	188	1,349
Diamond Bar	37	TR 63623	230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					99	du	7	37	44	35	16	51	575
	38	TR 72295	210	Single-Family Detached		Rates	0.19	0.56	0.75	0.63	0.37	1.00	9.52
					47	du	9	26	35	30	17	47	447
			230	Condominium/Townhouse		Rates	0.07	0.37	0.44	0.35	0.17	0.52	5.81
					135	du	9	50	59	47	23	70	784
Industry	39	15000 Nelson: DP 15-7	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					125.344	tsf	102	13	115	15	107	122	874
	40	489 & 499 Parriott Place: DP 15-10 & ZE 15-2	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					130.17	tsf	105	15	120	16	110	126	907
	41	SE corner Azusa and Chestnut	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					614.597	tsf	498	67	565	74	522	596	4,284
	42	18421 Railroad Ave.: DP 15-13 & ZE 15-3	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					8.85	tsf	7	1	8	1	8	9	62
	43	12851 Crossroads Parkway South: DP 15 14 & ZE 15-4	710	General Office Building		Rates	1.37	0.19	1.56	0.25	1.24	1.49	11.03
					77.25	tsf	106	15	121	19	96	115	852
	44	3718 Capitol Ave.: DP 15-15 & ZE TBD	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					36.666	tsf	30	4	34	4	32	36	256
	45	Echelon	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					326.7	tsf	265	36	301	39	278	317	2,277
	46	14700 Nelson	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					232.45	tsf	188	26	214	28	197	225	1,620
	47	19782 Walnut Drive North: DP-15-17	934	Fast-food With Drive-Thru		Rates	23.16	22.26	45.42	16.98	15.67	32.65	496.12
					2.662	tsf	62	59	121	45	42	87	1,321
	48	1552 Azusa Ave.: DP 15-18	820	Shopping Center		Rates	0.60	0.36	0.96	1.78	1.93	3.71	42.70
					20.621	tsf	12	8	20	37	40	77	881
	49	17225 Arenth Avenue: DP 15-19	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					6.76	tsf	5	1	6	1	6	7	47
	50	Castleton: DP 15-20/CUP 15-19	934	Fast-food With Drive-Thru		Rates	23.16	22.26	45.42	16.98	15.67	32.65	496.12
					2.492	tsf	58	55	113	42	39	81	1,236
	51	16801 Gale Ave: DP 15-21	110	General Light Industrial		Rates	0.81	0.11	0.92	0.12	0.85	0.97	6.97
					39.15	tsf	32	4	36	5	33	38	273
	52	Industry Business Center East	110	Warehousing & Distribution		Rates							
						tsf	421	85	506	124	383	507	4,593
	53	Industry Business Center Weset	110	Warehousing & Distribution		Rates							
						tsf	471	132	603	349	610	958	9,005
Cal Poly Pomona	54	Cal Poly Enrollment Increase	550	University/College		Rates	0.13	0.04	0.17	0.05	0.12	0.17	1.71
					8,889	student	1156	355	1511	444	1067	1,511	15,200
						Total	4,407	1,484	5,891	2,061	4,769	6,830	63,071

THE CITY OF
POMONA
Planning Division

Development & Neighborhood
Services Department

July 28, 2016

Mikaela Klein
1100 North Grand Avenue
Walnut, CA 91789-5611

Dear Ms. Klein:

This letter is in response to the Draft EIR for the Mr. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects SEIR. The City of Pomona would request that the traffic study include the following as outlined on Figure 4 Project Trip Distribution:

1) Should include the intersection of South Campus and Temple Avenue as a study intersection.
2) Include a percentage of traffic associated with Kellogg Drive as a high percentage of vehicles come exit 10 Fwy eastbound and continue to Kellogg Dr.
3) South Campus volume percentage distribution appears to be too low and not realistic.
4) Provide data or methodology to justify the percentage trip distribution along 57 Fwy of 10 percent northbound and 10 percent southbound.
5) Justify 4 percent distribution from Temple Ave east of 57 Fwy.

We appreciate the opportunity to review the Draft EIR for this project and look forward to discussing with the project traffic engineer the above requested information and how this will effect roadway impacts in the City of Pomona. Please call the Planning Division at (909) 620-2191 to discuss any further questions or issues related to this response to the Draft EIR.

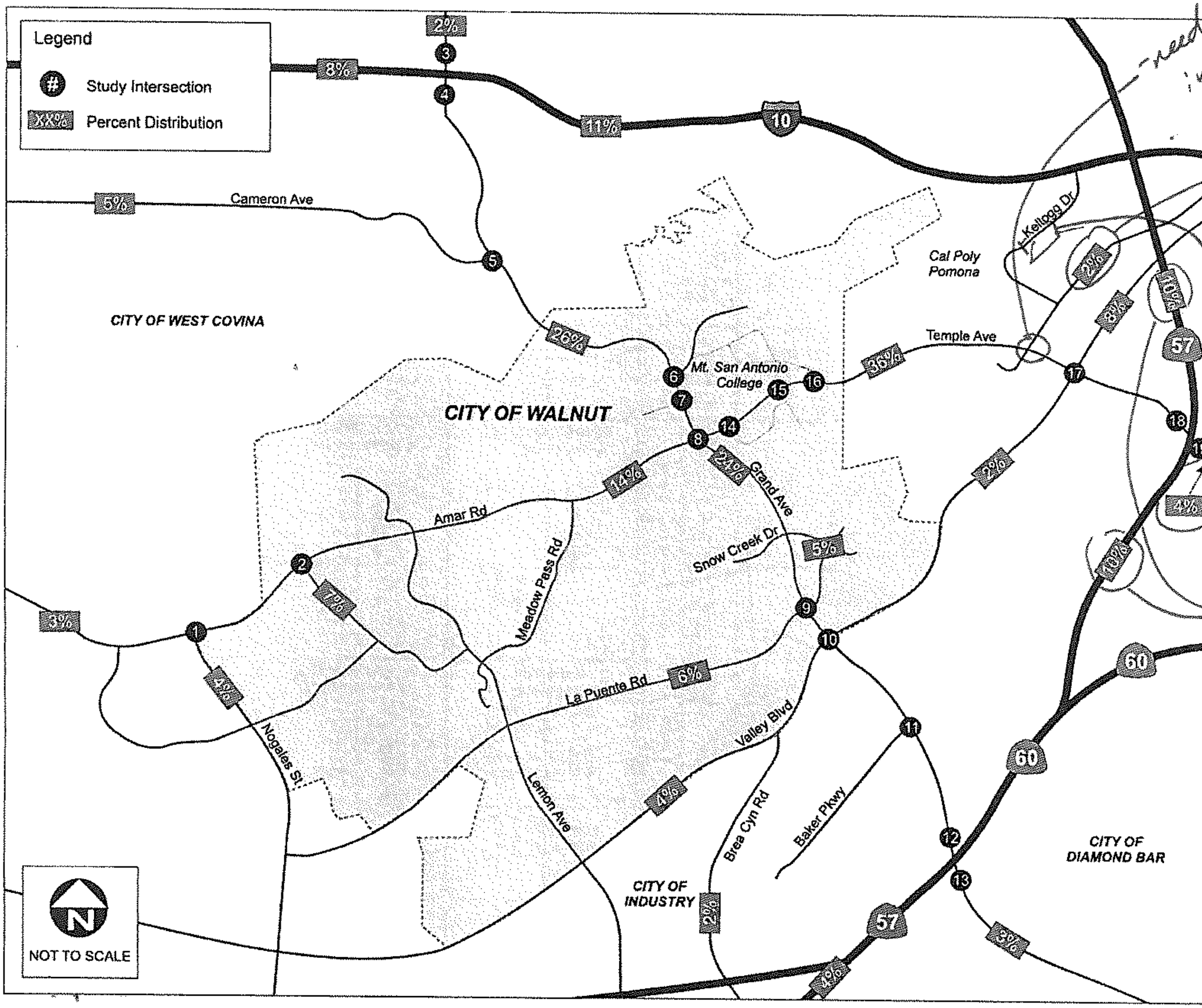
Sincerely,

Brad Johnson
Planning Manager

CC: Rene Guerrero, City Engineer

City Hall, 505 S. Garey Ave., Box 660, Pomona, CA 91769 (909) 620-2191 Fax (909) 469-2082

- need to include S. Campus



too low not realistic.

high & comes off 10-EB @ Kellogg

Questionable (too low) any data to support these %.

ITERIS

Mt San Antonio College
2015 Facilities Master Plan Update / Physical Education Projects
Traffic Impact Analysis

FIGURE 4
Project Trip Distribution

6-3. City of Pomona (July 28, 2016)

The City of Pomona requests that the traffic study include the following five items, which were also included in Figure 4: Project Trip Distribution (see Appendix A16).

As requested, Deepak Kaushik, PE, Iteris and Mika Klein participated in a phone conference with Pomona staff on August 10 to discuss their concerns.

As stated in Section 15204 of the CEQA Guidelines *"CEQA does not require a lead agency (i.e. District) to conduct every test or perform all research, study and experimentation recommended or demanded by commentators".*

6-3.1 *"Should include the intersection of South Campus and Temple Avenue as a study intersection."*

6.3.1 It is not expected that a significant amount of campus traffic would use South Campus Drive to access Temple Avenue, as opposed to alternate routes. Mt. SAC campus bound traffic would more than likely use Grand Avenue from the west and Temple Avenue from the east. Both Grand Avenue and Temple Avenue have a higher speed limit (45 mph) than Campus Drive (35 mph). In addition, Grand Avenue and Temple Avenue (arterial roadways) have higher roadway capacities than Campus Drive (collector).

While some campus bound traffic may still use Campus Drive to access Mt SAC in both directions, it would likely not be a significant amount. As a result, the South Campus and Temple Avenue intersection was not included in the analysis.

In order to assess this intersection thoroughly, it is anticipated that traffic counts during the 2016 fall term school year would need to be collected at this intersection. It is understood that the new parking structure would be opening on September 15, 2016. Thus, new traffic counts at this intersection should not be collected until at least the third week of the fall term, in order to capture a typical school-related Cal Poly and Mt SAC traffic with the new structure in place.

Also, as shown in Appendix A35 (Temple Avenue/South Campus Drive Improvements), an additional southbound right-turn lane and eastbound left-turn lane have been incorporated into the intersection to enhance traffic flow and reduce delay resulting from the new parking structure. These two intersection improvements serve the critical movements that Mt SAC FMPU trips would hypothetically utilize. Thus, with these improvements in place, it is unlikely that this intersection would be impacted by the Mt SAC FMPU traffic if it were to be included in the report.

The 1,500 parking space Parking Structure II (Lot K) at Cal Poly Pomona is located off of Campus Drive north of Temple Avenue. The $41 million project is scheduled for completion in September 2016.

Other Cal Poly projects under construction include Innovation Village (Phase 5) with 123,000 gsf with completion projected in 2016 and a Student Services Building with completion projected in 2018. The later project includes a new traffic signal on Kellogg Drive and University Avenue. A right-turn only lane will also be added at Temple Avenue to University Avenue.

Future projects include construction of 1,000 bed dormitories, which will replace existing dorms, and a realignment of Kellogg Drive.

Caltrans also is beginning a three-year construction project to add carpool lanes between Citrus Avenue and SR-57. (*Projects to Change Face of Campus,* Poly Centric University News Center, May 20, 2016).

6-3.2 *"Include a percentage of traffic associated with Kellogg Drive as a high percentage of vehicles come exit 10 Fwy eastbound and continue to Kellogg Dr."*

6.3.2 In the eastbound direction from I-10, the use of the I-10 to Kellogg Drive to Campus Drive route to reach Temple Avenue is a slower speed route, as well as a longer distance, than the I-10 to Grand Avenue route. The assumption is campus trips are exiting eastbound on the 10 Freeway, continuing south on Kellogg Drive through Cal Poly Pomona and west to Mt. SAC. The magnitude of this am peak traffic is unknown. The Kellogg Drive exit is 3.6 miles east of the Grand Avenue exit from 10 Freeway. Thus, a route from I-10 Freeway at Citrus Avenue to Grand/Mountaineer compared to the Kellogg exit to Grand/Bonita is 3.9 miles shorter.

Kellogg Drive and Campus Drive have a posted speed limit of 35 mph, include a stop-controlled intersection at University Drive, four signalized intersections, and the streets are adjacent to Cal Poly Pomona. Grand Avenue has a posted speed limit of 45 mph and does not include any stop-controlled intersections. Grand Avenue includes three signalized intersections (Holt Avenue, Cameron Avenue, Shady Mountain Road) before reaching the Mt SAC campus. Thus, our conclusion is that the I-10 to Grand Avenue route would be more attractive to drivers heading to Mt SAC.

In the westbound direction from I-10, the use of the I-10 to Kellogg Drive to Campus Drive route to reach Temple Avenue is a slower speed route than the 57 Freeway to Temple Avenue route. Kellogg Drive and Campus Drive have a posted speed limit of 35 mph, consist of more roadway curvatures than Temple Avenue, include a stop-controlled intersection at University Drive, and are adjacent to Cal Poly Pomona. Temple Avenue has a posted speed limit of 45 mph and does not consist of any stop-controlled intersections. Thus, our conclusion is the 57 Freeway to Temple Avenue route would be more attractive to drivers heading to Mt SAC.

While some campus bound traffic may still use the I-10/Kellogg Drive ramp to access Mt SAC in both directions, it would likely not be a significant amount.

Also, as shown in Appendix A35 (Temple Avenue/South Campus Drive Improvements), an additional southbound right-turn lane and eastbound left-turn lane have been incorporated into the intersection to enhance traffic flow and reduce delay resulting from the new parking structure. These two intersection improvements serve the critical movements that Mt SAC FMPU trips would hypothetically utilize. Thus, with these improvements in place, it is unlikely that this intersection would be impacted by the Mt SAC 2015 FMPU traffic if it were to be included in the report and include an altered trip distribution.

6-3.3 "*South Campus volume percentage distribution appears to be too low and not realistic.*"

6.3.3 The volume percentage distribution in the traffic study was based on routes that were deemed to be generally most attractive to motorists. Temple Avenue has a posted speed limit of 45 mph versus Campus Drive that has a posted speed limit of 35 mph. In addition, westbound/southbound Kellogg Drive reduces to one lane west of Red Gunn Lane for approximately 1,800 feet. Conversely, Temple Avenue consists of three lanes in each direction, consistently, between SR-57 and Campus Drive. Our professional judgment, as traffic engineers, is the distribution is appropriate and realistic.

Also, as shown in Appendix A35 (Temple Avenue/South Campus Drive Improvements), an additional southbound right-turn lane and eastbound left-turn lane have been incorporated into the intersection to enhance traffic flow and reduce delay resulting from the new parking structure. These two intersection improvements serve the critical movements that Mt SAC FMPU trips would hypothetically utilize. Thus, with these improvements in place, it is unlikely that this intersection would be impacted by the Mt SAC FMPU traffic if it were to be included in the report and include an altered trip distribution.

6-3.4 *"Provide data or methodology to justify the percentage trip distribution along 57 Fwy of 10 percent northbound and 10 percent southbound."*

6.3.4 Detailed origin/destination data was not collected, nor is it appropriate for this level of planning analysis. However, information used in the 2008 Draft EIR was applied to the current traffic study which was based on existing campus traffic patterns associated with the general locations of student residences provided by Mt. SAC.

Ultimately, a combination of the general student resident locations and engineering judgment, based on the surrounding circulation network, was used to determine project trip distribution.

6-3.5 *"Justify 4 percent distribution from Temple Ave east of 57 Fwy."*

6.3.5 Detailed origin/destination data was not collected, nor is it appropriate for this level of planning analysis. However, information used in the 2008 Draft EIR was applied to the current traffic study which was based on existing campus traffic patterns associated with the general locations of student residences provided by Mt. SAC.

Ultimately, a combination of the general student resident locations and engineering judgment, based on the surrounding circulation network, was used to determine project trip distribution.

May 8, 2017

VIA E-MAIL

Mt. San Antonio College
Attn: Ms. Rebecca Mitchell
1100 N. Grand Avenue
Walnut, CA 91789-1399

RE: Physical Education Project (Phase 1, 2) Subsequent Project EIR

Dear. Ms. Mitchell:

Pursuant to your letter dated April 24, 2017 and California Water Code Sections 10910-10915 and Sections 79560-79565, Three Valleys Municipal Water District (TVMWD) recognizes the additional supply of water required by the above-referenced project. TVMWD further acknowledges that the amount specified by Mt. SAC in its EIR document can be served by the existing water connection (designated as PM-1) on Metropolitan Water District's (MWD) Orange County Feeder without additional construction or expansion of the connection.

Mt. SAC's current Tier 1 allocation appears sufficient to cover the additional water demand of 48,000 gallons per day and no need for new or expanded entitlements are warranted at this time. It should be noted, however, that during years of drought or limited water availability, all of TVMWD's member agencies (including Mt. SAC) are subject to a decrease in their annual allocations. While these conditional changes in allocation do not necessarily limit the amount of water that an agency can take, exceeding the established amount will result in additional fees and costs to the agency.

Please contact TVMWD if you require any clarifications or have any additional questions.

Very truly yours,

Mario C. Garcia
Manager of Engineering & Operations

1021 E. Miramar Avenue • Claremont, California 91711-2052
Telephone (909) 621-5568 • Fax (909) 625-5470 • http://www.threevalleys.com

DRAFT

TRAFFIC IMPACT STUDY FOR THE PARKING STRUCTURE 2 PROJECT

CAL POLY POMONA
POMONA, CALIFORNIA

JULY 2014

PREPARED FOR

PARSONS BRINCKERHOFF, INC.

PREPARED BY

Gibson
transportation consulting, inc.

DRAFT

TRAFFIC IMPACT STUDY
FOR THE
PARKING STRUCTURE 2 PROJECT

CAL POLY POMONA
POMONA, CALIFORNIA

July 2014

Prepared for:

PARSONS BRINCKERHOFF, INC.

Prepared by:

GIBSON TRANSPORTATION CONSULTING, INC.
523 W. 6th Street, Suite 1234
Los Angeles, California 90014
(213) 683-0088

Ref: J1283

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Chapter 1
Introduction

The traffic impact analysis described in this study has been prepared for the Parking Structure 2 Project (Project) located at the California State Polytechnic University, Pomona (Cal Poly Pomona). The methodology and assumptions used in this analysis were established in conjunction with *Traffic Impact Study Guidelines* (City of Pomona Public Works Department, February 2012).

PROJECT LOCATION

The Project Site is located near the intersection of University Drive & Temple Avenue in the southern part of the Cal Poly Pomona campus in the City of Pomona. The Project Site is bounded by athletic facilities to the north, a surface parking lot to the east, I-Poly High School to the south, and University Drive to the west. The area surrounding the Project Site is largely undeveloped with the exception of university facilities. Most of the Cal Poly Pomona's buildings are north of the Project Site, with the agricultural research fields to the west and open space to the south.

The Project Site currently contains a 300-space surface parking lot. Primary vehicular access to the existing surface parking is provided by a driveway on University Drive.

PROJECT DESCRIPTION

The Project, which is expected to be constructed and operational by year 2016, includes a 1,550-space parking structure to support activities on the south part of campus including existing and proposed residential units, classroom buildings, and the nearby athletic facilities. The new structure will replace the existing 300 surface parking spaces and result in a total of

1200 net new parking spaces on the parcel. Surface parking areas to the east of the Project Site will remain after the construction of the Project.

The Project would retain the existing vehicular access to/from University Drive.

Since the Project consists of a parking structure, it is a supportive land use for campus operations and is, therefore, already included in the current Master Plan for the campus. The parking structure is evaluated in this document because it will alter the traffic circulation due to the increase of parking availability at this specified location.

For the purposes of this study, a single Project driveway is assumed to be located on the east side of University Avenue north of Temple Avenue.

Figure 1 illustrates the proposed Project site plan.

ORGANIZATION OF REPORT

This report is divided into 11 chapters, including this introduction. Chapter 2 describes the methodology used for the traffic impact analysis. Chapter 3 describes the existing circulation system, traffic volumes, and traffic conditions in the Study Area. Chapter 4 forecasts and analyzes future base operating conditions without Project traffic. Chapter 5 describes the procedure used to generate Project traffic volumes and the traffic distribution patterns throughout the Study Area. Chapter 6 presents the intersection operating conditions associated with operation of the Project added to Existing Conditions, and Chapter 7 presents the intersection operating conditions associated with operation of the Project added to Future without Project Conditions (Year 2016). Chapter 8 assesses the potentially significant traffic impacts associated with the Project compared to the existing and future conditions. Chapter 9 presents the recommended transportation mitigation measures to reduce any impacts created by the Project. Chapter 10 analyzes traffic impacts in accordance with the requirements of the CMP. Chapter 11 summarizes the analyses and study conclusions. Analysis worksheets, traffic counts, and any related documents are provided in the appendices.

- TO BE PROVIDED -

SITE PLAN

FIGURE
1

Chapter 2
Traffic Impact Analysis Methodology

This chapter describes the traffic scenarios analyzed, the methodologies used for assessing intersection and street segment operating conditions, and the significant traffic impact criteria used in the analysis.

STUDY SCOPE AND METHODOLOGY

This traffic study has been prepared in accordance with the City of Pomona guidelines, adopted policies, procedures, and standards, and provides a comprehensive analysis of the potential traffic impacts associated with the Project.

As described in more detail below, the study analyzed the potential Project-generated traffic impacts on the street system surrounding the Project Site when compared to Existing Conditions (Year 2014) and Future Conditions (Year 2016). Intersection traffic impacts for the Project were evaluated for typical weekday morning (6:30 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak periods. The analysis of future year traffic forecasts was conducted assuming full occupation of the Project parking spaces and is based on projected traffic conditions in year 2016 both with and without development of the Project.

Accordingly, the following traffic scenarios were developed and analyzed as part of this study:

- Existing Conditions (Year 2014) – The analysis of existing traffic conditions provides a basis for the assessment of existing and future traffic conditions with the addition of Project traffic. The Existing Conditions analysis includes a description of key area streets and highways, traffic volumes and current operating conditions, and transit service in the Project Site vicinity. In accordance with City of Pomona procedures, intersection turning movement counts were collected in March 2014 during typical weekday morning (6:30 AM to 9:00 AM) and afternoon (4:00 PM to 6:00 PM) peak. Field inspections of the study area, which include documentation of lane configurations and signal phasing for the analyzed intersections, were also conducted in March 2014.

- Existing Plus Project Conditions (Year 2014) – This scenario analyzes the intersection operating conditions that could be expected if the Project were fully occupied given the existing street system and traffic volumes. In this scenario, the Project-generated traffic is added to the Existing Conditions (Year 2014) traffic volumes.

- Future without Project Conditions (Year 2016) – This scenario analyzes the potential intersection operating conditions that could be expected as a result of adding regional growth and related project traffic to the existing volumes by year 2016. This analysis provides the baseline conditions by which Project impacts are evaluated in the future at full buildout.

- Future Plus Project Conditions (Year 2016) – This scenario analyzes the potential intersection operating conditions that could be expected if the Project were built in the projected buildout year (2016) by adding the Project traffic to the Future without Project Conditions (Year 2016) traffic volumes.

Intersection Capacity Analyses Methodology

Intersection capacity was analyzed using the methodologies adopted by the City of Pomona. In accordance with the City of Pomona policy, the intersection capacity analysis was conducted using the Synchro software which is based on the *2000 Highway Capacity Manual,* Transportation Research Board, 2000 (HCM), for signalized and unsignalized intersections. The HCM signalized methodology calculates the average delay, in seconds, for each vehicle passing through intersection during the peak hour, while the HCM unsignalized methodology calculates the vehicular delay, in seconds, for critical turning movements.

Vehicular delay is equated to a level of service (LOS) designation to characterize the traffic flow experienced by drivers. Table 1A presents a description of the LOS categories, which range from excellent, nearly free-flow traffic at LOS A, to congested, stop-and-go conditions at LOS F, for both signalized and unsignalized intersections, based upon their calculated delay output.

Significant Impact Criteria

Per *Traffic Impact Study Guidelines,* determination of Project traffic impacts are defined by the City of Pomona's significant impact criteria and are based on the change in LOS for the affected intersection as follows:

***"Signalized Intersections**. Any study intersection that is operating at a LOS A, B, C or D for any study scenario without project traffic in which the addition of project traffic causes the intersection to degrade to a LOS E or F shall mitigate that impact so as to bring the intersection back to at least LOS D.*

"Any study intersection that is operating at a LOS E or F for any study scenario without project traffic shall mitigate any impacts so as to bring the intersection back to the overall level of delay established prior to the project traffic being added.

***"Unsignalized Intersections**. An impact is considered significant if the study determines that either section a) or both sections b) and c) occur:*

> *"a) The addition of project related traffic causes the intersection to move from a LOS D or better to a LOS E or worse*
>
> ***OR***
>
> *"b) The project contributes additional traffic to an intersection that is already projected to operate at an LOS E or F with background traffic*
>
> ***AND***
>
> *"c) One or both of the following conditions are met:*
> *1) The project adds ten (10) or more trips to any approach*
> *2) The intersection meets the peak hour traffic signal warrant after the addition of project traffic."*

Freeway Mainline Analysis

Freeway mainline segments were analyzed using the Basic Freeway Segments methodology in the *2010 Highway Capacity Manual* (Transportation Research Board, 2010).

The freeway mainline segment analysis methodology reports density and LOS. The density is a measure of the number of passenger cars per mile per lane (pc/mi/ln) on the freeway mainline. Generally, traffic speeds decrease as vehicle density increases. However, the effect is especially significant as the capacity of the facility is reached, at which time additional density results in congestion and breakdown of traffic operations. The LOS is a broader representation of the overall operation of the facility, ranging from LOS A for free-flowing traffic to LOS F, when traffic volumes exceed a facility's capacity. A change in traffic volumes can result in a corresponding increase or decrease in density without changing the LOS of a facility. Table 1B summarizes the LOS categories for freeway mainline segments based on the calculated density output.

<u>Congestion Management Program Analysis</u>

Analysis was also conducted according to the Los Angeles County (County) Congestion Management Program (CMP) guidelines. The CMP is a State-mandated program that serves as the monitoring and analytical basis for transportation funding decisions in the County made through the Regional Transportation Improvement Program (RTIP) and State Transportation Improvement Program (STIP) processes. The CMP requires that a Traffic Impact Analysis (TIA) be performed for all CMP arterial monitoring intersections where a project would add 50 or more trips during either the morning or afternoon weekday peak hours and all mainline freeway monitoring locations where a project would add 150 or more trips (in either direction) during the morning or afternoon weekday peak hours. Additionally, it requires a review of potential impacts to the regional transit system.

TABLE 1A
LEVEL OF SERVICE DEFINITIONS
SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

Level of Service	Signalized Intersection Delay (sec)	Unsignalized Intersection Delay (sec)	Definition
A	0.0 - 10.0	0.0 - 10.0	EXCELLENT. No vehicle waits longer than one red light and no approach phase is fully used.
B	10.1 - 20.0	10.1 - 15.0	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	20.1 - 35.0	15.1 - 25.0	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	35.1 - 55.0	25.1 - 35.0	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	55.1 - 80.0	35.1 - 50.0	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 80.0	> 50.0	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Tremendous delays with continuously increasing queue lengths.

Source
Highway Capacity Manual 2000, Transportation Research Board, 2000.

TABLE 1B
LEVEL OF SERVICE DEFINITIONS
FREEWAY MAINLINE SEGMENTS

Level of Service	**Density** [a]	**Description**
A	≤ 11	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.
B	> 11 and ≤ 18	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.
C	> 18 and ≤ 26	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.
D	> 26 and ≤ 35	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.
E	> 35 and ≤ 45	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.
F	> 45	Represents a breakdown in flow and oversaturated conditions.

<u>Source</u>

Highway Capacity Manual 2010, Transportation Research Board, 2010.

Notes:

[a] Measured in vehicles per mile per lane (v/m/l) for freeways with a free-flow speed of 55 mph.

Chapter 3
Existing Conditions

A comprehensive data collection effort was undertaken to develop a detailed description of existing conditions in the Project Study Area. The existing conditions analysis relevant to this study includes an assessment of the existing street system, lane configurations, intersection traffic controls, an analysis of traffic volumes and current operating conditions, and an evaluation of the existing public transit service.

STUDY AREA

The Study Area was established by reviewing the existing intersection/corridor operations, Project peak hour vehicle trip generation, the anticipated distribution of Project vehicular trips, and the potential impacts of Project traffic.

A traffic analysis study area generally comprises those locations with the greatest potential to experience significant traffic impacts due to the Project as defined by the lead agency. In the traffic engineering practice, a study area generally includes those intersections that are:

1. Immediately adjacent or in close proximity to the project site
2. In the vicinity of the project site that are documented to have current or projected future adverse operational issues
3. In the vicinity of the project site that are forecast to experience a relatively greater percentage of project-related vehicular turning movements (e.g., at freeway ramp intersections).

The Project Study Area was designed to ensure that all potentially significantly impacted intersections, prior to any mitigation, were analyzed, and the boundary of the Study Area was extended, as necessary, to confirm that there were no significant impacts at or outside the boundary of the Study Area by reviewing the Project traffic's travel patterns. The intersections selected for analysis are consistent with the above criteria.

A total of 10 intersections, eight signalized and two unsignalized, were selected for analysis. Figure 2 illustrates the location of the Project Site in relation to the surrounding street system and the 10 study intersections.

The 10 intersections selected for evaluation are:

1. Kellogg Drive & I-10 Eastbound Off-ramp (free flow, no signal control)
2. University Drive & Kellogg Drive (four-way stop-controlled)
3. Palm Drive & Kellogg Drive (signalized)
4. South Campus Drive & Kellogg Drive (signalized)
5. Grand Avenue & Temple Avenue (signalized)
6. University Drive & Temple Avenue (signalized)
7. South Campus Drive & Temple Avenue (signalized)
8. Valley Boulevard & Temple Avenue (signalized)
9. State Route (SR) 57 Southbound Off-ramp & Temple Avenue (signalized)
10. SR 57 Northbound Off-ramp & Temple Avenue (signalized)

EXISTING STREET SYSTEM

The Study Area consists of a regional roadway system that offers sub-regional and local access and circulation opportunities. These transportation facilities generally provide two to five travel lanes and generally do not allow parking on either side of the street. Typically, the speed limits range between 35 and 55 miles per hour (mph).

Roadway Descriptions

Primary regional access to the Project Site is provided by the Santa Monica Freeway (I-10), which generally runs in the east-west direction north of the Study Area, and the Orange Freeway (SR 57), which generally runs in the north-south direction east of the Study Area. I-10 is located approximately one mile to the north of the Site, with access provided via an interchange at Kellogg Drive. SR 57 is located approximately one mile to the east of the Site, with access provided via an interchange at Temple Avenue. Temple Avenue is a major street providing regional and sub-regional access to the Project Site.

The following is a brief description of the major streets in the Study Area:

- Temple Avenue – Temple Avenue is a five lane roadway that runs in the east-west direction and is located directly south of the Project Site. It provides both local and regional access to the Project Site. There is generally no parking allowed on either side of the street within the Study Area. The posted speed limit is 45 to 55 mph.

- Kellogg Drive – Kellogg Drive is a four lane roadway that runs in the north-south direction before curving to the east-west direction and is located north of the Project Site. It connects I-10 to South Campus Drive, providing local and regional access to the Project Site. There is generally no parking allowed on either side of the street within the Study Area. The posted speed limit is 35 mph.

- South Campus Drive – South Campus Drive is a two lane roadway that runs in the north-south direction and is located east of the Project Site. It connects East Campus Drive to Temple Avenue and provides local access to the Project Site. There is generally no parking allowed on either sides of the street within the Study Area. The posted speed limit is 45 mph.

- Valley Boulevard – Valley Boulevard is a four lane roadway that runs in the north-south direction and is located east of the Project Site. It provides both local and regional access to the Project Site through Temple Avenue. There is generally parking allowed on both sides of the street within the Study Area. The posted speed limit is 45 mph.

- Grand Avenue – Grand Avenue is a four lane roadway that runs in the north-south direction and is located west of the Project Site near Mt. San Antonio College. It provides both local and regional access to the Project Site through Temple Avenue. There is generally no parking allowed on either sides of the street within the Study Area. The posted speed limit is 40 mph.

The existing lane configurations at the Study Area intersections are provided in Appendix A.

EXISTING TRANSIT SYSTEM

The Project area is served by bus lines operated by the Los Angeles County Metropolitan Transportation Authority (Metro), Foothill Transit, and the Cal Poly Pomona Bronco Express.

Bus transit service in the Project vicinity is available along the following streets:

- Grand Avenue
- Temple Avenue
- South Campus Drive
- Valley Boulevard
- University Drive

The following provides a brief description of the bus lines providing service in Project vicinity:

- <u>Metro Local Line 190/194</u> – Line 190/194 travels east-west on Temple Avenue in the vicinity of the Project Site. The line travels from El Monte to Cal Poly Pomona via Ramona Boulevard and Valley Boulevard.

- <u>Foothill Transit Line 195</u> – Line 195 travels north-south on North Campus Drive and east-west on Temple Avenue in the vicinity of the Project Site. The line travels from Cal Poly Pomona to the Pomona TransCenter via Reservoir Street.

- <u>Foothill Transit Line 289</u> – Line 289 travels east-west on Temple Avenue and in the vicinity of the Project Site. The line travels from the Puente Hills Mall to Pomona via La Puente Road, Grand Avenue and Temple Avenue.

- <u>Foothill Transit Line 480</u> – Line 480 travels north-south on South Campus Drive in the vicinity of the Project Site. The line travels from Montclair to West Covina via Mission Boulevard.

- <u>Foothill Transit Line 482</u> – Line 482 travels north-south on South Campus Drive and east-west on Temple Avenue in the vicinity of the Project Site. The line travels from Pomona to the Puente Hills Mall via Colima Road and Diamond Bar Boulevard.

- <u>Foothill Transit Line 486</u> – Line 486 travels east-west on Temple Avenue in the vicinity of the Project Site. The line travels from Cal Poly Pomona to El Monte via Amar Road and Temple Avenue.

The Project consists of the construction of a parking structure to accommodate vehicular demand. Therefore, all trips to and from the Project Site will be personal vehicle trips, and the Project will not have any impact on the transit system within the Study Area.

EXISTING BICYCLE AND PEDESTRIAN NETWORK

Existing Bicycle System

Based on the *Active Transportation Plan: Bicycle Master Plan and Pedestrian Master Plan* (Fehr & Peers, November 2012), the existing bicycle system in the Study Area consists of a limited coverage of bicycle lanes (Class II) and bicycle routes (Class III). Bicycle lanes are a component of street design with dedicated striping, separating vehicular traffic from bicycle traffic. These facilities offer a safer environment for both cyclists and motorists. Bicycle routes are identified as bicycle-friendly streets where motorists and cyclists share the roadway and there is no dedicated striping of a bicycle lane. Bicycle routes are preferably located on collector and lower volume arterial streets. The following bicycle facilities are provided along corridors within the Study Area:

Bicycle Lanes (Class II). Facilities where bicycles have use of a dedicated and striped lane within the roadway:

- South Campus Drive between SR 57 and Kellogg Drive

Bicycle Routes (Class III). Facilities where bicycles share the lane with vehicular traffic on a marked and signed roadway:

- South Campus Drive north of SR 57 and south of Kellogg Drive

Existing Pedestrian Facilities

The walkability of existing facilities is based on the availability of pedestrian routes necessary to accomplish daily tasks without the use of an automobile. These attributes are quantified by WalkScore.com, which calculates the walkability of specific addresses by taking into account the ease of living in the neighborhood with a reduced reliance on automobile travel and assigns a score out of 100 points. With the limited commercial businesses and cultural facilities adjacent to the Cal Poly Pomona campus, the Project Site is rated with a score of 48 of 100 possible points (as of April 16, 2014) and defined as “Car-Dependent so most errands require a car.”

The sidewalks that serve as routes to the existing surface parking lot provide proper connectivity for a comfortable and safe pedestrian environment. The sidewalks provide connectivity to pedestrian crossings at the adjacent study intersections, including University Drive & Temple Avenue and South Campus Drive & Temple Avenue, as well as access to the rest of the campus to the north of the Project Site. All of the signalized intersections in the Study Area provide marked pedestrian crosswalks and access ramps with pedestrian phasing; however, crossing at the eastbound approach at the intersection of University Drive & Temple Avenue and at the eastbound approach at the intersection of Palm Drive & Kellogg Drive is not permitted. The unsignalized intersection of University Drive & Kellogg Drive in the Project vicinity does not provide marked pedestrian crossings at the intersection; however, since all approaches are stop controlled, pedestrians are allowed to cross at this location.

EXISTING TRAFFIC VOLUMES AND LEVELS OF SERVICE

This section presents the existing peak hour turning movement traffic volumes for the study intersections, describes the methodology used to assess the traffic conditions at each intersection, and analyzes the resulting operating conditions at each intersection indicating delay and LOS.

Existing Traffic Volumes

New intersection turning movement counts were collected during the typical weekday morning and afternoon commuter peak periods at four of the ten study intersections. Counts for the remaining six intersections were taken from *Cal Poly Pomona Campus Replacement Housing and Dining Facility Project Draft Environmental Impact Report* (California State Polytechnic University, Pomona, November 2013).

Older counts were grown by 2% per year to reflect 2014 conditions per City of Pomona guidelines. Schools were in session at the time all traffic counts were conducted.

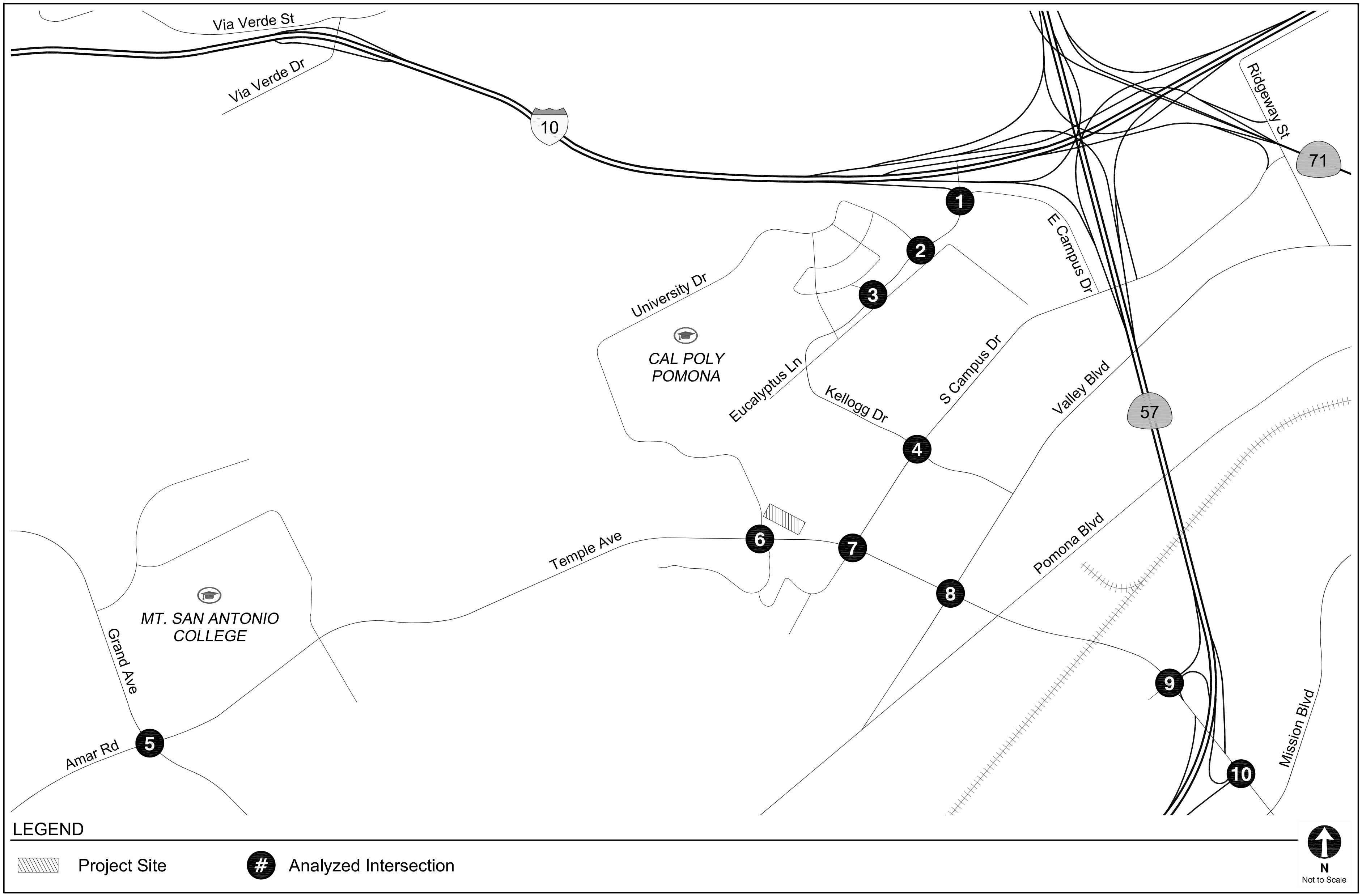
The existing intersection traffic volumes are shown in Figure 3 and the count summary worksheets are provided in Appendix B. The traffic volumes illustrated in Figure 3 were analyzed to determine the existing operating conditions at the analyzed intersections.

Existing Intersection Levels of Service

Table 2 summarizes the existing weekday morning and afternoon peak hour delay and the corresponding LOS for each of the study intersections. As shown in Table 2, eight of the 10 study intersections operate at LOS D or better during both the morning and afternoon peak hours under Existing Conditions. The following two study intersections operate at LOS E or F under Existing Conditions:

- University Drive & Kellogg Drive (LOS F)
- South Campus Drive & Temple Avenue (LOS E)

The LOS calculation worksheets are provided in Appendix C.



STUDY AREA AND ANALYZED INTERSECTIONS

FIGURE
2

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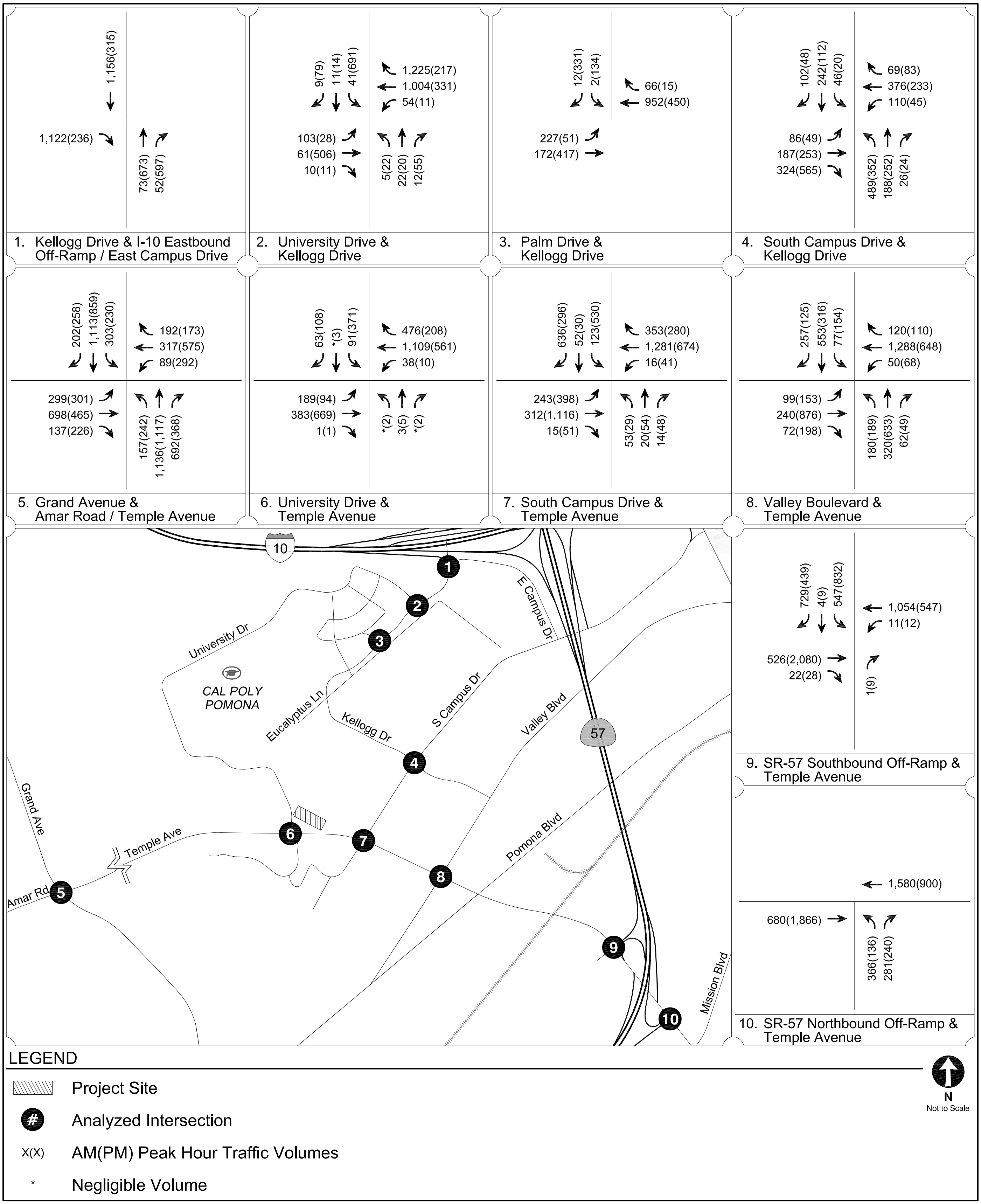


EXISTING CONDITIONS (YEAR 2014)
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 3

TABLE 2
EXISTING CONDITIONS (YEAR 2014)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing	
			Delay (sec)	LOS
1.	Kellogg Drive & I-10 Eastbound Off-Ramp [a]	A.M. P.M.	N/A N/A	A A
2.	University Drive & Kellogg Drive [b]	A.M. P.M.	56.4 118.7	F F
3.	Palm Drive & Kellogg Drive	A.M. P.M.	10.6 9.7	B A
4.	South Campus Drive & Kellogg Drive	A.M. P.M.	36.2 22.9	D C
5.	Grand Avenue & Temple Avenue	A.M. P.M.	43.5 32.2	D C
6.	University Drive & Temple Avenue	A.M. P.M.	53.4 31.8	D C
7.	South Campus Drive & Temple Avenue	A.M. P.M.	55.7 58.4	E E
8.	Valley Boulevard & Temple Avenue	A.M. P.M.	43.0 34.2	D C
9.	SR 57 Southbound Off-Ramp & Temple Avenue	A.M. P.M.	16.5 32.7	B C
10.	SR 57 Northbound Off-Ramp & Temple Avenue	A.M. P.M.	9.1 7.6	A A

Notes:

[a] Free-flow location does not experience any delay and operates at LOS A.

[b] Unsignalized location analyzed with HCM Unsignalized methodology.

N/A Not Applicable due to free flow traffic

Chapter 4
Future without Project Conditions

In accordance with California Environmental Quality Act (CEQA) requirements, the Project's TIA considers the effects of the Project in relation to other developments either proposed, approved, or under construction in the Study Area. These development proposals and the methodologies used in projecting future traffic conditions without the Project are discussed in this section. The Future Year 2016 roadway network conditions are also discussed in this chapter in terms of anticipated supply, demand, and operations (system performance). The Future Year 2016 was selected to coincide with the projected occupancy of the Project.

CEQA GUIDELINES REGARDING FUTURE TRAFFIC CONDITIONS

The forecast of Future without Project conditions was prepared in accordance with procedures outlined in Section 15130 of *Guidelines for Implementation of the California Environmental Quality Act*, *Chapter 3, Title 14, California Code of Regulations* (California Natural Resources Agency, amended July 27, 2007) (*Guidelines*). Specifically, *Guidelines* provides two options for developing the cumulative traffic volume forecast:

> "(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the [lead] agency, or
>
> "(B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency."

Accordingly, the traffic analysis provides a highly conservative estimate of Future without Project traffic volumes as it incorporates both the "A" and "B" options outlined in *Guidelines* for purposes of developing the forecast.

FUTURE WITHOUT PROJECT TRAFFIC VOLUMES

The Future without Project traffic volumes reflect growth in traffic over existing conditions from two sources. The first source is the ambient growth which increases the base traffic due to regional growth and development outside the Study Area. The second source is the contribution of traffic generated by projects which are proposed, approved, or under construction in the vicinity of the Study Area (collectively, the Related Projects).

Ambient Traffic Growth

Existing traffic is expected to increase as a result of regional growth and development. Based on the City of Pomona's guidelines, an ambient growth factor of 2.0% per year was used to adjust the existing traffic volumes to the Project's projected occupancy year of 2016. The total adjustment applied over the two-year period to full buildout of the Project was, therefore, 4.0%.

Related Projects

In accordance with CEQA requirements, this study considered the effects of the Project in relation to other developments either proposed, approved, or under construction in the Study Area. Considering the isolated location of the Cal Poly Pomona campus, the only two Related Projects expected to add traffic to the study intersections are the Cal Poly Pomona Campus Replacement Housing and Dining Facility Project, with a buildout year of 2023, and the New Innovation Village Research/Office Building Project, with a buildout year of 2016. The inclusion of the Cal Poly Pomona Campus Replacement Housing and Dining Facility Project is conservative in that it will not be fully operational prior to the opening of Parking Structure 2 in 2016. Other developments outside the Study Area that have been determined to be geographically too far from the Project Site to add substantially to the potential cumulative effects of Related Project traffic within the Study Area, as well as any additional projects that may be proposed between now and occupancy of the Project, are accounted for in the ambient growth calculations.

The trips associated with these Related Projects are illustrated in Figure 4. The geographical distribution of these Related Projects is consistent with the traffic study for this Project. The volumes for these Related Projects were added to the existing traffic volumes after adjustment for ambient growth through the assumed buildout year of 2016. The resulting Future without Project intersection traffic volumes are illustrated in Figure 5 which includes both the ambient growth and the Related Projects.

INTERSECTION OPERATIONS

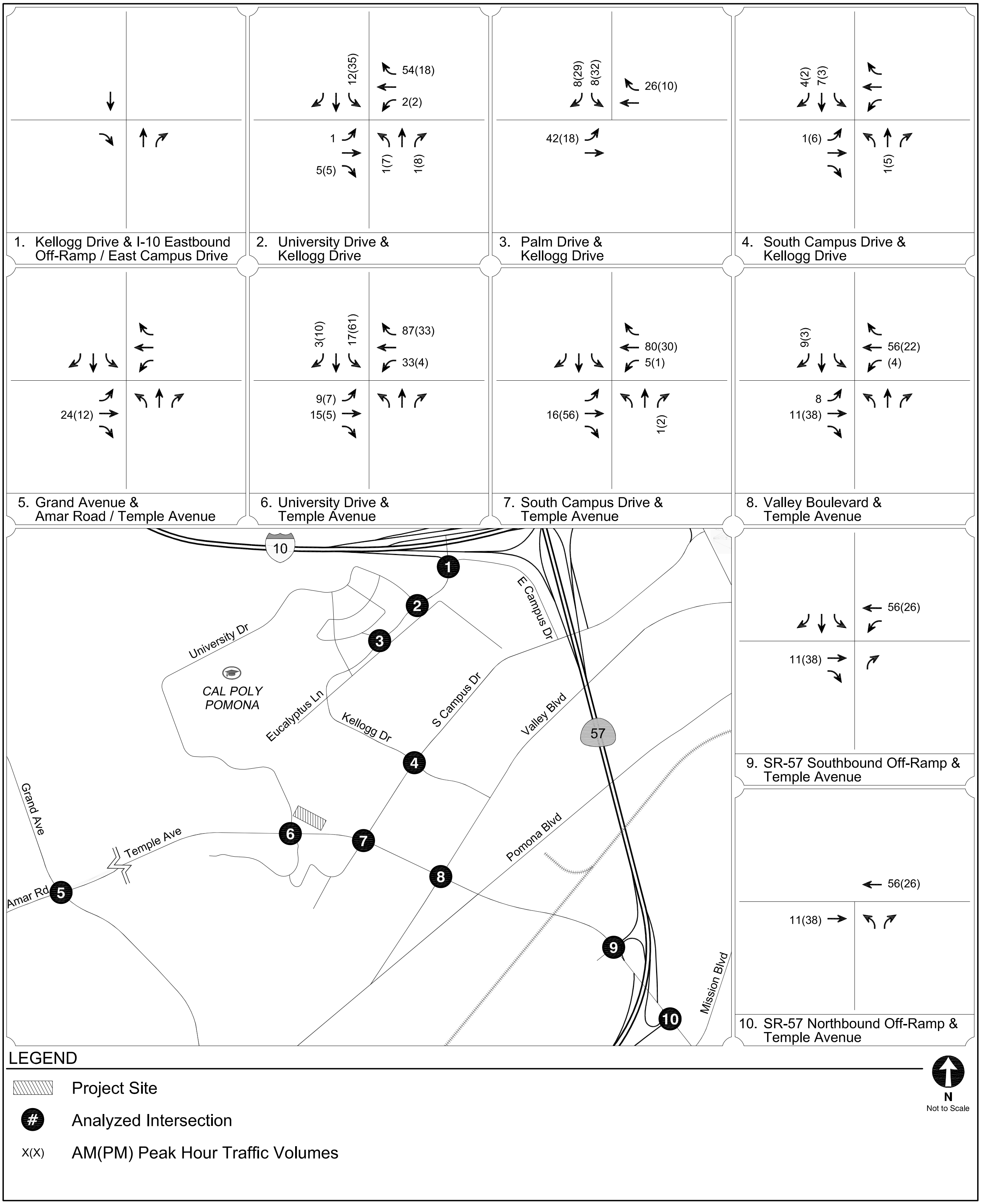
This section presents the methodology and results of the intersection operations for the Future without Project conditions that are defined by the traffic volumes, intersection lane configurations, and roadways that would exist in the year 2016. The following future roadway improvements expected to be completed before or near the opening date of the Project were included as part of the future conditions analyses:

- Intersection #2 – University Drive & Kellogg Drive: Installation of a traffic signal
- Intersection #8 – Valley Boulevard & Temple Avenue: Conversion of one of the existing southbound through lanes into a shared through/right-turn lane

The projected Future without Project (Year 2016) intersection operating conditions for the weekday morning and afternoon peak hours are shown in Table 3. As shown, eight of the 10 study intersections operate at LOS D or better during both the morning and afternoon peak hours. Two of the 10 study intersections operate at LOS E during either the morning or afternoon peak hour:

- University Drive & Temple Avenue
- South Campus Drive & Temple Avenue

The LOS calculation worksheets are provided in Appendix C.



