State Clearinghouse Number 2002041161

2015 Facilities Master Plan Update and Physical Education Projects

Draft Subsequent Program/Project EIR to
Final Program EIR (SCH 2002041161)

Appendices - Volume 2 of 2

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

SID LINDMARK, AICP
Planning . Environmental . Policy
June 2016

APPENDICES

10.0 APPENDICES

A. Notice of Preparation and Responses
B. Traffic/Parking
C. Air Quality and Greenhouse Gases
D. Noise
E. Geology/Soils
F Water Quality
G. Biological Resources
H. Cultural Resources
I. Lighting Plan
J. Other Correspondence Received
K. Other Project Information
L. 2016 Mitigation Monitoring Program
M. 2020 Olympic Track & Field Trials
N. Hydrology Study Update

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 and Program EIR for the Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects

FROM: Mikaela Klein, Senior Facilities Planner
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, California 91789-1399

The Mt. San Antonio Community College District (District) is the Lead Agency and will prepare a Draft Subsequent Project and Program Environmental Impact Report (Draft SEIR) for the Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects. 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 projects and program described in the Draft SEIR.

The projects and program descriptions, locations 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 and 2012 Facility Master Plans were evaluated in the Final Program EIRs (SCH 2002041161) that were certified in December 2002, January 2006, September 2008 and December 2013.

This Draft SEIR will address only those issues needed to make the prior 2002–2012 documentation adequate for the current projects and the projected student enrollment for 2020 (a headcount increase of 3,745). Based on initial scoping, the District believes the Physical Education Projects may result in project-specific environmental effects that were not fully examined in the Final Program EIRs (SCH 2002041161). Prior California Division of the State Architect (DSA) submittals concerning what is identified in the 2012 Final Program EIR as the Athletics Complex East (ACE) project (i.e. the stadium area) will be identified more comprehensively in this Draft SEIR as a component of the Physical Education Projects and Project-level CEQA documentation is being prepared for the Physical Education Projects component in this Draft SEIR.

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 Mikaela Klein, Senior Facilities Planner at the address above.

Project Title: Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects

Project Applicant: Mt. San Antonio Community College District

Date: January 15, 2016

Signature:

Mikaela Klein, Senior Facilities Planner

Telephone: (909) 274-5720

Facsimile: (909) 468-3931

E-Mail Address: mikaela.klein@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 increased enrollment of 3,745 students will result in an increase of 4,606 trips in 2020. FP&M completed the 2015 Facilities Master Plan Update (e.g. Land Use Plan) to address new planning elements not previously included in the *2012 Facility Master Plan (FMP)*. The Final EIR for the 2012 FMP (SCH 2002041161) was certified in December 2013.

Exhibit 2 is the Land Use Plan (dated January 7, 2016) for the proposed 2015 Facilities Master Plan Update (FMPU). The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and East of Bonita Avenue. (Previously the athletics projects were named the Athletics Complex East (Phase 1) and Physical Education Complex (Phase 2). Both phases are now called the Physical Education Projects (Exhibit 3 dated November 10, 2015). The existing stadium (11,940 seats) will be demolished, rather than renovated, and a new stadium (10,912 seats) built onsite. The District intends to use Measure RR funds to design and construct the Physical Education Projects. Other changes in the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, an expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage (i.e. construction and demolition) at 2015 FMPU buildout is approximately 500,000 gross square feet.

The potential traffic-related impacts of future student enrollment increases will be evaluated in a new traffic study. Up to twenty locations will be analyzed and parking demand and supply projected. The traffic-related potential air quality, greenhouse gas and noise impacts will also be evaluated. Please note that traffic studies for colleges are unique in that trips are projected based on student enrollment, and not on building square footage. Project impacts on historic resources, soils/geology and water quality will also be evaluated.

Table 1 includes the existing and projected fall student enrollment (headcount projections) for the college. Exhibit 2 displays the proposed 2015 FMPU (i.e. Land Use Plan), Exhibit 3 is the combined site plan for the Physical Education Projects (Phases 1, 2) and Exhibit 4 displays the Existing Campus Plan.

Special annual events that will continue to be held on campus include the Mt. SAC/Brooks 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 for the project is not attached and is not required by the CEQA Guidelines (Section 15063) at this time. The Draft SEIR will address the potential significant effects that are peculiar to the projects or site (Section 15183) and potential significant effects that were not addressed in the previous Final EIR certified by the District for the 2012 FMP.

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

Table 1
2015 FACILITIES MASTER PLAN UPDATE ENROLLMENT PROJECTIONS

Academic Year	Annual Credit + Non-Credit FTES	Fall Student Enrollment Headcount	Headcount Increase from 2015-16
2014-15	31,275	35,280	---
2015-16	32,025	35,986	Baseline
2020-21	37,809	39,731	3,745
2025-26	42,569	43,139	7,153
Source: Cambridge West Partnership, July 2015			

Exhibit 1
REGIONAL LOCATION

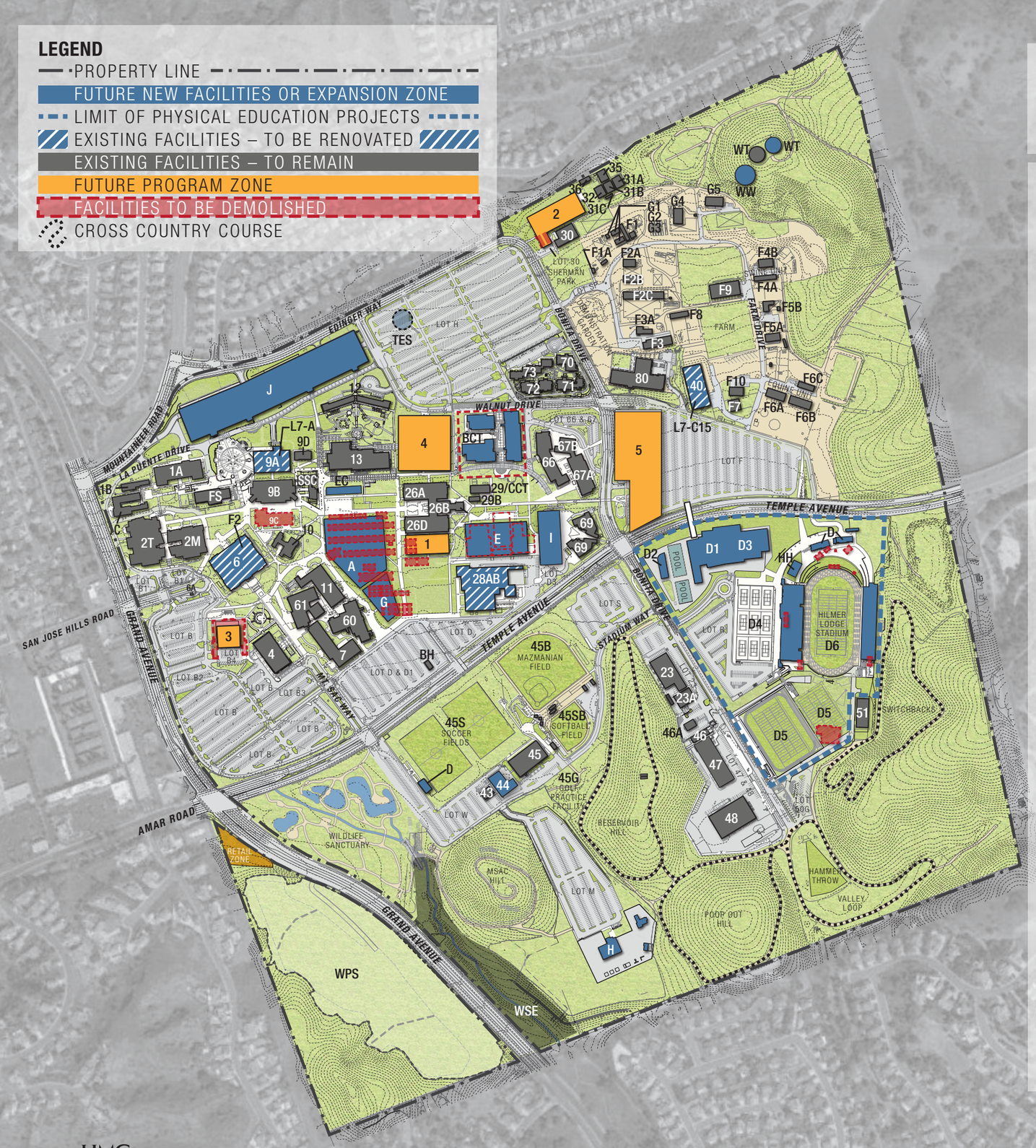
Exhibit 2

MT. SAN ANTONIO COLLEGE
LAND USE PLAN

MT. SAC
Mt. San Antonio College

LEGEND

- PROPERTY LINE
- FUTURE NEW FACILITIES OR EXPANSION ZONE
- LIMIT OF PHYSICAL EDUCATION PROJECTS
- EXISTING FACILITIES – TO BE RENOVATED
- EXISTING FACILITIES – TO REMAIN
- FUTURE PROGRAM ZONE
- FACILITIES TO BE DEMOLISHED
- CROSS COUNTRY COURSE



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	48th 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)

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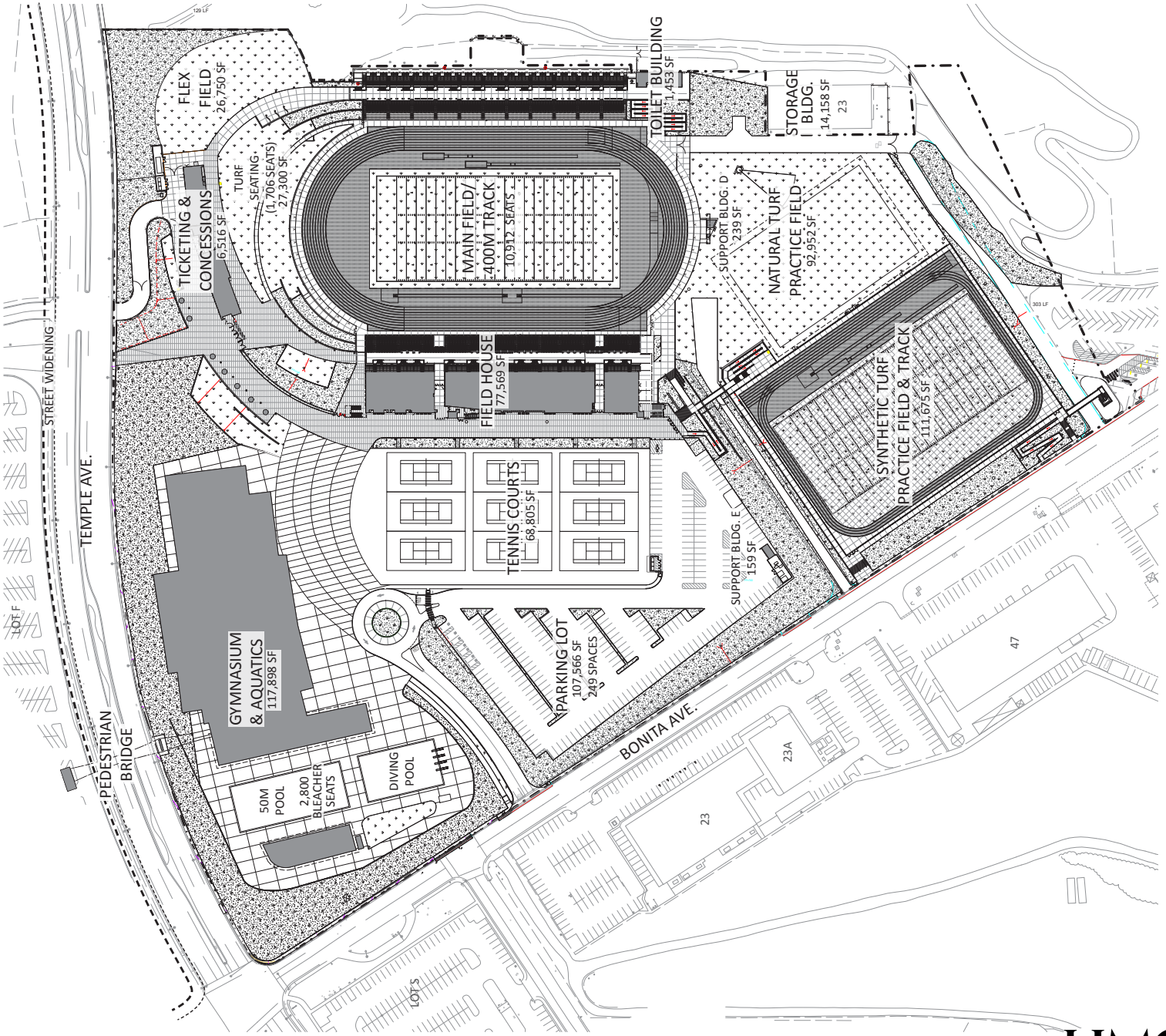
Exhibit 3
PHYSICAL EDUCATION PROJECTS (Phases 1, 2)

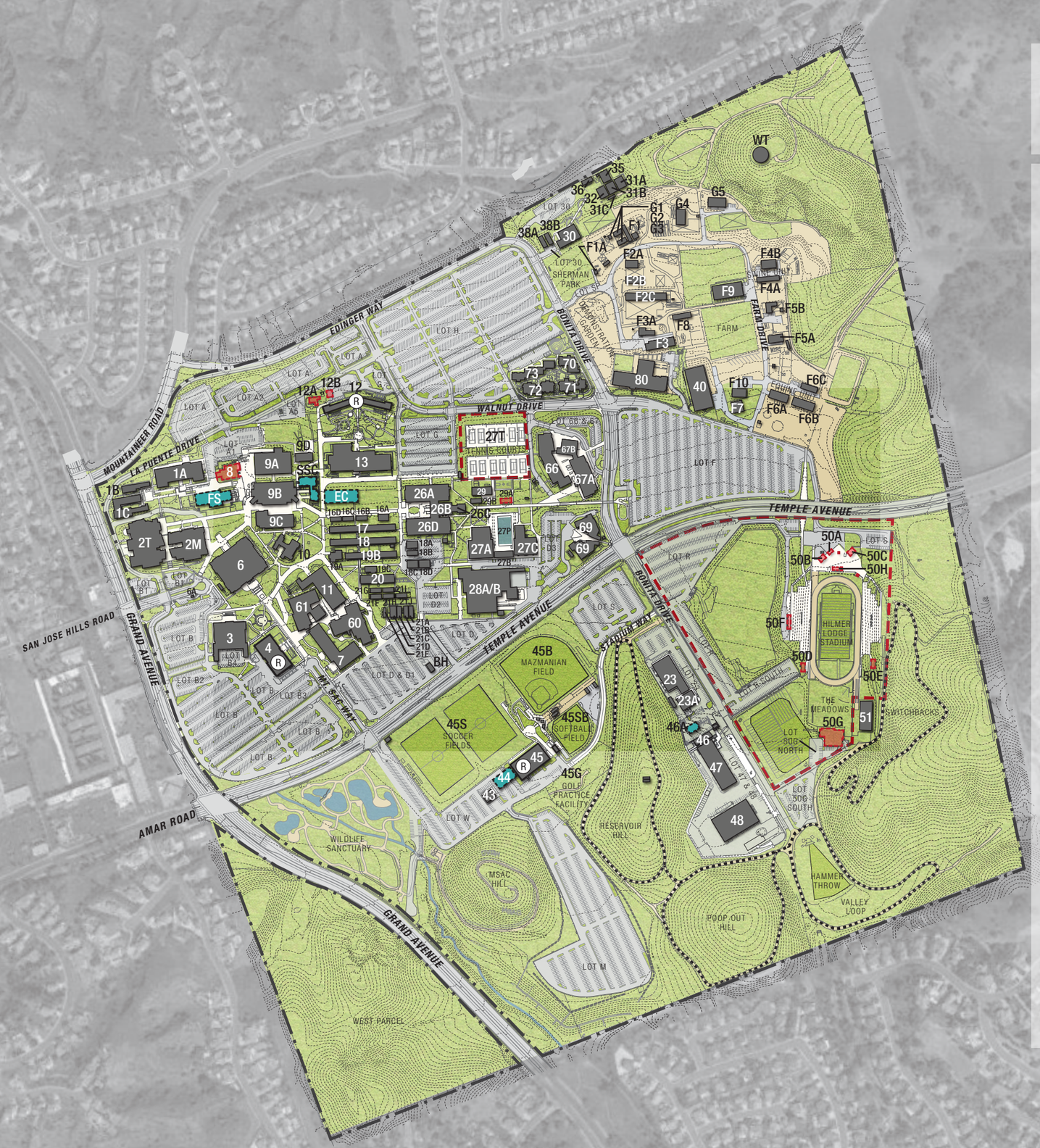


HMC Architects
November 10, 2015

Exhibit 4

MT. SAN ANTONIO COLLEGE
EXISTING CAMPUS PLAN

MT. SAC
Mt. San Antonio College



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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 FEET 600

NOP for the Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects
Brian D James
to:
mikaela.klein@mtsac.edu
01/19/2016 11:34 AM
Hide Details
From: Brian D James <BJames@cityofindustry.org>
To: "mikaela.klein@mtsac.edu" <mikaela.klein@mtsac.edu>
History: This message has been replied to.

Thank you for providing the opportunity to review the Master Plan and provide comments. The City of Industry does not have any comments on the NOP.

Brian James
Planning Director

City of Industry
15625 E. Stafford Street
Industry, CA 91744-0366
626-333-2211 | 626-961-6795 (F)
bdjames@cityofindustry.org
www.cityofindustry.org

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 FAX

January 28, 2016

Mikaela Klein
Mt. San Antonio Community College District
1100 North Grand Avenue
Walnut, CA 91789-1399

RE: SCH#2002041161, Mt. San Antonio 2015 Facilities Master Plan Update and Physical Education Projects, City of Walnut, Los Angeles County, California

Dear Ms. Klein:

The Native American Heritage Commission (NAHC) has reviewed the Notice of Preparation (NOP) referenced above. The California Environmental Quality Act (CEQA) states that any project that causes a substantial adverse change in the significance of an historical resource, which includes archeological resources, is a significant effect requiring the preparation of an EIR (CEQA Guidelines 15064.5(b)). To comply with this provision the lead agency is required to assess whether the project will have an adverse impact on historical resources within the area of project effect (APE), and if so to mitigate that effect.

To adequately assess and mitigate project-related impacts to archaeological resources, the NAHC recommends the following actions:

- ✓ Contact the appropriate regional center of the California Historic Resources Information System (CHRIS) for a record search. The record search will determine:
  - If a part or all of the area of project effect (APE) has been previously surveyed for cultural resources.
  - If any known cultural resources have already been recorded on or adjacent to the APE.
  - If the probability is low, moderate, or high that cultural resources are located in the APE.
  - If a survey is required to determine whether previously unrecorded cultural resources are present.
- ✓ 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.
  - The final report containing site significance, and mitigation measurers 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 pubic disclosure.
  - The final written report should be submitted within 3 months after work has been completed to the appropriate regional archaeological Information Center.
- ✓ Contact the Native American Heritage Commission for:
  - A Sacred Lands File (SLF) check.
  - A list of appropriate Native American Tribal Consultation List for consultation concerning the project site and to assist in the mitigation measures.
    The request forms can be found at http://nahc.ca.gov/resources/forms/
- ✓ Lack of surface evidence of archeological resources does not preclude their subsurface existence.
  - Lead agencies should include in their mitigation plan provisions for the identification and evaluation of accidentally discovered archeological resources, per CEQA Guidelines §15064.5(f). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American, with knowledge in cultural resources, should monitor all ground-disturbing activities.
  - Lead agencies should include in their mitigation plan provisions for the disposition of recovered cultural items that are not burial associated, which are addressed in PRC §5097.98, in consultation with culturally affiliated Native Americans.
  - Lead agencies should include provisions for discovery of Native American human remains in their mitigation plan. Health and Safety Code §7050.5, PRC §5097.98, and CEQA Guidelines §15064.5(e), address the process to be followed in the event of an accidental discovery of any human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton
Associate Governmental Program Analyst

CC: State Clearinghouse

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

January 20, 2016

Mikaela Klein, Senior Facilities Planner
Facilities Planning & Mangement
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

Notice of Preparation of a CEQA Document for the
Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects

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 CEQA document. Please send the SCAQMD a copy of the CEQA document upon its completion. Note that copies of the Draft EIR that are submitted to the State Clearinghouse are not forwarded to the SCAQMD. Please forward a copy of the Draft EIR directly to SCAQMD at the address in our letterhead. **In addition, please send with the draft EIR all appendices or technical documents related to the air quality and greenhouse gas analyses and electronic versions of all air quality modeling and health risk assessment files. These include original emission calculation spreadsheets and modeling files (not Adobe PDF files). Without all files and supporting air quality documentation, the SCAQMD will be unable to complete its review of the air quality analysis in a timely manner. Any delays in providing all supporting air quality 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 here: 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 Lead Agency should identify any potential adverse air quality impacts that could occur from all phases of the project and all air pollutant sources related to the 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, that is, sources that generate or attract vehicular trips should be included in the analysis.

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?sfvrsn=2. 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.

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 Perspective*, which can be found at the following internet address: 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.

Mitigation Measures

In the event that the 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 or eliminate 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 possible mitigation measures for the project, including:

- Chapter 11 of the SCAQMD *CEQA Air Quality Handbook*
- SCAQMD's CEQA web pages at: http://www.aqmd.gov/home/regulations/ceqa/air-quality-analysis-handbook/mitigation-measures-and-control-efficiencies.
- 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.
- SCAQMD's Rule 403 – Fugitive Dust, and the Implementation Handbook for controlling construction-related emissions
- Other measures to reduce air quality impacts from land use projects can be found in the SCAQMD's Guidance Document for Addressing Air Quality Issues in General Plans and Local Planning. This document can be found at the following internet address: http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/complete-guidance-document.pdf?sfvrsn=4.

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 via the SCAQMD's webpage (http://www.aqmd.gov).

The SCAQMD staff is available to work with the Lead Agency to ensure that project emissions are accurately evaluated and mitigated where feasible. If you have any questions regarding this letter, please contact me at Jwong1@aqmd.gov or call me at (909) 396-3176.

Sincerely,

Jillian Wong

Jillian Wong, Ph.D.
Program Supervisor
Planning, Rule Development & Area Sources

LAC160115-01
Control Number

COMMENTS ON NOP DRAFT SUBSEQUENT PROJECT AND PROGRAM EIR FOR 2015 MASTER PLAN UPDATE AND PHYSICAL EDUCATION PROJECTS

By United Walnut Taxpayers
Dennis G. Majors, P.E., UWT Board Member
February 10, 2016

INAPPROPRIATE USE OF MEASURE RR FUNDS FOR STADIUM RECONSTRUCTION

1. Measure RR has been chartactered as a "Classroom Repair, Education Improvement, Public Safety/Job Training Measure" supporting educational interests of Mt. San Antonio College by highlighting needs to renovate, construct and update classroom facilities for technology adequacy. The subject NOP seeks to change the objective of Measure RR by characterizing an expensive stadium reconstruction project as a "physical education" facility in an effort to loosely associate Measure RR funding after the fact with stadium reconstruction. Measure RR devotes few words to the notion of renovating or constructing any type of athletic facility with the words, "phase two athletic complex, including hard courts, gym, fields and tracks," let alone any reference to a massive stadium reconstruction project, an expanded 117, 898 square foot athletic complex more than doubling the existing gymnasium size and an underground 77,569 square foot field house more than seven times its current size to host such events as the 2020 Olympic Trials. While the Measure RR ballot narrative clearly documents the need for classroom and technology related upgrades, the proposed stadium reconstruction and expanded underground field house is excluded. Yet Measure RR has funded mass excavation of a large hill formation for purposes of stadium reconstruction, and proposes the dangerous trucking of a portion of its dirt through public streets, which would be piled up some 70 feet above Grand Avenue at the West Parcel Solar Project site directly in front of homes. Should a voter explore the disposition of facilities which they thought they had approved and are paying for, the voter would find that renovation and construction of classroom projects are being replaced by a massive new stadium complex not disclosed in Measure RR.

2. We request that the Citizens Oversight Group formed explicitly to ensure that "funds are spent as promised and sufficed" conduct a review of the use of Measure RR funding for stadium reconstruction which was not named in ballot materials provided the voters and therefore not intended as a funding source for planning, design and construction of a new stadium. We are further requesting that a formal audit be conducted as to the expenditure of funds to date for related stadium reconstruction costs that was never approved by voters.

INITIAL STUDY

3. We request that a copy of the Initial Study be provided to United Walnut Taxpayers. The Initial Study would help provide basis for the NOP and foster open public disclosure of the CEQA process.

UNDISCLOSED PURPOSE OF STADIUM HILL EXCAVATION AND REMOVAL

4. The 2013 Subsequent EIR has stated the purpose of removing a hill formation north the Hilmer Lodge Stadium was to provide earthfill for the Fire Academy building site and to create a building pad for the Athletic Education Building. These earthwork activities took place in 2014. Both the Mt. SAC Director of Public Affairs and Director of Facilities and Planning have advised that the Fire Academy will no longer be constructed at the sight specified just south of Lot M. An inspection of the mass earthwork operations that have occurred there indicates the site has been built to higher elevation than necessary for the Fire Academy or parking lot apparently to dispose of earthen materials from the stadium hill. Partly as a result, the building pad obstructs views of Snow Creek residents and is an eyesore to motorists traveling up Grand Avenue, in conflict with Grand Avenue's designation as a "Scenic Highway" in the City's General Plan. Further, the subject NOP indicates that the Athletic Education Building will not be placed on the building pad created for it by removing the stadium hill, but will be located to the north of the pad. Given the above, it is questionable why the natural hill formation to the north of the stadium was cut down other than the fact that construction concept plans in the NOP shows it is vital to the construction of the new stadium's underground field house, and bleachers and press box above it, to first excavate away a substantial part of the hill. Nonetheless, the construction of the Fire Academy continues to be displayed on the 2015 Master Plan Update, which should be clarified.

5. As disclosed in the 2012 Master Plan and 2013 Supplemental Subsequent Program EIR, work at the existing Hilmer Lodge Stadium was to be deferred maintenance on eastern bleachers, new bleachers, restroom renovation, a press box and a new field house. A 2014 construction contract for the Athletic Education Building pad described in the 2013 SEIR emerged compatible with reconstruction of the new stadium, an expanded underground field house, and new bleachers and new press box above it. The 2008 Supplemental Subsequent Program EIR, which was the basis for Measure RR, made no mention of the new stadium complex or its support facilities as now conceived.

6. It appears probable based on the above and an examination of the concept construction plans for the new stadium that the excavation and removal of the hill was for purposes of building the new stadium and underground field house and that excess dirt so created would be disposed of for convenience at the Fire Academy and West Parcel Solar sites. While

the above removal of the hill in the manner prescribed was to prepare for new stadium expansion, it has not been disclosed as such in any environmental documents.

CEQA CONSIDERATIONS

7. A Program Environmental Impact Report addresses a project at the level characteristic of a conceptual master plan, including all foreseeable future actions. The intent following completion of the Program EIR is to perform site specific EIRs on its separate project features as the schedule of implementation dictates and to perform adequate impact disclosure for each project feature. However, the proposed environmental documentation of this NOP, as has been the case with the college's previous environmental documentation, does not appear to proceed beyond the conceptual Program EIR level, despite the fact that major facilities are being proposed, including large-scale facility construction and earth removal, transport and placement.

8. Since all previous Supplemental Subsequent Program EIRs were prepared at a conceptual level, they did not provide the specific and more comprehensively scoped resource, land use and related inventories and detailed site plans for impact assessment and comprehensive alternatives analysis that would be warranted for site specific EIRs. Mt. SAC has failed to develop supportable findings within CEQA documents, because of unanalyzed and/or unmitigated significant adverse environmental impacts. Lacking the analysis of alternatives for major facilities such as the Parking Structure and West Parcel Solar Project, a necessary comparative assessment of impacts has been forgone for alternative sites of the proposed facilities.

CONSEQUENCES OF INCREASED ENROLLMENT

9. The college has accepted as *fait accompli* a continuing increase in student enrollment and has not considered the physical limits of the college to accommodate it or the impacts to nearby communities. Classroom buildings continue to be added to the campus interior and placed upon valuable parking spaces, which has the consequence of forcing support facilities like the parking structure and solar project to the campus periphery where they are incompatible with adjacent communities. These facilities are apparently looked upon as "necessary" consequences of increased student enrollment; however, the significant effects are entirely unacceptable to the local community.

10. The college has ignored residents' concerns over expansion plans that would place these highly impacting facilities near residential communities. For example, the parking structure would take away surface parking spaces on the campus periphery that have formed a buffer between the college and nearby communities, allowing them to coexist compatibly. The concrete parking structure proposed at Lot A would be wedged into the smallest space between the main campus and adjacent residences and would be exposed some 40 feet in the air entering

the Timberline community along Mountaineer Road on the north side of campus, massively changing the character of the entrance to the community. The campus area is zoned Residential Planned Development by the City of Walnut which in the words of Judge Luis A. Lavin in his May 13, 2015 Preliminary Injunction is for the purpose of encouraging "appropriate and desirable use of land which is sufficiently unique in its physical characteristics and other circumstances to warrant special methods of development." The proposed parking structure at Lot A violates Judge Lavin's ruling.

WEST PARCEL SOLAR PROJECT

11. The NOP indicates the college continues to propose a West Parcel Solar Project, directly adjacent to a single-family residential neighborhood, in violation of City of Walnut local planning and zoning ordinances.

12. The United Walnut Taxpayers delivered objections on the draft Addendum to the Mt. San Antonio College 2012 Facility Master Plan Subsequent Program EIR that was presented to the Mt. SAC Board of Trustees at their meeting of January 13, 2016 (Attachment A). The comments focused on visual impacts through a line of sight analysis, severe land form reconfiguration, inappropriate use of an Addendum in lieu of a project specific EIR with comprehensive alternatives analyses, significant changes to site plans since 2013, and public safety risks imposed by commingling a dangerous earth moving haul route with pubic traffic on city streets.

13. Further, the 2013 SEIR states "Utilizing the land for solar generation allows the district to reconsider its use after several years, once the solar power facility has paid for itself, and at that time a new use could be considered", which suggests that the irreversible impact of destroying the natural character of the West Parcel could in fact only be an interim use, which could change at any time. A project specific EIR should disclose specific future uses of the West Parcel, particularly because of the massive land form change required, and because the solar panels have been relocated further south on the building pad, as disclosed at the September 16, 2015 Board of Trustees meeting.

INCOMPATIBILITY OF PARKING STRUCTURE ON LOT A

14. The NOP indicates Mt. SAC continues to propose a 2,300 space parking structure on Lot A, subject to current litigation, at the northern boundary of the Mt. SAC campus directly adjacent to a single-family residential neighborhood, in violation of City of Walnut local planning and zoning ordinances. Mt. SAC has made a decision to at least temporarily develop interim parking on Lot M, on the south side of campus however continues to pursue the parking structure on Lot A. Dr. Scoggins stated in the July 8, 2015 Board of Trustees meeting:

"Lot M will be extended and paved to be used for parking for a number of years, until the Parking Structure comes back into the project list."

15. Dr. Scoggins added more immediacy to the development of the parking structure on Lot A by advising the Board of Trustees that until current litigation is favorably resolved over the next year, the construction of the parking structure is in a "holding pattern:"

"Dr. Scroggins said that, over the next year, the legal issues should be resolved; and that, right now, we're just in a holding pattern for good use of the funds."

16. The United Walnut Taxpayers' Board of Directors has offered reasonable terms for settlement of the parking structure, by not constructing it on Lot A while suggesting reasonable setbacks from residential dwellings consistent with City of Walnut Residential Planned Development zoning. At Lot A, the parking structure is within 125 feet of residential dwellings. Mt. SAC has rejected these offers.

17. The Preliminary Injunction issued by Judge Luis A. Lavin on May 13, 2015 enjoined further construction of the parking structure, specifically on the basis that "Plaintiff is likely to prevail on its third and fourth causes of action alleging violations of the City's zoning ordinance."

18. Yet Mt. SAC renders irrelevant the City of Walnut's planning and zoning ordinances, specifically the application of Residential Planned Development (RPD) zoning. Judge Luis Lavin cited the importance of compliance with City zoning and highlights the importance of this issue by stating in his May 13, 2015 Preliminary Injunction:

"After weighing the relative interim harm to the parties from the issuance or nonissuance of the injunction, the Court finds that an injunction should issue. As stated in the City's zoning codes, the restrictions on land for properties zoned RPD, which includes the Mt. San Antonio's campus, is to encourage the "appropriate and desirable use of land which is sufficiently unique in its physical characteristics and other circumstances to warrant special methods of development." Walnut City Code § 25-88. If the project is permitted to go forward, Plaintiff and the community will lose their interest in the enforcement of the City's zoning codes and in the orderly development of their community. In contrast, the District's harm is primarily financial. As for its students having to look for other parking spots pending this litigation, that harm is less severe than the harm that Plaintiff's members will suffer."

19. Further, Judge James C. Chalfant on January 21, 2016 ruled the following in his denial of Mt. SAC's motion to dismiss the case wherein Mt. SAC contended that United Walnut

Taxpayers does not have standing to seek a writ of mandate because District has no clear and present ministerial duty to enforce the ordinances and that only the City does:

> *"Department 82 previously ruled, "the parking structure is a no classroom facility that cannot be exempted from the City's zoning laws under Section 53094." Sherman Decl. Ex. A, p.4. Walnut further alleges that District is not entitled to the exemption in Government Code section 53094(a) because District is a community college district, not a school district. Thus, under Government Code section 53091, Walnut adequately alleges that District has a mandatory duty to comply with City's zoning laws.*
> *This IS sufficient for standing under CCP section 1085."*

20. Finally, with respect to Mt. SAC's motion to Dissolve or Modify the Preliminary Injunction for Parking Structure, Judge Chalfant on January 21, 2016 ruled:

> *"District moves to dissolve or modify the preliminary injunction on the grounds that Walnut failed to comply with the reverse validation action procedures, and that the Complaint is untimely. As discussed above, the court has determined that the reverse validation action procedures do not apply to this case, and the Complaint is timely. District's motion to dissolve the preliminary injunction is denied."*

21. Considering the above rationale and court rulings with respect to the Parking Structure, it would be prudent on the part to Mt. SAC to pursue alternative locations for the Parking Structure other than Lot A in consultation with and meeting mutual needs and zoning requirements beneficial to the City of Walnut, Mt. SAC and the United Walnut Taxpayers.

OTHER FACILITIES

22. The irrigation water tank and water tower could potentially be a significant aesthetic impact to property and homeowner in the Timberline area. A better description of the Thermal Energy System (TES) is needed, including a visual presentation of these facilities. Previous plans reviewed by UWT indicated that these facilities would be underground and not visible except for a concrete surface area. This needs to be clarified.

ATTACHMENT A

OBJECTIONS TO DRAFT ADDENDUM TO THE MT. SAN ANTONIO COLLEGE 2012 FACILITY MASTER PLAN EIR

By United Walnut Taxpayers
Dennis G. Majors, P.E., UWT Board Member
January 13, 2016

COMPREHENSIVE ALTERNATIVES ANALYSIS REQUIRED IN A PROJECT SPECIFIC EIR

1. A Mt. SAC solar alternatives analysis included an evaluation of three alternative sites and methods for solar power generation in a report, "Solar Power Options for Mt. San Antonio College", November 2013, which included the proposed West Parcel Solar Project. Three alternative sites and methods were evaluated as representative of the various available options, and used for decision-making: (1) 2.0 MW ground-mounted system located on the West Parcel, (2) a 0.33 MW system mounted on the top deck of the planned parking structure, and (3) a 1.5 MW watt carport [canopy] type system located in student Lot F. However, only the first alternative was included in an abbreviated Subsequent Program EIR when a site specific EIR with full disclosure of alternatives was clearly required. Such an alternatives evaluation is needed at this time in a project specific EIR.

AN ADDENDUM IS IN APPROPRIATE AND REQUIRES A PROJECT SPECIFIC EIR

2. The Addendum states that:

(a) The conditions stated in Section 15162 that would require preparation of a subsequent EIR are discussed below in Section (e), but are not met here.

(b) An addendum to an adopted negative declaration may be prepared if only minor technical changes or additions are necessary or none of the conditions described in Section 15162 calling for preparation of a subsequent EIR or negative declaration have occurred.

(c) An addendum need not be circulated for public review but can be included in or attached to the final EIR or adopted negative declaration.

3. Yet the Addendum states that a total of 11,000 truckloads will be dispatched from the Stadium Hill borrow source to the West Parcel at a rate of 20 truckloads per hour or at a spacing of 3 minute intervals minutes, 9 hours a days for 73 days over 6-mile haul route through three cities, two major college campuses and an unincorporated county area. The Addendum

further states that truck spacing at 5-minute intervals will avoid congestion at intersections yet, by this definition, congestion will occur through the dispatch of trucks at 3-minute intervals as stated elsewhere in the Addendum. Safety logistics of empty trucks accelerating through gaps in traffic south on Grand Avenue have also not been identified.

4. The Addendum states in defense of the not preparing a new environmental document that:

> "*New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, ……."*

5. Competent facility planning would demonstrate the need to plainly define to the public how 11,000 truckloads of dirt would be routed through city streets of three cities and two college campuses co-mingled with public traffic. This was not done. These significant impacts justify the preparation of a new environmental document.

6. An Addendum is inappropriate because of these significant undisclosed impacts to the public. A project specific EIR must be prepared to provide adequate public disclosure, including the comprehensive evaluation of alternatives. The analysis of alternatives will allow the public an opportunity to compare impacts and benefits of the alternatives and allow Mt. SAC to receive informed input from the community.

SIGNIFICANT CHANGES TO WEST PARCEL SOLAR PROJECT

7. Mt. SAC attempts to justify that the physical building pad of the Solar Project has not changed significantly by stating:

> *"The project remains at the same location, the project's characteristics are similar, and the magnitude of the potential environmental impact of the Solar Project are equal or less than that initially identified in Section 3.2 and Section 3.9 of the 2012 draft EIR."*

8. However, a description of the building pad of the West Parcel Solar Project is shown on page 6, Draft Subsequent EIR to Final Program EIR, Response to Public Comments, November 2013. Section 3. Revisions to the Draft EIR, Paragraph 10 states:

> *"The solar facility on the West Parcel was previously planned as a 1.5 to 2.0 MW facility on 6.6 acres (DEIR, p. 135). The proposed project is now a 2.0 MW facility on 10.6 acres.*

9. The above alterations in landforms between the DEIR, p. 135 and FEIR, pg. 6 constitutes a significant 61% increase in solar facility acreage (from 6.6 to 10.6 acres) without any disclosure in revised environmental documents.

10. Further and significantly, the revised building pad configuration recently disclosed in the Draft Addendum to the Mt. SAC 2012 Facility Master Plan EIR (SCH 2002041161) shows an unnumbered figure entitled Overall Planting Plan (EPT Design) which is so blurred to the reader that the physical scale shown at the bottom of the map cannot be read. However, from my personal knowledge of the project site and my measurement of known distances on the ground, I was able to determine that the build pad area has now been expanded to over 15 acres which is a approximately a 40% increase over than shown on page 6, Draft Subsequent EIR to Final Program EIR, Response to Public Comments, November 2013.

11. Since the solar panels have been pushed to the southern half of the building pad, Mt. SAC is creating building space for future uses on the northern portion of the pad undisclosed to the public. These significant changes have not been made available for public review in the Draft Addendum to the Mt. SAC 2012 Facility Master Plan EIR.

NO IDENTIFICATION OF WEST PARCEL SOLAR PROJECT IN 2012 FACILITIES MASTER PLAN

12. An examination of the 2012 FMP indicates while the words "Solar and Retail" appeared at the West Parcel site, there was no specific information provided on the West Parcel Solar Project or what the project would entail. Effectively, the West Parcel Solar Project has not been included in any Mt. SAC Master Plan. This suggests the West Parcel Solar Project was a hastily developed land use scheme, not identified in the master plan, and only addressed in an abbreviated Subsequent Program EIR with no evaluation and disclosure of alternatives.

ADDENDUM EXCLUDES LINE FO SIGHT ANALYSIS

13. Very significant changes to the project have not been disclosed in visual or line of sight analyses and included in the Addendum even though a line of sight analysis was performed by Mt. SAC and disclosed to the Board of Trustees with no previous public disclosure when seeking approval for award of the contract, "Assessment, Design, Installation and Operation and Maintenance of a Photovoltaic Solar System (West Parcel Solar Project)" on September 16, 2015. A line of sight analysis was conducted by United Walnut Taxpayers and presented to the Board of Trustees on September 9 and 16, 2015 to examine the visual effects of the Solar Plant from a number of perspectives in the City of Walnut up to a mile from the Solar Plant site, based on its highly elevated location in the natural hillsides above city streets and near residences. Principle viewsheds were evaluated from highly traveled city streets, and from home sites that would be representative of many homes in a particular community. Residences are impacted by

both blocked views of the solar building pad and by the placement of a significant eyesore in the midst of the community where natural hillsides once existed. As well, significant visual impacts are experienced by motorists entering the city on main thoroughfares like Grand Avenue and from other city streets.

SOLAR PROJECT NEGLECTS CITY GENERAL PLAN SCENIC HIGHWAYS DESIGNATION

14. The City of Walnut General Plan identifies a Scenic Highway on Grand Avenue in the location of the West Parcel Solar Project, which should be considered in a project specific EIR.. The West Parcel Solar Project is decimating this valued Scenic Highway. Under Scenic Highways, the General Plan states:

> *"Grand Avenue between Valley Boulevard and the northern City limits.*
> *Of all the existing roads within the City of walnut, Grand Avenue possesses the most Scenic value".*

TRUCK HAUL ANALYSIS

15. The Addendum states that the earthmoving operation will use fifteen (15) cubic yard dump trucks. These trucks weigh approximately 30 tons and carry approximately 30 tons of dirt, for a total loaded weight of 60 tons. The maximum weight on City of Walnut streets is 8,500 pounds, such that trucks will significantly exceed weight limits.

16. Regarding the Truck Haul Analysis, the Addendum states:

> *"The number of trucks traveling westbound on Temple Avenue and entering the 260-foot left-turn pocket to proceed southbound on Grand Avenue may cause potential congestion. If there is not enough left-turn pocket length, the haul trucks may cause congestion for other vehicles attempting to also use the outside left-turn lane."*

17. The Addendum further states that truck spacing at 5-minute intervals will avoid congestion at intersections:

> *"Therefore, trucks near the left-turn pocket at the Grand Avenue and Temple Avenue intersection is the key factor in determining if congestion will occur on the truck haul route to the West Parcel. Based on this analysis, if loaded trucks do not leave the borrow site under five (5) minutes apart, the left-turn pocket will not be congested."*

18. Yet elsewhere the Addendum states that trucks will be dispatched from the Stadium Hill borrow source to the West Parcel at a rate of 20 truckloads per hour or at a spacing of 3-minute intervals to achieve construction schedules. With truck intervals of 3 minutes, it

falls well below the 5-minute interval to avoid traffic congestion at intersections. With more than one truck in the right lane of the left turn pocket at Temple and Grand, more than half the left turn lane will be filled, displacing public traffic onto through-traffic lanes. This congestion would likely occur in left-turn pockets at Temple Avenue turning left on Grand Avenue, from Grand Avenue turning left on Valley Boulevard, and from Valley Boulevard turning left on Temple Avenue. Significantly, Mt. SAC now extends the haul route to a total of 6 miles through the City of Walnut, the City of Pomona, the City of Industry, unincorporated county areas, the Cal Poly campus and the Mt. SAC campus, involving 11,000 truckloads of dirt, at a pace of 20 truckloads per hour for 73 days. This was probably unavoidable to avoid dangerous U-turns along any shorter route, but results in extraordinary impacts on these cities and entities.

19. The Addendum includes a "gap analysis" performed by Itetris, Inc. concluding:

"The gap analysis identified 27 gaps in traffic exceeding 15 seconds during the peak hour analyzed. This indicates there is ample space for truck traffic to travel south on Grand Avenue from Temple Avenue to the site driveway, or space for entering or leaving the West Parcel without disrupting traffic flow on Grand Avenue or causing delays for haul trucks entering or leaving the West Parcel."

20. However, this means that in these short gaps in traffic occurring every couple minutes, one or possibly two 30-ton trucks at a time leaving the West Parcel after dumping their loads will be required to quickly weave into traffic gaps from a "full stop" to normal traffic speeds onto Grand Avenue. These trucks will travel south while public traffic quickly closes in and encounters them from behind on a right trending Grand Avenue turn with poor views looking ahead. Cars can close in quickly and unexpectedly on slow moving trucks after turning right from Amar Road on to Grand Avenue or passing through the Amar Road / Grand Intersection. These types of "real time" safety issues cannot be analyzed through numerical models. From my extensive experience in earth moving operations, the co-mingling of a haul route with public traffic, as is being done here, should always be avoided.

REVISED MITIGATION MEASURES

21. The Addendum states:

"MM-3a in the 2012 MMP is revised because the District does not issue demolition or grading permits for its construction projects. The District approves contracts for demolition or grading activities for their projects. As indicated in some public comments, the initial language may be misinterpreted that permits are required from outside agencies. The 2012 MMP and the 2012 Final EIR Facts and Findings did not state the involvement of any outside agencies in this regard. The change is not significant and no new effects result from the change."

22. Mt. SAC uses an Addendum to a Subsequent Supplemental EIR to attempt to provide justification for exemption from City permits, and County permits which have adopted by reference by the City of Walnut. The California Government Code, the City of Walnut Municipal Code and the County of Los Angeles Building Code all require grading permits for a local agency entity such as Mt. San Antonio College.

23. CA Gov. Code Symbol 53097 states:

"Notwithstanding any other provisions of this article, the governing board of a school district shall comply with any city or county ordinance (1) regulating drainage improvements and conditions, (2) regulating road improvements and conditions, or (3) requiring the review and approval of grading plans as these ordinance provisions relate to the design and construction of onsite improvements which affect drainage, road conditions, or grading, and shall give consideration to the specific requirements and conditions of city or county ordinances relating to the design and construction of offsite improvements. If a school district elects not to comply with the requirements of city or county ordinances relating to the design and construction of offsite improvements, the city or county shall not be liable for any injuries or for any damage to property caused by the failure of the school district to comply with those ordinances.(Amended by Stats. 1990, Ch. 275, Sec. 2.)"

24. Further, the Los Angeles County Building Code, which includes its planning and zoning ordinances, imposes additional regulations on a project with more than 100,000 cubic yards of on-site earthwork to avoid mass landform alteration, preserve hillside shapes and maintain viewsheds of surrounding areas. Because of the volume of earth fill involved on the West Parcel Solar Project, the provisions of Title 22, Planning and Zoning Restrictions Hillside Grading specifically apply.

25. This Code Section states, in part:

County Building Code – Title 22 Planning and Zoning, 1. Conditional Use Permits, 22.56.217 – Hillside Management Areas – Additional Regulations

Appendix for Section 22.56.217 – Hillside Design Guidelines, VI Sensitive Hillside Design Measures, 2. Grading and Facilities

Avoid mass landform alteration, preserve the physical shape of the hillside, and maintain pleasant views.

2.1. For projects with more than 100,000 cubic yards of onsite earthwork, avoid any mass cut and fill grading that would result in a change of 25 feet or greater in elevation from the existing natural grade to the finished manufactured grade at any one point on the site.

2.2. Use contoured grading lines that match or closely match the existing topography, generally avoiding lines that trace 45 to 90 degrees against the natural contour.

2.3. Utilize undulating banks for graded slopes to maintain the natural pattern of the topography to the greatest extent feasible.

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CITY OF WALNUT

February 16, 2016,

Mikaela Klein, Senior Facilities Planner
Facilities Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

SUBJECT: Notice of Preparation (NOP) of a Draft Subsequent Project and Program EIR for the Mt. San Antonio College (Mt. SAC) 2015 Facilities Master Plan and Physical Education Projects

Dear Ms. Klein,

This letter is the City of Walnut's response to the Mt. SAC's NOP for the Draft Subsequent Project and Program EIR (SEIR) for the 2015 Facilities Master Plan and Physical Education Projects. The City concurs that these significant projects require the preparation of a full SEIR to analyze their potentially significant and wide-ranging environmental impacts. Please send all notices and documents relating to the SEIR for the 2015 Facilities Master Plan and Physical Education Projects to the City of Walnut, Attention Tom Weiner, Community Development Director with a copy to Justin Carlson, City Planner.

Due to the fact that an Initial Study was not included, the City of Walnut would like the following specific details included within the SEIR analysis for the following projects identified in the circulated NOP:

- **Physical Education Projects**
- **Relocation of the Public Transportation Center (to Lot D3)**
- **Construction of a Pedestrian Bridge across Temple Avenue (connecting the Physical Education Complex to the existing Lot F)**
- **An expanded Wildlife Sanctuary and Open Space**
- **The Net Increase in Square-Footage (i.e. construction & demolition) at 2105 FMPU Buildout is Approximately 500,000 Gross Square-Feet**

PHYSICAL EDUCATION PROJECTS:

As indicated in the NOP, the major changes from the 2012 Facilities Master Plan (FMP) is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue (previously the athletics projects were named the Athletics Complex East (Phase 1) and Physical Education

Complex (Phase 2). Therefore, the Physical Education Projects (Phases 1, 2) as identified in Exhibit 3 of the NOP (circulated January 15, 2016) should include:

1. **Transportation/Traffic & Parking**: Close attention should be paid to the traffic impacts likely to be generated by the proposed project both during construction and upon completion of the proposed project and on the demand for parking spaces. A Traffic Impact Analysis (TIA) needs to include an analysis of potential traffic impacts upon road segments within the City and at key intersections, including but not limited to:

   - Temple Avenue at Bonita Avenue.
   - Temple Avenue/Amar Road at Grand Avenue.
   - Grand Avenue at Mountaineer Road.
   - Grand Avenue at San Jose Hills Road.
   - Mountaineer Road at Edinger Way.

   The TIA needs to address the proposed use of identified haul routes for the import or export of construction materials and the potential traffic related impacts resulting from the construction of applicable off-site improvements for the project located within public right-of-ways. Haul route analysis should take into account City adopted weight limits, permissible hours of construction and hauling activities and other applicable restrictions.

   Also, the NOP indicates that the District is looking at using the location for special events as well as the requested application to host the 8-day 2020 Olympic Track & Field trials. The College projects a maximum daily attendance of 20,000 attendees at these events. The SEIR needs to analyze traffic and increased congestion as well as the increased demand for parking spaces based on projected daily use as well as the peak demands generated by the projected attendance spikes at the proposed special events.

2. **Aesthetics**: Due to existing surrounding residential uses to the project site and the proposed uses, the SEIR needs to analyze the potential impacts of substantial light and/or glare as well as daytime and nighttime views. The light issues include without limitation reflections, glare, decreased night sky visibility and building shadow.

3. **Air Quality**: The impacts on air quality both during and after construction of the proposed Physical Education Projects should be properly analyzed. Sensitive populations are more susceptible to the effects of air pollution than are the general population (i.e., children, senior citizens, and acutely or chronically ill people). Land uses considered sensitive receptors typically include residences, schools, playgrounds, childcare centers, hospitals, convalescent homes, and retirement homes. Implementation of the proposed project is anticipated to generate increased vehicle trips on area roadways that could result in increased air pollutants. Construction and operation of the proposed project would increase vehicle trips on area roadways and result in associated air pollutants. Grading and excavation operations may also have air quality impacts in the absence of mitigation.

   Furthermore, the proposed project could potentially 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. Development and site improvements associated with the proposed project could result in the addition of new

indirect, mobile, and stationary source emissions. Therefore, further analysis in the SEIR is required to determine the significance of potential impacts as it relates to project air quality.

4. **Cultural Resources**: The SEIR needs to include a Cultural Resources analysis to ensure that all CEQA regulations be followed as it relates to the protection of cultural resources and the potential impacts that the project may have.

5. **Geology & Soils**: The SEIR should analyze geologic, geohazards, and environmental health hazards information for the project in order to identify, if any, geological impacts that are likely to result from project construction and implementation.

6. **Greenhouse Gas Emissions**: Greenhouse gas emissions (both direct and indirect) need to address the potential emissions from construction activities, proposed use of the project, as well as mobile and electrical consumption sources.

7. **Hazards and Hazardous Materials**: The project proposes the re-design of the athletic facilities (south of Temple Avenue and east of Bonita Avenue) and therefore, the SEIR needs to address potential hazard and/or hazardous materials related to the demolition and construction of the project.

8. **Hydrology and Water Quality**: The SEIR needs to analyze the effects the proposed project will have on hydrology and water quality as it relates to impacts resulting from work completed during the construction phase, following the completion of construction and prior to the establishment of ground cover. Additionally, the SEIR should analyze effects immediately after the completion of the proposed project when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

9. **Land Use and Planning**: The City of Walnut Zoning Map designates the project site as R.P.D. - 61,700 – 0.6 DU. The SEIR is required to determine whether project implementation would conflict with any applicable land use plan, policy, and/or regulation. The College must consult with the City of Walnut as a Responsible Agency for any and all necessary permits, including without limitation, grading, hauling, and conditional use permits required in accordance with applicable zoning.

10. **Noise**: A Noise Impact Study needs to address both the short term and long term impacts of the project, including projected average daily use and noise impacts of high intensity special events. The analysis also needs to address the impact that any constructed-related noise will have on adjacent properties.

11. **Public Services**: The SEIR needs to address both the short term and long term impacts of the project as it relates to increase demand for police and/or fire department services as well as other public facilities (e.g. sewer, storm drains, and roadways).

12. **Utilities and Service Systems**: The SEIR needs to address the short term and long term effects the project will have on utility and service systems in terms of construction and ongoing project operations.

13. **Cumulative Impacts**: The SEIR needs to address the cumulative short term and long term effects of the project and determine the significance of potential impacts.

14. **Impacts of Phased Project Construction Upon Earlier Phases**: The SEIR should properly analyze project phasing and staging of construction. The City of Walnut recommends that the SEIR include an analysis of the potential air quality, noise impacts, and traffic impacts that the construction of any later phases will have in regards to previously constructed phases of the project.

15. **Biological Resources**: The SEIR needs to address the short term and long term effects the project will have on biological resources and should include a thorough study and biological evaluation of sensitive habitat existing on and near the project site and potential disturbances during and after construction.

16. **Project Alternatives**: The SEIR must include a fair and unbiased consideration of various project alternatives, including alternative sites, alternative scale/scope and a no-project alternative.

RELOCATION OF THE PUBLIC TRANSPORTATION CENTER (TO LOT D3)

As indicated in the NOP, the 2015 Mt. SAC Facilities Master Plan Update (FMPU) includes the proposed relocation of the Public Transportation Center (PTC) to (Lot D3) on the north side of Temple Avenue. The SEIR as it relates to the relocated PTC needs to include:

1. **Transportation/Traffic & Parking**: Close attention should be paid to the traffic impacts likely to be generated by the proposed project both during construction and upon completion of the proposed project and on the demand for parking spaces. A Traffic Impact Analysis (TIA) needs to include an analysis of potential traffic impacts upon road segments within the City and at key intersections, including but not limited to:

   - Temple Avenue at Bonita Avenue.
   - Temple Avenue/Amar Road at Grand Avenue.
   - Grand Avenue at Mountaineer Road.
   - Grand Avenue at San Jose Hills Road.
   - Mountaineer Road at Edinger Way.

   The TIA needs to address the proposed use of identified haul routes for the import or export of construction materials and the potential traffic related impacts resulting from the construction of any applicable off-site improvements for the project located within public right-of-ways. Haul route analysis should take into account City adopted weight limits, permissible hours of construction and hauling activities and other applicable restrictions.

2. **Air Quality**: The impacts on air quality both during and after construction of the proposed Physical Education Projects should be properly analyzed. Sensitive populations are more susceptible to the effects of air pollution than are the general population (i.e., children, senior citizens, and acutely or chronically ill people). Land uses considered sensitive receptors typically include residences, schools, playgrounds, childcare centers, hospitals, convalescent homes, and retirement homes. Implementation of the proposed

project is anticipated to generate increased vehicle trips on area roadways that could result in increased air pollutants. Construction and operation of the proposed project would increase vehicle trips on area roadways and result in associated air pollutants. Grading and excavation operations may also have air quality impacts in the absence of mitigation.

Furthermore, the proposed project could potentially 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. Development and site improvements associated with the proposed project could result in the addition of new indirect, mobile, and stationary source emissions. Therefore, further analysis in the EIR is required to determine the significance of potential impacts as it relates to project air quality.

3. **Geology & Soils**: The SEIR should analyze geologic, geohazards, and environmental health hazards information for the project in order to identify, if any, geological impacts that are likely to result from project construction and implementation.

4. **Greenhouse Gas Emissions**: Greenhouse gas emissions (both direct and indirect) need to address the potential emissions construction activities, proposed use of the project, as well as mobile and electrical consumption sources.

5. **Hazards and Hazardous Materials**: The SEIR needs to address potential hazard and/or hazardous materials related to the construction of the project.

6. **Hydrology and Water Quality**: The SEIR needs to analyze the effects the proposed project will have on hydrology and water quality as it relates to impacts resulting from work completed during the construction phase, following the completion of construction and prior to the establishment of ground cover (if any). Additionally, the SEIR should analyze effects immediately after the completion of the proposed project when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

7. **Land Use and Planning**: The City of Walnut Zoning Map designates the project site as R.P.D. - 61,700 – 0.6 DU. The SEIR is required to determine whether project implementation would conflict with any applicable land use plan, policy, and/or regulation. The College must consult with the City of Walnut as a Responsible Agency for any and all necessary permits, including without limitation, grading, hauling, and conditional use permits required in accordance with applicable zoning.

8. **Noise**: A Noise Impact Study needs to address the short term and long term impacts of the project. The analysis also needs to address the impact that constructed-related noise will have on adjacent properties.

9. **Public Services**: The SEIR needs to address both the short term and long term impacts of the project as it relates to increase demand for police and/or fire department services as well as other public facilities (e.g. sewer, storm drains, and roadways).

10. **Utilities and Service Systems**: The SEIR needs to address the short term and long term effects the project will have on utility and service systems in terms of construction and ongoing project operations.

11. **Cumulative Impacts**: The SEIR needs to address the cumulative short term and long term effects of the project and determine the significant of potential impacts.

12. **Impacts of Phased Project Construction Upon Earlier Phases**: The SEIR should properly analyze project phasing and staging of construction. The City of Walnut recommends that the SEIR include an analysis of the potential air quality, noise impacts, and traffic impacts that the construction of any later phases will have in regards to previously constructed phases of the project.

13. **Project Alternatives**: The SEIR must include a fair and unbiased consideration of various project alternatives, including alternative sites, alternative scale/scope and a no-project alternative.

CONSTRUCTION OF A PEDESTRIAN BRIDGE ACROSS TEMPLE AVENUE (CONNECTING THE PHYSICAL EDUCATION COMPLEX TO THE EXISTING LOT F)

As indicated in the NOP, Mt. SAC is proposing the construction of a pedestrian bridge across Temple Avenue which will connect the Physical Education Complex to Lot F (NOP, Exhibit 3 Mt. SAC Land Use Plan). The SEIR as it relates to the pedestrian bridge should include:

1. **Transportation/Traffic**: Close attention should be paid to the vehicular and pedestrian traffic impacts likely to be generated by the proposed project both during construction and upon completion of the proposed project.Traffic Impact Analysis (TIA) needs to include an analysis of potential construction related traffic impacts on Temple Avenue. The TIA needs to address the proposed use of identified haul routes for the import or export of construction materials and the potential traffic related impacts resulting from the construction of applicable off-site improvements for the project located within public right-of-ways. Haul route analysis should take into account City adopted weight limits, permissible hours of construction and hauling activities and other applicable restrictions.

2. **Air Quality**: The impacts on air quality both during and after construction of the proposed Physical Education Projects should be properly analyzed. Sensitive populations are more susceptible to the effects of air pollution than are the general population (i.e., children, senior citizens, and acutely or chronically ill people). Land uses considered sensitive receptors typically include residences, schools, playgrounds, childcare centers, hospitals, convalescent homes, and retirement homes. Implementation of the proposed project is anticipated to generate increased vehicle trips on area roadways that could result in increased air pollutants. Construction of the proposed project would increase vehicle trips on area roadways and result in associated air pollutants. Grading and excavation operations may also have air quality impacts in the absence of mitigation.

   Furthermore, the proposed construction of the project could potentially 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. Development and site improvements associated with the proposed project could result in the addition of new indirect, mobile, and stationary source emissions. Therefore, further analysis in the EIR is required to determine the significance of potential impacts as it relates to project air quality.

3. **Greenhouse Gas Emissions**: Greenhouse gas emissions (both direct and indirect) need to be addressed the potential emissions construction activities, proposed use of the project, as well as mobile and electrical consumption sources.

4. **Land Use and Planning**: The City of Walnut Zoning Map designates the project site as R.P.D. - 61,700 – 0.6 DU. The SEIR is required to determine whether project implementation would conflict with any applicable land use plan, policy, and/or regulation. The College must consult with the City of Walnut as a Responsible Agency for any and all necessary permits, including without limitation, grading, hauling, and conditional use permits required in accordance with applicable zoning.

5. **Noise**: A Noise Impact Study needs to address both the potential short term and long term impacts of the project. The analysis also needs to address the impact that constructed-related noise will have on the surrounding area.

6. **Utilities and Service Systems**: The SEIR needs to address the short term and long term effects the project will have on utility and service systems in terms of construction and ongoing project operations.

7. **Cumulative Impacts**: The SEIR needs to address the cumulative short term and long term effects of the project and determine the significant of potential impacts.

8. **Impacts of Phased Project Construction Upon Earlier Phases**: The SEIR should properly analyze project phasing and staging of construction. The City of Walnut recommends that the SEIR include an analysis of the potential air quality, noise impacts, and traffic impacts that the construction of any later phases will have in regards to previously constructed phases of the project.

9. **Project Alternatives**: The SEIR must include a fair and unbiased consideration of various project alternatives, including alternative sites, alternative scale/scope and a no-project alternative.

AN EXPANDED WILDLIFE SANCTUARY AND OPEN SPACE

As indicated in the NOP, Mt. SAC is proposing an expanded wildlife sanctuary and open space. The SEIR as it relates to the expanded wildlife sanctuary and open space should include:

1. **Land Use and Planning**: The City of Walnut Zoning Map designates the project site as R.P.D. - 61,700 – 0.6 DU. The SEIR is required to determine whether project implementation would conflict with any applicable land use plan, policy, and/or regulation. The College must consult with the City of Walnut as a Responsible Agency for any and all necessary permits, including without limitation, grading, hauling, and conditional use permits required in accordance with applicable zoning.

2. **Biological Resources**: The SEIR needs to address the short term and long term effects the project will have on biological resources and should include a thorough study and biological evaluation of sensitive habitat existing on and near the project site and potential disturbances during and after project implementation.

3. **Cultural Resources**: The project area is predominately urbanized and it is unknown that cultural and/or paleontological resources are known to occur on-site. Therefore, further analysis in the SEIR is required to determine significance of potential impacts.

4. **Hydrology and Water Quality**: The SEIR needs to analyze the effects the proposed project will have on hydrology and water quality as it relates to impacts resulting from work completed during the construction phase, following the completion of construction and prior to the establishment of ground cover. Additionally, the SEIR should analyze effects immediately after the completion of the proposed project when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

5. **Geology & Soils**: The SEIR should analyze geologic, geohazards, and environmental health hazards information for the project in order to identify, if any, geological impacts that are likely to result from project construction and implementation.

6. **Project Alternatives**: The SEIR must include a fair and unbiased consideration of various project alternatives, including alternative sites, alternative scale/scope and a no-project alternative. Specifically, the SEIR should consider expanding the wildlife area and open space sanctuary to include the West Parcel which is documented as supporting high quality habitat for list species.

THE NET INCREASE IN SQUARE-FOOTAGE (I.E. CONSTRUCTION & DEMOLITION) AT 2105 FMPU BUILDOUT IS APPROXIMATELY 500,000 GROSS SQUARE-FEET:

As indicated in the NOP, the net increase in square-footage (i.e. construction & demolition) at 2105 FMPU buildout of approximately 500,000 Gross Square-Feet should include:

1. **Transportation/Traffic & Parking**: Close attention should be paid to the traffic impacts likely to be generated by the proposed project both during construction and upon completion of the proposed project and on the demand for parking spaces. A Traffic Impact Analysis (TIA) needs to include an cumulative analysis of potential traffic impacts upon road segments within the City and at key intersections, including but not limited to:

   - Temple Avenue at Bonita Avenue.
   - Temple Avenue/Amar Road at Grand Avenue.
   - Grand Avenue at Mountaineer Road.
   - Grand Avenue at San Jose Hills Road.
   - Mountaineer Road at Edinger Way.

   Additionally, the TIA needs to cumulatively address the proposed use of identified haul routes for the import or export of construction materials and the potential traffic related

impacts resulting from the construction of applicable off-site improvements for the project located within public right-of-ways. Haul route analysis should take into account City adopted weight limits, permissible hours of construction and hauling activities and other applicable restrictions.

2. **Aesthetics**: The SEIR needs to analyze the cumulative potential impacts of substantial light and/or glare as well as daytime and nighttime views. The light issues include without limitation reflections, glare, decreased night sky visibility and building shadow.

3. **Air Quality**: The impacts on air quality both during and after construction of the proposed Physical Education Projects should be properly analyzed. The proposed projects could potentially 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. Development and site improvements associated with the proposed project could result in the addition of new indirect, mobile, and stationary source emissions. Therefore, further analysis in the EIR is required to determine the significance of cumulative potential impacts as it relates to project air quality.

4. **Cultural Resources**: The SEIR needs to include a cumulative Cultural Resources analysis to ensure that all CEQA regulations be followed as it relates to the protection of cultural resources and the potential impacts that the project may have.

5. **Geology & Soils**: The SEIR should analyze geologic, geohazards, and environmental health hazards information for the project in order to identify, if any, geological impacts that are likely to result from project construction and implementation.

6. **Greenhouse Gas Emissions**: Greenhouse gas emissions (both direct and indirect) need to be cumulatively addressed the potential emissions construction activities, proposed use of the project, as well as mobile and electrical consumption sources.

7. **Hazards and Hazardous Materials**: The SEIR needs to cumulatively address potential hazards and/or hazardous materials related to the demolition and construction of all projects.

8. **Hydrology and Water Quality**: The SEIR needs to analyze the cumulative effects the proposed project will have on hydrology and water quality as it relates to impacts resulting from work completed during the construction phase, following the completion of construction and prior to the establishment of ground cover. Additionally, the SEIR should analyze effects immediately after the completion of the proposed project when impacts related to sedimentation would decrease markedly, but those associated with urban runoff would increase.

9. **Noise**: A Noise Impact Study needs to address both the short term and long term cumulative impacts of the projects. The analysis also needs to address the impacts that constructed-related noise will have on adjacent properties on all phases of the project.

10. **Public Services**: The SEIR needs to cumulatively address the short term and long term impacts of the project as it relates to increase demand for police and/or fire department services as well as other public facilities (e.g. sewer, storm drains, and roadways).

11. **Utilities and Service Systems**: The SEIR needs to address the short term and long term cumulative effects the projects will have on utility and service systems in terms of construction and ongoing project operations.

12. **Cumulative Impacts**: The SEIR needs to address the cumulative short term and long term effects of the overall project and determine the significant of potential impacts as it relates to the 2015 FMPU buildout.

10. **Impacts of Phased Project Construction Upon Earlier Phases**: The SEIR should properly analyze project phasing and staging of construction. The City of Walnut recommends that the SEIR include an analysis of the potential air quality, noise impacts, and traffic impacts that the construction of any later phases will have in regards to previously constructed phases of the project.

11. **Project Alternatives**: The SEIR must include a fair and unbiased consideration of various project alternatives, including alternative sites, alternative scale/scope and a no-project alternative.

Thank you again for providing the City of Walnut with the opportunity to comment on the NOP for this project. Please forward a copy of the SEIR to my attention at the City of Walnut upon completion. If you have any questions or require information for inclusion in the SEIR, please feel free to contact Community Development Director Tom Weiner or me at (909) 595-7543.

Sincerely,

Justin Carlson,
City Planner

Cc. City Manager
City Attorney
Community Development Director

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

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GRACE ROBINSON HYDE
Chief Engineer and General Manager

February 9, 2016

Ref File No.: 3586707

RECEIVED
FEB 11 2016
MT. SAC FACILITIES

Ms. Mikaela Klein
Senior Facilities Planner
Facilities Planning & Management
Mount San Antonio College
1100 North Grand Avenue
Walnut, CA 91789

Dear Ms. Klein:

Comment Letter for the Mount San Antonio College
2015 Facilities Master Plan Update and Physical Education Projects

The County Sanitation Districts of Los Angeles County (Districts) received a Notice of Preparation of a Draft Environmental Impact Report for the subject project on January 14, 2016. The proposed development is located within the jurisdictional boundaries of District No. 21. We offer the following comments regarding sewerage service:

1. The Districts maintain sewerage facilities within the project area that may be affected by the proposed project. Approval to construct improvements within a Districts' sewer easement and/or over or near a Districts' sewer is required before construction may begin. For a copy of the Districts' buildover procedures and requirements go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the Buildover Procedures and Requirements link. For more specific information regarding the buildover procedure, please contact Mr. Ed Stewart at (562) 908-4288, extension 2766.

2. The wastewater flow originating from the proposed project will discharge to local sewer lines, which are not maintained by the Districts, for conveyance to the Districts' Mount San Antonio Trunk Sewer, located along Mt. Sac Way. This portion of the Districts' 15-inch diameter trunk sewer has a design capacity ranging from 5.8 million gallons per day (mgd) to 4.5 mgd and conveyed a peak flow of 0.8 mgd when last measured in 2014.

3. The wastewater generated by the proposed project will be treated at the San Jose Creek Water Reclamation Plant (WRP) located adjacent to the City of Industry, which has a design capacity of 100 mgd and currently processes an average flow of 67.4 mgd. All biosolids and wastewater flows that exceed the capacity of the San Jose Creek WRP are diverted to and treated at the Joint Water Pollution Control Plant in the City of Carson.

4. The expected average wastewater flow from the proposed project, described in the document as a headcount increase of 3,745 students, is 74,900 gallons per day. For a copy of the Districts'

Recycled Paper

average wastewater generation factors, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and click on the Table 1, Loadings for Each Class of Land Use link.

5. The Districts are empowered by the California Health and Safety Code to charge a fee for the privilege of connecting (directly or indirectly) to the Districts' Sewerage System or for increasing the strength or quantity of wastewater discharged from connected facilities. This connection fee is a capital facilities fee that is imposed in an amount sufficient to construct an incremental expansion of the Sewerage System to accommodate the proposed project. Payment of a connection fee will be required before a permit to connect to the sewer is issued. For more information and a copy of the Connection Fee Information Sheet, go to www.lacsd.org, Wastewater & Sewer Systems, click on Will Serve Program, and search for the appropriate link. In determining the impact to the Sewerage System and applicable connection fees, the Districts' Chief Engineer will determine the user category (e.g. Condominium, Single Family home, etc.) that best represents the actual or anticipated use of the parcel or facilities on the parcel. For more specific information regarding the connection fee application procedure and fees, please contact the Connection Fee Counter at (562) 908-4288, extension 2727.

6. In order for the Districts to conform to the requirements of the Federal Clean Air Act (CAA), the design capacities of the Districts' wastewater treatment facilities are based on the regional growth forecast adopted by the Southern California Association of Governments (SCAG). Specific policies included in the development of the SCAG regional growth forecast are incorporated into clean air plans, which are prepared by the South Coast and Antelope Valley Air Quality Management Districts in order to improve air quality in the South Coast and Mojave Desert Air Basins as mandated by the CCA. All expansions of Districts' facilities must be sized and service phased in a manner that will be consistent with the SCAG regional growth forecast for the counties of Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial. The available capacity of the Districts' treatment facilities will, therefore, be limited to levels associated with the approved growth identified by SCAG. As such, this letter does not constitute a guarantee of wastewater service, but is to advise you that the Districts intend to provide this service up to the levels that are legally permitted and to inform you of the currently existing capacity and any proposed expansion of the Districts' facilities.

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,

Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: E. Stewart
M. Sullivan
M. Tatalovich

DOC: #3613233.D21

Submitted by:

ITERIS

MT. SAC 2015 FACILITIES MASTER PLAN UPDATE & PHYSICAL EDUCATION PROJECTS

Traffic Impact Study

Draft Report

Submitted to:

Mt. San Antonio College

April 1, 2016

17J16-17A8

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1.0 INTRODUCTION

This traffic impact study has been prepared for the proposed 2015 Facilities Master Plan Update (FMPU) and Physical Education Projects (PEP) of Mount San Antonio College (Mt. SAC). This report provides detailed information concerning the methodology, findings, and conclusions of the traffic analysis.

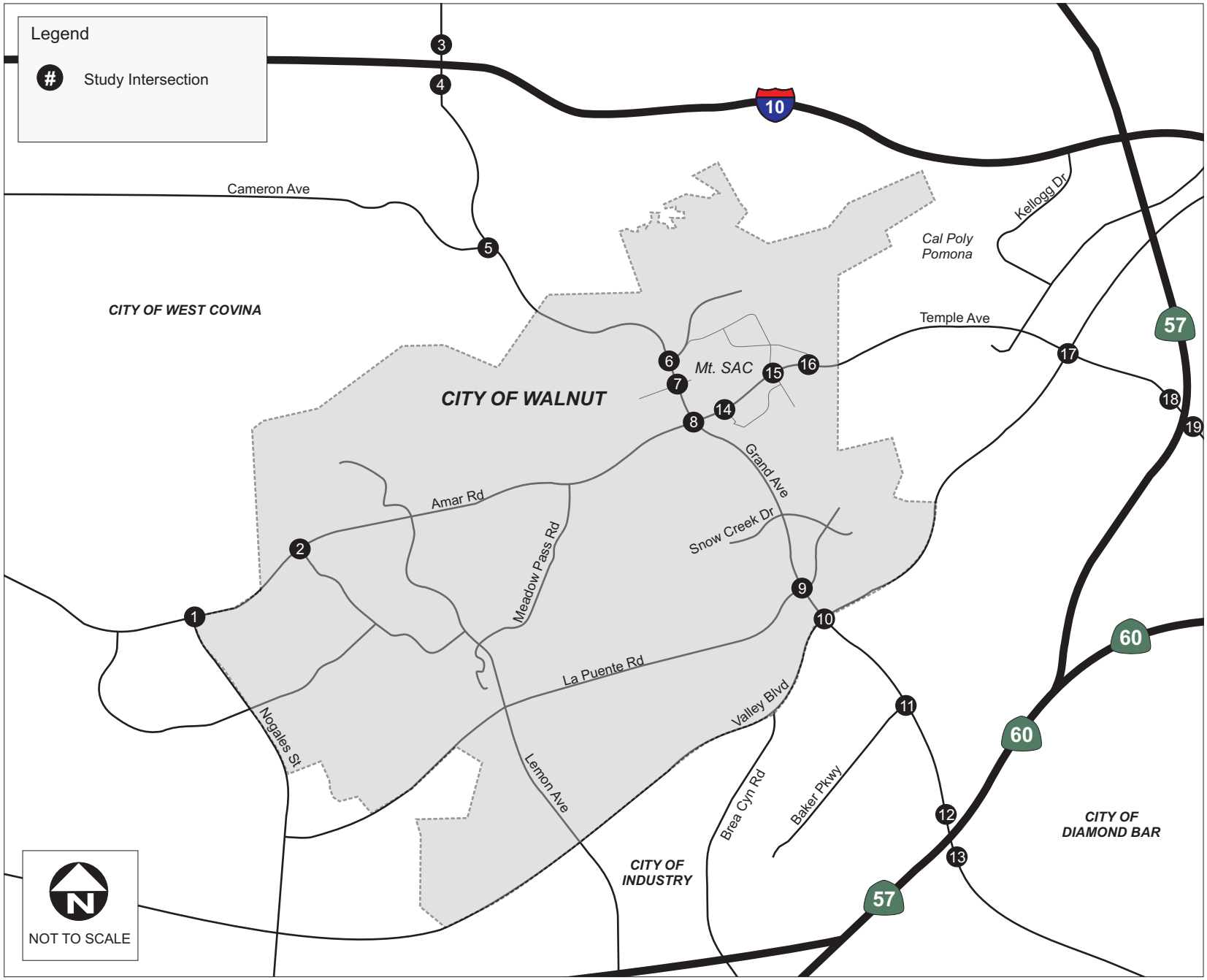
1.1 PROJECT DESCRIPTION

Mt. San Antonio College is located in the City of Walnut on over 420 acres. It has an estimated 2014-2015 fall enrollment of 35,986 students (headcount). The college has proposed a 2015 Facilities Master Plan Update. The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue. The existing stadium will be demolished and a new stadium built on the site. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks 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. **Figure 1** shows the location of Mt. SAC in relation to the surrounding street network.

1.2 STUDY AREA

A total of nineteen (19) intersections were selected for analysis. The 19 intersections represent locations that may potentially be impacted by traffic due to the proposed project. The study intersections are illustrated in the previously referenced **Figure 1** and are as follows:

1. Nogales Street/Amar Road;
2. Lemon Avenue/Amar Road;
3. Grand Avenue/I-10 Westbound Ramp;
4. Grand Avenue/I-10 Eastbound Ramp;
5. Grand Avenue/Cameron Avenue;
6. Grand Avenue/Mountaineer Road;
7. Grand Avenue/San Jose Hills Road;
8. Grand Avenue/Temple Avenue;
9. Grand Avenue/La Puente Road;
10. Grand Avenue/Valley Boulevard;
11. Grand Avenue/Baker Parkway;
12. Grand Avenue/SR-60 Westbound Ramps;
13. Grand Avenue/SR-60 Eastbound Ramps;
14. Mt. SAC Way/Temple Avenue;
15. Bonita Avenue/Temple Avenue;
16. Lot F/Temple Avenue;
17. Valley Boulevard/Temple Avenue;
18. SR-57 Southbound Ramps/Temple Avenue; and
19. SR-57 Northbound Ramps/Temple Avenue.



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

FIGURE 1
Study Area

1.3 STUDY PERIODS

Traffic operations were evaluated for each of the following scenarios during the weekday a.m. and p.m. peak hours:

- Existing Conditions (2015);
- Existing Plus 2020 Project Conditions;
- Existing Plus 2025 Project Conditions;
- Existing Plus 2020 Cumulative Conditions;
- Existing Plus 2025 Cumulative Conditions;
- Existing Plus 2020 Cumulative Plus Project Conditions; and
- Existing Plus 2025 Cumulative Plus Project Conditions.

The official buildout date of the 2015 FMPU and of the PEP is 2020. A year 2025 scenario is included in this analysis in order to coincide with the City and County General Plans.

2.0 ENVIRONMENTAL SETTING

This section presents an overview of the existing roadway and transit system within the study area, and the methodology used to determine existing traffic volumes.

2.1 ROADWAY CONFIGURATIONS

The existing configurations of the roadways within the study area are described as follows:

Grand Avenue oriented in a north-south direction, is a four-lane divided roadway with connection to the Interstate 10 and State Route 57/60 freeways. On-street parking is prohibited along Grand Avenue and the posted speed limit is 45 miles per hour within the study area.

Amar Road/Temple Avenue, oriented in an east-west direction, is a four-lane divided to six lane divided roadway with a raised median. On-street parking is prohibited along Amar Road/Temple Avenue and the posted speed limit is 45 miles per hour within the study area. Amar Road/Temple Avenue also provides access to State Route 57.

Lemon Avenue, oriented in a north-south direction, is a four-lane divided roadway with a raised median. On-street parking is prohibited through the study area and the posted speed limit is 45 miles per hour. Lemon Avenue mostly provides access to residential areas.

Cameron Avenue, is a four-lane undivided roadway, oriented in an east-west direction, with a posted speed limit of 45 miles per hour within the study area. Cameron Avenue terminates at Grand Avenue on the west end.

Mountaineer Road is a four-lane divided roadway, oriented in an east-west direction providing local access to residential areas and Mt. SAC. On street parking is prohibited and the posted speed limit is 35 miles per hour within the study area. Mountaineer Road terminates at Grand Avenue on the east end.

Baker Parkway is a four-lane divided roadway currently terminating at Grand Avenue on the west end. Baker Parkway would be extended east of Grand Avenue to provide direct access to the Industry Business Complex.

La Puente Road, oriented in an east-west direction, is a four-lane divided roadway, with a posted speed limit of 40 miles per hour. La Puente Road mostly provides access to residential areas.

Nogales Street is a two-lane undivided to four-lane divided roadway, oriented in a north-south direction. On street parking is prohibited and the posted speed limit is 50 miles per hour within the study area.

Valley Boulevard, oriented in an east-west direction, is a four to six-lane divided roadway with connection to the Interstate 10 and State Route 57/60 freeways. On-street parking is prohibited along Valley Boulevard within the study area.

2.2 EXISTING PUBLIC TRANSIT

Metro bus lines 190/194 travel north-south along Grand Avenue and east-west along Valley Boulevard through the study area.

Foothill Transit lines 195, 289, 480, 482, and 486 travel east-west along Amar Road/Temple Avenue through the study area.

2.3 EXISTING TRAFFIC VOLUMES

Existing traffic counts at all 19 intersections were conducted in October 2015. All counts were conducted during the a.m. peak period (7:00 – 9:00) and p.m. peak period (4:00 – 6:00). The traffic impact analysis is based on the highest single hour of traffic during each time period at each location. Detailed vehicle turning movement data are included in **Appendix A**. **Figure 2** shows the existing peak hour volumes at the study intersections.

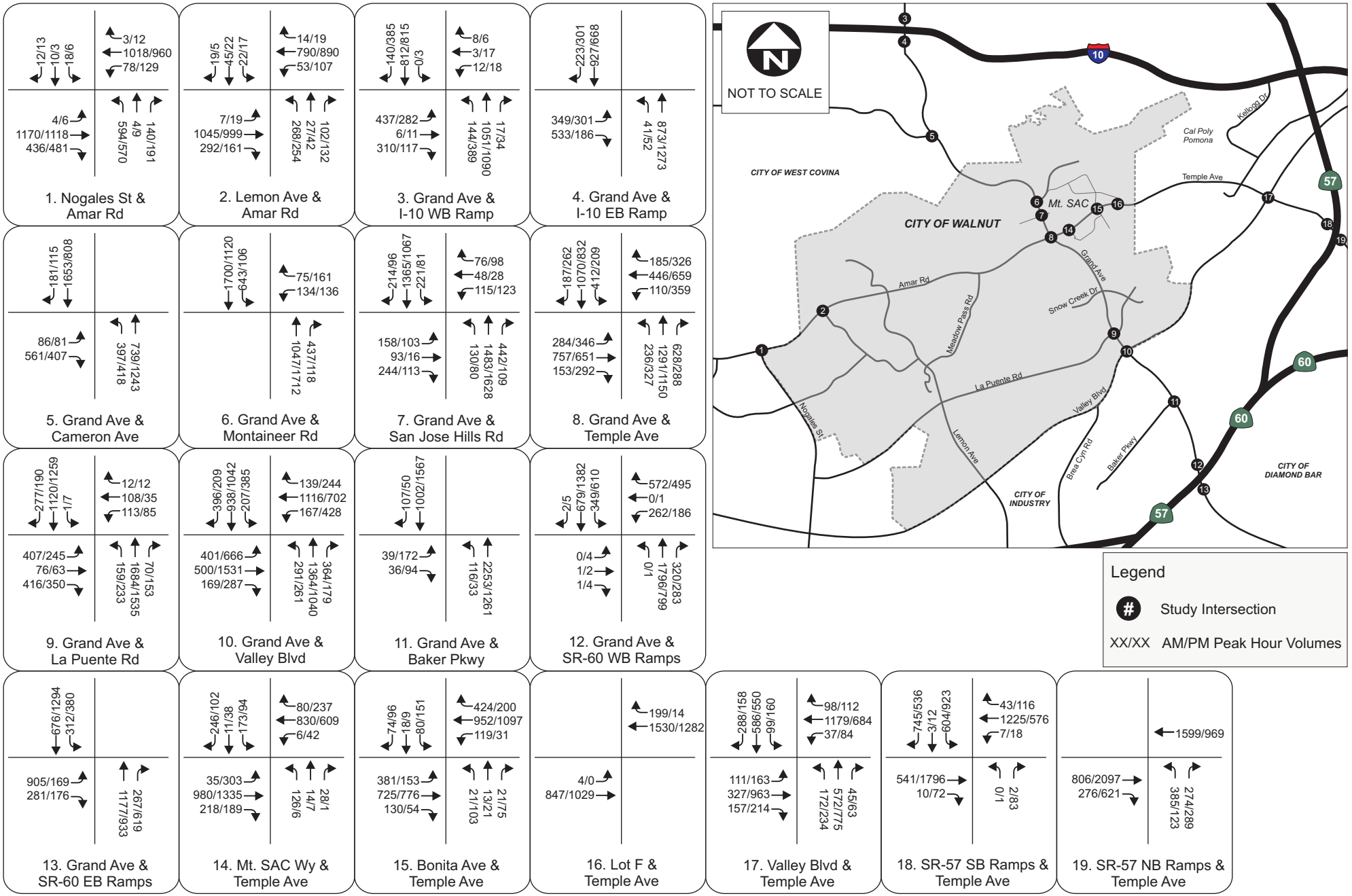


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FIGURE 2
Existing Peak Hour Intersection Volumes

3.0 TRAFFIC OPERATIONS ANALYSIS 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 was conducted according to the Los Angeles County traffic impact analysis guidelines for non-freeway ramp intersections located within the City of Walnut and City of Pomona. 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. 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.

TABLE 1: INTERSECTION LEVEL OF SERVICE DEFINITIONS – ICU METHODOLOGY

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, analysis of traffic operations were 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 signalized 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.	≤ 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 ≤ 20
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.	>20 and ≤ 35
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>35 and ≤ 55
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>55 and ≤ 80
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.	> 80

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

3.1 THRESHOLDS OF SIGNIFICANCE

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 With Project Conditions	V/C	Project V/C Increase
C	0.701 to 0.800	0.040 or more
D	0.801 to 0.900	0.020 or more
E / F	0.901 or more	0.010 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.

4.0 EXISTING CONDITIONS

A level of service analysis was conducted to evaluate existing (2015) intersection operations during the a.m. and p.m. peak hours at the study intersections. **Table 4** summarizes the existing LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**. **Figure 3** summarizes the existing intersection lane configurations.

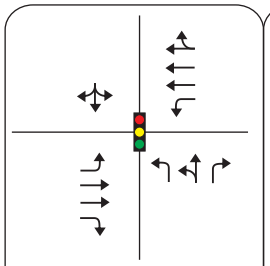
TABLE 4: EXISTING INTERSECTION PEAK HOUR LEVEL OF SERVICE

	Intersection	Control Type	AM Peak Hour			PM Peak Hour		
			Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS
1	Nogales St/Amar Rd	Signalized	-	0.760	C	-	0.725	C
2	Lemon Ave/Amar Rd	Signalized	-	0.706	C	-	0.636	B
3	Grand Ave/I-10 WB Ramp*	Signalized	23.4	-	C	24.8	-	C
4	Grand Ave/I-10 EB Ramp*	Signalized	26.3	-	C	16.7	-	B
5	Grand Ave/Cameron Ave	Signalized	-	1.084	F	-	0.659	B
6	Grand Ave/Mountaineer Rd	Signalized	-	0.666	B	-	0.721	C
7	Grand Ave/San Jose Hills Rd	Signalized	-	0.944	E	-	0.844	D
8	Grand Ave/Temple Ave	Signalized	-	0.885	D	-	0.764	C
9	Grand Ave/La Puente Rd	Signalized	-	1.065	F	-	0.950	E
10	Grand Ave/Valley Blvd	Signalized	-	0.845	D	-	0.928	E
11	Grand Ave/Baker Pkwy	Signalized	-	0.817	D	-	0.543	A
12	Grand Ave/SR-60 WB Ramps*	Signalized	22.8	-	C	22.8	-	C
13	Grand Ave/SR-60 EB Ramps*	Signalized	31.9	-	C	21.4	-	C
14	Mt. SAC Wy/Temple Ave	Signalized	-	0.724	C	-	0.700	B
15	Bonita Ave/Temple Ave	Signalized	-	0.580	A	-	0.601	B
16	Lot F/Temple Ave	Stop-control	15.3	-	C	0.0	-	A
17	Valley Blvd/Temple Ave	Signalized	-	0.751	C	-	0.763	C
18	SR-57 SB Ramps/Temple Ave*	Signalized	22.9	-	C	24.5	-	C
19	SR-57 NB Ramps/Temple Ave*	Signalized	13.6	-	B	8.8	-	A

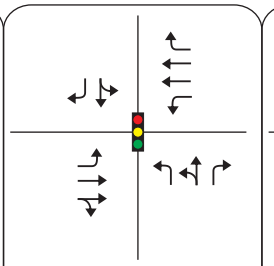
* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.
Notes:
V/C = Volume to Capacity Ratio, LOS = Level of Service.

As shown in **Table 4**, the following intersections are currently operating at LOS E or worse:

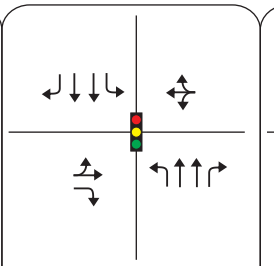
- Grand Avenue/Cameron Avenue (a.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. peak hour);
- Grand Avenue/La Puente Road (a.m. and p.m. peak hour); and
- Grand Avenue/Valley Boulevard (p.m. peak hour).



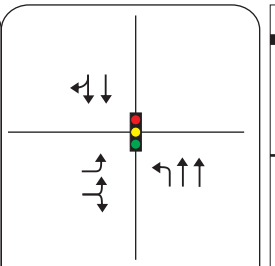
1. Nogales St & Amar Rd



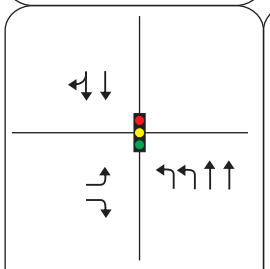
2. Lemon Ave & Amar Rd



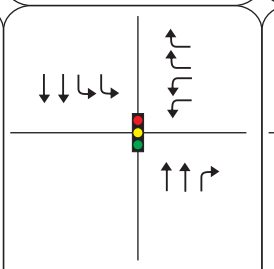
3. Grand Ave & I-10 WB Ramp



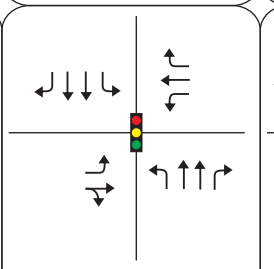
4. Grand Ave & I-10 EB Ramp



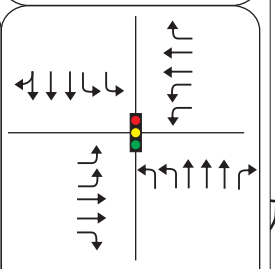
5. Grand Ave & Cameron Ave



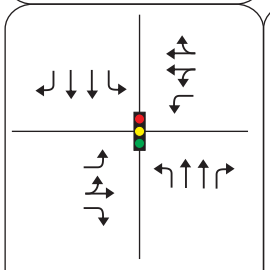
6. Grand Ave & Montaineer Rd



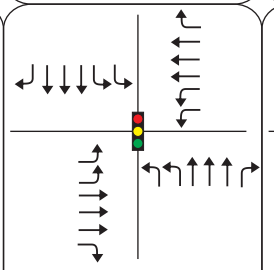
7. Grand Ave & San Jose Hills Rd



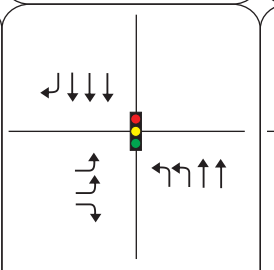
8. Grand Ave & Temple Ave



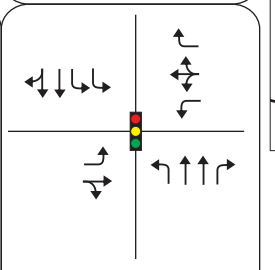
9. Grand Ave & La Puente Rd



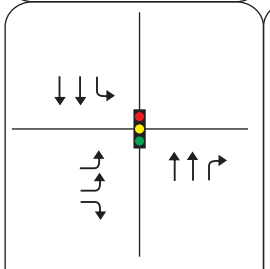
10. Grand Ave & Valley Blvd



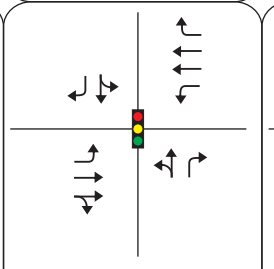
11. Grand Ave & Baker Pkwy



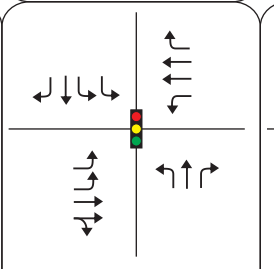
12. Grand Ave & SR-60 WB Ramps



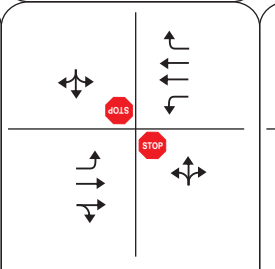
13. Grand Ave & SR-60 EB Ramps



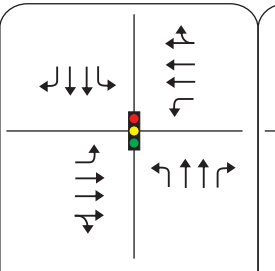
14. Mt. SAC Wy & Temple Ave



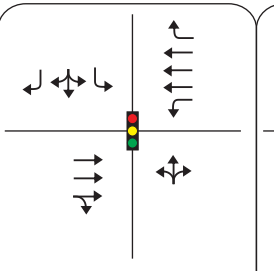
15. Bonita Ave & Temple Ave



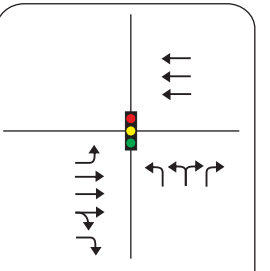
16. Lot F & Temple Ave



17. Valley Blvd & Temple Ave



18. SR-57 SB Ramps & Temple Ave



19. SR-57 NB Ramps & Temple Ave

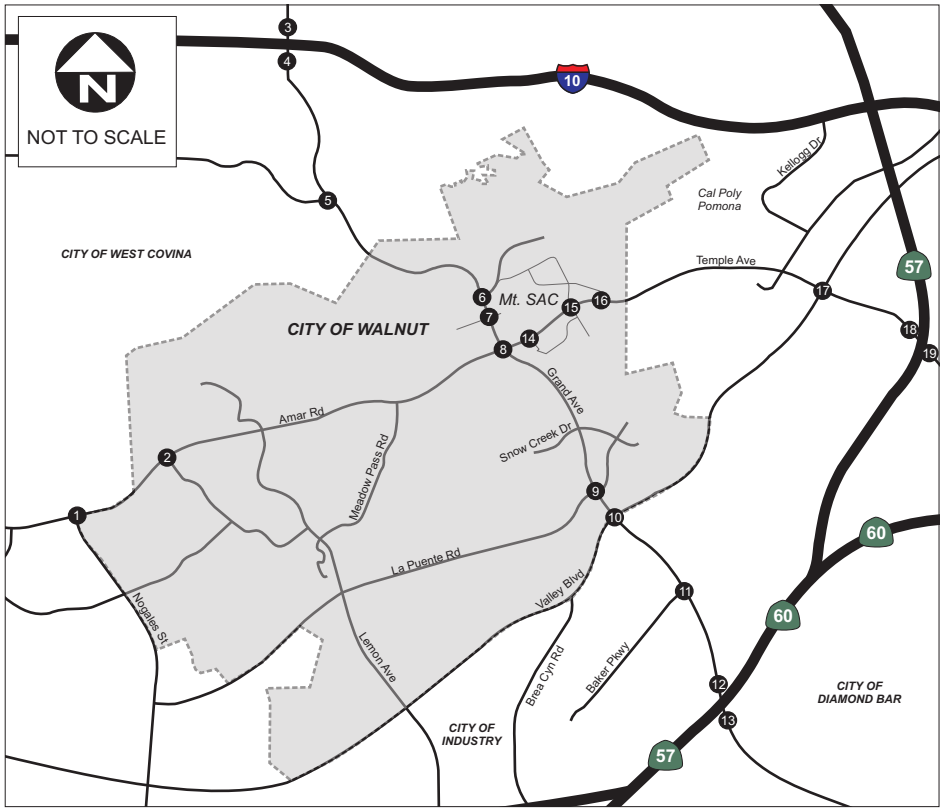


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FIGURE 3
Existing Intersection Lane Configuration

5.0 PROPOSED PROJECT TRAFFIC

This section defines the traffic generated by the proposed buildout of the Facilities Master Plan project in a three-step process including trip generation, trip distribution and trip assignment. The college has proposed a 2015 Facilities Master Plan Update. The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue. The existing stadium will be demolished and a new stadium built on the site. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet.

5.1 PROJECT TRIP GENERATION

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. The results of this calculation are shown for 2020 and 2025 in **Tables 5** and **6**, respectively.

As shown in **Table 5**, the buildout of the 2015 FMPU project in 2020 is forecast to generate 449 new a.m. peak hour trips, 449 new p.m. peak hour trips, and 4,606 new daily trips when compared to existing conditions. As shown in **Table 6**, by 2025 the project is forecast to generate 858 new a.m. peak hour trips, 858 new p.m. peak hour trips, and 8,798 new daily trips when compared to existing conditions.

TABLE 5: 2020 PROJECT TRIP GENERATION

ITE Code	Land Use	Size	Unit	AM Peak Hour Rates			PM Peak Hour Rates			Daily Rates	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
				In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	
New Project Land Use																	
540	Junior/Community College	3,745	Students	84%	16%	0.12	63%	37%	0.12	1.23	375	74	449	300	149	449	4,606
										Total	**375**	**74**	**449**	**300**	**149**	**449**	**4,606**

Source: ITE Trip Generation, 9th Edition

TABLE 6: 2025 PROJECT TRIP GENERATION

ITE Code	Land Use	Size	Unit	AM Peak Hour Rates			PM Peak Hour Rates			Daily Rates	AM Peak Hour Trips			PM Peak Hour Trips			Daily Trips
				In	Out	Total	In	Out	Total		In	Out	Total	In	Out	Total	
New Project Land Use																	
540	Junior/Community College	7,153	Students	84%	16%	0.12	63%	37%	0.12	1.23	715	143	858	572	286	858	8,798
										Total	**715**	**143**	**858**	**572**	**286**	**858**	**8,798**

Source: ITE Trip Generation, 9th Edition

5.2 PROJECT TRIP DISTRIBUTION

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. The distribution pattern developed for the project is shown in **Figure 4**.

5.3 PROJECT TRIP ASSIGNMENT

Trips generated by the project, as shown in **Tables 5** and **6**, were assigned to the surrounding roadway system based on the distribution patterns to estimate the project-related peak-hour traffic at each of the study intersections. The project trips were assigned based on distribution inputs to the TRAFFIX network. **Figure 5** illustrates the a.m. and p.m. peak hour 2020 project trip assignment. **Figure 6** illustrates the a.m. and p.m. peak hour 2025 project trip assignment.

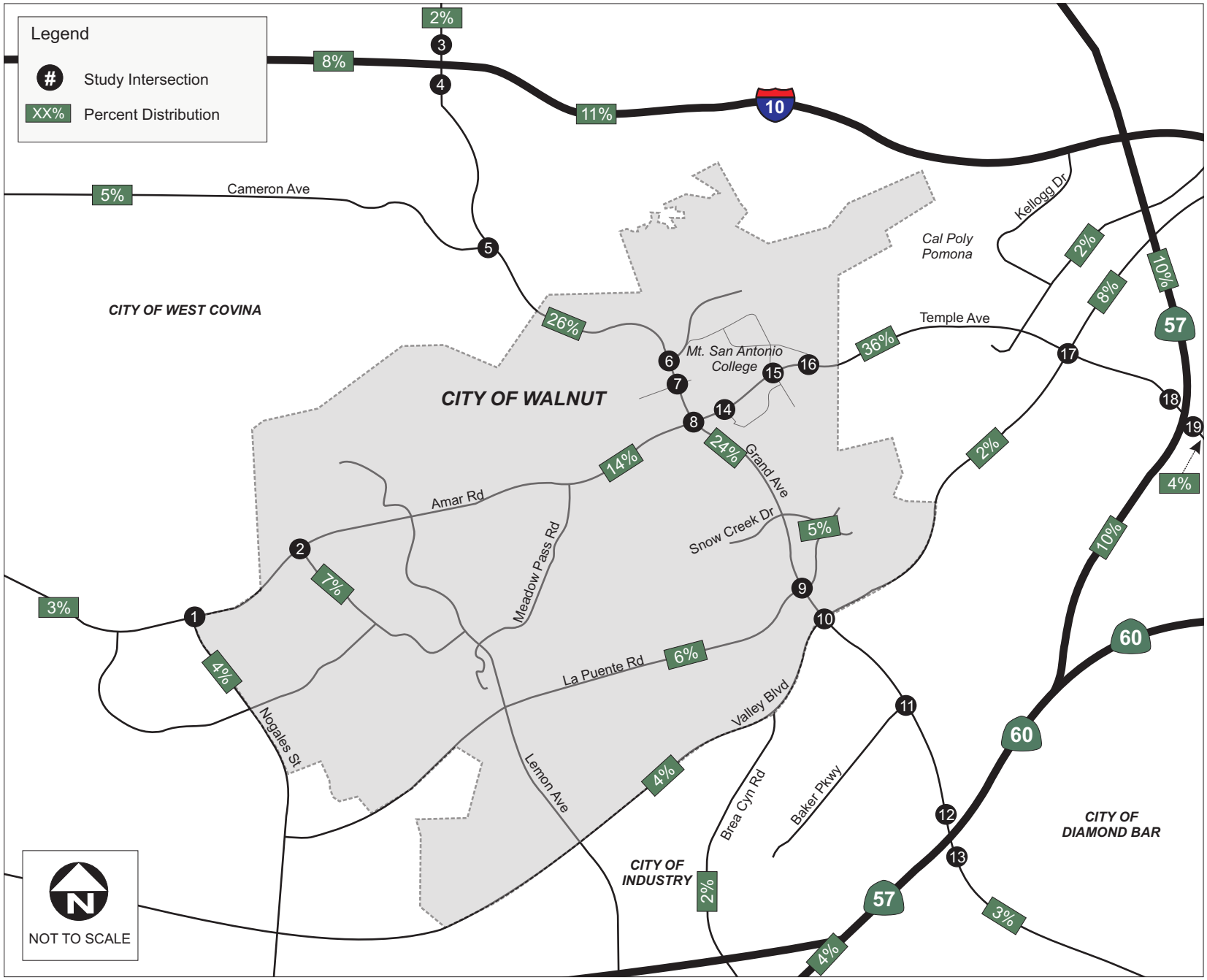

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FIGURE 4
Project Trip Distribution

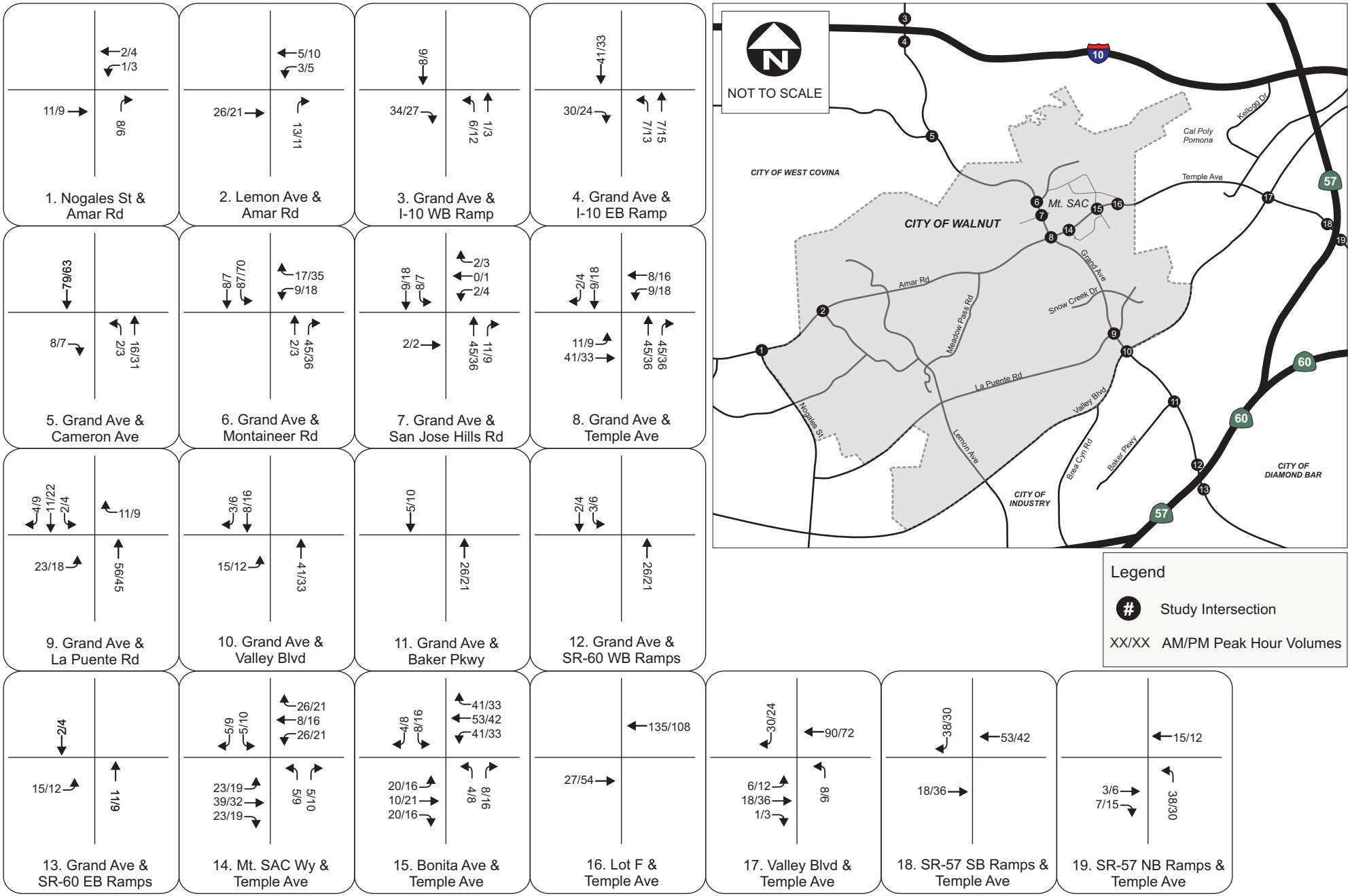

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FIGURE 5
2020 Project Trip Assignment

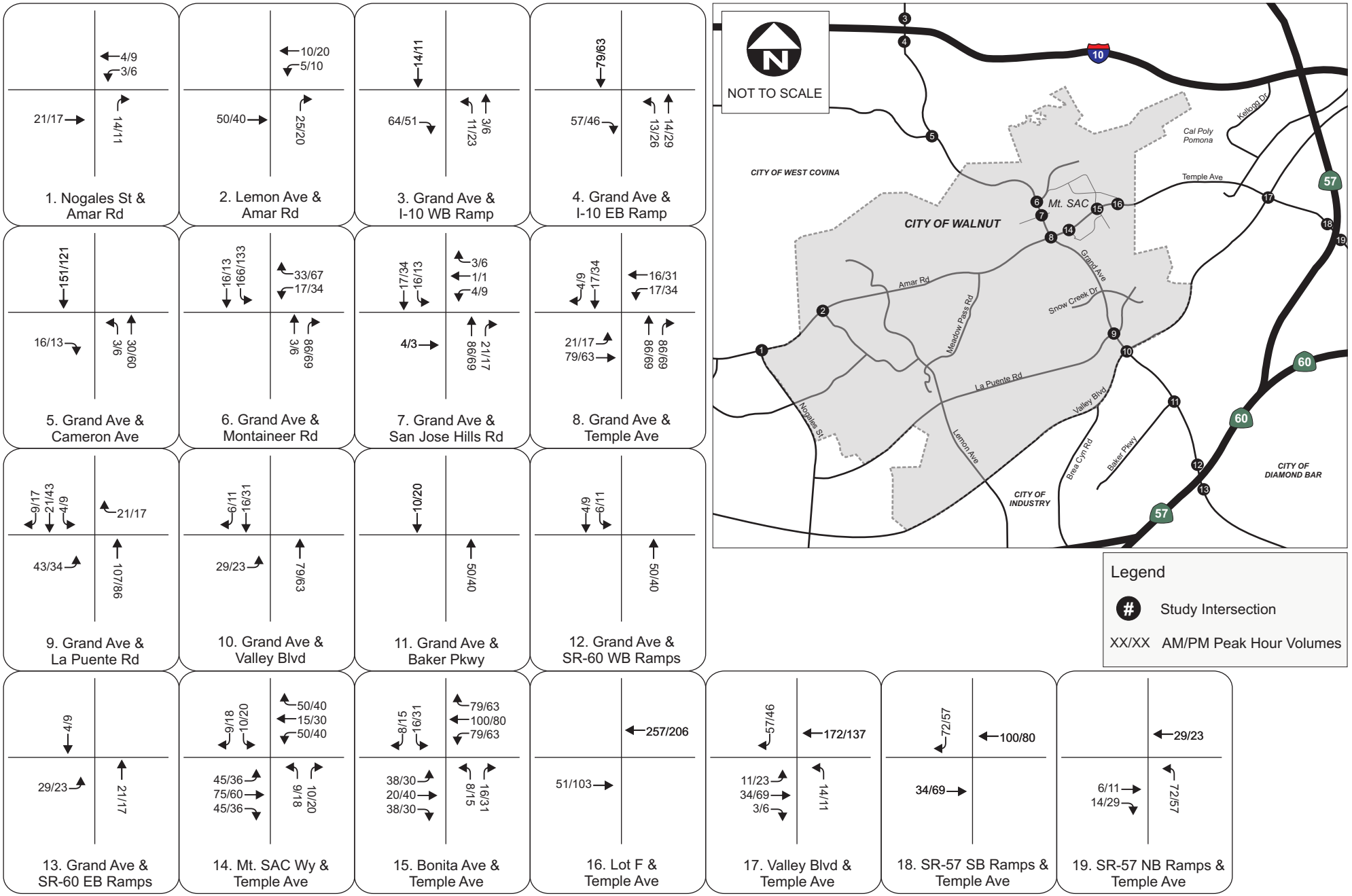

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FIGURE 6
2025 Project Trip Assignment

6.0 EXISTING PLUS 2020 PROJECT CONDITIONS

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. **Figure 7** illustrates the existing plus 2020 project traffic volumes at the study intersections.

6.1 EXISTING PLUS 2020 PROJECT INTERSECTION LEVELS OF SERVICE

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. **Table 7** summarizes the existing plus 2020 project level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 7: 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	Change in PM V/C or Delay	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	Nogales St/ Amar Rd	-	0.760	C	-	0.725	C	-	0.764	C	-	0.730	C	0.004	0.005	No
2	Lemon Ave/ Amar Rd	-	0.706	C	-	0.636	B	-	0.716	C	-	0.646	B	0.010	0.010	No
3	Grand Ave/ I-10 WB Ramp*	23.4	-	C	24.8	-	C	23.5	-	C	25.1	-	C	0.1	0.3	No
4	Grand Ave/ I-10 EB Ramp*	26.3	-	C	16.7	-	B	28.0	-	C	18.0	-	B	1.7	1.3	No
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	1.116	F	-	0.685	B	0.032	0.026	**Yes**
6	Grand Ave/ Mountaineer Rd	-	0.666	B	-	0.721	C	-	0.698	B	-	0.751	C	0.032	0.030	No
7	Grand Ave/ San Jose Hills Rd	-	0.944	E	-	0.844	D	-	0.967	E	-	0.865	D	0.023	0.021	**Yes**
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.928	E	-	0.785	C	0.043	0.021	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.089	F	-	0.960	E	0.024	0.010	**Yes**
10	Grand Ave/ Valley Blvd	-	0.845	D	-	0.928	E	-	0.859	D	-	0.935	E	0.014	0.007	No
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	0.826	D	-	0.550	A	0.009	0.007	No
12	Grand Ave/ SR-60 WB Ramps*	22.8	-	C	22.8	-	C	23.1	-	C	22.9	-	C	0.3	0.1	No
13	Grand Ave/ SR-60 EB Ramps*	31.9	-	C	21.4	-	C	32.4	-	C	21.4	-	C	0.5	0	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.752	C	-	0.741	C	0.028	0.041	**Yes**
15	Bonita Ave/ Temple Ave	-	0.580	A	-	0.601	B	-	0.618	B	-	0.635	B	0.038	0.034	No
16	Lot F/ Temple Ave	15.3	-	C	0.0	-	A	16.7	-	C	0.0	-	A	1.4	0.0	No

Intersection		Existing Conditions						Existing Plus 2020 Project Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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			
17	Valley Blvd/ Temple Ave	-	0.751	C	-	0.763	C	-	0.796	C	-	0.772	C	0.045	0.009	**Yes**
18	SR-57 SB Ramps/ Temple Ave*	22.9	-	C	24.5	-	C	23.6	-	C	25.2	-	C	0.7	0.7	No
19	SR-57 NB Ramps/ Temple Ave*	13.6	-	B	8.8	-	A	14.3	-	B	9.1	-	A	0.7	0.3	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.

Notes:

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

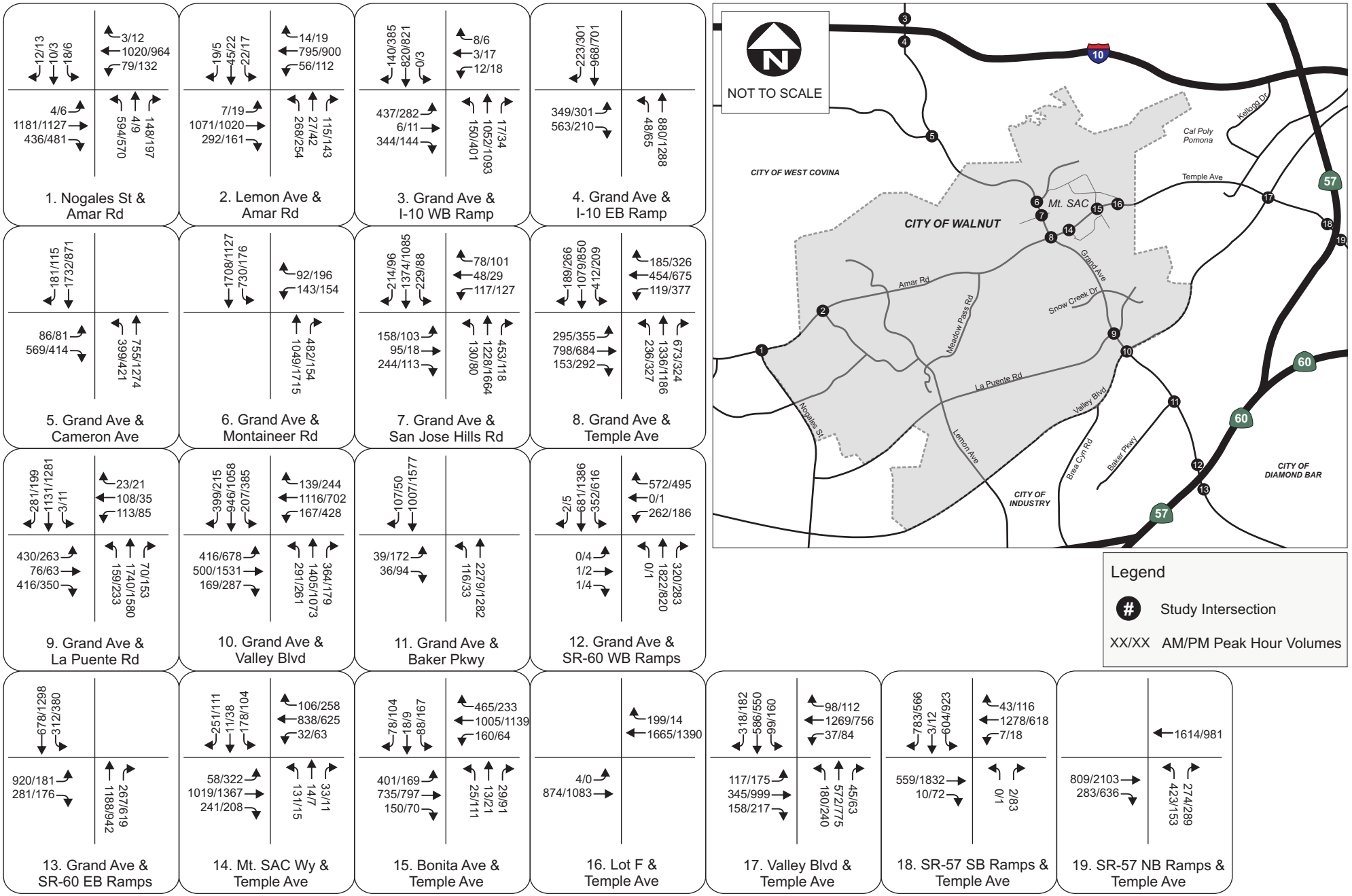

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FIGURE 7
Existing Plus 2020 Project
Peak Hour Intersection Volumes

As shown in **Table 7**, based on the thresholds of significance described in Section 3.1, the following intersections are forecast to be significantly impacted by the proposed 2020 project traffic:

- Grand Avenue/Cameron Avenue (a.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. and p.m. peak hour);
- Grand Avenue/Temple Avenue (a.m. peak hour);
- Grand Avenue/La Puente Road (a.m. peak hour);
- Mt. SAC Way/Temple Avenue (p.m. peak hour); and
- Valley Boulevard/Temple Avenue (a.m. peak hour).

6.2 Existing Plus 2020 Project Mitigation Measures

In order to reduce significant traffic impacts to a level considered less than significant in existing plus 2020 project conditions, a list of mitigation measures have been developed. The following mitigation measures would be required to reduce the level of impact:

- **Grand Avenue/Cameron Avenue** – Add a second eastbound right-turn lane.
- **Grand Avenue/San Jose Hills Road** – A second eastbound right-turn lane is required to mitigate the project impact at this intersection. However, sufficient ROW is not available due to adjacent land uses at the southwest and northwest corners of the intersection. As a result, improvements needed to mitigate this intersection are not considered feasible. A statement of overriding considerations is required.
- **Grand Avenue/Temple Avenue** – Convert the existing eastbound right-turn lane to a through/right-turn lane.
- **Grand Avenue/La Puente Road** – Modify the traffic signal to include an eastbound right-turn overlap phase.
- **Mt. SAC Way/Temple Avenue** – Restripe the eastbound approach to include a dedicated right-turn lane.
- **Valley Boulevard/Temple Avenue** – Improvements needed to mitigate this intersection are not considered feasible due to the ROW constraints near the adjacent railroad. A statement of overriding considerations is required.

At the locations where mitigation measures are deemed feasible, if it is determined by the lead agency that the necessary right-of-way is not available and the proposed lane additions cannot be developed within the available right-of-way, then the impacts may not be mitigated. **Table 8** summarizes the LOS results at the impacted intersections with implementation of the proposed mitigation measures that were determined to be feasible.

TABLE 8: 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	Change in PM V/C or Delay	Significant Impact with Mitigation?
		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			
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	0.924	E	-	0.603	B	-0.160	-0.056	No
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.873	D	-	0.775	C	-0.012	0.011	No
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	0.974	E	-	0.833	D	-0.091	-0.117	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.674	B	-	0.675	B	-0.050	-0.025	No

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

As shown in **Table 8**, at locations where improvements were considered feasible, project impacts are reduced to less than significant at four intersections.

7.0 EXISTING PLUS 2025 PROJECT CONDITIONS

A year 2025 scenario is included in this analysis in order to coincide with the City and County General Plans. Existing plus 2025 project conditions were developed by adding trips generated by the proposed 2025 project to the existing volumes. **Figure 8** illustrates the existing plus 2025 project traffic volumes at the study intersections.

7.1 EXISTING PLUS 2025 PROJECT INTERSECTION LEVELS OF SERVICE

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. **Table 9** summarizes the existing plus 2025 project level of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 9: 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	Change in PM V/C or Delay	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	Nogales St/ Amar Rd	-	0.760	C	-	0.725	C	-	0.769	C	-	0.735	C	0.009	0.010	No
2	Lemon Ave/ Amar Rd	-	0.706	C	-	0.636	B	-	0.726	C	-	0.657	B	0.020	0.021	No
3	Grand Ave/ I-10 WB Ramp*	23.4	-	C	24.8	-	C	23.7	-	C	25.5	-	C	0.3	0.7	No
4	Grand Ave/ I-10 EB Ramp*	26.3	-	C	16.7	-	B	29.9	-	C	19.2	-	B	3.6	2.5	No
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	1.146	F	-	0.708	C	0.062	0.049	**Yes**
6	Grand Ave/ Mountaineer Rd	-	0.666	B	-	0.721	C	-	0.726	C	-	0.777	C	0.060	0.056	**Yes**
7	Grand Ave/ San Jose Hills Rd	-	0.944	E	-	0.844	D	-	0.989	E	-	0.883	D	0.045	0.039	**Yes**
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.967	E	-	0.804	D	0.082	0.040	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.111	F	-	0.968	E	0.046	0.018	**Yes**
10	Grand Ave/ Valley Blvd	-	0.845	D	-	0.928	E	-	0.872	D	-	0.942	E	0.027	0.014	**Yes**
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	0.854	D	-	0.576	A	0.037	0.033	**Yes**
12	Grand Ave/ SR-60 WB Ramps*	22.8	-	C	22.8	-	C	23.5	-	C	23.0	-	C	0.7	0.2	No
13	Grand Ave/ SR-60 EB Ramps*	31.9	-	C	21.4	-	C	32.8	-	C	21.5	-	C	0.9	0.1	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.790	C	-	0.779	C	0.066	0.079	**Yes**
15	Bonita Ave/ Temple Ave	-	0.580	A	-	0.601	B	-	0.647	B	-	0.666	B	0.067	0.065	No
16	Lot F/ Temple Ave	15.3	-	C	0.0	-	A	18.1	-	C	0.0	-	A	2.8	0.0	No

Intersection		Existing Conditions						Existing Plus 2025 Project Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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			
17	Valley Blvd/ Temple Ave	-	0.751	C	-	0.763	C	-	0.838	D	-	0.776	C	0.087	0.013	**Yes**
18	SR-57 SB Ramps/ Temple Ave*	22.9	-	C	24.5	-	C	24.4	-	C	25.8	-	C	1.5	1.3	No
19	SR-57 NB Ramps/ Temple Ave*	13.6	-	B	8.8	-	A	14.8	-	B	9.4	-	A	1.2	0.6	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.

Notes:

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

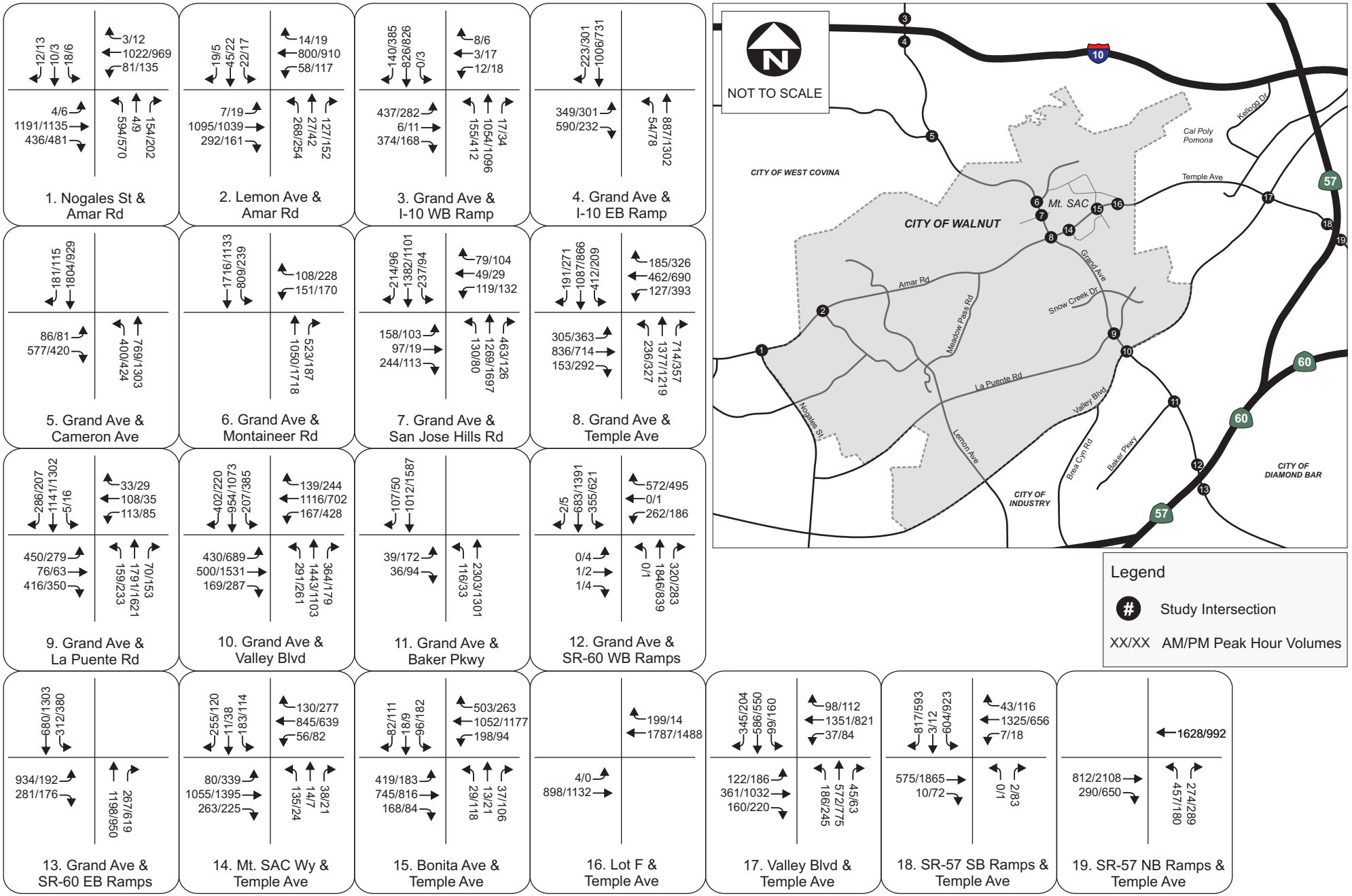

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FIGURE 8
Existing Plus 2025 Project
Peak Hour Intersection Volumes

As shown in **Table 9**, based on the thresholds of significance described in Section 3.1, the following intersections are forecast to be significantly impacted by the proposed 2025 project traffic:

- Grand Avenue/Cameron Avenue (a.m. and p.m. peak hour);
- Grand Avenue/Mountaineer Road (a.m. and p.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. and p.m. peak hour);
- Grand Avenue/Temple Avenue (a.m. and p.m. peak hour);
- Grand Avenue/La Puente Road (a.m. and p.m. peak hour);
- Grand Avenue/Valley Boulevard (a.m. and p.m. peak hour);
- Grand Avenue/Baker Parkway (a.m. peak hour);
- Mt. SAC Way/Temple Avenue (a.m. and p.m. peak hour); and
- Valley Boulevard/Temple Avenue (a.m. peak hour).

7.2 Existing Plus 2025 Project Mitigation Measures

In order to reduce significant traffic impacts to a level considered less than significant in existing plus 2025 project conditions, a list of mitigation measures have been developed. The following additional mitigation measures would be required in 2025 to reduce the level of impact beyond those required in 2020:

- **Grand Avenue/Mountaineer Road** – A third northbound through lane is required to mitigate the project impact at this intersection. However, sufficient ROW is not available within the current curb width. As a result, improvements needed to mitigate this intersection are not considered feasible. A statement of overriding considerations is required.
- **Grand Avenue/Valley Boulevard** – This intersection is considered to be fully built out since it currently consists of dual left-turn lanes at all approaches and dedicated free right-turn lanes at three approaches. In addition, no improvements at this intersection are considered feasible due to ROW constraints. A statement of overriding considerations is required.
- **Grand Avenue/Baker Parkway** – Restripe the northbound approach to include a third through lane.

At the locations where mitigation measures are deemed feasible, if it is determined by the lead agency that the necessary right-of-way is not available and the proposed lane additions cannot be developed within the available right-of-way, then the impacts may not be mitigated. **Table 10** summarizes the LOS results at the impacted intersections with implementation of the proposed mitigation measures that were determined to be feasible.

TABLE 10: 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	Change in PM V/C or Delay	Significant Impact with Mitigation?
		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			
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	0.949	E	-	0.624	B	-0.135	-0.035	No
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.903	E	-	0.790	C	0.018	0.026	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.001	F	-	0.847	D	-0.064	-0.103	No
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	0.600	B	-	0.505	A	-0.217	-0.038	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.704	C	-	0.708	C	-0.020	0.008	No

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

As shown in **Table 10**, at locations where improvements were considered feasible, project impacts are reduced to less than significant at four intersections.

8.0 CUMULATIVE PROJECT CONDITIONS

This section summarizes 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. Therefore, year 2020 and 2025 cumulative traffic conditions are assessed.

8.1 CUMULATIVE PROJECT GROWTH

A list of cumulative projects within the region, expected to be built by 2020, was provided by the Cities of Walnut, Pomona, Diamond Bar, and Industry, as shown in **Table 11**. An additional list of 2025 added cumulative projects within the region is shown in **Table 12**. Detailed trip generation data for these 54 cumulative projects within the vicinity of the project site is provided in **Appendix C**. The general location of each of the cumulative projects is shown in **Figure 9**. The peak hour vehicle trips expected to be generated by these developments within the study area in year 2020 are shown in **Figure 10**. The peak hour vehicle trips expected to be generated by these developments within the study area in year 2025 are shown in **Figure 11**. Trip distribution for the cumulative projects were assigned depending on the type of development, residential or non-residential, and location with respect to freeways and major arterials.