RELATED PROJECT-ONLY
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 4

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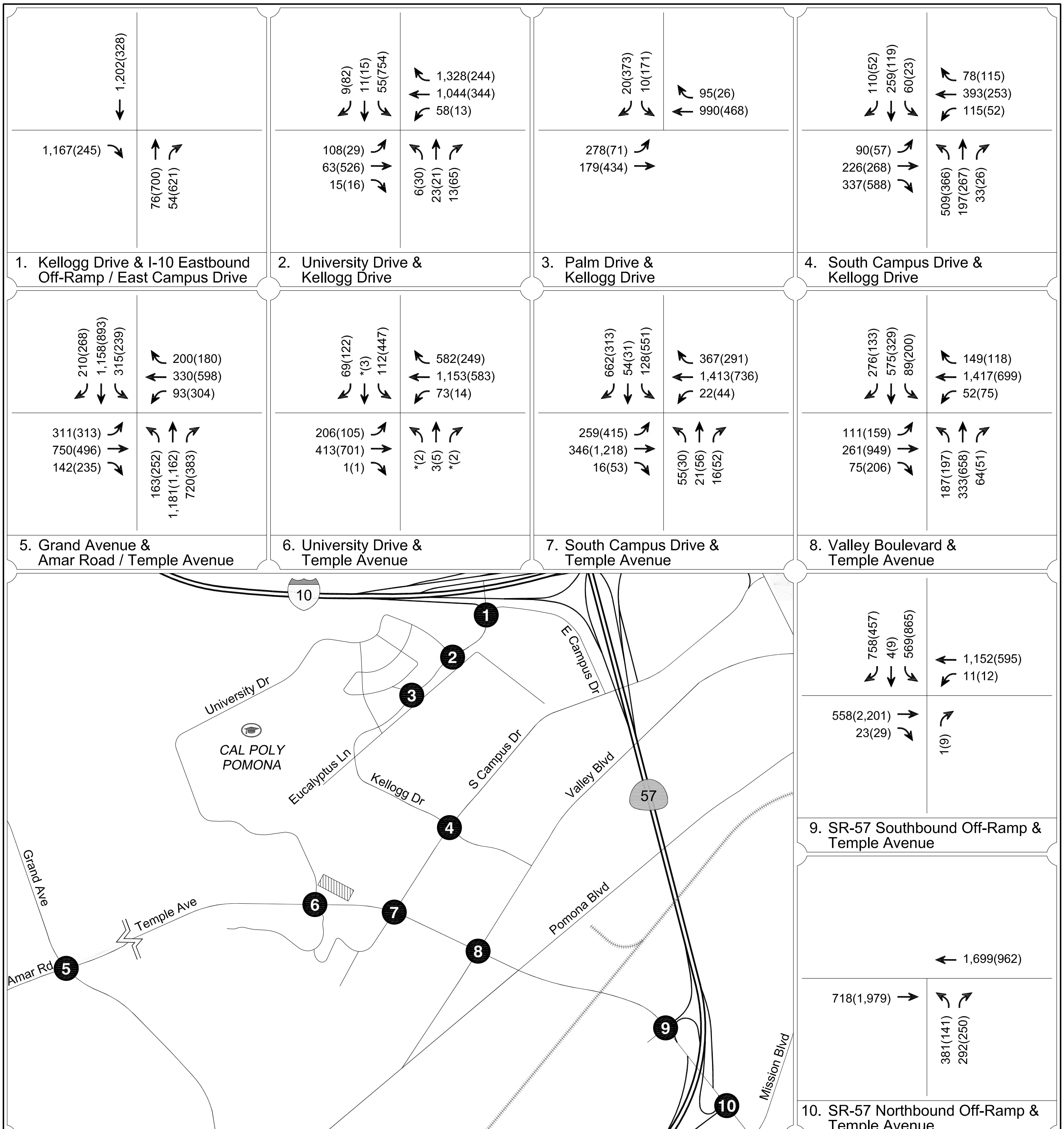


LEGEND

Project Site

\# Analyzed Intersection

X(X) AM(PM) Peak Hour Traffic Volumes

* Negligible Volume

N
Not to Scale

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 5

TABLE 3
FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Future withot Project	
			Delay (sec)	LOS
1.	Kellogg Drive & I-10 Eastbound Off-Ramp [a]	A.M. P.M.	N/A N/A	A A
2.	University Drive & Kellogg Drive [b]	A.M. P.M.	12.2 22.6	B C
3.	Palm Drive & Kellogg Drive	A.M. P.M.	11.2 10.0	B A
4.	South Campus Drive & Kellogg Drive	A.M. P.M.	37.6 21.7	D C
5.	Grand Avenue & Temple Avenue	A.M. P.M.	51.1 35.1	D D
6.	University Drive & Temple Avenue	A.M. P.M.	65.3 42.8	E D
7.	South Campus Drive & Temple Avenue	A.M. P.M.	70.7 68.8	E E
8.	Valley Boulevard & Temple Avenue [b]	A.M. P.M.	46.2 42.6	D D
9.	SR 57 Southbound Off-Ramp & Temple Avenue	A.M. P.M.	17.2 37.0	B D
10.	SR 57 Northbound Off-Ramp & Temple Avenue	A.M. P.M.	10.1 8.1	B A

Notes:

[a] Free-flow location does not experience any delay and operates at LOS A.

[b] Roadway improvements expected to be completed before or near the opening of the Project are assumed to be in operation.

N/A Not Applicable due to free flow traffic

Chapter 5
Project Traffic

An estimate of the Project's potential trip generation, trip distribution patterns, and trip assignment was prepared for the Project. These components form the basis of the Project's traffic impact analysis.

PROJECT TRAFFIC VOLUMES

The first step of the forecasting process is trip generation, which estimates the total arriving and departing trips generated by the Project on a peak hour basis by applying the appropriate vehicle trip generation equations, or rates, to the size and land use designation of the Project development. For the purposes of this analysis, trips associated with the existing parking lot spaces that will be replaced by the Project were credited towards the new Project's trip generation estimate.

The second step of the forecasting process is trip distribution, which identifies the origins and destinations of inbound and outbound Project trips. These origins and destinations are typically based on demographics and existing/anticipated travel patterns in the Study Area. Localized routes of travel through the Study Area are developed based on existing traffic patterns and relative travel times on various corridors. The trip distribution patterns used in this study are consistent with campus demographics and previous studies conducted in the area.

The third step of the forecasting process is traffic assignment. This involves applying the traffic generated by the Project (the trip generation) to the intersections and street segments in the Study Area according to the projected trip distribution patterns. These traffic volumes can then be added to existing and future background conditions to represent the cumulative effect of including Project related traffic volumes to the Study Area once the Project is complete.

With the forecasting process complete and Project traffic assignments developed, the impact of the proposed Project is isolated by comparing operational (i.e., LOS) conditions at the study intersections using expected future traffic volumes without and with to forecast Project traffic. The need for site-specific and/or cumulative local area traffic improvements may then be evaluated and the significance of the Project's impacts identified.

Project Trip Generation

The land use for the proposed Project is a parking structure so, by its nature, it does not produce and attract trips on its own. Parking Structure 2 is a supportive land use that will serve the existing and proposed land uses on the Cal Poly Pomona campus that do generate trips. Thus, the trips that will travel to and from Parking Structure 2 have already been accounted for in the campus Master Plan.

Rather than estimating the Project trip generation using the *Trip Generation, 9th Edition* (Institute of Transportation Engineers, 2012) methodology required by the City of Pomona for typical land use generators, the trips to and from the new parking structure were estimated based on the in and out travel patterns of the existing parking structure on the north end of campus. Inbound and outbound driveway counts were conducted at the existing parking structure during both the morning and afternoon peak hours to determine the current demand at this facility. Using this count data, trip generation rates were calculated per parking space to reflect typical demand at the campus parking structure.

This same rate was applied to the proposed Parking Structure 2, which consists of 1,550 parking spaces. The existing parking lot consists of 300 spaces that were credited to the overall parking structure totals to avoid double counting of vehicles. As such, the trip generation forecast shown in Table 4 reflects the proposed Project along with the credit for removal of the existing parking lot, which is basically absorbed by the structure. It should be noted that no further credit reductions (i.e. transit, pass-by) were applied to the trip generation because all trips to the Project Site are expected to be vehicle trips.

As shown in Table 4, the Project is estimated to generate 387 trips during the morning peak hour (379 inbound trips and seven outbound trips) and 346 trips during the afternoon peak hour (73 inbound trips and 274 outbound trips).

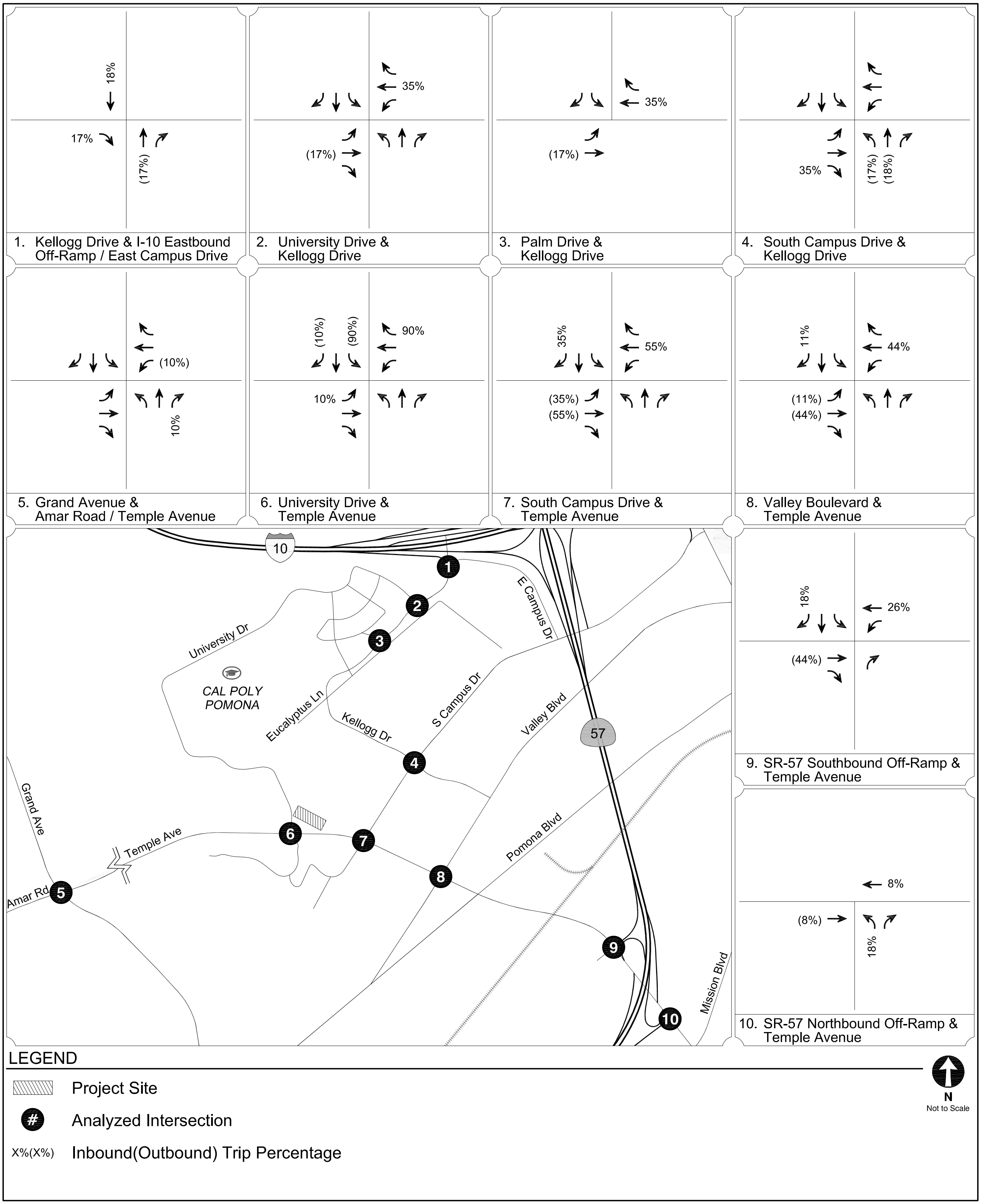
Project Trip Distribution

The traffic volumes for the proposed Project were distributed and assigned to the local street system based on student/staff demographics and existing/anticipated travel patterns in the Study Area. Localized routes of travel through the Study Area were developed based on existing traffic patterns and relative travel times on various corridors and the level of accessibility of the route to and from the Project Site. The Project trip distribution used for this analysis is consistent with previous traffic studies conducted on the Cal Poly Pomona campus for developmental projects that will generate the trips using the proposed Parking Structure 2.

Traffic volumes for the Project were distributed to the surrounding street system based on the following general pattern: approximately 18% of the traffic is generated to/from the north, 37% to/from the east, 28% to/from the south, and 17% to/from the west. The Project trip distribution is illustrated in Figure 6.

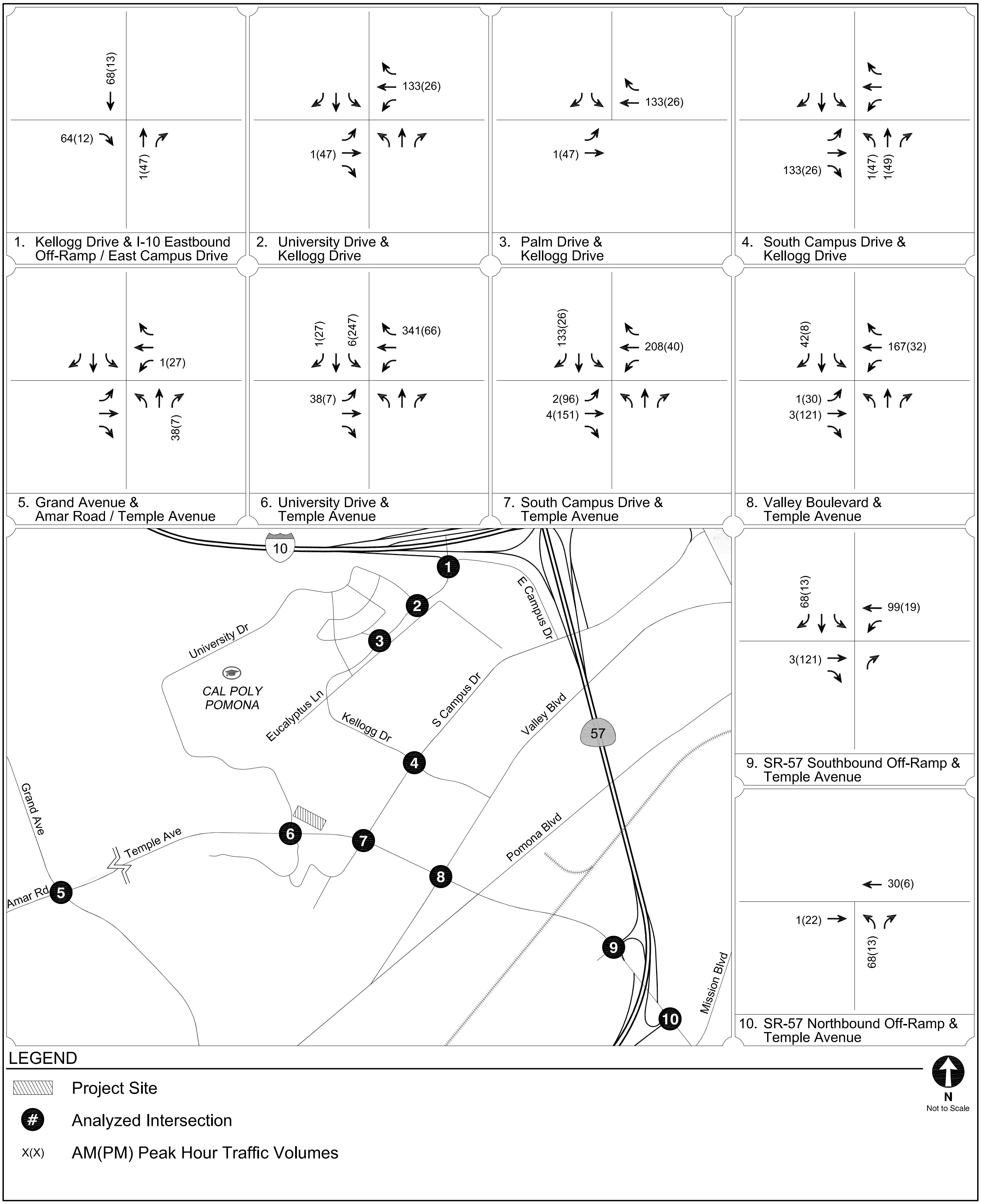
Project Trip Assignment

The assignment of traffic is calculated by applying the trip distribution patterns to the trip generation estimates. Figure 7 illustrates the net new Project traffic volumes at the study intersections.



TRIP DISTRIBUTION

FIGURE 6



PROJECT-ONLY
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 7

TABLE 4
TRIP GENERATION

Observed Entry/Exit Counts [a]							
Land Use	Size	AM Peak Hour			PM Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Parking Structure 1	2,375 spaces	721	14	735	138	520	658

Trip Generation Rates [b]							
Land Use	Size	AM Peak Hour			PM Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Parking Structure 1	2,375 spaces	98%	2%	0.31	21%	79%	0.28

Trip Generation Estimates [c]							
Land Use	Size	AM Peak Hour			PM Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
Proposed Project Parking Structure 2	1,550 spaces	471	9	480	90	339	429
Existing Use (Credit) Surface Parking Lot	300 spaces	91	2	93	17	66	83
NET INCREASE TOTAL		**379**	**7**	**387**	**73**	**274**	**346**

Notes:

[a] Entry/Exit counts at Parking Structure 1 driveways were conducted on Tuesday, March 11, 2014.
AM Peak Hours: 6:30AM - 9:00AM
PM Peak Hours: 4:00PM - 6:00PM

[b] Trip Generation Rates are based on the Observed Entry/Exit Counts and are calculated per parking space.

[c] Trip Generated Rates for Parking Structure 1 are used to calculated the Trip Generation Estimates for Parking Structure 2.

Chapter 6
Existing Plus Project Conditions

This chapter describes the results of the analysis of intersection operating conditions associated with the Project development added to Existing Conditions. Within this chapter, the Existing Plus Project conditions are presented for the 10 study intersections. The results of these analyses form the basis of the intersection impact analysis presented in Chapter 8.

EXISTING PLUS PROJECT INTERSECTION OPERATIONS

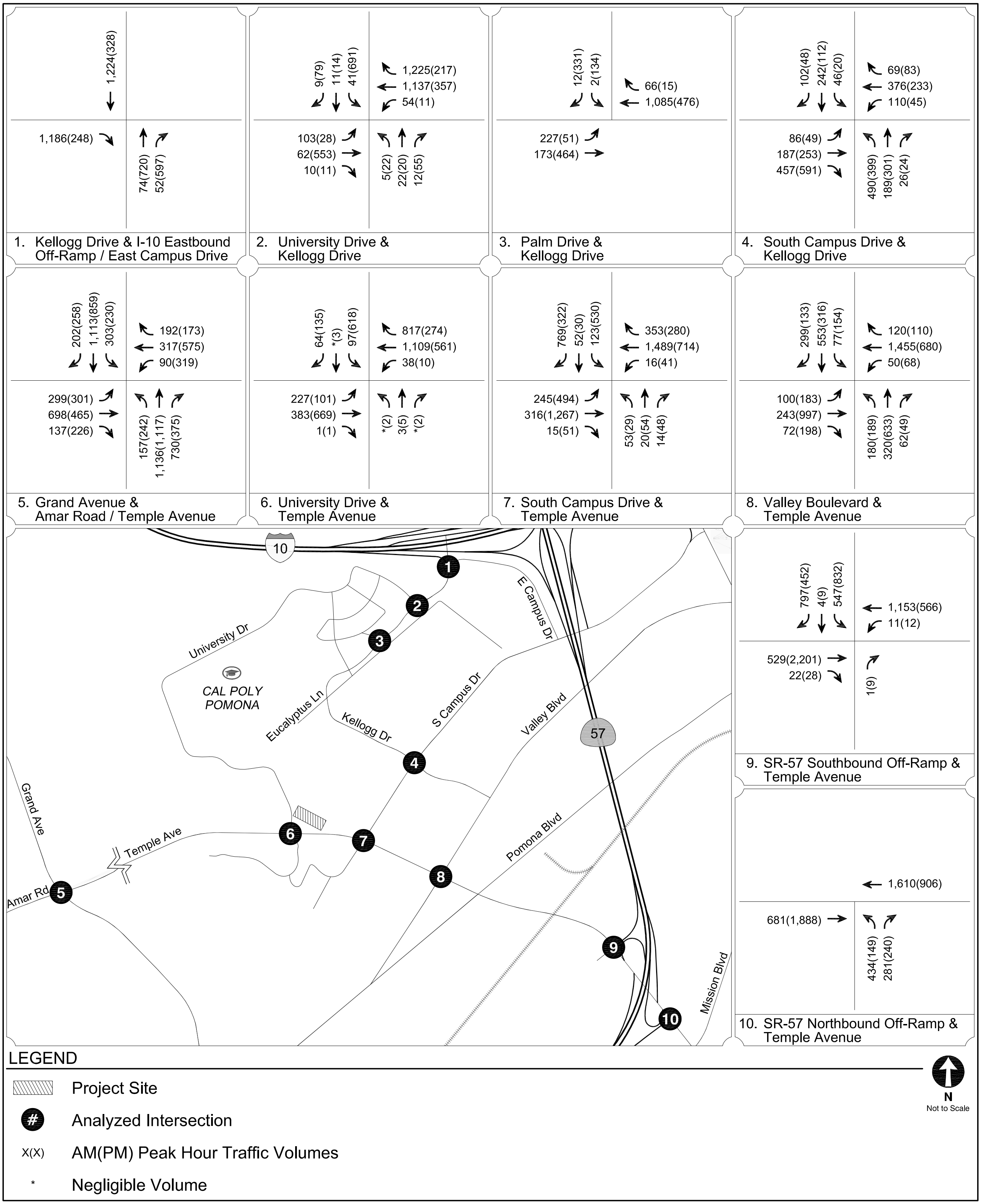
The Existing Plus Project conditions are analyzed on the same roadway network as the existing conditions. The Project-only traffic volumes described in Chapter 5 and shown in Figure 7 were added to the Existing traffic volumes shown in Figure 3 to obtain the Existing Plus Project peak hour traffic volumes shown in Figure 8.

The study intersections were analyzed using the methodologies described in Chapter 2. The Existing Plus Project intersection operating conditions for typical weekday morning and afternoon peak hours are shown in Table 5. As shown, under the Existing Plus Project conditions, seven of the 10 study intersections are projected to operate at LOS D or better during both the morning and afternoon peak hours.

The following three intersections are anticipated to operate at LOS E or F during either the morning or afternoon peak hour:

- University Drive & Kellogg Drive (LOS C or better with future roadway improvements)
- University Drive & Temple Avenue
- South Campus Drive & Temple Avenue

Detailed LOS worksheets are provided in Appendix C.



EXISTING PLUS PROJECT CONDITIONS (YEAR 2014)
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 8

TABLE 5
EXISTING PLUS PROJECT CONDITIONS (YEAR 2014)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing		Existing Plus Project		Change in Delay (sec)	Impact
			Delay (sec)	LOS	Delay (sec)	LOS		
1.	Kellogg Drive &	A.M.	N/A	A	N/A	A	N/A	NO
	I-10 Eastbound Off-Ramp [a]	P.M.	N/A	A	N/A	A	N/A	NO
2.	University Drive &	A.M.	56.4	E	83.8	F	27.4	**YES**
	Kellogg Drive [b]	P.M.	118.7	F	128.1	F	9.4	**YES**
3.	Palm Drive &	A.M.	10.6	B	11.8	B	1.2	NO
	Kellogg Drive	P.M.	9.7	A	9.9	A	0.2	NO
4.	South Campus Drive &	A.M.	36.2	D	35.3	D	-0.9	NO
	Kellogg Drive	P.M.	22.9	C	21.8	C	-1.1	NO
5.	Grand Avenue &	A.M.	43.5	D	46.0	D	2.5	NO
	Temple Avenue	P.M.	32.2	C	33.3	C	1.1	NO
6.	University Drive &	A.M.	53.4	D	58.8	E	5.4	**YES**
	Temple Avenue	P.M.	31.8	C	90.3	F	58.5	**YES**
7.	South Campus Drive &	A.M.	55.7	E	102.1	F	46.4	**YES**
	Temple Avenue	P.M.	58.4	E	75.3	E	16.9	**YES**
8.	Valley Boulevard &	A.M.	43.0	D	50.9	D	7.9	NO
	Temple Avenue	P.M.	34.2	C	39.9	D	5.7	NO
9.	SR 57 Southbound Off-Ramp &	A.M.	16.5	B	17.6	B	1.1	NO
	Temple Avenue	P.M.	32.7	C	34.8	C	2.1	NO
10.	SR 57 Northbound Off-Ramp &	A.M.	9.1	A	9.9	A	0.8	NO
	Temple Avenue	P.M.	7.6	A	7.9	A	0.3	NO

Notes:

[a] Free-flow location does not experience any delay and operates at LOS A.

[b] Impact is mitigated with future roadway improvements expected to be completed before or near the opening of the Project.

N/A Not Applicable due to free flow traffic

Chapter 7
Future Plus Project Conditions

This chapter describes the results of the analysis of intersection operating conditions associated with the Project development added to future conditions. The analysis of year 2016 corresponds to the anticipated buildout year of the Project. Within this chapter, the Future Plus Project conditions are presented for the 10 study intersections. The results of these analyses form the basis of the intersection impact analysis presented in Chapter 8.

FUTURE PLUS PROJECT (YEAR 2016) INTERSECTION OPERATIONS

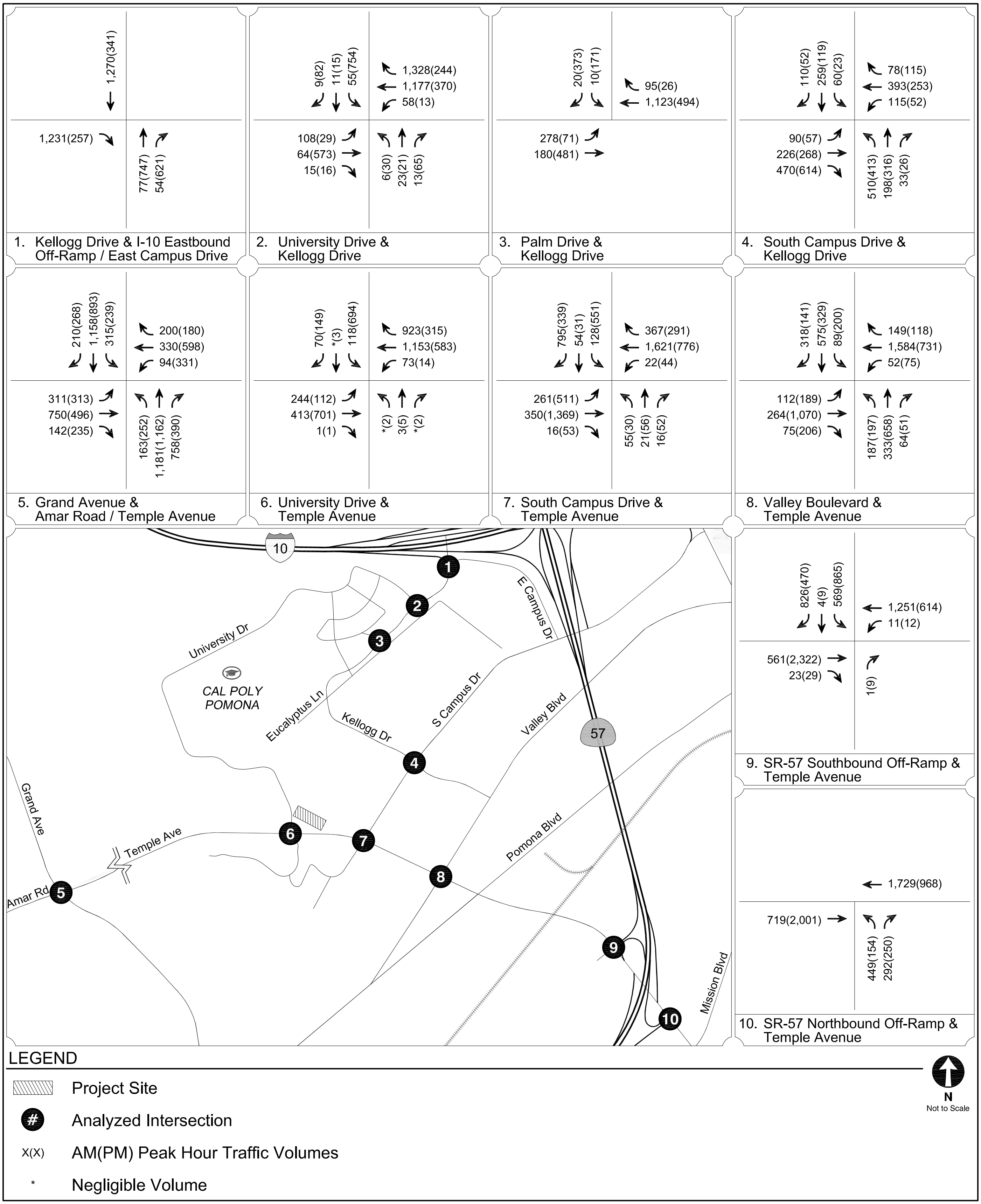
The Future Plus Project (Year 2016) conditions analyzed the traffic volumes, roadways, and intersection configurations that would exist in the year 2016 following full development of the Project with improvements to the roadway network described in Chapter 4. The Project-only traffic volumes described in Chapter 5 and shown in Figure 7 were added to the Future without Project (Year 2016) traffic volumes shown in Figure 5 to obtain the Future Plus Project (Year 2016) peak hour traffic volumes shown in Figure 9.

The study intersections were analyzed using the methodologies described in Chapter 2. The Future Plus Project (Year 2016) intersection operating conditions for typical weekday morning and afternoon peak hours are shown in Table 6. As shown, under the Future Plus Project (Year 2016) conditions, eight of the 10 study intersections are projected to operate at LOS D or better during both the morning and afternoon peak hours.

The following two intersections are anticipated to operate at LOS E or F during either the morning or afternoon peak hour:

- University Drive & Temple Avenue
- South Campus Drive & Temple Avenue

Detailed LOS worksheets are provided in Appendix C.



FUTURE PLUS PROJECT CONDITIONS (YEAR 2016)
INTERSECTION PEAK HOUR TRAFFIC VOLUMES

FIGURE 9

TABLE 6
FUTURE PLUS PROJECT CONDITIONS (YEAR 2016)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Future without Project		Future Plus Project		Change in Delay (sec)	Impact
			Delay (sec)	LOS	Delay (sec)	LOS		
1.	Kellogg Drive &	A.M.	N/A	A	N/A	A	N/A	NO
	I-10 Eastbound Off-Ramp [a]	P.M.	N/A	A	N/A	A	N/A	NO
2.	University Drive &	A.M.	12.2	B	14.2	B	2.0	NO
	Kellogg Drive [b]	P.M.	22.6	C	23.6	C	1.0	NO
3.	Palm Drive &	A.M.	11.2	B	12.9	B	1.7	NO
	Kellogg Drive	P.M.	10.0	A	10.2	B	0.2	NO
4.	South Campus Drive &	A.M.	37.6	D	36.9	D	-0.7	NO
	Kellogg Drive	P.M.	21.7	C	22.2	C	0.5	NO
5.	Grand Avenue &	A.M.	51.1	D	53.0	D	1.9	NO
	Temple Avenue	P.M.	35.1	D	36.5	D	1.4	NO
6.	University Drive &	A.M.	65.3	E	73.2	E	7.9	**YES**
	Temple Avenue	P.M.	42.8	D	118.8	F	76.0	**YES**
7.	South Campus Drive &	A.M.	70.7	E	124.3	F	53.6	**YES**
	Temple Avenue	P.M.	68.8	E	86.6	F	17.8	**YES**
8.	Valley Boulevard &	A.M.	46.2	D	53.4	D	7.2	NO
	Temple Avenue [b]	P.M.	42.6	D	48.4	D	5.8	NO
9.	SR 57 Southbound Off-Ramp &	A.M.	17.2	B	18.6	B	1.4	NO
	Temple Avenue	P.M.	37.0	D	41.3	D	4.3	NO
10.	SR 57 Northbound Off-Ramp &	A.M.	10.1	B	11.2	B	1.1	NO
	Temple Avenue	P.M.	8.1	A	8.4	A	0.3	NO

Notes:

[a] Free-flow location does not experience any delay and operates at LOS A.

[b] Roadway improvements expected to be completed before or near the opening of the project are assumed to be in operation.

N/A Not Applicable due to free flow traffic

Chapter 8
Traffic Impact Analysis

This chapter describes the results of the intersection impact analysis for the proposed Project under both Existing (Year 2014) and Future (Year 2016) conditions. Both analyses measured significant intersection impacts according to the impact criteria specified by the City of Pomona.

The relative impact of added Project traffic volumes during the peak hours was evaluated based on a comparative analysis of both existing and future operating conditions without the Project at the study intersections. The previously discussed significance criteria and thresholds outlined in Chapter 2 were used to determine the significance of a traffic impact caused by the Project on the study intersections.

EXISTING PLUS PROJECT CONDITIONS

Table 5 shows the Project's incremental increases in delay at each of the intersections. Based on the City of Pomona's significance criteria, the Project is anticipated to result in significant impacts at two of the study intersections during either the morning or afternoon peak hours under the Existing Plus Project conditions. Therefore, mitigation measures are required, as detailed in Chapter 9.

FUTURE PLUS PROJECT CONDITIONS (YEAR 2016)

Table 6 shows the Project's incremental increases in delay at each of the intersections. Based on the City of Pomona's significance criteria, the Project is anticipated to result in significant impacts at two of the study intersections during either the morning or afternoon peak hours under the Future Plus Project (Year 2016) conditions. Therefore, mitigation measures are identified, as detailed in Chapter 9.

FREEWAY MAINLINE SEGMENT ANALYSIS

The following freeway mainline segments were analyzed using the methodologies described in Chapter 2:

1. I-10 West of SR 57/SR 71 Junction
2. I-10 East of SR 57/SR 71 Junction
3. SR 57 North of Temple Avenue
4. SR 57 South of Temple Avenue

Existing Operating Conditions

The Existing and Existing Plus Project Conditions (Year 2014) freeway mainline operating conditions for typical weekday morning and afternoon peak hours are shown in Table 7. As shown, the maximum increase in density caused by the Project is 0.4 pc/mi/ln and there is no change in the LOS. Therefore, the impacts on the freeway mainline segments caused by the Project for the Existing Conditions are considered to be less than significant.

Future Operating Conditions

The Future and Future Plus Project Conditions (Year 2016) freeway mainline operating conditions for typical weekday morning and afternoon peak hours are shown in Table 8. As shown, the maximum increase in density caused by the Project is 0.4 pc/mi/ln and there is no change in the LOS. Therefore, the impacts on the freeway mainline segments caused by the Project for the Future Conditions are considered to be less than significant.

Detailed freeway mainline analysis sheets are provided in Appendix D.

TABLE 7
EXISTING CONDITIONS (YEAR 2014)
FREEWAY MAINLINE SEGMENT PEAK HOUR LEVEL OF SERVICE ANALYSIS

No.	Freeway Segment	Peak Hour	Direction	Existing		Existing Plus Project		Change in Density
				Density	LOS	Density	LOS	
1.	I-10 West of SR-57/SR-71 Junction	AM	EB	32.8	D	33.1	D	0.3
			WB	36.3	E	36.3	E	0.0
		PM	EB	39.5	E	39.6	E	0.1
			WB	34.6	D	34.8	D	0.2
2.	I-10 East of SR-57/SR-71 Junction	AM	EB	39.8	D	39.8	E	0.0
			WB	44.1	E	44.4	E	0.3
		PM	EB	48.1	F	48.3	E	0.2
			WB	42.0	E	42.1	E	0.1
3.	SR 57 North of Temple Avenue	AM	NB	27.8	D	27.8	D	0.0
			SB	29.7	D	30.0	D	0.3
		PM	NB	29.0	D	29.3	D	0.3
			SB	32.0	D	32.1	D	0.1
4.	SR 57 South of Temple Avenue	AM	NB	26.0	C	26.4	D	0.4
			SB	27.7	D	27.7	D	0.0
		PM	NB	27.1	D	27.2	D	0.1
			SB	30.0	D	30.2	D	0.2

Notes:
Density reported in passenger cars per mile per lane (pc/mi/ln).

TABLE 8
FUTURE CONDITIONS (YEAR 2016)
FREEWAY MAINLINE SEGMENT PEAK HOUR LEVEL OF SERVICE

No.	Freeway Segment	Peak Hour	Direction	Future without Project		Future Plus Project		Change in Density
				Density	LOS	Density	LOS	
1.	I-10 West of SR-57/SR-71 Junction	AM	EB	34.1	D	34.4	D	0.3
			WB	37.7	E	37.7	E	0
		PM	EB	41.1	E	41.2	E	0.1
			WB	35.9	E	36.2	E	0.3
2.	I-10 East of SR-57/SR-71 Junction	AM	EB	41.4	E	41.4	E	0
			WB	45.9	F	46.2	F	0.3
		PM	EB	50.0	F	50.2	F	0.2
			WB	43.7	E	43.7	E	0
3.	SR 57 North of Temple Avenue	AM	NB	28.9	D	28.9	D	0
			SB	30.8	D	31.2	D	0.4
		PM	NB	30.2	D	30.4	D	0.2
			SB	33.3	D	33.4	D	0.1
4.	SR 57 South of Temple Avenue	AM	NB	27.1	D	27.4	D	0.3
			SB	28.8	D	28.9	D	0.1
		PM	NB	28.2	D	28.3	D	0.1
			SB	31.2	D	31.4	D	0.2

Notes:
Density reported in passenger cars per mile per lane (pc/mi/ln).

Chapter 9

Transportation Mitigation Program

This chapter presents the mitigation program designed to alleviate the transportation impacts at study intersections associated with construction of the Project and to improve traffic operations in the Project vicinity. The various guidelines, methods, and assumptions mandated by the relevant local jurisdiction, wherever applicable, have been used in the preparation of this analysis.

The various mitigation measures described in this chapter were tested against the significant traffic impacts found in both the Existing Plus Project and the Future Plus Project (Year 2016) analyses presented in Chapter 8. As described in that chapter, the Existing Plus Project and Future Plus Project conditions, before mitigation, are expected to generate significant traffic impacts at study intersections during either the morning or afternoon peak hours. To alleviate these impacts, specific physical intersection improvements have been identified.

SPECIFIC INTERSECTION IMPROVEMENTS

Intersection improvements designed to alleviate the significant impacts of the Project consist of physical improvements and associated signal phasing enhancements. Widening and/or other improvements to the intersections would be designed to meet the requirements of the jurisdiction(s) responsible for the intersection.

Following is a description of the specific mitigation measures identified for the significantly impacted intersections.

- <u>Intersection #6 – University Drive & Temple Avenue</u>. Convert the westbound right-turn lane into a free-flow right-turn lane. The north side of University Avenue has an additional travel lane to capture the free-flow vehicles. A raised island (“porkchop”) would be necessary to separate westbound right-turn lanes from the eastbound left-turn traffic and northbound through traffic, as well as providing a refuge for pedestrians. Pedestrian crossings from the island may require the installation of call-buttons for both north-south and east-west crossings. Modification of the curb return on the northeast corner would be required to install this mitigation.

- Intersection #7 – South Campus Drive & Temple Avenue. Add a second (dual) southbound right-turn lane on South Campus Drive and a second (dual) eastbound left-turn lane on Temple Avenue. The additional southbound right-turn lane will require widening of the west side of South Campus Drive. The additional eastbound left-turn lane can be accommodated within the existing curb-to-curb street width and will require restriping and modification to the center median, as well as modification to the traffic signal head to cover both lanes. After the mitigation, the southbound approach would provide one left-turn lane, one shared through/left-turn lane, and two right-turn lanes. The eastbound approach will provide two left-turn lanes, two through lanes, and one shared through/right-turn lane.

The physical improvements identified above are feasible and would serve to improve operating conditions at the four intersections identified in Tables 5 and 6.

EXISTING PLUS PROJECT WITH MITIGATION TRAFFIC CONDITIONS

This section details the traffic volumes, intersection operating conditions, and significant traffic impacts from the Project on the existing environment (year 2014) after implementation of the mitigation program.

Intersection Operations

The Existing Plus Project with Mitigation conditions are defined by the traffic volumes, roadways, and intersection configurations that would exist following development of the Project and the specific intersection improvements identified above.

The study intersections were analyzed using the methodologies described in Chapter 2. The Existing Plus Project with Mitigation intersection operating conditions for typical weekday morning and afternoon peak hours are shown in Table 9.

As shown in Table 9, with implementation of the recommended mitigations on the Existing Plus Project scenario, all intersections are mitigated to acceptable LOS or to their pre-project condition.

Detailed LOS worksheets are provided in Appendix C.

FUTURE PLUS PROJECT WITH MITIGATION TRAFFIC CONDITIONS

This section details the traffic volumes, intersection operating conditions, and significant traffic impacts from the Project on the future environment (year 2016) after implementation of the mitigation program.

Intersection Operations

The Future Plus Project with Mitigation conditions are defined by the traffic volumes, roadways, and intersection configurations that would exist in the year 2016 following development of the Project and the specific intersection improvements identified above.

The study intersections were analyzed using the methodologies described in Chapter 2. The Future Plus Project with Mitigation intersection operating conditions for typical weekday morning and afternoon peak hours are shown in Table 10.

As shown in Table 10, with implementation of the recommended mitigations on the Future Plus Project scenario, all intersections are mitigated to acceptable LOS or to their pre-Project operation.

Detailed LOS worksheets are provided in Appendix C.

TABLE 9
EXISTING PLUS PROJECT WITH MITIGATION CONDITIONS (YEAR 2014)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Existing		Existing Plus Project (Mitigated)		Change in Delay (sec)	Impact
			Delay (sec)	LOS	Delay (sec)	LOS		
6.	University Drive & Temple Avenue	A.M.	53.4	D	40.3	D	-13.1	NO
		P.M.	31.8	C	41.7	D	9.9	NO
7.	South Campus Drive & Temple Avenue	A.M.	55.7	E	28.9	C	-26.8	NO
		P.M.	58.4	E	39.7	D	-18.7	NO

TABLE 10
FUTURE PLUS PROJECT WITH MITIGATION CONDITIONS (YEAR 2016)
INTERSECTION PEAK HOUR LEVELS OF SERVICE

No	Intersection	Peak Hour	Future without Project		Future Plus Project (Mitigated)		Change in Delay (sec)	Impact
			Delay (sec)	LOS	Delay (sec)	LOS		
6.	University Drive &	A.M.	65.3	E	48.4	D	-16.9	NO
	Temple Avenue	P.M.	42.8	D	51.3	D	8.5	NO
7.	South Campus Drive &	A.M.	70.7	E	30.5	C	-40.2	NO
	Temple Avenue	P.M.	68.8	E	46.1	D	-22.7	NO

Chapter 10

Congestion Management Program Analysis

The CMP requires that when a TIA is prepared for a project, traffic and transit impact analyses be conducted for select regional facilities based on the amount of project traffic expected to use these facilities. The operating conditions analysis at all CMP arterial and freeway monitoring stations that may be impacted by the Project was performed in accordance with the TIA guidelines referenced in the *2010 Congestion Management Program for Los Angeles County* (Metro, 2010).

CMP SIGNIFICANT TRAFFIC IMPACT CRITERIA

The CMP guidelines state that a CMP freeway analysis must be conducted if 150 or more trips attributable to the proposed development are added to a mainline freeway monitoring location in either direction during the morning or afternoon weekday peak hours. Similarly, a CMP arterial monitoring station analysis must be conducted if 50 or more peak hour project trips are added to a CMP arterial monitoring station during the morning or afternoon weekday commuter peak hours.

A significant project-related CMP impact would be identified if the CMP facility is projected to operate at LOS F (V/C > 1.00) and if the project traffic causes an incremental change in the V/C ratio of 0.02 or greater. The proposed development would not be considered to have a regionally significant impact, regardless of the increase in V/C ratio, if the analyzed facility is projected to operate at LOS E or better after the addition of the project traffic.

CMP FREEWAY ANALYSIS

The CMP freeway monitoring stations that will provide access to the Project Site include:

- I-210 at San Dimas Avenue, San Dimas, CA
- I-210 east of Indian Hill Boulevard, Claremont, CA
- I-10 at Grand Avenue, Covina, CA
- I-10 at Dudley Street, Pomona, CA
- I-10 at Indian Hill Boulevard, Claremont, CA
- SR 57 south of the junction of I-10, SR 71, and I-210, Pomona, CA
- SR 60 at Brea Canyon Road, Diamond Bar, CA
- SR 60 east of SR 57

Based on the Project-only traffic shown in Figure 7, the Project is expected to add fewer than 150 peak hour trips distributed to the freeways in the area. Therefore, the Project's CMP freeway impacts are considered to be less than significant and no further analysis is required.

CMP ARTERIAL MONITORING STATION ANALYSIS

The only CMP arterial monitoring station closest to the Project Site is the intersection of:

- Corona Expressway (SR 71) & Mission Boulevard, approximately two miles east of the Project Site.

Based on the Project-only traffic shown in Figure 7, the Project is expected to add fewer than 50 trips during the peak hours at this intersection. Therefore, the Project's CMP arterial impacts are considered to be less than significant, and no further analysis is required.

REGIONAL TRANSIT IMPACT ANALYSIS

The Project proposes the construction of a parking structure. Therefore, all trips to and from the Project Site are expected to be vehicle trips and the Project is not expected to have any impact on the transit system within the Study Area.

Chapter 11
Summary and Conclusions

This study was undertaken to analyze the potential traffic impacts of the Project on the local street system. The following summarizes the results of this analysis:

- The Project consists of the development of a 1,550-space parking structure that would replace an existing 300-space parking lot.

- The Project is anticipated to result in 387 trips during the morning peak hour and 346 trips during the afternoon peak hour. The proposed parking structure will serve the existing and proposed land uses at Cal Poly Pomona and will not generate trips on its own. The trips traveling to and from the Project have already been accounted for in the campus Master Plan.

- The Project traffic was added to the existing circulation system to develop the Existing Plus Project traffic conditions. Based on the City of Pomona's significance criteria, impacts at two of the study intersections were determined to be significant under Existing Plus Project Conditions during either the morning or afternoon peak hours. Therefore, mitigation measures are required.

- Future traffic conditions in the Study Area were forecast for the Project buildout year of 2016. Based on the City of Pomona's significance criteria, impacts at two of the study intersections were determined to be significant under Future Plus Project (Year 2016) Conditions during either the morning or afternoon peak hours. Therefore, mitigation measures are required.

- Mitigation measures at two of study intersections were identified to alleviate the impacts caused by the Project traffic. After the implementation of the mitigation measures, all impacts are expected to be less than significant.

- Analysis of potential impacts on the regional transportation system conducted in accordance with CMP guidelines determined that the Project would not have a significant impact on the regional freeway, arterial street system or transit system.

References

Active Transportation Plan: Bicycle Master Plan and Pedestrian Master Plan, Fehr & Peers, November 2012.

2000 Highway Capacity Manual, Transportation Research Board*,* 2000.

2010 Congestion Management Program for Los Angeles County, Los Angeles County Metropolitan Transportation Authority, 2010.

2010 Highway Capacity Manual, Transportation Research Board, 2010.

Cal Poly Pomona Campus Replacement Housing and Dining Facility Project Draft Environmental Impact Report, California State Polytechnic University, Pomona, November 2013.

Draft Traffic Impact Study for the New Innovation Village Research/Office Building Project, Cal Poly Pomona, Pomona, California, Gibson Transportation Consulting, Inc., May 2014.

Guidelines for Implementation of the California Environmental Quality Act, *Chapter 3, Title 14, California Code of Regulations*, California Natural Resources Agency, amended July 27, 2007.

Traffic Impact Study Guidelines, City of Pomona Public Works Department, February 2012.

Trip Generation, 9th Edition, Institute of Transportation Engineers, 2012.

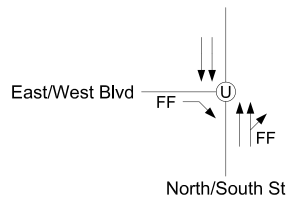
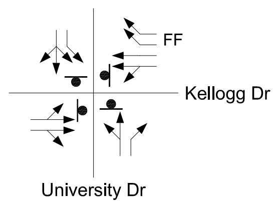
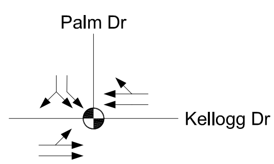
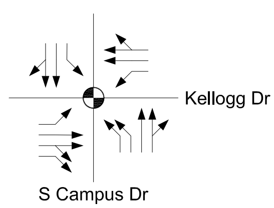
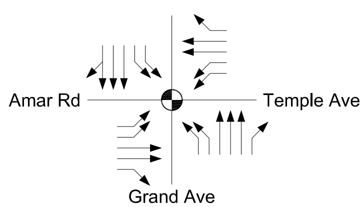
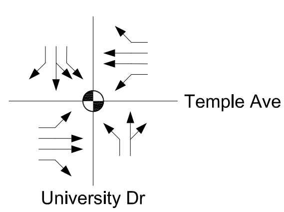
Appendix A

Intersection Lane Configurations

Gibson transportation consulting, inc.

LEGEND

- Traffic Signal
- Uncontrolled Intersection
- Stop Sign
- FF Free-Flow Right-Turn

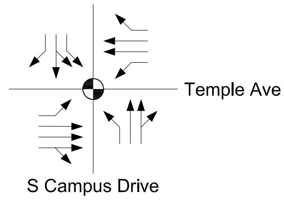
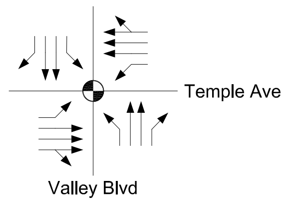
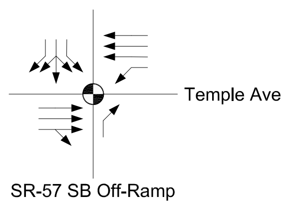
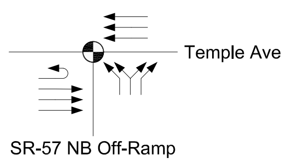
	EXISTING CONDITIONS (YEAR 2014)	FUTURE CONDITIONS (YEAR 2016)
1. Kellogg Drive & I-10 Eastbound Off-Ramp / East Campus Drive		Same as Existing Conditions
2. University Drive & Kellogg Drive		Same as Existing Conditions
3. Palm Drive & Kellogg Drive		Same as Existing Conditions
4. South Campus Drive & Kellogg Drive		Same as Existing Conditions
5. Grand Avenue & Amar Road / Temple Avenue		Same as Existing Conditions
6. University Drive & Temple Avenue		Same as Existing Conditions

INTERSECTION LANE CONFIGURATIONS

APPENDIX A

LEGEND

Traffic Signal

	EXISTING CONDITIONS (YEAR 2014)	FUTURE CONDITIONS (YEAR 2016)
7. South Campus Drive & Temple Avenue		Same as Existing Conditions
8. Valley Boulevard & Temple Avenue		Same as Existing Conditions
9. SR-57 Southbound Off-Ramp & Temple Avenue		Same as Existing Conditions
10. SR-57 Northbound Off-Ramp & Temple Avenue		Same as Existing Conditions

INTERSECTION LANE CONFIGURATIONS

APPENDIX A

Appendix B

Traffic Counts

WILTEC

DRIVEWAY COUNT SUMMARY

CLIENT: GIBSON TRANSPORTATION
PROJECT: CAL POLY POMONA
DATE: TUESDAY MARCH 11, 2014
PERIOD: 6:30 AM TO 9:00 AM AND 4:00 PM TO 6:00 PM
LOCATION: CAL POLY POMONA PARKING STRUCTURE

DRIVEWAY 1

15 MIN COUNTS		
PERIOD	**IN**	**OUT**
630-645	6	0
645-700	16	0
700-715	30	1
715-730	56	0
730-745	92	0
745-800	98	1
800-815	78	1
815-830	64	3
830-845	54	2
845-900	72	3
TIME	**IN**	**OUT**
630-730	108	1
645-745	194	1
700-800	276	2
715-815	324	2
730-830	332	5
745-845	294	7
800-900	268	9

15 MIN COUNTS		
PERIOD	**IN**	**OUT**
400-415	17	38
415-430	19	25
430-445	26	42
445-500	21	72
500-515	20	64
515-530	16	50
530-545	25	36
545-600	30	40
TIME	**IN**	**OUT**
400-500	83	177
415-515	86	203
430-530	83	228
445-545	82	222
500-600	91	190

DRIVEWAY 2

15 MIN COUNTS		
PERIOD	**IN**	**OUT**
630-645	2	0
645-700	9	0
700-715	16	1
715-730	58	2
730-745	125	5
745-800	143	1
800-815	63	1
815-830	33	2
830-845	41	2
845-900	65	0
TIME	**IN**	**OUT**
630-730	85	3
645-745	208	8
700-800	342	9
715-815	389	9
730-830	364	9
745-845	280	6
800-900	202	5

15 MIN COUNTS		
PERIOD	**IN**	**OUT**
400-415	10	44
415-430	8	38
430-445	12	67
445-500	12	104
500-515	13	73
515-530	18	48
530-545	17	30
545-600	10	29
TIME	**IN**	**OUT**
400-500	42	253
415-515	45	282
430-530	55	292
445-545	60	255
500-600	58	180

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_001 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

AM

NS/EW Streets:	Kellogg Dr			Kellogg Dr			I-10 EB Off-Ramp-E Campus Dr			I-10 EB Off-Ramp-E Campus Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
7:00 AM		8	5		157				73				243
7:15 AM		5	11		236				201				453
7:30 AM		13	15		343				347				718
7:45 AM		32	11		331				363				737
8:00 AM		20	13		202				168				403
8:15 AM		13	7		127				83				230
8:30 AM		12	13		132				125				282
8:45 AM		15	15		168				148				346

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	118	90	0	1696	0	0	0	1508	0	0	0	3412
APPROACH %'s :	0.00%	56.73%	43.27%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	70	50	0	1112	0	0	0	1079	0	0	0	2311
PEAK HR FACTOR :	0.698			0.810			0.743			0.000			0.784

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_001 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

PM

NS/EW Streets:	Kellogg Dr			Kellogg Dr			I-10 EB Off-Ramp-E Campus Dr			I-10 EB Off-Ramp-E Campus Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	0	1	0	0	0	0	
4:00 PM		91	69		52				35				247
4:15 PM		93	44		80				47				264
4:30 PM		111	95		75				56				337
4:45 PM		189	142		77				60				468
5:00 PM		192	180		66				56				494
5:15 PM		155	157		85				55				452
5:30 PM		89	86		73				49				297
5:45 PM		56	66		80				48				250

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	976	839	0	588	0	0	0	406	0	0	0	2809
APPROACH %'s :	0.00%	53.77%	46.23%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	#DIV/0!	#DIV/0!	#DIV/0!	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	647	574	0	303	0	0	0	227	0	0	0	1751
PEAK HR FACTOR :		0.821			0.891			0.946			0.000		0.886

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_002 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

AM

NS/EW Streets:	University Ave			University Ave			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0.5	1	0.8	0.3	0.3	0.5	1	0.5	0.5	1.5	1	
7:00 AM	1	2	2	3	3	0	0	8	0	6	150	70	245
7:15 AM	1	5	0	7	2	1	14	7	0	6	213	212	468
7:30 AM	0	4	3	8	2	0	38	15	1	15	271	393	750
7:45 AM	2	5	3	12	3	6	39	23	2	17	279	412	803
8:00 AM	2	7	6	12	4	2	8	14	7	14	202	161	439
8:15 AM	0	7	1	6	4	2	7	9	5	12	114	79	246
8:30 AM	1	2	6	9	5	2	6	7	4	9	127	121	299
8:45 AM	4	3	5	10	4	2	9	17	7	20	133	173	387

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	11	35	26	67	27	15	121	100	26	99	1489	1621	3637
APPROACH %'s :	15.28%	48.61%	36.11%	61.47%	24.77%	13.76%	48.99%	40.49%	10.53%	3.09%	46.40%	50.51%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	5	21	12	39	11	9	99	59	10	52	965	1178	2460
PEAK HR FACTOR :		0.633			0.702			0.656			0.775		0.766

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_002 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

PM

NS/EW Streets:	University Ave			University Ave			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0.5	0.5	1	0.8	0.3	0.3	0.5	1	0.5	0.5	1.5	1	
4:00 PM	9	4	7	92	5	7	4	62	4	4	56	20	274
4:15 PM	4	8	15	70	4	9	1	53	2	9	77	33	285
4:30 PM	5	7	9	107	3	11	4	76	2	5	68	62	359
4:45 PM	4	3	11	179	4	22	9	134	6	1	79	61	513
5:00 PM	5	6	19	205	4	23	10	144	2	4	79	39	540
5:15 PM	7	3	14	173	2	20	4	133	1	1	92	47	497
5:30 PM	8	4	10	96	1	12	7	80	1	1	96	27	343
5:45 PM	6	0	4	64	1	7	7	57	2	1	90	32	271

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	48	35	89	986	24	111	46	739	20	26	637	321	3082
APPROACH %'s :	27.91%	20.35%	51.74%	87.96%	2.14%	9.90%	5.71%	91.80%	2.48%	2.64%	64.74%	32.62%	

PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	21	19	53	664	13	76	27	487	11	11	318	209	1909
PEAK HR FACTOR :		0.775			0.811			0.841			0.954		0.884

CONTROL : 4-Way Stop

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_003 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

AM

NS/EW Streets:	Palm Dr			Palm Dr			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	0.5	0.5	1.5	0	0	2	0	
7:00 AM				0		2	15	13			154	4	188
7:15 AM				1		1	48	15			189	18	272
7:30 AM				0		2	67	61			259	22	411
7:45 AM				1		8	74	56			262	15	416
8:00 AM				0		1	29	33			205	8	276
8:15 AM				1		1	20	17			101	8	148
8:30 AM				0		4	34	21			119	13	191
8:45 AM				5		5	61	24			123	14	232

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	8	0	24	348	240	0	0	1412	102	2134
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	25.00%	0.00%	75.00%	59.18%	40.82%	0.00%	0.00%	93.26%	6.74%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	0	2	0	12	218	165	0	0	915	63	1375
PEAK HR FACTOR :	0.000			0.389			0.737			0.870			0.826

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5434_003 **Day:** THURSDAY

City: City of Pomona **Date:** 11/1/2012

PM

NS/EW Streets:	Palm Dr			Palm Dr			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	0.5	0.5	1.5	0	0	2	0	
4:00 PM				14		53	7	59			72	3	208
4:15 PM				15		23	10	50			78	8	184
4:30 PM				23		49	18	62			82	5	239
4:45 PM				45		96	18	105			110	2	376
5:00 PM				34		98	9	121			97	3	362
5:15 PM				35		85	12	103			120	4	359
5:30 PM				15		39	10	72			106	5	247
5:45 PM				6		38	14	64			110	1	233

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	187	0	481	98	636	0	0	775	31	2208
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	27.99%	0.00%	72.01%	13.35%	86.65%	0.00%	0.00%	96.15%	3.85%	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	129	0	318	49	401	0	0	433	14	1344
PEAK HR FACTOR :	0.000			0.793			0.865			0.901			0.894

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_001 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

AM

NS/EW Streets:	South Campus Dr			South Campus Dr			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	1.5	.5	1	1.5	.5	1	1.5	1.5	1	1.5	.5	
7:00 AM	38	29	3	7	43	9	4	34	108	15	20	4	314
7:15 AM	130	29	5	13	69	19	13	30	98	28	58	8	500
7:30 AM	151	54	10	13	70	30	27	29	74	35	131	21	645
7:45 AM	128	50	4	12	62	34	35	59	87	35	125	19	650
8:00 AM	70	51	6	7	36	17	9	65	59	10	55	20	405
8:15 AM	70	45	5	8	29	17	1	38	58	6	60	10	347
8:30 AM	151	36	4	2	22	23	7	21	55	15	82	7	425
8:45 AM	165	39	5	2	23	30	14	28	74	24	96	11	511

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	903	333	42	64	354	179	110	304	613	168	627	100	3797
APPROACH %'s :	70.66%	26.06%	3.29%	10.72%	59.30%	29.98%	10.71%	29.60%	59.69%	18.77%	70.06%	11.17%	

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	479	184	25	45	237	100	84	183	318	108	369	68	2200
PEAK HR FACTOR :		0.800			0.845			0.808			0.729		0.846

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_001 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

PM

NS/EW Streets:	South Campus Dr			South Campus Dr			Kellogg Dr			Kellogg Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	1.5	.5	1	1.5	.5	1	1.5	1.5	1	1.5	.5	
4:00 PM	69	89	6	3	23	13	19	83	158	13	45	31	552
4:15 PM	46	80	5	3	20	4	10	50	81	11	31	17	358
4:30 PM	40	76	5	2	23	11	8	30	99	3	43	19	359
4:45 PM	45	47	6	0	15	9	6	43	89	10	30	30	330
5:00 PM	59	57	6	5	22	9	16	79	122	16	45	28	464
5:15 PM	84	71	7	5	34	13	16	41	109	8	49	24	461
5:30 PM	105	61	8	4	29	14	5	51	121	7	78	21	504
5:45 PM	97	58	3	6	25	11	11	77	202	13	56	8	567

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	545	539	46	28	191	84	91	454	981	81	377	178	3595
APPROACH %'s :	48.23%	47.70%	4.07%	9.24%	63.04%	27.72%	5.96%	29.75%	64.29%	12.74%	59.28%	27.99%	

PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	345	247	24	20	110	47	48	248	554	44	228	81	1996
PEAK HR FACTOR :		0.885			0.851			0.733			0.833		0.880

CONTROL : Signalized

WILTEC Tel: (626) 564-1944 Fax: (626) 564-0969 info@wiltecusa.com

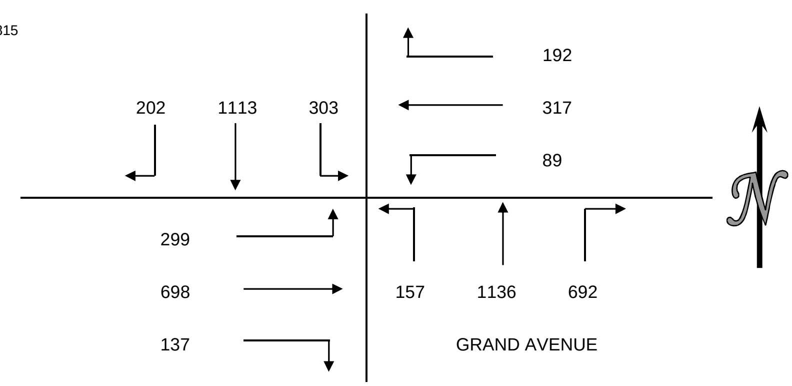
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		6:30 AM TO 9:00 AM
INTERSECTION:	N/S	GRAND AVENUE
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-645	23	205	15	19	46	8	33	78	10	21	49	29	536
645-700	16	175	33	24	72	13	47	126	26	30	62	43	667
700-715	25	227	71	36	77	17	110	194	28	21	114	45	965
715-730	48	322	59	36	79	12	138	227	26	29	174	66	1216
730-745	42	296	91	44	85	22	205	302	44	34	171	73	1409
745-800	50	259	88	63	82	28	174	303	33	27	214	85	1406
800-815	62	236	65	49	71	27	175	304	54	47	139	75	1304
815-830	49	224	55	40	107	23	117	223	67	56	91	58	1110
830-845	63	252	51	13	52	13	96	155	55	67	114	71	1002
845-900	42	218	57	29	52	18	75	183	72	51	102	91	990
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-730	112	929	178	115	274	50	328	625	90	101	399	183	3384
645-745	131	1020	254	140	313	64	500	849	124	114	521	227	4257
700-800	165	1104	309	179	323	79	627	1026	131	111	673	269	4996
715-815	202	1113	303	192	317	89	692	1136	157	137	698	299	5335
730-830	203	1015	299	196	345	100	671	1132	198	164	615	291	5229
745-845	224	971	259	165	312	91	562	985	209	197	558	289	4822
800-900	216	930	228	131	282	81	463	865	248	221	446	295	4406

AM PEAK HOUR: 715-815



TEMPLE AVENUE

PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	2	1	0	2	5
645-700	2	1	1	0	4
700-715	4	3	2	1	10
715-730	2	1	1	0	4
730-745	8	3	0	6	17
745-800	12	0	0	3	15
800-815	7	7	0	2	16
815-830	1	1	1	4	7
830-845	6	6	0	0	12
845-900	2	2	0	1	5
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	10	6	4	3	23
645-745	16	8	4	7	35
700-800	26	7	3	10	46
715-815	29	11	1	11	52
730-830	28	11	1	15	55
745-845	26	14	1	9	50
800-900	16	16	1	7	40

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	1	1
645-700	0	0	0	0	0
700-715	0	0	0	0	0
715-730	0	0	0	1	1
730-745	1	0	1	0	2
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	0	0	0	0	0
830-845	0	0	0	0	0
845-900	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	0	0	0	2	2
645-745	1	0	1	1	3
700-800	1	0	1	1	3
715-815	1	0	1	1	3
730-830	1	0	1	0	2
745-845	0	0	0	0	0
800-900	0	0	0	0	0

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

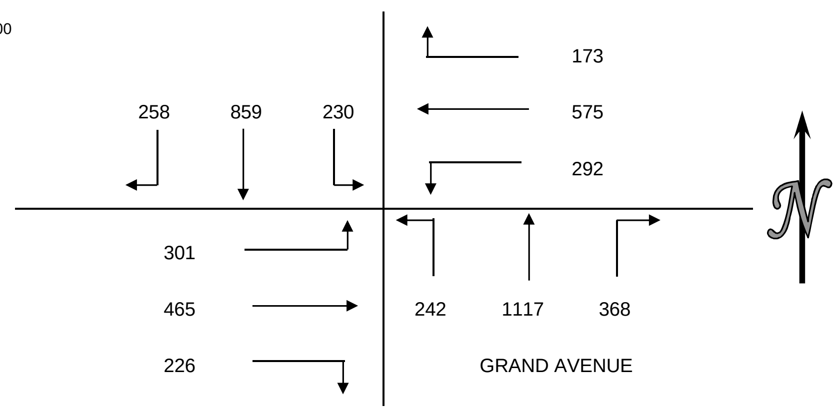
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		4:00 PM TO 6:00 PM
INTERSECTION:	N/S	GRAND AVENUE
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	67	193	53	44	91	59	95	224	72	68	88	71	1125
415-430	59	200	48	53	119	90	78	217	52	58	119	77	1170
430-445	72	233	67	63	139	82	58	235	50	55	99	67	1220
445-500	63	204	61	55	142	99	89	238	51	51	117	80	1250
500-515	74	243	48	56	161	74	78	286	56	61	105	67	1309
515-530	52	214	37	35	151	85	78	279	52	69	118	88	1258
530-545	75	195	73	32	140	65	96	289	76	51	109	68	1269
545-600	57	207	72	50	123	68	116	263	58	45	133	78	1270
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	261	830	229	215	491	330	320	914	225	232	423	295	4765
415-515	268	880	224	227	561	345	303	976	209	225	440	291	4949
430-530	261	894	213	209	593	340	303	1038	209	236	439	302	5037
445-545	264	856	219	178	594	323	341	1092	235	232	449	303	5086
500-600	258	859	230	173	575	292	368	1117	242	226	465	301	5106

AM PEAK HOUR: 500-600



TEMPLE AVENUE

PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	11	5	0	2	18
415-430	23	1	4	4	32
430-445	14	3	0	3	20
445-500	12	4	0	1	17
500-515	10	3	0	3	16
515-530	14	10	0	1	25
530-545	10	5	0	1	16
545-600	26	5	0	2	33
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	60	13	4	10	87
415-515	59	11	4	11	85
430-530	50	20	0	8	78
445-545	46	22	0	6	74
500-600	60	23	0	7	90

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	1	0	0	0	1
415-430	3	1	0	0	4
430-445	2	0	0	0	2
445-500	1	0	0	0	1
500-515	1	3	0	1	5
515-530	0	1	0	0	1
530-545	1	0	0	0	1
545-600	1	0	0	1	2
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	7	1	0	0	8
415-515	7	4	0	1	12
430-530	4	4	0	1	9
445-545	3	4	0	1	8
500-600	3	4	0	2	9

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_004 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

AM

NS/EW Streets:	University Ave			University Ave			W Temple Ave			W Temple Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	.5	.5	1.5	.5	1	1	2	1	1	2	1	
7:00 AM		0	0	10	0	6	13	64	1	1	355	62	512
7:15 AM		0	0	15	0	7	47	95	0	4	314	110	592
7:30 AM		0	0	35	0	21	68	109	0	13	199	158	603
7:45 AM		3	0	29	0	28	57	107	0	19	219	137	599
8:00 AM		0	0	26	0	9	14	83	0	2	179	70	383
8:15 AM		1	0	10	1	4	21	111	0	1	134	58	341
8:30 AM		0	1	16	1	4	30	87	0	1	136	102	378
8:45 AM		2	0	13	0	15	25	93	0	3	130	134	415
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	6	1	154	2	94	275	749	1	44	1666	831	3823
APPROACH %'s :	0.00%	85.71%	14.29%	61.60%	0.80%	37.60%	26.83%	73.07%	0.10%	1.73%	65.56%	32.70%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	0	3	0	89	0	62	185	375	1	37	1087	467	2306
PEAK HR FACTOR :		0.250			0.662			0.792			0.929		0.956

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	1
0	0	5	4
0	0	4	11
0	0	0	17
0	0	0	2
0	0	4	1
0	0	4	1
0	0	1	2
NB	SB	EB	WB
0	0	18	39

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_004 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

PM

NS/EW Streets:	University Ave			University Ave			W Temple Ave			W Temple Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	.5	.5	1.5	.5	1	1	2	1	1	2	1	
4:00 PM	2	0	0	95	2	24	14	319	4	5	130	28	623
4:15 PM	2	2	1	74	1	13	11	175	4	4	108	25	420
4:30 PM	1	0	0	82	1	14	5	183	1	0	127	27	441
4:45 PM	3	0	3	73	0	18	11	163	1	4	108	24	408
5:00 PM	1	0	2	68	1	25	13	150	0	3	119	23	405
5:15 PM	1	1	0	79	0	20	18	173	0	4	145	40	481
5:30 PM	0	2	0	77	1	20	36	184	1	1	139	76	537
5:45 PM	0	2	0	140	1	41	25	149	0	2	147	65	572
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	10	7	6	688	7	175	133	1496	11	23	1023	308	3887
APPROACH %'s :	43.48%	30.43%	26.09%	79.08%	0.80%	20.11%	8.11%	91.22%	0.67%	1.70%	75.55%	22.75%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	2	5	2	364	3	106	92	656	1	10	550	204	1995
PEAK HR FACTOR :	0.750			0.650			0.847			0.884			0.872

UTURNS			
NB	SB	EB	WB
0	0	1	5
0	0	2	4
0	0	0	0
0	0	2	4
0	0	0	3
0	0	1	3
0	0	2	1
0	0	1	0
NB	SB	EB	WB
0	0	9	20

CONTROL : Signalized

WILTEC

Tel: (626) 564-1944 Fax: (626) 564-0969 info@wiltecusa.com

INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

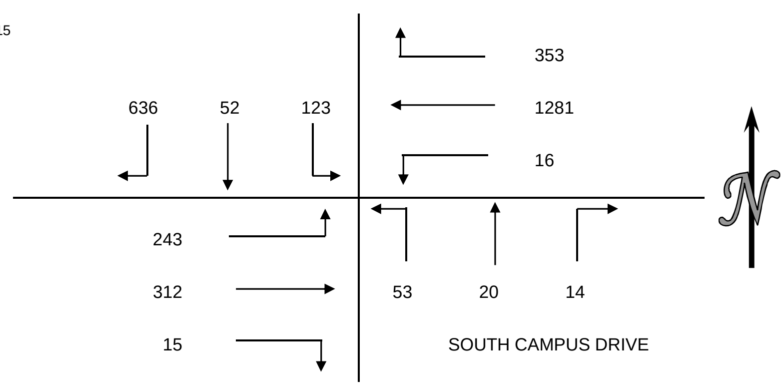
CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		6:30 AM TO 9:00 AM
INTERSECTION:	N/S	SOUTH CAMPUS DRIVE
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-645	28	1	4	6	73	1	2	0	1	1	19	10	146
645-700	82	1	12	28	198	2	2	0	0	0	29	28	382
700-715	103	4	13	48	239	4	9	7	0	0	40	50	517
715-730	174	5	27	86	310	6	4	2	4	1	58	55	732
730-745	157	18	39	73	300	3	4	10	20	0	62	38	724
745-800	177	20	30	89	276	4	4	3	18	7	81	86	795
800-815	128	9	27	105	395	3	2	5	11	7	111	64	867
815-830	122	7	20	92	294	2	4	1	3	2	81	47	675
830-845	99	3	21	91	154	4	5	5	5	15	58	56	516
845-900	90	3	27	84	207	3	3	2	9	3	79	61	571
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-730	387	11	56	168	820	13	17	9	5	2	146	143	1777
645-745	516	28	91	235	1047	15	19	19	24	1	189	171	2355
700-800	611	47	109	296	1125	17	21	22	42	8	241	229	2768
715-815	636	52	123	353	1281	16	14	20	53	15	312	243	3118
730-830	584	54	116	359	1265	12	14	19	52	16	335	235	3061
745-845	526	39	98	377	1119	13	15	14	37	31	331	253	2853
800-900	439	22	95	372	1050	12	14	13	28	27	329	228	2629

AM PEAK HOUR: 715-815

TEMPLE AVENUE



PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	1	0	1
645-700	6	1	11	13	31
700-715	23	3	17	15	58
715-730	13	2	1	7	23
730-745	49	6	17	51	123
745-800	13	6	2	28	49
800-815	15	4	12	19	50
815-830	14	3	17	25	59
830-845	14	3	0	8	25
845-900	24	9	17	38	88
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	42	6	30	35	113
645-745	91	12	46	86	235
700-800	98	17	37	101	253
715-815	90	18	32	105	245
730-830	91	19	48	123	281
745-845	56	16	31	80	183
800-900	67	19	46	90	222

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	0	0
645-700	0	0	0	1	1
700-715	0	0	0	0	0
715-730	0	0	0	1	1
730-745	1	0	1	6	8
745-800	2	1	0	8	11
800-815	0	1	0	1	2
815-830	0	0	0	2	2
830-845	0	0	0	1	1
845-900	4	0	1	7	12
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	0	0	0	2	2
645-745	1	0	1	8	10
700-800	3	1	1	15	20
715-815	3	2	1	16	22
730-830	3	2	1	17	23
745-845	2	2	0	12	16
800-900	4	1	1	11	17

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

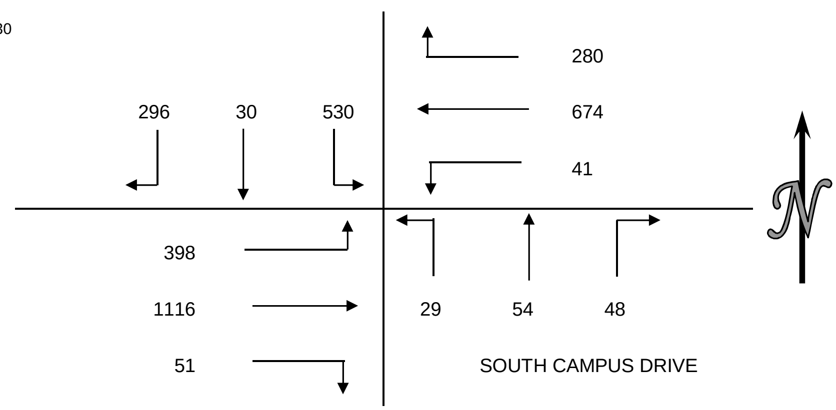
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT: GIBSON TRANSPORTATION
PROJECT: CAL POLY POMONA
DATE: TUESDAY MARCH 11, 2014
PERIOD: 4:00 PM TO 6:00 PM
INTERSECTION: N/S SOUTH CAMPUS DRIVE
E/W TEMPLE AVENUE
CITY: POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	65	10	102	47	158	11	13	6	6	10	194	62	684
415-430	75	5	76	62	160	9	8	11	8	8	199	96	717
430-445	76	8	102	76	182	10	13	8	8	13	295	102	893
445-500	74	2	134	67	164	11	16	8	10	7	305	111	909
500-515	62	9	166	73	179	8	8	19	5	16	287	86	918
515-530	84	11	128	64	149	12	11	19	6	15	229	99	827
530-545	83	8	106	123	149	10	20	13	5	7	173	76	773
545-600	76	5	74	104	194	8	6	14	16	3	175	97	772
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	290	25	414	252	664	41	50	33	32	38	993	371	3203
415-515	287	24	478	278	685	38	45	46	31	44	1086	395	3437
430-530	296	30	530	280	674	41	48	54	29	51	1116	398	3547
445-545	303	30	534	327	641	41	55	59	26	45	994	372	3427
500-600	305	33	474	364	671	38	45	65	32	41	864	358	3290

AM PEAK HOUR: 430-530



TEMPLE AVENUE

PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	10	8	3	44	65
415-430	2	9	4	30	45
430-445	14	3	1	28	46
445-500	12	24	10	47	93
500-515	6	8	6	75	95
515-530	8	12	4	35	59
530-545	5	0	1	20	26
545-600	10	13	7	42	72
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	38	44	18	149	249
415-515	34	44	21	180	279
430-530	40	47	21	185	293
445-545	31	44	21	177	273
500-600	29	33	18	172	252

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	1	0	0	2	3
415-430	0	0	0	1	1
430-445	3	0	0	5	8
445-500	1	0	0	1	2
500-515	1	0	0	7	8
515-530	0	1	0	4	5
530-545	1	3	1	2	7
545-600	1	0	0	5	6
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	5	0	0	9	14
415-515	5	0	0	14	19
430-530	5	1	0	17	23
445-545	3	4	1	14	22
500-600	3	4	1	18	26

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_003 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

AM

NS/EW Streets:	Valley Dr			Valley Dr			W Temple Ave			W Temple Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	3	0	1	3	0	
7:00 AM	26	48	11	16	138	68	14	36	9	11	295	15	687
7:15 AM	39	79	16	15	121	66	30	55	24	11	363	26	845
7:30 AM	56	99	17	16	146	55	26	69	17	14	315	45	875
7:45 AM	55	88	17	28	137	63	27	75	21	13	290	32	846
8:00 AM	31	72	9	18	99	42	16	70	14	15	188	22	596
8:15 AM	24	64	13	11	83	35	19	42	6	16	157	29	499
8:30 AM	42	53	11	16	68	29	15	70	8	8	299	37	656
8:45 AM	40	56	2	7	52	30	12	62	14	10	294	27	606
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	313	559	96	127	844	388	159	479	113	98	2201	233	5610
APPROACH %'s :	32.33%	57.75%	9.92%	9.35%	62.10%	28.55%	21.17%	63.78%	15.05%	3.87%	86.93%	9.20%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	176	314	61	75	542	252	97	235	71	49	1263	118	3253
PEAK HR FACTOR :		0.801			0.953			0.819			0.894		0.929

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	2	0
0	0	4	0
0	0	1	1
0	0	1	0
0	0	1	0
0	0	1	0
NB	SB	EB	WB
0	0	10	1

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA13_5040_003 **Day:** WEDNESDAY

City: City of Pomona **Date:** 1/23/2013

PM

NS/EW Streets:	Valley Dr			Valley Dr			W Temple Ave			W Temple Ave			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1	2	1	1	3	0	1	3	0	
4:00 PM	42	97	10	66	74	21	62	358	54	8	97	29	918
4:15 PM	25	110	15	43	71	27	36	189	37	21	94	32	700
4:30 PM	29	121	8	41	70	23	43	185	47	25	120	44	756
4:45 PM	16	152	9	39	65	18	38	222	22	26	117	27	751
5:00 PM	29	168	13	54	99	32	41	188	47	12	93	32	808
5:15 PM	52	159	8	32	83	28	31	192	48	18	157	19	827
5:30 PM	54	154	15	29	65	37	36	194	43	12	186	33	858
5:45 PM	50	140	12	36	63	26	42	285	56	25	199	24	958
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	297	1101	90	340	590	212	329	1813	354	147	1063	240	6576
APPROACH %'s :	19.96%	73.99%	6.05%	29.77%	51.66%	18.56%	13.18%	72.64%	14.18%	10.14%	73.31%	16.55%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	185	621	48	151	310	123	150	859	194	67	635	108	3451
PEAK HR FACTOR :		0.957			0.789			0.785			0.817		0.901

	UTURNS			
	NB	SB	EB	WB
4:00 PM	0	0	1	0
4:15 PM	0	0	0	0
4:30 PM	0	1	0	2
4:45 PM	0	0	1	1
5:00 PM	0	0	1	1
5:15 PM	0	0	1	1
5:30 PM	0	0	2	1
5:45 PM	1	1	1	1
	NB	SB	EB	WB
TOTAL	1	2	7	7

CONTROL : Signalized

WILTEC

Tel: (626) 564-1944 Fax: (626) 564-0969 info@wiltecusa.com

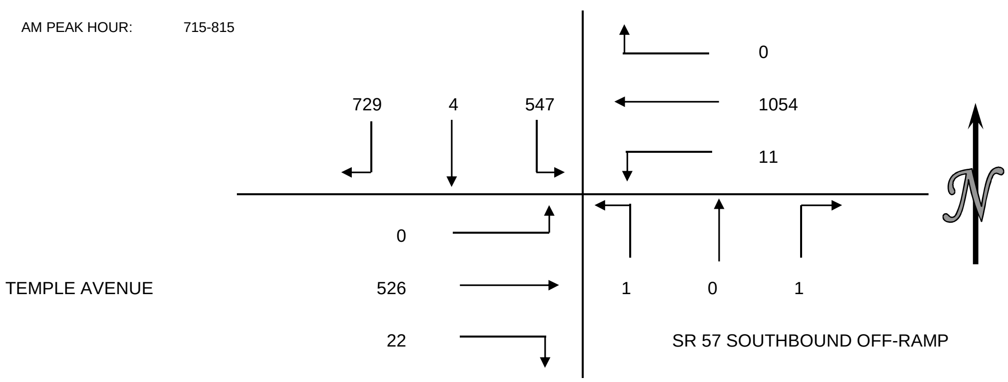
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		6:30 AM TO 9:00 AM
INTERSECTION:	N/S	SR 57 SOUTHBOUND OFF-RAMP
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-645	155	6	92	0	129	1	0	0	0	5	63	0	451
645-700	250	2	107	0	206	1	0	0	0	0	70	0	636
700-715	232	2	98	0	300	1	2	0	0	1	84	0	720
715-730	256	2	104	0	356	3	1	0	0	5	109	0	836
730-745	195	2	107	0	225	0	0	0	0	2	132	0	663
745-800	130	0	175	0	189	1	0	0	1	7	132	0	635
800-815	148	0	161	0	284	7	0	0	0	8	153	0	761
815-830	173	1	93	0	211	0	1	0	0	6	116	0	601
830-845	185	0	56	0	252	1	1	0	0	4	116	0	615
845-900	192	3	79	0	250	7	1	0	0	8	138	0	678
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-730	893	12	401	0	991	6	3	0	0	11	326	0	2643
645-745	933	8	416	0	1087	5	3	0	0	8	395	0	2855
700-800	813	6	484	0	1070	5	3	0	1	15	457	0	2854
715-815	729	4	547	0	1054	11	1	0	1	22	526	0	2895
730-830	646	3	536	0	909	8	1	0	1	23	533	0	2660
745-845	636	1	485	0	936	9	2	0	1	25	517	0	2612
800-900	698	4	389	0	997	15	3	0	0	26	523	0	2655

AM PEAK HOUR: 715-815



PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	0	0
645-700	1	0	0	0	1
700-715	0	0	0	0	0
715-730	1	0	0	2	3
730-745	0	0	0	0	0
745-800	0	0	0	0	0
800-815	0	0	0	2	2
815-830	0	0	0	0	0
830-845	0	0	0	1	1
845-900	0	0	0	2	2
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	2	0	0	2	4
645-745	2	0	0	2	4
700-800	1	0	0	2	3
715-815	1	0	0	4	5
730-830	0	0	0	2	2
745-845	0	0	0	3	3
800-900	0	0	0	5	5

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	0	0
645-700	0	0	0	0	0
700-715	1	0	0	0	1
715-730	1	0	0	0	1
730-745	1	0	0	1	2
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	0	0	0	0	0
830-845	0	0	0	0	0
845-900	3	0	0	0	3
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	2	0	0	0	2
645-745	3	0	0	1	4
700-800	3	0	0	1	4
715-815	2	0	0	1	3
730-830	1	0	0	1	2
745-845	0	0	0	0	0
800-900	3	0	0	0	3

WILTEC

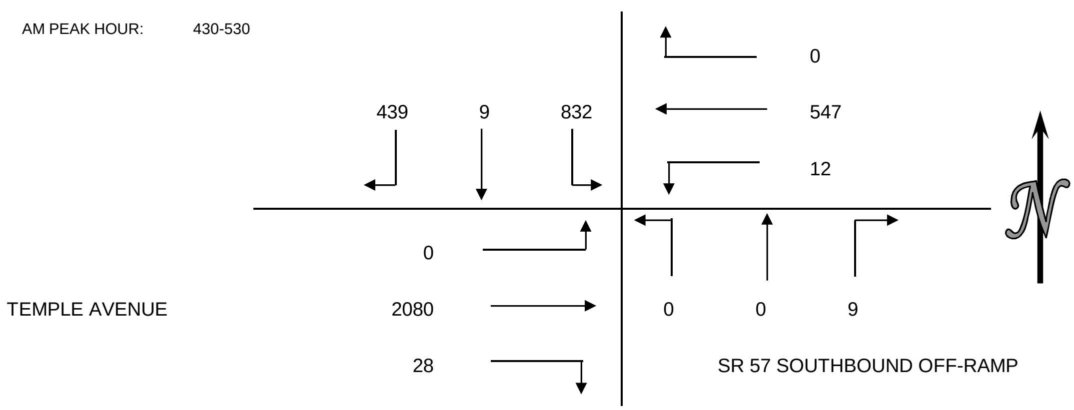
Phone: (626) 564-1944 Fax: (626) 564-0969

INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		4:00 PM TO 6:00 PM
INTERSECTION:	N/S	SR 57 SOUTHBOUND OFF-RAMP
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	122	0	144	0	110	1	0	0	0	10	429	0	816
415-430	118	0	158	0	135	0	1	0	0	14	395	0	821
430-445	107	6	175	0	152	2	2	0	0	12	538	0	994
445-500	101	1	186	0	142	3	1	0	0	6	518	0	958
500-515	105	1	214	0	109	5	1	0	0	5	514	0	954
515-530	126	1	257	0	144	2	5	0	0	5	510	0	1050
530-545	134	0	232	0	103	2	2	0	0	11	410	0	894
545-600	120	0	212	0	159	1	3	0	0	7	411	0	913
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	448	7	663	0	539	6	4	0	0	42	1880	0	3589
415-515	431	8	733	0	538	10	5	0	0	37	1965	0	3727
430-530	439	9	832	0	547	12	9	0	0	28	2080	0	3956
445-545	466	3	889	0	498	12	9	0	0	27	1952	0	3856
500-600	485	2	915	0	515	10	11	0	0	28	1845	0	3811



PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	1	0	0	0	1
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	0	0	0	0	0
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	2	0	0	0	2
545-600	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	1	0	0	0	1
415-515	0	0	0	0	0
430-530	0	0	0	0	0
445-545	2	0	0	0	2
500-600	2	0	0	0	2

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	0	0	0	0	0
500-515	0	0	0	0	0
515-530	0	0	0	0	0
530-545	0	0	0	0	0
545-600	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	0	0	0	0	0
415-515	0	0	0	0	0
430-530	0	0	0	0	0
445-545	0	0	0	0	0
500-600	0	0	0	0	0

WILTEC

Tel: (626) 564-1944 Fax: (626) 564-0969 info@wiltecusa.com

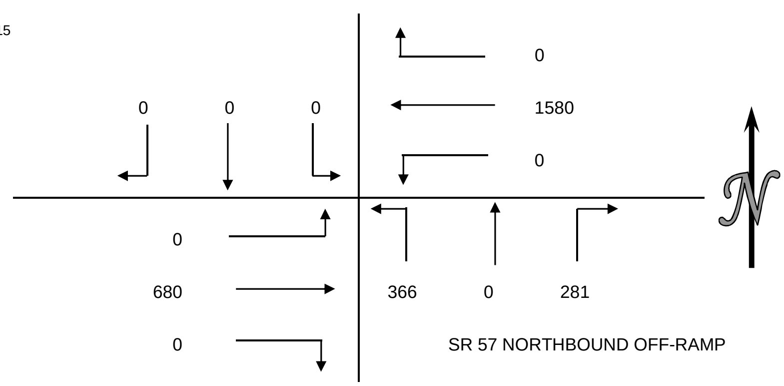
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		6:30 AM TO 9:00 AM
INTERSECTION:	N/S	SR 57 NORTHBOUND OFF-RAMP
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-645	0	0	0	0	226	0	37	0	46	0	107	0	416
645-700	0	0	0	0	326	0	46	0	78	0	125	0	575
700-715	0	0	0	0	354	0	44	0	94	0	124	0	616
715-730	0	0	0	0	500	0	61	0	137	0	134	0	832
730-745	0	0	0	0	386	0	82	0	101	0	157	0	726
745-800	0	0	0	0	322	0	76	0	74	0	180	0	652
800-815	0	0	0	0	372	0	62	0	54	0	209	0	697
815-830	0	0	0	0	344	0	53	0	107	0	138	0	642
830-845	0	0	0	0	323	0	41	0	101	0	111	0	576
845-900	0	0	0	0	316	0	57	0	113	0	120	0	606
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
630-730	0	0	0	0	1406	0	188	0	355	0	490	0	2439
645-745	0	0	0	0	1566	0	233	0	410	0	540	0	2749
700-800	0	0	0	0	1562	0	263	0	406	0	595	0	2826
715-815	0	0	0	0	1580	0	281	0	366	0	680	0	2907
730-830	0	0	0	0	1424	0	273	0	336	0	684	0	2717
745-845	0	0	0	0	1361	0	232	0	336	0	638	0	2567
800-900	0	0	0	0	1355	0	213	0	375	0	578	0	2521

AM PEAK HOUR: 715-815



TEMPLE AVENUE

PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	0	0
645-700	0	0	0	0	0
700-715	0	0	0	0	0
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	0	0	0	0	0
830-845	0	0	0	0	0
845-900	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	0	0	0	0	0
645-745	0	0	0	0	0
700-800	0	0	0	0	0
715-815	0	0	0	0	0
730-830	0	0	0	0	0
745-845	0	0	0	0	0
800-900	0	0	0	0	0

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-645	0	0	0	0	0
645-700	0	0	0	0	0
700-715	0	0	0	0	0
715-730	0	0	0	0	0
730-745	0	0	0	0	0
745-800	0	0	0	0	0
800-815	0	0	0	0	0
815-830	0	0	0	0	0
830-845	0	0	0	0	0
845-900	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
630-730	0	0	0	0	0
645-745	0	0	0	0	0
700-800	0	0	0	0	0
715-815	0	0	0	0	0
730-830	0	0	0	0	0
745-845	0	0	0	0	0
800-900	0	0	0	0	0

WILTEC

Phone: (626) 564-1944 Fax: (626) 564-0969

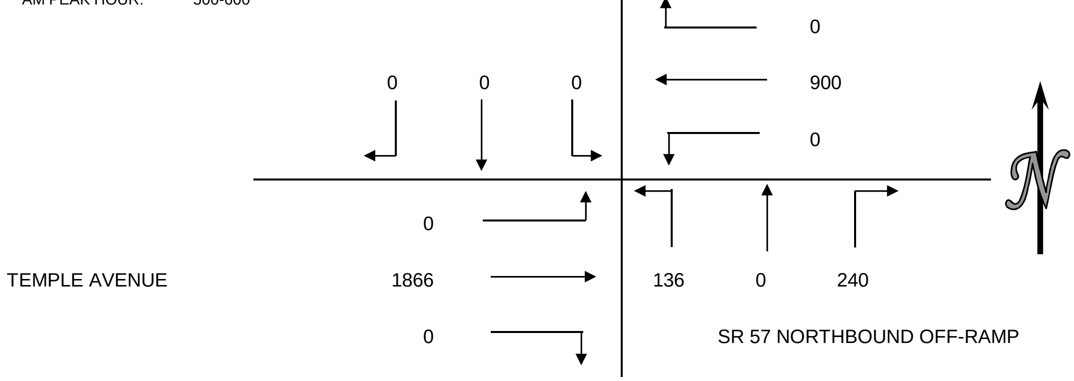
INTERSECTION CAR/PED/BIKE TRAFFIC COUNT RESULTS SUMMARY

CLIENT:		GIBSON TRANSPORTATION
PROJECT:		CAL POLY POMONA
DATE:		TUESDAY MARCH 11, 2014
PERIOD:		4:00 PM TO 6:00 PM
INTERSECTION:	N/S	SR 57 NORTHBOUND OFF-RAMP
	E/W	TEMPLE AVENUE
CITY:		POMONA

VEHICLE COUNTS

15 MIN COUNTS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-415	0	0	0	0	215	0	51	0	36	0	305	0	607
415-430	0	0	0	0	195	0	52	0	47	0	335	0	629
430-445	0	0	0	0	238	0	53	0	36	0	386	0	713
445-500	0	0	0	0	212	0	60	0	40	0	405	0	717
500-515	0	0	0	0	231	0	53	0	33	0	432	0	749
515-530	0	0	0	0	208	0	66	0	33	0	500	0	807
530-545	0	0	0	0	227	0	58	0	37	0	480	0	802
545-600	0	0	0	0	234	0	63	0	33	0	454	0	784
HOUR TOTALS	1	2	3	4	5	6	7	8	9	10	11	12	
PERIOD	SBRT	SBTH	SBLT	WBRT	WBTH	WBLT	NBRT	NBTH	NBLT	EBRT	EBTH	EBLT	TOTAL
400-500	0	0	0	0	860	0	216	0	159	0	1431	0	2666
415-515	0	0	0	0	876	0	218	0	156	0	1558	0	2808
430-530	0	0	0	0	889	0	232	0	142	0	1723	0	2986
445-545	0	0	0	0	878	0	237	0	143	0	1817	0	3075
500-600	0	0	0	0	900	0	240	0	136	0	1866	0	3142

AM PEAK HOUR: 500-600



PEDESTRIAN COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	0	0	1	0	1
415-430	0	0	1	0	1
430-445	0	0	1	0	1
445-500	0	0	0	0	0
500-515	0	0	0	0	0
515-530	0	0	1	0	1
530-545	0	0	1	0	1
545-600	0	0	1	0	1
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	0	0	3	0	3
415-515	0	0	2	0	2
430-530	0	0	2	0	2
445-545	0	0	2	0	2
500-600	0	0	3	0	3

BICYCLE COUNTS

15 MIN COUNTS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-415	0	0	0	0	0
415-430	0	0	0	0	0
430-445	0	0	0	0	0
445-500	0	0	0	0	0
500-515	0	0	0	0	0
515-530	0	0	1	0	1
530-545	0	0	1	0	1
545-600	0	0	0	0	0
HOUR TOTALS	NORTH	EAST	SOUTH	WEST	TOTAL
PERIOD	LEG	LEG	LEG	LEG	
400-500	0	0	0	0	0
415-515	0	0	0	0	0
430-530	0	0	1	0	1
445-545	0	0	2	0	2
500-600	0	0	2	0	2

Appendix C

Intersection Level of Service Worksheets

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	41	11	9	5	22	12	103	61	10	54	1004	1225
Peak Hour Factor	0.70	0.70	0.70	0.63	0.63	0.63	0.66	0.66	0.66	0.78	0.78	0.78
Hourly flow rate (vph)	59	16	13	8	35	19	156	92	15	69	1287	1571

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2	SW 3	SW 4
Volume Total (vph)	39	48	43	19	202	61	498	858	785	785
Volume Left (vph)	39	20	8	0	156	0	69	0	0	0
Volume Right (vph)	0	13	0	19	0	15	0	0	785	785
Hadj (s)	0.53	0.05	0.13	-0.67	0.42	-0.14	0.10	0.03	-0.67	-0.67
Departure Headway (s)	7.9	7.4	7.6	6.8	6.8	6.2	5.5	5.4	3.2	3.2
Degree Utilization, x	0.09	0.10	0.09	0.04	0.38	0.11	0.76	1.0	0.70	0.70
Capacity (veh/h)	436	465	457	506	513	556	649	677	1120	1120
Control Delay (s)	10.4	10.0	10.1	8.8	12.7	8.8	22.3	157.5	12.0	12.0
Approach Delay (s)	10.2		9.7		11.8		56.4			
Approach LOS	B		A		B		F			

Intersection Summary			
Delay	50.8		
Level of Service	F		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	2	12	227	172	952	66
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.87			1.00	0.99	
Flt Protected	0.99			0.97	1.00	
Satd. Flow (prot)	2963			3260	3320	
Flt Permitted	0.99			0.60	1.00	
Satd. Flow (perm)	2963			2027	3320	
Peak-hour factor, PHF	0.34	0.34	0.74	0.74	0.87	0.87
Adj. Flow (vph)	6	35	307	232	1094	76
RTOR Reduction (vph)	23	0	0	0	8	0
Lane Group Flow (vph)	18	0	0	539	1162	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	16.1			22.3	22.3	
Effective Green, g (s)	16.1			22.3	22.3	
Actuated g/C Ratio	0.35			0.48	0.48	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1028			974	1595	
v/s Ratio Prot	c0.01				c0.35	
v/s Ratio Perm				0.27		
v/c Ratio	0.02			2.03dl	0.73	
Uniform Delay, d1	10.0			8.5	9.6	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.7	1.7	
Delay (s)	10.0			9.2	11.3	
Level of Service	A			A	B	
Approach Delay (s)	10.0			9.2	11.3	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	10.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	46.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.
c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	86	187	324	110	376	69	489	188	26	46	242	102
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.93	0.85	1.00	0.98		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2988	1365	1583	3275		2891	3293		1583	3204	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2988	1365	1583	3275		2891	3293		1583	3204	
Peak-hour factor, PHF	0.81	0.81	0.81	0.73	0.73	0.73	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	106	231	400	151	515	95	611	235	32	54	285	120
RTOR Reduction (vph)	0	151	96	0	21	0	0	14	0	0	69	0
Lane Group Flow (vph)	106	280	104	151	589	0	611	253	0	54	336	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	4.7	16.9	32.8	6.0	18.2		15.9	25.5		4.1	13.7	
Effective Green, g (s)	4.7	16.9	32.8	6.0	18.2		15.9	25.5		4.1	13.7	
Actuated g/C Ratio	0.07	0.25	0.48	0.09	0.27		0.23	0.37		0.06	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	108	737	733	138	870		671	1225		94	640	
v/s Ratio Prot	0.07	0.09	0.03	c0.10	c0.18		c0.21	0.08		0.03	c0.10	
v/s Ratio Perm			0.04									
v/c Ratio	0.98	0.38	0.14	1.09	0.68		0.91	0.21		0.57	0.53	
Uniform Delay, d1	31.9	21.4	10.0	31.2	22.5		25.6	14.6		31.4	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	80.3	1.5	0.1	104.1	4.2		16.6	0.1		8.2	0.8	
Delay (s)	112.2	22.9	10.1	135.3	26.7		42.2	14.7		39.6	25.3	
Level of Service	F	C	B	F	C		D	B		D	C	
Approach Delay (s)		32.3			48.3			33.8			27.0	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	36.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	299	698	137	89	317	192	303	1113	202	157	1136	692
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4706		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4706		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	325	759	149	97	345	209	329	1210	220	171	1235	752
RTOR Reduction (vph)	0	0	105	0	0	39	0	28	0	0	0	32
Lane Group Flow (vph)	325	759	44	97	345	170	329	1402	0	171	1235	720
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	14.2	20.0	26.0	16.8	22.6	32.6	10.0	30.0		6.0	26.0	42.8
Effective Green, g (s)	14.2	20.0	26.0	16.8	22.6	32.6	10.0	30.0		6.0	26.0	42.8
Actuated g/C Ratio	0.16	0.23	0.29	0.19	0.25	0.37	0.11	0.34		0.07	0.29	0.48
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	462	755	506	546	853	618	325	1589		195	1410	790
v/s Ratio Prot	0.11	c0.23	0.01	0.03	c0.10	0.03	c0.11	c0.30		0.06	0.26	c0.17
v/s Ratio Perm			0.02			0.08						0.31
v/c Ratio	0.70	1.01	0.09	0.18	0.40	0.28	1.01	0.88		0.88	0.88	0.91
Uniform Delay, d1	35.3	34.4	22.8	30.2	27.5	19.8	39.4	27.7		41.0	29.9	21.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.8	34.1	0.1	0.2	0.3	0.2	53.1	7.4		32.7	7.9	14.7
Delay (s)	40.1	68.5	22.9	30.4	27.8	20.0	92.5	35.2		73.8	37.8	36.0
Level of Service	D	E	C	C	C	C	F	D		E	D	D
Approach Delay (s)		55.5			25.7			45.9			40.0	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	88.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	383	1	38	1109	476	0	3	0	91	0	63
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	239	485	1	41	1192	512	0	12	0	138	0	95
RTOR Reduction (vph)	0	0	1	0	0	252	0	0	0	0	0	78
Lane Group Flow (vph)	239	485	0	41	1192	260	0	12	0	69	69	17
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.0	39.4	39.4	4.2	30.6	46.6		16.0		16.0	16.0	16.0
Effective Green, g (s)	13.0	39.4	39.4	4.2	30.6	46.6		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.14	0.43	0.43	0.05	0.33	0.51		0.17		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	224	1442	645	72	1120	763		308		262	278	262
v/s Ratio Prot	c0.15	0.14		0.03	c0.36	c0.06		c0.01		0.05	0.04	
v/s Ratio Perm			0.00			0.11						0.01
v/c Ratio	1.07	0.34	0.00	0.57	1.06	0.34		0.04		0.26	0.25	0.06
Uniform Delay, d1	39.3	17.4	14.9	42.8	30.5	13.4		31.4		32.7	32.6	31.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	79.0	0.1	0.0	9.9	45.8	0.3		0.2		2.4	2.1	0.5
Delay (s)	118.3	17.5	14.9	52.8	76.3	13.6		31.6		35.1	34.7	32.0
Level of Service	F	B	B	D	E	B		C		D	C	C
Approach Delay (s)		50.7			57.3			31.6			33.7	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
51: Temple Avenue & South Campus Drive

4/17/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	312	15	16	1281	353	53	20	14	123	52	636
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1583	4785		1583	3353	1500	1583	3144		1504	1642	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1583	4785		1583	3353	1500	1583	3144		1504	1642	1500
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	296	380	18	17	1348	372	65	24	17	138	58	715
RTOR Reduction (vph)	0	4	0	0	0	175	0	14	0	0	0	124
Lane Group Flow (vph)	296	394	0	17	1348	197	65	27	0	97	99	591
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	51.0		16.0	46.0	46.0	17.0	17.0		12.1	12.1	33.1
Effective Green, g (s)	23.0	53.0		18.0	48.0	48.0	19.0	19.0		14.1	14.1	37.1
Actuated g/C Ratio	0.21	0.47		0.16	0.43	0.43	0.17	0.17		0.13	0.13	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	2262		254	1435	642	268	532		189	206	523
v/s Ratio Prot	0.19	0.08		0.01	c0.40		c0.04	0.01		0.06	0.06	c0.23
v/s Ratio Perm						0.13						0.16
v/c Ratio	0.91	0.17		0.07	0.94	0.31	0.24	0.05		0.51	0.48	1.13
Uniform Delay, d1	43.6	17.0		39.9	30.7	21.1	40.3	39.0		45.8	45.6	37.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	28.9	0.0		0.5	12.0	0.3	2.1	0.2		2.3	1.8	80.0
Delay (s)	72.4	17.0		40.4	42.6	21.4	42.5	39.2		48.1	47.4	117.5
Level of Service	E	B		D	D	C	D	D		D	D	F
Approach Delay (s)		40.7			38.1			41.2			102.5	
Approach LOS		D			D			D			F	