TABLE 11: 2020 CUMULATIVE DEVELOPMENT PROJECTS

#	Agency	Project Title	Location	Description
1	**Walnut**	Shea Homes Project	North of Valley Blvd between Pierre Rd and Suzanne Rd	37 single-family detached homes and 61 single-family townhomes
2		Salamone Subdivision	Off of Meadowpass Rd	6 residential lots
3		Gregorian Subdivision	1521 Meadowpass Rd	7 single-family residential lots
4		The Olsen Company Project	650 Camino De Rosa	8 single-family residences
5	**Pomona**	22122 W. Valley Blvd.	22122 W. Valley Blvd.	Warehouse - 141,000 SF
6		2001 W. Mission Blvd.	2001 W. Mission Blvd.	Warehouse - 432,843 SF
7		2-16 Village Loop Rd.	2-16 Village Loop Rd.	Single Family Detached – 124 DU and Retail - 6,000 SF
8		92 Rio Rancho Rd.	92 Rio Rancho Rd.	Condominium/Townhome - 56 DU
9		1943 S. Towne Ave.	1943 S. Towne Ave.	Single Family Detached - 48,000 DU
10		715 E. Phillips Rd.	715 E. Phillips Rd.	Condominium/Townhome - 4 DU
11		1041 S. White Ave.	1041 S. White Ave.	Single Family Detached - 20 DU
12		701 S. Garey Ave.	701 S. Garey Ave.	Retail - 37,000 SF

13		1439 S. Palomares St.	1439 S. Palomares St.	Condominium/Townhome - 6 DU
14		1390 S. Palomares St.	1390 S. Palomares St.	Condominium/Townhome - 12 DU
15		Rio Rancho Towne Center Phase II	Rio Rancho Towne Center	Retail - 64,717 SF
16		600 Dudley Ave.	600 Dudley Ave.	Senior Housing - 84 DU
17		855 E. Phillips Blvd.	855 E. Phillips Blvd.	Single Family Detached - 37 DU
18		675 E. Mission Blvd.	675 E. Mission Blvd.	Condominium/Townhome - 38 DU
19		22 Rio Rancho Rd.	22 Rio Rancho Rd.	Automobile Sales - 5,750 SF
20		888 W. Mission Blvd.	888 W. Mission Blvd.	Retail - 20,239 SF
21		1368 W. Mission Blvd.	1368 W. Mission Blvd.	Condominium/Townhome - 36 DU
22		1932/1936 S. Garey Ave.	1932/1936 S. Garey Ave.	Condominium/Townhome - 17 DU
23		1300 W. Mission Blvd.	1300 W. Mission Blvd.	Condominium/Townhome - 33 DU
24		1365/1367 S. Garey Ave.	1365/1367 S. Garey Ave.	Condominium/Townhome - 2 DU
25		1940 S. Garey Ave.	1940 S. Garey Ave.	Condominium/Townhome - 10 DU
26		424-446 W. Commercial St.	424-446 W. Commercial St.	Senior Housing - 61 DU
27		952 E. Ninth St.	952 E. Ninth St.	Condominium/Townhome - 11 DU
28		1344 W. Grand Ave.	1344 W. Grand Ave.	Condominium/Townhome - 7 DU
29		1363 S. Buena Vista Ave.	1363 S. Buena Vista Ave.	Condominium/Townhome - 3 DU
30		1480 W. Mission Blvd.	1480 W. Mission Blvd.	Condominium/Townhome - 24 DU
31		1455 S. White Ave.	1455 S. White Ave.	Condominium/Townhome - 2 DU
32		1302 Hansen Ave.	1302 Hansen Ave.	Single Family Detached - 2 DU
33		Rio Rancho Towne Center Hotel (White & Rancho Valley)	White & Rancho Valley	Hotel - 149 Rooms
34		1145 W. 10th St.	1145 W. 10th St.	Religious Facility - 6,019 SF
35		40 Rio Rancho Rd.	40 Rio Rancho Rd.	Restaurant - 1,608 SF
36		1491 E. Ninth St.	1491 E. Ninth St.	Warehouse/Office - 193,500 SF
37	**Diamond Bar**	TR 63623	Larkstone Drive south of Southpointe Middle School	99 detached condominium units
38		TR 72295	Brea Canyon Road and Diamond Bar Blvd	47 single-family lots, 73 detached condominiums, 62 attached condominiums
39	**Industry**	15000 Nelson	15000 Nelson	125,344 sf industrial building
40		489 & 499 Parriott Plce	489 & 499 Parriott Plce	130,170 sf industrial building
41		SE Corner of Azusa and Chestnut	SE Corner of Azusa and Chestnut	614,597 sf industrial building
42		18421 Railroad Ave.	18421 Railroad Ave.	8,850 sf industrial building
43		12851 Crossroads Parkway South	12851 Crossroads Parkway South	77,250 sf office building

44		3718 Capitol Ave.	3718 Capitol Ave.	36,666 sf warehouse
45		Echelon	Echelon	326,700 sf building
46		14700 Nelson	14700 Nelson	232,450 sf building
47		19782 Walnut Drive North	19782 Walnut Drive North	2,662 sf Carl's Jr. restaurant with drive-thru
48		1552 Azusa Ave.	1552 Azusa Ave.	20,621 sf retail building
49		1722 Arenth Avenue	1722 Arenth Avenue	6,760 sf Union Pacific railroad maintenance building
50		Castleton	Castleton	2,492 sf fast-food with drive-thru
51		16801 Gale Ave.	16801 Gale Ave.	39,150 sf warehouse building
52	**California State Polytechnic University, Pomona**	Future Enrollment Increase (2020)	3801 W Temple Ave, Pomona, CA 91768	4,089 students by 2020

Notes:
tsf = thousand square feet
du = dwelling unit

TABLE 12: 2025 ADDITIONAL CUMULATIVE DEVELOPMENT PROJECTS

#	Agency	Project Title	Location	Description
53	**Industry**	Industry Business Center East	Southeast corner of Grand Ave. and Baker Pkwy.	Warehousing and Distribution
54		Industry Business Center West	Southwest corner of Grand Ave. and Baker Pkwy.	Warehousing and Distribution
52 (revised)	**California State Polytechnic University, Pomona**	Future Enrollment Increase (2025)	3801 W Temple Ave, Pomona, CA 91768	8,889 students by 2025

Notes:
tsf = thousand square feet

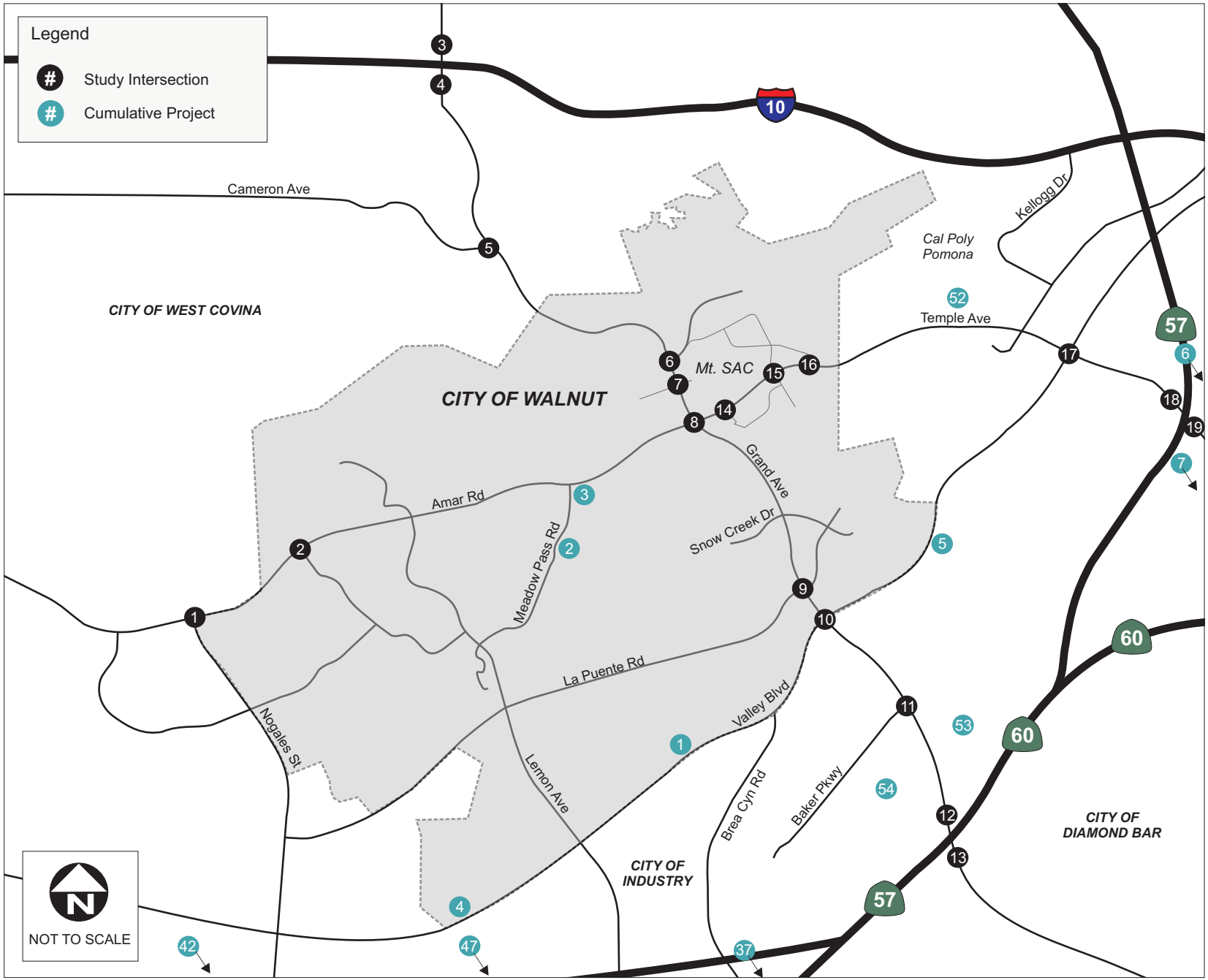

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FIGURE 9
Location of Cumulative Development Projects

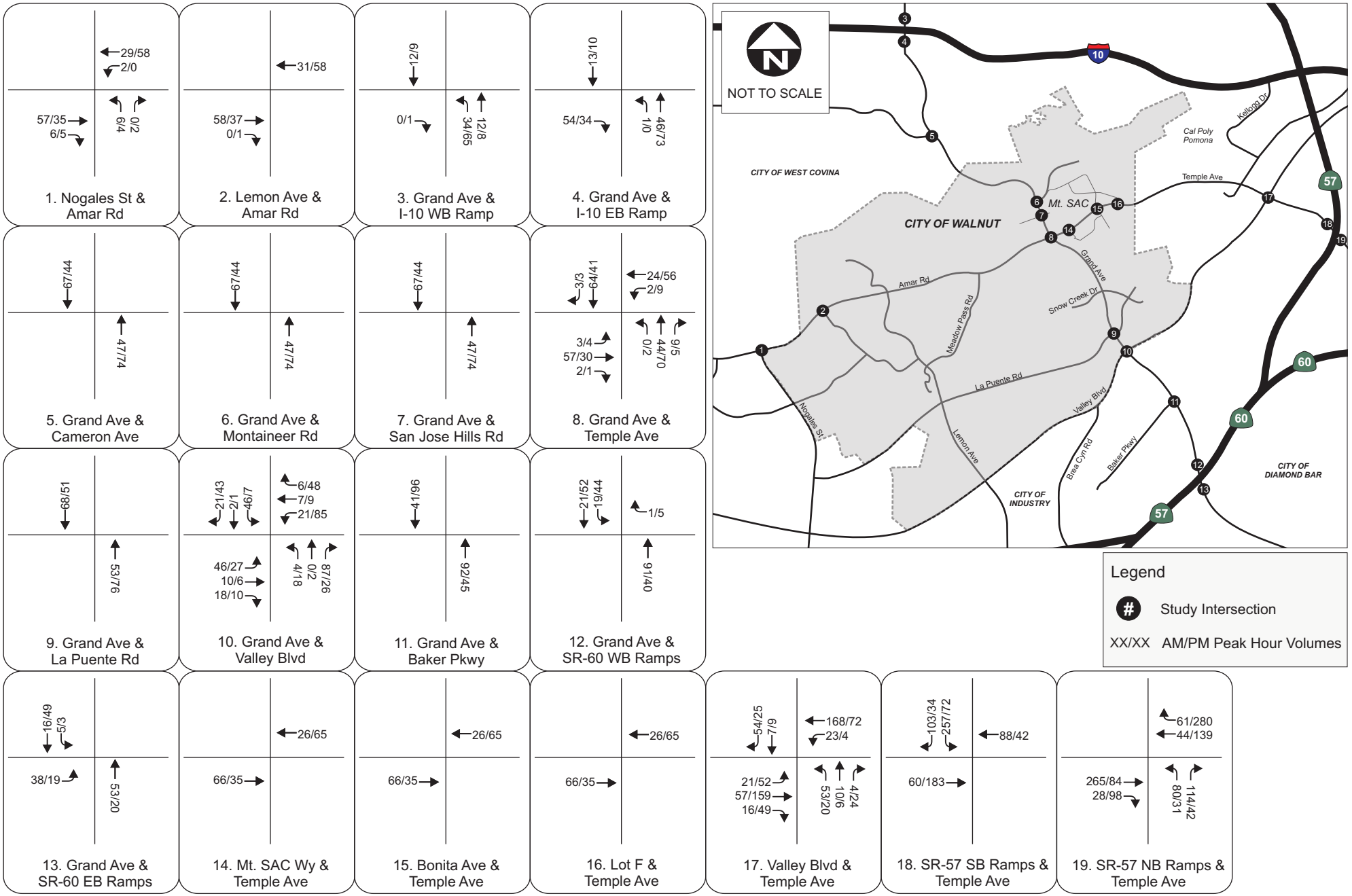

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FIGURE 10
2020 Cumulative Development Projects
Trip Generation

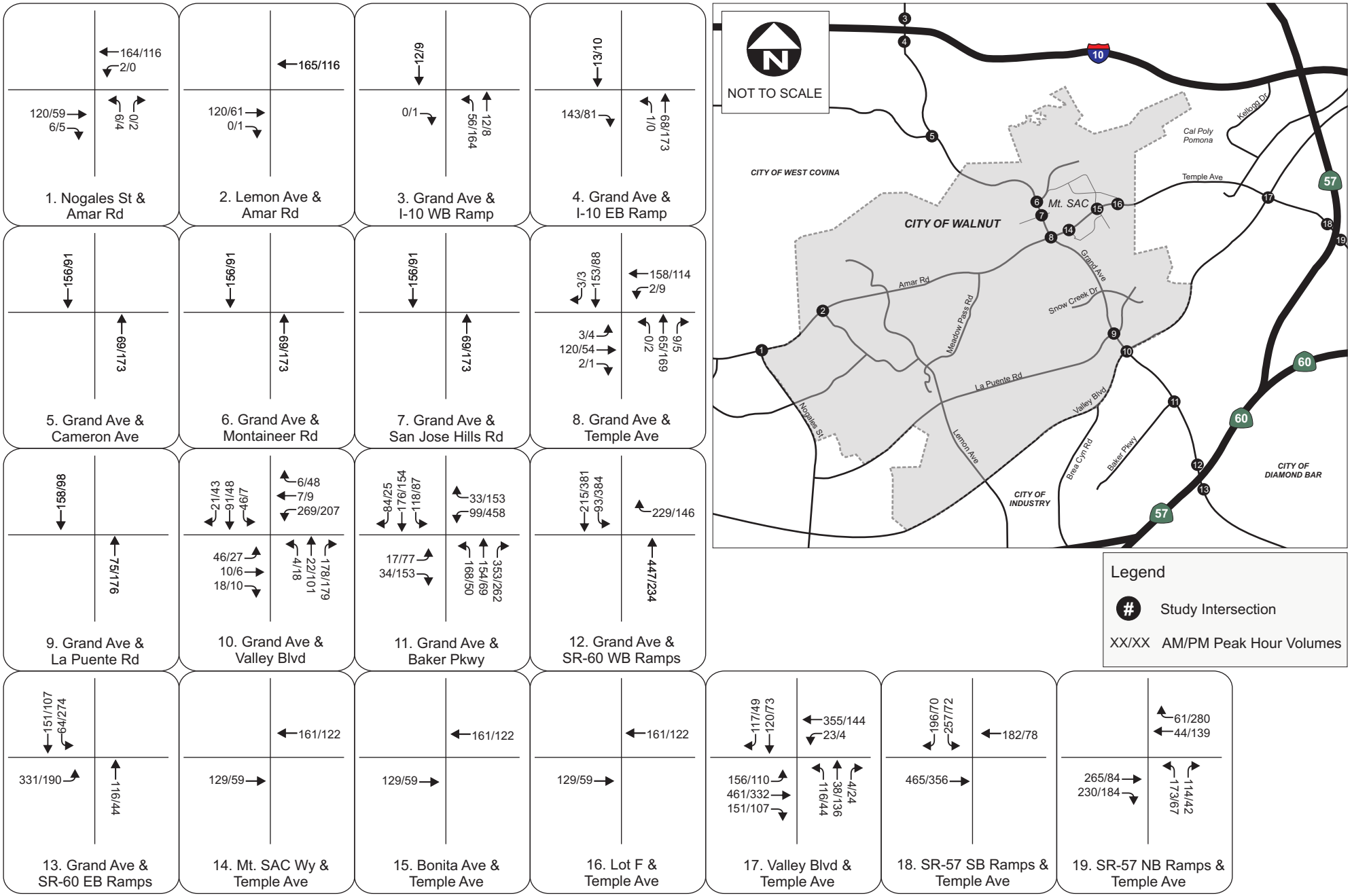

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FIGURE 11
2025 Cumulative Development Projects
Trip Generation

Using the trip generation and trip distribution for each cumulative project, a summary of the total cumulative project trips in the study area is presented and compared to the total 2015 FMPU trips forecast to be generated in 2020 and 2025. **Table 13** 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 13: 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 13**, 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.

9.0 EXISTING PLUS 2020 CUMULATIVE CONDITIONS

The official FMPU buildout year is 2020, therefore 2020 conditions are assessed assuming cumulative traffic growth. Existing plus 2020 cumulative volumes were developed by adding the 2020 cumulative trips generated by the cumulative development projects as described in Section 8, to existing volumes. It should be noted that this scenario was used only to develop traffic volumes, not for LOS analysis, as traffic impacts are measured against existing LOS operations. **Figure 12** shows the existing plus 2020 cumulative peak hour volumes at the study intersections.

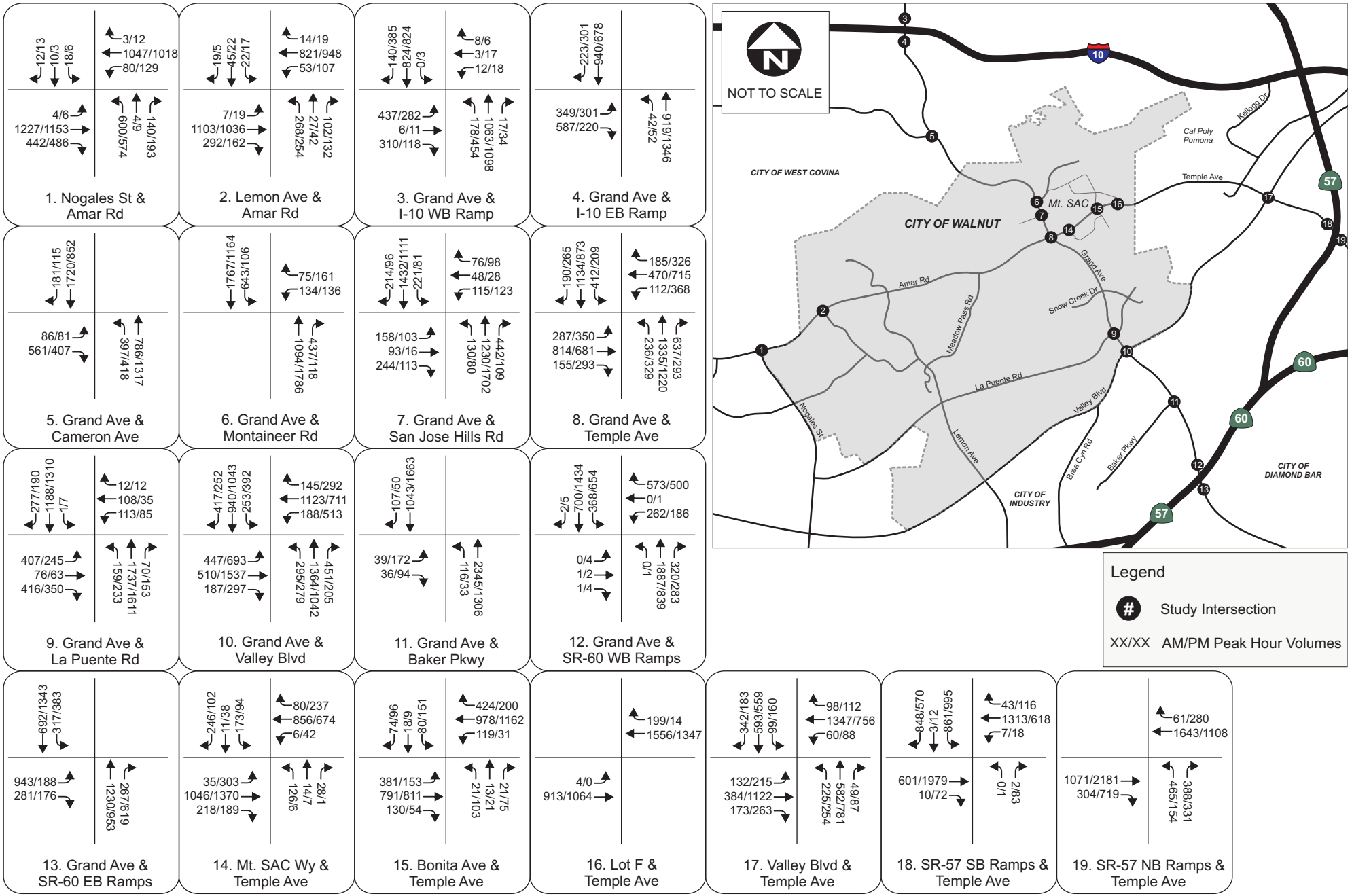

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FIGURE 12
Existing Plus 2020 Cumulative Trips
Peak Hour Intersection Volumes

10.0 EXISTING PLUS 2020 PROJECT PLUS CUMULATIVE CONDITIONS

Existing plus 2020 project plus cumulative volumes were developed by adding the trips generated by proposed 2020 project, as described in Section 5, to existing plus 2020 cumulative volumes (without project), as described in Section 9. **Figure 13** shows the existing plus 2020 project plus cumulative peak hour volumes at the study intersections.

10.1 EXISTING PLUS 2020 PROJECT PLUS CUMULATIVE INTERSECTION LEVELS OF SERVICE

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. **Table 14** summarizes the existing plus 2020 project plus cumulative levels of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 14: EXISTING PLUS 2020 PROJECT PLUS CUMULATIVE INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Existing Plus 2020 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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	Nogales St/ Amar Rd	-	0.760	C	-	0.725	C	-	0.788	C	-	0.743	C	0.028	0.018	No
2	Lemon Ave/ Amar Rd	-	0.706	C	-	0.636	B	-	0.736	C	-	0.658	B	0.030	0.022	No
3	Grand Ave/ I-10 WB Ramp*	23.4	-	C	24.8	-	C	24.0	-	C	26.6	-	C	0.6	1.8	No
4	Grand Ave/ I-10 EB Ramp*	26.3	-	C	16.7	-	B	30.7	-	C	18.9	-	B	4.4	2.2	No
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	1.139	F	-	0.700	B	0.055	0.041	**Yes**
6	Grand Ave/ Mountaineer Rd	-	0.666	B	-	0.721	C	-	0.713	C	-	0.775	C	0.047	0.054	**Yes**
7	Grand Ave/ San Jose Hills Rd	-	0.944	E	-	0.844	D	-	0.983	E	-	0.889	D	0.039	0.045	**Yes**
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.952	E	-	0.804	D	0.067	0.040	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.108	F	-	0.977	E	0.043	0.027	**Yes**
10	Grand Ave/ Valley Blvd	-	0.845	D	-	0.928	E	-	0.891	D	-	0.967	E	0.046	0.039	**Yes**
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	0.856	D	-	0.565	A	0.039	0.022	**Yes**
12	Grand Ave/ SR-60 WB Ramps*	22.8	-	C	22.8	-	C	24.8	-	C	23.4	-	C	2.0	0.6	No
13	Grand Ave/ SR-60 EB Ramps*	31.9	-	C	21.4	-	C	34.5	-	C	21.5	-	C	2.6	0.1	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.774	C	-	0.752	C	0.050	0.052	**Yes**
15	Bonita Ave/ Temple Ave	-	0.580	A	-	0.601	B	-	0.626	B	-	0.656	B	0.046	0.055	No
16	Lot F/ Temple Ave	15.3	-	C	0.0	-	A	16.7	-	C	0.0	-	A	1.400	0.000	No

Intersection		Existing Conditions						Existing Plus 2020 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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			
17	Valley Blvd/ Temple Ave	-	0.751	C	-	0.763	C	-	0.915	E	-	0.814	D	0.164	0.051	**Yes**
18	SR-57 SB Ramps/ Temple Ave*	22.9	-	C	24.5	-	C	32.1	-	C	29.9	-	C	9.2	5.4	No
19	SR-57 NB Ramps/ Temple Ave*	13.6	-	B	8.8	-	A	16.1	-	B	9.8	-	A	2.5	1.0	No

* Caltrans intersection, utilizing HCM delay-based methodology to evaluate intersection operations.

Notes:

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

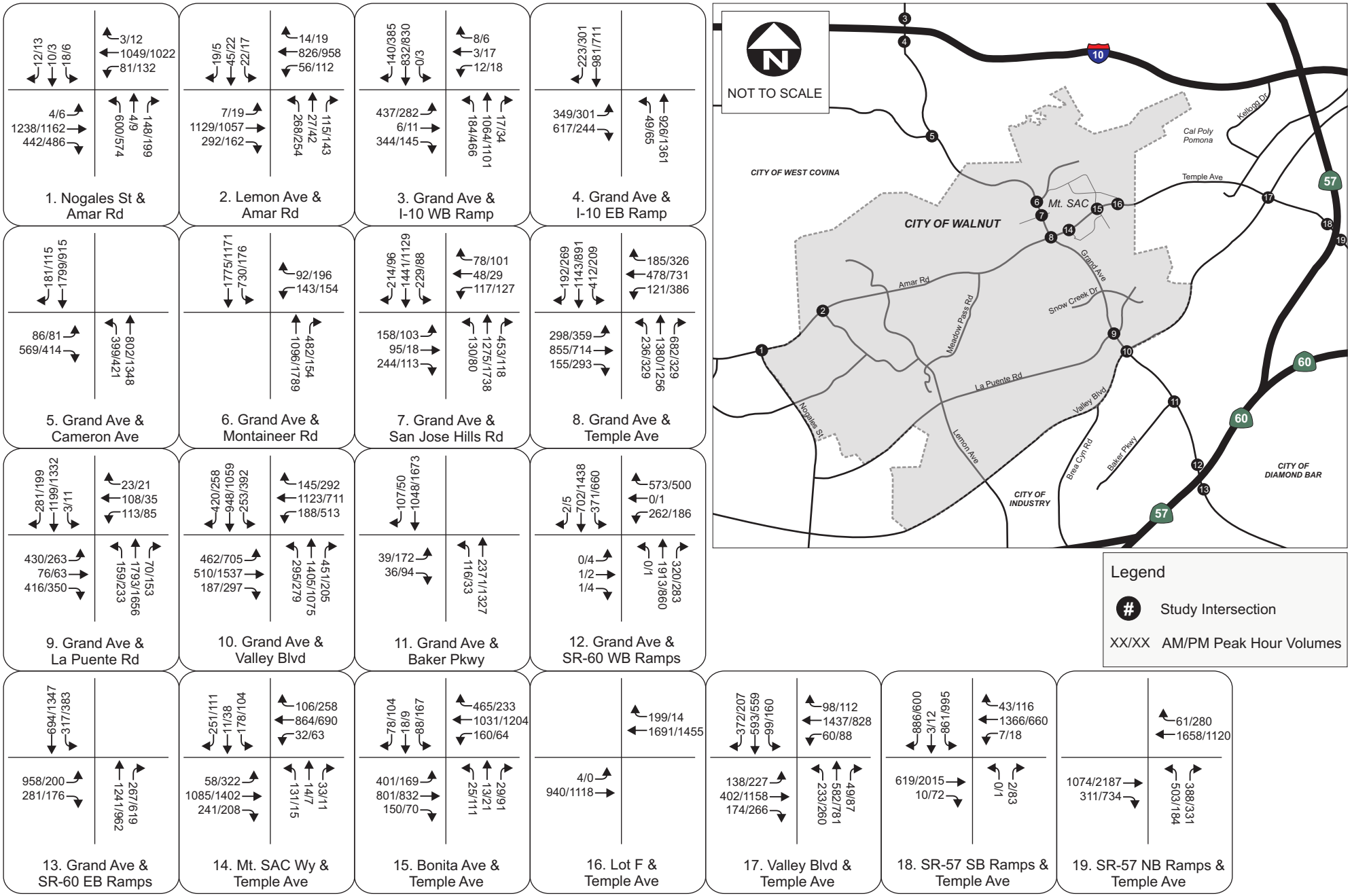

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FIGURE 13
Existing Plus 2020 Project Plus Cumulative
Peak Hour Intersection Volumes

As shown in **Table 14**, based on the thresholds of significance described in Section 3.1, the following intersections are forecast to be significantly impacted by the proposed 2020 project traffic plus cumulative conditions:

- Grand Avenue/Cameron Avenue (a.m. peak hour);
- Grand Avenue/Mountaineer Avenue (a.m. and p.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. and p.m. peak hour);
- Grand Avenue/Temple Avenue (a.m. and p.m. peak hour);
- Grand Avenue/La Puente Road (a.m. and p.m. peak hour);
- Grand Avenue/Valley Boulevard (a.m. and p.m. peak hour);
- Grand Avenue/Baker Parkway (a.m. peak hour);
- Mt. SAC Way/Temple Avenue (a.m. and p.m. peak hour); and
- Valley Boulevard/Temple Avenue (a.m. and p.m. peak hour).

10.2 Existing Plus 2020 Project Plus Cumulative Mitigation Measures

In order to reduce significant traffic impacts to a level considered less than significant in existing plus 2020 project plus cumulative conditions, a list of mitigation measures have been developed. The following mitigation measures would be required to reduce the level of impact:

- **Grand Avenue/Cameron Avenue** – Add a second eastbound right-turn lane.
- **Grand Avenue/Mountaineer Road** – A third northbound through lane is required to mitigate the project impact at this intersection. However, sufficient ROW is not available within the current curb width. As a result, improvements needed to mitigate this intersection are not considered feasible. A statement of overriding considerations is required.
- **Grand Avenue/San Jose Hills Road** – A second eastbound right-turn lane is required to mitigate the project impact at this intersection. However, sufficient ROW is not available due to adjacent land uses at the southwest and northwest corners of the intersection. As a result, improvements needed to mitigate this intersection are not considered feasible. A statement of overriding considerations is required.
- **Grand Avenue/Temple Avenue** – Convert the existing eastbound right-turn lane to a through/right-turn lane.
- **Grand Avenue/La Puente Road** – Modify the traffic signal to include an eastbound right-turn overlap phase.
- **Grand Avenue/Valley Boulevard** – This intersection is considered to be fully built out since it currently consists of dual left-turn lanes at all approaches and dedicated free right-turn lanes at three approaches. In addition, no improvements at this intersection are considered feasible due to ROW constraints. A statement of overriding considerations is required.
- **Grand Avenue/Baker Parkway** – Restripe the northbound approach to include a third through lane.
- **Mt. SAC Way/Temple Avenue** – Restripe the eastbound approach to include a dedicated right-turn lane.
- **Valley Boulevard/Temple Avenue** – Improvements needed to mitigate this intersection are not considered feasible due to the ROW constraints near the adjacent railroad. A statement of overriding considerations is required.

At the locations where mitigation measures are deemed feasible, if it is determined by the lead agency that the necessary right-of-way is not available and the proposed lane additions cannot be developed within the available right-of-way, then the impacts may not be mitigated. **Table 15** summarizes the LOS results at the impacted intersections with implementation of the proposed mitigation measures that were determined to be feasible. It should be noted that project conditions with cumulative growth are compared to existing conditions, for significant impact determination, for the purposes of California Environmental Quality Act (CEQA) clearance.

TABLE 15: MITIGATED EXISTING PLUS 2020 PROJECT PLUS CUMULATIVE INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Mitigated Existing Plus 2020 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	Significant Impact with Mitigation?
		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			
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	0.947	F	-	0.618	B	-0.137	-0.041	No
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.893	E	-	0.804	C	0.008	0.040	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	0.993	F	-	0.850	E	-0.072	-0.100	No
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	0.856	D	-	0.565	A	0.039	0.022	**Yes**
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.696	B	-	0.686	B	-0.028	-0.014	No

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

As shown in **Table 15**, at locations where improvements were considered feasible, project impacts are reduced to less than significant at three intersections.

11.0 EXISTING PLUS 2025 CUMULATIVE CONDITIONS

For consistency with the County General Plan, the project's level of impact in year 2025 is assessed assuming cumulative traffic growth. Similar to existing plus 2020 cumulative conditions, existing plus 2025 cumulative traffic volumes were developed by considering traffic increases due to specific planned or approved development projects in the study area, without consideration of the proposed project. It should be noted that this scenario was used only to develop traffic volumes, not for LOS analysis, as traffic impacts are measured against existing LOS operations. **Figure 14** shows the existing plus 2025 cumulative peak hour volumes at the study intersections.

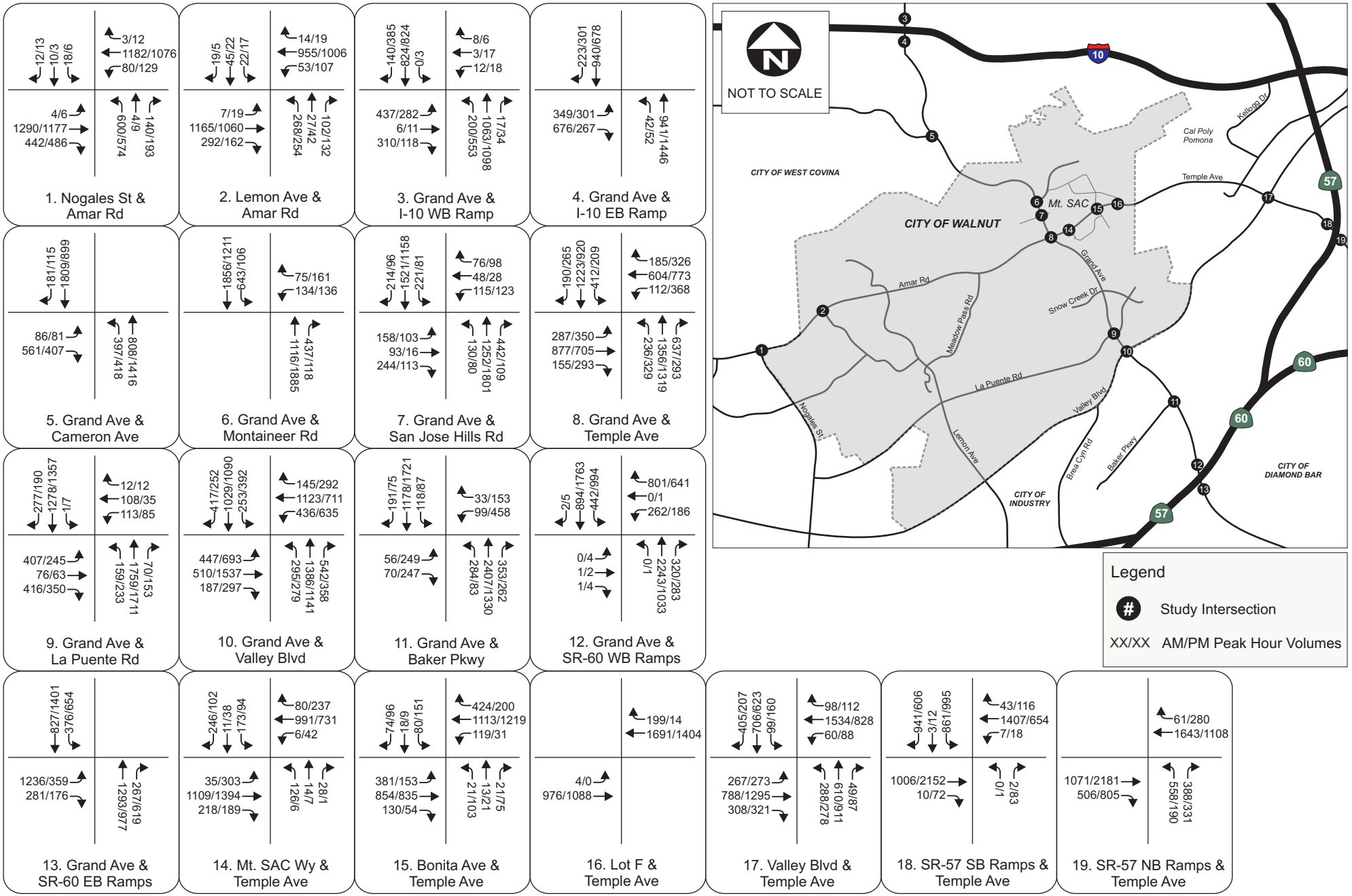

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FIGURE 14
Existing Plus 2025 Cumulative Trips
Peak Hour Intersection Volumes

12.0 EXISTING PLUS 2025 PROJECT PLUS CUMULATIVE CONDITIONS

Existing plus 2025 project plus cumulative volumes were developed by adding the trips generated by proposed 2025 project as described in Section 5, to existing plus 2025 cumulative (without project) volumes, as described in Section 11. **Figure 15** shows the existing plus 2025 project plus cumulative peak hour volumes at the study intersections.

12.1 EXISTING PLUS 2025 PROJECT PLUS CUMULATIVE INTERSECTION LEVELS OF SERVICE

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. **Table 16** summarizes the existing plus 2025 project plus cumulative levels of service at the study intersections. Level of service calculation worksheets are included in **Appendix B**.

TABLE 16: EXISTING PLUS 2025 PROJECT PLUS CUMULATIVE INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Existing Plus 2025 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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	Nogales St/ Amar Rd	-	0.760	C	-	0.725	C	-	0.813	D	-	0.755	C	0.053	0.030	**Yes**
2	Lemon Ave/ Amar Rd	-	0.706	C	-	0.636	B	-	0.766	C	-	0.677	B	0.060	0.041	**Yes**
3	Grand Ave/ I-10 WB Ramp*	23.4	-	C	24.8	-	C	24.6	-	C	30.2	-	C	1.2	5.4	No
4	Grand Ave/ I-10 EB Ramp*	26.3	-	C	16.7	-	B	41.3	-	D	21.5	-	C	15.0	4.8	No
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	1.199	F	-	0.739	C	0.115	0.080	**Yes**
6	Grand Ave/ Mountaineer Rd	-	0.666	B	-	0.721	C	-	0.748	C	-	0.834	D	0.082	0.113	**Yes**
7	Grand Ave/ San Jose Hills Rd	-	0.944	E	-	0.844	D	-	1.012	F	-	0.939	E	0.068	0.095	**Yes**
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	1.011	F	-	0.844	D	0.126	0.080	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.138	F	-	1.001	F	0.073	0.051	**Yes**
10	Grand Ave/ Valley Blvd	-	0.845	D	-	0.928	E	-	0.909	E	-	1.035	F	0.064	0.107	**Yes**
11	Grand Ave/ Baker Pkwy	-	0.817	D	-	0.543	A	-	1.035	F	-	0.908	E	0.218	0.365	**Yes**
12	Grand Ave/ SR-60 WB Ramps*	22.8	-	C	22.8	-	C	54.9	-	D	40.4	-	D	32.1	17.6	No
13	Grand Ave/ SR-60 EB Ramps*	31.9	-	C	21.4	-	C	60.3	-	E	40.5	-	D	28.4	19.1	**Yes**
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.832	D	-	0.798	C	0.108	0.098	**Yes**
15	Bonita Ave/ Temple Ave	-	0.580	A	-	0.601	B	-	0.701	C	-	0.706	C	0.121	0.105	**Yes**
16	Lot F/ Temple Ave	15.3	-	C	0.0	-	A	20.2	-	C	0.0	-	A	4.9	0.0	No

Intersection		Existing Conditions						Existing Plus 2025 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	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			
17	Valley Blvd/ Temple Ave	-	0.751	C	-	0.763	C	-	1.168	F	-	0.922	E	0.417	0.159	**Yes**
18	SR-57 SB Ramps/ Temple Ave*	22.9	-	C	24.5	-	C	43.7	-	D	38.3	-	D	20.8	13.8	No
19	SR-57 NB Ramps/ Temple Ave*	13.6	-	B	8.8	-	A	18.0	-	B	10.4	-	B	4.4	1.6	No

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

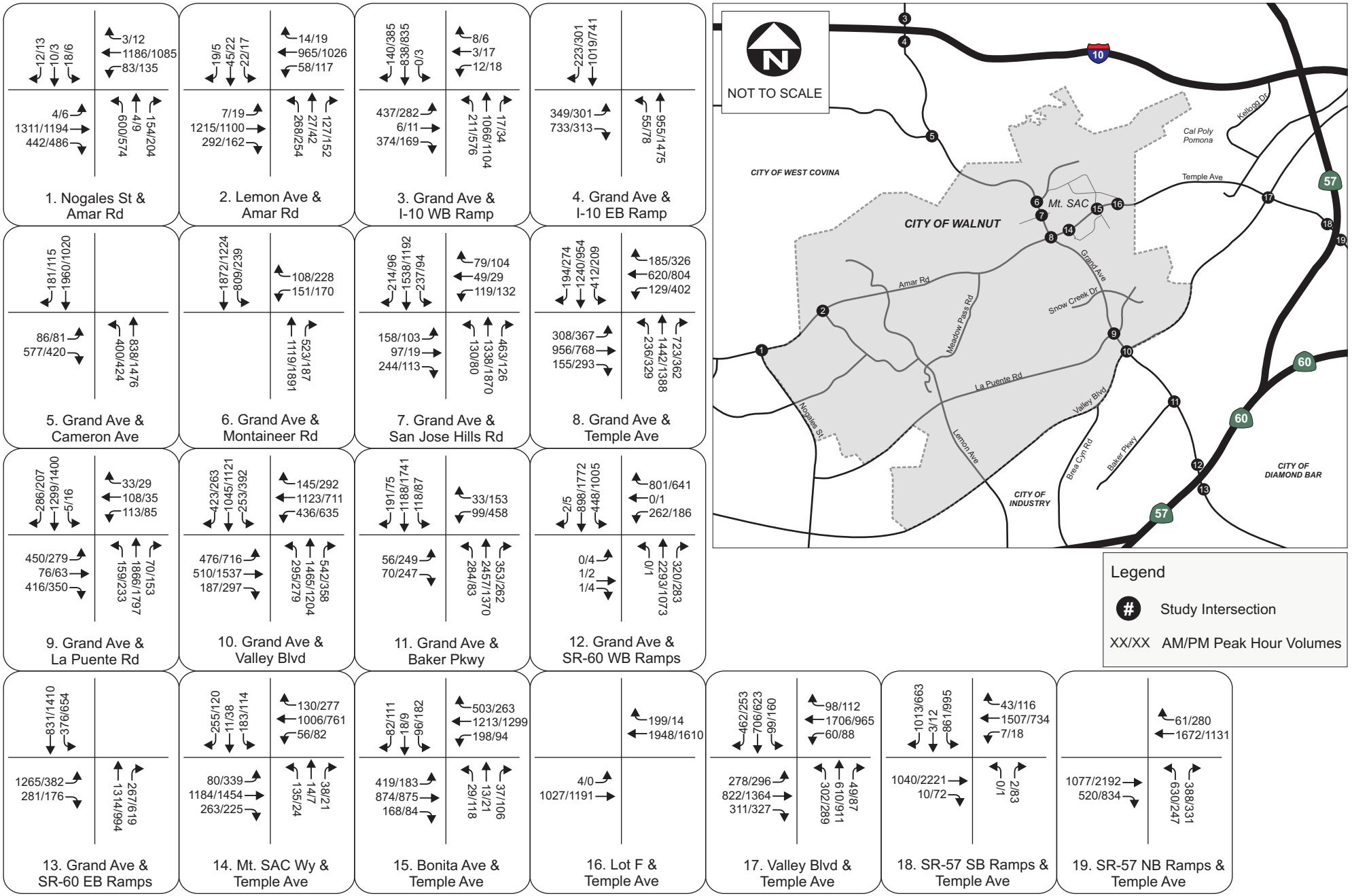

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FIGURE 15
Existing Plus 2025 Project Plus Cumulative
Peak Hour Intersection Volumes

As shown in **Table 16**, based on the thresholds of significance described in Section 3.1, the following intersections are forecast to be significantly impacted by the proposed 2025 project traffic plus cumulative conditions:

- Nogales Street/Amar Road (a.m. peak hour);
- Lemon Avenue/Amar Road (a.m. peak hour);
- Grand Avenue/Cameron Avenue (a.m. and p.m. peak hour);
- Grand Avenue/Mountaineer Road (a.m. and p.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. and p.m. peak hour);
- Grand Avenue/Temple Avenue (a.m. and p.m. peak hour);
- Grand Avenue/La Puente Road (a.m. and p.m. peak hour);
- Grand Avenue/Valley Boulevard (a.m. and p.m. peak hour);
- Grand Avenue/Baker Parkway (a.m. and p.m. peak hour);
- Grand Avenue/SR-60 Eastbound Ramps (a.m. peak hour);
- Mt. SAC Way/Temple Avenue (a.m. and p.m. peak hour);
- Bonita Avenue/Temple Avenue (a.m. and p.m. peak hour); and
- Valley Boulevard/Temple Avenue (a.m. and p.m. peak hour).

12.2 Existing Plus 2025 Project Plus Cumulative Mitigation Measures

In order to reduce significant traffic impacts to a level considered less than significant in existing plus 2025 project plus cumulative conditions, a list of mitigation measures have been developed. The following additional mitigation measures would be required in 2025 to reduce the level of impact beyond those required in 2020:

- **Nogales Street/Amar Road** – Convert the existing eastbound right-turn lane to a through/right-turn lane. There is sufficient roadway width at the intersection departure in the eastbound direction to accommodate the third through lane.
- **Lemon Avenue/Amar Road** – Restripe the eastbound approach to include a dedicated right-turn lane.
- **Grand Avenue/SR-60 Eastbound Ramps** – Convert the existing northbound right-turn lane to a shared through/right-turn lane. There is sufficient roadway width at the intersection departure in the northbound direction to accommodate the third through lane.
- **Bonita Avenue/Temple Avenue** – Modify the traffic signal to include a northbound right-turn overlap phase.

At the locations where mitigation measures are deemed feasible, if it is determined by the lead agency that the necessary right-of-way is not available and the proposed lane additions cannot be developed within the available right-of-way, then the impacts may not be mitigated. **Table 17** summarizes the LOS results at the impacted intersections with implementation of the proposed mitigation measures that were determined to be feasible. As mentioned earlier, project conditions with cumulative growth are compared to existing conditions, for significant impact determination, for the purposes of CEQA clearance.

TABLE 17: MITIGATED EXISTING PLUS 2025 PROJECT PLUS CUMULATIVE INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Mitigated Existing Plus 2025 Project Plus Cumulative Conditions						Change in AM V/C or Delay	Change in PM V/C or Delay	Significant Impact with Mitigation?
		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	Nogales St/ Amar Rd	-	0.760	C	-	0.725	C	-	0.765	C	-	0.731	C	0.005	0.006	No
2	Lemon Ave/ Amar Rd	-	0.706	C	-	0.636	B	-	0.668	B	-	0.626	B	-0.038	-0.010	No
5	Grand Ave/ Cameron Ave	-	1.084	F	-	0.659	B	-	1.002	F	-	0.654	B	-0.082	-0.005	No
8	Grand Ave/ Temple Ave	-	0.885	D	-	0.764	C	-	0.961	E	-	0.845	D	0.076	0.081	**Yes**
9	Grand Ave/ La Puente Rd	-	1.065	F	-	0.950	E	-	1.028	F	-	0.880	D	-0.037	-0.070	No
11	Grand Ave/ Baker Pkwy	-	0.828	D	-	0.543	A	-	0.842	D	-	0.813	D	0.025	0.270	**Yes**
13	Grand Ave/ SR-60 EB Ramps*	31.9	-	C	21.4	-	C	49.5	-	D	38.6	-	D	17.6	17.2	No
14	Mt. SAC Wy/ Temple Ave	-	0.724	C	-	0.700	B	-	0.747	C	-	0.727	C	0.023	0.027	No
15	Bonita Ave/ Temple Ave	-	0.580	A	-	0.601	B	-	0.685	B	-	0.660	B	0.105	0.059	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 17**, at locations where improvements were considered feasible, project impacts are reduced to less than significant at seven intersections.

12.3 Fair Share Contribution

It is anticipated that the proposed project would pay a fair share towards the cost of the mitigation measures described for the cumulative scenarios. The project fair share is equal to the total project trips at an impacted intersection divided by the total growth at an intersection, which includes both FMPU project trips and cumulative project trips. **Table 18** summarizes the calculation of the proposed project's fair share at each of the impacted intersections for 2020 and 2025 project conditions during the a.m. and p.m. peak hours. Detailed fair-share calculations are provided in **Appendix D**.

Table 18: Project Fair Share Contribution

Intersection		Fair Share Contribution (%)			
		Existing Plus 2020 Project Plus Cumulative		Existing Plus 2025 Project Plus Cumulative	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
1	Nogales St/Amar Rd	N/I	N/I	12%	N/I
2	Lemon Ave/Amar Rd	N/I	N/I	24%	N/I
5	Grand Ave/Cameron Ave	48%	N/I	47%	43%
6	Grand Ave/Mountaineer Rd	60%	59%	59%	55%
7	Grand Ave/San Jose Hills Rd	41%	40%	40%	37%
8	Grand Ave/Temple Ave	45%	43%	39%	42%
9	Grand Ave/La Puente Rd	47%	46%	47%	43%
10	Grand Ave/Valley Blvd	20%	19%	15%	15%
11	Grand Ave/Baker Pkwy	19%	N/I	5%	4%
12	Grand Ave/SR-60 WB Ramps	N/I	N/I	6%	N/I
14	Mt. SAC Wy/Temple Ave	64%	62%	52%	64%
15	Bonita Ave/Temple Ave	N/I	N/I	58%	69%
17	Valley Blvd/Temple Ave	27%	27%	16%	22%

N/I = Not impacted during this time period

13.0 CONGESTION MANAGEMENT PROGRAM ANALYSIS (CMP)

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. A total of 164 intersections are identified for monitoring on the system in Los Angeles County. This section describes the analysis of project-related impacts on the CMP system. The analysis has been conducted according to the guidelines set forth in the 2004 Congestion Management Program for Los Angeles County.

According to the CMP Traffic Impact Analysis (TIA) Guidelines developed by Metro, a CMP traffic impact analysis is required given the following conditions:

- CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project would add 50 or more trips during either the a.m. or p.m. weekday peak hours.
- CMP freeway monitoring locations where the proposed project would add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hours.

The nearest freeway segments are the I-10, SR-60, and SR-57. Based on the project trip generation estimates, the proposed project would add less than 150 new peak hour trips in either direction at the three freeway segments. Therefore, no CMP mainline freeway segment analysis was conducted in this report.

14.0 CONCLUSIONS

Mt. SAC has proposed a 2015 Facilities Master Plan Update, for which the major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue. The existing stadium will be demolished and a new stadium built on the site. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet.

Traffic operations were assessed for existing conditions, 2020 conditions, and 2025 conditions. Under existing conditions, the following four intersections are operating at LOS E or worse:

- Grand Avenue/Cameron Avenue (a.m. peak hour);
- Grand Avenue/San Jose Hills Road (a.m. peak hour);
- Grand Avenue/La Puente Road (a.m. and p.m. peak hour); and
- Grand Avenue/Valley Boulevard (p.m. peak hour).

The buildout of the 2015 FMPU project in 2020 is forecast to generate 449 new a.m. peak hour trips, 449 new p.m. peak hour trips, and 4,606 new daily trips when compared to existing conditions. By 2025 the project is forecast to generate 858 new a.m. peak hour trips, 858 new p.m. peak hour trips, and 8,798 new daily trips when compared to existing conditions.

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, when considering other cumulative project developments. 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.

In order to reduce significant traffic impacts to a level considered less than significant, a list of feasible mitigation measures were developed. At locations where mitigation measures were not considered feasible, a statement of overriding considerations is required. **Table 19** summarizes the overall number of impacted study intersections per scenario.

TABLE 19: SUMMARY OF SIGNIFICANT IMPACTS PER SCENARIO

Scenario		Number of Locations with Significant Impacts	Less than Significant with Mitigation
1	Existing Plus 2020 Project	6	No
2	Existing Plus 2025 Project	9	No
3	Existing Plus 2020 Project Plus Cumulative	9	No
4	Existing Plus 2025 Project Plus Cumulative	13	No

TECHNICAL MEMORANDUM

To: Gary Nellesen, Mt San Antonio College

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

Date: April 15, 2016

Subject: Physical Education Projects (PEP) Truck Haul Traffic Impact Analysis

1. INTRODUCTION

This memorandum presents Iteris' assessment of the potential traffic impacts related to the Physical Education Projects (PEP) construction truck hauling activities in the City of Walnut. This report contains the evaluation of intersection traffic operations in the existing conditions and operations with the proposed construction conditions.

The first leg of the haul route, where trucks are fully loaded for export, is planned to start from the PEP site on the Mt. SAC campus and end north of the City of Walnut. Trucks would fill up at the PEP site, travel to east along Temple Avenue to the SR-57 interchange, and head north on SR-57. The return route, where trucks are empty, would run the same way, utilizing the Temple Avenue/SR-57 interchange, to westbound Temple Avenue, to Bonita Avenue. **Figure 1** shows the propose route.

The following four (4) intersections along the proposed haul route are analyzed as part of this report:

1. Bonita Avenue/Temple Avenue;
2. Valley Boulevard/Temple Avenue;
3. SR-57 Southbound Ramps/Temple Avenue; and
4. SR-57 Northbound Ramps/Temple Avenue.

Figure 2 shows the location of the intersections analyzed in this memorandum.

801 South Grand Avenue, Suite 530, Los Angeles, California 90017
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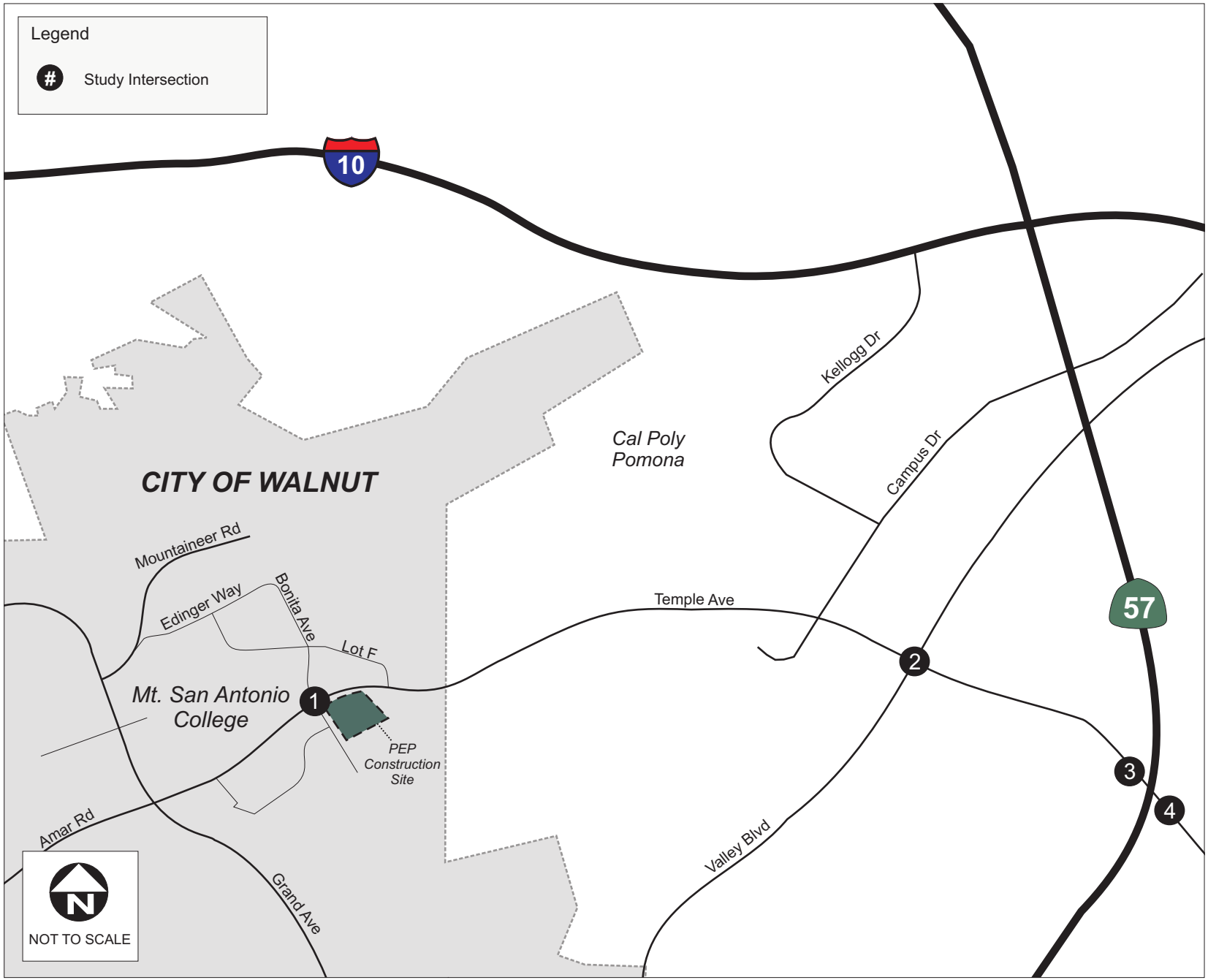
Traffic Impact Analysis

FIGURE 1
Proposed Haul Routes



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Physical Education Projects (PEP) Truck Haul
Traffic Impact Analysis

FIGURE 2
Study Intersections

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 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.

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, analysis of traffic operations were 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 signalized 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.	≤ 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 ≤ 20
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.	>20 and ≤ 35
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>35 and ≤ 55
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>55 and ≤ 80
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.	> 80

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 October 1, 2015 during the a.m. peak period (7:00 – 9:00 a.m.) and the p.m. peak period (4:00 – 6:00 p.m.) on a typical weekday. The volumes collected between 8:00 to 9:00 a.m. and 4:00 to 5:00 p.m. were used in this analysis to be most consistent with the truck hauling process which is planned to occur between 8:30 a.m. and 4:30 p.m. on weekdays. **Figure 3** shows the existing traffic volumes at the study intersections. Existing traffic count data is provided in **Appendix A**.

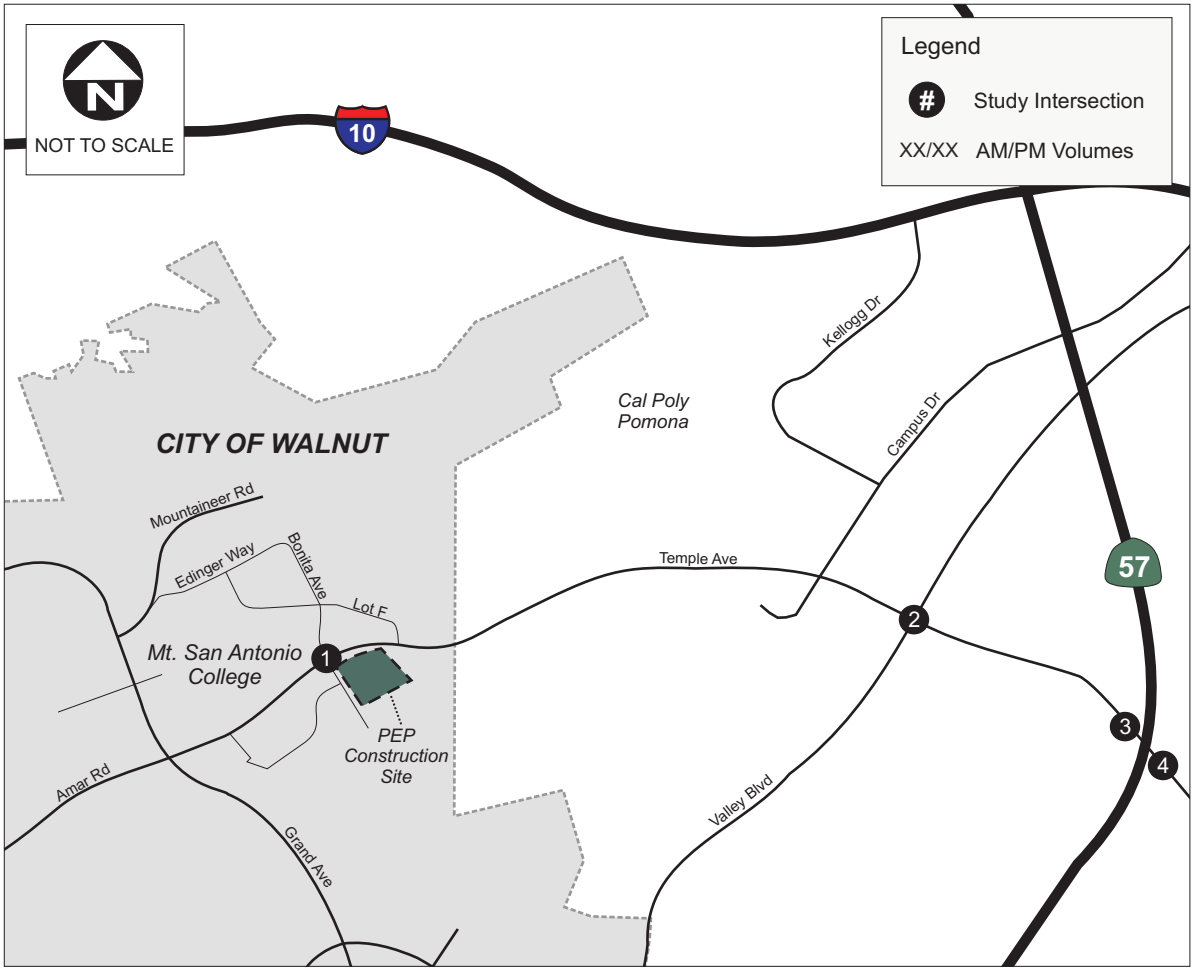
A level of service analysis was conducted to evaluate existing intersection operations during the a.m. and p.m. peak hours at the four study intersections. **Table 4** summarizes the existing LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.

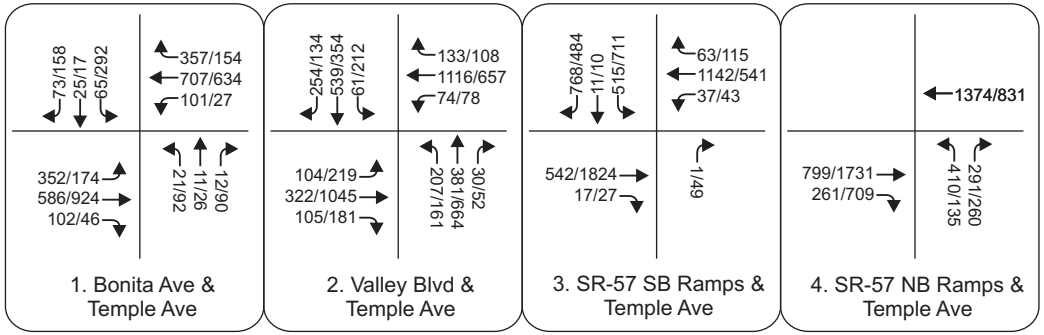
TABLE 4: EXISTING INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Control Type	AM Peak Hour			PM Peak Hour		
			Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS
1	Bonita Ave/Temple Ave	Signalized	-	0.569	A	-	0.633	B
2	Valley Blvd/Temple Ave	Signalized	-	0.814	D	-	0.820	D
3	SR-57 SB Ramps/Temple Ave*	Signalized	21.4	-	C	23.8	-	C
4	SR-57 NB Ramps/Temple Ave*	Signalized	14.2	-	B	9.1	-	A

* 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 4**, all study intersections are currently operating at LOS D or better.





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Physical Education Projects (PEP) Truck Haul
Traffic Impact Analysis

FIGURE 3
Existing Intersection Volumes

3. CONSTRUCTION TRAFFIC

This section summarizes the total truck traffic forecast to be generated by construction activities related to trucks exporting dirt from the PEP site, as well as trucks returning back to the PEP site. A limiting factor regarding the amount of trucks that can be accommodated within the circulation network are existing left-turn pocket storage lengths, where left-turn movements would be made. The most critical location is at the Bonita Avenue/Temple Avenue intersections where the westbound left-turn pocket has a storage length of 120 feet.

The process used to calculate the total number truck loads generated per hour assuming approximately 40 days of construction, as well as the Passenger Car Equivalent (PCE) truck trips, is summarized as follows:

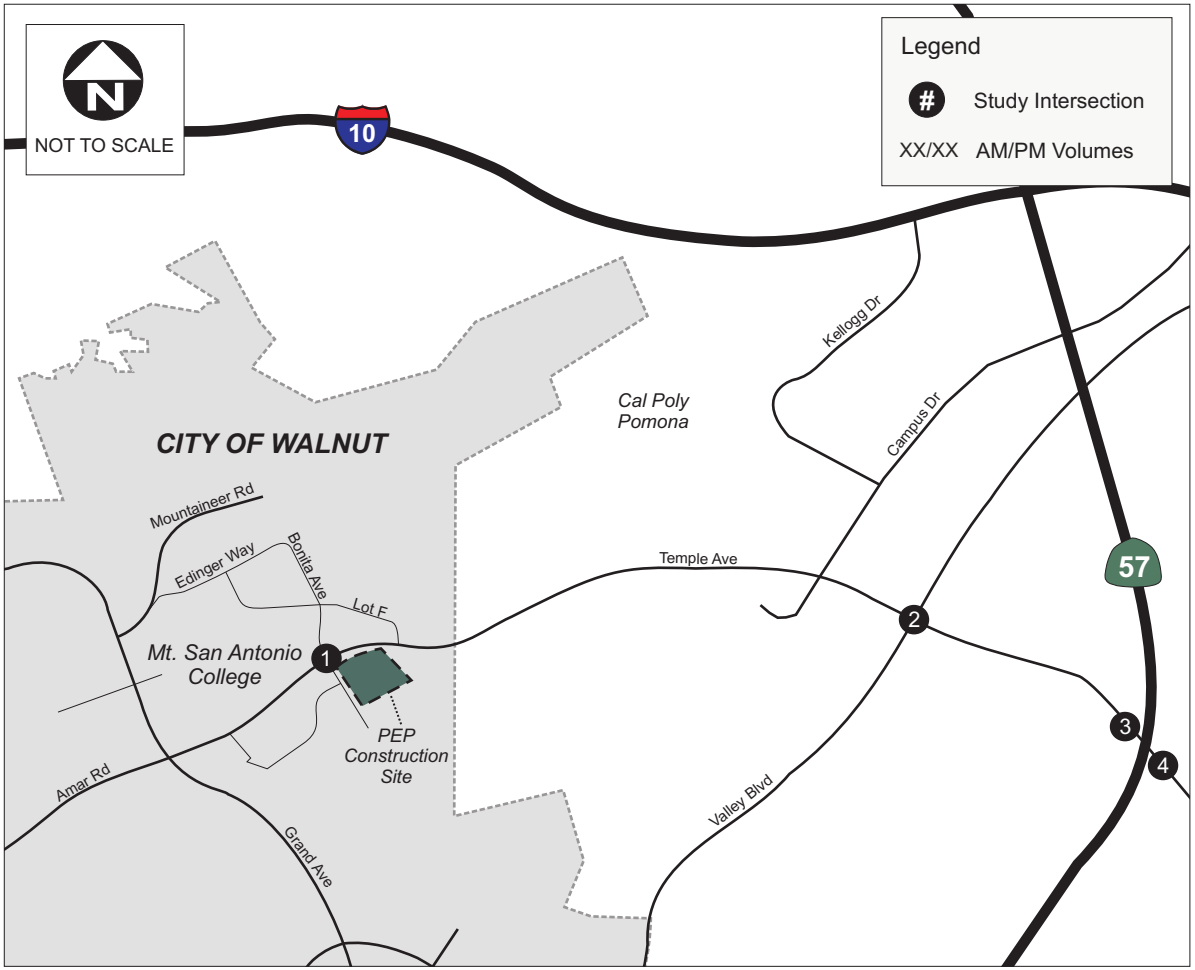
- A total of 81,429 cubic yards of dirt is expected to be hauled (provided by Psomas)
- The capacity of a 40' truck, to be used for this construction, is 14 cubic yards
- As a result, a total of 5,816 truck loads are required:
    - 81,429 / 14 = 5,816 truck loads
- Construction would occur for a total of 8 hours a day
- The construction period is expected to last approximately 40 days
- As a result, a total of approximately 144 truck loads would be delivered per day:
    - 5,816 truck loads / 40 days = 144 truck loads per day
- As a result, a total of 18 truck loads per hour are forecast to be generated by the PEP site:
    - 144 truck loads / 8 hours per day = 18 truck loads per hour
- Based on the 40' truck size, a PCE factor of 2.5 passenger vehicles per truck is assumed, resulting in approximately 60 PCE trips per hour generated at each site:
    - 24 truck trips x 2.5 vehicles per truck = 60 PCE-adjusted trips.

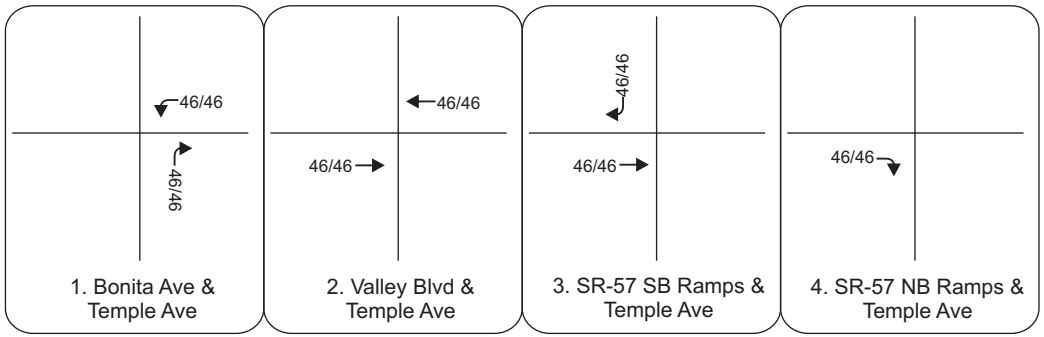
Based on the critical pocket length at the Bonita Avenue/Temple Avenue intersection, and the 40' length of the typical truck, it is recommended that, in order to avoid queue back up outside a left-turn pocket, no more than two trucks exit or enter the borrow site at the same time. Ideally, each truck would leave the two sites no more than every three minutes, which can be accommodated assuming the 18 trucks per hour calculated above.

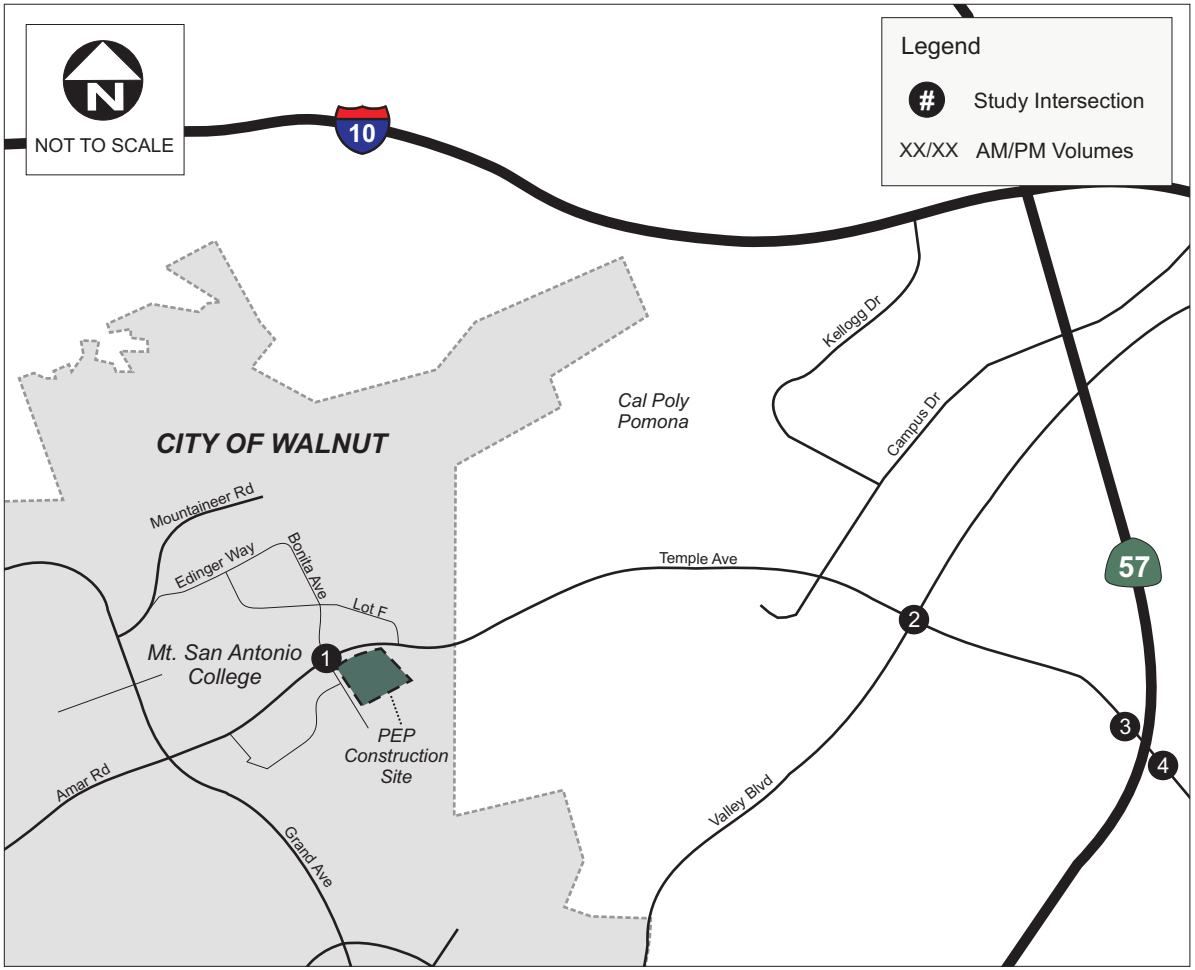
Figure 4 shows the assignment of PCE-adjusted truck trips within the study area during the a.m. and p.m. peak hours.

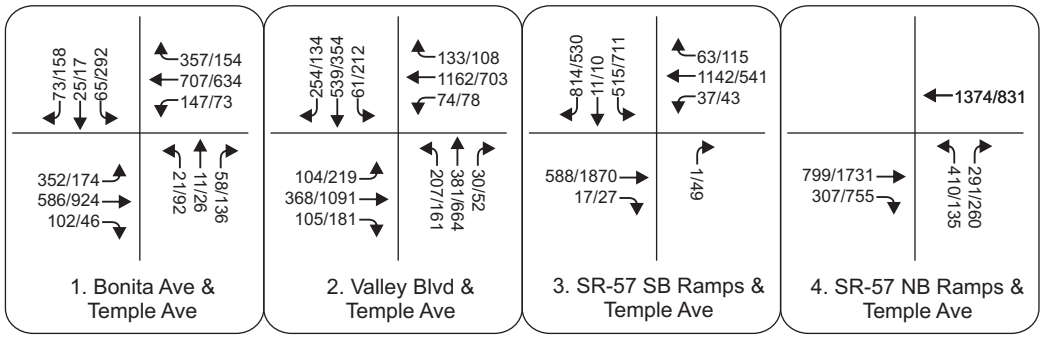
4. EXISTING PLUS CONSTRUCTION CONDITIONS

This section summarizes the traffic operations of the study intersections for existing conditions with the construction truck hauling activities. **Figure 4** shows the existing plus construction traffic volumes which include the PCE-adjusted truck volumes at the study intersections. **Table 5** summarizes the existing plus construction LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.


NOT TO SCALE
Legend
Study Intersection
XX/XX AM/PM Volumes
10
CITY OF WALNUT
Cal Poly Pomona
Kellogg Dr
Campus Dr
Mountaineer Rd
Edinger Way
Bonita Ave
Lot F
Temple Ave
57
Mt. San Antonio College
PEP Construction Site
Amar Rd
Grand Ave
Valley Blvd
1
2
3
4


46/46
46/46
1. Bonita Ave & Temple Ave
46/46
46/46
2. Valley Blvd & Temple Ave
46/46
46/46
3. SR-57 SB Ramps & Temple Ave
46/46
4. SR-57 NB Ramps & Temple Ave





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Physical Education Projects (PEP) Truck Haul
Traffic Impact Analysis

FIGURE 5
Existing Plus Construction Intersection Volumes

TABLE 5: EXISTING PLUS CONSTRUCTION INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Existing Conditions						Existing Plus Construction 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	Bonita Ave/Temple Ave	-	0.569	A	-	0.633	B	-	0.607	B	-	0.699	B	0.038	0.066	No
2	Valley Blvd/Temple Ave	-	0.814	D	-	0.820	D	-	0.825	D	-	0.831	D	0.011	0.011	No
3	SR-57 SB Ramps/Temple Ave*	21.4	-	C	23.8	-	C	21.7	-	C	24.8	-	C	0.3	1.0	No
4	SR-57 NB Ramps/Temple Ave*	14.2	-	B	9.1	-	A	14.2	-	B	9.1	-	A	0.0	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**, assuming the additional PCE-adjusted truck trips in the circulation network, the study intersections are forecast to continue to operate at LOS D or better during both peak hours. As also shown, the truck hauling activities are not forecast to result in any significant traffic impacts based on LA County thresholds of significance.

5. CONCLUSIONS

All study intersections are currently operating at LOS D or better. Assuming the additional PCE-adjusted truck trips in the circulation network, the study intersections are forecast to continue to operate at LOS D or better during both peak hours.

Based on the proposed hauling requirements and LA County thresholds of significance, it is forecast that up to 18 trucks per hour could be added to the circulation network without causing a significant impact to the study intersections. In addition to intersection LOS, available turn pocket storage lengths at the study intersections are a limiting factor in the amount of trucks that can operate per hour along the route.

APPENDIX A – TRAFFIC COUNTS

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

City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

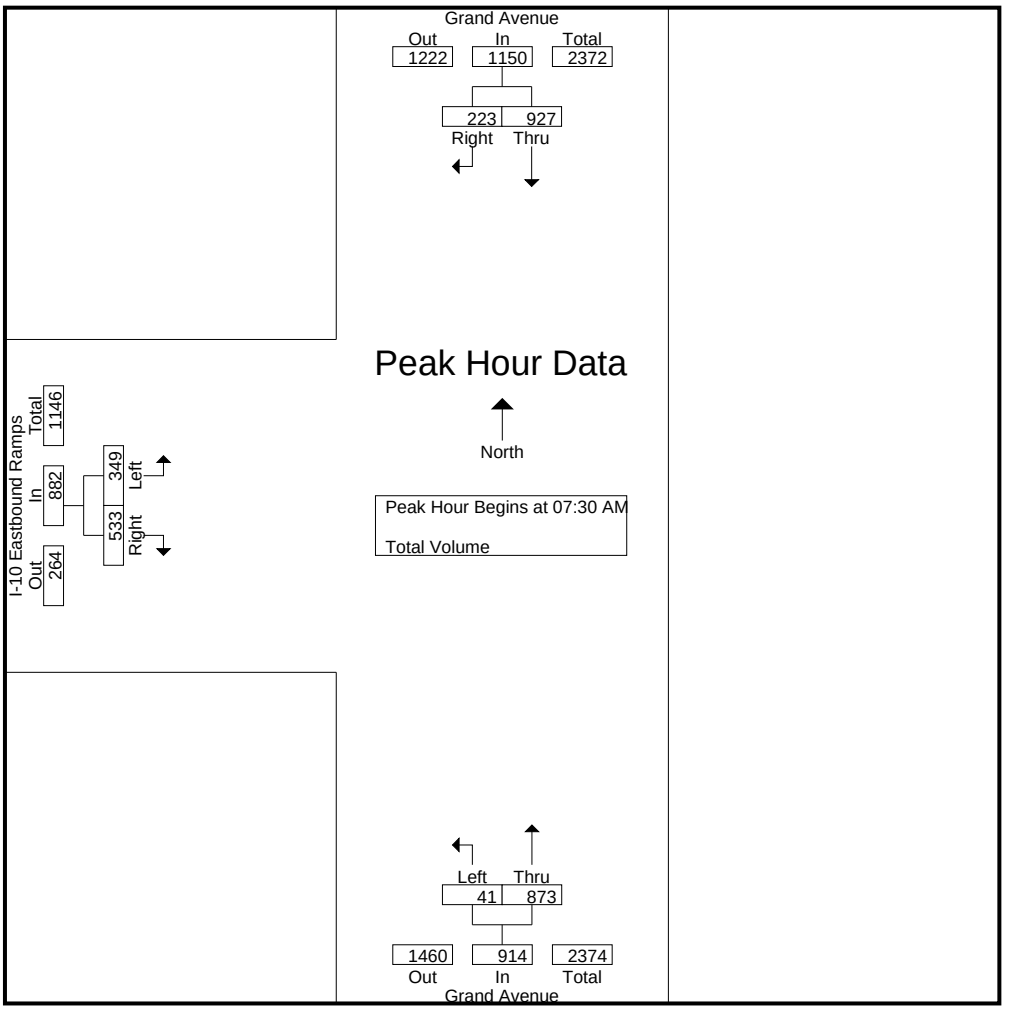
	Grand Avenue Southbound				Grand Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
07:00 AM	218	43	0	261	9	141	0	150	55	166	0	221	632
07:15 AM	224	59	0	283	8	165	0	173	83	152	0	235	691
07:30 AM	237	56	0	293	5	209	0	214	102	142	0	244	751
07:45 AM	241	48	0	289	11	228	0	239	91	161	0	252	780
Total	920	206	0	1126	33	743	0	776	331	621	0	952	2854
08:00 AM	249	52	0	301	10	199	0	209	87	123	0	210	720
08:15 AM	200	67	1	268	15	237	0	252	69	107	0	176	696
08:30 AM	190	48	0	238	8	220	0	228	83	120	0	203	669
08:45 AM	163	58	0	221	7	240	0	247	100	130	0	230	698
Total	802	225	1	1028	40	896	0	936	339	480	0	819	2783
Grand Total	1722	431	1	2154	73	1639	0	1712	670	1101	0	1771	5637
Apprch %	79.9	20	0		4.3	95.7	0		37.8	62.2	0		
Total %	30.5	7.6	0	38.2	1.3	29.1	0	30.4	11.9	19.5	0	31.4	

	Grand Avenue Southbound			Grand Avenue Northbound			I-10 Eastbound Ramps Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	237	56	293	5	209	214	**102**	142	244	751
07:45 AM	241	48	289	11	228	239	91	**161**	**252**	**780**
08:00 AM	**249**	52	**301**	10	199	209	87	123	210	720
08:15 AM	200	**67**	267	**15**	**237**	**252**	69	107	176	695
Total Volume	927	223	1150	41	873	914	349	533	882	2946
% App. Total	80.6	19.4		4.5	95.5		39.6	60.4		
PHF	.931	.832	.955	.683	.921	.907	.855	.828	.875	.944

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

City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EAM
Site Code : 04215551
Start Date : 10/1/2015
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:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	224	**59**	283	10	199	209	55	**166**	221
+15 mins.	237	56	293	**15**	237	**252**	83	152	235
+30 mins.	241	48	289	8	220	228	**102**	142	244
+45 mins.	**249**	52	**301**	7	**240**	247	91	161	**252**
Total Volume	951	215	1166	40	896	936	331	621	952
% App. Total	81.6	18.4		4.3	95.7		34.8	65.2	
PHF	.955	.911	.968	.667	.933	.929	.811	.935	.944

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

City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

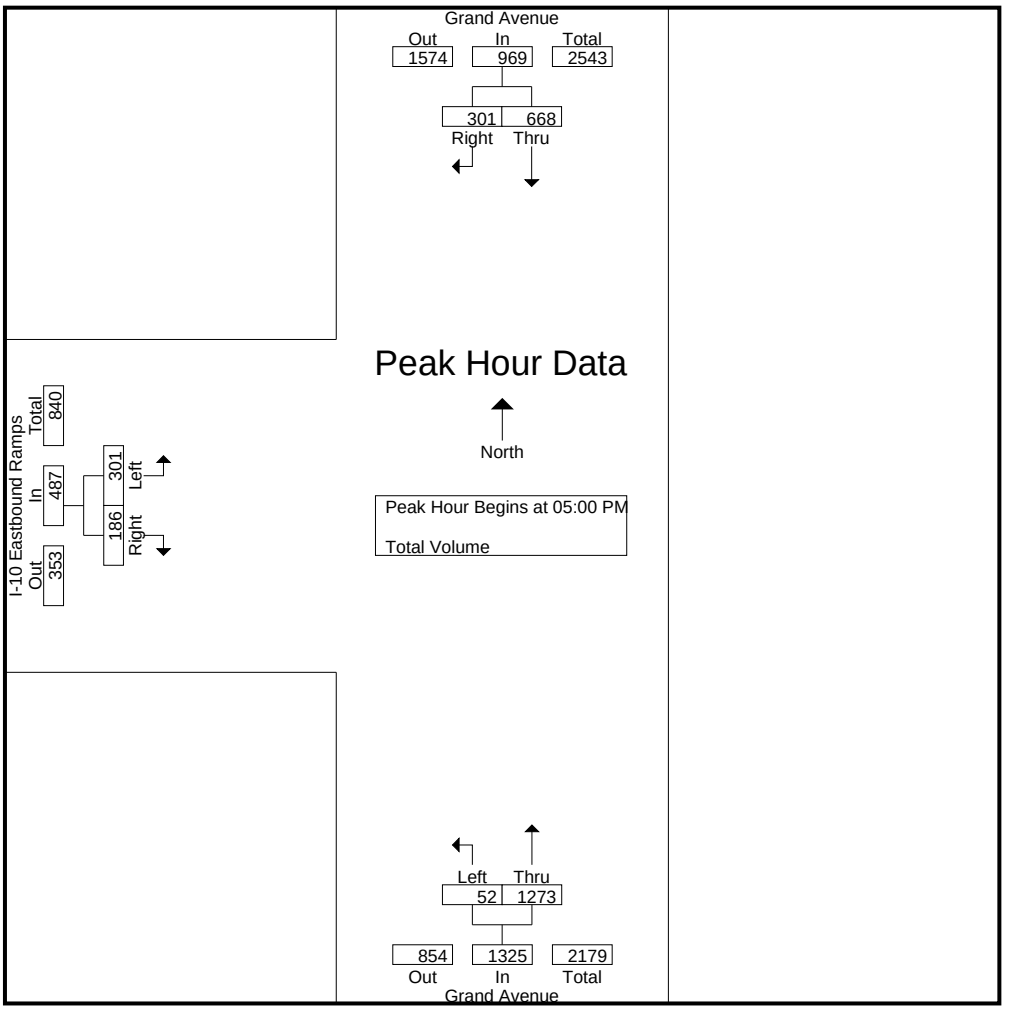
	Grand Avenue Southbound				Grand Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
04:00 PM	168	78	0	246	13	231	0	244	59	57	0	116	606
04:15 PM	181	95	0	276	14	265	0	279	75	41	0	116	671
04:30 PM	164	85	0	249	14	279	0	293	82	37	0	119	661
04:45 PM	167	81	0	248	16	287	0	303	64	53	0	117	668
Total	680	339	0	1019	57	1062	0	1119	280	188	0	468	2606
05:00 PM	135	70	0	205	19	315	0	334	65	46	0	111	650
05:15 PM	163	77	0	240	7	310	0	317	79	60	0	139	696
05:30 PM	182	70	0	252	11	328	0	339	75	32	0	107	698
05:45 PM	188	84	0	272	15	320	0	335	82	48	0	130	737
Total	668	301	0	969	52	1273	0	1325	301	186	0	487	2781
Grand Total	1348	640	0	1988	109	2335	0	2444	581	374	0	955	5387
Apprch %	67.8	32.2	0		4.5	95.5	0		60.8	39.2	0		
Total %	25	11.9	0	36.9	2	43.3	0	45.4	10.8	6.9	0	17.7	

	Grand Avenue Southbound			Grand Avenue Northbound			I-10 Eastbound Ramps Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	135	70	205	**19**	315	334	65	46	111	650
05:15 PM	163	77	240	7	310	317	79	**60**	**139**	696
05:30 PM	182	70	252	11	**328**	**339**	75	32	107	698
05:45 PM	**188**	**84**	**272**	15	320	335	**82**	48	130	**737**
Total Volume	668	301	969	52	1273	1325	301	186	487	2781
% App. Total	68.9	31.1		3.9	96.1		61.8	38.2		
PHF	.888	.896	.891	.684	.970	.977	.918	.775	.876	.943

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

City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EPM
Site Code : 04215551
Start Date : 10/1/2015
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			05:00 PM			05:00 PM		
+0 mins.	168	78	246	**19**	315	334	65	46	111
+15 mins.	**181**	**95**	**276**	7	310	317	79	**60**	**139**
+30 mins.	164	85	249	11	**328**	**339**	75	32	107
+45 mins.	167	81	248	15	320	335	**82**	48	130
Total Volume	680	339	1019	52	1273	1325	301	186	487
% App. Total	66.7	33.3		3.9	96.1		61.8	38.2	
PHF	.939	.892	.923	.684	.970	.977	.918	.775	.876

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

City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	15	148	98	1	262	10	394	22	0	426	64	86	10	0	160	13	36	37	1	87	935
07:15 AM	19	167	62	2	250	7	319	18	0	344	58	142	11	0	211	29	57	49	0	135	940
07:30 AM	22	125	80	2	229	8	241	21	0	270	37	186	20	0	243	28	89	41	0	158	900
07:45 AM	32	120	79	0	231	9	300	28	1	338	47	117	9	0	173	27	85	28	0	140	882
Total	88	560	319	5	972	34	1254	89	1	1378	206	531	50	0	787	97	267	155	1	520	3657
08:00 AM	26	174	67	0	267	13	319	31	0	363	30	127	5	0	162	27	96	39	0	162	954
08:15 AM	10	158	64	0	232	29	272	38	0	339	56	75	11	0	142	32	73	29	0	134	847
08:30 AM	8	120	59	0	187	15	183	28	2	228	68	92	8	0	168	20	70	20	1	111	694
08:45 AM	17	87	64	0	168	14	342	36	1	393	53	87	6	0	146	23	83	17	1	124	831
Total	61	539	254	0	854	71	1116	133	3	1323	207	381	30	0	618	102	322	105	2	531	3326
Grand Total	149	1099	573	5	1826	105	2370	222	4	2701	413	912	80	0	1405	199	589	260	3	1051	6983
Apprch %	8.2	60.2	31.4	0.3		3.9	87.7	8.2	0.1		29.4	64.9	5.7	0		18.9	56	24.7	0.3		
Total %	2.1	15.7	8.2	0.1	26.1	1.5	33.9	3.2	0.1	38.7	5.9	13.1	1.1	0	20.1	2.8	8.4	3.7	0	15.1	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	167	62	248	7	**319**	18	344	**58**	142	11	211	**29**	57	**49**	135	938
07:30 AM	22	125	**80**	227	8	241	21	270	37	**186**	**20**	**243**	28	89	41	158	898
07:45 AM	**32**	120	79	231	9	300	28	337	47	117	9	173	27	85	28	140	881
08:00 AM	26	**174**	67	**267**	**13**	319	**31**	**363**	30	127	5	162	27	**96**	39	**162**	**954**
Total Volume	99	586	288	973	37	1179	98	1314	172	572	45	789	111	327	157	595	3671
% App. Total	10.2	60.2	29.6		2.8	89.7	7.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.712	.924	.790	.905	.741	.769	.563	.812	.957	.852	.801	.918	.962

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City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015
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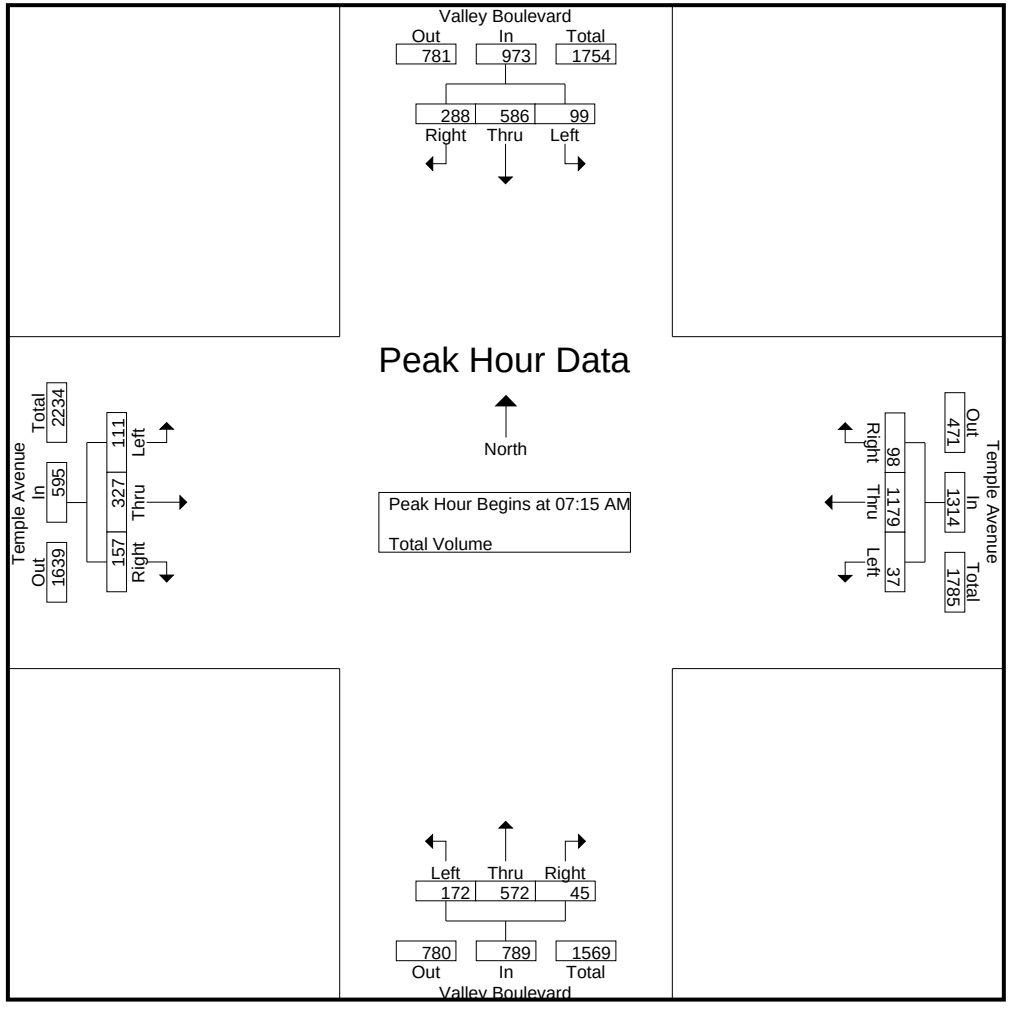

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Start Date : 10/1/2015

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	19	167	62	248	**10**	**394**	22	**426**	**58**	142	11	211	**29**	57	**49**	135	
+15 mins.	22	125	**80**	227	7	319	18	344	37	**186**	**20**	**243**	28	89	41	158	
+30 mins.	**32**	120	79	231	8	241	21	270	47	117	9	173	27	85	28	140	
+45 mins.	26	**174**	67	**267**	9	300	**28**	337	30	127	5	162	27	**96**	39	**162**	
Total Volume	99	586	288	973	34	1254	89	1377	172	572	45	789	111	327	157	595	
% App. Total	10.2	60.2	29.6		2.5	91.1	6.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.850	.796	.795	.808	.741	.769	.563	.812	.957	.852	.801	.918	

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City of Walnut
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Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	49	90	29	0	168	18	163	17	0	198	35	144	8	0	187	51	194	42	0	287	840
04:15 PM	51	71	46	0	168	20	166	31	2	219	33	162	18	0	213	45	237	41	0	323	923
04:30 PM	54	96	31	4	185	19	146	27	0	192	53	203	11	0	267	51	286	39	5	381	1025
04:45 PM	54	97	28	0	179	21	182	33	0	236	40	155	15	0	210	66	328	59	1	454	1079
Total	208	354	134	4	700	78	657	108	2	845	161	664	52	0	877	213	1045	181	6	1445	3867
05:00 PM	36	113	32	0	181	16	139	26	0	181	57	234	17	1	309	37	184	46	0	267	938
05:15 PM	36	193	49	1	279	15	186	30	0	231	65	206	13	0	284	25	206	46	3	280	1074
05:30 PM	34	147	49	0	230	32	177	23	2	234	72	180	18	0	270	35	245	63	0	343	1077
05:45 PM	48	74	37	1	160	10	209	32	0	251	40	157	15	0	212	26	305	80	3	414	1037
Total	154	527	167	2	850	73	711	111	2	897	234	777	63	1	1075	123	940	235	6	1304	4126
Grand Total	362	881	301	6	1550	151	1368	219	4	1742	395	1441	115	1	1952	336	1985	416	12	2749	7993
Apprch %	23.4	56.8	19.4	0.4		8.7	78.5	12.6	0.2		20.2	73.8	5.9	0.1		12.2	72.2	15.1	0.4		
Total %	4.5	11	3.8	0.1	19.4	1.9	17.1	2.7	0.1	21.8	4.9	18	1.4	0	24.4	4.2	24.8	5.2	0.2	34.4	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**54**	97	28	179	21	182	**33**	**236**	40	155	15	210	**66**	**328**	59	**453**	**1078**
05:00 PM	36	113	32	181	16	139	26	181	57	**234**	17	**308**	37	184	46	267	937
05:15 PM	36	**193**	**49**	**278**	15	**186**	30	231	65	206	13	284	25	206	46	277	1070
05:30 PM	34	147	49	230	**32**	177	23	232	**72**	180	**18**	270	35	245	**63**	343	1075
Total Volume	160	550	158	868	84	684	112	880	234	775	63	1072	163	963	214	1340	4160
% App. Total	18.4	63.4	18.2		9.5	77.7	12.7		21.8	72.3	5.9		12.2	71.9	16		
PHF	.741	.712	.806	.781	.656	.919	.848	.932	.813	.828	.875	.870	.617	.734	.849	.740	.965

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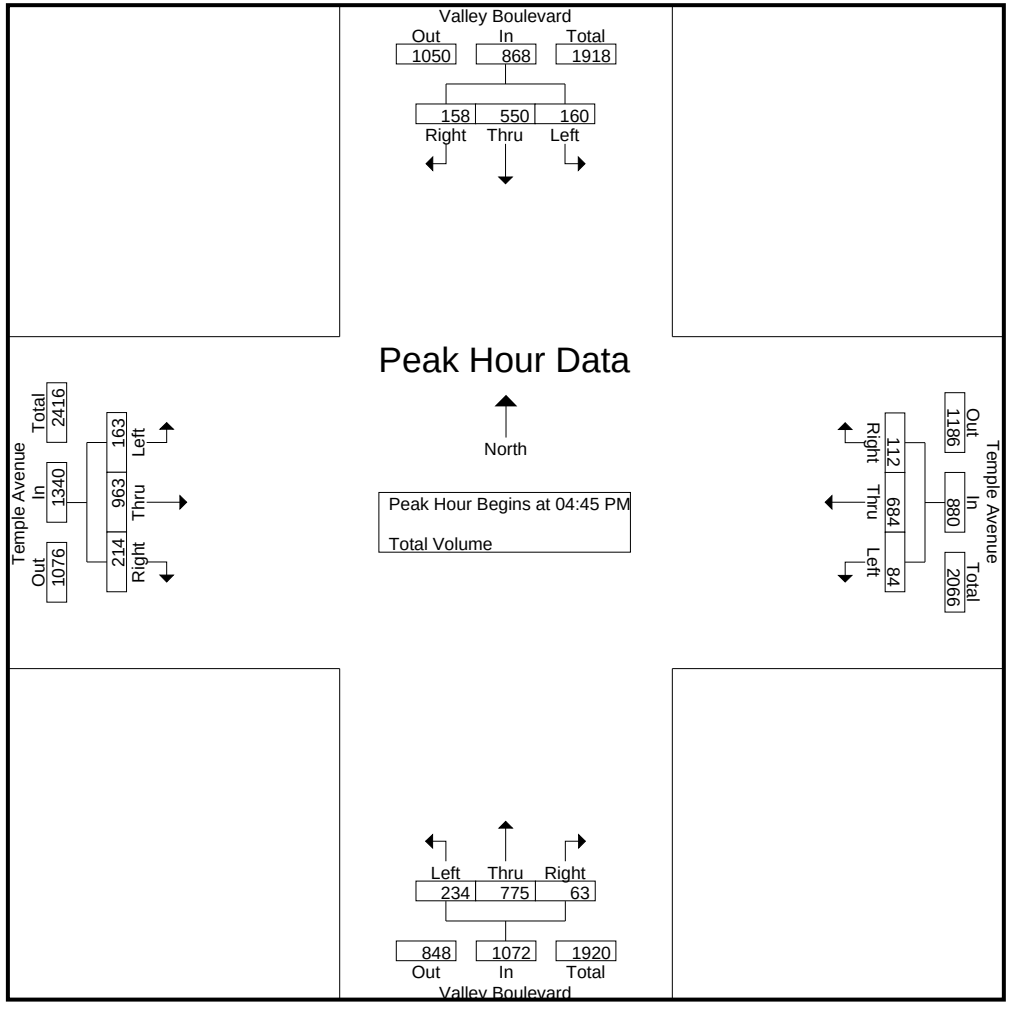

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	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:45 PM				05:00 PM				05:00 PM				04:00 PM				
+0 mins.	**54**	97	28	179	16	139	26	181	57	**234**	17	**308**	51	194	42	287	
+15 mins.	36	113	32	181	15	186	30	231	65	206	13	284	45	237	41	323	
+30 mins.	36	**193**	**49**	**278**	**32**	177	23	232	**72**	180	**18**	270	51	286	39	376	
+45 mins.	34	147	49	230	10	**209**	**32**	**251**	40	157	15	212	**66**	**328**	**59**	**453**	
Total Volume	160	550	158	868	73	711	111	895	234	777	63	1074	213	1045	181	1439	
% App. Total	18.4	63.4	18.2		8.2	79.4	12.4		21.8	72.3	5.9		14.8	72.6	12.6		
PHF	.741	.712	.806	.781	.570	.850	.867	.891	.813	.830	.875	.872	.807	.796	.767	.794	

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City of Walnut
N/S: SR-57 Southbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57STEAM
Site Code : 04215551
Start Date : 10/1/2015
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Groups Printed- Total Volume

	SR-57 Southbound Ramps Southbound					Temple Avenue Westbound					Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	141	0	246	0	387	1	452	12	8	473	0	0	1	0	1	0	120	0	0	120	981
07:15 AM	143	0	186	0	329	2	319	7	9	337	0	0	1	0	1	0	101	4	0	105	772
07:30 AM	159	0	145	0	304	1	209	8	16	234	0	0	0	0	0	0	160	4	0	164	702
07:45 AM	161	3	168	0	332	3	245	16	31	295	0	0	0	0	0	0	160	2	0	162	789
Total	604	3	745	0	1352	7	1225	43	64	1339	0	0	2	0	2	0	541	10	0	551	3244
08:00 AM	123	3	185	0	311	1	266	16	11	294	0	0	0	0	0	0	147	3	0	150	755
08:15 AM	151	3	186	0	340	2	270	7	7	286	0	0	0	0	0	0	142	8	0	150	776
08:30 AM	128	2	197	0	327	1	298	17	7	323	0	0	0	0	0	0	131	3	0	134	784
08:45 AM	113	3	200	0	316	1	308	23	7	339	0	0	1	0	1	0	122	3	0	125	781
Total	515	11	768	0	1294	5	1142	63	32	1242	0	0	1	0	1	0	542	17	0	559	3096
Grand Total	1119	14	1513	0	2646	12	2367	106	96	2581	0	0	3	0	3	0	1083	27	0	1110	6340
Apprch %	42.3	0.5	57.2	0		0.5	91.7	4.1	3.7		0	0	100	0		0	97.6	2.4	0		
Total %	17.6	0.2	23.9	0	41.7	0.2	37.3	1.7	1.5	40.7	0	0	0	0	0	0	17.1	0.4	0	17.5	

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	141	0	**246**	**387**	1	**452**	12	**465**	0	0	**1**	**1**	0	120	0	120	**973**
07:15 AM	143	0	186	329	2	319	7	328	0	0	1	1	0	101	**4**	105	763
07:30 AM	159	0	145	304	1	209	8	218	0	0	0	0	0	**160**	4	**164**	686
07:45 AM	**161**	**3**	168	332	**3**	245	**16**	264	0	0	0	0	0	160	2	162	758
Total Volume	604	3	745	1352	7	1225	43	1275	0	0	2	2	0	541	10	551	3180
% App. Total	44.7	0.2	55.1		0.5	96.1	3.4		0	0	100		0	98.2	1.8		
PHF	.938	.250	.757	.873	.583	.678	.672	.685	.000	.000	.500	.500	.000	.845	.625	.840	.817

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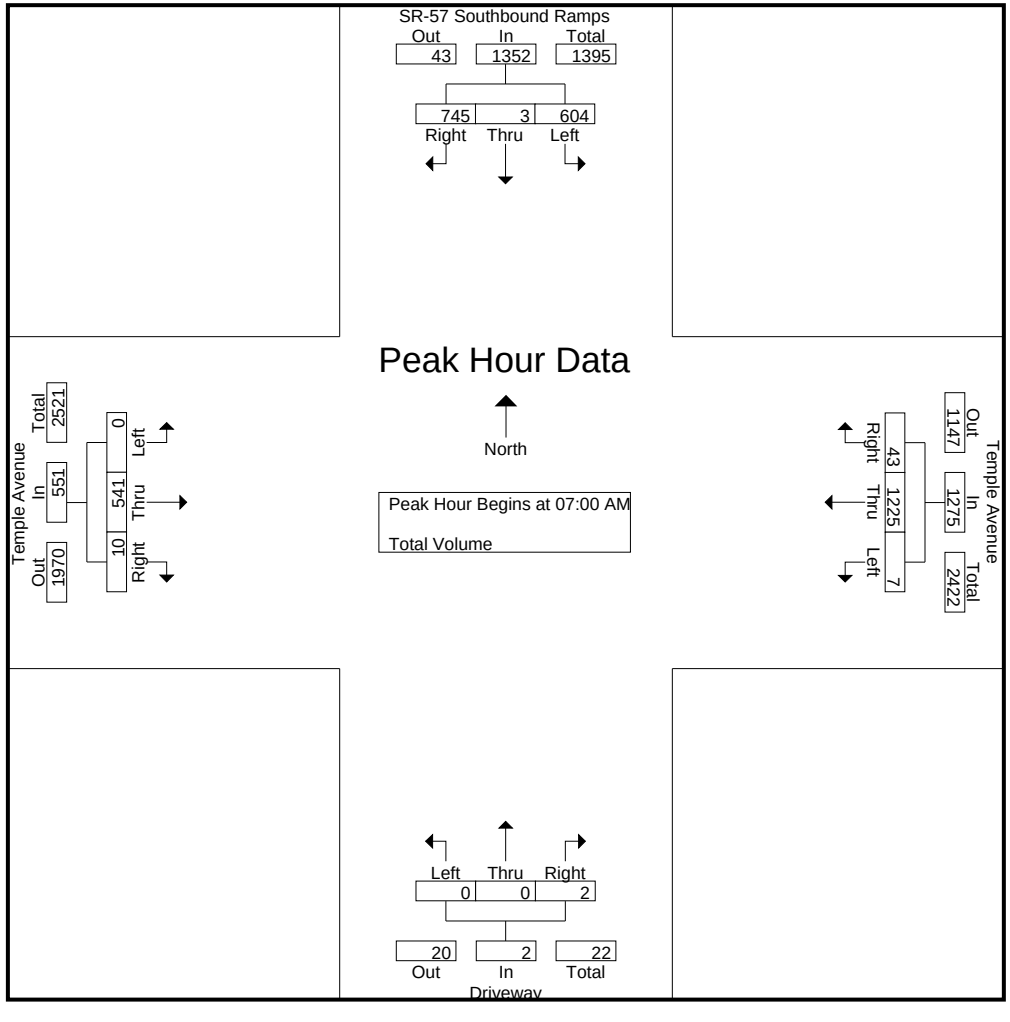

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	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:00 AM				07:00 AM				07:00 AM				07:30 AM				
+0 mins.	141	0	**246**	**387**	1	**452**	12	**465**	0	0	**1**	**1**	0	**160**	4	**164**	
+15 mins.	143	0	186	329	2	319	7	328	0	0	1	1	0	160	2	162	
+30 mins.	159	0	145	304	1	209	8	218	0	0	0	0	0	147	3	150	
+45 mins.	**161**	**3**	168	332	**3**	245	**16**	264	0	0	0	0	0	142	**8**	150	
Total Volume	604	3	745	1352	7	1225	43	1275	0	0	2	2	0	609	17	626	
% App. Total	44.7	0.2	55.1		0.5	96.1	3.4		0	0	100		0	97.3	2.7		
PHF	.938	.250	.757	.873	.583	.678	.672	.685	.000	.000	.500	.500	.000	.952	.531	.954	

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Groups Printed- Total Volume

	SR-57 Southbound Ramps Southbound					Temple Avenue Westbound					Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	173	2	122	0	297	1	125	40	14	180	0	0	10	0	10	0	375	0	0	375	862
04:15 PM	167	3	137	0	307	2	126	27	6	161	0	0	8	0	8	0	437	4	0	441	917
04:30 PM	180	3	97	0	280	2	147	22	10	181	0	0	18	0	18	0	498	13	0	511	990
04:45 PM	191	2	128	0	321	0	143	26	8	177	0	0	13	0	13	0	514	10	0	524	1035
Total	711	10	484	0	1205	5	541	115	38	699	0	0	49	0	49	0	1824	27	0	1851	3804
05:00 PM	207	1	117	0	325	5	145	37	10	197	0	0	16	0	16	0	445	15	0	460	998
05:15 PM	244	5	137	0	386	5	130	32	12	179	0	0	19	0	19	0	441	16	0	457	1041
05:30 PM	246	4	145	0	395	2	162	31	13	208	1	0	20	0	21	0	437	24	0	461	1085
05:45 PM	226	2	137	0	365	6	139	16	6	167	0	0	28	0	28	0	473	17	0	490	1050
Total	923	12	536	0	1471	18	576	116	41	751	1	0	83	0	84	0	1796	72	0	1868	4174
Grand Total	1634	22	1020	0	2676	23	1117	231	79	1450	1	0	132	0	133	0	3620	99	0	3719	7978
Apprch %	61.1	0.8	38.1	0		1.6	77	15.9	5.4		0.8	0	99.2	0		0	97.3	2.7	0		
Total %	20.5	0.3	12.8	0	33.5	0.3	14	2.9	1	18.2	0	0	1.7	0	1.7	0	45.4	1.2	0	46.6	

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	207	1	117	325	5	145	**37**	187	0	0	16	16	0	445	15	460	988
05:15 PM	244	**5**	137	386	5	130	32	167	0	0	19	19	0	441	16	457	1029
05:30 PM	**246**	4	**145**	**395**	2	**162**	31	**195**	**1**	0	20	21	0	437	**24**	461	**1072**
05:45 PM	226	2	137	365	**6**	139	16	161	0	0	**28**	**28**	0	**473**	17	**490**	1044
Total Volume	923	12	536	1471	18	576	116	710	1	0	83	84	0	1796	72	1868	4133
% App. Total	62.7	0.8	36.4		2.5	81.1	16.3		1.2	0	98.8		0	96.1	3.9		
PHF	.938	.600	.924	.931	.750	.889	.784	.910	.250	.000	.741	.750	.000	.949	.750	.953	.964

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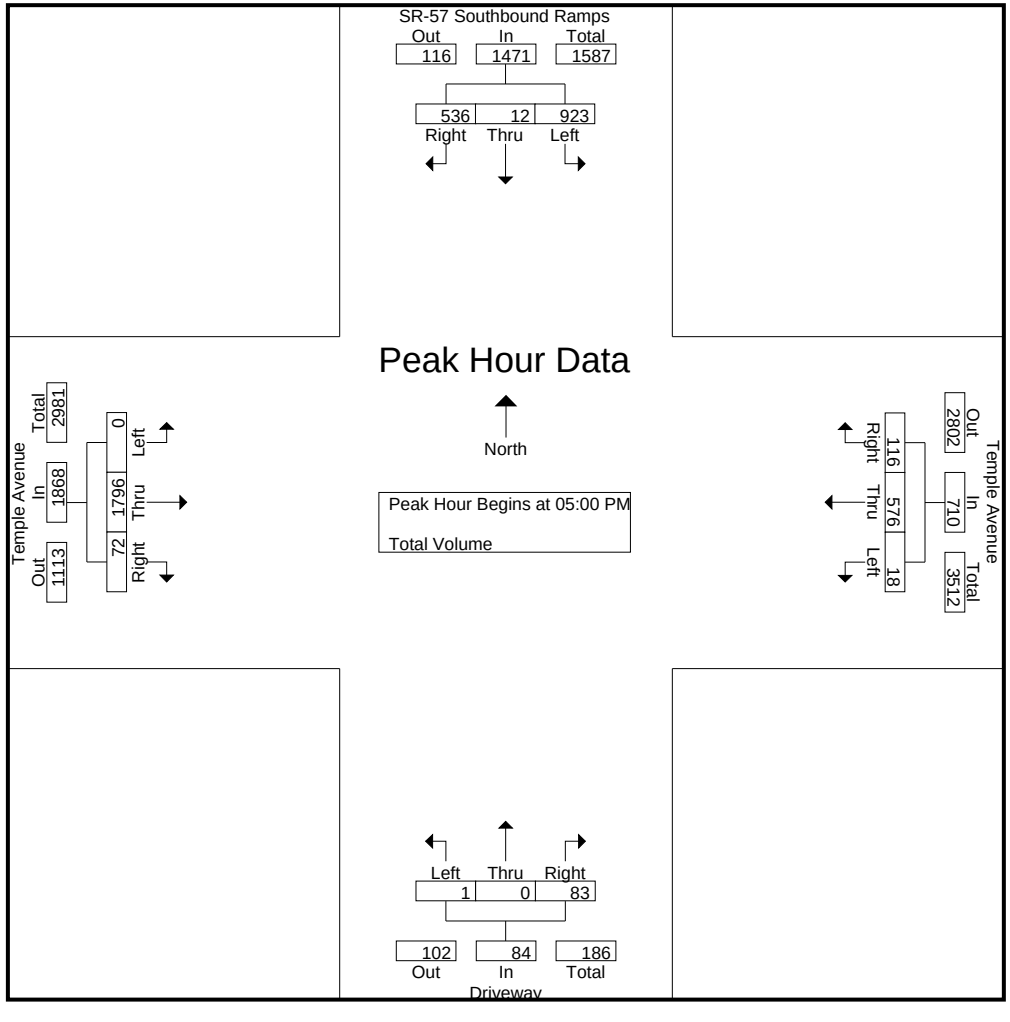

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Start Date : 10/1/2015

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:45 PM				05:00 PM				04:30 PM				
+0 mins.	207	1	117	325	0	143	26	169	0	0	16	16	0	498	13	511	
+15 mins.	244	**5**	137	386	**5**	145	**37**	187	0	0	19	19	0	**514**	10	**524**	
+30 mins.	**246**	4	**145**	**395**	5	130	32	167	**1**	0	20	21	0	445	15	460	
+45 mins.	226	2	137	365	2	**162**	31	**195**	0	0	**28**	**28**	0	441	**16**	457	
Total Volume	923	12	536	1471	12	580	126	718	1	0	83	84	0	1898	54	1952	
% App. Total	62.7	0.8	36.4		1.7	80.8	17.5		1.2	0	98.8		0	97.2	2.8		
PHF	.938	.600	.924	.931	.600	.895	.851	.921	.250	.000	.741	.750	.000	.923	.844	.931	

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

City of Walnut
N/S: SR-57 Northbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57NTEAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Temple Avenue Westbound				SR-57 Northbound Ramps Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	534	0	534	161	41	0	202	178	64	0	242	978
07:15 AM	0	396	0	396	101	70	0	171	199	44	1	244	811
07:30 AM	0	335	0	335	65	62	0	127	216	82	0	298	760
07:45 AM	0	334	0	334	58	101	0	159	213	86	0	299	792
Total	0	1599	0	1599	385	274	0	659	806	276	1	1083	3341
08:00 AM	0	350	0	350	74	91	0	165	200	70	0	270	785
08:15 AM	0	361	0	361	92	67	0	159	217	78	0	295	815
08:30 AM	0	335	0	335	94	74	0	168	202	59	0	261	764
08:45 AM	0	328	0	328	150	59	0	209	180	54	0	234	771
Total	0	1374	0	1374	410	291	0	701	799	261	0	1060	3135
Grand Total	0	2973	0	2973	795	565	0	1360	1605	537	1	2143	6476
Apprch %	0	100	0		58.5	41.5	0		74.9	25.1	0		
Total %	0	45.9	0	45.9	12.3	8.7	0	21	24.8	8.3	0	33.1	

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**534**	**534**	**161**	41	**202**	178	64	242	**978**
07:15 AM	0	396	396	101	70	171	199	44	243	810
07:30 AM	0	335	335	65	62	127	**216**	82	298	760
07:45 AM	0	334	334	58	**101**	159	213	**86**	**299**	792
Total Volume	0	1599	1599	385	274	659	806	276	1082	3340
% App. Total	0	100		58.4	41.6		74.5	25.5		
PHF	.000	.749	.749	.598	.678	.816	.933	.802	.905	.854

Counts Unlimited
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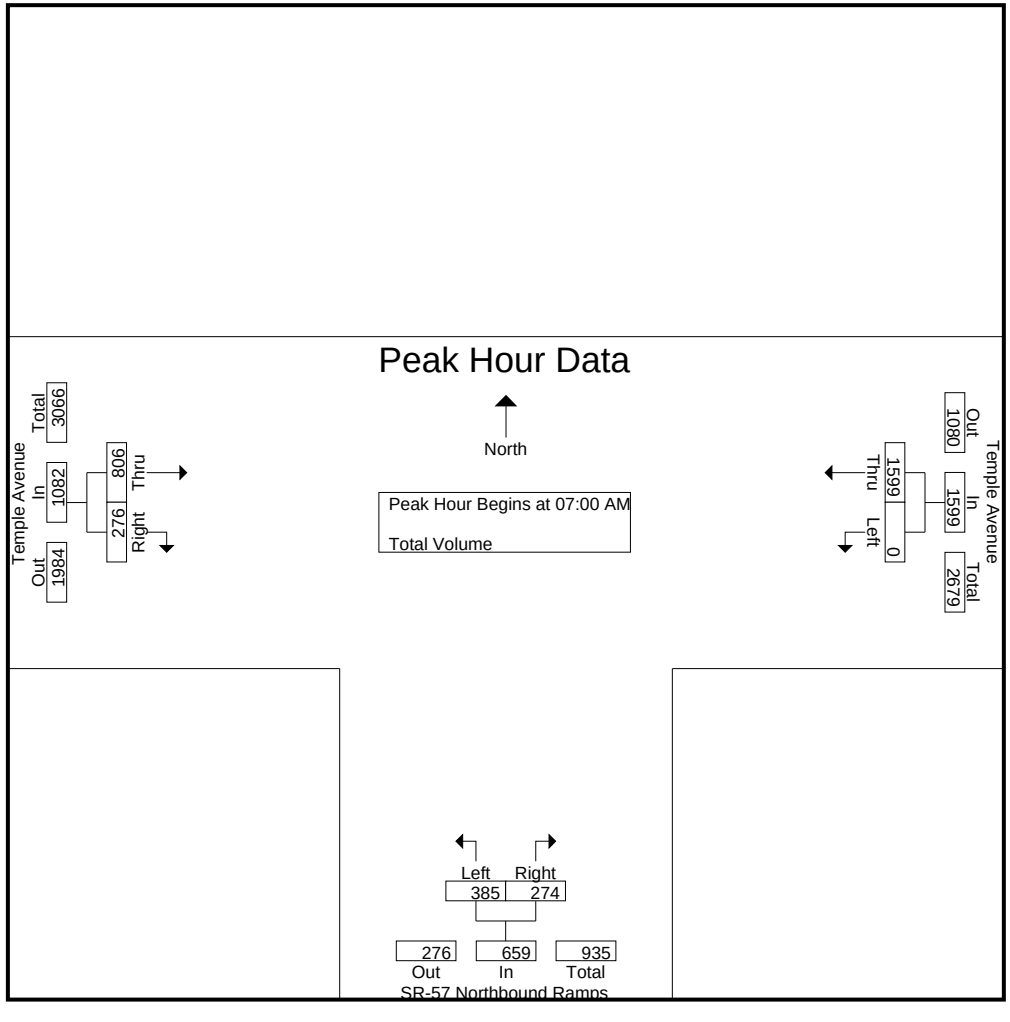
City of Walnut
N/S: SR-57 Northbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57NTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



Counts Unlimited
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City of Walnut
N/S: SR-57 Northbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57NTEAM
Site Code : 04215551
Start Date : 10/1/2015

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
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			08:00 AM			07:30 AM			
+0 mins.	0	**534**	**534**	74	**91**	165	216	82	298	
+15 mins.	0	396	396	92	67	159	213	**86**	**299**	
+30 mins.	0	335	335	94	74	168	200	70	270	
+45 mins.	0	334	334	**150**	59	**209**	**217**	78	295	
Total Volume	0	1599	1599	410	291	701	846	316	1162	
% App. Total	0	100		58.5	41.5		72.8	27.2		
PHF	.000	.749	.749	.683	.799	.839	.975	.919	.972	

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City of Walnut
N/S: SR-57 Northbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57NTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Temple Avenue Westbound				SR-57 Northbound Ramps Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	222	0	222	32	58	0	90	407	145	0	552	864
04:15 PM	0	214	0	214	33	57	0	90	386	195	0	581	885
04:30 PM	0	185	0	185	42	76	0	118	428	205	0	633	936
04:45 PM	0	210	0	210	28	69	0	97	510	164	0	674	981
Total	0	831	0	831	135	260	0	395	1731	709	0	2440	3666
05:00 PM	0	246	0	246	24	61	0	85	485	156	0	641	972
05:15 PM	0	253	0	253	36	64	0	100	542	142	0	684	1037
05:30 PM	0	255	0	255	35	83	0	118	525	168	0	693	1066
05:45 PM	0	215	0	215	28	81	0	109	545	155	0	700	1024
Total	0	969	0	969	123	289	0	412	2097	621	0	2718	4099
Grand Total	0	1800	0	1800	258	549	0	807	3828	1330	0	5158	7765
Apprch %	0	100	0		32	68	0		74.2	25.8	0		
Total %	0	23.2	0	23.2	3.3	7.1	0	10.4	49.3	17.1	0	66.4	

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	246	246	24	61	85	485	156	641	972
05:15 PM	0	253	253	**36**	64	100	542	142	684	1037
05:30 PM	0	**255**	**255**	35	**83**	**118**	525	**168**	693	**1066**
05:45 PM	0	215	215	28	81	109	**545**	155	**700**	1024
Total Volume	0	969	969	123	289	412	2097	621	2718	4099
% App. Total	0	100		29.9	70.1		77.2	22.8		
PHF	.000	.950	.950	.854	.870	.873	.962	.924	.971	.961

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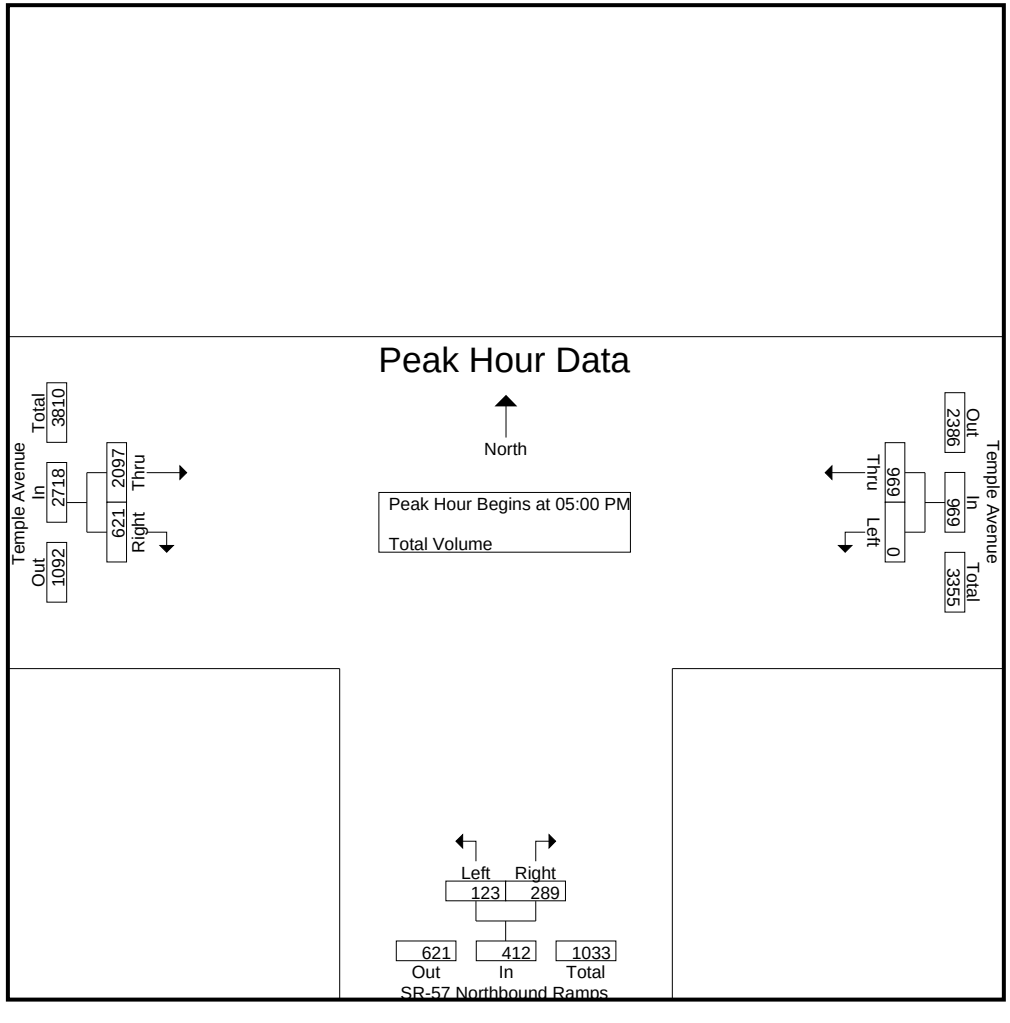
File Name : WNT57NTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: SR-57 Northbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57NTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	05:00 PM			05:00 PM			05:00 PM			
+0 mins.	0	246	246	24	61	85	485	156	641	
+15 mins.	0	253	253	**36**	64	100	542	142	684	
+30 mins.	0	**255**	**255**	35	**83**	**118**	525	**168**	693	
+45 mins.	0	215	215	28	81	109	**545**	155	**700**	
Total Volume	0	969	969	123	289	412	2097	621	2718	
% App. Total	0	100		29.9	70.1		77.2	22.8		
PHF	.000	.950	.950	.854	.870	.873	.962	.924	.971	

APPENDIX B – LOS CALCULATION SHEETS

EXISTING CONDITIONS

PEP Truck Haul Congestion
Existing Conditions
AM Peak Hour

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

Intersection #1 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.569
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	38	Level Of Service:	A

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			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	0 1	2	0 1	0 1	2	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	21	11	12	65	25	73	352	586	102	101	707	357
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:	21	11	12	65	25	73	352	586	102	101	707	357
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:	21	11	12	65	25	73	352	586	102	101	707	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:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	27	14	16	85	33	96	461	767	134	132	925	467
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	27	14	16	85	33	96	461	767	134	132	925	467
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:	27	14	16	85	33	96	461	767	134	132	925	467
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	2.00	1.00	1.00	2.00	1.70	0.30	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	2726	474	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.01	0.01	0.03	0.02	0.06	0.14	0.28	0.28	0.08	0.29	0.29
OvlAdjV/S:						0.00						
Crit Moves:		****			****			****			****	

PEP Truck Haul Congestion
Existing Conditions
AM Peak Hour

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

Intersection #2 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.814
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	70	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	207	381	30	61	539	254	104	322	105	74	1116	133
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:	207	381	30	61	539	254	104	322	105	74	1116	133
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:	207	381	30	61	539	254	104	322	105	74	1116	133
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:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	237	437	34	70	618	291	119	369	120	85	1280	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	237	437	34	70	618	291	119	369	120	85	1280	153
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:	237	437	34	70	618	291	119	369	120	85	1280	153
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	2.00	1.00	1.00	2.00	1.00	1.00	2.26	0.74	1.00	2.68	0.32
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	3620	1180	1600	4289	511
Capacity Analysis Module:												
Vol/Sat:	0.15	0.14	0.02	0.04	0.19	0.18	0.07	0.10	0.10	0.05	0.30	0.30
Crit Moves:	****				****		****				****	