Intersection Summary			
HCM 2000 Control Delay	55.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	99	240	72	50	1288	120	180	320	62	77	553	257
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4651		1583	4756		1583	3353	1500	1583	3353	1500
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4651		1583	4756		1583	3353	1500	1583	3353	1500
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.65	0.65	0.65	0.88	0.88	0.88
Adj. Flow (vph)	127	308	92	56	1431	133	277	492	95	88	628	292
RTOR Reduction (vph)	0	58	0	0	13	0	0	0	67	0	0	170
Lane Group Flow (vph)	127	342	0	56	1551	0	277	492	28	88	628	122
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	7.0	30.4		4.2	27.6		15.0	24.2	24.2	7.6	16.8	16.8
Effective Green, g (s)	7.0	30.4		4.2	27.6		15.0	24.2	24.2	7.6	16.8	16.8
Actuated g/C Ratio	0.08	0.37		0.05	0.33		0.18	0.29	0.29	0.09	0.20	0.20
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	134	1715		80	1593		288	984	440	146	683	305
v/s Ratio Prot	c0.08	c0.07		0.04	c0.33		c0.17	0.15		0.06	c0.19	
v/s Ratio Perm									0.02			0.08
v/c Ratio	0.95	0.20		0.70	0.97		0.96	0.50	0.06	0.60	0.92	0.40
Uniform Delay, d1	37.5	17.7		38.5	27.0		33.4	24.1	20.9	35.9	32.1	28.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	61.2	0.1		23.4	16.5		42.5	1.8	0.3	6.8	19.5	3.9
Delay (s)	98.7	17.8		61.9	43.6		75.9	25.9	21.2	42.8	51.7	32.3
Level of Service	F	B		E	D		E	C	C	D	D	C
Approach Delay (s)		37.3			44.2			41.4			45.3	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	526	22	11	1054	0	0	0	1	547	4	729
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		0.99		1.00	1.00				0.86	1.00	0.89	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (prot)		4789		1583	4818				1526	1504	1409	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (perm)		4789		1583	4818				1526	1504	1409	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	572	24	12	1146	0	0	0	1	595	4	792
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	1	0	13	54
Lane Group Flow (vph)	0	590	0	12	1146	0	0	0	0	482	445	397
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		22.7		0.8	27.5				24.2	24.2	24.2	24.2
Effective Green, g (s)		22.7		0.8	27.5				24.2	24.2	24.2	24.2
Actuated g/C Ratio		0.38		0.01	0.46				0.41	0.41	0.41	0.41
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1820		21	2219				618	609	571	577
v/s Ratio Prot		0.12		0.01	c0.24							
v/s Ratio Perm									0.00	c0.32	0.32	0.28
v/c Ratio		0.32		0.57	0.52				0.00	0.79	0.78	0.69
Uniform Delay, d1		13.1		29.3	11.4				10.6	15.5	15.4	14.6
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5		32.5	0.9				0.0	7.0	6.7	3.4
Delay (s)		13.6		61.8	12.3				10.6	22.5	22.1	18.0
Level of Service		B		E	B				B	C	C	B
Approach Delay (s)		13.6			12.8			10.6			20.9	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	59.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	680	0	0	1580	366	281
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.97	0.85
Flt Protected		1.00			1.00	0.96	1.00
Satd. Flow (prot)		4818			4818	3201	1365
Flt Permitted		1.00			1.00	0.96	1.00
Satd. Flow (perm)		4818			4818	3201	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	739	0	0	1717	398	305
RTOR Reduction (vph)	0	0	0	0	0	55	66
Lane Group Flow (vph)	0	739	0	0	1717	428	154
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		16.2			16.2	10.2	10.2
Effective Green, g (s)		16.2			16.2	10.2	10.2
Actuated g/C Ratio		0.47			0.47	0.30	0.30
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2268			2268	949	404
v/s Ratio Prot		0.15			c0.36		
v/s Ratio Perm						c0.13	0.11
v/c Ratio		0.33			0.76	0.45	0.38
Uniform Delay, d1		5.7			7.5	9.8	9.6
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		0.4			2.4	0.3	0.6
Delay (s)		6.1			9.9	10.2	10.2
Level of Service		A			A	B	B
Approach Delay (s)		6.1			9.9	10.2	
Approach LOS		A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	34.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	53.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	691	14	79	22	20	55	28	506	11	11	331	217
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.78	0.84	0.84	0.84	0.95	0.95	0.95
Hourly flow rate (vph)	853	17	98	28	26	71	33	602	13	12	348	228

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2	SW 3	SW 4
Volume Total (vph)	569	399	54	71	335	314	128	232	114	114
Volume Left (vph)	569	284	28	0	33	0	12	0	0	0
Volume Right (vph)	0	98	0	71	0	13	0	0	114	114
Hadj (s)	0.53	0.22	0.30	-0.67	0.08	0.00	0.08	0.03	-0.67	-0.67
Departure Headway (s)	8.2	7.9	9.2	8.3	8.0	7.9	8.5	8.4	3.2	3.2
Degree Utilization, x	1.0	0.87	0.14	0.16	0.74	0.69	0.30	0.54	0.10	0.10
Capacity (veh/h)	430	452	372	411	442	445	412	410	1121	1121
Control Delay (s)	171.4	43.6	12.5	11.7	29.3	25.4	13.8	19.8	5.4	5.4
Approach Delay (s)	118.7		12.1		27.4		12.9			
Approach LOS	F		B		D		B			

Intersection Summary			
Delay	60.8		
Level of Service	F		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	134	331	51	417	450	15
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.89			1.00	1.00	
Flt Protected	0.99			0.99	1.00	
Satd. Flow (prot)	3015			3335	3336	
Flt Permitted	0.99			0.86	1.00	
Satd. Flow (perm)	3015			2877	3336	
Peak-hour factor, PHF	0.79	0.79	0.87	0.87	0.90	0.90
Adj. Flow (vph)	170	419	59	479	500	17
RTOR Reduction (vph)	151	0	0	0	6	0
Lane Group Flow (vph)	438	0	0	538	511	0
Turn Type	Prot		Perm	NA	NA	
Protected Phases	6			4	8	
Permitted Phases			4			
Actuated Green, G (s)	18.2			13.1	13.1	
Effective Green, g (s)	18.2			13.1	13.1	
Actuated g/C Ratio	0.46			0.33	0.33	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1396			959	1112	
v/s Ratio Prot	c0.15				0.15	
v/s Ratio Perm				c0.19		
v/c Ratio	0.31			0.56	0.46	
Uniform Delay, d1	6.6			10.7	10.3	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.8	0.3	
Delay (s)	7.2			11.5	10.6	
Level of Service	A			B	B	
Approach Delay (s)	7.2			11.5	10.6	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	9.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	39.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	49	253	565	45	233	83	352	252	24	20	112	48
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.96		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2958	1365	1583	3221		2891	3309		1583	3203	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2958	1365	1583	3221		2891	3309		1583	3203	
Peak-hour factor, PHF	0.73	0.73	0.73	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85
Adj. Flow (vph)	67	347	774	54	281	100	409	293	28	24	132	56
RTOR Reduction (vph)	0	269	184	0	47	0	0	11	0	0	46	0
Lane Group Flow (vph)	67	465	203	54	334	0	409	310	0	24	142	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	2.7	18.4	31.6	2.2	17.9		13.2	22.3		1.4	10.5	
Effective Green, g (s)	2.7	18.4	31.6	2.2	17.9		13.2	22.3		1.4	10.5	
Actuated g/C Ratio	0.04	0.31	0.52	0.04	0.30		0.22	0.37		0.02	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	70	902	805	57	956		632	1223		36	557	
v/s Ratio Prot	c0.04	c0.16	0.06	0.03	0.10		c0.14	c0.09		0.02	0.04	
v/s Ratio Perm			0.09									
v/c Ratio	0.96	0.52	0.25	0.95	0.35		0.65	0.25		0.67	0.25	
Uniform Delay, d1	28.7	17.3	7.9	29.0	16.6		21.4	13.2		29.2	21.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	91.8	2.1	0.2	99.1	1.0		2.3	0.1		38.0	0.2	
Delay (s)	120.5	19.4	8.0	128.1	17.6		23.7	13.3		67.2	21.8	
Level of Service	F	B	A	F	B		C	B		E	C	
Approach Delay (s)		21.4			31.4			19.1			26.9	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	60.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	47.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	301	465	226	292	575	173	230	859	258	242	1117	368
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	327	505	246	317	625	188	250	934	280	263	1214	400
RTOR Reduction (vph)	0	0	56	0	0	56	0	83	0	0	0	49
Lane Group Flow (vph)	327	505	190	317	625	132	250	1131	0	263	1214	351
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0	15.3	21.3	8.0	15.3	21.3	6.0	19.0		6.0	19.0	27.0
Effective Green, g (s)	8.0	15.3	21.3	8.0	15.3	21.3	6.0	19.0		6.0	19.0	27.0
Actuated g/C Ratio	0.12	0.24	0.33	0.12	0.24	0.33	0.09	0.30		0.09	0.30	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	359	797	590	359	797	590	269	1374		269	1423	723
v/s Ratio Prot	c0.11	0.15	0.03	0.11	c0.19	0.02	0.09	0.24		c0.09	c0.25	0.06
v/s Ratio Perm			0.10			0.07						0.17
v/c Ratio	0.91	0.63	0.32	0.88	0.78	0.22	0.93	0.82		0.98	0.85	0.49
Uniform Delay, d1	27.8	22.0	16.1	27.7	23.0	15.5	28.9	21.1		29.1	21.3	13.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.4	1.7	0.3	21.7	5.1	0.2	36.0	5.7		48.2	6.7	0.5
Delay (s)	54.2	23.6	16.4	49.4	28.0	15.7	64.9	26.8		77.2	28.0	14.1
Level of Service	D	C	B	D	C	B	E	C		E	C	B
Approach Delay (s)		31.3			32.0			33.3			31.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	32.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	94	669	1	10	561	208	2	5	2	371	3	108
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1598	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1598	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	111	787	1	11	638	236	3	7	3	571	5	166
RTOR Reduction (vph)	0	0	1	0	0	123	0	2	0	0	0	130
Lane Group Flow (vph)	111	787	0	11	638	113	3	8	0	285	291	36
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0	24.0	24.0	0.8	18.8	34.8	16.0	16.0		16.0	16.0	16.0
Effective Green, g (s)	6.0	24.0	24.0	0.8	18.8	34.8	16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.08	0.33	0.33	0.01	0.26	0.48	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	1105	494	17	865	717	347	370		330	351	329
v/s Ratio Prot	c0.07	c0.23		0.01	0.19	0.03	0.00	c0.00		c0.19	0.18	
v/s Ratio Perm			0.00			0.04						0.02
v/c Ratio	0.85	0.71	0.00	0.65	0.74	0.16	0.01	0.02		0.86	0.83	0.11
Uniform Delay, d1	33.0	21.4	16.4	35.9	24.7	10.7	22.2	22.3		27.3	27.1	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	38.7	2.2	0.0	62.0	3.3	0.1	0.0	0.1		24.6	19.8	0.7
Delay (s)	71.7	23.6	16.4	97.9	28.1	10.8	22.2	22.4		52.0	46.9	23.4
Level of Service	E	C	B	F	C	B	C	C		D	D	C
Approach Delay (s)		29.5			24.3			22.3			43.6	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay	31.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	51.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	398	1116	51	41	674	280	29	54	48	530	30	296
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1583	4786		1583	3353	1500	1583	3116		1504	1605	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	1583	4786		1583	3353	1500	1583	3116		1504	1605	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	433	1213	55	46	757	315	34	63	56	791	45	442
RTOR Reduction (vph)	0	5	0	0	0	246	0	45	0	0	0	222
Lane Group Flow (vph)	433	1263	0	46	757	69	34	74	0	419	417	220
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	36.6		3.0	18.6	18.6	17.0	17.0		22.0	22.0	43.0
Effective Green, g (s)	23.0	38.6		5.0	20.6	20.6	19.0	19.0		24.0	24.0	47.0
Actuated g/C Ratio	0.24	0.41		0.05	0.22	0.22	0.20	0.20		0.25	0.25	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	1952		83	730	326	317	625		381	407	776
v/s Ratio Prot	c0.27	0.26		0.03	c0.23		0.02	c0.02		c0.28	0.26	0.07
v/s Ratio Perm						0.05						0.08
v/c Ratio	1.13	0.65		0.55	1.04	0.21	0.11	0.12		1.10	1.02	0.28
Uniform Delay, d1	35.8	22.5		43.7	37.0	30.3	30.9	30.9		35.3	35.3	13.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	85.3	0.7		7.8	43.2	0.3	0.7	0.4		75.7	51.0	0.2
Delay (s)	121.1	23.3		51.5	80.2	30.7	31.6	31.3		111.0	86.3	14.1
Level of Service	F	C		D	F	C	C	C		F	F	B
Approach Delay (s)		48.2			65.1			31.4			69.5	
Approach LOS		D			E			C			E	

Intersection Summary			
HCM 2000 Control Delay	58.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	153	876	198	68	648	110	189	633	49	154	316	125
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4684		1583	4713		1583	3353	1500	1583	3353	1500
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4684		1583	4713		1583	3353	1500	1583	3353	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.82	0.82	0.82	0.96	0.96	0.96	0.79	0.79	0.79
Adj. Flow (vph)	194	1109	251	83	790	134	197	659	51	195	400	158
RTOR Reduction (vph)	0	52	0	0	34	0	0	0	38	0	0	117
Lane Group Flow (vph)	194	1308	0	83	890	0	197	659	13	195	400	41
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	22.0		4.0	16.0		10.0	18.0	18.0	10.0	18.0	18.0
Effective Green, g (s)	10.0	22.0		4.0	16.0		10.0	18.0	18.0	10.0	18.0	18.0
Actuated g/C Ratio	0.14	0.31		0.06	0.23		0.14	0.26	0.26	0.14	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	226	1472		90	1077		226	862	385	226	862	385
v/s Ratio Prot	c0.12	c0.28		0.05	0.19		c0.12	c0.20		0.12	0.12	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.86	0.89		0.92	0.83		0.87	0.76	0.03	0.86	0.46	0.11
Uniform Delay, d1	29.3	22.8		32.8	25.7		29.4	24.0	19.5	29.3	21.9	19.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	26.0	6.9		69.4	5.3		28.6	6.4	0.2	27.0	1.8	0.6
Delay (s)	55.4	29.8		102.2	31.0		58.0	30.4	19.6	56.4	23.7	20.4
Level of Service	E	C		F	C		E	C	B	E	C	C
Approach Delay (s)		32.9			36.9			35.8			31.5	
Approach LOS		C			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	34.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	2080	28	12	547	0	0	0	9	832	9	439
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00				0.86	1.00	0.98	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (prot)		4808		1583	4818				1526	1504	1515	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (perm)		4808		1583	4818				1526	1504	1515	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2261	30	13	595	0	0	0	10	904	10	477
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	7	0	5	194
Lane Group Flow (vph)	0	2290	0	13	595	0	0	0	3	488	469	235
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Effective Green, g (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Actuated g/C Ratio		0.54		0.01	0.59				0.32	0.32	0.32	0.32
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2600		13	2853				491	484	487	458
v/s Ratio Prot		c0.48		c0.01	0.12							
v/s Ratio Perm									0.00	c0.32	0.31	0.16
v/c Ratio		0.88		1.00	0.21				0.01	1.01	0.96	0.51
Uniform Delay, d1		18.8		46.2	8.8				21.5	31.6	31.1	25.7
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		4.7		249.6	0.2				0.0	43.0	31.4	1.0
Delay (s)		23.5		295.8	9.0				21.5	74.6	62.5	26.6
Level of Service		C		F	A				C	E	E	C
Approach Delay (s)		23.5			15.1			21.5			55.7	
Approach LOS		C			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	32.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	1866	0	0	900	136	240
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.93	0.85
Flt Protected		1.00			1.00	0.97	1.00
Satd. Flow (prot)		4818			4818	3100	1365
Flt Permitted		1.00			1.00	0.97	1.00
Satd. Flow (perm)		4818			4818	3100	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2028	0	0	978	148	261
RTOR Reduction (vph)	0	0	0	0	0	4	4
Lane Group Flow (vph)	0	2028	0	0	978	275	126
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		28.7			28.7	10.0	10.0
Effective Green, g (s)		28.7			28.7	10.0	10.0
Actuated g/C Ratio		0.61			0.61	0.21	0.21
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2960			2960	663	292
v/s Ratio Prot		c0.42			0.20		
v/s Ratio Perm						0.09	c0.09
v/c Ratio		0.69			0.33	0.41	0.43
Uniform Delay, d1		6.0			4.4	15.8	15.9
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		1.3			0.3	0.4	1.0
Delay (s)		7.3			4.7	16.2	16.9
Level of Service		A			A	B	B
Approach Delay (s)		7.3			4.7	16.5	
Approach LOS		A			A	B	

Intersection Summary			
HCM 2000 Control Delay	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	46.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	55	11	9	6	23	13	108	63	15	58	1044	1328
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00		0.95			0.95	0.88
Frt	1.00	0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	0.98			0.99	1.00		0.97			1.00	1.00
Satd. Flow (prot)	1504	1579			1746	1500		3218			3344	2640
Flt Permitted	0.95	0.98			0.99	1.00		0.56			0.92	1.00
Satd. Flow (perm)	1504	1579			1746	1500		1853			3069	2640
Peak-hour factor, PHF	0.70	0.70	0.70	0.63	0.63	0.63	0.66	0.66	0.66	0.78	0.78	0.78
Adj. Flow (vph)	79	16	13	10	37	21	164	95	23	74	1338	1703
RTOR Reduction (vph)	0	10	0	0	0	19	0	7	0	0	0	371
Lane Group Flow (vph)	55	43	0	0	47	2	0	275	0	0	1412	1332
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	6	6		2	2			4			8	6
Permitted Phases						2	4			8		8
Actuated Green, G (s)	15.8	15.8			7.6	7.6		42.5			42.5	58.3
Effective Green, g (s)	15.8	15.8			7.6	7.6		42.5			42.5	58.3
Actuated g/C Ratio	0.20	0.20			0.10	0.10		0.55			0.55	0.75
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	305	320			170	146		1010			1674	2111
v/s Ratio Prot	0.04	0.03			c0.03							c0.13
v/s Ratio Perm						0.00		0.15			c0.46	0.38
v/c Ratio	0.18	0.13			0.28	0.01		1.67dl			0.84	0.63
Uniform Delay, d1	25.7	25.4			32.6	31.8		9.4			14.9	4.7
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.3	0.2			0.9	0.0		0.1			4.1	0.6
Delay (s)	26.0	25.6			33.5	31.8		9.6			19.0	5.3
Level of Service	C	C			C	C		A			B	A
Approach Delay (s)		25.8			33.0			9.6			11.5	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	12.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	77.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	10	20	278	179	990	95
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.90			1.00	0.99	
Flt Protected	0.98			0.97	1.00	
Satd. Flow (prot)	3029			3254	3309	
Flt Permitted	0.98			0.61	1.00	
Satd. Flow (perm)	3029			2054	3309	
Peak-hour factor, PHF	0.34	0.34	0.74	0.74	0.87	0.87
Adj. Flow (vph)	29	59	376	242	1138	109
RTOR Reduction (vph)	39	0	0	0	11	0
Lane Group Flow (vph)	49	0	0	618	1236	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	16.1			23.2	23.2	
Effective Green, g (s)	16.1			23.2	23.2	
Actuated g/C Ratio	0.34			0.49	0.49	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1031			1007	1623	
v/s Ratio Prot	c0.02				c0.37	
v/s Ratio Perm				0.30		
v/c Ratio	0.05			2.52dl	0.76	
Uniform Delay, d1	10.5			8.8	9.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			1.1	2.2	
Delay (s)	10.5			9.9	12.0	
Level of Service	B			A	B	
Approach Delay (s)	10.5			9.9	12.0	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	226	337	115	393	78	509	197	33	60	259	110
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.94	0.85	1.00	0.98		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	3011	1365	1583	3270		2891	3281		1583	3203	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	3011	1365	1583	3270		2891	3281		1583	3203	
Peak-hour factor, PHF	0.81	0.81	0.81	0.73	0.73	0.73	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	111	279	416	158	538	107	636	246	41	71	305	129
RTOR Reduction (vph)	0	153	87	0	24	0	0	19	0	0	69	0
Lane Group Flow (vph)	111	326	129	158	621	0	636	268	0	71	365	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	6.0	16.0	32.0	6.0	16.0		16.0	26.1		4.1	14.2	
Effective Green, g (s)	6.0	16.0	32.0	6.0	16.0		16.0	26.1		4.1	14.2	
Actuated g/C Ratio	0.09	0.23	0.47	0.09	0.23		0.23	0.38		0.06	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	706	720	139	767		678	1255		95	666	
v/s Ratio Prot	0.07	0.11	0.04	c0.10	c0.19		c0.22	0.08		0.04	c0.11	
v/s Ratio Perm			0.05									
v/c Ratio	0.80	0.46	0.18	1.14	0.81		0.94	0.21		0.75	0.55	
Uniform Delay, d1	30.5	22.4	10.5	31.1	24.7		25.6	14.2		31.5	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.5	2.2	0.1	117.8	9.0		20.6	0.1		27.0	0.9	
Delay (s)	57.0	24.6	10.6	148.9	33.7		46.2	14.2		58.5	25.1	
Level of Service	E	C	B	F	C		D	B		E	C	
Approach Delay (s)		25.3			56.4			36.2			29.8	
Approach LOS		C			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	37.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	311	750	142	93	330	200	315	1158	210	163	1181	720
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4707		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4707		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	815	154	101	359	217	342	1259	228	177	1284	783
RTOR Reduction (vph)	0	0	108	0	0	38	0	29	0	0	0	31
Lane Group Flow (vph)	338	815	46	101	359	179	342	1458	0	177	1284	752
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	14.5	20.0	26.0	17.7	23.2	33.2	10.0	30.0		6.0	26.0	43.7
Effective Green, g (s)	14.5	20.0	26.0	17.7	23.2	33.2	10.0	30.0		6.0	26.0	43.7
Actuated g/C Ratio	0.16	0.22	0.29	0.20	0.26	0.37	0.11	0.33		0.07	0.29	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	467	747	501	570	867	622	322	1574		193	1396	797
v/s Ratio Prot	0.12	c0.24	0.01	0.03	c0.11	0.03	c0.12	c0.31		0.06	0.27	c0.19
v/s Ratio Perm			0.02			0.09						0.32
v/c Ratio	0.72	1.09	0.09	0.18	0.41	0.29	1.06	0.93		0.92	0.92	0.94
Uniform Delay, d1	35.7	34.9	23.2	29.9	27.6	19.9	39.9	28.8		41.6	30.8	21.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.5	60.5	0.1	0.1	0.3	0.3	67.5	10.9		41.7	11.3	19.3
Delay (s)	41.2	95.4	23.3	30.1	27.9	20.2	107.4	39.6		83.3	42.1	41.1
Level of Service	D	F	C	C	C	C	F	D		F	D	D
Approach Delay (s)		72.9			25.8			52.3			45.0	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	51.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	89.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	89.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	206	413	1	73	1153	582	0	3	0	112	0	69
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	261	523	1	78	1240	626	0	12	0	170	0	105
RTOR Reduction (vph)	0	0	1	0	0	310	0	0	0	0	0	86
Lane Group Flow (vph)	261	523	0	78	1240	316	0	12	0	85	85	19
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.0	37.2	37.2	5.6	29.8	45.8		16.0		16.0	16.0	16.0
Effective Green, g (s)	13.0	37.2	37.2	5.6	29.8	45.8		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.14	0.41	0.41	0.06	0.33	0.50		0.18		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	226	1373	614	97	1100	756		311		265	280	264
v/s Ratio Prot	c0.16	0.16		0.05	c0.37	c0.07		c0.01		0.06	0.05	
v/s Ratio Perm			0.00			0.14						0.01
v/c Ratio	1.15	0.38	0.00	0.80	1.13	0.42		0.04		0.32	0.30	0.07
Uniform Delay, d1	38.9	18.7	15.8	42.1	30.5	14.1		31.0		32.7	32.6	31.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	108.0	0.2	0.0	36.6	69.3	0.4		0.2		3.2	2.8	0.5
Delay (s)	146.9	18.9	15.8	78.7	99.8	14.5		31.3		35.8	35.3	31.7
Level of Service	F	B	B	E	F	B		C		D	D	C
Approach Delay (s)		61.5			71.5			31.3			34.1	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	65.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	259	346	16	22	1413	367	55	21	16	128	54	662
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1583	4785		1583	3353	1500	1583	3134		1504	1643	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1583	4785		1583	3353	1500	1583	3134		1504	1643	1500
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	316	422	20	23	1487	386	67	26	20	144	61	744
RTOR Reduction (vph)	0	4	0	0	0	164	0	17	0	0	0	120
Lane Group Flow (vph)	316	438	0	23	1487	222	67	29	0	101	104	624
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	51.0		16.0	46.0	46.0	17.0	17.0		12.3	12.3	33.3
Effective Green, g (s)	23.0	53.0		18.0	48.0	48.0	19.0	19.0		14.3	14.3	37.3
Actuated g/C Ratio	0.20	0.47		0.16	0.43	0.43	0.17	0.17		0.13	0.13	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	2258		253	1433	641	267	530		191	209	524
v/s Ratio Prot	0.20	0.09		0.01	c0.44		c0.04	0.01		0.07	0.06	c0.24
v/s Ratio Perm						0.15						0.17
v/c Ratio	0.98	0.19		0.09	1.04	0.35	0.25	0.06		0.53	0.50	1.19
Uniform Delay, d1	44.4	17.2		40.2	32.1	21.6	40.5	39.1		45.8	45.7	37.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	42.9	0.0		0.7	34.1	0.3	2.2	0.2		2.6	1.9	103.5
Delay (s)	87.3	17.3		40.9	66.3	21.9	42.7	39.3		48.5	47.5	141.0
Level of Service	F	B		D	E	C	D	D		D	D	F
Approach Delay (s)		46.5			56.9			41.3			120.9	
Approach LOS		D			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	70.7	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	261	75	52	1417	149	187	333	64	89	575	276
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.91	0.91
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4657		1583	4749		1583	3353	1500	1583	3212	1365
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4657		1583	4749		1583	3353	1500	1583	3212	1365
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.65	0.65	0.65	0.88	0.88	0.88
Adj. Flow (vph)	142	335	96	58	1574	166	288	512	98	101	653	314
RTOR Reduction (vph)	0	42	0	0	10	0	0	0	58	0	0	126
Lane Group Flow (vph)	142	389	0	58	1730	0	288	512	40	101	653	188
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.0	47.3		8.7	45.0		21.0	36.1	44.8	11.9	27.0	27.0
Effective Green, g (s)	13.0	49.3		10.7	47.0		23.0	38.1	48.8	13.9	29.0	29.0
Actuated g/C Ratio	0.11	0.41		0.09	0.39		0.19	0.32	0.41	0.12	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	1913		141	1860		303	1064	635	183	776	329
v/s Ratio Prot	c0.09	0.08		0.04	c0.36		c0.18	0.15	0.01	0.06	c0.20	
v/s Ratio Perm									0.02			0.14
v/c Ratio	0.83	0.20		0.41	0.93		0.95	0.48	0.06	0.55	0.84	0.57
Uniform Delay, d1	52.4	22.7		51.7	34.9		47.9	33.0	21.7	50.1	43.3	40.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	27.6	0.1		1.9	8.8		38.5	1.6	0.0	3.6	10.7	7.0
Delay (s)	80.0	22.8		53.6	43.7		86.4	34.5	21.7	53.7	54.0	47.1
Level of Service	E	C		D	D		F	C	C	D	D	D
Approach Delay (s)		37.0			44.0			49.8			51.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	558	23	11	1152	0	0	0	1	569	4	758
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		0.99		1.00	1.00				0.86	1.00	0.89	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (prot)		4789		1583	4818				1526	1504	1409	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (perm)		4789		1583	4818				1526	1504	1409	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	607	25	12	1252	0	0	0	1	618	4	824
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	1	0	9	53
Lane Group Flow (vph)	0	626	0	12	1252	0	0	0	0	501	466	417
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		22.6		0.8	27.4				25.0	25.0	25.0	25.0
Effective Green, g (s)		22.6		0.8	27.4				25.0	25.0	25.0	25.0
Actuated g/C Ratio		0.37		0.01	0.45				0.41	0.41	0.41	0.41
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1791		20	2185				631	622	583	589
v/s Ratio Prot		0.13		0.01	c0.26							
v/s Ratio Perm									0.00	c0.33	0.33	0.29
v/c Ratio		0.35		0.60	0.57				0.00	0.81	0.80	0.71
Uniform Delay, d1		13.6		29.6	12.2				10.4	15.6	15.5	14.7
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5		40.2	1.1				0.0	7.5	7.6	3.9
Delay (s)		14.1		69.8	13.3				10.4	23.1	23.1	18.5
Level of Service		B		E	B				B	C	C	B
Approach Delay (s)		14.1			13.8			10.4			21.6	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	60.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	718	0	0	1699	381	292
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.97	0.85
Flt Protected		1.00			1.00	0.96	1.00
Satd. Flow (prot)		4818			4818	3201	1365
Flt Permitted		1.00			1.00	0.96	1.00
Satd. Flow (perm)		4818			4818	3201	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	780	0	0	1847	414	317
RTOR Reduction (vph)	0	0	0	0	0	55	56
Lane Group Flow (vph)	0	780	0	0	1847	448	172
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		16.1			16.1	10.6	10.6
Effective Green, g (s)		16.1			16.1	10.6	10.6
Actuated g/C Ratio		0.46			0.46	0.31	0.31
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2235			2235	977	416
v/s Ratio Prot		0.16			c0.38		
v/s Ratio Perm						c0.14	0.13
v/c Ratio		0.35			0.83	0.46	0.41
Uniform Delay, d1		5.9			8.1	9.7	9.6
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		0.4			3.7	0.3	0.7
Delay (s)		6.4			11.7	10.1	10.2
Level of Service		A			B	B	B
Approach Delay (s)		6.4			11.7	10.1	
Approach LOS		A			B	B	

Intersection Summary			
HCM 2000 Control Delay	10.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	34.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
29: University Drive & Kellogg Drive

7/29/2014

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	754	15	82	30	21	65	29	526	16	13	344	244
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00		0.95			0.95	0.88
Frt	1.00	0.97			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	0.96			0.97	1.00		1.00			1.00	1.00
Satd. Flow (prot)	1504	1567			1715	1500		3330			3347	2640
Flt Permitted	0.95	0.96			0.97	1.00		0.92			0.92	1.00
Satd. Flow (perm)	1504	1567			1715	1500		3066			3097	2640
Peak-hour factor, PHF	0.81	0.81	0.81	0.78	0.78	0.78	0.84	0.84	0.84	0.95	0.95	0.95
Adj. Flow (vph)	931	19	101	38	27	83	35	626	19	14	362	257
RTOR Reduction (vph)	0	10	0	0	0	60	0	2	0	0	0	75
Lane Group Flow (vph)	531	510	0	0	65	23	0	678	0	0	376	182
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	6	6		2	2			4			8	6
Permitted Phases						2	4			8		8
Actuated Green, G (s)	29.1	29.1			8.0	8.0		19.4			19.4	48.5
Effective Green, g (s)	29.1	29.1			8.0	8.0		19.4			19.4	48.5
Actuated g/C Ratio	0.42	0.42			0.12	0.12		0.28			0.28	0.71
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	638	665			200	175		868			877	2023
v/s Ratio Prot	c0.35	0.33			c0.04							0.04
v/s Ratio Perm						0.02		c0.22			0.12	0.03
v/c Ratio	0.83	0.77			0.33	0.13		0.78			0.43	0.09
Uniform Delay, d1	17.5	16.8			27.8	27.1		22.6			20.0	3.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	9.1	5.3			1.0	0.3		4.6			0.3	0.0
Delay (s)	26.6	22.1			28.7	27.5		27.2			20.4	3.1
Level of Service	C	C			C	C		C			C	A
Approach Delay (s)		24.4			28.0			27.2			13.4	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	171	373	71	434	468	26
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.90			1.00	0.99	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	3024			3329	3326	
Flt Permitted	0.98			0.82	1.00	
Satd. Flow (perm)	3024			2748	3326	
Peak-hour factor, PHF	0.79	0.79	0.87	0.87	0.90	0.90
Adj. Flow (vph)	216	472	82	499	520	29
RTOR Reduction (vph)	177	0	0	0	8	0
Lane Group Flow (vph)	511	0	0	581	541	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	18.2			14.6	14.6	
Effective Green, g (s)	18.2			14.6	14.6	
Actuated g/C Ratio	0.45			0.36	0.36	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1348			983	1190	
v/s Ratio Prot	c0.17				0.16	
v/s Ratio Perm				c0.21		
v/c Ratio	0.38			0.59	0.45	
Uniform Delay, d1	7.5			10.7	10.0	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.8			1.0	0.3	
Delay (s)	8.3			11.6	10.3	
Level of Service	A			B	B	
Approach Delay (s)	8.3			11.6	10.3	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	10.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	40.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
19: Kellogg Drive & South Campus Drive

5/19/2014

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	57	268	588	52	253	115	366	267	26	23	119	52
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.95		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2960	1365	1583	3195		2891	3309		1583	3200	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2960	1365	1583	3195		2891	3309		1583	3200	
Peak-hour factor, PHF	0.73	0.73	0.73	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85
Adj. Flow (vph)	78	367	805	63	305	139	426	310	30	27	140	61
RTOR Reduction (vph)	0	268	194	0	71	0	0	11	0	0	50	0
Lane Group Flow (vph)	78	502	208	63	373	0	426	329	0	27	151	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	3.8	18.4	31.8	3.0	17.6		13.4	22.6		1.5	10.7	
Effective Green, g (s)	3.8	18.4	31.8	3.0	17.6		13.4	22.6		1.5	10.7	
Actuated g/C Ratio	0.06	0.30	0.52	0.05	0.29		0.22	0.37		0.02	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	97	885	794	77	914		629	1215		38	556	
v/s Ratio Prot	c0.05	c0.17	0.06	0.04	0.12		c0.15	c0.10		0.02	0.05	
v/s Ratio Perm			0.10									
v/c Ratio	0.80	0.57	0.26	0.82	0.41		0.68	0.27		0.71	0.27	
Uniform Delay, d1	28.5	18.2	8.3	29.0	17.7		22.1	13.7		29.8	22.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	36.6	2.6	0.2	46.6	1.4		2.9	0.1		47.3	0.3	
Delay (s)	65.1	20.8	8.5	75.6	19.1		25.0	13.8		77.0	22.3	
Level of Service	E	C	A	E	B		C	B		E	C	
Approach Delay (s)		19.6			26.1			20.0			28.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	61.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	48.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	313	496	235	304	598	180	239	893	268	252	1162	383
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	539	255	330	650	196	260	971	291	274	1263	416
RTOR Reduction (vph)	0	0	56	0	0	56	0	82	0	0	0	49
Lane Group Flow (vph)	340	539	199	330	650	140	260	1180	0	274	1263	367
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0	15.4	21.4	8.0	15.4	21.4	6.0	19.0		6.0	19.0	27.0
Effective Green, g (s)	8.0	15.4	21.4	8.0	15.4	21.4	6.0	19.0		6.0	19.0	27.0
Actuated g/C Ratio	0.12	0.24	0.33	0.12	0.24	0.33	0.09	0.30		0.09	0.30	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	359	801	591	359	801	591	269	1372		269	1421	722
v/s Ratio Prot	c0.12	0.16	0.03	0.11	c0.19	0.02	0.09	0.25		c0.09	c0.26	0.06
v/s Ratio Perm			0.10			0.07						0.18
v/c Ratio	0.95	0.67	0.34	0.92	0.81	0.24	0.97	0.86		1.02	0.89	0.51
Uniform Delay, d1	28.0	22.2	16.2	27.9	23.1	15.6	29.1	21.4		29.2	21.7	13.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.6	2.2	0.3	27.7	6.3	0.2	45.2	7.2		59.7	8.6	0.6
Delay (s)	61.6	24.5	16.5	55.6	29.4	15.8	74.3	28.7		88.9	30.3	14.4
Level of Service	E	C	B	E	C	B	E	C		F	C	B
Approach Delay (s)		33.8			34.5			36.5			35.1	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	701	1	14	583	249	2	5	2	447	3	122
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1598	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1598	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	124	825	1	16	662	283	3	7	3	688	5	188
RTOR Reduction (vph)	0	0	1	0	0	148	0	2	0	0	0	147
Lane Group Flow (vph)	124	825	0	16	662	135	3	8	0	344	349	41
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0	24.1	24.1	0.8	18.9	34.9	16.0	16.0		16.0	16.0	16.0
Effective Green, g (s)	6.0	24.1	24.1	0.8	18.9	34.9	16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.08	0.33	0.33	0.01	0.26	0.48	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	1108	495	17	869	718	347	369		330	350	329
v/s Ratio Prot	c0.08	c0.25		0.01	0.20	0.04	0.00	c0.00		c0.23	0.22	
v/s Ratio Perm			0.00			0.05						0.03
v/c Ratio	0.95	0.74	0.00	0.94	0.76	0.19	0.01	0.02		1.04	1.00	0.13
Uniform Delay, d1	33.3	21.7	16.3	36.0	24.9	10.9	22.2	22.3		28.5	28.4	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	64.3	2.8	0.0	188.5	4.0	0.1	0.0	0.1		61.0	47.4	0.8
Delay (s)	97.6	24.4	16.3	224.6	28.9	11.0	22.3	22.4		89.5	75.8	23.6
Level of Service	F	C	B	F	C	B	C	C		F	E	C
Approach Delay (s)		34.0			26.9			22.4			70.0	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	415	1218	53	44	736	291	30	56	52	551	31	313
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1583	4787		1583	3353	1500	1583	3112		1504	1605	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	1583	4787		1583	3353	1500	1583	3112		1504	1605	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	451	1324	58	49	827	327	35	65	60	822	46	467
RTOR Reduction (vph)	0	5	0	0	0	256	0	48	0	0	0	221
Lane Group Flow (vph)	451	1377	0	49	827	71	35	77	0	436	432	246
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	36.6		3.0	18.6	18.6	17.0	17.0		22.0	22.0	43.0
Effective Green, g (s)	23.0	38.6		5.0	20.6	20.6	19.0	19.0		24.0	24.0	47.0
Actuated g/C Ratio	0.24	0.41		0.05	0.22	0.22	0.20	0.20		0.25	0.25	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	1953		83	730	326	317	625		381	407	776
v/s Ratio Prot	c0.28	0.29		0.03	c0.25		0.02	c0.02		c0.29	0.27	0.08
v/s Ratio Perm						0.05						0.09
v/c Ratio	1.17	0.71		0.59	1.13	0.22	0.11	0.12		1.14	1.06	0.32
Uniform Delay, d1	35.8	23.3		43.8	37.0	30.4	30.9	31.0		35.3	35.3	14.2
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	102.7	1.2		10.7	76.3	0.3	0.7	0.4		91.5	61.8	0.2
Delay (s)	138.5	24.5		54.5	113.3	30.7	31.6	31.4		126.8	97.1	14.4
Level of Service	F	C		D	F	C	C	C		F	F	B
Approach Delay (s)		52.5			88.4			31.4			77.9	
Approach LOS		D			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	68.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	80.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	949	206	75	699	118	197	658	51	200	329	133
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.91	0.91
Frt	1.00	0.97		1.00	0.98		1.00	1.00	0.85	1.00	0.99	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4689		1583	4713		1583	3353	1500	1583	3193	1365
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4689		1583	4713		1583	3353	1500	1583	3193	1365
Peak-hour factor, PHF	0.79	0.79	0.79	0.82	0.82	0.82	0.96	0.96	0.96	0.79	0.79	0.79
Adj. Flow (vph)	201	1201	261	91	852	144	205	685	53	253	416	168
RTOR Reduction (vph)	0	38	0	0	26	0	0	0	39	0	3	113
Lane Group Flow (vph)	201	1424	0	91	970	0	205	685	14	253	430	38
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	14.6	31.0		6.0	22.4		14.3	24.0	24.0	13.0	22.7	22.7
Effective Green, g (s)	14.6	31.0		6.0	22.4		14.3	24.0	24.0	13.0	22.7	22.7
Actuated g/C Ratio	0.16	0.34		0.07	0.25		0.16	0.27	0.27	0.14	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	256	1615		105	1173		251	894	400	228	805	344
v/s Ratio Prot	c0.13	c0.30		0.06	0.21		0.13	c0.20		c0.16	0.13	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.79	0.88		0.87	0.83		0.82	0.77	0.04	1.11	0.53	0.11
Uniform Delay, d1	36.2	27.8		41.6	32.0		36.6	30.4	24.4	38.5	29.1	25.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.6	6.0		48.0	4.9		18.2	6.2	0.2	92.1	2.5	0.7
Delay (s)	50.8	33.8		89.6	36.9		54.8	36.6	24.6	130.6	31.6	26.5
Level of Service	D	C		F	D		D	D	C	F	C	C
Approach Delay (s)		35.9			41.3			39.9			60.6	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	42.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	2201	29	12	595	0	0	0	9	865	9	457
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00				0.86	1.00	0.99	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (prot)		4808		1583	4818				1526	1504	1515	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (perm)		4808		1583	4818				1526	1504	1515	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2392	32	13	647	0	0	0	10	940	10	497
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	7	0	5	172
Lane Group Flow (vph)	0	2423	0	13	647	0	0	0	3	498	497	275
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Effective Green, g (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Actuated g/C Ratio		0.54		0.01	0.59				0.32	0.32	0.32	0.32
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2600		13	2853				491	484	487	458
v/s Ratio Prot		c0.50		c0.01	0.13							
v/s Ratio Perm									0.00	c0.33	0.33	0.19
v/c Ratio		0.93		1.00	0.23				0.01	1.03	1.02	0.60
Uniform Delay, d1		19.8		46.2	8.9				21.5	31.6	31.6	26.6
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		7.6		249.6	0.2				0.0	48.5	46.2	2.1
Delay (s)		27.4		295.8	9.1				21.5	80.1	77.8	28.7
Level of Service		C		F	A				C	F	E	C
Approach Delay (s)		27.4			14.8			21.5			63.4	
Approach LOS		C			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	1979	0	0	962	141	250
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.93	0.85
Flt Protected		1.00			1.00	0.97	1.00
Satd. Flow (prot)		4818			4818	3100	1365
Flt Permitted		1.00			1.00	0.97	1.00
Satd. Flow (perm)		4818			4818	3100	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2151	0	0	1046	153	272
RTOR Reduction (vph)	0	0	0	0	0	2	2
Lane Group Flow (vph)	0	2151	0	0	1046	287	134
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		28.4			28.4	10.2	10.2
Effective Green, g (s)		28.4			28.4	10.2	10.2
Actuated g/C Ratio		0.61			0.61	0.22	0.22
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2936			2936	678	298
v/s Ratio Prot		c0.45			0.22		
v/s Ratio Perm						0.09	c0.10
v/c Ratio		0.73			0.36	0.42	0.45
Uniform Delay, d1		6.4			4.5	15.7	15.8
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		1.7			0.3	0.4	1.1
Delay (s)		8.1			4.9	16.1	16.8
Level of Service		A			A	B	B
Approach Delay (s)		8.1			4.9	16.3	
Approach LOS		A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	41	11	9	5	22	12	103	62	10	54	1137	1225
Peak Hour Factor	0.70	0.70	0.70	0.63	0.63	0.63	0.66	0.66	0.66	0.78	0.78	0.78
Hourly flow rate (vph)	59	16	13	8	35	19	156	94	15	69	1458	1571

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2	SW 3	SW 4
Volume Total (vph)	39	48	43	19	203	62	555	972	785	785
Volume Left (vph)	39	20	8	0	156	0	69	0	0	0
Volume Right (vph)	0	13	0	19	0	15	0	0	785	785
Hadj (s)	0.53	0.05	0.13	-0.67	0.42	-0.14	0.10	0.03	-0.67	-0.67
Departure Headway (s)	7.9	7.5	7.6	6.8	6.9	6.3	5.5	5.4	3.2	3.2
Degree Utilization, x	0.09	0.10	0.09	0.04	0.39	0.11	0.84	1.0	0.70	0.70
Capacity (veh/h)	430	459	451	499	507	548	650	668	1120	1120
Control Delay (s)	10.5	10.1	10.2	8.9	13.0	8.9	29.8	230.7	12.0	12.0
Approach Delay (s)	10.3		9.8		12.0		83.8			
Approach LOS	B		A		B		F			

Intersection Summary			
Delay	75.3		
Level of Service	F		
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	2	12	227	173	1085	66
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.87			1.00	0.99	
Flt Protected	0.99			0.97	1.00	
Satd. Flow (prot)	2963			3260	3324	
Flt Permitted	0.99			0.61	1.00	
Satd. Flow (perm)	2963			2045	3324	
Peak-hour factor, PHF	0.34	0.34	0.74	0.74	0.87	0.87
Adj. Flow (vph)	6	35	307	234	1247	76
RTOR Reduction (vph)	23	0	0	0	7	0
Lane Group Flow (vph)	18	0	0	541	1316	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	16.0			23.3	23.3	
Effective Green, g (s)	16.0			23.3	23.3	
Actuated g/C Ratio	0.34			0.49	0.49	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1002			1007	1637	
v/s Ratio Prot	c0.01				c0.40	
v/s Ratio Perm				0.26		
v/c Ratio	0.02			2.06dl	0.80	
Uniform Delay, d1	10.4			8.3	10.1	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.0			0.6	3.0	
Delay (s)	10.5			8.8	13.0	
Level of Service	B			A	B	
Approach Delay (s)	10.5			8.8	13.0	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	11.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	86	187	457	110	376	69	490	189	26	46	242	102
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.98		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2947	1365	1583	3275		2891	3293		1583	3204	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2947	1365	1583	3275		2891	3293		1583	3204	
Peak-hour factor, PHF	0.81	0.81	0.81	0.73	0.73	0.73	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	106	231	564	151	515	95	612	236	32	54	285	120
RTOR Reduction (vph)	0	212	96	0	21	0	0	14	0	0	69	0
Lane Group Flow (vph)	106	301	186	151	589	0	612	254	0	54	336	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	4.7	16.9	32.8	6.0	18.2		15.9	25.5		4.1	13.7	
Effective Green, g (s)	4.7	16.9	32.8	6.0	18.2		15.9	25.5		4.1	13.7	
Actuated g/C Ratio	0.07	0.25	0.48	0.09	0.27		0.23	0.37		0.06	0.20	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	108	727	733	138	870		671	1225		94	640	
v/s Ratio Prot	0.07	0.10	0.06	c0.10	c0.18		c0.21	0.08		0.03	c0.10	
v/s Ratio Perm			0.08									
v/c Ratio	0.98	0.41	0.25	1.09	0.68		0.91	0.21		0.57	0.53	
Uniform Delay, d1	31.9	21.6	10.6	31.2	22.5		25.6	14.6		31.4	24.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	80.3	1.7	0.2	104.1	4.2		16.7	0.1		8.2	0.8	
Delay (s)	112.2	23.4	10.8	135.3	26.7		42.4	14.7		39.6	25.3	
Level of Service	F	C	B	F	C		D	B		D	C	
Approach Delay (s)		29.9			48.3			33.9			27.0	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	68.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	299	698	137	90	317	192	303	1113	202	157	1136	730
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4706		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4706		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	325	759	149	98	345	209	329	1210	220	171	1235	793
RTOR Reduction (vph)	0	0	106	0	0	38	0	29	0	0	0	31
Lane Group Flow (vph)	325	759	43	98	345	171	329	1401	0	171	1235	762
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	14.3	20.0	26.0	18.0	23.7	33.7	10.0	30.0		6.0	26.0	44.0
Effective Green, g (s)	14.3	20.0	26.0	18.0	23.7	33.7	10.0	30.0		6.0	26.0	44.0
Actuated g/C Ratio	0.16	0.22	0.29	0.20	0.26	0.37	0.11	0.33		0.07	0.29	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	459	745	500	578	882	628	321	1568		192	1391	800
v/s Ratio Prot	0.11	c0.23	0.01	0.03	c0.10	0.03	c0.11	c0.30		0.06	0.26	c0.19
v/s Ratio Perm			0.02			0.08						0.32
v/c Ratio	0.71	1.02	0.09	0.17	0.39	0.27	1.02	0.89		0.89	0.89	0.95
Uniform Delay, d1	35.9	35.0	23.3	29.8	27.2	19.6	40.0	28.5		41.7	30.6	22.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	4.9	37.8	0.1	0.1	0.3	0.2	56.8	8.2		36.2	8.7	20.9
Delay (s)	40.8	72.8	23.4	30.0	27.5	19.8	96.8	36.7		77.9	39.3	42.9
Level of Service	D	E	C	C	C	B	F	D		E	D	D
Approach Delay (s)		58.4			25.4			48.0			43.6	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	383	1	38	1109	817	0	3	0	97	0	64
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	287	485	1	41	1192	878	0	12	0	147	0	97
RTOR Reduction (vph)	0	0	1	0	0	328	0	0	0	0	0	80
Lane Group Flow (vph)	287	485	0	41	1192	550	0	12	0	73	74	17
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.0	39.4	39.4	4.2	30.6	46.6		16.0		16.0	16.0	16.0
Effective Green, g (s)	13.0	39.4	39.4	4.2	30.6	46.6		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.14	0.43	0.43	0.05	0.33	0.51		0.17		0.17	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	224	1442	645	72	1120	763		308		262	278	262
v/s Ratio Prot	c0.18	0.14		0.03	c0.36	c0.13		c0.01		0.05	0.05	
v/s Ratio Perm			0.00			0.24						0.01
v/c Ratio	1.28	0.34	0.00	0.57	1.06	0.72		0.04		0.28	0.27	0.06
Uniform Delay, d1	39.3	17.4	14.9	42.8	30.5	17.5		31.4		32.8	32.7	31.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	156.2	0.1	0.0	9.9	45.8	3.4		0.2		2.6	2.3	0.5
Delay (s)	195.5	17.5	14.9	52.8	76.3	20.8		31.6		35.4	35.1	32.0
Level of Service	F	B	B	D	E	C		C		D	D	C
Approach Delay (s)		83.6			52.7			31.6			34.0	
Approach LOS		F			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	58.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
51: Temple Avenue & South Campus Drive

6/9/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	316	15	16	1489	353	53	20	14	123	52	769
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1583	4785		1583	3353	1500	1583	3144		1504	1642	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1583	4785		1583	3353	1500	1583	3144		1504	1642	1500
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	299	385	18	17	1567	372	65	24	17	138	58	864
RTOR Reduction (vph)	0	4	0	0	0	150	0	14	0	0	0	121
Lane Group Flow (vph)	299	399	0	17	1567	222	65	27	0	97	99	743
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	51.0		16.0	46.0	46.0	17.0	17.0		12.1	12.1	33.1
Effective Green, g (s)	23.0	53.0		18.0	48.0	48.0	19.0	19.0		14.1	14.1	37.1
Actuated g/C Ratio	0.21	0.47		0.16	0.43	0.43	0.17	0.17		0.13	0.13	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	2262		254	1435	642	268	532		189	206	523
v/s Ratio Prot	0.19	0.08		0.01	c0.47		c0.04	0.01		0.06	0.06	c0.29
v/s Ratio Perm						0.15						0.20
v/c Ratio	0.92	0.18		0.07	1.09	0.35	0.24	0.05		0.51	0.48	1.42
Uniform Delay, d1	43.7	17.0		39.9	32.0	21.5	40.3	39.0		45.8	45.6	37.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	30.7	0.0		0.5	53.0	0.3	2.1	0.2		2.3	1.8	200.2
Delay (s)	74.4	17.0		40.4	85.1	21.8	42.5	39.2		48.1	47.4	237.7
Level of Service	E	B		D	F	C	D	D		D	D	F
Approach Delay (s)		41.5			72.7			41.2			202.6	
Approach LOS		D			E			D			F	