PEP Truck Haul Congestion
Existing Conditions
AM Peak Hour

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

Intersection #3 SR-57 SB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.652
Loss Time (sec):	6	Average Delay (sec/veh):	21.4
Optimal Cycle:	37	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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0	0 1	1	0	1! 0 1	0	0	2 1 0	1	0	3 0 1
Volume Module:												
Base Vol:	0	0	1	515	11	768	0	542	17	37	1142	63
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:	0	0	1	515	11	768	0	542	17	37	1142	63
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:	0	0	1	515	11	768	0	542	17	37	1142	63
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.00
PHF Volume:	0	0	1	522	11	778	0	549	17	37	1157	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	1	522	11	778	0	549	17	37	1157	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	0	0	1	522	11	778	0	549	17	37	1157	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.87	0.89	0.89	0.89	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.00	0.00	1.00	1.39	0.02	1.59	0.00	2.91	0.09	1.00	3.00	1.00
Final Sat.:	0	0	1644	2366	29	2695	0	5009	157	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.39	0.29	0.00	0.11	0.11	0.02	0.22	0.00
Crit Moves:					****		****				****	
Green/Cycle:	0.00	0.00	0.00	0.60	0.60	0.60	0.00	0.29	0.29	0.05	0.34	0.00
Volume/Cap:	0.00	0.00	xxxx	0.37	0.65	0.48	0.00	0.38	0.38	0.38	0.65	0.00
Delay/Veh:	0.0	0.0	0.0	10.4	14.0	11.5	0.0	28.7	28.7	48.1	28.7	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:	0.0	0.0	0.0	10.4	14.0	11.5	0.0	28.7	28.7	48.1	28.7	0.0
LOS by Move:	A	A	A	B	B	B	A	C	C	D	C	A
HCM2kAvgQ:	0	0	0	8	6	7	0	5	5	2	12	0

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

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to MMA, LONG BEACH, CA

PEP Truck Haul Congestion
Existing Conditions
AM Peak Hour

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

Intersection #4 SR-57 NB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.458
Loss Time (sec):	6	Average Delay (sec/veh):	14.2
Optimal Cycle:	25	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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0 1	0	0	0 0 0	1	0	2 1 1	0	0	3 0 0
Volume Module:												
Base Vol:	410	0	291	0	0	0	0	799	261	0	1374	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:	410	0	291	0	0	0	0	799	261	0	1374	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:	410	0	291	0	0	0	0	799	261	0	1374	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00	0.96	0.96	0.96
PHF Volume:	426	0	302	0	0	0	0	831	0	0	1428	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	426	0	302	0	0	0	0	831	0	0	1428	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	426	0	302	0	0	0	0	831	0	0	1428	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.91	1.00	0.91	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.58	0.00	1.42	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2745	0	2451	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.00	0.12	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.28	0.00
Crit Moves:	****										****	
Green/Cycle:	0.34	0.00	0.34	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.60	0.00
Volume/Cap:	0.46	0.00	0.36	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.46	0.00
Delay/Veh:	26.1	0.0	25.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	11.1	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:	26.1	0.0	25.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	11.1	0.0
LOS by Move:	C	A	C	A	A	A	A	A	A	A	B	A
HCM2kAvgQ:	7	0	5	0	0	0	0	4	0	0	9	0

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

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PEP Truck Haul Congestion
Existing Conditions
PM Peak Hour

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

Intersection #1 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.633
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	43	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			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	0 1	2	0 1	0 1	2	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	92	26	90	292	17	158	174	924	46	27	634	154
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:	92	26	90	292	17	158	174	924	46	27	634	154
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:	92	26	90	292	17	158	174	924	46	27	634	154
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:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	105	30	103	333	19	180	198	1054	52	31	723	176
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	30	103	333	19	180	198	1054	52	31	723	176
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:	105	30	103	333	19	180	198	1054	52	31	723	176
OvlAdjVol:						81						
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	2.00	1.00	1.00	2.00	1.91	0.09	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	3048	152	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.02	0.06	0.10	0.01	0.11	0.06	0.35	0.35	0.02	0.23	0.11
OvlAdjV/S:						0.05						
Crit Moves:			****	****				****		****		

PEP Truck Haul Congestion
Existing Conditions
PM Peak Hour

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

Intersection #2 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.820
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	72	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	161	664	52	212	354	134	219	1045	181	80	657	108
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:	161	664	52	212	354	134	219	1045	181	80	657	108
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:	161	664	52	212	354	134	219	1045	181	80	657	108
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:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	180	741	58	237	395	150	244	1166	202	89	733	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	180	741	58	237	395	150	244	1166	202	89	733	121
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:	180	741	58	237	395	150	244	1166	202	89	733	121
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	2.00	1.00	1.00	2.00	1.00	1.00	2.56	0.44	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4091	709	1600	4122	678
Capacity Analysis Module:												
Vol/Sat:	0.11	0.23	0.04	0.15	0.12	0.09	0.15	0.29	0.29	0.06	0.18	0.18
Crit Moves:		****		****				****		****		

PEP Truck Haul Congestion
Existing Conditions
PM Peak Hour

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

Intersection #3 SR-57 SB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.847
Loss Time (sec):	6	Average Delay (sec/veh):	23.8
Optimal Cycle:	71	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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0	0 1	1	0	1! 0 1	0	0	2 1 0	1	0	3 0 1
Volume Module:												
Base Vol:	0	0	49	711	10	484	0	1824	27	43	541	115
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:	0	0	49	711	10	484	0	1824	27	43	541	115
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:	0	0	49	711	10	484	0	1824	27	43	541	115
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.00
PHF Volume:	0	0	53	774	11	527	0	1985	29	47	589	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	53	774	11	527	0	1985	29	47	589	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	0	0	53	774	11	527	0	1985	29	47	589	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.87	0.91	0.91	0.91	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.00	0.00	1.00	1.58	0.02	1.40	0.00	2.96	0.04	1.00	3.00	1.00
Final Sat.:	0	0	1644	2749	29	2425	0	5101	76	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.03	0.28	0.38	0.22	0.00	0.39	0.39	0.03	0.11	0.00
Crit Moves:					****			****		****		
Green/Cycle:	0.00	0.00	0.00	0.45	0.45	0.45	0.00	0.46	0.46	0.03	0.49	0.00
Volume/Cap:	0.00	0.00	xxxx	0.63	0.85	0.48	0.00	0.85	0.85	0.85	0.23	0.00
Delay/Veh:	0.0	0.0	0.0	21.6	29.0	19.5	0.0	26.9	26.9	116.6	14.7	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:	0.0	0.0	0.0	21.6	29.0	19.5	0.0	26.9	26.9	116.6	14.7	0.0
LOS by Move:	A	A	A	C	C	B	A	C	C	F	B	A
HCM2kAvgQ:	0	0	1	18	1	11	0	20	20	3	4	0

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

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PEP Truck Haul Congestion
Existing Conditions
PM Peak Hour

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

Intersection #4 SR-57 NB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.486
Loss Time (sec):	6	Average Delay (sec/veh):	9.1
Optimal Cycle:	27	Level Of Service:	A

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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0 1	0	0	0 0 0	1	0	2 1 1	0	0	3 0 0
Volume Module:												
Base Vol:	135	0	260	0	0	0	0	1731	709	0	831	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:	135	0	260	0	0	0	0	1731	709	0	831	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:	135	0	260	0	0	0	0	1731	709	0	831	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.93
PHF Volume:	145	0	278	0	0	0	0	1853	0	0	890	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	145	0	278	0	0	0	0	1853	0	0	890	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	145	0	278	0	0	0	0	1853	0	0	890	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	0.89	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.34	0.00	1.66	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2258	0	2790	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.10	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.17	0.00
Crit Moves:			****					****				
Green/Cycle:	0.21	0.00	0.21	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.73	0.00
Volume/Cap:	0.31	0.00	0.49	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.23	0.00
Delay/Veh:	33.9	0.0	35.5	0.0	0.0	0.0	0.0	5.6	0.0	0.0	4.3	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:	33.9	0.0	35.5	0.0	0.0	0.0	0.0	5.6	0.0	0.0	4.3	0.0
LOS by Move:	C	A	D	A	A	A	A	A	A	A	A	A
HCM2kAvgQ:	3	0	5	0	0	0	0	9	0	0	3	0

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

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EXISTING PLUS CONSTRUCTION CONDITIONS

PEP Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

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

Intersection #1 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.607
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	41	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			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	0 1	2	0 1	0 1	2	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	21	11	12	65	25	73	352	586	102	101	707	357
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:	21	11	12	65	25	73	352	586	102	101	707	357
Added Vol:	0	0	46	0	0	0	0	0	0	46	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	21	11	58	65	25	73	352	586	102	147	707	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:	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76	0.76
PHF Volume:	27	14	76	85	33	96	461	767	134	192	925	467
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	27	14	76	85	33	96	461	767	134	192	925	467
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:	27	14	76	85	33	96	461	767	134	192	925	467
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	2.00	1.00	1.00	2.00	1.70	0.30	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	2726	474	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.02	0.01	0.05	0.03	0.02	0.06	0.14	0.28	0.28	0.12	0.29	0.29
OvlAdjV/S:						0.00						
Crit Moves:			****	****			****				****	

PEP Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

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

Intersection #2 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.825
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	73	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	207	381	30	61	539	254	104	322	105	74	1116	133
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:	207	381	30	61	539	254	104	322	105	74	1116	133
Added Vol:	0	0	0	0	0	0	0	46	0	0	46	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	207	381	30	61	539	254	104	368	105	74	1162	133
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:	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
PHF Volume:	237	437	34	70	618	291	119	422	120	85	1333	153
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	237	437	34	70	618	291	119	422	120	85	1333	153
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:	237	437	34	70	618	291	119	422	120	85	1333	153
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	2.00	1.00	1.00	2.00	1.00	1.00	2.33	0.67	1.00	2.69	0.31
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	3734	1066	1600	4307	493
Capacity Analysis Module:												
Vol/Sat:	0.15	0.14	0.02	0.04	0.19	0.18	0.07	0.11	0.11	0.05	0.31	0.31
Crit Moves:	****				****		****				****	

PEP Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

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

Intersection #3 SR-57 SB Ramps / Temple Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.667
Loss Time (sec): 6 Average Delay (sec/veh): 21.7
Optimal Cycle: 39 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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0	0	0 1	1	0 1!	0 1	0	0 2	1 0	1	0 3 0 1
Volume Module:												
Base Vol:	0	0	1	515	11	768	0	542	17	37	1142	63
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:	0	0	1	515	11	768	0	542	17	37	1142	63
Added Vol:	0	0	0	0	0	46	0	46	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	1	515	11	814	0	588	17	37	1142	63
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.00
PHF Volume:	0	0	1	522	11	825	0	596	17	37	1157	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	1	522	11	825	0	596	17	37	1157	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	0	0	1	522	11	825	0	596	17	37	1157	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.87	0.89	0.89	0.89	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.00	0.00	1.00	1.38	0.02	1.60	0.00	2.92	0.08	1.00	3.00	1.00
Final Sat.:	0	0	1644	2340	28	2715	0	5021	145	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.22	0.40	0.30	0.00	0.12	0.12	0.02	0.22	0.00
Crit Moves:					****		****				****	
Green/Cycle:	0.00	0.00	0.00	0.61	0.61	0.61	0.00	0.28	0.28	0.05	0.33	0.00
Volume/Cap:	0.00	0.00	xxxx	0.37	0.67	0.50	0.00	0.42	0.42	0.42	0.67	0.00
Delay/Veh:	0.0	0.0	0.0	10.1	13.9	11.3	0.0	29.2	29.2	49.2	29.5	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:	0.0	0.0	0.0	10.1	13.9	11.3	0.0	29.2	29.2	49.2	29.5	0.0
LOS by Move:	A	A	A	B	B	B	A	C	C	D	C	A
HCM2kAvgQ:	0	0	0	8	7	8	0	5	5	2	12	0

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

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PEP Truck Haul Congestion
Existing With Truck Haul
AM Peak Hour

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

Intersection #4 SR-57 NB Ramps / Temple Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.458
Loss Time (sec): 6 Average Delay (sec/veh): 14.2
Optimal Cycle: 25 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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0	1	0	0 0 0	0	1	0 2	1 1	0	0 3 0 0
Volume Module:												
Base Vol:	410	0	291	0	0	0	0	799	261	0	1374	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:	410	0	291	0	0	0	0	799	261	0	1374	0
Added Vol:	0	0	0	0	0	0	0	0	46	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	410	0	291	0	0	0	0	799	307	0	1374	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00	0.96	0.96	0.96
PHF Volume:	426	0	302	0	0	0	0	831	0	0	1428	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	426	0	302	0	0	0	0	831	0	0	1428	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	426	0	302	0	0	0	0	831	0	0	1428	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.91	1.00	0.91	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.58	0.00	1.42	0.00	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00 0.00
Final Sat.:	2745	0	2451	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.16	0.00	0.12	0.00	0.00	0.00	0.00	0.16	0.00	0.00	0.28	0.00
Crit Moves:	****										****	
Green/Cycle:	0.34	0.00	0.34	0.00	0.00	0.00	0.00	0.60	0.00	0.00	0.60	0.00
Volume/Cap:	0.46	0.00	0.36	0.00	0.00	0.00	0.00	0.27	0.00	0.00	0.46	0.00
Delay/Veh:	26.1	0.0	25.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	11.1	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:	26.1	0.0	25.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	11.1	0.0
LOS by Move:	C	A	C	A	A	A	A	A	A	A	B	A
HCM2kAvgQ:	7	0	5	0	0	0	0	4	0	0	9	0

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

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PEP Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

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

Intersection #1 Bonita/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.699
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	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			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	0 1	2	0 1	0 1	2	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	92	26	90	292	17	158	174	924	46	27	634	154
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:	92	26	90	292	17	158	174	924	46	27	634	154
Added Vol:	0	0	46	0	0	0	0	0	0	46	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	92	26	136	292	17	158	174	924	46	73	634	154
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:	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
PHF Volume:	105	30	155	333	19	180	198	1054	52	83	723	176
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	105	30	155	333	19	180	198	1054	52	83	723	176
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:	105	30	155	333	19	180	198	1054	52	83	723	176
OvlAdjVol:						81						
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	2.00	1.00	1.00	2.00	1.91	0.09	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	3048	152	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.02	0.10	0.10	0.01	0.11	0.06	0.35	0.35	0.05	0.23	0.11
OvlAdjV/S:						0.05						
Crit Moves:			****	****				****		****		

PEP Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

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

Intersection #2 Valley/Temple

Cycle (sec):	100	Critical Vol./Cap.(X):	0.831
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	74	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	161	664	52	212	354	134	219	1045	181	80	657	108
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:	161	664	52	212	354	134	219	1045	181	80	657	108
Added Vol:	0	0	0	0	0	0	0	46	0	0	46	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	161	664	52	212	354	134	219	1091	181	80	703	108
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:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	180	741	58	237	395	150	244	1218	202	89	785	121
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	180	741	58	237	395	150	244	1218	202	89	785	121
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:	180	741	58	237	395	150	244	1218	202	89	785	121
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	2.00	1.00	1.00	2.00	1.00	1.00	2.57	0.43	1.00	2.60	0.40
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4117	683	1600	4161	639
Capacity Analysis Module:												
Vol/Sat:	0.11	0.23	0.04	0.15	0.12	0.09	0.15	0.30	0.30	0.06	0.19	0.19
Crit Moves:		****		****				****		****		

PEP Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

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

Intersection #3 SR-57 SB Ramps / Temple Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.874
Loss Time (sec): 6 Average Delay (sec/veh): 24.8
Optimal Cycle: 81 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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0	0	0 1	1	0 1!	0 1	0	0 2	1 0	1	0 3 0 1
Volume Module:												
Base Vol:	0	0	49	711	10	484	0	1824	27	43	541	115
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:	0	0	49	711	10	484	0	1824	27	43	541	115
Added Vol:	0	0	0	0	0	46	0	46	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	49	711	10	530	0	1870	27	43	541	115
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.00
PHF Volume:	0	0	53	774	11	577	0	2035	29	47	589	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	53	774	11	577	0	2035	29	47	589	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	0	0	53	774	11	577	0	2035	29	47	589	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	1.00	0.87	0.91	0.91	0.91	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.00	0.00	1.00	1.56	0.02	1.42	0.00	2.96	0.04	1.00	3.00	1.00
Final Sat.:	0	0	1644	2703	27	2455	0	5103	74	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.03	0.29	0.40	0.23	0.00	0.40	0.40	0.03	0.11	0.00
Crit Moves:					****			****		****		
Green/Cycle:	0.00	0.00	0.00	0.45	0.45	0.45	0.00	0.46	0.46	0.03	0.49	0.00
Volume/Cap:	0.00	0.00	xxxx	0.63	0.87	0.52	0.00	0.87	0.87	0.87	0.23	0.00
Delay/Veh:	0.0	0.0	0.0	21.5	30.5	19.7	0.0	28.5	28.5	126.1	15.0	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:	0.0	0.0	0.0	21.5	30.5	19.7	0.0	28.5	28.5	126.1	15.0	0.0
LOS by Move:	A	A	A	C	C	B	A	C	C	F	B	A
HCM2kAvgQ:	0	0	1	18	1	12	0	21	21	3	4	0

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

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PEP Truck Haul Congestion
Existing With Truck Haul
PM Peak Hour

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

Intersection #4 SR-57 NB Ramps / Temple Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 0.486
Loss Time (sec): 6 Average Delay (sec/veh): 9.1
Optimal Cycle: 27 Level Of Service: A

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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0	1	0	0 0 0	0	1	0 2	1 1	0	0 3 0 0
Volume Module:												
Base Vol:	135	0	260	0	0	0	0	1731	709	0	831	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:	135	0	260	0	0	0	0	1731	709	0	831	0
Added Vol:	0	0	0	0	0	0	0	0	46	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	135	0	260	0	0	0	0	1731	755	0	831	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:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.93
PHF Volume:	145	0	278	0	0	0	0	1853	0	0	890	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	145	0	278	0	0	0	0	1853	0	0	890	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	145	0	278	0	0	0	0	1853	0	0	890	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.89	1.00	0.89	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.34	0.00	1.66	0.00	0.00	0.00	0.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2258	0	2790	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.10	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.17	0.00
Crit Moves:			****					****				
Green/Cycle:	0.21	0.00	0.21	0.00	0.00	0.00	0.00	0.73	0.00	0.00	0.73	0.00
Volume/Cap:	0.31	0.00	0.49	0.00	0.00	0.00	0.00	0.49	0.00	0.00	0.23	0.00
Delay/Veh:	33.9	0.0	35.5	0.0	0.0	0.0	0.0	5.6	0.0	0.0	4.3	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:	33.9	0.0	35.5	0.0	0.0	0.0	0.0	5.6	0.0	0.0	4.3	0.0
LOS by Move:	C	A	D	A	A	A	A	A	A	A	A	A
HCM2kAvgQ:	3	0	5	0	0	0	0	9	0	0	3	0

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

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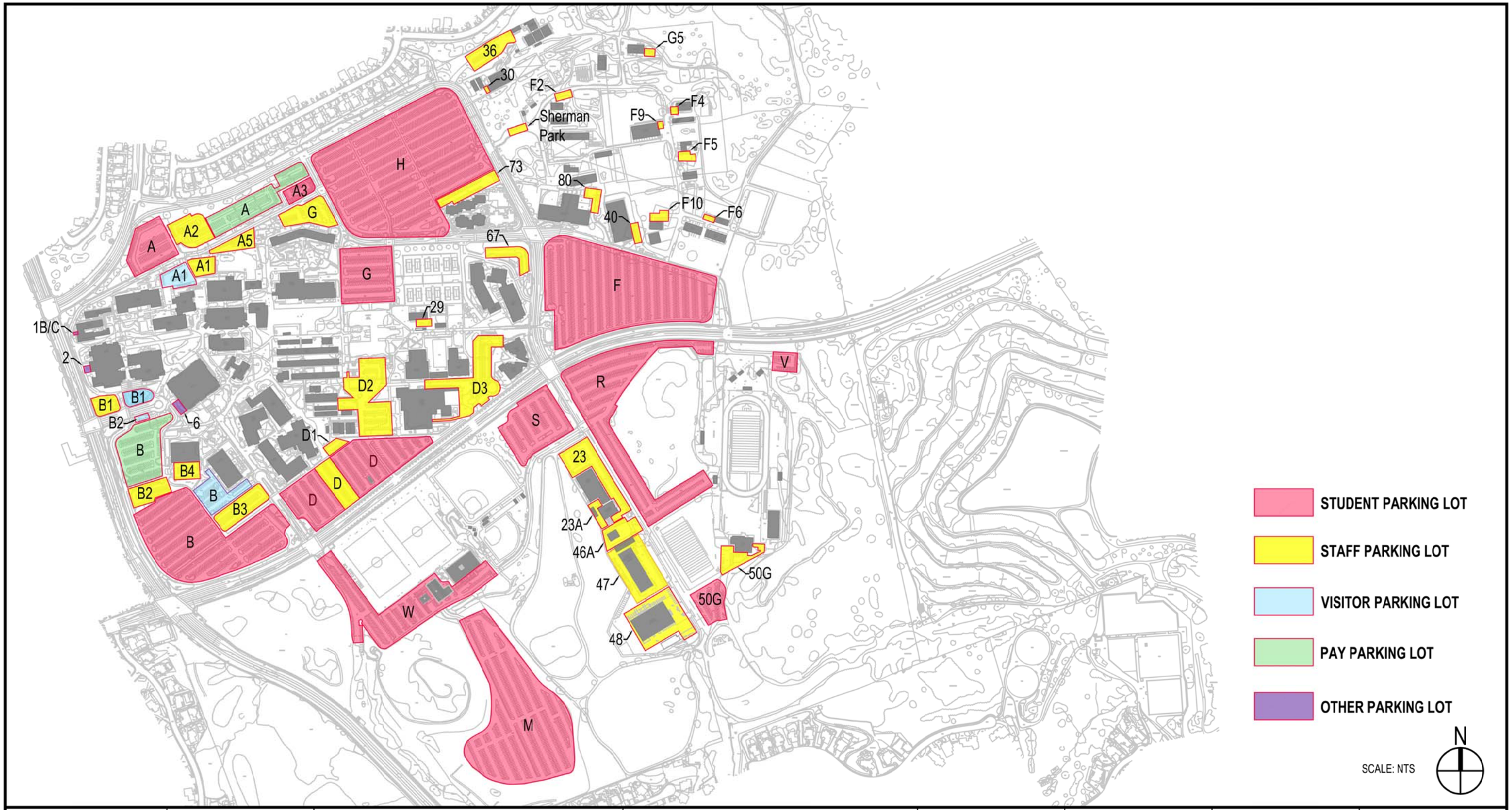

MT. SAC
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key plan:

general notes:

revisions:

MARK:	DATE:	DESCRIPTION:
1	04/12/16	Revised Paylot A to include Student Lot A3

drawing data:

DATE:	4/12/2016
SHEET SIZE:	11 X 17
FILENAME:	PARKINGSITE.dwg
DRAWN BY:	NK
CHECKED BY:	AK
COPYRIGHT:	MT. SAN ANTONIO COLLEGE

project title:

CAMPUS PARKING COUNT

sheet name:

CAMPUS PARKING LOTS

sheet number:

01

SHEET 1 OF 1

\\tfs1\FPM\Planning\CAMPUS PLANNING\Parking Counts\PARKINGSITE - WORKING.dwg, 4/12/2016 11:08:31 AM, akinkaid

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Mt. San Antonio College

Facilities Planning & Management
1100 North Grand Avenue •Walnut, CA 91789
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PARKING COUNTS

Updated 04/12/2016:ak

Lot Number	Staff	Student	Disabled	Paylot	10 min	15 min	20 min	30 min	Metered	Service	Construction	Motorcycle	EV [1]	Special	Notes	Total
A Pay Lot	0	0	0	213	0	0	0	0	0	0	0	0	0	0		**213**
A Student	0	165	0	0	0	0	0	0	0	0	0	0	0	0		**165**
A1 Staff	34	0	2	0	0	0	0	0	0	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Health Permit Required"	**37**
A1 Visitor	5	0	6	0	0	0	0	12	16	0	0	0	0	0		**39**
A2 Staff	92	0	0	0	0	0	0	0	0	0	0	0	0	0		**92**
A3 Student		34														**34**
A5 Staff	33	0	0	0	0	0	0	0	0	0	0	0	0	0		**33**
B Pay Lot	0	0	3	187	0	0	0	0	19	0	0	0	0	3	Special: When sign is in open position - "Board of Trustees Parking Only Permit Required", otherwise pay lot parking	**212**
B Student	0	756	0	0	0	0	0	0	0	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Health Permit Required"	**757**
B Visitor	20	0	8	0	0	0	0	22	20	2	0	0	0	2	(1) Special: "Reserved for Health Services - Medical Vehicles Only" (1) Special: "Public Safety Parking Only"	**74**
B1 Staff	28	0	0	0	0	0	0	0	0	0	0	0	0	0		**28**
B1 Visitor	0	0	2	0	0	0	0	19	0	0	0	0	0	0		**21**
B2 Visitor	0	0	0	0	5	0	0	0	0	0	0	0	0	0		**5**
B2 Staff	64	0	0	0	0	0	0	0	0	0	0	0	0	0		**64**
B3 Staff	118	0	0	0	0	0	0	0	0	0	0	0	0	1	Special: "Reserved for Outstanding Faculty Member of the Year Permit Required"	**119**
B4 Staff	16	0	0	0	0	0	0	0	0	1	0	0	0	5	(1) Special "Reserved Parking Permit ##### Required" (1) Special: "Loading and Unloading Only"	**22**
D Student	100	357	18	0	0	0	0	0	106	0	0	42	0	0		**623**
D1 Staff	18	0	0	0	0	0	0	0	0	0	0	0	0	0		**18**
D2 Staff	104	0	11	0	0	2	1	0	0	0	0	0	10	2	(1) Special: "Restricted Medical Parking Only - Special Health Services Permit Required" (1) Special: "Reserved for Outstanding Faculty Member of the Year"	**130**
D3 Staff	164	0	4	0	0	0	0	0	2	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Health Services Permit Required"	**171**
F Student	67	1,181	12	0	0	0	0	4	22	0	0	0	0	0		**1,286**

Lot Number	Staff	Student	Disabled	Paylot	10 min	15 min	20 min	30 min	Metered	Service	Construction	Motorcycle	EV [1]	Special	Notes	Total
G Staff	48	0	4	0	0	0	0	0	0	0	0	0	0	2	Special: "Restricted Parking Foundation Donors Only Special Permit Required"	**54**
G Student	0	166	22	0	0	0	0	0	25	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Health Permit Required"	**214**
H Student [2]	35	1,522	0	0	0	0	0	0	0	0	0	0	0	0		**1,557**
M Student	0	971	0	0	0	0	0	0	0	0	0	0	0	0		**971**
R Student	0	686	14	0	0	0	0	0	0	0	0	0	0	0		**700**
S Student	0	261	7	0	0	0	0	0	0	0	0	0	0	0		**268**
V Student	0	22	12	0	0	0	0	0	0	0	0	0	0	0		**34**
W Student [3]	25	304	10	0	0	0	0	0	0	0	16	0	0	0		**355**
Bldg. F2 Staff	6	0	0	0	0	0	0	2	0	0	0	0	0	0		**8**
Bldg. F4 Staff	0	0	2	0	0	0	0	0	0	0	0	0	0	0		**2**
Bldg. F5 Staff	6	0	4	0	0	0	0	0	0	0	0	0	0	0		**10**
Bldg. F6 Staff	1	0	2	0	0	0	0	0	0	0	0	0	0	0		**3**
Bldg. F9 Staff	0	0	1	0	0	0	0	0	0	0	0	0	0	0		**1**
Bldg. F10 Staff	0	0	2	0	0	0	0	0	0	0	0	0	0	12	Special: "48th Ag Association Staff Parking Only"	**14**
Bldg. G5 Staff	4	0	0	0	0	0	0	0	0	0	0	0	0	0		**4**
Bldg. 1B/C	0	0	0	0	0	1	0	0	0	0	0	0	0	0	"15 Minutes Loading and Unloading Zone Only"	**1**
Bldg. 2	0	0	0	0	0	0	0	0	0	2	0	0	0	0		**2**
Bldg. 6	0	0	0	0	0	0	0	0	0	7	0	0	0	0		**7**
Bldg. 23 Staff	131	0	5	0	0	2	0	0	0	0	0	0	0	4	Special: "Public Safety Vehicles Only"	**142**
Bldg. 23A Staff	10	0	0	0	0	0	0	0	0	0	0	0	0	0		**10**
Bldg. 29 Staff	2	0	0	0	0	0	0	0	0	1	0	0	0	2		**5**
Bldg. 30 Staff	0	0	2	0	0	0	0	0	0	0	0	0	0	0		**2**
Bldg. 36 Staff	72	0	2	0	0	0	0	3	8	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Healh Service Permit Required"	**86**
Bldg. 40 Staff	0	0	0	0	0	0	0	0	0	2	0	0	0	0		**2**
Bldg. 46A Staff	25	0	2	0	0	0	0	0	0	0	0	0	4	0		**31**
Bldg. 47 Staff	41	0	2	0	0	0	0	0	0	0	0	0	0	13	Special: "District Vehicles Only"	**56**
Bldg. 48 Staff	44	0	0	0	0	0	0	0	0	0	0	0	0	9	Special: Van #129, Van #134, Van #135, Van #136, Van #161, Van #194, Van #195, Van #196, Van #197	**53**
Bldg. 50G Staff	31	0	1	0	0	0	0	0	0	1	0	0	0	0		**33**
Bldg. 50G Student	0	86	1	0	0	0	0	0	4	0	0	0	0	1	Special: "Restricted Medical Parking Only - Special Healh Service Permit Required"	**92**
Bldg. 67 Staff	40	0	3	0	0	0	0	3	6	0	0	1	0	4	(1) Special: "Restricted Medical Parking Only - Special Health Services Permit Required" (1) Special: "Physician Parking Only" (1) Special: "Reserved for Health Services Ambulance Only" (1) Special: "Parking for Medical Services Only"	**57**

Lot Number	Staff	Student	Disabled	Paylot	10 min	15 min	20 min	30 min	Metered	Service	Construction	Motorcycle	EV [1]	Special	Notes	Total
Bldg. 73 Staff	23	0	3	0	0	0	0	0	0	0	0	0	0	19	(16) Special: "20 Minutes Child Drop Off Zone" (3) Special: "Low Emitting Fuel Efficient Vehicles Only"	**45**
Bldg. 80 Staff	8	0	6	0	0	0	0	0	0	0	0	0	0	0		**14**
Sherman Park	0	0	0	0	0	0	0	0	0	0	0	0	0	9	Special: "30 Minute Parking or Facilities Use" - "Staff or Student Permit Required"	**9**
TOTALS:	**1,415**	**6,511**	**173**	**400**	**5**	**5**	**1**	**65**	**228**	**16**	**16**	**43**	**14**	**93**		**8,985**

NOTES:

General: Metered parking stalls on Temple Avenue are not counted in campus total as they are on a city-owned street.

General: RV stalls are not counted.

General: If a lot had signage identifying its name, the name is used here. Otherwise lot names/numbers were assigned in order to identify each lot individually - the lot signage does not necessarily use these names/numbers.

[1] = Electric vehicles charging stalls

[2] = Lot H Student currently under thermal energy storage (TES) construction, but will be returned to pre-construction striping layout

[3] = Lot W - Building 44 currently under construction

Student Tranporation Fees

(April 14, 2016)

Foothill Transit Billing:

Period of MOU: From August 24, 2015 through August 29, 2016

Month	Number of Rides	Rate	Total
Aug 2015	44,769	$0.60	$ 26,861.40
Sep 2015	100,739	$0.60	$ 60,443.40
Oct 2015	104,987	$0.60	$ 62,992.20
Nov 2015	81,379	$0.60	$ 48,827.40
Dec 2015	47,276	$0.60	$ 28,365.60
		Fall 2015	**$ 227,490.00**
Jan 2016	55,459	$0.60	$ 33,275.40
Feb 2016 - Projected	57,811	$0.60	$ 34,686.60
Mar 2016 - Projected	85,281	$0.60	$ 51,168.60
April 2016 - Projected	88,726	$0.60	$ 53,235.60
May 2016 - Projected	75,281	$0.60	$ 45,168.60
June 2016 - Projected	55,366	$0.60	$ 33,219.60
July 2016 - Projected	62,593	$0.60	$ 37,555.80
Aug 2016 - Projected	10,000	$0.60	$ 6,000.00
		Spring 2016	**$ 294,310.20**
		Total	**$ 521,800.20**

$ 478,244.40 **NTE (Not to Exceed) Projected to be reached on June 2016 Foothill Transit will Stop Billing when NTE is reached.**

Per Banner System as of April 11, 2016:

Last Day to Register for a Fall 2015 Class: 11/23/2015

Last Day to Register for a Spring 2015 Class: **5/23/2016** **Date for Final Reconciliation**

Detail Code: TRAP Part-Time Students

Detail Code: TRAF Full-Time Students

	Term		Total Assessed	Uncollected	Mt. SAC Total Collected	Per Foothill Transit	Difference
Part-Time Students: $8	Fall 2015	201520	$ 151,592.00	$ 4,481.00	$ 147,111.00		
Full-Time Students: $9	Fall 2015	201520	$ 95,778.00	$ 431.00	$ 95,347.00		
			$ 247,370.00	**$ 4,912.00**	**$ 242,458.00**	**$ 227,490.00**	**$ 14,968.00**

	Term		Total Assessed	Uncollected	Total Collected		
Part-Time Students: $8	Spring	201540	$ 149,264.00	$ 15,031.00	$ 134,233.00		
Full-Time Students: $9	Spring	201540	$ 85,365.00	$ 2,863.15	$ 82,501.85		
			$ 234,629.00	**$ 17,894.15**	**$ 216,734.85**	**$ 294,310.20**	**$ (77,575.35)**
		Grand Total	**$ 481,999.00**	**$ 22,806.15**	**$ 459,192.85**	**$ 521,800.20**	**$ (62,607.35)**

Air Quality Assessment for the Mt. San Antonio College Facilities Master Plan Update and Physical Education Projects

Report #16-008AQ
April 15, 2016

Prepared For:

Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

Prepared By:

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1.0 EXISTING AIR QUALITY

1.1 Project Description

Mt. San Antonio College is located in the City of Walnut on over 420 acres. It has an estimated 2014-2015 fall enrollment of 35,986 students (headcount). The college has proposed a 2015 Facilities Master Plan Update (FMPU), and the corresponding Land Use Plan is shown as in Exhibit 1. The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue as shown in Exhibit 2. The existing stadium will be demolished and a new stadium built onsite. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks 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.

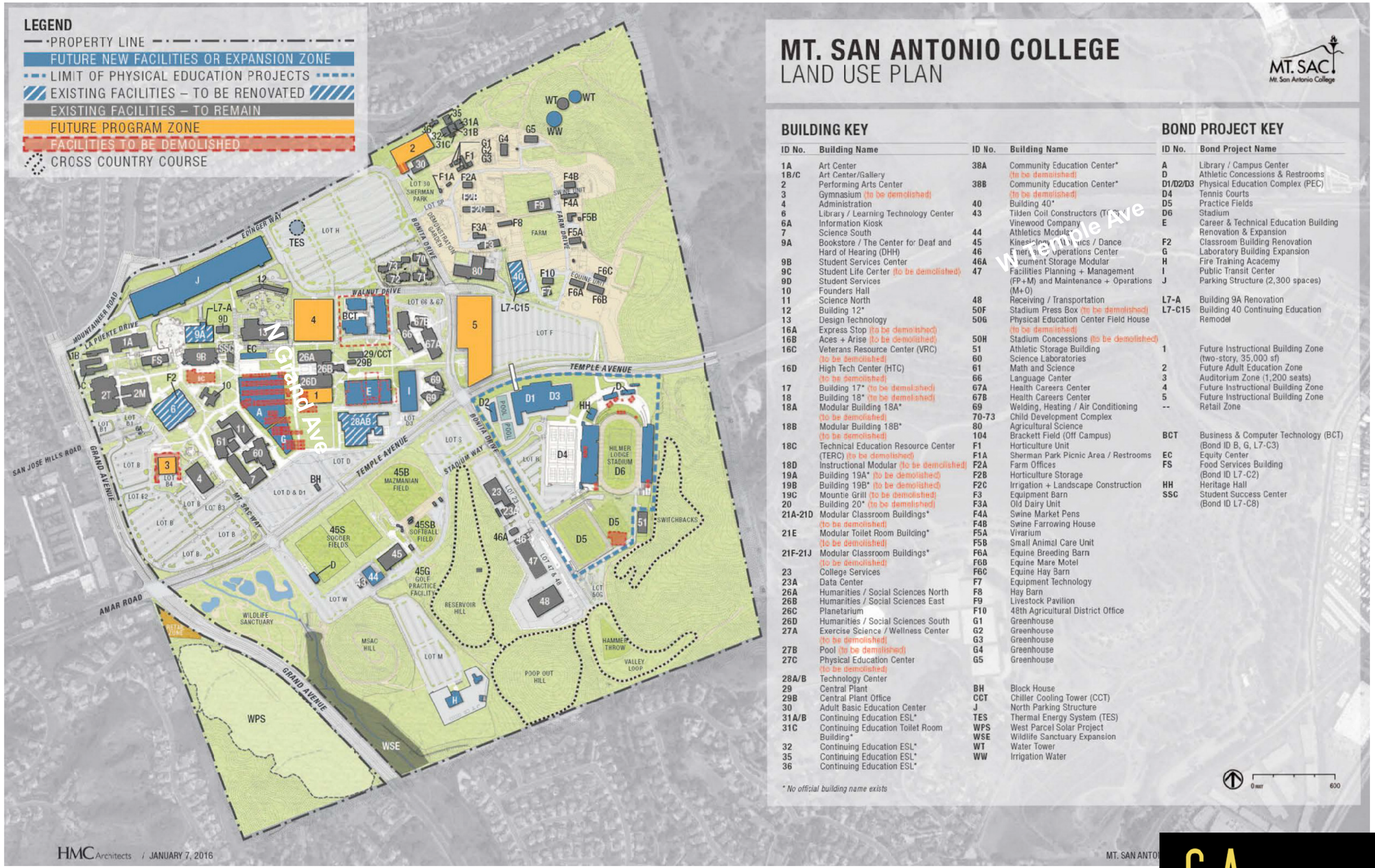
This report analyzes the potential air quality impacts associated with this project. Regional air quality impacts from construction and operation of the proposed project are analyzed, as are potential local air quality impacts.

1.2 Local, State, and Federal Air Quality Agencies

The proposed project is located in the South Coast Air Basin (SCAB). The SCAB is comprised of parts of Los Angeles, Riverside and San Bernardino counties and all of Orange County. The basin is bounded on the west by the Pacific Ocean and surrounded on the other sides by mountains. To the north lie the San Gabriel Mountains, to the north and east the San Bernardino Mountains, to the southeast the San Jacinto Mountains and to the south the Santa Ana Mountains. The basin forms a low plain and the mountains channel and confine airflow, which trap air pollutants.

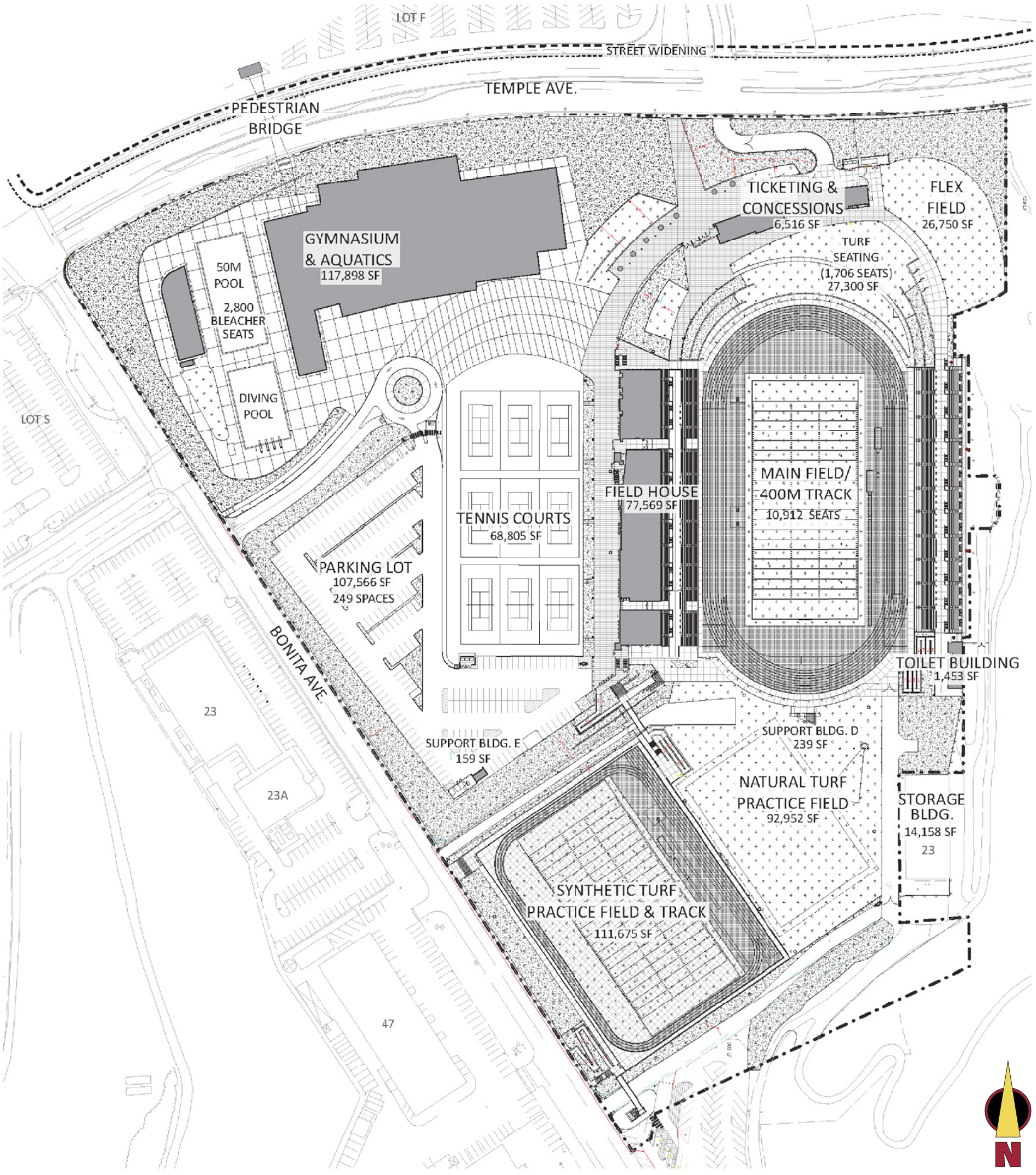
The primary agencies responsible for regulations to improve air quality in the SCAB are the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). The Southern California Association of Governments (SCAG) is an important partner to the SCAQMD, as it is the designated metropolitan planning authority for the area and produces estimates of anticipated future growth and vehicular travel in the basin that are used for air quality planning. The SCAQMD sets and enforces regulations for non-vehicular sources of air pollution in the basin.

Exhibit 1 - Land Use Plan for the 2015 FMPU



G&A

Exhibit 2 - Physical Education Projects



G&A

The U.S. Environmental Protection Agency (U.S. EPA) is the primary federal agency for regulating air quality. The EPA implements the provisions of the Federal Clean Air Act (FCAA). This Act establishes national ambient air quality standards (NAAQS) that are applicable nationwide. The EPA designates areas with pollutant concentrations that do not meet the NAAQS as non-attainment areas for each criteria pollutant. States are required by the FCAA to prepare State Implementation Plans (SIP) for designated non-attainment areas. The SIP is required to demonstrate how the areas will attain the NAAQS by the prescribed deadlines and what measures will be required to attain the standards. The EPA also oversees implementation of the prescribed measures. Areas that achieve the NAAQS after a non-attainment designation are redesignated as maintenance areas and must have approved Maintenance Plans to ensure continued attainment of the NAAQS.

The California Clean Air Act (CCAA) required all air pollution control districts in the state to prepare a plan to reduce pollutant concentrations exceeding the CAAQS and ultimately achieves the CAAQS. The districts are required to review and revise these plans every three years. The SCAQMD satisfies this requirement through the publication of an Air Quality Management Plan (AQMP). The AQMP is developed by SCAQMD and SCAG in coordination with local governments and the private sector. The AQMP is incorporated into the SIP by CARB to satisfy the FCAA requirements discussed above. The AQMP is discussed further in Section 1.5.

1.3 Criteria Pollutants, Health Effects, and Standards

Under the Federal Clean Air Act (FCAA), the U.S. EPA has established National Ambient Air Quality Standards (NAAQS) for six major pollutants; ozone (O_3), respirable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These six air pollutants are often referred to as the criteria pollutants. The NAAQS are two tiered: primary, to protect public health, and secondary, to prevent degradation to the environment (i.e., impairment of visibility, damage to vegetation and property).

Under the California Clean Air Act (CCAA), the California Air Resources Board has established California Ambient Air Quality Standards (CAAQS) to protect the health and welfare of Californians. State standards have been established for the six criteria pollutants as well as four additional pollutants; visibility reducing particles, sulfates, hydrogen sulfide, and vinyl chloride. Exhibit 3 presents the state and national ambient air quality standards.

Exhibit 3 - Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

Source: California Air Resources Board website 10/1/15

1.4 Attainment Designations

Based on monitored air pollutant concentrations, the U.S. EPA and CARB designate areas relative to their status in attaining the NAAQS and CAAQS respectively. Table 1 lists the current attainment designations for the SCAB. For the Federal standards, the required attainment date is also shown. The "Unclassified" designation indicates that the air quality data for the area does not support a designation of attainment or nonattainment.

Table 1 Designations of Criteria Pollutants for the SCAB

Pollutant	Federal	State
Ozone (O_3)	Extreme Nonattainment (2023)	Nonattainment
Respirable Particulate Matter (PM_{10})	Attainment/Maintenance (2013)	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Moderate Nonattainment (2015)	Nonattainment
Carbon Monoxide (CO)	Attainment/Maintenance (2000)	Attainment
Nitrogen Dioxide (NO_2)	Attainment/Maintenance (1995)	Attainment
Sulfur Dioxide (SO_2)	Attainment	Attainment
Lead	Attainment	Attainment
Visibility Reducing Particles	n/a	Unclassified
Sulfates	n/a	Unclassified
Hydrogen Sulfide	n/a	Attainment
Vinyl Chloride	n/a	Attainment

Table 1 shows that the U.S. EPA has designated SCAB as Extreme Non-attainment for ozone, Attainment/Maintenance for PM_{10}, Moderate Non-attainment for $PM_{2.5}$, and attainment/maintenance for CO and NO_2. The basin has been designated by the state as non-attainment for ozone, PM_{10}, and $PM_{2.5}$. For the federal designations, the qualifiers, Extreme and Moderate, affect the required attainment dates as the federal regulations have different requirements for areas that exceed the standards by greater amounts at the time of attainment/non-attainment designation. The SCAB is designated as in attainment of the Federal SO_2 and lead NAAQS as well as the state CO, NO_2, SO_2, lead, hydrogen sulfide, and vinyl chloride CAAQS.

Table 1 shows that SCAB is designated as in attainment of the SO_2 and lead NAAQS as well as the state CO, NO_2, SO_2, lead, hydrogen sulfide, and vinyl chloride CAAQS. Generally, these pollutants are not considered a concern in the SCAB.

1.5 Air Quality Management Plan (AQMP)

As discussed above, the CAA requires plans to demonstrate attainment of the NAAQS for which an area is designated as nonattainment. Further, the CCAA requires SCAQMD to revise its plan to reduce pollutant concentrations exceeding the CAAQS every three years. In the SCAB, SCAQMD and SCAG, in coordination with local governments and the private sector, develop the Air Quality Management Plan (AQMP) for the air basin to satisfy these

requirements. The AQMP is the most important air management document for the basin because it provides the blueprint for meeting state and federal ambient air quality standards.

On December 7, 2012, the 2012 AQMP was adopted by the SCAQMD Governing Board. The primary task of the 2012 AQMP is to bring the basin into attainment with federal health-based standards for unhealthful fine particulate matter (PM2.5) by 2014. The document states that to have any reasonable expectation of meeting the 2023 ozone deadline, the scope and pace of continued air quality improvement must greatly intensify.

The SCAQMD is in the process of developing the 2016 AQMP, which will be a comprehensive and integrated plan primarily focused on addressing the ozone and PM2.5 standards. The upcoming 2016 AQMP will develop integrated strategies and measures to meet the following NAAQS:

- 8-hour Ozone by 2032
- Annual PM2.5 by 2021-2025
- 1-hour Ozone by 2023
- 24-hour PM2.5 by 2019

The draft 2016 AQMP is expected to be released in early 2016. The current schedule shows the SCAQMD Governing Board adopting the 2016 AQMP in April 2016.

1.6 Climate

The climate in and around the project area, as with all of Southern California, is controlled largely by the strength and position of the subtropical high-pressure cell over the Pacific Ocean. It maintains moderate temperatures and comfortable humidity, and limits precipitation to a few storms during the winter "wet" season. Temperatures are normally mild, excepting the summer months, which commonly bring substantially higher temperatures. In all portions of the basin, temperatures well above 100 degrees F. have been recorded in recent years. The annual average temperature in the basin is approximately 62 degrees Fahrenheit.

Winds in the project area are usually driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling towards the sea. Wind direction will be altered by local canyons, with wind tending to flow parallel to the canyons. During the transition period from one wind pattern to the other, the dominant wind direction rotates into the south and causes a minor wind direction maximum from the south. The frequency of calm winds (less than 2 miles per hour) is less than 10 percent. Therefore, there is little stagnation in the project vicinity, especially during busy daytime traffic hours.

Southern California frequently has temperature inversions, which inhibit the dispersion of pollutants. Inversions may be either ground based or elevated. Grounds based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold, early winter

mornings. Under conditions of a ground-based inversion, very little mixing or turbulence occurs, and high concentrations of primary pollutants may occur local to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversions act as a lid or upper boundary and restrict vertical mixing. Below the elevated inversion, dispersion is not restricted. Mixing heights for elevated inversions are lower in the summer and more persistent. This low summer inversion puts a lid over the South Coast Air Basin (SCAB) and is responsible for the high levels of ozone observed during summer months in the air basin.

1.7 Monitored Air Quality

Air quality at any site is dependent on the regional air quality and local pollutant sources. Regional air quality is determined by the release of pollutants throughout the air basin. Estimates for the SCAB have been made for existing emissions ("Final 2012 Air Quality Management Plan", February 2013). The data indicate that on-road (e.g.; automobiles, busses and trucks) and off-road (e.g.; trains, ships, and construction equipment) mobile sources are the major source of current emissions in the SCAB. Mobile sources account for approximately 59% of VOC emissions, 88% of NOx emissions, 50% of direct PM2.5 emissions, 75% of SOx emissions and 95% of CO emissions. Area sources (e.g., architectural coatings, residential water heaters, and consumer products) account for approximately 36% of VOC emissions and 39% of direct $PM_{2.5}$ emissions. Point sources (e.g., chemical manufacturing, petroleum production, and electric utilities) account for approximately 23% of SOx emissions. Entrained road dust account for approximately 10% of direct PM2.5 emissions.

The SCAQMD has divided the SCAB into 38 air-monitoring areas with a designated ambient air monitoring station in most areas. The project is in the Pomona/Walnut Valley Source-Receptor Area (SRA) 10. The Pomona monitoring station is the representative facility for SRA 10. The data collected at this station is considered representative of the air quality experienced in the vicinity of the project. The air pollutants measured at the Pomona station include ozone and carbon monoxide (CO). The nearest station that monitors particulates is the Glendora station. The air quality data monitored from 2012 to 2014 are presented in Table 2 (2015 data has not been released yet). The air quality data monitored were obtained from the CARB air quality data website (www.arb.ca.gov/adam/).

Table 2 Air Quality Levels Measured at the Pomona/Glendora Stations

Pollutant	California Standard	National Standard	Year	Max. Level	Days State Standard Exceeded	Days National Standard Exceeded
Ozone	0.09 ppm	None	2014	0.123	22	0
1 Hour			2013	0.125	12	0
Average			2012	0.117	21	0
Ozone	0.070 ppm	0.08 ppm[4]	2014	0.099	56	33
8 Hour			2013	0.099	22	15
Average			2012	0.092	30	15
CO	9.0 ppm	9 ppm	2014	n/a	n/a	n/a
8 Hour			2013	n/a	n/a	n/a
Average			2012	1.47	0	0
Fine	None	35 µg/m^3	2014	53.5	*	*
Particulates			2013	78.7	*	*
$PM_{2.5}$			2012	38.0	*	*
(24 Hour)						
Fine	12 µg/m^3	12 µg/m^3	2014	9.4	0	0
Particulates			2013	9.7	0	0
$PM_{2.5}$			2012	*	*	*
(Annual)						
Respirable	50 µg/m^3	150 µg/m^3	2014	78.0	*	0
Particulates			2013	100.7	*	0
PM_{10}			2012	75.8	*	0
24 Hour Average						
Respirable	20 µg/m^3	35 µg/m^3	2014	33.6	No	No
Particulates			2013	30.6	No	No
PM_{10}			2012	29.4	No	No
AAM						

n/a – data not available

* Insufficient data available to determine the value

Source: CARB Air Quality Data Statistics web site www.arb.ca.gov/adam/ accessed 1/27/2016

The Pomona and Glendora monitoring data presented in Table 2 show that ozone is the air pollutant of primary concern in the project area. The Federal 8-hour ozone standard was exceeded between 15 and 33 days per year for the period between 2012 and 2014. Insufficient data is available to determine the seriousness of particulate levels in the area. The Federal standards for PM10 do not appear to be violated in the area.

1.8 Existing Campus Emissions

Existing campus emissions were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). The model calculates emissions for construction and operation of various projects. For campus emissions, the model uses the "headcount" or student enrollment data. For the existing baseline case, the headcount is 35,986.

CalEEMod calculates maximum daily emissions for the summertime and wintertime periods. The results presented below are from the summer or winter emissions, whichever are the higher emissions. Output files from the CalEEMod program are presented in the appendix. Table 3 presents the results of the CalEEMod model showing the maximum daily air pollutant emissions projected for the existing academic year. The specific data utilized in calculating the emissions are provided in the appendix.

Table 3 Existing Campus Emissions (pounds per day)

	ROG	NOx	CO	SOx	PM10	PM2.5
Area	41.5	0.0	3.8	0.0	0.0	0.0
Energy	1.3	12.0	10.1	0.1	0.9	0.9
Mobile	178.6	495.2	1917.7	3.9	283.5	80.3
Total	**221.4**	**507.2**	**1931.6**	**4.0**	**284.4**	**81.2**

Mobile emissions are the most significant category of emissions. These emissions represent vehicular emissions from students and teachers traveling to the campus. Mobile emissions represent almost 98% of the total campus emissions. Area source emissions represent emissions from painting, consumer products (e.g., using aerosol sprays), and landscaping activities.

2.0 POTENTIAL AIR QUALITY IMPACTS

Air quality impacts are usually divided into short term and long term. Short-term impacts are usually the result of construction or grading operations. Long-term impacts are associated with the operation of the proposed project. The analysis of potential air impacts is further divided into those associated with the 2015 FMPU projects and the PEP.

2.1 Thresholds of Significance

2.1.1 Regional Air Quality

In their "1993 CEQA Air Quality Handbook", the SCAQMD has established significance thresholds to assess the impact of project related air pollutant emissions. Table 4 presents these significance thresholds. There are separate thresholds for short-term construction and long-term operational emissions. A project with daily emission rates below these thresholds are considered to have a less than significant effect on air quality. It should be noted the thresholds recommended by the SCAQMD are very low and subject to controversy. It is up to the individual lead agencies to determine if the SCAQMD thresholds are appropriate for their projects.

Table 4 SCAQMD Regional Pollutant Emission Thresholds of Significance

	Pollutant Emissions (lbs./day)					
	CO	**ROG**	**NOx**	**PM10**	**PM2.5**	**SOx**
Construction	*550*	*75*	*100*	*150*	*55*	*150*
Operation	*550*	*55*	*55*	*150*	*55*	*150*

2.1.2 Localized Significance Thresholds

As part of the SCAQMD's environmental justice program, attention was focused on localized effects of air quality. In accordance with Governing Board direction, SCAQMD staff developed localized significance threshold (LST) methodology and mass rate look-up tables by Source Receptor Area (SRA) that can be used to determine whether or not a project may generate significant adverse localized air quality impacts. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard, and are developed based on the ambient concentrations of that pollutant for each source receptor area. The LST methodology is described in "Final Localized Significance Threshold Methodology" updated in 2009 by the SCAQMD and is available at the SCAQMD website (http://aqmd.gov/ceqa/handbook/LST/LST.html).

The LST mass rate look-up tables provided by the SCAQMD allow one to determine if the daily emissions for proposed construction or operational activities could result in significant localized air quality impacts. If the calculated on-site emissions for the proposed construction

or operational activities are below the LST emission levels found on the LST mass rate look-up tables and no potentially significant impacts are found to be associated with other environmental issues, then the proposed construction or operation activity is not significant for local air quality.

The LST mass rate look-up tables are applicable to the following pollutants only: oxides of nitrogen (NO_x), carbon monoxide (CO), particulate matter less than 10 microns in aerodynamic diameter (PM_{10}), and particulate matter less than 2.5 microns ($PM_{2.5}$). LSTs are derived based on the location of the activity (i.e., the source/receptor area); the emission rates of NO_x, CO, $PM_{2.5}$ and PM_{10}; and the distance to the nearest exposed individual.

The LST methodology presents mass emission rates for each SRA, project sizes of 1, 2, and 5 acres, and nearest receptor distances of 25, 50, 100, 200, and 500 meters. For project sizes between the values given, or with receptors at distances between the given receptors, the methodology uses linear interpolation to determine the thresholds. If receptors are within 25 meters of the site, the methodology document says that the threshold for the 25-meter distance should be used. The threshold levels varying depending on the size of the project and the distance to the receptor. Therefore, threshold levels need to be calculated on a project-by-project basis.

2.2 The 2015 Facility Master Plan Update (FMPU)

Construction emissions, operational emission changes, and compliance with the Air Quality Management Planning are considered in Section 2.2.

2.2.1 Construction Emissions

Construction emissions for the 2015 FMPU are first considered. Since construction schedules have not been developed for most of the projects in the FMPU, the emissions potentially generated by the FMPU are considered for various scenarios. More detailed information has been developed for the two of the larger projects covered in the FMPU; specifically, Buildings A and G. Construction emissions for PEP are addressed in more detail in Sections 2.3.1 and 2.3.2.

2.2.1.1 *Overall Construction Emissions*

The long-term buildout of the 2015 FMPU will result in new construction of 454,485 square feet (including PEP). To make room for some of the new construction, demolition of some existing buildings is necessary. The FMPU indicates that approximately 122,976 square feet will be demolished.

Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). CalEEMod considers the following phases in its calculation of construction emissions; demolition, site preparation, grading, building construction, paving, and painting. Demolition quantities, construction quantities, the appropriate number of acres, and other key elements of the project were input

into the CalEEMod to generate the estimate of emissions. CalEEMod default values for the construction phases were used since construction phasing has not been established. Some parts of the FMPU may be completed by 2017 while other parts would not be completed until 2020 or 2025. Therefore, the entire FMPU (excluding PEP) was modeled using early years (e.g., 2018) since the emissions factors for heavy equipment decrease slightly for later years. It was also assumed that the overlap between construction phases would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading to reduce particulate emissions. CalEEMod printouts are included in the Appendix.

Table 5 presents the results of the total emission calculations for the construction activities discussed above. The first lines of the table present the total emissions generated by the buildout and associated demolition of the FMPU (excluding PEP), then the emissions for PEP Phases 1 and 2, and finally the total emissions for everything combined. The following two lines in Table 5 average the total emissions over a 5 year and 10 year period assuming a 5-day workweek. The 5-year and 10 averaging periods loosely represent a best case and worst-case approach for construction on campus. A ten-year averaging period would extend past 2025, which is probably a realistic construction period for the FMPU. The 5-year average represents a much quicker rate of construction, and it is very unlikely that the FMPU would be built out within this time period. Finally, it needs to be emphasized that the construction emissions will vary for different phases of construction, and from project to project. For this reason specific projects are also assessed in the report; specifically Building G (see Section 2.2.1.2), Building A (see Section 2.2.1.3), PEP Phase 1 (see Section 2.3.1), and PEP Phase 2 (see Section 2.3.2).

Table 5 Construction Emissions for the 2015 FMPU

	ROG	NOx	CO	SOx	PM10	PM2.5
			Pollutant Emissions (lbs.)			
FMPU (Excluding PEP)	2,922	9,526	8,672	14	1,093	695
PEP Phase 1	12,130	23,763	32,064	63	4,438	1,942
PEP Phase 2	2,219	6,537	6,858	12	701	442
Total Construction	17,271	39,826	47,594	90	6,232	3,079
			Pollutant Emissions (lbs. per day)			
Average Over 5 Years	13.2	30.6	36.5	0.1	4.8	2.4
Average Over 10 Years	6.6	15.3	18.3	0.0	2.4	1.2
SCQAMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

The projected construction emissions shown in Table 5 are all well below the significance thresholds established by the SCAQMD. This indicates that the construction emissions will generally not impact the regional air quality and that additional global mitigation measures will not be needed outside of those already required by the Mitigation Monitoring Program. It should also be pointed out that the construction emissions generated during PEP Phase 1 are substantially higher than generated by the rest of the FMPU.

2.2.1.2 *Construction Emissions for Building G*

Construction of Building G, the Laboratory Building Expansion, will include construction of an approximately 50,000 gross square foot (gsf) building by 2020. The construction of Building G, and later the adjacent Building A, will require the demolition of Buildings 16, 17, 18, 19 and 21. It was assumed that all of these buildings would be demolished as part of the Building G construction.

Emissions during construction were calculated using the California Emissions Estimator Model (CalEEMod). The appropriate number of acres, square footage of demolition, square footage of Building G, and other key elements of the project were input into the CalEEMod to generate the estimate of emissions. It was also assumed that the overlap between construction phases would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading. CalEEMod printouts are included in the Appendix.

Table 6 presents the results of the emissions calculations for the construction activities discussed above. The highest daily construction emissions are presented below and represent a worst-case scenario. The projected emissions are compared to the Significance Thresholds described in Section 2.1.2.

Table 6 Peak Construction Emissions for Building G

	Pollutant Emissions (Pounds Per Day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Demolition	3.6	37.0	34.2	0.1	3.4	1.9
Site Preparation	4.1	42.6	35.6	0.0	10.5	6.5
Grading	2.8	28.4	24.1	0.0	4.7	3.0
Building Const.	2.5	21.6	18.9	0.0	1.6	1.3
Paving	1.4	13.8	15.0	0.0	0.9	0.7
Architectural Coating	19.6	1.7	2.0	0.0	0.2	0.1
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

The projected construction emissions are all well below the significance thresholds established by the SCAQMD for all phases of construction and all pollutants. The regional

impacts of the construction of Building G will be less than significant, and additional mitigation measures will not be required.

The localized impact of the project was also assessed using the SCAQMD's methodology. This analysis determines if there will be impact on adjacent residential area due to the construction of the project. The nearest off-site residential area is about 978 feet north of the construction and demolition area. The on-site emissions were calculated utilizing CalEEMod. The emissions presented in Table 7 are those that would be emitted from activity within the project site. The total on-site construction emissions are compared to the Localized Significance Thresholds (LSTs) described in Section 2.1.2. Specific thresholds were calculated for the distance associated with this site and size of site. Worksheets showing the emission calculations are presented in the appendix.

Table 7 On-Site Construction Emissions for Building G

	Daily Emissions (lbs./day)			
Activity	NOx	CO	PM10	PM2.5
Demolition	33.9	30.8	2.9	1.7
Site Preparation	42.5	34.8	10.3	6.4
Grading	28.4	23.4	4.5	2.9
Building Construction	21.0	17.1	1.3	1.2
Paving	13.8	14.4	0.7	0.7
Architectural Coating	1.7	1.8	0.1	0.1
LST Thresholds	*509*	*12,386*	*112*	*49*
Exceed Threshold?	*No*	*No*	*No*	*No*

None of the emissions will exceed the LST significance thresholds. Only watering twice per day during earth moving operations and use of low VOC paints has been assumed, and this is required by the Mitigation Monitoring Program. Therefore, the impact of demolition and construction for Building G on nearby off-site sensitive receptor areas will be less than significant.

2.2.1.3 *Construction Emissions for Building A*

Construction of Building A, the Library/Campus Center, will include construction of an approximately 167,200 gross square foot (gsf) building by 2025. Demolition will be required to clear the site for Building A, but this was assumed to occur during the construction of Building G.

Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). The appropriate number of acres, square footage of Building A, and other key elements of the project were input into the CalEEMod to generate the estimate of emissions. It was also assumed that the overlap between construction phases

would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading. CalEEMod printouts are included in the Appendix.

Table 8 presents the results of the emissions calculations for the construction activities discussed above. The highest daily construction emissions are presented below and represent a worst-case scenario. The projected emissions are compared to the Significance Thresholds described in Section 2.1.2.

Table 8 Peak Construction Emissions for Building A

	Pollutant Emissions (Pounds Per Day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Demolition	1.4	12.4	16.1	0.0	0.7	0.5
Site Preparation	1.1	10.2	11.4	0.0	3.2	1.8
Grading	0.9	8.4	9.4	0.0	2.7	1.5
Building Const.	1.4	10.7	13.8	0.0	0.7	0.5
Paving	0.6	5.3	9.1	0.0	0.4	0.3
Architectural Coating	34.9	1.2	1.9	0.0	0.1	0.1
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

The projected construction emissions are all well below the significance thresholds established by the SCAQMD for all phases of construction and all pollutants. The regional impacts of the construction of Building A will be less than significant, and additional mitigation measures will not be required.

The localized impact of the project was also assessed using the SCAQMD's methodology. This analysis determines if there will be impact on adjacent residential area due to the construction of the project. The nearest off-site residential area is about 978 feet north of the construction/demolition area. The on-site emissions were calculated utilizing CalEEMod. The emissions presented in Table 9 are those that would be emitted from activity within the project site. The total on-site construction emissions are compared to the Localized Significance Thresholds (LSTs) described in Section 2.1.2. Worksheets showing the emission calculations are presented in the appendix.

Table 9 On-Site Construction Emissions for Building A

Activity	Daily Emissions (lbs./day) NOx	CO	PM10	PM2.5
Demolition	12.3	15.7	0.5	0.5
Site Preparation	10.1	11.2	3.1	1.8
Grading	8.3	9.2	2.6	1.5
Building Construction	10.4	12.4	0.4	0.4
Paving	5.3	8.7	0.2	0.2
Architectural Coating	1.1	1.8	0.1	0.1
LST Thresholds	*509*	*12,386*	*112*	*49*
Exceed Threshold?	*No*	*No*	*No*	*No*

None of the emissions will exceed the LST significance thresholds. Only watering twice per day during earth moving operations and use of low VOC paints has been assumed, and this is required by the Mitigation Monitoring Program. Therefore, the impact of the construction of Building A on nearby off-site sensitive receptor areas will be less than significant.

2.2.2 Operational Emissions

The realization of the 2015 FMPU will result in increases in student enrollment (headcount) as additional and newer facilities are brought online. By the academic year 2020-2021 the headcount is anticipated to increase 3,745 over baseline up to a total headcount of 39,731. By the academic year 2025-2026, the headcount is anticipated to increase to 43,139, which is an increase of 7,153 over baseline.

The CalEEMod was used to project the emissions for the 2020 and 2025 academic years. The results presented below are from the summer or winter emissions, whichever are the higher emissions. Output files from the CalEEMod program are presented in the appendix. Table 10 presents the results of the CalEEMod model showing the maximum daily air pollutant emissions projected for the existing, 2020, and 2025 academic years. The change between the existing (baseline) case and the future academic years are also shown. A negative number indicates a decrease in emissions, while a positive number indicates an increase over existing levels. The change in emissions is also compared to the SCAQMD thresholds in the table. The specific data utilized in calculating the emissions are provided in the appendix.

Table 10 Campus Emissions for Future Years (pounds per day)

	ROG	NOx	CO	SOx	PM10	PM2.5
Existing	221.4	507.2	1,932	4.0	284.4	81.2
Year 2020	186.2	384.6	1,485	4.4	312.6	88.3
Change	-35.2	-122.6	-447	0.4	28.2	7.0
Year 2025	176.8	299.3	1,315	4.9	339.7	95.9
Change	-44.6	-207.9	-617	0.9	55.2	14.7
SCAQMD Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Exceed Thresholds for 2020	*No*	*No*	*No*	*No*	*No*	*No*
Exceed Thresholds for 2025	*No*	*No*	*No*	*No*	*No*	*No*

The analysis indicates that the emissions of ROG, NOx, and CO will decrease in future years even though the headcount will increase. The vehicular emission rates will continue to decrease in future for these emissions, and will more than offset the increase in headcount. Emissions of SOx, PM10, and PM2.5 will increase slightly in future years. Again the emission rates for these pollutants will go down in future years, offsetting a portion of the increase in emissions caused by increasing headcount. Most importantly, all emission changes are less than the SCAQMD thresholds, and no impact on regional air quality is projected.

2.2.3 Local Air Quality at Intersections

To assess local air quality impacts, the peak hour traffic are related to the Ambient Air Quality Standards, which are the significance threshold for this type of impact. Because the area is in attainment of the CO state standards, exceedances of these standards, 20 ppm for 1-hour carbon monoxide (CO) concentration levels and 9 ppm for 8-hour CO concentration levels, would result in a significant local air quality impact. The air basin has reached attainment of the CO air quality standards and CO analysis is generally no longer required by the SCAQMD.

CO modeling was originally performed at four intersections considered to be the worst-case intersections in the South Coast Air Basin as part of the 2003 AQMP to demonstrate attainment of the federal CO standards. This CO modeling is included in the EPA approved 2005 SCAB CO Redesignation Request. The four intersections included, Wilshire at Veteran, Sunset at Highland, La Cienega at Century, and Long Beach at Imperial. The highest peak a.m. traffic volume was 8,062 (occurred at Wilshire and Veteran), while the highest peak p.m. volume was 8,674 (occurred at La Cienega and Century). Table 4-10 of Appendix V, Section

4 of the 2005 SCAB CO Redesignation Request shows that the modeled 1-hour average concentrations at these four intersections for 2002 conditions are below the 8-hour standard of 9 ppm. The highest modeled 1-hour average concentration of 4.6 ppm took place at the Wilshire and Veteran intersection, and is well below the State standard of 20 ppm and the Federal standard of 35 ppm.

Traffic data prepared for the project (Iteris, January 2016) provides intersection volumes for the existing case, 2020 plus project, and 2025 plus project. The total intersection volumes are provided in Table 11. The data indicate that all of the intersections will be well below the intersection volumes used for the Redesignation Request. The highest intersection volume will be 7,102 vehicles per hour, which is below the highest peak p.m. volume of 8,674. Therefore, the impact on air pollution at intersections will be less than significant.

Table 11 Intersection Volumes (Vehicles Per Hour)

	Existing		2020 + Project		2025 + Project	
Intersection	**A.M.**	**P.M.**	**A.M.**	**P.M.**	**A.M.**	**P.M.**
Nogales St/Amar Rd	3,487	3,498	3,509	3,520	3,529	3,541
Lemon Ave/Amar Rd	2,684	2,667	2,731	2,714	2,774	2,757
Grand Ave/I-10 WB Ramp	2,940	3,167	2,989	3,215	3,032	3,258
Grand Ave/I-10 EB Ramp	2,946	2,781	3,031	2,866	3,109	2,945
Grand Ave/Cameron Ave	3,617	3,072	3,722	3,176	3,817	3,272
Grand Ave/Mountaineer Rd	4,036	3,353	4,204	3,522	4,357	3,675
Grand Ave/San Jose Hills Rd	4,289	3,542	4,368	3,622	4,441	3,694
Grand Ave/Temple Ave	5,759	5,701	5,929	5,871	6,085	6,027
Grand Ave/La Puente Rd	4,443	4,167	4,550	4,274	4,648	4,373
Grand Ave/Valley Blvd	6,052	6,974	6,119	7,041	6,182	7,102
Grand Ave/Baker Pkwy	3,553	3,180	3,584	3,211	3,613	3,240
Grand Ave/SR-60 EB Ramps	3,982	3,772	4,013	3,803	4,042	3,832
Grand Ave/SR-60 WB Ramps	3,618	3,571	3,646	3,596	3,672	3,620
Mt. SAC Wy/Temple Ave	2,747	2,963	2,912	3,129	3,065	3,281
Bonita Ave/Temple Ave	2,958	2,766	3,167	2,975	3,360	3,164
Lot F/Temple Ave	2,580	2,325	2,742	2,487	2,888	2,634
Valley Blvd/Temple Ave	3,671	4,160	3,824	4,313	3,962	4,452
SR-57 SB Ramps/Temple Ave	3,180	4,133	3,289	4,241	3,386	4,339
SR-57 NB Ramps/Temple Ave	3,340	4,099	3,403	4,162	3,461	4,219

2.2.4 Local Air Quality During Olympic Trials

The same approach was used to assess the local air quality next to intersections during the proposed Olympic Field Trials as was used above in Section 2.2.3 for campus buildout. The Olympic Trials represent the highest level of traffic that is projected to occur with the buildout of the campus.

The highest peak p.m. volume of 8,674 should not be exceeded to insure that CO concentrations around intersections are well below the State standard of 20 ppm and the Federal standard of 35 ppm. The Olympic Trials will have a minimal effect on a.m. peak hour traffic, and therefore, only the p.m. peak is examined.

Traffic data prepared for the Olympic Trials (Iteris, April 2016) provides intersection volumes for 2020 Plan A and Plan B. Plan A and Plan B differ by how much guests are accommodated on-campus (refer to Traffic Assessment for more information). The total intersection volumes are provided in Table 12. The data indicate that all of the intersections will be below the critical intersection volume of 8,674 used for the Redesignation Request. The highest intersection volume will be 8,626 vehicles per hour, which is below the critical p.m. volume of 8,674. Therefore, the impact on air pollution at intersections will be less than significant. Intersection volumes will be slightly higher for Plan A than for Plan B, and air pollutant levels would parallel the traffic volumes.

Table 12 Intersection Volumes for Olympic Field Trials (Vehicles Per Hour)

Intersection	Plan A P.M. Peak	Plan B P.M. Peak
Nogales St/Amar Rd	3,498	3,498
Lemon Ave/Amar Rd	2,667	2,667
Grand Ave/I-10 WB Ramp	4,664	4,025
Grand Ave/I-10 EB Ramp	4,283	3,644
Grand Ave/Cameron Ave	4,574	3,935
Grand Ave/Mountaineer Rd	5,083	4,488
Grand Ave/San Jose Hills Rd	4,724	4,210
Grand Ave/Temple Ave	8,157	7,244
Grand Ave/La Puente Rd	5,669	5,536
Grand Ave/Valley Blvd	8,626	8,344
Grand Ave/Baker Pkwy	4,824	4,542
Grand Ave/SR-60 EB Ramps	5,419	5,137
Grand Ave/SR-60 WB Ramps	4,074	3,971
Mt. SAC Wy/Temple Ave	5,441	4,234
Bonita Ave/Temple Ave	6,057	4,920
Lot F/Temple Ave	4,858	3,851
Valley Blvd/Temple Ave	7,470	6,033
SR-57 SB Ramps/Temple Ave	7,793	6,006
SR-57 NB Ramps/Temple Ave	6,352	5,035

2.2.5 Compliance with Air Quality Planning

The following section deals with the major air planning requirements for this project. Specifically, consistency of the project with the AQMP is addressed. As discussed below, consistency with the AQMP is a requirement of the California Environmental Quality Act (CEQA).

An air quality assessment must discuss any inconsistencies between the proposed project and applicable General Plans and regional plans (California Environmental Quality Act (CEQA) guidelines (Section 15125)). Regional plans that apply to the proposed project include the South Coast Air Quality Management Plan (AQMP). In this regard, this section will discuss any inconsistencies between the proposed project and the AQMP.

The purpose of the consistency discussion is to set forth the issues regarding consistency with the assumptions and objectives of the AQMP and discuss whether the project would interfere with the region's ability to comply with Federal and State air quality standards. If the decision-maker determines that the project is inconsistent, the lead agency may consider project modifications or inclusion of mitigation to eliminate the inconsistency.

The SCAQMD's CEQA Handbook states "New or amended GP Elements (including land use zoning and density amendments), Specific Plans, and significant projects must be analyzed for consistency with the AQMP." Strict consistency with all aspects of the plan is usually not required. A proposed project should be considered to be consistent with the plan if it furthers one or more policies and does not obstruct other policies. The Handbook identifies two key indicators of consistency:

(1) Whether the project will result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQMP (except as provided for CO in Section 9.4 for relocating CO hot spots).

(2) Whether the project will exceed the assumptions in the AQMP in 2010 or increments based on the year of project buildout and phase.

Both of these criteria are evaluated in the following sections.

Criterion 1 - Increase in the Frequency or Severity of Violations?

Based on the air quality modeling analysis contained in this report, with mitigation there will not be significant short-term construction impacts based on the SCAQMD localized significance thresholds. Therefore, short-term construction activities will not increase the frequency or severity of existing air quality violations. Additionally, mitigation measures are proposed for construction that will bring the level of emissions under the significance thresholds.

The proposed project will increase regional emissions, but will increase (and decrease) regional emissions by an amount less than the SCAQMD regional thresholds (Refer to Section 2.2.2). Because the project is not projected to impact the local air quality or the regional air quality, the project is found to be consistent with the AQMP for the first criterion.

Criterion 2 - Exceed Assumptions in the AQMP?

Consistency with the AQMP assumptions is determined by performing an analysis of the project with the assumptions in the AQMP. Thus, the emphasis of this criterion is to insure that the analyses conducted for the project are based on the same forecasts as the AQMP. The Regional Comprehensive Plan and Guide (RCP&G) consist of three sections: Core Chapters, Ancillary Chapters, and Bridge Chapters. The Growth Management, Regional Mobility, Air Quality, Water Quality, and Hazardous Waste Management chapters constitute the Core Chapters of the document. These chapters currently respond directly to federal and state requirements placed on SCAG. Local governments are required to use these as the basis of their plans for purposes of consistency with applicable regional plans under CEQA.

Since the SCAG forecasts are not detailed, the test for consistency of this project is not specific. The AQMP assumptions are based upon projections from local general plans. Projects that are consistent with the local general plan are consistent with the AQMP assumptions. The emission projections for the project (Section 2.2.2) show that the project will increase emissions significantly, and therefore, do not represent a significant increase in activities levels for the campus. Therefore, the second criterion is met for consistency with the AQMP.

2.3 Physical Education Projects (PEP)

Temporary impacts can result from project construction activities. Air pollutants are emitted by construction equipment and fugitive dust is generated during grading and construction. Construction of PEP will occur in two phases. The first phase roughly start in October 2016 and end in August 2018. The second phase of construction would occur from roughly February 2018 and be complete by August 2020. Both phases are assessed below.

2.3.1 Phase 1 Construction Emissions

Phase 1 will include demolition of the existing stadium, construction of a new stadium, a new Field House, installation of several practice fields and other improvements. The plan for the PEP area at the end of Phase 1 is shown in Exhibit 4. Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). The model calculates emissions for construction and operation of various projects. For on-road vehicular emissions, the CalEEMod model utilizes the EMFAC2007 emission rates that have also been developed by CARB.

Exhibit 4 - PEP Phase 1

CalEEMod considers the following phases in its calculation of construction emissions; demolition, site preparation, grading, building construction, paving, and painting. Demolition quantities and approximate scheduling were provided by Tilden-Coil in conjunction with the College. The appropriate number of acres, duration of each construction phase, and other key elements of the project were input into the CalEEMod to generate the estimate of emissions. It was also assumed that the overlap between construction phases would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading. CalEEMod printouts are included in the Appendix.

Table 13 presents the results of the total emissions calculations for the construction activities discussed above. The highest construction emissions are presented below and represent a worst-case scenario. No mitigation is included in the emissions presented below. The projected emissions are compared to the Significance Thresholds described in Section 2.1.2. The CalEEMod printouts are included in the Appendix.

Table 13 Peak Construction Emissions for PEP Phase 1

	Pollutant Emissions (Pounds Per Day)					
Activity	**ROG**	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Demolition	5.0	55.7	43.7	0.1	6.6	3.0
Site Preparation	5.2	54.7	42.2	0.0	11.3	7.2
Grading	11.2	***147.2***	106.9	0.3	32.6	11.9
Building Const.	7.3	49.1	76.9	0.2	10.3	4.2
Paving	1.8	17.2	15.2	0.0	1.1	0.9
Architectural Coating	10.3	2.6	7.6	0.0	1.5	0.5
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	***Yes***	*No*	*No*	*No*	*No*

The projected construction emissions are all well below the significance thresholds established by the SCAQMD, except for NOx emissions during the grading phase. The exceedance is caused by a combination on off-road heavy equipment (e.g., graders) and haul trucks exporting 81,429 cubic yards of fill. Mitigation measures for PEP Phase 1 construction will be needed to reduce NOx emissions and are presented in Section 3.2.

The localized impact of the project was also assessed using the SCAQMD's methodology. This analysis determines if there will be impact on adjacent residential area due to the construction of the project. The nearest off-site residential area is about 900 feet south of the main area of construction. The on-site emissions were calculated utilizing CalEEMod. The emissions presented in Table 14 are those that would be emitted from activity within the project site. The total on-site construction emissions are compared to the Localized

Significance Thresholds (LSTs) described in Section 2.1.2. Worksheets showing the emission calculations are presented in the appendix.

Table 14 On-Site Emissions By Construction Activity for PEP Phase 1

Activity	Daily Emissions (lbs./day) NOx	CO	PM10	PM2.5
Demolition	45.7	35.0	5.7	2.7
Site Preparation	54.6	41.1	11.1	7.2
Grading	74.8	49.1	7.7	4.9
Building Construction	26.4	18.1	1.8	1.7
Paving	17.2	14.5	0.9	0.9
Architectural Coating	2.0	1.9	0.2	0.2
LST Thresholds	*489*	*11,084*	*105*	*44*
Exceed Threshold?	*No*	*No*	*No*	*No*

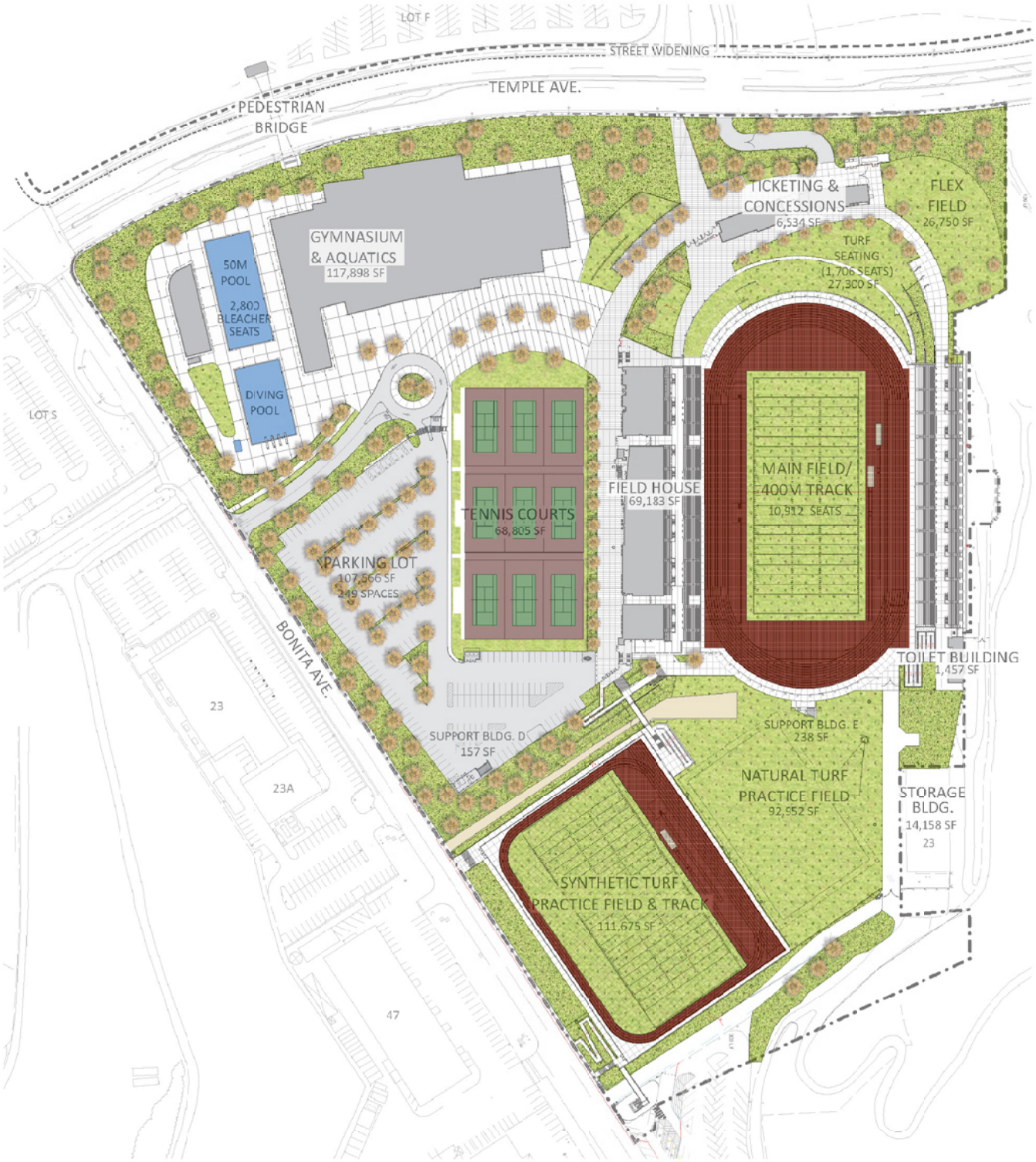
None of the emissions will exceed the LST significance thresholds. Only watering twice per day during earth moving operations has been assumed, and this is required by the Mitigation Monitoring Program. Therefore, the impact of construction of Phase 1 on nearby off-site sensitive receptor areas will be less than significant.

2.3.2 Phase 2 Construction Emissions

Phase 2 will include the construction of a gymnasium and aquatic center, 50-meter pool, diving pool, and nine tennis courts. The plan PEP Phase 2 is shown in Exhibit 5. Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod) similar to the approach used to model Phase 1. Key elements of the project were input into the CalEEMod to generate the estimate of emissions. It was also assumed that the overlap between construction phases would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading. CalEEMod printouts are included in the Appendix.

Table 15 presents the results of the total emissions calculations for the construction activities discussed above. The highest daily construction emissions are presented below and represent a worst-case scenario. No mitigation is included in the emissions presented below. The projected emissions are compared to the Significance Thresholds described in Section 2.1.2. The CalEEMod printouts are included in the Appendix.

Exhibit 5 - PEP Phase 2



G&A

Table 15 Peak Construction Emissions for PEP Phase 2

Activity	Pollutant Emissions (Pounds Per Day) ROG	NOx	CO	SOx	PM10	PM2.5
Demolition	7.0	80.9	80.8	0.2	31.1	7.2
Site Preparation	4.4	45.7	37.1	0.0	10.7	6.7
Grading	3.1	31.1	24.7	0.0	4.8	3.1
Building Const.	3.2	26.2	25.5	0.0	2.7	1.8
Paving	1.2	11.7	12.9	0.0	0.9	0.7
Architectural Coating	9.9	1.8	2.6	0.0	0.3	0.2
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*150*	*55*
Exceed Threshold?	*No*	*No*	*No*	*No*	*No*	*No*

The projected construction emissions are all well below the significance thresholds established by the SCAQMD. Mitigation measures will not be needed for PEP Phase 2 construction.

The localized impact of the project was also assessed using the SCAQMD's methodology. This analysis determines if there will be impact on adjacent residential area due to the construction of the project. The nearest off-site residential area is about 900 feet south of the main area of construction. The on-site emissions were calculated utilizing CalEEMod. The emissions presented in Table 16 are those that would be emitted from activity within the project site. The total on-site construction emissions are compared to the Localized Significance Thresholds (LSTs) described in Section 2.1.2. Worksheets showing the emission calculations are presented in the appendix.

Table 16 On-Site Emissions By Construction Activity for PEP Phase 2

Activity	Daily Emissions (lbs./day) NOx	CO	PM10	PM2.5
Demolition	31.0	29.6	25.6	5.0
Site Preparation	45.6	36.2	10.5	6.6
Grading	31.1	24.0	4.7	3.1
Building Construction	23.3	17.5	1.5	1.4
Paving	11.6	12.1	0.6	0.6
Architectural Coating	1.7	1.8	0.1	0.1
LST Thresholds	*489*	*11,084*	*105*	*44*
Exceed Threshold?	*No*	*No*	*No*	*No*

None of the emissions will exceed the LST significance thresholds. Only watering twice per day during earth moving operations has been assumed, and this is required by the Mitigation Monitoring Program. Therefore, the impact of construction of Phase 2 on nearby off-site sensitive receptor areas will be less than significant.

2.3.3 Diesel Particulate Matter Emissions During Construction

In 1998, the California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines (Diesel Particulate Matter or DPM) as a Toxic Air Contaminant (TAC). It is assumed that the majority of the heavy construction equipment utilized during construction would be diesel fueled and emit DPM.

Impacts from toxic substances are related to cumulative exposure and are assessed over a 70-year period. Cancer risk is expressed as the maximum number of new cases of cancer projected to occur in a population of one million people due to exposure to the cancer-causing substance over a 70-year lifetime (California Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Guide to Health Risk Assessment.) Grading for the PEP Phase 1 and Phase 2, when the peak diesel exhaust emissions would occur, is expected to take less than 6 months total with all construction expected to be completed in less than 4 years. Because of the relatively short duration of construction compared to a 70-year lifespan, diesel emissions resulting from the construction of the project, including truck traffic associated with the project, are not expected to result in a significant impact.

2.4 Cumulative Impacts

To assess the cumulative local air quality impacts, the cumulative peak hour traffic is related to the Ambient Air Quality Standards, which are the significance threshold for this type of impact. Because the area is in attainment of the CO state standards, exceedances of these standards, 20 ppm for 1-hour carbon monoxide (CO) concentration levels and 9 ppm for 8-hour CO concentration levels, would result in a significant local air quality impact. The air basin has reached attainment of the CO air quality standards and CO analysis is generally no longer required by the SCAQMD.

CO modeling was originally performed at four intersections considered to be the worst-case intersections in the South Coast Air Basin as part of the 2003 AQMP to demonstrate attainment of the federal CO standards. This CO modeling is included in the EPA approved 2005 SCAB CO Redesignation Request. The four intersections included, Wilshire at Veteran, Sunset at Highland, La Cienega at Century, and Long Beach at Imperial. The highest peak a.m. traffic volume was 8,062 (occurred at Wilshire and Veteran), while the highest peak p.m. volume was 8,674 (occurred at La Cienega and Century). Table 4-10 of Appendix V, Section 4 of the 2005 SCAB CO Redesignation Request shows that the modeled 1-hour average concentrations at these four intersections for 2002 conditions are below the 8-hour standard of 9 ppm. The highest modeled 1-hour average concentration of 4.6 ppm took place at the Wilshire and Veteran intersection, and is well below the State standard of 20 ppm and the Federal standard of 35 ppm.

Traffic data prepared for the project (Iteris, April 2016) provides intersection volumes for 2020 for existing plus cumulative plus project, and 2025 for existing plus cumulative plus project. The total intersection volumes are provided in Table 17. The data indicate that all of the intersections will be well below the intersection volumes used for the Redesignation Request. The highest intersection volume will be 7,805 vehicles per hour, which is below the highest peak p.m. volume of 8,674. Therefore, the cumulative impact on air pollution at intersections will be less than significant.

Table 17 Cumulative Plus Project Intersection Volumes (Vehicles Per Hour)

	2020		2025	
Intersection	**A.M.**	**P.M.**	**A.M.**	**P.M.**
Nogales St/Amar Rd	3,609	3,624	3,827	3,727
Lemon Ave/Amar Rd	2,820	2,810	3,059	2,935
Grand Ave/I-10 WB Ramp	3,047	3,298	3,112	3,440
Grand Ave/I-10 EB Ramp	3,145	2,983	3,334	3,209
Grand Ave/Cameron Ave	3,836	3,294	4,042	3,536
Grand Ave/Mountaineer Rd	4,318	3,640	4,582	3,939
Grand Ave/San Jose Hills Rd	4,482	3,740	4,666	3,958
Grand Ave/Temple Ave	6,137	6,092	6,600	6,476
Grand Ave/La Puente Rd	4,671	4,401	4,881	4,647
Grand Ave/Valley Blvd	6,387	7,323	6,900	7,805
Grand Ave/Baker Pkwy	3,717	3,349	4,849	4,725
Grand Ave/SR-60 EB Ramps	4,145	3,944	5,026	4,977
Grand Ave/SR-60 WB Ramps	3,758	3,687	4,334	4,235
Mt. SAC Wy/Temple Ave	3,004	3,229	3,355	3,462
Bonita Ave/Temple Ave	3,259	3,075	3,650	3,345
Lot F/Temple Ave	2,834	2,587	3,178	2,815
Valley Blvd/Temple Ave	4,237	4,733	5,503	5,475
SR-57 SB Ramps/Temple Ave	3,797	4,572	4,486	4,915
SR-57 NB Ramps/Temple Ave	3,995	4,836	4,348	5,015

3.0 MITIGATION MEASURES

3.1 Mitigation Monitoring Program

Two measures from the Mitigation Monitoring Program have been included in the analysis of potential impacts for the proposed project. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading to reduce particulate emissions. These measures need to be applied to the proposed project.

3.2 Short-Term Impacts

NOx emissions were projected to be above the regional threshold of 100 pounds per day during the grading phase of construction for the PEP Phase 1. No other construction activities were projected to exceed thresholds and therefore, this mitigation only applies to the grading phase of PEP Phase 1. The mitigation measure provided below brings the emissions to below the NOx threshold.

Mitigation Measure AQ-1: Require all off-road diesel-powered construction equipment greater than 50 hp (e.g., excavators, graders, dozers, scrappers, tractors, loaders, etc.) to comply with EPA-Certified Tier IV emission controls where available. This will reduce the projected NOx emissions to 75.7 pounds per day (CalEEMod printout included in the Appendix). It should be noted that this measure is consistent with Measure 3f of the 2013 Mitigation Monitoring Program.

3.3 Long-Term Impacts

No long-term regional impacts are projected and therefore, mitigation measures are not necessary for operational emissions.

4.0 UNAVOIDABLE SIGNIFICANT IMPACTS

4.1 Short-Term Impacts

The analysis demonstrates that the project with mitigation will result in a less than significant air quality impact.

4.2 Long-Term Impacts

The analysis demonstrates that the project will in a less than significant air quality impact.

In summary, there will be no unavoidable adverse air quality impacts.

5.0 APPENDIX

Mt. SAC FMPU - Existing

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	35,986.00	Student	420.00	1,570,869.41	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	36.06	420.00
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	41.4529	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545
Energy	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645
Mobile	178.5957	495.1502	1,917.6748	3.9219	276.4876	6.9977	283.4853	73.8641	6.4291	80.2932		354,568.1900	354,568.1900	15.6670		354,897.1961
Total	**221.3700**	**507.1995**	**1,931.5659**	**3.9943**	**276.4876**	**7.9244**	**284.4120**	**73.8641**	**7.3558**	**81.2199**		**368,991.1026**	**368,991.1026**	**15.9660**	**0.2643**	**369,408.3150**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	41.4529	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545
Energy	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645
Mobile	178.5957	495.1502	1,917.6748	3.9219	276.4876	6.9977	283.4853	73.8641	6.4291	80.2932		354,568.1900	354,568.1900	15.6670		354,897.1961
Total	**221.3700**	**507.1995**	**1,931.5659**	**3.9943**	**276.4876**	**7.9244**	**284.4120**	**73.8641**	**7.3558**	**81.2199**		**368,991.1026**	**368,991.1026**	**15.9660**	**0.2643**	**369,408.3150**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	178.5957	495.1502	1,917.6748	3.9219	276.4876	6.9977	283.4853	73.8641	6.4291	80.2932		354,568.1900	354,568.1900	15.6670		354,897.1961
Unmitigated	178.5957	495.1502	1,917.6748	3.9219	276.4876	6.9977	283.4853	73.8641	6.4291	80.2932		354,568.1900	354,568.1900	15.6670		354,897.1961

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	43,183.20	15,114.12	1439.44	100,305,908	100,305,908
Total	43,183.20	15,114.12	1,439.44	100,305,908	100,305,908

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514499	0.060499	0.179997	0.139763	0.042095	0.006675	0.015446	0.029572	0.001914	0.002508	0.004341	0.000594	0.002098

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645
NaturalGas Unmitigated	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	122528	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645
Total		**1.3214**	**12.0125**	**10.0905**	**0.0721**		**0.9130**	**0.9130**		**0.9130**	**0.9130**		**14,415.0369**	**14,415.0369**	**0.2763**	**0.2643**	**14,502.7645**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	122.528	1.3214	12.0125	10.0905	0.0721		0.9130	0.9130		0.9130	0.9130		14,415.0369	14,415.0369	0.2763	0.2643	14,502.7645
Total		**1.3214**	**12.0125**	**10.0905**	**0.0721**		**0.9130**	**0.9130**		**0.9130**	**0.9130**		**14,415.0369**	**14,415.0369**	**0.2763**	**0.2643**	**14,502.7645**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	41.4529	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545
Unmitigated	41.4529	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	9.9740					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.1032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.3757	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545
Total	**41.4529**	**0.0368**	**3.8005**	**2.7000e-004**		**0.0138**	**0.0138**		**0.0138**	**0.0138**		**7.8756**	**7.8756**	**0.0228**		**8.3545**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Architectural Coating	9.9740					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	31.1032					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.3757	0.0368	3.8005	2.7000e-004		0.0138	0.0138		0.0138	0.0138		7.8756	7.8756	0.0228		8.3545
Total	**41.4529**	**0.0368**	**3.8005**	**2.7000e-004**		**0.0138**	**0.0138**		**0.0138**	**0.0138**		**7.8756**	**7.8756**	**0.0228**		**8.3545**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it was not relevant to the analysis.

MtSAC FMPU Buildout Including Demolition & Excluding PEP

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	259.02	1000sqft	5.95	259,018.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	4.9070	51.8466	40.3687	0.0576	18.2675	2.7558	21.0233	9.9840	2.5354	12.5194	0.0000	5,754.2657	5,754.2657	1.2367	0.0000	5,780.2359
2018	90.4154	26.8746	27.4308	0.0503	1.4809	1.5545	3.0354	0.3979	1.4602	1.8581	0.0000	4,614.0008	4,614.0008	0.7068	0.0000	4,628.8441
Total	**95.3225**	**78.7212**	**67.7994**	**0.1079**	**19.7484**	**4.3103**	**24.0587**	**10.3819**	**3.9956**	**14.3775**	**0.0000**	**10,368.2665**	**10,368.2665**	**1.9435**	**0.0000**	**10,409.0799**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2017	4.9070	51.8466	40.3687	0.0576	8.3310	2.7558	11.0869	4.5222	2.5354	7.0575	0.0000	5,754.2657	5,754.2657	1.2367	0.0000	5,780.2359
2018	90.4154	26.8746	27.4308	0.0503	1.4809	1.5545	3.0354	0.3979	1.4602	1.8581	0.0000	4,614.0008	4,614.0008	0.7068	0.0000	4,628.8441
Total	**95.3225**	**78.7212**	**67.7994**	**0.1079**	**9.8120**	**4.3103**	**14.1223**	**4.9201**	**3.9956**	**8.9157**	**0.0000**	**10,368.2665**	**10,368.2665**	**1.9435**	**0.0000**	**10,409.0799**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.32**	**0.00**	**41.30**	**52.61**	**0.00**	**37.99**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2017	1/27/2017	5	20	
2	Site Preparation	Site Preparation	1/28/2017	2/10/2017	5	10	
3	Grading	Grading	2/11/2017	3/10/2017	5	20	
4	Building Construction	Building Construction	3/11/2017	1/26/2018	5	230	
5	Paving	Paving	1/27/2018	2/23/2018	5	20	
6	Architectural Coating	Architectural Coating	2/24/2018	3/23/2018	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 388,527; Non-Residential Outdoor: 129,509 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42

Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	427.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	109.00	42.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	22.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.6213	0.0000	4.6213	0.6997	0.0000	0.6997			0.0000			0.0000
Off-Road	4.0482	42.6971	33.8934	0.0399		2.1252	2.1252		1.9797	1.9797		4,036.4674	4,036.4674	1.1073		4,059.7211
Total	**4.0482**	**42.6971**	**33.8934**	**0.0399**	**4.6213**	**2.1252**	**6.7465**	**0.6997**	**1.9797**	**2.6794**		**4,036.4674**	**4,036.4674**	**1.1073**		**4,059.7211**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3631	5.5585	4.5802	0.0157	0.3721	0.0851	0.4572	0.1019	0.0783	0.1802		1,556.8692	1,556.8692	0.0112		1,557.1043
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0574	0.0776	0.8097	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9291	160.9291	8.4500e-003		161.1065
Total	**0.4205**	**5.6361**	**5.3899**	**0.0177**	**0.5397**	**0.0865**	**0.6262**	**0.1464**	**0.0795**	**0.2259**		**1,717.7984**	**1,717.7984**	**0.0196**		**1,718.2108**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.0796	0.0000	2.0796	0.3149	0.0000	0.3149			0.0000			0.0000
Off-Road	4.0482	42.6971	33.8934	0.0399		2.1252	2.1252		1.9797	1.9797	0.0000	4,036.4674	4,036.4674	1.1073		4,059.7211
Total	**4.0482**	**42.6971**	**33.8934**	**0.0399**	**2.0796**	**2.1252**	**4.2048**	**0.3149**	**1.9797**	**2.2946**	**0.0000**	**4,036.4674**	**4,036.4674**	**1.1073**		**4,059.7211**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.3631	5.5585	4.5802	0.0157	0.3721	0.0851	0.4572	0.1019	0.0783	0.1802		1,556.8692	1,556.8692	0.0112		1,557.1043

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0574	0.0776	0.8097	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9291	160.9291	8.4500e-003		161.1065
Total	**0.4205**	**5.6361**	**5.3899**	**0.0177**	**0.5397**	**0.0865**	**0.6262**	**0.1464**	**0.0795**	**0.2259**		**1,717.7984**	**1,717.7984**	**0.0196**		**1,718.2108**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.8382	51.7535	39.3970	0.0391		2.7542	2.7542		2.5339	2.5339		4,003.0859	4,003.0859	1.2265		4,028.8432
Total	**4.8382**	**51.7535**	**39.3970**	**0.0391**	**18.0663**	**2.7542**	**20.8205**	**9.9307**	**2.5339**	**12.4646**		**4,003.0859**	**4,003.0859**	**1.2265**		**4,028.8432**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0688	0.0931	0.9716	2.3900e-003	0.2012	1.6200e-003	0.2028	0.0534	1.4900e-003	0.0549		193.1150	193.1150	0.0101		193.3278
Total	**0.0688**	**0.0931**	**0.9716**	**2.3900e-003**	**0.2012**	**1.6200e-003**	**0.2028**	**0.0534**	**1.4900e-003**	**0.0549**		**193.1150**	**193.1150**	**0.0101**		**193.3278**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.8382	51.7535	39.3970	0.0391		2.7542	2.7542		2.5339	2.5339	0.0000	4,003.0859	4,003.0859	1.2265		4,028.8432
Total	**4.8382**	**51.7535**	**39.3970**	**0.0391**	**8.1298**	**2.7542**	**10.8840**	**4.4688**	**2.5339**	**7.0027**	**0.0000**	**4,003.0859**	**4,003.0859**	**1.2265**		**4,028.8432**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0688	0.0931	0.9716	2.3900e-003	0.2012	1.6200e-003	0.2028	0.0534	1.4900e-003	0.0549		193.1150	193.1150	0.0101		193.3278
Total	**0.0688**	**0.0931**	**0.9716**	**2.3900e-003**	**0.2012**	**1.6200e-003**	**0.2028**	**0.0534**	**1.4900e-003**	**0.0549**		**193.1150**	**193.1150**	**0.0101**		**193.3278**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000

Off-Road	3.4555	35.9825	25.3812	0.0297		2.0388	2.0388		1.8757	1.8757		3,043.6667	3,043.6667	0.9326		3,063.2507
Total	**3.4555**	**35.9825**	**25.3812**	**0.0297**	**6.5523**	**2.0388**	**8.5912**	**3.3675**	**1.8757**	**5.2432**		**3,043.6667**	**3,043.6667**	**0.9326**		**3,063.2507**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0574	0.0776	0.8097	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9291	160.9291	8.4500e-003		161.1065
Total	**0.0574**	**0.0776**	**0.8097**	**1.9900e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**160.9291**	**160.9291**	**8.4500e-003**		**161.1065**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	3.4555	35.9825	25.3812	0.0297		2.0388	2.0388		1.8757	1.8757	0.0000	3,043.6667	3,043.6667	0.9326		3,063.2507
Total	**3.4555**	**35.9825**	**25.3812**	**0.0297**	**2.9486**	**2.0388**	**4.9874**	**1.5154**	**1.8757**	**3.3911**	**0.0000**	**3,043.6667**	**3,043.6667**	**0.9326**		**3,063.2507**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0574	0.0776	0.8097	1.9900e-003	0.1677	1.3500e-003	0.1690	0.0445	1.2400e-003	0.0457		160.9291	160.9291	8.4500e-003		161.1065
Total	**0.0574**	**0.0776**	**0.8097**	**1.9900e-003**	**0.1677**	**1.3500e-003**	**0.1690**	**0.0445**	**1.2400e-003**	**0.0457**		**160.9291**	**160.9291**	**8.4500e-003**		**161.1065**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730		2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**		**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.3501	3.3819	4.7669	9.0600e-003	0.2626	0.0538	0.3164	0.0748	0.0495	0.1243		893.3155	893.3155	6.5100e-003		893.4523
Worker	0.4168	0.5640	5.8838	0.0145	1.2184	9.8000e-003	1.2282	0.3231	9.0400e-003	0.3322		1,169.4183	1,169.4183	0.0614		1,170.7073
Total	**0.7669**	**3.9460**	**10.6507**	**0.0235**	**1.4809**	**0.0636**	**1.5445**	**0.3979**	**0.0585**	**0.4564**		**2,062.7338**	**2,062.7338**	**0.0679**		**2,064.1596**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730	0.0000	2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**	**0.0000**	**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3501	3.3819	4.7669	9.0600e-003	0.2626	0.0538	0.3164	0.0748	0.0495	0.1243		893.3155	893.3155	6.5100e-003		893.4523
Worker	0.4168	0.5640	5.8838	0.0145	1.2184	9.8000e-003	1.2282	0.3231	9.0400e-003	0.3322		1,169.4183	1,169.4183	0.0614		1,170.7073
Total	**0.7669**	**3.9460**	**10.6507**	**0.0235**	**1.4809**	**0.0636**	**1.5445**	**0.3979**	**0.0585**	**0.4564**		**2,062.7338**	**2,062.7338**	**0.0679**		**2,064.1596**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048		2,609.9390	2,609.9390	0.6387		2,623.3517
Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**		**2,609.9390**	**2,609.9390**	**0.6387**		**2,623.3517**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3272	3.1023	4.5742	9.0500e-003	0.2626	0.0507	0.3133	0.0748	0.0466	0.1214		878.3094	878.3094	6.4800e-003		878.4454
Worker	0.3749	0.5115	5.3239	0.0145	1.2184	9.5400e-003	1.2279	0.3231	8.8200e-003	0.3319		1,125.7525	1,125.7525	0.0570		1,126.9488
Total	**0.7020**	**3.6138**	**9.8981**	**0.0235**	**1.4809**	**0.0602**	**1.5412**	**0.3979**	**0.0554**	**0.4534**		**2,004.0619**	**2,004.0619**	**0.0635**		**2,005.3942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048	0.0000	2,609.9389	2,609.9389	0.6387		2,623.3517

Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**	**0.0000**	**2,609.9389**	**2,609.9389**	**0.6387**		**2,623.3517**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3272	3.1023	4.5742	9.0500e-003	0.2626	0.0507	0.3133	0.0748	0.0466	0.1214		878.3094	878.3094	6.4800e-003		878.4454
Worker	0.3749	0.5115	5.3239	0.0145	1.2184	9.5400e-003	1.2279	0.3231	8.8200e-003	0.3319		1,125.7525	1,125.7525	0.0570		1,126.9488
Total	**0.7020**	**3.6138**	**9.8981**	**0.0235**	**1.4809**	**0.0602**	**1.5412**	**0.3979**	**0.0554**	**0.4534**		**2,004.0619**	**2,004.0619**	**0.0635**		**2,005.3942**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6114	17.1628	14.4944	0.0223		0.9386	0.9386		0.8635	0.8635		2,245.2695	2,245.2695	0.6990		2,259.9481
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6114**	**17.1628**	**14.4944**	**0.0223**		**0.9386**	**0.9386**		**0.8635**	**0.8635**		**2,245.2695**	**2,245.2695**	**0.6990**		**2,259.9481**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6114	17.1628	14.4944	0.0223		0.9386	0.9386		0.8635	0.8635	0.0000	2,245.2695	2,245.2695	0.6990		2,259.9481
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.6114**	**17.1628**	**14.4944**	**0.0223**		**0.9386**	**0.9386**		**0.8635**	**0.8635**	**0.0000**	**2,245.2695**	**2,245.2695**	**0.6990**		**2,259.9481**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	90.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**90.3398**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0757	0.1032	1.0746	2.9200e-003	0.2459	1.9200e-003	0.2478	0.0652	1.7800e-003	0.0670		227.2161	227.2161	0.0115		227.4576
Total	**0.0757**	**0.1032**	**1.0746**	**2.9200e-003**	**0.2459**	**1.9200e-003**	**0.2478**	**0.0652**	**1.7800e-003**	**0.0670**		**227.2161**	**227.2161**	**0.0115**		**227.4576**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	90.0411					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**90.3398**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0757	0.1032	1.0746	2.9200e-003	0.2459	1.9200e-003	0.2478	0.0652	1.7800e-003	0.0670		227.2161	227.2161	0.0115		227.4576
Total	**0.0757**	**0.1032**	**1.0746**	**2.9200e-003**	**0.2459**	**1.9200e-003**	**0.2478**	**0.0652**	**1.7800e-003**	**0.0670**		**227.2161**	**227.2161**	**0.0115**		**227.4576**

MtSAC FMPU - Building G Construction Including Demolition

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	50.00	1000sqft	5.00	50,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage corresponds to demolition area.

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblConstructionPhase	PhaseEndDate	1/2/2020	1/3/2020
tblConstructionPhase	PhaseStartDate	2/15/2019	2/16/2019

tblLandUse	LotAcreage	1.15	5.00
tblProjectCharacteristics	OperationalYear	2014	2021

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.0757	42.5821	35.6146	0.0515	18.2675	2.1520	20.4195	9.9840	1.9799	11.9639	0.0000	4,995.9071	4,995.9071	1.2354	0.0000	5,021.8497
2020	19.5665	19.6428	18.5011	0.0313	0.2848	1.1230	1.4078	0.0765	1.0558	1.1323	0.0000	2,902.9777	2,902.9777	0.7058	0.0000	2,917.7991
Total	**23.6423**	**62.2248**	**54.1156**	**0.0828**	**18.5522**	**3.2750**	**21.8272**	**10.0605**	**3.0357**	**13.0962**	**0.0000**	**7,898.8848**	**7,898.8848**	**1.9411**	**0.0000**	**7,939.6488**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2019	4.0757	42.5821	35.6146	0.0515	8.3310	2.1520	10.4830	4.5222	1.9799	6.5020	0.0000	4,995.9071	4,995.9071	1.2354	0.0000	5,021.8497
2020	19.5665	19.6428	18.5011	0.0313	0.2848	1.1230	1.4078	0.0765	1.0558	1.1323	0.0000	2,902.9777	2,902.9777	0.7058	0.0000	2,917.7991
Total	**23.6423**	**62.2248**	**54.1156**	**0.0828**	**8.6158**	**3.2750**	**11.8908**	**4.5987**	**3.0357**	**7.6344**	**0.0000**	**7,898.8848**	**7,898.8848**	**1.9411**	**0.0000**	**7,939.6488**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.56**	**0.00**	**45.52**	**54.29**	**0.00**	**41.71**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/4/2019	5	5	
3	Grading	Grading	2/5/2019	2/14/2019	5	8	
4	Building Construction	Building Construction	2/16/2019	1/3/2020	5	230	
5	Paving	Paving	1/4/2020	1/29/2020	5	18	
6	Architectural Coating	Architectural Coating	1/30/2020	2/24/2020	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 75,000; Non-Residential Outdoor: 25,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	162	0.38
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	261.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	21.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.8247	0.0000	2.8247	0.4277	0.0000	0.4277			0.0000			0.0000
Off-Road	3.3224	33.9413	30.8050	0.0399		1.6448	1.6448		1.5316	1.5316		3,929.2327	3,929.2327	1.0974		3,952.2774

Total	**3.3224**	**33.9413**	**30.8050**	**0.0399**	**2.8247**	**1.6448**	**4.4694**	**0.4277**	**1.5316**	**1.9592**		**3,929.2327**	**3,929.2327**	**1.0974**		**3,952.2774**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2100	2.9441	2.6981	9.5500e-003	0.2275	0.0519	0.2794	0.0623	0.0478	0.1101		917.6518	917.6518	6.8900e-003		917.7965
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0645	0.6715	1.9800e-003	0.1677	1.2900e-003	0.1690	0.0445	1.1900e-003	0.0457		149.0226	149.0226	7.3400e-003		149.1767
Total	**0.2574**	**3.0087**	**3.3696**	**0.0115**	**0.3951**	**0.0532**	**0.4483**	**0.1068**	**0.0490**	**0.1557**		**1,066.6745**	**1,066.6745**	**0.0142**		**1,066.9732**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.2711	0.0000	1.2711	0.1925	0.0000	0.1925			0.0000			0.0000
Off-Road	3.3224	33.9413	30.8050	0.0399		1.6448	1.6448		1.5316	1.5316	0.0000	3,929.2327	3,929.2327	1.0974		3,952.2774
Total	**3.3224**	**33.9413**	**30.8050**	**0.0399**	**1.2711**	**1.6448**	**2.9159**	**0.1925**	**1.5316**	**1.7240**	**0.0000**	**3,929.2327**	**3,929.2327**	**1.0974**		**3,952.2774**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.2100	2.9441	2.6981	9.5500e-003	0.2275	0.0519	0.2794	0.0623	0.0478	0.1101		917.6518	917.6518	6.8900e-003		917.7965
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0645	0.6715	1.9800e-003	0.1677	1.2900e-003	0.1690	0.0445	1.1900e-003	0.0457		149.0226	149.0226	7.3400e-003		149.1767
Total	**0.2574**	**3.0087**	**3.3696**	**0.0115**	**0.3951**	**0.0532**	**0.4483**	**0.1068**	**0.0490**	**0.1557**		**1,066.6745**	**1,066.6745**	**0.0142**		**1,066.9732**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0188	42.5046	34.8088	0.0391		2.1505	2.1505		1.9784	1.9784		3,876.7233	3,876.7233	1.2266		3,902.4810
Total	**4.0188**	**42.5046**	**34.8088**	**0.0391**	**18.0663**	**2.1505**	**20.2167**	**9.9307**	**1.9784**	**11.9091**		**3,876.7233**	**3,876.7233**	**1.2266**		**3,902.4810**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0569	0.0775	0.8058	2.3800e-003	0.2012	1.5500e-003	0.2027	0.0534	1.4300e-003	0.0548		178.8272	178.8272	8.8100e-003		179.0121

Total	**0.0569**	**0.0775**	**0.8058**	**2.3800e-003**	**0.2012**	**1.5500e-003**	**0.2027**	**0.0534**	**1.4300e-003**	**0.0548**		**178.8272**	**178.8272**	**8.8100e-003**		**179.0121**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0188	42.5046	34.8088	0.0391		2.1505	2.1505		1.9784	1.9784	0.0000	3,876.7233	3,876.7233	1.2266		3,902.4810
Total	**4.0188**	**42.5046**	**34.8088**	**0.0391**	**8.1298**	**2.1505**	**10.2803**	**4.4688**	**1.9784**	**6.4472**	**0.0000**	**3,876.7233**	**3,876.7233**	**1.2266**		**3,902.4810**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0569	0.0775	0.8058	2.3800e-003	0.2012	1.5500e-003	0.2027	0.0534	1.4300e-003	0.0548		178.8272	178.8272	8.8100e-003		179.0121
Total	**0.0569**	**0.0775**	**0.8058**	**2.3800e-003**	**0.2012**	**1.5500e-003**	**0.2027**	**0.0534**	**1.4300e-003**	**0.0548**		**178.8272**	**178.8272**	**8.8100e-003**		**179.0121**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.7610	28.3800	23.3864	0.0297		1.5329	1.5329		1.4103	1.4103		2,944.1998	2,944.1998	0.9315		2,963.7615
Total	**2.7610**	**28.3800**	**23.3864**	**0.0297**	**6.5523**	**1.5329**	**8.0852**	**3.3675**	**1.4103**	**4.7778**		**2,944.1998**	**2,944.1998**	**0.9315**		**2,963.7615**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0645	0.6715	1.9800e-003	0.1677	1.2900e-003	0.1690	0.0445	1.1900e-003	0.0457		149.0226	149.0226	7.3400e-003		149.1767
Total	**0.0474**	**0.0645**	**0.6715**	**1.9800e-003**	**0.1677**	**1.2900e-003**	**0.1690**	**0.0445**	**1.1900e-003**	**0.0457**		**149.0226**	**149.0226**	**7.3400e-003**		**149.1767**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.7610	28.3800	23.3864	0.0297		1.5329	1.5329		1.4103	1.4103	0.0000	2,944.1998	2,944.1998	0.9315		2,963.7615
Total	**2.7610**	**28.3800**	**23.3864**	**0.0297**	**2.9486**	**1.5329**	**4.4815**	**1.5154**	**1.4103**	**2.9256**	**0.0000**	**2,944.1998**	**2,944.1998**	**0.9315**		**2,963.7615**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0474	0.0645	0.6715	1.9800e-003	0.1677	1.2900e-003	0.1690	0.0445	1.1900e-003	0.0457		149.0226	149.0226	7.3400e-003		149.1767
Total	**0.0474**	**0.0645**	**0.6715**	**1.9800e-003**	**0.1677**	**1.2900e-003**	**0.1690**	**0.0445**	**1.1900e-003**	**0.0457**		**149.0226**	**149.0226**	**7.3400e-003**		**149.1767**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3516	20.9650	17.1204	0.0268		1.2850	1.2850		1.2083	1.2083		2,580.7618	2,580.7618	0.6279		2,593.9479
Total	**2.3516**	**20.9650**	**17.1204**	**0.0268**		**1.2850**	**1.2850**		**1.2083**	**1.2083**		**2,580.7618**	**2,580.7618**	**0.6279**		**2,593.9479**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0589	0.5446	0.8426	1.7200e-003	0.0500	9.1600e-003	0.0592	0.0143	8.4200e-003	0.0227		164.0406	164.0406	1.2100e-003		164.0661
Worker	0.0664	0.0904	0.9401	2.7800e-003	0.2347	1.8000e-003	0.2365	0.0623	1.6700e-003	0.0639		208.6317	208.6317	0.0103		208.8474
Total	**0.1253**	**0.6350**	**1.7827**	**4.5000e-003**	**0.2848**	**0.0110**	**0.2957**	**0.0765**	**0.0101**	**0.0866**		**372.6723**	**372.6723**	**0.0115**		**372.9135**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3516	20.9650	17.1204	0.0268		1.2850	1.2850		1.2083	1.2083	0.0000	2,580.7618	2,580.7618	0.6279		2,593.9479
Total	**2.3516**	**20.9650**	**17.1204**	**0.0268**		**1.2850**	**1.2850**		**1.2083**	**1.2083**	**0.0000**	**2,580.7618**	**2,580.7618**	**0.6279**		**2,593.9479**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0589	0.5446	0.8426	1.7200e-003	0.0500	9.1600e-003	0.0592	0.0143	8.4200e-003	0.0227		164.0406	164.0406	1.2100e-003		164.0661
Worker	0.0664	0.0904	0.9401	2.7800e-003	0.2347	1.8000e-003	0.2365	0.0623	1.6700e-003	0.0639		208.6317	208.6317	0.0103		208.8474
Total	**0.1253**	**0.6350**	**1.7827**	**4.5000e-003**	**0.2848**	**0.0110**	**0.2957**	**0.0765**	**0.0101**	**0.0866**		**372.6723**	**372.6723**	**0.0115**		**372.9135**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1113	19.0839	16.8084	0.0268		1.1128	1.1128		1.0465	1.0465		2,542.4799	2,542.4799	0.6194		2,555.4880
Total	**2.1113**	**19.0839**	**16.8084**	**0.0268**		**1.1128**	**1.1128**		**1.0465**	**1.0465**		**2,542.4799**	**2,542.4799**	**0.6194**		**2,555.4880**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0558	0.4751	0.8182	1.7100e-003	0.0500	8.3800e-003	0.0584	0.0143	7.7100e-003	0.0220		160.3435	160.3435	1.1900e-003		160.3685
Worker	0.0622	0.0837	0.8745	2.7800e-003	0.2347	1.7900e-003	0.2365	0.0623	1.6600e-003	0.0639		200.1542	200.1542	9.7300e-003		200.3585
Total	**0.1181**	**0.5588**	**1.6926**	**4.4900e-003**	**0.2848**	**0.0102**	**0.2949**	**0.0765**	**9.3700e-003**	**0.0859**		**360.4977**	**360.4977**	**0.0109**		**360.7270**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	2.1113	19.0839	16.8084	0.0268		1.1128	1.1128		1.0465	1.0465	0.0000	2,542.4799	2,542.4799	0.6194		2,555.4880
Total	**2.1113**	**19.0839**	**16.8084**	**0.0268**		**1.1128**	**1.1128**		**1.0465**	**1.0465**	**0.0000**	**2,542.4799**	**2,542.4799**	**0.6194**		**2,555.4880**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0558	0.4751	0.8182	1.7100e-003	0.0500	8.3800e-003	0.0584	0.0143	7.7100e-003	0.0220		160.3435	160.3435	1.1900e-003		160.3685
Worker	0.0622	0.0837	0.8745	2.7800e-003	0.2347	1.7900e-003	0.2365	0.0623	1.6600e-003	0.0639		200.1542	200.1542	9.7300e-003		200.3585
Total	**0.1181**	**0.5588**	**1.6926**	**4.4900e-003**	**0.2848**	**0.0102**	**0.2949**	**0.0765**	**9.3700e-003**	**0.0859**		**360.4977**	**360.4977**	**0.0109**		**360.7270**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3301	13.7845	14.3523	0.0223		0.7390	0.7390		0.6799	0.6799		2,160.7571	2,160.7571	0.6988		2,175.4326
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3301**	**13.7845**	**14.3523**	**0.0223**		**0.7390**	**0.7390**		**0.6799**	**0.6799**		**2,160.7571**	**2,160.7571**	**0.6988**		**2,175.4326**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0445	0.0598	0.6246	1.9800e-003	0.1677	1.2800e-003	0.1690	0.0445	1.1900e-003	0.0457		142.9673	142.9673	6.9500e-003		143.1132
Total	**0.0445**	**0.0598**	**0.6246**	**1.9800e-003**	**0.1677**	**1.2800e-003**	**0.1690**	**0.0445**	**1.1900e-003**	**0.0457**		**142.9673**	**142.9673**	**6.9500e-003**		**143.1132**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3301	13.7845	14.3523	0.0223		0.7390	0.7390		0.6799	0.6799	0.0000	2,160.7571	2,160.7571	0.6988		2,175.4326
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.3301**	**13.7845**	**14.3523**	**0.0223**		**0.7390**	**0.7390**		**0.6799**	**0.6799**	**0.0000**	**2,160.7571**	**2,160.7571**	**0.6988**		**2,175.4326**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0445	0.0598	0.6246	1.9800e-003	0.1677	1.2800e-003	0.1690	0.0445	1.1900e-003	0.0457		142.9673	142.9673	6.9500e-003		143.1132
Total	**0.0445**	**0.0598**	**0.6246**	**1.9800e-003**	**0.1677**	**1.2800e-003**	**0.1690**	**0.0445**	**1.1900e-003**	**0.0457**		**142.9673**	**142.9673**	**6.9500e-003**		**143.1132**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.3125					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9057
Total	**19.5547**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9057**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0119	0.0160	0.1666	5.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.2000e-004	0.0122		38.1246	38.1246	1.8500e-003		38.1635
Total	**0.0119**	**0.0160**	**0.1666**	**5.3000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.2000e-004**	**0.0122**		**38.1246**	**38.1246**	**1.8500e-003**		**38.1635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	19.3125					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9057
Total	**19.5547**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9057**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0119	0.0160	0.1666	5.3000e-004	0.0447	3.4000e-004	0.0451	0.0119	3.2000e-004	0.0122		38.1246	38.1246	1.8500e-003		38.1635
Total	**0.0119**	**0.0160**	**0.1666**	**5.3000e-004**	**0.0447**	**3.4000e-004**	**0.0451**	**0.0119**	**3.2000e-004**	**0.0122**		**38.1246**	**38.1246**	**1.8500e-003**		**38.1635**

Operational emission data removed because it is not relevant to the analysis.