Intersection Summary			
HCM 2000 Control Delay	102.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	112.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	107.0%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	243	72	50	1455	120	180	320	62	77	553	299
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4653		1583	4763		1583	3353	1500	1583	3353	1500
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4653		1583	4763		1583	3353	1500	1583	3353	1500
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.65	0.65	0.65	0.88	0.88	0.88
Adj. Flow (vph)	128	312	92	56	1617	133	277	492	95	88	628	340
RTOR Reduction (vph)	0	57	0	0	10	0	0	0	67	0	0	146
Lane Group Flow (vph)	128	347	0	56	1740	0	277	492	28	88	628	194
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	8.0	35.2		5.6	32.8		16.0	26.6	26.6	8.2	18.8	18.8
Effective Green, g (s)	8.0	35.2		5.6	32.8		16.0	26.6	26.6	8.2	18.8	18.8
Actuated g/C Ratio	0.09	0.38		0.06	0.36		0.17	0.29	0.29	0.09	0.21	0.21
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	138	1788		96	1705		276	973	435	141	688	307
v/s Ratio Prot	c0.08	0.07		0.04	c0.37		c0.17	0.15		0.06	c0.19	
v/s Ratio Perm									0.02			0.13
v/c Ratio	0.93	0.19		0.58	1.02		1.00	0.51	0.06	0.62	0.91	0.63
Uniform Delay, d1	41.5	18.8		41.9	29.4		37.8	27.0	23.5	40.2	35.6	33.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	54.5	0.1		8.7	27.1		55.1	1.9	0.3	8.3	18.6	9.5
Delay (s)	96.0	18.8		50.6	56.5		92.9	28.9	23.8	48.5	54.2	42.7
Level of Service	F	B		D	E		F	C	C	D	D	D
Approach Delay (s)		37.4			56.3			48.9			50.0	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	50.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.97		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.3%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	529	22	11	1153	0	0	0	1	547	4	797
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		0.99		1.00	1.00				0.86	1.00	0.88	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (prot)		4789		1583	4818				1526	1504	1398	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (perm)		4789		1583	4818				1526	1504	1398	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	575	24	12	1253	0	0	0	1	595	4	866
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	1	0	9	53
Lane Group Flow (vph)	0	593	0	12	1253	0	0	0	0	506	474	423
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		22.6		0.8	27.4				25.2	25.2	25.2	25.2
Effective Green, g (s)		22.6		0.8	27.4				25.2	25.2	25.2	25.2
Actuated g/C Ratio		0.37		0.01	0.45				0.42	0.42	0.42	0.42
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1785		20	2178				634	625	581	592
v/s Ratio Prot		0.12		0.01	c0.26							
v/s Ratio Perm									0.00	0.34	0.34	0.30
v/c Ratio		0.33		0.60	0.58				0.00	0.81	0.82	0.71
Uniform Delay, d1		13.6		29.7	12.3				10.3	15.6	15.7	14.7
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.5		40.2	1.1				0.0	7.6	8.7	4.1
Delay (s)		14.1		69.9	13.4				10.3	23.2	24.3	18.8
Level of Service		B		E	B				B	C	C	B
Approach Delay (s)		14.1			13.9			10.3			22.1	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	60.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	64.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	681	0	0	1610	434	281
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.98	0.85
Flt Protected		1.00			1.00	0.96	1.00
Satd. Flow (prot)		4818			4818	3220	1365
Flt Permitted		1.00			1.00	0.96	1.00
Satd. Flow (perm)		4818			4818	3220	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	740	0	0	1750	472	305
RTOR Reduction (vph)	0	0	0	0	0	31	64
Lane Group Flow (vph)	0	740	0	0	1750	505	177
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		16.1			16.1	11.1	11.1
Effective Green, g (s)		16.1			16.1	11.1	11.1
Actuated g/C Ratio		0.46			0.46	0.32	0.32
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2203			2203	1015	430
v/s Ratio Prot		0.15			c0.36		
v/s Ratio Perm						c0.16	0.13
v/c Ratio		0.34			0.79	0.50	0.41
Uniform Delay, d1		6.1			8.1	9.8	9.5
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		0.4			3.1	0.4	0.6
Delay (s)		6.5			11.2	10.2	10.1
Level of Service		A			B	B	B
Approach Delay (s)		6.5			11.2	10.2	
Approach LOS		A			B	B	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	35.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	691	14	79	22	20	55	28	553	11	11	357	217
Peak Hour Factor	0.81	0.81	0.81	0.78	0.78	0.78	0.84	0.84	0.84	0.95	0.95	0.95
Hourly flow rate (vph)	853	17	98	28	26	71	33	658	13	12	376	228

Direction, Lane #	SE 1	SE 2	NW 1	NW 2	NE 1	NE 2	SW 1	SW 2	SW 3	SW 4
Volume Total (vph)	569	399	54	71	363	342	137	251	114	114
Volume Left (vph)	569	284	28	0	33	0	12	0	0	0
Volume Right (vph)	0	98	0	71	0	13	0	0	114	114
Hadj (s)	0.53	0.22	0.30	-0.67	0.08	0.01	0.08	0.03	-0.67	-0.67
Departure Headway (s)	8.4	8.1	9.5	8.5	8.1	8.0	8.6	8.6	3.2	3.2
Degree Utilization, x	1.0	0.89	0.14	0.17	0.81	0.76	0.33	0.60	0.10	0.10
Capacity (veh/h)	424	434	352	385	440	442	406	405	1121	1121
Control Delay (s)	184.5	47.8	12.8	12.1	36.3	30.9	14.5	22.3	5.4	5.4
Approach Delay (s)	128.1		12.4		33.7		14.3			
Approach LOS	F		B		D		B			

Intersection Summary			
Delay	65.5		
Level of Service	F		
Intersection Capacity Utilization	67.9%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	134	331	51	464	476	15
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.89			1.00	1.00	
Flt Protected	0.99			1.00	1.00	
Satd. Flow (prot)	3015			3336	3337	
Flt Permitted	0.99			0.86	1.00	
Satd. Flow (perm)	3015			2890	3337	
Peak-hour factor, PHF	0.79	0.79	0.87	0.87	0.90	0.90
Adj. Flow (vph)	170	419	59	533	529	17
RTOR Reduction (vph)	173	0	0	0	5	0
Lane Group Flow (vph)	416	0	0	592	541	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	18.2			14.0	14.0	
Effective Green, g (s)	18.2			14.0	14.0	
Actuated g/C Ratio	0.45			0.35	0.35	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1365			1006	1162	
v/s Ratio Prot	c0.14				0.16	
v/s Ratio Perm				c0.20		
v/c Ratio	0.30			0.59	0.47	
Uniform Delay, d1	7.0			10.7	10.2	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.6			0.9	0.3	
Delay (s)	7.6			11.6	10.5	
Level of Service	A			B	B	
Approach Delay (s)	7.6			11.6	10.5	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	40.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	54.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	49	253	591	45	233	83	399	301	24	20	112	48
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.96		1.00	0.99		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2952	1365	1583	3221		2891	3316		1583	3203	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2952	1365	1583	3221		2891	3316		1583	3203	
Peak-hour factor, PHF	0.73	0.73	0.73	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85
Adj. Flow (vph)	67	347	810	54	281	100	464	350	28	24	132	56
RTOR Reduction (vph)	0	276	186	0	47	0	0	9	0	0	47	0
Lane Group Flow (vph)	67	476	219	54	334	0	464	369	0	24	141	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	3.8	19.9	33.9	2.2	18.3		14.0	23.0		1.5	10.5	
Effective Green, g (s)	3.8	19.9	33.9	2.2	18.3		14.0	23.0		1.5	10.5	
Actuated g/C Ratio	0.06	0.32	0.54	0.04	0.29		0.22	0.37		0.02	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	96	938	826	55	941		646	1218		37	537	
v/s Ratio Prot	c0.04	c0.16	0.06	0.03	0.10		c0.16	c0.11		0.02	0.04	
v/s Ratio Perm			0.10									
v/c Ratio	0.70	0.51	0.27	0.98	0.35		0.72	0.30		0.65	0.26	
Uniform Delay, d1	28.8	17.4	7.7	30.2	17.5		22.5	14.1		30.3	22.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	19.8	2.0	0.2	114.3	1.0		3.8	0.1		33.0	0.3	
Delay (s)	48.6	19.3	7.9	144.5	18.5		26.3	14.2		63.3	22.9	
Level of Service	D	B	A	F	B		C	B		E	C	
Approach Delay (s)		17.1			34.2			20.9			27.5	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	62.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	301	465	226	319	575	173	230	859	258	242	1117	375
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	327	505	246	347	625	188	250	934	280	263	1214	408
RTOR Reduction (vph)	0	0	56	0	0	56	0	83	0	0	0	49
Lane Group Flow (vph)	327	505	190	347	625	132	250	1131	0	263	1214	359
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0	15.3	21.3	8.0	15.3	21.3	6.0	19.0		6.0	19.0	27.0
Effective Green, g (s)	8.0	15.3	21.3	8.0	15.3	21.3	6.0	19.0		6.0	19.0	27.0
Actuated g/C Ratio	0.12	0.24	0.33	0.12	0.24	0.33	0.09	0.30		0.09	0.30	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	359	797	590	359	797	590	269	1374		269	1423	723
v/s Ratio Prot	0.11	0.15	0.03	c0.12	c0.19	0.02	0.09	0.24		c0.09	c0.25	0.06
v/s Ratio Perm			0.10			0.07						0.18
v/c Ratio	0.91	0.63	0.32	0.97	0.78	0.22	0.93	0.82		0.98	0.85	0.50
Uniform Delay, d1	27.8	22.0	16.1	28.0	23.0	15.5	28.9	21.1		29.1	21.3	13.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.4	1.7	0.3	38.3	5.1	0.2	36.0	5.7		48.2	6.7	0.5
Delay (s)	54.2	23.6	16.4	66.3	28.0	15.7	64.9	26.8		77.2	28.0	14.2
Level of Service	D	C	B	E	C	B	E	C		E	C	B
Approach Delay (s)		31.3			37.5			33.3			31.9	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	64.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	669	1	10	561	274	2	5	2	618	3	135
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	119	787	1	11	638	311	3	7	3	951	5	208
RTOR Reduction (vph)	0	0	1	0	0	162	0	2	0	0	0	151
Lane Group Flow (vph)	119	787	0	11	638	149	3	8	0	475	481	57
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0	24.0	24.0	0.8	18.8	34.8	16.0	16.0		16.0	16.0	16.0
Effective Green, g (s)	6.0	24.0	24.0	0.8	18.8	34.8	16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.08	0.33	0.33	0.01	0.26	0.48	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	1105	494	17	865	717	347	370		330	350	329
v/s Ratio Prot	c0.08	c0.23		0.01	0.19	0.05	0.00	c0.00		c0.32	0.30	
v/s Ratio Perm			0.00			0.05						0.04
v/c Ratio	0.92	0.71	0.00	0.65	0.74	0.21	0.01	0.02		1.44	1.37	0.17
Uniform Delay, d1	33.1	21.4	16.4	35.9	24.7	11.0	22.2	22.3		28.4	28.4	23.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	53.4	2.2	0.0	62.0	3.3	0.1	0.0	0.1		214.2	185.6	1.1
Delay (s)	86.5	23.6	16.4	97.9	28.1	11.2	22.2	22.4		242.6	214.0	24.2
Level of Service	F	C	B	F	C	B	C	C		F	F	C
Approach Delay (s)		31.8			23.4			22.3			191.7	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM 2000 Control Delay	90.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	494	1267	51	41	714	280	29	54	48	530	30	322
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1583	4790		1583	3353	1500	1583	3116		1504	1605	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	1583	4790		1583	3353	1500	1583	3116		1504	1605	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	537	1377	55	46	802	315	34	63	56	791	45	481
RTOR Reduction (vph)	0	4	0	0	0	246	0	45	0	0	0	223
Lane Group Flow (vph)	537	1428	0	46	802	69	34	74	0	419	417	258
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	36.6		3.0	18.6	18.6	17.0	17.0		22.0	22.0	43.0
Effective Green, g (s)	23.0	38.6		5.0	20.6	20.6	19.0	19.0		24.0	24.0	47.0
Actuated g/C Ratio	0.24	0.41		0.05	0.22	0.22	0.20	0.20		0.25	0.25	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	1954		83	730	326	317	625		381	407	776
v/s Ratio Prot	c0.34	0.30		0.03	c0.24		0.02	c0.02		c0.28	0.26	0.08
v/s Ratio Perm						0.05						0.09
v/c Ratio	1.40	0.73		0.55	1.10	0.21	0.11	0.12		1.10	1.02	0.33
Uniform Delay, d1	35.8	23.6		43.7	37.0	30.3	30.9	30.9		35.3	35.3	14.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	194.5	1.4		7.8	63.6	0.3	0.7	0.4		75.7	51.0	0.3
Delay (s)	230.3	25.1		51.5	100.6	30.7	31.6	31.3		111.0	86.3	14.6
Level of Service	F	C		D	F	C	C	C		F	F	B
Approach Delay (s)		81.0			79.7			31.4			68.0	
Approach LOS		F			E			C			E	

Intersection Summary			
HCM 2000 Control Delay	75.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	183	997	198	68	680	110	189	633	49	154	316	133
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4698		1583	4717		1583	3353	1500	1583	3353	1500
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4698		1583	4717		1583	3353	1500	1583	3353	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.82	0.82	0.82	0.96	0.96	0.96	0.79	0.79	0.79
Adj. Flow (vph)	232	1262	251	83	829	134	197	659	51	195	400	168
RTOR Reduction (vph)	0	42	0	0	32	0	0	0	38	0	0	125
Lane Group Flow (vph)	232	1471	0	83	931	0	197	659	13	195	400	43
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.0	23.0		4.0	16.0		9.0	18.0	18.0	9.0	18.0	18.0
Effective Green, g (s)	11.0	23.0		4.0	16.0		9.0	18.0	18.0	9.0	18.0	18.0
Actuated g/C Ratio	0.16	0.33		0.06	0.23		0.13	0.26	0.26	0.13	0.26	0.26
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	248	1543		90	1078		203	862	385	203	862	385
v/s Ratio Prot	c0.15	c0.31		0.05	0.20		c0.12	c0.20		0.12	0.12	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.94	0.95		0.92	0.86		0.97	0.76	0.03	0.96	0.46	0.11
Uniform Delay, d1	29.1	23.0		32.8	26.0		30.4	24.0	19.5	30.3	21.9	19.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	39.6	13.4		69.4	7.3		54.4	6.4	0.2	51.7	1.8	0.6
Delay (s)	68.7	36.3		102.2	33.3		84.8	30.4	19.6	82.0	23.7	20.5
Level of Service	E	D		F	C		F	C	B	F	C	C
Approach Delay (s)		40.6			38.8			41.6			37.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	39.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	2201	28	12	566	0	0	0	9	832	9	452
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00				0.86	1.00	0.98	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (prot)		4809		1583	4818				1526	1504	1513	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (perm)		4809		1583	4818				1526	1504	1513	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2392	30	13	615	0	0	0	10	904	10	491
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	7	0	5	185
Lane Group Flow (vph)	0	2421	0	13	615	0	0	0	3	488	475	252
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Effective Green, g (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Actuated g/C Ratio		0.54		0.01	0.59				0.32	0.32	0.32	0.32
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2600		13	2853				491	484	487	458
v/s Ratio Prot		c0.50		c0.01	0.13							
v/s Ratio Perm									0.00	c0.32	0.31	0.18
v/c Ratio		0.93		1.00	0.22				0.01	1.01	0.97	0.55
Uniform Delay, d1		19.8		46.2	8.9				21.5	31.6	31.2	26.0
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		7.5		249.6	0.2				0.0	43.0	34.0	1.4
Delay (s)		27.3		295.8	9.1				21.5	74.6	65.2	27.4
Level of Service		C		F	A				C	E	E	C
Approach Delay (s)		27.3			15.0			21.5			56.7	
Approach LOS		C			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	34.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	1888	0	0	906	149	240
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.93	0.85
Flt Protected		1.00			1.00	0.97	1.00
Satd. Flow (prot)		4818			4818	3112	1365
Flt Permitted		1.00			1.00	0.97	1.00
Satd. Flow (perm)		4818			4818	3112	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2052	0	0	985	162	261
RTOR Reduction (vph)	0	0	0	0	0	4	4
Lane Group Flow (vph)	0	2052	0	0	985	283	132
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		28.4			28.4	10.2	10.2
Effective Green, g (s)		28.4			28.4	10.2	10.2
Actuated g/C Ratio		0.61			0.61	0.22	0.22
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2936			2936	681	298
v/s Ratio Prot		c0.43			0.20		
v/s Ratio Perm						0.09	c0.10
v/c Ratio		0.70			0.34	0.42	0.44
Uniform Delay, d1		6.2			4.5	15.6	15.7
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		1.4			0.3	0.4	1.1
Delay (s)		7.6			4.8	16.1	16.8
Level of Service		A			A	B	B
Approach Delay (s)		7.6			4.8	16.3	
Approach LOS		A			A	B	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	55.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	55	11	9	6	23	13	108	64	15	58	1177	1328
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00		0.95			0.95	0.88
Frt	1.00	0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected	0.95	0.98			0.99	1.00		0.97			1.00	1.00
Satd. Flow (prot)	1504	1579			1746	1500		3219			3345	2640
Flt Permitted	0.95	0.98			0.99	1.00		0.56			0.92	1.00
Satd. Flow (perm)	1504	1579			1746	1500		1864			3080	2640
Peak-hour factor, PHF	0.70	0.70	0.70	0.63	0.63	0.63	0.66	0.66	0.66	0.78	0.78	0.78
Adj. Flow (vph)	79	16	13	10	37	21	164	97	23	74	1509	1703
RTOR Reduction (vph)	0	10	0	0	0	19	0	7	0	0	0	355
Lane Group Flow (vph)	55	43	0	0	47	2	0	277	0	0	1583	1348
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	6	6		2	2			4			8	6
Permitted Phases						2	4			8		8
Actuated Green, G (s)	15.7	15.7			7.6	7.6		46.0			46.0	61.7
Effective Green, g (s)	15.7	15.7			7.6	7.6		46.0			46.0	61.7
Actuated g/C Ratio	0.19	0.19			0.09	0.09		0.57			0.57	0.76
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	290	304			163	140		1054			1742	2133
v/s Ratio Prot	0.04	0.03			c0.03							c0.12
v/s Ratio Perm						0.00		0.15			c0.51	0.39
v/c Ratio	0.19	0.14			0.29	0.01		1.76dl			0.91	0.63
Uniform Delay, d1	27.5	27.2			34.3	33.4		9.0			15.8	4.5
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	0.3	0.2			1.0	0.0		0.1			7.3	0.6
Delay (s)	27.8	27.4			35.3	33.5		9.1			23.1	5.2
Level of Service	C	C			D	C		A			C	A
Approach Delay (s)		27.6			34.7			9.1			13.8	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	81.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	10	20	278	180	1123	95
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.90			1.00	0.99	
Flt Protected	0.98			0.97	1.00	
Satd. Flow (prot)	3029			3254	3314	
Flt Permitted	0.98			0.62	1.00	
Satd. Flow (perm)	3029			2083	3314	
Peak-hour factor, PHF	0.34	0.34	0.74	0.74	0.87	0.87
Adj. Flow (vph)	29	59	376	243	1291	109
RTOR Reduction (vph)	39	0	0	0	10	0
Lane Group Flow (vph)	49	0	0	619	1390	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	16.0			23.8	23.8	
Effective Green, g (s)	16.0			23.8	23.8	
Actuated g/C Ratio	0.33			0.50	0.50	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1013			1037	1650	
v/s Ratio Prot	c0.02				c0.42	
v/s Ratio Perm				0.30		
v/c Ratio	0.05			2.58dl	0.84	
Uniform Delay, d1	10.8			8.6	10.4	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.1			0.9	4.1	
Delay (s)	10.8			9.5	14.5	
Level of Service	B			A	B	
Approach Delay (s)	10.8			9.5	14.5	
Approach LOS	B			A	B	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	47.8	Sum of lost time (s)	12.0
Intersection Capacity Utilization	66.5%	ICU Level of Service	C
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	90	226	470	115	393	78	510	198	33	60	259	110
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.98		1.00	0.98		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2966	1365	1583	3270		2891	3282		1583	3203	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2966	1365	1583	3270		2891	3282		1583	3203	
Peak-hour factor, PHF	0.81	0.81	0.81	0.73	0.73	0.73	0.80	0.80	0.80	0.85	0.85	0.85
Adj. Flow (vph)	111	279	580	158	538	107	638	248	41	71	305	129
RTOR Reduction (vph)	0	222	87	0	24	0	0	19	0	0	69	0
Lane Group Flow (vph)	111	347	203	158	621	0	638	270	0	71	365	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	6.0	16.0	32.0	6.0	16.0		16.0	26.1		4.1	14.2	
Effective Green, g (s)	6.0	16.0	32.0	6.0	16.0		16.0	26.1		4.1	14.2	
Actuated g/C Ratio	0.09	0.23	0.47	0.09	0.23		0.23	0.38		0.06	0.21	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	695	720	139	767		678	1256		95	666	
v/s Ratio Prot	0.07	0.12	0.07	c0.10	c0.19		c0.22	0.08		0.04	c0.11	
v/s Ratio Perm			0.08									
v/c Ratio	0.80	0.50	0.28	1.14	0.81		0.94	0.22		0.75	0.55	
Uniform Delay, d1	30.5	22.6	11.1	31.1	24.7		25.6	14.2		31.5	24.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.5	2.6	0.2	117.8	9.0		21.3	0.1		27.0	0.9	
Delay (s)	57.0	25.2	11.3	148.9	33.7		46.9	14.2		58.5	25.1	
Level of Service	E	C	B	F	C		D	B		E	C	
Approach Delay (s)		24.7			56.4			36.7			29.8	
Approach LOS		C			E			D			C	

Intersection Summary			
HCM 2000 Control Delay	36.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	311	750	142	94	330	200	315	1158	210	163	1181	758
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4707		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4707		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	815	154	102	359	217	342	1259	228	177	1284	824
RTOR Reduction (vph)	0	0	108	0	0	38	0	29	0	0	0	31
Lane Group Flow (vph)	338	815	46	102	359	179	342	1458	0	177	1284	793
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	14.5	20.0	26.0	18.0	23.5	33.5	10.0	30.0		6.0	26.0	44.0
Effective Green, g (s)	14.5	20.0	26.0	18.0	23.5	33.5	10.0	30.0		6.0	26.0	44.0
Actuated g/C Ratio	0.16	0.22	0.29	0.20	0.26	0.37	0.11	0.33		0.07	0.29	0.49
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	465	745	500	578	875	625	321	1569		192	1391	800
v/s Ratio Prot	0.12	c0.24	0.01	0.04	c0.11	0.03	c0.12	c0.31		0.06	0.27	c0.20
v/s Ratio Perm			0.02			0.09						0.33
v/c Ratio	0.73	1.09	0.09	0.18	0.41	0.29	1.07	0.93		0.92	0.92	0.99
Uniform Delay, d1	35.9	35.0	23.4	29.9	27.5	19.8	40.0	29.0		41.8	31.0	22.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.6	61.6	0.1	0.1	0.3	0.3	68.6	11.2		43.3	11.6	29.5
Delay (s)	41.5	96.6	23.5	30.0	27.8	20.1	108.6	40.2		85.0	42.7	52.3
Level of Service	D	F	C	C	C	C	F	D		F	D	D
Approach Delay (s)		73.7			25.7			53.0			49.4	
Approach LOS		E			C			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	92.1%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	413	1	73	1153	923	0	3	0	118	0	70
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	309	523	1	78	1240	992	0	12	0	179	0	106
RTOR Reduction (vph)	0	0	1	0	0	329	0	0	0	0	0	87
Lane Group Flow (vph)	309	523	0	78	1240	663	0	12	0	89	90	19
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	13.0	37.2	37.2	5.6	29.8	45.8		16.0		16.0	16.0	16.0
Effective Green, g (s)	13.0	37.2	37.2	5.6	29.8	45.8		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.14	0.41	0.41	0.06	0.33	0.50		0.18		0.18	0.18	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	226	1373	614	97	1100	756		311		265	280	264
v/s Ratio Prot	c0.20	0.16		0.05	c0.37	c0.15		c0.01		0.06	0.06	
v/s Ratio Perm			0.00			0.29						0.01
v/c Ratio	1.37	0.38	0.00	0.80	1.13	0.88		0.04		0.34	0.32	0.07
Uniform Delay, d1	38.9	18.7	15.8	42.1	30.5	20.0		31.0		32.7	32.7	31.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	190.9	0.2	0.0	36.6	69.3	11.2		0.2		3.4	3.0	0.5
Delay (s)	229.8	18.9	15.8	78.7	99.8	31.2		31.3		36.1	35.7	31.7
Level of Service	F	B	B	E	F	C		C		D	D	C
Approach Delay (s)		97.2			69.6			31.3			34.3	
Approach LOS		F			E			C			C	

Intersection Summary			
HCM 2000 Control Delay	73.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	90.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	88.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	261	350	16	22	1621	367	55	21	16	128	54	795
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	1583	4785		1583	3353	1500	1583	3134		1504	1643	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	1583	4785		1583	3353	1500	1583	3134		1504	1643	1500
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	318	427	20	23	1706	386	67	26	20	144	61	893
RTOR Reduction (vph)	0	4	0	0	0	143	0	17	0	0	0	118
Lane Group Flow (vph)	318	443	0	23	1706	243	67	29	0	101	104	775
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	51.0		16.0	46.0	46.0	17.0	17.0		12.3	12.3	33.3
Effective Green, g (s)	23.0	53.0		18.0	48.0	48.0	19.0	19.0		14.3	14.3	37.3
Actuated g/C Ratio	0.20	0.47		0.16	0.43	0.43	0.17	0.17		0.13	0.13	0.33
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	324	2258		253	1433	641	267	530		191	209	524
v/s Ratio Prot	0.20	0.09		0.01	c0.51		c0.04	0.01		0.07	0.06	c0.30
v/s Ratio Perm						0.16						0.21
v/c Ratio	0.98	0.20		0.09	1.19	0.38	0.25	0.06		0.53	0.50	1.48
Uniform Delay, d1	44.4	17.3		40.2	32.1	22.0	40.5	39.1		45.8	45.7	37.5
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	44.7	0.0		0.7	93.0	0.4	2.2	0.2		2.6	1.9	225.5
Delay (s)	89.2	17.3		40.9	125.1	22.3	42.7	39.3		48.5	47.5	263.0
Level of Service	F	B		D	F	C	D	D		D	D	F
Approach Delay (s)		47.2			105.4			41.3			222.9	
Approach LOS		D			F			D			F	

Intersection Summary			
HCM 2000 Control Delay	124.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	112.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	264	75	52	1584	149	187	333	64	89	575	318
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.91	0.91
Frt	1.00	0.97		1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4658		1583	4755		1583	3353	1500	1583	3212	1365
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4658		1583	4755		1583	3353	1500	1583	3212	1365
Peak-hour factor, PHF	0.78	0.78	0.78	0.90	0.90	0.90	0.65	0.65	0.65	0.88	0.88	0.88
Adj. Flow (vph)	144	338	96	58	1760	166	288	512	98	101	653	361
RTOR Reduction (vph)	0	42	0	0	9	0	0	0	58	0	0	141
Lane Group Flow (vph)	144	392	0	58	1917	0	288	512	40	101	653	220
Turn Type	Prot	NA		Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases									2			6
Actuated Green, G (s)	10.0	47.3		8.7	46.0		21.0	36.1	44.8	11.9	27.0	27.0
Effective Green, g (s)	12.0	49.3		10.7	48.0		23.0	38.1	48.8	13.9	29.0	29.0
Actuated g/C Ratio	0.10	0.41		0.09	0.40		0.19	0.32	0.41	0.12	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	158	1913		141	1902		303	1064	635	183	776	329
v/s Ratio Prot	c0.09	0.08		0.04	c0.40		c0.18	0.15	0.01	0.06	c0.20	
v/s Ratio Perm									0.02			0.16
v/c Ratio	0.91	0.20		0.41	1.01		0.95	0.48	0.06	0.55	0.84	0.67
Uniform Delay, d1	53.5	22.7		51.7	36.0		47.9	33.0	21.7	50.1	43.3	41.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	46.4	0.1		1.9	22.6		38.5	1.6	0.0	3.6	10.7	10.3
Delay (s)	99.8	22.8		53.6	58.6		86.4	34.5	21.7	53.7	54.0	51.5
Level of Service	F	C		D	E		F	C	C	D	D	D
Approach Delay (s)		42.0			58.4			49.8			53.2	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	53.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	561	23	11	1251	0	0	0	1	569	4	826
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		0.99		1.00	1.00				0.86	1.00	0.88	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (prot)		4789		1583	4818				1526	1504	1399	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.99	1.00
Satd. Flow (perm)		4789		1583	4818				1526	1504	1399	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	610	25	12	1360	0	0	0	1	618	4	898
RTOR Reduction (vph)	0	6	0	0	0	0	0	0	1	0	6	53
Lane Group Flow (vph)	0	629	0	12	1360	0	0	0	0	525	495	441
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		22.6		0.8	27.4				25.7	25.7	25.7	25.7
Effective Green, g (s)		22.6		0.8	27.4				25.7	25.7	25.7	25.7
Actuated g/C Ratio		0.37		0.01	0.45				0.42	0.42	0.42	0.42
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		1771		20	2160				641	632	588	599
v/s Ratio Prot		0.13		0.01	c0.28							
v/s Ratio Perm									0.00	0.35	0.35	0.31
v/c Ratio		0.35		0.60	0.63				0.00	0.83	0.84	0.74
Uniform Delay, d1		14.0		30.0	13.0				10.3	15.8	15.9	14.9
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		0.6		40.2	1.4				0.0	9.1	10.6	4.7
Delay (s)		14.5		70.2	14.4				10.3	24.9	26.5	19.6
Level of Service		B		E	B				B	C	C	B
Approach Delay (s)		14.5			14.8			10.3			23.7	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	61.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	719	0	0	1729	449	292
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.98	0.85
Flt Protected		1.00			1.00	0.96	1.00
Satd. Flow (prot)		4818			4818	3220	1365
Flt Permitted		1.00			1.00	0.96	1.00
Satd. Flow (perm)		4818			4818	3220	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	782	0	0	1879	488	317
RTOR Reduction (vph)	0	0	0	0	0	31	55
Lane Group Flow (vph)	0	782	0	0	1879	524	195
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		16.1			16.1	11.4	11.4
Effective Green, g (s)		16.1			16.1	11.4	11.4
Actuated g/C Ratio		0.45			0.45	0.32	0.32
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2185			2185	1034	438
v/s Ratio Prot		0.16			c0.39		
v/s Ratio Perm						c0.16	0.14
v/c Ratio		0.36			0.86	0.51	0.45
Uniform Delay, d1		6.3			8.7	9.8	9.5
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		0.5			4.7	0.4	0.7
Delay (s)		6.8			13.4	10.2	10.3
Level of Service		A			B	B	B
Approach Delay (s)		6.8			13.4	10.2	
Approach LOS		A			B	B	

Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	35.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	754	15	82	30	21	65	29	573	16	13	370	244
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Lane Util. Factor	0.95	0.95			1.00	1.00		0.95			0.95	0.88
Frt	1.00	0.97			1.00	0.85		1.00			1.00	0.85
Flt Protected	0.95	0.96			0.97	1.00		1.00			1.00	1.00
Satd. Flow (prot)	1504	1567			1715	1500		3332			3347	2640
Flt Permitted	0.95	0.96			0.97	1.00		0.92			0.92	1.00
Satd. Flow (perm)	1504	1567			1715	1500		3070			3096	2640
Peak-hour factor, PHF	0.81	0.81	0.81	0.78	0.78	0.78	0.84	0.84	0.84	0.95	0.95	0.95
Adj. Flow (vph)	931	19	101	38	27	83	35	682	19	14	389	257
RTOR Reduction (vph)	0	10	0	0	0	60	0	2	0	0	0	74
Lane Group Flow (vph)	531	510	0	0	65	23	0	734	0	0	403	183
Turn Type	Split	NA		Split	NA	Perm	Perm	NA		Perm	NA	pm+ov
Protected Phases	6	6		2	2			4			8	6
Permitted Phases						2	4			8		8
Actuated Green, G (s)	29.2	29.2			8.0	8.0		20.4			20.4	49.6
Effective Green, g (s)	29.2	29.2			8.0	8.0		20.4			20.4	49.6
Actuated g/C Ratio	0.42	0.42			0.11	0.11		0.29			0.29	0.71
Clearance Time (s)	4.0	4.0			4.0	4.0		4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0			3.0	3.0
Lane Grp Cap (vph)	630	657			197	172		899			907	2033
v/s Ratio Prot	c0.35	0.33			c0.04							0.04
v/s Ratio Perm						0.02		c0.24			0.13	0.03
v/c Ratio	0.84	0.78			0.33	0.13		0.82			0.44	0.09
Uniform Delay, d1	18.1	17.4			28.3	27.7		22.9			20.0	3.1
Progression Factor	1.00	1.00			1.00	1.00		1.00			1.00	1.00
Incremental Delay, d2	10.0	5.7			1.0	0.4		5.8			0.3	0.0
Delay (s)	28.1	23.1			29.3	28.0		28.6			20.3	3.1
Level of Service	C	C			C	C		C			C	A
Approach Delay (s)		25.7			28.6			28.6			13.6	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	69.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SER	NEL	NET	SWT	SWR
Lane Configurations						
Volume (vph)	171	373	71	481	494	26
Ideal Flow (vphpl)	1800	1800	1700	1800	1800	1800
Total Lost time (s)	4.0			4.0	4.0	
Lane Util. Factor	0.97			0.95	0.95	
Frt	0.90			1.00	0.99	
Flt Protected	0.98			0.99	1.00	
Satd. Flow (prot)	3024			3331	3328	
Flt Permitted	0.98			0.82	1.00	
Satd. Flow (perm)	3024			2763	3328	
Peak-hour factor, PHF	0.79	0.79	0.87	0.87	0.90	0.90
Adj. Flow (vph)	216	472	82	553	549	29
RTOR Reduction (vph)	175	0	0	0	7	0
Lane Group Flow (vph)	513	0	0	635	571	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	6		7	4	8	
Permitted Phases			4			
Actuated Green, G (s)	18.2			16.0	16.0	
Effective Green, g (s)	18.2			16.0	16.0	
Actuated g/C Ratio	0.43			0.38	0.38	
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1304			1047	1261	
v/s Ratio Prot	c0.17				0.17	
v/s Ratio Perm				c0.23		
v/c Ratio	0.39			0.61	0.45	
Uniform Delay, d1	8.2			10.6	9.8	
Progression Factor	1.00			1.00	1.00	
Incremental Delay, d2	0.9			1.0	0.3	
Delay (s)	9.1			11.6	10.1	
Level of Service	A			B	B	
Approach Delay (s)	9.1			11.6	10.1	
Approach LOS	A			B	B	

Intersection Summary			
HCM 2000 Control Delay	10.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	42.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	59.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	57	268	614	52	253	115	413	316	26	23	119	52
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1600	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	0.92	0.85	1.00	0.95		1.00	0.99		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	2954	1365	1583	3195		2891	3315		1583	3200	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1583	2954	1365	1583	3195		2891	3315		1583	3200	
Peak-hour factor, PHF	0.73	0.73	0.73	0.83	0.83	0.83	0.86	0.86	0.86	0.85	0.85	0.85
Adj. Flow (vph)	78	367	841	63	305	139	480	367	30	27	140	61
RTOR Reduction (vph)	0	281	200	0	71	0	0	9	0	0	51	0
Lane Group Flow (vph)	78	507	220	63	373	0	480	388	0	27	150	0
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA		Prot	NA	
Protected Phases	1	6	7	5	2		7	4		3	8	
Permitted Phases			6									
Actuated Green, G (s)	3.8	18.4	32.7	3.0	17.6		14.3	23.5		1.5	10.7	
Effective Green, g (s)	3.8	18.4	32.7	3.0	17.6		14.3	23.5		1.5	10.7	
Actuated g/C Ratio	0.06	0.29	0.52	0.05	0.28		0.23	0.38		0.02	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	96	871	802	76	901		662	1248		38	548	
v/s Ratio Prot	c0.05	c0.17	0.06	0.04	0.12		c0.17	c0.12		0.02	0.05	
v/s Ratio Perm			0.10									
v/c Ratio	0.81	0.58	0.27	0.83	0.41		0.73	0.31		0.71	0.27	
Uniform Delay, d1	28.9	18.7	8.3	29.4	18.2		22.2	13.7		30.2	22.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	38.8	2.8	0.2	49.7	1.4		3.9	0.1		47.3	0.3	
Delay (s)	67.7	21.6	8.4	79.1	19.6		26.2	13.9		77.5	22.7	
Level of Service	E	C	A	E	B		C	B		E	C	
Approach Delay (s)		20.1			27.0			20.6			29.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	22.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	62.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (vph)	313	496	235	331	598	180	239	893	268	252	1162	390
Ideal Flow (vphpl)	1600	1800	1800	1600	1800	1800	1600	1800	1800	1600	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.91		0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	2891	3353	1500	2891	3353	1500	2891	4651		2891	4818	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	340	539	255	360	650	196	260	971	291	274	1263	424
RTOR Reduction (vph)	0	0	56	0	0	56	0	82	0	0	0	49
Lane Group Flow (vph)	340	539	199	360	650	140	260	1180	0	274	1263	375
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	1	6		5	2	3
Permitted Phases			4			8						2
Actuated Green, G (s)	8.0	15.4	21.4	8.0	15.4	21.4	6.0	19.0		6.0	19.0	27.0
Effective Green, g (s)	8.0	15.4	21.4	8.0	15.4	21.4	6.0	19.0		6.0	19.0	27.0
Actuated g/C Ratio	0.12	0.24	0.33	0.12	0.24	0.33	0.09	0.30		0.09	0.30	0.42
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	359	801	591	359	801	591	269	1372		269	1421	722
v/s Ratio Prot	0.12	0.16	0.03	c0.12	c0.19	0.02	0.09	0.25		c0.09	c0.26	0.06
v/s Ratio Perm			0.10			0.07						0.19
v/c Ratio	0.95	0.67	0.34	1.00	0.81	0.24	0.97	0.86		1.02	0.89	0.52
Uniform Delay, d1	28.0	22.2	16.2	28.2	23.1	15.6	29.1	21.4		29.2	21.7	13.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	33.6	2.2	0.3	48.2	6.3	0.2	45.2	7.2		59.7	8.6	0.6
Delay (s)	61.6	24.5	16.5	76.4	29.4	15.8	74.3	28.7		88.9	30.3	14.5
Level of Service	E	C	B	E	C	B	E	C		F	C	B
Approach Delay (s)		33.8			41.2			36.5			35.1	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	36.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	701	1	14	583	315	2	5	2	694	3	149
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	132	825	1	16	662	358	3	7	3	1068	5	229
RTOR Reduction (vph)	0	0	1	0	0	187	0	2	0	0	0	148
Lane Group Flow (vph)	132	825	0	16	662	171	3	8	0	534	539	81
Turn Type	Prot	NA	Perm	Prot	NA	pm+ov	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases			4			8						6
Actuated Green, G (s)	6.0	24.1	24.1	0.8	18.9	34.9	16.0	16.0		16.0	16.0	16.0
Effective Green, g (s)	6.0	24.1	24.1	0.8	18.9	34.9	16.0	16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.08	0.33	0.33	0.01	0.26	0.48	0.22	0.22		0.22	0.22	0.22
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	130	1108	495	17	869	718	347	369		330	350	329
v/s Ratio Prot	c0.08	c0.25		0.01	0.20	0.05	0.00	c0.00		c0.36	0.34	
v/s Ratio Perm			0.00			0.06						0.05
v/c Ratio	1.02	0.74	0.00	0.94	0.76	0.24	0.01	0.02		1.62	1.54	0.25
Uniform Delay, d1	33.5	21.7	16.3	36.0	24.9	11.2	22.2	22.3		28.5	28.5	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	83.1	2.8	0.0	188.5	4.0	0.2	0.0	0.1		291.8	256.9	1.8
Delay (s)	116.5	24.4	16.3	224.6	28.9	11.4	22.3	22.4		320.2	285.3	25.2
Level of Service	F	C	B	F	C	B	C	C		F	F	C
Approach Delay (s)		37.1			25.9			22.4			253.9	
Approach LOS		D			C			C			F	

Intersection Summary			
HCM 2000 Control Delay	118.8	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	72.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	511	1369	53	44	776	291	30	56	52	551	31	339
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	1.00	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	1583	4791		1583	3353	1500	1583	3112		1504	1605	1500
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	1583	4791		1583	3353	1500	1583	3112		1504	1605	1500
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	555	1488	58	49	872	327	35	65	60	822	46	506
RTOR Reduction (vph)	0	4	0	0	0	256	0	48	0	0	0	221
Lane Group Flow (vph)	555	1542	0	49	872	71	35	77	0	436	432	285
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	pm+ov
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases						8						6
Actuated Green, G (s)	21.0	36.6		3.0	18.6	18.6	17.0	17.0		22.0	22.0	43.0
Effective Green, g (s)	23.0	38.6		5.0	20.6	20.6	19.0	19.0		24.0	24.0	47.0
Actuated g/C Ratio	0.24	0.41		0.05	0.22	0.22	0.20	0.20		0.25	0.25	0.50
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	384	1954		83	730	326	317	625		381	407	776
v/s Ratio Prot	c0.35	0.32		0.03	c0.26		0.02	c0.02		c0.29	0.27	0.09
v/s Ratio Perm						0.05						0.10
v/c Ratio	1.45	0.79		0.59	1.19	0.22	0.11	0.12		1.14	1.06	0.37
Uniform Delay, d1	35.8	24.4		43.8	37.0	30.4	30.9	31.0		35.3	35.3	14.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	214.6	2.2		10.7	100.7	0.3	0.7	0.4		91.5	61.8	0.3
Delay (s)	250.4	26.6		54.5	137.7	30.7	31.6	31.4		126.8	97.1	14.9
Level of Service	F	C		D	F	C	C	C		F	F	B
Approach Delay (s)		85.7			106.4			31.4			76.3	
Approach LOS		F			F			C			E	

Intersection Summary			
HCM 2000 Control Delay	86.6	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	94.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	189	1070	206	75	731	118	197	658	51	200	329	141
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	0.95	1.00	1.00	0.91	0.91
Frt	1.00	0.98		1.00	0.98		1.00	1.00	0.85	1.00	0.99	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1583	4701		1583	4717		1583	3353	1500	1583	3192	1365
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1583	4701		1583	4717		1583	3353	1500	1583	3192	1365
Peak-hour factor, PHF	0.79	0.79	0.79	0.82	0.82	0.82	0.96	0.96	0.96	0.79	0.79	0.79
Adj. Flow (vph)	239	1354	261	91	891	144	205	685	53	253	416	178
RTOR Reduction (vph)	0	31	0	0	24	0	0	0	39	0	3	120
Lane Group Flow (vph)	239	1584	0	91	1011	0	205	685	14	253	431	40
Turn Type	Prot	NA		Prot	NA		Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	15.5	31.0		6.0	21.5		14.3	24.0	24.0	13.0	22.7	22.7
Effective Green, g (s)	15.5	31.0		6.0	21.5		14.3	24.0	24.0	13.0	22.7	22.7
Actuated g/C Ratio	0.17	0.34		0.07	0.24		0.16	0.27	0.27	0.14	0.25	0.25
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	272	1619		105	1126		251	894	400	228	805	344
v/s Ratio Prot	c0.15	c0.34		0.06	0.21		0.13	c0.20		c0.16	0.14	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.88	0.98		0.87	0.90		0.82	0.77	0.04	1.11	0.54	0.12
Uniform Delay, d1	36.3	29.2		41.6	33.2		36.6	30.4	24.4	38.5	29.1	25.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	25.8	17.2		48.0	9.6		18.2	6.2	0.2	92.1	2.5	0.7
Delay (s)	62.1	46.4		89.6	42.7		54.8	36.6	24.6	130.6	31.6	26.6
Level of Service	E	D		F	D		D	D	C	F	C	C
Approach Delay (s)		48.4			46.5			39.9			60.3	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (vph)	0	2322	29	12	614	0	0	0	9	865	9	470
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Lane Util. Factor		0.91		1.00	0.91				1.00	0.95	0.91	0.95
Frt		1.00		1.00	1.00				0.86	1.00	0.98	0.85
Flt Protected		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (prot)		4809		1583	4818				1526	1504	1513	1425
Flt Permitted		1.00		0.95	1.00				1.00	0.95	0.96	1.00
Satd. Flow (perm)		4809		1583	4818				1526	1504	1513	1425
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2524	32	13	667	0	0	0	10	940	10	511
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	7	0	5	164
Lane Group Flow (vph)	0	2555	0	13	667	0	0	0	3	508	493	291
Turn Type		NA		Prot	NA				Perm	Perm	NA	Perm
Protected Phases		6		5	2						8	
Permitted Phases									4	8		8
Actuated Green, G (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Effective Green, g (s)		50.4		0.8	55.2				30.0	30.0	30.0	30.0
Actuated g/C Ratio		0.54		0.01	0.59				0.32	0.32	0.32	0.32
Clearance Time (s)		4.0		4.0	4.0				4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0		3.0	3.0				3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		2600		13	2853				491	484	487	458
v/s Ratio Prot		c0.53		c0.01	0.14							
v/s Ratio Perm									0.00	c0.34	0.33	0.20
v/c Ratio		0.98		1.00	0.23				0.01	1.05	1.01	0.64
Uniform Delay, d1		21.0		46.2	9.0				21.5	31.6	31.6	26.9
Progression Factor		1.00		1.00	1.00				1.00	1.00	1.00	1.00
Incremental Delay, d2		14.0		249.6	0.2				0.0	54.5	43.7	2.9
Delay (s)		35.0		295.8	9.2				21.5	86.1	75.3	29.8
Level of Service		C		F	A				C	F	E	C
Approach Delay (s)		35.0			14.7			21.5			64.9	
Approach LOS		C			B			C			E	

Intersection Summary			
HCM 2000 Control Delay	41.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	93.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	SEU	SET	SER	NWL	NWT	NEL	NER
Lane Configurations							
Volume (vph)	0	2001	0	0	968	154	250
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1800
Total Lost time (s)		4.0			4.0	4.0	4.0
Lane Util. Factor		0.91			0.91	0.97	0.91
Frt		1.00			1.00	0.93	0.85
Flt Protected		1.00			1.00	0.97	1.00
Satd. Flow (prot)		4818			4818	3111	1365
Flt Permitted		1.00			1.00	0.97	1.00
Satd. Flow (perm)		4818			4818	3111	1365
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	2175	0	0	1052	167	272
RTOR Reduction (vph)	0	0	0	0	0	2	2
Lane Group Flow (vph)	0	2175	0	0	1052	296	139
Turn Type	Perm	NA			NA	Perm	Perm
Protected Phases		6			2		
Permitted Phases	6					4	4
Actuated Green, G (s)		28.1			28.1	10.4	10.4
Effective Green, g (s)		28.1			28.1	10.4	10.4
Actuated g/C Ratio		0.60			0.60	0.22	0.22
Clearance Time (s)		4.0			4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0	3.0	3.0
Lane Grp Cap (vph)		2911			2911	695	305
v/s Ratio Prot		c0.45			0.22		
v/s Ratio Perm						0.10	c0.10
v/c Ratio		0.75			0.36	0.43	0.45
Uniform Delay, d1		6.6			4.7	15.5	15.6
Progression Factor		1.00			1.00	1.00	1.00
Incremental Delay, d2		1.8			0.3	0.4	1.1
Delay (s)		8.4			5.0	15.9	16.7
Level of Service		A			A	B	B
Approach Delay (s)		8.4			5.0	16.2	
Approach LOS		A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	46.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
12: Temple Avenue & University Drive 6/9/2014

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	383	1	38	1109	817	0	3	0	97	0	64
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	287	485	1	41	1192	878	0	12	0	147	0	97
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	287	485	0	41	1192	878	0	12	0	73	74	15
Turn Type	Prot	NA	Perm	Prot	NA	Free	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			Free						6
Actuated Green, G (s)	18.0	49.4	49.4	4.2	35.6	101.6		16.0		16.0	16.0	16.0
Effective Green, g (s)	18.0	49.4	49.4	4.2	35.6	101.6		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.18	0.49	0.49	0.04	0.35	1.00		0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	280	1630	729	65	1174	1500		277		236	250	236
v/s Ratio Prot	c0.18	0.14		0.03	c0.36			0.01		0.05	0.05	
v/s Ratio Perm			0.00			c0.59						0.01
v/c Ratio	1.02	0.30	0.00	0.63	1.02	0.59		0.04		0.31	0.30	0.06
Uniform Delay, d1	41.8	15.7	13.4	47.9	33.0	0.0		36.3		37.9	37.8	36.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	60.4	0.1	0.0	18.2	30.1	1.7		0.3		3.4	3.0	0.5
Delay (s)	102.2	15.8	13.4	66.2	63.1	1.7		36.6		41.3	40.8	37.0
Level of Service	F	B	B	E	E	A		D		D	D	D
Approach Delay (s)		47.9			37.6			36.6			39.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	101.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	245	316	15	16	1489	353	53	20	14	123	52	769
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	0.88
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3072	4785		1583	3353	1500	1583	3144		1504	1642	2640
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3072	4785		1583	3353	1500	1583	3144		1504	1642	2640
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	299	385	18	17	1567	372	65	24	17	138	58	864
RTOR Reduction (vph)	0	4	0	0	0	140	0	14	0	0	0	0
Lane Group Flow (vph)	299	399	0	17	1567	232	65	27	0	97	99	864
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						Free
Actuated Green, G (s)	15.9	52.0		16.1	52.2	52.2	16.1	16.1		12.1	12.1	112.3
Effective Green, g (s)	17.9	54.0		18.1	54.2	54.2	18.1	18.1		14.1	14.1	112.3
Actuated g/C Ratio	0.16	0.48		0.16	0.48	0.48	0.16	0.16		0.13	0.13	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	489	2300		255	1618	723	255	506		188	206	2640
v/s Ratio Prot	c0.10	0.08		0.01	c0.47		0.04	0.01		c0.06	0.06	
v/s Ratio Perm						0.15						c0.33
v/c Ratio	0.61	0.17		0.07	0.97	0.32	0.25	0.05		0.52	0.48	0.33
Uniform Delay, d1	44.0	16.5		39.9	28.2	17.8	41.2	39.8		45.9	45.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.3	0.0		0.5	15.4	0.3	2.4	0.2		2.4	1.8	0.3
Delay (s)	46.2	16.5		40.4	43.6	18.0	43.6	40.0		48.3	47.5	0.3
Level of Service	D	B		D	D	B	D	D		D	D	A
Approach Delay (s)		29.2			38.7			42.2			9.1	
Approach LOS		C			D			D			A	