MtSAC FMPU - Building A Construction (No Demolition)

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	50.00	1000sqft	1.15	50,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblConstructionPhase	PhaseEndDate	1/30/2025	1/31/2025
tblConstructionPhase	PhaseStartDate	1/29/2025	1/28/2025

tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	34.9425	22.5279	27.5026	0.0444	6.0343	1.0105	7.0448	3.0160	0.9371	3.9530	0.0000	4,205.6518	4,205.6518	1.1423	0.0000	4,229.6397
Total	**34.9425**	**22.5279**	**27.5026**	**0.0444**	**6.0343**	**1.0105**	**7.0448**	**3.0160**	**0.9371**	**3.9530**	**0.0000**	**4,205.6518**	**4,205.6518**	**1.1423**	**0.0000**	**4,229.6397**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2025	34.9425	22.5279	27.5026	0.0444	2.8445	1.0105	3.8550	1.3914	0.9371	2.3285	0.0000	4,205.6518	4,205.6518	1.1423	0.0000	4,229.6397
Total	**34.9425**	**22.5279**	**27.5026**	**0.0444**	**2.8445**	**1.0105**	**3.8550**	**1.3914**	**0.9371**	**2.3285**	**0.0000**	**4,205.6518**	**4,205.6518**	**1.1423**	**0.0000**	**4,229.6397**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**52.86**	**0.00**	**45.28**	**53.86**	**0.00**	**41.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	1/28/2025	5	20	
2	Site Preparation	Site Preparation	1/28/2025	1/31/2025	5	2	
3	Grading	Grading	2/1/2025	2/6/2025	5	4	
4	Building Construction	Building Construction	2/7/2025	11/13/2025	5	200	
5	Paving	Paving	11/14/2025	11/27/2025	5	10	
6	Architectural Coating	Architectural Coating	11/28/2025	12/11/2025	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 75,000; Non-Residential Outdoor: 25,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74

Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	21.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3514	12.3363	15.6569	0.0245		0.5261	0.5261		0.4914	0.4914		2,360.7055	2,360.7055	0.5979		2,373.2613

Total	**1.3514**	**12.3363**	**15.6569**	**0.0245**	**0.0000**	**0.5261**	**0.5261**	**0.0000**	**0.4914**	**0.4914**		**2,360.7055**	**2,360.7055**	**0.5979**		**2,373.2613**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0297	0.0385	0.4075	1.7300e-003	0.1453	1.1200e-003	0.1464	0.0385	1.0400e-003	0.0396		115.5652	115.5652	5.0000e-003		115.6702
Total	**0.0297**	**0.0385**	**0.4075**	**1.7300e-003**	**0.1453**	**1.1200e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**115.5652**	**115.5652**	**5.0000e-003**		**115.6702**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	1.3514	12.3363	15.6569	0.0245		0.5261	0.5261		0.4914	0.4914	0.0000	2,360.7055	2,360.7055	0.5979		2,373.2613
Total	**1.3514**	**12.3363**	**15.6569**	**0.0245**	**0.0000**	**0.5261**	**0.5261**	**0.0000**	**0.4914**	**0.4914**	**0.0000**	**2,360.7055**	**2,360.7055**	**0.5979**		**2,373.2613**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0297	0.0385	0.4075	1.7300e-003	0.1453	1.1200e-003	0.1464	0.0385	1.0400e-003	0.0396		115.5652	115.5652	5.0000e-003		115.6702
Total	**0.0297**	**0.0385**	**0.4075**	**1.7300e-003**	**0.1453**	**1.1200e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**115.5652**	**115.5652**	**5.0000e-003**		**115.6702**

3.3 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					5.7996	0.0000	5.7996	2.9537	0.0000	2.9537			0.0000			0.0000
Off-Road	1.1233	10.1294	11.1875	0.0171		0.4826	0.4826		0.4440	0.4440		1,658.2640	1,658.2640	0.5363		1,669.5266
Total	**1.1233**	**10.1294**	**11.1875**	**0.0171**	**5.7996**	**0.4826**	**6.2822**	**2.9537**	**0.4440**	**3.3977**		**1,658.2640**	**1,658.2640**	**0.5363**		**1,669.5266**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0183	0.0237	0.2508	1.0600e-003	0.0894	6.9000e-004	0.0901	0.0237	6.4000e-004	0.0244		71.1171	71.1171	3.0800e-003		71.1817

Total	**0.0183**	**0.0237**	**0.2508**	**1.0600e-003**	**0.0894**	**6.9000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**71.1171**	**71.1171**	**3.0800e-003**		**71.1817**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.6098	0.0000	2.6098	1.3292	0.0000	1.3292			0.0000			0.0000
Off-Road	1.1233	10.1294	11.1875	0.0171		0.4826	0.4826		0.4440	0.4440	0.0000	1,658.2640	1,658.2640	0.5363		1,669.5266
Total	**1.1233**	**10.1294**	**11.1875**	**0.0171**	**2.6098**	**0.4826**	**3.0924**	**1.3292**	**0.4440**	**1.7732**	**0.0000**	**1,658.2640**	**1,658.2640**	**0.5363**		**1,669.5266**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0183	0.0237	0.2508	1.0600e-003	0.0894	6.9000e-004	0.0901	0.0237	6.4000e-004	0.0244		71.1171	71.1171	3.0800e-003		71.1817
Total	**0.0183**	**0.0237**	**0.2508**	**1.0600e-003**	**0.0894**	**6.9000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**71.1171**	**71.1171**	**3.0800e-003**		**71.1817**

3.4 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9143	0.0000	4.9143	2.5256	0.0000	2.5256			0.0000			0.0000
Off-Road	0.9208	8.3322	9.1683	0.0141		0.3941	0.3941		0.3626	0.3626		1,362.2555	1,362.2555	0.4406		1,371.5077
Total	**0.9208**	**8.3322**	**9.1683**	**0.0141**	**4.9143**	**0.3941**	**5.3084**	**2.5256**	**0.3626**	**2.8882**		**1,362.2555**	**1,362.2555**	**0.4406**		**1,371.5077**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0183	0.0237	0.2508	1.0600e-003	0.0894	6.9000e-004	0.0901	0.0237	6.4000e-004	0.0244		71.1171	71.1171	3.0800e-003		71.1817
Total	**0.0183**	**0.0237**	**0.2508**	**1.0600e-003**	**0.0894**	**6.9000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**71.1171**	**71.1171**	**3.0800e-003**		**71.1817**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.2114	0.0000	2.2114	1.1365	0.0000	1.1365			0.0000			0.0000
Off-Road	0.9208	8.3322	9.1683	0.0141		0.3941	0.3941		0.3626	0.3626	0.0000	1,362.2555	1,362.2555	0.4406		1,371.5077
Total	**0.9208**	**8.3322**	**9.1683**	**0.0141**	**2.2114**	**0.3941**	**2.6055**	**1.1365**	**0.3626**	**1.4991**	**0.0000**	**1,362.2555**	**1,362.2555**	**0.4406**		**1,371.5077**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0183	0.0237	0.2508	1.0600e-003	0.0894	6.9000e-004	0.0901	0.0237	6.4000e-004	0.0244		71.1171	71.1171	3.0800e-003		71.1817
Total	**0.0183**	**0.0237**	**0.2508**	**1.0600e-003**	**0.0894**	**6.9000e-004**	**0.0901**	**0.0237**	**6.4000e-004**	**0.0244**		**71.1171**	**71.1171**	**3.0800e-003**		**71.1817**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3195	10.3614	12.4112	0.0220		0.3903	0.3903		0.3765	0.3765		1,993.0806	1,993.0806	0.3240		1,999.8837
Total	**1.3195**	**10.3614**	**12.4112**	**0.0220**		**0.3903**	**0.3903**		**0.3765**	**0.3765**		**1,993.0806**	**1,993.0806**	**0.3240**		**1,999.8837**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0472	0.2884	0.7233	1.7100e-003	0.0500	7.4900e-003	0.0575	0.0143	6.8900e-003	0.0211		159.8016	159.8016	1.1300e-003		159.8253
Worker	0.0480	0.0621	0.6582	2.7900e-003	0.2347	1.8200e-003	0.2366	0.0623	1.6900e-003	0.0639		186.6823	186.6823	8.0700e-003		186.8518
Total	**0.0952**	**0.3506**	**1.3815**	**4.5000e-003**	**0.2848**	**9.3100e-003**	**0.2941**	**0.0765**	**8.5800e-003**	**0.0851**		**346.4839**	**346.4839**	**9.2000e-003**		**346.6771**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3195	10.3614	12.4112	0.0220		0.3903	0.3903		0.3765	0.3765	0.0000	1,993.0806	1,993.0806	0.3240		1,999.8837
Total	**1.3195**	**10.3614**	**12.4112**	**0.0220**		**0.3903**	**0.3903**		**0.3765**	**0.3765**	**0.0000**	**1,993.0806**	**1,993.0806**	**0.3240**		**1,999.8837**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0472	0.2884	0.7233	1.7100e-003	0.0500	7.4900e-003	0.0575	0.0143	6.8900e-003	0.0211		159.8016	159.8016	1.1300e-003		159.8253
Worker	0.0480	0.0621	0.6582	2.7900e-003	0.2347	1.8200e-003	0.2366	0.0623	1.6900e-003	0.0639		186.6823	186.6823	8.0700e-003		186.8518
Total	**0.0952**	**0.3506**	**1.3815**	**4.5000e-003**	**0.2848**	**9.3100e-003**	**0.2941**	**0.0765**	**8.5800e-003**	**0.0851**		**346.4839**	**346.4839**	**9.2000e-003**		**346.6771**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.5660	5.2611	8.6730	0.0134		0.2434	0.2434		0.2248	0.2248		1,278.7103	1,278.7103	0.4052		1,287.2204
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5660**	**5.2611**	**8.6730**	**0.0134**		**0.2434**	**0.2434**		**0.2248**	**0.2248**		**1,278.7103**	**1,278.7103**	**0.4052**		**1,287.2204**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0297	0.0385	0.4075	1.7300e-003	0.1453	1.1200e-003	0.1464	0.0385	1.0400e-003	0.0396		115.5652	115.5652	5.0000e-003		115.6702
Total	**0.0297**	**0.0385**	**0.4075**	**1.7300e-003**	**0.1453**	**1.1200e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**115.5652**	**115.5652**	**5.0000e-003**		**115.6702**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	0.5660	5.2611	8.6730	0.0134		0.2434	0.2434		0.2248	0.2248	0.0000	1,278.7103	1,278.7103	0.4052		1,287.2204
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.5660**	**5.2611**	**8.6730**	**0.0134**		**0.2434**	**0.2434**		**0.2248**	**0.2248**	**0.0000**	**1,278.7103**	**1,278.7103**	**0.4052**		**1,287.2204**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0297	0.0385	0.4075	1.7300e-003	0.1453	1.1200e-003	0.1464	0.0385	1.0400e-003	0.0396		115.5652	115.5652	5.0000e-003		115.6702
Total	**0.0297**	**0.0385**	**0.4075**	**1.7300e-003**	**0.1453**	**1.1200e-003**	**0.1464**	**0.0385**	**1.0400e-003**	**0.0396**		**115.5652**	**115.5652**	**5.0000e-003**		**115.6702**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.7625					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.7705
Total	**34.9334**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.7705**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.1400e-003	0.0118	0.1254	5.3000e-004	0.0447	3.5000e-004	0.0451	0.0119	3.2000e-004	0.0122		35.5585	35.5585	1.5400e-003		35.5908
Total	**9.1400e-003**	**0.0118**	**0.1254**	**5.3000e-004**	**0.0447**	**3.5000e-004**	**0.0451**	**0.0119**	**3.2000e-004**	**0.0122**		**35.5585**	**35.5585**	**1.5400e-003**		**35.5908**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	34.7625					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.7705
Total	**34.9334**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.7705**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	9.1400e-003	0.0118	0.1254	5.3000e-004	0.0447	3.5000e-004	0.0451	0.0119	3.2000e-004	0.0122		35.5585	35.5585	1.5400e-003		35.5908
Total	**9.1400e-003**	**0.0118**	**0.1254**	**5.3000e-004**	**0.0447**	**3.5000e-004**	**0.0451**	**0.0119**	**3.2000e-004**	**0.0122**		**35.5585**	**35.5585**	**1.5400e-003**		**35.5908**

Mt. SAC FMPU - 2020

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	39,731.00	Student	39.82	1,734,347.04	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2014	2020

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.7361	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849
Energy	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418
Mobile	138.9955	371.3045	1,469.3479	4.3611	305.4860	6.0726	311.5586	81.6293	5.6001	87.2293		337,925.0691	337,925.0691	12.2648		338,182.6299
Total	**186.1905**	**384.6048**	**1,484.5710**	**4.4410**	**305.4860**	**7.0952**	**312.5812**	**81.6293**	**6.6227**	**88.2519**		**353,848.9489**	**353,848.9489**	**12.5932**	**0.2918**	**354,203.8566**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	45.7361	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849
Energy	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418
Mobile	138.9955	371.3045	1,469.3479	4.3611	305.4860	6.0726	311.5586	81.6293	5.6001	87.2293		337,925.0691	337,925.0691	12.2648		338,182.6299
Total	**186.1905**	**384.6048**	**1,484.5710**	**4.4410**	**305.4860**	**7.0952**	**312.5812**	**81.6293**	**6.6227**	**88.2519**		**353,848.9489**	**353,848.9489**	**12.5932**	**0.2918**	**354,203.8566**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	138.9955	371.3045	1,469.3479	4.3611	305.4860	6.0726	311.5586	81.6293	5.6001	87.2293		337,925.0691	337,925.0691	12.2648		338,182.6299
Unmitigated	138.9955	371.3045	1,469.3479	4.3611	305.4860	6.0726	311.5586	81.6293	5.6001	87.2293		337,925.0691	337,925.0691	12.2648		338,182.6299

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	47,677.20	16,687.02	1589.24	110,744,568	110,744,568
Total	47,677.20	16,687.02	1,589.24	110,744,568	110,744,568

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.509128	0.059640	0.181069	0.139276	0.042833	0.006726	0.016156	0.033615	0.001941	0.002483	0.004400	0.000574	0.002159

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418
NaturalGas Unmitigated	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	135279	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418
Total		**1.4589**	**13.2627**	**11.1406**	**0.0796**		**1.0080**	**1.0080**		**1.0080**	**1.0080**		**15,915.1846**	**15,915.1846**	**0.3050**	**0.2918**	**16,012.0418**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	135.279	1.4589	13.2627	11.1406	0.0796		1.0080	1.0080		1.0080	1.0080		15,915.1846	15,915.1846	0.3050	0.2918	16,012.0418
Total		**1.4589**	**13.2627**	**11.1406**	**0.0796**		**1.0080**	**1.0080**		**1.0080**	**1.0080**		**15,915.1846**	**15,915.1846**	**0.3050**	**0.2918**	**16,012.0418**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	45.7361	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849
Unmitigated	45.7361	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	11.0119					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	34.3401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.3841	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849
Total	**45.7361**	**0.0377**	**4.0825**	**3.0000e-004**		**0.0146**	**0.0146**		**0.0146**	**0.0146**		**8.6952**	**8.6952**	**0.0233**		**9.1849**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Consumer Products	34.3401					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.3841	0.0377	4.0825	3.0000e-004		0.0146	0.0146		0.0146	0.0146		8.6952	8.6952	0.0233		9.1849
Architectural Coating	11.0119					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**45.7361**	**0.0377**	**4.0825**	**3.0000e-004**		**0.0146**	**0.0146**		**0.0146**	**0.0146**		**8.6952**	**8.6952**	**0.0233**		**9.1849**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it was not relevant to this analysis.

Mt. SAC FMPU - 2025

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	43,139.00	Student	43.23	1,883,113.86	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	49.6466	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568
Energy	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042
Mobile	125.5363	284.8629	1,298.2027	4.8092	331.8937	6.6483	338.5420	88.7042	6.1346	94.8389		355,040.8254	355,040.8254	11.1335		355,274.6288
Total	**176.7670**	**299.3030**	**1,314.6920**	**4.8959**	**331.8937**	**7.7584**	**339.6520**	**88.7042**	**7.2447**	**95.9489**		**372,330.6054**	**372,330.6054**	**11.4893**	**0.3168**	**372,670.0897**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	49.6466	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568
Energy	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042
Mobile	125.5363	284.8629	1,298.2027	4.8092	331.8937	6.6483	338.5420	88.7042	6.1346	94.8389		355,040.8254	355,040.8254	11.1335		355,274.6288
Total	**176.7670**	**299.3030**	**1,314.6920**	**4.8959**	**331.8937**	**7.7584**	**339.6520**	**88.7042**	**7.2447**	**95.9489**		**372,330.6054**	**372,330.6054**	**11.4893**	**0.3168**	**372,670.0897**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	125.5363	284.8629	1,298.2027	4.8092	331.8937	6.6483	338.5420	88.7042	6.1346	94.8389		355,040.8254	355,040.8254	11.1335		355,274.6288
Unmitigated	125.5363	284.8629	1,298.2027	4.8092	331.8937	6.6483	338.5420	88.7042	6.1346	94.8389		355,040.8254	355,040.8254	11.1335		355,274.6288

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	51,766.80	18,118.38	1725.56	120,243,888	120,243,888
Total	51,766.80	18,118.38	1,725.56	120,243,888	120,243,888

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.499131	0.060194	0.182964	0.141782	0.044131	0.007011	0.016488	0.036565	0.002001	0.002519	0.004202	0.000556	0.002456

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042
NaturalGas Unmitigated	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	146883	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042
Total		**1.5840**	**14.4003**	**12.0962**	**0.0864**		**1.0944**	**1.0944**		**1.0944**	**1.0944**		**17,280.3390**	**17,280.3390**	**0.3312**	**0.3168**	**17,385.5042**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Junior College (2Yr)	146.883	1.5840	14.4003	12.0962	0.0864		1.0944	1.0944		1.0944	1.0944		17,280.3390	17,280.3390	0.3312	0.3168	17,385.5042
Total		**1.5840**	**14.4003**	**12.0962**	**0.0864**		**1.0944**	**1.0944**		**1.0944**	**1.0944**		**17,280.3390**	**17,280.3390**	**0.3312**	**0.3168**	**17,385.5042**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	49.6466	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568
Unmitigated	49.6466	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	11.9565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	37.2857					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.4045	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568
Total	**49.6466**	**0.0398**	**4.3931**	**3.3000e-004**		**0.0156**	**0.0156**		**0.0156**	**0.0156**		**9.4411**	**9.4411**	**0.0246**		**9.9568**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

SubCategory	lb/day										lb/day					
Consumer Products	37.2857					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	0.4045	0.0398	4.3931	3.3000e-004		0.0156	0.0156		0.0156	0.0156		9.4411	9.4411	0.0246		9.9568
Architectural Coating	11.9565					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**49.6466**	**0.0398**	**4.3931**	**3.3000e-004**		**0.0156**	**0.0156**		**0.0156**	**0.0156**		**9.4411**	**9.4411**	**0.0246**		**9.9568**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it was not relevant to the analysis.

Physical Education Projects-- Phase 1 -- Construction Only

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	91.73	1000sqft	2.11	91,730.00	0
General Light Industry	79.40	1000sqft	1.82	79,400.00	0
Other Non-Asphalt Surfaces	174.43	1000sqft	4.00	174,430.00	0
Parking Lot	107.57	1000sqft	2.47	107,570.00	0
City Park	21.80	Acre	21.80	949,608.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This has updated painting information from Matt Breyer dated March 3, 2016.

Land Use -

Construction Phase - Demolition duration based on Tilden Coil schedule
Site Prep plus Grading equals 45 days based on Tilden Coil schedule
Construction phase roughly based on Tilden Coil schedule and end date of construction and paint info dates March 3, 2016

Trips and VMT - Demolition is 9800 cy, total export of dirt during grading 81429 cy, and concrete import is 15,800 cy

Demolition -

Grading - Entire site will essentially be re-graded

Architectural Coating - Default values based on requirements of Mitigation Monitoring Program and paint info dated March 3, 2016.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	649,198.00	9,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,947,593.00	151,650.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblConstructionPhase	NumDays	35.00	58.00
tblConstructionPhase	NumDays	500.00	381.00
tblConstructionPhase	NumDays	30.00	56.00
tblConstructionPhase	NumDays	45.00	40.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	12/12/2016	12/24/2016
tblConstructionPhase	PhaseStartDate	12/25/2016	12/26/2016
tblConstructionPhase	PhaseStartDate	12/7/2016	12/20/2016
tblGrading	AcresOfGrading	100.00	112.50

tblGrading	MaterialImported	0.00	81,429.00
tblProjectCharacteristics	OperationalYear	2014	2019
tblTripsAndVMT	HaulingTripNumber	0.00	1,580.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	11.1635	147.2165	106.8954	0.2517	32.9577	4.6960	37.6537	9.9840	4.3202	13.9404	0.0000	25,504.5115	25,504.5115	2.0834	0.0000	25,548.2623
2017	10.5035	135.9483	102.4764	0.2514	14.4870	4.3333	18.8202	5.0866	3.9865	9.0731	0.0000	25,084.5826	25,084.5826	2.0791	0.0000	25,128.2432
2018	10.3331	44.0146	72.2222	0.1575	8.2418	1.8399	10.0817	2.2117	1.7229	3.9346	0.0000	13,800.3014	13,800.3014	0.9842	0.0000	13,820.9698
Total	**32.0001**	**327.1794**	**281.5940**	**0.6606**	**55.6864**	**10.8692**	**66.5556**	**17.2823**	**10.0296**	**26.9482**	**0.0000**	**64,389.3955**	**64,389.3955**	**5.1467**	**0.0000**	**64,497.4753**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	11.1635	147.2165	106.8954	0.2517	27.8784	4.6960	32.5745	7.6033	4.3202	11.9235	0.0000	25,504.5115	25,504.5115	2.0834	0.0000	25,548.2623

2017	10.5035	135.9483	102.4764	0.2514	9.4077	4.3333	13.7410	3.0697	3.9865	7.0562	0.0000	25,084.5826	25,084.5826	2.0791	0.0000	25,128.2432
2018	10.3331	44.0146	72.2222	0.1575	8.2418	1.8399	10.0817	2.2117	1.7229	3.9346	0.0000	13,800.3014	13,800.3014	0.9842	0.0000	13,820.9698
Total	**32.0001**	**327.1794**	**281.5940**	**0.6606**	**45.5280**	**10.8692**	**56.3971**	**12.8847**	**10.0296**	**22.9143**	**0.0000**	**64,389.3955**	**64,389.3955**	**5.1467**	**0.0000**	**64,497.4753**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**18.24**	**0.00**	**15.26**	**25.45**	**0.00**	**14.97**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2016	12/6/2016	6	56	
2	Site Preparation	Site Preparation	12/20/2016	12/24/2016	6	5	
3	Grading	Grading	12/26/2016	2/9/2017	6	40	
4	Building Construction	Building Construction	2/10/2017	4/30/2018	6	381	
5	Paving	Paving	5/1/2018	6/9/2018	6	35	
6	Architectural Coating	Architectural Coating	6/10/2018	8/16/2018	6	58	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 151,650; Non-Residential Outdoor: 9,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73

Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	1,962.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	10,179.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	589.00	230.00	1,580.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	118.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.5833	0.0000	7.5833	1.1482	0.0000	1.1482			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365		4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**7.5833**	**2.2921**	**9.8754**	**1.1482**	**2.1365**	**3.2847**		**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6332	9.9525	7.7871	0.0258	0.6105	0.1528	0.7633	0.1672	0.1406	0.3077		2,597.4943	2,597.4943	0.0188		2,597.8881
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		167.3573	167.3573	9.1500e-003		167.5495

Total	**0.6971**	**10.0385**	**8.6855**	**0.0278**	**0.7781**	**0.1542**	**0.9323**	**0.2116**	**0.1419**	**0.3535**		**2,764.8516**	**2,764.8516**	**0.0279**		**2,765.4376**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.4125	0.0000	3.4125	0.5167	0.0000	0.5167			0.0000			0.0000
Off-Road	4.2876	45.6559	35.0303	0.0399		2.2921	2.2921		2.1365	2.1365	0.0000	4,089.2841	4,089.2841	1.1121		4,112.6374
Total	**4.2876**	**45.6559**	**35.0303**	**0.0399**	**3.4125**	**2.2921**	**5.7046**	**0.5167**	**2.1365**	**2.6532**	**0.0000**	**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.6332	9.9525	7.7871	0.0258	0.6105	0.1528	0.7633	0.1672	0.1406	0.3077		2,597.4943	2,597.4943	0.0188		2,597.8881
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0640	0.0860	0.8984	1.9900e-003	0.1677	1.4000e-003	0.1691	0.0445	1.2900e-003	0.0458		167.3573	167.3573	9.1500e-003		167.5495
Total	**0.6971**	**10.0385**	**8.6855**	**0.0278**	**0.7781**	**0.1542**	**0.9323**	**0.2116**	**0.1419**	**0.3535**		**2,764.8516**	**2,764.8516**	**0.0279**		**2,765.4376**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036		4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**18.0663**	**2.9387**	**21.0049**	**9.9307**	**2.7036**	**12.6343**		**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0768	0.1032	1.0780	2.3900e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		200.8288	200.8288	0.0110		201.0594
Total	**0.0768**	**0.1032**	**1.0780**	**2.3900e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**200.8288**	**200.8288**	**0.0110**		**201.0594**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	5.0771	54.6323	41.1053	0.0391		2.9387	2.9387		2.7036	2.7036	0.0000	4,065.0053	4,065.0053	1.2262		4,090.7544
Total	**5.0771**	**54.6323**	**41.1053**	**0.0391**	**8.1298**	**2.9387**	**11.0685**	**4.4688**	**2.7036**	**7.1724**	**0.0000**	**4,065.0053**	**4,065.0053**	**1.2262**		**4,090.7544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0768	0.1032	1.0780	2.3900e-003	0.2012	1.6800e-003	0.2029	0.0534	1.5500e-003	0.0549		200.8288	200.8288	0.0110		201.0594
Total	**0.0768**	**0.1032**	**1.0780**	**2.3900e-003**	**0.2012**	**1.6800e-003**	**0.2029**	**0.0534**	**1.5500e-003**	**0.0549**		**200.8288**	**200.8288**	**0.0110**		**201.0594**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Fugitive Dust					9.2350	0.0000	9.2350	3.6672	0.0000	3.6672			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975		6,414.9807	6,414.9807	1.9350		6,455.6154
Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**9.2350**	**3.5842**	**12.8192**	**3.6672**	**3.2975**	**6.9647**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5988	72.2881	56.5602	0.1873	23.4991	1.1099	24.6091	5.8938	1.0210	6.9148		18,866.3877	18,866.3877	0.1362		18,869.2475
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0853	0.1147	1.1978	2.6500e-003	0.2236	1.8700e-003	0.2254	0.0593	1.7200e-003	0.0610		223.1431	223.1431	0.0122		223.3994
Total	**4.6841**	**72.4028**	**57.7580**	**0.1899**	**23.7227**	**1.1118**	**24.8345**	**5.9531**	**1.0227**	**6.9758**		**19,089.5308**	**19,089.5308**	**0.1484**		**19,092.6469**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.1557	0.0000	4.1557	1.6502	0.0000	1.6502			0.0000			0.0000
Off-Road	6.4795	74.8137	49.1374	0.0617		3.5842	3.5842		3.2975	3.2975	0.0000	6,414.9807	6,414.9807	1.9350		6,455.6154

Total	**6.4795**	**74.8137**	**49.1374**	**0.0617**	**4.1557**	**3.5842**	**7.7400**	**1.6502**	**3.2975**	**4.9477**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.5988	72.2881	56.5602	0.1873	23.4991	1.1099	24.6091	5.8938	1.0210	6.9148		18,866.3877	18,866.3877	0.1362		18,869.2475
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0853	0.1147	1.1978	2.6500e-003	0.2236	1.8700e-003	0.2254	0.0593	1.7200e-003	0.0610		223.1431	223.1431	0.0122		223.3994
Total	**4.6841**	**72.4028**	**57.7580**	**0.1899**	**23.7227**	**1.1118**	**24.8345**	**5.9531**	**1.0227**	**6.9758**		**19,089.5308**	**19,089.5308**	**0.1484**		**19,092.6469**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2350	0.0000	9.2350	3.6672	0.0000	3.6672			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518		6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**9.2350**	**3.3172**	**12.5522**	**3.6672**	**3.0518**	**6.7190**		**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.3279	66.2528	54.5918	0.1871	5.0284	1.0143	6.0427	1.3602	0.9330	2.2932		18,556.6415	18,556.6415	0.1334		18,559.4430
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0765	0.1035	1.0796	2.6500e-003	0.2236	1.8000e-003	0.2254	0.0593	1.6600e-003	0.0610		214.5722	214.5722	0.0113		214.8087
Total	**4.4044**	**66.3563**	**55.6714**	**0.1897**	**5.2520**	**1.0161**	**6.2681**	**1.4195**	**0.9347**	**2.3542**		**18,771.2136**	**18,771.2136**	**0.1447**		**18,774.2517**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.1557	0.0000	4.1557	1.6502	0.0000	1.6502			0.0000			0.0000
Off-Road	6.0991	69.5920	46.8050	0.0617		3.3172	3.3172		3.0518	3.0518	0.0000	6,313.3690	6,313.3690	1.9344		6,353.9915
Total	**6.0991**	**69.5920**	**46.8050**	**0.0617**	**4.1557**	**3.3172**	**7.4729**	**1.6502**	**3.0518**	**4.7020**	**0.0000**	**6,313.3690**	**6,313.3690**	**1.9344**		**6,353.9915**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	4.3279	66.2528	54.5918	0.1871	5.0284	1.0143	6.0427	1.3602	0.9330	2.2932		18,556.6415	18,556.6415	0.1334		18,559.4430
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0765	0.1035	1.0796	2.6500e-003	0.2236	1.8000e-003	0.2254	0.0593	1.6600e-003	0.0610		214.5722	214.5722	0.0113		214.8087
Total	**4.4044**	**66.3563**	**55.6714**	**0.1897**	**5.2520**	**1.0161**	**6.2681**	**1.4195**	**0.9347**	**2.3542**		**18,771.2136**	**18,771.2136**	**0.1447**		**18,774.2517**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730		2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**		**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0705	1.0797	0.8896	3.0500e-003	0.0926	0.0165	0.1091	0.0248	0.0152	0.0400		302.4032	302.4032	2.1700e-003		302.4488
Vendor	1.9171	18.5201	26.1046	0.0496	1.4379	0.2946	1.7325	0.4096	0.2709	0.6805		4,891.9658	4,891.9658	0.0357		4,892.7149
Worker	2.2525	3.0478	31.7942	0.0781	6.5836	0.0529	6.6366	1.7460	0.0488	1.7948		6,319.1504	6,319.1504	0.3317		6,326.1157
Total	**4.2401**	**22.6476**	**58.7884**	**0.1308**	**8.1141**	**0.3640**	**8.4782**	**2.1803**	**0.3349**	**2.5153**		**11,513.5193**	**11,513.5193**	**0.3695**		**11,521.2794**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1024	26.4057	18.1291	0.0268		1.7812	1.7812		1.6730	1.6730	0.0000	2,639.8053	2,639.8053	0.6497		2,653.4490
Total	**3.1024**	**26.4057**	**18.1291**	**0.0268**		**1.7812**	**1.7812**		**1.6730**	**1.6730**	**0.0000**	**2,639.8053**	**2,639.8053**	**0.6497**		**2,653.4490**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0705	1.0797	0.8896	3.0500e-003	0.0926	0.0165	0.1091	0.0248	0.0152	0.0400		302.4032	302.4032	2.1700e-003		302.4488
Vendor	1.9171	18.5201	26.1046	0.0496	1.4379	0.2946	1.7325	0.4096	0.2709	0.6805		4,891.9658	4,891.9658	0.0357		4,892.7149

Worker	2.2525	3.0478	31.7942	0.0781	6.5836	0.0529	6.6366	1.7460	0.0488	1.7948		6,319.1504	6,319.1504	0.3317		6,326.1157
Total	**4.2401**	**22.6476**	**58.7884**	**0.1308**	**8.1141**	**0.3640**	**8.4782**	**2.1803**	**0.3349**	**2.5153**		**11,513.5193**	**11,513.5193**	**0.3695**		**11,521.2794**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048		2,609.9390	2,609.9390	0.6387		2,623.3517
Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**		**2,609.9390**	**2,609.9390**	**0.6387**		**2,623.3517**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0687	1.0013	0.8718	3.0500e-003	0.2203	0.0165	0.2368	0.0561	0.0152	0.0713		297.3784	297.3784	2.2000e-003		297.4247
Vendor	1.7917	16.9886	25.0489	0.0495	1.4379	0.2775	1.7155	0.4096	0.2553	0.6649		4,809.7893	4,809.7893	0.0355		4,810.5344
Worker	2.0256	2.7639	28.7688	0.0781	6.5836	0.0515	6.6352	1.7460	0.0477	1.7937		6,083.1947	6,083.1947	0.3078		6,089.6590
Total	**3.8860**	**20.7537**	**54.6896**	**0.1307**	**8.2418**	**0.3456**	**8.5874**	**2.2117**	**0.3182**	**2.5298**		**11,190.3624**	**11,190.3624**	**0.3455**		**11,197.6181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048	0.0000	2,609.9389	2,609.9389	0.6387		2,623.3517
Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**	**0.0000**	**2,609.9389**	**2,609.9389**	**0.6387**		**2,623.3517**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0687	1.0013	0.8718	3.0500e-003	0.2203	0.0165	0.2368	0.0561	0.0152	0.0713		297.3784	297.3784	2.2000e-003		297.4247
Vendor	1.7917	16.9886	25.0489	0.0495	1.4379	0.2775	1.7155	0.4096	0.2553	0.6649		4,809.7893	4,809.7893	0.0355		4,810.5344
Worker	2.0256	2.7639	28.7688	0.0781	6.5836	0.0515	6.6352	1.7460	0.0477	1.7937		6,083.1947	6,083.1947	0.3078		6,089.6590
Total	**3.8860**	**20.7537**	**54.6896**	**0.1307**	**8.2418**	**0.3456**	**8.5874**	**2.2117**	**0.3182**	**2.5298**		**11,190.3624**	**11,190.3624**	**0.3455**		**11,197.6181**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.6114	17.1628	14.4944	0.0223		0.9386	0.9386		0.8635	0.8635		2,245.2695	2,245.2695	0.6990		2,259.9481
Paving	0.1849					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7963**	**17.1628**	**14.4944**	**0.0223**		**0.9386**	**0.9386**		**0.8635**	**0.8635**		**2,245.2695**	**2,245.2695**	**0.6990**		**2,259.9481**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day										lb/day					
Off-Road	1.6114	17.1628	14.4944	0.0223		0.9386	0.9386		0.8635	0.8635	0.0000	2,245.2695	2,245.2695	0.6990		2,259.9481
Paving	0.1849					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.7963**	**17.1628**	**14.4944**	**0.0223**		**0.9386**	**0.9386**		**0.8635**	**0.8635**	**0.0000**	**2,245.2695**	**2,245.2695**	**0.6990**		**2,259.9481**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.6286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000

Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506		281.4485	281.4485	0.0267		282.0102
Total	**9.9272**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**		**281.4485**	**281.4485**	**0.0267**		**282.0102**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4058	0.5537	5.7635	0.0156	1.3190	0.0103	1.3293	0.3498	9.5500e-003	0.3594		1,218.7045	1,218.7045	0.0617		1,219.9996
Total	**0.4058**	**0.5537**	**5.7635**	**0.0156**	**1.3190**	**0.0103**	**1.3293**	**0.3498**	**9.5500e-003**	**0.3594**		**1,218.7045**	**1,218.7045**	**0.0617**		**1,219.9996**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.6286					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2986	2.0058	1.8542	2.9700e-003		0.1506	0.1506		0.1506	0.1506	0.0000	281.4485	281.4485	0.0267		282.0102
Total	**9.9272**	**2.0058**	**1.8542**	**2.9700e-003**		**0.1506**	**0.1506**		**0.1506**	**0.1506**	**0.0000**	**281.4485**	**281.4485**	**0.0267**		**282.0102**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.4058	0.5537	5.7635	0.0156	1.3190	0.0103	1.3293	0.3498	9.5500e-003	0.3594		1,218.7045	1,218.7045	0.0617		1,219.9996
Total	**0.4058**	**0.5537**	**5.7635**	**0.0156**	**1.3190**	**0.0103**	**1.3293**	**0.3498**	**9.5500e-003**	**0.3594**		**1,218.7045**	**1,218.7045**	**0.0617**		**1,219.9996**

Physical Education Projects-- Phase 2 -- Construction Only

South Coast AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	117.90	1000sqft	2.71	117,900.00	0
Enclosed Parking Structure	23.09	1000sqft	0.53	23,088.00	0
Other Non-Asphalt Surfaces	68.81	1000sqft	1.58	68,805.00	0
Parking Lot	0.00	1000sqft	0.00	0.00	0
City Park	0.00	Acre	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Construction of enclosed parking structure used to simulate pool areas.
Non-asphalt parking used to simulate construction of tennis courts.

Construction Phase - Painting consistent with March 3, 2016 info.

Trips and VMT -

Demolition -

Grading -

Architectural Coating - Painting consistent with March 3, 2016 info.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	104,897.00	13,644.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	314,690.00	229,901.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblConstructionPhase	NumDays	18.00	88.00
tblConstructionPhase	NumDays	230.00	535.00
tblConstructionPhase	PhaseEndDate	9/1/2020	9/28/2020
tblConstructionPhase	PhaseStartDate	8/5/2020	9/1/2020
tblLandUse	LandUseSquareFeet	23,090.00	23,088.00
tblLandUse	LandUseSquareFeet	68,810.00	68,805.00
tblProjectCharacteristics	OperationalYear	2014	2021

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.3540	45.6933	37.1138	0.0458	18.2675	2.3670	20.6344	9.9840	2.1776	12.1617	0.0000	4,229.8157	4,229.8157	1.2359	0.0000	4,255.7699
2019	2.8803	23.6584	24.6410	0.0457	1.1962	1.3315	2.5277	0.3214	1.2511	1.5725	0.0000	4,152.2005	4,152.2005	0.6761	0.0000	4,166.3989

2020	9.9162	80.9181	80.8283	0.2231	58.1124	2.4685	60.5808	9.3468	2.2869	11.6337	0.0000	21,032.4367	21,032.4367	1.2312	0.0000	21,058.2918
Total	**17.1505**	**150.2698**	**142.5831**	**0.3147**	**77.5760**	**6.1670**	**83.7430**	**19.6523**	**5.7156**	**25.3679**	**0.0000**	**29,414.4529**	**29,414.4529**	**3.1432**	**0.0000**	**29,480.4606**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.3540	45.6933	37.1138	0.0458	8.3310	2.3670	10.6980	4.5222	2.1776	6.6998	0.0000	4,229.8157	4,229.8157	1.2359	0.0000	4,255.7698
2019	2.8803	23.6584	24.6410	0.0457	1.1962	1.3315	2.5277	0.3214	1.2511	1.5725	0.0000	4,152.2005	4,152.2005	0.6761	0.0000	4,166.3989
2020	9.9162	80.9181	80.8283	0.2231	28.6187	2.4685	31.0872	4.8812	2.2869	7.1681	0.0000	21,032.4367	21,032.4367	1.2312	0.0000	21,058.2918
Total	**17.1505**	**150.2698**	**142.5831**	**0.3147**	**38.1459**	**6.1670**	**44.3129**	**9.7248**	**5.7156**	**15.4404**	**0.0000**	**29,414.4529**	**29,414.4529**	**3.1432**	**0.0000**	**29,480.4605**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**50.83**	**0.00**	**47.08**	**50.52**	**0.00**	**39.13**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/1/2018	2/7/2018	5	5	
2	Grading	Grading	2/8/2018	2/19/2018	5	8	
3	Building Construction	Building Construction	2/20/2018	3/9/2020	5	535	

4	Paving	Paving	3/10/2020	4/2/2020	5	18	
5	Architectural Coating	Architectural Coating	4/3/2020	8/4/2020	5	88	
6	Demolition	Demolition	9/1/2020	9/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 229,901; Non-Residential Outdoor: 13,644 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36

Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	4,956.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	88.00	34.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.2921	45.6088	36.2346	0.0391		2.3654	2.3654		2.1762	2.1762		3,939.7731	3,939.7731	1.2265		3,965.5297
Total	**4.2921**	**45.6088**	**36.2346**	**0.0391**	**18.0663**	**2.3654**	**20.4317**	**9.9307**	**2.1762**	**12.1069**		**3,939.7731**	**3,939.7731**	**1.2265**		**3,965.5297**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0619	0.0845	0.8792	2.3900e-003	0.2012	1.5700e-003	0.2028	0.0534	1.4600e-003	0.0548		185.9041	185.9041	9.4100e-003		186.1016
Total	**0.0619**	**0.0845**	**0.8792**	**2.3900e-003**	**0.2012**	**1.5700e-003**	**0.2028**	**0.0534**	**1.4600e-003**	**0.0548**		**185.9041**	**185.9041**	**9.4100e-003**		**186.1016**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.2921	45.6088	36.2346	0.0391		2.3654	2.3654		2.1762	2.1762	0.0000	3,939.7731	3,939.7731	1.2265		3,965.5297
Total	**4.2921**	**45.6088**	**36.2346**	**0.0391**	**8.1298**	**2.3654**	**10.4952**	**4.4688**	**2.1762**	**6.6450**	**0.0000**	**3,939.7731**	**3,939.7731**	**1.2265**		**3,965.5297**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0619	0.0845	0.8792	2.3900e-003	0.2012	1.5700e-003	0.2028	0.0534	1.4600e-003	0.0548		185.9041	185.9041	9.4100e-003		186.1016
Total	**0.0619**	**0.0845**	**0.8792**	**2.3900e-003**	**0.2012**	**1.5700e-003**	**0.2028**	**0.0534**	**1.4600e-003**	**0.0548**		**185.9041**	**185.9041**	**9.4100e-003**		**186.1016**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	3.0028	31.0702	23.9988	0.0297		1.7201	1.7201		1.5825	1.5825		2,993.1005	2,993.1005	0.9318		3,012.6681
Total	**3.0028**	**31.0702**	**23.9988**	**0.0297**	**6.5523**	**1.7201**	**8.2724**	**3.3675**	**1.5825**	**4.9500**		**2,993.1005**	**2,993.1005**	**0.9318**		**3,012.6681**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	lb/day											lb/day				
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	3.0028	31.0702	23.9988	0.0297		1.7201	1.7201		1.5825	1.5825	0.0000	2,993.1005	2,993.1005	0.9318		3,012.6681
Total	**3.0028**	**31.0702**	**23.9988**	**0.0297**	**2.9486**	**1.7201**	**4.6686**	**1.5154**	**1.5825**	**3.0979**	**0.0000**	**2,993.1005**	**2,993.1005**	**0.9318**		**3,012.6681**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0516	0.0704	0.7327	1.9900e-003	0.1677	1.3100e-003	0.1690	0.0445	1.2100e-003	0.0457		154.9201	154.9201	7.8400e-003		155.0847
Total	**0.0516**	**0.0704**	**0.7327**	**1.9900e-003**	**0.1677**	**1.3100e-003**	**0.1690**	**0.0445**	**1.2100e-003**	**0.0457**		**154.9201**	**154.9201**	**7.8400e-003**		**155.0847**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048		2,609.9390	2,609.9390	0.6387		2,623.3517
Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**		**2,609.9390**	**2,609.9390**	**0.6387**		**2,623.3517**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2649	2.5114	3.7029	7.3200e-003	0.2126	0.0410	0.2536	0.0605	0.0377	0.0983		711.0123	711.0123	5.2400e-003		711.1225
Worker	0.3026	0.4129	4.2982	0.0117	0.9836	7.7000e-003	0.9913	0.2609	7.1200e-003	0.2680		908.8644	908.8644	0.0460		909.8302

Total	**0.5675**	**2.9243**	**8.0011**	**0.0190**	**1.1962**	**0.0487**	**1.2449**	**0.3214**	**0.0449**	**0.3663**		**1,619.8767**	**1,619.8767**	**0.0512**		**1,620.9527**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6687	23.2608	17.5327	0.0268		1.4943	1.4943		1.4048	1.4048	0.0000	2,609.9389	2,609.9389	0.6387		2,623.3517
Total	**2.6687**	**23.2608**	**17.5327**	**0.0268**		**1.4943**	**1.4943**		**1.4048**	**1.4048**	**0.0000**	**2,609.9389**	**2,609.9389**	**0.6387**		**2,623.3517**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2649	2.5114	3.7029	7.3200e-003	0.2126	0.0410	0.2536	0.0605	0.0377	0.0983		711.0123	711.0123	5.2400e-003		711.1225
Worker	0.3026	0.4129	4.2982	0.0117	0.9836	7.7000e-003	0.9913	0.2609	7.1200e-003	0.2680		908.8644	908.8644	0.0460		909.8302
Total	**0.5675**	**2.9243**	**8.0011**	**0.0190**	**1.1962**	**0.0487**	**1.2449**	**0.3214**	**0.0449**	**0.3663**		**1,619.8767**	**1,619.8767**	**0.0512**		**1,620.9527**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3516	20.9650	17.1204	0.0268		1.2850	1.2850		1.2083	1.2083		2,580.7618	2,580.7618	0.6279		2,593.9479
Total	**2.3516**	**20.9650**	**17.1204**	**0.0268**		**1.2850**	**1.2850**		**1.2083**	**1.2083**		**2,580.7618**	**2,580.7618**	**0.6279**		**2,593.9479**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2503	2.3147	3.5812	7.2900e-003	0.2126	0.0389	0.2515	0.0606	0.0358	0.0964		697.1727	697.1727	5.1500e-003		697.2808
Worker	0.2783	0.3787	3.9394	0.0116	0.9836	7.5600e-003	0.9912	0.2609	7.0100e-003	0.2679		874.2661	874.2661	0.0431		875.1702
Total	**0.5286**	**2.6934**	**7.5207**	**0.0189**	**1.1962**	**0.0465**	**1.2427**	**0.3214**	**0.0428**	**0.3642**		**1,571.4388**	**1,571.4388**	**0.0482**		**1,572.4510**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.3516	20.9650	17.1204	0.0268		1.2850	1.2850		1.2083	1.2083	0.0000	2,580.7618	2,580.7618	0.6279		2,593.9479
Total	**2.3516**	**20.9650**	**17.1204**	**0.0268**		**1.2850**	**1.2850**		**1.2083**	**1.2083**	**0.0000**	**2,580.7618**	**2,580.7618**	**0.6279**		**2,593.9479**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2503	2.3147	3.5812	7.2900e-003	0.2126	0.0389	0.2515	0.0606	0.0358	0.0964		697.1727	697.1727	5.1500e-003		697.2808
Worker	0.2783	0.3787	3.9394	0.0116	0.9836	7.5600e-003	0.9912	0.2609	7.0100e-003	0.2679		874.2661	874.2661	0.0431		875.1702
Total	**0.5286**	**2.6934**	**7.5207**	**0.0189**	**1.1962**	**0.0465**	**1.2427**	**0.3214**	**0.0428**	**0.3642**		**1,571.4388**	**1,571.4388**	**0.0482**		**1,572.4510**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Off-Road	2.1113	19.0839	16.8084	0.0268		1.1128	1.1128		1.0465	1.0465		2,542.4799	2,542.4799	0.6194		2,555.4880
Total	**2.1113**	**19.0839**	**16.8084**	**0.0268**		**1.1128**	**1.1128**		**1.0465**	**1.0465**		**2,542.4799**	**2,542.4799**	**0.6194**		**2,555.4880**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2373	2.0192	3.4773	7.2900e-003	0.2126	0.0356	0.2482	0.0606	0.0328	0.0933		681.4601	681.4601	5.0500e-003		681.5660
Worker	0.2608	0.3509	3.6644	0.0116	0.9836	7.5200e-003	0.9912	0.2609	6.9700e-003	0.2678		838.7414	838.7414	0.0408		839.5976
Total	**0.4981**	**2.3701**	**7.1416**	**0.0189**	**1.1962**	**0.0431**	**1.2394**	**0.3214**	**0.0397**	**0.3611**		**1,520.2014**	**1,520.2014**	**0.0458**		**1,521.1637**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.1113	19.0839	16.8084	0.0268		1.1128	1.1128		1.0465	1.0465	0.0000	2,542.4799	2,542.4799	0.6194		2,555.4880
Total	**2.1113**	**19.0839**	**16.8084**	**0.0268**		**1.1128**	**1.1128**		**1.0465**	**1.0465**	**0.0000**	**2,542.4799**	**2,542.4799**	**0.6194**		**2,555.4880**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2373	2.0192	3.4773	7.2900e-003	0.2126	0.0356	0.2482	0.0606	0.0328	0.0933		681.4601	681.4601	5.0500e-003		681.5660
Worker	0.2608	0.3509	3.6644	0.0116	0.9836	7.5200e-003	0.9912	0.2609	6.9700e-003	0.2678		838.7414	838.7414	0.0408		839.5976
Total	**0.4981**	**2.3701**	**7.1416**	**0.0189**	**1.1962**	**0.0431**	**1.2394**	**0.3214**	**0.0397**	**0.3611**		**1,520.2014**	**1,520.2014**	**0.0458**		**1,521.1637**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1689	11.6447	12.1132	0.0187		0.6432	0.6432		0.5935	0.5935		1,778.2300	1,778.2300	0.5585		1,789.9580
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1689**	**11.6447**	**12.1132**	**0.0187**		**0.6432**	**0.6432**		**0.5935**	**0.5935**		**1,778.2300**	**1,778.2300**	**0.5585**		**1,789.9580**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0593	0.0797	0.8328	2.6400e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5800e-003	0.0609		190.6230	190.6230	9.2700e-003		190.8176
Total	**0.0593**	**0.0797**	**0.8328**	**2.6400e-003**	**0.2236**	**1.7100e-003**	**0.2253**	**0.0593**	**1.5800e-003**	**0.0609**		**190.6230**	**190.6230**	**9.2700e-003**		**190.8176**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1689	11.6447	12.1132	0.0187		0.6432	0.6432		0.5935	0.5935	0.0000	1,778.2300	1,778.2300	0.5585		1,789.9580
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1689**	**11.6447**	**12.1132**	**0.0187**		**0.6432**	**0.6432**		**0.5935**	**0.5935**	**0.0000**	**1,778.2300**	**1,778.2300**	**0.5585**		**1,789.9580**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0593	0.0797	0.8328	2.6400e-003	0.2236	1.7100e-003	0.2253	0.0593	1.5800e-003	0.0609		190.6230	190.6230	9.2700e-003		190.8176
Total	**0.0593**	**0.0797**	**0.8328**	**2.6400e-003**	**0.2236**	**1.7100e-003**	**0.2253**	**0.0593**	**1.5800e-003**	**0.0609**		**190.6230**	**190.6230**	**9.2700e-003**		**190.8176**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.6207					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109		281.4481	281.4481	0.0218		281.9057
Total	**9.8629**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**		**281.4481**	**281.4481**	**0.0218**		**281.9057**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0533	0.0718	0.7495	2.3800e-003	0.2012	1.5400e-003	0.2027	0.0534	1.4300e-003	0.0548		171.5607	171.5607	8.3400e-003		171.7359
Total	**0.0533**	**0.0718**	**0.7495**	**2.3800e-003**	**0.2012**	**1.5400e-003**	**0.2027**	**0.0534**	**1.4300e-003**	**0.0548**		**171.5607**	**171.5607**	**8.3400e-003**		**171.7359**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	9.6207					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2422	1.6838	1.8314	2.9700e-003		0.1109	0.1109		0.1109	0.1109	0.0000	281.4481	281.4481	0.0218		281.9057
Total	**9.8629**	**1.6838**	**1.8314**	**2.9700e-003**		**0.1109**	**0.1109**		**0.1109**	**0.1109**	**0.0000**	**281.4481**	**281.4481**	**0.0218**		**281.9057**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

Worker	0.0533	0.0718	0.7495	2.3800e-003	0.2012	1.5400e-003	0.2027	0.0534	1.4300e-003	0.0548		171.5607	171.5607	8.3400e-003		171.7359
Total	**0.0533**	**0.0718**	**0.7495**	**2.3800e-003**	**0.2012**	**1.5400e-003**	**0.2027**	**0.0534**	**1.4300e-003**	**0.0548**		**171.5607**	**171.5607**	**8.3400e-003**		**171.7359**

3.7 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					53.6248	0.0000	53.6248	8.1193	0.0000	8.1193			0.0000			0.0000
Off-Road	3.0964	31.0154	29.6099	0.0400		1.4899	1.4899		1.3865	1.3865		3,857.1420	3,857.1420	1.0933		3,880.1021
Total	**3.0964**	**31.0154**	**29.6099**	**0.0400**	**53.6248**	**1.4899**	**55.1147**	**8.1193**	**1.3865**	**9.5058**		**3,857.1420**	**3,857.1420**	**1.0933**		**3,880.1021**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9023	49.8430	50.5938	0.1812	4.3199	0.9773	5.2972	1.1831	0.8991	2.0822		17,032.3275	17,032.3275	0.1309		17,035.0765
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0445	0.0598	0.6246	1.9800e-003	0.1677	1.2800e-003	0.1690	0.0445	1.1900e-003	0.0457		142.9673	142.9673	6.9500e-003		143.1132
Total	**3.9467**	**49.9028**	**51.2184**	**0.1832**	**4.4875**	**0.9786**	**5.4661**	**1.2276**	**0.9003**	**2.1279**		**17,175.2947**	**17,175.2947**	**0.1379**		**17,178.1897**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					24.1312	0.0000	24.1312	3.6537	0.0000	3.6537			0.0000			0.0000
Off-Road	3.0964	31.0154	29.6099	0.0400		1.4899	1.4899		1.3865	1.3865	0.0000	3,857.1420	3,857.1420	1.0933		3,880.1021
Total	**3.0964**	**31.0154**	**29.6099**	**0.0400**	**24.1312**	**1.4899**	**25.6210**	**3.6537**	**1.3865**	**5.0402**	**0.0000**	**3,857.1420**	**3,857.1420**	**1.0933**		**3,880.1021**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	3.9023	49.8430	50.5938	0.1812	4.3199	0.9773	5.2972	1.1831	0.8991	2.0822		17,032.3275	17,032.3275	0.1309		17,035.0765
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0445	0.0598	0.6246	1.9800e-003	0.1677	1.2800e-003	0.1690	0.0445	1.1900e-003	0.0457		142.9673	142.9673	6.9500e-003		143.1132
Total	**3.9467**	**49.9028**	**51.2184**	**0.1832**	**4.4875**	**0.9786**	**5.4661**	**1.2276**	**0.9003**	**2.1279**		**17,175.2947**	**17,175.2947**	**0.1379**		**17,178.1897**

Operational data removed because it was not used.

Greenhouse Gas Assessment for the Mt. San Antonio College Facilities Master Plan Update and Physical Education Projects

Report #16-008GHG
April 15, 2016

Prepared For:

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1.0 EXISTING ENVIRONMENT

1.1 Project Description

Mt. San Antonio College is located in the City of Walnut on over 420 acres. It has an estimated 2014-2015 fall enrollment of 35,986 students (headcount). The college has proposed a 2015 Facilities Master Plan Update (FMPU) and the corresponding Land Use Plan is shown as in Exhibit 1. The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue and is shown in Exhibit 2. The existing stadium will be demolished and a new stadium built onsite. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks 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.

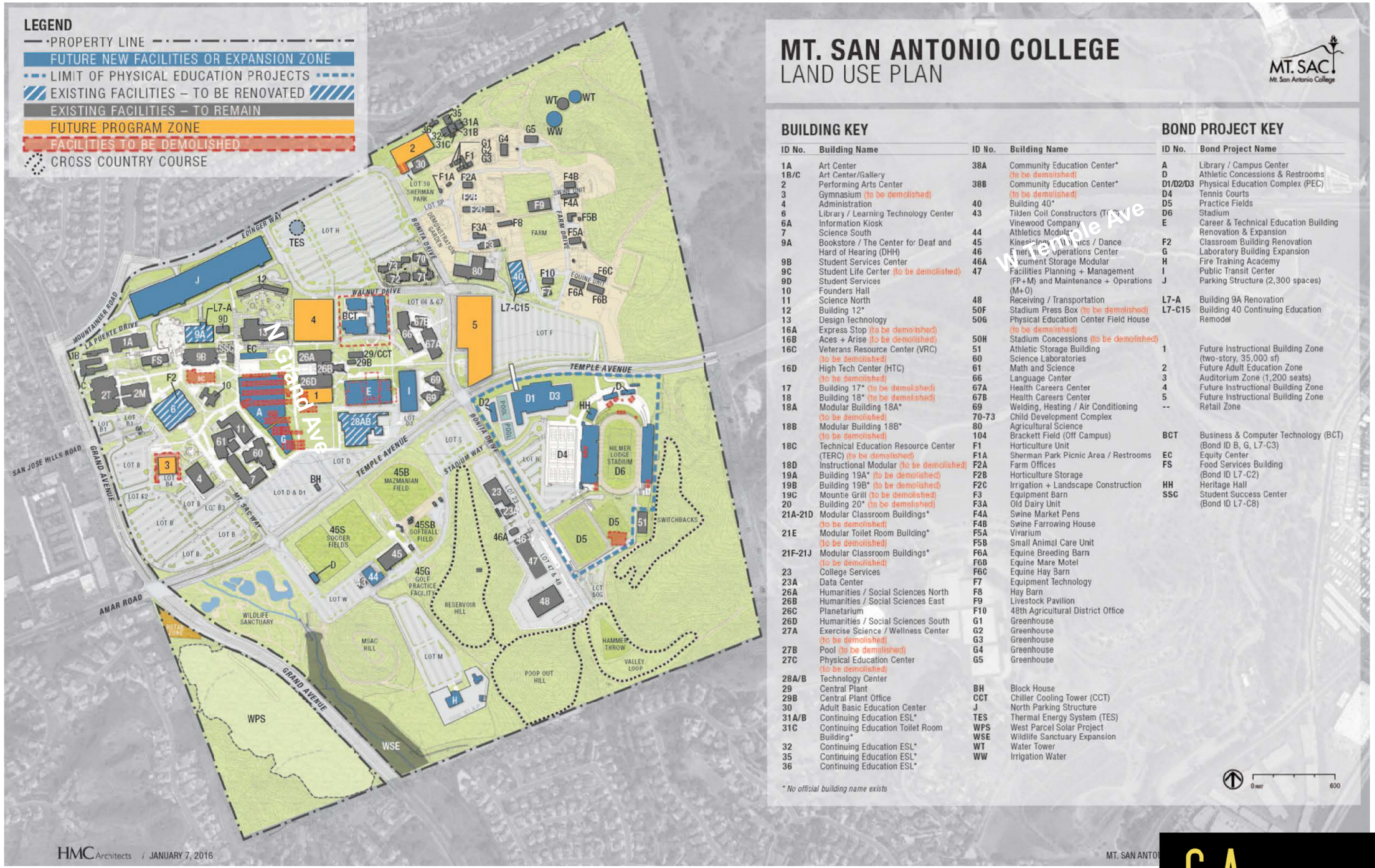
This report analyzes the potential climate change impacts associated with this project. Both the greenhouse gas emissions generated by construction and operation of the project are assessed.

1.2 Greenhouse Gases and Climate Change

1.2.1 Impact of Climate Change

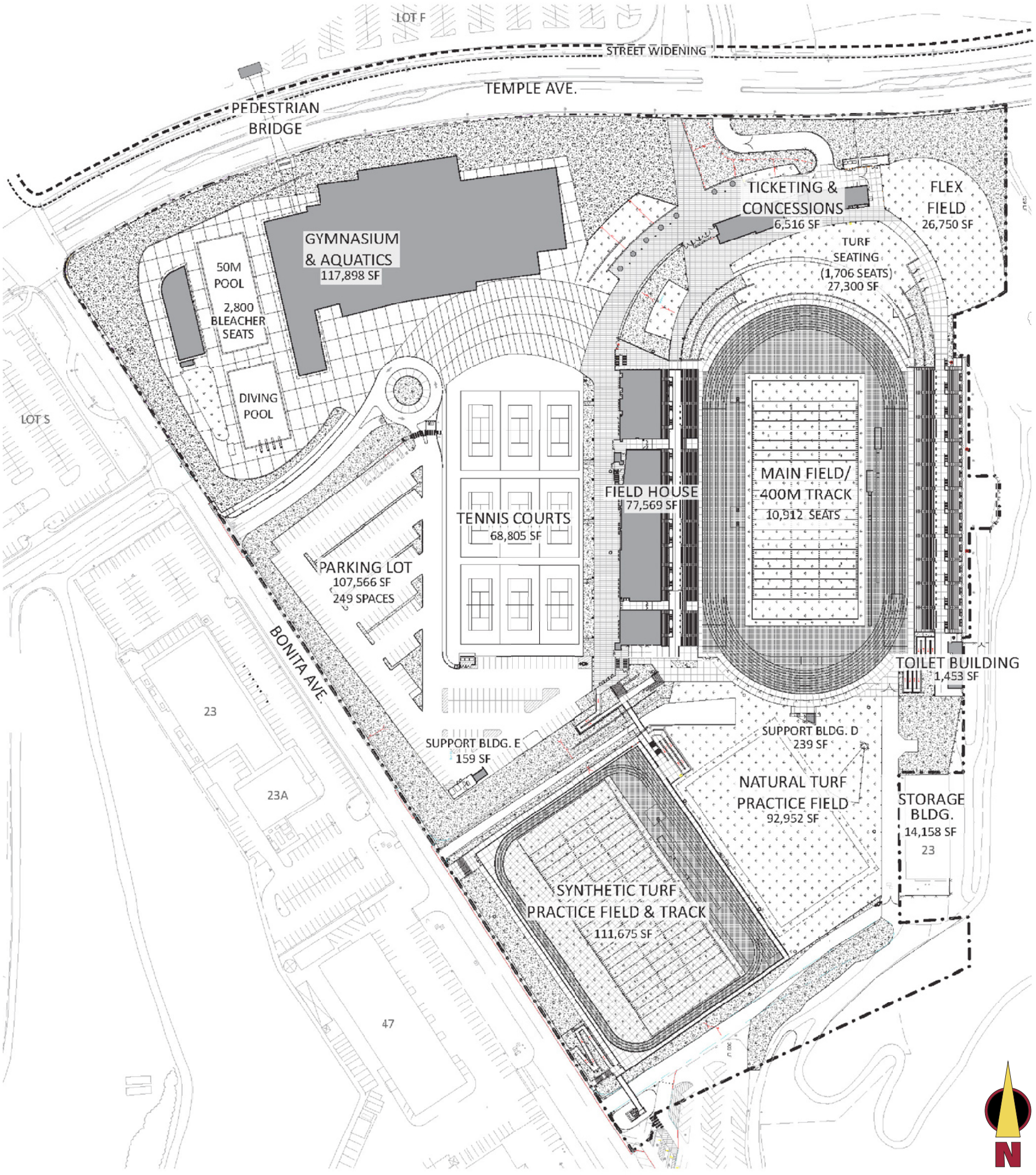
The Earth's climate has always been in the process of changing, due to many different natural factors. These factors have included changes in the Earth's orbit, volcanic eruptions, and varying amounts of energy released from the sun. Differences such as these have caused fluctuations in the temperature of the climate, ranging from ice ages to long periods of warmth. However, since the late 18th century, humans have had an increasing impact of the rate of climate change, beginning with the Industrial Revolution.

Exhibit 1 - Land Use Plan for the 2015 FMPU



G&A

Exhibit 2 - Physical Education Projects



G&A

Many human activities have augmented the amount of "greenhouse gases" ("GHGs") being released into our atmosphere, specifically the burning of fossil fuels, such as coal and oil, and deforestation. The gases increase the efficiency of the greenhouse effect, which is the process of trapping and recycling energy (in the form of heat) that the Earth emits naturally, resulting in higher temperatures worldwide. The Intergovernmental Panel on Climate Change stated in February 2007 that warming is unequivocal, expressing very high confidence (expressed as a nine out of ten chance of being correct) that the net effect of human activities since 1750 has been one of warming. According to the National Oceanic and Atmospheric Administration (NOAA) and National Aeronautics and Space Administration (NASA) data, the average surface temperature of the Earth has increased by about 1.2 to 1.4°F in the last 100 years. The eight warmest years on record (since 1850) have all occurred since 1998, with the warmest year being 2005. [EPA, 2011, epa.gov/climatechange/basicinfo.html].

This process of heating is often referred to as 'global warming,' although the National Academy of Sciences prefers the terms 'climate change' as an umbrella phrase which includes global warming as well as other environmental changes, in addition to the increasing temperatures. Some of these effects include changes to rainfall, wind, and current weather patterns, as well as snow and ice cover, and sea level.

If greenhouse gases continue to increase, climate models predict that the average temperature at the Earth's surface could increase from 3.2 to 7.2°F above 1990 levels by the end of this century. The degree of change is influenced by the assumed amount of GHG emissions, and how quickly atmospheric GHG levels are stabilized. At this point, however, the climate change models are not capable of predicting local impacts, but rather, can only predict global trends. [EPA, 2011, epa.gov/climatechange/basicinfo.html].

Global GHG emissions are measured in million metric tons of carbon dioxide equivalent ("MMT CO_2EQ") units. A metric ton is approximately 2,205 lbs. Some GHGs emitted into the atmosphere are naturally occurring, while others are caused solely by human activities. The principal GHGs that enter the atmosphere because of human activities are:

- **Carbon dioxide (CO_2)** enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), agriculture, irrigation, and deforestation, as well as the manufacturing of cement.

- **Methane (CH_4)** is emitted through the production and transportation of coal, natural gas, and oil, as well as from livestock. Other agricultural activities influence methane emissions as well as the decay of waste in landfills.

- **Nitrous oxide (N_2O)** is released most often during the burning of fuel at high temperatures. This greenhouse gas is caused mostly by motor vehicles, which also include non-road vehicles, such as those used for agriculture.

- **Fluorinated Gases** are emitted primarily from industrial sources, which often include hydrofluorocarbons (HRC), perfluorocarbons (PFC), and sulfur hexafluoride (SF_6). Though they are often released in smaller quantities, they are referred to as High Global Warming Potential Gases because of their ability to cause global warming. Fluorinated gases are often used as substitutes for ozone depleting substances.

These gases have different potentials for trapping heat in the atmosphere, called global warming potential ("GWP"). For example, one pound of methane has 21 times more heat capturing potential than one pound of carbon dioxide. When dealing with an array of emissions, the gases are converted to carbon dioxide equivalents for comparison purposes. The GWPs for common greenhouse gases are shown in Table 1.

Table 1 Global Warming Potentials (GWP)

Gas	Global Warming Potential
Carbon Dioxide	1
Methane	28
Nitrous Oxide	265
Nitrogen Trifluoride	16,100
Hydrofluorocarbons	100-12,000
Perfluorocarbons	7,000-11,000
Sulfur Hexafluoride (SF_6)	23,500

Source: CARB, "First Update to the Climate Change Scoping Plan," May 2014.

1.2.2 Impact of Climate Change on California and Human Health

The long-term environmental impacts of global warming may include sea level rise that could cause devastating erosion and flooding of coastal cities and villages, as well as more intense hurricanes and typhoons worldwide. In the United States, Chicago is projected to experience 25 percent more frequent heat waves and Los Angeles a four-to-eight-fold increase in heat wave days by the end of the century (IPCC, 2007: Climate Change 2007: Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge).

Locally, global warming could cause changing weather patterns with increased storm and drought severity in California. Changes to local and regional ecosystems include the potential loss of species and a significant reduction in winter snow pack (e.g., estimates

include a 30 to 90% reduction in snow pack in the Sierra Nevada mountain range). Current data suggest that in the next 25 years, in every season of the year, California could experience unprecedented heat, longer and more extreme heat waves, greater intensity and frequency of heat waves, and longer dry periods. The California Climate Change Center (2006) predicted that California could witness the following events:

- Temperature rises between 3 and 10.5°F
- 6 to 20 inches or more increase in sea level
- 2 to 4 times as many heat-wave days in major urban centers
- 2 to 6 times as many heat-related deaths in major urban centers
- 1 to 1.5 times more critically dry years
- 10 to 55% increase in the risk of wildfires

An increase in the frequency of extreme events may result in more event-related deaths, injuries, infectious diseases, and stress-related disorders. Particular segments of the population such as those with heart problems, asthma, the elderly, the very young and the homeless can be especially vulnerable to extreme heat. Also, climate change may increase the risk of some infectious diseases; particularly those diseases that appear in warm areas and are spread by mosquitoes and other insects. These "vector-borne" diseases include malaria, dengue fever, yellow fever, and encephalitis. Also, algal blooms could occur more frequently as temperatures warm – particularly in areas with polluted waters – in which case diseases (such as cholera) that tend to accompany algal blooms could become more frequent.

1.2.3 Adaptation Impact

Adaptation refers to potential climate change impacts on the project. Global warming is already having a profound impact on water resources. Climate change already altered the weather patterns and water supply in California leading to increased water shortages (i.e., a dwindling snowpack, bigger flood flows, rising sea levels, longer and harsher droughts). Water supplies are also at risk from rising sea levels. Risks may include degradation of California's estuaries, wetlands, and groundwater aquifers that would threaten the quality and reliability of the major California fresh water supply (Climate Change Adaptation Strategies for California's Water, State of California Department of Water Resources, October 2008).

Higher temperatures will also likely increase electricity demand due to higher air conditioning use. Even if the population remained unchanged, toward the end of the century annual electricity demand could increase by as much as 20 percent if temperatures rise into the higher warming range. (Implementing aggressive efficiency measures could lower this estimate).

Higher temperatures may require that the project consume more electricity for cooling. Additionally, more water may be needed for the landscaping. However, sea level rise will not

impact the project because it is so far and high relative to the ocean.

Adaptation includes the responses to the changing climate and policies to minimize the predicted impacts (e.g., building better coastal defenses to sea level rise). Adaptation is not included in this report. It should be note that adaptation is not mitigation. Mitigation includes intervention or policies to reduce GHG emissions or to enhance the sinks of GHGs.

1.2.4 Emission Inventories

To put perspective on the emissions generated by a project and to better understand the sources of GHGs, it is important to look at emission inventories. The United Nations has taken the lead in quantifying GHG emissions and compiling the literature on climate change. The United Nations estimate for CO_2 emissions for the world and for the top ten CO_2 producing countries is presented in Table 2.

Table 2 Top Ten CO2 Producing Nations in 2007 (Million Metric Tons (MMT) CO_2)

Country	Emissions	Percent of Global
1. China	6,538	22%
2. United States	6,094	20%
3. India	1,610	5%
4. Russian Federation	1,580	5%
5. Japan	1,304	4%
6. Germany	841	3%
7. Canada	590	2%
8. United Kingdom	546	2%
9. Korea, Republic of	503	2%
10. Iran (Islamic Republic of)	496	2%
Remaining Countries	*10,010*	*33%*
Total Global	**30,114**	**100%**

Source: United Nations, 2011, http://unstats.un.org/unsd/environment/air_co2_emissions.htm

Global CO_2 emissions totaled about 30,114 MMT CO_2 in 2007. China released the most CO_2 emissions. The United States was second and released 6,094 MMT CO_2 in 2007, which is approximately 20% of the earth's total emissions. The data in Table 2 emphasize the major role that the United States and China play in climate change with the emissions of the two countries accounting for 42% of the emissions.

Within the United States, California has the second highest level of GHG production with Texas having the highest. In 2001, the burning of fossil fuels produced over 81% of total

GHG emissions. In relation to other states, California is the second highest producer of CO_2 by fossil fuels, as shown in Exhibit 3.

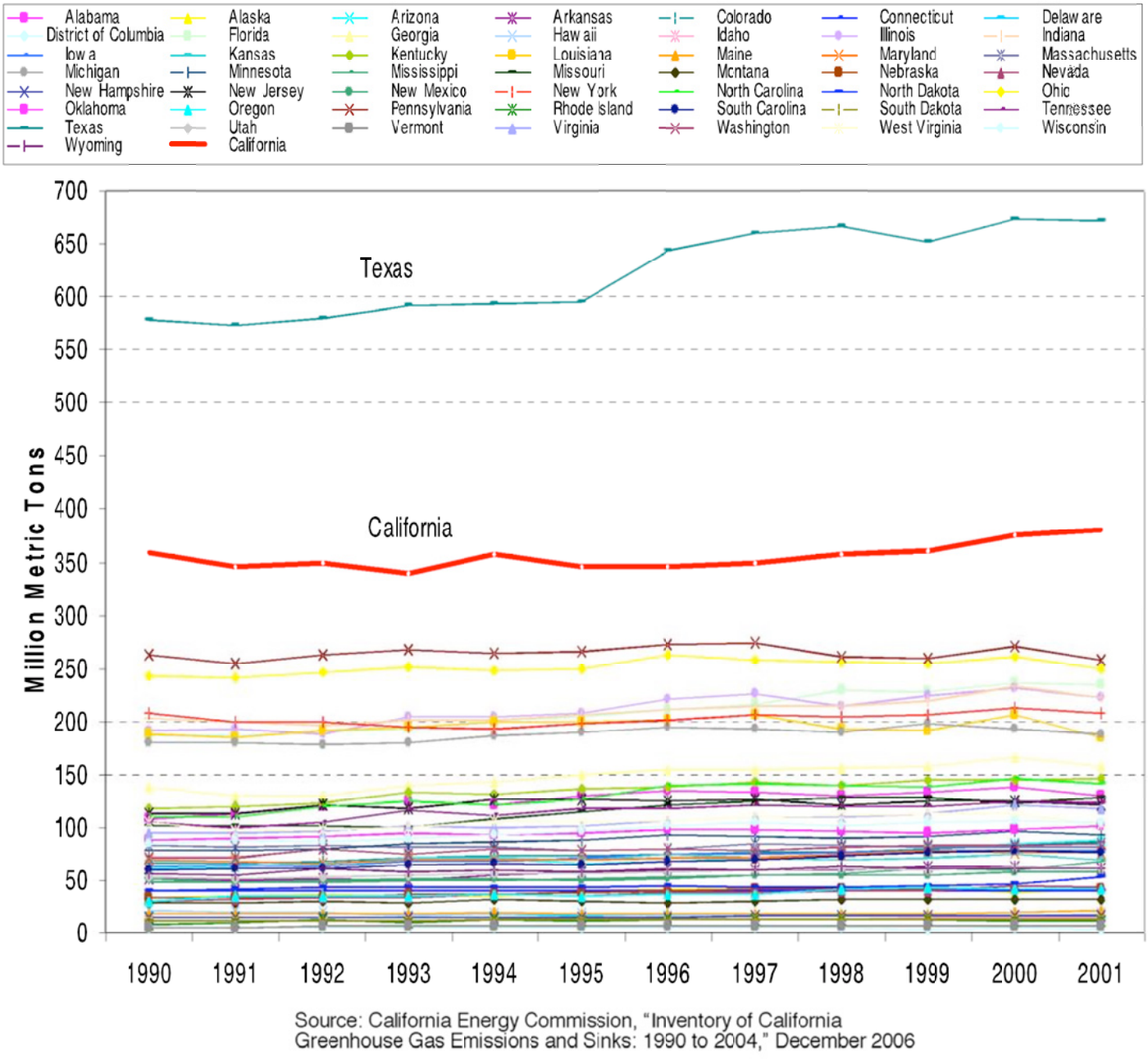
1.2.5 Sources of Greenhouse Gases in California

The California Energy Commission ("CEC") categorizes GHG generation by source into eight broad categories. The categories are:

- **Transportation** includes the combustion of gasoline and diesel in automobiles and trucks. Transportation also includes jet fuel consumption and bunker fuel for ships.
- **Agriculture** GHG emissions are composed mostly of nitrous oxide from agricultural soil management, methane from enteric fermentation, and methane and nitrous oxide from manure management.
- **Commercial and residential** uses generate GHG emissions primarily from the combustion of natural gas for space and water heating.
- **Industrial** GHG emissions are produced from many industrial activities. Major contributors include oil and natural gas extraction; crude oil refining; food processing; stone, clay, glass, and cement manufacturing; chemical manufacturing; and cement production. Wastewater treatment plants are also significant contributors to this category.
- **Electric generation** includes both emissions from power plants in California as well as power plants located outside of the state that supply electricity to the state.
- **Recycling and waste** includes primarily landfills.
- **High (GWP)** emissions consist of ozone depleting substance substitutes and electricity grid SF6 losses.
- **Forestry** emissions are due to wildfires.

The relative amount of GHGs released from each of these categories in California in 2009 is shown in Exhibit 4 (source: "California Greenhouse Gas Inventory for 2000-2009 by Category as Defined in the Scoping Plan," California Environmental Protection Agency, October 26, 2011).

Exhibit 3 - CO2 Production by State



Source: California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004," December 2006

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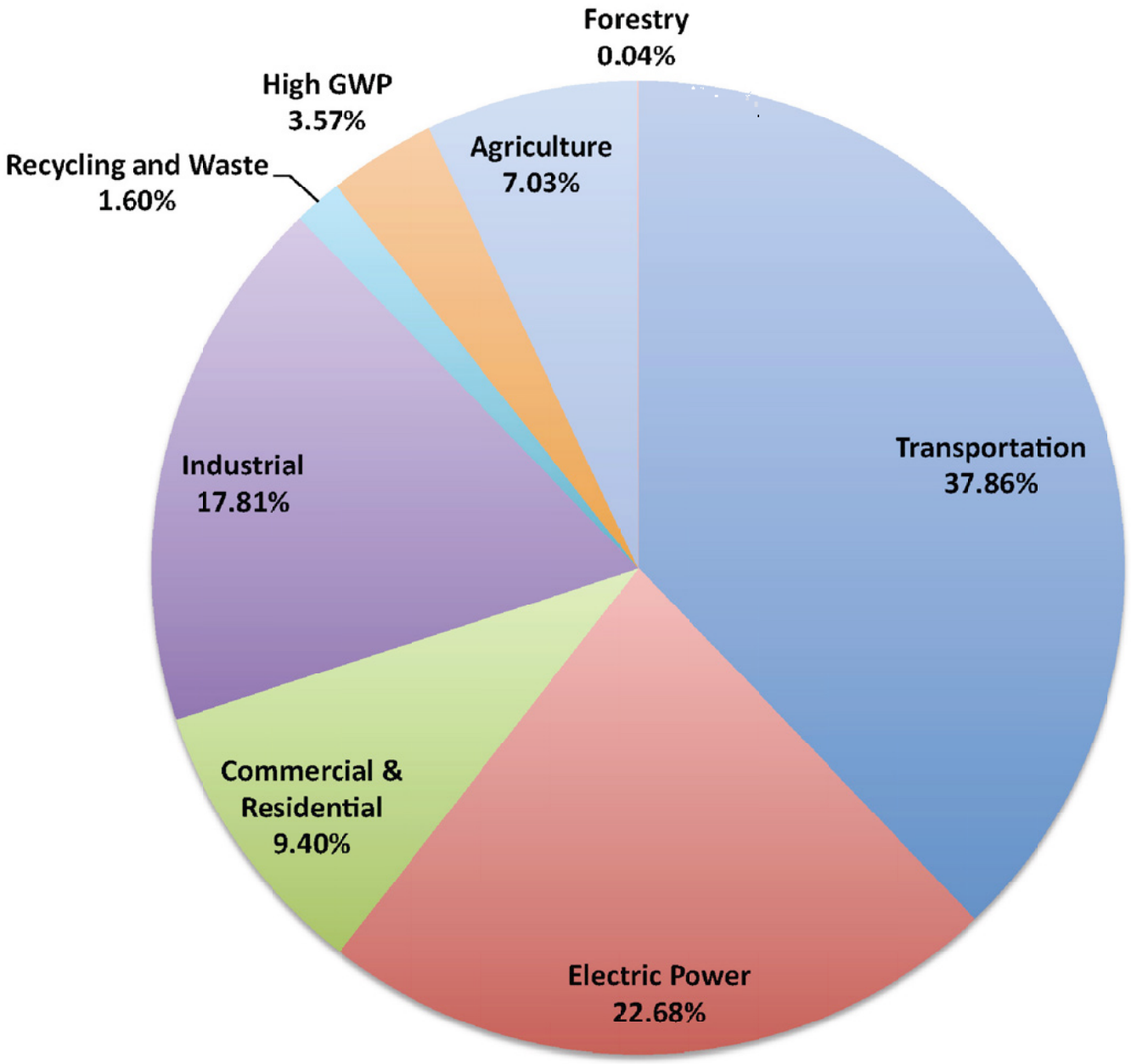
Exhibit 4 - California GHG Emissions by Sector



Examination of Exhibit 4 indicates that most of California's GHGs are emitted by transportation sources, such as automobiles, trucks, and airplanes. Combustion of fossil fuels in the transportation sector contributed approximately 38% of the California GHG. This category was followed by the electric power sector (including both in-state and out-of-state sources) (23%) and the industrial sector (18%). Residential and commercial activity accounted for approximately 9% of the emissions.

While California has the second highest rate of GHG production in the nation, it should also be noted that California has one of the lowest per capita rates of GHG emissions, as shown in Exhibit 5. According to Exhibit 5, California had the fourth lowest per capita rate of CO_2 production from fossil fuels in the United States. Wyoming produced the most CO_2 per capita, while the District of Columbia produced the lowest.

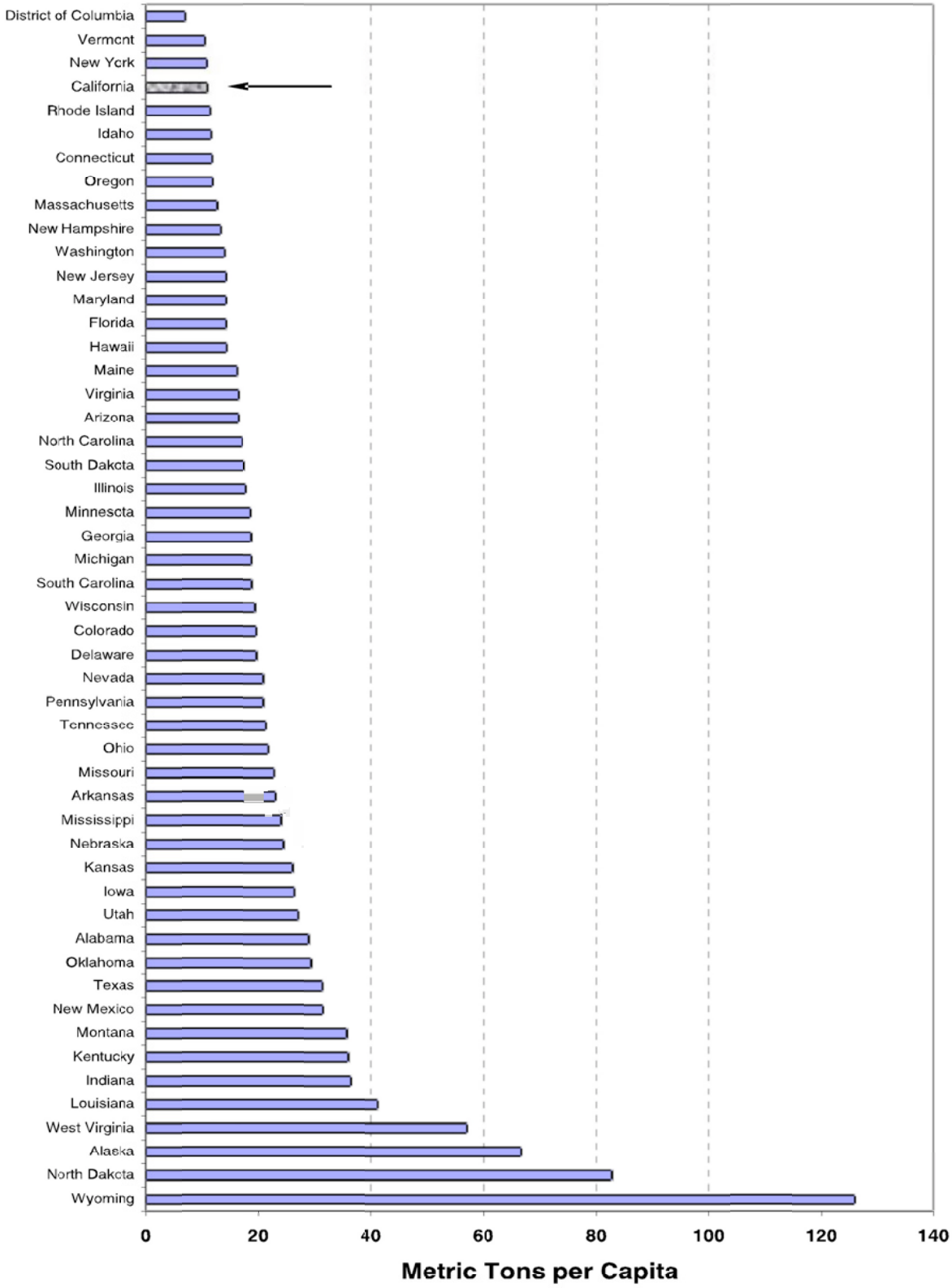
1.3 Regulatory Framework

1.3.1 Federal Plans, Policies, Regulations, and Laws.

The federal government began studying the phenomenon of global warming as early as 1978 with the National Climate Protection Act, 92 Stat. 601, which required the President to establish a program to "assist the Nation and the world to understand and respond to natural and man-induced climate processes and their implications." The 1987 Global Climate Protection Act, Title XI of Pub. L. 100-204, directed the U.S. EPA to propose a "coordinated national policy on global climate change," and ordered the Secretary of State to work "through the channels of multilateral diplomacy" to coordinate efforts to address global warming. Further, in 1992, the United States ratified a nonbinding agreement among 154 nations to reduce atmospheric GHGs.

The U.S. EPA has several regulatory initiatives to reduce greenhouse gas emissions. On August 3, 2015, the EPA issued the Clean Power Plan, which put the nation on track to cut harmful pollution from the power sector by 32 percent below 2005 levels, while also cutting smog-and soot-forming emissions that threaten public health by 20 percent. Previously, on May 13, 2010, EPA set greenhouse gas emissions thresholds to define when permits under the New Source Review Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs are required for new and existing industrial facilities. This final rule "tailors" the requirements of these Clean Air Act permitting programs to limit covered facilities to the nation's largest greenhouse gas emitters: power plants, refineries, and cement production facilities.

Exhibit 5 - CO2 Emissions Per Capita (2001)



Source: California Energy Commission, "Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004," December 2006

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EPA and the National Highway Traffic Safety Administration (NHTSA) are taking coordinated steps to enable the production of a new generation of clean vehicles through reduced greenhouse gas emissions and improved fuel use. Together, the enacted and proposed standards are expected to save more than six billion barrels of oil through 2025 and reduce more than 3,100 million metric tons of carbon dioxide emissions. Additionally, EPA is also responsible for developing and implementing regulations to ensure that transportation fuel sold in the United States contains a minimum volume of renewable fuel. By 2022, the Renewable Fuel Standard (RFS) program will reduce greenhouse gas emissions by 138 million metric tons, about the annual emissions of 27 million passenger vehicles, replacing about seven percent of expected annual diesel consumption and decreasing oil imports by $41.5 billion.

The U.S. EPA has issued two proposals to further reduce GHG emissions from municipal solid waste landfills. The EPA has proposed a suite of requirements that would reduce GHG emissions from the oil and natural gas industry.

1.3.2 California State Plans, Policies, Regulations, and Laws

In the past several years, California has distinguished itself as a national leader in efforts to address global climate change by enacting several major pieces of legislation, engaging in multi-national and multi-state collaborative efforts, and preparing a wealth of information on the impacts associated with global climate change.

In November 2008, the Governor issued Executive Order S-13-08 directing state agencies to plan for sea level rise and other climate change impacts. There are four key actions in the Executive Order: (1) initiation of a climate change adaptation strategy that will assess the state's expected climate change impacts where the state is most vulnerable, with recommendations by early 2009; (2) an expert panel on sea level rise will inform state planning and development efforts; (3) interim guidance to state agencies on planning for sea level rise in coastal and floodplain areas for new projects; and (4) initiation of a report on critical existing and planned infrastructure projects vulnerable to sea level rise.

Assembly Bill 32, the California Global Warming Solutions Act of 2006 (Health and Safety Code § 38500 et seq.). In September 2006, Governor Arnold Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006. In general, AB 32 directs the California Air Resources Board ("CARB") to do the following:

- On or before June 30, 2007, CARB shall publish a list of discrete early action measures for reducing GHG emissions that can be implemented by January 1, 2010;

- By January 1, 2008, establish the statewide GHG emissions cap for 2020, based on CARB's calculation of statewide GHG emissions in 1990 (an approximately 25 percent reduction in existing statewide GHG emissions);

- Also by January 1, 2008, adopt mandatory reporting rules for GHG emissions sources that "contribute the most to statewide emissions" (Health & Safety Code § 38530);

- By January 1, 2009, adopt a scoping plan that indicates how GHG emission reductions will be achieved from significant GHG sources through regulations, market mechanisms, and other strategies;

- On or before January 1, 2010, adopt regulations to implement the early action GHG emission reduction measures;

- On or before January 1, 2011, adopt quantifiable, verifiable, and enforceable emission reduction measures by regulation that will achieve the statewide GHG emissions limit by 2020; and

- On January 1, 2012, CARB's GHG emissions regulations become operative.

- On January 1, 2020, achieve 1990 levels of GHG emissions.

In a December 2006 report, CARB estimated that California emitted between 425 and 468 million metric tons of CO_2 in 1990. In December 2007, CARB finalized 1990 emissions at 427 million metric tons of CO_2. In the August 2007 draft report, CARB estimated California emitted approximately 480 million metric tons of CO_2 in 2004. Based on the U.S. Census Bureau California 2007 population of 36,553,215, this would result in about 13 metric tons of CO_2 per capita.

AB 32 takes into account the relative contribution of each source or source category to protect adverse impacts on small businesses and others by requiring CARB to recommend a *de minimis* (minimal importance) threshold of GHG emissions below which emissions reduction requirements would not apply. AB 32 also allows the Governor to adjust the deadlines mentioned above for individual regulations or the entire state to the earliest feasible date in the event of extraordinary circumstances, catastrophic events, or threat of significant economic harm.

CARB "Early Action Measures" (June 30, 2007). On June 21, 2007, CARB approved its early action measures to address climate change, as required by AB 32. The three measures include: (1) a low carbon fuel standard, which will reduce the carbon-intensity in California fuels, thereby reducing total CO_2 emissions; (2) reduction of refrigerant losses from motor vehicle air conditioning system maintenance through the restriction of "do-it-yourself" automotive refrigerants; and (3) increased CH_4 (methane) capture from landfills through the required implementation of state-of-the-art capture technologies.

CARB Mandatory Reporting Regulations (December 2008). Under AB 32, CARB propounded regulations to govern mandatory greenhouse gas emissions reporting for certain sectors of the economy, most dealing with approximately 94 percent of the industrial and commercial stationary sources of emissions. Regulated entities include electricity generating facilities, electricity retail providers, oil refineries, hydrogen plants, cement plants, cogeneration facilities, and industrial sources that emit over 25,000 metric tons of CO2 from stationary source combustion.

Senate Bill 97 (2007). By July 1, 2009, the Governor's Office of Planning and Research (OPR) is directed to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of greenhouse gas emissions or the effects of greenhouse gas emissions, as required by the California Environmental Quality Act. The Resources Agency is required to certify and adopt these guidelines by January 1, 2010. OPR is required to periodically update these guidelines as CARB implements AB 32. In addition, SB 97 states that the failure to include a discussion of greenhouse gas emissions in any CEQA document for a project funded under the Highway Safety, Traffic Reduction, Air Quality and Port Security Bond Act of 2006, or projects funded under the Disaster Preparedness and Flood Prevention Bond Act of 2006 shall not be a cause of action under CEQA. This last provision will be repealed on January 1, 2010. In response to SB 97, the Office of Planning and Research ("OPR") issued a Technical Advisory on CEQA and Climate Change in June 2008. The Advisory provides an outline of what should be included in a GHG analysis under CEQA (http://www.opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf). In January 2009, OPR issued draft amendments to the CEQA Guidelines that address GHGs. Among the amendments are the following:

- Determining the Significance of Impacts from Greenhouse Gas Emissions (Guidelines § 15064.4);
- Thresholds of Significance (Guidelines ¤ 15064.7(c));
- Discussion of Cumulative Impacts (Guidelines ¤ 15130(a)(1)(B) and Guidelines § 15130(f));
- Tiering and Streamlining the Analysis of Greenhouse Gas Emissions (Guidelines § 15183.5).

Executive Order S-01-07 (2007). Executive Order S-01-07 calls for a reduction in the carbon intensity of California's transportation fuels by at least 10 percent by 2020. As noted above, the low-carbon fuel standard ("LCFS") was adopted by CARB as one of its three "early action measures" on June 21, 2007.

Senate Bill 1368 (2006) (Public Utilities Code §§ 8340-41). SB 1368 required the California Public Utilities Commission ("PUC") to establish a "GHG emission performance standard" by February 1, 2007, for all electricity providers under its jurisdiction, including the state's three

largest privately owned utilities. These utilities provide approximately 30 percent of the state's electric power. After the PUC acted, the CEC adopted a performance standard "consistent with" the PUC performance standard and applied it to local publicly-owned utilities on May 23, 2007 (over one month ahead of its June 30, 2007 deadline). Cal. Pub. Res. Code § 8341(e)(1). However, the California Office of Administrative Law ("OAL") found four alleged flaws in the CEC's rulemaking. The CEC overcame these alleged flaws and adopted reformulating regulations in August 2007.

Senate Bill 107 (2006). Senate Bill 107 ("SB 107") requires investor-owned utilities such as Pacific Gas and Electric, Southern California Edison and San Diego Gas and Electric, to generate 20 percent of their electricity from renewable sources by 2010. Previously, state law required that this target be achieved by 2017.

Senate Bill 375 (September 2008). In September 2008, SB 375 was signed by Governor Schwarzenegger. SB 375 is a comprehensive global warming bill that helps to achieve the goals of AB32. To help establish these targets, the CARB assigned a Regional Targets Advisory Committee to recommend factors to be considered and methodologies for setting greenhouse gas emission reduction targets. SR 375 also provides incentive – relief from certain CEQA requirements for development projects that are consistent with regional plans that achieve the targets. SB 375 requires CARB to develop, in collaboration with the Metropolitan Planning Organization (MPO), passenger vehicle greenhouse gas emissions reduction targets for 2020 and 2035 by September 30, 2010. The MPO is required to include and adopt, in their regional transportation plan, a sustainable community strategy that will meet the region's target provided by CARB.

Executive Order S-3-05 (June 1, 2005). Executive Order S-3-05 calls for a reduction in GHG emissions to 2000 levels by 2010; 1990 levels by 2020; and for an 80 percent reduction in GHG emissions below 1990 levels by 2050. It also directs the California Environmental Protection Agency ("CalEPA") to prepare biennial science reports on the potential impact of continued global warming on certain sectors of the California economy.

California's Renewable Energy Portfolio Standard Program (2005). In 2002, California established its Renewable Energy Portfolio Standard Program, which originally included a goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. The state's most recent 2005 Energy Action Plan raises the renewable energy goal from 20 percent by 2017, to 33 percent by 2020.

Title 24, Part 6, California Code of Regulations (2005). In 2005, California adopted new energy efficiency standards for residential and nonresidential buildings in order to reduce California's energy consumption. This program has been partially responsible for keeping California's per capita energy use approximately flat over the past 30 years.

Assembly Bill 1493 (2002) (Health and Safety Code § 43018.5). Assembly Bill 1493 ("AB 1493") required CARB to develop and adopt the nation's first GHG emission standards for automobiles. Not only have litigants challenged their legality in federal court, but also USEPA denied California's request for a Clean Air Act waiver to implement its regulations. As of this writing, California and other states that seek to adopt California's greenhouse gas emissions standards for automobiles are challenging USEPA's denial in federal court.

Climate Action Registry (2001). California Senate Bills 1771 and 527 created the structure of the California Climate Action Registry ("Registry"), and former Governor Gray Davis signed the final version of the Registry's enabling legislation into law on October 13, 2001. These bills establish the Registry as a non-profit entity to help companies and organizations establish GHG emissions baselines against which future GHG emission reduction requirements could be applied. Using any year from 1990 forward as a base year, participants can record their annual GHG emissions with the Registry. In return for this voluntary action, the State of California promises to offer its "best efforts" to ensure that participants receive consideration for their early action if they are subject to any future state, federal, or international emissions regulatory scheme.

1.3.3 SCAQMD Plans, Policies, Regulations and Laws

The South Coast Air Quality Management District ("SCAQMD") adopted a "Policy on Global Warming and Stratospheric Ozone Depletion" in April 1990. The policy commits the SCAQMD to consider global impacts in rulemaking and in drafting revisions to the Air Quality Management Plan. In March 1992, the SCAQMD Governing Board reaffirmed this policy and adopted amendments to the policy to include the following directives:

- Phase out the use and corresponding emissions of chlorofluorocarbons (CFCs), methyl chloroform (1,1,1-trichloroethane or TCA), carbon tetrachloride, and halons by December 1995;
- Phase out the large quantity use and corresponding emissions of hydrochlorofluorocarbons (HCFCs) by the year 2000;
- Develop recycling regulations for HCFCs (e.g., SCAQMD Rules 1411 and 1415);
- Develop an emissions inventory and control strategy for methyl bromide; and,
- Support the adoption of a California GHG emission reduction goal.

The legislative and regulatory activity detailed above is expected to require significant development and implementation of energy efficient technologies and shifting of energy production to renewable sources.

1.3.4 Mt. San Antonio College GHG Plans

Mt. SAC at this time does not have an Air Quality Plan, nor does it have an Air Management or Greenhouse Gas control plan. Like many cities and counties, Mt. SAC is using the State to develop appropriate policies and plans. However, the College is in the process of adopting CEQA significance thresholds for most environmental topics. The proposed GHG threshold for a project is an increase of 3,000 metric tons per year of equivalent CO2 (MTCO2EQ/Yr.).

1.4 Existing Campus Emissions

Existing campus emissions were calculated using the California Emissions Estimator Model (CalEEMod). CalEEMod is a computer program developed by the SCAQMD in conjunction with the California Air Resources Board (CARB). The model calculates emissions for construction and operation of various projects. For campus emissions, the model uses the "headcount" or student enrollment data. For the existing baseline case, the headcount is 35,986.

CalEEMod calculates annual emissions for the main greenhouse gases. Output files from the CalEEMod program are presented in the Appendix. Table 3 presents the results of the CalEEMod model showing the annual greenhouse gas emissions projected for the existing academic year. The specific data utilized in calculating the emissions are provided in the Appendix.

Table 3 Existing Campus Emissions (MT/Yr.)

	CO2	CH4	N2O	CO2EQ
Area	1	0	0	1
Energy	7,403	0	0	7,437
Mobile	45,525	2	0	45,567
Waste	1,333	79	0	2,988
Water	695	3	0	768
Total	**54,957**	**84**	**0**	**56,762**

Mobile emissions are the most significant category of emissions. These emissions represent vehicular emissions from students, teachers, and others traveling to and from the campus. Mobile emissions represent almost 80% of the total campus emissions. The next largest category (13%) is due to energy consumption, specifically the greenhouse gas emissions that are a result of the generation of electricity needed for campus activities. The solid waste generated on campus is moved to landfills where it generates methane. This represents

about 5% of the existing greenhouse gas generating potential for the campus. Water is imported into the area and used on-campus. The importation of water uses electricity, and therefore, results in greenhouse gas generation, which is slightly above 1% of the campus GHG emissions. Area source emissions represent emissions from painting, consumer products (e.g., using aerosol sprays), etc., and represent less than 1% of the total emissions.

2.0 POTENTIAL CLIMATE CHANGE IMPACTS

2.1 Significance Thresholds

As discussed above, the CEQA Guidelines do not include or recommend any particular threshold of significance; instead, they leave that decision to the discretion of the lead agency. During the development of the CEQA Guidelines update to address GHG, the Natural Resources Agency concluded that the CEQA Guidelines do not establish significance thresholds for other potential impacts and SB97 did not authorize the development of a statewide threshold as a part of the guidelines update[1].

Early in the process of developing the guidelines The Governor's Office of Planning and Research (OPR) published a Technical Advisory[2] that requested CARB to recommend a method for setting significance thresholds to encourage consistency and uniformity in the CEQA analysis of the GHG emission impacts. On October 24, 2008, CARB published its proposed approach to setting significance thresholds[3]. Two public meetings were held to present and clarify the proposed approach and CARB received public comments on the proposal[4]. However, development of the thresholds was not continued after the close of the public comment period at the request of OPR.

Several California Air Districts have adopted significance thresholds for projects where they are the lead agency (primarily air permits for industrial projects) and have provided recommendations for significance thresholds for commercial and residential development projects. In June 2010, the Bay Area Air Quality Management District (BAAQMD) adopted CEQA guidelines with recommended GHG thresholds of significance for general development projects, which were updated in 2011. On March 5, 2012 the Alameda County Superior Court issued a judgment finding that the Air District had failed to comply with CEQA when it adopted the Thresholds and ordered the district to no longer recommend the Thresholds. SCAQMD has adopted significance thresholds for industrial projects where they are the lead agency, which included recommendations for recommended significance thresholds for development projects. However, SCAQMD has stopped working on

[1] "Final Statement of Reasons for Regulatory Action Amendments to the State CEQA Guidelines Addressing Analysis and Mitigation of Greenhouse Gas Emissions Pursuant to SB97" California Natural Resources Agency, December 2009. http://ceres.ca.gov/ceqa/docs/Final_Statement_of_Reasons.pdf (accessed 1/22/2013)

[2] "CEQA AND CLIMATE CHANGE: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review" June 19, 2008. http://opr.ca.gov/docs/june08-ceqa.pdf (accessed 1/22/2013)

[3] "Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act" October 24, 2008. http://www.arb.ca.gov/cc/localgov/ceqa/meetings/102708/prelimdraftproposal102408.pdf (accessed 1/22/2013)

[4] http://www.arb.ca.gov/cc/localgov/ceqa/ceqacomm.htm (accessed 1/22/2013)

developing these recommendations awaiting a resolution of the BAAQMD legal proceedings.

The following sections discuss the recommended CARB threshold approach, as well as the proposed SCAQMD and adopted but rescinded BAAQMD significance thresholds. Section 2.1.1 discusses CARB's significance threshold development and Section 2.1.2 discusses SCAQMD's significance threshold development. These proposed thresholds were used as guidance for the Significance Thresholds that will be used to determine the project's GHG impact potential and are described in Section 2.1.3.

2.1.1 CARB Significance Thresholds Approach

On October 24, 2008 the California Air Resources Board (CARB) published a preliminary staff proposal of approaches for setting GHG significance thresholds for CEQA. In this document, CARB considered but rejected the use of a "zero threshold" that would have identified any project emitting GHGs as being significant and asserted that a non-zero threshold can be supported by substantial evidence. Non-zero thresholds were found to be not mandated because some level of emissions is still consistent with stabilizing atmospheric GHG concentrations and that current and anticipated regulations, apart from CEQA, will proliferate and increasingly will reduce GHG contributions of past, present and future projects. However, CARB argued that any non-zero threshold must make substantial contributions in reducing the peak of the State's GHG emissions. The thresholds should cause that peak to occur sooner and put California on track to meet its interim (2020) and long-term (2050) emission reduction targets.

The CARB approach recognized that different GHG thresholds may apply in different sectors because some sectors contribute more to the problem and should be obliged to provide greater reductions and that differing levels of emissions reductions were expected from different sectors in order to meet the State's objectives. Further, the data and science suggests that sectors must be treated separately and different thresholds—qualitative, quantitative and performance-based—can apply to different sectors.

Specific threshold recommendations were proposed for the two types of projects which local agencies are typically the CEQA lead agency, industrial projects, and residential/commercial projects. However, the two approaches are similar. A non-exempt project that meets specified performance standards and whose emissions are less than a specified amount would be determined to be less than significant. For residential/commercial projects, a project that is consistent with a previously approved plan meeting the following requirements would be considered to have a less than significant impact relative to climate change:

- Addresses GHG emissions.
- Satisfies 15064(h)(3) of the California Code of Regulations.

- Meets a community level GHG target consistent with the statewide emissions limit in AB 32 and where the plan will apply beyond 2020, Executive Order S-3-05.
- Is consistent with a transportation related reduction target adopted by CARB pursuant to SB 375.
- Includes a GHG inventory and mechanisms to regularly monitor and evaluate emissions.
- Incorporates specific, enforceable GHG requirements.
- Incorporates mechanisms that allow the plan to be revised in order to meet targets.

AND

- Has a certified final CEQA document (see 15152(f)).

CARB proposed that Industrial projects that meet CARB performance standards for construction-related emissions and transportation emissions or incorporate equivalent mitigation measures AND emit less than 7,000 MT/yr. CO_2EQ from non-transportation sources would be considered less than significant. Residential/commercial projects that meet CARB performance standards for constructed related emissions, energy use, water use, waste and transportation AND emit less GHG's than a threshold to be developed later would be considered less than significant. All other projects would be presumed to be significant and implement all feasible mitigation measures. Note that the initial proposal did not specify the performance standards but left their development for later work.

In October of 2008 CARB held a public meeting to present the draft document and request public input. In December of 2008 CARB held a second public meeting that provided a refinement of the proposal including specific performance standards. The suggested construction performance standards were:

- Provide alternative transportation mode options or incentives for workers to and from worksite on days that construction requires 200 or more workers; and
- Recycle and/or salvage at least 75% of non-hazardous construction and demolition debris by weight (residential) or by weight in volume (commercial); and
- Use recycled materials for at least 20% of construction materials based on cost for building materials, based on volume for roadway, parking lot, sidewalk and curb material. Recycled materials may include salvaged, reused, and recycled content materials.

The proposed performance standards for energy use, water use, waste and transportation applicable to residential/commercial projects were:

> **Energy:** Meet California Energy Commission's (CEC) Tier II Energy Efficiency standards in effect at the time building construction begins. At the time this represented a 30% reduction in combined space heating, cooling, and water-heating energy compared to 2008 Title 24 Standards.
>
> **Water:** Provide a minimum 20% reduction in indoor potable water use and 50% reduction in outdoor potable water used for landscape irrigation over the water use level projected by the methodology in the California Green Building Code, Section 603.2 (indoor) and 604.2 (outdoor).
>
> **Waste:** Where local recycling and/or composting programs exist design facilities and structures to encourage participation in the program, install adequate, accessible recycling and composting receptacles in common or public areas, AND provide easy access to central recycling and composting receptacles or collections areas.
>
> **Transportation:** Residential projects demonstrate that the average vehicle miles traveled per household year year is projected not to exceed 14,000 miles. Commercial projects must be within ½ mile of residential zone with average density of 10 du/net acre AND within ½ mile of at least 10 neighborhood services AND provide pedestrian access between project and services AND institute a comprehensive transportation demand management (TDM) program to reduce employee trips by at least 20%.

In mid December CARB announced that it was extending the deadline for public comments until January 9, 2009 and after that a revised draft would be prepared and circulated for public comment prior to taking the proposal to the board for approval. However, CARBs work on developing the thresholds ceased soon after this due to the conclusions reached by OPR discussed above.

2.1.2 SCAQMD's Significance Thresholds

On December 5, 2008, the South Coast Air Quality Management District (SCAQMD) adopted GHG significance threshold for Stationary Sources, Rules and Plans where the SCAQMD is lead agency. The threshold uses a tiered approach. The project is compared with the requirements of each tier sequentially and if it complies with any tier, it is determined to not result in a significant impact.

Tier 1 excludes projects that are specifically exempt from SB97 from resulting in a significant impact. Tier 2 excludes projects that are consistent with a GHG reduction plan that has a certified final CEQA document and complies with AB 32 GHG reduction goals. Tier 3 excludes projects with annual emissions lower than a screening threshold. Tier 4 consists of

three decision tree options. Under the first option, the project would be excluded if design features and/or mitigation measures resulted in emissions 30 percent lower than business as usual emissions. Under the second option, the project would be excluded if it had early compliance with AB 32 through early implementation of CARB's Scoping Plan measures. Under the third option, project would be excluded if it met sector based performance standards. However, the specifics of the Tier 4 compliance options were not adopted by the SCAQMD board to allow further time to develop the options and coordinate with CARB's GHG significance threshold development efforts. Tier 5 would exclude projects that implement offsite mitigation (GHG reduction projects) or purchase offsets to reduce GHG emission impacts to less than the proposed screening level.

The guidance document prepared for the stationary source threshold recommended using the same tiered approach for residential and commercial projects with a 3,000 metric ton CO_2 Equivalent per year ($MTCO_2EQ$/yr.) Tier 3 screening threshold. However, this was not adopted as the SCAQMD Board felt that more analysis was required along with coordination with CARB's GHG significance threshold development. At subsequent meetings of the SCAQMD GHG Working Group SCAQMD staff recommended two options for the Tier 3 screening threshold for residential and commercial projects. The first option would use a 3,500 $MTCO_2EQ$/yr. threshold for residential projects, a 1,400 $MTCO_2EQ$/yr. threshold for commercial projects and a 3,000 $MTCO_2EQ$/yr. for mixed-use projects. The second option would apply the 3,000 $MTCO_2EQ$/yr. for all commercial and residential projects.

The SCAQMD proposed compliance options for Tier 4 of the significance thresholds at subsequent GHG Working Group meetings. The first option would be a reduction of 23.9% in GHG emissions over the base case. This percentage reduction is the land use sector portion of the CARB Scoping Plan's overall reduction of 28%. This target would be updated as the AB 32 Scoping Plan is revised. The base case scenario for this reduction still needs to be defined. Residual emissions would need to be less than 25,000 $MTCO_2EQ$/year to comply with the option. Staff proposed efficiency targets for the third option of 4.6 $MTCO_2EQ$/year per service population (the population of residential portions of projects plus the number of employees of commercial portions of projects.) for project level analysis and 6.6 $MTCO_2EQ$/year for plan level analyses. For project level analyses, residual emissions would need to be less than 25,000 $MTCO_2EQ$/year to comply with this option.

2.1.3 Project Significance Threshold

The Significance Threshold that will be used for this project is based on SCAQMD's suggested tiered approach, which is consistent with CARB's recommendations and consistent with the College's proposed CEQA thresholds. The project is not specifically exempted in SB97 and there are no GHG reduction plans that are consistent with the AB32 GHG reduction goals that with a certified final CEQA document that are applicable to the proposed project. Therefore, the project is not compliant with Tiers 1 or 2. The significance of the project will be determined based on compliance with the Tier 3 and 4 requirements.

The project will be considered to have a significant impact if total annual GHG emissions exceed 3,000 MT CO2EQ. This is further supported by proposed College District CEQA thresholds that use an annual limit of 3,000 MTCO2EQ. If the 3,000 threshold is exceeded then the annual emissions per service population (the number of students and persons employed by the college complex in this case) should not exceed 4.6 MTCO2EQ/yr, or a significant impact will be determined. Note that the methodology recommends that total construction emissions be amortized over a 30-year period or the project's expected lifetime if it is less than 30 years.

2.2 Construction Emissions

Temporary impacts will result from construction activities. The primary source of GHG emissions generated by construction activities is from use of diesel-powered construction equipment. Typical emission rates for construction equipment were obtained from CalEEMod (California Emissions Estimator Model). CalEEMod is a computer program that can be used to estimate emissions including operation (vehicle and area) sources, as well as construction projects.

Most construction projects will involve six phases; demolition, site preparation, grading, paving, and painting. Major construction projects that are part of the analysis include construction of Building G, Building A, PEP Phase 1, and PEP Phase 2. Construction GHG emissions are forecast for each of these four projects. These four projects have tentative schedules for construction. The emissions from the rest of the 2015 FMPU projects, which have not yet been scheduled and generally are smaller projects, are then forecast.

2.2.1 Construction Emissions for Building G

Construction of Building G, the Laboratory Building Expansion, will include construction of an approximately 50,000 gross square foot (gsf) building by 2020. The construction of Building G, and later the adjacent Building A, will require the demolition of Buildings 16, 17, 18, 19 and 21. It was assumed that all of these buildings would be demolished as part of the Building G construction.

Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod). The appropriate number of acres, square footage of demolition, square footage of Building G, and other key elements of the project were input into the CalEEMod to generate the estimate of emissions. It was also assumed that the overlap between construction phases would be minimal. Only mitigation required by the Mitigation Monitoring Program is assumed for this analysis. Specifically, only paints with a volatile organic content (VOC) of 75 grams per liter (g/l) will be used, and watering twice per day will be employed during grading. CalEEMod printouts are included in the Appendix.

Table 4 presents the results of the emissions calculations for the construction activities discussed above. The total construction emissions are presented below. Additionally, the emissions when amortized over a 30-year period are also shown.

Table 4 GHG Emissions for Building G Construction (Metric Tons Per Year)

	CO2	CH4	N2O	CO2EQ
Total Construction Emissions (Metric Tons)	395.7	0.1	0.0	397.6
Averaged Over 30 Years (Metric Tons Per Year)	13.2	0.00	0.00	13.3

MTCO2EQ = metric tons equivalent carbon dioxide (CO2).

2.2.2 Construction Emissions for Building A

Construction of Building A, the Library/Campus Center, will include construction of an approximately 167,200 gross square foot (gsf) building by 2025. Demolition will be required to clear the site for Building A, but this was assumed to occur during the construction of Building G.

Table 5 presents the results of the emissions calculations for the construction activities discussed above. The total construction emissions are presented below. Additionally, the emissions when amortized over a 30-year period are also shown. CalEEMod printouts are included in the Appendix.

Table 5 GHG Emissions for Building A Construction (Metric Tons Per Year)

	CO2	CH4	N2O	CO2EQ
Total Construction Emissions (Metric Tons)	248.6	0.0	0.0	249.4
Averaged Over 30 Years (Metric Tons Per Year)	8.3	0.0	0.0	8.3

MTCO2EQ = metric tons equivalent carbon dioxide (CO2).

2.2.3 Construction Emissions for PEP Phase 1

Construction of the Physical Education Projects (PEP) will occur in two phases. The first phase roughly starts in October 2016 and ends in August 2018. The second phase of construction would occur from roughly February 2018 and be complete by August 2020.

Phase 1 will include demolition of the existing stadium, construction of a new stadium, a new Field House, installation of several practice fields and other improvements. The plan for the PEP area at the end of Phase 1 is shown in Exhibit 6.

Table 6 presents the results of the emissions calculations for the construction activities discussed above. The total construction emissions are presented below. Additionally, the emissions when amortized over a 30-year period are also shown. CalEEMod printouts are included in the Appendix.

Table 6 GHG Emissions for PEP Phase 1 (Metric Tons Per Year)

	CO2	CH4	N2O	CO2EQ
Total Construction Emissions (Metric Tons)	3,169.3	0.3	0.0	3,174.7
Averaged Over 30 Years (Metric Tons Per Year)	105.6	0.0	0.0	105.8

MTCO2EQ = metric tons equivalent carbon dioxide (CO2).

Exhibit 6 - PEP Phase 1

G&A

2.2.4 Construction Emissions for PEP Phase 2

PEP Phase 2 will include the construction of a gymnasium and aquatic center, 50 meter pool, diving pool, and nine tennis courts. The plan PEP Phase 2 is shown in Exhibit 7. Emissions during the phases of construction were calculated using the California Emissions Estimator Model (CalEEMod) similar to the approach used to model PEP Phase 1.

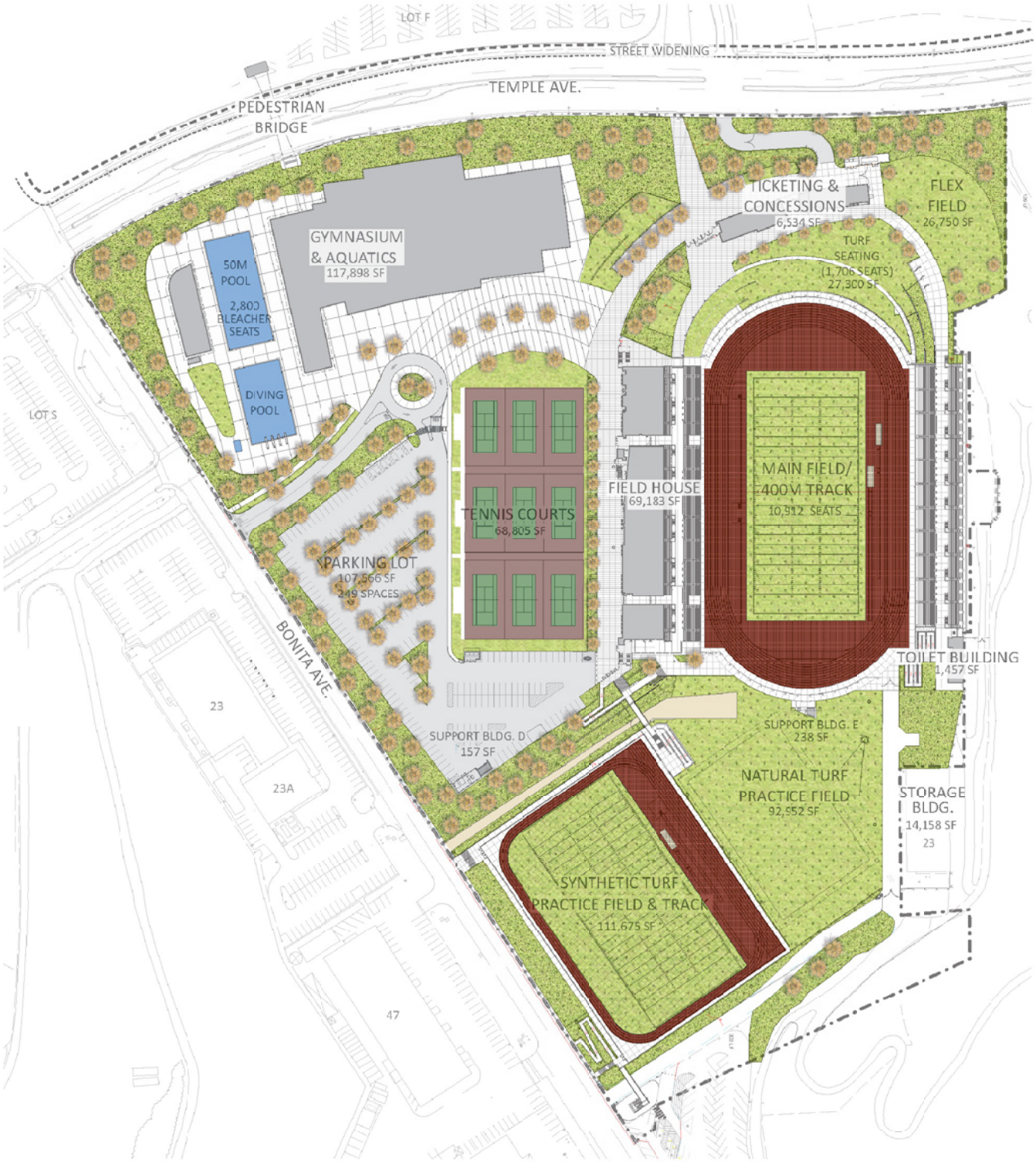
Table 7 presents the results of the emissions calculations for the construction activities discussed above. The total construction emissions are presented below. Additionally, the emissions when amortized over a 30-year period are also shown. CalEEMod printouts are included in the Appendix.

Table 7 GHG Emissions for PEP Phase 2 (Metric Tons Per Year)

	CO2	CH4	N2O	CO2EQ
Total Construction Emissions (Metric Tons)	1,263.9	0.2	0.0	1,267.8
Averaged Over 30 Years (Metric Tons Per Year)	42.1	0.0	0.0	42.3

MTCO2EQ = metric tons equivalent carbon dioxide (CO2).

Exhibit 7 - PEP Phase 2



G&A

2.2.5 2015 FMPU Construction Emissions

The long-term buildout of the 2015 FMPU will result in new construction of 454,485 square feet (including PEP). To make room for some of the new construction, demolition of some existing buildings is necessary. The FMPU indicates that approximately 122,976 square feet will be demolished. Some parts of the FMPU may be completed by 2017 while other parts would not be completed until 2020. Therefore, the entire FMPU (excluding PEP, construction of Buildings A and G, and demolition necessary for Buildings A and G) was modeled using early years (e.g., 2017) since the emissions factors for heavy equipment decrease slightly for later years. Note that the PEP and Buildings A and G represent the largest projects proposed as part of the FMPU, and only a small amount of construction and demolition are not already accounted for.

Table 8 presents the results of the emissions calculations for the construction and demolition activities discussed above. The construction emissions for the buildout of the FMPU without PEP and Buildings A and G are presented below in Table 8. Table 9 presents the construction emissions for all of the 2015 FMPU including PEP, and Buildings A and G. Additionally, the emissions when amortized over a 30-year period are also shown. CalEEMod printouts are included in the Appendix.

Table 8 GHG Emissions for FMPU With Exclusions (1) (Metric Tons Per Year)

	CO2	CH4	N2O	CO2EQ
Total Construction Emissions (Metric Tons)	84.9	0.0	0.0	85.3
Averaged Over 30 Years (Metric Tons Per Year)	2.8	0.0	0.0	2.8

1. Excludes construction and demolition emissions associated with PEP Phase 1, PEP Phase 2, Building A, and Building G.

Construction and demolition emissions for all new projects proposed as part of the 2015 FMPU were summed. The results are presented in Table 9. It shows that the amortized construction emissions for the FMPU are 172.5 MTCO2EQ per year.

Table 9 GHG Emissions for FMPU All Projects (Metric Tons Per Year)

Project	CO2EQ
Building G	13.3
Building A	8.3
PEP Phase 1	105.8
PEP Phase 2	42.3
Remainder FMPU	2.8
Total	**172.5**

2.3 Operational Emissions

The realization of the FMPU will result in increases in student enrollment (headcount) as additional and newer facilities are brought online. By the academic year 2020-2021 the headcount is anticipated to increase 3,745 over baseline up to a total headcount of 39,731. By the academic year 2025-2026, the headcount is anticipated to increase to 43,139, which is an increase of 7,153 over baseline.

The CalEEMod was used to project the emissions for the 2020 and 2025 academic years. The results presented below are the annual operational GHG emissions based on headcount. Output files from the CalEEMod program are presented in the appendix. Table 10 presents the results of the CalEEMod model showing the maximum daily air pollutant emissions projected for the existing, 2020, and 2025 academic years. The change between the existing (baseline) case and the future academic years are also shown. A negative number indicates a decrease in emissions, while a positive number indicates an increase over existing levels. The change in emissions is also compared to the College thresholds, which are based on the SCAQMD draft threshold guidance. The specific data utilized in calculating the emissions are provided in the Appendix.

Table 10 Changes in Operational GHG Emissions (Metric Tons Per Year)

	CO2EQ
Existing	56,762
Year 2020	55,764
Change	-997
Year 2025	59,006
Change	2,245
College & SCAQMD Thresholds	*3,000*
Exceed Thresholds for 2020	*No*
Exceed Thresholds for 2025	*No*

The analysis indicates that the emissions of greenhouse gas will decrease between now and 2020 even though the headcount will increase. The energy efficiency of motor vehicles will continue to increase in future years resulting in lower GHG emissions, and will more than offset the increase in headcount. GHG emissions will increase between 2020 and 2025 because the headcount is anticipated to increase significantly during this time. However, the increase between existing and 2025 GHG emissions is only 2,245 metric tons per year of equivalent CO2 (MTCO2EQ). Again the emission rates for GHG will go down in future years, partially offsetting a portion of the increase in emissions caused by increasing headcount for 2025.

The College has proposed a threshold of 3,000 MTCO2EQ per year as a significance threshold, and this threshold is based in part on SCAQMD draft recommendations. In all cases, the GHG emission increases are projected to be less than the threshold. Therefore, a less than significant impact on climate change is projected.

2.4 Construction Plus Operational Emissions

The change in GHG emissions due to the project, both operational and construction is shown in Table 11. The change in operational emissions presented previously in Table 10, are combined with the annualized construction emissions presented in Table 9. The total impact of the proposed project on GHG emissions is presented in the final line of the table.

Table 11 Change in GHG Emissions (MTCO2EQ/Yr.)

	2020	2025
Change in Operational Emissions	-997	2,245
New Annualized Construction Emissions	173	173
Total Change in Annual Emissions	**-824**	**2,418**

Table 11 shows that the total GHG emissions for the project will be less in 2020 by about 824 MTCO2EQ per year. By 2025, there will be an increase of about 2,418 MTCO2EQ per year. This is lower than the draft SCAQMD and College screening thresholds of 3,000 MTCO2EQ per year. The project emissions are below the threshold requirements of 3,000 MTCO2EQ per year, and therefore, climate change impacts will be less than significant.

It should be noted that the GHG emissions for the buildout of the 2015 FMPU is below the threshold, and therefore, all of the projects within the 2015 FMPU will be consistent with the GHG threshold requirement. No further environmental analysis of GHG emissions will be needed for projects included in the 2015 FMPU. Therefore, projects in the 2015 FMPU such as Building A, Building G, PEP Phase 1, and PEP Phase 2 will not result in significant GHG emission increases and will not require an additional GHG analysis.

3.0 MITIGATION MEASURES

No mitigation measures are required since the project will result in in greenhouse gas emissions below the draft SCAQMD and College thresholds.

4.0 REFERENCES

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U.S. Environmental Protection Agency, "AP 42, Fifth Edition Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources," http://www.epa.gov/ttn/chief/ap42/.

U.S. Environmental Protection Agency, "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2005," April 15, 2007.

California Air Resource Board, " Climate Change Proposed Scoping Plan", October 2008.

California Air Resource Board, "Staff Proposal-Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the CEQA", December 2008.

California Air Resource Board, "Preliminary Draft Staff Proposal- Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the CEQA", October 24,2008.

SCAQMD, Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans, December 5, 2008

State of California Department of Water Resources (DWR), Climate Change Adaptation Strategies for California's Water, October 2008

Appendix

Mt. SAC FMPU - Existing

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	35,986.00	Student	420.00	1,570,869.41	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	36.06	420.00
tblProjectCharacteristics	OperationalYear	2014	2015

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5436	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474
Energy	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	7,403.3349	7,403.3349	0.2764	0.0915	7,437.4924
Mobile	23.7230	70.6780	271.1154	0.5553	37.9951	0.9750	38.9701	10.1657	0.8957	11.0615	0.0000	45,525.4227	45,525.4227	1.9861	0.0000	45,567.1310
Waste						0.0000	0.0000		0.0000	0.0000	1,333.1310	0.0000	1,333.1310	78.7858	0.0000	2,987.6324
Water						0.0000	0.0000		0.0000	0.0000	24.4443	670.2510	694.6953	2.5415	0.0657	768.4198
Total	**31.5077**	**72.8749**	**273.4320**	**0.5685**	**37.9951**	**1.1433**	**39.1384**	**10.1657**	**1.0641**	**11.2298**	**1,357.5753**	**53,599.9017**	**54,957.4770**	**83.5923**	**0.1571**	**56,761.6229**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	7.5436	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474
Energy	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	7,403.3349	7,403.3349	0.2764	0.0915	7,437.4924
Mobile	23.7230	70.6780	271.1154	0.5553	37.9951	0.9750	38.9701	10.1657	0.8957	11.0615	0.0000	45,525.4227	45,525.4227	1.9861	0.0000	45,567.1310
Waste						0.0000	0.0000		0.0000	0.0000	1,333.1310	0.0000	1,333.1310	78.7858	0.0000	2,987.6324
Water						0.0000	0.0000		0.0000	0.0000	24.4443	670.2510	694.6953	2.5410	0.0656	768.3808
Total	**31.5077**	**72.8749**	**273.4320**	**0.5685**	**37.9951**	**1.1433**	**39.1384**	**10.1657**	**1.0641**	**11.2298**	**1,357.5753**	**53,599.9017**	**54,957.4770**	**83.5918**	**0.1570**	**56,761.5839**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e

Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	23.7230	70.6780	271.1154	0.5553	37.9951	0.9750	38.9701	10.1657	0.8957	11.0615	0.0000	45,525.4227	45,525.4227	1.9861	0.0000	45,567.1310
Unmitigated	23.7230	70.6780	271.1154	0.5553	37.9951	0.9750	38.9701	10.1657	0.8957	11.0615	0.0000	45,525.4227	45,525.4227	1.9861	0.0000	45,567.1310

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	43,183.20	15,114.12	1439.44	100,305,908	100,305,908
Total	43,183.20	15,114.12	1,439.44	100,305,908	100,305,908

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514499	0.060499	0.179997	0.139763	0.042095	0.006675	0.015446	0.029572	0.001914	0.002508	0.004341	0.000594	0.002098

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,016.7639	5,016.7639	0.2306	0.0477	5,036.3971
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,016.7639	5,016.7639	0.2306	0.0477	5,036.3971
NaturalGas Mitigated	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	2,386.5710	2,386.5710	0.0457	0.0438	2,401.0953
NaturalGas Unmitigated	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	2,386.5710	2,386.5710	0.0457	0.0438	2,401.0953

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	4.47227e+007	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	2,386.5710	2,386.5710	0.0457	0.0438	2,401.0953
Total		**0.2412**	**2.1923**	**1.8415**	**0.0132**		**0.1666**	**0.1666**		**0.1666**	**0.1666**	**0.0000**	**2,386.5710**	**2,386.5710**	**0.0457**	**0.0438**	**2,401.0953**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	4.47227e+007	0.2412	2.1923	1.8415	0.0132		0.1666	0.1666		0.1666	0.1666	0.0000	2,386.5710	2,386.5710	0.0457	0.0438	2,401.0953
Total		**0.2412**	**2.1923**	**1.8415**	**0.0132**		**0.1666**	**0.1666**		**0.1666**	**0.1666**	**0.0000**	**2,386.5710**	**2,386.5710**	**0.0457**	**0.0438**	**2,401.0953**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	1.75309e+007	5,016.7639	0.2306	0.0477	5,036.3971
Total		**5,016.7639**	**0.2306**	**0.0477**	**5,036.3971**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	1.75309e+007	5,016.7639	0.2306	0.0477	5,036.3971
Total		**5,016.7639**	**0.2306**	**0.0477**	**5,036.3971**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	7.5436	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474
Unmitigated	7.5436	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.8203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.6763					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0470	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474
Total	**7.5436**	**4.6000e-003**	**0.4751**	**3.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**0.8931**	**0.8931**	**2.5900e-003**	**0.0000**	**0.9474**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.8203					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.6763					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0470	4.6000e-003	0.4751	3.0000e-005		1.7200e-003	1.7200e-003		1.7200e-003	1.7200e-003	0.0000	0.8931	0.8931	2.5900e-003	0.0000	0.9474
Total	**7.5436**	**4.6000e-003**	**0.4751**	**3.0000e-005**		**1.7200e-003**	**1.7200e-003**		**1.7200e-003**	**1.7200e-003**	**0.0000**	**0.8931**	**0.8931**	**2.5900e-003**	**0.0000**	**0.9474**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	694.6953	2.5410	0.0656	768.3808
Unmitigated	694.6953	2.5415	0.0657	768.4198

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	77.0496 / 120.514	694.6953	2.5415	0.0657	768.4198

Total		**694.6953**	**2.5415**	**0.0657**	**768.4198**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	77.0496 / 120.514	694.6953	2.5410	0.0656	768.3808
Total		**694.6953**	**2.5410**	**0.0656**	**768.3808**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,333.1310	78.7858	0.0000	2,987.6324
Unmitigated	1,333.1310	78.7858	0.0000	2,987.6324

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	6567.44	1,333.1310	78.7858	0.0000	2,987.6324
Total		**1,333.1310**	**78.7858**	**0.0000**	**2,987.6324**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	6567.44	1,333.1310	78.7858	0.0000	2,987.6324
Total		**1,333.1310**	**78.7858**	**0.0000**	**2,987.6324**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it was not relevant to the analysis.

MtSAC FMPU - Building G Construction Including Demolition

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	50.00	1000sqft	5.00	50,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Acreage corresponds to demolition area.

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblConstructionPhase	PhaseEndDate	1/2/2020	1/3/2020
tblConstructionPhase	PhaseStartDate	2/15/2019	2/16/2019

tblLandUse	LotAcreage	1.15	5.00
tblProjectCharacteristics	OperationalYear	2014	2021

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3376	3.0434	2.6721	4.3000e-003	0.1364	0.1756	0.3120	0.0525	0.1647	0.2172	0.0000	370.3116	370.3116	0.0821	0.0000	372.0362
2020	0.1918	0.1694	0.1807	3.0000e-004	2.3000e-003	9.3500e-003	0.0116	6.1000e-004	8.7100e-003	9.3300e-003	0.0000	25.3970	25.3970	6.8100e-003	0.0000	25.5401
Total	**0.5294**	**3.2128**	**2.8528**	**4.6000e-003**	**0.1387**	**0.1849**	**0.3236**	**0.0531**	**0.1734**	**0.2265**	**0.0000**	**395.7086**	**395.7086**	**0.0889**	**0.0000**	**397.5763**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.3376	3.0434	2.6721	4.3000e-003	0.0816	0.1756	0.2572	0.0291	0.1647	0.1937	0.0000	370.3112	370.3112	0.0821	0.0000	372.0359
2020	0.1918	0.1694	0.1807	3.0000e-004	2.3000e-003	9.3500e-003	0.0116	6.1000e-004	8.7100e-003	9.3300e-003	0.0000	25.3970	25.3970	6.8100e-003	0.0000	25.5401
Total	**0.5294**	**3.2128**	**2.8528**	**4.6000e-003**	**0.0839**	**0.1849**	**0.2688**	**0.0297**	**0.1734**	**0.2031**	**0.0000**	**395.7082**	**395.7082**	**0.0889**	**0.0000**	**397.5759**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**39.51**	**0.00**	**16.93**	**44.10**	**0.00**	**10.34**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2019	1/28/2019	5	20	
2	Site Preparation	Site Preparation	1/29/2019	2/4/2019	5	5	
3	Grading	Grading	2/5/2019	2/14/2019	5	8	
4	Building Construction	Building Construction	2/16/2019	1/3/2020	5	230	
5	Paving	Paving	1/4/2020	1/29/2020	5	18	
6	Architectural Coating	Architectural Coating	1/30/2020	2/24/2020	5	18	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 75,000; Non-Residential Outdoor: 25,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	3	8.00	162	0.38
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Grading	Excavators	1	8.00	162	0.38
Paving	Pavers	2	8.00	125	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37

Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Graders	1	8.00	174	0.41
Paving	Paving Equipment	2	8.00	130	0.36
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	261.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	21.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0283	0.0000	0.0283	4.2800e-003	0.0000	4.2800e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0332	0.3394	0.3081	4.0000e-004		0.0165	0.0165		0.0153	0.0153	0.0000	35.6454	35.6454	9.9600e-003	0.0000	35.8545

Total	**0.0332**	**0.3394**	**0.3081**	**4.0000e-004**	**0.0283**	**0.0165**	**0.0447**	**4.2800e-003**	**0.0153**	**0.0196**	**0.0000**	**35.6454**	**35.6454**	**9.9600e-003**	**0.0000**	**35.8545**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0700e-003	0.0299	0.0264	1.0000e-004	2.2400e-003	5.2000e-004	2.7600e-003	6.1000e-004	4.8000e-004	1.0900e-003	0.0000	8.3364	8.3364	6.0000e-005	0.0000	8.3377
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	6.7000e-004	6.8900e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3730	1.3730	7.0000e-005	0.0000	1.3744
Total	**2.5200e-003**	**0.0306**	**0.0333**	**1.2000e-004**	**3.8900e-003**	**5.3000e-004**	**4.4200e-003**	**1.0500e-003**	**4.9000e-004**	**1.5400e-003**	**0.0000**	**9.7093**	**9.7093**	**1.3000e-004**	**0.0000**	**9.7120**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0127	0.0000	0.0127	1.9200e-003	0.0000	1.9200e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0332	0.3394	0.3081	4.0000e-004		0.0165	0.0165		0.0153	0.0153	0.0000	35.6454	35.6454	9.9600e-003	0.0000	35.8544
Total	**0.0332**	**0.3394**	**0.3081**	**4.0000e-004**	**0.0127**	**0.0165**	**0.0292**	**1.9200e-003**	**0.0153**	**0.0172**	**0.0000**	**35.6454**	**35.6454**	**9.9600e-003**	**0.0000**	**35.8544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0700e-003	0.0299	0.0264	1.0000e-004	2.2400e-003	5.2000e-004	2.7600e-003	6.1000e-004	4.8000e-004	1.0900e-003	0.0000	8.3364	8.3364	6.0000e-005	0.0000	8.3377
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.5000e-004	6.7000e-004	6.8900e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3730	1.3730	7.0000e-005	0.0000	1.3744
Total	**2.5200e-003**	**0.0306**	**0.0333**	**1.2000e-004**	**3.8900e-003**	**5.3000e-004**	**4.4200e-003**	**1.0500e-003**	**4.9000e-004**	**1.5400e-003**	**0.0000**	**9.7093**	**9.7093**	**1.3000e-004**	**0.0000**	**9.7120**

3.3 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.1063	0.0870	1.0000e-004		5.3800e-003	5.3800e-003		4.9500e-003	4.9500e-003	0.0000	8.7923	8.7923	2.7800e-003	0.0000	8.8507
Total	**0.0101**	**0.1063**	**0.0870**	**1.0000e-004**	**0.0452**	**5.3800e-003**	**0.0506**	**0.0248**	**4.9500e-003**	**0.0298**	**0.0000**	**8.7923**	**8.7923**	**2.7800e-003**	**0.0000**	**8.8507**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	2.0000e-004	2.0700e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4119	0.4119	2.0000e-005	0.0000	0.4123

Total	**1.3000e-004**	**2.0000e-004**	**2.0700e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4119**	**0.4119**	**2.0000e-005**	**0.0000**	**0.4123**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0101	0.1063	0.0870	1.0000e-004		5.3800e-003	5.3800e-003		4.9500e-003	4.9500e-003	0.0000	8.7923	8.7923	2.7800e-003	0.0000	8.8507
Total	**0.0101**	**0.1063**	**0.0870**	**1.0000e-004**	**0.0203**	**5.3800e-003**	**0.0257**	**0.0112**	**4.9500e-003**	**0.0161**	**0.0000**	**8.7923**	**8.7923**	**2.7800e-003**	**0.0000**	**8.8507**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.3000e-004	2.0000e-004	2.0700e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4119	0.4119	2.0000e-005	0.0000	0.4123
Total	**1.3000e-004**	**2.0000e-004**	**2.0700e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4119**	**0.4119**	**2.0000e-005**	**0.0000**	**0.4123**

3.4 Grading - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0110	0.1135	0.0936	1.2000e-004		6.1300e-003	6.1300e-003		5.6400e-003	5.6400e-003	0.0000	10.6837	10.6837	3.3800e-003	0.0000	10.7547
Total	**0.0110**	**0.1135**	**0.0936**	**1.2000e-004**	**0.0262**	**6.1300e-003**	**0.0323**	**0.0135**	**5.6400e-003**	**0.0191**	**0.0000**	**10.6837**	**10.6837**	**3.3800e-003**	**0.0000**	**10.7547**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.7000e-004	2.7600e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5492	0.5492	3.0000e-005	0.0000	0.5497
Total	**1.8000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5492**	**0.5492**	**3.0000e-005**	**0.0000**	**0.5497**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0118	0.0000	0.0118	6.0600e-003	0.0000	6.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0110	0.1135	0.0936	1.2000e-004		6.1300e-003	6.1300e-003		5.6400e-003	5.6400e-003	0.0000	10.6837	10.6837	3.3800e-003	0.0000	10.7547
Total	**0.0110**	**0.1135**	**0.0936**	**1.2000e-004**	**0.0118**	**6.1300e-003**	**0.0179**	**6.0600e-003**	**5.6400e-003**	**0.0117**	**0.0000**	**10.6837**	**10.6837**	**3.3800e-003**	**0.0000**	**10.7547**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.7000e-004	2.7600e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5492	0.5492	3.0000e-005	0.0000	0.5497
Total	**1.8000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5492**	**0.5492**	**3.0000e-005**	**0.0000**	**0.5497**

3.5 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2669	2.3795	1.9432	3.0400e-003		0.1459	0.1459		0.1371	0.1371	0.0000	265.7293	265.7293	0.0647	0.0000	267.0871
Total	**0.2669**	**2.3795**	**1.9432**	**3.0400e-003**		**0.1459**	**0.1459**		**0.1371**	**0.1371**	**0.0000**	**265.7293**	**265.7293**	**0.0647**	**0.0000**	**267.0871**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5100e-003	0.0630	0.0927	2.0000e-004	5.5900e-003	1.0300e-003	6.6200e-003	1.6000e-003	9.5000e-004	2.5500e-003	0.0000	16.9741	16.9741	1.2000e-004	0.0000	16.9767
Worker	7.0800e-003	0.0106	0.1095	3.2000e-004	0.0262	2.0000e-004	0.0264	6.9400e-003	1.9000e-004	7.1300e-003	0.0000	21.8163	21.8163	1.0600e-003	0.0000	21.8386
Total	**0.0136**	**0.0736**	**0.2022**	**5.2000e-004**	**0.0317**	**1.2300e-003**	**0.0330**	**8.5400e-003**	**1.1400e-003**	**9.6800e-003**	**0.0000**	**38.7905**	**38.7905**	**1.1800e-003**	**0.0000**	**38.8153**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2669	2.3795	1.9432	3.0400e-003		0.1459	0.1459		0.1371	0.1371	0.0000	265.7290	265.7290	0.0647	0.0000	267.0867
Total	**0.2669**	**2.3795**	**1.9432**	**3.0400e-003**		**0.1459**	**0.1459**		**0.1371**	**0.1371**	**0.0000**	**265.7290**	**265.7290**	**0.0647**	**0.0000**	**267.0867**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.5100e-003	0.0630	0.0927	2.0000e-004	5.5900e-003	1.0300e-003	6.6200e-003	1.6000e-003	9.5000e-004	2.5500e-003	0.0000	16.9741	16.9741	1.2000e-004	0.0000	16.9767
Worker	7.0800e-003	0.0106	0.1095	3.2000e-004	0.0262	2.0000e-004	0.0264	6.9400e-003	1.9000e-004	7.1300e-003	0.0000	21.8163	21.8163	1.0600e-003	0.0000	21.8386
Total	**0.0136**	**0.0736**	**0.2022**	**5.2000e-004**	**0.0317**	**1.2300e-003**	**0.0330**	**8.5400e-003**	**1.1400e-003**	**9.6800e-003**	**0.0000**	**38.7905**	**38.7905**	**1.1800e-003**	**0.0000**	**38.8153**

3.5 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.1700e-003	0.0286	0.0252	4.0000e-005		1.6700e-003	1.6700e-003		1.5700e-003	1.5700e-003	0.0000	3.4598	3.4598	8.4000e-004	0.0000	3.4775
Total	**3.1700e-003**	**0.0286**	**0.0252**	**4.0000e-005**		**1.6700e-003**	**1.6700e-003**		**1.5700e-003**	**1.5700e-003**	**0.0000**	**3.4598**	**3.4598**	**8.4000e-004**	**0.0000**	**3.4775**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	7.3000e-004	1.1900e-003	0.0000	7.0000e-005	1.0000e-005	9.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2193	0.2193	0.0000	0.0000	0.2193
Worker	9.0000e-005	1.3000e-004	1.3500e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2766	0.2766	1.0000e-005	0.0000	0.2769
Total	**1.7000e-004**	**8.6000e-004**	**2.5400e-003**	**0.0000**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4959**	**0.4959**	**1.0000e-005**	**0.0000**	**0.4962**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	3.1700e-003	0.0286	0.0252	4.0000e-005		1.6700e-003	1.6700e-003		1.5700e-003	1.5700e-003	0.0000	3.4597	3.4597	8.4000e-004	0.0000	3.4775
Total	**3.1700e-003**	**0.0286**	**0.0252**	**4.0000e-005**		**1.6700e-003**	**1.6700e-003**		**1.5700e-003**	**1.5700e-003**	**0.0000**	**3.4597**	**3.4597**	**8.4000e-004**	**0.0000**	**3.4775**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	8.0000e-005	7.3000e-004	1.1900e-003	0.0000	7.0000e-005	1.0000e-005	9.0000e-005	2.0000e-005	1.0000e-005	3.0000e-005	0.0000	0.2193	0.2193	0.0000	0.0000	0.2193
Worker	9.0000e-005	1.3000e-004	1.3500e-003	0.0000	3.5000e-004	0.0000	3.5000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.2766	0.2766	1.0000e-005	0.0000	0.2769
Total	**1.7000e-004**	**8.6000e-004**	**2.5400e-003**	**0.0000**	**4.2000e-004**	**1.0000e-005**	**4.4000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.4959**	**0.4959**	**1.0000e-005**	**0.0000**	**0.4962**

3.6 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0120	0.1241	0.1292	2.0000e-004		6.6500e-003	6.6500e-003		6.1200e-003	6.1200e-003	0.0000	17.6419	17.6419	5.7100e-003	0.0000	17.7617
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0120**	**0.1241**	**0.1292**	**2.0000e-004**		**6.6500e-003**	**6.6500e-003**		**6.1200e-003**	**6.1200e-003**	**0.0000**	**17.6419**	**17.6419**	**5.7100e-003**	**0.0000**	**17.7617**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	5.5000e-004	5.7700e-003	2.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.1855	1.1855	6.0000e-005	0.0000	1.1867
Total	**3.8000e-004**	**5.5000e-004**	**5.7700e-003**	**2.0000e-005**	**1.4800e-003**	**1.0000e-005**	**1.4900e-003**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**0.0000**	**1.1855**	**1.1855**	**6.0000e-005**	**0.0000**	**1.1867**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0120	0.1241	0.1292	2.0000e-004		6.6500e-003	6.6500e-003		6.1200e-003	6.1200e-003	0.0000	17.6418	17.6418	5.7100e-003	0.0000	17.7617
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0120**	**0.1241**	**0.1292**	**2.0000e-004**		**6.6500e-003**	**6.6500e-003**		**6.1200e-003**	**6.1200e-003**	**0.0000**	**17.6418**	**17.6418**	**5.7100e-003**	**0.0000**	**17.7617**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	5.5000e-004	5.7700e-003	2.0000e-005	1.4800e-003	1.0000e-005	1.4900e-003	3.9000e-004	1.0000e-005	4.0000e-004	0.0000	1.1855	1.1855	6.0000e-005	0.0000	1.1867
Total	**3.8000e-004**	**5.5000e-004**	**5.7700e-003**	**2.0000e-005**	**1.4800e-003**	**1.0000e-005**	**1.4900e-003**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**0.0000**	**1.1855**	**1.1855**	**6.0000e-005**	**0.0000**	**1.1867**

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1738					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3017
Total	**0.1760**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3017**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	1.5000e-004	1.5400e-003	0.0000	3.9000e-004	0.0000	4.0000e-004	1.0000e-004	0.0000	1.1000e-004	0.0000	0.3161	0.3161	2.0000e-005	0.0000	0.3164
Total	**1.0000e-004**	**1.5000e-004**	**1.5400e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**4.0000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3161**	**0.3161**	**2.0000e-005**	**0.0000**	**0.3164**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1738					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1800e-003	0.0152	0.0165	3.0000e-005		1.0000e-003	1.0000e-003		1.0000e-003	1.0000e-003	0.0000	2.2979	2.2979	1.8000e-004	0.0000	2.3017
Total	**0.1760**	**0.0152**	**0.0165**	**3.0000e-005**		**1.0000e-003**	**1.0000e-003**		**1.0000e-003**	**1.0000e-003**	**0.0000**	**2.2979**	**2.2979**	**1.8000e-004**	**0.0000**	**2.3017**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.0000e-004	1.5000e-004	1.5400e-003	0.0000	3.9000e-004	0.0000	4.0000e-004	1.0000e-004	0.0000	1.1000e-004	0.0000	0.3161	0.3161	2.0000e-005	0.0000	0.3164
Total	**1.0000e-004**	**1.5000e-004**	**1.5400e-003**	**0.0000**	**3.9000e-004**	**0.0000**	**4.0000e-004**	**1.0000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3161**	**0.3161**	**2.0000e-005**	**0.0000**	**0.3164**

Operational emission data removed because it is not relevant to this analysis.

MtSAC FMPU - Building A Construction (No Demolition)

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	50.00	1000sqft	1.15	50,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblConstructionPhase	PhaseEndDate	1/30/2025	1/31/2025
tblConstructionPhase	PhaseStartDate	1/29/2025	1/28/2025
tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.3367	1.2650	1.6362	3.0700e-003	0.0521	0.0485	0.1006	0.0192	0.0464	0.0656	0.0000	248.5760	248.5760	0.0394	0.0000	249.4037
Total	**0.3367**	**1.2650**	**1.6362**	**3.0700e-003**	**0.0521**	**0.0485**	**0.1006**	**0.0192**	**0.0464**	**0.0656**	**0.0000**	**248.5760**	**248.5760**	**0.0394**	**0.0000**	**249.4037**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2025	0.3367	1.2650	1.6362	3.0700e-003	0.0403	0.0485	0.0888	0.0132	0.0464	0.0596	0.0000	248.5758	248.5758	0.0394	0.0000	249.4034
Total	**0.3367**	**1.2650**	**1.6362**	**3.0700e-003**	**0.0403**	**0.0485**	**0.0888**	**0.0132**	**0.0464**	**0.0596**	**0.0000**	**248.5758**	**248.5758**	**0.0394**	**0.0000**	**249.4034**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**22.61**	**0.00**	**11.72**	**31.35**	**0.00**	**9.19**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2025	1/28/2025	5	20	
2	Site Preparation	Site Preparation	1/28/2025	1/31/2025	5	2	
3	Grading	Grading	2/1/2025	2/6/2025	5	4	
4	Building Construction	Building Construction	2/7/2025	11/13/2025	5	200	
5	Paving	Paving	11/14/2025	11/27/2025	5	10	
6	Architectural Coating	Architectural Coating	11/28/2025	12/11/2025	5	10	

Acres of Grading (Site Preparation Phase): 1

Acres of Grading (Grading Phase): 1.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 75,000; Non-Residential Outdoor: 25,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Demolition	Rubber Tired Dozers	1	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	1	7.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Pavers	1	6.00	125	0.42

Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	21.00	8.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1234	0.1566	2.5000e-004		5.2600e-003	5.2600e-003		4.9100e-003	4.9100e-003	0.0000	21.4160	21.4160	5.4200e-003	0.0000	21.5299
Total	**0.0135**	**0.1234**	**0.1566**	**2.5000e-004**	**0.0000**	**5.2600e-003**	**5.2600e-003**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**21.4160**	**21.4160**	**5.4200e-003**	**0.0000**	**21.5299**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.8000e-004	4.0000e-004	4.1900e-003	2.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0649	1.0649	5.0000e-005	0.0000	1.0658
Total	**2.8000e-004**	**4.0000e-004**	**4.1900e-003**	**2.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.0649**	**1.0649**	**5.0000e-005**	**0.0000**	**1.0658**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0135	0.1234	0.1566	2.5000e-004		5.2600e-003	5.2600e-003		4.9100e-003	4.9100e-003	0.0000	21.4159	21.4159	5.4200e-003	0.0000	21.5298
Total	**0.0135**	**0.1234**	**0.1566**	**2.5000e-004**	**0.0000**	**5.2600e-003**	**5.2600e-003**	**0.0000**	**4.9100e-003**	**4.9100e-003**	**0.0000**	**21.4159**	**21.4159**	**5.4200e-003**	**0.0000**	**21.5298**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	2.8000e-004	4.0000e-004	4.1900e-003	2.0000e-005	1.4300e-003	1.0000e-005	1.4400e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.0649	1.0649	5.0000e-005	0.0000	1.0658
Total	**2.8000e-004**	**4.0000e-004**	**4.1900e-003**	**2.0000e-005**	**1.4300e-003**	**1.0000e-005**	**1.4400e-003**	**3.8000e-004**	**1.0000e-005**	**3.9000e-004**	**0.0000**	**1.0649**	**1.0649**	**5.0000e-005**	**0.0000**	**1.0658**

3.3 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0116	0.0000	0.0116	5.9100e-003	0.0000	5.9100e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2500e-003	0.0203	0.0224	3.0000e-005		9.7000e-004	9.7000e-004		8.9000e-004	8.9000e-004	0.0000	3.0087	3.0087	9.7000e-004	0.0000	3.0291
Total	**2.2500e-003**	**0.0203**	**0.0224**	**3.0000e-005**	**0.0116**	**9.7000e-004**	**0.0126**	**5.9100e-003**	**8.9000e-004**	**6.8000e-003**	**0.0000**	**3.0087**	**3.0087**	**9.7000e-004**	**0.0000**	**3.0291**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1311	0.1311	1.0000e-005	0.0000	0.1312
Total	**3.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1311**	**0.1311**	**1.0000e-005**	**0.0000**	**0.1312**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.2200e-003	0.0000	5.2200e-003	2.6600e-003	0.0000	2.6600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2500e-003	0.0203	0.0224	3.0000e-005		9.7000e-004	9.7000e-004		8.9000e-004	8.9000e-004	0.0000	3.0087	3.0087	9.7000e-004	0.0000	3.0291
Total	**2.2500e-003**	**0.0203**	**0.0224**	**3.0000e-005**	**5.2200e-003**	**9.7000e-004**	**6.1900e-003**	**2.6600e-003**	**8.9000e-004**	**3.5500e-003**	**0.0000**	**3.0087**	**3.0087**	**9.7000e-004**	**0.0000**	**3.0291**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1311	0.1311	1.0000e-005	0.0000	0.1312
Total	**3.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1311**	**0.1311**	**1.0000e-005**	**0.0000**	**0.1312**

3.4 Grading - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					9.8300e-003	0.0000	9.8300e-003	5.0500e-003	0.0000	5.0500e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0167	0.0183	3.0000e-005		7.9000e-004	7.9000e-004		7.3000e-004	7.3000e-004	0.0000	2.4716	2.4716	8.0000e-004	0.0000	2.4884
Total	**1.8400e-003**	**0.0167**	**0.0183**	**3.0000e-005**	**9.8300e-003**	**7.9000e-004**	**0.0106**	**5.0500e-003**	**7.3000e-004**	**5.7800e-003**	**0.0000**	**2.4716**	**2.4716**	**8.0000e-004**	**0.0000**	**2.4884**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1311	0.1311	1.0000e-005	0.0000	0.1312
Total	**3.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1311**	**0.1311**	**1.0000e-005**	**0.0000**	**0.1312**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					4.4200e-003	0.0000	4.4200e-003	2.2700e-003	0.0000	2.2700e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.8400e-003	0.0167	0.0183	3.0000e-005		7.9000e-004	7.9000e-004		7.3000e-004	7.3000e-004	0.0000	2.4716	2.4716	8.0000e-004	0.0000	2.4884
Total	**1.8400e-003**	**0.0167**	**0.0183**	**3.0000e-005**	**4.4200e-003**	**7.9000e-004**	**5.2100e-003**	**2.2700e-003**	**7.3000e-004**	**3.0000e-003**	**0.0000**	**2.4716**	**2.4716**	**8.0000e-004**	**0.0000**	**2.4884**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	5.0000e-005	5.2000e-004	0.0000	1.8000e-004	0.0000	1.8000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1311	0.1311	1.0000e-005	0.0000	0.1312
Total	**3.0000e-005**	**5.0000e-005**	**5.2000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**1.8000e-004**	**5.0000e-005**	**0.0000**	**5.0000e-005**	**0.0000**	**0.1311**	**0.1311**	**1.0000e-005**	**0.0000**	**0.1312**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1320	1.0361	1.2411	2.2000e-003		0.0390	0.0390		0.0377	0.0377	0.0000	180.8092	180.8092	0.0294	0.0000	181.4264
Total	**0.1320**	**1.0361**	**1.2411**	**2.2000e-003**		**0.0390**	**0.0390**		**0.0377**	**0.0377**	**0.0000**	**180.8092**	**180.8092**	**0.0294**	**0.0000**	**181.4264**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5900e-003	0.0294	0.0697	1.7000e-004	4.9300e-003	7.5000e-004	5.6700e-003	1.4100e-003	6.9000e-004	2.0900e-003	0.0000	14.5692	14.5692	1.0000e-004	0.0000	14.5713
Worker	4.4900e-003	6.4100e-003	0.0677	2.8000e-004	0.0230	1.8000e-004	0.0232	6.1200e-003	1.7000e-004	6.2900e-003	0.0000	17.2014	17.2014	7.3000e-004	0.0000	17.2167
Total	**9.0800e-003**	**0.0358**	**0.1374**	**4.5000e-004**	**0.0280**	**9.3000e-004**	**0.0289**	**7.5300e-003**	**8.6000e-004**	**8.3800e-003**	**0.0000**	**31.7705**	**31.7705**	**8.3000e-004**	**0.0000**	**31.7880**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1320	1.0361	1.2411	2.2000e-003		0.0390	0.0390		0.0377	0.0377	0.0000	180.8090	180.8090	0.0294	0.0000	181.4262
Total	**0.1320**	**1.0361**	**1.2411**	**2.2000e-003**		**0.0390**	**0.0390**		**0.0377**	**0.0377**	**0.0000**	**180.8090**	**180.8090**	**0.0294**	**0.0000**	**181.4262**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.5900e-003	0.0294	0.0697	1.7000e-004	4.9300e-003	7.5000e-004	5.6700e-003	1.4100e-003	6.9000e-004	2.0900e-003	0.0000	14.5692	14.5692	1.0000e-004	0.0000	14.5713
Worker	4.4900e-003	6.4100e-003	0.0677	2.8000e-004	0.0230	1.8000e-004	0.0232	6.1200e-003	1.7000e-004	6.2900e-003	0.0000	17.2014	17.2014	7.3000e-004	0.0000	17.2167
Total	**9.0800e-003**	**0.0358**	**0.1374**	**4.5000e-004**	**0.0280**	**9.3000e-004**	**0.0289**	**7.5300e-003**	**8.6000e-004**	**8.3800e-003**	**0.0000**	**31.7705**	**31.7705**	**8.3000e-004**	**0.0000**	**31.7880**

3.6 Paving - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8300e-003	0.0263	0.0434	7.0000e-005		1.2200e-003	1.2200e-003		1.1200e-003	1.1200e-003	0.0000	5.8001	5.8001	1.8400e-003	0.0000	5.8387
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**2.8300e-003**	**0.0263**	**0.0434**	**7.0000e-005**		**1.2200e-003**	**1.2200e-003**		**1.1200e-003**	**1.1200e-003**	**0.0000**	**5.8001**	**5.8001**	**1.8400e-003**	**0.0000**	**5.8387**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	2.0000e-004	2.1000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.5324	0.5324	2.0000e-005	0.0000	0.5329
Total	**1.4000e-004**	**2.0000e-004**	**2.1000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.5324**	**0.5324**	**2.0000e-005**	**0.0000**	**0.5329**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	2.8300e-003	0.0263	0.0434	7.0000e-005		1.2200e-003	1.2200e-003		1.1200e-003	1.1200e-003	0.0000	5.8001	5.8001	1.8400e-003	0.0000	5.8387
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**2.8300e-003**	**0.0263**	**0.0434**	**7.0000e-005**		**1.2200e-003**	**1.2200e-003**		**1.1200e-003**	**1.1200e-003**	**0.0000**	**5.8001**	**5.8001**	**1.8400e-003**	**0.0000**	**5.8387**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.4000e-004	2.0000e-004	2.1000e-003	1.0000e-005	7.1000e-004	1.0000e-005	7.2000e-004	1.9000e-004	1.0000e-005	1.9000e-004	0.0000	0.5324	0.5324	2.0000e-005	0.0000	0.5329
Total	**1.4000e-004**	**2.0000e-004**	**2.1000e-003**	**1.0000e-005**	**7.1000e-004**	**1.0000e-005**	**7.2000e-004**	**1.9000e-004**	**1.0000e-005**	**1.9000e-004**	**0.0000**	**0.5324**	**0.5324**	**2.0000e-005**	**0.0000**	**0.5329**

3.7 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1738					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5000e-004	5.7300e-003	9.0500e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2781
Total	**0.1747**	**5.7300e-003**	**9.0500e-003**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**1.2766**	**1.2766**	**7.0000e-005**	**0.0000**	**1.2781**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	6.0000e-005	6.4000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1638	0.1638	1.0000e-005	0.0000	0.1640
Total	**4.0000e-005**	**6.0000e-005**	**6.4000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1638**	**0.1638**	**1.0000e-005**	**0.0000**	**0.1640**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1738					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.5000e-004	5.7300e-003	9.0500e-003	1.0000e-005		2.6000e-004	2.6000e-004		2.6000e-004	2.6000e-004	0.0000	1.2766	1.2766	7.0000e-005	0.0000	1.2781
Total	**0.1747**	**5.7300e-003**	**9.0500e-003**	**1.0000e-005**		**2.6000e-004**	**2.6000e-004**		**2.6000e-004**	**2.6000e-004**	**0.0000**	**1.2766**	**1.2766**	**7.0000e-005**	**0.0000**	**1.2781**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.0000e-005	6.0000e-005	6.4000e-004	0.0000	2.2000e-004	0.0000	2.2000e-004	6.0000e-005	0.0000	6.0000e-005	0.0000	0.1638	0.1638	1.0000e-005	0.0000	0.1640
Total	**4.0000e-005**	**6.0000e-005**	**6.4000e-004**	**0.0000**	**2.2000e-004**	**0.0000**	**2.2000e-004**	**6.0000e-005**	**0.0000**	**6.0000e-005**	**0.0000**	**0.1638**	**0.1638**	**1.0000e-005**	**0.0000**	**0.1640**

Operational emission data removed because it is irrelevant to this analysis.

MtSAC FMPU Construction for GHG

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	41.82	1000sqft	0.96	41,818.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase -

Demolition -

Architectural Coating - Maximum VOC is 75 g/l per Mitigation Monitoring Program

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblArchitecturalCoating	EF_Residential_Exterior	100.00	75.00
tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017													84.8772	0.0189	0.0000	85.2734
Total													**84.8772**	**0.0189**	**0.0000**	**85.2734**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2017													84.8771	0.0189	0.0000	85.2733
Total													**84.8771**	**0.0189**	**0.0000**	**85.2733**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2017	1/13/2017	5	10	
2	Site Preparation	Site Preparation	1/14/2017	1/16/2017	5	1	
3	Grading	Grading	1/17/2017	1/18/2017	5	2	
4	Building Construction	Building Construction	1/19/2017	6/7/2017	5	100	
5	Paving	Paving	6/8/2017	6/14/2017	5	5	
6	Architectural Coating	Architectural Coating	6/15/2017	6/21/2017	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 62,727; Non-Residential Outdoor: 20,909 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Demolition	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Site Preparation	Graders	1	8.00	174	0.41
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Grading	Rubber Tired Dozers	1	1.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	226	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Paving	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	1	7.00	125	0.42
Paving	Rollers	1	7.00	80	0.38

Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	4	10.00	0.00	166.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	18.00	7.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	4.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													5.3697	1.0600e-003	0.0000	5.3919
Total													**5.3697**	**1.0600e-003**	**0.0000**	**5.3919**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													5.4983	4.0000e-005	0.0000	5.4991
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.4942	3.0000e-005	0.0000	0.4947
Total													**5.9925**	**7.0000e-005**	**0.0000**	**5.9939**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													5.3697	1.0600e-003	0.0000	5.3919
Total													**5.3697**	**1.0600e-003**	**0.0000**	**5.3919**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													5.4983	4.0000e-005	0.0000	5.4991
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.4942	3.0000e-005	0.0000	0.4947

Total													**5.9925**	**7.0000e-005**	**0.0000**	**5.9939**

3.3 Site Preparation - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													0.4336	1.3000e-004	0.0000	0.4364
Total													**0.4336**	**1.3000e-004**	**0.0000**	**0.4364**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0247	0.0000	0.0000	0.0247
Total													**0.0247**	**0.0000**	**0.0000**	**0.0247**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													0.4336	1.3000e-004	0.0000	0.4364
Total													**0.4336**	**1.3000e-004**	**0.0000**	**0.4364**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0247	0.0000	0.0000	0.0247
Total													**0.0247**	**0.0000**	**0.0000**	**0.0247**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													1.0739	2.1000e-004	0.0000	1.0784
Total													**1.0739**	**2.1000e-004**	**0.0000**	**1.0784**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0988	1.0000e-005	0.0000	0.0990
Total													**0.0988**	**1.0000e-005**	**0.0000**	**0.0990**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust													0.0000	0.0000	0.0000	0.0000
Off-Road													1.0739	2.1000e-004	0.0000	1.0784
Total													**1.0739**	**2.1000e-004**	**0.0000**	**1.0784**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0988	1.0000e-005	0.0000	0.0990
Total													**0.0988**	**1.0000e-005**	**0.0000**	**0.0990**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road													52.5954	0.0161	0.0000	52.9339
Total													**52.5954**	**0.0161**	**0.0000**	**52.9339**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													6.7866	5.0000e-005	0.0000	6.7876
Worker													8.8957	4.6000e-004	0.0000	8.9054
Total													**15.6823**	**5.1000e-004**	**0.0000**	**15.6929**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road													52.5954	0.0161	0.0000	52.9338
Total													**52.5954**	**0.0161**	**0.0000**	**52.9338**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													6.7866	5.0000e-005	0.0000	6.7876
Worker													8.8957	4.6000e-004	0.0000	8.9054
Total													**15.6823**	**5.1000e-004**	**0.0000**	**15.6929**

3.6 Paving - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road													2.4243	6.7000e-004	0.0000	2.4384
Paving													0.0000	0.0000	0.0000	0.0000
Total													**2.4243**	**6.7000e-004**	**0.0000**	**2.4384**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.4448	2.0000e-005	0.0000	0.4453
Total													**0.4448**	**2.0000e-005**	**0.0000**	**0.4453**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road													2.4243	6.7000e-004	0.0000	2.4384
Paving													0.0000	0.0000	0.0000	0.0000
Total													**2.4243**	**6.7000e-004**	**0.0000**	**2.4384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.4448	2.0000e-005	0.0000	0.4453
Total													**0.4448**	**2.0000e-005**	**0.0000**	**0.4453**

3.7 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating													0.0000	0.0000	0.0000	0.0000
Off-Road													0.6383	7.0000e-005	0.0000	0.6397
Total													**0.6383**	**7.0000e-005**	**0.0000**	**0.6397**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0988	1.0000e-005	0.0000	0.0990
Total													**0.0988**	**1.0000e-005**	**0.0000**	**0.0990**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating													0.0000	0.0000	0.0000	0.0000
Off-Road													0.6383	7.0000e-005	0.0000	0.6397
Total													**0.6383**	**7.0000e-005**	**0.0000**	**0.6397**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling													0.0000	0.0000	0.0000	0.0000
Vendor													0.0000	0.0000	0.0000	0.0000
Worker													0.0988	1.0000e-005	0.0000	0.0990
Total													**0.0988**	**1.0000e-005**	**0.0000**	**0.0990**

Operational emission data removed because it is not relevant to this analysis.

Mt. SAC FMPU - 2020

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	39,731.00	Student	39.82	1,734,347.04	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2020
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2014	2020

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.3248	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416
Energy	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	8,173.7870	8,173.7870	0.3051	0.1010	8,211.4992
Mobile	18.4764	52.9962	207.3328	0.6174	41.9806	0.8473	42.8279	11.2346	0.7813	12.0159	0.0000	43,372.1782	43,372.1782	1.5544	0.0000	43,404.8200
Waste						0.0000	0.0000		0.0000	0.0000	1,471.8692	0.0000	1,471.8692	86.9850	0.0000	3,298.5537
Water						0.0000	0.0000		0.0000	0.0000	26.9882	740.0029	766.9910	2.8060	0.0725	848.3879
Total	**27.0674**	**55.4214**	**209.8763**	**0.6320**	**41.9806**	**1.0330**	**43.0137**	**11.2346**	**0.9671**	**12.2017**	**1,498.8574**	**52,286.9541**	**53,785.8115**	**91.6531**	**0.1735**	**55,764.3024**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	8.3248	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416
Energy	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	8,173.7870	8,173.7870	0.3051	0.1010	8,211.4992
Mobile	18.4764	52.9962	207.3328	0.6174	41.9806	0.8473	42.8279	11.2346	0.7813	12.0159	0.0000	43,372.1782	43,372.1782	1.5544	0.0000	43,404.8200
Waste						0.0000	0.0000		0.0000	0.0000	1,471.8692	0.0000	1,471.8692	86.9850	0.0000	3,298.5537
Water						0.0000	0.0000		0.0000	0.0000	26.9882	740.0029	766.9910	2.8055	0.0724	848.3448
Total	**27.0674**	**55.4214**	**209.8763**	**0.6320**	**41.9806**	**1.0330**	**43.0137**	**11.2346**	**0.9671**	**12.2017**	**1,498.8574**	**52,286.9541**	**53,785.8115**	**91.6526**	**0.1734**	**55,764.2593**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.06**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	18.4764	52.9962	207.3328	0.6174	41.9806	0.8473	42.8279	11.2346	0.7813	12.0159	0.0000	43,372.1782	43,372.1782	1.5544	0.0000	43,404.8200
Unmitigated	18.4764	52.9962	207.3328	0.6174	41.9806	0.8473	42.8279	11.2346	0.7813	12.0159	0.0000	43,372.1782	43,372.1782	1.5544	0.0000	43,404.8200

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	47,677.20	16,687.02	1589.24	110,744,568	110,744,568
Total	47,677.20	16,687.02	1,589.24	110,744,568	110,744,568

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.509128	0.059640	0.181069	0.139276	0.042833	0.006726	0.016156	0.033615	0.001941	0.002483	0.004400	0.000574	0.002159

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,538.8497	5,538.8497	0.2546	0.0527	5,560.5261
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	5,538.8497	5,538.8497	0.2546	0.0527	5,560.5261
NaturalGas Mitigated	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	2,634.9373	2,634.9373	0.0505	0.0483	2,650.9731
NaturalGas Unmitigated	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	2,634.9373	2,634.9373	0.0505	0.0483	2,650.9731

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	4.93769e+007	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	2,634.9373	2,634.9373	0.0505	0.0483	2,650.9731
Total		**0.2663**	**2.4204**	**2.0332**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**	**0.0000**	**2,634.9373**	**2,634.9373**	**0.0505**	**0.0483**	**2,650.9731**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	4.93769e+007	0.2663	2.4204	2.0332	0.0145		0.1840	0.1840		0.1840	0.1840	0.0000	2,634.9373	2,634.9373	0.0505	0.0483	2,650.9731
Total		**0.2663**	**2.4204**	**2.0332**	**0.0145**		**0.1840**	**0.1840**		**0.1840**	**0.1840**	**0.0000**	**2,634.9373**	**2,634.9373**	**0.0505**	**0.0483**	**2,650.9731**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	1.93553e+007	5,538.8497	0.2546	0.0527	5,560.5261
Total		**5,538.8497**	**0.2546**	**0.0527**	**5,560.5261**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	1.93553e+007	5,538.8497	0.2546	0.0527	5,560.5261
Total		**5,538.8497**	**0.2546**	**0.0527**	**5,560.5261**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	8.3248	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416
Unmitigated	8.3248	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.0097					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.2671					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0480	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416
Total	**8.3248**	**4.7100e-003**	**0.5103**	**4.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**0.9860**	**0.9860**	**2.6400e-003**	**0.0000**	**1.0416**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	2.0097					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.2671					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0480	4.7100e-003	0.5103	4.0000e-005		1.8300e-003	1.8300e-003		1.8300e-003	1.8300e-003	0.0000	0.9860	0.9860	2.6400e-003	0.0000	1.0416
Total	**8.3248**	**4.7100e-003**	**0.5103**	**4.0000e-005**		**1.8300e-003**	**1.8300e-003**		**1.8300e-003**	**1.8300e-003**	**0.0000**	**0.9860**	**0.9860**	**2.6400e-003**	**0.0000**	**1.0416**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	766.9910	2.8055	0.0724	848.3448
Unmitigated	766.9910	2.8060	0.0725	848.3879

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	85.068 / 133.055	766.9910	2.8060	0.0725	848.3879
Total		**766.9910**	**2.8060**	**0.0725**	**848.3879**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	85.068 / 133.055	766.9910	2.8055	0.0724	848.3448
Total		**766.9910**	**2.8055**	**0.0724**	**848.3448**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,471.8692	86.9850	0.0000	3,298.5537
Unmitigated	1,471.8692	86.9850	0.0000	3,298.5537

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Junior College (2Yr)	7250.91	1,471.8692	86.9850	0.0000	3,298.5537
Total		**1,471.8692**	**86.9850**	**0.0000**	**3,298.5537**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	7250.91	1,471.8692	86.9850	0.0000	3,298.5537
Total		**1,471.8692**	**86.9850**	**0.0000**	**3,298.5537**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it was not relevant to the analysis.

Mt. SAC FMPU - 2025

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	43,139.00	Student	43.23	1,883,113.86	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2025
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Headcount data from Iteris.
Lot acreage from Project Description

Table Name	Column Name	Default Value	New Value
tblProjectCharacteristics	OperationalYear	2014	2025

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.0373	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291
Energy	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	8,874.9087	8,874.9087	0.3313	0.1097	8,915.8557
Mobile	16.6654	40.6778	182.9036	0.6808	45.6102	0.9278	46.5379	12.2085	0.8561	13.0646	0.0000	45,557.1361	45,557.1361	1.4106	0.0000	45,586.7585
Waste						0.0000	0.0000		0.0000	0.0000	1,598.1215	0.0000	1,598.1215	94.4463	0.0000	3,581.4932
Water						0.0000	0.0000		0.0000	0.0000	29.3031	803.4780	832.7811	3.0467	0.0787	921.1599
Total	**25.9918**	**43.3108**	**185.6603**	**0.6966**	**45.6102**	**1.1294**	**46.7396**	**12.2085**	**1.0578**	**13.2663**	**1,627.4246**	**55,236.5934**	**56,864.0179**	**99.2376**	**0.1884**	**59,006.3964**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	9.0373	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291
Energy	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	8,874.9087	8,874.9087	0.3313	0.1097	8,915.8557
Mobile	16.6654	40.6778	182.9036	0.6808	45.6102	0.9278	46.5379	12.2085	0.8561	13.0646	0.0000	45,557.1361	45,557.1361	1.4106	0.0000	45,586.7585
Waste						0.0000	0.0000		0.0000	0.0000	1,598.1215	0.0000	1,598.1215	94.4463	0.0000	3,581.4932
Water						0.0000	0.0000		0.0000	0.0000	29.3031	803.4780	832.7811	3.0461	0.0786	921.1132
Total	**25.9918**	**43.3108**	**185.6603**	**0.6966**	**45.6102**	**1.1294**	**46.7396**	**12.2085**	**1.0578**	**13.2663**	**1,627.4246**	**55,236.5934**	**56,864.0179**	**99.2370**	**0.1882**	**59,006.3496**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.06**	**0.00**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	16.6654	40.6778	182.9036	0.6808	45.6102	0.9278	46.5379	12.2085	0.8561	13.0646	0.0000	45,557.1361	45,557.1361	1.4106	0.0000	45,586.7585
Unmitigated	16.6654	40.6778	182.9036	0.6808	45.6102	0.9278	46.5379	12.2085	0.8561	13.0646	0.0000	45,557.1361	45,557.1361	1.4106	0.0000	45,586.7585

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Junior College (2Yr)	51,766.80	18,118.38	1725.56	120,243,888	120,243,888
Total	51,766.80	18,118.38	1,725.56	120,243,888	120,243,888

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Junior College (2Yr)	16.60	8.40	6.90	6.40	88.60	5.00	92	7	1

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.499131	0.060194	0.182964	0.141782	0.044131	0.007011	0.016488	0.036565	0.002001	0.002519	0.004202	0.000556	0.002456

5.0 Energy Detail

4.4 Fleet Mix

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,013.9548	6,013.9548	0.2764	0.0572	6,037.4905
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6,013.9548	6,013.9548	0.2764	0.0572	6,037.4905
NaturalGas Mitigated	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	2,860.9539	2,860.9539	0.0548	0.0525	2,878.3652
NaturalGas Unmitigated	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	2,860.9539	2,860.9539	0.0548	0.0525	2,878.3652

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	5.36123e+007	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	2,860.9539	2,860.9539	0.0548	0.0525	2,878.3652
Total		**0.2891**	**2.6281**	**2.2076**	**0.0158**		**0.1997**	**0.1997**		**0.1997**	**0.1997**	**0.0000**	**2,860.9539**	**2,860.9539**	**0.0548**	**0.0525**	**2,878.3652**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Land Use	kBTU/yr	tons/yr										MT/yr					
Junior College (2Yr)	5.36123e+007	0.2891	2.6281	2.2076	0.0158		0.1997	0.1997		0.1997	0.1997	0.0000	2,860.9539	2,860.9539	0.0548	0.0525	2,878.3652
Total		**0.2891**	**2.6281**	**2.2076**	**0.0158**		**0.1997**	**0.1997**		**0.1997**	**0.1997**	**0.0000**	**2,860.9539**	**2,860.9539**	**0.0548**	**0.0525**	**2,878.3652**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	2.10156e+007	6,013.9548	0.2764	0.0572	6,037.4905
Total		**6,013.9548**	**0.2764**	**0.0572**	**6,037.4905**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Junior College (2Yr)	2.10156e+007	6,013.9548	0.2764	0.0572	6,037.4905
Total		**6,013.9548**	**0.2764**	**0.0572**	**6,037.4905**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	9.0373	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291
Unmitigated	9.0373	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.1821					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.8046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0506	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291
Total	**9.0372**	**4.9800e-003**	**0.5491**	**4.0000e-005**		**1.9500e-003**	**1.9500e-003**		**1.9500e-003**	**1.9500e-003**	**0.0000**	**1.0706**	**1.0706**	**2.7800e-003**	**0.0000**	**1.1291**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					

Architectural Coating	2.1821					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	6.8046					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.0506	4.9800e-003	0.5491	4.0000e-005		1.9500e-003	1.9500e-003		1.9500e-003	1.9500e-003	0.0000	1.0706	1.0706	2.7800e-003	0.0000	1.1291
Total	**9.0372**	**4.9800e-003**	**0.5491**	**4.0000e-005**		**1.9500e-003**	**1.9500e-003**		**1.9500e-003**	**1.9500e-003**	**0.0000**	**1.0706**	**1.0706**	**2.7800e-003**	**0.0000**	**1.1291**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	832.7811	3.0461	0.0786	921.1132
Unmitigated	832.7811	3.0467	0.0787	921.1599

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	92.3649 / 144.468	832.7811	3.0467	0.0787	921.1599
Total		**832.7811**	**3.0467**	**0.0787**	**921.1599**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Junior College (2Yr)	92.3649 / 144.468	832.7811	3.0461	0.0786	921.1132
Total		**832.7811**	**3.0461**	**0.0786**	**921.1132**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	1,598.1215	94.4463	0.0000	3,581.4932
Unmitigated	1,598.1215	94.4463	0.0000	3,581.4932

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e

Land Use	tons	MT/yr			
Junior College (2Yr)	7872.87	1,598.1215	94.4463	0.0000	3,581.4932
Total		**1,598.1215**	**94.4463**	**0.0000**	**3,581.4932**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Junior College (2Yr)	7872.87	1,598.1215	94.4463	0.0000	3,581.4932
Total		**1,598.1215**	**94.4463**	**0.0000**	**3,581.4932**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Construction emission data removed because it is not relevant to this analysis.

Physical Education Projects-- Phase 1 -- Construction Only

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	91.73	1000sqft	2.11	91,730.00	0
General Light Industry	79.40	1000sqft	1.82	79,400.00	0
Other Non-Asphalt Surfaces	174.43	1000sqft	4.00	174,430.00	0
Parking Lot	107.57	1000sqft	2.47	107,570.00	0
City Park	21.80	Acre	21.80	949,608.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2019
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - This has updated painting information from Matt Breyer dated March 3, 2016.

Land Use -

Construction Phase - Demolition duration based on Tilden Coil schedule
Site Prep plus Grading equals 45 days based on Tilden Coil schedule
Construction phase roughly based on Tilden Coil schedule and end date of construction and paint info dates March 3, 2016

Trips and VMT - Demolition is 9800 cy, total export of dirt during grading 81429 cy, and concrete import is 15,800 cy

Demolition -

Grading - Entire site will essentially be re-graded

Architectural Coating - Default values based on requirements of Mitigation Monitoring Program and paint info dated March 3, 2016.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Construction Off-road Equipment Mitigation - Tier 4 required for grading mitigation for NOx control

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	649,198.00	9,000.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	1,947,593.00	151,650.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	6.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	9.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	35.00	58.00
tblConstructionPhase	NumDays	500.00	381.00
tblConstructionPhase	NumDays	30.00	56.00
tblConstructionPhase	NumDays	45.00	40.00
tblConstructionPhase	NumDays	20.00	5.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00

tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblConstructionPhase	PhaseEndDate	12/12/2016	12/24/2016
tblConstructionPhase	PhaseStartDate	12/25/2016	12/26/2016
tblConstructionPhase	PhaseStartDate	12/7/2016	12/20/2016
tblGrading	AcresOfGrading	100.00	112.50
tblGrading	MaterialImported	0.00	81,429.00
tblProjectCharacteristics	OperationalYear	2014	2019
tblTripsAndVMT	HaulingTripNumber	0.00	1,580.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.1853	2.1465	1.6442	2.7600e-003	0.5338	0.0899	0.6238	0.1538	0.0835	0.2373	0.0000	253.4344	253.4344	0.0374	0.0000	254.2204
2017	1.1723	9.2147	12.4228	0.0264	1.3801	0.3716	1.7517	0.3952	0.3466	0.7419	0.0000	2,187.4919	2,187.4919	0.1605	0.0000	2,190.8622
2018	0.6601	2.6655	4.2104	9.1600e-003	0.4573	0.1158	0.5730	0.1228	0.1084	0.2312	0.0000	728.4072	728.4072	0.0595	0.0000	729.6567
Total	**2.0177**	**14.0266**	**18.2774**	**0.0383**	**2.3712**	**0.5773**	**2.9486**	**0.6718**	**0.5386**	**1.2104**	**0.0000**	**3,169.3336**	**3,169.3336**	**0.2574**	**0.0000**	**3,174.7393**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2016	0.0662	0.7014	1.2354	2.7600e-003	0.2906	0.0194	0.3100	0.0821	0.0188	0.1009	0.0000	253.4343	253.4343	0.0374	0.0000	254.2202
2017	0.9797	7.0368	12.1995	0.0264	1.2786	0.2352	1.5138	0.3549	0.2215	0.5764	0.0000	2,187.4914	2,187.4914	0.1605	0.0000	2,190.8617
2018	0.6292	2.3322	4.2111	9.1600e-003	0.4573	0.0913	0.5485	0.1228	0.0860	0.2087	0.0000	728.4070	728.4070	0.0595	0.0000	729.6565
Total	**1.6752**	**10.0704**	**17.6460**	**0.0383**	**2.0264**	**0.3459**	**2.3723**	**0.5598**	**0.3262**	**0.8859**	**0.0000**	**3,169.3327**	**3,169.3327**	**0.2574**	**0.0000**	**3,174.7384**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**16.98**	**28.21**	**3.45**	**0.00**	**14.54**	**40.09**	**19.54**	**16.67**	**39.44**	**26.80**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	10/3/2016	12/6/2016	6	56	
2	Site Preparation	Site Preparation	12/20/2016	12/24/2016	6	5	
3	Grading	Grading	12/26/2016	2/9/2017	6	40	
4	Building Construction	Building Construction	2/10/2017	4/30/2018	6	381	
5	Paving	Paving	5/1/2018	6/9/2018	6	35	
6	Architectural Coating	Architectural Coating	6/10/2018	8/16/2018	6	58	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 151,650; Non-Residential Outdoor: 9,000 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Scrapers	2	8.00	361	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	125	0.42
Paving	Paving Equipment	2	8.00	130	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	1,962.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	10,179.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	589.00	230.00	1,580.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	118.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Clean Paved Roads

3.2 Demolition - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2123	0.0000	0.2123	0.0322	0.0000	0.0322	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1201	1.2784	0.9809	1.1200e-003		0.0642	0.0642		0.0598	0.0598	0.0000	103.8726	103.8726	0.0283	0.0000	104.4658
Total	**0.1201**	**1.2784**	**0.9809**	**1.1200e-003**	**0.2123**	**0.0642**	**0.2765**	**0.0322**	**0.0598**	**0.0920**	**0.0000**	**103.8726**	**103.8726**	**0.0283**	**0.0000**	**104.4658**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0175	0.2834	0.2142	7.2000e-004	0.0168	4.2700e-003	0.0211	4.6100e-003	3.9300e-003	8.5400e-003	0.0000	66.0706	66.0706	4.7000e-004	0.0000	66.0805
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.6900e-003	2.4800e-003	0.0258	6.0000e-005	4.6100e-003	4.0000e-005	4.6500e-003	1.2200e-003	4.0000e-005	1.2600e-003	0.0000	4.3171	4.3171	2.3000e-004	0.0000	4.3220
Total	**0.0192**	**0.2859**	**0.2400**	**7.8000e-004**	**0.0214**	**4.3100e-003**	**0.0257**	**5.8300e-003**	**3.9700e-003**	**9.8000e-003**	**0.0000**	**70.3877**	**70.3877**	**7.0000e-004**	**0.0000**	**70.4025**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0956	0.0000	0.0956	0.0145	0.0000	0.0145	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0296	0.1793	0.6648	1.1200e-003		0.0113	0.0113		0.0113	0.0113	0.0000	103.8725	103.8725	0.0283	0.0000	104.4657
Total	**0.0296**	**0.1793**	**0.6648**	**1.1200e-003**	**0.0956**	**0.0113**	**0.1068**	**0.0145**	**0.0113**	**0.0257**	**0.0000**	**103.8725**	**103.8725**	**0.0283**	**0.0000**	**104.4657**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0175	0.2834	0.2142	7.2000e-004	0.0168	4.2700e-003	0.0211	4.6100e-003	3.9300e-003	8.5400e-003	0.0000	66.0706	66.0706	4.7000e-004	0.0000	66.0805
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	1.6900e-003	2.4800e-003	0.0258	6.0000e-005	4.6100e-003	4.0000e-005	4.6500e-003	1.2200e-003	4.0000e-005	1.2600e-003	0.0000	4.3171	4.3171	2.3000e-004	0.0000	4.3220
Total	**0.0192**	**0.2859**	**0.2400**	**7.8000e-004**	**0.0214**	**4.3100e-003**	**0.0257**	**5.8300e-003**	**3.9700e-003**	**9.8000e-003**	**0.0000**	**70.3877**	**70.3877**	**7.0000e-004**	**0.0000**	**70.4025**

3.3 Site Preparation - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0127	0.1366	0.1028	1.0000e-004		7.3500e-003	7.3500e-003		6.7600e-003	6.7600e-003	0.0000	9.2193	9.2193	2.7800e-003	0.0000	9.2777
Total	**0.0127**	**0.1366**	**0.1028**	**1.0000e-004**	**0.0452**	**7.3500e-003**	**0.0525**	**0.0248**	**6.7600e-003**	**0.0316**	**0.0000**	**9.2193**	**9.2193**	**2.7800e-003**	**0.0000**	**9.2777**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.7000e-004	2.7600e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4625	0.4625	2.0000e-005	0.0000	0.4631
Total	**1.8000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4625**	**0.4625**	**2.0000e-005**	**0.0000**	**0.4631**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1900e-003	5.1500e-003	0.0531	1.0000e-004		1.6000e-004	1.6000e-004		1.6000e-004	1.6000e-004	0.0000	9.2193	9.2193	2.7800e-003	0.0000	9.2777
Total	**1.1900e-003**	**5.1500e-003**	**0.0531**	**1.0000e-004**	**0.0203**	**1.6000e-004**	**0.0205**	**0.0112**	**1.6000e-004**	**0.0113**	**0.0000**	**9.2193**	**9.2193**	**2.7800e-003**	**0.0000**	**9.2777**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.8000e-004	2.7000e-004	2.7600e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4625	0.4625	2.0000e-005	0.0000	0.4631
Total	**1.8000e-004**	**2.7000e-004**	**2.7600e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4625**	**0.4625**	**2.0000e-005**	**0.0000**	**0.4631**

3.4 Grading - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Fugitive Dust					0.1847	0.0000	0.1847	0.0733	0.0000	0.0733	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2244	0.1474	1.9000e-004		0.0108	0.0108		9.8900e-003	9.8900e-003	0.0000	17.4587	17.4587	5.2700e-003	0.0000	17.5693
Total	**0.0194**	**0.2244**	**0.1474**	**1.9000e-004**	**0.1847**	**0.0108**	**0.1955**	**0.0733**	**9.8900e-003**	**0.0832**	**0.0000**	**17.4587**	**17.4587**	**5.2700e-003**	**0.0000**	**17.5693**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0136	0.2206	0.1667	5.6000e-004	0.0691	3.3300e-003	0.0724	0.0173	3.0600e-003	0.0204	0.0000	51.4169	51.4169	3.7000e-004	0.0000	51.4246
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	3.5000e-004	3.6800e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	1.0000e-005	1.8000e-004	0.0000	0.6167	0.6167	3.0000e-005	0.0000	0.6174
Total	**0.0138**	**0.2209**	**0.1704**	**5.7000e-004**	**0.0697**	**3.3400e-003**	**0.0731**	**0.0175**	**3.0700e-003**	**0.0206**	**0.0000**	**52.0336**	**52.0336**	**4.0000e-004**	**0.0000**	**52.0420**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0831	0.0000	0.0831	0.0330	0.0000	0.0330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.2700e-003	9.8300e-003	0.1043	1.9000e-004		3.0000e-004	3.0000e-004		3.0000e-004	3.0000e-004	0.0000	17.4587	17.4587	5.2700e-003	0.0000	17.5693

Total	**2.2700e-003**	**9.8300e-003**	**0.1043**	**1.9000e-004**	**0.0831**	**3.0000e-004**	**0.0834**	**0.0330**	**3.0000e-004**	**0.0333**	**0.0000**	**17.4587**	**17.4587**	**5.2700e-003**	**0.0000**	**17.5693**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0136	0.2206	0.1667	5.6000e-004	0.0691	3.3300e-003	0.0724	0.0173	3.0600e-003	0.0204	0.0000	51.4169	51.4169	3.7000e-004	0.0000	51.4246
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.4000e-004	3.5000e-004	3.6800e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	1.0000e-005	1.8000e-004	0.0000	0.6167	0.6167	3.0000e-005	0.0000	0.6174
Total	**0.0138**	**0.2209**	**0.1704**	**5.7000e-004**	**0.0697**	**3.3400e-003**	**0.0731**	**0.0175**	**3.0700e-003**	**0.0206**	**0.0000**	**52.0336**	**52.0336**	**4.0000e-004**	**0.0000**	**52.0420**

3.4 Grading - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1847	0.0000	0.1847	0.0733	0.0000	0.0733	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1037	1.1831	0.7957	1.0500e-003		0.0564	0.0564		0.0519	0.0519	0.0000	97.3657	97.3657	0.0298	0.0000	97.9922
Total	**0.1037**	**1.1831**	**0.7957**	**1.0500e-003**	**0.1847**	**0.0564**	**0.2411**	**0.0733**	**0.0519**	**0.1252**	**0.0000**	**97.3657**	**97.3657**	**0.0298**	**0.0000**	**97.9922**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0726	1.1455	0.9108	3.1800e-003	0.0841	0.0172	0.1013	0.0228	0.0158	0.0386	0.0000	286.5791	286.5791	2.0400e-003	0.0000	286.6219
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	1.8100e-003	0.0188	5.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.3606	3.3606	1.7000e-004	0.0000	3.3642
Total	**0.0738**	**1.1474**	**0.9296**	**3.2300e-003**	**0.0878**	**0.0173**	**0.1050**	**0.0238**	**0.0159**	**0.0396**	**0.0000**	**289.9397**	**289.9397**	**2.2100e-003**	**0.0000**	**289.9862**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0831	0.0000	0.0831	0.0330	0.0000	0.0330	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0129	0.0557	0.5912	1.0500e-003		1.7100e-003	1.7100e-003		1.7100e-003	1.7100e-003	0.0000	97.3656	97.3656	0.0298	0.0000	97.9920
Total	**0.0129**	**0.0557**	**0.5912**	**1.0500e-003**	**0.0831**	**1.7100e-003**	**0.0848**	**0.0330**	**1.7100e-003**	**0.0347**	**0.0000**	**97.3656**	**97.3656**	**0.0298**	**0.0000**	**97.9920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0726	1.1455	0.9108	3.1800e-003	0.0841	0.0172	0.1013	0.0228	0.0158	0.0386	0.0000	286.5791	286.5791	2.0400e-003	0.0000	286.6219
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2200e-003	1.8100e-003	0.0188	5.0000e-005	3.7300e-003	3.0000e-005	3.7600e-003	9.9000e-004	3.0000e-005	1.0200e-003	0.0000	3.3606	3.3606	1.7000e-004	0.0000	3.3642
Total	**0.0738**	**1.1474**	**0.9296**	**3.2300e-003**	**0.0878**	**0.0173**	**0.1050**	**0.0238**	**0.0159**	**0.0396**	**0.0000**	**289.9397**	**289.9397**	**2.2100e-003**	**0.0000**	**289.9862**

3.5 Building Construction - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.4312	3.6704	2.5200	3.7300e-003		0.2476	0.2476		0.2325	0.2325	0.0000	332.8760	332.8760	0.0819	0.0000	334.5964
Total	**0.4312**	**3.6704**	**2.5200**	**3.7300e-003**		**0.2476**	**0.2476**		**0.2325**	**0.2325**	**0.0000**	**332.8760**	**332.8760**	**0.0819**	**0.0000**	**334.5964**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.6700e-003	0.1526	0.1214	4.2000e-004	0.0127	2.2900e-003	0.0149	3.3900e-003	2.1100e-003	5.5000e-003	0.0000	38.1854	38.1854	2.7000e-004	0.0000	38.1911
Vendor	0.2593	2.6249	3.5258	6.9300e-003	0.1968	0.0407	0.2375	0.0562	0.0375	0.0936	0.0000	619.9038	619.9038	4.4200e-003	0.0000	619.9966

Worker	0.2947	0.4364	4.5304	0.0110	0.8982	7.3600e-003	0.9056	0.2386	6.7900e-003	0.2453	0.0000	809.2214	809.2214	0.0418	0.0000	810.0997
Total	**0.5636**	**3.2139**	**8.1776**	**0.0184**	**1.1077**	**0.0504**	**1.1580**	**0.2981**	**0.0464**	**0.3445**	**0.0000**	**1,467.3106**	**1,467.3106**	**0.0465**	**0.0000**	**1,468.2875**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3295	2.6198	2.5011	3.7300e-003		0.1659	0.1659		0.1576	0.1576	0.0000	332.8756	332.8756	0.0819	0.0000	334.5960
Total	**0.3295**	**2.6198**	**2.5011**	**3.7300e-003**		**0.1659**	**0.1659**		**0.1576**	**0.1576**	**0.0000**	**332.8756**	**332.8756**	**0.0819**	**0.0000**	**334.5960**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	9.6700e-003	0.1526	0.1214	4.2000e-004	0.0127	2.2900e-003	0.0149	3.3900e-003	2.1100e-003	5.5000e-003	0.0000	38.1854	38.1854	2.7000e-004	0.0000	38.1911
Vendor	0.2593	2.6249	3.5258	6.9300e-003	0.1968	0.0407	0.2375	0.0562	0.0375	0.0936	0.0000	619.9038	619.9038	4.4200e-003	0.0000	619.9966
Worker	0.2947	0.4364	4.5304	0.0110	0.8982	7.3600e-003	0.9056	0.2386	6.7900e-003	0.2453	0.0000	809.2214	809.2214	0.0418	0.0000	810.0997
Total	**0.5636**	**3.2139**	**8.1776**	**0.0184**	**1.1077**	**0.0504**	**1.1580**	**0.2981**	**0.0464**	**0.3445**	**0.0000**	**1,467.3106**	**1,467.3106**	**0.0465**	**0.0000**	**1,468.2875**

3.5 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1374	1.1979	0.9029	1.3800e-003		0.0770	0.0770		0.0724	0.0724	0.0000	121.9364	121.9364	0.0298	0.0000	122.5630
Total	**0.1374**	**1.1979**	**0.9029**	**1.3800e-003**		**0.0770**	**0.0770**		**0.0724**	**0.0724**	**0.0000**	**121.9364**	**121.9364**	**0.0298**	**0.0000**	**122.5630**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4900e-003	0.0525	0.0440	1.6000e-004	0.0111	8.5000e-004	0.0120	2.8400e-003	7.8000e-004	3.6200e-003	0.0000	13.9128	13.9128	1.0000e-004	0.0000	13.9149
Vendor	0.0898	0.8921	1.2515	2.5600e-003	0.0729	0.0142	0.0871	0.0208	0.0131	0.0339	0.0000	225.8208	225.8208	1.6300e-003	0.0000	225.8550
Worker	0.0980	0.1466	1.5199	4.0900e-003	0.3328	2.6500e-003	0.3355	0.0884	2.4600e-003	0.0908	0.0000	288.6288	288.6288	0.0144	0.0000	288.9309
Total	**0.1914**	**1.0912**	**2.8154**	**6.8100e-003**	**0.4168**	**0.0177**	**0.4345**	**0.1120**	**0.0163**	**0.1284**	**0.0000**	**528.3624**	**528.3624**	**0.0161**	**0.0000**	**528.7007**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.1066	0.8647	0.9037	1.3800e-003		0.0525	0.0525		0.0499	0.0499	0.0000	121.9362	121.9362	0.0298	0.0000	122.5629
Total	**0.1066**	**0.8647**	**0.9037**	**1.3800e-003**		**0.0525**	**0.0525**		**0.0499**	**0.0499**	**0.0000**	**121.9362**	**121.9362**	**0.0298**	**0.0000**	**122.5629**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.4900e-003	0.0525	0.0440	1.6000e-004	0.0111	8.5000e-004	0.0120	2.8400e-003	7.8000e-004	3.6200e-003	0.0000	13.9128	13.9128	1.0000e-004	0.0000	13.9149
Vendor	0.0898	0.8921	1.2515	2.5600e-003	0.0729	0.0142	0.0871	0.0208	0.0131	0.0339	0.0000	225.8208	225.8208	1.6300e-003	0.0000	225.8550
Worker	0.0980	0.1466	1.5199	4.0900e-003	0.3328	2.6500e-003	0.3355	0.0884	2.4600e-003	0.0908	0.0000	288.6288	288.6288	0.0144	0.0000	288.9309
Total	**0.1914**	**1.0912**	**2.8154**	**6.8100e-003**	**0.4168**	**0.0177**	**0.4345**	**0.1120**	**0.0163**	**0.1284**	**0.0000**	**528.3624**	**528.3624**	**0.0161**	**0.0000**	**528.7007**

3.6 Paving - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.3004	0.2537	3.9000e-004		0.0164	0.0164		0.0151	0.0151	0.0000	35.6453	35.6453	0.0111	0.0000	35.8783
Paving	3.2400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Total	**0.0314**	**0.3004**	**0.2537**	**3.9000e-004**		**0.0164**	**0.0164**		**0.0151**	**0.0151**	**0.0000**	**35.6453**	**35.6453**	**0.0111**	**0.0000**	**35.8783**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	1.2700e-003	0.0132	4.0000e-005	2.8800e-003	2.0000e-005	2.9000e-003	7.6000e-004	2.0000e-005	7.9000e-004	0.0000	2.4977	2.4977	1.2000e-004	0.0000	2.5004
Total	**8.5000e-004**	**1.2700e-003**	**0.0132**	**4.0000e-005**	**2.8800e-003**	**2.0000e-005**	**2.9000e-003**	**7.6000e-004**	**2.0000e-005**	**7.9000e-004**	**0.0000**	**2.4977**	**2.4977**	**1.2000e-004**	**0.0000**	**2.5004**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0282	0.3004	0.2537	3.9000e-004		0.0164	0.0164		0.0151	0.0151	0.0000	35.6453	35.6453	0.0111	0.0000	35.8783
Paving	3.2400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0314**	**0.3004**	**0.2537**	**3.9000e-004**		**0.0164**	**0.0164**		**0.0151**	**0.0151**	**0.0000**	**35.6453**	**35.6453**	**0.0111**	**0.0000**	**35.8783**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.5000e-004	1.2700e-003	0.0132	4.0000e-005	2.8800e-003	2.0000e-005	2.9000e-003	7.6000e-004	2.0000e-005	7.9000e-004	0.0000	2.4977	2.4977	1.2000e-004	0.0000	2.5004
Total	**8.5000e-004**	**1.2700e-003**	**0.0132**	**4.0000e-005**	**2.8800e-003**	**2.0000e-005**	**2.9000e-003**	**7.6000e-004**	**2.0000e-005**	**7.9000e-004**	**0.0000**	**2.4977**	**2.4977**	**1.2000e-004**	**0.0000**	**2.5004**

3.7 Architectural Coating - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2792					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6600e-003	0.0582	0.0538	9.0000e-005		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003	0.0000	7.4045	7.4045	7.0000e-004	0.0000	7.4192
Total	**0.2879**	**0.0582**	**0.0538**	**9.0000e-005**		**4.3700e-003**	**4.3700e-003**		**4.3700e-003**	**4.3700e-003**	**0.0000**	**7.4045**	**7.4045**	**7.0000e-004**	**0.0000**	**7.4192**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0111	0.0165	0.1715	4.6000e-004	0.0375	3.0000e-004	0.0378	9.9700e-003	2.8000e-004	0.0103	0.0000	32.5610	32.5610	1.6200e-003	0.0000	32.5950
Total	**0.0111**	**0.0165**	**0.1715**	**4.6000e-004**	**0.0375**	**3.0000e-004**	**0.0378**	**9.9700e-003**	**2.8000e-004**	**0.0103**	**0.0000**	**32.5610**	**32.5610**	**1.6200e-003**	**0.0000**	**32.5950**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2792					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.6600e-003	0.0582	0.0538	9.0000e-005		4.3700e-003	4.3700e-003		4.3700e-003	4.3700e-003	0.0000	7.4044	7.4044	7.0000e-004	0.0000	7.4192
Total	**0.2879**	**0.0582**	**0.0538**	**9.0000e-005**		**4.3700e-003**	**4.3700e-003**		**4.3700e-003**	**4.3700e-003**	**0.0000**	**7.4044**	**7.4044**	**7.0000e-004**	**0.0000**	**7.4192**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Worker	0.0111	0.0165	0.1715	4.6000e-004	0.0375	3.0000e-004	0.0378	9.9700e-003	2.8000e-004	0.0103	0.0000	32.5610	32.5610	1.6200e-003	0.0000	32.5950
Total	**0.0111**	**0.0165**	**0.1715**	**4.6000e-004**	**0.0375**	**3.0000e-004**	**0.0378**	**9.9700e-003**	**2.8000e-004**	**0.0103**	**0.0000**	**32.5610**	**32.5610**	**1.6200e-003**	**0.0000**	**32.5950**

Physical Education Projects-- Phase 2 -- Construction Only

South Coast AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Junior College (2Yr)	117.90	1000sqft	2.71	117,900.00	0
Enclosed Parking Structure	23.09	1000sqft	0.53	23,088.00	0
Other Non-Asphalt Surfaces	68.81	1000sqft	1.58	68,805.00	0
Parking Lot	0.00	1000sqft	0.00	0.00	0
City Park	0.00	Acre	0.00	0.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	9			**Operational Year**	2021
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Construction of enclosed parking structure used to simulate pool areas.
Non-asphalt parking used to simulate construction of tennis courts.

Construction Phase - Painting consistent with March 3, 2016 info.

Trips and VMT -

Demolition -

Grading -

Architectural Coating - Painting consistent with March 3, 2016 info.

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	104,897.00	13,644.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	314,690.00	229,901.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	75.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	75.00
tblConstructionPhase	NumDays	18.00	88.00
tblConstructionPhase	NumDays	230.00	535.00
tblConstructionPhase	PhaseEndDate	9/1/2020	9/28/2020
tblConstructionPhase	PhaseStartDate	8/5/2020	9/1/2020
tblLandUse	LandUseSquareFeet	23,090.00	23,088.00
tblLandUse	LandUseSquareFeet	68,810.00	68,805.00
tblProjectCharacteristics	OperationalYear	2014	2021

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.3843	3.1916	3.0644	5.4100e-003	0.2047	0.1864	0.3911	0.0742	0.1748	0.2490	0.0000	454.2840	454.2840	0.0766	0.0000	455.8930
2019	0.3728	3.0949	3.2147	6.0000e-003	0.1533	0.1737	0.3270	0.0413	0.1632	0.2045	0.0000	493.5893	493.5893	0.0800	0.0000	495.2699

2020	0.5805	1.5275	1.6155	3.7900e-003	0.6198	0.0637	0.6836	0.1039	0.0598	0.1636	0.0000	315.9894	315.9894	0.0318	0.0000	316.6568
Total	**1.3376**	**7.8139**	**7.8947**	**0.0152**	**0.9778**	**0.4239**	**1.4017**	**0.2193**	**0.3978**	**0.6171**	**0.0000**	**1,263.8627**	**1,263.8627**	**0.1884**	**0.0000**	**1,267.8197**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.3843	3.1916	3.0644	5.4100e-003	0.1654	0.1864	0.3518	0.0531	0.1748	0.2280	0.0000	454.2837	454.2837	0.0766	0.0000	455.8927
2019	0.3728	3.0949	3.2147	6.0000e-003	0.1533	0.1737	0.3270	0.0413	0.1632	0.2045	0.0000	493.5889	493.5889	0.0800	0.0000	495.2696
2020	0.5805	1.5275	1.6155	3.7900e-003	0.3249	0.0637	0.3887	0.0592	0.0598	0.1190	0.0000	315.9892	315.9892	0.0318	0.0000	316.6566
Total	**1.3376**	**7.8139**	**7.8947**	**0.0152**	**0.6437**	**0.4239**	**1.0675**	**0.1536**	**0.3978**	**0.5514**	**0.0000**	**1,263.8618**	**1,263.8618**	**0.1884**	**0.0000**	**1,267.8188**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**34.18**	**0.00**	**23.84**	**29.97**	**0.00**	**10.65**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	2/1/2018	2/7/2018	5	5	
2	Grading	Grading	2/8/2018	2/19/2018	5	8	
3	Building Construction	Building Construction	2/20/2018	3/9/2020	5	535	

4	Paving	Paving	3/10/2020	4/2/2020	5	18	
5	Architectural Coating	Architectural Coating	4/3/2020	8/4/2020	5	88	
6	Demolition	Demolition	9/1/2020	9/28/2020	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 4

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 229,901; Non-Residential Outdoor: 13,644 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	162	0.38
Demolition	Rubber Tired Dozers	2	8.00	255	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	255	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	162	0.38
Grading	Graders	1	8.00	174	0.41
Grading	Rubber Tired Dozers	1	8.00	255	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Building Construction	Cranes	1	7.00	226	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Cement and Mortar Mixers	2	6.00	9	0.56
Paving	Pavers	1	8.00	125	0.42
Paving	Paving Equipment	2	6.00	130	0.36

Paving	Rollers	2	6.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	4,956.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	88.00	34.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	8	20.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	18.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0452	0.0000	0.0452	0.0248	0.0000	0.0248	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0107	0.1140	0.0906	1.0000e-004		5.9100e-003	5.9100e-003		5.4400e-003	5.4400e-003	0.0000	8.9353	8.9353	2.7800e-003	0.0000	8.9937

Total	**0.0107**	**0.1140**	**0.0906**	**1.0000e-004**	**0.0452**	**5.9100e-003**	**0.0511**	**0.0248**	**5.4400e-003**	**0.0303**	**0.0000**	**8.9353**	**8.9353**	**2.7800e-003**	**0.0000**	**8.9937**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	2.2000e-004	2.2500e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4282	0.4282	2.0000e-005	0.0000	0.4286
Total	**1.5000e-004**	**2.2000e-004**	**2.2500e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4282**	**0.4282**	**2.0000e-005**	**0.0000**	**0.4286**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0203	0.0000	0.0203	0.0112	0.0000	0.0112	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0107	0.1140	0.0906	1.0000e-004		5.9100e-003	5.9100e-003		5.4400e-003	5.4400e-003	0.0000	8.9352	8.9352	2.7800e-003	0.0000	8.9937
Total	**0.0107**	**0.1140**	**0.0906**	**1.0000e-004**	**0.0203**	**5.9100e-003**	**0.0262**	**0.0112**	**5.4400e-003**	**0.0166**	**0.0000**	**8.9352**	**8.9352**	**2.7800e-003**	**0.0000**	**8.9937**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.5000e-004	2.2000e-004	2.2500e-003	1.0000e-005	4.9000e-004	0.0000	5.0000e-004	1.3000e-004	0.0000	1.3000e-004	0.0000	0.4282	0.4282	2.0000e-005	0.0000	0.4286
Total	**1.5000e-004**	**2.2000e-004**	**2.2500e-003**	**1.0000e-005**	**4.9000e-004**	**0.0000**	**5.0000e-004**	**1.3000e-004**	**0.0000**	**1.3000e-004**	**0.0000**	**0.4282**	**0.4282**	**2.0000e-005**	**0.0000**	**0.4286**

3.3 Grading - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0262	0.0000	0.0262	0.0135	0.0000	0.0135	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0120	0.1243	0.0960	1.2000e-004		6.8800e-003	6.8800e-003		6.3300e-003	6.3300e-003	0.0000	10.8612	10.8612	3.3800e-003	0.0000	10.9322
Total	**0.0120**	**0.1243**	**0.0960**	**1.2000e-004**	**0.0262**	**6.8800e-003**	**0.0331**	**0.0135**	**6.3300e-003**	**0.0198**	**0.0000**	**10.8612**	**10.8612**	**3.3800e-003**	**0.0000**	**10.9322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.9000e-004	3.0100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5709	0.5709	3.0000e-005	0.0000	0.5715
Total	**1.9000e-004**	**2.9000e-004**	**3.0100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5709**	**0.5709**	**3.0000e-005**	**0.0000**	**0.5715**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0118	0.0000	0.0118	6.0600e-003	0.0000	6.0600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0120	0.1243	0.0960	1.2000e-004		6.8800e-003	6.8800e-003		6.3300e-003	6.3300e-003	0.0000	10.8612	10.8612	3.3800e-003	0.0000	10.9322
Total	**0.0120**	**0.1243**	**0.0960**	**1.2000e-004**	**0.0118**	**6.8800e-003**	**0.0187**	**6.0600e-003**	**6.3300e-003**	**0.0124**	**0.0000**	**10.8612**	**10.8612**	**3.3800e-003**	**0.0000**	**10.9322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					

Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	2.9000e-004	3.0100e-003	1.0000e-005	6.6000e-004	1.0000e-005	6.6000e-004	1.7000e-004	0.0000	1.8000e-004	0.0000	0.5709	0.5709	3.0000e-005	0.0000	0.5715
Total	**1.9000e-004**	**2.9000e-004**	**3.0100e-003**	**1.0000e-005**	**6.6000e-004**	**1.0000e-005**	**6.6000e-004**	**1.7000e-004**	**0.0000**	**1.8000e-004**	**0.0000**	**0.5709**	**0.5709**	**3.0000e-005**	**0.0000**	**0.5715**

3.4 Building Construction - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3002	2.6168	1.9724	3.0200e-003		0.1681	0.1681		0.1580	0.1580	0.0000	266.3659	266.3659	0.0652	0.0000	267.7348
Total	**0.3002**	**2.6168**	**1.9724**	**3.0200e-003**		**0.1681**	**0.1681**		**0.1580**	**0.1580**	**0.0000**	**266.3659**	**266.3659**	**0.0652**	**0.0000**	**267.7348**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0290	0.2881	0.4041	8.3000e-004	0.0235	4.5900e-003	0.0281	6.7200e-003	4.2200e-003	0.0109	0.0000	72.9223	72.9223	5.3000e-004	0.0000	72.9333

Worker	0.0320	0.0479	0.4960	1.3300e-003	0.1086	8.7000e-004	0.1095	0.0289	8.0000e-004	0.0297	0.0000	94.2003	94.2003	4.6900e-003	0.0000	94.2989
Total	**0.0610**	**0.3359**	**0.9002**	**2.1600e-003**	**0.1322**	**5.4600e-003**	**0.1376**	**0.0356**	**5.0200e-003**	**0.0406**	**0.0000**	**167.1226**	**167.1226**	**5.2200e-003**	**0.0000**	**167.2322**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3002	2.6168	1.9724	3.0200e-003		0.1681	0.1681		0.1580	0.1580	0.0000	266.3656	266.3656	0.0652	0.0000	267.7345
Total	**0.3002**	**2.6168**	**1.9724**	**3.0200e-003**		**0.1681**	**0.1681**		**0.1580**	**0.1580**	**0.0000**	**266.3656**	**266.3656**	**0.0652**	**0.0000**	**267.7345**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0290	0.2881	0.4041	8.3000e-004	0.0235	4.5900e-003	0.0281	6.7200e-003	4.2200e-003	0.0109	0.0000	72.9223	72.9223	5.3000e-004	0.0000	72.9333
Worker	0.0320	0.0479	0.4960	1.3300e-003	0.1086	8.7000e-004	0.1095	0.0289	8.0000e-004	0.0297	0.0000	94.2003	94.2003	4.6900e-003	0.0000	94.2989
Total	**0.0610**	**0.3359**	**0.9002**	**2.1600e-003**	**0.1322**	**5.4600e-003**	**0.1376**	**0.0356**	**5.0200e-003**	**0.0406**	**0.0000**	**167.1226**	**167.1226**	**5.2200e-003**	**0.0000**	**167.2322**

3.4 Building Construction - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3069	2.7359	2.2342	3.5000e-003		0.1677	0.1677		0.1577	0.1577	0.0000	305.5302	305.5302	0.0743	0.0000	307.0913
Total	**0.3069**	**2.7359**	**2.2342**	**3.5000e-003**		**0.1677**	**0.1677**		**0.1577**	**0.1577**	**0.0000**	**305.5302**	**305.5302**	**0.0743**	**0.0000**	**307.0913**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0318	0.3080	0.4529	9.6000e-004	0.0273	5.0500e-003	0.0324	7.8000e-003	4.6500e-003	0.0124	0.0000	82.9452	82.9452	6.0000e-004	0.0000	82.9578
Worker	0.0341	0.0509	0.5277	1.5400e-003	0.1260	9.9000e-004	0.1270	0.0335	9.1000e-004	0.0344	0.0000	105.1138	105.1138	5.1000e-003	0.0000	105.2209
Total	**0.0659**	**0.3589**	**0.9805**	**2.5000e-003**	**0.1533**	**6.0400e-003**	**0.1593**	**0.0413**	**5.5600e-003**	**0.0468**	**0.0000**	**188.0591**	**188.0591**	**5.7000e-003**	**0.0000**	**188.1786**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.3069	2.7359	2.2342	3.5000e-003		0.1677	0.1677		0.1577	0.1577	0.0000	305.5299	305.5299	0.0743	0.0000	307.0909
Total	**0.3069**	**2.7359**	**2.2342**	**3.5000e-003**		**0.1677**	**0.1677**		**0.1577**	**0.1577**	**0.0000**	**305.5299**	**305.5299**	**0.0743**	**0.0000**	**307.0909**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0318	0.3080	0.4529	9.6000e-004	0.0273	5.0500e-003	0.0324	7.8000e-003	4.6500e-003	0.0124	0.0000	82.9452	82.9452	6.0000e-004	0.0000	82.9578
Worker	0.0341	0.0509	0.5277	1.5400e-003	0.1260	9.9000e-004	0.1270	0.0335	9.1000e-004	0.0344	0.0000	105.1138	105.1138	5.1000e-003	0.0000	105.2209
Total	**0.0659**	**0.3589**	**0.9805**	**2.5000e-003**	**0.1533**	**6.0400e-003**	**0.1593**	**0.0413**	**5.5600e-003**	**0.0468**	**0.0000**	**188.0591**	**188.0591**	**5.7000e-003**	**0.0000**	**188.1786**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Off-Road	0.0517	0.4676	0.4118	6.6000e-004		0.0273	0.0273		0.0256	0.0256	0.0000	56.5092	56.5092	0.0138	0.0000	56.7983
Total	**0.0517**	**0.4676**	**0.4118**	**6.6000e-004**		**0.0273**	**0.0273**		**0.0256**	**0.0256**	**0.0000**	**56.5092**	**56.5092**	**0.0138**	**0.0000**	**56.7983**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6600e-003	0.0504	0.0825	1.8000e-004	5.1300e-003	8.7000e-004	6.0000e-003	1.4600e-003	8.0000e-004	2.2600e-003	0.0000	15.2213	15.2213	1.1000e-004	0.0000	15.2237
Worker	5.9900e-003	8.8600e-003	0.0922	2.9000e-004	0.0237	1.8000e-004	0.0238	6.2800e-003	1.7000e-004	6.4500e-003	0.0000	18.9324	18.9324	9.1000e-004	0.0000	18.9514
Total	**0.0117**	**0.0593**	**0.1746**	**4.7000e-004**	**0.0288**	**1.0500e-003**	**0.0298**	**7.7400e-003**	**9.7000e-004**	**8.7100e-003**	**0.0000**	**34.1538**	**34.1538**	**1.0200e-003**	**0.0000**	**34.1751**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0517	0.4676	0.4118	6.6000e-004		0.0273	0.0273		0.0256	0.0256	0.0000	56.5092	56.5092	0.0138	0.0000	56.7983

Total	**0.0517**	**0.4676**	**0.4118**	**6.6000e-004**		**0.0273**	**0.0273**		**0.0256**	**0.0256**	**0.0000**	**56.5092**	**56.5092**	**0.0138**	**0.0000**	**56.7983**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.6600e-003	0.0504	0.0825	1.8000e-004	5.1300e-003	8.7000e-004	6.0000e-003	1.4600e-003	8.0000e-004	2.2600e-003	0.0000	15.2213	15.2213	1.1000e-004	0.0000	15.2237
Worker	5.9900e-003	8.8600e-003	0.0922	2.9000e-004	0.0237	1.8000e-004	0.0238	6.2800e-003	1.7000e-004	6.4500e-003	0.0000	18.9324	18.9324	9.1000e-004	0.0000	18.9514
Total	**0.0117**	**0.0593**	**0.1746**	**4.7000e-004**	**0.0288**	**1.0500e-003**	**0.0298**	**7.7400e-003**	**9.7000e-004**	**8.7100e-003**	**0.0000**	**34.1538**	**34.1538**	**1.0200e-003**	**0.0000**	**34.1751**

3.5 Paving - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0105	0.1048	0.1090	1.7000e-004		5.7900e-003	5.7900e-003		5.3400e-003	5.3400e-003	0.0000	14.5187	14.5187	4.5600e-003	0.0000	14.6144
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.1048**	**0.1090**	**1.7000e-004**		**5.7900e-003**	**5.7900e-003**		**5.3400e-003**	**5.3400e-003**	**0.0000**	**14.5187**	**14.5187**	**4.5600e-003**	**0.0000**	**14.6144**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.4000e-004	7.7000e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5806	1.5806	8.0000e-005	0.0000	1.5822
Total	**5.0000e-004**	**7.4000e-004**	**7.7000e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.5806**	**1.5806**	**8.0000e-005**	**0.0000**	**1.5822**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0105	0.1048	0.1090	1.7000e-004		5.7900e-003	5.7900e-003		5.3400e-003	5.3400e-003	0.0000	14.5186	14.5186	4.5600e-003	0.0000	14.6144
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0105**	**0.1048**	**0.1090**	**1.7000e-004**		**5.7900e-003**	**5.7900e-003**		**5.3400e-003**	**5.3400e-003**	**0.0000**	**14.5186**	**14.5186**	**4.5600e-003**	**0.0000**	**14.6144**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-004	7.4000e-004	7.7000e-003	2.0000e-005	1.9700e-003	2.0000e-005	1.9900e-003	5.2000e-004	1.0000e-005	5.4000e-004	0.0000	1.5806	1.5806	8.0000e-005	0.0000	1.5822
Total	**5.0000e-004**	**7.4000e-004**	**7.7000e-003**	**2.0000e-005**	**1.9700e-003**	**2.0000e-005**	**1.9900e-003**	**5.2000e-004**	**1.0000e-005**	**5.4000e-004**	**0.0000**	**1.5806**	**1.5806**	**8.0000e-005**	**0.0000**	**1.5822**

3.6 Architectural Coating - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4233					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0107	0.0741	0.0806	1.3000e-004		4.8800e-003	4.8800e-003		4.8800e-003	4.8800e-003	0.0000	11.2343	11.2343	8.7000e-004	0.0000	11.2526
Total	**0.4340**	**0.0741**	**0.0806**	**1.3000e-004**		**4.8800e-003**	**4.8800e-003**		**4.8800e-003**	**4.8800e-003**	**0.0000**	**11.2343**	**11.2343**	**8.7000e-004**	**0.0000**	**11.2526**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e

Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-003	3.2500e-003	0.0339	1.1000e-004	8.6900e-003	7.0000e-005	8.7600e-003	2.3100e-003	6.0000e-005	2.3700e-003	0.0000	6.9548	6.9548	3.3000e-004	0.0000	6.9618
Total	**2.2000e-003**	**3.2500e-003**	**0.0339**	**1.1000e-004**	**8.6900e-003**	**7.0000e-005**	**8.7600e-003**	**2.3100e-003**	**6.0000e-005**	**2.3700e-003**	**0.0000**	**6.9548**	**6.9548**	**3.3000e-004**	**0.0000**	**6.9618**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.4233					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0107	0.0741	0.0806	1.3000e-004		4.8800e-003	4.8800e-003		4.8800e-003	4.8800e-003	0.0000	11.2343	11.2343	8.7000e-004	0.0000	11.2526
Total	**0.4340**	**0.0741**	**0.0806**	**1.3000e-004**		**4.8800e-003**	**4.8800e-003**		**4.8800e-003**	**4.8800e-003**	**0.0000**	**11.2343**	**11.2343**	**8.7000e-004**	**0.0000**	**11.2526**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.2000e-003	3.2500e-003	0.0339	1.1000e-004	8.6900e-003	7.0000e-005	8.7600e-003	2.3100e-003	6.0000e-005	2.3700e-003	0.0000	6.9548	6.9548	3.3000e-004	0.0000	6.9618
Total	**2.2000e-003**	**3.2500e-003**	**0.0339**	**1.1000e-004**	**8.6900e-003**	**7.0000e-005**	**8.7600e-003**	**2.3100e-003**	**6.0000e-005**	**2.3700e-003**	**0.0000**	**6.9548**	**6.9548**	**3.3000e-004**	**0.0000**	**6.9618**

3.7 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.5363	0.0000	0.5363	0.0812	0.0000	0.0812	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0310	0.3102	0.2961	4.0000e-004		0.0149	0.0149		0.0139	0.0139	0.0000	34.9914	34.9914	9.9200e-003	0.0000	35.1997
Total	**0.0310**	**0.3102**	**0.2961**	**4.0000e-004**	**0.5363**	**0.0149**	**0.5512**	**0.0812**	**0.0139**	**0.0951**	**0.0000**	**34.9914**	**34.9914**	**9.9200e-003**	**0.0000**	**35.1997**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0385	0.5070	0.4954	1.8100e-003	0.0425	9.7600e-003	0.0523	0.0117	8.9800e-003	0.0206	0.0000	154.7295	154.7295	1.1800e-003	0.0000	154.7542
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	6.2000e-004	6.4100e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3172	1.3172	6.0000e-005	0.0000	1.3185

Total	**0.0390**	**0.5076**	**0.5018**	**1.8300e-003**	**0.0442**	**9.7700e-003**	**0.0539**	**0.0121**	**8.9900e-003**	**0.0211**	**0.0000**	**156.0467**	**156.0467**	**1.2400e-003**	**0.0000**	**156.0727**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.2413	0.0000	0.2413	0.0365	0.0000	0.0365	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0310	0.3102	0.2961	4.0000e-004		0.0149	0.0149		0.0139	0.0139	0.0000	34.9914	34.9914	9.9200e-003	0.0000	35.1997
Total	**0.0310**	**0.3102**	**0.2961**	**4.0000e-004**	**0.2413**	**0.0149**	**0.2562**	**0.0365**	**0.0139**	**0.0504**	**0.0000**	**34.9914**	**34.9914**	**9.9200e-003**	**0.0000**	**35.1997**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0385	0.5070	0.4954	1.8100e-003	0.0425	9.7600e-003	0.0523	0.0117	8.9800e-003	0.0206	0.0000	154.7295	154.7295	1.1800e-003	0.0000	154.7542
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.2000e-004	6.2000e-004	6.4100e-003	2.0000e-005	1.6500e-003	1.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.3172	1.3172	6.0000e-005	0.0000	1.3185
Total	**0.0390**	**0.5076**	**0.5018**	**1.8300e-003**	**0.0442**	**9.7700e-003**	**0.0539**	**0.0121**	**8.9900e-003**	**0.0211**	**0.0000**	**156.0467**	**156.0467**	**1.2400e-003**	**0.0000**	**156.0727**

Operational data removed since it was not relevant to the analysis.

Noise Analysis for the Mt. San Antonio College Facilities Master Plan Update and Physical Education Projects

Report #16-008NZ
May 26, 2016

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1.0 EXISTING SETTING

1.1 Project Description

Mt. San Antonio College is located in the City of Walnut on over 420 acres. It has an estimated 2014-2015 fall enrollment of 35,986 students (headcount). The college has proposed a 2015 Facilities Master Plan Update (FMPU) and the corresponding Land Use Plan is shown as Exhibit 1. The major change from the 2012 FMP is the re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue and is shown in Exhibit 2. The existing stadium will be demolished and a new stadium built onsite. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks 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.

This report assesses the potential noise impacts of the project on the surrounding land uses. Construction noise, stadium noise, parking lot noise, and other on-site activity noise are considered for their potential impact.

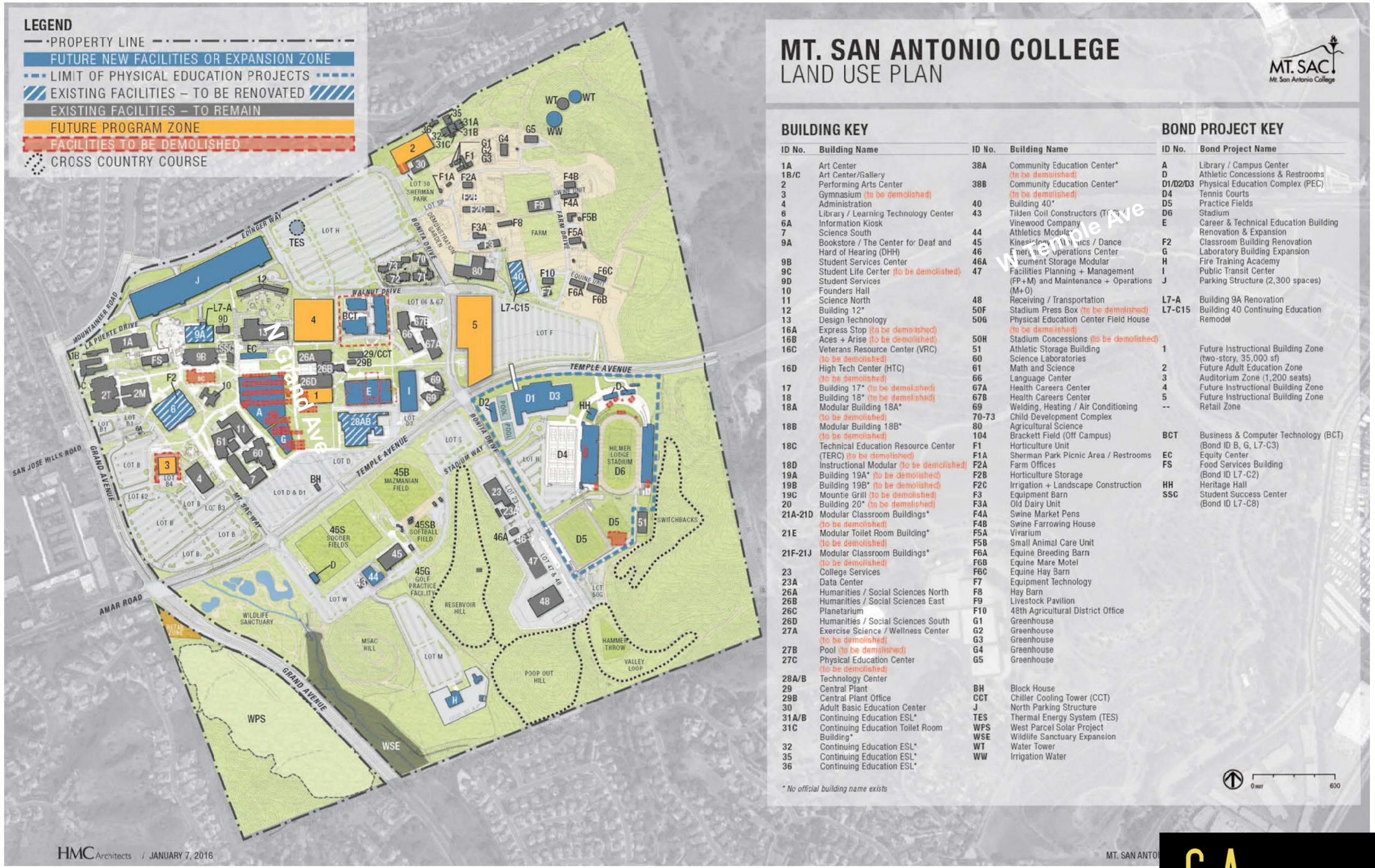
1.2 Background Information on Noise

1.2.1 Noise Criteria Background

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dB higher than another is judged to be twice as loud; and 20 dB higher four times as loud; and so forth. Everyday sounds normally range from 30 dB (very quiet) to 100 dB (very loud).

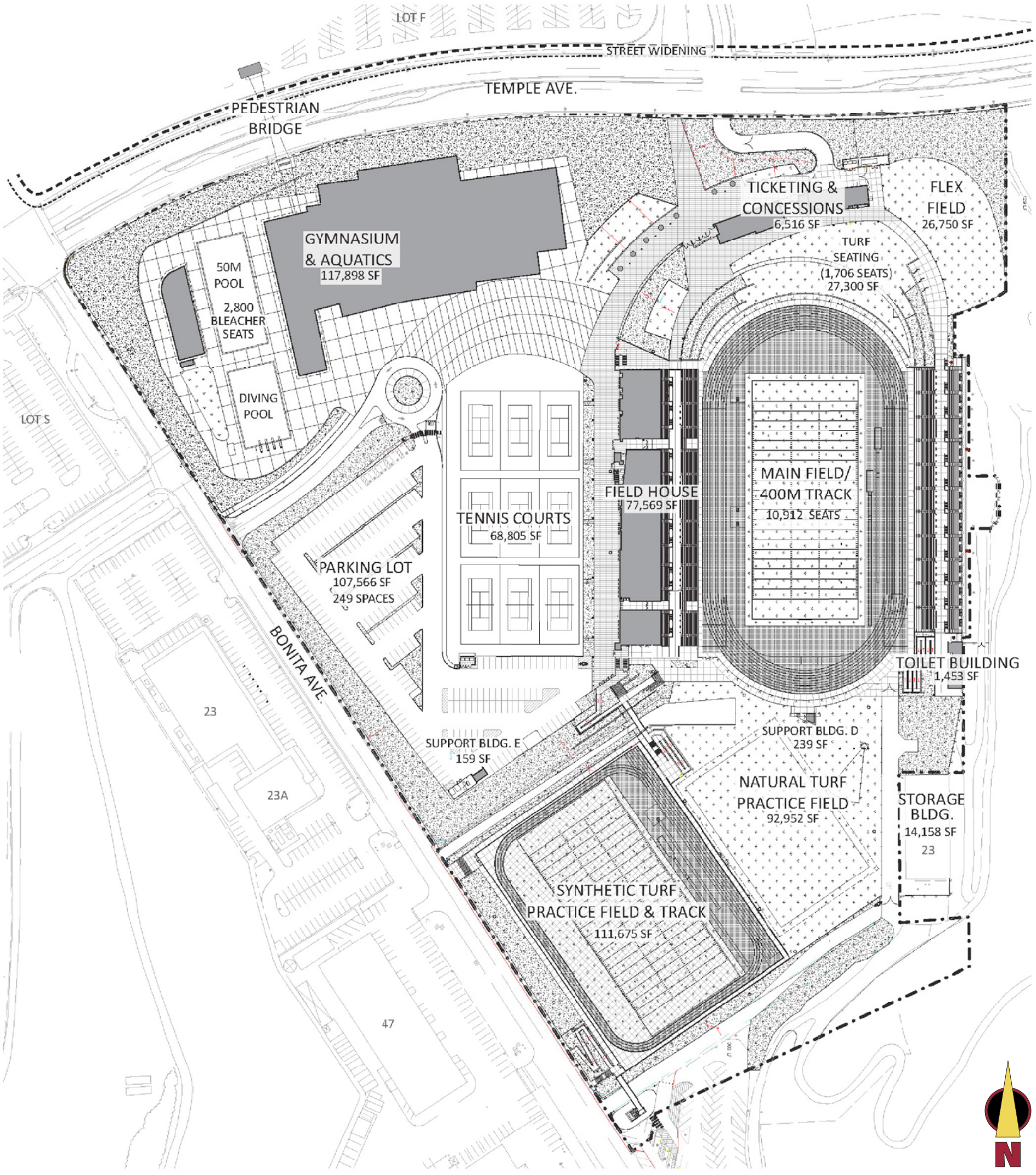
Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. Community noise levels are measured in terms of the "A-weighted decibel," abbreviated dBA. Exhibit 3 provides examples of various noises and their typical A-weighted noise level.

Exhibit 1 - Land Use Plan for the 2015 FMPU



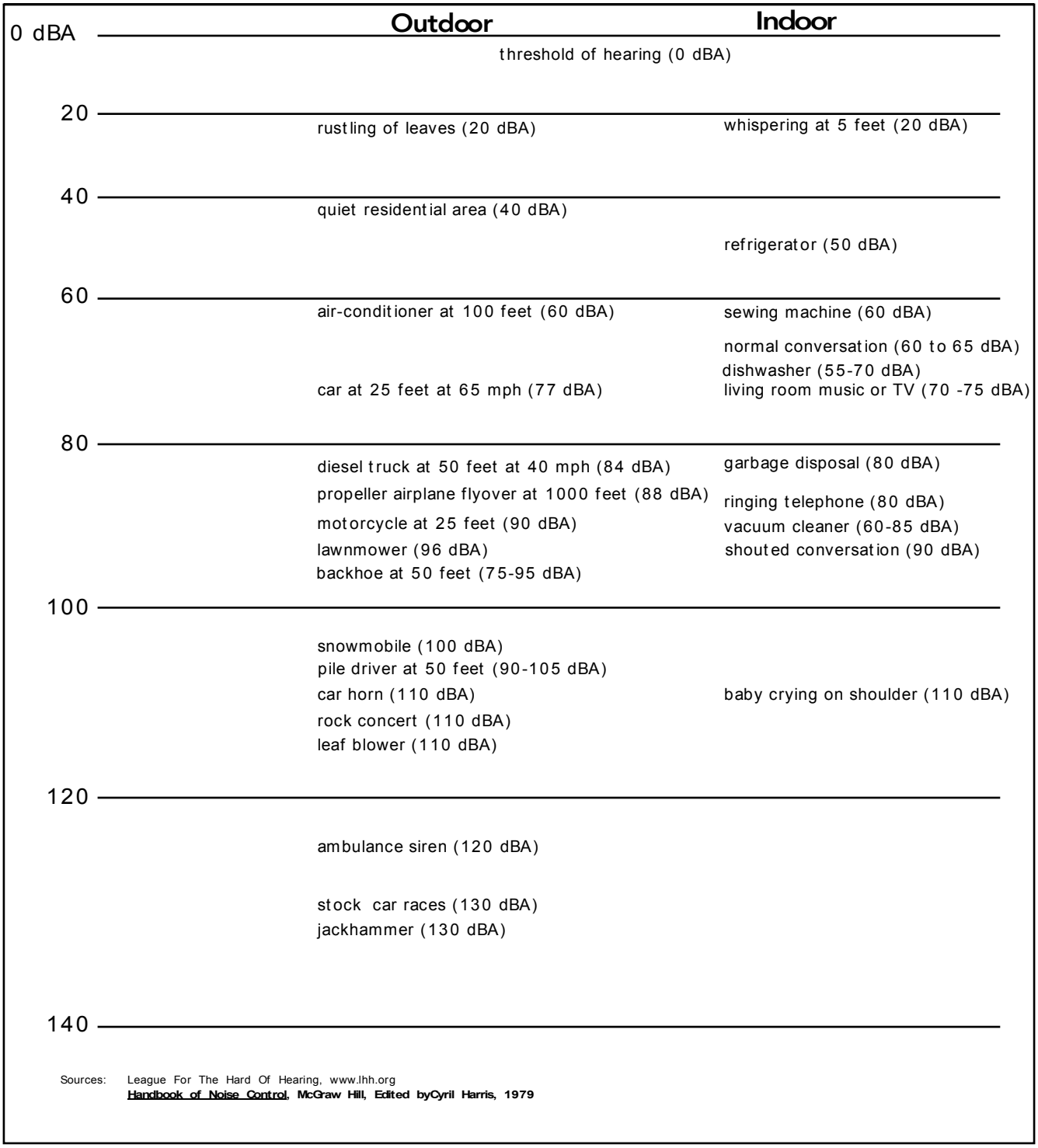
G&A

Exhibit 2 - Physical Education Projects



G&A

Exhibit 3 - Typical Noise Levels



Sources: League For The Hard Of Hearing, www.lhh.org
Handbook of Noise Control, McGraw Hill, Edited byCyril Harris, 1979

G&A

Sound levels decrease as a function of distance from the source as a result of wave divergence, atmospheric absorption and ground attenuation. As the sound wave form travels away from the source, the sound energy is dispersed over a greater area, thereby dispersing the sound power of the wave. Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence and the resultant fluctuations. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. Turbulence and gradients of wind, temperature and humidity also play a significant role in determining the degree of attenuation. Intervening topography can also have a substantial effect on the effective perceived noise levels.

Noise has been defined as unwanted sound and it is known to have several adverse effects on people. From these known effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. This criteria is based on such known impacts of noise on people as hearing loss, speech interference, sleep interference, physiological responses and annoyance. Each of these potential noise impacts on people are briefly discussed in the following narratives:

Hearing loss is not a concern in community noise situations of this type. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry or very noisy work environments. Noise levels in neighborhoods, even in very noisy airport environs, are not sufficiently loud to cause hearing loss.

Speech interference is one of the primary concerns in environmental noise problems. Normal conversational speech is in the range of 60 to 65 dBA and any noise in this range or louder may interfere with speech. There are specific methods of describing speech interference as a function of distance between speaker and listener and voice level.

Sleep interference is a major noise concern for traffic noise. Sleep disturbance studies have identified interior noise levels that have the potential to cause sleep disturbance. Note that sleep disturbance does not necessarily mean awakening from sleep, but can refer to altering the pattern and stages of sleep.

Physiological responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, etc. While such effects can be induced and observed, the extent is not known to which these physiological responses cause harm or are sign of harm.

Annoyance is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another of equal hearing capability.

1.2.2 Noise Assessment Metrics

The description, analysis and reporting of community noise levels around communities is made difficult by the complexity of human response to noise and the myriad of noise metrics that have been developed for describing noise impacts. Each of these metrics attempts to quantify noise levels with respect to community response. Most of the metrics use the A-

Weighted noise level to quantify noise impacts on humans. A-weighting is a frequency weighting that accounts for human sensitivity to different frequencies.

Noise metrics can be divided into two categories: single event and cumulative. Single-event metrics describe the noise levels from an individual event such as an aircraft fly over or perhaps a heavy equipment pass-by. Cumulative metrics average the total noise over a specific time period, which is typically 1 or 24-hours for community noise problems. For this type of analysis, cumulative noise metrics will be used.

Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man, (2) the variety of noises found in the environment, (3) the variations in noise levels that occur as a person moves through the environment, and (4) the variations associated with the time of day. They are designed to account for the known effects of noise on people described previously. Based on these effects, the observation has been made that the potential for a noise to impact people is dependent on the total acoustical energy content of the noise. A number of noise scales have been developed to account for this observation. Two of the predominate noise scales are the: Equivalent Noise Level (Leq) and the Community Noise Equivalent Level (CNEL). These scales are described in the following paragraphs.

Leq is the sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. Leq is the "energy" average noise level during the time period of the sample. Leq can be measured for any time period, but is typically measured for 1 hour. It is the energy sum of all the events and background noise levels that occur during that time period.

CNEL, Community Noise Equivalent Level, is the predominant rating scale now in use in California for land use compatibility assessment. The CNEL scale represents a time weighted 24-hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 p.m. to 10 p.m.) penalizes noises by 5 dBA, while nighttime (10 p.m. to 7 a.m.) noises are penalized by 10 dBA. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. A CNEL noise level may be reported as a "CNEL of 60 dBA," "60 dBA CNEL," or simply "60 CNEL." Typical noise levels in terms of the CNEL scale for different types of communities are presented in Exhibit 4.

L(%) (also sometimes represented as L(N)) is a statistical method of describing noise which accounts for variance in noise levels throughout a given measurement period. L (%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example since 15 minutes is 25% of one hour, L(25) is the noise level that is equal to or exceeded for 15 minutes in a one-hour period. It is L(%) that is commonly used in Noise Ordinance standards. For example many daytime County and City Noise Ordinances use an ordinance standard of 55 dBA for 30 minutes per hour or an L(50) level of 55 dBA. In other words, the Noise Ordinance states that no noise level should exceed 55 dBA for more that fifty percent of a given period.

1.3 Noise Criteria

Mt. San Antonio College is exempt from City zoning and ordinances. The District's noise standards area presented below. The California guidelines for land use compatibility are then

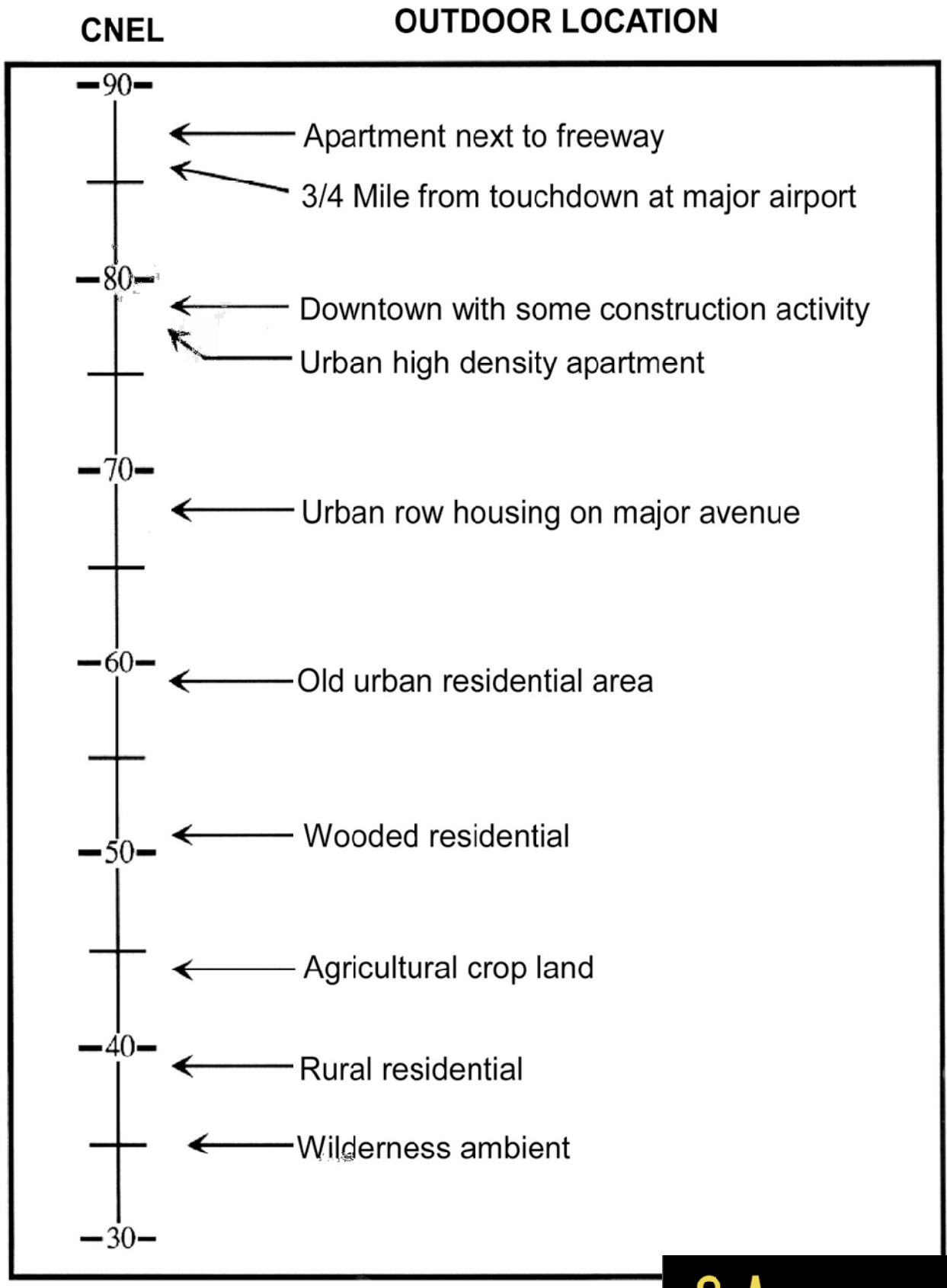
presented followed by the City of Walnut's Noise Ordinance. Although the College is not required to comply with the Walnut regulations, they are presented to reflect norms in the region for noise control.

1.3.1 District Requirements

The Mt. San Antonio Community College District is exempt from City zoning and the City's Noise Ordinance pursuant to California Government Code 53096. The District complies with Department of the State Architect (DSA) and California Educational Code interior noise requirements for classroom facilities. The District adopted the following mitigation measure to reduce noise exposure from construction:

5a. 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.

Exhibit 4 - Examples of CNEL Noise Levels



1.3.2 California Compatibility Guidelines

The State of California Guidelines, published by the Department of Health, provide guidance for the acceptability of different land uses. The compatibility guidelines are reproduced here in Exhibit 5. The guidelines can be used to evaluate the compatibility of the proposed land uses with the noise environment. The guidelines show compatibility of various land uses with different noise environments. The guidelines show that school uses are normally acceptable in noise environments up to 70 CNEL.

1.3.3 City of Walnut Noise Ordinance

The Noise Ordinance regulates noise on one property impacting a neighboring property. Typically, it sets limits on noise levels that can be experienced at the neighboring property. The Noise Ordinance is part of the City's Code (Title 4, Division 6 – Noise Control) and is enforceable throughout the City.

The Walnut Noise Ordinance (Chapter 16B of the Municipal Code) establishes exterior and interior noise standards that protect residential, commercial, and industrial areas. Section 16B-5, quoted below, presents the City's Noise Ordinance Standards.

Section 16B-5
Citations for violations of the City's Noise Ordinance are hereby authorized when:

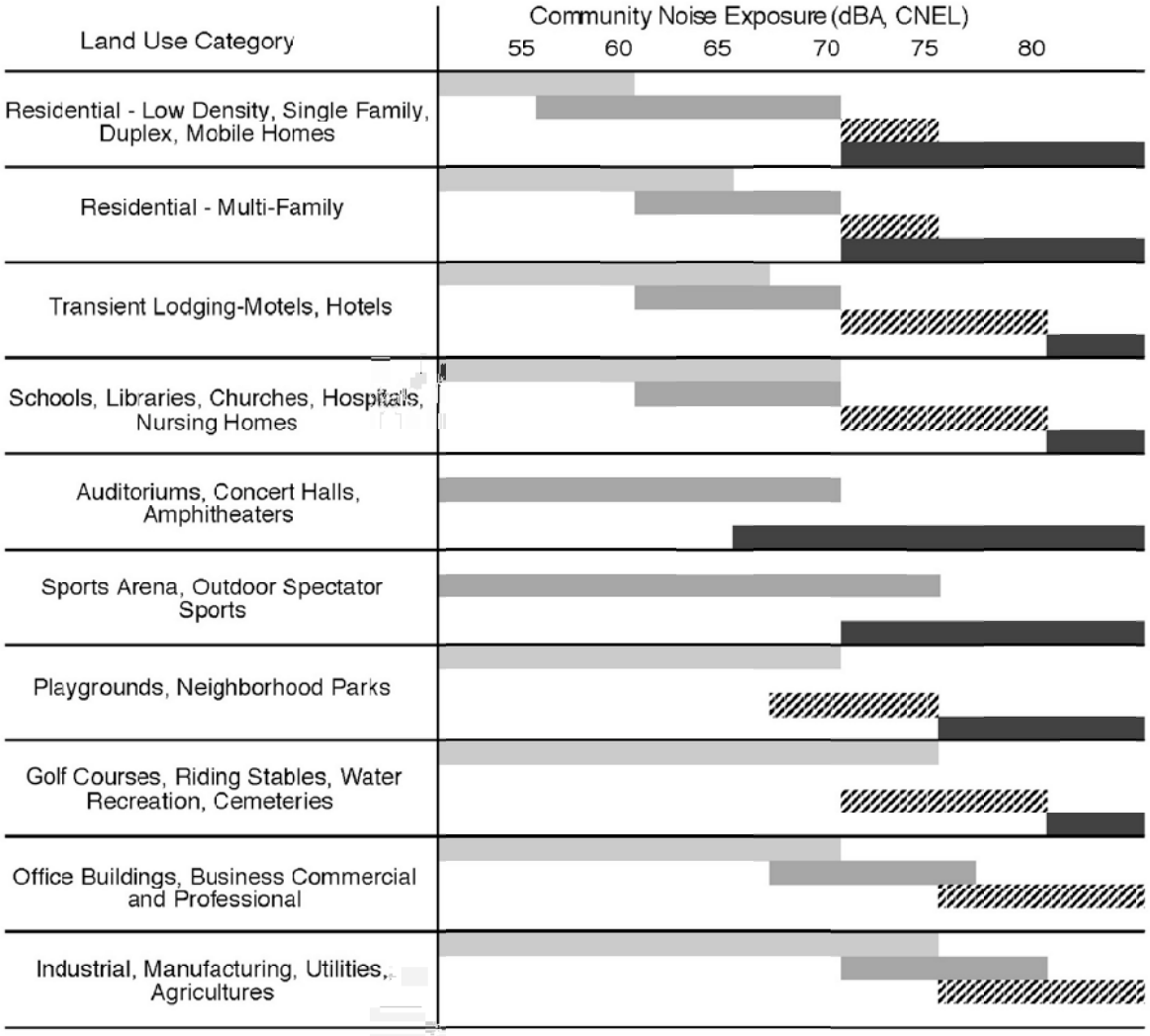
(a) Exterior noise levels shall apply to all receptor properties as follows, unless otherwise noted:

Receptor Land Use	Time of Day	Noise Level
Residential	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Commercial	11 p.m. to 7 a.m.	45 dB
	7 a.m. to 11 p.m.	50 dB
Industrial	Anytime	70 dB

(b) If the measurement location is on a boundary property between two different zones, exterior noise level utilized in subsection (a) of this section to determine the exterior standard shall be the daytime exterior noise level of the subject receptor property.

Exhibit 5 - Compatibility Matrix

Land Use/Noise Compatibility Guidelines



Normally Acceptable Specified land use is satisfactory based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

ConditionallyAcceptable- New construction or development shall be undertaken only after a detailed analysis of the noise reduction requiremerts is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system of air conditioning, will normally suffice.

Normally Unacceptable New construction or development should generally be discouraged. If new construction or devel opment does proceed, a detailed analysis of the noise reduction requirementsmust be madeand needed noise insulation features included in the design.

ClearlyUnacceptable Newconstruction or development should generally not be undertaken.

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The noise scale associated with the noise level limits presented in Section 16B-5 of the City's Noise Ordinance is not indicated. If one assumes that the levels specified in the Noise Ordinance were the levels that could not be exceeded at any time, the Ordinance would be overly restrictive and almost any commercial use adjacent to a residential use would likely violate the Noise Ordinance limits on a regular basis. It is likely that the City's Noise Ordinance limits are intended to duplicate the County of Los Angeles Noise Ordinance limits. The County's Noise Ordinance base limits are the same as specified in the City's Noise Ordinance. In the County's Ordinance, the base noise level limits are noise levels that cannot be exceeded for 30 minutes in one hour (dBA L50).

The City's Noise Ordinance (Article II Regulations, Section 16B-3(a)) exempts construction noise from the noise level limits between the hours of 7:00 a.m. and 8:00 p.m. on weekdays. Construction is not allowed on holidays, Saturdays, and Sundays without special approvals or exceptions. If construction occurs outside the permitted hours, then the construction activities would be subject to the limits in Section 16B-5.

1.4 Existing Noise Measurements

Noise measurements have been made in the community surrounding the campus. Noise measurements in the community during normal circumstances were made and the results are presented in Section 1.4.1. Additional measurements were made during a football game at the Hilmer Stadium and these results are presented in Section 1.4.2.

1.4.1 General Community Noise Measurements

Noise levels were recently measured for many areas surrounding Mt. San Antonio College, and are reported in "Ambient Noise Levels," (memo to Ms. Mikaela Klein, by Greve & Associates, dated August 23, 2016). All measured sites are presented in Exhibit 6. Details on the methodology for the measurements can be found in the above referenced document. Table 1 shows the results of the measurements. A detailed description of the noise environment for each site is presented after the table.

Exhibit 6 - Noise Measurement Sites

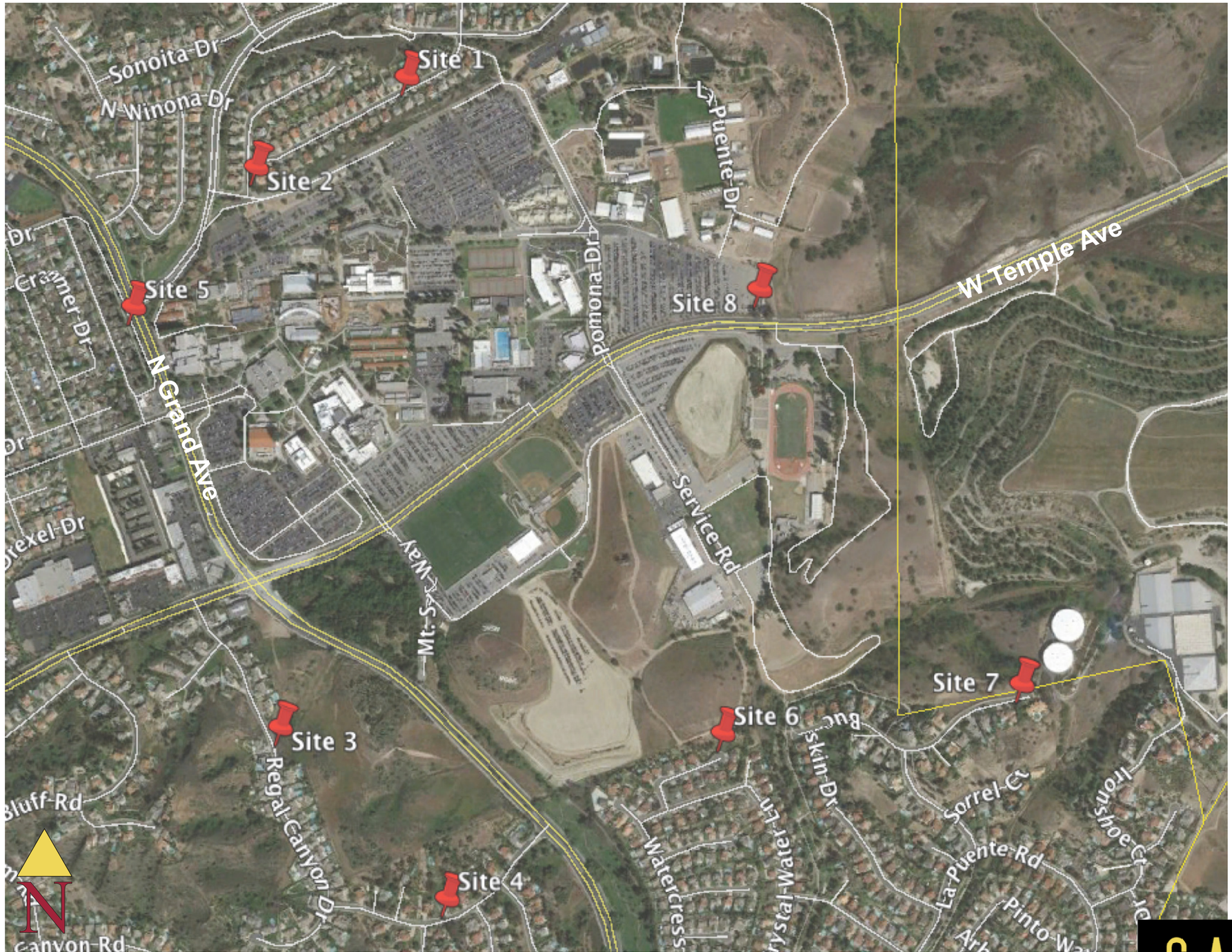


Table 1 Noise Measurement Results (dBA)

	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 8
Start Time	10:22a	10:52a	1:35p	2:10p	11:24a	12:33p	12:59p	2:40p
Leq	52.7	55.7	46.9	51.8	61.6	43.7	50.1	59.2
Lmax	73.6	72.4	66.5	70.9	71.4	56.9	68.1	68.7
L1.7	63.3	67.8	57.4	64.5	68.6	50.8	62.3	65.9
L8.3	53.1	57.6	47.6	51.2	66.0	46.5	50.4	64.0
L25	46.0	51.2	43.1	45.9	62.5	43.6	45.4	60.8
L50	42.2	46.7	41.3	44.2	59.8	41.7	42.5	56.4
L90	39.2	44.2	38.9	40.1	52.6	39.2	38.8	46.3
Lmin	37.4	42.4	37.4	37.6	45.5	36.4	37.7	42.6

The noise levels for all sites were typical of urban and suburban areas. None of the sites had excessively high noise levels or exceptional low noise levels. The average noise levels (Leq) ranged from 47 dBA to 62 dBA. The noise was mainly generated by traffic on the local roadways. Maximum noise levels were usually caused by a louder vehicle (e.g., trucks) or an aircraft overflight. Specific notes for each site are presented below.

Site 1: Residence at 21034 Granite Wells Road.
Site 1 is located in front of the residence at 21034 Granite Wells Road. (The rear yard of this site was measurement Site 1 for the 2008 noise study for the Master Plan Update EIR.) The dominant source of noise at this site was traffic on Granite Wells Road. The Lmax at Site 1 was 73.6 dBA and was due to a loud truck. The Leq at this site was 52.7 dBA, which is typical for a suburban area. Other sources of noise in the area included jet aircraft high overhead, birds in nearby trees, and low general aviation aircraft associated with Brackett Field Airport.

Site 2: Residence at 20905 Granite Wells Road.
Site 2 is located in line with the rear yard of the residence at 20905 Granite Wells Road along Stoddard Wells Road. (The rear yard of this site was measurement Site 2 for the 2008 noise study for the Master Plan Update EIR.) The dominant source of noise at this site was traffic on the local roadways. The Lmax at Site 1 was 72.4 dBA and was due to a loud vehicle. The Leq at this site was 55.7 dBA, which is typical for a suburban area. Other sources of noise in the area included jet aircraft high overhead, birds in nearby trees, a helicopter, and low general aviation aircraft associated with Brackett Field Airport.

Site 3: Residence at 1131 Regal Canyon Drive.
Site 3 is located across the street from the residence at 1131 Regal Canyon Drive. This site is next to the West Parcel Solar site. A portion of North Grand Avenue can be seen from this

site, which is typical for many homes along the West Parcel Solar site. The traffic noise from North Grand Avenue was very faint. This site had an average noise level (Leq) of 46.9 dBA, which is typical for a quiet suburban area. High jet aircraft, cars on Regal Canyon Drive, and low levels of noise from North Grand Avenue were the primary sources of noise.

Site 4: Residence at 21107 Stonybrook Drive.

Site 4 is located in front of the residence at 21107 Stonybrook Drive. This area is also next to the West Parcel Solar site. The small amount of traffic on Stonybrook Drive was the most significant source of noise in the area. This site had an average noise level (Leq) of 51.8 dBA. Other sources of noise experienced in the area included high jet aircraft, wind in the trees, birds, and air conditioners.

Site 5: Residence at 1433 Kem Way.

Site 5 is located in front of the residence at 1433 Kem Way. Kem Way is a frontage road that runs parallel to North Grand Avenue. The dominant source of noise at this site was traffic, including buses, on North Grand Avenue. This was the loudest site measured with an Leq 61.6 dBA, which is typical for an urban area. Other sources of noise in the area were very minor compared to the traffic on North Grand Avenue.

Site 6: Residence at 21647 Sleepy Hollow Court.

Site 6 is located in front of the residence at 21647 Sleepy Hollow Court. This area backs up to Mt. San Antonio College. Sleepy Hollow Court is a dead-end road that has very little traffic. This site had the lowest noise level and the Leq at this site was 43.7 dBA, which is typical for a quiet suburban area. A car on Sleepy Hollow Court, minor construction at a residence a few houses away, and birds were the main sources of noise. No noise from the college campus was heard.

Site 7: Residence at 21880 Buckskin Drive.

Site 7 is located in front of the residence at 21880 Buckskin Drive. This area also is adjacent to Mt. San Antonio College. Buckskin Drive is a dead-end road. This site had an average noise level (Leq) of 50.1 dBA, which is typical for a suburban area. High jet aircraft, distant traffic, a low general aviation aircraft, and a residential air conditioner were heard during the measurements. No noise from the college campus was heard.

Site 8: Stadium Parking Lot.

Site 8 was the only site monitored that was not representative of a residential neighborhood. Site 8 is located in the southeast corner of the parking lot across West Temple Avenue from the existing stadium. The site is dominated by traffic noise from West Temple Avenue. The site had an average (Leq) noise level of 59.2 dBA. Some low flying general aviation aircraft were also heard during the measurements.

1.4.2 Noise Measurements for Football Game

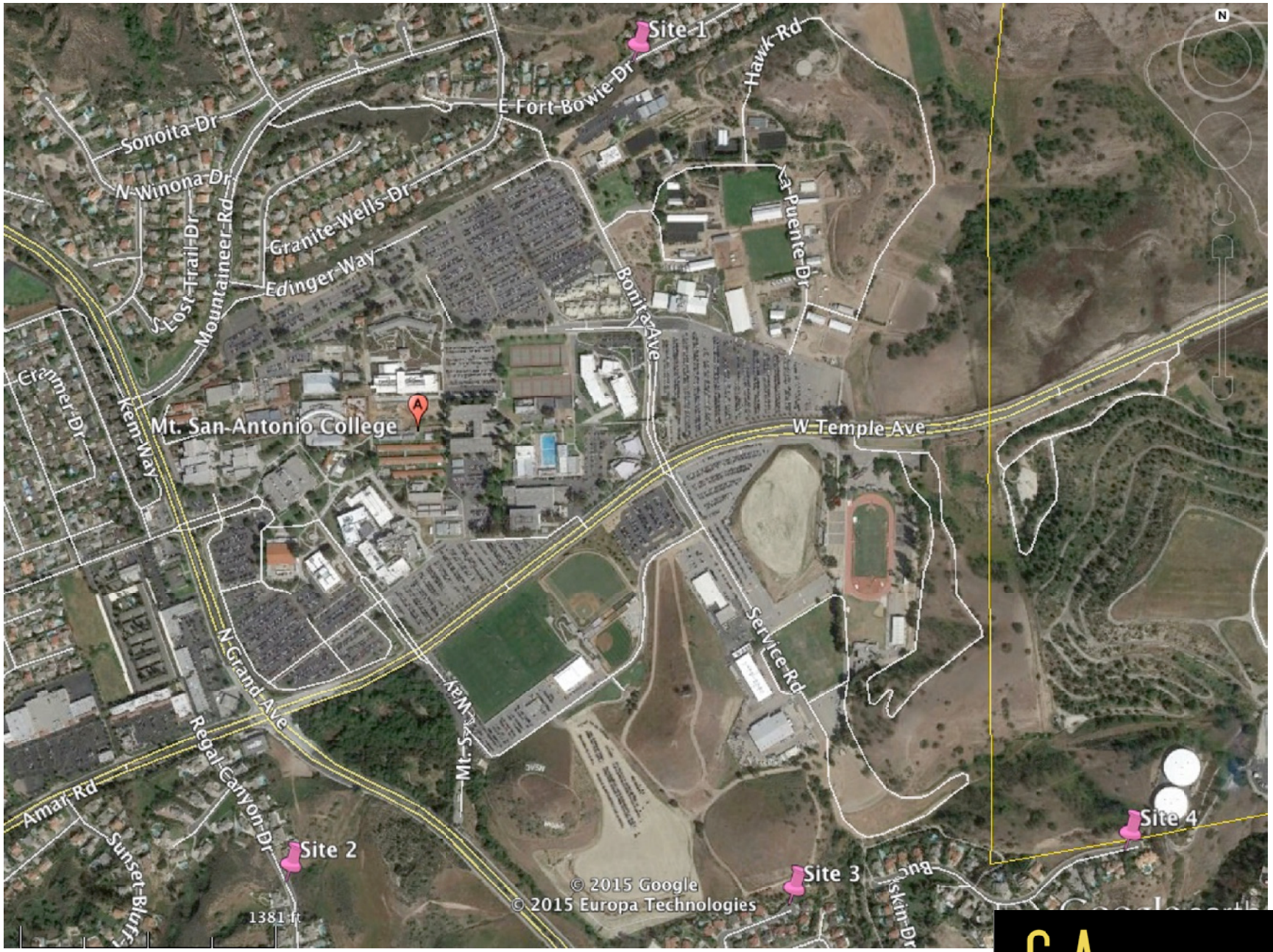
Noise levels in the surrounding community during a football game were measured. The methodology and results are presented in "Stadium Noise Measurements – Hilmer Lodge Stadium," (memo to Ms. Mikaela Klein, Mt. San Antonio College, October 27, 2015). The sites that were monitored are shown in 0, and Table 1 shows the results of the measurements.