Intersection Summary			
HCM 2000 Control Delay	28.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	112.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	101	669	1	10	561	274	2	5	2	618	3	135
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	119	787	1	11	638	311	3	7	3	951	5	208
RTOR Reduction (vph)	0	0	1	0	0	0	0	2	0	0	0	118
Lane Group Flow (vph)	119	787	0	11	638	311	3	8	0	475	481	90
Turn Type	Prot	NA	Perm	Prot	NA	Free	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			Free						6
Actuated Green, G (s)	8.0	29.2	29.2	0.8	22.0	93.0	17.0	17.0		30.0	30.0	30.0
Effective Green, g (s)	8.0	29.2	29.2	0.8	22.0	93.0	17.0	17.0		30.0	30.0	30.0
Actuated g/C Ratio	0.09	0.31	0.31	0.01	0.24	1.00	0.18	0.18		0.32	0.32	0.32
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	1052	470	13	793	1500	289	308		485	515	483
v/s Ratio Prot	c0.08	c0.23		0.01	0.19		0.00	0.00		c0.32	0.30	
v/s Ratio Perm			0.00			c0.21						0.06
v/c Ratio	0.88	0.75	0.00	0.85	0.80	0.21	0.01	0.02		0.98	0.93	0.19
Uniform Delay, d1	42.0	28.6	21.9	46.0	33.5	0.0	31.1	31.2		31.2	30.5	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	42.0	3.0	0.0	166.4	6.0	0.3	0.1	0.1		36.1	26.3	0.9
Delay (s)	84.0	31.6	21.9	212.5	39.4	0.3	31.2	31.3		67.3	56.8	23.6
Level of Service	F	C	C	F	D	A	C	C		E	E	C
Approach Delay (s)		38.4			28.7			31.3			55.1	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	41.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	93.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	494	1267	51	41	714	280	29	54	48	530	30	322
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	0.88
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3072	4790		1583	3353	1500	1583	3116		1504	1605	2640
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3072	4790		1583	3353	1500	1583	3116		1504	1605	2640
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	537	1377	55	46	802	315	34	63	56	791	45	481
RTOR Reduction (vph)	0	4	0	0	0	144	0	45	0	0	0	0
Lane Group Flow (vph)	537	1428	0	46	802	171	34	74	0	419	417	481
Turn Type	Prot	NA		Prot	NA	pm+ov	Split	NA		Split	NA	Free
Protected Phases	7	4		3	8	6	2	2		6	6	
Permitted Phases						8						Free
Actuated Green, G (s)	14.0	33.2		2.4	21.6	45.6	16.0	16.0		24.0	24.0	91.6
Effective Green, g (s)	16.0	35.2		4.4	23.6	49.6	18.0	18.0		26.0	26.0	91.6
Actuated g/C Ratio	0.17	0.38		0.05	0.26	0.54	0.20	0.20		0.28	0.28	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	536	1840		76	863	812	311	612		426	455	2640
v/s Ratio Prot	c0.17	0.30		0.03	c0.24	0.06	0.02	0.02		c0.28	0.26	
v/s Ratio Perm						0.05						c0.18
v/c Ratio	1.00	0.78		0.61	0.93	0.21	0.11	0.12		0.98	0.92	0.18
Uniform Delay, d1	37.8	24.7		42.7	33.2	10.9	30.2	30.3		32.6	31.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	39.3	2.1		12.9	15.9	0.1	0.7	0.4		39.0	23.0	0.2
Delay (s)	77.1	26.9		55.6	49.1	11.0	30.9	30.7		71.6	54.8	0.2
Level of Service	E	C		E	D	B	C	C		E	D	A
Approach Delay (s)		40.6			39.0			30.7			40.2	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM 2000 Control Delay	39.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	91.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	244	413	1	73	1153	923	0	3	0	118	0	70
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500		1765		1504	1593	1500
Peak-hour factor, PHF	0.79	0.79	0.79	0.93	0.93	0.93	0.25	0.25	0.25	0.66	0.66	0.66
Adj. Flow (vph)	309	523	1	78	1240	992	0	12	0	179	0	106
RTOR Reduction (vph)	0	0	1	0	0	0	0	0	0	0	0	89
Lane Group Flow (vph)	309	523	0	78	1240	992	0	12	0	89	90	17
Turn Type	Prot	NA	Perm	Prot	NA	Free	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			Free						6
Actuated Green, G (s)	18.0	44.7	44.7	8.1	34.8	100.8		16.0		16.0	16.0	16.0
Effective Green, g (s)	18.0	44.7	44.7	8.1	34.8	100.8		16.0		16.0	16.0	16.0
Actuated g/C Ratio	0.18	0.44	0.44	0.08	0.35	1.00		0.16		0.16	0.16	0.16
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0			4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0			3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	282	1486	665	127	1157	1500		280		238	252	238
v/s Ratio Prot	c0.20	0.16		0.05	c0.37			0.01		0.06	0.06	
v/s Ratio Perm			0.00			c0.66						0.01
v/c Ratio	1.10	0.35	0.00	0.61	1.07	0.66		0.04		0.37	0.36	0.07
Uniform Delay, d1	41.4	18.5	15.6	44.8	33.0	0.0		35.9		37.9	37.8	36.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00		1.00	1.00	1.00
Incremental Delay, d2	81.6	0.1	0.0	8.5	47.9	2.3		0.3		4.4	3.9	0.6
Delay (s)	123.0	18.6	15.6	53.4	80.9	2.3		36.2		42.4	41.7	36.6
Level of Service	F	B	B	D	F	A		D		D	D	D
Approach Delay (s)		57.4			46.2			36.2			40.0	
Approach LOS		E			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	48.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	100.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	261	350	16	22	1621	367	55	21	16	128	54	795
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	0.88
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (prot)	3072	4785		1583	3353	1500	1583	3134		1504	1643	2640
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.98	1.00
Satd. Flow (perm)	3072	4785		1583	3353	1500	1583	3134		1504	1643	2640
Peak-hour factor, PHF	0.82	0.82	0.82	0.95	0.95	0.95	0.82	0.82	0.82	0.89	0.89	0.89
Adj. Flow (vph)	318	427	20	23	1706	386	67	26	20	144	61	893
RTOR Reduction (vph)	0	4	0	0	0	113	0	17	0	0	0	0
Lane Group Flow (vph)	318	443	0	23	1706	273	67	29	0	101	104	893
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						Free
Actuated Green, G (s)	18.8	70.0		16.0	67.2	67.2	16.0	16.0		13.1	13.1	131.1
Effective Green, g (s)	20.8	72.0		18.0	69.2	69.2	18.0	18.0		15.1	15.1	131.1
Actuated g/C Ratio	0.16	0.55		0.14	0.53	0.53	0.14	0.14		0.12	0.12	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	487	2627		217	1769	791	217	430		173	189	2640
v/s Ratio Prot	c0.10	0.09		0.01	c0.51		0.04	0.01		c0.07	0.06	
v/s Ratio Perm						0.18						c0.34
v/c Ratio	0.65	0.17		0.11	0.96	0.34	0.31	0.07		0.58	0.55	0.34
Uniform Delay, d1	51.8	14.7		49.5	29.8	17.9	50.9	49.2		55.0	54.8	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	0.0		1.0	13.8	0.3	3.7	0.3		4.9	3.4	0.3
Delay (s)	54.9	14.7		50.5	43.6	18.1	54.6	49.5		60.0	58.2	0.3
Level of Service	D	B		D	D	B	D	D		E	E	A
Approach Delay (s)		31.4			39.0			52.5			11.3	
Approach LOS		C			D			D			B	

Intersection Summary			
HCM 2000 Control Delay	30.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	131.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	112	701	1	14	583	315	2	5	2	694	3	149
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00		0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (prot)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	0.95	1.00
Satd. Flow (perm)	1583	3353	1500	1583	3353	1500	1583	1685		1504	1597	1500
Peak-hour factor, PHF	0.85	0.85	0.85	0.88	0.88	0.88	0.75	0.75	0.75	0.65	0.65	0.65
Adj. Flow (vph)	132	825	1	16	662	358	3	7	3	1068	5	229
RTOR Reduction (vph)	0	0	1	0	0	0	0	2	0	0	0	116
Lane Group Flow (vph)	132	825	0	16	662	358	3	8	0	534	539	113
Turn Type	Prot	NA	Perm	Prot	NA	Free	Split	NA		Split	NA	Perm
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases			4			Free						6
Actuated Green, G (s)	8.0	26.8	26.8	1.6	20.4	92.4	17.0	17.0		31.0	31.0	31.0
Effective Green, g (s)	8.0	26.8	26.8	1.6	20.4	92.4	17.0	17.0		31.0	31.0	31.0
Actuated g/C Ratio	0.09	0.29	0.29	0.02	0.22	1.00	0.18	0.18		0.34	0.34	0.34
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	137	972	435	27	740	1500	291	310		504	535	503
v/s Ratio Prot	c0.08	c0.25		0.01	0.20		0.00	0.00		c0.36	0.34	
v/s Ratio Perm			0.00			c0.24						0.08
v/c Ratio	0.96	0.85	0.00	0.59	0.89	0.24	0.01	0.02		1.06	1.01	0.23
Uniform Delay, d1	42.1	30.9	23.3	45.1	35.0	0.0	30.8	30.9		30.7	30.7	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	65.3	7.0	0.0	30.3	13.3	0.4	0.1	0.1		56.8	40.8	1.0
Delay (s)	107.3	37.9	23.3	75.4	48.2	0.4	30.9	31.0		87.5	71.5	23.1
Level of Service	F	D	C	E	D	A	C	C		F	E	C
Approach Delay (s)		47.5			32.1			31.0			69.5	
Approach LOS		D			C			C			E	

Intersection Summary			
HCM 2000 Control Delay	51.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	92.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	511	1369	53	44	776	291	30	56	52	551	31	339
Ideal Flow (vphpl)	1700	1800	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
Total Lost time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	2.0
Lane Util. Factor	0.97	0.91		1.00	0.95	1.00	1.00	0.95		0.95	0.95	0.88
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.93		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (prot)	3072	4791		1583	3353	1500	1583	3112		1504	1605	2640
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	0.96	1.00
Satd. Flow (perm)	3072	4791		1583	3353	1500	1583	3112		1504	1605	2640
Peak-hour factor, PHF	0.92	0.92	0.92	0.89	0.89	0.89	0.86	0.86	0.86	0.67	0.67	0.67
Adj. Flow (vph)	555	1488	58	49	872	327	35	65	60	822	46	506
RTOR Reduction (vph)	0	3	0	0	0	189	0	52	0	0	0	0
Lane Group Flow (vph)	555	1543	0	49	872	138	35	73	0	436	432	506
Turn Type	Prot	NA		Prot	NA	Perm	Split	NA		Split	NA	Free
Protected Phases	7	4		3	8		2	2		6	6	
Permitted Phases						8						Free
Actuated Green, G (s)	28.7	57.5		6.2	35.0	35.0	16.1	16.1		35.1	35.1	130.9
Effective Green, g (s)	30.7	59.5		8.2	37.0	37.0	18.1	18.1		37.1	37.1	130.9
Actuated g/C Ratio	0.23	0.45		0.06	0.28	0.28	0.14	0.14		0.28	0.28	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	720	2177		99	947	423	218	430		426	454	2640
v/s Ratio Prot	c0.18	0.32		0.03	c0.26		0.02	0.02		c0.29	0.27	
v/s Ratio Perm						0.09						c0.19
v/c Ratio	0.77	0.71		0.49	0.92	0.33	0.16	0.17		1.02	0.95	0.19
Uniform Delay, d1	46.8	28.7		59.3	45.5	37.1	49.7	49.8		46.9	46.0	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.1	1.1		3.9	13.9	0.5	1.6	0.9		49.7	30.1	0.2
Delay (s)	51.9	29.8		63.2	59.4	37.5	51.3	50.6		96.6	76.1	0.2
Level of Service	D	C		E	E	D	D	D		F	E	A
Approach Delay (s)		35.6			53.8			50.8			54.6	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay	46.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	130.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Appendix D

Freeway Analysis

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,518	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD\text{^}(0.84)$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,802} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{32.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,220	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}996} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{36.3} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,869	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,175} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{39.5} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,875	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD\text{^}(0.84)$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,901} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{34.6} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,922	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{0.84}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,190} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{39.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,774	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,426} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S} =$ **44.1** pc/mi/ln

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	9,564	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2{,}644} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{48.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	8,355	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	Other Inputs		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):		75.4 - f_{LW} - f_{LC}		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	- 3.22TRD^(0.84) =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ =	**2,310**	pc/h/ln	Density (D): $\frac{v_p}{S}$ =	**42.0**	pc/mi/ln
[a] Speed (S):	55.0	mi/h	Level of Service (LOS):	**E**	

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	5,607	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	5.26	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%			
Terrain Type:	Level		**Other Inputs**		
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	Lateral Clearance (f_{LC}):		mi/h
for RVs (E_R):	1.2	Total Ramp Density (TRD):		ramps/mi
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.974	Free-Flow Speed: $75.4 - f_{LW} - f_{LC} - 3.22TRD^{0.84}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **1,531** pc/h/ln

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **27.8** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,974	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,631} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S} = \mathbf{29.7}$ pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,848	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}597} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **29.0** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,454	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$ $- 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}762} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{32.0} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,243	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,432} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{26.0} \text{ pc/mi/ln}$$

Level of Service (LOS): **C**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,586	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD\text{^}(0.84) =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,525} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.7} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,468	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,493} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.
[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,035	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,648} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{30.0} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,582	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,820} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{33.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	7,221	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%			
Terrain Type:	Level		Other Inputs		
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	Lateral Clearance (f_{LC}):		mi/h
for RVs (E_R):	1.2	Total Ramp Density (TRD):		ramps/mi
Heavy Vehicle Factor (f_{HV}): $\dfrac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	Free-Flow Speed: $75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\dfrac{V}{PHF * N * f_{HV} * f_p}$ = **1,996** pc/h/ln

Density (D): $\dfrac{v_p}{S}$ = **36.3** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	7,881	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):		$75.4 - f_{LW} - f_{LC}$		
$\dfrac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	$- 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\dfrac{V}{PHF * N * f_{HV} * f_p}$ =	**2,179**	pc/h/ln	Density (D): $\dfrac{v_p}{S}$ =	**39.6**	pc/mi/ln
[a] Speed (S):	55.0	mi/h	Level of Service (LOS):	**E**	

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	6,922	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations			Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00		Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents			Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5		Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2		Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962		$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **1,914** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **34.8** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,923	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,190} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{39.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,842	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,444} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{44.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	9,613	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

75.4 - f_{LW} - f_{LC} - 3.22TRD^(0.84) = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,658} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{48.3} \text{ pc/mi/ln}$$

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,368	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$$75.4 - f_{LW} - f_{LC} - 3.22TRD\hat{}(0.84) = \quad \text{mi/h}$$

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,313} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{42.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,608	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD\text{^}(0.84) =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}531} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,042	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$ $- 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,650} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **30.0** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,897	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}610} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S} = \mathbf{29.3}$ pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	6,467	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	5.26	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations			**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00		Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents			Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5		Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2		Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):			$75.4 - f_{LW} - f_{LC}$		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.974		$- 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}766} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{32.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	5,311	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	5.26	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level		Number of Lanes:	4.0	lanes
Driver Type:	Commuter/Weekday				

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	Lateral Clearance (f_{LC}):		mi/h
for RVs (E_R):	1.2	Total Ramp Density (TRD):		ramps/mi
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.974	Free-Flow Speed: $75.4 - f_{LW} - f_{LC} - 3.22TRD^{0.84}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **1,450** pc/h/ln

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **26.4** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,587	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,526} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.7} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

EXISTING WITH PROJECT CONDITIONS (YEAR 2014)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,481	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,497} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	6,084	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	5.26	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.974	$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **1,661** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **30.2** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,778	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,874} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{34.1} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,508	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD\text{^}(0.84) =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,076} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{37.7} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	8,183	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations			Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00		Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents			Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5		Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2		Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962		$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **2,262** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **41.1** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	7,150	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}977} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{35.9} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,239	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2{,}278} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{41.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	9,125	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **2,523** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **45.9** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	9,947	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

75.4 - f_{LW} - f_{LC} - 3.22TRD^(0.84) = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,750} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{50.0} \text{ pc/mi/ln}$$

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			Speed Inputs		
Volume (V):	8,689	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%			
Terrain Type:	Level		**Other Inputs**		
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		Speed Adjustment Calculations		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	Lateral Clearance (f_{LC}):		mi/h
for RVs (E_R):	1.2	Total Ramp Density (TRD):		ramps/mi
Heavy Vehicle Factor (f_{HV}): $\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	Free-Flow Speed: $75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **2,402** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **43.7** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,831	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD^{(0.84)}$ = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,592} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{28.9} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,213	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,696} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{30.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,081	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,661} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{30.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,713	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,833} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{33.3} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,452	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD\text{^}(0.84)$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,489} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **27.1** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,809	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}586} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{28.8} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,687	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$
$- 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}553} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{28.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITHOUT PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,277	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} = \quad \text{mi/h}$$

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}714} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{31.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	6,842	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):		75.4 - f_{LW} - f_{LC}		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	- 3.22TRD^(0.84) =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **1,892** pc/h/ln

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **34.4** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	7,509	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):		$75.4 - f_{LW} - f_{LC}$		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	$- 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ = **2,076** pc/h/ln

Density (D): $\frac{v_p}{S}$ = **37.7** pc/mi/ln

[a] Speed (S): 55.0 mi/h

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Eastbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,195	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,266} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{41.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

1. I-10 Westbound

West of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	7,197	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	7.84	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations		**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00	Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents		Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5	Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2	Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):		$75.4 - f_{LW} - f_{LC}$		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.962	$- 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p): $\frac{V}{PHF * N * f_{HV} * f_p}$ =	**1,990**	pc/h/ln	Density (D): $\frac{v_p}{S}$ =	**36.2**	pc/mi/ln
[a] Speed (S):	55.0	mi/h	Level of Service (LOS):	**E**	

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,240	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,278} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{41.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	9,193	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$ $- 3.22TRD\text{^}(0.84)$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2{,}542} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{46.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Eastbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	9,996	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,763} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{50.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **F**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

2. I-10 Westbound

East of SR-57/SR-71 Junction

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	8,702	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	7.84	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.962$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{2,406} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{43.7} \text{ pc/mi/ln}$$

Level of Service (LOS): **E**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,832	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}592} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{28.9} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,281	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD^{(0.84)} =$ ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,715} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{31.2} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Northbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,130	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p): 1.00

Passenger Car Equivalents

for Trucks & Buses (E_T): 1.5

for RVs (E_R): 1.2

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}674} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **30.4** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

3. SR-57 Southbound

North of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	6,726	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,836} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{33.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,520	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)} =$ ______ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,507} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{27.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

AM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,810	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC} - 3.22TRD^{(0.84)}$ = ____ mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1,587} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D): $\frac{v_p}{S}$ = **28.9** pc/mi/ln

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Northbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs

Volume (V):	5,700	veh/h
Peak Hour Factor (PHF):	0.940	
% Trucks & Buses (P_T):	5.26	%
% RVs (P_R):	0.00	%
Grade Length:		mi
Grade %:		%
Terrain Type:	Level	
Driver Type:	Commuter/Weekday	

Speed Inputs

Lane Width:		ft
Right-shoulder Lateral Clearance:		ft
Number of Ramps in 6 miles Centered on Segment:		ramps

Other Inputs

Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations

Driver Population Factor (f_p):	1.00	
Passenger Car Equivalents		
for Trucks & Buses (E_T):	1.5	
for RVs (E_R):	1.2	

Heavy Vehicle Factor (f_{HV}):

$$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} = 0.974$$

Speed Adjustment Calculations

Lane Width (f_{LW}):		mi/h
Lateral Clearance (f_{LC}):		mi/h
Total Ramp Density (TRD):		ramps/mi

Free-Flow Speed:

$75.4 - f_{LW} - f_{LC}$

$- 3.22TRD^{(0.84)}$ = mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \mathbf{1{,}556} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \mathbf{28.3} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

FUTURE WITH PROJECT CONDITIONS (YEAR 2016)

Cal Poly Pomona Parking Structure 2

Highway Capacity Manual 2010 - Basic Freeway Segments Worksheet

4. SR-57 Southbound

South of Temple Avenue

PM Peak Hour

SPEED AND FLOW INPUTS

Flow Inputs			**Speed Inputs**		
Volume (V):	6,326	veh/h	Lane Width:		ft
Peak Hour Factor (PHF):	0.940		Right-shoulder Lateral Clearance:		ft
% Trucks & Buses (P_T):	5.26	%	Number of Ramps in 6 miles Centered on Segment:		ramps
% RVs (P_R):	0.00	%			
Grade Length:		mi			
Grade %:		%	**Other Inputs**		
Terrain Type:	Level				
Driver Type:	Commuter/Weekday		Number of Lanes:	4.0	lanes

SPEED AND FLOW ADJUSTMENT CALCULATIONS

Flow Adjustment Calculations			**Speed Adjustment Calculations**		
Driver Population Factor (f_p):	1.00		Lane Width (f_{LW}):		mi/h
Passenger Car Equivalents			Lateral Clearance (f_{LC}):		mi/h
for Trucks & Buses (E_T):	1.5		Total Ramp Density (TRD):		ramps/mi
for RVs (E_R):	1.2		Free-Flow Speed:		
Heavy Vehicle Factor (f_{HV}):			$75.4 - f_{LW} - f_{LC}$		
$\frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}$ =	0.974		$- 3.22TRD^{(0.84)}$ =		mi/h

LEVEL OF SERVICE AND PERFORMANCE MEASURES

Flow Rate (v_p):

$$\frac{V}{PHF * N * f_{HV} * f_p} = \textbf{1,727} \text{ pc/h/ln}$$

[a] Speed (S): 55.0 mi/h

Density (D):

$$\frac{v_p}{S} = \textbf{31.4} \text{ pc/mi/ln}$$

Level of Service (LOS): **D**

Notes: Methodology from *Highway Capacity Manual 2010*, Transportation Research Board, 2010.
Adjustment factors from HCM 2010 Chapter 11 as follows: LOS, S, FFS, v_p from Exhibits 11-5 and 11-6; E_R/E_T from Exhibits 11-10 through 11-13; f_{LW} from Exhibit 11-8; f_{LC} from Exhibit 11-9; f_p from Page 11-18.

[a] Speed of 55 mi/h was used for segments at Caltrans' request.

Appendix E

Signal Warrant Analysis

Traffic Signal Warrant Analysis Summary

Project Name:	**Cal Poly Pomona, Parking Structure 2**
Analysis Scenario:	**Existing with Project (Year 2014) - AM**
Intersection Number:	**2**
Major Street Name:	**Kellogg Drive**
Minor Street Name:	**University Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Analysis Summary

Project Name:	**Cal Poly Pomona, Parking Structure 2**
Analysis Scenario:	**Existing with Project (Year 2014) - PM**
Intersection Number:	**2**
Major Street Name:	**Kellogg Drive**
Minor Street Name:	**University Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**

Traffic Signal Warrant Analysis Summary

Project Name:	**Cal Poly Pomona, Parking Structure 2**
Analysis Scenario:	**Future with Project (Year 2016) - AM**
Intersection Number:	**2**
Major Street Name:	**Kellogg Drive**
Minor Street Name:	**University Drive**

Summary of Results

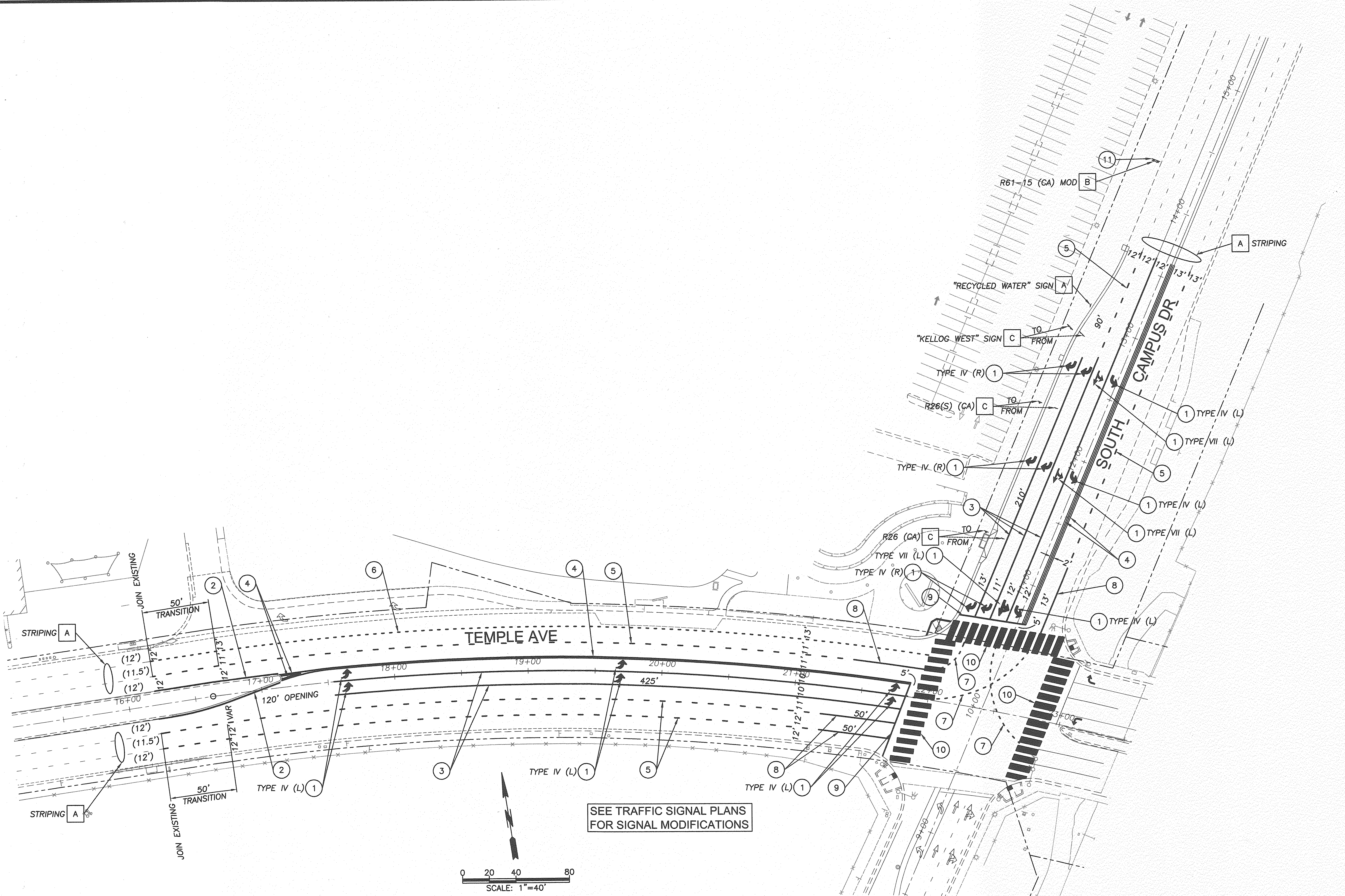
MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	NO
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	NO
Warrant 2 - Four-Hour Vehicular Volume	NO
Warrant 3 - Peak Hour	NO
Any Warrant Satisfied?	**NO**

Traffic Signal Warrant Analysis Summary

Project Name:	**Cal Poly Pomona, Parking Structure 2**
Analysis Scenario:	**Future with Project (Year 2016) - PM**
Intersection Number:	**2**
Major Street Name:	**Kellogg Drive**
Minor Street Name:	**University Drive**

Summary of Results

MUTCD Warrant	Satisfied?
Warrant 1 - Eight-Hour Vehicular Volume	
1A - Minimum Vehicular Volume	YES
1B - Interruption of Continuous Traffic	NO
1C - 80% Combination	YES
Warrant 2 - Four-Hour Vehicular Volume	YES
Warrant 3 - Peak Hour	YES
Any Warrant Satisfied?	**YES**



SIGNING AND STRIPING GENERAL NOTES:

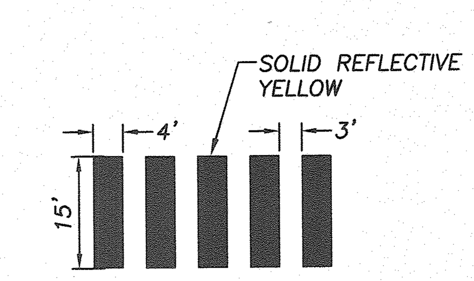
1. SIGNING AND STRIPING INSTALLATIONS SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (CA MUTCD), THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION (CALTRANS) STANDARD PLANS AND SPECIFICATIONS (2012 EDITION), AND ALL ADDENDUM THERETO.
2. ALL STRIPING, MARKINGS, AND LEGENDS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL PROVIDE AND INSTALL RAISED PAVEMENT MARKERS FOR ALL STRIPING. STRIPING, MARKING, AND LEGENDS SHALL CONFORM TO THE LATEST CALTRANS STANDARD PLANS A20A THRU A2D AND A24D THRU A24E.
3. ALL MARKINGS AND LEGENDS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
4. PRIOR TO FINAL ACCEPTANCE OF STREET IMPROVEMENTS, ALL PAVEMENT STRIPING AND STENCILING WITHIN THE PERIMETER OF THE CONSTRUCTION AREA SHALL BE RESTORED TO LIKE NEW CONDITION, IN MANNER MEETING THE APPROVAL OF THE CITY ENGINEER.
5. THE CONTRACTOR SHALL RESTRIPE EXISTING AND CURB MARKINGS OBLITERATED BY NEW CONSTRUCTION WHETHER OR NOT SHOWN ON PLANS AT NO COST TO THE CITY.
6. TEMPORARY STRIPING & MARKINGS SHALL BE APPLIED ON STREET WITH PAVEMENT SURFACE COURSE REPLACEMENTS PRIOR TO OPENING STREET TO THE PUBLIC. IN NO CASE SHALL A NEWLY PAVED STREET OPEN TO THE PUBLIC BE LEFT UNSTRIPED OVER A WEEKEND OR HOLIDAY. PERMANENT STRIPING & MARKING SHALL BE INSTALLED WITHIN (5) CALENDAR DAYS AFTER INSTALLING THE FINAL PAVEMENT SURFACE.
7. ALL CONFLICTING STRIPING, PAVEMENT MARKINGS, LEGENDS AND RAISED PAVEMENT MARKERS SHALL BE REMOVED BY WET SAND BLASTING OR GRINDING. BLACK OUT IS NOT PERMITTED. ALL DAMAGED PAVEMENT DUE TO REMOVALS SHALL BE REPAIRED AS NECESSARY TO MAINTAIN A SMOOTH AND UNIFORM SURFACE OR AS DIRECTED BY THE ENGINEER.
8. ALL TEMPORARY PAVEMENT MARKERS/TABS SHALL BE REMOVED AT THE CONCLUSION OF THE PROJECT.
9. TRAFFIC SIGNAL LOOPS SHALL BE INSTALLED AND FUNCTIONAL WITHIN 5 CALENDAR DAYS OF INSTALLING FINAL PAVEMENT SURFACE.
10. THE CONTRACTOR SHALL FURNISH & INSTALL 2-WAY BLUE REFLECTIVE PAVEMENT MARKERS AT ALL FIRE HYDRANTS WITHIN THE PROJECT LIMITS.

DISPOSITION NOTES:

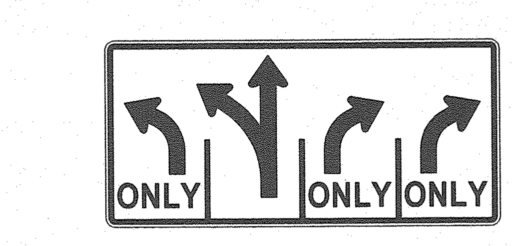
A — PROTECT IN PLACE (ITEM PER PLAN)
B — REMOVE (ITEM PER PLAN)
C — RELOCATE (ITEM PER PLAN)

SIGNING AND STRIPING NOTES:

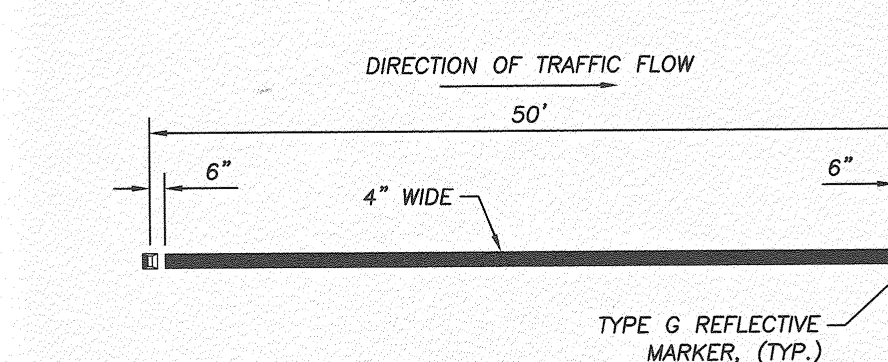
1 — INSTALL PAVEMENT MARKING (TYPE PER PLAN)
2 — INSTALL THERMOPLASTIC YELLOW MEDIAN LINE (DETAIL 25)
3 — INSTALL THERMOPLASTIC WHITE CHANNELIZER LINE (DETAIL 38)
4 — INSTALL THERMOPLASTIC DOUBLE YELLOW MEDIAN LINE (DETAIL 29)
5 — INSTALL THERMOPLASTIC WHITE LANE LINE (DETAIL 9)
6 — INSTALL THERMOPLASTIC WHITE LANE DROP LINE (DETAIL 37B)
7 — INSTALL THERMOPLASTIC WHITE LANE LINE EXTENSIONS (DETAIL 27C)
8 — INSTALL THERMOPLASTIC 4" WIDE WHITE LEAD LINE AND INSTALL TYPE G REFLECTIVE MARKERS AT EACH END PER DETAIL 3 HEREON
9 — INSTALL THERMOPLASTIC 12" WHITE LIMIT LINE
10 — INSTALL THERMOPLASTIC 'BAR' CROSSWALK PER DETAIL 1 HEREON
11 — INSTALL R61-15 (CA) MOD SIGN PER DETAIL 2 ON EXISTING POSTS



'BAR' CROSSWALK MARKINGS (1)
NO SCALE



R61-15 (CA) MOD (2)
NO SCALE



TYPICAL LEAD LINE LAYOUT (3)
NO SCALE

ACCEPTED
BY: [signature] DATE: 12/22/15
PUBLIC WORKS DIRECTOR

RECOMMENDED
BY: [signature] DATE: 12/22/15
RENE GUERRERO, P.E., RCE NO. 66263, CITY ENGINEER

CITY OF POMONA
PUBLIC WORKS DEPARTMENT/ENGINEERING DIVISION

STREET IMPROVEMENT
SIGNING AND STRIPING

TEMPLE AVE AND SOUTH CAMPUS DRIVE

SCALE AS SHOWN	DESIGNED: PVT. ENG.		SHT. 1
	DRAWN: PVT. ENG.		OF 1 SHTS
	CHECKED:		
	REVIEWED:		

△ REVISIONS	DATE	INITIAL

PLANS PREPARED UNDER THE SUPERVISION OF:

REGISTERED PROFESSIONAL ENGINEER — MARIE MARSTON — RCE 38798 — Exp. 03/31/17 — CIVIL — STATE OF CALIFORNIA

MARIE MARSTON RCE 38798 DATE 12-15-15

CIVIL WORKS Engineers, Inc.
3151 Airway Avenue, Suite T-1
Costa Mesa, CA 92626
(714) 966-9060

811 Know what's below. Call before you dig.

ATTENTION:
All utilities shown on this plan are based on available records. It shall be the sole responsibility of the contractor to verify all existing utilities by contacting utility agencies and to avoid damaging existing utilities during excavation.

FOR UNDERGROUND SERVICE ALERT CALL:
811

FJ-159

J:\320.08.14\Cadfiles\Sheets\Temple-Campus\Sheet 5 - Striping.dwg 12/15/15 12:15

Mitigation Monitoring Program

Parking Structure 2

California State Polytechnic University, Pomona

CAL POLY POMONA

November 2014

PARSONS BRINCKERHOFF

EXHIBIT A
Environmental Mitigation Monitoring Program
Parking Structure 2
California State Polytechnic University, Pomona

Section 1: Authority

This Environmental Mitigation Monitoring Program has been prepared pursuant to Section 21081.6 of the California Environmental Quality Act, known as CEQA (Public Resources Code Section 21000 et seq.), to provide for the monitoring of mitigation measures required of the Parking Structure 2 project, as set forth in the Environmental Impact Report (EIR) prepared for the project (State Clearinghouse No. 2014051024). This report will be kept on file in the office of the California State Polytechnic University, Pomona, Facilities Planning and Management, 3801 West Temple Avenue, Pomona, CA 91768.

Section 2: Monitoring Schedule

The California State Polytechnic University, Pomona will be responsible for ensuring compliance with mitigation monitoring applicable to implementation of the Project. Staff will prepare or cause to be prepared reports identifying compliance with mitigation measures, as appropriate. Once construction has begun and is underway, monitoring of the mitigation measures associated with construction will be carried out by the California State Polytechnic University, Pomona.

Section 3: Changes to Mitigation Measures

Any substantive change in the monitoring and reporting program made by the Lead Agency will be reported in writing. Modifications to the mitigation measures may be made by the Lead Agency subject to one of the following findings, documented by evidence included in the record:

a. The mitigation measure included in the Mitigated Negative Declaration (MND) and the Mitigation Monitoring Program is no longer required because the significant environmental impact identified in the Mitigated Negative Declaration has been found not to exist, or to occur at a level which makes the impact less than significant as a result of changes in the project, changes in conditions of the environment, or other factors.

OR

b. The modified or substitute mitigation measure to be included in the Mitigation Monitoring Program provides a level of environmental protection equal to or greater than that afforded by the mitigation measure included in the Mitigated Negative Declaration and the Mitigation Monitoring Program; and

The modified or substitute mitigation measures do not have significant adverse effects on the environment in addition to or greater than those which were considered by the Board of Trustees and other responsible hearing bodies in their decision on the Mitigated Negative Declaration and the proposed project; and

The modified or substitute mitigation measures are feasible, and the Lead Agency, through measures included in the Mitigation Monitoring Program or other Lead Agency procedures, can assure their implementation.

Findings and related documentation supporting the findings involving modifications to mitigation measures will be maintained in the project file with the Mitigation Monitoring Program and will be made available to the public upon request.

Section 5: Mitigation Monitoring Matrix

The mitigation monitoring matrix identifies the environmental issue areas for which monitoring is required, the required mitigation measures, the time frame for monitoring, and the responsible monitoring agencies.

Mitigation Measures	Time Frame / Monitoring Milestone	Responsible Monitoring Party
Traffic/Circulation		
1. University Drive & Temple Avenue – Convert the westbound right-turn lane into a free-flow right-turn lane. The north side of University Avenue has an additional travel lane to capture the free-flow vehicles. A raised island ("porkchop") will be necessary to separate westbound right-turn lanes from the eastbound left-turn traffic and northbound through traffic, as well as providing a refuge for pedestrians. Pedestrian crossings from the island may require the installation of call-buttons for north-south and east-west crossings. Modification of the curb return on the northeast corner will be required to install this mitigation.	Prior to operation	California State Polytechnic University, Pomona
2. South Campus Drive & Temple Avenue – Add a second (dual) southbound right-turn lane on South Campus Drive and a second (dual) eastbound left turn lane on Temple Avenue. The additional southbound right-turn lane will require widening of the west side of South Campus Drive. The additional eastbound left-turn lane can be accommodated within the existing curb-to-curb street width and will require restriping and modification to the center median, as well as modification to the traffic signal head to cover both lanes. After the mitigation, the southbound approach would provide one left-turn lane, one shared through/left-turn lane, and two right-turn lanes. The eastbound approach will provide two left-turn lanes, two through lanes, and one shared through/right-turn lane.	Prior to operation	California State Polytechnic University, Pomona
Short-term Construction Effects		
1. During high wind episodes (wind speeds exceeding a sustained rate of 25 miles per hour); grading or other high-dust generating activities will be suspended.	During construction	CSU Pomona and contractor
2. During smog alerts, all construction activities will be suspended.	During	CSU Pomona and

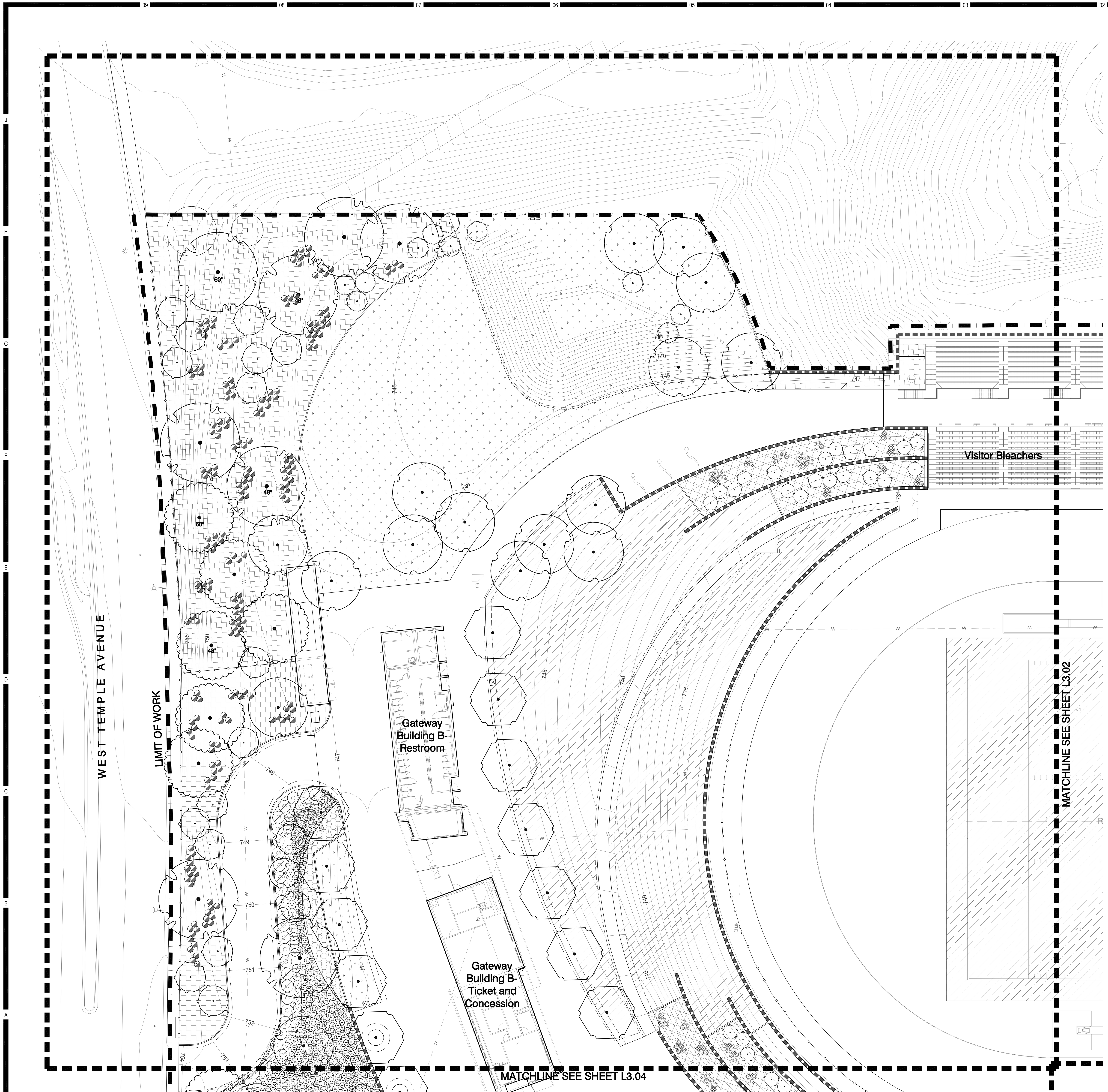
Mitigation Measures	Time Frame / Monitoring Milestone	Responsible Monitoring Party
	construction	contractor
3. All construction equipment will be properly tuned.	During construction	CSU Pomona and contractor
4. Diesel particulate filters are installed on diesel equipment and trucks and low sulfur diesel will be used for construction equipment.	During construction	CSU Pomona and contractor
5. Gasoline, butane, or electric power construction equipment will be used if feasible.	During construction	CSU Pomona and contractor
6. To reduce emissions from idling, the contractor shall ensure that all equipment and vehicles not in use for more than 5 minutes are turned off, whenever feasible.	During construction	CSU Pomona and contractor
7. Low VOC-content asphalt and concrete will be utilized to the extent possible.	During construction	CSU Pomona and contractor
8. All stockpiles will be covered with tarps or plastic sheeting.	During construction	CSU Pomona and contractor
9. Speeds on unpaved roads will be limited to less than 15 miles per hour.	During construction	CSU Pomona and contractor
10. All haul trucks that carry contents subject to airborne dispersal will be covered.	During construction	CSU Pomona and contractor
11. All access points to the site used by haul trucks will be kept clean during site grading.	During construction	CSU Pomona and contractor
12. Exposed surfaces will be watered as needed.	During construction	CSU Pomona and contractor
13. Electricity from power poles rather than temporary diesel or gasoline generators will be used to the extent available.	During construction	CSU Pomona and contractor
14. As needed, outdoor activities in the site vicinity will be limited during high-dust and other heavy construction activities.	During construction	CSU Pomona and contractor
15. Throughout the construction period, the ventilation system in the I-Poly Pomona High School building will be tested and put on a more frequent maintenance schedule to ensure that it is functioning properly and providing proper ventilation.	During construction	CSU Pomona and contractor
16. Construction hours will be restricted per City of Pomona regulations, which limit the hours of construction activity between 7:00 am and 6:00 pm Monday through Friday, and from 8:00 am and 6:00 pm on Saturdays. No construction activity will take place on Sunday or federal holidays.	During construction	CSU Pomona and contractor

Mitigation Measures	Time Frame / Monitoring Milestone	Responsible Monitoring Party
18. Construction staging areas will be located as far as possible from nearby uses.	During construction	CSU Pomona and contractor
19. A flag person will be employed as needed to direct traffic when heavy construction vehicles enter the campus from South University Drive and West Temple Avenue.	During construction	CSU Pomona and contractor
20. Construction and haul trucks will use the City of Pomona designated truck routes to travel to and from the site.	During construction	CSU Pomona and contractor
21. Construction-related truck traffic will be scheduled to avoid peak travel time on the I-10 freeway, and State Route 57, as feasible.	During construction	CSU Pomona and contractor
22. Hauling of equipment and materials and other truck trips during construction will be scheduled during non-peak hours, to the extent feasible.	During construction	CSU Pomona and contractor
23. Construction inert materials, including vegetative matter, asphalt, concrete, and other recyclable materials will be recycled to the extent possible.	During construction	CSU Pomona and contractor

Compliance with Existing Regulations during Construction

For construction, in compliance with the existing regulations and as applicable a Construction Storm Water General Permit will be obtained from the Regional Water Quality Control Board, and Pollution Prevention Plan (SWPPP) will be instituted to reduce the entry of construction debris, sediment, and other material from the construction site into local waterways. The SWPPP may include the following:

- Schedule excavation and grading work for dry weather
- Use as little water as possible for dust control
- Never hose down dirty pavement or impermeable surfaces where fluids have spilled
- Avoid excavation and grading activities during wet weather
- Construct diversion dikes to channel runoff around the site and line channels with grass or roughened pavement to reduce the velocity of runoff
- Install sediment filters and/or debris traps at or near entrances to the storm drain system
- Cover stockpiles and excavated soil with tarps or plastic sheeting
- Plant permanent vegetation as soon as possible



PLANTING LEGEND: Trees, See Details E, F/L3.10

SYMBOL	NAME	WATER REQ.	SIZE	QTY	FORM
	Alnus rhombifolia White Alder	High	48" Box	35	Standard
	Lyonothamnus flo. ssp. asplenifolius Catalina Ironwood	Medium	24" Box	42	Standard
	Cercis occidentalis Western Redbud	Medium	24" Box	167	Low Branching
	Platanus racemosa California sycamore	Medium	36" Box	129	50% Std. 50% Multi
	Quercus agrifolia Coast Live Oak 24" box unless otherwise noted	Low	24" Box 48" Box 60" Box	38 6 7	Standard
	Quercus douglasii Blue Oak 24" box unless otherwise noted	Low	24" Box 48" Box 60" Box	21 4 6	Standard
	Existing palm tree to remain. Protect in place per specifications	-	-	-	-
	Existing tree to remain. Protect in place per specifications	-	-	-	-
	Root Barrier	See Detail B/L3.10			

PLANTING LEGEND: Shrubs and Groundcover

SYMBOL	NAME	WATER REQ.	SIZE	QTY	DETAIL
	Acacia redolens 'Low Boy' Prostrate Acacia	Low	5 gal @ 4' o.c.	8,035	C,D,G/L3.10
	Agave americana American Century Plant	Low	5 gal	121	C,D,G/L3.10
	Agave attenuata Fox Tail Agave	Low	5 gal	2686	C,D,G/L3.10
	Agave weberi Weber's Agave	Low	15 gal	34	C,D,G/L3.10
	Arctostaphylos densiflora "Howard Mcminn' Manzanita	Medium	15 gal	243	C,D,G/L3.10
	Arctostaphylos 'Pacific Mist' Manzanita	Low	1 gal	2836	C,D,G/L3.10
	Carex divulsa Berkeley Sedge	Low	1 gal @ 18"o.c.	4,704	C,D,G/L3.10
	Continus coggygria 'Royal Purple' Smoke Tree	Low	24" Box Low Branching	30	C,D,G/L3.10
	Dodonaea viscosa 'Purpurea' Purple-leafed Hop-bush	Low	15 gal	322	C,D,G/L3.10
	Eriogonum cinereum Ashy-leaf Buckwheat	Medium	5 gal	454	C,D,G/L3.10
	Elaegnus pungens 'Fruitlandii' Fruitland Silverberry	Low	15 gal	497	C,D,G/L3.10
	Muhlenbergia capillaris 'Lenca' Regal Mist Pink Muhly	Medium	1 gal @ 30" o.c.	5067	C,D,G/L3.10
	Muhlenbergia rigens Deer Grass	Low	1 gal	2931	C,D,G/L3.10
	Prunus ilicifolia Holly-Leafed Cherry	Low	15 gal	33	C,D,G/L3.10
	1.5" Pewter Gray Crushed Aggregate Southwest Boulder and Stone		-	2897 SF	I/L3.10

PLANTING LEGEND: Coastal Sage Hydroseed Mixture

SYMBOL	NAME	WATER REQ.	SIZE	QTY	DETAIL
	Hydroseed Mix	-	Per Planting Specifications		

PLANTING LEGEND: Turf

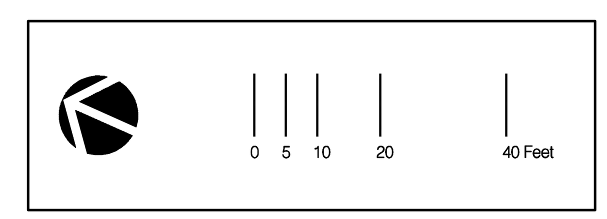
SYMBOL	NAME	WATER REQ.	SIZE/ QTY	DETAIL
	Turf #1: Sod	High	254,390 SF	-
	Turf #2: Hydroseed	High	117,281 SF	-

PLANTING LEGEND: Landscape Boulders

SYMBOL	NAME	SIZE	QTY	DETAIL
4'	Blasted Granite Boulders available through Southwest Boulder phone#=(877)792-7625	4'	3	A/L3.10
3'		3'	4	A/L3.10
2'		2'	4	A/L3.10

PLANTING NOTES

1. In all shrub and groundcover areas apply 2" layer of forest floor bark mulch per Aguinaga Fertilizer Company, Inc. Contractor shall submit sample to landscape architect for approval.
2. Plant quantities are for REFERENCE ONLY, Contractor to provide and install all plant material shown on drawings.
3. Furnish soil report through specifications once rough grading is completed.
4. Turn and fill all planting areas per specifications



HMC Architects
3546 Concours Street / Ontario, CA 91764
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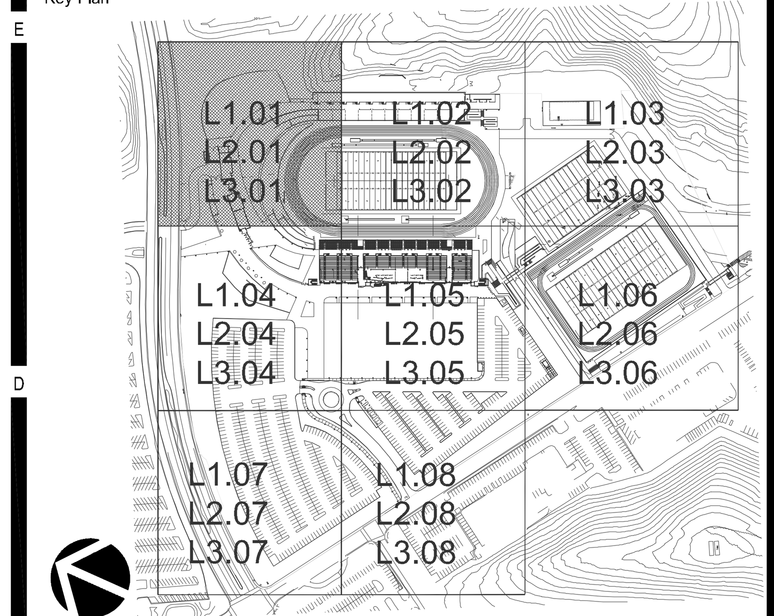
SM
KEYNOTES

EPTDESIGN
landscape architecture | urban design | planning
844 East Green Street, Ste. 201
Pasadena, CA 91101
T | 626.795.2008 F | 626.795.2547
www.eptdesign.com

Key Plan



Consultant Seal
REGISTERED LANDSCAPE ARCHITECT
STEPHEN CARROLL No. 3977
Signature
8/31/15
Expiration Date
Date
STATE OF CALIFORNIA

Agency Approval FILE NO.
IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APPL. ----
ACS______ FLS______ SSS______
DATE ______________

Project Title
MT. SAC
Mt. San Antonio College
MT SAN ANTONIO COLLEGE
Athletics Complex East
1100 North Grand Avenue
Walnut, CA 91789
(909) 274-7500
shothi@mtsac.edu

No.	Description	Date

Drawing Title:
PLANTING PLAN

Architect's Seal
LICENSED ARCHITECT
KENNETH H. SALYER
NO. C-19082
REN. 11-30-15
STATE OF CALIFORNIA

Designed:	SC/BM	Project No.	5018008
Drawn:	JG/BO	Scale:	As indicated
QAQC	BM	Drawing No.	L3.01
Date:	01/15/2015		

PLEASE RECYCLE
DSA SUBMITTAL - NOT FOR CONSTRUCTION

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MT. SAC
Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue • Walnut, CA 91789
909-274-4850 • www.mtsac.edu

Table 1.0

2016 MITIGATION MONITORING PROGRAM

2015 Facilities Master Plan Update (FMPU) and Physical Education Projects (PEP) Final SEIR SCH 2002041161 – Appendix L1

CEQA Guidelines Section 15097

October 10, 2016

Notes: Includes all mitigation measures in 2012 MMP w/revisions and additions for 2015 FMPU
Titles revised to conform to revised CEQA Checklist, Office of Planning and Research (OPR), August 2016
All prior indices for mitigation measures have been changed