Table 2 Noise Measurement Results (dBA)

	Site 4	Site 4	Site 1	Site 1	Site 2	Site 2	Site 3	Site 3
Start Time	6:17p	6:35p	7:02p	7:20p	7:45p	8:01p	8:37p	8:52p
Leq	42.8	44.5	49.3	49.1	49.5	48.6	41.4	42.4
Lmax	53.7	61.4	68.8	65.9	65.8	65.3	55.3	56.5
L1.7	49.7	52.9	60.1	60.3	61.2	60.1	50.0	47.7
L8.3	45.9	48.4	50.6	52.4	49.5	49.3	44.4	45.2
L25	43.3	43.2	45.2	44.7	46.2	46.0	40.9	43.1
L50	41.1	41.3	42.8	41.8	44.4	43.9	39.1	41.1
L90	38.7	37.6	39.9	39.9	41.6	40.5	36.8	38.2
Lmin	36.4	35.1	38.7	38.3	38.9	38.3	34.5	36.0

At Site 4, the PA system and occasionally the crowd could be heard. At the other three sites, stadium noise could not be heard. The game was still underway when the measurements ended. It was estimated that west stand of the stadium was filled to about 45% of capacity and that the east stand had 15% of capacity, or an estimated attendance of approximately 4,500.

Exhibit 7 - Noise Measurement Sites for Football Game



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1.5 Existing Roadway Noise Levels

The highway noise levels projected in this report were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December, 1978). The FHWA Model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the "equivalent noise level." A computer code has been written which computes equivalent noise levels for each of the time periods used in the calculation of CNEL. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. CNEL contours are found by iterating over many distances until the distances to the 60, 65, 70, and 75 CNEL contours are found.

Average daily traffic volumes (ADTs) were provided by the traffic engineer for the project (Deepak Kaushik, P.E., Iteris, January, 2016). Traffic volumes and posted speed limits were used with the FHWA Model to estimate the noise levels in terms of CNEL. The distances to the CNEL contours for the roadways in the vicinity of the project site are given in Table 3. These numbers represent the distance from the centerline of the road to the contour value shown. Note that the values given in Table 3 do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Table 3 Existing Traffic Noise Levels

Roadway Segment	Extent of Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet)		
			70 CNEL	65 CNEL	60 CNEL
Grand Ave	North of I-10 WB Ramps	66.9	62	133	288
Grand Ave	between I-10 WB/EB Ramps	66.8	60	131	282
Grand Ave	between I-10 EB Ramps and Cameron Ave	66.2	56	120	260
Grand Ave	between Cameron Ave and Mountaineer Rd	67.5	68	147	317
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	66.4	57	123	266
Grand Ave	between San Jose Hills Rd and Temple Ave	66.4	57	124	268
Grand Ave	between Temple Ave and La Puente Rd	69.1	86	186	402
Grand Ave	between La Puente Rd and Valley Blvd	69.5	92	200	431
Grand Ave	between Valley Blvd and Baker Pkwy	68.9	84	182	393
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	68.9	84	182	392
Grand Ave	between SR-60 EB/WB Ramps	68.3	76	165	357
Grand Ave	South of SR-60 WB Ramps	67.6	69	148	320
Nogales St	North of Amar Rd	47.0	RW	RW	13
Nogales St	South of Amar Rd	65.4	49	105	227

Table 3 Continued – Existing Traffic Noise Levels

Roadway Segment	Extent of Segment	CNEL @ 100' †	Distance To CNEL Contour from Centerline of Roadway (feet) 70 CNEL	65 CNEL	60 CNEL
Lemon Ave	South of Amar Rd	58.6	17	37	81
Mt SAC Wy	North of Temple Ave	55.7	11	23	51
Mt SAC Wy	South of Temple Ave	51.2	RW	RW	26
Bonita Ave	North of Temple Ave	58.1	16	34	74
Bonita Ave	South of Temple Ave	54.7	RW	20	44
Lot F	North of Temple Ave	38.2	RW	RW	RW
Valley Ave	North of Temple Ave	65.6	50	109	236
Valley Ave	South of Temple Ave	65.6	51	109	236
SR-57 SB Off Ramp	North of Temple Ave	67.0	63	136	294
SR-57 SB On Ramp	North of Temple Ave	55.7	RW	23	51
SR-57 NB Off Ramp	South of Temple Ave	65.2	47	102	221
SR-57 NB On Ramp	South of Temple Ave	63.0	33	73	157
Amar Rd	West of Nogales St	67.8	70	152	329
Amar Rd	between Nogales St and Lemon Ave	66.5	58	126	272
Amar Rd	between Lemon Ave and Grand Ave	66.5	58	125	270
Temple Ave	between Grand Ave and Mt SAC Wy	65.5	50	108	232
Temple Ave	between Mt SAC Wy and Bonita Ave	65.1	47	101	219
Temple Ave	between Bonita Ave and Lot F	67.6	69	149	321
Temple Ave	between Lot F and Valley Blvd	67.7	70	151	326
Temple Ave	between Valley Blvd and SR-57 SB Ramps	66.8	61	131	284
Temple Ave	between SR-57 SB/NB Ramps	68.4	78	169	364
Temple Ave	East of SR-57 NB Off Ramp	68.0	74	159	343
I-10 WB Ramps	West of Grand Ave	65.8	52	113	244
I-10 EB Ramps	West of Grand Ave	64.3	41	89	192
Cameron Ave	West of Grand Ave	62.9	33	72	155
Mountaineer Rd	East of Grand Ave	57.2	14	30	65
San Jose Hills Rd	West of Grand Ave	54.9	RW	21	45

Table 3 Continued – Existing Traffic Noise Levels

Roadway Segment	Extent of Segment	CNEL @ 100'*	Distance To CNEL Contour from Centerline of Roadway (feet) 70 CNEL	65 CNEL	60 CNEL
San Jose Hills Rd	East of Grand Ave	55.1	RW	21	47
La Puente Rd	West of Grand Ave	62.0	29	62	135
La Puente Rd	East of Grand Ave	55.6	RW	23	50
Valley Ave	West of Grand Ave	69.6	93	202	435
Valley Ave	East of Grand Ave	69.4	90	195	420
Baker Pkwy	West of Grand Ave	58.2	RW	35	75
SR-60 EB Ramps	East of Grand Ave	67.0	63	136	293
SR-60 WB Off Ramp	West of Grand Ave	60.4	22	49	106
SR-60 WB On Ramp	East of Grand Ave	65.0	46	100	216

* From roadway centerline
RW – Noise contour falls within roadway right-of-way.

Table 3 shows that the loudest roadways in the area are portions of Valley Avenue, Temple Avenue and Grand Avenue. The roadways in the area have noise levels typical for a suburban area.

2.0 POTENTIAL NOISE IMPACTS

Potential noise impacts are commonly divided into two groups; temporary and long term. Temporary impacts are usually associated with noise generated by construction activities. Long-term impacts are caused by operation of the project. In this report the impacts are further divided into those associated with the buildout of the 2015 Facilities Master Plan Update (FMPU) and projects directly associated with the Physical Education Projects (PEP).

2.1 Thresholds of Significance

The College has proposed (and it is anticipated that they will be adopted prior to the release of the SEIR) Thresholds of Significance criteria for noise related impacts. These thresholds will be used as the primary measure of whether an impact will be less than significant.

Construction noise impacts have two thresholds based on the duration of construction. Longer term construction projects have a more stringent threshold since they represent a greater annoyance to the community. An additional threshold addresses potential vibration impacts. The following three thresholds related to construction will be addressed.

1. Site-specific construction projects lasting one year or less for site preparation, demolition, grading and shell building construction located within 1,500 feet or less from a sensitive off-site land use have a significant construction noise impact if construction occurs outside of permitted construction hours. Construction hours are defined in Mitigation Measure 5a in the Mitigation Monitoring Program as 7 a.m. to 7 p.m. on Monday through Saturday.

2. Site-specific construction projects lasting more than one year, with site preparation, demolition, grading and shell building construction, located within 1,500 feet or less from a sensitive off-site land use have a significant construction noise impact if: (1) Construction occurs outside of permitted construction hours, and (2) Lmax noise levels from 7 a.m. to 7 pm are less than 90 dBA and less than 65 dBA Leq at any off-site sensitive receptor property line and (3) From 7 p.m. to 7 a.m., the Lmax is less than 75 dBA and less than 55 dBA Leq offsite at any off-site sensitive property line. Construction hours are defined in Mitigation Measure 5a in the Mitigation Monitoring Program as 7 a.m. to 7 p.m. on Monday through Saturday.

3. A significant construction equipment vibration impact occurs for a site-specific project if a peak particle velocity (PPV) of 0.04 inches/ second or more occurs offsite in a sensitive receptor area for more than fifteen (15) minutes in any one hour.

Long-term off-site impacts from traffic noise are measured against two criteria. Both criteria must be met for a significant impact to be identified. The threshold for off-site traffic noise impacts is as follows.

4. FMP traffic-related net noise increases on public roadways more than 3 dBA at 100 feet from centerline that result in noise levels above 65 CNEL in off-campus sensitive receptor areas (residential or hospitals), or above 70 CNEL

for off-campus commercial areas, due to baseline versus buildout project net FMP trip increases are a significant impact.

Cumulative impacts are measured by the following criteria.

5. Cumulative projects traffic-related noise impacts (existing plus project baseline versus existing plus project plus cumulative) are not significant if the same noise criteria stated above is applied to sensitive receptors or commercial areas off-campus;

Long-term off-site impacts from operations on-campus are also subject to noise thresholds. The following threshold applies.

6. Site-specific projects that generate operational noise as measured at a residential property line greater than 55 dBA (Leq) from 7 a.m. to 10 p.m. and 50 dBA from 10 p.m. to 7 a.m. have a significant noise impact. The maximum operational noise level shall not exceed 75 dBA (Lmax) during the day or 70 dBA (Lmax) during the night. If the ambient noise levels are higher than the stated Leq or Lmax criteria, the corresponding Leq and Lmax criteria levels are increased to the ambient noise level. Noise levels above the stated criteria are a significant impact.

2.2 The 2015 Facility Master Plan Update (FMPU)

The potential impacts associated with the 2015 FMPU involve construction associated with the various FMPU projects and the traffic associated with the increase student attendance (headcount). Potential noise impacts associated with the Physical Education Project (PEP) are addressed in Section 2.3.

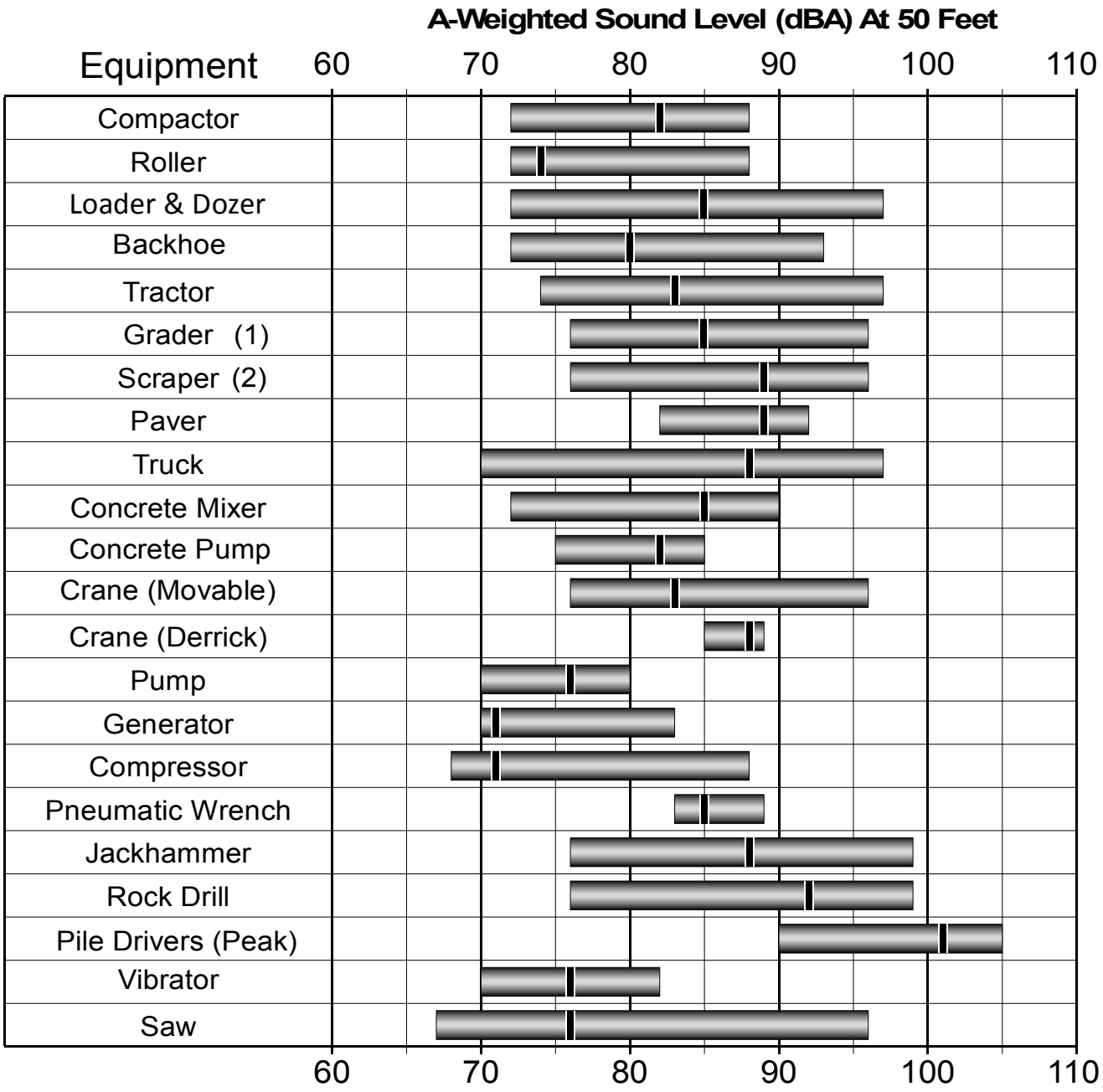
2.2.1 Construction Noise

Construction noise represents a short-term impact on ambient noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators can reach high levels. Worst-case examples of construction noise at 50 feet are presented in 0. Typical equipment that might be employed for the type of projects associated with the FMPU includes graders, scrapers, front loaders, trucks, concrete mixers and concrete pumps. The peak (Lmax) noise level for most of the equipment that will be used during the construction is 70 to 95 dBA at a distance of 50 feet. Noise levels at further distances would be less than this, and intervening terrain such as ridgelines would reduce noise levels even further. The noise levels shown in 0 are based upon worst-case (i.e. loudest noise) conditions at the construction site, so these noise levels are used as the basis for predicting the worst-case construction noise estimate.

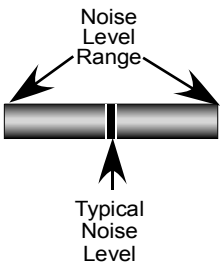
The thresholds of significance indicate that any construction project more than 1,500 feet from a residential area will result in a less than significant impact. Exhibit 9 shows the area on-campus that is more than 1,500 feet from sensitive receptor areas. Any construction within this zone would have a less than significant impact. If a project is less than 1,500 feet from a sensitive receptor, but construction lasts less than 1 year, then it will have a less than significant impact when mitigated per Mitigation Measure 5a of the Mitigation Monitoring Plan. This measure limits construction to 7 a.m. to 7 p.m. on Monday through Saturday. Projects requiring more than 1 year of construction would likely result in an impact and will require further analysis prior to the initiation of construction to determine what mitigation is feasible and if it will be adequate.

Table 4 shows the individual projects that are part of the FMPU. For each project it is determined, based on the above significance thresholds, whether an impact could result or not. The first column of the table simply identifies the project. Many of the projects involved are demolition projects and are presented first in the table. The second column identifies whether the project is within 1,500 feet of a residential area. The third column identifies whether the construction or demolition would last more than 1 year. Demolition projects generally occur rather quickly while construction projects tend to take much longer. Small construction projects can be completed in less than 1 year. If it is uncertain how long construction might last, then the project is identified as lasting more than 1 year. The final column identifies whether there will be an impact or not based on the threshold criteria discussed above. Many of the projects have been identified as “Less than significant with MM5a,” which means that they must comply with Mitigation Measure 5a (MM5a) to avoid a significant impact. Six of the projects are identified as “Potential significant impact.” For these projects, a project level construction noise analysis needs to be prepared that specifically addresses the potential construction noise impacts and appropriate mitigation measures. At the Master Facilities Plan level, these projects and their construction schedules are not sufficiently detailed to conduct a construction noise analysis. Mitigation measures are discussed in Section 3.1.1.

Exhibit 8 - Construction Noise Levels



LEGEND



Sources: "Handbook of Noise Control,"
by Cyril Harris, 1979
"Transit Noise and Vibration Impact Assessment"
by Federal Transit Administration, 1995

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Exhibit 9 - Potential Construction Noise Impact Zone

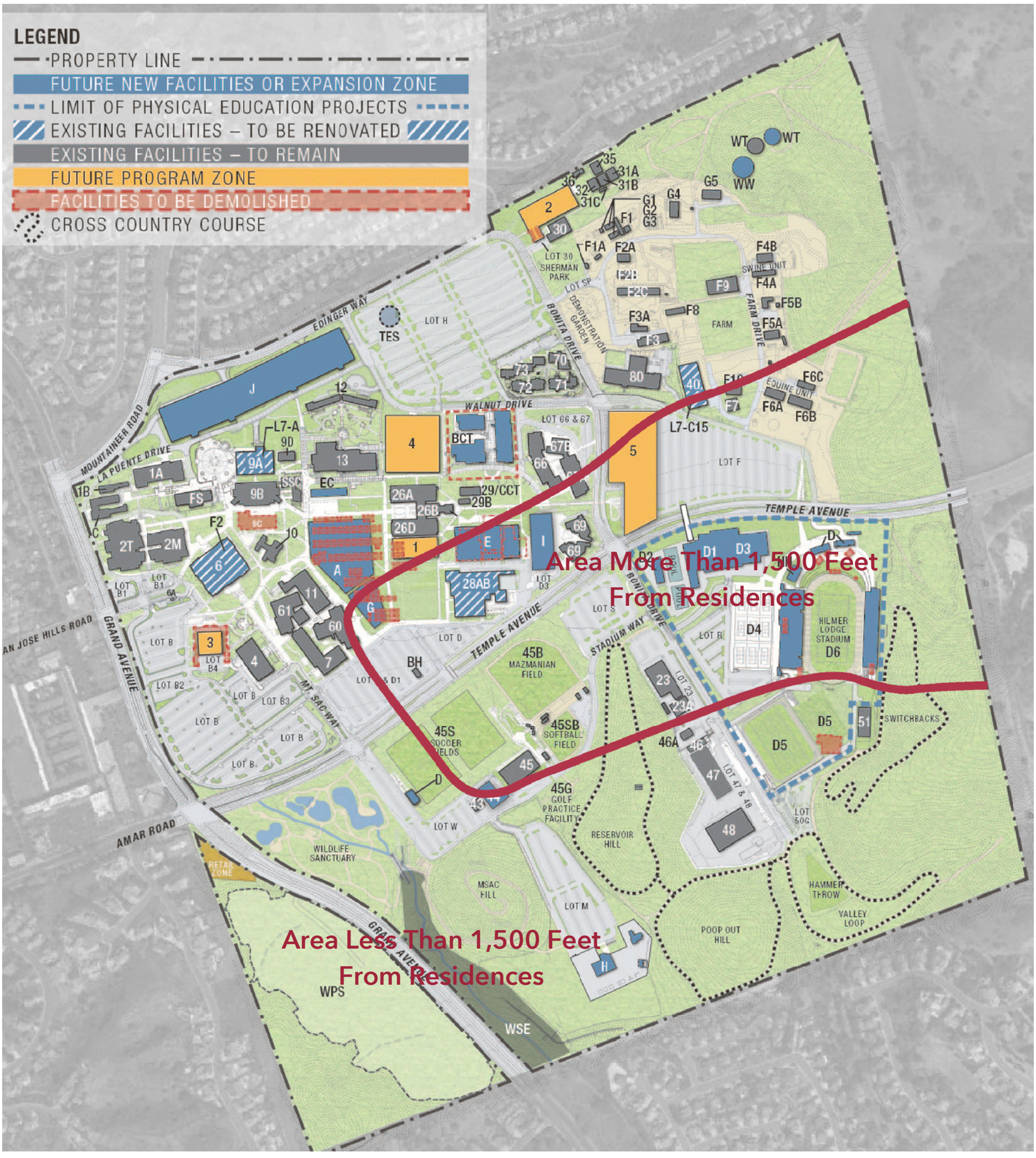

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Table 4 Construction Impacts for 2015 FMPU Projects

Project	Greater Than 1,500 feet	Lasting Less Than 1 Year	Potential Impact?
Demolition Projects			
Campus Inn	No	Yes	Less than significant with MM5a
Administration (Bldg 4)	No	Yes	Less than significant with MM5a
Bldg 12A, 12B	No	Yes	Less than significant with MM5a
Bldg 18A, 18B	No	Yes	Less than significant with MM5a
Bldg 38A, 38B	No	Yes	Less than significant with MM5a
ACE Demolitions	No (part only)	Yes	See Note (2)
Bldg 27A-C	Yes	N.A.	Less than significant
Gym (03)	No	Yes	Less than significant with MM5a
Student Center (9C)	No	Yes	Less than significant with MM5a
Bldg 17	No	Yes	Less than significant with MM5a
Bldg 18A	No	Yes	Less than significant with MM5a
Bldg 18B	No	Yes	Less than significant with MM5a
Bldg 19A-C	No	Yes	Less than significant with MM5a
Bldg 20	No	Yes	Less than significant with MM5a
Construction Projects			
Student Success Center	No	Yes	Less than significant with MM5a
Food Service	No	Yes	Less than significant with MM5a
BCT/Language Lab Lobby	No	No	Less than significant with MM5a (1)
Library/Campus Center	No	No	Potential significant impact
Auditorium (1,200 seats)	No	No	Potential significant impact
PEP/Stadium/Auxiliary	No (part only)	No	See Note (2)
Career & Tech Ed (E2)	No	Yes	Less than significant with MM5a
Future Instruction Zone 1	No	No	Potential significant impact
Future Instructional Zone 2	No	No	Potential significant impact
Future Instructional Zone 4	No	No	Potential significant impact
Future Instructional Zone 5	No	No	Potential significant impact
Future Instructional Zone 6	Yes	N.A.	Less than significant

Notes:

N.A. – Not Applicable

1. Construction noise analysis has been previously prepared; Memo to Mikaela Klein, "Business Computer Technology (BCT) and Language Center Lobby (LCL) Addition - Construction Noise Analysis," October 16, 2015.

2. See Section 2.3.1 for detail analysis.

2.2.2 Vibration Impacts

The California Department of Transportation (Caltrans) has published the "Transportation and Construction-Induced Vibration Guidance Manual" (June 2004). This document has become the standard by which construction projects are evaluated for their vibration potential in California.

The threshold for vibration associated with construction is a peak particle velocity (PPV) of 0.04 inches/ second. The most critical concern according to Caltrans is whether pile driving will be used. If pile driving is to be used then vibration levels can be high and exceed this level. Since pile driving is not anticipated as part of these projects, and no other unusual construction techniques are proposed that would have a high potential for vibration generation, it can be concluded that vibration impacts will be less than significant for the proposed projects.

2.2.3 Off-Site Traffic Noise

To determine traffic noise impacts as a result of the project, the FHWA (Federal Highway Administration) noise model was used. The FHWA noise model utilizes various traffic-flow parameters (e.g. traffic volume, speed, mix, etc.) to predict noise levels that result from the operation of motor vehicles on the roadways. Existing and future traffic volumes utilized were provided by Iteris, January 2016.

Table 5 shows traffic noise CNEL level changes on the roadways affected by the project. The first data column of Table 5 shows the project's contribution to the increase in the year 2020. The noise increase is due solely to the proposed project. It represents the existing case compared to the existing plus project case. Although the traffic increase will occur over time, the courts have determined that examination of the existing plus project case represents the worst-case impact generated solely by the project. The second column provides similar data, but for the year 2025. This comparison represents the existing plus project increase over existing for the year 2025.

Table 5 Traffic Noise CNEL Increases Due to the Project (dB)

Roadway	Segment	2020 Existing v. Existing + Project	2025 Existing v. Existing + Project
Grand Ave	North of I-10 WB Ramps	0.01	0.02
Grand Ave	between I-10 WB/EB Ramps	0.07	0.13
Grand Ave	between I-10 EB Ramps and Cameron Ave	0.14	0.27
Grand Ave	between Cameron Ave and Mountaineer Rd	0.13	0.25
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	0.08	0.15
Grand Ave	between San Jose Hills Rd and Temple Ave	0.08	0.15
Grand Ave	between Temple Ave and La Puente Rd	0.12	0.23
Grand Ave	between La Puente Rd and Valley Blvd	0.07	0.13
Grand Ave	between Valley Blvd and Baker Pkwy	0.06	0.11
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	0.04	0.07
Grand Ave	between SR-60 EB/WB Ramps	0.03	0.06
Grand Ave	South of SR-60 WB Ramps	0.02	0.03
Nogales St	North of Amar Rd	0.00	0.00
Nogales St	South of Amar Rd	0.02	0.05
Lemon Ave	South of Amar Rd	0.08	0.15
Mt SAC Wy	North of Temple Ave	0.28	0.52
Mt SAC Wy	South of Temple Ave	0.73	1.30
Bonita Ave	North of Temple Ave	0.41	0.76
Bonita Ave	South of Temple Ave	0.85	1.50
Lot F	North of Temple Ave	0.00	0.00
Valley Ave	North of Temple Ave	0.07	0.13
Valley Ave	South of Temple Ave	0.02	0.03
SR-57 SB Off Ramp	North of Temple Ave	0.05	0.10
SR-57 SB On Ramp	North of Temple Ave	0.00	0.00
SR-57 NB Off Ramp	South of Temple Ave	0.16	0.30
SR-57 NB On Ramp	South of Temple Ave	0.13	0.25
Amar Rd	West of Nogales St	0.02	0.03
Amar Rd	between Nogales St and Lemon Ave	0.04	0.07
Amar Rd	between Lemon Ave and Grand Ave	0.07	0.14
Temple Ave	between Grand Ave and Mt SAC Wy	0.15	0.29
Temple Ave	between Mt SAC Wy and Bonita Ave	0.18	0.33
Temple Ave	between Bonita Ave and Lot F	0.25	0.47
Temple Ave	between Lot F and Valley Blvd	0.25	0.46
Temple Ave	between Valley Blvd and SR-57 SB Ramps	0.16	0.30
Temple Ave	between SR-57 SB/NB Ramps	0.09	0.16
Temple Ave	East of SR-57 NB Off Ramp	0.02	0.04
I-10 WB Ramps	West of Grand Ave	0.12	0.22
I-10 EB Ramps	West of Grand Ave	0.17	0.31

Table 5 Continued - Traffic Noise CNEL Increases Due to the Project (dB)

Roadway	Segment	2020 Existing v. Existing + Project	2025 Existing v. Existing + Project
Cameron Ave	West of Grand Ave	0.04	0.07
Mountaineer Rd	East of Grand Ave	1.01	1.77
San Jose Hills Rd	West of Grand Ave	0.02	0.04
San Jose Hills Rd	East of Grand Ave	0.78	1.38
La Puente Rd	West of Grand Ave	0.09	0.17
La Puente Rd	East of Grand Ave	0.14	0.26
Valley Ave	West of Grand Ave	0.02	0.04
Valley Ave	East of Grand Ave	0.00	0.00
Baker Pkwy	West of Grand Ave	0.00	0.00
SR-60 EB Ramps	East of Grand Ave	0.02	0.04
SR-60 WB Off Ramp	West of Grand Ave	0.10	0.18
SR-60 WB On Ramp	East of Grand Ave	0.00	0.00

The threshold criteria presented previously in Section 2.1 indicates that to have significant noise increase, the noise must be projected to increase by 3 dB or more. No increases greater than 3 dB are projected. For the year 2020, the greatest increase is 1.01 dB, and it is for Mountaineer Road east of Grand Avenue. For 2025, the greatest increase is 1.77 dB, and it is also for Mountaineer Road. Mountaineer Road is a low volume roadway, and therefore, relatively small increases in traffic result in higher increases in noise. It should be noted that Mountaineer Road would remain a low volume road with low levels of noise (see following paragraphs and Table 6). Since the increases will be less than 3 dB, the traffic noise impacts due directly to the project will be less than significant.

The distances to the future with CNEL contours for the roadways in the vicinity of the proposed project site are presented in Table 6. The values shown under the 60, 65 and 70 CNEL columns represent the distance from the centerline of the roadway to the respective contour value. The CNEL levels at 100 feet from the roadway centerline are also presented. The contours do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels. Traffic volumes, speeds and traffic mixes used to calculate the noise levels are presented in the appendix.

Table 6 Future Traffic Noise Levels (Existing Plus Project 2025)

Roadway	Segment	CNEL @ 100' *	Distance To CNEL Contour from Centerline of Roadway (feet)		
			70 CNEL	65 CNEL	60 CNEL
Grand Ave	North of I-10 WB Ramps	66.9	62	134	289
Grand Ave	between I-10 WB/EB Ramps	66.9	62	133	288
Grand Ave	between I-10 EB Ramps and Cameron Ave	66.5	58	125	271
Grand Ave	between Cameron Ave and Mountaineer Rd	67.8	71	153	330
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	66.5	58	126	272
Grand Ave	between San Jose Hills Rd and Temple Ave	66.6	59	127	275
Grand Ave	between Temple Ave and La Puente Rd	69.3	89	193	417
Grand Ave	between La Puente Rd and Valley Blvd	69.7	94	204	439
Grand Ave	between Valley Blvd and Baker Pkwy	69.0	86	185	400
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	69.0	85	184	396
Grand Ave	between SR-60 EB/WB Ramps	68.4	77	167	360
Grand Ave	South of SR-60 WB Ramps	67.6	69	149	321
Nogales St	North of Amar Rd	47.0	RW	RW	RW
Nogales St	South of Amar Rd	65.4	49	106	229
Lemon Ave	South of Amar Rd	58.8	RW	38	83
Mt SAC Wy	North of Temple Ave	56.2	RW	25	55
Mt SAC Wy	South of Temple Ave	52.5	RW	RW	31
Bonita Ave	North of Temple Ave	58.8	18	38	83
Bonita Ave	South of Temple Ave	56.2	12	26	56
Lot F	North of Temple Ave	38.2	RW	RW	RW
Valley Ave	North of Temple Ave	65.7	52	112	241
Valley Ave	South of Temple Ave	65.6	51	110	238
SR-57 SB Off Ramp	North of Temple Ave	67.1	64	138	299
SR-57 SB On Ramp	North of Temple Ave	55.7	RW	23	51
SR-57 NB Off Ramp	South of Temple Ave	65.5	49	107	231
SR-57 NB On Ramp	South of Temple Ave	63.2	35	76	163
Amar Rd	West of Nogales St	67.8	71	153	330
Amar Rd	between Nogales St and Lemon Ave	66.6	59	127	275
Amar Rd	between Lemon Ave and Grand Ave	66.6	59	128	276
Temple Ave	between Grand Ave and Mt SAC Wy	65.8	52	112	243
Temple Ave	between Mt SAC Wy and Bonita Ave	65.4	49	107	230
Temple Ave	between Bonita Ave and Lot F	68.1	74	160	345
Temple Ave	between Lot F and Valley Blvd	68.2	75	162	350
Temple Ave	between Valley Blvd and SR-57 SB Ramps	67.1	64	138	297
Temple Ave	between SR-57 SB/NB Ramps	68.6	80	173	373
Temple Ave	East of SR-57 NB Off Ramp	68.1	74	160	345
I-10 WB Ramps	West of Grand Ave	66.1	54	117	253
I-10 EB Ramps	West of Grand Ave	64.6	43	93	202
Cameron Ave	West of Grand Ave	62.9	33	72	157
Mountaineer Rd	East of Grand Ave	59.0	RW	39	86
San Jose Hills Rd	West of Grand Ave	54.9	RW	21	45
San Jose Hills Rd	East of Grand Ave	56.5	RW	26	58

Table 6 Continued -- Future Traffic Noise Levels (Existing Plus Project 2025)

Roadway	Segment	CNEL @ 100' *	Distance To CNEL Contour from Centerline of Roadway (feet)		
			70 CNEL	65 CNEL	60 CNEL
La Puente Rd	West of Grand Ave	62.1	29	64	138
La Puente Rd	East of Grand Ave	55.8	RW	24	52
Valley Ave	West of Grand Ave	69.6	94	203	437
Valley Ave	East of Grand Ave	69.4	90	195	420
Baker Pkwy	West of Grand Ave	58.2	RW	35	75
SR-60 EB Ramps	East of Grand Ave	67.1	63	137	295
SR-60 WB Off Ramp	West of Grand Ave	60.6	23	50	109
SR-60 WB On Ramp	East of Grand Ave	65.0	46	100	216

* From roadway centerline
RW – Contour falls within road right-of-way

Table 6 shows that the loudest roadways in the area continue to be portions of Valley Avenue, Temple Avenue and Grand Avenue. The roadways in the area have noise levels typical for a suburban area.

In summary, traffic noise impacts will be less than significant with the proposed project.

2.2.4 Cumulative Impacts

The buildout of the 2015 FMPU projects plus other non-campus projects in Walnut and other surrounding cities have the potential to generate additional traffic and additional noise. The potential cumulative impact on the noise environment is addressed in this section.

Table 7 shows traffic noise CNEL level changes on the roadways affected by the project and the other cumulative projects for 2020. The first data column of Table 7 shows the difference in noise levels between existing conditions and existing conditions plus cumulative projects (no campus projects). This noise increase is due to the proposed other projects in the area not including campus related projects. It represents the existing case compared to the existing plus other development case. The final data column provides the comparison between existing conditions versus the existing plus cumulative projects plus campus related projects. The increases shown in the final column represent the cumulative impacts. Table 8 presents the same data but for 2025.

Table 7 Cumulative Traffic Noise CNEL Increases for 2020 (dB)

Roadway	Segment	2020 Existing v. Existing + Cumulative Projects	2020 Existing v. Existing + Cumulative + Campus Projects
Grand Ave	North of I-10 WB Ramps	0.0	0.1
Grand Ave	between I-10 WB/EB Ramps	0.1	0.2
Grand Ave	between I-10 EB Ramps and Cameron Ave	0.2	0.3
Grand Ave	between Cameron Ave and Mountaineer Rd	0.1	0.3
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	0.1	0.2
Grand Ave	between San Jose Hills Rd and Temple Ave	0.1	0.2
Grand Ave	between Temple Ave and La Puente Rd	0.1	0.3
Grand Ave	between La Puente Rd and Valley Blvd	0.1	0.2
Grand Ave	between Valley Blvd and Baker Pkwy	0.1	0.2
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	0.2	0.2
Grand Ave	between SR-60 EB/WB Ramps	0.1	0.2
Grand Ave	South of SR-60 WB Ramps	0.1	0.1
Nogales St	North of Amar Rd	0.0	0.0
Nogales St	South of Amar Rd	0.0	0.1
Lemon Ave	South of Amar Rd	0.0	0.1
Mt SAC Wy	North of Temple Ave	0.0	0.3
Mt SAC Wy	South of Temple Ave	0.0	0.7
Bonita Ave	North of Temple Ave	0.0	0.4
Bonita Ave	South of Temple Ave	0.0	0.8
Lot F	North of Temple Ave	0.0	0.0
Valley Ave	North of Temple Ave	0.2	0.2
Valley Ave	South of Temple Ave	0.2	0.2
SR-57 SB Off Ramp	North of Temple Ave	0.4	0.5
SR-57 SB On Ramp	North of Temple Ave	0.0	0.0
SR-57 NB Off Ramp	South of Temple Ave	0.6	0.7
SR-57 NB On Ramp	South of Temple Ave	0.4	0.5
Amar Rd	West of Nogales St	0.1	0.1
Amar Rd	between Nogales St and Lemon Ave	0.1	0.2
Amar Rd	between Lemon Ave and Grand Ave	0.1	0.2
Temple Ave	between Grand Ave and Mt SAC Wy	0.1	0.3
Temple Ave	between Mt SAC Wy and Bonita Ave	0.2	0.3
Temple Ave	between Bonita Ave and Lot F	0.2	0.4
Temple Ave	between Lot F and Valley Blvd	0.4	0.6
Temple Ave	between Valley Blvd and SR-57 SB Ramps	0.4	0.5
Temple Ave	between SR-57 SB/NB Ramps	0.3	0.4
Temple Ave	East of SR-57 NB Off Ramp	0.4	0.5
I-10 WB Ramps	West of Grand Ave	0.1	0.2
I-10 EB Ramps	West of Grand Ave	0.2	0.3

Table 7 Continued -- Cumulative Traffic Noise CNEL Increases for 2020 (dB)

Roadway	Segment	2020 Existing v. Existing + Cumulative Projects	2020 Existing v. Existing + Cumulative + Campus Projects
Cameron Ave	West of Grand Ave	0.0	0.0
Mountaineer Rd	East of Grand Ave	0.0	1.0
San Jose Hills Rd	West of Grand Ave	0.0	0.0
San Jose Hills Rd	East of Grand Ave	0.0	0.2
La Puente Rd	West of Grand Ave	0.0	0.1
La Puente Rd	East of Grand Ave	0.0	0.1
Valley Ave	West of Grand Ave	0.1	0.1
Valley Ave	East of Grand Ave	0.2	0.2
Baker Pkwy	West of Grand Ave	0.0	0.0
SR-60 EB Ramps	East of Grand Ave	0.1	0.1
SR-60 WB Off Ramp	West of Grand Ave	0.3	0.4
SR-60 WB On Ramp	East of Grand Ave	0.0	0.0

Table 8 Cumulative Traffic Noise CNEL Increases for 2025 (dB)

Roadway	Segment	2025 Existing v. Existing + Cumulative Projects	2025 Existing v. Existing + Cumulative + Campus Projects
Grand Ave	North of I-10 WB Ramps	0.0	0.1
Grand Ave	between I-10 WB/EB Ramps	0.2	0.3
Grand Ave	between I-10 EB Ramps and Cameron Ave	0.4	0.7
Grand Ave	between Cameron Ave and Mountaineer Rd	0.3	0.5
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	0.3	0.4
Grand Ave	between San Jose Hills Rd and Temple Ave	0.3	0.4
Grand Ave	between Temple Ave and La Puente Rd	0.3	0.5
Grand Ave	between La Puente Rd and Valley Blvd	0.3	0.4
Grand Ave	between Valley Blvd and Baker Pkwy	0.6	0.7
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	1.1	1.2
Grand Ave	between SR-60 EB/WB Ramps	0.8	0.8
Grand Ave	South of SR-60 WB Ramps	0.2	0.2
Nogales St	North of Amar Rd	0.0	0.0
Nogales St	South of Amar Rd	0.0	0.1
Lemon Ave	South of Amar Rd	0.0	0.2
Mt SAC Wy	North of Temple Ave	0.0	0.5
Mt SAC Wy	South of Temple Ave	0.0	1.3
Bonita Ave	North of Temple Ave	0.0	0.8
Bonita Ave	South of Temple Ave	0.0	1.5
Lot F	North of Temple Ave	0.0	0.0
Valley Ave	North of Temple Ave	0.6	0.8
Valley Ave	South of Temple Ave	0.7	0.7
SR-57 SB Off Ramp	North of Temple Ave	0.6	0.6
SR-57 SB On Ramp	North of Temple Ave	0.0	0.0
SR-57 NB Off Ramp	South of Temple Ave	1.0	1.2
SR-57 NB On Ramp	South of Temple Ave	0.7	0.9
Amar Rd	West of Nogales St	0.2	0.2
Amar Rd	between Nogales St and Lemon Ave	0.3	0.3
Amar Rd	between Lemon Ave and Grand Ave	0.3	0.4
Temple Ave	between Grand Ave and Mt SAC Wy	0.3	0.5
Temple Ave	between Mt SAC Wy and Bonita Ave	0.3	0.6
Temple Ave	between Bonita Ave and Lot F	0.3	0.7
Temple Ave	between Lot F and Valley Blvd	0.7	1.1
Temple Ave	between Valley Blvd and SR-57 SB Ramps	0.7	0.9
Temple Ave	between SR-57 SB/NB Ramps	0.5	0.6
Temple Ave	East of SR-57 NB Off Ramp	0.4	0.5
I-10 WB Ramps	West of Grand Ave	0.3	0.5
I-10 EB Ramps	West of Grand Ave	0.5	0.7

Table 8 Continued -- Cumulative Traffic Noise CNEL Increases for 2025 (dB)

Roadway	Segment	2025 Existing v. Existing + Cumulative Projects	2025 Existing v. Existing + Cumulative + Campus Projects
Cameron Ave	West of Grand Ave	0.0	0.1
Mountaineer Rd	East of Grand Ave	0.0	1.8
San Jose Hills Rd	West of Grand Ave	0.0	0.0
San Jose Hills Rd	East of Grand Ave	0.0	0.4
La Puente Rd	West of Grand Ave	0.0	0.2
La Puente Rd	East of Grand Ave	0.0	0.3
Valley Ave	West of Grand Ave	0.1	0.2
Valley Ave	East of Grand Ave	0.4	0.4
Baker Pkwy	West of Grand Ave	2.2	2.2
SR-60 EB Ramps	East of Grand Ave	1.0	1.0
SR-60 WB Off Ramp	West of Grand Ave	2.2	2.3
SR-60 WB On Ramp	East of Grand Ave	0.7	0.7

The threshold criteria presented previously in Section 2.1 indicates that to have significant noise increase, the noise must be projected to increase by 3 dB or more. No increases greater than 3 dB are projected. For the year 2020, the greatest increase is 1.0 dB, and it is for Mountaineer Road east of Grand Avenue. For 2025, the greatest increase is 2.3 dB, and it is for the eastbound SR-60 off-ramp. Mountaineer Road is a low volume roadway, and therefore, relatively small increases in traffic result in higher increases in noise. It should be noted that Mountaineer Road would remain a low volume road with low levels of noise (see following paragraphs and Table 9). Since the increases will be less than 3 dB, the cumulative traffic noise impacts will be less than significant.

The distances to the 2025 CNEL contours for the roadways with cumulative and project traffic are presented in Table 9. The values shown under the 60, 65 and 70 CNEL columns represent the distance from the centerline of the roadway to the respective contour value. The CNEL levels at 100 feet from the roadway centerline are also presented. The contours do not take into account the effect of any noise barriers or topography that may reduce traffic noise levels. Traffic volumes, speeds and traffic mixes used to calculate the noise levels are presented in the appendix.

Table 9 Cumulative Traffic Noise Levels (2025)

Roadway	Segment	CNEL @ 100' *	Distance To CNEL Contour from Centerline of Roadway (feet)		
			70 CNEL	65 CNEL	60 CNEL
Grand Ave	North of I-10 WB Ramps	67.0	62	135	291
Grand Ave	between I-10 WB/EB Ramps	67.1	63	137	297
Grand Ave	between I-10 EB Ramps and Cameron Ave	66.9	61	133	287
Grand Ave	between Cameron Ave and Mountaineer Rd	68.1	74	160	345
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	66.8	61	131	284
Grand Ave	between San Jose Hills Rd and Temple Ave	66.9	61	133	287
Grand Ave	between Temple Ave and La Puente Rd	69.6	93	201	434
Grand Ave	between La Puente Rd and Valley Blvd	69.9	98	212	457
Grand Ave	between Valley Blvd and Baker Pkwy	69.6	93	202	435
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	70.1	100	217	468
Grand Ave	between SR-60 EB/WB Ramps	69.1	87	187	404
Grand Ave	South of SR-60 WB Ramps	67.8	71	153	330
Nogales St	North of Amar Rd	47.0	2	6	13
Nogales St	South of Amar Rd	65.4	49	107	230
Lemon Ave	South of Amar Rd	58.8	17	38	83
Mt SAC Wy	North of Temple Ave	56.2	11	25	55
Mt SAC Wy	South of Temple Ave	52.5	6	14	31
Bonita Ave	North of Temple Ave	58.8	18	38	83
Bonita Ave	South of Temple Ave	56.2	12	26	56
Lot F	North of Temple Ave	38.2	0	1	3
Valley Ave	North of Temple Ave	66.4	57	123	265
Valley Ave	South of Temple Ave	66.3	56	122	263
SR-57 SB Off Ramp	North of Temple Ave	67.7	70	151	325
SR-57 SB On Ramp	North of Temple Ave	55.7	11	23	51
SR-57 NB Off Ramp	South of Temple Ave	66.4	57	123	266
SR-57 NB On Ramp	South of Temple Ave	63.9	38	83	180
Amar Rd	West of Nogales St	68.0	73	158	341
Amar Rd	between Nogales St and Lemon Ave	66.9	61	133	287
Amar Rd	between Lemon Ave and Grand Ave	66.9	62	134	289
Temple Ave	between Grand Ave and Mt SAC Wy	66.0	54	117	252
Temple Ave	between Mt SAC Wy and Bonita Ave	65.7	51	111	240
Temple Ave	between Bonita Ave and Lot F	68.3	77	166	359
Temple Ave	between Lot F and Valley Blvd	68.8	82	178	385
Temple Ave	between Valley Blvd and SR-57 SB Ramps	67.7	70	152	327
Temple Ave	between SR-57 SB/NB Ramps	69.0	85	185	398
Temple Ave	East of SR-57 NB Off Ramp	68.5	79	171	369
I-10 WB Ramps	West of Grand Ave	66.4	57	123	265
I-10 EB Ramps	West of Grand Ave	65.0	46	100	216

Table 9 Continued -- Cumulative Traffic Noise Levels (2025)

Roadway	Segment	CNEL @ 100' *	Distance To CNEL Contour from Centerline of Roadway (feet)		
			70 CNEL	65 CNEL	60 CNEL
Cameron Ave	West of Grand Ave	62.9	33	72	157
Mountaineer Rd	East of Grand Ave	59.0	18	39	86
San Jose Hills Rd	West of Grand Ave	54.9	9	21	45
San Jose Hills Rd	East of Grand Ave	55.5	10	23	49
La Puente Rd	West of Grand Ave	62.1	29	64	138
La Puente Rd	East of Grand Ave	55.8	11	24	52
Valley Ave	West of Grand Ave	69.7	96	207	446
Valley Ave	East of Grand Ave	69.8	96	208	448
Baker Pkwy	West of Grand Ave	60.4	23	49	106
SR-60 EB Ramps	East of Grand Ave	68.0	73	158	341
SR-60 WB Off Ramp	West of Grand Ave	62.7	32	70	151
SR-60 WB On Ramp	East of Grand Ave	65.7	51	111	239

* From roadway centerline
RW – Contour falls within road right-of-way

Table 9 shows that the loudest roadways in the area continue to be portions of Valley Avenue, Temple Avenue and Grand Avenue. The roadways in the area have noise levels typical for a suburban area.

2.3 Physical Education Projects (PEP)

Potential noise impacts associated with the Physical Education Projects are addressed in this section. Construction noise, noise from football games, noise from special events, parking lot noise, and other CEQA topics are addressed.

2.3.1 Construction Noise

Construction noise represents a short-term impact on ambient noise levels. Noise generated by construction equipment, including trucks, graders, bulldozers, concrete mixers and portable generators can reach high levels.

The thresholds of significance indicate that any construction project greater than 1,500 feet from a residential area will result in a less than significant impact. Exhibit 9, presented previously, shows the area on-campus that is more than 1,500 feet from sensitive receptor areas. Any construction within this zone would have a less than significant impact. If a project is less than 1,500 feet from a sensitive receptor, but construction lasts less than 1 year, then it will have a less than significant impact when mitigated per Mitigation Measure 5a of the Mitigation Monitoring Plan. This measure limits construction to 7 a.m. to 7 p.m. on Monday through Saturday. The PEP area for the most part is more than 1,500 feet from any residential area. For example, the closest edge of the residential area to the south is approximately 1,630 feet from the center of the stadium area where most of the construction will occur. In fact, the only project in the PEP that is closer than 1,500 feet is the demolition of the Field House in Area D5. The demolition of the Field House would last less a year, and therefore, with Mitigation Measure 5A it would result in a less than significant impact. Therefore, all of the construction for the PEP would result in a less than significant impact.

Due to the sensitivity of the construction of the new stadium and other PEP facilities, a more quantitative analysis of construction noise is presented. Worst-case examples of construction noise at 50 feet were presented previously in Exhibit 8. Typical equipment that might be employed for this type of project includes graders, dozers, scrapers, front loaders, trucks, cranes, concrete mixers and concrete pumps. The peak (Lmax) noise level for most of the equipment that will be used during the construction is 70 to 95 dBA at a distance of 50 feet. Noise levels at further distances would be less than this, and intervening terrain such as ridgelines would reduce noise levels even further.

The closest residential area is immediately south of the proposed location of the stadium. Potential construction operations would typically be about 1,600 feet from the nearest residential lots to the south. There is a large hill between the nearest residences and the stadium construction area that will act as a noise barrier, and reduce noise levels by an estimated 10 dB. Based on a distance of 1,600 feet, the worst-case unmitigated peak (Lmax) construction noise levels could be 35 to 55 dBA at the residences. The average noise levels (Leq) are typically 15 dB lower than the peak (Lmax) noise levels. The 15 dB value is based on our general observations during construction noise measurements over the past 20 years. The use of a 15 dB difference is also consistent with most of the values presented in Exhibit 8 that show typical levels, which can be assumed to be average, and maximum noise levels. Average noise levels (Leq) at the nearest existing residential buildings to the south (1,600 feet) would be in the range of 20 to 40 dBA (Leq). Ambient noise levels were measured in the area (i.e., Site 7, see Section 1.4.1). The Lmax noise level measured at this site was 68.1 dBA with an average noise level (Leq) of 50.1 dBA. The Lmax and Leq noise levels during construction will be quieter than ambient conditions, and construction noise impacts will be less than significant. Additionally, the noise levels projected are well below the thresholds of significance and would further support the conclusion that construction noise from PEP will be less than significant.

2.3.2 Football Stadium Noise

As part of the PEP, the existing stadium will be demolished and a new stadium constructed. The current stadium has permanent bleacher seats that will accommodate 11,940 people. The proposed stadium will have permanent capacity for 10,912 attendees. Plus the proposed stadium has a seating plan that could accommodate 8,840 additional attendees in temporary bleachers for a total seating capacity of 19,752.

Noise measurements were made at three venues to establish baseline noise levels for college football games. The stadiums monitored were the Cerritos College stadium, the Shappell Stadium in Yorba Linda, and the Hilmer Stadium at Mt. SAC. (The documentation for the Mt. SAC measurements has already been provided. The measurements at Cerritos College were documented in a memo to Mika Klein, Mt. SAC, dated October 13, 2015, and the measurements at Shappell Stadium is a similar memo dated October 27, 2015.) The estimated attendance at the Cerritos College game was 1,800, 1,200 at Shappell Stadium, and 4,500 at the Mt. SAC football game. The noise measurements of the college football games indicated that attendance at the game was the primary factor of how much noise was generated. The public address system (PA) was a minor secondary contributor.

With the new stadium, the attendance at football games is anticipated to remain the same since the attendance has not been restricted by the stadium size. As a worst case the attendance may increase in proportion to the anticipated increases in student enrollment (headcount). For the academic year 2015 to 2016 the headcount at Mt. SAC is 35,986. This is projected to increase to 43,139 for the 2025 – 2026 academic year, or a 20% increase. This

only results in a potential increase of 0.7 dB. Estimated peak noise levels for the existing and future case are provided in the Table 10. The site locations represent the nearest residential areas in all directions and were previously presented in Exhibit 7.

Table 10 Peak Noise Levels for Hilmer Stadium Football Games (dBA)

	Measured Football Game (2015)	Projected Football Game (2025)
Attendance	4,500	5,400
Site 1	41.1	41.8
Site 2	41.1	41.8
Site 3	37.6	38.3
Site 4	49.4	50.1

The significance criteria for on-campus operations affecting off-campus sensitive receptors are a maximum noise level of 75 dBA (Lmax) before 10 p.m. and 70 dBA (Lmax) after 10 p.m. The projected noise levels are well below the criteria levels, and therefore, any impacts will be less than significant.

2.3.3 Parking Lot F

Enhancements to the Lot F parking and eventually a parking structure in Lot F are proposed. The proposed parking area is and will continue to be a source of noise. The nearest sensitive land use is the residential area to the north as near as 1,300 feet from the parking area.

Traffic associated with parking lots is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by car door slamming, engine start-up, alarm activation and car pass-bys can still be annoying to nearby residents. Estimates of the maximum noise levels associated with some parking lot activities are presented in Table 11. The noise levels presented are for a distance of 1,300 feet from the source, and are the maximum noise level generated. A range is given to reflect the variability of noise generated by various automobile types and driving styles.

Table 11 Noise Levels Generated By Lot F Parking

Event	Lmax (dBA)
Door Slam	32 to 42
Car Alarm Activation	37 to 42
Engine Start-up	32 to 42
Car pass-by	27 to 42

The nearest residences to the project are as close as 1,300 feet from the proposed parking spaces, and may experience a maximum noise level of approximately 42 dBA for car activity. Noise measurements (i.e., Site 1, see Table 1) were conducted in this area and a peak noise level of 73.6 dBA was recorded. Therefore, parking lot activity noise will be well below the ambient noise levels, and the noise impact caused by the parking lot activity will be less than significant. Additionally, the noise levels projected are well below the thresholds of significance and would further support the conclusion that parking noise from Lot F will be less than significant.

2.3.4 Special Events

Special events such as the Brooks/Mt. SAC Relays, the Mt. SAC Cross-Country Invitational, and Graduation Ceremonies will continue to be held in the stadium area, and for some events, attendance may grow in future years. The Olympic Field Trials in 2020 are also being pursued for Mt. SAC and would represent a new event for the College. These special events and others are addressed in the following sections.

Brooks/Mt. SAC Relay

The Brooks/Mt. SAC Relay Races are held once per year. Current attendance at the relay event is 3,500. The attendees are anticipated to increase by 500 to an estimated attendance of 4,000. The increase in attendance will cause a less than significant increase in noise. The increase over existing levels will only be 0.6 dB as shown in the Table 12. This increase in noise will not be perceptible. It should also be noted that the peak noise levels are well below the significance threshold of 75 dBA (Lmax) for the daytime period.

Table 12 Peak Noise Levels for the Brooks/Mt. SAC Relays (dBA)

Event	Measured Football Game	Existing Brooks/Mt. SAC Relays	Future Brooks/Mt. SAC Relays	Increase
Attendance	4,500	3,500	4,000	500
Site 1	41.1	40.0	40.5	0.6
Site 2	41.1	40.0	40.5	0.6
Site 3	37.6	36.5	37.0	0.6
Site 4	49.4	48.3	48.8	0.6

Mt. SAC Cross-Country Invitational

The Mt. SAC Cross-Country Invitational is one of the largest events currently held in and around the stadium area. Daily attendance is around 17,000 and this attendance level is not anticipated to change in future years. The noise levels for the Cross-Country event are estimated based on crowd noise generated by a football game. The projected noise levels are presented in Table 13. Since the new stadium will not result in an increase in attendance levels, the future events will be no louder than current events and the noise impact will be less than significant. It should also be noted that the peak noise levels are well below the significance threshold of 75 dBA (Lmax) for the daytime period.

Table 13 Peak Noise Levels for the Mt. SAC Cross-Country Invitational (dBA)

Event	Measured Football Game	Existing Mt. SAC XC Invite	Future Mt. SAC XC Invite	Increase
Attendance	4,500	17,000	17,000	0
Site 1	41.1	46.8	46.8	0.0
Site 2	41.1	46.8	46.8	0.0
Site 3	37.6	43.3	43.3	0.0
Site 4	49.4	55.1	55.1	0.0

Aquatics, Graduation and Soccer Events

Aquatic events will be held nearby in the Aquatic Center, but will have the same potential for noise generation that does football events. Attendance for aquatic events is anticipated to increase sharply from current levels of 3,500 to a future level of 4,000 attendees. The number of aquatic events per year is currently around 30, and is expected to increase slightly to 35 in future years. However, this level of attendance still remains below football games, which have been shown to generate very low levels of noise in the surrounding community and have a less than significant noise impact.

Graduation exercises currently attract approximately 12,000 attendees and this is projected to increase to 13,000 attendees. This level remains below the attendance for the Mt. SAC Cross-Country Invitational, which has been shown to have a less than significant noise impact.

Soccer events attract only 200 attendees currently. The attendance is estimated to increase to 210 per event. This crowd will not be audible in the residential community and the noise impact will be less than significant.

2020 Olympic Track and Field Trials

The 2020 Olympic Track and Field Trials are being sought for Mt SAC. Daily attendance for this multiple day event is projected to be 20,000. The Mt. SAC Cross-Country Invitational, which is an annual event, currently has daily attendance of 17,000. The noise levels for the Olympic trials are estimated based on crowd noise generated by a football game. The projected noise levels are presented in Table 14. The Olympic trials would result in noise levels 0.7 dB higher than would the existing Mt. SAC Cross-Country Invitational. This increase in noise would not be perceptible. It should also be noted that the peak noise levels are well below the significance threshold of 75 dBA (Lmax) for the daytime period, and 70 dBA (Lmax) for the nighttime period. Therefore, the impact of the 2020 Olympic trials will be less than significant. It should be emphasized that no restrictions on the time of the games need to be imposed; the event will be well under the significance thresholds without any restrictions.

Table 14 Peak Noise Levels for the 2020 Olympic Trials (dBA)

Event	Existing Mt. SAC XC Invite	2020 Olympic Trials	Increase
Attendance	17,000	20,000	3,000
Site 1	46.8	47.5	0.7
Site 2	46.8	47.5	0.7
Site 3	43.3	44.0	0.7
Site 4	55.1	55.8	0.7

2.3.5 Potential Traffic Noise Impacts for the Olympic Trials

The proposed 2020 Olympic Track and Field Trials would generate substantial traffic over several days. The traffic noise impacts associated with the Olympic Trials are assessed in this section. Existing and future traffic volumes with the Olympic Trials were provided by Iteris, April 2016. Traffic noise levels are measured using the CNEL noise scale. This noise scale utilizes traffic data for a full 24-hour period. However, traffic that occurs during the evening hours (7 p.m. to 10 p.m.) is penalized by 5 dB, and traffic that occurs during nighttime hours (10 p.m. to 7 a.m.) is penalized by 10 dB. It was estimated that 49% of Olympic Trial traffic would occur during the day, 46% during the evening hours, and 5% during nighttime. Two strategies are being considered to handle the parking requirements; Plan A and Plan B.

Table 15 shows the traffic noise CNEL level changes on the roadways affected by the Olympic Trials. The noise increase is a comparison of existing traffic versus existing plus Olympic Trial traffic.

Table 15 Traffic Noise CNEL Increases Due to the Olympic Trials (dB)

Roadway	Segment	Increase With Plan A	Increase With Plan B
Grand Ave	North of I-10 WB Ramps	0.0	0.0
Grand Ave	between I-10 WB/EB Ramps	0.5	0.3
Grand Ave	between I-10 EB Ramps and Cameron Ave	1.1	0.7
Grand Ave	between Cameron Ave and Mountaineer Rd	0.8	0.5
Grand Ave	between Mountaineer Rd and San Jose Hills Rd	0.7	0.4
Grand Ave	between San Jose Hills Rd and Temple Ave	0.7	0.4
Grand Ave	between Temple Ave and La Puente Rd	0.8	0.6
Grand Ave	between La Puente Rd and Valley Blvd	0.7	0.6

Roadway	Segment	Increase With Plan A	Increase With Plan B
Grand Ave	between Valley Blvd and Baker Pkwy	0.9	0.7
Grand Ave	between Baker Pkwy and SR-60 EB Ramps	0.9	0.7
Grand Ave	between SR-60 EB/WB Ramps	0.6	0.5
Grand Ave	South of SR-60 WB Ramps	0.2	0.1
Nogales St	North of Amar Rd	0.0	0.0
Nogales St	South of Amar Rd	0.0	0.0
Lemon Ave	South of Amar Rd	0.0	0.0
Mt SAC Wy	North of Temple Ave	1.2	0.0
Mt SAC Wy	South of Temple Ave	2.7	0.0
Bonita Ave	North of Temple Ave	3.1	2.7
Bonita Ave	South of Temple Ave	3.5	1.2
Lot F	North of Temple Ave	0.0	0.0
Valley Ave	North of Temple Ave	0.7	0.4
Valley Ave	South of Temple Ave	0.0	0.0
SR-57 SB Off Ramp	North of Temple Ave	0.0	0.0
SR-57 SB On Ramp	North of Temple Ave	0.0	0.0
SR-57 NB Off Ramp	South of Temple Ave	0.6	0.0
SR-57 NB On Ramp	South of Temple Ave	0.0	0.0
Amar Rd	West of Nogales St	0.0	0.0
Amar Rd	between Nogales St and Lemon Ave	0.0	0.0
Amar Rd	between Lemon Ave and Grand Ave	0.0	0.0
Temple Ave	between Grand Ave and Mt SAC Wy	1.4	0.8
Temple Ave	between Mt SAC Wy and Bonita Ave	1.1	0.9
Temple Ave	between Bonita Ave and Lot F	1.8	1.1
Temple Ave	between Lot F and Valley Blvd	2.1	1.3
Temple Ave	between Valley Blvd and SR-57 SB Ramps	1.5	0.8
Temple Ave	between SR-57 SB/NB Ramps	0.9	0.5
Temple Ave	East of SR-57 NB Off Ramp	1.6	0.9
I-10 WB Ramps	West of Grand Ave	1.0	0.6
I-10 EB Ramps	West of Grand Ave	1.4	0.9

Table 15 Continued - Traffic Noise CNEL Increases Due to the Olympic Trials (dB)

Roadway	Segment	Increase With Plan A	Increase With Plan B
Cameron Ave	West of Grand Ave	0.0	0.0
Mountaineer Rd	East of Grand Ave	2.1	2.0
San Jose Hills Rd	West of Grand Ave	0.0	0.0
San Jose Hills Rd	East of Grand Ave	0.0	0.0
La Puente Rd	West of Grand Ave	0.0	0.3
La Puente Rd	East of Grand Ave	0.0	0.0
Valley Ave	West of Grand Ave	0.0	0.0
Valley Ave	East of Grand Ave	0.1	0.0
Baker Pkwy	West of Grand Ave	0.0	0.0
SR-60 EB Ramps	East of Grand Ave	0.7	0.6
SR-60 WB Off Ramp	West of Grand Ave	2.3	2.0

Roadway	Segment	Increase With Plan A	Increase With Plan B
SR-60 WB On Ramp	East of Grand Ave	0.2	0.2

The threshold criteria presented previously in Section 2.1 indicates that to have significant noise increase, the noise must be projected to increase by 3 dB or more. Two locations show increases greater than 3 dB and they are Bonita Avenue north and south of Temple Avenue (highlighted in Table 15). Only Plan A results in increases greater than 3 dB. For there to be an impact, the noise must increase by more than 3 dB and impact a noise-sensitive land use. The area of concern is primarily parking lots and other on-campus uses. Therefore, this is not considered a significant impact. Since the increases will be less than 3 dB or not impact noise-sensitive areas, the traffic noise impacts due Olympic Trials will be less than significant.

2.3.6 Aircraft Noise

There are no airports in the vicinity of the College and aircraft overflight noise is not significant at the project site. Aircraft overflights were monitored but were not a significant cause of noise during the ambient noise measurements at the campus or in the surrounding community. The nearest airport is Brackett Field, which lies to the northeast approximately 4.5 miles. This airport serves general aviation (GA) aircraft. There are no aircraft noise impacts at the project site.

3.0 MITIGATION MEASURES

3.1 The Facilities Plan Master Update

3.1.1 Construction Noise

The analysis presented in Section 2.2.1 shows that construction activities could generate loud noise levels for several projects. The most effective method of controlling construction noise is through limiting construction hours. Mitigation Measure 5a (MM5a) of the Mitigation Monitoring Program was designed to effectively limit construction hours. The measure reads as follows:

> 5a. 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 offsite 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.

Many of the FMPU projects will have less than significant construction noise impacts when MM5a is strictly enforced. The projects that fall into this category include; demolition of Campus Inn, demolition of Administration Building, demolition of Buildings 12A & B, demolition of Buildings 18A & B, demolition of Buildings 38A & B, ACE demolitions, demolition of Gym, demolition of Student Center, demolition of Building 17, demolition of Buildings 19A-C, demolition of Building 20, all demolition for PEP, construction of Student Success Center, construction of Food Service, construction of all PEP. With the strict enforcement of MM5a all of these projects will have a less than significant impact.

Construction of the following projects may last more than 1 year, and therefore, require further analysis as detailed plans of these projects become available; construction of the Library/Campus Center, construction of Auditorium, construction of Future Instruction Zones 1, 2, 4, and 5. The following mitigation measure should be applied to these projects.

> **Noise Mitigation 1 – Develop Construction Noise Management Plans.** Prior to the initiation of each of the following projects; construction of the Library/Campus Center, construction of Auditorium, construction of Future Instruction Zones 1, 2, 4, and 5, a Construction Noise Management Plan should be developed for that project. The plan should identify all feasible measures to reasonably reduce noise levels during construction. The plan should consider locating staging areas away from noise sensitive areas, insuring all heavy duty construction equipment have muffler systems in good working order, use of temporary sound barriers, and limiting hours of construction consistent with MM5a. The plan should include projections of construction noise with and without the control measures.

The extent of the effectiveness of this measure cannot be determined at this time, and therefore, the construction noise impacts associated with these projects must still be considered to be significant.

3.1.2 Traffic Noise

The analysis presented in Section 2.2.1 shows that the project will not result in any significant long-term off-site traffic noise impacts. No mitigation is required.

3.1.3 Cumulative Noise Impacts

The analysis presented in Section 2.2.4 shows that the project will result in cumulative long-term off-site traffic noise impacts that are less than significant. No mitigation is required.

3.2 Physical Education Projects

3.2.1 Construction Noise

The analysis presented in Section 2.3.1 shows that the project will not result in any significant construction noise impacts. No mitigation is required.

3.2.2 Football and Special Event Noise

The assessments presented in Sections 2.3.2, 2.3.4, and 2.3.5 show that the project will not result in any significant long-term off-site noise impacts associated with sporting events in the PEP area. No mitigation is required.

3.2.3 Lot F Parking

The analysis presented in Section 2.3.3 shows that the project will not result in any significant long-term off-site noise impacts due to modifications to parking in Lot F including a parking structure. No mitigation is required.

4.0 UNAVOIDABLE SIGNIFICANT IMPACTS

The mitigation measures described above will mitigate all noise impacts to a level of less than significance except for construction noise associated with some of the FMPU projects. The following projects still have the potential to create a significant construction noise impact; construction of the Library/Campus Center, construction of Auditorium, construction of Future Instruction Zones 1, 2, 4, and 5.

APPENDIX

Mt. SAC FMPU Traffic Analysis						
			A	**B**	**C**	
Link #	**Roadway**	**Extent**	**Existing ADT**	**2020 Existing + Project**	**2025 Existing + Project**	**Speed**
1	Grand Ave	North of I-10 WB Ramps	30,579	30,671	30,755	45
2	Grand Ave	between I-10 WB/EB Ramps	29,655	30,138	30,579	45
3	Grand Ave	between I-10 EB Ramps and Cameron Ave	26,219	27,093	27,891	45
4	Grand Ave	between Cameron Ave and Mountaineer Rd	35,395	36,473	37,451	45
5	Grand Ave	between Mountaineer Rd and San Jose Hills Rd	36,485	37,141	37,737	40
6	Grand Ave	between San Jose Hills Rd and Temple Ave	36,994	37,684	38,314	40
7	Grand Ave	between Temple Ave and La Puente Rd	38,481	39,585	40,593	50
8	Grand Ave	between La Puente Rd and Valley Blvd	42,657	43,347	43,977	50
9	Grand Ave	between Valley Blvd and Baker Pkwy	37,243	37,749	38,211	50
10	Grand Ave	between Baker Pkwy and SR-60 EB Ramps	37,042	37,364	37,658	50
11	Grand Ave	between SR-60 EB/WB Ramps	32,172	32,402	32,612	50
12	Grand Ave	South of SR-60 WB Ramps	35,803	35,941	36,067	45
13	Nogales St	North of Amar Rd	581	581	581	35
14	Nogales St	South of Amar Rd	16,385	16,477	16,561	50
15	Lemon Ave	South of Amar Rd	8,507	8,669	8,815	35
16	Mt SAC Wy	North of Temple Ave	9,253	9,863	10,419	25
17	Mt SAC Wy	South of Temple Ave	3,353	3,963	4,519	25
18	Bonita Ave	North of Temple Ave	7,464	8,212	8,894	35
19	Bonita Ave	South of Temple Ave	3,471	4,219	4,901	35
20	Lot F	North of Temple Ave	166	166	166	25
21	Valley Ave	North of Temple Ave	22,724	23,092	23,428	45
22	Valley Ave	South of Temple Ave	22,747	22,839	22,923	45
23	SR-57 SB Off Ramp	North of Temple Ave	18,802	19,032	19,242	55
24	SR-57 SB On Ramp	North of Temple Ave	1,374	1,374	1,374	55
25	SR-57 NB Off Ramp	South of Temple Ave	12,239	12,699	13,119	55
26	SR-57 NB On Ramp	South of Temple Ave	7,357	7,587	7,797	55
27	Amar Rd	West of Nogales St	37,296	37,434	37,560	45
28	Amar Rd	between Nogales St and Lemon Ave	28,103	28,333	28,543	45
29	Amar Rd	between Lemon Ave and Grand Ave	27,848	28,332	28,772	45
30	Temple Ave	between Grand Ave and Mt SAC Wy	29,832	30,890	31,856	40
31	Temple Ave	between Mt SAC Wy and Bonita Ave	27,232	28,360	29,388	40
32	Temple Ave	between Bonita Ave and Lot F	27,492	29,148	30,660	50
33	Temple Ave	between Lot F and Valley Blvd	28,085	29,743	31,253	50
34	Temple Ave	between Valley Blvd and SR-57 SB Ramps	29,897	31,003	32,009	45
35	Temple Ave	between SR-57 SB/NB Ramps	43,374	44,249	45,046	45
36	Temple Ave	East of SR-57 NB Off Ramp	39,749	39,933	40,101	45
37	I-10 WB Ramps	West of Grand Ave	14,229	14,620	14,977	55
38	I-10 EB Ramps	West of Grand Ave	9,952	10,343	10,700	55
39	Cameron Ave	West of Grand Ave	12,096	12,200	12,294	45
40	Mountaineer Rd	East of Grand Ave	6,173	7,797	9,275	35
41	San Jose Hills Rd	West of Grand Ave	5,166	5,190	5,210	30

Mt. SAC FMPU Traffic Analysis						
			A	**B**	**C**	
Link #	**Roadway**	**Extent**	**Existing ADT**	**2020 Existing + Project**	**2025 Existing + Project**	**Speed**
42	San Jose Hills Rd	East of Grand Ave	5,391	6,449	7,415	30
43	La Puente Rd	West of Grand Ave	13,222	13,498	13,750	40
44	La Puente Rd	East of Grand Ave	4,206	4,344	4,470	35
45	Valley Ave	West of Grand Ave	43,315	43,499	43,667	50
46	Valley Ave	East of Grand Ave	41,099	41,099	41,099	50
47	Baker Pkwy	West of Grand Ave	4,135	4,135	4,135	45
48	SR-60 EB Ramps	East of Grand Ave	18,684	18,776	18,860	55
49	SR-60 WB Off Ramp	West of Grand Ave	4,087	4,179	4,263	55
50	SR-60 WB On Ramp	East of Grand Ave	11,836	11,836	11,836	55

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

GEOTECHNICAL STUDY REPORT (FINAL)
Proposed Athletic Complex East
Mount San Antonio College
Walnut, California

Converse Project No. 14-31-124-01

January 23, 2015

Prepared For:

Mount San Antonio College
1100 North Grand Avenue, Building No. 23
Walnut, California 91789

Prepared By:

Converse Consultants
222 East Huntington Drive, Suite 211
Monrovia, California 91016

Converse Consultants
Geotechnical Engineering, Environmental & Groundwater Science, Inspection & Testing Services

January 23, 2015

Mr. Leonard Ortiz
Construction Specialist
Mount San Antonio College
Facilities Planning & Management
1100 North Grand Avenue, Building 23
Walnut, California 91789

Subject: **GEOTECHNICAL STUDY REPORT (FINAL)**
Proposed Athletic Complex East
Mount San Antonio College
Walnut, California
Converse Project No. 14-31-124-01

Dear Mr. Ortiz:

Converse Consultants (Converse) has prepared this geotechnical study report to present the findings, conclusions and recommendations of our geologic and geotechnical study for the Proposed Athletics Complex East Project at Mount San Antonio College, Walnut, California.

In accordance with California Education Code, Sections 17212 and 81033, this report was prepared consistent with the current edition of California Building Code, Title 24, Chapter 16A and Chapter 18A; California Administrative Code, Part 1, Title 24, CCR, Section 4-317 (e) and CGS Note 48-Checklist for the Review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings, for design and for the Division of the State Architect (DSA) submittal purposes.

Converse evaluated the nature and engineering properties of the subsurface soils and bedrock to provide recommendations for site earthwork, foundation design and construction for the proposed development. Our services were performed in accordance with our proposal dated February 25, 2014.

We appreciate the opportunity to be of continued service to Mount San Antonio College. If you should have any questions, please do not hesitate to contact us at (626) 930-1200.

CONVERSE CONSULTANTS

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Vice President/Principal Engineer

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PROFESSIONAL CERTIFICATION

This report for the Proposed Athletics Complex East Project located within the campus of Mount San Antonio College, in the City of Walnut, California, has been prepared by the staff of Converse under the professional supervision of the individuals whose seals and signatures appear hereon.

The findings, recommendations, specifications or professional opinions contained in this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice in this area of Southern California. There is no warranty, either expressed or implied.

In the event that changes to the property occur, or additional, relevant information about the property is brought to our attention, the conclusions contained in this report may not be valid unless these changes and additional relevant information are reviewed and the recommendations of this report are modified or verified in writing.

Mohammad Malim, EIT
Senior Staff Engineer

Mark B. Schluter, PG, CEG
Senior Engineering Geologist

Siva K. Sivathasan, PhD, PE, GE, DGE, QSD, F. ASCE
Vice President/Principal Engineer

EXECUTIVE SUMMARY

The following is a summary of our geotechnical study, conclusions and recommendations, as presented in the body of this report, please refer to the appropriate sections of the report for complete conclusions and recommendations. In the event of a conflict between this summary and the report, or an omission in the summary, the report shall prevail.

- The proposed developments for the Athletic Complex East consist of construction of several multi-level buildings that will have the following footprints as summarized in the Table No. 1, *Planned Buildings and Building Footprints*. In addition, visitor bleachers to accommodate 4,000 seats, two pedestrian bridges, IAAF Compliant Track and Field, scoreboard, flatwork, access roads and retaining walls will be constructed as part of the project.

- Twenty-nine (29) exploratory borings (BH-1 through BH-29) were drilled within the project sites from June 16 to June 24, 2014. Sixteen (16) borings were also drilled within the project site from April 6 to April 15, 2013 as part of the Geotechnical Study Report for the Fill Placement for the Driving Range and Practice Field and Hilltop Removal for Future Physical Education Complex (2013). The borings were advanced using a limited access track drill rig and a truck-mounted drill rig with an 8-inch diameter hollow stem auger to depths ranging from 10 to 91.5 feet below the existing ground surface (bgs).

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is partially located within a mapped Seismic Hazard Zone for liquefaction. The results of liquefaction analyses indicate the project site is not susceptible to liquefaction. The estimated potential seismic induced settlement range from approximately 0.67 to 0.87 inches with potential differential settlement ranging from approximately 0.34 to 0.44 inches.

- Local zones of perched groundwater were encountered during subsurface exploration at a depths ranging from approximately 17 to 38 feet bgs in borings BH-1, BH-14, BH-20, BH-21, BH-23, BH-24, BH-25, and BH-26. Localized perched groundwater seepage should be anticipated during excavations.

- Shallow footings or deep foundations are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans, specifications, and are followed during site construction.

- Variable thickness undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for any slab or foundation support.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- The on-site soil has a “Low to High” expansion potential and requires mitigation. On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general the pH value, chloride content, and saturated resistivity of the site soils are in the non-corrosive range. However, the saturated resistivity of samples taken, indicate a “Corrosive” potential to ferrous metals.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site soil materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipment for gravelly materials.

Results of our investigation indicate that the site is suitable from a geotechnical standpoint for the proposed development, provided that the recommendations contained in this report are incorporated into the design and construction of the project.

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1.0 INTRODUCTION

This report contains the findings and recommendations of our geotechnical study performed at the site of the proposed Athletics Complex East Project located within the campus of Mount San Antonio College, in the City of Walnut, California, as shown on Drawing No. 1, *Site Location Map*.

The purpose of the investigation was to generate a report for design and the Department of State Architect (DSA) submittal purposes, consistent with current edition of California Education Code, Sections 17212 and 81033, California Building Code, Title 24 CCR, Sections 4-317, 1803 and 1804 and CGS Note 48-Checklist for the review of Engineering Geology and Seismology Reports for California Public Schools, Hospitals and Essential Services Buildings.

We have used site plans provided to us by your office as a reference for this project. The current site plan is included in this report as Drawing No. 2, *Site Plan and Boring Location Map*.

This report is written for the project described herein and is intended for use solely by Mount San Antonio College and its design team. It should not be used as a bidding document but may be made available to the potential contractors for information on factual data only. For bidding purposes, the contractors should be responsible for making their own interpretation of the data contained in this report.

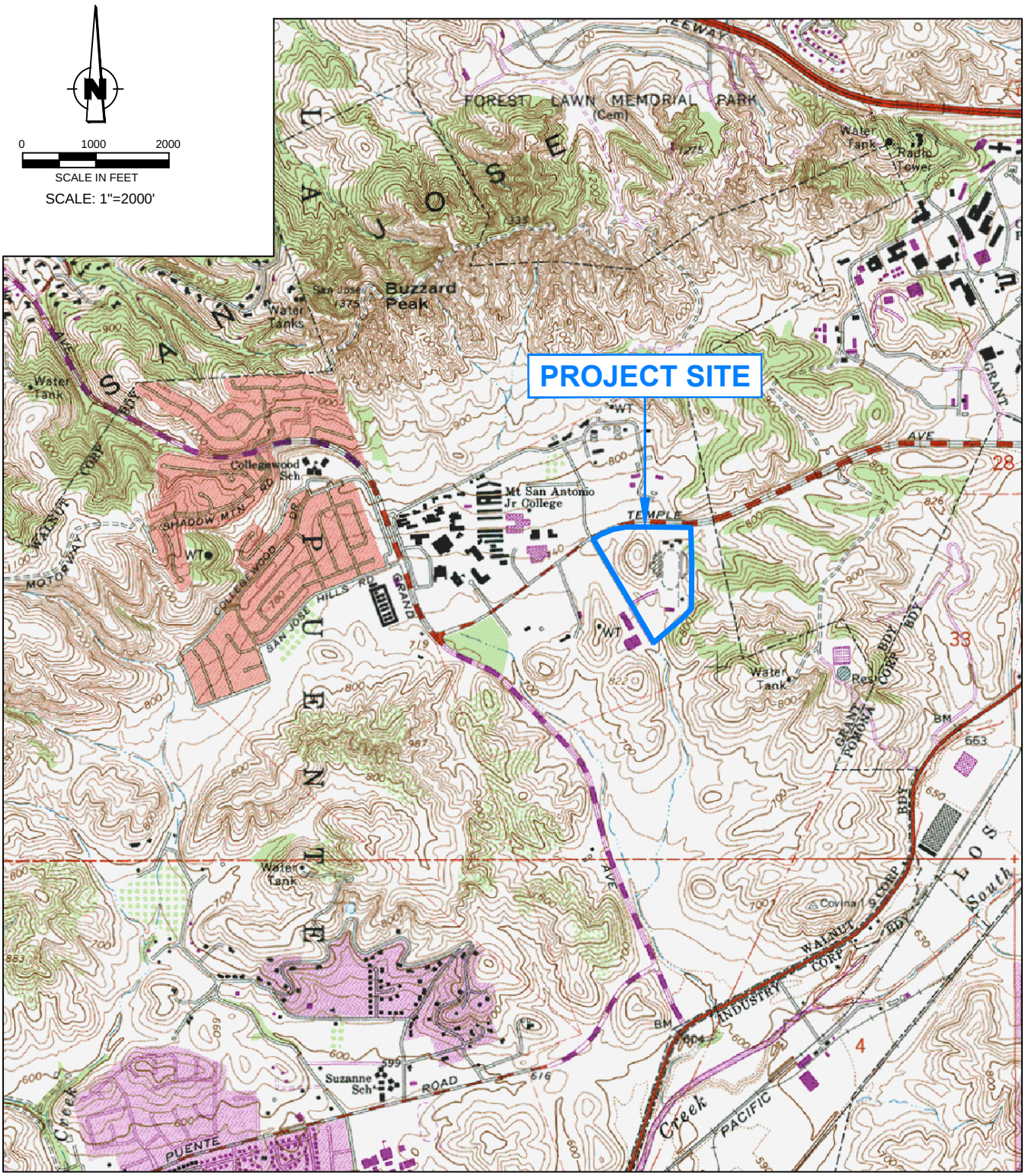
2.0 SITE AND PROJECT DESCRIPTION

2.1 Site Description

The proposed Athletics Complex East is located at the sites of the current Hilmer Lodge Stadium, the adjacent hilltop to the west, and associated athletics practice fields and parking lots in the south-easterly portion of campus in Mt. San Antonio College. The site dimensions are approximately 1300 feet east-west by 1500 feet north-south. The site is bordered by Temple Avenue to the north, a hillside used for cattle grazing to the south and east, the Bonita Drive to the west.

The subject site for the Athletic Complex East has surface elevations ranging from approximately 717 to 784 feet relative to mean-sea-level (MSL), sloping gradually toward the southwest. The site coordinates are: North latitude: 34.0459 degrees, West longitude: 117.8371 degrees.

The site coordinates were centered on the subject sites and used to calculate the earthquake ground motions. Review of the Engineering Geology and Seismology for Public Schools and Hospitals in California, dated August 9, 2005 (page 35) indicates



REFERENCE: USGS MAP
SAN DIMAS QUADRANGLE 1966 PHOTO REVISED 1981

SITE LOCATION MAP

MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.
14-31-124-01

Drawing No.
1

Converse Consultants

I:\ACADDRAWINGS\14\31\124\14-31-124-01-SITE LOCATION.DWG

that accuracy to within a few hundred meters of these coordinates is sufficient for the computation of the earthquake ground motion of the project site.

2.2 Project Description

The proposed developments for the Athletic Complex East consist of construction of several multi-level buildings that will have the following footprints as summarized in Table No. 1, *Planned Buildings and Building Footprints*. In addition, visitor bleachers to accommodate 4,000 seats, two pedestrian bridges, IAAF Compliant Track and Field, scoreboard, flatwork, access roads and retaining walls will be constructed as part of the project. The existing stadium structures and athletic facilities will be demolished and removed from the site. Portions of the structures are to be below the existing ground surface.

Table No. 1, Planned Buildings and Building Footprints

Planned Building/Development	Approximate Building Footprint
Field House (including Home Bleachers)	70,000 square feet (7,000 seats)
Gateway Building (buildings for public entry, ticketing, concession and restrooms)	6,500 square feet
New Restroom Building	1,511 square feet
Broadcast Building	251 square feet

The proposed new structural loads are anticipated to be low to moderate and assumed as 200 kips and 10 kips per linear foot for interior columns/posts and interior concrete bearing wall reactions, respectively.

3.0 SCOPE OF WORK

The scope of our work included a site reconnaissance, subsurface exploration with soil sampling, landscape soil sampling and testing, percolation testing, laboratory testing, engineering analysis, and preparation of this report.

3.1 Site Reconnaissance

During the site reconnaissance on March 18, 2014, the surface conditions were noted and the locations of the borings were determined so that drill rig access to all the locations was available. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used. Underground Service Alert (USA) of Southern California was notified of our proposed drilling locations at least 48 hours prior to initiation of the subsurface field work.

3.2 Subsurface Exploration and Percolation Testing

Twenty-nine (29) exploratory borings (BH-1 through BH-29) were drilled within the project sites from June 16 to June 24, 2014. Sixteen (16) borings were also drilled within the project site from April 6 to April 15, 2013 as part of the Geotechnical Study Report for the Fill Placement for the Driving Range and Practice Field and Hilltop Removal for Future Physical Education Complex (2013). The borings were advanced using a limited access track drill rig and a truck-mounted drill rig with an 8-inch diameter hollow stem auger to depths ranging from 10 to 91.5 feet below the existing ground surface (bgs). Each boring was visually logged by a Converse engineer and sampled at regular intervals and at changes in subsurface soils. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

California Modified Sampler (Ring samples), Standard Penetration Test samples, and bulk soil samples were obtained for laboratory testing. Standard Penetration Tests (SPTs) were performed in selected borings at selected intervals using a standard (1.4 inches inside diameter and 2.0 inches outside diameter) split-barrel sampler. The bore holes were backfilled and compacted with soil cuttings by reverse spinning of the auger following the completion of drilling and patched with asphalt where necessary to match existing conditions.

Borings BH-22 and BH-29 were utilized for percolation tests prior to backfill. Percolation test procedures and test results are further discussed in report section 7.0, *Percolation Testing* and Appendix D.

The approximate locations of the exploratory borings are shown in Drawing No. 2, *Site Plan and Boring Location Map*. Detailed descriptions of the field exploration and sampling program are presented in Appendix A, *Field Exploration*.

3.3 Laboratory Testing

Representative samples of the site soils were tested in the laboratory to aid in the classification and to evaluate relevant engineering properties. The tests performed included:

- In Situ Moisture Contents and Dry Densities (ASTM Standard D2216)
- Grain Size Distribution (ASTM Standard C136)
- Fines Content/Passing No. 200 Sieve (ASTM D1140)
- Atterberg Limits (ASTM D4318)
- Maximum Dry Density and Optimum-Moisture Content Relationship (ASTM Standard D1557)
- Direct Shear (ASTM Standard D3080)
- Consolidation (ASTM Standard D2435)
- Expansion Index (ASTM Standard D4829)

- R-value (ASTM Standard D2844)
- Soil Corrosivity Tests (Caltrans 643, 422, 417, and 532)

For a description of the laboratory test methods and test results, see Appendix B, *Laboratory Testing Program*. For *in-situ* moisture and density data, see the Logs of Borings in Appendix A, *Field Exploration*.

3.4 Engineering Analyses and Report

Data obtained from the exploratory fieldwork and laboratory-testing program were analyzed and evaluated. This report was prepared to provide the findings, conclusions and recommendations developed during our investigation and evaluation.

4.0 GEOLOGIC CONDITIONS

4.1 Regional Geology

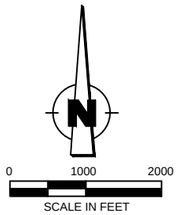
The proposed project site is located in the San Jose Hills along the western edge of the Pomona Valley within the Transverse Ranges geomorphic province of California near the northern terminus of the Peninsular Ranges Province.

The Pomona Valley is situated at the junction of the two major convergent fault systems: 1) Northwest-trending high angle strike slip faults of the San Andreas system projecting from the northern terminus of the Peninsular Ranges Province, and 2) East-trending low angle reverse or reverse-oblique faults bounding the south margin of the Transverse Ranges. Faults in group one include the Palos Verdes, Newport-Inglewood, Whittier-Elsinore and San Jacinto fault zones. Group two faults include the Malibu-Santa Monica, Hollywood, Raymond, Sierra Madre and Cucamonga fault zones.

The Geologic Map of the San Dimas and Ontario Quadrangles prepared by Thomas W. Dibblee, Jr. (DF-91, dated July, 2002) was reviewed. The map shows the location of Mt. San Antonio College campus within an alluvial basin surrounded by hillsides consisting of sedimentary bedrock of the Monterey (Puente) Formation. No faults are shown running through or projecting through the project site. A hillside is depicted within the northeastern portion of the subject site and has been mapped as (Tmy)-Yorba Shale Member consisting of thinly bedded, diatomaceous, semi-siliceous clay shale, siltstone and minor sandstone. A portion of the map by Thomas W. Dibblee has been reproduced and is shown as Drawing No. 3, *Regional Geologic Map*.

4.2 Subsurface Profile of Subject Site

The earth materials encountered during our investigation consist of existing fill soils placed during previous site grading operations, natural alluvial soils and sedimentary bedrock of the Puente Formation. These earth materials consist primarily of clay, clayey



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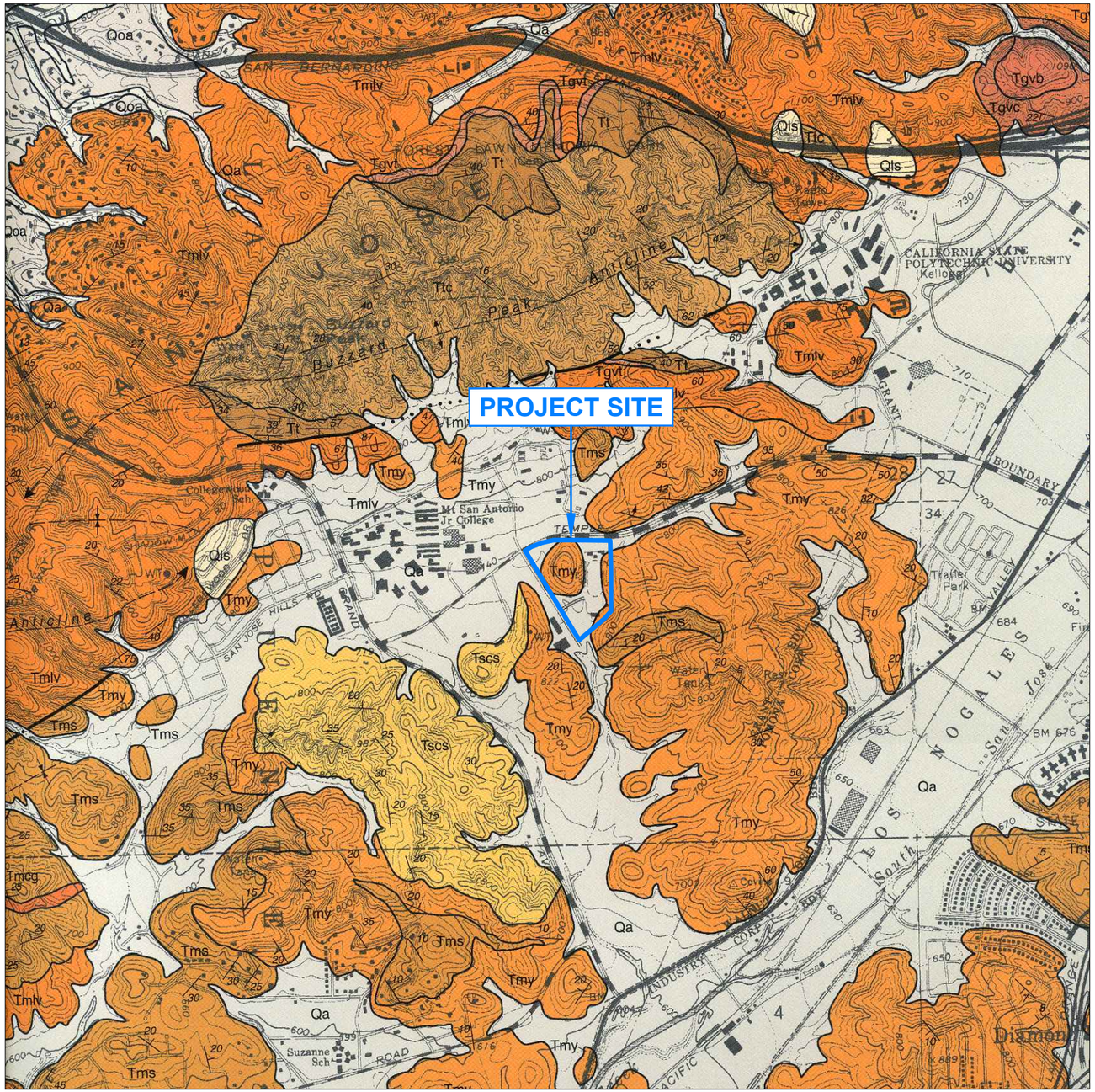


SAN DIMAS AND ONTARIO MAP (DF-91)

LEGEND

SURFICIAL SEDIMENTS

af *artificial fill*
Qg *alluvial gravel and sand of stream channels, some artificially channelized*
Qa *alluvial gravel and sand of valley areas*

LANDSLIDE AND TALUS RUBBLE

— UNCONFORMITY —

OLDER, DISSECTED SURFICIAL SEDIMENTS

Qoa *low remnants of elevated alluvial gravel*
Qog *high remnants of elevated older alluvial gravel, including coarse boulder gravel*

— UNCONFORMITY —

SEDIMENTARY AND VOLCANIC ROCKS

SYCAMORE CANYON FORMATION

Sycamore Canyon Formation (uppermost member of Puente Formation of Durham & Yerkes 1964, Tan 1998) shallow marine clastic latest Miocene age.
Tscg *conglomerate, light gray, of cobbles and pebbles of plutonic rocks in sandstone matrix.*
Tscs *sandstone, light gray, similar to* ***Tms****. Includes some conglomerate similar to* ***Tscg****, and siltstone.*

MONTEREY (PUENTE) FORMATION

Monterey Formation (Puente form of Eldridge & Arnold, 1907, Durham & Yerkes 1964: Tan 1998, marine biogenic & clastic; late Miocene age, (Mohnian Stage))
Tm *unassigned shale; similar to* ***Tmlv*** *&* ***Tmly***
Tmy *Yorba shale Member – light gray, thin bedded, diatomaceous, semi-siliceous to clay shale, siltstone, minor sandstone; fish scales.*
Tmcg *conglomerate facies of cobbles & pebbles of plutonic rocks in sandstone matrix lenses in unit* ***Tms****, deposited as submarine deltas.*
Tms *Soquel sandstone facies, partly intertongued into* ***Tmy*** *&* ***Tmlv****, light gray to tan, moderately lithified, bedded, arkosic, contains concretions, some interbedded silty shale, derived from plutonic terrane & deposited as submarine fans, unfossiliferous*
Tmlv *La Vida Shale Member, white, weathered; thin bedded, platy, siliceous shale, clay shale, and siltstone, some strata of tan dolomite and sandstone; fish scales, foraminifera.*

TOPANGA FORMATION

(of Shelton, 1955; Tan, 1998, marine clastic middle Miocene age, unfossiliferous, locally intertongued into Glendora volcanics). age late? Miocene
Tt *sandstone, light gray to tan, moderately lithified, bedded, arkosic, locally pebbly, includes interbedded siltstone or clay shale.*
Ttc *conglomerate (Buzzard Peak Conglomerate member of Woodford et al. 1946, light gray to tan, semi-lithified, vaguely bedded, composed of cobbles and pebbles of mostly plutonic rocks in sandstone matrix.*

GLENDORA VOLCANIC ROCKS

Glendora Volcanics (of Shelton, 1955, Tan, 1999; extrusive volcanic rocks; middle Miocene age locally interfingued into Topanga Formation). (radiometric age ±16 MA (Weigand, P.W., oral communication 2001)
Tgv *undifferentiated volcanic rock, mostly brown andesitic flows and breccias*
Tgvc *volcanic conglomerate, gray to brown, of volcanic detritus.*
Tgvb *basalt flows, gray to black, massive to vesicular.*
Tgvp *basaltic pelagonitic tuff & pillow lavas.*
Tgvt *rhyolitic tuff breccia, tan to white*
Tgva *andesite flows and flow breccias, brown, porphyritic, massive.*
Tgvr *rhyolitic-dacitic flows, tan to light brown, aphanitic, massive to flow-banded, hard, fractured*
Tgve *rhyolite-dacite breccia exposed only at Elephant Hill.*

— UNCONFORMITY —

CRYSTALLINE BASEMENT ROCKS

GRANITIC ROCKS

MOUNTAIN MEADOWS DACITE

Mountain Meadows dacite (of Shelton 1955, Tan, 1999 intrusive into qd; early Miocene? Age)
Mda *dacite light gray, hard, massive, fine grained, contains small feldspar phenocrysts and biotite flakes.*

QUARTZ DIORITIC PLUTONIC ROCKS

quartz diorite; plutonic igneous rock, late Mesozoic- Cretaceous age
qd *biotite quartz diorite, light gray, massive.*
qdb *Bonsall Tonalite of Larsen 1948 similar to* ***qd****, but slightly gneissoid & contains dark gray fine grained xenolithis elongated parallel to gneissoid structure up to 9 in. long.*

Holocene · Pleistocene · QUATERNARY
Miocene · TERTIARY
CENOZOIC
CEOUS
ZOIC

REFERENCE: THOMAS W. DIBBLE, Jr. (DF-91)
SAN DIMAS QUADRANGLE
AND ONTARIO QUADRANGLE (2002)

REGIONAL GEOLOGIC MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. 14-31-124-01

Drawing No. 3

sands, sands, and clays. Each of these earth materials is described in more detail below.

Fill Soils

An undocumented fill layer of variable thickness was encountered in a majority of the soil borings drilled intermittently from June 16 to 24, 2014, within the subject site. The depth of the fill ranges from approximately less than one (1) foot to sixteen (16) feet. The observed fill soils consist primarily of clay, sandy clay and clayey sands. Most of the fill soils appear to have been locally derived from cut slopes and from the general site areas during original site grading and development. Documentation concerning the placement and degree of compaction of the fill soils was not available.

Alluvium

Alluvial deposits were encountered underlying the fill material at the project site. The native soil encountered in the borings consists primarily of clayey sands, clay, silty sands and sandy clays with occasional gravels and cobbles. The soils also include occasional fragments of weathered bedrock. We expect that cobbles are larger in size than the largest observed, approximately four (4) inches in the maximum dimension, in the hollow stem auger soil cuttings. Based on our previous experience and knowledge of the area, and materials encountered during subsurface exploration, cobbles greater than eight (8) inches and occasional boulders may also be buried below the site (Converse 2013). The depth of the alluvial soils varies from approximately zero (0) feet to fifty three (53) feet across the project site.

It should be noted that the alluvial soil on site exhibits a low-to-high expansive potential. Natural residual soils that develop above the Puente Formation tend to be expansive clays and are derived from the mechanical breakdown of the bedrock, particularly the shale components, which are composed of lithified clay. These materials should be mitigated per the earthwork recommendations provided herein.

Siltstone, Sandstone, Claystone and Conglomerate Bedrock (Tpss)

The western and eastern portions of the proposed site are underlain by sedimentary bedrock of the Puente Formation, which consists of laminated to thinly-bedded siltstone, sandstone, and shale. The bedded bedrock exhibited moderately steep to near-vertical bedding in the samples (45 to 90 degrees), but due to the limitations of the sampling performed, the dip direction is uncertain. Geologic mapping of bedrock cuts at the site indicate bedding that generally strikes northeastward and dips northwestward 42 to 65 degrees. The bedrock tends to be slightly fractured to fractured, with caliche and gypsum crystals developing along fracture surfaces.

Sandstone and Pebble Conglomerate Bedrock (Tpcg)

The northwest portion of the hilltop west of the stadium is underlain by harder, cemented sandstone pebble conglomerate bedrock. The harder conglomerate bedrock consists of gravel and cobble-sized rocks in a cemented sandy matrix. The conglomerate is massive and may contain boulder-sized hard rock material. The conglomerate bedrock materials were observed to be very hard in previous explorations by (Converse 2013) and will be more difficult to excavate during construction.

For additional information on the subsurface conditions, see the Logs of Boring Data in Appendix A, *Field Exploration*.

Subsurface geologic conditions beneath the subject site are depicted on *Geologic Cross-Sections A-A' through D-D'* as shown on Drawing No. 4. The geologic cross-sections show the interpreted extent and limits of the different types of subsurface materials encountered during our study. The cross-sections show the existing surface improvements in relation to the proposed developments.

4.3 Groundwater

The site is situated within the Puente Basin portion of the larger San Gabriel Valley Groundwater Basin. Local zones of perched groundwater were encountered during subsurface exploration at a depths ranging from approximately 17 to 38 feet bgs in borings BH-1, BH-14, BH-20, BH-21, BH-23, BH-24, BH-25, and BH-26. Higher groundwater levels at the site are likely attributed to the buried drainage channel below the track and field and practice field still which transmits water along its axis southward. It appears the groundwater encountered during the exploration is localized within the buried channels of historical drainages and is not likely to be encountered in areas away from the buried drainages. Canyon bottom subdrain devices should be installed along the axes of the buried channels during grading operations, as described herein, to transmit the subsurface water to an approved outlet location. One buried channel runs beneath the track and field stadium and contains buried drain pipes for the detention basin located northeast of the stadium.

Wet weather periods may produce groundwater seepage in the bedrock fractures and along less permeable layers from infiltration of rainfall, surface flow and runoff and should be anticipated during grading and construction. In general, groundwater levels fluctuate with the seasons. Groundwater conditions below any given site vary depending on numerous factors including seasonal rainfall, local irrigation, and groundwater pumping, among other factors. The regional groundwater table is not expected to be encountered during the planned construction. However, the possibility of perched groundwater encountered during future grading and excavation cannot be completely precluded.

4.4 Subsurface Variations

Based on results of the subsurface exploration and our experience with the subject area, some variations in the continuity and nature of subsurface conditions within the project site are anticipated. Because of the uncertainties involved in the nature and depositional characteristics of the earth material at the site, care should be exercised in interpolating or extrapolating subsurface conditions between or beyond the boring locations. If, during construction, subsurface conditions different from those presented in this report are encountered, this office should be notified immediately so that recommendations can be modified, if necessary.

5.0 FAULTING AND SEISMIC HAZARDS

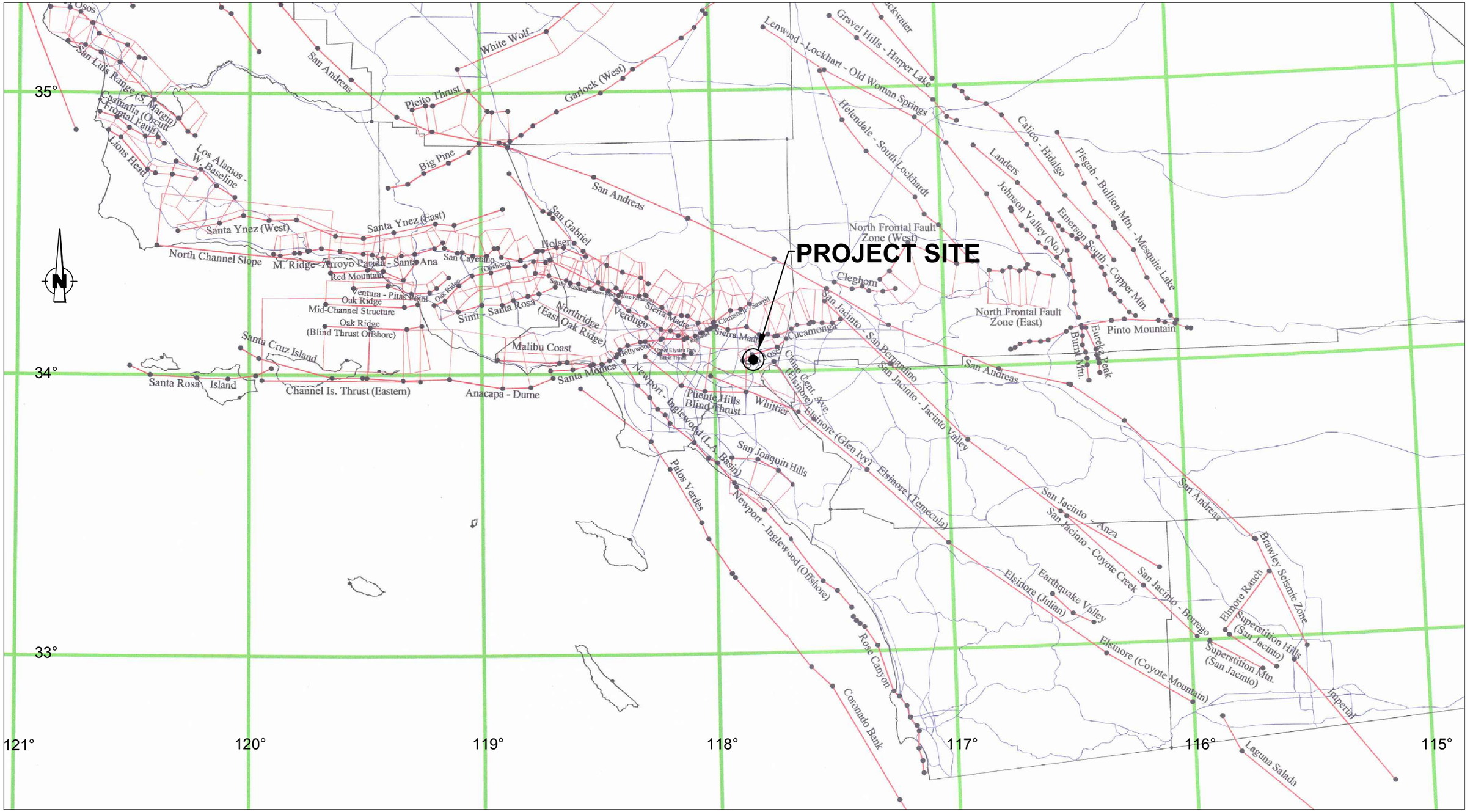
Geologic hazards are defined as geologically related conditions that may present a potential danger to life and property. Typical geologic hazards in Southern California include earthquake ground shaking, fault surface rupture, liquefaction and seismically induced settlement, lateral spreading, landslides, earthquake induced flooding, tsunamis and seiches, and volcanic eruption hazard.

Results of a site-specific evaluation for each type of possible seismic hazards are discussed in the following sections.

5.1 Seismic Characteristics of Nearby Faults

No surface faults are known to project through or towards the site. The closest known faults to the project site with mappable surface expressions are the San Jose Fault (0.8 kilometers to the north) and Chino-Central Avenue (Elsinore) Fault (6.9 kilometers to the east/ southeast). The concealed Puente Hills Blind Thrust Fault (Coyote Hills segment) along with other regional faults was included as active fault sources for the probabilistic seismic hazard analysis for the site. The approximate locations of these local active faults with respect to the project site are tabulated on Table No. 2, *Summary of Regional Faults,* and are shown on Drawing No. 3, *Regional Geological Map* and Drawing No. 5, *Southern California Regional Fault Map*.

The Pomona Valley Basin is bounded to the north by the San Jose Fault and to the southwest by the Chino-Central Avenue faults. These two fault systems do not exhibit evidence of surface movement within Holocene time and are not considered active based on current geologic information. The San Jose and Chino-Central Avenue faults are considered Late Quaternary, having exhibited displacement and movement within the past 738,000 years.



REFERENCE: PORTION OF CGS 2002 CALIFORNIA FAULT MODEL MODIFIED FOR USE WITH FRISKSP AND EQFAULT BY THOMAS F. BLAKE, AUGUST 2004

FAULT SOURCES

BLIND THRUST FAULT, POLYGONS INDICATE RUPTURE PLANES AND DIP DIRECTION

SOUTHERN CALIFORNIA REGIONAL FAULT MAP

Converse Consultants

MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. 14-31-124-01

Drawing No. 5

San Jose Fault

The San Jose Fault lies along the southern flank of the northeast trending San Jose Hills. The fault trends northeast and dips to the north. The mapped trace of the San Jose Fault is located approximately 2,500 to 4,200 feet (0.76 to 1.28 kilometers) north of the project.

Geotechnical investigations performed on the campus of California State Polytechnic University at Pomona (Geocon, 2001) indicated that the San Jose is an active reverse separation fault. Because of the lack of success in previous fault trench excavations, Geocon based its conclusions on a series of closely spaced boreholes along several traverses across a subtle topographic bench on the campus. They discovered two shallowly to moderately north-dipping thrust faults with the most recent displacement being about 1 meter and occurred since 3500 yrs. B.P. on the basis of radiocarbon dating of faulted alluvium. These findings would show this segment of the fault is active, but is a reverse separation fault south of the San Jose Hills (Yeats, 2004).

Chino-Central Avenue Faults

The Chino and Central Avenue faults trend northwest along the southwest portion of the Chino Basin. The fault ties along the northeast edge of the Puente Hills. The Chino and Central Avenue faults are considered part of the Elsinore fault which is one of the major right lateral strike slip faults of the Peninsular Ranges geomorphic province. The Elsinore fault splits near Prado Dam into the Chino-Central Avenue and Whittier faults. The Chino-Central Avenue faults are two separate fault strands that strike northwest. The Chino fault dips southwest and is at least 18 km in length. The Central Avenue fault is about 8 km in length and concealed by younger alluvial deposits.

As is the case for most areas of Southern California, ground-shaking resulting from earthquakes associated with nearby and more distant faults may occur at the project site. During the life of the project, seismic activity associated with active faults can be expected to generate moderate to strong ground shaking at the site.

Table No. 2, *Summary of Regional Faults,* summarizes selected data of known faults capable of seismic activity within 50 kilometers of the site. The data presented below was calculated using EQFAULT Version 3.0 with updated fault data from “The Revised 2002 California Probabilistic Seismic Hazard Maps (Cao et al., 2003)”, Appendix A, and other published geologic data.

Table No. 2, Summary of Regional Faults

Fault Name and Section	Approximate * Distance to Site (kilometers)	Max. Moment Magnitude (Mmax)	Slip Rate (mm/yr)
San Jose*	0.8	6.4	0.50
Chino-Central Ave. (Elsinore)	6.9	6.7	1.00
Elysian Park Blind Thrust*	8.2	6.7	1.50
Puente Hills Blind Thrust**	8.3	7.3	0.70
Sierra Madre*	9.6	7.2	2.00
Whittier	12.6	6.8	2.50
Cucamonga*	13.8	6.9	5.00
Clamshell-Sawpit	19.5	6.5	0.50
Raymond	19.6	6.5	1.50
Verdugo*	28.6	6.9	0.50
Elsinore-Glen Ivy	29.1	6.8	5.00
Compton Thrust	29.9	6.8	1.50
Hollywood	36.2	6.4	1.00
San Jacinto – San Bernardino	38.0	6.7	12.00
San Andreas – 1857 Rupture*	39.1	7.4	30.00
San Andreas – Mojave*	39.1	7.4	30.00
Newport-Inglewood (L.A. Basin)*	39.6	7.1	1.00
San Andreas – San Bernardino*	41.0	7.5	24.00
San Andreas – Southern*	41.0	7.2	25.00
Cleghorn*	45.7	6.7	2.00
Sierra Madre (San Fernando)*	48.4	6.7	2.00

*****Review of published geologic data and mapping including Appendix A of the 2002 California Fault Parameters Report (Cao et al., 2003). Distance from the site to nearest subsurface projection, per Shaw et al., 2002.

5.2 Seismic History

An analysis of the seismic history of the site was conducted using the computer program EQSEARCH, (Blake, 2000), and attenuation relationships proposed by Boore et al. (1997) for alluvium soil conditions. The Southern California Earthquake Catalog with the Southern California Earthquake Center was also utilized (SCEC, 2011).

Based on the analysis of seismic history, the number of earthquakes with a moment magnitude of 5.0 or greater occurring within a distance of 100 kilometers was 169, since the year 1800. Based on the analysis, the largest earthquake-induced ground acceleration affecting the site since the year 1800 is a 7.0 magnitude earthquake in 1858 with a calculated ground acceleration of 0.24g at the site.

Review of recent seismological and geophysical publications indicates that the seismic hazard for the Pomona Basin is high. The Pomona Basin is bounded by active regional faults on all sides and underlain by alluvial sediments and buried thrust faults. The seismic hazard for the heavily populated Pomona Basin was illustrated by the 1971 San Fernando, 1987 Whittier Narrows, 1991 Sierra Madre, 1994 Northridge and July 2008 Chino Hills earthquakes. The epicenters for these earthquakes are shown on Drawing No. 6, *Epicenters Map of Southern California Earthquakes (1800-1999).*

5.3 Surface Fault Rupture

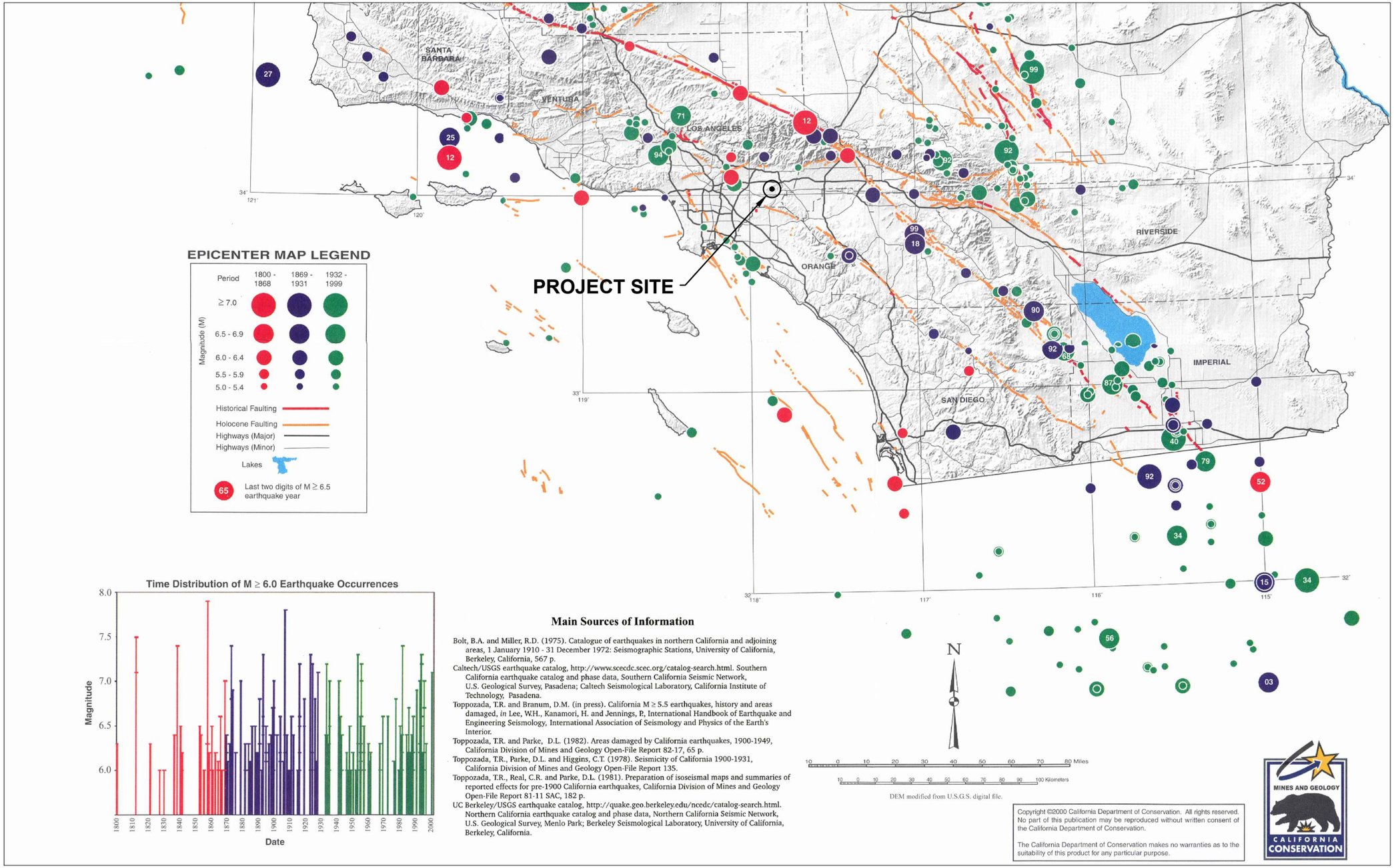
The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture. The Alquist-Priolo Earthquake Fault Zoning Act requires the California Geological Survey to zone "active faults" within the State of California. An "active fault" has exhibited surface displacement with Holocene time (within the last 11,000 years) hence constituting a potential hazard to structures that may be located across it. Public school structures are required to be set-back at least 50 feet from an active fault. The active fault set-back distance is measured perpendicular from the dip of the fault plane. Based on a review of existing geologic information, no known active faults project through or toward the site. The potential for surface rupture resulting from the movement of the nearby major faults is considered remote.

5.4 Liquefaction and Seismically-Induced Settlement

Liquefaction is the sudden decrease in the strength of cohesionless soils due to dynamic or cyclic shaking. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

The site is partially located within a potential liquefaction zone per the State of California Seismic Hazard Zones Map for the San Dimas Quadrangle as shown in Drawing No. 7, *Seismic Hazard Map*. Liquefaction analyses were performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software for the upper 50 feet below ground surface utilizing borings BH-14 and BH-26. The results of the liquefaction analysis and a summary of the methods used are presented in Appendix C, *Liquefaction/Seismic Settlement Analysis*.

The results of liquefaction analyses indicate the project site is not susceptible to liquefaction. The estimated potential seismically induced settlement ranges from approximately 0.67 to 0.87 inches with potential differential settlement ranging from



Time Distribution of M ≥ 6.0 Earthquake Occurrences

Main Sources of Information

Bolt, B.A. and Miller, R.D. (1975). Catalogue of earthquakes in northern California and adjoining areas, 1 January 1910 - 31 December 1972: Seismographic Stations, University of California, Berkeley, California, 567 p.

Caltech/USGS earthquake catalog, http://www.scecdc.scec.org/catalog-search.html. Southern California earthquake catalog and phase data, Southern California Seismic Network, U.S. Geological Survey, Pasadena; Caltech Seismological Laboratory, California Institute of Technology, Pasadena.

Toppozada, T.R. and Branum, D.M. (in press). California M ≥ 5.5 earthquakes, history and areas damaged, *in* Lee, W.H., Kanamori, H. and Jennings, P, International Handbook of Earthquake and Engineering Seismology, International Association of Seismology and Physics of the Earth's Interior.

Toppozada, T.R. and Parke, D.L. (1982). Areas damaged by California earthquakes, 1900-1949, California Division of Mines and Geology Open-File Report 82-17, 65 p.

Toppozada, T.R., Parke, D.L. and Higgins, C.T. (1978). Seismicity of California 1900-1931, California Division of Mines and Geology Open-File Report 135.

Toppozada, T.R., Real, C.R. and Parke, D.L. (1981). Preparation of isoseismal maps and summaries of reported effects for pre-1900 California earthquakes, California Division of Mines and Geology Open-File Report 81-11 SAC, 182 p.

UC Berkeley/USGS earthquake catalog, http://quake.geo.berkeley.edu/ncedc/catalog-search.html. Northern California earthquake catalog and phase data, Northern California Seismic Network, U.S. Geological Survey, Menlo Park; Berkeley Seismological Laboratory, University of California, Berkeley, California.

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MINES AND GEOLOGY
CALIFORNIA CONSERVATION

REFERENCE: PORTION OF EPICENTERS AND AREAS DAMAGED BY M≥5 CALIFORNIA EARTHQUAKES, 1800-1999 CALIFORNIA DEPARTMENT OF CONSERVATION, MAP SHEET 49 DATED 2000.

EPICENTER MAP OF SOUTHERN CALIFORNIA EARTHQUAKES (1800-1999)

Converse Consultants

MT. SAN ANTONIO COLLEGE
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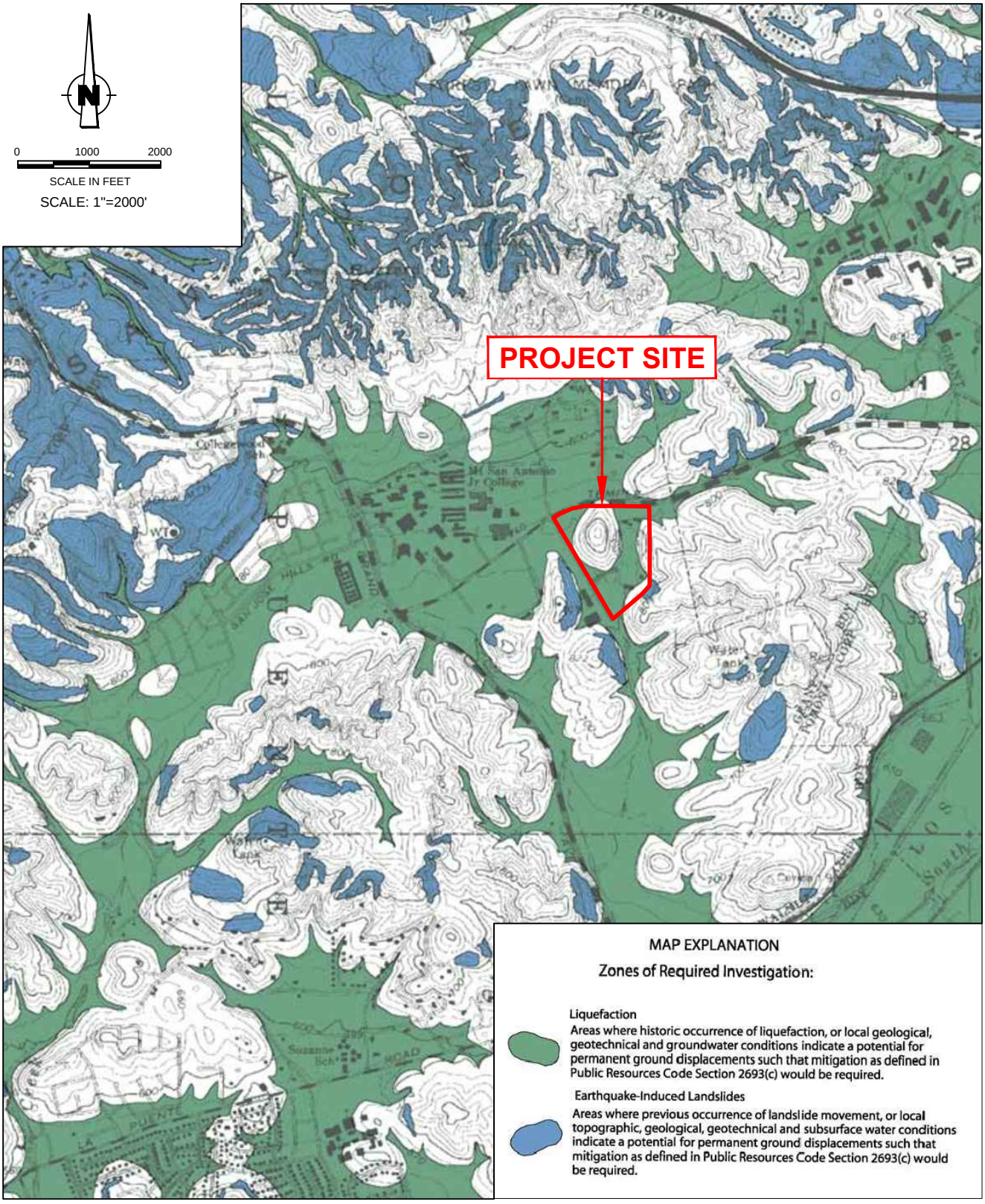
WALNUT, CALIFORNIA

Project No. 14-31-124-01

Drawing No. 6



REFERENCE: SAN DIMAS QUADRANGLE 1999
SEISMIC HAZARD ZONES STATE OF CALIFORNIA

SEISMIC HAZARD ZONES MAP

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ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.	Drawing No.
14-31-124-01	7

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approximately 0.34 to 0.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

5.5 Lateral Spreading

Seismically induced lateral spreading involves primarily lateral movement of earth materials due to ground shaking. It differs from the slope failure in that complete ground failure involving large movement does not occur due to the relatively smaller gradient of the initial ground surface. Lateral spreading is demonstrated by near-vertical cracks with predominantly horizontal movement of the soil mass involved. The topography at the project site and in the immediate vicinity of the site is relatively flat, with no significant nearby slopes or embankments. Under these circumstances, the potential for lateral spreading at the subject site is considered negligible.

5.6 Seismically-Induced Slope Instability

Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes. The project site is also not shown with any earthquake-induced landslide areas due to the relatively flat condition of the site topography. In the absence of significant ground slopes, the potential for seismically induced landslides to affect the proposed site is considered to be very low.

5.7 Earthquake-Induced Flooding

Review of the Flood Insurance Rate Map (FIRM), Panel 1725 of 2350, from the FEMA Map Service Center Viewer, indicates that the site is in an area designated as Zone D, “Areas in which flood hazards are undetermined, but possible.” Due to the absence of groundwater at shallow depths, distance of the subject site from large bodies of water and regional flood control structures, the potential for flooding at the subject site is considered remote.

5.8 Tsunami and Seiches

Tsunamis are seismic sea waves generated by fault displacement or major ground movement. Based on the location of the site from the ocean (over 20 kilometers), tsunamis do not pose a hazard. Seiches are large waves generated in enclosed bodies of water in response to ground shaking. Based on site location away from lakes and reservoirs, seiches do not pose a hazard.

5.9 Volcanic Eruption Hazard

There are no known volcanoes near the site. According to Jennings (1994), the nearest potential hazards from future volcanic eruptions is the Amboy Crater-Lavic Lake area

located in the Mojave Desert more than 120 miles east/northeast of the site. Volcanic eruption hazards are not present.

6.0 SEISMIC ANALYSIS

6.1 CBC Seismic Design Parameters

Seismic parameters based on the 2013 California Building Code are calculated using the United States Geological Survey *U.S. Seismic Design Maps* website application and the site coordinates (34.0458 degrees North Latitude, 117.8469 degrees West Longitude). The seismic parameters are presented below.

Table No. 3, CBC Seismic Design Parameters

Seismic Parameters	2013 CBC
Site Class	D
Mapped Short period (0.2-sec) Spectral Response Acceleration, S_S	2.186 g
Mapped 1-second Spectral Response Acceleration, S_1	0.781 g
Site Coefficient (from Table 1613.5.3(1)), F_a	1.0
Site Coefficient (from Table 1613.5.3(2)), F_v	1.5
MCE 0.2-sec period Spectral Response Acceleration, S_{MS}	2.186 g
MCE 1-second period Spectral Response Acceleration, S_{M1}	1.171 g
Design Spectral Response Acceleration for short period, S_{DS}	1.457 g
Design Spectral Response Acceleration for 1-second period, S_{D1}	0.781 g
Seismic Design Category	E

6.2 Site-Specific Response Spectrum

The subject site is partially located in a Seismic Hazard Zone. Based on 2013 CBC Section 1616A.1.3, a site-specific ground motion analysis is required A site-specific response spectrum was developed for the project for a Maximum Considered Earthquake (MCE), defined as a horizontal peak ground acceleration that has a 2 percent probability of being exceeded in 50 years (return period of approximately 2,475 years).

In accordance with ASCE 7-10, Section 21.2 the site-specific response spectra can be taken as the lesser of the probabilistic maximum rotated component of MCE ground motion and the 84th percentile of deterministic maximum rotated component of MCE ground motion response spectra. The design response spectra can be taken as 2/3 of site-specific MCE response spectra, but should not be lower than 80 percent of CBC general response spectra. The risk coefficient C_R has been incorporated at each spectral response period for which the acceleration was computed in accordance with ASCE 7-10, Section 21.2.1.1.

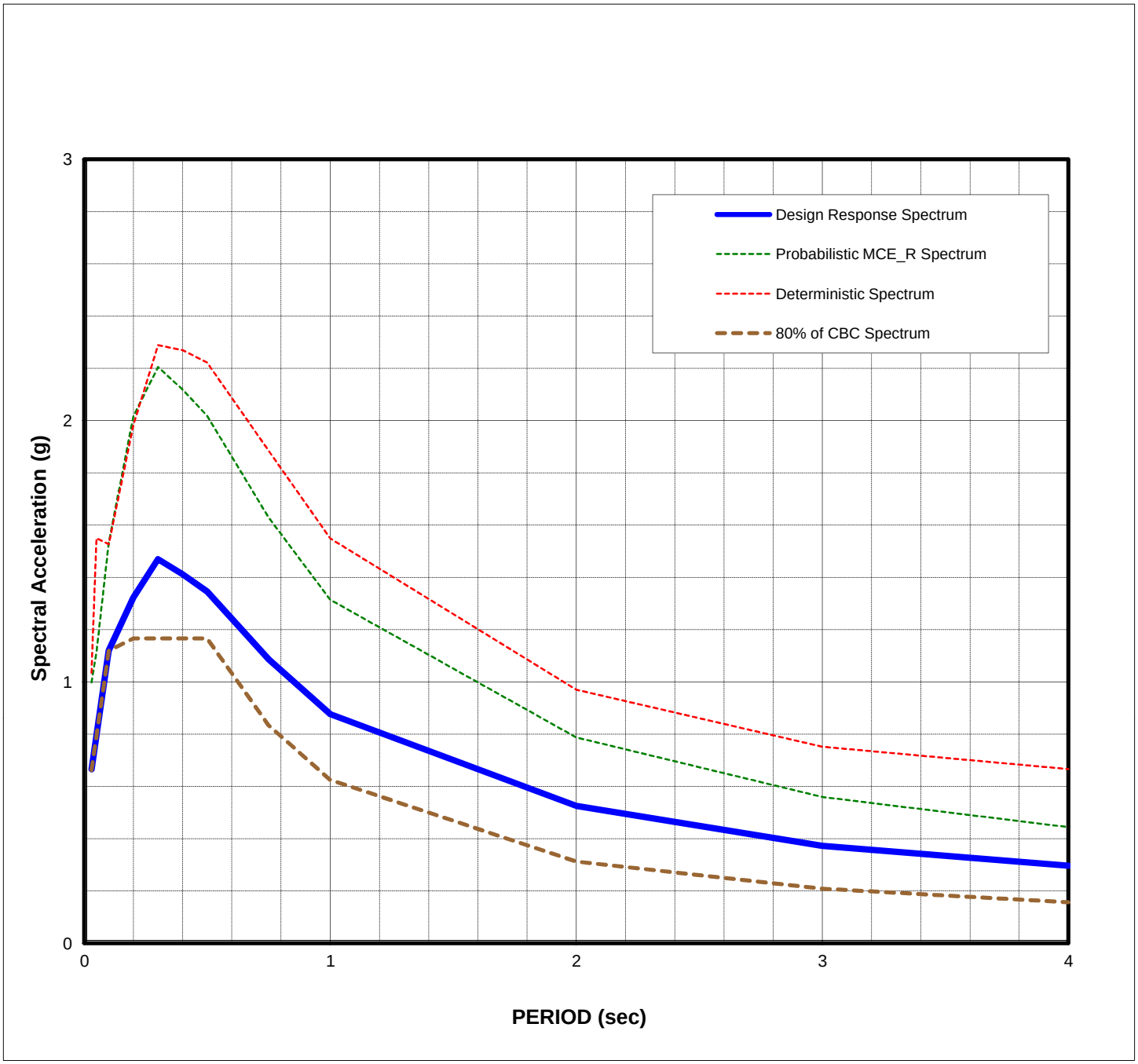
The 2013 CBC mapped acceleration parameters are provided in the following table. These parameters were determined using the United States Geological Survey *U.S. Seismic Design Maps* website application, and in accordance with ASCE 7-10 Sections 11.4, 11.6, 11.8 and 21.2.

Table No. 4, 2013 CBC Mapped Acceleration Parameters

Site Class	D	Seismic Design Category	E
S_s	2.186	C_{RS}	1.013
S_1	0.781	C_{R1}	1.023
F_a	1	**0.08 F_v/F_a**	0.120
F_v	1.5	**0.4 F_v/F_a**	0.600
S_{MS}	2.186	T_0	0.107
S_{M1}	1.172	T_S	0.536
S_{DS}	1.457	T_L	8
S_{D1}	0.781		

A Site-Specific response analysis, using faults within 100 kilometers of the site, was developed using the computer program EZ-FRISK by Risk Engineering (v. 7.62) and the 2008 USGS Fault Model database. Attenuation relationships proposed by Boore and Atkinson (2008), Campbell and Bozorgnia (2008), Chiou and Youngs (2008) were used in the analysis. These attenuation relationships are based on Next Generation Attenuation (NGA) project model. Maximum rotated components were determined using Huang (2008) method. An average shear wave velocity at upper 30 meters of soil profile (V_{s30}) of 270 meters per second, depth to bedrock of with a shear wave velocity 1,000 meters per second at 150 meters below grade, and depth of bedrock where the shear wave velocity is 2,500 meters per second at 3,000 meters below grade were selected for EZ-Frisk Analysis.

Applicable response spectra data are presented in the table below and on Drawing No. 8, *Site-Specific Design Response Spectrum.* These curves correspond to response values obtained from above attenuation relations for horizontal elastic single-degree-of-freedom systems with equivalent viscous damping of 5 percent of critical damping.



Note: Calculated using EZFRISK program Risk Engineering, version 7.62
and USGS 2008 fault model database.

SITE SPECIFIC DESIGN RESPONSE SPECTRUM

Mt. SAC Athletic Complex East

Walnut, CA

For : Mt. San Antonio College

Project Number:

14-31-124-01

Converse Consultants

Drawing No.

8

Table No. 5, Site-Specific Response Spectrum Data

Period (sec)	2% in 50yr Probabilistic Spectral Acceleration (g)	Risk Coefficient C_R	Probabilistic MCE_R Spectral Acceleration (g)	84th Percentile Deterministic MCE Response Spectra, (g)	Deterministic CBC Lower Level, (g)	Site Specific MCE_R Spectral Acceleration (g)	80% CBC Design Response Spectrum	Site Specific Design Spectral Acceleration (g)
0.03	0.985	1.013	0.998	1.034	0.825	0.998	0.662	**0.665**
0.05	1.099	1.013	1.113	1.550	0.975	1.113	0.793	**0.793**
0.10	1.515	1.013	1.535	1.527	1.350	1.527	1.119	**1.119**
0.20	1.991	1.013	2.017	1.983	1.500	1.983	1.166	**1.322**
0.30	2.174	1.014	2.204	2.288	1.500	2.204	1.166	**1.469**
0.40	2.087	1.015	2.118	2.269	1.500	2.118	1.166	**1.412**
0.50	1.987	1.016	2.018	2.222	1.500	2.018	1.166	**1.345**
0.75	1.600	1.018	1.629	1.884	1.200	1.629	0.833	**1.086**
1.00	1.288	1.020	1.314	1.549	0.900	1.314	0.625	**0.876**
2.00	0.772	1.020	0.787	0.970	0.450	0.787	0.312	**0.525**
3.00	0.548	1.020	0.559	0.752	0.300	0.559	0.208	**0.373**
4.00	0.435	1.020	0.444	0.666	0.225	0.444	0.156	**0.296**

Vertical acceleration at the site may be calculated using the ASCE 7-10, Section 12.4.

The site-specific design response parameters are provided in the following table. These parameters were determined from Design Response Spectra presented in table above, and following guidelines of ASCE Section 21.4.

Table No. 6, Site-Specific Seismic Design Parameters

	Design Parameters (5% Damping)	Lower Limit, 80% of CBC Design Spectra
Site-Specific 0.2-second period Spectral Response Acceleration, S_{MS}	1.984	1.749
Site-Specific1-second period Spectral Response Acceleration, S_{M1}	1.575	0.937
Site-Specific Design Spectral Response Acceleration for short period S_{DS}	1.322	1.166
Site-Specific Design Spectral Response Acceleration for 1-second period, S_{D1}	1.050	0.625

7.0 PERCOLATION TESTING RESULTS

Percolation testing was performed utilizing exploratory borings BH-22 and BH-29 on June 19, 2013. The tests were performed using the falling head test method in accordance with Los Angeles County “Low Impact Development Best Management Practice Guideline for Design, Investigation, and Reporting”. The results of the percolation tests are tabulated below and presented in Appendix D, *Percolation Testing*.

Table No. 7, Percolation Testing Results

Boring No.	Depth of Boring* (feet)	Predominant Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-22	10	Clay (CL)	0.28	0.12
BH-29	10	Clayey Sand (SC)	0.92	0.59

*Approximate

In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.5 inch per hour. Therefore the soils at the parking lot area in the northwestern portion of the site are suitable for infiltration system. The project Civil Engineer shall review the raw data of percolation test presented in *Appendix D* to determine specific soil layers and percolation rates for design of the proposed infiltration system. Infiltration system should be properly maintained periodically to minimize sedimentation in the infiltration system. A proposed infiltration system must comply with the following setbacks in accordance with Los Angeles County guideline.

Table No. 8, Infiltration Facility Setback Requirements per Los Angeles County

Setback from	Distance
Property lines and public right of way	5 feet
Any foundation	15 feet or within 1:1 plane drawn up from the bottom of foundation, whichever greater
Face of any slope	H/2, 5 feet minimum (H is height of slope)
Water wells used for drinking water	100 feet

8.0 GEOTECHNICAL EVALUATIONS AND CONCLUSIONS

Based on the results of our background review, subsurface exploration, laboratory testing, geotechnical analyses, and understanding of the planned site re-development, it is our opinion that the proposed project is feasible from a geotechnical standpoint, provided the following conclusions and recommendations are incorporated into the project plans, specifications, and are followed during site construction.

The following is a summary of the major geologic and geotechnical factors to be considered for the planned project:

- There are no known active faults projecting toward or extending across the proposed site. The project site is not located within a currently designated State of California Earthquake Fault Zone (formerly Alquist-Priolo Special Studies Zones) for surface fault rupture.

- The site is partially located within a mapped Seismic Hazard Zone for liquefaction. Liquefaction analyses were performed for the upper 50 feet below ground surface utilizing borings BH-14 and BH-26. Based on the results of liquefaction analyses indicate the project site is not susceptible to liquefaction. The estimated potential liquefaction induced settlement ranges from approximately 0.67 to 0.87 inches with potential differential settlement ranging from approximately 0.34 to 0.44 inches.

- Local zones of perched groundwater were encountered during subsurface exploration at a depths ranging from approximately 17 to 38 feet bgs in borings BH-1, BH-14, BH-20, BH-21, BH-23, BH-24, BH-25, and BH-26. Localized perched groundwater seepage should be anticipated during excavations.

- Variable thickness undocumented fill soils were encountered in the borings. The undocumented fill is not considered suitable for any slab or foundation support.

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- Shallow footings or deep foundations are considered suitable for structure support provided the recommendations in this report are incorporated into the project plans, specifications, and are followed during site construction. Foundation recommendations are based on the different subsurface soils anticipated beneath planned structure. The earth materials anticipated at the subject site and the foundation recommendations are summarized in the following table:

Table No. 9, Earth Materials and Foundation Recommendations of Planned Structures

Structure	Approximate Lowest Floor Elevation (MSL)	Anticipated Materials Beneath Planned Structure	Fill Thickness* (feet)	Foundation Recommendations
Field House	731	Bedrock (Tpss)	0 to 10	Shallow Foundations
Gateway Building	748	Fill- Clay (CL)	5 to 10	Deep Foundations
New Restroom Building	740	Bedrock (Tpss)	0 to 7	Shallow Foundations
Visitor Bleachers	731	Bedrock (Tpss)	None	Shallow Foundations
Pedestrian Bridge	730	Fill- Clay (CL)	4 to 5	Pier Foundations
Retaining Walls	731	Fill- Clay (CL)	15	Pier Foundations
Scoreboard	731	Fill- Clay (CL)	13	Deep Foundations

*Approximate

- Based on the proposed plan, cut-and-fill grading operations are required to achieve the planned finished grades.

- The on-site soil has a “Low to High” expansive potential and requires mitigation. On-site clayey soils with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

- Site soils have “negligible” concentrations of water soluble sulfates.

- In general the pH value, chloride content, and saturated resistivity of the site soils are in the non-corrosive range. However, the saturated resistivity of samples taken, indicate a “Corrosive” potential to ferrous metals.

- The earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The on-site materials contain about 5 to 10 percent gravel up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. Earthwork should be performed with suitable equipments for gravelly materials.

- Buried drain pipes are located beneath the current track and field which drain the detention basin located northeast of the stadium. The condition of the drain pipe should be evaluated for future use. Should the pipe be corroded or damaged, it should be replaced.

9.0 EARTHWORK AND SITE GRADING RECOMMENDATIONS

9.1 General Evaluation

Based on our field exploration, laboratory testing, and analyses of subsurface conditions at the site, remedial grading is required to prepare the site for support of the proposed structures. The subject site has slight slope. It is anticipated that the site preparation will include both cut and fill. To reduce differential settlement, variations in the soil type, degree of compaction, and thickness of the compacted fill, the thickness of compacted fill placed underneath the footings should be kept uniform.

Site grading recommendations provided below are based on our experience with similar projects in the area and our evaluation of this investigation. It is our understanding that site preparation will require removal of existing structures with their foundations and other existing underground manmade structures and utilities.

The site soils can be excavated utilizing conventional heavy-duty earth-moving equipment. The excavated site soils, free of vegetation, shrub and debris, may be placed as compacted fill in structural areas after proper processing. Rocks larger than three (3)

inches in the largest dimension should not be placed as fill. Rocks larger than one (1) inch should not be placed within the upper 12 inches of subgrade soils.

On-site clayey soils and with an expansion index exceeding 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. Soils containing organic materials should not be used as structural fill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading

9.2 Over-Excavation/Removal

Different earth materials should be anticipated at excavation bottom of the planned foundation level. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grades are recommended. For structures with shallow footings, we recommend footings be all on bedrock or a minimum of 3 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary and replaced as compacted fill.

The excavation to remove unsuitable soils should be extended to five (5) feet laterally beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. Thickness of compacted fill underneath the buildings should not vary. Cut/Fill transition areas should be over excavated and recompacted to provide uniform fill support. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should be kept at a uniform thickness.

As an alternative to deep foundations, over-excavation and re-compaction for the Gateway Building, retaining walls, and pedestrian bridge may be as follows. Over-excavation and re-compaction for the Gateway Building area should be a minimum of 5 feet. For retaining walls up to 24 inches we recommend over-excavation be at least 2 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available. For retaining walls between 24 inches and 54 inches we recommend over-excavation be at least 4 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available. For retaining walls greater than 54 inches we recommend over-excavation be at least 5 feet below existing grade or depth of undocumented fill, whichever is greater, and 2 feet laterally beyond the foot prints, where space is available. For the proposed pedestrian bridge we recommend over-excavation be at least 5 feet below existing grade or depth of undocumented fill, whichever is greater, and 5 feet laterally beyond the foot prints, where space is available.

For IAAF compliant track and field and artificial turf areas, we recommend over-excavation be at least 2 feet below existing grade and 2 feet laterally beyond the foot prints, where space is available. These areas should be backfilled with proper subgrade materials that meet the specifications by IAAF.

The exposed bottom of the over-excavation area should be scarified at least 6 inches, moisture conditioned as needed to near-optimum moisture content, and compacted to 90 percent relative compaction. Over-excavation should not undermine adjacent off-site improvements. Remedial grading should not extend within a projected 1:1 (horizontal to vertical) plane projected down from the outer edge of adjacent off-site improvements. If soft loose, yielding soil conditions are encountered at the excavation bottom, the following options can be considered:

a. Over-excavate until reach firm bottom.
b. Scarify or over-excavate additional 18 inches deep, and then place at least 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction.
c. Over-excavate additional 18 inches deep, and then place a layer of geofabric i.e. Marifi HP570, X600 or equivalent), place 18-inch-thick compacted base material (CAB or equivalent) to bridge the soft bottom. Base should be compacted to 90% relative compaction. An additional layer of geofabric may be needed on top of base depending on the actual site conditions.

The actual depth of removal should be based on recommendations and observation made during grading. Therefore, some variations in the depth and lateral extent of over-excavation recommended in this report should be anticipated.

Site grading may result in transition lines with cut and/or fill conditions. This transition line would require special grading considerations. Detailed site grading recommendations are provided in the following sections.

9.3 Canyon Bottom Subdrains

Canyon bottom subdrain systems should be constructed of a minimum 6-inch diameter, Schedule 80 PVC pipe with glued manufactured pipe fitting and caps. The drain pipe should be sloped at a minimum 2% gradient to provide gravity flow to the approved outlet location. Perforated pipes shall be laid with perforations down. Schedule 80 PVC perforated pipe may have to be custom fabricated.

Surface drain systems should not be connected to the subdrain system. Introduction of surface water in the subdrain system could be recharge water into the compacted fill soils. Surface and subsurface drainage systems should be kept separate.

A State of California Department of Transportation (Caltrans) Class 2 Permeable Material is recommended for the permeable drain material. The percentage

composition by weight of permeable material in place shall conform to the following gradings:

Table No. 10, Caltrans Class 2 Permeable Material

Sieve Size	Percentage Passing
1”	100
¾”	90 - 100
3/8”	40 - 100
No. 4	25 – 40
No.8	18 – 33
No. 30	5 – 15
No. 50	0 – 7
No. 200	0 – 3

Note: Class 2 permeable material shall have a Sand Equivalent value of not less than 75.

9.4 Structural Fill

The approved bottom of the excavations should be scarified to a depth of at least six (6) inches. The scarified soils should be moisture conditioned to near-optimum moisture content and compacted to at least 90 percent of the laboratory maximum dry density to produce a firm and unyielding surface.

All structural fill should be placed on competent, scarified and compacted native materials as determined by a geotechnical engineer and in accordance with the specifications presented in this section. Excavated site soils, free of deleterious materials and rock fragments larger than three (3) inches in the largest dimension, should be suitable for placement as compacted fill. Any import fill should be tested and approved by Converse. The import fill should have an expansion potential less than 20.

Prior to compaction, fill materials should be thoroughly mixed and moisture conditioned when necessary, within three (3) percent of the optimum moisture for granular soils and at approximately three (3) percent above the optimum moisture for fine-grained soils. All fill, if not specified otherwise elsewhere in this report, should be compacted to at least 90 percent of the laboratory dry density in accordance with the ASTM Standard D1557 test method. The amount of processing required for proper moisture conditioning at the site will depend on the seasonal variations in the *in-situ* moisture conditions, the depth of cut, the equipment, and the processing method.

Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the

height of the fill is greater than five (5) feet, the fill shall be keyed and benched into competent materials. The height and width of the benches shall be at least two (2) feet.

9.5 Excavatability

Based on our field exploration, the earth materials at the site should be excavatable with conventional heavy-duty earth moving and trenching equipment. The onsite materials contain about 5 to 30 percent gravels up to 3 inches in maximum dimension. Larger gravels, cobbles and possible boulders may exist at the site. The pebble conglomerate bedrock materials are cemented and moderately hard to hard. The excavation and rippability of this bedrock will be more difficult and should be anticipated during grading. Soil borings drilled for the project encountered difficult drilling and/or refusal in the conglomerate bedrock materials. Standard Penetration Tests (SPT) blow counts in the conglomerate bedrock materials were high and often times met refusal to sampler penetrations. Localized areas of very hard bedrock requiring very hard ripping should be anticipated. Directional ripping and downsizing breakers may be required in cemented sandstone and conglomerate beds. Earthwork should be performed with suitable equipments for gravelly materials.

9.6 Expansive Soil

Based on our laboratory testing results, the on-site clayey earth materials are considered to be very “low to high” expansion potential. Medium to high expansion potential materials may be anticipated. The on-site soil materials will be mixed during the grading and the expansion potential might change. Therefore, the expansion potential of site soils should be verified after the grading as slabs, foundations and pavement placed directly on expansive subgrade soil will likely crack over time.

To mitigate the expansive soils, on-site clayey soils with an Expansion Index higher than 20 should not be re-used for compaction within 2 feet below the proposed foundations or for retaining wall backfill. The extent of removal should be determined by the geotechnical representative based on soil observation during grading.

There are several alternative mitigation measures that can be utilized to improve expansive soils at the site. Some mitigation measures include:

- Pre-saturation of on-site compacted subgrade soils to at approximate three (3) percent above optimum moisture content.

- Removing about two (2) feet of the underlying soils throughout areas beneath structures and the track, and replacing with imported non-expansive sandy soil materials.

9.7 Pipeline Backfill Recommendations

Any soft and/or unsuitable material encountered at the pipe invert should be removed and replaced with an adequate bedding material. The pipe subgrade should be level, firm, uniform, free of loose materials and properly graded to provide uniform bearing and support to the entire section of the pipe placed on bedding material. Protruding oversize particles larger than two (2) inches in the largest dimension, if any, should be removed from the trench bottom and replaced with compacted materials. During the digging of depressions for proper sealing of the pipe joints, the pipe should rest on a prepared bottom for as near its full length as is practicable. The bedding zone is defined as that portion of the pipe trench from four inches below the pipe invert to one foot above the top of pipe, in accordance with Section 306-1.2.1 of the Latest Edition of the *Standard Specifications for Public Works Construction* (SSPWC).

9.8 Trench Zone Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement. Excavated on-site soils free of oversize particles, defined as larger than one (1) inch in maximum dimension in the upper 12 inches of subgrade soils and larger than three (3) inches in the largest dimension in the trench backfill below, and deleterious matter after proper processing may be used to backfill the trench zone. Imported trench backfill, if used, should be approved by the project soils consultant prior to delivery at the site. No more than 30 percent of the backfill volume should be larger than ¾ inch in the largest dimension.

Trench backfill shall be compacted to 90 percent of the laboratory maximum dry density as per ASTM Standard D1557 test method. At least the upper twelve (12) inches of trench underlying pavements should be compacted to at least 95 percent of the laboratory maximum dry density.

Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within two (2) percent of optimum moisture content and then placed in horizontal layers if the expansion index is less than or equal to 30. Should the expansion index be greater than 30, backfill materials shall be brought to approximately 2 percent above optimum moisture content. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained. It should be the responsibility of the contractor to maintain safe conditions during cut and/or fill operations. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

Imported soils, if any, used as compacted trench backfill should be predominantly granular and meet the following criteria:

- Expansion Index less than 20
- Free of all deleterious materials
- Contain no particles larger than 3 inches in the largest dimension
- Contain less than 30 percent by weight retained on ¾-inch sieve
- Contain less than 15 percent fines (passing #200 sieve)
- Have a Plasticity Index of 10 or less

Any import fill should be tested and approved by the geotechnical representative prior to delivery to the site.

9.9 Shrinkage and Subsidence

The shrinkage and/or bulkage would depend on, among other factors, the depth of cut and/or fill, and the grading method and equipment utilized. For preliminary estimation, bulking and shrinkage factors for various units of earth material at the site may be taken as presented below:

- The approximate shrinkage factor for the upper ten (10) feet of alluvial soils is estimated to range from ten (10) to twenty (20) percent.
- Subsidence would depend on the construction methods including type of equipment utilized. For estimation purposes, ground subsidence may be taken as 0.20 feet.

Although these values are only approximate, they represent our best estimates of the factors to be used to calculate lost volume that may occur during grading. If more accurate shrinkage and subsidence factors are needed, it is recommended that field-testing using the actual equipment and grading techniques be conducted.

9.10 Subgrade Preparation

Final subgrade soils for structures and streets should be uniform and non-yielding. To obtain a uniform subgrade, soils should be well mixed and uniformly compacted. The subgrade soils should be non-expansive and well-drained. The near-surface site soils should be free draining. We recommend that at least the upper two (2) inches of subgrade soils underneath the slab-on-grade should be comprised of well-drained granular soils such as sands, gravel or crushed aggregate satisfying the following criteria:

- Maximum size $\leq$ 1.5 inches
- Percent passing U.S. #200 sieve $\leq$ 12 percent
- Sand equivalent $\geq$ 30

The subgrade soils should be moisture conditioned before placing concrete.

The various design recommendations provided in this section are based on the assumptions that in preparing the site, the earthwork and site grading recommendations provided in this report will be followed. The proposed buildings may be supported by shallow continuous and isolated square footings.

10.0 DESIGN RECOMMENDATIONS

10.1 Shallow Foundations

10.1.1 Vertical Capacity

Continuous and square footings should be founded at least 24 inches below lowest adjacent final grade on the recommended earth materials. A minimum footing width of 24 inches is recommended for continuous and square footings. The net allowable dead plus live load bearing value for isolated square and continuous footings is 3,000 psf. The net allowable bearing pressure can be increased by 400 psf for each additional foot of excavation depth and width up to a maximum value of 5,000 psf.

The net allowable bearing values indicated above are for the dead loads and frequently applied live loads and are obtained by applying a factor of safety of 3.0 to the net ultimate bearing capacity.

10.1.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for footings poured

against properly compacted fill or undisturbed stiff natural soils. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5.

10.1.3 Settlement

The static settlement of structures supported on continuous and/or spread footings founded on compacted fill will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 1.0 inch. Differential settlement is expected to be up to one-half of the total settlement over a 30 foot span.

10.1.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

10.2 Pier Foundations

The planned cantilever light poles, pedestrian bridge and retaining walls can be supported on piers (caissons) provided the following recommendations incorporated into design and construction. The piers can be connected to a grade beam system determined by the project structural engineer to control the deflections of structure under the design tolerance.

10.2.1 Vertical Capacity

Piers should be at least 24-inch in diameter extending at least 8 feet below adjacent final grade on compacted fill or native alluvial soils. Piers can be designed for an allowable skin friction of 250 psf against the perimeter of pier for a minimum embedment of 8 feet below the adjacent grade or depth of fill, whichever is greater. Furthermore, sonotubes should be used for the depth of the installed piers equal to that of the depth of fill. The soil skin friction associated with the depth of installed sonotubes should be neglected in pier capacity calculations.

If end bearing capacity is to be considered for design, the bottom of pier should be cleaned out with appropriate equipment. The allowable end bearing capacity can be designed for 3,500 psf. However, the diameter of pier may be increased and temporary casing may be required to facilitate cleanout.

10.2.2 Lateral Capacity

Resistance to lateral loads can be provided by friction acting at the base of the foundation and by passive earth pressure. A coefficient of friction of 0.35 may be assumed with normal dead load forces. An allowable passive earth pressure of 300 psf per foot of depth up to a maximum of 3,000 psf may be used for foundations poured against compacted fill. The values of coefficient of friction and allowable passive earth pressure include a factor of safety of 1.5. For ground surface restrained by concrete slab, the passive resistance may be calculated from the ground surface. For unrestrained ground condition, the passive resistance of the upper one (1) feet earth material should be neglected in design.

10.2.3 Settlement

The static settlement of structures supported on piers founded on native alluvium will depend on the actual footing dimensions and the imposed vertical loads. Most of the footing settlement at the project site is expected to occur immediately after the application of the load. Based on the maximum allowable net bearing pressures presented above, static settlement is anticipated to be less than 0.5 inch.

10.2.4 Dynamic Increases

Bearing values indicated above are for total dead load and frequently applied live loads. The above vertical bearing may be increased by 33% for short durations of loading which will include the effect of wind or seismic forces. The allowable passive pressure may be increased by 33% for lateral loading due to wind or seismic forces.

10.3 Cast-In-Drilled-Hole (CIDH) Piles

Cast-In-Drilled-Hole (CIDH) piles deriving their capacities primarily from the skin friction may be used for support of the Gateway Building.

Pile drilling and concrete placement should be performed in accordance with the recommendations presented herein and in the Appendix G, *Guide Specifications for Drilled Pile Installation* and the Standards and Specifications of ADSC: An International Association of Foundation Drilling Contractors.

The drilling for piles should not be performed adjacent to recently excavated or recently poured piles until the concrete in the completed piles has been allowed to set for several hours. The minimum recommended spacing between adjacent pours may be taken as 6 times the pile diameters. Piles in groups should be drilled and poured in an alternating sequence to minimize the potential for fresh concrete flowing into adjacent open pile excavations.

Drilling of pile shafts should be observed by the Geotechnical Consultant to confirm that piles are extended to the proper depth and that material encountered is similar to that encountered in the borings drilled for this study. Pile lengths should be tabulated in the foundation plans based upon the embedment below the bottom of the pile cap or other point of reference that can be established in the field during construction.

10.3.1 Axial Pile Capacity

The CIDH piles should be at least 18-inch in diameter extending to at least 3 feet into native alluvial soils or compacted fill, and can be designed for an allowable skin friction of 200 psf. The diameter and length of pile shall be determined by the project structural engineer based on the design loads. The piles can be connected to grade beams, determined by structural engineer, to control the deflections under the design tolerance. For the Gateway building areas located within relatively deep undocumented fill areas, over-excavation and compaction is not feasible, we recommend CIDH pile extend at least 7 feet below the fill and install sonotube to the depth of undocumented fill to isolate the pile for potential settlement of fills.

A factor of safety of 2.0 has been applied to obtain the allowable values from the ultimate capacities. The Uplift capacities can be taken as one-half of compressive capacities for pile design. In order to eliminate reductions in capacities due to group efficiency and problems in construction, the minimum pile spacing, if any, should be 3 diameters on center.

Settlement of single piles designed and constructed in accordance with the recommendations presented herein is estimated to be less than 0.5 inch. Actual settlement would depend on the applied loads. Pile group settlement would depend on pile spacing, diameter, number of piles and/or the minimum dimensions of the pile group cap.

The allowable capacities may be increased by one-third for short-term transient loads, including wind or seismic forces. Short term uplift capacities can be assumed to be equal to half of the short term downward friction capacities.

10.3.2 Lateral Pile Capacity

The allowable passive earth pressure in terms of equivalent fluid pressure of 300 pcf for bedrock up to a maximum of 3,000 psf can be used for lateral design. The value of allowable passive earth pressure includes a factor of safety of 1.5. The passive pressure can be doubled if the pile spacing is greater than 3 times pile diameter.

10.4 Modulus of Subgrade Reaction

For the subject project, design of the structures supported on compacted fill subgrade prepared in accordance with the recommendations provided in this report may be based on a soil modulus of subgrade reaction of (k_s) of 150 pounds per square inch per inch.

10.5 Lateral Earth Pressure

The proposed retaining walls are anticipated to be up to 17 feet in height. The earth pressure behind any buried wall depends primarily on the allowable wall movement, type of backfill materials, backfill slopes, wall inclination, surcharges, and any hydrostatic pressure. The following fluid pressures are recommended for vertical walls with no hydrostatic pressure, no surcharge, and level backfill.

Table No. 11, Lateral Earth Pressures for Retaining Wall Design

Backfill Slope (H:V)	Cantilever Wall Equivalent Fluid Pressure (pcf)	Restrained Wall Equivalent Fluid Pressure (psf)
Level	30 (triangular pressure distribution)	50 (triangular pressure distribution)

The recommended lateral pressures assume that the walls are fully back-drained to prevent build-up of hydrostatic pressure. Adequate drainage could be provided by means of permeable drainage materials wrapped in filter fabric installed behind the walls. The drainage system should consist of perforated pipe surrounded by a minimum one (1) square feet per lineal feet of free draining, uniformly graded, ¾ -inch washed, crushed aggregate, and wrapped in filter fabric such as Mirafi 140N or equivalent. The filter fabric should overlap approximately 12 inches or more at the joints. The subdrain pipe should consist of perforated, four-inch diameter, rigid ABS (SDR-35) or PVC A-2000, or equivalent, with perforations placed down. Alternatively, a prefabricated drainage composite system such as the Miradrain G100N or equivalent can be used. The subdrain should be connected to solid pipe outlets, with a maximum outlet spacing of 100 feet. Waterproofing membranes should be added to the subterranean wall levels for moisture sensitive areas to mitigate moisture migration through the walls.

In addition, walls with inclined backfill should be designed for an additional equivalent fluid pressure of one (1) pound per cubic foot for every two (2) degrees of slope inclination. Walls subjected to surcharge loads located within a distance equal to the height of the wall should be designed for an additional uniform lateral pressure equal to one-third or one-half the anticipated surcharge load for unrestrained or restrained walls, respectively. These values are applicable for backfill placed between the wall stem and an imaginary plane rising 45 degrees from below the edge (heel) of the wall footings.

Retaining walls taller than 6 feet should be designed to resist additional earth pressure caused by seismic ground shaking based on Section 1615A.1.6 of CBC 2010. A seismic earth pressure of 16H (psf), based on an inverted triangular distribution, can be used for design of wall.

10.6 Slabs-on-grade

Slabs-on-grade should have a minimum thickness of four inches for support of nominal ground-floor live loads without hydrostatic uplift pressures. Minimum reinforcement for slabs-on-grade should be No. 3 reinforcing bars, spaced at 18-inches on-center each way. The thickness and reinforcement of more heavily-loaded slabs will be dependent upon the anticipated loads and should be designed by a structural engineer.

Slabs should be designed and constructed as promulgated by the American Concrete Institute (ACI) and the Portland Cement Association (PCA). Prior to the slab pour, all utility trenches should be properly backfilled and compacted. Care should be taken during concrete placement to avoid slab curling.

In areas where a moisture-sensitive floor covering (such as vinyl tile or carpet) is used, slabs should be protected by at least a 10-mil-thick moisture barrier between the slab and compacted subgrade that meets the performance criteria of ASTM E 1745 Class A material. Polyethylene sheets should be overlapped a minimum of six inches, and should be taped or otherwise sealed.

10.7 Soil Corrosivity Evaluation

Based on our review of soil corrosivity test results (see Appendix B), the soluble sulfate concentration, pH, and chloride content are not in the corrosive range to concrete In accordance with the Caltrans Corrosive Guidelines (2012). However, the minimum saturated resistivity is in the corrosive range to ferrous metal. Protections of underground metal pipe should be considered. Since the soluble sulfate concentrations tested for this project are less than 2,000 ppm in the soil, mitigation measures to protect concrete in contact with the soils are not anticipated. Type I or II Portland Cement may be used for the construction of the foundations and slabs.

The test results presented herein are considered preliminary. Additional testing and evaluation of the as-graded soils is recommended. A corrosion engineer may be consulted for appropriate mitigation procedures and construction design, if needed. Conventional corrosion mitigation measures may include the following:

- Steel and wire concrete reinforcement should have at least three inches of concrete cover where cast against soil, unformed. Below-grade ferrous metals should be given a high-quality protective coating, such as 18-mil plastic tape, extruded polyethylene, coal-tar enamel, or Portland cement mortar.

- Below-grade metals should be electrically insulated (isolated) from above-grade metals by means of dielectric fittings in ferrous utilities and/or exposed metal structures breaking grade.

10.8 Flexible Pavement

The flexible pavement structural section design recommendations were performed in accordance with the method contained in the *CALTRANS Highway Design Manual*, Chapter 630 without the factor of safety. No specific traffic study was performed to determine the Traffic Index (TI) for the proposed project, therefore a wide range of TI values were evaluated.

Due to various earth materials encountered at the site, flexible pavement structural section recommendations are prepared for both subgrade soils. We recommend that the project structural engineer consider the traffic loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 12, Flexible Pavement Structural Sections

Design R-value	Design TI	Asphalt Concrete (AC) Over Aggregate Base (AB) Structural Sections		Full AC Structural Section
		AC (inches)	AB (inches)	AC (inches)
12	4	3.0	5	5
	5	4.0	6.5	6.5
	6	5.0	8	8
	7	6.0	10	9.5
	8	7.0	11.5	11
	9	8.0	13	12.5

Base material shall conform to requirements for Crushed Miscellaneous Base (CMB) or equivalent and should be placed in accordance with the requirements of the Standard Specifications for Public Works Construction (SSPWC, latest Edition).

Asphaltic materials should conform to Section 203-1, "Paving Asphalt," of the Standard Specifications for Public Works Construction (SSPWC, latest Edition) and should be placed in accordance with Section 302-5, "Asphalt Concrete Pavement," of the SSPWC, 2012 edition.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

10.9 Rigid Pavement

Rigid pavement design recommendations were provided in accordance with the Portland Cement Association's (PCA) Southwest Region Publication P-14, *Portland Cement Concrete Pavement (PCCP) for Light, Medium, and Heavy Traffic*. We recommend that the project structural engineer consider the loading conditions at various locations and select the appropriate pavement sections from the following table:

Table No. 13, Rigid Pavement Structural Sections

Design R-Value	Design Traffic Index (TI)	PCCP Pavement Section (inches)
12	4.5	7.00
	5.0	7.25
	6.0	7.50
	7.0	7.75
	8.0	8.00
	9.0	8.25

The pavement sections presented in the table are based on a minimum 28-day Modulus of Rupture (M-R) of 550 psi and a compressive strength of 3,000 psi. The third point method of testing beams should be used to evaluate modulus of rupture. The concrete mix design should contain a minimum cement content of 5.5 sacks per cubic yard. Recommended maximum and minimum values of slump for pavement concrete are three (3) inches and one (1) inch, respectively.

Transverse contraction joints should not be spaced more than 15 feet and should be cut to a depth of ¼ the thickness of the slab. Longitudinal joints should not be spaced more than 12 feet apart. A longitudinal joint is not necessary in the pavement adjacent to the curb and gutter section.

All outside edges should conform to Section 201 of the Standard Specifications for Public Works Construction (SSPWC, latest edition), and should be constructed in accordance with Section 302-6 of the SSPWC. Pavement subgrade should be prepared in accordance with Section 9.7 of this report.

The PCCP materials should conform to Section 201 of the Specifications for Public Works Construction and should be constructed in accordance with Section 302-6 of the SSPWC.

Positive drainage should be provided away from all pavement areas to prevent seepage of surface and/or subsurface water into the pavement base and/or subgrade.

10.10 Site Drainage

Adequate positive drainage should be provided away from the structures to prevent ponding and to reduce percolation of water into structural backfill. We recommend that the landscape area immediately adjacent to the foundation shall be designed sloped away from the building with a minimum 5% slope gradient for at least 10 feet measured perpendicular to the face of the wall. Impervious surfaces within 10 feet of the building foundation shall be sloped a minimum of 2 percent away from the building per 2013 CBC.

Planters and landscaped areas adjacent to the building perimeter should be designed to minimize water infiltration into the subgrade soils. Gutters and downspouts should be installed on the roof, and runoff should be directed to the storm drain through non-erosive devices. Lower level walkways and open patio areas may require special drainage provisions and sump pumps to provide suitable drainage.

11.0 CONSTRUCTION RECOMMENDATIONS

11.1 General

Site soils should be excavatable using conventional heavy-duty excavating equipment. Temporary sloped excavation is feasible if performed in accordance with the slope ratios provided in Section 11.2, *Temporary Excavations*. Existing utilities should be accurately located and either protected or removed as required. For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

11.2 Temporary Excavations

Based on the materials encountered in the exploratory borings, sloped temporary excavations may be constructed according to the slope ratios presented in Table No. 14, *Slope Ratios for Temporary Excavation*. Any loose utility trench backfill or other fill encountered in excavations will be less stable than the native soils. Temporary cuts encountering loose fill or loose dry sand may have to be constructed at a flatter gradient than presented in the following table:

Table No. 14, Slope Ratios for Temporary Excavation

Maximum Depth of Cut (feet)	Maximum Slope Ratio* (horizontal: vertical)
0 – 5	vertical
5 – 10	1:1
10 +	1.5:1

*Slope ratio assumed to be uniform from top to toe of slope.

Surfaces exposed in slope excavations should be kept moist but not saturated to retard raveling and sloughing during construction. Adequate provisions should be made to protect the slopes from erosion during periods of rainfall. Surcharge loads, including construction, should not be placed within five (5) feet of the unsupported trench edge. The above maximum slopes are based on a maximum height of six (6) feet of stockpiled soils placed at least five (5) feet from the trench edge.

For steeper temporary construction slopes or deeper excavations, shoring should be provided by the contractor as necessary, to protect the workers in the excavation.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by the project's geotechnical consultant. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.

If the excavation occurs near existing structures, special construction considerations would be required during excavation to protect these existing structures during construction. The proposed excavation should not cause loss of bearing and/or lateral supports of the existing structures.

11.3 Shoring Design

Temporary shoring will be required for the recommended excavation due to space limitations and property line boundaries and because of nearby existing structures or facilities and traffic loading. Temporary shoring may consist of the use of a trench box (where feasible), or conventional soldier piles and lagging. Shoring should ultimately be designed by a qualified structural engineer considering the recommendations below in their final design and others which are applicable.

Drilled excavations for soldier piles, which are recommended to create the proposed 40 foot high excavation, may require the use of drilling fluids to prevent caving and to maintain an opened hole for pile installation. Casing may be needed if granular earth material is located behind the existing retaining wall.

11.3.1 Cantilevered Shoring

Cantilevered shoring systems may include soldier piles with lagging to maintain temporary support of vertical wall excavations. Shoring design must consider the support of adjacent underground utilities and/or structures, and should consider the effects of shoring deflection on supported improvements. Due to sandy nature of on site soils, some caving during the drilling of soldier-pile borings should be anticipated.

A soldier pile system will require continuous lagging to control caving and sloughing in the excavation between soldier piles.

Temporary cantilevered shoring should be designed to resist a lateral earth pressure equivalent to a fluid density of 32 pounds per cubic foot (pcf) for non-surcharged condition. This pressure is valid only for shoring retaining level ground. This equivalent fluid pressure is valid only for shoring supporting level ground.

In addition to the lateral earth pressure, surcharge pressures due to miscellaneous loads, such as soil stockpiles, vehicular traffic or construction equipment located adjacent to the shoring, should be included in the design of the shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation. Surcharge pressures from the existing structures should be added to the above earth pressures for surcharges within a horizontal distance less than or equal to the wall height. Surcharge coefficients of 50% of any uniform vertical surcharge should be added as a horizontal earth pressure for shoring design. All shoring should be designed and installed in accordance with state and federal safety regulations.

The minimum embedment depth for piles is ten (10) feet from the lowest adjacent grade into firm alluvium, below the bottom of the excavation. Vertical skin friction against soldier piles for may be taken as 350 psf. Fixity may be assumed at two (2) feet below the excavation into firm native alluvium or bedrock. For the design of soldier piles spaced at least 3.0 diameters on-center, the passive resistance of the soils adjacent to the piles may be assumed to be 300 psf per foot of embedment depth. Soldier pile members placed in drilled holes should be properly backfilled with a sand/cement slurry or lean concrete in order to develop the required passive resistance.

Caving soils should be anticipated between the piles. To limit local sloughing, caving soils can be supported by continuous lagging or guniting. The lagging between the soldier piles may consist of pressure-treated wood members or solid steel sheets. In our opinion, steel sheeting is expected to be more expedient than wood lagging to install. Although soldier piles and any bracing used should be designed for the full-anticipated earth pressures and surcharge pressures, the pressures on the lagging are less because of the effect of arching between the soldier piles. Accordingly, the lagging between the piles may be designed for a nominal pressure of up to a maximum of 350 psf. All lumber to be left in the ground should be treated in accordance with Section 204-2 of the "Standard Specifications for Public Works Construction" (Latest Edition).

11.3.2 Tie-Back Shoring

A tie-back soldier-pile shoring system may be used to maintain temporary support of deep vertical walled excavations. Braced or tied-back shoring, retaining a level ground

surface, should be designed for a uniform pressure of 20H psf, where H is the height of the retained cut in feet.

Surcharge pressures should be added to this earth pressure for surcharges within a distance from the top of the shoring less than or equal to the shoring height. A surcharge coefficient of 50 percent of any uniform vertical surcharge should be added as a horizontal shoring pressure for braced shoring. A uniform lateral pressure of 100 psf should be included in the upper 10 feet of the shoring to account for normal vehicular and construction traffic within 10 feet of the trench excavation.

11.3.3 Tie-Backs

For design of tie-back shoring, it should be assumed that the potential wedge of failure is determined by a plane at 30 degrees from the vertical, through the bottom of the excavation. Tie-back anchors may be installed at angles of 15 to 40 degrees below a horizontal plane. Tie-back installation and testing guidelines and procedures are presented in Appendix F, *"Guide Specifications for Installation and Acceptance of Tie-back Anchors".* Soil friction values, for estimating the allowable capacity of drilled friction anchors, may be computed using the following equation:

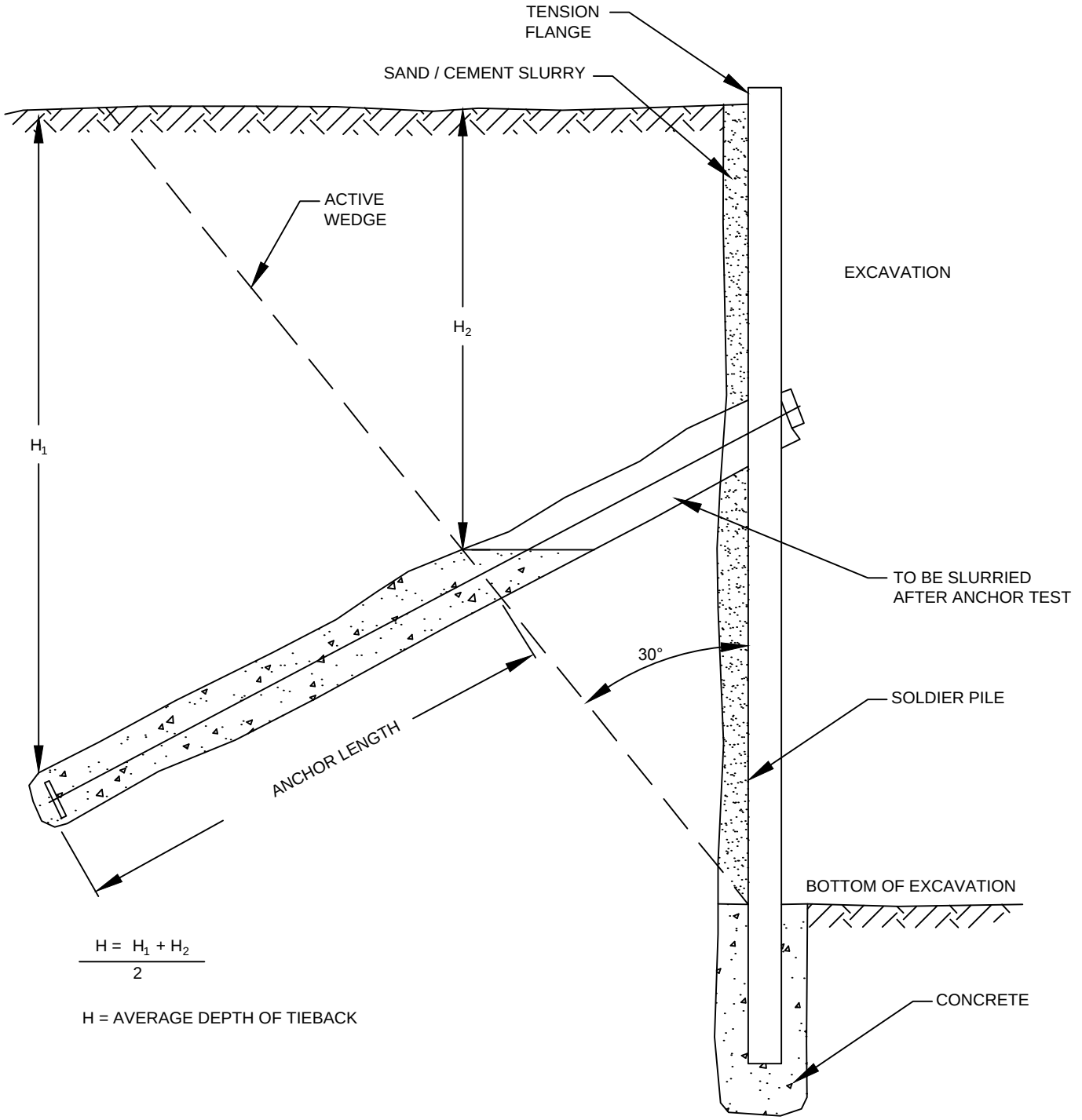
$q = 40H$; $q \leq$ *500 pounds-per-square-foot (psf)*

where:
H = average depth of anchor below ground surface, shown on Drawing No. 9, *Schematic Tie-Back Design*
q = anchor surface area resistance, in psf (excluding tip),

Only the frictional resistance developed beyond the assumed failure plane should be included in the tie-back design for resisting lateral loads. After shoring/tie-back is no longer needed to support the excavation, stress should be carefully released and shoring system including tieback may be able to be left in place.

All shoring and tie-back should be designed by experienced California licensed Civil Engineer and installed by experienced contractors. Shoring/tie-back design should also be reviewed by a geotechnical consultant to verify the soil parameters used in the design are in conformance with geotechnical report.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act of 1987 and current amendments, and the Construction Safety Act should be met. The soils exposed in cuts should be observed during excavation by a competent person employed by the contractor. If potentially unstable soil conditions are encountered, modifications of slope ratios for temporary cuts may be required.



$$H = \frac{H_1 + H_2}{2}$$

H = AVERAGE DEPTH OF TIEBACK

SCHEMATIC TIE-BACK DESIGN

MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.
13-31-284-01

Converse Consultants

Drawing No.
9

It is recommended that Converse review plans and specifications for proposed shoring and that a Converse representative observes the installation of shoring. A licensed surveyor should be retained to establish monuments on shoring and the surrounding ground prior to excavation. Such monuments should be monitored for horizontal and vertical movement during construction. Results of the monitoring program should be provided immediately to the project Structural (shoring) Engineer and Converse for review and evaluation. Adjacent building elements should be photo-documented prior to construction.

12.0 PLAN REVIEW AND CONSTRUCTION INSPECTION SERVICES

This report has been prepared to aid in evaluation of the site, to prepare site-grading recommendations, and to assist the civil/structural engineer in the design of the proposed developments. It is recommended that this office be provided the opportunity to provide final site grading and design recommendations once the final grading plan is available.

All site grading and earthwork should be completed under the observation and testing of a qualified geotechnical consultant to verify compliance with the recommendations set forth in this report. All ground surfaces should be examined and approved by the project geotechnical consultant prior to placing any fill and/or structure. All footing excavations should be observed prior to placement of steel and concrete to see that footings are founded on satisfactory soil and that excavations are free of loose, disturbed or deleterious materials.

13.0 CLOSURE

The findings and recommendations of this report were prepared in accordance with generally accepted professional engineering and engineering geologic principles and practice. We make no other warranty, either expressed or implied. Our conclusions and recommendations are based on the results of the field and laboratory investigations, combined with an interpolation and extrapolation of soil conditions between and beyond boring locations. If conditions encountered during construction appear to be different from those shown by the borings, this office should be notified.

Design recommendations given in this report are based on the assumption that the earthwork and site grading recommendations contained in this report are implemented. Additional consultation may be prudent to interpret Converse's findings for contractors, or to possibly refine these recommendations based upon the review of the final site grading and actual site conditions encountered during construction. If the scope of the project changes, if project completion is to be delayed, or if the report is to be used for another purpose, this office should be consulted.

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APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

Our field investigation included a site reconnaissance of the site and a subsurface exploration program consisting of drilling soil borings. During the site reconnaissance on March 18, 2013, the surface conditions were noted and the locations of the borings were determined. The borings were located using existing boundary features as a guide and should be considered accurate only to the degree implied by the method used.

Twenty-nine (29) borings (BH-1 through BH-29) were drilled from June 16 to 24 2013, extending between depths of approximately 10 to 61.5 feet below the existing ground surface (bgs). Sixteen (16) borings were also drilled within the project site from April 6 to April 15, 2013 as part of the Geotechnical Study Report for the Fill Placement for the Driving Range and Practice Field and Hilltop Removal for Future Physical Education Complex (2013) extending between depths of approximately 21.5 to 91.5 feet below the existing ground surface (bgs). The borings were drilled using a limited access track drill rig and truck-mounted drill rig equipped with an 8-inch diameter hollow-stem auger for soil sampling. Soils and bedrock were logged by a Converse engineer and classified in the field by visual examination in accordance with the Unified Soil Classification System. The field descriptions have been modified where appropriate to reflect the laboratory test results.

Ring samples of the subsurface materials were obtained at frequent intervals in the exploratory borings using a drive sampler (2.4-inches inside diameter and 3.0-inches outside diameter) lined with sample rings. The steel ring sampler was driven into the bottom of the borehole with successive drops of a 140-pound driving weight falling 30 inches, using an automatic hammer. Samples were retained in brass rings (2.4-inches inside diameter and 1.0-inch in height). The central portion of the sample was retained and carefully sealed in waterproof plastic containers for shipment to the Converse laboratory. Blow counts for each sample interval are presented on the logs of borings. Bulk samples of typical soil types were also obtained.

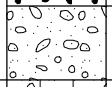
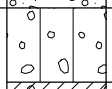
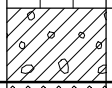
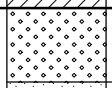
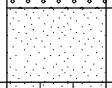
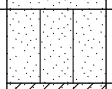
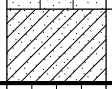
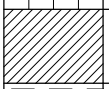
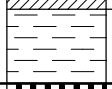
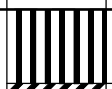
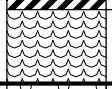
Standard Penetration Tests (SPT) were also performed using a standard (1.4-inches inside diameter and 2.0-inches outside diameter) split-barrel sampler. The mechanically driven hammer for the SPT sampler was 140 pounds, failing 30 inches for each blow. The recorded blow counts for every six inches for a total of 1.5 feet of sampler penetration are shown on the Logs of Borings in the “BLOWS" column. The standard penetration test was performed in accordance with the ASTM Standard D1586 test method. The soil retrieved from the spoon sampler was carefully sealed in waterproof plastic containers for shipment to the laboratory.

Borings BH-22 and BH-29 were utilized for percolation tests prior to backfill. Percolation test procedures and test results are further discussed in report section 7.0, *Percolation*

Testing and Appendix D.

It should be noted that the exact depths at which material changes occur cannot always be established accurately. Changes in material conditions that occur between driven samples are indicated in the logs at the top of the next drive sample. A key to soil symbols and terms is presented as Drawing No. A-1, *Soil Classification Chart*. The logs of the exploratory boring are presented in Drawing Nos. *A-2 through A-30*, *Log of Borings*.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

BORING LOG SYMBOLS

SAMPLE TYPE

- STANDARD PENETRATION TEST — Split barrel sampler in accordance with ASTM D-1586-84 Standard Test Method
- DRIVE SAMPLE 2.42" I.D. sampler.
- DRIVE SAMPLE No recovery
- BULK SAMPLE
- GROUNDWATER WHILE DRILLING
- GROUNDWATER AFTER DRILLING

LABORATORY TESTING ABBREVIATIONS

TEST TYPE
(Results shown in Appendix B)

CLASSIFICATION

Plasticity	pi
Grain Size Analysis	ma
Passing No. 200 Sieve	wa
Sand Equivalent	se
Expansion Index	ei
Compaction Curve	max
Hydrometer	h

STRENGTH

Pocket Penetrometer	p
Direct Shear	ds
Direct Shear (single point)	ds*
Unconfined Compression	uc
Triaxial Compression	tx
Vane Shear	vs
Consolidation	c
Collapse Test	col
Resistance (R) Value	r
Chemical Analysis	ca
Electrical Resistivity	er

UNIFIED SOIL CLASSIFICATION AND KEY TO BORING LOG SYMBOLS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-1**

Log of Boring No. BH- 1

Dates Drilled: 6/18/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 733 Depth to Water (ft): 17.2

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		6" ASPHALT CONCRETE OVER 3" BASE						
		FILL (Af): **CLAY (CL):** trace of silt and fine-grained sand, dark brown.						ei,wa (fc=80%)
		SANDY CLAY (CL): fine to medium-grained sand, some silt, olive.						
5			■		7/8/12	32	85	
		ALLUVIUM (Qal): **CLAY (CL):** trace of fine to medium-grained sand and silt, whitish, yellow-brown.						
10			■		6/14/20	31	85	ds
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND CLAYSTONE:** moderately weathered, near vertical bedding, orangish brown/olive.						
15		-45° approximate bedding, thinly bedded	■		14/17/21	37	81	
20		-dark brown	⊠		9/16/17			
25			■		21/42/46	42	79	
		End of boring at 26.5 feet. Groundwater encountered at 17.2 feet during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-18-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-2**

Log of Boring No. BH- 2

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 740 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAY (CL):** trace of fine-grained sand, some silt, dark brown.						ca,er
5			■		8/12/19	24	99	
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** moderately weathered, no apparent bedding, orangish brown/olive.	■		15/19/23	39	84	
15			■		12/17/22	28	89	
20			☒		9/10/12			
		End of boring at 21.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-3**

Log of Boring No. BH- 3

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 769 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAY (CL):** trace fo fine-grained sand, some silt, brown.		■				
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** moderately weathered, near vertical bedding, pockets of caliche, orangish brown, gray.	■		3/18/35	28	87	
10		-45° bedding, orange, gray, trace caliche white	■		8/20/27	14	94	
15			☒		14/19/23			
20		-near vertical bedding, trace caliche, orange gray	■		22/15/20	14	98	
		End of boring at 21.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-4**

Log of Boring No. BH- 4

Dates Drilled: 6/20/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 777 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		3" ASPHALT CONCRETE OVER 1.5" BASE						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, CLAYSTONE AND SANDSTONE:** lightly weathered, 45° bedding, pockeets of caliche, light gray/gray, orangish brown						
5			■		17/32/39	18	98	
10		-45° bedding, lightly weathered, dark brown, gray, light gray	■		7/22/30	30	85	
15			■		14/19/36	24	92	
20			☒		7/9/10			
25		-near vertical bedding, moderately weathered, thinly bedded	■		11/24/50(5")	30	96	
30			☒		9/13/15			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-5a**

Log of Boring No. BH- 4

Dates Drilled: 6/20/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 777 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, CLAYSTONE AND SANDSTONE:** moderately weathered, thinly bedded.	■		10/24/35	29	89	
40			☒		9/11/12			
45		-thinly bedded, near vertical bedding, orange, orangish brown, gray, light gray	■		16/44/50(5")	16	99	
50			☒		15/16/20			
55			■		15/29/50(4.5")	28	94	
60			☒		11/14/16			
		End of boring at 61.5 feet. Groundwater encountered at 58.7 feet during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-20-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-5b**

Log of Boring No. BH- 5

Dates Drilled: 6/24/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 780 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		2" ASPHALT CONCRETE OVER 2" BASE						
		ALLUVIUM (Qal): **SANDY SILT (ML):** fine to medium-grained sand, some clay, yellow brown.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** severely weathered, no apparent bedding, orange, gray brown, light gray			22/32/40	28	90	
5								
		-moderate weathering, approximately 45° bedding			19/50(6")	20	92	
10								
					13/16/21			
15								
		-thinly bedded			23/50(6")	32	89	
20								
					11/13/22			
25								
					13/17/22			
30								

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-6a**

Log of Boring No. BH- 5

Dates Drilled: 6/24/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 780 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** severely weathered, orange, gray brown, light gray	X		16/17/16			
		End of boring at 36.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-25-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-6b**

Log of Boring No. BH- 6

Dates Drilled: 6/24/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 781 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		2" ASPHALT WITH NO BASE						
		ALLUVIUM (Qal): **SANDY SILT (ML):** fine to coarse-grained sand, some clay, yellow brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SANDSTONE:** moderately weathered, thinly bedded, nearly vertical, orangish brown, gray, light gray	■		10/30/35	26	123	
10			■		9/22/31	24	95	
15			■		27/36/45	29	90	
20		-approximately 45° bedding, lightly weathered	⊠		8/17/25			
25			■		30/50(5")			
30			⊠		12/12/16			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-7a**

Log of Boring No. BH- 6

Dates Drilled: 6/24/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 781 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SANDSTONE:** moderately weathered, thinly bedded, orangish brown, gray, light gray	■		25/50(6")	30	85	
40		-pockets of caliche	☒		20/20/20			
45		-approximately 60° bedding, pockets of quartz	■		33/50(5")	30	86	ds
50			☒		7/14/18			
		End of boring at 51.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-24-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-7b**

Log of Boring No. BH- 7

Dates Drilled: 6/24/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 773 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		2" ASPHALT WITH NO BASE						
		ALLUVIUM (Qal): **SILTY SAND (SM):** fine to medium-grained, some clay, light brown.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** weathered, no apparent bedding, grayish brown, orangish brown, light brown.						
5			■		8/15/21	34	80	
10		-thinly bedded, near vertical bedding	■		13/40/45	20	89	
15			⊠		6/10/13			
20			■		7/19/27	30	86	
25			⊠		7/11/14			
30			■		11/24/38	35	82	
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings and patched with asphalt concrete on 6-24-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-8**

Log of Boring No. BH- 8

Dates Drilled: 6/16/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 740 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		5" ASPHALT OVER 6" BASE						
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, trace clay, light brown.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** weathered, no apparent bedding, grayish brown, orangish brown, light brown	■		14/22/37	21	90	ds
5								
		-thinly bedded, near vertical bedding	■		15/40/50(5")	18	96	
10								
			☒		10/17/25			
15								
		End of boring at 16.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-9**

Log of Boring No. BH- 9

Dates Drilled: 6/20/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAY (CL):** trace fo fine-grained sand, some silt, brown.						ei
5		**ALLUVIUM (Qal):** **CLAY (CL):** trace of fine to medium-grained sand, some silt, dark brown.	■		8/14/22	27	94	
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, CLAYSTONE AND SANDSTONE:** moderately weathered, no apparent bedding, orangish brown, dark brown, gray, light gray.	■		5/14/20	24	91	
15			■		7/16/22	26	95	
20			☒		5/7/7			
25		-pockets of caliche	■		8/14/24	27	90	
30			☒		6/6/8			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-10a**

Log of Boring No. BH- 9

Dates Drilled: 6/20/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, CLAYSTONE AND SANDSTONE:** moderately weathered, no apparent bedding, orangish brown, dark brown, gray, light gray.	■		16/31/34	36	84	
		End of boring at 37.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings on 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-10b**

Log of Boring No. BH-10

Dates Drilled: 6/16/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 725 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		4" ASPHALT OVER 6" BASE						ca,er
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, trace of clay, gravels up to 1.5" in maximum dimension, few clays, light brown.						
5		**ALLUVIUM (Qa):** **SILTY SAND (SM):** fine to medium-grained, with clay, trace caliche, dark brown.	■		7/7/7	22	80	ds
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** weathered, no apparent bedding, light.	■		7/18/30	29	92	
15		-moderately weathered, near vertical bedding, thinly bedded, orangish brown, grayish brown, light brown	■		9/19/28	24	95	
20			■		19/26/48	24	92	
		End of boring at 21.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-11**

Log of Boring No. BH-11

Dates Drilled: 6/16/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 717 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT OVER 9" BASE						
		FILL (Af): **CLAY (CL):** trace of fine to medium-grained sand, trace silt, dark gray.						
5		**SANDY CLAY (CL):** fine to coarse-grained sand, trace silt, few gravels up to 0.5" in maximum dimension, dark brown.	■		6/9/7	14	108	
10			■		44/21/8	12	95	
15		-native at the bottom	■		6/3/4	10	97	
		End of boring at 16.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-12**

Log of Boring No. BH-12

Dates Drilled: 6/16/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 718 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT OVER 6" BASE						ca,er
		FILL (Af): **CLAY (CL):** trace of fine to medium-grained sand, some silt, few gravels up to 0.5" in maximum dimension, dark brown.						
5		**ALLUVIUM (Qa):** **CLAY (CL):** trace of fine-grained sand, trace of silt, caliche, dark brown.	■		5/14/18	19	101	ds
10			■		7/13/16	25	90	
		BEDROCK - PUENTE FORMATION (Tpss): **SANDSTONE AND SILTSTONE:** severly weathered, no apparent bedding, orangish brown, olive brown						
15			■		7/12/14	28	97	
20		-moderately weathered, thinly bedded, near vertical bedding, light grayish brown, orangish brown, light brown	■		17/28/36	30	76	
		End of boring at 21.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-13**

Log of Boring No. BH-13

Dates Drilled: 6/16/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 731 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SANDY CLAY (CL):** fine to medium-grained sand, trace silt, dark brown. **SANDY CLAY (CL):** fine to medium-grained sand, trace silt, olive brown.		■				ca,er
5			■		5/10/10	30	85	
10		**SAND (SP):** fine to medium-grained, with silt and clay, greenish gray.	■		6/11/14	26	91	
15		**ALLUVIUM (Qa):** **CLAY (CL):** trace of fine-grained sand, trace of silt, dark gray.	■		4/4/6	31	87	
20			■		4/8/11	20	117	ds
25			⊠		4/7/10			
30			■		7/13/17	27	89	
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings on 6-16-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-14**

Log of Boring No. BH-14

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): 38

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, olive. **CLAYEY SAND (SC):** fine to medium-grained, few gravels up to 1.5" in maximum dimension, gray brown.						
5			■		4/8/11	35	86	
		CLAY (CL): fine to coarse-grained, with few rocks with silt up to 1" in maximum dimension, gray brown.						
10			■		5/7/8	29	87	
		ALLUVIUM (Qal): **CLAY (CL):** trace of fine to coarse-grained sand, with silt, trace caliche, dark brown.						
15			■		3/4/5			
20			⊠		4/5/6			wa (fc=72%)
25			■		7/14/22	33	85	c
30			⊠		8/11/12			wa(fc=46%)

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-15a**

Log of Boring No. BH-14

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 732 Depth to Water (ft): 38

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **CLAY (CL):** trace of fine to coarse-grained sand, with silt, dark brown.	■		2/6/9	31	91	c
40			☒		5/5/7			wa (fc=63%)
45			☒		6/4/7			
		CLAY (CL): trace of fine-grained sand, trace silt, brown.						
50		**SILTY SAND (SM):** fine to medium-grained, with clay, light brown.	☒		27/36/22			
		End of boring at 53 feet. Groundwater encountered at 38 feet during drilling. Borehole backfilled with soil cuttings on 6-17-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-15b**

Log of Boring No. BH-15

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 731 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to coarse-grained, olive brown.						
		ALLUVIUM (Qal): **CLAY (CL):** trace of fine to medium-grained sand, with silt, olive brown.						
5			■		10/5/8	31	86	
10			⊠		4/6/8			
15			■		4/10/17	27	87	c
20		**Fat CLAY (CH):** trace silt, dark brown.	■		10/15/21	27	90	pi
25			⊠		4/5/7			
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** moderately weathered, no apparent bedding, grayish brown, orange brown, light brown						
30			■		8/11/14	29	92	
		End of boring at 31.5 feet. Groundwater encountered at 38 feet during drilling. Borehole backfilled with soil cuttings on 6-17-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-16**

Log of Boring No. BH-16

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 756 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **CLAY (CL):** trace of fine to coarse-grained sand and silt, with gravels up to 1" in maximum dimension, light gray.						ei,ca,er
5			■		16/33/43	17	91	
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE** no apparent bedding, moderately weathered, light gray.						
10		-trace caliche	■		15/32/50	21	121	
15			■		15/28/39	22	112	
20			■		17/30/48	23	113	
25		-near vertical bedding	⊠		9/13/16			
30			⊠		11/17/21			
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings on 6-24-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-17**

Log of Boring No. BH-17

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 750 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		ALLUVIUM (Qal): **SANDY SILT (ML):** fine to coarse-grained sand, yelllow brown.						max
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** moderate weathering, no apparent bedding, yellowish brown.	■		33/35/29	22	99	
10			■		19/28/41	20	97	
15			⊠		10/12/18			
20			⊠		18/16/21			
25			⊠		16/20/21			
30			⊠		11/16/18			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-18a**

Log of Boring No. BH-17

Dates Drilled: 6/17/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 750 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND CLAYSTONE:** moderate weathering, no apparent bedding, yellowish brown	X		8/17/17			
40		-trace clay, near horizontal bedding	X		13/23/26			
45			X		11/15/16			
50			■		24/42/50(4.5")	38	105	
		End of boring at 51.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings on 6-17-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-18b**

Log of Boring No. BH-18

Dates Drilled: 6/18/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 751 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **SILTY SAND (SM):** fine to medium-grained, trace of clay, yellow.						
5			■		8/10/19	18	106	
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, SANDSTONE AND CLAYSTONE:** lightly weathered, 30° from horizontal bedding, with caliche, light gray, olive brown.	■		12/23/35	18	116	
15			■		18/26/35	11	126	
20		-severely weathered, no apparent bedding, orangish brown, olive brown to yellow brown	☒		13/20/29			
25		-moderate weathering, near vertical bedding, thinly bedded, olive, light gray to gray, trace caliche	■		34/50(4.5")	13	84	
30			☒		21/22/24			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-19a**

Log of Boring No. BH-18

Dates Drilled: 6/18/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 751 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND CLAYSTONE:** lightly weathered, 30° from horizontal bedding, with caliche, light gray, olive brown.			15/35/47	27	85	
40		-few gravels up to 3/4" in maximum dimension, gray brown	X		12/17/22			
45			■		15/27/50(5.5")	32	94	
50			X		10/16/19			
		End of boring at 51.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-18-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-19b**

Log of Boring No. BH-19

Dates Drilled: 6/18/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 771 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		ALLUVIUM (Qal): **SILTY SAND (SM):** fine to coarse-grained, few rocks up to 3/4" in maximum dimension, yellow brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** severely weathered, thinly bedded at nearly horizontal, orangish brown, and light gray, red brown.	■		17/15/17	38	77	ds
10			■		16/26/32	19	91	
15			⊠		7/11/10			
20		-thinly bedded at approximately 30°, moderately weathered, orange brown, light gray	■		11/21/32	21	93	
25		-Siltstone, Sandstone, Claystone and Granite, Sandy Clay (CL) fine to coarse-grained, few rocks up to 3/4" in maximum dimension, gray brown	■		8/16/26			
30			▭		50(5")			
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings on 6-18-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-20**

Log of Boring No. BH-20

Dates Drilled: 6/18/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 736 Depth to Water (ft): 23.25

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		2.5" ASPHALT COVER WITH 6" BASE						ei
		FILL (Af): **SANDY CLAY (CL):** fine to coarse-grained, trace silt, dark brown.						
5		-with gravels up to 3/4" in maximum dimension, brown			8/8/15	22	96	ds
10		**ALLUVIUM (Qal):** **CLAY (CL):** trace of fine-grained sand and silt, trace caliche, brown.			5/8/13	29	86	
15					3/5/6			
20					4/6/7	38	79	
25					4/6/7			
30		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** moderately weathered, bedding approximately 80° vertical, orangish brown and gray.			13/31/50	33	85	
		End of boring at 31.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-18-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-22**

Log of Boring No. BH-21

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 740 Depth to Water (ft): 30.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT CONCRETE						
		FILL (Af): **CLAY (CL):** trace of fine to medium-grained sand and silt, dark brown.						
5		**ALLUVIUM (Qa):** **CLAY (CL):** trace of fine-grained sand and silt, dark brown.			8/8/11	13	110	c
10		**SANDY CLAY (CL):** fine to medium-grained sand, some silt, dark brown.			7/14/15	6	109	
15		**CLAY (CL):** trace of fine-grained sand and silt, trace caliche, dark brown.			6/9/14	28	94	
20					4/6/8			
25		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** moderately weathered, no apparent bedding, brown, orangish brown, gray			7/9/12			
30					10/10/14			
		End of boring at 31.5 feet. Groundwater encountered at 30.5 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-23**

Log of Boring No. BH-22

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 745 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT CONCRETE WITH 3" BASE						wa (fc=83%)
		FILL (Af): **CLAY (CL):** trace of fine-grained sand and silt, dark gray.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE:** lightly weathered, near vertical bedding, orangish brown, olive gray.			4/10/14	31	84	
10					8/10/12	27	87	
		End of boring at 11.5 feet. Groundwater not encountered during drilling. Borehole utilized for percolation testing. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-24**

Log of Boring No. BH-23

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 742 Depth to Water (ft): 29.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3" ASPHALT CONCRETE WITH 3" BASE						max
		FILL (Af): **SANDY SILT (ML):** fine to coarse-grained sand, some gravels up to 1" in maximum dimension.						
5		**ALLUVIUM (Qa):** **CLAY (CL):** trace of fine-grained sand and silt, dark brown.			6/8/14	19	103	
10		**CLAY WITH SAND (CL):** fine to medium-grained sand, brown.			10/11/16	12	111	
15		**CLAY (CL):** trace of fine-grained sand and silt, trace caliche, brown.			6/10/22	24	95	c
20					6/9/8			
25		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** lightly weathered, near vertical bedding, orangish brown, olive gray			12/14/22	7	109	
30					14/17/17			

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-25a**

Log of Boring No. BH-23

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 742 Depth to Water (ft): 29.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND CLAYSTONE:** lightly weathered, near vertical bedding, orangish brown, olive gray	X		11/15/20			
		End of boring at 29.5 feet. Groundwater not encountered during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-25b**

Log of Boring No. BH-24

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 743 Depth to Water (ft): 17

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3.5" ASPHALT OVER 6" BASE						
		FILL (Af): **CLAY (CL):** trace of fine to medium-grained sand with silt, few rocks up to 1/2" in maximum dimension, dark brown.						ca,er
5		**ALLUVIUM (Qal):** **SILTY CLAY (CL):** trace of fine to medium-grained sand and silt, gravels between 3/8" to 3/4" in diameter, trace caliche, brown.			9/13/19	11	110	ds
10		**SILTY SAND (SM):** fine to coarse-grained, few gravels up to 1/2" in maximum diemension, dark brown.			4/8/10	11	100	
15		**CLAY (CL):** trace of fine-grained sand and silt, brown.			4/6/10			
20		**SANDY CLAY (CL):** fine to medium-grained sand, brown.			4/8/8	20	107	
25		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, CLAYSTONE AND SANDSTONE:** stiff layers of cemented clay, sandy clay with gravel, rocks up to 3/4" in maximum dimension, brown			31/25/30			
					19/20/22			
		End of boring at 29.5 feet due to refusal of stiff cemented layer. Groundwater encountered at 17 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-26**

Log of Boring No. BH-25

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 28.8

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		2" ASPHALT OVER 5" BASE						ei
		FILL (Af): **CLAY WITH SAND (CL):** fine to medium-grained sand, some silt, dark brown.						
5		**ALLUVIUM (Qal):** **SANDY CLAY (CL):** fine to medium-grained sand, some silt, dark brown.	■		8/13/18	16	114	pi
10		**SILTY SAND (SM):** fine to coarse-grained, with rocks up to 3/4" in maximum dimension, trace clay, dark brown.	■		11/11/19	6	108	
15			⊠		3/5/9			
20			■		15/16/28	16	113	
25		**CLAYEY SAND (SC):** fine to coarse-grained, trace silt, some gravel, brown.	⊠		50(4")			
30		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** gray brown.	■		20/50(6")	33	81	
		End of boring at 31 feet. Groundwater encountered at 28.8 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-18-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-27**

Log of Boring No. BH-26

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 17.9

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		2" ASPHALT CONCRETE OVER 3" BASE						
		FILL (Af): **CLAYEY SAND (SC):** medium to coarse-grained, brown.						
5			■		6/9/12	16	113	ds
10		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to medium-grained, trace silt, brown.	■		13/23/34	12	118	wa (fc=21%)
15		**SILTY SAND (SM):** fine-grained, slightly gravelly, trace of clay, brown.	■		14/23/30	11	119	
20			☒		20/13/20			wa (fc=17%)
25		**SILTY CLAY (CL):** trace of fine-grained sand and silt, brown.	■		14/19/21	34	80	
30			☒		7/10/14			wa (fc=62%)

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-28a**

Log of Boring No. BH-26

Dates Drilled: 6/19/2014 Logged by: FM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 741 Depth to Water (ft): 17.9

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND CLAYSTONE:** thinly bedded, moderately weathered, gray brown	■		18/36/47	34	85	
40			☒		5/7/9			wa (fc=75%)
45			■		15/30/50	33	86	
50			☒		8/15/20			
		End of boring at 51.5 feet. Groundwater encountered at 17.9 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-28b**

Log of Boring No. BH-27

Dates Drilled: 6/19/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 746 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY CLAY (CL):** trace of fine-grained sand and silt, dark brown.						
5		**ALLUVIUM (Qal):** **CLAY (CL):** trace of fine-grained sand and silt, dark brown.	■		38/18/20	13	98	
		-few gravels up to 1.5" in maximum dimension, brown to light brown						
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND CLAYSTONE:** severly weathered, no apparent bedding, trace caliche, orangish brown, gray, olive	■		5/13/23	30	84	
15		-near vertical bedding, moderately weathered.	⊠		7/7/13			
20			■		7/18/25	33	89	
		End of boring at 21.5 feet. Groundwater encountered at 38 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-29**

Log of Boring No. BH-28

Dates Drilled: 6/18/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 742 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SANDY SILT (ML):** fine to coarse-grained sand, trace clay, dark brown.						ma, max (fc=80%)
5		**ALLUVIUM (Qal):** **CLAY (CL):** trace of fine-grained sand and silt, gray brown.			5/9/14	28	96	
10					7/15/15	32	93	
15		**SANDY CLAY (CL):** fine to medium-grained, trace silt, pockets of caliche, olive brown.			5/7/9			
20					10/15/22	35	84	
		End of boring at 21.5 feet. Groundwater encountered at 38 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE ATHLETICS COMPLEX EAST WALNUT, CALIFORNIA

Project No. **14-31-124-01** Drawing No. **A-30**

Log of Boring No. BH-29

Dates Drilled: 6/19/2014 Logged by: MM Checked By: WHC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 740 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		4" ASPHALT OVER 6" BASE						r
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, light brown.						
		CLAYEY SAND (SC): fine to medium-grained, trace silt, orangish brown.						
5								
10		End of boring at 21.5 feet. Groundwater encountered at 38 feet during drilling. Borehole backfilled with soil cuttings, tamped and patched with asphalt 6-19-14.						

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **A-31**

APPENDIX A-1

PREVIOUS FIELD EXPLORATION BORING LOGS (2013)

Log of Boring No. BH-B1

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 752 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with gravels up to 1" in maximum dimension, light brown.						max
5			■		9/16/13			
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** slightly to moderately weathered, near-vertical bedding (±90°), orange-brown, olive-brown.	■		19/19/30	29	91	c
15			☒		4/7/10			
20		-slightly fractured, tight, contains gypsum crystals along fractures	■		13/20/32	36	84	
25			☒		7/11/15			
		End of boring at 26.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-2

Log of Boring No. BH-B2

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 803 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with clays and gravels up to 1" in maximum dimension, light brown.						
5		-becomes gray, buff	■		10/11/16	19	81	
10		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, gray.	■		14/25/31	54	83	
15		-becomes olive-brown	☒		2/4/6			
20		-moderate bedding (±45°), becomes gray	■		10/21/28	27	92	
25			☒		5/8/12			
30			■		17/32/42	33	88	

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-3a

Log of Boring No. BH-B2

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 803 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE:** laminated, slightly to moderately weathered, gray.	X		8/11/15			
40			■		10/29/54	23	95	
45			X		5/12/15			
50			■		21/48/50	39	80	ds
		End of boring at 51.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-11-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-3b

Log of Boring No. BH-B3

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 840 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with gravels up to 0.75" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, some caliche along fractures, moderate bedding (±45°), gray, light brown.			15/26/27	29	96	
10					8/17/27	36	83	
15		**SILTSTONE, SANDSTONE AND SHALE:** steep to near-vertical bedding (±70°), gray.			6/23/33	46	69	
20					4/8/9			
25		-near-vertical bedding (±90°)			7/18/38	55	71	
30		-becomes olive-brown			5/7/13			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-4a

Log of Boring No. BH-B3

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 840 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, some caliche along fractures, moderate bedding (±45°), gray, light brown.	■		6/12/34	34	86	ds
40		**MUDSTONE:** weathered, massive, olive-brown	☒		3/5/9			
45		**SILTSTONE, SHALE AND SANDSTONE:** very thinly bedded, slightly weathered, moderate bedding (±45°), olive-brown and orangish-brown	■		10/23/25	37	84	
50			☒		10/20/29			
55			■		13/50(5")	29	90	
60			☒		6/10/16			
65		-becomes slightly fractured, gypsum crystals along fractures	■		11/26/50	34	88	

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01 Drawing No.: A2-4b

Log of Boring No. BH-B3

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 840 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly weathered, olive-brown, orangish-brown.	X		7/10/16			
		End of boring at 71.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-15-13.						

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01

Drawing No.: A2-4c

Log of Boring No. BH-B4

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with gravels up to 1" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** laminated, slightly weathered to moderately weathered, moderate to steep bedding (±70°), gray-brown.			9/17/27	3	108	
10		**SHALE:** slightly fractured, caliche along fractures, near-vertical bedding, gray.			8/15/24	28	87	
15					16/28/32			
20		**SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, gray-brown.			9/16/27			
25		-becomes orange-brown			6/11/13			
30					7/11/14			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-5a

Log of Boring No. BH-B4

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly weathered to moderately weathered, moderate to steep bedding (±70°), olive-brown.	X		5/8/10			
40			X		8/11/17			
45		-becomes orange-brown	X		12/17/28			
50		-becomes grayish brown	X		8/9/10			
55		-becomes orange-brown	X		9/12/17			
60			X		7/9/12			
65			X		11/15/16			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-5b

Log of Boring No. BH-B4

Dates Drilled: 4/15/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly weathered to moderately weathered, moderate to steep bedding (±70°), gray-brown.	X		9/11/16			
		End of boring at 71.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-5c

Log of Boring No. BH-B5

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 839 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with few clays and gravels up to 0.75" maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE** slightly fractured, slightly to moderately weathered, light gray	■		8/20/28	27	78	
10		-becomes light brown, near vertical-bedding (±90°)	■		10/36/50(5")	29	64	
15			■		8/19/38	33	83	ds
20		-becomes gray	☒		6/12/14			
25			☒		10/9/14			
30		-becomes slightly fractured, gypsum crystals along fractures, orange-brown	☒		5/11/15			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-6a

Log of Boring No. BH-B5

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 839 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly fractured, slightly to moderately weathered, light gray.	X		50(5")			
40			X		6/9/76			
45		-becomes gray	X		6/10/17			
50		-becomes olive-brown/orange-brown	X		5/10/15			
55			X		6/10/15			
60			X		10/17/25			
65			X		11/12/19			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-6b

Log of Boring No. BH-B5

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 839 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly fractured, slightly to moderately weathered, light gray.	X		5/6/14			
		End of boring at 71.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-6c

Log of Boring No. BH-B6

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with clays and gravels up to 1" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, SANDSTONE, AND SHALE:** laminated, slightly to moderately weathered, steep to near-vertical bedding (±70°), light gray, light brown			17/28/37	25	85	
10		-becomes slightly fractured, gray-brown			8/22/34	23	91	
15					11/23/37	26	91	
20					5/6/10			
25		-moderate bedding (±45°), gray-brown, orange-brown			8/17/28			
30					5/6/10			

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01

Drawing No.: A2-7a

Log of Boring No. BH-B6

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE, AND SHALE:** slightly fractured, gypsum crystals along fractures.	■		2/8/38	34	86	
40			☒		6/17/24			
45			■		16/50(5")			
50		-moderate bedding (±45°)	☒		11/13/20			
55			■		13/42/50(4")	26	92	
60								
65		-near-vertical bedding (±90°)	■		14/50(5")	34	85	ds

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01 Drawing No.: A2-7b

Log of Boring No. BH-B6

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 841 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE, AND SHALE:** laminated, slightly to moderately weathered, steep to near-vertical bedding (±70°), light gray, light brown	X		11/16/20			
		End of boring at 71.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-11-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-7c

Log of Boring No. BH-B7

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 823 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, light gray.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE SHALE AND SANDSTONE:** laminated, slightly to moderately weathered, light gray.	■		10/21/35	32	87	
10		**MUDSTONE:** fractured and recemented, massive, gypsum crystals along fractures, gray-brown.	■		14/24/36	34	90	
15		**SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), gray-brown, orange-brown	■		5/24/27			
20			☒		6/11/15			
25		-slightly fractured, gypsum crystals along fractures	■		7/17/39	32	89	
30			☒		4/11/15			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-8a

Log of Boring No. BH-B7

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 823 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SHALE AND SANDSTONE:** very thinly bedded, slightly weathered, gray/orangish-brown.	X		13/10/14			
75		-steep to near-vertical bedding (±70°)	■		25/50(5")	34	82	ds
80			X		8/7/14			
		End of boring at 81.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-11-13.						

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01

Drawing No.: A2-8c

Log of Boring No. BH-B8

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 835 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, gravels up to 1" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), gray-brown, olive-brown.	■		8/16/31	31	88	
10			■		11/22/32	30	91	
15		**MUDSTONE:** slightly to moderately weathered, massive, tight, gray	■		7/23/29	34	87	
20		**SILTSTONE AND SHALE:** laminated, slightly moderately weathered, moderate bedding (±45°), gray-brown, olive-brown	☒		3/9/8			
25			☒		11/13/15			
30			☒		5/8/8			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-9a

Log of Boring No. BH-B8

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 835 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), gray-brown, olive-brown	X		10/13/17			
40			X		6/8/11			
45			X		9/9/14			
50			X		7/23/18			
55			X		10/15/17			
60		-becomes orange-brown	X		9/16/18			
65			X		9/14/20			

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No.: 13-31-116-01 Drawing No.: A2-9b

Log of Boring No. BH-B8

Dates Drilled: 4/11/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 835 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.						
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), orange brown	X		11/16/21			
		End of boring at 71.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-11-13.						

Converse Consultants

Project Name: MT. SAC HILLTOP REMOVAL, WALNUT, CALIFORNIA

Project No. 13-31-116-01 Drawing No. A2-9c

Log of Boring No. BH-B9

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		COLLUVIUM (Qcol): **SILTY SAND (SM):** fine to medium-grained, with clay and gravels up to 1" in maximum dimension, light brown.						
5		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, SANDSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), olive-brown, orange-brown.			14/29/36	29	87	
10					13/30/35	36	83	
15		-becomes gray-brown, moderate to steep bedding (±50°)			5/8/13			
20					6/24/31	33	87	
25					4/9/17			
30		-becomes slightly fractured, gypsum crystals along fractures			13/14/22	34	86	

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-10a

Log of Boring No. BH-B9

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND SHALE:** laminated, slightly to moderately weathered, moderate bedding (±45°), olive-brown, orange-brown.	X		9/18/21			
40		**SHALE:** fractured and recemented, moderately weathered, gypsum crystals along fractures, gray-brown	■		10/21/38	34	87	
45			X		4/6/8			
50		**SILTSTONE AND SHALE:** laminated, slightly weathered, moderate bedding (±45°), gray-brown	■		19/42/50(5")	29	92	
55			X		6/20/24			
60			■		8/12/23	39	81	
65			X		3/10/22			

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-10b

Log of Boring No. BH-B9

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE, SANDSTONE AND SHALE:** laminated, slightly to moderately weathered, steep to near-vertical bedding (±70°), orange-brown.	■		5/30/50(3")	34	91	
75			⊠		9/13/28			
80		-near-vertical bedding (±90°)	■		34/50(5")	33	88	
		End of boring at 81.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-10-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

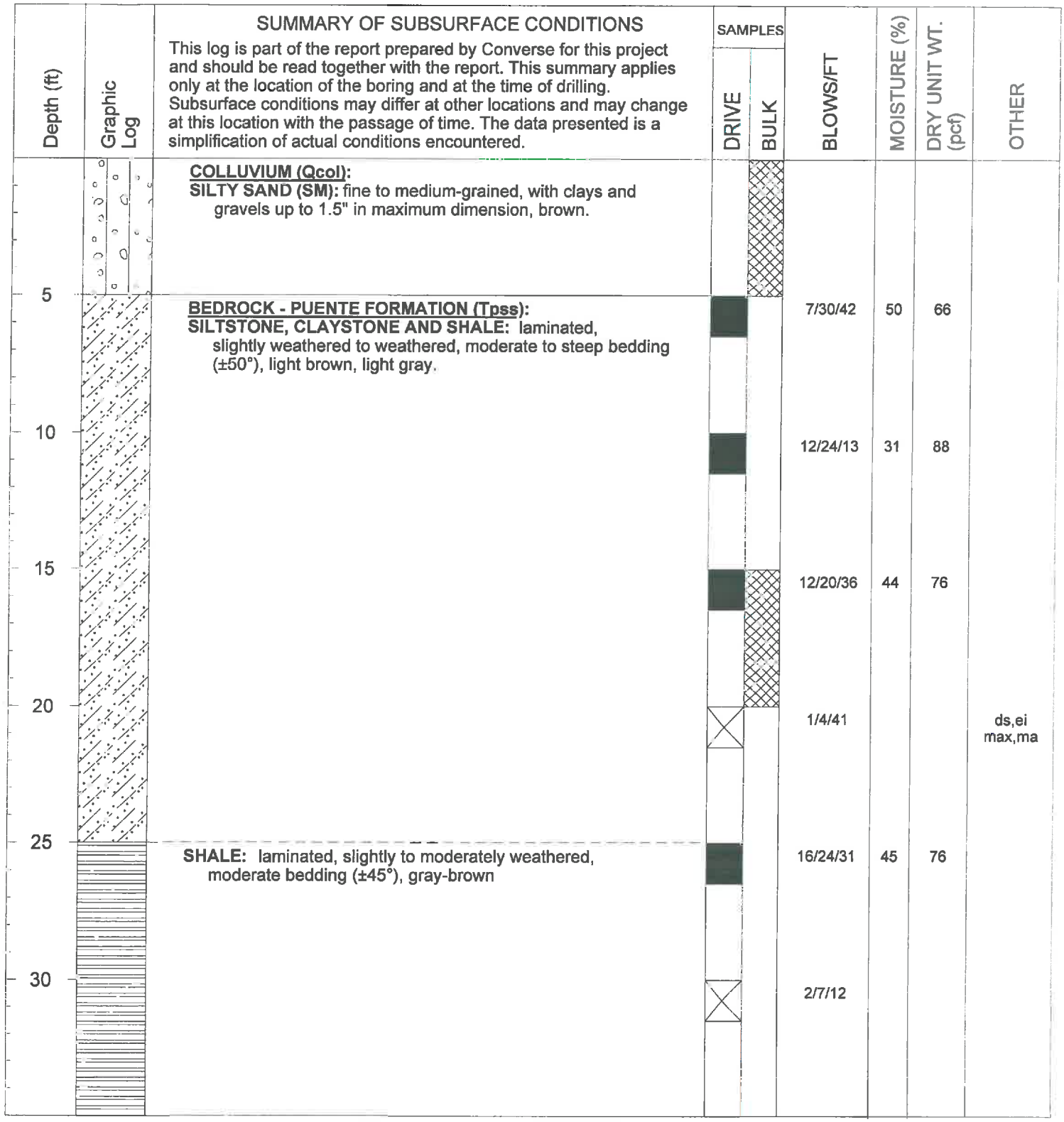
Drawing No. A2-10c

Log of Boring No. BH-B10

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED



Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A-11a

Log of Boring No. BH-B10

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly weathered to weathered, slightly fractured, gypsum cystals along fractures	■		9/18/25	38	80	
40		-becomes olive-brown	☒		5/18/15			
45			■		20/39/50(5")	61	61	
50			☒		8/15/26			
55		**SILTSTONE AND SHALE:** thinly bedded, slightly fractured, gypsum crystals along fractures, steep to near-vertical bedding (±70°), gray-brown	■		24/45/50(5")	36	84	
60			☒		18/25/36			
65		**MUDSTONE:** slightly fractured, slightly weathered, massive, gray-brown	■		22/37/50	43	80	

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A-11b

Log of Boring No. BH-B10

Dates Drilled: 4/10/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 846 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		BEDROCK - PUENTE FORMATION (Tpss): **SILTSTONE AND SHALE:** laminated, slightly weathered to weathered, gray brown	X		7/18/14			
75		**SILTSTONE AND SHALE:** thinly bedded, slightly weathered, steep to near-vertical bedding (±70°), gray brown	■		15/32/50(2")	46	74	
80			X		7/11/13			
85		**SILTSTONE, SANDSTONE AND SHALE:** slightly fractured, gypsum crystals along fractures, near-vertical bedding (±90°), dark brown, orange-brown	■		34/45/50	40	77	ds
90			X		12/13/23			
		End of boring at 91.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings on 4-10-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A-11c

Log of Boring No. BH-B11

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 722 Depth to Water (ft): 21.5

SUMMARY OF SUBSURFACE CONDITIONS

This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Depth (ft)	Graphic Log	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
							ei
5		■		6/14/21	28	83	ds
10		⊠		2/4/6			
15		■		9/15/22	24	100	c
20		⊠		4/6/10			
25		■		6/14/27	20	108	
30		⊠		5/11/18			

FILL (Af):
SILTY SAND (SM): fine to medium-grained with clay, with gravels up to 0.5" in maximum dimension, brown.
SANDY CLAY (CL): fine to medium-grained sand, light brown.

ALLUVIUM (Qal):
SANDY CLAY (CL): fine to medium-grained sand, dark brown, black.

CLAYEY SILT (ML): caliche stringers, brown.

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-12a

Log of Boring No. BH-B11

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 722 Depth to Water (ft): 21.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		SAND (SP): medium to coarse-grained, with gravels up to 1.5" in maximum dimension, orangish brown.	■		16/50(5")	9	128	
40			☒		8/18/16			
45		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, SANDSTONE AND SHALE** laminated, slightly weathered, near vertical bedding (±90°), gray-brown, orange-brown	■		15/50(5")	28	90	
50			☒		23/23/43			
		End of boring at 51.5 feet. Groundwater encountered at 21.5 feet. Borehole backfilled with soil cuttings on 4-6-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-12b

Log of Boring No. BH-B12

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 721 Depth to Water (ft): 19.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, with clays and gravels up to 1" maximum dimension, brown.						
5		**SANDY CLAY (CL):** fine to medium-grained sand, brown.	■		4/4/6	28	86	ei
10		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** medium to coarse-grained, dark orange-brown.	■		4/8/10	14	115	
15			☒		2/2/5			
20		**CLAY (CL):** trace of fine-grained sand, brown.	■		4/3/4	35	92	c
25			☒		5/6/6			
30		**CLAYEY SAND (SC):** fine to medium-grained, gravels up to 1/3" in maximum dimension, brown.	■		7/9/10	19	106	

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-13a

Log of Boring No. BH-B12

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 721 Depth to Water (ft): 19.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		CLAY (CL): brown.	X		8/11/14			
40		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE, SHALE AND SANDSTONE** laminated, slightly weathered to weathered, steep to near-vertical bedding (±70°), gray-brown, orange-brown.	■		8/18/27	25	94	
45			X		20/28/22			
50			■		36/50(4")	34	88	
		End of boring at 51.5 feet. Groundwater encountered at 19.5 feet. Borehole backfilled with soil cuttings on 4-6-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-13b

Log of Boring No. BH-B13

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 717 Depth to Water (ft): 17.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, with silts, brown. **CLAY (CL):** trace fo fine medium-grained sand and silt, dark brown.						
5			■		3/5/7	25	94	
10			■		2/3/5	36	78	c
15		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to medium-grained, light brown.	⊠		2/5/8			
20		**SANDY CLAY (CL):** fine to medium-grained sand, brown.	■		2/4/5	25	100	
25		**CLAYEY SAND (SC):** medium to coarse-grained, with gravels up to 1" in maximum dimension, light brown.	⊠		5/7/5			
30		-becomes orange-brown	■		5/10/21	30	98	

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-14a

Log of Boring No. BH-B13

Dates Drilled: 4/6/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 717 Depth to Water (ft): 17.5

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		CLAYEY SAND (SC): medium to coarse-grained, with gravels up to 1" in maximum dimension, light brown.	X		20/17/36			
40		**GRAVELLY CLAY (CL):** some fine to coarse-grained sand, gravels up to 2" in maximum dimension, brown.	■		16/30/45	15	108	
45			X		6/7/14			
50		**BEDROCK - PUENTE FORMATION (Tpss):** **SILTSTONE AND SHALE:** laminated, slightly fractured, sligtly weathered, gray-brown, orange-brown	■		12/20/30	29	92	
		End of boring at 51.5 feet. Groundwater encountered at 17.5 feet. Borehole backfilled with soil cuttings on 4-6-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-14b

Log of Boring No. BH-B14

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 744 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES: DRIVE	SAMPLES: BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		4" ASPHALT OVER 7" BASE						
		FILL (Af): **SILTY SAND (SM):** fine to medium-grained, light brown. **CLAYEY SAND (SC):** fine to medium-grained, with gravels up to 1" in maximum dimension, orangish brown.						
5			■		8/10/10			
10		**ALLUVIUM (Qal):** **SILTY SAND (SM):** fine to medium-grained, with few clays, gravels up to 1/2" in maximum dimension, orangish brown.	■		9/16/19			
15			■		6/9/11	20	109	
20		**SILTY SAND (SM):** medium to coarse-grained, orange-brown.	■		5/5/6	11	113	
25		**CLAYEY SAND (SC):** fine to coarse-grained, gray brown.	■		7/16/24	15	120	
		End of boring at 26.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings and bentonite chips, tamped and patched with asphalt on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-15

Log of Boring No. BH-B15

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 749 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		3.5" ASPHALT OVER 7" BASE						
		FILL (Af): **SAND WITH CLAY (CL):** fine to medium-grained, with gravels up to 1" in maximum dimension.						ma
5		**CLAYEY SAND (SC):** fine to medium-grained, with gravels up to 0.5" in maximum dimension, dark brown.			4/11/13	23	89	
10		**ALLUVIUM (Qal):** **SANDY CLAY (CL):** fine to medium-grained, dark brown.			6/9/13	34	94	
15		**CLAYEY SAND (SC):** gravels up to 3/4" in maximum dimension, brown.			6/10/12	17	113	
20		**GRAVELLY SAND (SP):** medium to coarse-grained, gravels up to 1" in maximum dimension, orange-brown.			19/35/19			
		End of boring at 21.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings and bentonite chips, tamped and patched with asphalt on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-16

Log of Boring No. BH-B16

Dates Drilled: 4/12/2013 Logged by: MM Checked By: SCL/CLC

Equipment: 8" HOLLOW STEM AUGER Driving Weight and Drop: 140 lbs / 30 in

Ground Surface Elevation (ft): 742 Depth to Water (ft): NOT ENCOUNTERED

Depth (ft)	Graphic Log	SUMMARY OF SUBSURFACE CONDITIONS This log is part of the report prepared by Converse for this project and should be read together with the report. This summary applies only at the location of the boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FT	MOISTURE (%)	DRY UNIT WT. (pcf)	OTHER
		4.5" ASPHALT/6" BASE						
		FILL (Af): **CLAYEY SAND (SC):** fine to medium-grained, with gravels up to 1" in maximum dimension, dark brown.			6/10/14			max,ei
5		**SANDY CLAY (CL):** fine to medium-grained sand, dark brown.			6/10/14	32	86	
10		**ALLUVIUM (Qal):** **CLAYEY SAND (SC):** fine to medium-grained, with gravels up to 1" in maximum dimension, orangish brown.			7/10/19	6	123	c
15					5/6/7	4	120	
20		**SAND (SP):** medium to coarse-grained, with gravels up to 1" in maximum dimension, orangish brown.			10/17/24	4	115	
25		**CLAYEY SAND (SC):** gravels up to 1 1/2" in maximum dimension, dark brown.			10/13/18	15	116	
		End of boring at 26.5 feet. No groundwater encountered during drilling. Borehole backfilled with soil cuttings and bentonite chips, tamped and patched with asphalt on 4-12-13.						

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. A2-17

APPENDIX B

LABORATORY TESTING PROGRAM

APPENDIX B

LABORATORY TESTING PROGRAM

Tests were conducted in our laboratory on representative soil samples for the purpose of classification and evaluation of their relevant physical characteristics and engineering properties. The amount and selection of tests were based on the geotechnical requirements of the project. Test results are presented herein and on the Logs of Borings in Appendix A, *Field Exploration*. The following is a summary of the laboratory tests conducted for this project.

Moisture Content and Dry Density

Results of moisture content and dry density tests, performed on relatively undisturbed ring samples were used to aid in the classification of the soils and to provide quantitative measure of the *in situ* dry density. Data obtained from this test provides qualitative information on strength and compressibility characteristics of site soils. For test results, see the Logs of Borings in Appendix A, *Field Exploration*.

Grain-Size Analysis

To assist in classification of soils, mechanical grain-size analysis was performed on One (1) selected sample. Testing was performed in general accordance with the ASTM Standard C136 test method. Grain-size curves are shown in Drawing No. B-1, *Grain Size Distribution Results*.

Percent Finer than Sieve No. 200

The percent finer than sieve No. 200 tests were performed on nine (9) representative soil samples to aid in the classification of the on-site soils and to estimate other engineering parameters. Testing was performed in general accordance with the ASTM Standard D1140 test method. Test results are presented in the Logs of Borings in Appendix A, *Field Exploration*.

Atterberg Limits

Atterberg limits test were performed on two (2) representative samples to assist the classification of the soil and fill materials according to ASTM Standard D4318 test method. The test results are presented in the following table and on Drawing No. B-2, *Atterburg Limits Results*.

Table No. B-1 Atterberg Limit Test Results

Boring No.	Depth (feet)	Soil Classification	Liquid Limit (%)	Plastic Limit (%)	Plastic Index (%)
BH-15	25	Fat Clay (CH)	58	29	29
BH-25	5	Clay (CL)	43	18	25

Maximum Dry Density Test

Three (3) laboratory maximum dry density-moisture content relationship test was performed on one representative bulk sample. The test was conducted in accordance with ASTM Standard D1557 laboratory procedure. The test result is presented on Drawing No. B-3, *Moisture-Density Relationship Results*.

Direct Shear

Direct shear tests were performed on ten (10) relatively undisturbed samples at soaked moisture conditions. For each test, three samples contained in brass sampler rings were placed, one at a time, directly into the test apparatus and subjected to a range of normal loads appropriate for the anticipated conditions. The samples were then sheared at a constant strain rate of 0.01 inch/minute. Shear deformation was recorded until a maximum of about 0.50-inch shear displacement was achieved. Ultimate strength was selected from the shear-stress deformation data and plotted to determine the shear strength parameters. For test data, including sample density and moisture content, see Drawing Nos. B-4a through B-4j, Direct *Shear Test Results,* and in the following table:

Table No. B-2, Direct Shear Test Results

Boring No.	Depth (feet)	Soil Classification	Peak Strength Parameters	
			Friction Angle (degrees)	Cohesion (psf)
BH-1	10	Bedrock (TPSS) Siltstone/Sandstone	47	0
BH-6	45	Bedrock (TPSS) Siltstone/Sandstone	28	270
BH-8	5	Bedrock (TPSS) Siltstone/Sandstone	33	270
BH-10	5	Silty Sand (SM)	28	555
BH-12	5	Clay (CL)	35	300
BH-13	20	Clay (CL)	36	315
BH-19	5	Bedrock (TPSS) Siltstone/Sandstone	19	75
BH-20	5	Sandy Clay (CL)	34	450
BH-24	5	Clay (CL)	19	1515
BH-26	5	Clayey Sand (SC)	31	390

Consolidation Test

Consolidation tests were performed on five (5) selected samples. Data obtained from this test performed on a relatively undisturbed soil sample was used to evaluate the settlement characteristics of the foundation soils under load. Preparation for this test involved trimming the sample and placing the one-inch high brass ring into the test apparatus, which contained porous stones, both top and bottom, to accommodate drainage during testing. Normal axial loads were applied to one end of the sample through the porous stones, and the resulting deflections were recorded at various time periods. The load was increased after the sample reached a reasonable state of equilibrium. Normal loads were applied at a constant load-increment ratio, successive loads being generally twice the preceding load. The sample was tested at field and submerged conditions. The test results, including sample density and moisture content, are presented in Drawings Nos. B-5a through B-5e, *Consolidation Test Results*.

Expansion Index Test

Five (5) representative bulk samples were tested to evaluate the expansion potential of material encountered at the site. The test was conducted in accordance with ASTM D4829 Standard. Test results are presented in the following table:

Table No. B-3, Expansion Index Test Result

Boring No.	Depth (feet)	Soil Description	Expansion Index	Expansion Potential
BH-1	1-5	Sandy Clay (CL)	38	Low
BH-9	0-5	Clay (CL)	75	Medium
BH-16	0-5	Clay (CL)	71	Medium
BH-20	1-5	Sandy Clay (CL)	97	High
BH-25	1-5	Clay with Sand (CL)	85	Medium

R-value Test

One (1) representative bulk soil sample was tested for resistance value (R-value) in accordance with State of California Standard Method 301-G. This test is designed to provide a relative measure of soil strength for use in pavement design. The test results are shown in the following table:

Table No. B-4, R-value Test Result

Boring No.	Depth (feet)	Soil Classification	Measured R-value
BH-29	1-5	Clayey Sand (SC)	12

Soil Corrosivity

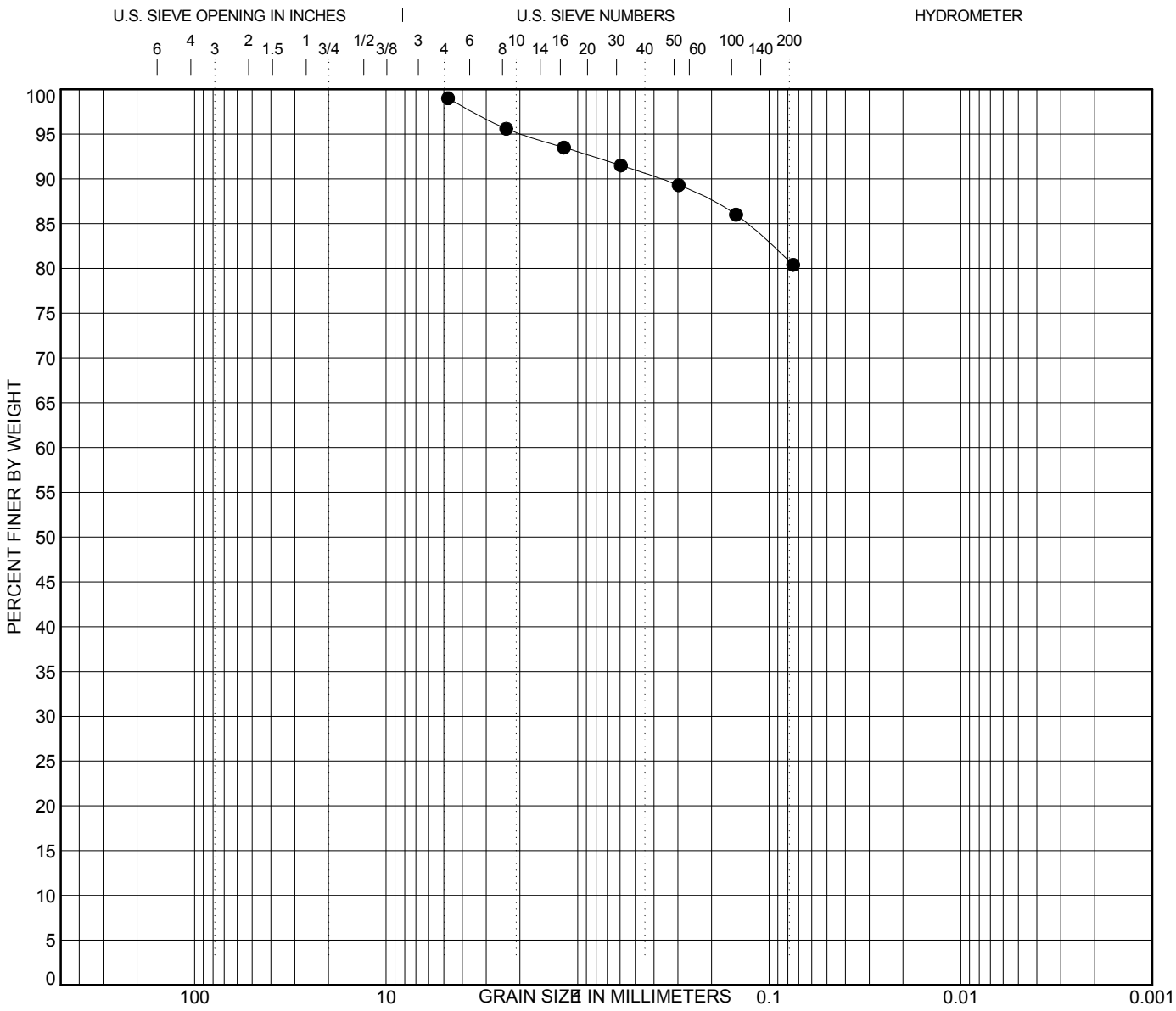
Six (6) representative soil samples were tested to determine minimum electrical resistivity, pH, and chemical content, including chloride concentrations, and soluble sulfate. The purpose of these tests is to determine the corrosion potential of site soils when placed in contact with common construction materials. These tests were performed by EGL in Arcadia, California. The test results received from EGL are included in the following table:

Table No. B-5, Corrosivity Test Results

Boring No.	Sample Depth (feet)	pH (Caltrans 643)	Soluble Chlorides (Caltrans 422) ppm	Soluble Sulfate (Caltrans 417) (% by weight)	Saturated Resistivity (Caltrans 532) Ohm-cm
BH-2	0-5	7.40	100	0.001	480
BH-10	1-5	7.60	110	0.026	460
BH-12	1-5	7.61	65	0.002	500
BH-13	0-5	7.66	280	0.052	380
BH-16	0-5	7.95	130	0.048	640
BH-24	1-5	7.36	85	0.002	1,300

Sample Storage

Soil samples presently stored in our laboratory will be discarded 30 days after the date of this report, unless this office receives a specific request to retain the samples for a longer period of time.



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	**BH-28**	**0-5**	**SANDY SILT (ML)**					

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	**BH-28**	**0-5**	**4.75**				**0.0**	**18.6**	**80.4**	

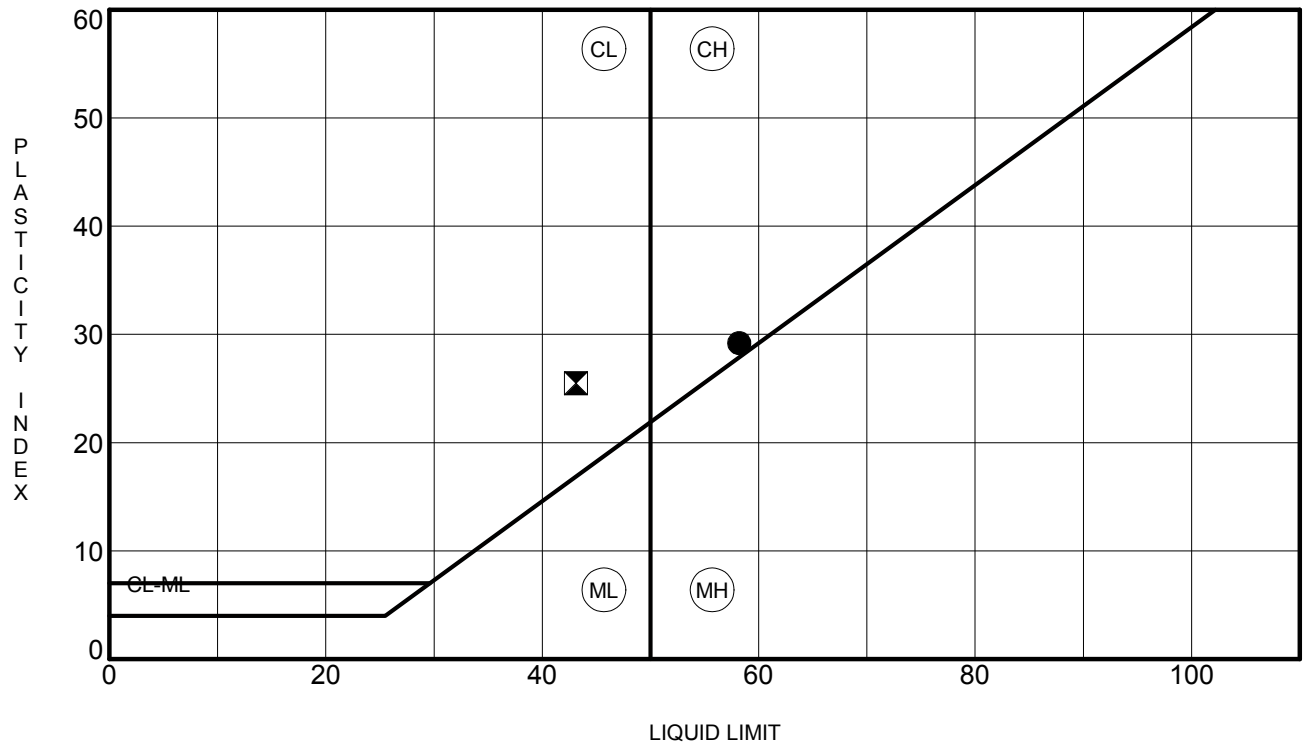
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.
14-31-124-01

Drawing No.
B-1



Symbol	Boring No.	Depth (ft)	LL (%)	PL (%)	PI (%)	Description
●	**BH-15**	**25**	**58.2**	**29**	**29**	**Fat CLAY (CH)**
⧓	**BH-25**	**5**	**43.1**	**17.6**	**25**	**SANDY CLAY (CL)**

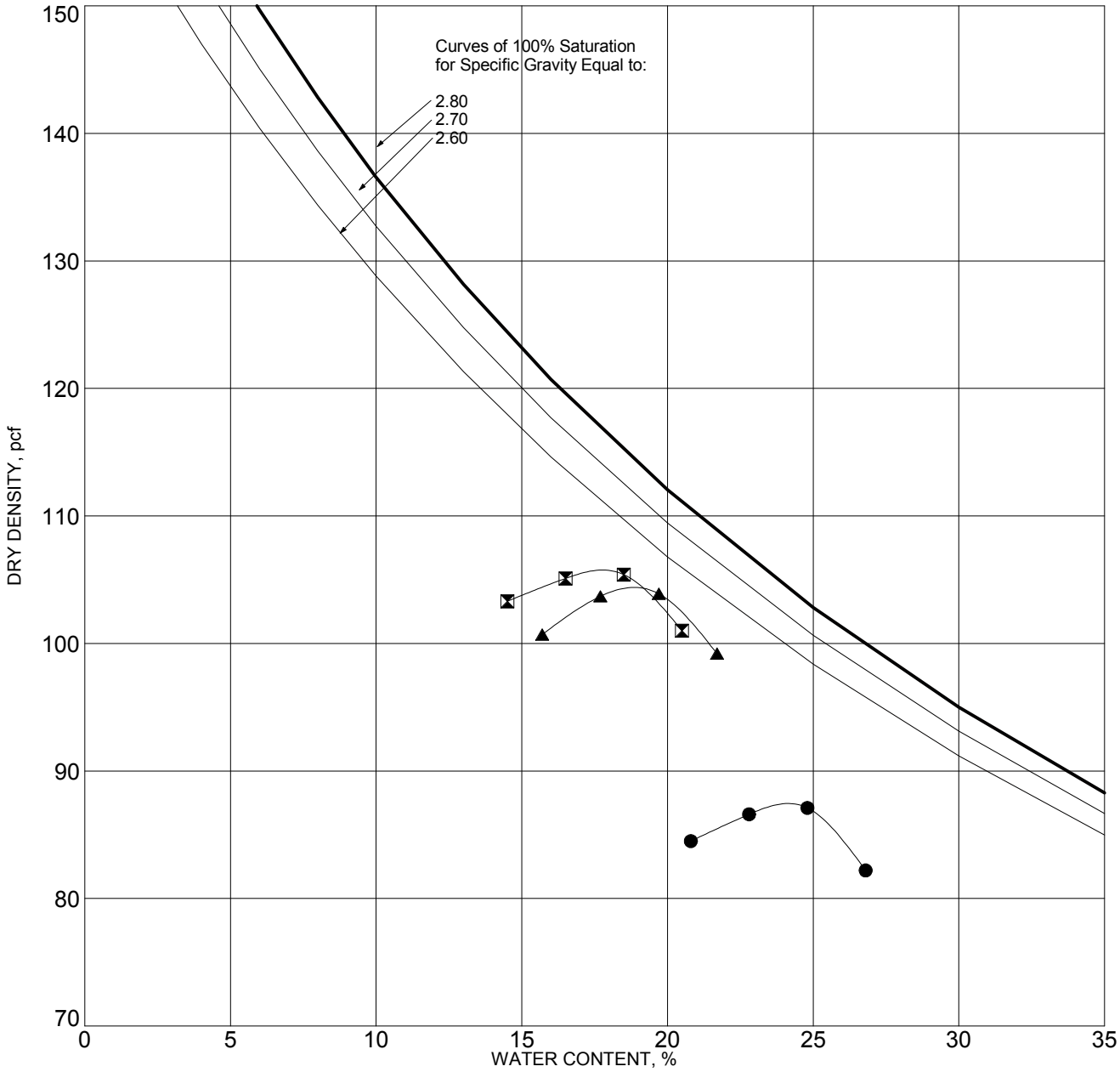
ATTERBERG LIMITS RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.
14-31-124-01

Drawing No.
B-2



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-17	0-5	SANDY SILT (ML)	D1557 Method A	23.8	87.5
⊠	BH-23	1-5	SANDY SILT (ML)	D1557 Method A	17.9	106
▲	BH-28	0-5	SANDY SILT (ML)	D1557 Method A	18.7	104.6

NOTE:

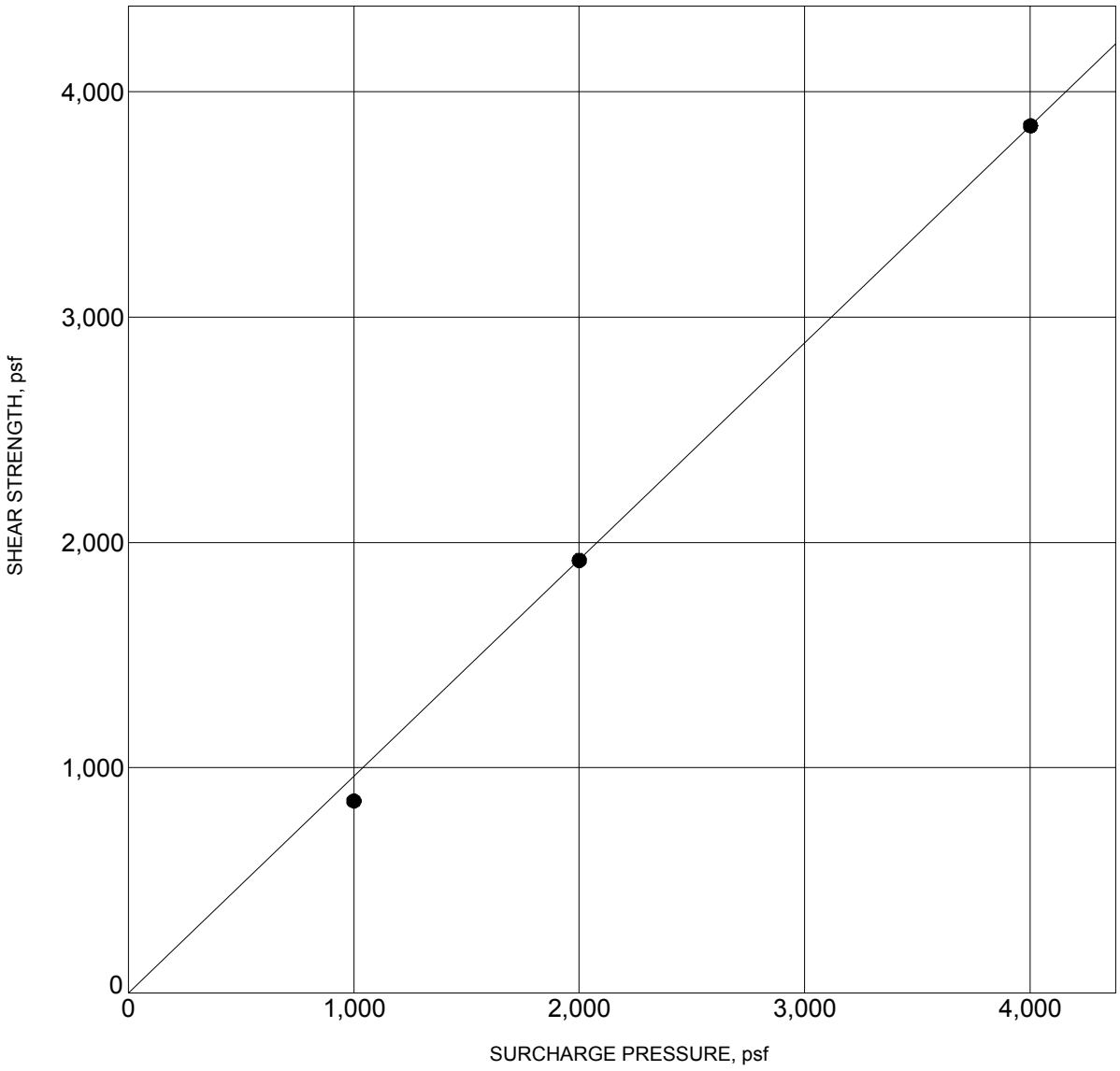
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No.
14-31-124-01

Drawing No.
B-3



BORING NO.	:	**BH- 1**	DEPTH (ft)	:	**10**
DESCRIPTION	:	**BEDROCK (Tpss): - SILTSTONE AND CLAYSTONE**			
COHESION (psf)	:	**0**	FRICTION ANGLE (degrees)	:	**47**
MOISTURE CONTENT (%)	:	**30.8**	DRY DENSITY (pcf)	:	**84.8**

NOTE: Ultimate Strength.

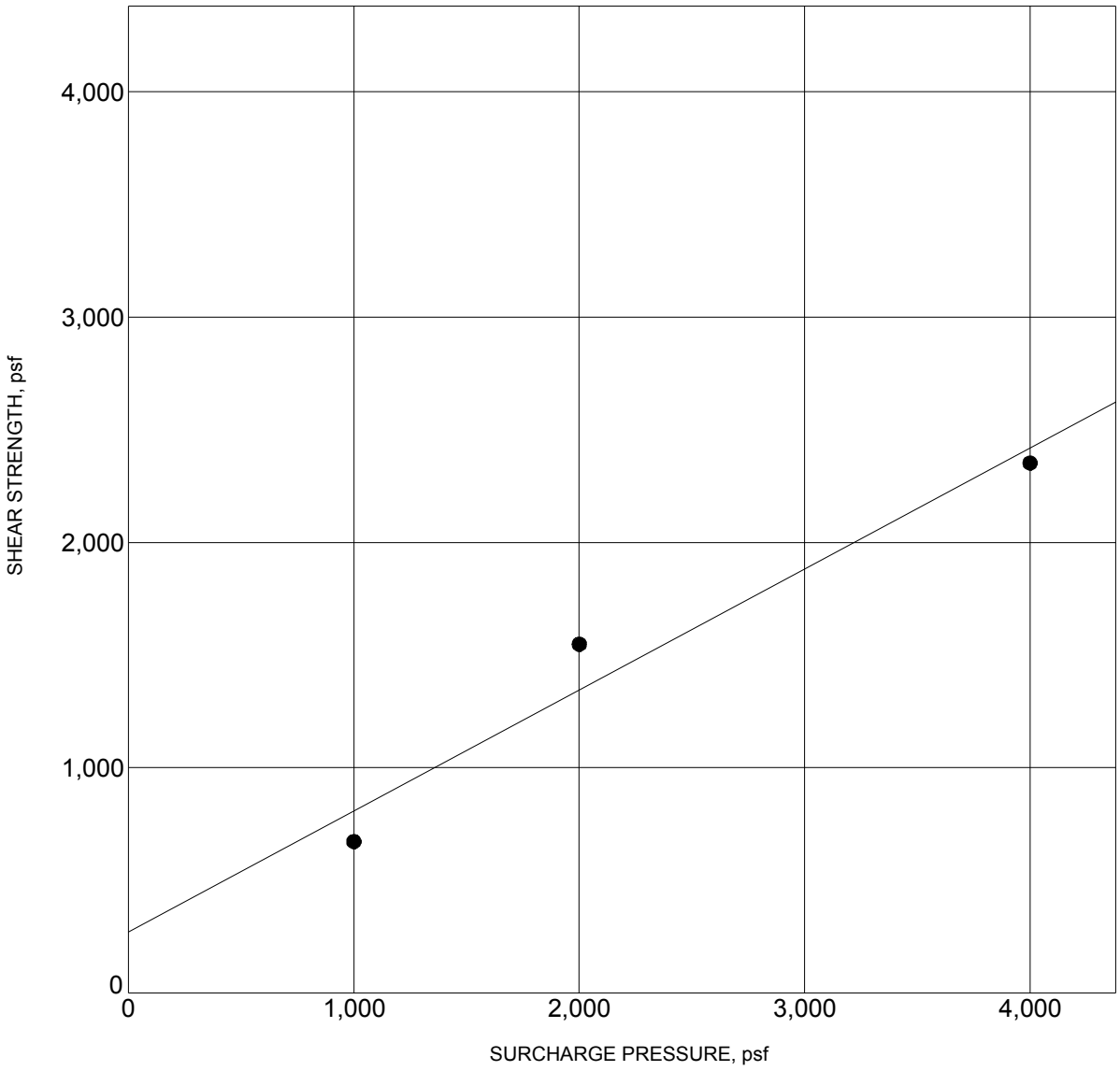
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4a**



BORING NO.	:	**BH- 6**	DEPTH (ft)	:	**45**
DESCRIPTION	:	**BEDROCK (Tpss): - SILTSTONE AND CLAYSTONE**			
COHESION (psf)	:	**270**	FRICTION ANGLE (degrees)	:	**28**
MOISTURE CONTENT (%)	:	**30.2**	DRY DENSITY (pcf)	:	**86.2**

NOTE: Ultimate Strength.

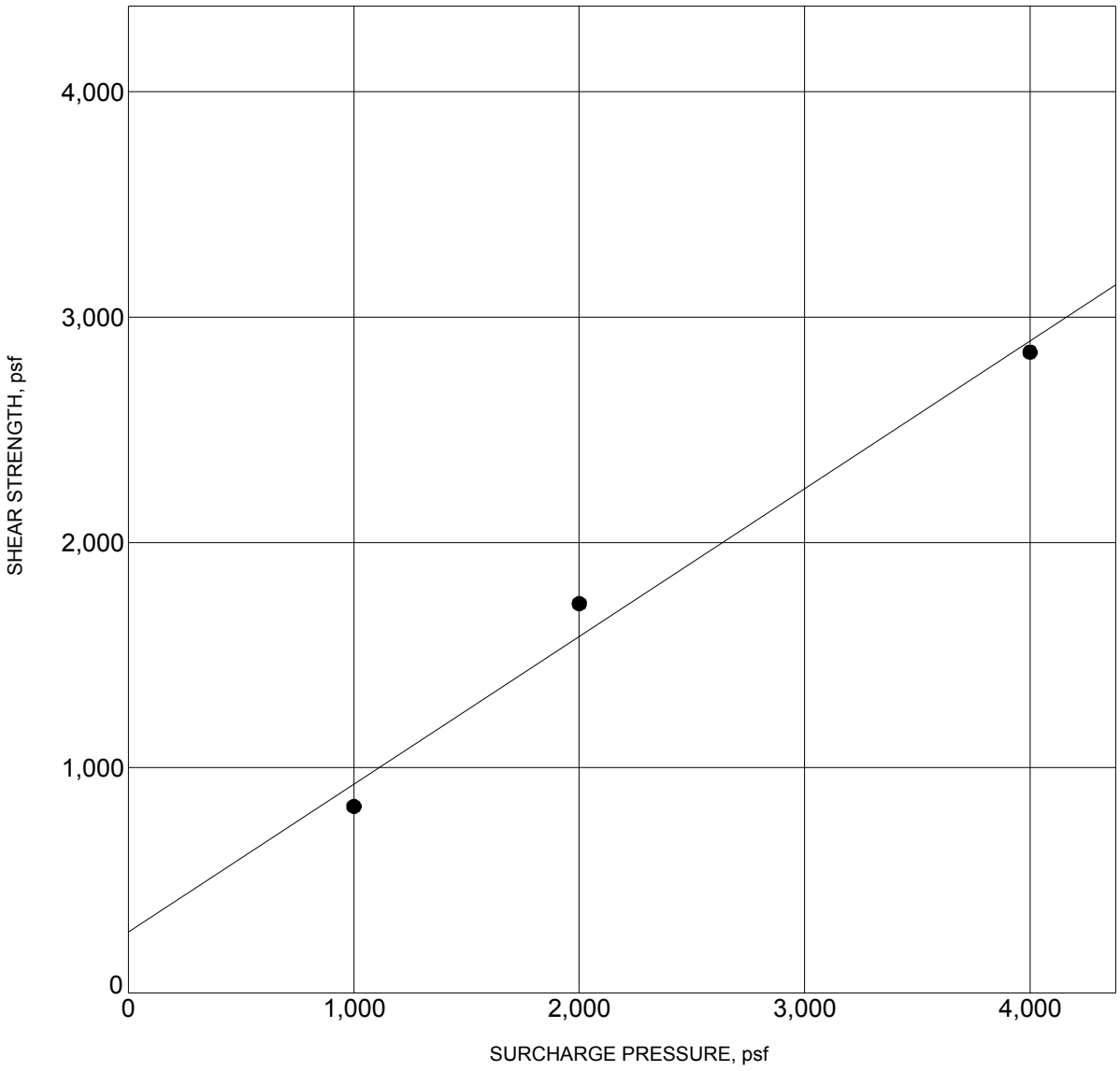
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4b**



BORING NO.	:	**BH- 8**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**BEDROCK (Tpss): - SILTSTONE AND CLAYSTONE**			
COHESION (psf)	:	**270**	FRICTION ANGLE (degrees)	:	**33**
MOISTURE CONTENT (%)	:	**21.2**	DRY DENSITY (pcf)	:	**89.8**

NOTE: Ultimate Strength.