ABBREVIATIONS			
ACBM	American Center for Bioilogical Medicine	IES	Illuminating Engineering Society
ADA	Americans with Disabilities Act	LACoFD	Los Angeles County Fire Department
AS	Associated Students	LACSD	Los Angeles County Sanitation Districts
ASF	Assignable Square Feet	LASD	Los Angeles County Sheriff's Department
BACM	Best Available Control Measures	Lmax	Maximum Sound Level
BACT	Best Available Control Technology	LOC	Local Organizing Committee
CAC	California Administrative Code	Metro	Los Angeles County Metropolitan Transportation Authority
CalEPA	California Environmental Protection Agency	MMP	Mitigation Monitoring Program
CALGreen	California Green Building Standards Code	MOU	Memorandum of Understanding
Cal-IPC	California Invasive Plant Council	NB	Northbound
Cal/OSHA	California Division of Occupational Safety and Health	NAHC	California Native American Heritage Commission
Caltrans	California Department of Transportation	NCAA	National Collegiate Athletic Association
CARB	California Air Resources Board	NPDES	National Pollutant Discharge Elimination System
CBC	California Building Code	OHP	California Office of Historic Preservation
CBW	California Black Walnut (trees)	OPR	California Office of Planning and Research
CDFW	California Department of Fish and Wildlife	OSHPD	California Office of Statewide Health Planning and Development
CEC	California Energy Commission	OTFT	Olympic Track and Field Trials
CEQA	California Environmental Quality Act	PEP	Physical Education Projects (Phase 1, 2)
CMPCT	Campus Master Plan Coordinating Team	PPV	Peak Particle Velocity
CNDBB	California Natural Diversity Database	PRC	California Public Resources Code
cy	Cubic Yards	ROW	Right-of-way
dB or dBA	Decibel	RWQCB	Regional Water Quality Control Board
District	Mt. San Antonio Community College District	SCAB	South Coast Air Basin of California
DPH	Los Angeles County Department of Public Health	SCAG	Southern California Association of Governments
DPR	Department of Parks and Recreation	SCAQMD	South Coast Air Quality Management District
DSA	Division of the State Architect	SCCIC	South Central Coast Information Center
EB	Eastbound	SEIR	Subsequent Environmental Impact Report
EIR	Environmental Impact Report	SHGC	Solar Heat Gain Coefficient
EPA	Environmental Protection Agency	SoCalGas	Southern California Gas Company
fc	Foot-candle(s)	SOI	Secretary of the Interior
FMP	Facility or Facilities Master Plan	SRI	Solar Reflectance Index
FMPU	Facility or Facilities Master Plan Update	SWPPP	Stormwater Pollution Prevention Plan
GHG	Greenhouse Gas(es)	THP	Truck Haul Plan
g/l	Gram per Liter	TVMWD	Three Valleys Municipal Water District
HABS	Historic American Buildings Survey	UIMP	Utility or Utilities Infrastructure Master Plan
HH	Heritage Hall	VOC	Volatile Organic Compound
hp	Horsepower	WQMP	Water Quality Management Plan

Mitigation Measures	Monitoring Action	Department Responsible
1. Aesthetics		
AES-01. All athletic field lighting [excluding the PEP (Phase 1, 2)] must employ automatic shutoff devices to monitor that facilities are not illuminated unless desired. Lighting levels and design shall comply with the recommendations of the Illuminating Engineers Society's *Sports and Recreational Area Lighting (IES RP-6-01)* standards for site-specific athletic facilities. Facilities Planning & Management shall ensure compliance.	Assure light and glare is minimized outside of the athletic fields.	Facilities Planning & Management
AES-02. All new construction contracts shall implement those provisions of the latest Landscape Master Plan applicable to their projects. Facilities Planning & Management shall ensure compliance.	Assuring the campus landscaping plans and guidelines are implemented.	Facilities Planning & Management
AES-03. Hilmer Lodge Stadium (Measure RR Project D6) lighting fixtures shall be designed, located, installed, aimed downward or toward structures and maintained in good order to prevent glare, light trespass and light pollution off-site. Lighting fixtures shall be mounted, aimed and shielded so that their beams fall within the primary playing area and their immediate surroundings, and so that no significant off-site light trespass is produced. Stadium Lighting (Measure RR Project D6) shall adhere to National Collegiate Athletic Association (NCAA) Lighting Standards, the Flex Field (Measure RR Project D5) to 50 FC/2:1 Uniformity and the Practice Field (Measure RR Project D5) to 20 FC/2:1 Uniformity (Draft SEIR Table 3.8.20). The Stadium sports lighting shall be turned off as soon as possible following the end of the event when players and spectators are leaving the Stadium. Where feasible, a low-level lighting system shall be used to facilitate spectators leaving the facility, cleanup, nighttime maintenance and other closing activities. Facilities Planning & Management shall ensure compliance.	Assure light and glare is minimized outside of the athletic fields.	Facilities Planning & Management
AES-04. The lighting and programming for the soccer fields south of the Observatory (Building 60) shall be reviewed to determine if light and glare can be reduced for observatory activities on the first Friday of each month for public viewing and on Tuesday and Wednesday nights for student research activities. Facilities Planning & Management shall ensure compliance.	Minimizing conflicts with observatory activities and soccer field lighting.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
1. Aesthetics (continued)		
AES-05. Exterior building materials, colors and signage shall be reviewed by the Campus Master Plan Coordinating Team (CMPCT). All construction contracts shall specify these items and implement CMPCT final recommendations. Facilities Planning & Management shall ensure compliance.	Ongoing provision for consistency between projects and the local built environment.	Facilities Planning & Management
AES-06. All future projects included in the 2015 FMPU that are located near the perimeter of the campus shall conform to the Campus Perimeter Night Lighting Guidelines (Table 3.7.12 in Draft SEIR). The Guidelines do not supersede California Building Code (CBC) Section 1205.6: Light pollution reduction, the California Administrative Code (CAC) Section 10-114: Determination of outdoor lighting zones and administrative rules for use or the Illuminating Engineering Society (IES) G-1-03: *Guideline on Security Lighting for People, Property and Public Spaces* for parking and sidewalks/walkway security illumination levels. Facilities Planning and Management shall ensure compliance.	Project compliance to reduce light or glare impacts off-campus.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
2. Air Quality		
AQ-01. All contractors shall comply with all feasible Best Available Control Measures (BACM) included in South Coast Air Quality Management District (SCAQMD) Rule 403**:** Fugitive Dust included in Table 1: Best Available Control Measures Applicable to All Construction Activity Sources. In addition, the project shall comply with at least one of the following Track-Out Control Options: (a) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 20 feet wide and 50 feet long, (b) Pave the surface extending at least 100 feet and a width of at least 20 feet wide, (c) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle under carriages before vehicles exit the site, (d) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, (e) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified items (a) through (d) above. Individual BACM in Table 1 that are not applicable to the project or infeasible, based on additional new project information, may be omitted only if Facilities Planning & Management specifies in a written agreement with the applicant that specific BACM measures may be omitted. Any clarifications, additions, selections of alternative measures, or specificity required to implement the required BACM for the project shall be included in the written agreement. The written agreement shall be completed prior to demolition and/or grading for the project. Facilities Planning & Management shall include the written agreement within the Mitigation Monitoring Program (MMP) for the project and Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with Rule 403 to reduce air quality emissions.	Facilities Planning & Management Purchasing

Mitigation Measures	Monitoring Action	Department Responsible
2. Air Quality (continued)		
AQ-02. Project construction contracts shall prohibit off-road vehicle and engine idling in excess of five (5) minutes and monitor that all off-road equipment is compliant with the California Air Resources Board's (CARB) in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1 certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet Environmental Protection Agency (EPA) Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, Best Available Control Technology (BACT) documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with CARB and EPA regulations to reduce air quality emissions.	Purchasing Facilities Planning & Management
AQ-03. During construction, contractors shall minimize off-site air quality impacts by implementing the following measures: (a) encourage carpooling for construction workers, (b) limit lane closures to off-peak travel periods, (c) park construction vehicles off traveled roadways, (d) encourage receipt of materials during non-peak traffic hours and (e) sandbag construction sites for erosion control. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with recommendations to reduce air quality emissions.	Purchasing Facilities Planning & Management
AQ-04. Truck deliveries and pickups shall be scheduled during off-peak hours whenever possible to alleviate traffic congestion and air quality emissions during peak hours. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with recommendations to reduce vehicle trips during peak hours.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
2. Air Quality (continued)		
AQ-05. During project construction, all off-road diesel-powered construction equipment greater than 50 hp shall meet the EPA-Certified Tier 4 emission standards where available. All construction equipment shall be outfitted with BACT devices certified by CARB. Any emission control devices used by a contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided by contractors before commencement of equipment use on campus. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with EPA and CARB regulations to reduce diesel particulate emissions.	Facilities Planning & Management
AQ-06. Construction contracts shall specify that all diesel construction equipment used onsite shall use ultra-low sulfur diesel fuel. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with recommendations to reduce diesel engine air quality emissions.	Facilities Planning & Management Purchasing
AQ-07. During grading and construction, fugitive dust from construction operations shall be reduced by watering at least twice daily using reclaimed water or chemical soil binder, where feasible, or water whenever substantial dust generation is evident. Grading sites of more than ten gross acres shall be watered at least three times daily. The project shall comply with Rule 403: Fugitive Dust (South Coast Air Quality Management District). Project contractors shall suspend grading operations, apply soil binders, and water the grading site when wind speeds (as instantaneous gusts) exceed 25 miles per hour. Traffic speeds on all unpaved graded surfaces shall not exceed 15 miles per hour. All grading operations shall be suspended during first and second stage smog alerts. All project contracts shall require project contractors to keep construction equipment engines tuned to monitor that air quality impacts generated by construction activities are minimized. Upon request, contractors shall submit equipment tuning logs to Facilities Planning & Management. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with SCAQMD regulations to reduce particulate emissions.	Facilities Planning & Management Purchasing
AQ-08. To reduce volatile organic compound (VOC) emissions, all construction contracts shall limit painting to eight hours per day and specify the use of paints and coatings with a VOC content of 80 grams per liter (g/l) or less. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with SCAQMD regulations to reduce VOC/ROG particulate emissions.	Facilities Planning & Management Purchasing

Mitigation Measures	Monitoring Action	Department Responsible
2. Air Quality (continued)		
AQ-09. All off-road diesel-powered construction equipment greater than 50 hp (e.g. excavators, graders, dozers, scrappers, tractors, loaders, etc.) used during construction of PEP (Phase 1) shall comply with EPA-Certified Tier IV emission controls where available. The requirements shall be placed in construction contracts. Facilities Planning & Management and Purchasing shall ensure compliance.	Ongoing compliance with SCAQMD regulations for construction NOx emissions.	Facilities Planning & Management Purchasing
AQ-10. The College shall obtain all required permits for the Fire Training Academy from the South Coast Air Quality Management District (SCAQMD). The Fire Technology Program and Technology and Health Division shall ensure compliance.	Compliance with SCAQMD permits for operation of fire suppression activities at the Training Academy.	Fire Technology Program and Technology and Health Division
3. Biological Resources		
BIO-01. New permanent lighting standards in Parking Lot M and Lot W immediately adjacent to sensitive biological habitat areas (i.e. Wildlife Sanctuary/Open Space Zone) shall not exceed 0.2 foot-candles (fc) at five (5) feet outside of the parking lot boundary. Facilities Planning & Management shall ensure compliance.	Minimize light intrusion in open space areas.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
3. Biological Resources (continued)		
BIO-02. A pre-construction survey for Burrowing Owls shall be completed for construction areas with suitable habitat for the Burrowing Owl (e.g. Irrigation Well site, the Detention Basin site, and the Fire Training Academy site). If clearing, grading, or construction is planned to occur during the raptor and migratory bird breeding season (February 1 through July 31) or the burrowing owl breeding season (February 1 through August 31), pre-construction surveys should be conducted in the construction area and in appropriate nesting habitat within 500 feet of the construction area. A pre-construction nest/owl survey should be completed for each project or work area within 14 days prior to the start of construction. Multiple pre-construction surveys may be required because the start of specific projects may be separated in time by months or years. If there are no nesting owls, raptors or protected birds within each area, development would be allowed to proceed. However, if raptors or migratory birds are observed nesting within this area and within sight or sound of the work, development within 300 feet must be postponed either until all nesting has ceased, until after the breeding season, or until construction is moved far away enough so that the activity does not impact the birds. If burrowing owls are observed, impacts shall be avoided according to the *Staff Report on Burrowing Owl Mitigation* (CDFW 2012). All recommendations of the final studies shall be implemented. Facilities Planning & Management shall ensure compliance.	Project compliance with CDFW regulations for rare and sensitive biological resources.	Facilities Planning & Management
BIO-03. Prior to grading within areas of Venturan Coastal Sage Scrub, the College shall identify replacement 2:1 acreage. Replacement habitat shall be completed prior to project completion. Planning & Facilities Management shall ensure compliance.	Project compliance with CDFW regulations for rare and sensitive biological resources.	Facilities Planning & Management
BIO-04. Prior to grading within areas of non-native grassland, the College shall identify replacement 0.5:1 acreage habitat. Replacement habitat shall be completed prior to project completion. Planning & Facilities Management shall ensure compliance.	Project compliance with CDFW regulations for rare and sensitive biological resources.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
3. Biological Resources (continued)		
BIO-05 The College shall adopt a Land Management Plan to minimize impacts on California Black Walnut trees on campus. Any walnut trees with a diameter of six inches four feet above ground damaged or removed by construction activities shall be replaced according to the standards in Table 4 of the *Mt. SAC California Black Walnut Management Plan* (Helix Environmental Planning, September 2012). Replacement habitat shall be completed prior to project completion. The required mitigation acreage for replacement black walnut trees is 2.018 acres. The replacement specimens shall be preserved, maintained and monitored for a period of five years to monitor vitality. Facilities Planning & Management shall ensure compliance.	Project compliance with CDFW regulations for rare and sensitive biological resources. Provides conservation area for replacement of California Black Walnut trees removed elsewhere on campus.	Facilities Planning & Management
BIO-06. Prior to removal of any trees on campus in or near construction areas of the 2015 FMPU during March–May, a qualified biologist shall survey the trees for active nesting sites. All recommendations of the final biological report shall be completed. Facilities Planning & Management shall ensure compliance.	Project compliance with CDFW regulations for rare and sensitive biological resources.	Facilities Planning & Management
BIO-07. If construction is planned during February 1–July 31 in potential raptor nesting habitat, pre-construction surveys of habitat within 500 feet of the construction area shall be completed. All recommendations of the final report shall be implemented. Facilities Planning & Management shall ensure compliance.	Project compliance with CDFW and Bird Migration Act regulations for rare and sensitive biological resources.	Facilities Planning & Management
BIO-08. Permanent development adjacent to any future wetland mitigation areas shall incorporate a 100 foot buffer during final project design. If un-vegetated, the buffer shall be planted with non-invasive species that are compatible with the adjacent wetland mitigation area habitat. A qualified biologist shall review the final landscape plans for the buffer area to confirm that no species on the California Invasive Plant Council (Cal-IPC) list are present in the plan. Facilities Planning & Management shall ensure compliance.	Project compliance to reduce impacts on wetland habitat areas.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
3. Biological Resources (continued)		
BIO-09. The limits of construction for projects adjacent to sensitive habitats should be delineated with silt fencing/fiber rolls and orange construction fencing. A qualified biologist should attend a pre-construction meeting to inform construction crews about the sensitivity of any adjacent habitat. A qualified biologist should also inspect the fencing upon installation and monitor clearing and grading of (and near) native habitat to prevent unauthorized impacts. Facilities Planning & Management shall ensure compliance.	Project compliance to reduce intrusion of construction equipment into sensitive adjacent habitats.	Facilities Planning & Management
BIO-10. Impacts to California Black Walnut trees, if they cannot be avoided, should be mitigated by the replacement of each impacted tree that has a diameter of 6 inches at 4 feet-6 inches above the ground by a 24-inch boxed specimen (Draft SEIR Appendix G1: *Mt. San Antonio College 2015 Facilities Master Plan Update Biological Technical Report* dated April 14, 2016: Table 5). These trees should be planted in the approved California Black Walnut Management Plan area and preserved, maintained and monitored for five years to monitor viability. Facilities Planning & Management shall ensure compliance.	Compliance with impacts on California Black Walnut trees.	Facilities Planning & Management
BIO-11. A 25-foot buffer shall be incorporated into the project design for the Fire Training Academy to protect future wetland mitigation areas along Snow Creek. A qualified biologist shall also review the draft landscape plans for the buffer area to confirm that no species on the Cal-IPC list would be present during plan implementation. Facilities Planning & Management shall ensure compliance.	Compliance with efforts to reduce impacts on native habitat and sensitive bird species.	Facilities Planning & Management
BIO-12. When a preliminary site plan for the Fire Training Academy is available, the College shall have a qualified noise consultant evaluate the potential construction and operational noise impacts of the Fire Training Academy on threatened and special status birds in the adjacent Venturan Coastal Sage Scrub on MSAC Hill and riparian habitat along Snow Creek. The study shall also assess any noise impacts on residential uses to the south. All recommended mitigation measures of the final report shall be implemented. Facilities Planning & Management shall ensure compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
3. Biological Resources (continued)		
BIO-13. Construction noise adjacent to existing Venturan Coastal Sage Scrub habitat within the West Parcel and on MSAC Hill that is retained (i.e. not graded) will be minimized whenever feasible by avoiding construction grading during the prime nesting season. Facilities Planning & Management shall ensure compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning & Management
BIO-14. The College shall file information and exhibits on the animal and plants observed on campus completed for the Final EIR with the California Natural Diversity Database (CNDDB) within six months of certification of the Final EIR. Facilities Planning & Management shall ensure compliance.	Compliance with CDFW request for filing information with CNDDB.	Facilities Planning & Management
BIO-15. The College shall file a written notification with CDFW pursuant to Section 1602 for the proposed re-configuration of the detention basin northeast of the Hilmer Lodge Stadium by November 1, 2016. Facilities Planning & Management shall ensure compliance.	Compliance with CDFW request for filing a Notification pursuant to Section 1602 for the re-configured detention basin.	Facilities Planning & Management
4. Cultural Resources		
CR-01. During construction grading and site preparation activities, the contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the contractor shall inform the project manager. A qualified archaeologist that meets the Secretary of the Interior's Standards (SOI) and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery or other appropriate measures. Facilities Planning & Management shall ensure compliance.	Actions if cultural resources are discovered during grading.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
4. Cultural Resources (continued)		
CR-02. If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the contractor shall inform the project manager, and the Los Angeles County Department of Medical Examiner-Coroner must be notified according to Section 5097.98 of the California Public Resources Code (PRC) and Section 7050.5 of the California Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission (NAHC), and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Facilities Planning & Management shall ensure compliance.	Actions if human remains are discovered during grading.	Facilities Planning & Management
CR-03. The recommended action for the adverse impact on historic resources and on the Mt. SAC Historic District due to buildout of the 2015 FMPU and the PEP is revision of the Land Use Plan to avoid demolition of a CEQA historic resource. An evaluation of feasible options shall be prepared for the Campus Master Plan Coordinating Team (CMPCT) prior to certification of the Final EIR. The College shall evaluate whether the impacts on 3CD or 3CB buildings proposed for removal or demolition in the recommended Historic District may be reduced to Less than Significant. The alternatives to be considered include: (1) Redesign of the 2015 FMPU to avoid impacting the 3CD or 3CB buildings, (2) Redesign of the 2015 FMPU to reduce the project impacts on 3CD or 3CB buildings to Less than Significant, (3) Redesign of phases of the project to reduce impacts on 3CD or 3CB buildings to Less than Significant as more detailed planning for each phase comes up for review before CMPCT, and (4) Evaluation of adaptive reuses of 3CD or 3CB buildings prior to construction. Facilities Planning & Management shall ensure compliance.	Assuring future projects have been assessed for cultural resource impacts	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
4. Cultural Resources (continued)		
CR-04. If project redesign is not feasible to achieve the Project and College's educational goals and facility needs, the following mitigation shall be implemented to reduce the significant impacts on historical resources: (a) Historic American Buildings Survery (HABS) Level II History Report for the (1) Mt. SAC Historic District and for (2) Hilmer Lodge Stadium consistent with the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007); (b) HABS Level II Standard Photography following the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines for the Mt. SAC Historic District and Hilmer Lodge Stadium; (c) Reproduction of select existing drawings for each building proposed for demolition or alteration following HABS Level II guidelines; (d) Creation of an interpretative exhibit within Heritage Hall (HH) including not only the history of Hilmer Lodge Stadium, but the entire Historic District as well, and (e) Development of a "Mt. SAC History" section on the campus website. Facilities Planning & Management shall ensure compliance.	Project compliance with CEQA regulations and California Office of Historic Preservation (OHP) guidelines for historic resources.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
4. Cultural Resources (continued)		
CR-05. Prior to demolition, removal, or remodeling of any 3CD or 3CB building on campus, the College shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as California Department of Parks and Recreation (DPR) 523 forms. Documentation through HABS is an important measure because it allows documentation of the resource before alterations begin. Given the relative historic significance of the resources, Level II HABS is the recommended documentation standard, to be prepared in accordance with the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines (http://www.nps.gov/hdp/standards/habsguidelines.htm). A narrative historical report following the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007) should be prepared for the (1) Mt. SAC Historic District and (2) Hilmer Lodge Stadium. The College shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as California Department of Parks and Recreation (DPR) 523 forms. The DPR forms shall be submitted to the California Office of Historic Preservation (OHP) [via the South Central Coast Information Center (SCCIC] for their records. All other historic documents shall be made available to the public in the collection of the College's Library/Learning Technology Center, including: the HABS Narrative Historical Report, DPR 523 forms, the *Historic Resources on the Campus of Mt. San Antonio College, Walnut, California* (The Building Biographer, June 1, 2003) and *The Historical Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California* (Davis 2012), and a copy of this report. Facilities Planning & Management shall ensure compliance.	Project compliance with CEQA regulations and California Office of Historic Preservation (OHP) guidelines for historic resources.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
4. Cultural Resources (continued)		
CR-06. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the College shall hire a qualified HABS photographer to provide photo-documentation for the properties on campus identified as 3CD or 3CB which are proposed for removal or demolition in the 2012 FMP or 2015 FMPU. The photo-documentation shall be made available to the public in the collection of the College's Library/Learning Technology Center. The documentation should be done in accordance with the Guidelines provided in the *Photographic Specifications: Historic American Building Survey, Historic American Engineering Record, Division of National Register Programs, National Park Service, Western Region*. Facilities Planning & Management shall ensure compliance.	Project compliance with CEQA regulations and California Office of Historic Preservation (OHP) guidelines for historic resources.	Facilities Planning & Management
CR-07. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the College shall prepare archivally stable reproductions of original as-built drawings. Reproductions of drawings shall be done in accordance with the *Secretary of the Interior's Guidelines for Architectural and Engineering Documentation*. Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar in accordance with the U.S. Copyright Act, as amended. Facilities Planning & Management shall ensure compliance.	Project compliance with CEQA regulations and California Office of Historic Preservation (OHP) guidelines for historic resources.	Facilities Planning & Management
CR-08. To recognize the history of Mt. SAC, part of the facilities for the new Physical Education Projects (PEP) (Phase 1) will include Heritage Hall, an area dedicated to historical interpretation of the history of Hilmer Lodge Stadium and the College. The interpretative panels could utilize information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.	Preserve and honor Mt. SAC's history.	Facilities Planning & Management
CR-09. To further recognition of the history of Mt. SAC, a page or series of pages should be developed for inclusion on the College's website. This project could be completed as a multi-disciplinary project, prepared by students in the Technology and History departments utilizing the information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.	Preserve and honor Mt. SAC's history.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
4. Cultural Resources (continued)		
CR-10. An architectural historian or historical architect meeting the Secretary of the Interior's (SOI) Professional Qualification Standards for either discipline shall review the proposed architectural drawings and renderings of the Library/Learning Technology Center (6), Bookstore/Auxiliary Services (9A) and Technology Center (28 A/B) to monitor compliance with the SOI Standards for the Treatment of Historic Properties. The person should be consulted during the early design of the renovation projects to monitor adherence to the Standards and to minimize plan alternations during the design process. Facilities Planning & Management shall ensure compliance.	Project compliance with CEQA regulations and SOI's guidelines for Treatment of Historic Properties.	Facilities Planning & Management
5. Energy		
EN-01. An energy management system shall be installed in all new facilities to reduce energy consumption and related pollutant emissions. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with recommendations to reduce energy and air quality emissions.	Facilities Planning & Management
6. Greenhouse Gas Emissions		
GH-01. Future buildings exceeding 20,000 ASF shall have building roof coverings with a minimum three-year aged solar reflectance and thermal emittance, or a minimum solar reflectance index (SRI) greater than or equal to the values specified in Sections A5.106.11.2.1 and A5 106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) 3 complying with Sections A5.106.11.2.3 as shown in Table A5.106.11.2.1 or A5.106.11.2.2 in Appendix A5 for Non-Residential Voluntary Measures in the 2013, or more current version of, California Green Building Standards Code (CALGreen). Facilities Planning & Management shall ensure compliance.	Ongoing compliance with CALGreen regulations to reduce cumulative greenhouse gas (GHG) emissions in the South Coast Air Basin of California (SCAB).	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
6. Greenhouse Gas Emissions (continued)		
GH-02. Future buildings exceeding 20,000 ASF shall include occupant sensors, motion sensors and vacancy sensors capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated and shall have a visible status signal indicating that the device is operating properly or that it has failed or malfunctioned. The visible status signal may have an override switch that turns the signal off. In addition, ultrasonic and microwave devices shall have a built-in mechanism that allows the calibration of the sensitivity of the device to room movement in order to reduce the false sensing of occupants and shall comply with either Subsection A5.209.1.4.1 or A5.209.1.4.2 as applicable. These measures are included in Appendix A5 for Non-Residential Voluntary Measures in the 2013, or more current version of, California Green Building Standards Code (CALGreen). Facilities Planning & Management shall ensure compliance.	Ongoing compliance with CALGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning & Management
GH-03. Future buildings exceeding 20,000 ASF shall include installation of field-fabricated fenestration (i.e. windows) and field-fabricated exterior doors only if the compliance documentation demonstrates compliance for the installation using U-factors from Table A5.205.1-A and Solar Heat Gain Coefficient (SHGC) values from Table A5.205.1-B included in Appendix A5 for Non-Residential Voluntary Measures in the 2013, or more current version of, California Green Building Standards Code (CALGreen). Facilities Planning & Management shall ensure compliance.	Ongoing compliance with CALGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning & Management
GH-04. Future buildings exceeding 70,000 ASF shall either have an energy efficiency of 30 percent above Title 24. Part 6 [e.g. exceed California Energy Commission (CEC) requirements] (Performance Approach), based on the 2008 Energy Efficiency Standards by 30 percent and meet the requirements of Division A45.6 or exceed the latest edition of "Savings by Design, Healthcare Modeling Procedures" by 15 percent, in accordance with Section A.5.203.1.2 CALGreen Tier 2 [Office of Statewide Health Planning and Development (OSHPD)], as listed in Appendix A5 for Non-Residential Voluntary Measures in the 2013, or more current version of, California Green Building Standards Code (CALGreen). Facilities Planning & Management shall ensure compliance.	Ongoing compliance with CALGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
7. Hazards & Hazardous Materials		
HAZ-01. Prior to demolition or remodeling, onsite inspection and sampling in all buildings included in the 2015 FMPU for renovation or demolition shall be completed by a qualified Occupational Safety and Health Administration (OSHA) professional for asbestos contaminated building materials and the presence of lead-based paint. All final recommendations of the final approved report(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with OSHA and SCAQMD regulations for American Center for Biological Medicine (ACBM) materials or lead-based paint hazards.	Facilities Planning & Management
HAZ-02. All building plans for laboratories on campus shall be reviewed by the Division of the State Architect (DSA), the State Fire Marshall and the Los Angeles County Fire Department (LACoFD) (Fire Prevention-Engineering Unit) for fire and hazard safety. All final recommendations of the final approved plan(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with DSA regulations for fire and hazard safety in campus laboratories.	Facilities Planning & Management
HAZ-03. Prior to construction, all proposed storage areas onsite of potential hazardous chemicals and materials and operational plans shall be reviewed by the LACoFD. All recommendations of the final approved plans shall be included in construction documents, if applicable, and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing compliance with LACoFD regulations for storage of potential hazardous chemicals and materials on campus.	Facilities Planning & Management
HAZ-04. All materials generated onsite for the Fire Training Academy that are classified as hazardous by state regulations shall be disposed of consistent with OSHA, CalEPA and the Los Angeles County Department of Public Health (DPH). The Fire Technology Program and the Technology and Health Division shall ensure compliance.	Compliance with OSHA, CalEPA and DPH requirements for operation of fire suppression activities at the Fire Training Academy.	Fire Technology Program and Technology and Health Division
8. Hydrology/Water Quality		
HYD-01. Future development occurring for buildout of the 2015 FMPU shall install the drainage facilities required by the 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) and *Figure 2d – Proposed Utility Map – Hydrology Distribution*, as modified by the *Campuswide Stormwater Analysis* prepared by Psomas and dated September 1, 2016 prior to occupancy. Facilities Planning & Management shall ensure compliance.	Providing adequate drainage facilities for all future development on campus.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
8. Hydrology/Water Quality (continued)		
HYD-02. The Master Campus Drainage Plan shall be updated prior to commencement of grading for the Fire Training Academy and Physical Education Projects (Phase 1,2). The Drainage Plan shall comply with the *State of California National Pollutant Discharge Elimination System (NPDES) Construction Activities Storm Water Discharge Permit (Construction Permit*) regulations. When construction activities on campus constitute acreage at or above the threshold acreage, the College shall prepare a Stormwater Pollution Prevention Plan (SWPPP) and a Monitoring Program for the 2015 FMPU. All recommendations of the final drainage plan(s) approved by the Division of the State Architect (DSA) shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provisions for compliance with Water Quality Management Plans (WQMP).	Facilities Planning & Management
HYD-03. All drainage improvements shall be consistent with the current Master Campus Drainage Plan. All recommendations of the approved final drainage plan(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provisions for compliance with campus drainage plans.	Facilities Planning & Management
HYD-04. Prior to excavation onsite for which the preliminary soils/geology report indicated groundwater may be encountered; any required permit for de-watering shall be obtained from the Los Angeles Regional Water Quality Control Board (RWQCB). If effluent concentrations exceed permit requirements, a carbon treatment system or equivalent system to remove pollutants shall be utilized prior to discharge. Facilities Planning & Management shall ensure compliance.	Ongoing provisions for compliance with RWQCB regulations.	Facilities Planning & Management
HYD-05. 21b. The College shall obtain all required permits for the Fire Training Academy from the RWQCB. Facilities Planning & Management and the Fire Technology Program shall ensure compliance.	Compliance with RWQCB permits for wastewater disposal for Fire Training Academy fire suppression activities.	Facilities Planning & Management Fire Technology Program
9. Land Use/Planning		
LU-01. All future land uses on campus, building locations and assignable square footage (ASF) shall be substantially consistent with the 2015 FMPU. Facilities Planning & Management shall ensure compliance.	Ongoing review of consistency between individual projects and 2015 FMPU	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
9. Land Use/Planning (continued)		
LU-02. The following master plan elements shall be revised to conform to the 2015 FMPU: (1) Land Use Plan, (2) Conservation Plan, (3) Circulation and Parking Plan. Facilities Planning & Management shall ensure compliance.	Assuring consistency between the 2015 FMPU Land Use Plan and other elements.	Facilities Planning & Management
LU-03. The City of Walnut should revise its General Plan designation for the Mt. SAC campus to Community College in its next General Plan Update and the Zoning District to Community College (or another applicable) zoning district so the General Plan and Zoning District are consistent. The Community Development Department of the City of Walnut shall ensure compliance.	Resolving inconsistencies between General Plan designations and campus land uses.	City of Walnut
LU-04. The Master Conservation Plan shall be revised to include approximately 25.6 acres of Habitat Mitigation Area for removal of existing California Black Walnut (CBW) trees, Venturan Coastal Sage Scrub and Non-Native Grassland habitats. Facilities Planning & Management shall ensure compliance.	The adopted Mt. San Antonio College *California Black Walnut Management Plan*, Helix Environmental Planning, Inc., September 21, 2012 defines the large 25.6 acres area and the smaller initial CBW replacement habit of 2.02 areas (Figure 4).	Facilities Planning & Management
LU-05. Prior to building construction for the Fire Training Academy, CMPCT shall review the Preliminary Landscaping Plan and a Preliminary Operation and Management Plan for the Fire Training Academy. Facilities Planning & Management shall ensure compliance.	CMPCT oversight of the preliminary plans for the Fire Training Academy.	Facilities Planning & Management
LU-06. Programming for the Auditorium should establish if an adjacent Parking Structure is desirable in Lot B within six months of certification of the Final EIR. A site-specific study is required for the Auditorium and/or an adjacent parking structure. Facilities Planning & Management shall ensure compliance.	Explore advanced planning needs for an additional parking structure near the Auditorium.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
10. Noise		
NO-01. All construction activities, except in emergencies or special circumstances, shall be limited to the hours of 7 am to 7 pm Monday–Saturday. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing of limitation on construction hours to reduce construction noise impacts on adjacent areas.	Facilities Planning & Management
NO-02. Loudspeaker and other public address systems on campus shall be located and adjusted to register no more than 70 dB Lmax at the nearest off-site residences. Facilities Planning & Management shall ensure compliance.	Ongoing restriction of loudspeaker and public address system noise levels to minimize noise impacts on adjacent areas.	Facilities Planning & Management
NO-03. Weekend special events within any athletic field areas such as tournaments, day-long meets, etc. shall be planned to not begin before 7 am on Saturday or 8 am on Sunday. Event Services shall ensure compliance.	Ongoing restriction of event hours to minimize early morning noise impacts on adjacent areas.	Event Services
NO-04. Concrete pouring for Parking Structure J shall be located as far away from residences as possible. Concrete trucks shall use Bonita Drive and Walnut Drive for access. Construction of Parking Structure J is limited to the hours of 7 am to 7 pm Monday–Saturday. Facilities Planning & Management shall ensure compliance.	Ongoing limitations on location of concrete pouring to minimize noise impacts on adjacent off-site residential areas.	Facilities Planning & Management
NO-05. The College shall adopt policies and post signs in Parking Structure J indicating vehicles with alarms may be towed from parking areas if alarms sound for more than five minutes. The Mt. SAC Department of Police/Public Safety shall ensure compliance.	Ongoing restriction on vehicle alarms to minimize noise impacts on adjacent areas.	Department of Police/Public Safety
NO-06. Construction contracts shall specify that construction equipment vibration impacts with a peak particle velocity (PPV) of 0.04 inches per second or more occurring off-site in a sensitive receptor area shall not exceed 15 minutes in any one hour. Facilities Planning & Management shall ensure compliance.	Minimization of vibration off-site for sensitive receptors from construction equipment operations.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
11. Open Space, Managed Resources and Working Landscapes		
MR-01. All recommendations in the final geotechnical report(s) for projects included in the 2015 FMPU shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing requirements to assure public safety from seismic hazards.	Facilities Planning & Management
MR-02. During construction grading and site preparation activities, the contractor shall monitor all construction activities. In the event a paleontological find or a potential paleontological find is discovered, construction activities shall cease and the contractor shall inform the project manager. A qualified paleontologist shall be contacted to analyze the find and recommend further appropriate measures to reduce further impacts on paleontological resources. Facilities Planning & Management shall ensure compliance.	Ongoing during construction	Facilities Planning & Management
12. Population/Housing		
PH-01. Beginning January 2016, then in January 2020 and every five years after January 2020, projections of future campus employment shall be forwarded to the Southern California Association of Governments (SCAG). Human Resources shall ensure compliance.	Ongoing provision for employment projections for SCAG forecasts.	Human Resources
13. Public Services		
PS-01. The net increase in campus wastewater flows shall be projected whenever the Mt. SAC Utility Infrastructure Master Plan (UIMP) is updated based on a new campus FMP or FMPU, or within ten years of the last UIMP Update. The College shall obtain the required permits from the Consolidated Sanitation District of Los Angeles County (LACSD), and pay the required capital facilities fees for the net increase projected in the updated UIMP. Facilities Planning & Management shall ensure compliance.	Ongoing communication of campus circulation and parking conditions for Los Angeles County Sheriff's Department (LASD) vehicular response.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
13. Public Services (continued)		
PS-02. The Mt. SAC Department of Police/Public Safety shall project their Department personnel and equipment needs to accommodate the student, staff and facility increases projected in the 2015 FMPU. The Personnel Plan shall provide for student, staff and visitor security upon buildout of the 2015 FMPU. (Expansions of the Code Blue Emergency Phone System and revisions to the assignment of evening escorts shall be included in the Plan). Department of Police/Public Safety shall ensure compliance.	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs at buildout.	Department of Police/Public Safety
PS-03. Within six months of certification of the 2015 Final EIR, the Department of Police/Public Safety shall complete a security construction plan to address direct and indirect security needs for all construction activities on campus associated with the 2015 FMPU. The special public safety needs of buildings (i.e. demolition, new construction and remodeling), construction sites, transport of construction materials and equipment, construction parking and use of construction equipment shall be addressed. Facilities Planning & Management shall ensure compliance.	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs during construction.	Facilities Planning & Management
PS-04. The Kinesiology, Athletics and Dance Division and the Mt. SAC Department of Police/Public Safety shall prepare a Security Plan for all new special events (i.e. does not include the 2020 Olympic Track & Field Trials) with a maximum daily attendance of 10,000 persons or more. The Security Plan shall be approved by the Board of Trustees a minimum of three (3) months prior to the event. Facilities Planning & Management shall ensure compliance.	Ongoing provision for maintaining safety for personnel and equipment for any future new special events. None are currently planned.	Kinesiology, Athletics and Dance Division Facilities Planning & Management
PS-05. The Kinesiology, Athletics and Dance Division and the Mt. SAC Department of Police/Public Safety shall prepare a Security Plan for the 2020 Olympic Track & Field Trials. The Security Plan shall be approved by the Board of Trustees a minimum of nine (9) months prior to the event. Facilities Planning & Management shall ensure compliance.	Provision for maintaining safety for guests, athletes, students, faculty, staff and volunteers during the event.	Kinesiology, Athletics and Dance Division Facilities Planning & Management
14. Transportation		
TR-01 to TR-14 are intersection improvements or ramp improvements required for buildout of the 2015 Facilities Master Plan Update (FMPU).		

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-01. A second eastbound (EB) right-turn lane shall be added to the Grand Avenue and Cameron Avenue intersection. The City of Industry is the Lead Agency and the County of Los Angeles is an interested agency. The City of Industry shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-02. The College shall provide a minimum of 8,017 parking spaces by 2020 and a minimum of 8,716 spaces by 2025. The parking totals exclude the 50 on-street metered spaces along Temple Avenue. The 2025 student headcount projections and parking requirements shall be updated by January 1, 2020. Facilities Planning & Management shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-03. The EB right-turn lane at the Grand Avenue and Temple Avenue intersection shall be converted to a through/right-turn lane. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-04. The signal phasing for the Grand Avenue and La Puente Road intersection shall be modified to include an EB right-turn overlap phase (i.e. a right-turn protected arrow). The City of Walnut shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-05. The EB approach shall be restriped to include a dedicated right-turn lane at the Temple Avenue and Mt. SAC Way intersection. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-06. Additional improvements at the Temple Avenue and Valley Boulevard intersection are not feasible due to the right-of-way (ROW) constraints near the adjacent railroad line. Therefore, further improvements are not feasible. The City of Pomona is the Lead Agency.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-07. When a site plan is completed, a site-specific analysis shall be completed for the Public Transportation Center. All recommendations of the traffic analysis shall be completed and the project coordinated with the College, the City of Walnut, Foothill Transit and, if required, the Los Angeles County Metropolitan Transportation Authority (Metro). Facilities Planning & Management shall ensure compliance.	Complete required traffic improvements by 2020	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-08. A third NB through-lane is required at the Grand Avenue and Mountaineer Road intersection. However, insufficient right-of-way (ROW) is available within the current curb width. Therefore, further improvements are not feasible. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-09. The NB approach of the Grand Avenue and Baker Parkway intersection shall be restriped to include a third through-lane. However, this improvement would not fully mitigate the cumulative impact. The City of Industry is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-10. When the preliminary design of the pedestrian bridge on Temple Avenue east of Bonita Drive is available, it shall be reviewed by the Executive Board Officers of the Associated Students (AS) of Mt. SAC, by the Campus Master Plan Coordinating Team (CMPCT), by the City of Walnut, and the Division of the State Architect (DSA). All recommendations of a site-specific traffic analysis shall be implemented. The Lead Agency is the City of Walnut.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-11. Convert the existing EB right-turn lane to a through/right-turn lane at the Nogales Street/Amar Road intersection (Intersection Index #1 per *Mt. SAC 2015 Facilities Master Plan Update & Physical Education Projects Traffic Impact Study Final Repor*t prepared by Iteris and dated September 1. 2016). There is sufficient roadway width at the intersection departure lane in the eastbound direction to accommodate the third through-lane. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-12. Restripe the EB approach lane to include a dedicated right-turn lane at the Lemon Avenue/Amar Road intersection (Intersection Index #2). The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-13. Convert the existing NB right-turn lane to a shared through/right-turn lane at the Grand Avenue and SR-60 EB Ramps (Intersection Index #13). There is sufficient roadway width at the intersection departure in the northbound (NB) direction to accommodate the third through lane. The California Department of Transportation is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-14. Modify the traffic signal at the Bonita Drive/Temple Avenue intersection (Intersection Index #15) to include a NB right-turn overlap phase. The City of Walnut is the Lead Agency.	Complete required traffic improvements by 2025	Facilities Planning & Management
TR-15. A third NB through-lane is required at the Grand Avenue and Mountaineer Road intersection. However, insufficient right-of-way ROW is available within the current curb width. Therefore, further improvements are not feasible. The City of Walnut is the Lead Agency.	Assure pedestrian and vehicular safety during truck hauling activities for the PEP (Phase 1).	Facilities Planning & Management
TR-16 to TR-27 are requirements for hosting the 2020 Olympic Track & Field Trials		
TR-16. Facilities Planning & Management, along with the Local Organizing Committee (LOC) shall prepare a Transportation and Parking Management Plan for the 2020 Olympic Track & Field Trials (OTFT). All campus parking locations and parking or shuttle fees shall be included in the Plan. If needed, additional security shall be provided at off-campus shuttle lots. All parking attendants (i.e. a minimum of one for each lot) shall have communication devices to communicate with a Campus Parking Supervisor. The Executive Board Officers of the Associated Students (AS) of Mt. SAC shall be given an opportunity to review and comment on the preliminary plan. The Plan shall be substantially complete at least a year (12 months) before the OTFT begin and be approved by the Board of Trustees. The timeframe relates to the preparation of registration materials and event websites. Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management
TR-17. Parking lot locations, vehicle occupancy requirements, and parking pass fees shall be published in all registration and event materials, on the event websites and included in all media information. The Local Organizing Committee (LOC) shall hire students part-time as parking attendants or, if qualified, as shuttle drivers. Event Services shall ensure compliance.	Distributing information to all registrants, media and the public on parking availability.	Event Services Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-18. The Local Organizing Committee (LOC) shall provide shuttle bus service as described in Draft SEIR Section 3.11.2. The off-campus shuttles shall operate at least three (3) hours before the first event of the day for the 2020 Olympic Track & Field Trials and for at least three (3) hours after the last event ends. Event Services shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Event Services Facilities Planning & Management
TR-19. The Local Organizing Committee (LOC) shall conduct two or more workshops for local Chamber of Commerce members and area hotel managers at least nine (9) months before the 2020 Olympic Track & Field Trials to inform them of the events. The workshops shall discuss shuttle routes and time tables, distribute media packets, answer questions and encourage hotel managers to offer special hotel packages and morning and evening hotel shuttle services between their hotel and the campus free or for a limited fee. The Director of the Local Organizing Committee (LOC) shall ensure compliance.	Distributing information to businesses that provide services to athletics and guests during the event.	Facilities Planning & Management
TR-20. The Transportation and Parking Management Plan for the 2020 Olympic Track & Field Trials shall be based on the information in the Parking Plan in Draft SEIR Section 3.11.2. With the stated minimum persons per vehicle, the designated lots provide parking for at least 14,919 guests and 490 faculty/staff on campus during the 2020 Summer Intersession if classes are not in session (Draft SEIR Table 3.11.5). The Parking Plan provides sufficient parking without Parking Structure J (Draft SEIR Table 3.11.5). Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management
TR-21. If the 2020 Olympic Track & Field Trials are held during the Summer Intersession and classes are in session, the Local Organizing Committee (LOC) shall implement a Parking Plan based on Draft SEIR Section 3.11.2. The Parking Plan shall pre-register faculty and staff for parking on campus for the week (i.e. not daily). Faculty and staff do not need to pre-register for the weekend. This procedure assures all faculty and staff have easy access to reserved parking during the week. Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-22. During registration for the 2020 Olympic Track & Field Trials, registrants may purchase a parking pass for a specific on-campus parking lot (e.g. Lot F) or an off-campus parking pass (e.g. Cal Poly Pomona, Lanterman Developmental Center, Diamond Bar High School or Walnut High School etc.). Parking passes will be sold for the entire 10-day event, for Session 1 (Day 1–4), Day 5–6 or Session 2 (Day 7–10). No parking passes will be issued for the other off-campus shuttle locations. Each registrant who purchases a parking pass shall receive a windshield parking pass for a specific parking lot. Each parking pass shall state the minimum persons per vehicle [e. g. minimum three (3) persons per vehicle]. Registration for athletes and officials shall begin two (2) weeks before registration for the general public. Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management
TR-23. With classes not scheduled in the Summer Intersession, the recommended parking plan for the 2020 Olympic Track & Field Trials (OTFT) is Plan A in Draft SEIR Section 3.11.2 (Table 3.11.5). The OTFT Parking Plan shall be refined when the shuttle route system is finalized (i.e. TR-17). Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management
TR-24. With classes scheduled in the Summer Intersession, the recommended parking plan for the 2020 Olympic Track & Field Trials (OTFT) is Plan B in Draft SEIR Section 3.11.2 (Table 3.11.6). The OTFT Parking Plan shall be refined when the shuttle route system is finalized (i.e. TR-17). An updated focused traffic analysis is required. Facilities Planning & Management shall ensure compliance.	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management
TR-25. For additional reduction in pm peak period conflicts between area commuter traffic and 2020 Olympic Track & Field Trials traffic leaving the final event on Friday or Monday during Session 1, the event schedule shall be revised so guest traffic leaves before the commute period begins or after the pm peak commute period ends. Either event schedule revision will result in reducing the number of pm peak period conflicts by two days, and only two of the ten event days during Session 2 have pm peak conflicts (Draft SEIR Table 3.11.1). Facilities Planning & Management shall ensure compliance.	If feasible, revising the preliminary schedule to reduce traffic congestion weekdays during the pm peak period.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-26. Prior to installation of the Lot F traffic signal, the City of Walnut shall consider lowering the posted travel speed along Temple Avenue near Lot F from 50 mph to 35–40 mph to facilitate access to the Lot F east entry driveway. The Public Works Department of the City of Walnut shall ensure compliance.	Consideration of lower posted travel speeds on Temple Avenue when a signal is warranted at Lot F and Temple Avenue.	Facilities Planning & Management
TR-27. Prior to completion of Parking Structure J, the northside leg at the Lot F and Temple Avenue driveway shall be widened. Facilities Planning & Management shall ensure compliance.	Complete required traffic improvements when required	Facilities Planning & Management
TR-28 to TR-40 are requirements for general parking, construction, and transportation impacts		
TR-28. Beginning in 2015, whenever a traffic/parking study for a FMP has not been completed in five (5) years, a new parking study shall be completed. The parking study shall specify the total parking supply required and a timeframe for providing the required number of campus parking spaces. Facilities Planning & Management shall ensure compliance.	Ongoing provision for adequate parking based on the College's recommended most recent headcount parking standard.	Facilities Planning & Management
TR-29. Site specific traffic and parking studies are required by the College for all new special events (i.e. excluding the 2020 Olympic Track & Field Trials) with projected maximum daily attendance above 15,000 weekdays (excludes Summer Intersession and campus holidays). Facilities Planning & Management shall ensure compliance.	Studies for new Special Events other than the 2020 Olympic Track & Field Trials	Facilities Planning & Management
TR-30. The following recommendations from the *Mt. San Antonio College Traffic Impact Analysis (Revised)* prepared by Kunzman Associates and dated August 22, 2002 shall be implemented for onsite improvements: (1) Preferential carpool parking permits and spaces for special events and/or special recognition of student and faculty achievements, (2) Additional parking spaces for motorcycles, (3) Additional bicycle racks, (4) Bicycle lockers and/or showers and lockers for cyclists, and (5) Evaluation of reduction in free parking, raising parking fees and/or demand parking prices. The evaluation shall be completed by July 1, 2017 and CMPCT shall issue a recommendation to the Board of Trustees by September 1, 2017. Facilities Planning & Management shall ensure compliance.	Ongoing provision to improve alternative transportation on campus.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-31. For hauling operations of more than 15 trucks per hour or more than 100,000 cubic yards (cy), a Truck Haul Plan (THP) approved by the Director of Facilities Planning & Management, with consultation with adjacent cities, shall be implemented. The THP shall consider traffic counts, routes, hours/day of hauling, avoidance of am and pm peak hours, intersection geometrics, access/egress constraints and pieces of construction equipment onsite. Recommendations shall be made concerning all hauling operations to minimize traffic and pedestrian congestion on campus and off campus and included in construction logistics plans. If required, all haul trucks shall be radio-dispatched. Light duty trucks with a weight of no more than 8,500 pounds are exempt from the THP requirements. Facilities Planning & Management shall ensure compliance.	Assure pedestrian safety and reduce vehicular congestion along haul routes for campus construction hauling during peak hour traffic.	Facilities Planning & Management
TR-32. Contractors shall submit traffic handling plans and other construction documents to Facilities Planning & Management prior to commencement of demolition or grading. The plans and documents shall comply with the *Work Area Traffic Control Handbook (WATCH)*. Facilities Planning & Management shall ensure compliance.	Ongoing assurance of public safety at or near project construction sites.	Facilities Planning & Management
TR-33. Demolition and construction contracts shall include plans for temporary sidewalk closure, pedestrian safety on adjacent sidewalks, vehicle and pedestrian safety along the project perimeter and along construction equipment haul routes on campus. These plans shall be reviewed by the Mt. SAC Department of Police/Public Safety and approved by Facilities Planning & Management. Facilities Planning & Management shall ensure compliance.	Ongoing assurance of public safety at or near project construction sites.	Facilities Planning & Management
TR-34. Demolition and construction contracts shall include plans for construction worker parking areas on campus. Facilities Planning & Management shall ensure compliance.	Ongoing provisions for construction employee parking areas near construction sites or in designated areas with permits.	Facilities Planning & Management
TR-35. Each project site shall be adequately barricaded with temporary fencing to secure construction equipment, minimize trespassing, vandalism and short-cut attractions, and reduce hazards during demolition and construction. Facilities Planning & Management shall ensure compliance.	Ongoing provisions for construction security for individual projects and assurance of public safety.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-36. Construction contractors shall post a flag person at locations near a construction site during major truck hauling activities to protect pedestrians from conflicts with heavy equipment entering or leaving the project site. Facilities Planning & Management shall ensure compliance.	Ongoing provision for public safety from truck hauling activities near pedestrian paths.	Facilities Planning & Management
TR-37. Upon completion of project-specific construction documents, the Mt. SAC Department of Police/Public Safety shall complete a parking, pedestrian, circulation and signage plan to address direct and indirect public safety needs for parking on campus during the project-specific construction period. For each major project, the changing parking demands created by construction, increased student enrollments and new building locations shall be addressed. Facilities Planning & Management shall ensure compliance.	Ongoing provision for maintaining adequate parking during construction periods.	Facilities Planning & Management
TR-38. During the preparation of campus grading, landscape and street improvement plans, the sight distance (length of roadway visible to a driver) at each project access on campus shall be reviewed with respect to Caltrans standards. Facilities Planning & Management shall ensure compliance.	Provision for sight distances for public safety on campus near construction sites.	Facilities Planning & Management
TR-39. Onsite traffic signing and striping shall be implemented in conjunction with detailed project-specific construction plans. Facilities Planning & Management shall ensure compliance.	Provision for required onsite traffic signs and striping.	Facilities Planning & Management
TR-40. The Master Vehicular Circulation Plan shall be updated and shall specify all revisions and additions to parking areas, parking controls, public bus stops, private shuttle operations, shuttle stops and signage within the campus needed for buildout of the 2015 FMPU. All recommendations of the approved Vehicular Circulation Plan shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Provision for adequate transportation facilities and services for buildout of the 2015 FMPU.	Facilities Planning & Management
TR-41 to TR-48 are requirements for public transit impacts		
TR-41. The Bursar's Office at Mt. San Antonio College shall participate in the Metrolink College Student Discount Pass Program. Registration materials for each term shall inform student of its availability. Auxiliary Services shall ensure compliance.	Ongoing provision for bus passes for campus students.	Auxiliary Services

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-42. Schedule/fee information for Foothill Transit (including the Go Pass), Metrolink and Metro shall be made available to students for each semester. Auxiliary Services shall ensure compliance.	Ongoing provision for up to date information on area transportation services.	Auxiliary Services
TR-43. The Campus Master Plan Coordinating Team (CMPCT) shall review the preliminary site plan for the Public Transportation Center and recommend any changes needed in the Pedestrian Circulation and Vehicular Circulation exhibits in the 2015 FMPU to provide safe pedestrian paths, including Americans with Disability Act (ADA) requirements for access the Public Transportation Center. Facilities Planning & Management shall ensure compliance.	Ongoing provision for adequate pedestrian paths and vehicular circulation near the Public Transportation Center.	Facilities Planning & Management
TR-44. The District shall complete a Memorandum of Understanding (MOU) with participating transit agencies for the Public Transportation Center. The MOU shall specify all financial, legal, insurance, operation and maintenance responsibilities for each party. Facilities Planning & Management shall ensure compliance.	Provision for legal agreements for operation and funding of the Public Transportation Center.	Facilities Planning & Management
TR-45. The District shall negotiate an agreement with additional transit agencies serving the campus to provide an unlimited bus pass for a fixed student transportation fee per semester by January 1, 2018. Facilities Planning & Management shall ensure compliance.	Complete required traffic improvements by 2018.	Facilities Planning & Management
TR-46. The Executive Board Officers of the Associated Students (AS) of Mt. SAC shall be given an opportunity to review and comment on the Public Transportation Center project prior to CMPCT final review. Facilities Planning & Management shall ensure compliance.	Provide opportunities for student feedback on preliminary plans for the Public Transportation Center.	Facilities Planning & Management
TR-47. Mt. SAC shall meet with Cal Poly Pomona to discuss a joint campus shuttle service by July 1, 2017. Facilities Planning & Management shall ensure compliance.	Explore opportunities for shuttle use between Mt. SAC and Cal Poly Pomona.	Facilities Planning & Management
TR-48. Not Used		
TR-49 to TR-57 are requirements for other transportation issues (TR-48 is no longer being used as an index)		

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-49. When traffic access is allowed (gate controlled) at the southside leg of the Temple Avenue and Lot F driveway (primarily for athletic events), manual traffic control (Mt. SAC or City provided traffic control personnel) shall be utilized. The Kinesiology, Athletics and Dance Division and Facilities Planning & Management shall ensure compliance.	Provision for required traffic controls along Temple Avenue at the Lot F intersection during special events when the Lot F intersection is not signalized.	Kinesiology, Athletics and Dance Division and Facilities Planning & Management
TR-50. All truck hauling from the borrow site to the West Parcel shall have radio-communication to assure that trucks do not create traffic congestion at area intersections, in the left-turn pocket at Grand Avenue and Temple Avenue and at the West Parcel driveway. In addition, haul trucks on the designated haul route shall be spaced to assure that trucks do not impede traffic flow along the haul route, (a) All construction hauling for the West Parcel project shall occur between the hours of 8:30 am to 4:30 pm Monday–Saturday to avoid the am and pm peak hour traffic along the haul route, (b) The hauling contractor shall maintain radio-communication with all trucks at all times, and have a designated person at the West Parcel and at the borrow site who can inform truck drivers at the borrow site if the spacing needs to be adjusted. All truck drivers shall be oriented to the hauling and communication procedures prior to initiating haul activities. The project manager shall ensure truck hauling to assure spacing requirements and hauling activities do not exceed the requirements, (c) Truck haul drivers shall be instructed to maintain proper spacing along the entire return route from the West Parcel to the borrow site. When needed, the drivers should be in radio-communication along the return route to prevent congestion. However, visual contract between trucks may be sufficient to provide spacing without a lot of radio communication on the return haul route and; (d) For 95% of the time, drivers shall maintain a minimum of 80 feet separation between trucks on the return route from the West Parcel to the borrow site on roadway links. This restriction does not apply to intersections where signalization may cause delays. Facilities Planning & Management shall ensure compliance.	Assure pedestrian and vehicular safety during truck hauling activities for the West Parcel Solar project.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-51. Programming for the Auditorium should establish if an adjacent Parking Structure is desirable in Lot B within six months of certification of the Final EIR. A site specific study is required for the Auditorium and/or an adjacent parking structure. Facilities Planning & Management shall ensure compliance.	Explore advanced planning needs for an additional parking structure near the Auditorium.	Facilities Planning & Management
TR-52. The City of Walnut shall consider restricting left-turn movements eastbound along Amar Road east of Country Hollow Drive during the am peak hour, implementation of a resident parking program or restrictions on street parking during certain hours, to minimize student-related traffic in the adjacent neighborhoods west of Grand Avenue south of Collegewood Drive. The Community Development Department of the City of Walnut shall ensure compliance.	Provision for required vehicle turning movement restrictions for vehicular safety.	City of Walnut
TR-53. Truck hauling for grading of the Physical Education Projects (PEP) (Phase 1, 2) site shall be limited to 8 hours a day and a maximum of 18 trucks per hour. Facilities Planning & Management shall ensure compliance.	Truck hauling for PEP.	Facilities Planning & Management
TR-54. When a site plan is completed, a site-specific analysis shall be completed for the Public Transportation Center. All recommendations of the traffic analysis shall be completed and the project coordinated with the College, the City of Walnut, Foothill Transit and if required, Metro. Facilities Planning & Management shall ensure compliance.	Provision for inter-agency coordination and CEQA regulations.	Facilities Planning & Management
TR-55. The Mt. SAC Department of Police/Public Safety shall update their evacuation plans for an extreme emergency by January 1, 2017. The updated emergency evacuation plan shall refine the preliminary plan included in the Final EIR and distribute vehicular traffic from campus lots to Grand Avenue and Temple Avenue in the most efficient and safe manner as possible. Public safety officers shall be deployed to pre-assigned locations and tasks to direct vehicular traffic in pre-determined directions defined in the emergency evacuation plan. Facilities Planning & Management shall ensure compliance.	Provision for a current plan for minimizing the time required to evacuate vehicles and personnel away from campus in an emergency evacuation.	Mt. SAC Department of Police/Public Safety Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
14. Transportation (continued)		
TR-56. For hauling operations of more than 15 trucks per hour and more than 100,000 cubic yards, a Truck Haul Plan (THP) approved by the Director of Facilities Planning & Management, shall be implemented. The THP shall consider traffic counts, haul routes, hours/days of hauling, avoidance of peak hours, intersection geometrics, access/egress constraints, truck load capacity, and pieces of construction equipment onsite and shall specify requirements to minimize traffic and pedestrian congestion on campus and off campus. The THP shall be required in all applicable construction logistics plans. If necessary, all haul trucks shall utilize radio communication to improve traffic flow and minimize congestion. Light duty trucks with a weight of no more than 8,500 pounds are exempted from a THP. Facilities Planning & Management shall ensure compliance.	Minimizing traffic impacts from truck hauling.	Facilities Planning & Management
TR-57. Beginning in 2015, whenever a traffic/parking study for a FMP or FMPU has not been completed in five (5) years, a new parking study shall be completed. The parking study shall specify the total parking supply required and a timeframe for providing the required number of campus parking spaces. Facilities Planning & Management shall ensure compliance.	Providing ample parking supply when enrollment changes.	Facilities Planning & Management
15. Utilities/Service Systems		
SS-01. The 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) shall be updated to accommodate the projected 2019–2020 student enrollment and the facilities included in the buildout of the 2015 FMPU to year 2020. Facilities Planning & Management shall ensure compliance.	Resolution of phasing issues related to infrastructure, new facilitates and student enrollment increases.	Facilities Planning & Management
SS-02. The 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) shall be revised for buildout of the 2015 FMPU. The UIMP shall specify all revisions and additions to water lines from Three Valleys Municipal Water District's (TVMWD) \ PM-1 connector to the campus, and lines within the campus needed for buildout of the 2015 FMPU. All recommendations of the approved UIMP shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provision for ample water supplies on campus.	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
15. Utilities/Service Systems (continued)		
SS-03. The College shall obtain permits and water commitments required by the Three Valleys Municipal Water District (TVMWD) for water service to all projects. These requirements shall be included in construction contracts. TVMWD has requested advance notification whenever demand may increase by more than 50 percent so future planning may be completed. Facilities Planning & Management shall ensure compliance.	Ongoing provision for ample water supplies on campus.	Facilities Planning & Management
SS-04. The 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) shall be updated and shall specify all revisions and additions to sewer lines within the campus needed for buildout of the 2015 FMPU. All recommendations of the approved UIMP shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provision for adequate sewer line capacity on campus.	Facilities Planning & Management
SS-05. The 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) shall be updated and shall specify all revisions and additions to the electrical distribution system within the campus needed for buildout of the 2015 FMPU. All recommendations of the approved UIMP shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Provision for adequate electrical system for buildout of the 2015 FMPU.	Facilities Planning & Management
SS-06. For each project, the College shall obtain all approval(s) required by Southern California Edison (SCE) for electrical service. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provision for electrical service for new projects from SCE.	Facilities Planning & Management
SS-07. For each project**,** the College shall obtain all permits required by the Southern California Gas Company (SoCalGas) for natural gas service. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall ensure compliance.	Ongoing provision for natural gas service for new projects from SoCalGas	Facilities Planning & Management

Mitigation Measures	Monitoring Action	Department Responsible
15. Utilities/Service Systems (continued)		
SS-08. The 2012 Mt. SAC Utility Infrastructure Master Plan (UIMP) shall be updated and shall specify all revisions and additions to solid waste collection systems, storage and transfer within the campus needed for buildout of the 2015 FMPU. All recommendations of the approved UIMP shall be included in construction contracts and implemented. (Contracts with independent trash haulers are not included in these requirements). Facilities Planning & Management shall ensure compliance.	Provision for adequate solid waste facilities on campus for buildout of the 2015 FMPU	Facilities Planning & Management
Source: Mt. San Antonio College Facilities Planning & Management, October 10, 2016		

Table 1
PHYSICAL EDUCATION PROJECT (PHASE 1, 2) SITE-SPECIFIC MITIGATION MONITORING RPOGRAM
Based on 2016 Mitigation Monitoring Program (Adopted by Board of Trustees on October 12, 2016)
SCH 2002041161

Project Name:	Physical Education Project (Phase 1, 2)
Date of Adoption of Project MMP:	August 9, 2017
Identification Number in 2015 Facility Master Plan:	D1 – D5
Project Manager:	Leonard Ortiz
Initial Worksheet Prepared by:	Sid Lindmark, AICP
Date Worksheet Prepared:	April 17, 2017
Phone:	(909) 274-5496
E-Mail:	lortiz6@mtsac.edu

Adopted MMP Mitigation Measures	Other Firms/Agencies Involved	Date Completed	Responsible Party Signature	Comments
1. AESTHETICS				
AES-02. All new construction contracts shall implement those provisions of the latest Facility Master Plan Landscape Plan applicable to their projects. Facilities Planning & Management shall ensure compliance.				
AES-03. Hilmar Lodge Stadium (D6) lighting fixtures shall be designed, located, installed, aimed downward or toward structures, and maintained in good order to prevent glare, light trespass, and light pollution offsite. Lighting fixtures shall be mounted, aimed and shielded so that their beams fall within the primary playing area and their immediate surroundings, and so that no significant off-site light trespass is produced. Stadium Lighting (D6) shall adhere to NCAA Lighting Guidelines, the Flex Field (D5) to 50 FC: 2:1 Uniformity, and the Practice Field (D5) to 30 FC 22:1 Uniformity Standards. The Stadium sports lighting shall be turned off as soon as possible following the end of the event and players and spectators are leaving the Stadium. Where feasible, a low-level lighting				

system shall be used to facilitate spectators leaving the facility, cleanup, nighttime maintenance and other closing activities. Facilities Planning & Management shall ensure compliance.				
AES-05. Exterior building materials, colors and signage shall be reviewed by the Campus Master Plan Coordinating Team (CMPCT). All construction contracts shall specify these items and implement CMPCT final recommendations. Facilities Planning & Management shall monitor compliance.				
AES-06. All future projects included in the 2015 FMPU that are located near the perimeter of the campus shall conform to the Campus Perimeter Night Lighting Guidelines (Table 3.7.12 in Draft EIR). The Guidelines do not supersede California Building Code Section 1205.6, the California Administrative Code Section for the LZA Z, or the Illuminating Engineering Society (IES) G-1-03 Standards for parking and sidewalks/walkway security illumination levels. Facilities Planning and Management shall ensure compliance.				
AES-07. All lighting shall be directed site and not spill over into offsite areas. Al construction contracts shall include provisions for defining the lighting for each project and direct light onsite. Facilities Planning and Management shall ensure compliance.				
2. AIR QUALITY				
AQ-01. All contractors shall comply with all feasible Best Available Control Measures (BACM) *included in* South Coast Air Quality Management District (SCAQMD) *Rule 403:* Fugitive Dust *included in Table* 1: Best Available Control Measures Applicable to All Construction Activity Sources. In addition, the project shall comply with at least one of the following Track-Out Control Options: (a) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 20 feet wide and 50 feet long, (b) Pave the surface extending at least 100 feet and a width of at least 20 feet wide, (c) Utilize a wheel				

shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle under carriages before vehicles exit the site, (d) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site, (e) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the methods specified items (a) through (d) above. Individual BACM in Table 1 that are not applicable to the project or infeasible, based on additional new project information, may be omitted only if Planning Facilities Planning & Management specifies in a written agreement with the applicant that specific BACM measures may be omitted. Any clarifications, additions, selections of alternative measures, or specificity required to implement the required BACM for the project shall be included in the written agreement. The written agreement shall be completed prior to demolition and/or grading for the project. Facilities Planning & Management shall include the written agreement within the Mitigation Monitoring Program for the project and Facilities Planning & Management shall ensure compliance.				
AQ-02. Project construction contracts shall prohibit off-road vehicle and engine idling in excess of five (5) minutes and ensure that all off-road equipment is compliant with the CARB's in-use off-road diesel vehicle regulations and SCAQMD Rule 1186 and 1186.1 certified street sweepers or roadway washing trucks, and all internal combustion engines/construction equipment operating on the project site shall meet EPA-Certified Tier 2 emissions standards, or higher according to the adopted project start date requirements. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQMD operating permit shall be provided to the construction manager at the time of mobilization of each applicable unit of equipment. Facilities Planning & Management shall ensure compliance.				

AQ-03. During construction, contractors shall minimize offsite air quality impacts by implementing the following measures: (a) encourage car pooling for construction workers, (b) limit lane closures to off-peak travel periods, (c) park construction vehicles off traveled roadways, (d) encourage receipt of materials during non-peak traffic hours and (e) sandbag construction sites for erosion control. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
AQ-04. Truck deliveries and pickups shall be scheduled during off-peak hours whenever possible to alleviate traffic congestion and air quality emissions during peak hours. Facilities Planning & Management shall monitor compliance.				
AQ-05. During project construction, all off-road diesel-powered construction equipment greater than 50 hp shall meet the EPA-Certified Tier 4 emission standards where available. All construction equipment shall be outfitted with BACT devices certified by CARB. Any emission control devices used by a contractor shall achieve emissions reductions that are no less than what could be achieved by a Level 3 diesel emissions control strategy for a similarly sized engine as defined by CARB regulations. A copy of each unit's certified tier specification, BACT documentation and CARB or SCAQQMD operating permit shall be provided by contractors before commencement of equipment use on campus. Facilities Planning & Management shall ensure compliance.				
AQ-06. Construction contracts shall specify that all diesel construction equipment used onsite shall use ultra-low sulfur diesel fuel. Facilities Planning & Management shall ensure compliance.				.
AQ-07. During grading and construction, fugitive dust from construction operations shall be reduced by watering at least twice daily using reclaimed water or chemical soil binder, where feasible, or water whenever substantial dust generation is evident. Grading sites of				

more than ten gross acres shall be watered at least three times daily. The project shall comply with Rule 403: Fugitive Dust (South Coast Air Quality Management District). Project contractors shall suspend grading operations, apply soil binders, and water the grading site when wind speeds (as instantaneous gusts) exceed 25 miles per hour. Traffic speeds on all unpaved graded surfaces shall not exceed 15 miles per hour. All grading operations shall be suspended during first and second stage smog alerts. All project contracts shall require project contractors to keep construction equipment engines tuned to ensure that air quality impacts generated by construction activities are minimized. Upon request, contractors shall submit equipment tuning logs to Facilities Planning & Management. Facilities Planning & Management shall ensure compliance.				
AQ-08. To reduce VOC emissions, all construction contracts shall limit painting to eight hours per day; specify the use of paints and coatings with a VOC content of 80 grams per liter (g/l) or less. Facilities Planning & Management shall ensure compliance.				
AQ-09. All off-road diesel-powered construction equipment greater than 50 hp (e.g., excavators, graders, dozers, scrappers, tractors, loaders, etc.) used during construction of PEP (Phase 1) shall comply with EPA-Certified Tier IV emission controls where available. The requirements shall be placed in construction contracts. Facilities Planning & Management shall ensure compliance.				
AQ-10. The college shall obtain all required permits for the Fire Training Academy from the South Coast Air Quality Management District. Fire Technology shall ensure compliance.				
3. BIOLOGICAL RESOURCES				
BIO-01. New permanent lighting standards in Parking Lot M and Lot W immediately adjacent to sensitive biological habitat areas (i.e. Wildlife Sanctuary/Open Space Zone)				

shall not exceed 0.2 foot- candles at five (5) feet outside of the parking lot boundary. Facilities Planning & Management shall ensure compliance.				
BIO-02. Pre-construction burrowing owl (BUOW) surveys will be conducted to ensure no construction related impacts occur to this sensitive species. A pre-construction survey for BUOW shall be completed for construction areas with suitable habitat for the BUOW Owl (e.g. Irrigation Well site, the Detention Basin site, and the Fire Training Academy site). If clearing, grading, or construction is planned to occur during the BUOW breeding season (February 1 through August 31), pre-construction surveys should be conducted in the construction area and in appropriate habitat within 500 feet of the construction area. A pre-construction nest/owl survey should be completed for each project or work area within 14 days of the start of construction. Multiple pre-construction surveys may be required because the start of specific projects may be separated in time by months or years. If there are no nesting owls, within each area, development would be allowed to proceed. If BUOW are observed, impacts shall be avoided according to the Staff Report on Burrowing Owl Mitigation (CDFW 2012). All recommendations of the final studies shall be implemented. Facilities Planning & Management shall ensure compliance.				
BIO-03. Prior to grading within areas of Venturan Coastal Sage Scrub, the college shall identify replacement 2:1 acreage. Replacement habitat shall be installed prior to project completion. Planning & Facilities Management shall ensure compliance.				
BIO-04. Prior to grading within areas of non-native grassland, the college shall identify replacement 0.5:1 acreage habitat. Replacement habitat shall be completed prior to project completion. Planning & Facilities Management shall ensure compliance.				
BIO-06. Prior to removal of any trees on campus in or near construction areas of the 2015 Facility Master Plan				

Update during March - May, a qualified biologist shall survey the trees for active nesting sites of migratory birds. (See BIO -17 for raptors) If migratory birds are observed nesting in the trees, development within 300 feet must be postponed either until all nesting has ceased, or until construction is moved far away enough so that the activity does not impact the birds. Facilities Planning & Management shall monitor compliance.				
BIO-09. The limits of construction for projects adjacent to sensitive habitats should be delineated with silt fencing/fiber rolls and orange construction fencing. A qualified biologist should attend a pre-construction meeting to inform construction crews about the sensitivity of any adjacent habitat. A qualified biologist should also inspect the fencing upon installation and monitor clearing and grading of (and near) native habitat to prevent unauthorized impacts. Facilities Planning & Management shall monitor compliance.				
BIO-10. Impacts to California Black Walnut trees, if they cannot be avoided, should be mitigated by the replacement of each impacted tree that has a diameter of 6 inches at 4 feet, 6 inches above the ground by a 24-inch boxed specimen (Table 5 in Appendix G1). These trees should be planted in the approved California Black Walnut Management Plan area and preserved, maintained and monitored for two years. Planning & Management shall ensure compliance.				Applies to detention basin area
BIO-16. The Planting Plan, EPT Design (Sheet L3.01), January 15, 2015 or its update shall be implemented for the Detention Basin area east of the stadium. Facilities Planning & Management shall ensure compliance.				
BIO-17. Raptors may be impacted during construction activities by nest disruption, habitat loss or noise. A pre-construction survey shall be conducted within 14 days of the start of construction. If clearing, grading, or construction will occur from Feb 1 – July 31, pre-construction surveys shall be conducted in the construction area and in appropriate nesting habitat				

within 500 feet of the construction area. Multiple pre-construction surveys may be required if the start of specific projects is separated in time by months or years. If there are no nesting raptors within each area, development is allowed to proceed. However, if raptors are observed nesting within the area and within sight and sound of the work, development within 300 feet shall be postponed either until all nesting has ceased, until after the breeding season, or until construction is moved far enough away so the activity does not impact the birds. An exception to this would be any raptor nests east of North Grand Avenue. North Grand Avenue is a four-lane road with a landscaped median. Any nests east of the road would likely be habituated to activity from this busy road and unaffected by construction on the West Parcel. Facilities Planning & Management shall monitor compliance.				
BIO-18. Impacts to coastal cactus wren habitat should be mitigated at 2:1 ratio. That is, for each acre of cacti dominated coastal sage scrub impacted, 2 acres should be created and/or preserved. Facilities Planning & Management shall monitor compliance.				May apply to detention basin area
BIO-20. All construction lighting and new campus lighting that is adjacent to sensitive habitat areas should be of low illumination and be shielded and directed downwards and away from adjacent native habitat. Facilities Planning & Management shall monitor compliance.				
4. CULTURAL RESOURCES				
CR-01 During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event that cultural resources (i.e., prehistoric sites, historic sites, and/or isolated artifacts) are discovered, work shall be halted immediately within 50 feet of the discovery and the Contractor shall inform the Project Manager. A qualified archaeologist that meets the Secretary of the Interior's Standards and Guidelines for Professional Qualifications in Archaeology shall be retained to analyze the significance of the discovery and				

recommend further appropriate measures to reduce further impacts on archaeological resources. Such measures may include avoidance, preservation in place, excavation, documentation, curation, data recovery, or other appropriate measures. Facilities Planning & Management shall monitor compliance.				
CR-02. If, during the course of implementing the project, human remains are discovered, all work shall be halted immediately within 50 feet of the discovery, the Contractor shall inform the Project Manager, and the County Coroner must be notified according to Section 5097.98 of the PRC and Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the coroner will notify the Native American Heritage Commission, and the procedures outlined in CEQA Section 15064.5(d) and (e) shall be followed. Facilities Planning & Management shall monitor compliance.				
CR-03. The recommended action for the adverse impact on historic resources and on the Mt. SAC Historic District due to buildout of the 2015 FMPU and the PEP is revision of the Land Use Plan to avoid demolition of a CEQA historic resource. An evaluation of feasible options shall be prepared for CMPCT prior to certification of the Final EIR. The college shall evaluate whether the impacts on 3CD or 3CB buildings proposed for removal or demolition in the recommended District may be reduced to Less than Significant. The alternatives to be considered include: (1) Redesign of the 2015 Facility Master Plan Update to avoid impacting the 3CD or 3CB buildings, (2) Redesign of the 2015 Facility Master Plan Update to reduce the project impacts on 3CD or 3CB buildings to Less than Significant, (3) Redesign of phases of the project to reduce impacts on 3CD or 3CB buildings to Less than Significant as more detailed planning for each phase comes up for review before the Campus Master Plan Coordinating Team (CMPCT), and (4) Evaluation of adaptive reuses of 3CD or 3CB buildings prior to construction. Planning Facilities &				

Management shall monitor compliance. The Facilities Planning & Management Department shall ensure compliance.				
CR-04. If project redesign is not feasible to achieve the Project and College's educational goals and facility needs, the following mitigation shall be implemented to reduce the significant impacts on historical resources: (a) HABS Level II History Report for the (1) Mt. SAC Historic District and for (2) Hilmer Lodge Stadium consistent with the *Historic American Buildings Survey Guidelines for Historical Reports* (National Park Service 2007); (b) HABS Level II Standard Photography following the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines for the Mt. SAC Historic District and Hilmer Lodge Stadium; (c) Reproduction of select existing drawings for each building proposed for demolition or alteration following HABS Level II guidelines; (d) Creation of a interpretative exhibit within Heritage Hall (HH) including not only the history of Hilmer Lodge Stadium, but the entire Historic District as well, and (e) Development of a "Mt. SAC History" section on the campus website. The Facilities Planning & Management Department shall ensure compliance				
CR-05. Prior to demolition, removal, or remodeling of any 3CD or 3CB building on campus, the college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. Documentation through HABS is an important measure because it allows documentation of the resource before alterations begin. Given the relative historic significance of the resources, Level II HABS is the recommended documentation standard, to be prepared in accordance with the *Secretary of Interior Standards and Guidelines for Architectural and Engineering Documentation* and HABS specific guidelines (http://www.nps.gov/hdp/standards/habsguidelines.htm). A narrative historical report following the *Historic*				

American Buildings Survey Guidelines for Historical Reports (National Park Service 2007) should be prepared for the (1) Mt. SAC Historic District and (2) Hilmer Lodge Stadium. The college shall enlist the services of a qualified architectural historian to prepare the HABS Narrative Historical Report as well as CA DPR 523 forms. The DPR forms shall be submitted to the State Office of Historic Preservation (via the SCCIC) for their records. All other historic documents shall be made available to the public in the collection of the College's Learning Technology Center, including: the HABS Narrative Historical Report, DPR 523 forms, the *Historic Resources on the Campus of Mt. San Antonio College, Walnut, California* (The Building Biographer, June 1, 2003) and *The Historical Resources Analysis for Five Buildings at Mount San Antonio College, Los Angeles County, Walnut, California* (Davis 2012), and a copy of this report. Facilities Planning & Management shall ensure compliance.				
CR-06. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall hire a qualified HABS photographer to provide photo-documentation for the properties on campus identified as 3CD or 3CB which are proposed for removal or demolition in the 2012 Facilities Master Plan or 2015 FMP Update. The photo-documentation shall be made available to the public in the collection of the College's Learning Technology Center. The documentation should be done in accordance with the Guidelines provided in the *Photographic Specifications: Historic American Building Survey, Historic American Engineering Record, Division of National Register Programs, National Park Service, Western Region*. Facilities Planning & Management shall ensure compliance.				
CR-07. Prior to demolition, removal or remodeling of any 3CD or 3CB building, the college shall prepare archivally stable reproduction of original as-built drawings. Reproductions of drawings shall be done in accordance with the *Secretary of the Interior's Guidelines for*				

Architectural and Engineering Documentation. Select existing drawings, where available, may be photographed with large-format negatives or photographically reproduced on Mylar in accordance with the U.S. Copyright Act, as amended. Facilities Planning & Management shall ensure compliance.				
CR-08. To recognize the history of Mt. SAC, part of the facilities for the new Stadium will include Heritage Hall, an area dedicated to historical interpretation of the history of Hilmer Lodge Stadium and the college. The interpretative panels could utilize information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.				
CR-09. To further recognition of the history of Mt. SAC, a page or series of pages should be developed for inclusion on the college's website. This project could be completed as a multi-disciplinary school project, prepared by students in the Technology and History departments utilizing the information from the HABS Level II Narrative Historical Report and large-format photographic documentation. Facilities Planning & Management shall ensure compliance.				
CR-10. An architectural historian or historical architect meeting the SOI Professional Qualification Standards for either discipline shall review the proposed architectural drawings and renderings of the Library (6), Bookstore (9A) and Technology Center (28 A/B) to ensure compliance with the SOI Treatment of Historic Properties. The person should be consulted during the early design of the renovation projects to ensure adherence to the Standards and to minimize plan alternations during the design process. Facilities Planning & Management shall ensure compliance.				
5. ENERGY				
EN-01. An energy management system shall be installed in all new facilities to reduce energy consumption and related pollutant emissions. Facilities Planning &				

Management shall monitor compliance.				
6. GREENHOUSE GAS EMISSIONS				
GH-01. Future buildings exceeding 20,000 ASF shall have building roof coverings with a minimum three-year aged solar reflectance and thermal emittance, or a minimum reflectance index (SRI) greater than or equal to the values specified in Sections A5.106.11.2.1 and A5 106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) 3 complying with Sections A5.106.11.2.3 as shown in Table A5.106.11.2.1 or A5.106.11.2.2 in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning & Management shall ensure compliance.				
GH-02. Future buildings exceeding 20,000 ASF shall include occupant sensors, motion sensors and vacancy sensors capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated and shall have a visible status signal indicating that the device is operating properly or that it has failed or malfunctioned. The visible status signal may have an override switch that s turns the signal off. In addition, ultrasonic and microwave devices shall have a built-in mechanism that allows the calibration of the sensitivity of the device to room movement in order to reduce the false sensing of occupants and shall comply with either Subsection A5.209.1.4.1 or A5.209.1.4.2 as applicable. These measures are included in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning & Management shall ensure compliance.				
GH-03. Future buildings exceeding 20,000 ASF shall include installation of field-fabricated fenestration (i.e. windows) and field-fabricated exterior doors only if the compliance documentation demonstrates compliance for the installation using U-factors from Table A5.205.1-A and Solar Heat Gain Coefficient (SHGC) values from Table				

A5.205.1-B included in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning & Management shall ensure compliance.				
GH-04. Future buildings exceeding 70,000 ASF shall either have an energy efficiency of 30 percent above Title 24. Part 6 (e.g. Exceed CEC requirements (Performance Approach), based on the 2008 Energy Efficiency Standards by 30 percent and meet the requirements of Division A45.6) or exceed the latest edition of "Savings by Design, Healthcare Modeling Procedures" by 15 percent, in accordance with Section A.5.203.1.2 CalGreen Tier 2 (OSHPD), as listed in Appendix A5 for Non-Residential Voluntary Measures in the 2010 California Green Building Standards Code (CalGreen). Facilities Planning & Management shall ensure compliance.				
7. HAZARDS & HAZARDOUS MATERIALS				
HAZ-01. Prior to demolition or remodeling, onsite inspection and sampling in all buildings included in the 2015 Facility Master Plan Update for renovation or demolition shall be completed by a qualified OSHA professional for asbestos contaminated building materials and the presence of lead-based paint. All final recommendations of the final approved report(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
HAZ-02. All building plans for laboratories on campus shall be reviewed by the Department of State Architect, the State Fire Marshall and the County of Los Angeles Fire Department (Fire Prevention-Engineering Unit) for fire and hazard safety. All final recommendations of the final approved plan(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
HAZ-03. Prior to construction all proposed storage areas onsite of potential hazardous chemicals and materials and operational plans shall be reviewed by the County of Los				

Angeles Fire Department. All recommendations of the final approved plans shall be included in construction documents, if applicable and implemented. Facilities Planning & Management shall monitor compliance.				
HAZ-04. All materials generated onsite for the Fire Training Academy that are classified as hazardous by state regulations shall be disposed of consistent with OSHA, CALEPA and LACHA. Fire Technology shall ensure compliance.				
8. HYDROLOGY/WATER QUALITY				
HYD-01. Future development occurring for buildout of the 2015 FMPU shall install the drainage facilities required by the Utilities Master Plan Infrastructure Plan, as modified by the 2016 Hydrology Study, Psomas May 2016, and Future Hydrology Figure 2d, (Ibid) prior to occupancy. Facilities Planning & Management shall monitor compliance.				
HYD-02. 7a. The *Master Campus Drainage Plan* shall be updated prior to commencement of grading for the Fire Training Academy and Athletics Education Building projects. The plan shall comply with the *State of California National Pollutant Discharge Elimination System (NPDES) Construction Activities Storm Water Discharge Permit (Construction Permit*) regulations. When construction activities on campus constitute acreage at or above the threshold acreage, the college shall prepare a *Storm Water Pollution Prevention Plan (SWPPP)* and a *Monitoring Program* for the 2012 Facility Master Plan. The *Master Campus Drainage Plan* shall meet any requirements of the County of Los Angeles Department of Public Works and the City of Walnut. All recommendations of the approved final drainage plan(s) shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
HYD-03. All drainage improvements shall be consistent with the *Master Campus Drainage Plan*. All recommendations of the approved final drainage plan(s)				

shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
HYD-04. Prior to excavation onsite for which the preliminary soils/geology report indicated groundwater may be encountered; any required permit for de-watering shall be obtained from the California Regional Water Quality Control Board, Los Angeles Region. If effluent concentrations exceed permit requirements, a carbon treatment system or equivalent system to remove pollutants shall be utilized prior to discharge. Facilities Planning & Management shall monitor compliance.				
9. LAND USE/PLANNING				
LU-01. All future land uses on campus, building locations and square footage (ASF) shall be in substantially consistent with the 2015 Facilities Master Plan Update. Facilities Planning & Management shall monitor compliance.				
LU-02. The following Master Plan elements shall be revised to conform to the 2015 Facilities Master Plan Update: (1) Land Use Plan, (2) Conservation Plan, (3) Circulation and Parking Plan. Facilities Planning & Management shall monitor compliance.				
LU-03. The City of Walnut should revise its General Plan designation for the campus in its next General Plan Update to Community College and the Zoning District to Community College (or another applicable) zoning district so the General Plan and Zoning District are consistent. The Community Development Department of the City of Walnut shall ensure compliance.				
LU-04. The Facility Master Plan Conservation Plan shall be revised to include approximately 25.6 acre Habitat Mitigation Area for removal of existing California Black Walnut, Coastal Sage Scrub and Non-Native Grassland habitats. Facilities Planning & Management shall monitor compliance.				

LU-07. The District shall submit an application for a grading plan to the City of Walnut for all projects subject to the Walnut Municipal Code Sections 6-5.5 and 6-5.6. The grading plan shall confirm to the requirements of the Walnut Municipal Code Section 6-5.3 and Appendix J Sections J101.7, J108 - J111 of Appendix J. To the extent there is any ambiguity as to scope, the WMC controls over Appendix J. The District shall comply with all requirements of an approved grading plan. Facilities Planning and Management shall ensure compliance.				
10. NOISE				
NO-01. All construction and general maintenance activities, except in emergencies or special circumstances, shall be limited to the hours of 7 am to 7 pm Monday-Saturday. Staging areas for construction shall be located away from existing off-site residences. All construction equipment shall use properly operating mufflers. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
NO-02. Loudspeaker and other public address systems on campus shall be located and adjusted to register no more than 70 dB Lmax at the nearest offsite residences. Facilities Planning & Management shall monitor compliance.				
NO-03. Weekend special events within any athletic field complex such as tournaments, day-long meets, etc. shall be planned to not begin before 7 am on Saturday or 8 am on Sunday. Event Services shall monitor compliance.				
NO-05. The college shall adopt policies and post signs in the parking structure indicating vehicles with alarms may be towed from parking areas if alarms sound for more than five minutes. The Public Safety Department shall ensure compliance.				
NO-06. Construction contracts shall specify that construction equipment vibration impacts with a peak particle velocity (PPV) of 0.04 inches per second or more occurring offsite in a sensitive receptor area shall not				

exceed 15 minutes in any one hour. Facilities Planning & Management shall monitor compliance.				
11. OPEN SPACE, MANAGED RESOURCWES AND WORKING LANDSCAPES				
MR-01. All recommendations in the final geotechnical report(s) for projects included in the 2015 Facility Master Plan Update shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
MR-02. During construction grading and site preparation activities, the Contractor shall monitor all construction activities. In the event a paleontological find or a potential paleontological find is discovered, construction activities shall cease and the Contractor shall inform the Project Manager. A qualified paleontologist shall be contacted to analyze the find and recommend further appropriate measures to reduce further impacts on paleontological resources. Facilities Planning & Management shall monitor compliance.				
12. POPULATION/HOUSING				
PH-01. Beginning on January 2016, on January 2020 and every five years, projections of future campus employment shall be forwarded to the Southern California Association of Governments. Human Resources shall monitor compliance.				
13. PUBLIC SERVICES				
PS-01. The net increase in campus wastewater flows shall be projected whenever the Mt. SAC Utility Infrastructure Master Plan (UIMP) is updated for a new campus Facility Master Plan, or within ten years of the last UIMP Update. The District shall obtain the required permits from the Consolidated Sanitation District of Los Angeles County, and pay the required capital facilities fees for the net increase projected in the UIMP Update. Facilities Planning & Management shall ensure compliance.				
PS-02. The Public Safety Department shall project their Department personnel and equipment needs to accommodate the student, staff and facility increases				

projected in the 2015 Facility Master Plan Update. The plan shall provide for student, staff and visitor security upon buildout of the 2015 Facility Master Plan Update. (Expansions of the Code Blue Emergency Phone System and revisions to the assignment of Evening Escorts shall be included in the plan). Public Safety shall ensure compliance				
PS-03. Within six months of certification of the 2015 Final EIR, the Public Safety Department shall complete a security construction plan to address direct and indirect security needs for all construction activities on campus associated with the 2015 Facility Master Plan Update. The special public safety needs of buildings (i.e. demolition, new construction and remodeling), construction sites, transport of construction materials and equipment, construction parking and use of construction equipment shall be addressed. Facilities Planning & Management shall ensure compliance				
PS-04. The Athletics Division and the Campus Security Department shall prepare a Security Plan for all new Special Events (i.e. does not include the 2020 Olympic Track & Field Trials) with a maximum daily attendance of 10,000 persons or more. The Security Plan shall be approved by the Board of Trustees a minimum of three (3) months prior to the event. Facilities Planning & Management shall ensure compliance.				
PS-05. The Athletics Division and the Campus Security Department shall prepare a Security Plan for the 2020 Olympic Track & Field Trials. The Security Plan shall be approved by the Board of Trustees a minimum of nine (9) months prior to the event. Facilities Planning & Management shall ensure compliance.				
14. TRANSPORTATION				
TR-01. A second EB right-turn lane shall be added to the Grand Avenue and Cameron Avenue intersection. The City of Industry is the Lead Agency and the County of Los Angeles is an interested agency. The City of Industry shall ensure compliance.				Complete by 2020

TR-03. The EB right-turn lane at the Grand Avenue and Temple Avenue intersection shall be converted to a through/right-turn lane. The City of Walnut is the Lead Agency.				Complete by 2020
TR-04. The signal phasing for the Grand Avenue and La Puente Road intersection shall be modified to include an EB right-turn overlap phase (i.e. a right-turn protected arrow). The City of Walnut shall ensure compliance.				Complete by 2020
TR-05. The EB approach shall be restriped to include a dedicated right-turn lane at the Temple Avenue and Mt. SAC Way intersection. The City of Walnut is the Lead Agency.				Complete by 2020
TR-07. When a site plan is completed, a site-specific analysis shall be completed for the Public Transit Center. All recommendations of the traffic analysis shall be completed and the project coordinated with the college, the City of Walnut, the Foothill Transit Agency and if required, the County of Los Angeles Metro Transit Authority. Facilities Planning & Management shall ensure compliance.				Could impact Temple/Bonita
TR-10. When the preliminary design of the pedestrian bridge on Temple east of Bonita Avenue is available, it shall be reviewed by the Executive Board of Officers of Associated Students, by CMPCT, by the City of Walnut, and DSA. All recommendations of a site-specific traffic analysis shall be implemented. The Lead Agency is the City of Walnut.				Complete by 2025
TR-11. Convert the existing EB right-turn lane to a through/right-turn lane at the Nogales/Amar Road intersection (#1). There is sufficient roadway width at the intersection departure lane in the eastbound direction to accommodate the third through-lane. The City of Walnut is the Lead Agency.				Complete by 2025
TR-12. Restripe the EB approach lane to include a dedicated right-turn lane at the Lemon Avenue and Amar Road intersection (#2). The City of Walnut is the Lead Agency.				Complete by 2025

TR-13. Convert the existing NB right-turn lane to a shared through/right-turn lane at the Grand Avenue and SR-60 EB Ramps (#13). There is sufficient roadway width at the intersection departure in the northbound direction to accommodate the third through lane. The California Department of Transportation is the Lead Agency.				Complete by 2025
TR-14. Modify the traffic signal at the Bonita Avenue and Temple Avenue intersection (#15) to include a NB right-turn overlap phase. The City of Walnut is the Lead Agency.				Complete by 2025
TR-16. Facilities Planning & Management, along with the Local Organizing Committee (LOC) shall prepare a Transportation and Parking Management Plan for the 2020 Olympics Track & Field Trials. All campus parking locations and parking or shuttle fees shall be included in the Plan. If needed, additional security shall be provided at off-campus shuttle lots. All parking attendants (i.e. a minimum of one for each lot) shall have communication devices to communicate with a Campus Parking Supervisor. The Executive Board Officers of the Associated Students (AS) of Mt. SAC shall be given an opportunity to review and comment on the preliminary plan. The Plan shall be substantially complete at least a year (12 months) before the Trials begin and be approved by the Board of Trustees. The timeframe relates to the preparation of registration materials and event websites. Facilities Planning & Management shall ensure compliance.				Complete a year ahead of event
TR-17. Parking lot locations, vehicle occupancy requirements, and Parking Pass fees shall be published in all registration and event materials, on the event websites, and included in all media information. The Local Organizing Committee (LOC) shall hire students part-time as parking attendants or if qualified, as shuttle drivers. Event Services shall monitor compliance.				
TR-18. The Local Organizing Committee (LOC) shall provide shuttle bus service as described in Section 3.11.2. The off-campus shuttles shall operate at least three (3.0) hours				

before the first event of the day for the 2020 Olympic Track & Field Trials and for at least three (3.0) hours after the last event ends. Event Services shall monitor compliance.				
TR-19. The Local Organizing Committee (LOC) shall conduct two or more workshops for local Chamber of Commerce members and area Hotel Managers at least nine (9) months before the 2020 Olympic Track & Field Trials to inform them of the events, Shuttle Routes and time tables, distribute media packets, answer questions and encourage hotel managers to offer special hotel packages and morning and evening hotel shuttle services between their hotel and the campus free or for a limited fee. The Director of the Local Organizing Committee (LOC) shall ensure compliance.				Complete 9 months ahead of event
TR-20. The Transportation and Parking Management Plan for the 2020 Olympic Track & Field Trials shall be based on the information in the Parking Plan in Section 3.11.2. With the stated minimum persons per vehicle, the designated lots provide parking for at least 14,174 guests and 490 faculty/staff on campus during the 2020 Summer Intersession if classes are not in session. The Planning Plan provides sufficient parking without Parking Structure J. The plan shall be refined when the Shuttle Route system is finalized (i.e. TR-19). Facilities Planning & Management shall ensure compliance.				Need contractual agreement to alter Summer Session with faculty/staff
TR-21. If the 2020 Olympic Track & Field Trials are held during the Summer Intersession and classes are in session, the Local Organizing Committee (LOC) shall implement a Parking Plan based on Section 3.11.2. The Plan shall pre-register faculty and staff for parking on-campus for the week (i.e. not daily). Faculty and staff do not need to pre-register for the weekend. This procedure assures all faculty and staff have easy access to reserved parking during the week. Facilities Planning & Management shall ensure compliance.				
TR-22. During registration for the 2020 Olympic Track & Field Trials, registrants may purchase a Parking Pass for a				

specific on-campus Parking Lot (e.g. Lot F) for an off-campus Parking Pass (e.g. Cal Poly Pomona, Lanterman Developmental Center, Diamond Bar High School or Walnut High School etc.). Parking Passes will be sold for the entire 10-day event, for Session 1 (Day 1 – 4), Day 5 - 6 or Session 2 (Day 7 – 10). No Parking Passes will be issued for the other off-campus shuttle locations. Each registrant who purchases a Parking Pass shall receive a windshield Parking Pass for a specific Parking Lot. Each Parking Pass shall state the Minimum Persons per Vehicle (e. g., Minimum 3.0 Persons per Vehicle). Registration for Athletes and Officials shall begin two (2) weeks before registration for the general public. Facilities Planning & Management shall ensure compliance.				
TR-24. With classes scheduled in the Summer Intersession, the recommenced parking plan for the 2020 Olympics Track & Field Trials is Plan C in Section 3.11.2. The plan shall be refined when the Shuttle Route system is finalized (i.e. SE-04). An updated focused traffic analysis is required. Facilities Planning & Management shall ensure compliance.				
TR-25. For additional reduction in pm peak period conflicts between area commuter traffic and 2020 Olympics Track & Field Trials traffic leaving the final event on Friday or Monday during Session 1, the event schedule shall be revised so guest traffic leaves before the commute period begins after the pm peak commute period ends. Either event schedule revision results in reducing the number of pm peak period conflicts by two days, and only two of the ten event days during Session 2 have pm peak conflicts (Table 3.11.8). Facilities Planning & Management shall ensure compliance.				
TR-26. Prior to installation of the Lot F traffic signal, the City of Walnut shall consider lowering the posted travel speed along Temple Avenue near Lot F from 50 mph to 35-40 mph to facilitate access to the Lot F east entry driveway. The Public Works Department of the City of Walnut shall monitor compliance.				

TR-27. Prior to completion of Parking Structure J, the northside leg at the Lot F and Temple Avenue driveway shall be widened. Facilities Planning & Management shall ensure compliance.				
TR-28. Beginning in 2015, whenever a traffic/parking study for a FMP has not been completed in five (5) years, a new parking study shall be completed. The parking study shall specify the total parking supply required and a timeframe for providing the required number of campus parking spaces. Facilities Planning & Management shall ensure compliance.				
TR-29. Site specific traffic and parking studies are required by the District for all new Special Events (i.e. excluding the 2020 Olympic Track & Field Trials) with projected maximum daily attendance above 15,000 weekdays (excludes Summer Intersession and campus holidays). Facilities Planning & Management shall ensure compliance.				
TR-30. The following recommendations from the 2002 Mt. San Antonio College Parking Lot and Access Study shall be implemented for onsite improvements: (1) Preferential carpool parking permits and spaces for Special Events and/or special recognition of student and faculty achievements, (2) Additional parking spaces for motorcycles, (3) Additional bicycle racks, (4) Bicycle lockers and/or showers and lockers for cyclists, and (5) Evaluation of reduction in free parking, raising parking fees and/or demand parking prices. The evaluation shall be completed by July 1, 2017 and CMPCT shall issue a recommendation to the Board of Trustees by September 1, 2017. Facilities Planning & Management shall ensure compliance.				
TR-31. For hauling operations of more than 15 trucks per hour or more than 100,000 cubic yards, a Truck Haul Plan (THP) approved by the Director of Facilities Planning & Management, with consultation with adjacent cities, shall be implemented. The Plan shall consider traffic counts, routes, hours/day of hauling, avoidance of am and pm				See TR-50 for City of Walnut

peak hours, intersection geometrics, access/egress constraints, and pieces construction equipment onsite. Recommendations shall be made concerning all hauling operations to minimize traffic and pedestrian congestion on-campus and off-campus and included in construction logistics plans. If required, all haul trucks shall be radio-dispatched. Light duty trucks with a weight of no more than 8,500 pounds are exempt from the THP requirements. Facilities Planning & Management shall ensure compliance.				
TR-32. Contractors shall submit traffic handling plans and other construction documents to Facilities Planning & Management prior to commencement of demolition or grading. The plans and documents shall comply with the *Work Area Traffic Control Handbook (WATCH)*. Facilities Planning & Management shall monitor compliance.				
TR-33. Demolition and construction contracts shall include plans for temporary sidewalk closure, pedestrian safety on adjacent sidewalks, vehicle and pedestrian safety along the project perimeter, and along construction equipment haul routes on campus. These plans shall be reviewed by the Public Safety Department and approved by Facilities Planning & Management. Facilities Planning & Management shall monitor compliance.				
TR-34. Demolition and construction contracts shall include plans for construction worker parking areas on campus. Facilities Planning & Management shall monitor compliance.				
TR-35. Each project site shall be adequately barricaded with temporary fencing to secure construction equipment, minimize trespassing, vandalism, short-cut attractions, and reduce hazards during demolition and construction. Facilities Planning & Management shall monitor compliance.				
TR-36. Construction contractors shall post a flag person at locations near a construction site during major truck hauling activities to protect pedestrians from conflicts with heavy equipment entering or leaving the project site.				

Facilities Planning & Management shall monitor compliance.				
TR-37. Upon completion of construction documents, the Public Safety Department shall complete a parking, pedestrian, circulation and signage plan to address direct and indirect public safety needs for parking on campus during the construction period. For each major project, the changing parking demands created by construction, increased student enrollments and new building locations shall be addressed. Facilities Planning & Management shall ensure compliance.				
TR-38. During the preparation of campus grading, landscape and street improvement plans, the sight distance at each project access on campus shall be reviewed with respect to Caltrans standards. Facilities Planning & Management shall monitor compliance.				
TR-39. Onsite traffic signing and striping shall be implemented in conjunction with detailed construction plans for the project. Facilities Planning & Management shall monitor compliance				
TR-40. The *Master Facilities Transportation Plan* shall be updated and shall specify all revisions and additions to parking areas, parking controls, public bus stops, private shuttle operations, shuttle stops and signage within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved transportation plan shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
TR-49. When traffic access is allowed (gate controlled) at the southside leg of the Temple Avenue and Lot F driveway, manual traffic control (campus or City provided traffic control personnel) shall be utilized. The Athletics Department and Facilities Planning & Management shall ensure compliance.				
TR-50. The District shall submit an application for a truck hauling plan prepared by a registered traffic engineer to the City of Walnut for all projects subject to the Walnut			.	

Municipal Code Sections 6-8. In general, WMC 6-8 addressed projects moving more than 5,000 cubic yards of earth on any public roadway. The District shall comply with all requirements of an approved truck hauling plan. Facilities Planning and Management shall ensure compliance.				
TR-53. Truck hauling for Phase 2 grading of the PEP site shall be limited to 8 hours a day and a maximum of 18 trucks per hour. Facilities Planning & Management shall ensure compliance.				
TR-55. The Public Safety Department shall update their evacuation plans for an extreme emergency by January 1, 2017. The updated emergency evacuation plan shall refine the preliminary plan included in the Final EIR and distribute vehicular traffic from campus lots to Grand Avenue and Temple Avenue in the most efficient and safe manner as possible. Public safety officers shall be deployed to pre-assigned locations and tasks to direct vehicular traffic in pre-determined directions defined in the plan. Facilities Planning & Management shall ensure compliance.				
TR-59. The Public Safety Department shall keep the Sheriff Department informed of anticipated major changes in circulation patterns, parking, and any special security needs related to campus construction and operation. Public Safety shall monitor compliance.				
TR-60. A new traffic signal at the Kellogg Drive and Interstate-10 intersection shall be operational by 2020. *The California Department of Transportation District 7 is t*he Lead Agency.				
TR-61. The westbound approach at the Campus Drive and Temple Avenue intersection shall be restriped to convert the westbound right-turn lane to a shared through/right-turn lane BY 2020. The District shall fund this improvement. The City of Pomona is the Lead Agency.				

15. UTILITIES/SERVICE SYSTEMS				
SS-01: Within six months of certification of the 2015 Final EIR, the Utilities Master Infrastructure Plan shall be updated to accommodate the projected 2019 – 2020 student enrollment and the facilities included in the buildout of the Facilities Master Plan Update in 2020. Facilities Planning & Management shall monitor compliance.				
SS-02. The *Master Facilities Infrastructure Plan* shall be revised for buildout of the 2015 Facility Master Plan Update. The plan shall specify all revisions and additions to water lines from Three Valleys Municipal Water District's PM-1 connector to the campus, and lines within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
SS-03. The college shall obtain permits and water commitments required by the Three Valleys Municipal Water District for water service to all projects. These requirements shall be included I construction contracts. TVMWD has requested advance notification whenever demand may increase by more than 50 percent so future planning may be completed. Facilities Planning & Management shall monitor compliance.				
SS-04. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to sewer lines within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
SS-05. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to the electrical distribution system within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan				

shall be included in construction contracts and implemented. Facilities Planning				
SS-06. For each project, the college shall obtain all approval(s) required by Southern California Edison for electrical service. These requirements shall be included in construction contracts for each project. Facilities Planning & Management shall monitor compliance.				
SS-07. For each project**,** the college shall obtain all permits required by the Southern California Gas Company for natural gas service. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.				
SS-08. The *Master Facilities Infrastructure Plan* shall be updated and shall specify all revisions and additions to solid waste collection systems, storage and transfer within the campus needed for buildout of the 2015 Facility Master Plan Update. All recommendations of the approved infrastructure plan shall be included in construction contracts and implemented. (Contracts with independent trash haulers are not included in these requirements). Facilities Planning & Management shall monitor compliance.				
Source: Facilities Planning & Management, May 3, 2017				