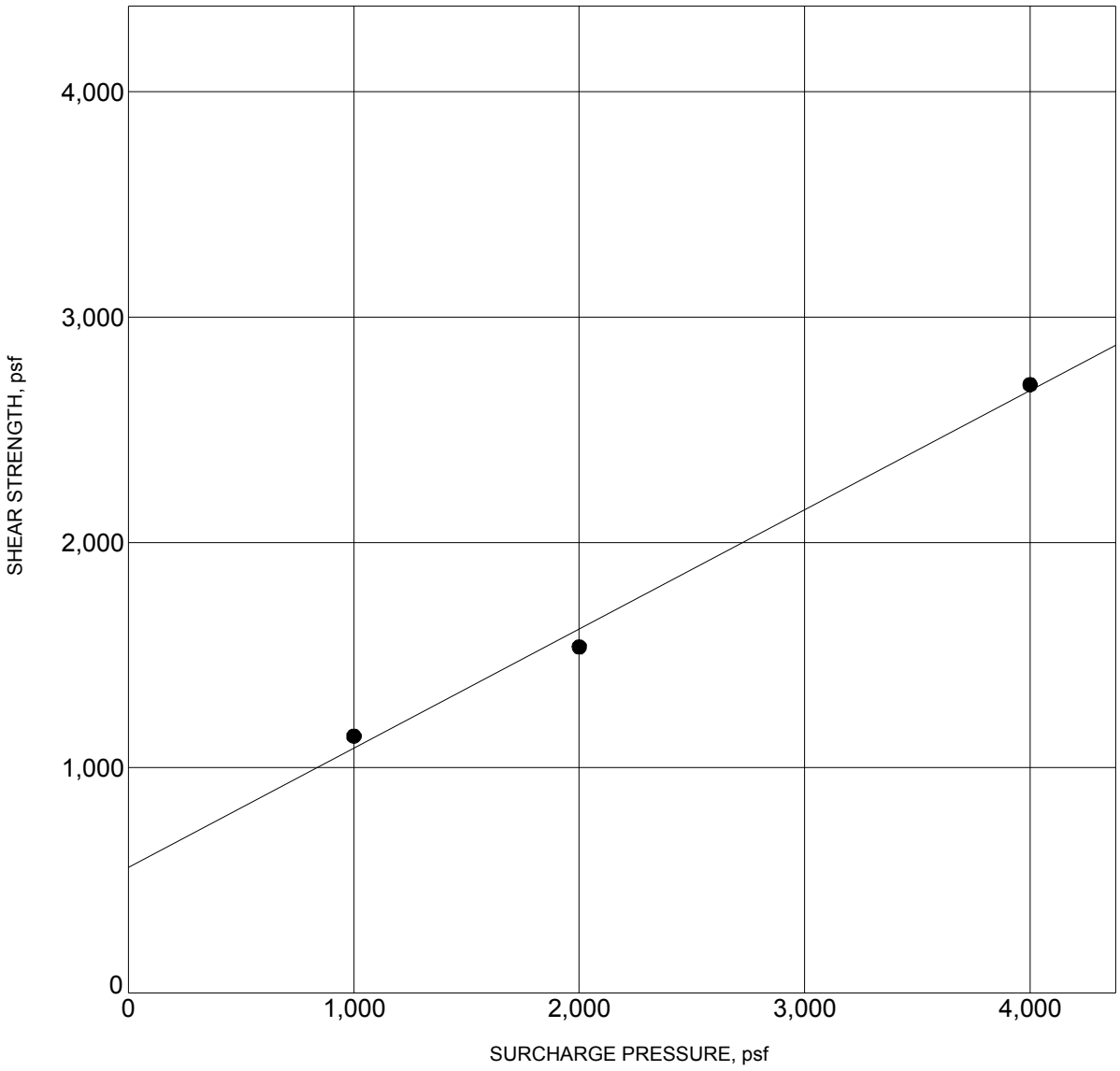
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4c**



BORING NO.	:	**BH-10**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**SILTY SAND (SM)**			
COHESION (psf)	:	**555**	FRICTION ANGLE (degrees)	:	**28**
MOISTURE CONTENT (%)	:	**22**	DRY DENSITY (pcf)	:	**80**

NOTE: Ultimate Strength.

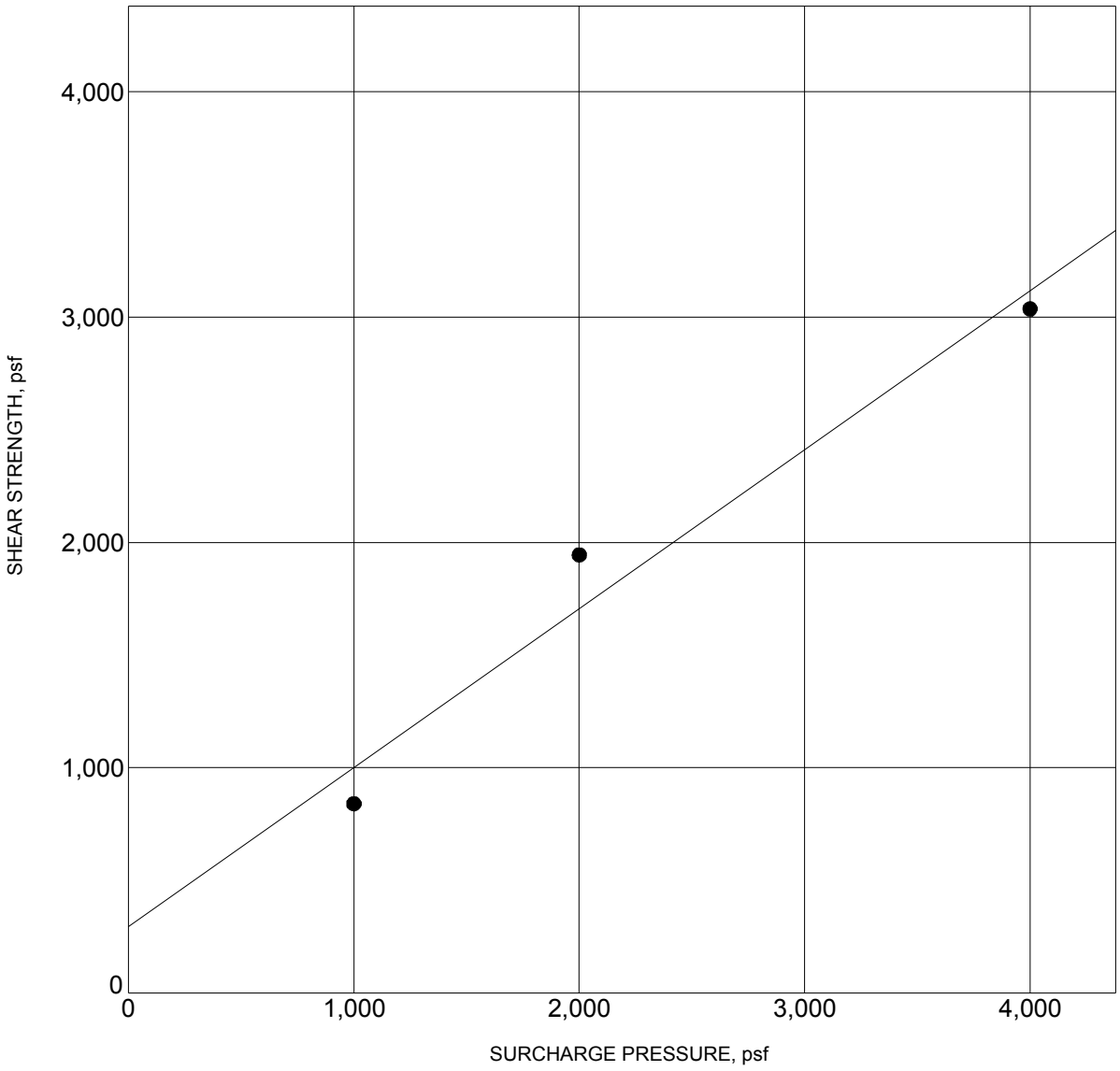
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4d**



BORING NO.	:	**BH-12**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**CLAY (CL)**			
COHESION (psf)	:	**300**	FRICTION ANGLE (degrees)	:	**35**
MOISTURE CONTENT (%)	:	**18.5**	DRY DENSITY (pcf)	:	**100.9**

NOTE: Ultimate Strength.

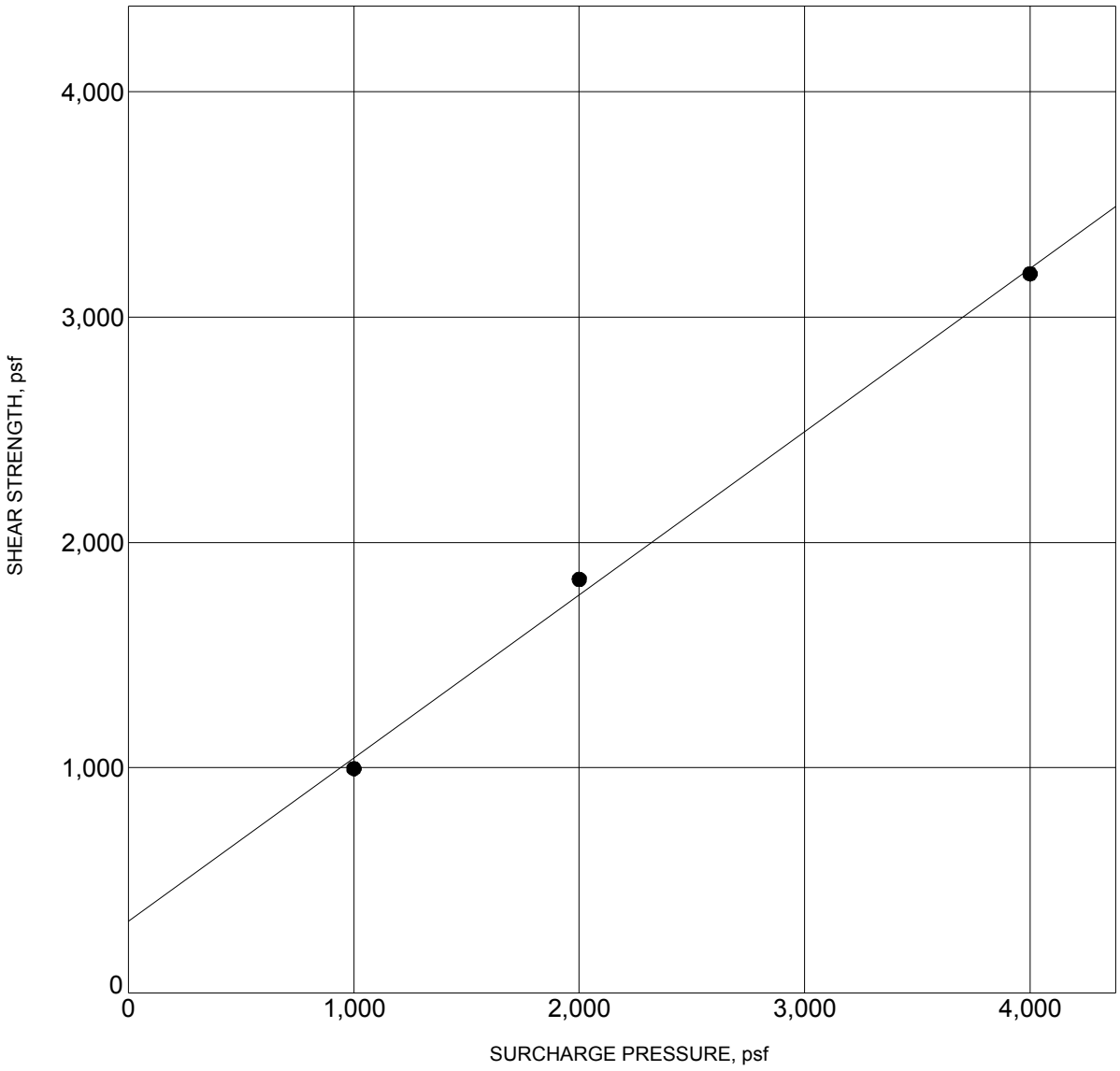
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4e**



BORING NO.	:	**BH-13**	DEPTH (ft)	:	**20**
DESCRIPTION	:	**CLAY (CL)**			
COHESION (psf)	:	**315**	FRICTION ANGLE (degrees)	:	**36**
MOISTURE CONTENT (%)	:	**20**	DRY DENSITY (pcf)	:	**116.9**

NOTE: Ultimate Strength.

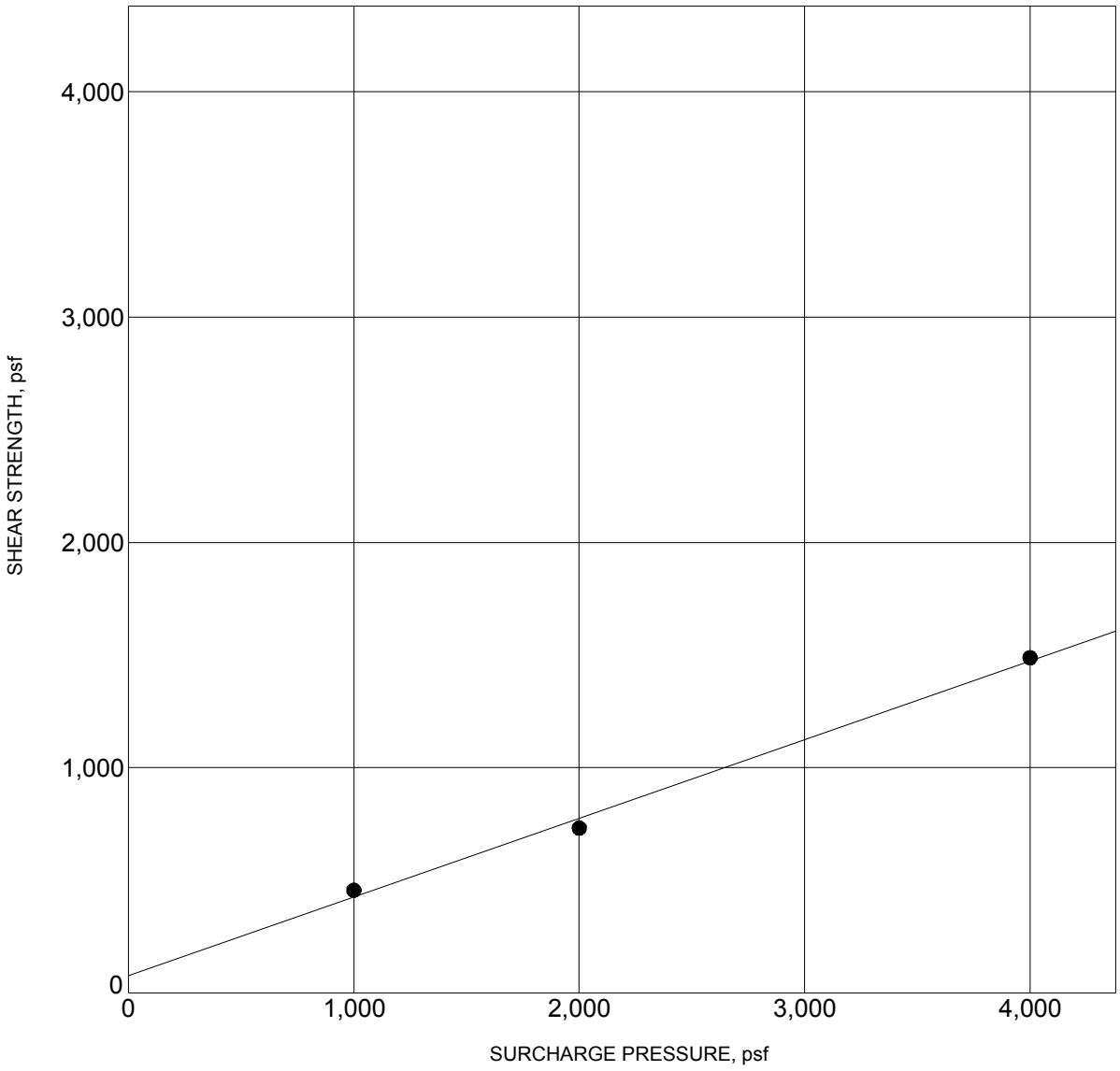
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4f**



BORING NO.	:	**BH-19**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**BEDROCK (Tpss): - SILTSTONE AND CLAYSTONE**			
COHESION (psf)	:	**75**	FRICTION ANGLE (degrees)	:	**19**
MOISTURE CONTENT (%)	:	**37.8**	DRY DENSITY (pcf)	:	**76.6**

NOTE: Ultimate Strength.

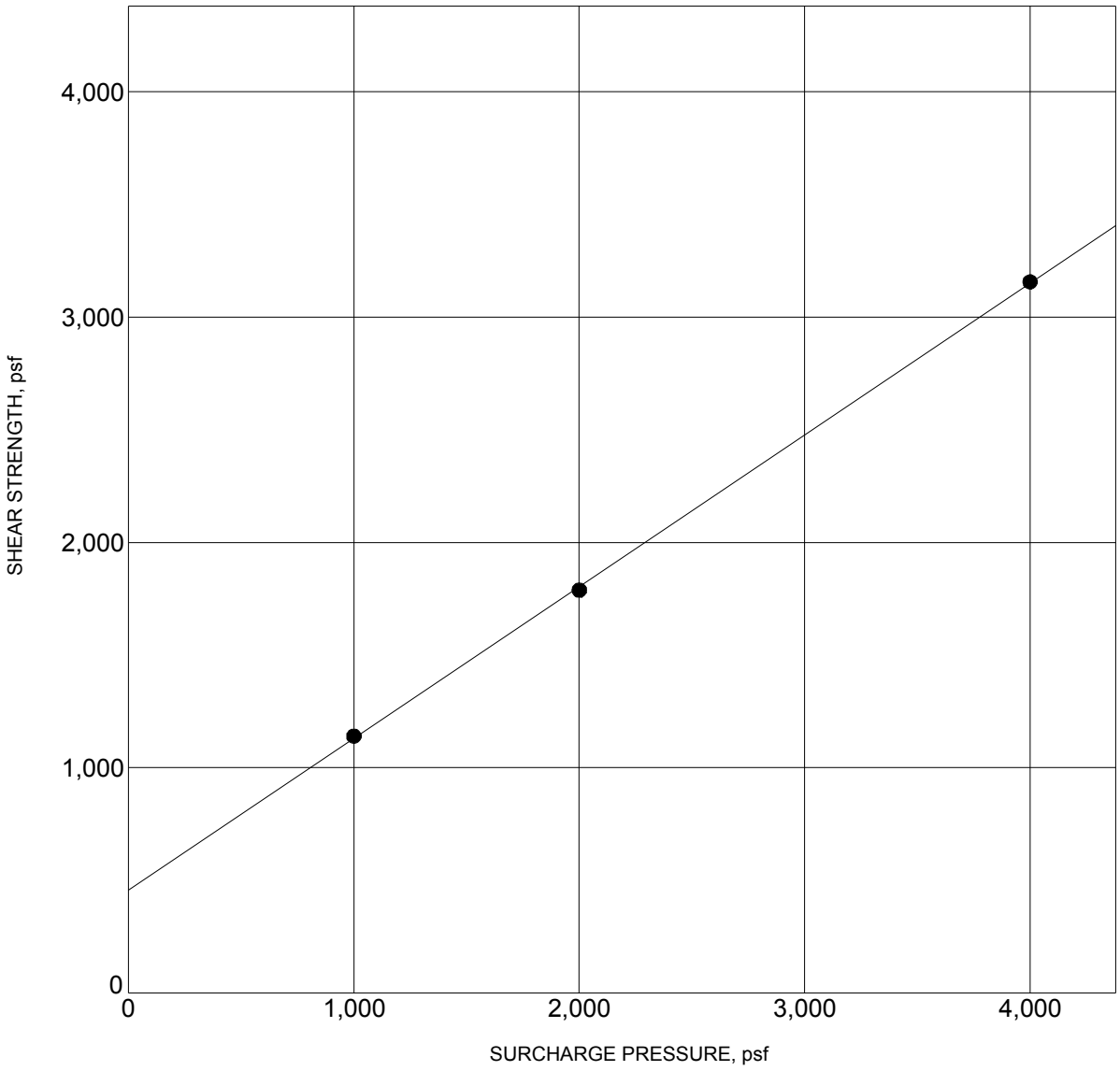
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4g**



BORING NO.	:	**BH-20**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**SANDY CLAY (CL)**			
COHESION (psf)	:	**450**	FRICTION ANGLE (degrees)	:	**34**
MOISTURE CONTENT (%)	:	**22.0**	DRY DENSITY (pcf)	:	**96.1**

NOTE: Ultimate Strength.

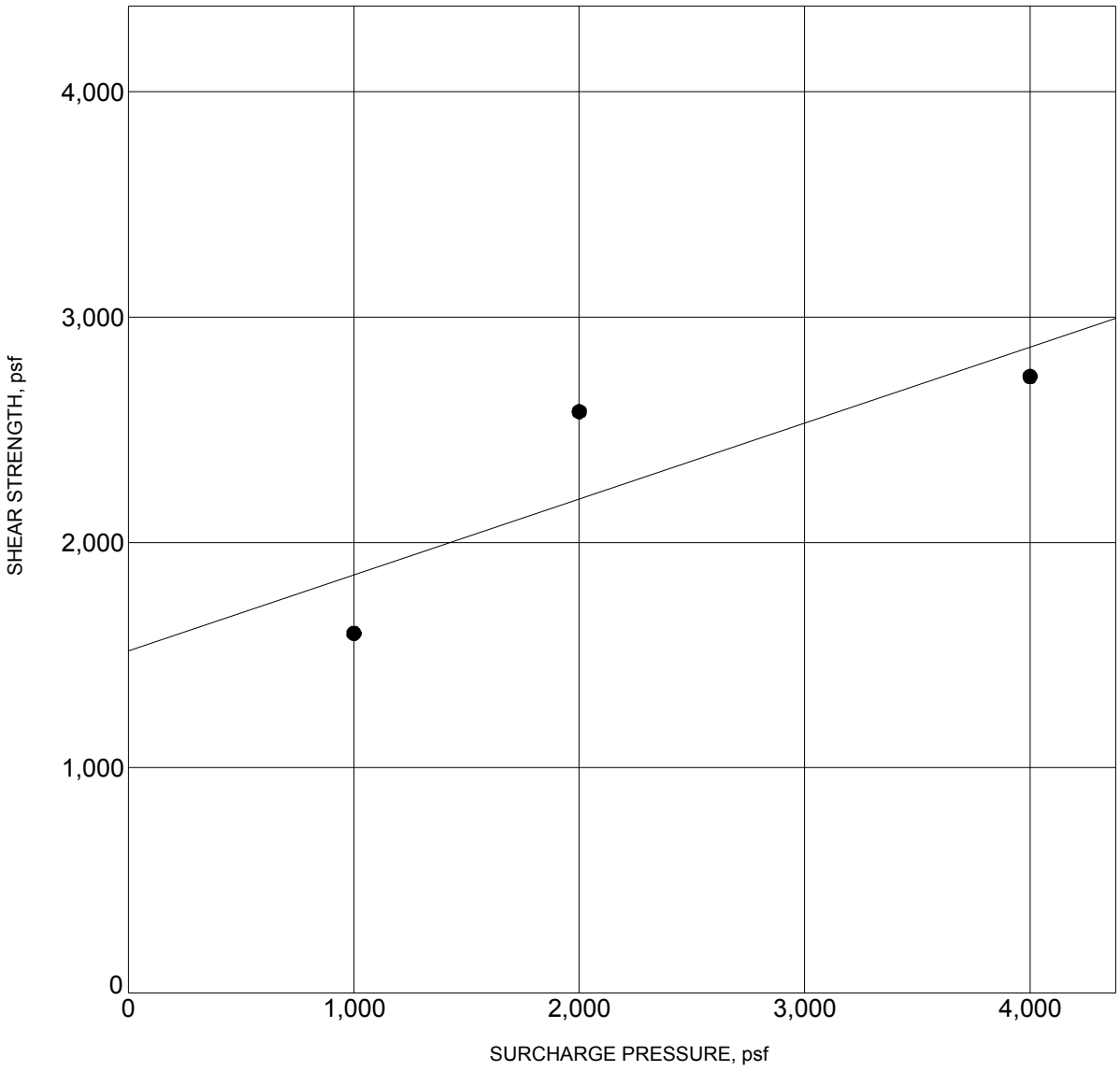
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4h**



BORING NO.	:	**BH-24**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**CLAY (CL)**			
COHESION (psf)	:	**1515**	FRICTION ANGLE (degrees)	:	**19**
MOISTURE CONTENT (%)	:	**11.1**	DRY DENSITY (pcf)	:	**110.3**

NOTE: Ultimate Strength.

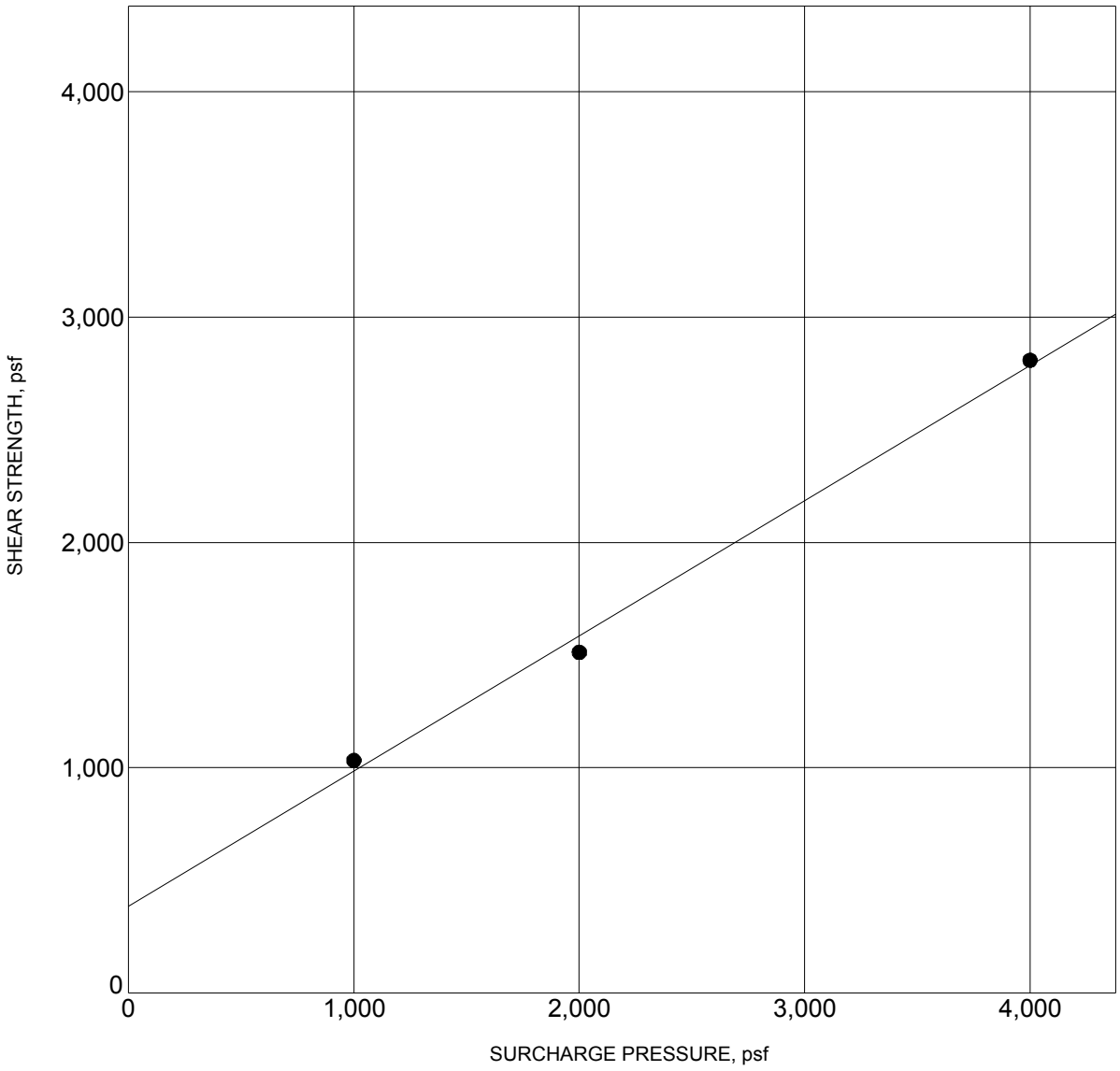
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4i**



BORING NO.	:	**BH-26**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**CLAYEY SAND (SC)**			
COHESION (psf)	:	**390**	FRICTION ANGLE (degrees)	:	**31**
MOISTURE CONTENT (%)	:	**15.9**	DRY DENSITY (pcf)	:	**112.6**

NOTE: Ultimate Strength.

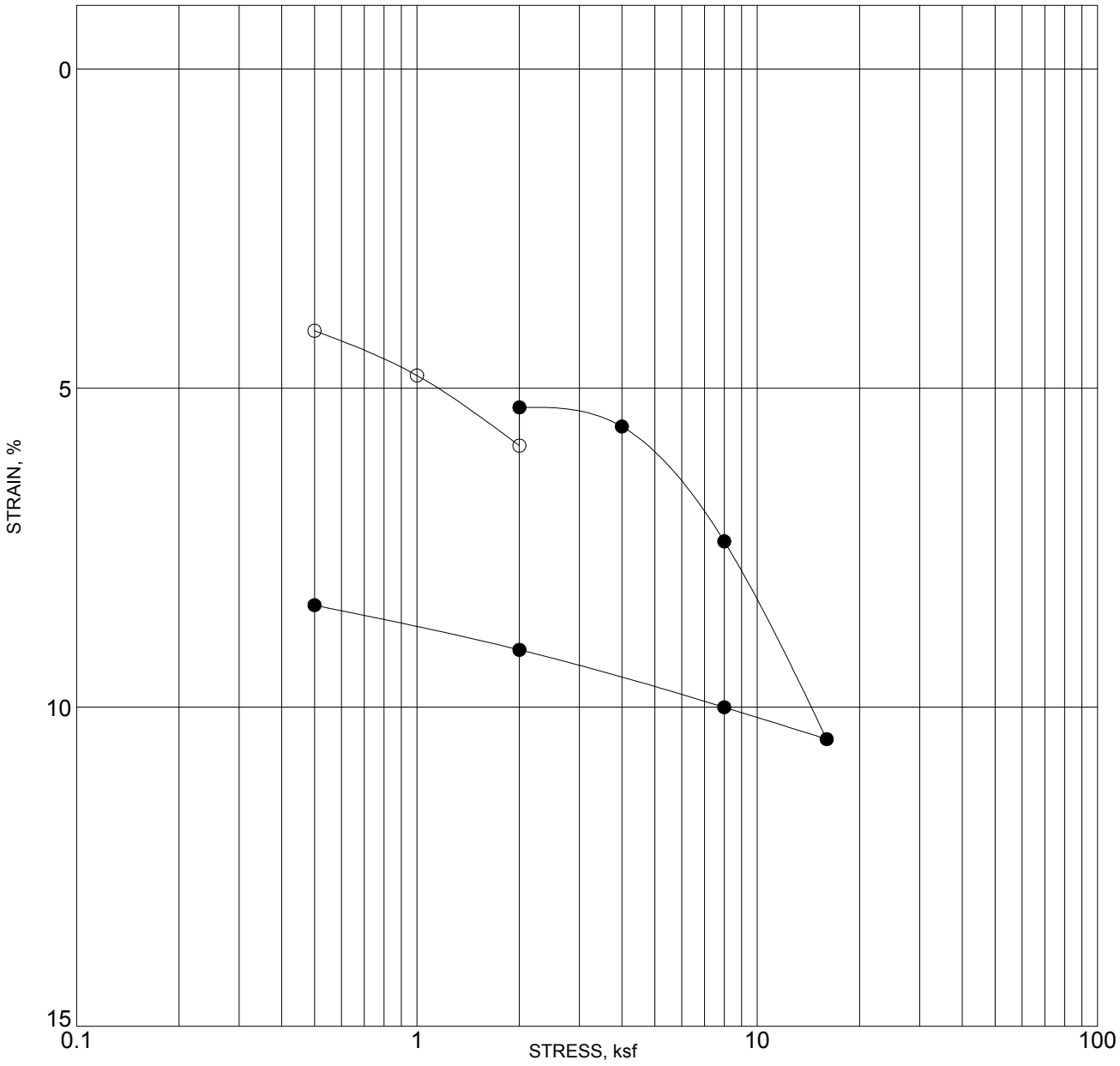
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-4j**



BORING NO. :	**BH-14**	DEPTH (ft) :	**25**
DESCRIPTION :	**SILTY CLAY (CL)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**33.2**	**84.8**		
FINAL	**32.4**	**91.9**		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

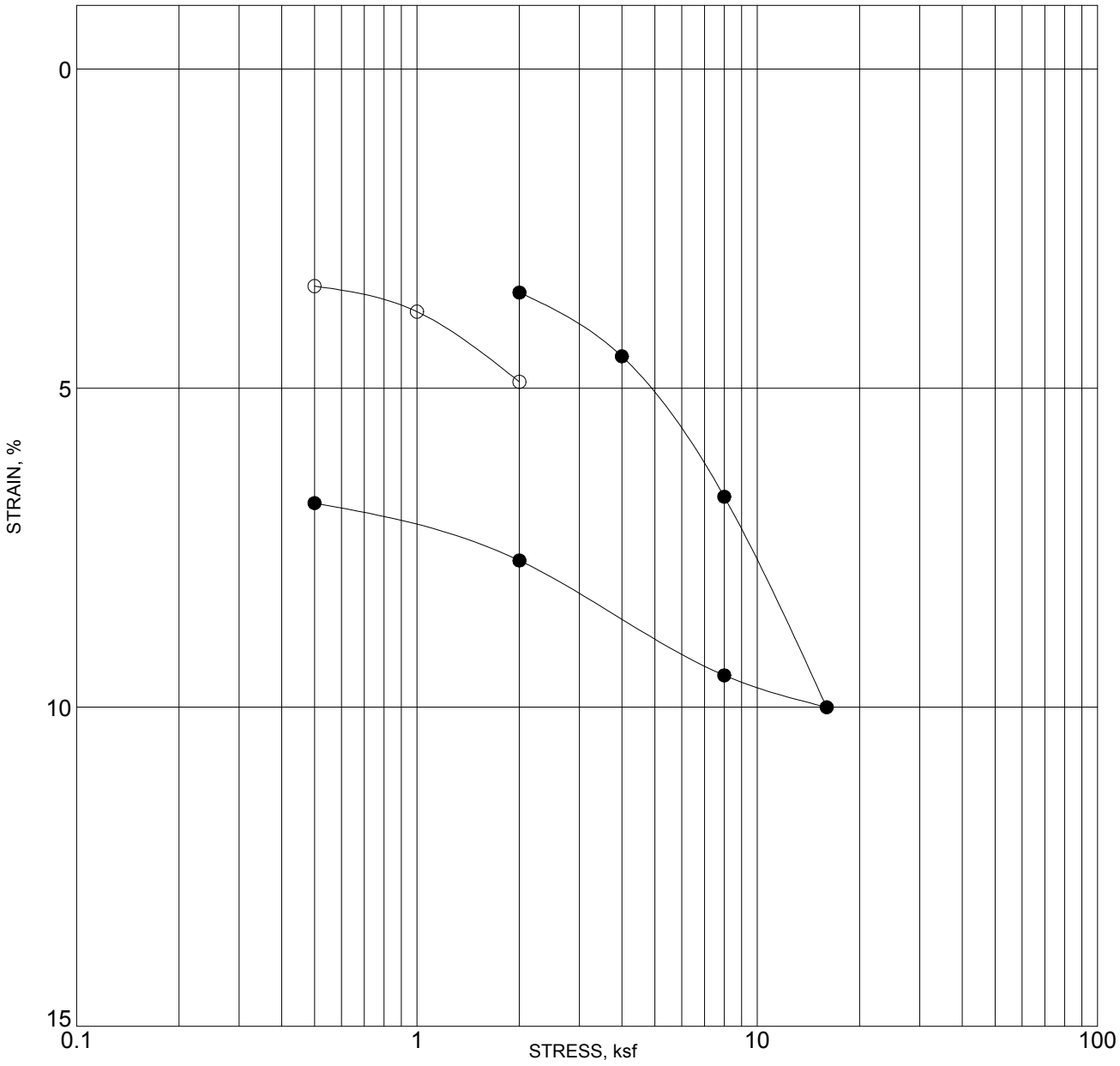
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-5a**



BORING NO. :	BH-14	DEPTH (ft) :	35
DESCRIPTION :	SILTY CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	31.2	91.2		
FINAL	28.6	87.4		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

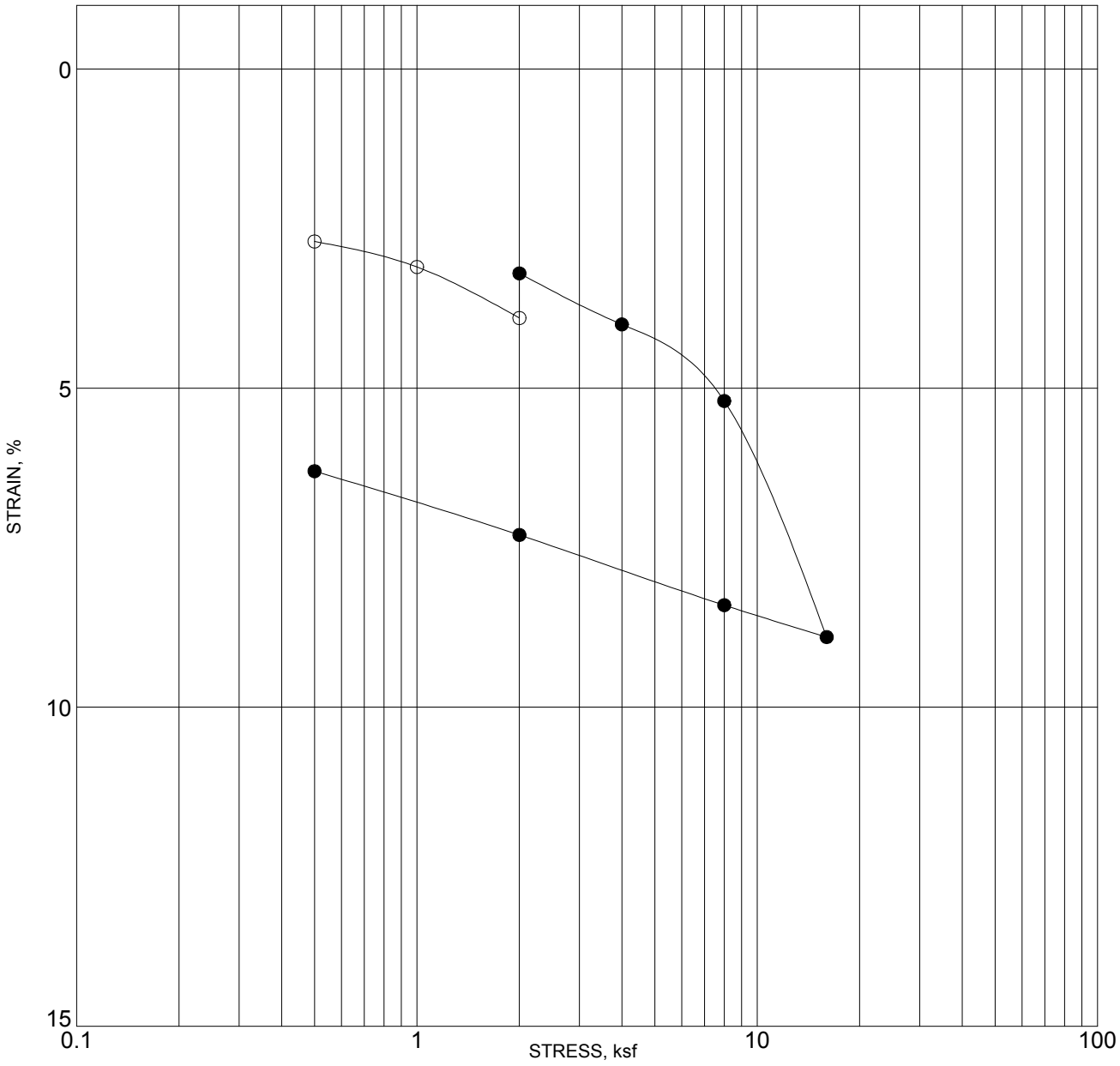
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-5b**



BORING NO. :	**BH-15**	DEPTH (ft) :	**15**
DESCRIPTION :	**CLAY (CL)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**26.7**	**87.4**		
FINAL	**29.3**	**92.9**		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

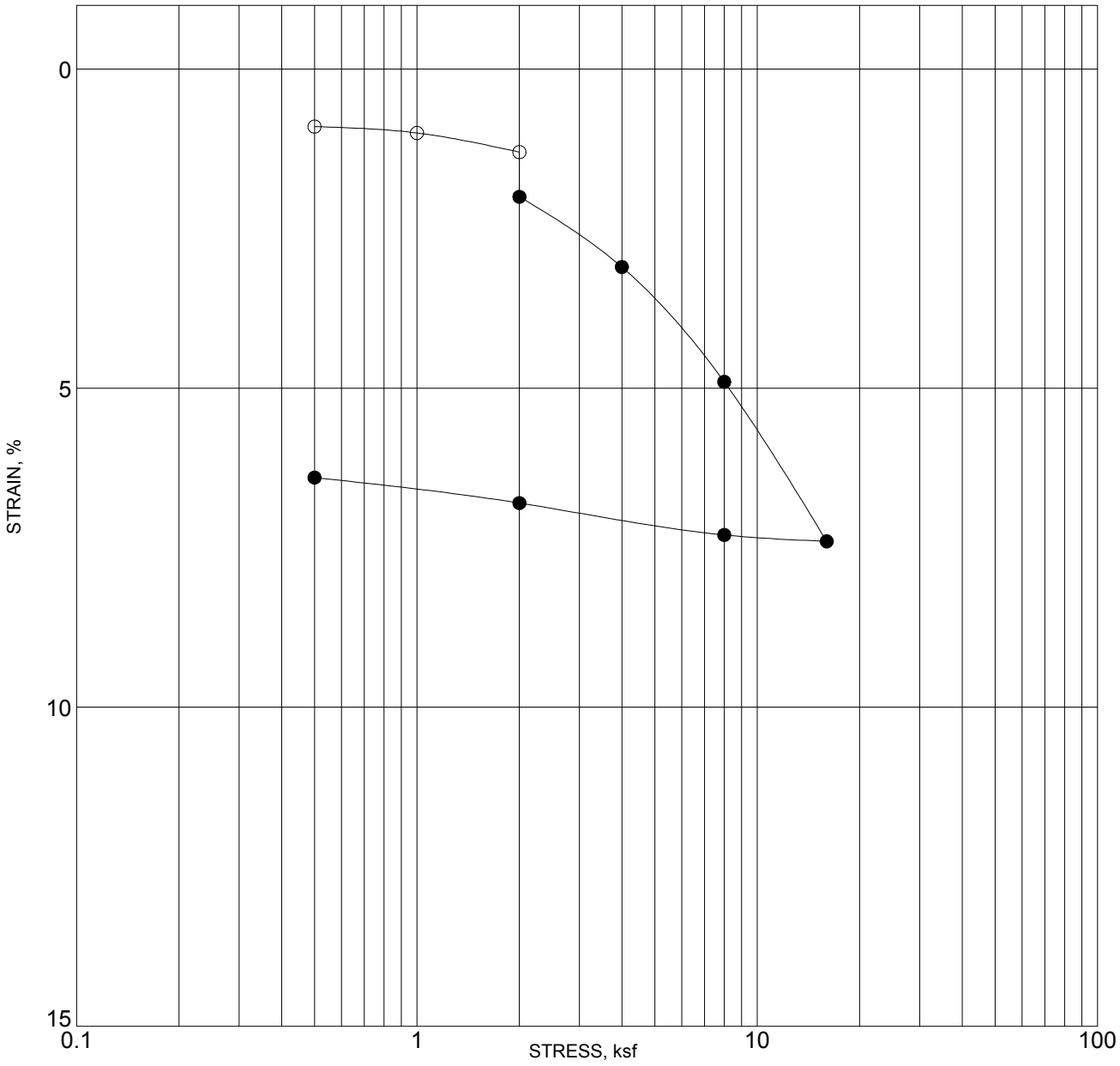
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-5c**



BORING NO. :	BH-21	DEPTH (ft) :	5
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	12.9	110.1		
FINAL	14.7	117.1		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

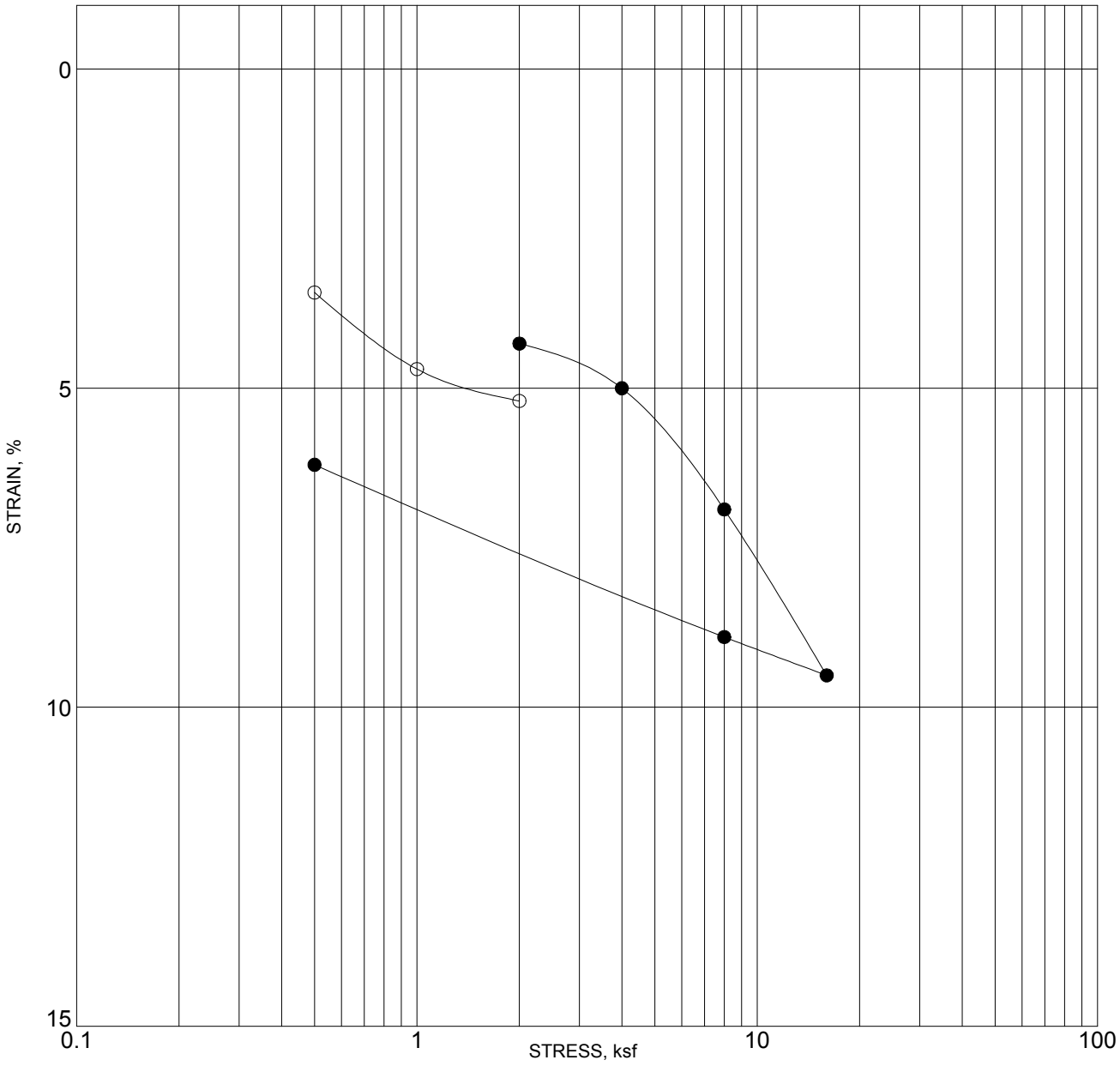
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-5d**



BORING NO. :	**BH-23**	DEPTH (ft) :	**15**
DESCRIPTION :	**CLAY (CL)**		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	**24**	**95**		
FINAL	**25.4**	**100.9**		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

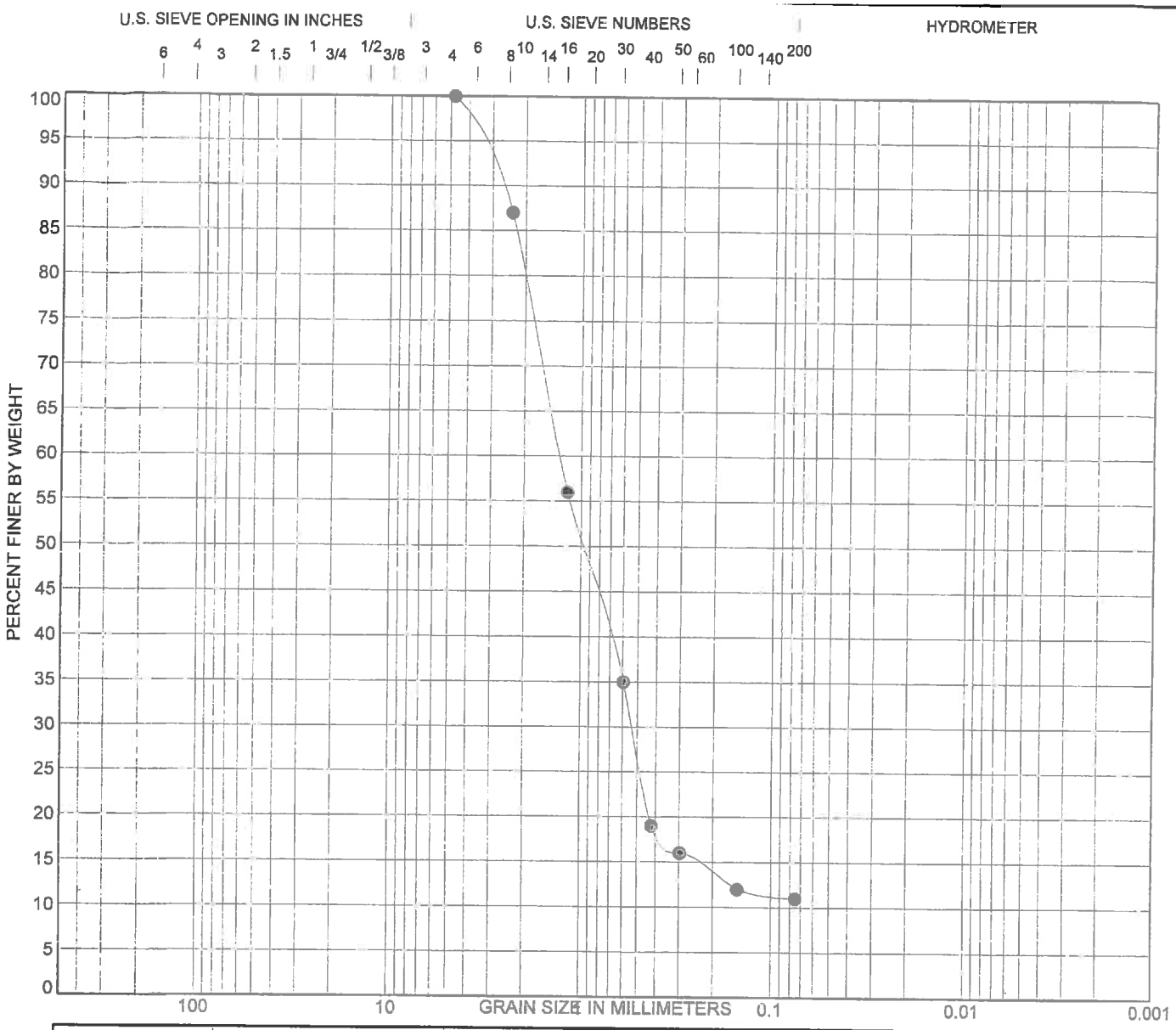
Project Name
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Project No. **14-31-124-01**

Drawing No. **B-5e**

APPENDIX B-1

PREVIOUS LABORATORY TESTING (2013)



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Boring No.	Depth (ft)	Description	LL	PL	PI	Cc	Cu
●	BH-B15	0-5	SAND (SP) WITH CLAY				5.85	34.18

	Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	BH-B15	0-5	4.75	1.29	0.534		0.0	89.0	11.0	

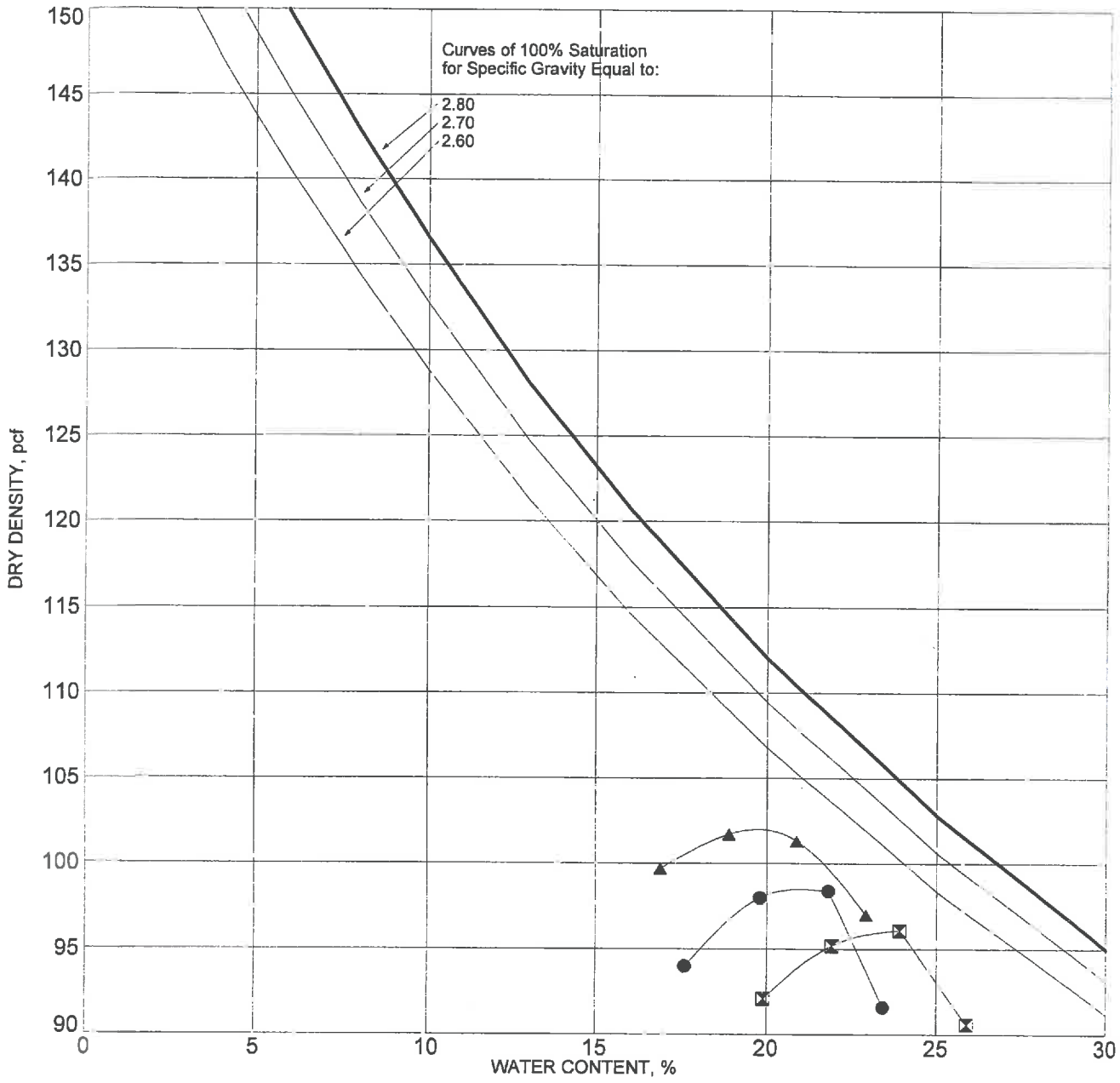
GRAIN SIZE DISTRIBUTION RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No.
13-31-116-01

Drawing No.
B2-1



SYMBOL	BORING NO.	DEPTH (ft)	DESCRIPTION	ASTM TEST METHOD	OPTIMUM WATER, %	MAXIMUM DRY DENSITY, pcf
●	BH-B1	0-5	SILTY SAND (SM)	D1557 Method B	20.8	99.2
⊠	BH-B10	15-20	BEDROCK: SILTSTONE - CLAYSTONE	D1557 Method B	23.3	97
▲	BH-B16	0-5	CLAYEY SAND (SC)	D1557 Method B	19.8	102.2

NOTE:

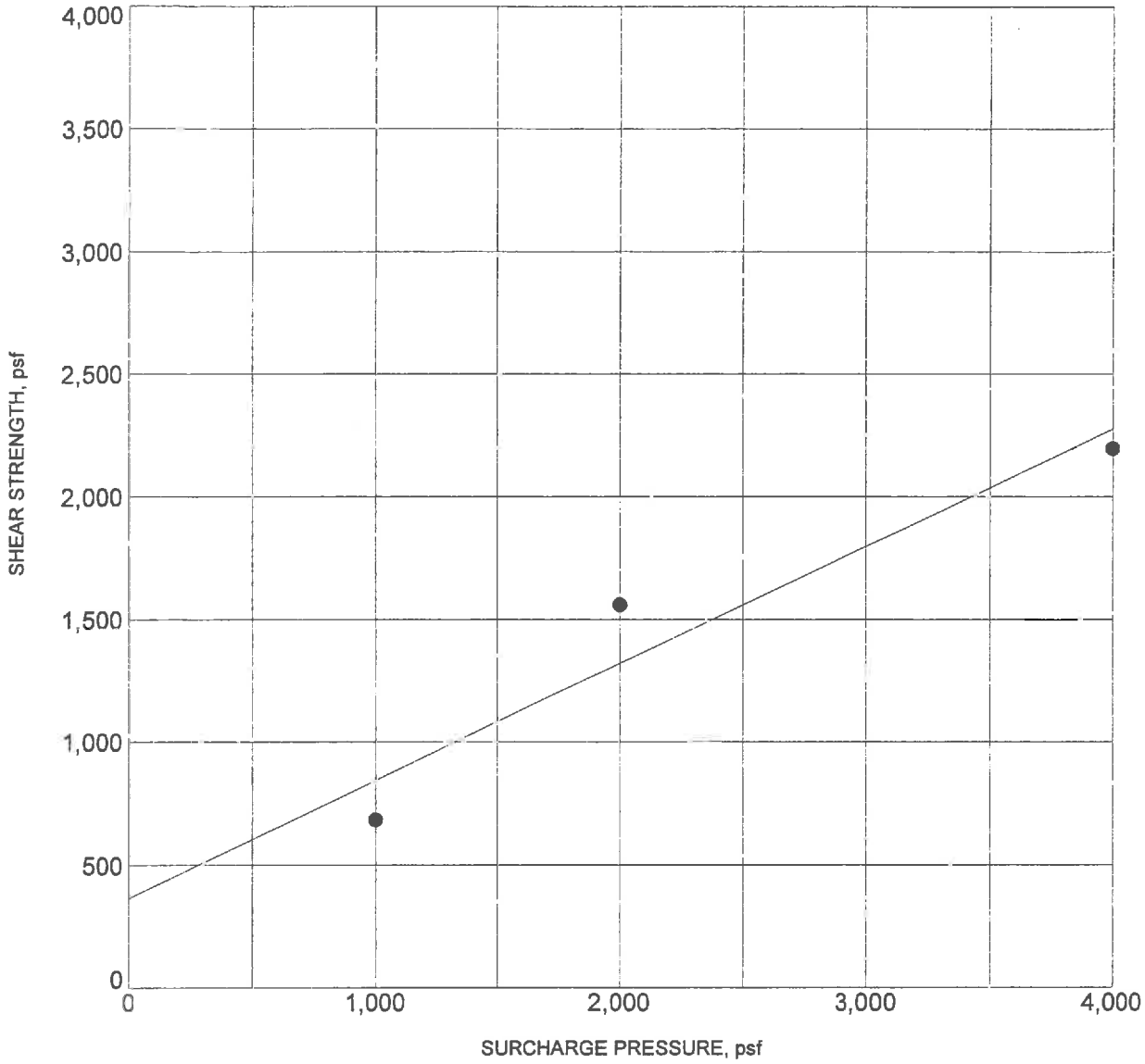
MOISTURE-DENSITY RELATIONSHIP RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No.
13-31-116-01

Drawing No.
B2-2



BORING NO.	:	**BH-B2**	DEPTH (ft)	:	**50**
DESCRIPTION	:	**BEDROCK: SILTSTONE**			
COHESION (psf)	:	**350**	FRICTION ANGLE (degrees)		**26**
MOISTURE CONTENT (%)	:	**39.1**	DRY DENSITY (pcf)	:	**79.8**

NOTE: Ultimate Strength.

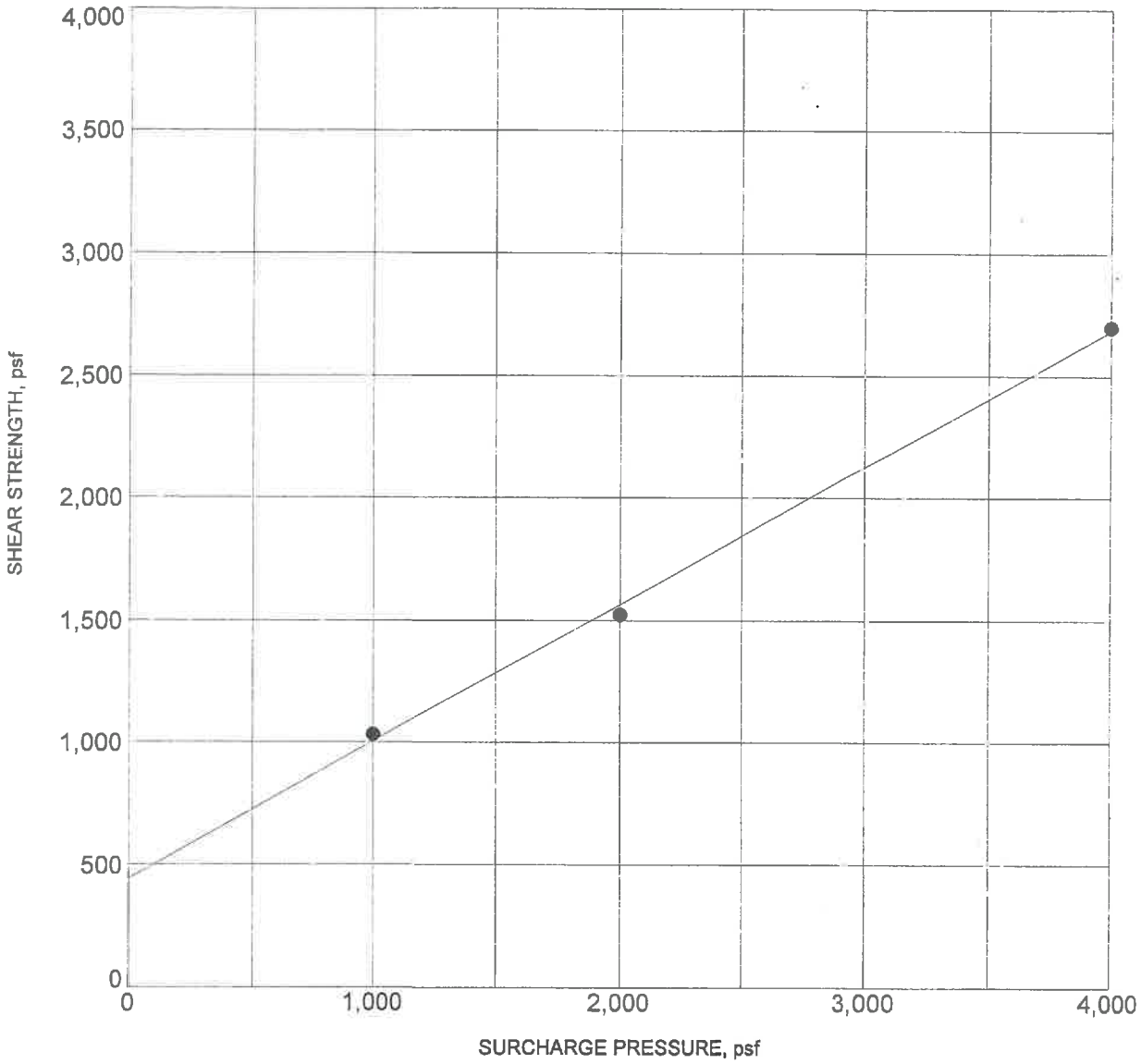
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3a**



BORING NO.	:	**BH-B3**	DEPTH (ft)	:	**35**
DESCRIPTION	:	**BEDROCK: SILTSTONE**			
COHESION (psf)	:	**450**	FRICTION ANGLE (degrees)		**29**
MOISTURE CONTENT (%)	:	**33.7**	DRY DENSITY (pcf)	:	**85.7**

NOTE: Ultimate Strength.

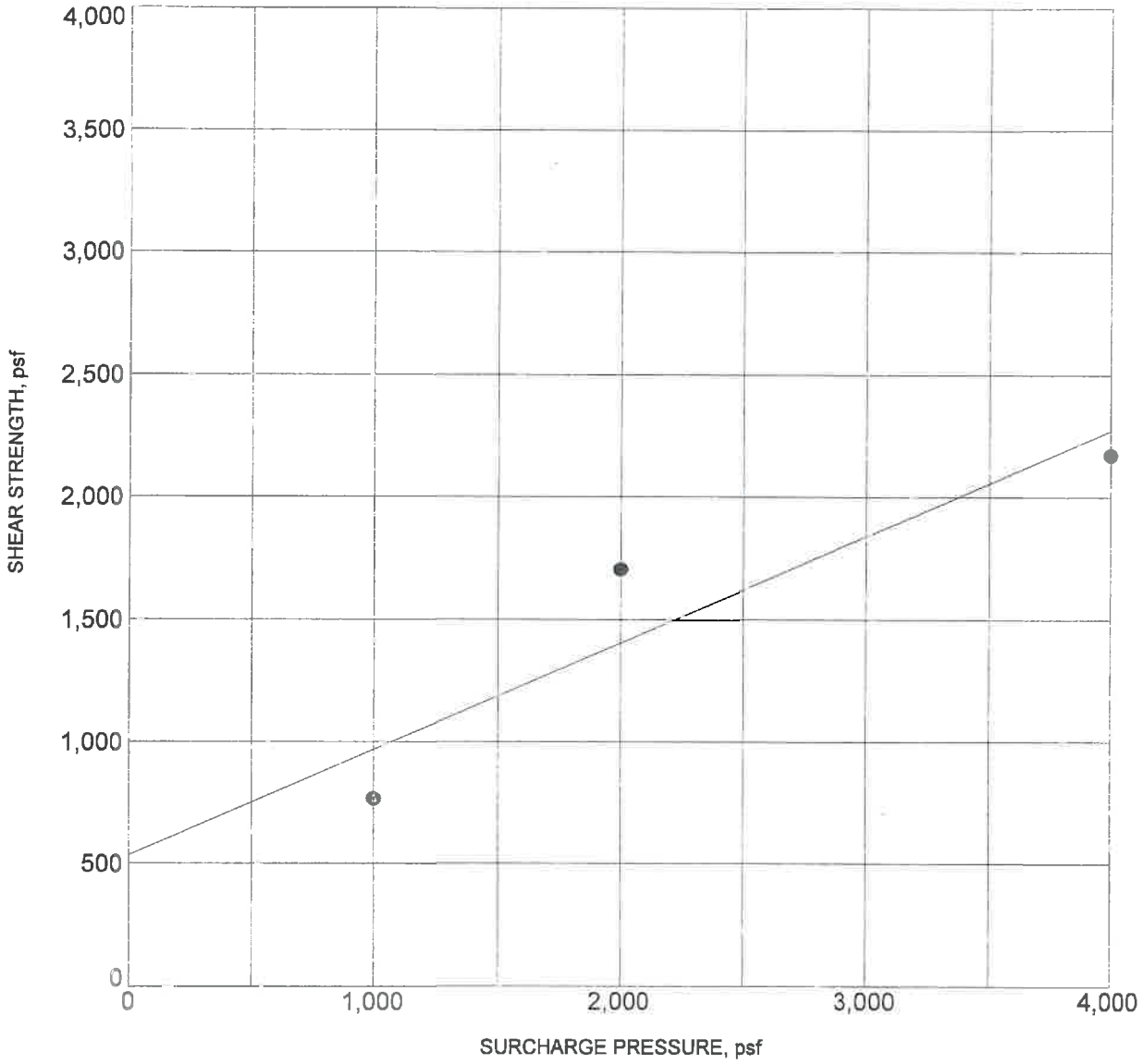
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3b**



BORING NO.	:	**BH-B5**	DEPTH (ft)	:	**15**
DESCRIPTION	:	**BEDROCK: SILTSTONE**			
COHESION (psf)	:	**550**	FRICTION ANGLE (degrees)		**23**
MOISTURE CONTENT (%)	:	**32.6**	DRY DENSITY (pcf)	:	**83.3**

NOTE: Ultimate Strength.

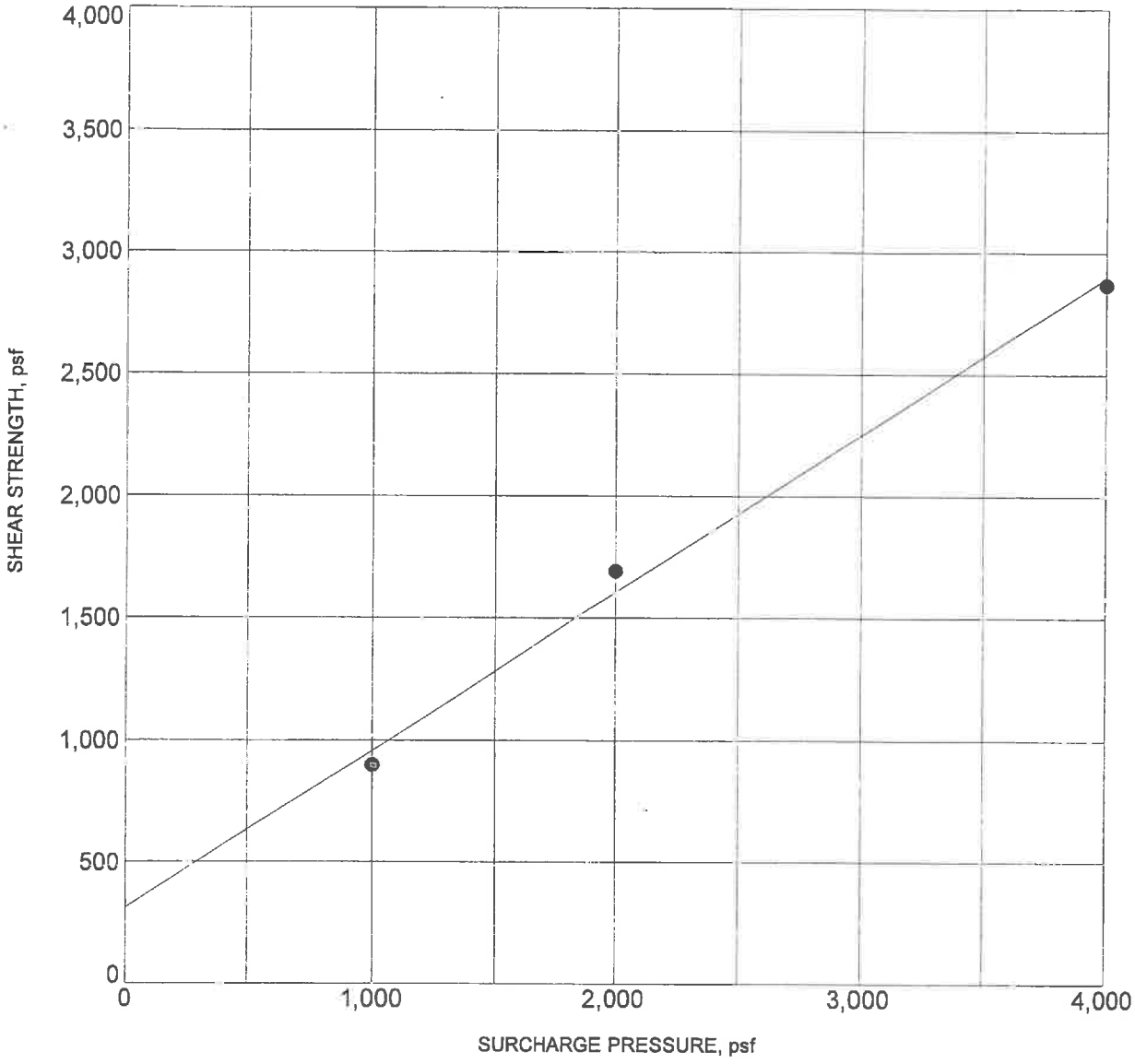
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3c**



BORING NO.	:	**BH-B6**	DEPTH (ft)	:	**65**
DESCRIPTION	:	**BEDROCK: SILTSTONE, SANDSTONE AND SHALE**			
COHESION (psf)	:	**300**	FRICTION ANGLE (degrees)		**33**
MOISTURE CONTENT (%)	:	**34.0**	DRY DENSITY (pcf)	:	**85.3**

NOTE: Ultimate Strength.

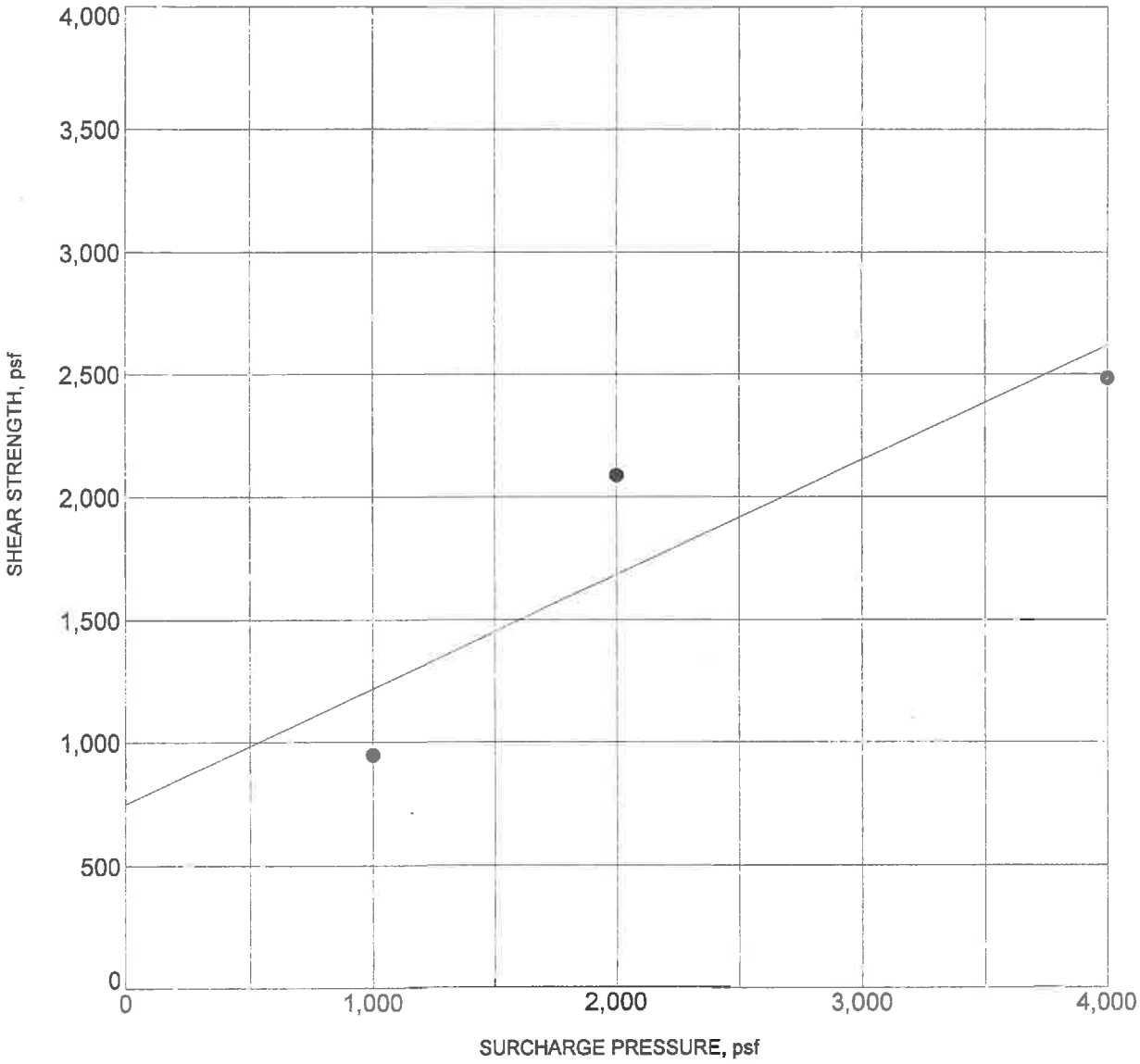
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No.
13-31-116-01

Drawing No.
B2-3d



BORING NO.	:	**BH-B7**	DEPTH (ft)	:	**75**
DESCRIPTION	:	**BEDROCK: SILTSTONE**			
COHESION (psf)	:	**750**	FRICTION ANGLE (degrees)		**25**
MOISTURE CONTENT (%)	:	**34.2**	DRY DENSITY (pcf)	:	**81.5**

NOTE: Ultimate Strength.

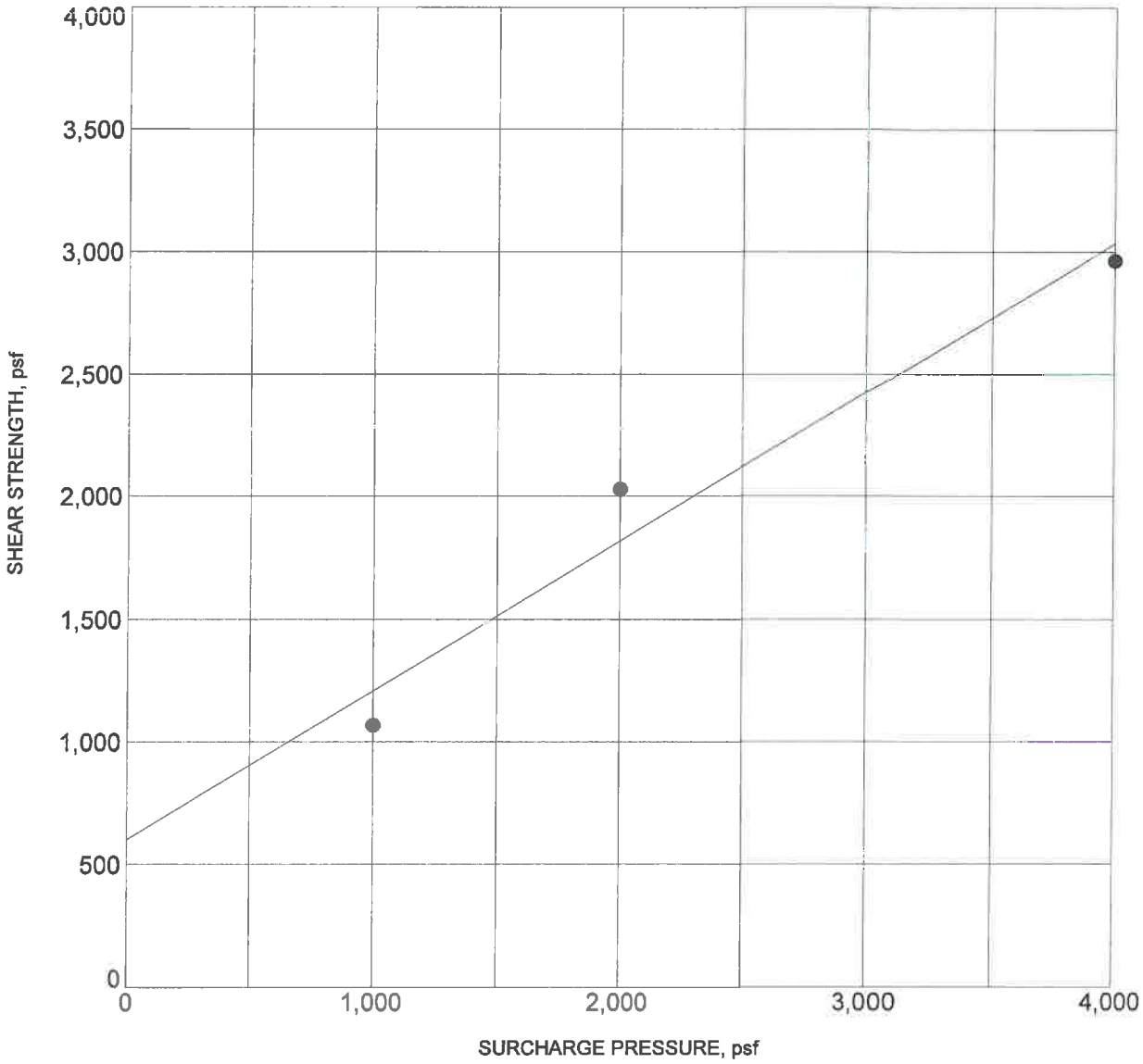
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No.
13-31-116-01

Drawing No.
B2-3e



BORING NO.	:	**BH-B10**	DEPTH (ft)	:	**15-20**
DESCRIPTION	:	**BEDROCK: SILTSTONE, CLAYSTONE AND SHALE**			
COHESION (psf)	:	**600**	FRICTION ANGLE (degrees)		**31**
MOISTURE CONTENT (%)	:	**31.9**	DRY DENSITY (pcf)	:	**82.3**

NOTE: Ultimate Strength, remolded to 90% relative compaction.

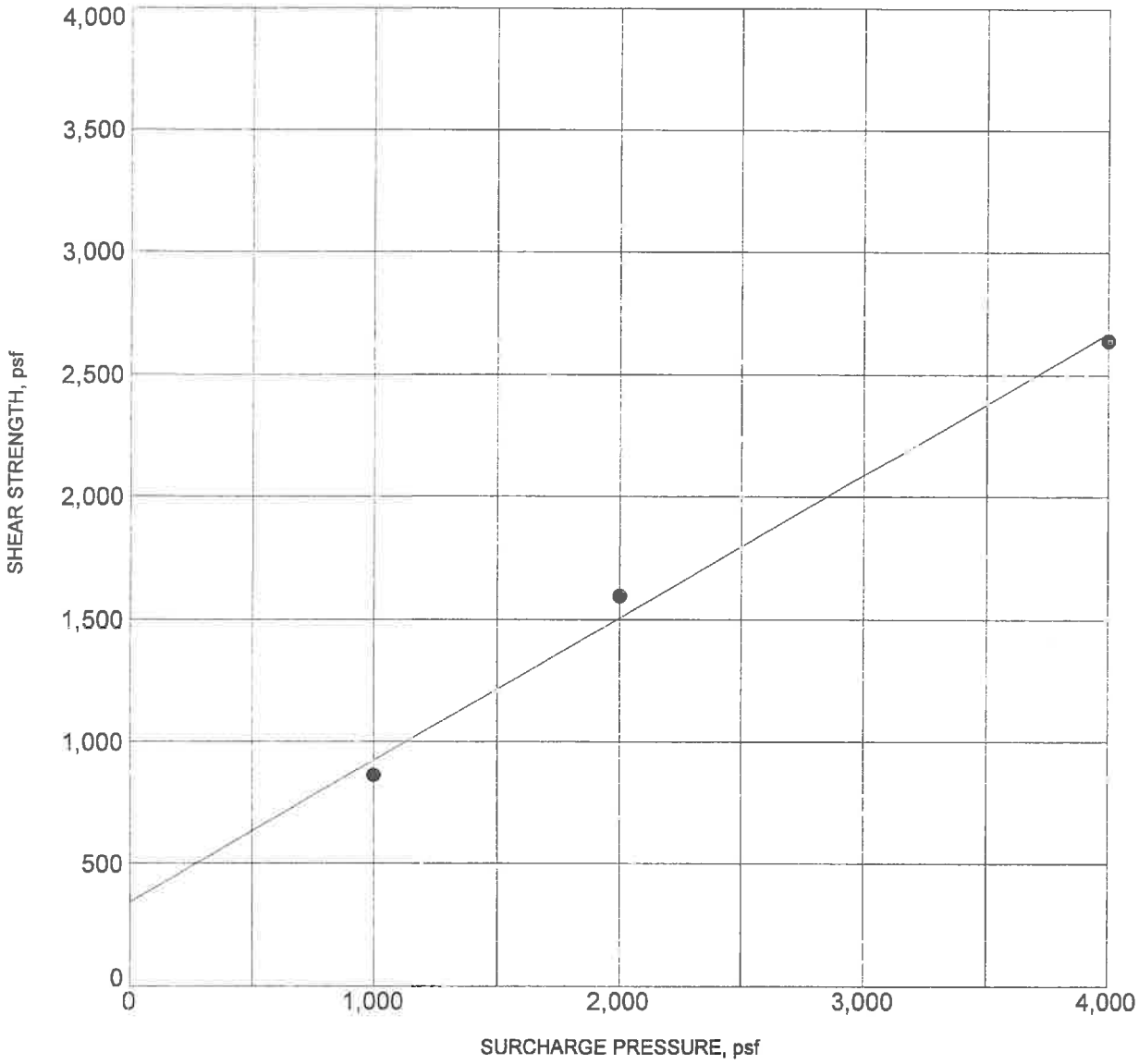
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3f**



BORING NO.	:	**BH-B10**	DEPTH (ft)	:	**85**
DESCRIPTION	:	**BEDROCK: SILTSTONE, SANDSTONE AND SHALE**			
COHESION (psf)	:	**350**	FRICTION ANGLE (degrees)		**30**
MOISTURE CONTENT (%)	:	**40.3**	DRY DENSITY (pcf)	:	**76.9**

NOTE: Ultimate Strength. .

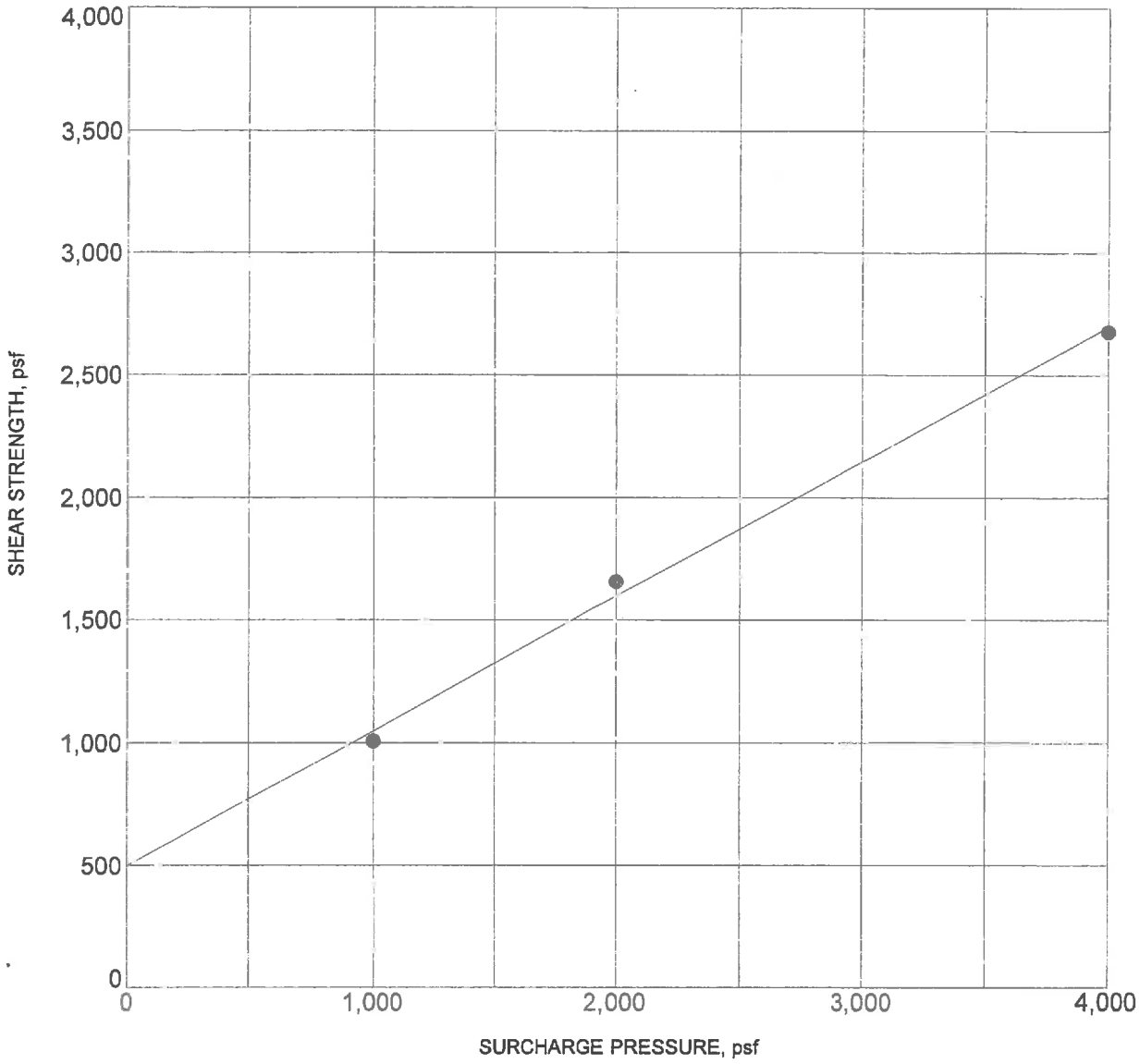
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3g**



BORING NO.	:	**BH-B11**	DEPTH (ft)	:	**5**
DESCRIPTION	:	**SANDY CLAY (CL)**			
COHESION (psf)	:	**500**	FRICTION ANGLE (degrees)		**29**
MOISTURE CONTENT (%)	:	**28.1**	DRY DENSITY (pcf)	:	**83.1**

.NOTE: Ultimate Strength.

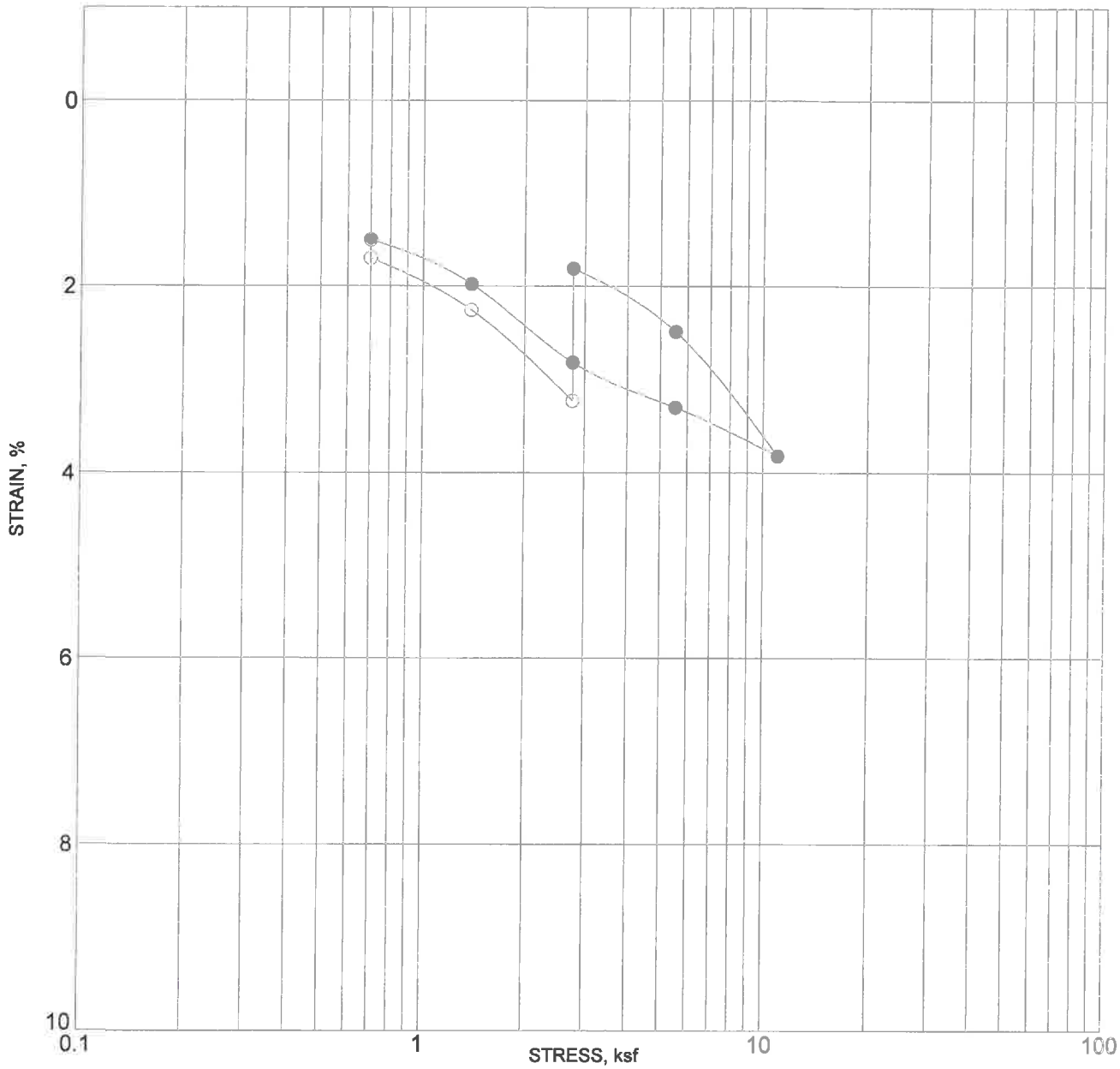
DIRECT SHEAR TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-3h**



BORING NO. :	BH-B1	DEPTH (ft) :	10
DESCRIPTION :	BEDROCK: SILTSTONE AND SHALE		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	29.9	91.3		
FINAL	18.1	96.4		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

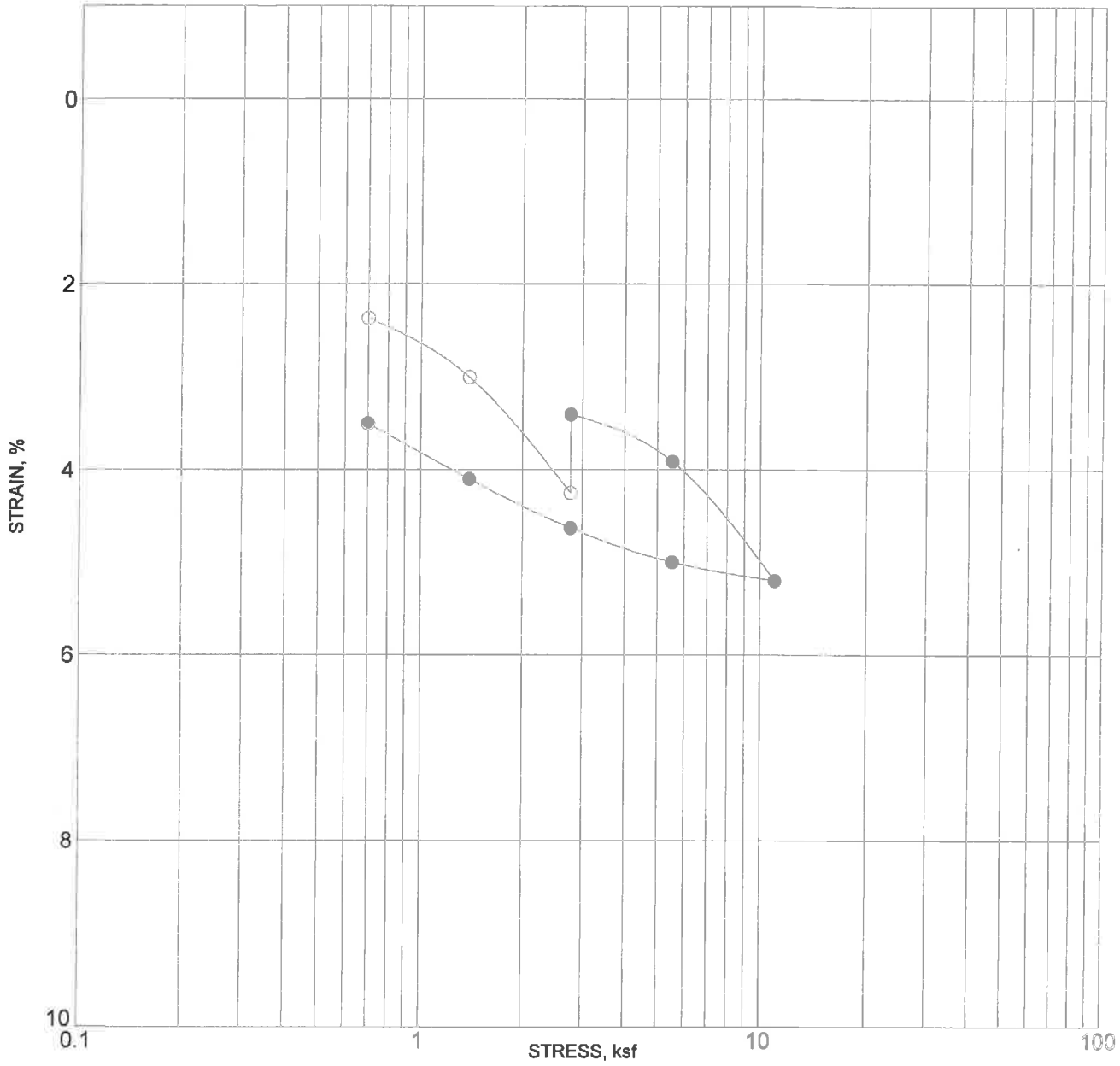
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. **13-31-116-01**

Drawing No. **B2-4a**



BORING NO. :	BH-B11	DEPTH (ft) :	15
DESCRIPTION :	SANDY CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	24.2	100.3		
FINAL	18.1	105.9		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

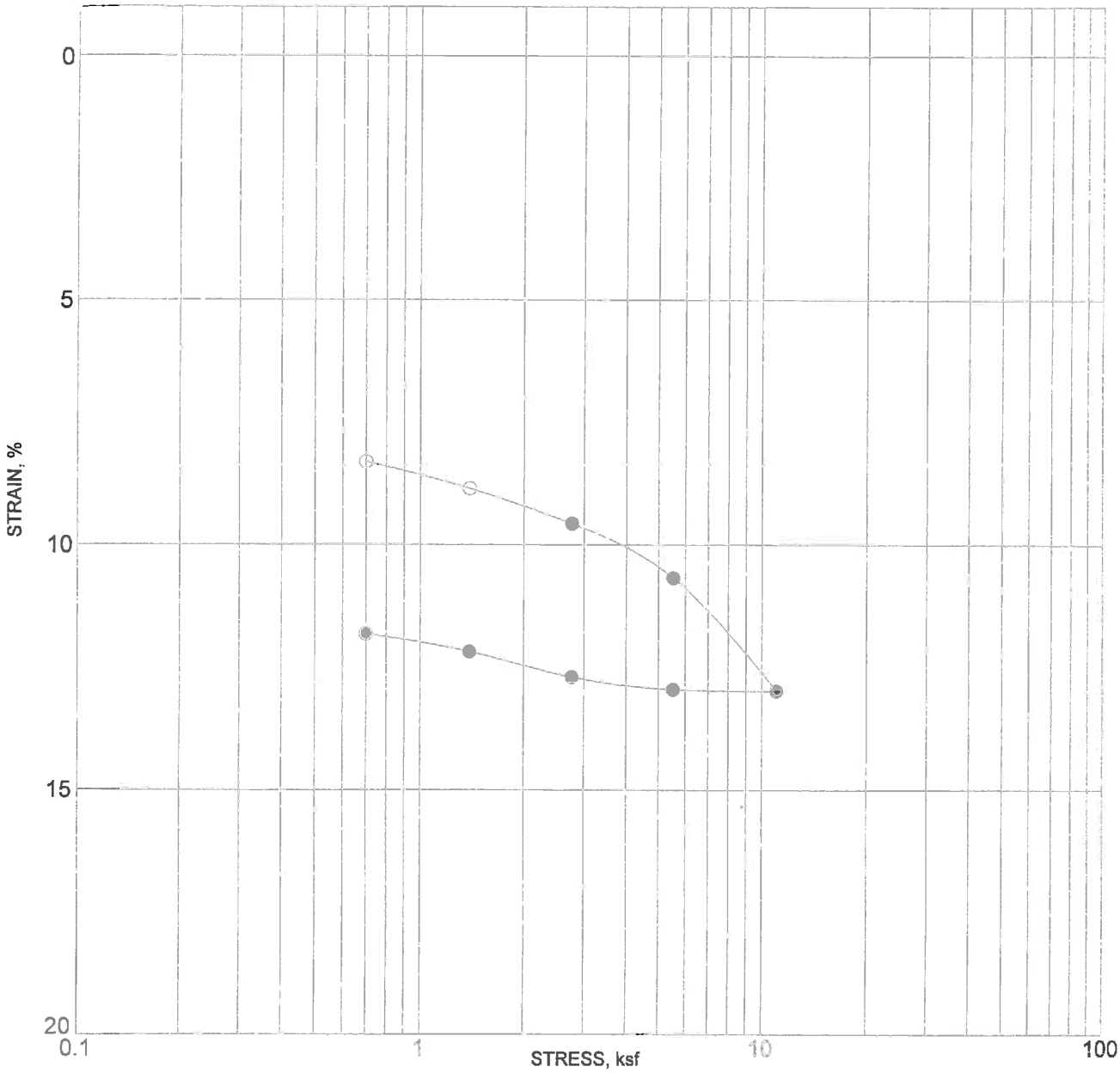
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. B2-4b



BORING NO. :	BH-B12	DEPTH (ft) :	20
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	35	91.7		
FINAL	18.1	96.8		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

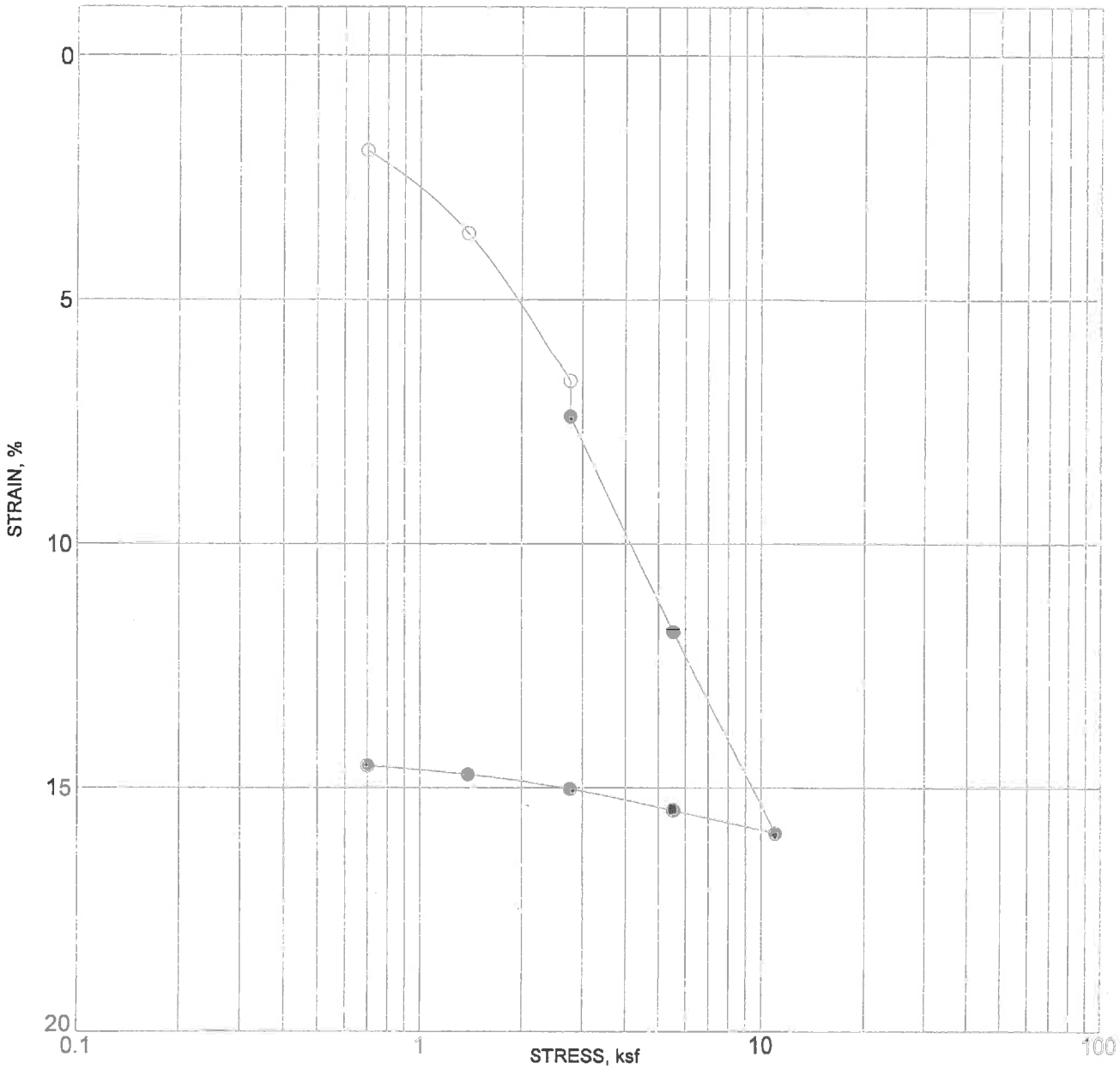
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. B2-4c



BORING NO. :	BH-B13	DEPTH (ft) :	10
DESCRIPTION :	CLAY (CL)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	36.1	77.6		
FINAL	18.1	81.9		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

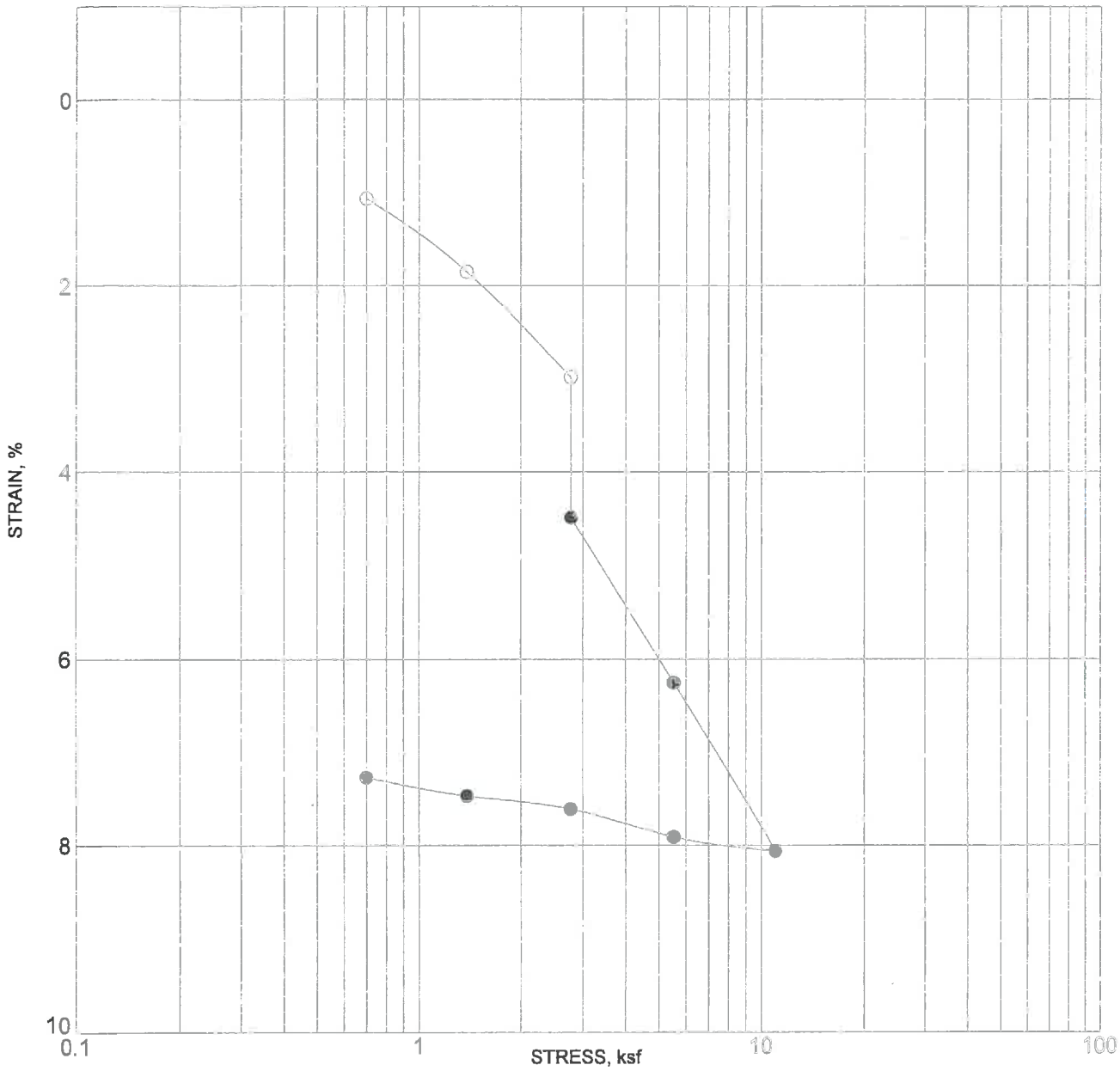
CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. B2-4d



BORING NO. :	BH-B16	DEPTH (ft) :	10
DESCRIPTION :	CLAYEY SAND (SC)		

	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	PERCENT SATURATION	VOID RATIO
INITIAL	5.5	123.3		
FINAL	18.1	130.1		

NOTE: SOLID CIRCLES INDICATE READINGS AFTER ADDITION OF WATER

CONSOLIDATION TEST RESULTS

Converse Consultants

Project Name
MT. SAC HILLTOP REMOVAL
WALNUT, CALIFORNIA

Project No. 13-31-116-01

Drawing No. B2-4e

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

APPENDIX C

LIQUEFACTION/SEISMIC SETTLEMENT ANALYSIS

Liquefaction is defined as the phenomenon where a soil mass exhibits a substantial reduction in its shear strength. This strength reduction is due to the development of excess pore pressure in a soil mass caused by earthquake induced ground motions. Saturated soils behave temporarily as a viscous fluid (liquefaction) and, consequently, lose their capacity to support the structures founded on them. The potential for liquefaction decreases with increasing clay and gravel content, but increases as the ground acceleration and duration of shaking increase. Liquefaction potential has been found to be the greatest where the groundwater level and loose sands occur within 50 feet of the ground surface.

Our liquefaction analyses are based on the *Special Publication 117A: Guidelines for Evaluating and Mitigating Seismic Hazards in California* (9/2008), *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California* (3/1999), and *2013 California Building Code*.

The subsurface data obtained from exploratory borings were used to evaluate the liquefaction/seismic settlement potential of the area. The Log of Borings is presented in Appendix A, *Field Exploration*. The liquefaction potential and seismic settlement analyses were performed utilizing data obtained from borings BH-14 and BH-26 for the upper 50 feet of soil. The analyses were performed using *LiquefyPro,* Version 5.8n, 2012, by Civil Tech Software. The following seismic parameters are used for liquefaction potential analyses.

Table No. C-1 Seismic Parameters Used in Liquefaction Analysis

Groundwater Depth* (feet)	Earthquake Magnitude** Mw	Peak Ground Acceleration*** (g)
17	6.69	0.77

* Based on groundwater encountered during exploration
** Based on the 2008 NSHMP PSHA Interactive Deaggregation web site for a return period of 2475 years
*** Based on PGA_M per section 21.5 of ASCE 7-10

The results of liquefaction analyses indicate the project site is not susceptible to liquefaction. The estimated potential seismically induced settlement ranges from approximately 0.67 to 0.87 inches with potential differential settlement ranging from approximately 0.34 to 0.44 inches. The project structural engineer should consider the effects of seismically-induced settlement in the foundation design.

Table No. C-2, Seismic Settlement Analyses Summary

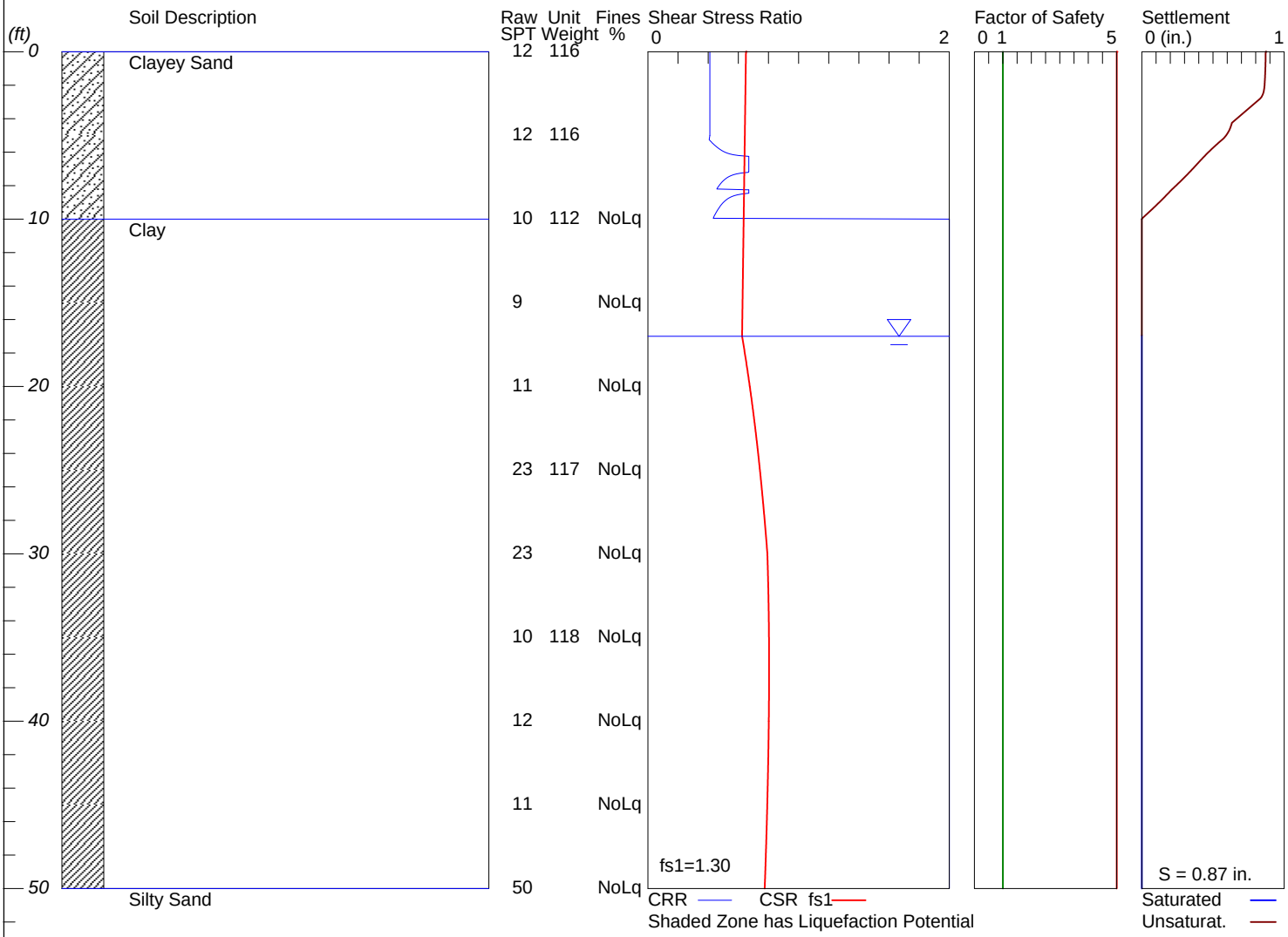
Boring No.	Building/Structure	Seismic Settlement of Upper 50 Feet (inches)
BH-14	Scoreboard	0.87
BH-26	Gateway Building	0.67

LIQUEFACTION ANALYSIS

Mt. SAC Athletics Complex East

Hole No.=BH-14 Water Depth=17 ft Surface Elev.=732

Magnitude=6.69
Acceleration=0.77g



LiquefyPro CivilTech Software USA www.civiltech.com

****

LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.

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Input File Name: UNTITLED

Title: Mt. SAC Athletics Complex East

Subtitle: 14-31-124-01

Surface Elev.=732

Hole No.=BH-14

Depth of Hole= 50.00 ft

Water Table during Earthquake= 17.00 ft

Water Table during In-Situ Testing= 17.00 ft

Max. Acceleration= 0.77 g

Earthquake Magnitude= 6.69

Input Data:

Surface Elev.=732

Hole No.=BH-14

Depth of Hole=50.00 ft

Water Table during Earthquake= 17.00 ft

Water Table during In-Situ Testing= 17.00 ft

Max. Acceleration=0.77 g

Earthquake Magnitude=6.69

No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	12.00	116.00	0.00
5.00	12.00	116.00	0.00
10.00	10.00	112.00	NoLiq
15.00	9.00	112.00	NoLiq
20.00	11.00	112.00	NoLiq
25.00	23.00	117.00	NoLiq
30.00	23.00	117.00	NoLiq
35.00	10.00	118.00	NoLiq
40.00	12.00	118.00	NoLiq
45.00	11.00	118.00	NoLiq
50.00	50.00	118.00	NoLiq

Output Results:

Settlement of Saturated Sands=0.00 in.

Settlement of Unsaturated Sands=0.87 in.

Total Settlement of Saturated and Unsaturated Sands=0.87 in.

Differential Settlement=0.435 to 0.574 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	Liquefy.sum in.
0.00	0.41	0.65	5.00	0.00	0.87	0.87
0.05	0.41	0.65	5.00	0.00	0.87	0.87
0.10	0.41	0.65	5.00	0.00	0.87	0.87
0.15	0.41	0.65	5.00	0.00	0.87	0.87
0.20	0.41	0.65	5.00	0.00	0.87	0.87
0.25	0.41	0.65	5.00	0.00	0.87	0.87
0.30	0.41	0.65	5.00	0.00	0.87	0.87
0.35	0.41	0.65	5.00	0.00	0.87	0.87
0.40	0.41	0.65	5.00	0.00	0.87	0.87
0.45	0.41	0.65	5.00	0.00	0.87	0.87
0.50	0.41	0.65	5.00	0.00	0.87	0.87
0.55	0.41	0.65	5.00	0.00	0.87	0.87
0.60	0.41	0.65	5.00	0.00	0.87	0.87
0.65	0.41	0.65	5.00	0.00	0.87	0.87
0.70	0.41	0.65	5.00	0.00	0.87	0.87
0.75	0.41	0.65	5.00	0.00	0.87	0.87
0.80	0.41	0.65	5.00	0.00	0.87	0.87
0.85	0.41	0.65	5.00	0.00	0.87	0.87
0.90	0.41	0.65	5.00	0.00	0.87	0.87
0.95	0.41	0.65	5.00	0.00	0.87	0.87
1.00	0.41	0.65	5.00	0.00	0.87	0.87
1.05	0.41	0.65	5.00	0.00	0.87	0.87
1.10	0.41	0.65	5.00	0.00	0.87	0.87
1.15	0.41	0.65	5.00	0.00	0.87	0.87
1.20	0.41	0.65	5.00	0.00	0.87	0.87
1.25	0.41	0.65	5.00	0.00	0.87	0.87
1.30	0.41	0.65	5.00	0.00	0.87	0.87
1.35	0.41	0.65	5.00	0.00	0.87	0.87
1.40	0.41	0.65	5.00	0.00	0.87	0.87
1.45	0.41	0.65	5.00	0.00	0.87	0.87
1.50	0.41	0.65	5.00	0.00	0.87	0.87
1.55	0.41	0.65	5.00	0.00	0.87	0.87
1.60	0.41	0.65	5.00	0.00	0.87	0.87
1.65	0.41	0.65	5.00	0.00	0.86	0.86
1.70	0.41	0.65	5.00	0.00	0.86	0.86
1.75	0.41	0.65	5.00	0.00	0.86	0.86
1.80	0.41	0.65	5.00	0.00	0.86	0.86
1.85	0.41	0.65	5.00	0.00	0.86	0.86
1.90	0.41	0.65	5.00	0.00	0.86	0.86
1.95	0.41	0.65	5.00	0.00	0.86	0.86
2.00	0.41	0.65	5.00	0.00	0.86	0.86
2.05	0.41	0.65	5.00	0.00	0.86	0.86
2.10	0.41	0.65	5.00	0.00	0.86	0.86
2.15	0.41	0.65	5.00	0.00	0.86	0.86
2.20	0.41	0.65	5.00	0.00	0.86	0.86
2.25	0.41	0.65	5.00	0.00	0.86	0.86
2.30	0.41	0.65	5.00	0.00	0.86	0.86
2.35	0.41	0.65	5.00	0.00	0.86	0.86
2.40	0.41	0.65	5.00	0.00	0.86	0.86
2.45	0.41	0.65	5.00	0.00	0.85	0.85
2.50	0.41	0.65	5.00	0.00	0.85	0.85
2.55	0.41	0.65	5.00	0.00	0.85	0.85
2.60	0.41	0.65	5.00	0.00	0.85	0.85
2.65	0.41	0.65	5.00	0.00	0.84	0.84
2.70	0.41	0.65	5.00	0.00	0.84	0.84
2.75	0.41	0.65	5.00	0.00	0.84	0.84
2.80	0.41	0.65	5.00	0.00	0.83	0.83
2.85	0.41	0.65	5.00	0.00	0.82	0.82
2.90	0.41	0.65	5.00	0.00	0.82	0.82
2.95	0.41	0.65	5.00	0.00	0.81	0.81
3.00	0.41	0.65	5.00	0.00	0.80	0.80
3.05	0.41	0.65	5.00	0.00	0.80	0.80
3.10	0.41	0.65	5.00	0.00	0.79	0.79
3.15	0.41	0.65	5.00	0.00	0.78	0.78
3.20	0.41	0.65	5.00	0.00	0.78	0.78

						Liquefy.sum
3.25	0.41	0.65	5.00	0.00	0.77	0.77
3.30	0.41	0.65	5.00	0.00	0.76	0.76
3.35	0.41	0.65	5.00	0.00	0.76	0.76
3.40	0.41	0.65	5.00	0.00	0.75	0.75
3.45	0.41	0.65	5.00	0.00	0.74	0.74
3.50	0.41	0.65	5.00	0.00	0.74	0.74
3.55	0.41	0.65	5.00	0.00	0.73	0.73
3.60	0.41	0.65	5.00	0.00	0.72	0.72
3.65	0.41	0.65	5.00	0.00	0.71	0.71
3.70	0.41	0.65	5.00	0.00	0.71	0.71
3.75	0.41	0.64	5.00	0.00	0.70	0.70
3.80	0.41	0.64	5.00	0.00	0.69	0.69
3.85	0.41	0.64	5.00	0.00	0.69	0.69
3.90	0.41	0.64	5.00	0.00	0.68	0.68
3.95	0.41	0.64	5.00	0.00	0.67	0.67
4.00	0.41	0.64	5.00	0.00	0.67	0.67
4.05	0.41	0.64	5.00	0.00	0.66	0.66
4.10	0.41	0.64	5.00	0.00	0.65	0.65
4.15	0.41	0.64	5.00	0.00	0.65	0.65
4.20	0.41	0.64	5.00	0.00	0.64	0.64
4.25	0.41	0.64	5.00	0.00	0.63	0.63
4.30	0.41	0.64	5.00	0.00	0.63	0.63
4.35	0.41	0.64	5.00	0.00	0.63	0.63
4.40	0.41	0.64	5.00	0.00	0.63	0.63
4.45	0.41	0.64	5.00	0.00	0.63	0.63
4.50	0.41	0.64	5.00	0.00	0.62	0.62
4.55	0.41	0.64	5.00	0.00	0.62	0.62
4.60	0.41	0.64	5.00	0.00	0.62	0.62
4.65	0.41	0.64	5.00	0.00	0.62	0.62
4.70	0.41	0.64	5.00	0.00	0.61	0.61
4.75	0.41	0.64	5.00	0.00	0.61	0.61
4.80	0.41	0.64	5.00	0.00	0.61	0.61
4.85	0.41	0.64	5.00	0.00	0.60	0.60
4.90	0.41	0.64	5.00	0.00	0.60	0.60
4.95	0.41	0.64	5.00	0.00	0.60	0.60
5.00	0.41	0.64	5.00	0.00	0.59	0.59
5.05	0.41	0.64	5.00	0.00	0.59	0.59
5.10	0.41	0.64	5.00	0.00	0.58	0.58
5.15	0.41	0.64	5.00	0.00	0.58	0.58
5.20	0.41	0.64	5.00	0.00	0.57	0.57
5.25	0.41	0.64	5.00	0.00	0.56	0.56
5.30	0.41	0.64	5.00	0.00	0.56	0.56
5.35	0.42	0.64	5.00	0.00	0.55	0.55
5.40	0.42	0.64	5.00	0.00	0.54	0.54
5.45	0.43	0.64	5.00	0.00	0.54	0.54
5.50	0.43	0.64	5.00	0.00	0.53	0.53
5.55	0.44	0.64	5.00	0.00	0.52	0.52
5.60	0.45	0.64	5.00	0.00	0.52	0.52
5.65	0.45	0.64	5.00	0.00	0.51	0.51
5.70	0.46	0.64	5.00	0.00	0.51	0.51
5.75	0.47	0.64	5.00	0.00	0.50	0.50
5.80	0.47	0.64	5.00	0.00	0.49	0.49
5.85	0.48	0.64	5.00	0.00	0.49	0.49
5.90	0.49	0.64	5.00	0.00	0.48	0.48
5.95	0.50	0.64	5.00	0.00	0.47	0.47
6.00	0.51	0.64	5.00	0.00	0.47	0.47
6.05	0.52	0.64	5.00	0.00	0.46	0.46
6.10	0.54	0.64	5.00	0.00	0.46	0.46
6.15	0.56	0.64	5.00	0.00	0.45	0.45
6.20	0.60	0.64	5.00	0.00	0.44	0.44
6.25	0.67	0.64	5.00	0.00	0.44	0.44
6.30	0.67	0.64	5.00	0.00	0.43	0.43
6.35	0.67	0.64	5.00	0.00	0.43	0.43
6.40	0.67	0.64	5.00	0.00	0.42	0.42
6.45	0.67	0.64	5.00	0.00	0.42	0.42
6.50	0.67	0.64	5.00	0.00	0.41	0.41
6.55	0.67	0.64	5.00	0.00	0.41	0.41

						Liquefy.sum
6.60	0.67	0.64	5.00	0.00	0.40	0.40
6.65	0.67	0.64	5.00	0.00	0.39	0.39
6.70	0.67	0.64	5.00	0.00	0.39	0.39
6.75	0.67	0.64	5.00	0.00	0.38	0.38
6.80	0.67	0.64	5.00	0.00	0.38	0.38
6.85	0.67	0.64	5.00	0.00	0.37	0.37
6.90	0.67	0.64	5.00	0.00	0.37	0.37
6.95	0.67	0.64	5.00	0.00	0.36	0.36
7.00	0.67	0.64	5.00	0.00	0.36	0.36
7.05	0.67	0.64	5.00	0.00	0.35	0.35
7.10	0.67	0.64	5.00	0.00	0.35	0.35
7.15	0.67	0.64	5.00	0.00	0.34	0.34
7.20	0.67	0.64	5.00	0.00	0.33	0.33
7.25	0.62	0.64	5.00	0.00	0.33	0.33
7.30	0.59	0.64	5.00	0.00	0.32	0.32
7.35	0.57	0.64	5.00	0.00	0.32	0.32
7.40	0.55	0.64	5.00	0.00	0.31	0.31
7.45	0.54	0.64	5.00	0.00	0.31	0.31
7.50	0.53	0.64	5.00	0.00	0.30	0.30
7.55	0.52	0.64	5.00	0.00	0.29	0.29
7.60	0.51	0.64	5.00	0.00	0.29	0.29
7.65	0.51	0.64	5.00	0.00	0.28	0.28
7.70	0.50	0.64	5.00	0.00	0.28	0.28
7.75	0.50	0.64	5.00	0.00	0.27	0.27
7.80	0.49	0.64	5.00	0.00	0.26	0.26
7.85	0.49	0.64	5.00	0.00	0.26	0.26
7.90	0.48	0.64	5.00	0.00	0.25	0.25
7.95	0.48	0.64	5.00	0.00	0.25	0.25
8.00	0.47	0.64	5.00	0.00	0.24	0.24
8.05	0.47	0.64	5.00	0.00	0.23	0.23
8.10	0.46	0.64	5.00	0.00	0.23	0.23
8.15	0.46	0.64	5.00	0.00	0.22	0.22
8.20	0.46	0.64	5.00	0.00	0.21	0.21
8.25	0.67	0.64	5.00	0.00	0.21	0.21
8.30	0.67	0.64	5.00	0.00	0.20	0.20
8.35	0.67	0.64	5.00	0.00	0.20	0.20
8.40	0.67	0.64	5.00	0.00	0.19	0.19
8.45	0.67	0.64	5.00	0.00	0.19	0.19
8.50	0.62	0.64	5.00	0.00	0.18	0.18
8.55	0.59	0.64	5.00	0.00	0.17	0.17
8.60	0.57	0.64	5.00	0.00	0.17	0.17
8.65	0.56	0.64	5.00	0.00	0.16	0.16
8.70	0.55	0.64	5.00	0.00	0.16	0.16
8.75	0.54	0.64	5.00	0.00	0.15	0.15
8.80	0.53	0.64	5.00	0.00	0.15	0.15
8.85	0.52	0.64	5.00	0.00	0.14	0.14
8.90	0.51	0.64	5.00	0.00	0.13	0.13
8.95	0.51	0.64	5.00	0.00	0.13	0.13
9.00	0.50	0.64	5.00	0.00	0.12	0.12
9.05	0.50	0.64	5.00	0.00	0.12	0.12
9.10	0.49	0.64	5.00	0.00	0.11	0.11
9.15	0.49	0.64	5.00	0.00	0.10	0.10
9.20	0.48	0.64	5.00	0.00	0.10	0.10
9.25	0.48	0.64	5.00	0.00	0.09	0.09
9.30	0.47	0.64	5.00	0.00	0.09	0.09
9.35	0.47	0.64	5.00	0.00	0.08	0.08
9.40	0.47	0.64	5.00	0.00	0.07	0.07
9.45	0.46	0.64	5.00	0.00	0.07	0.07
9.50	0.46	0.64	5.00	0.00	0.06	0.06
9.55	0.46	0.64	5.00	0.00	0.05	0.05
9.60	0.45	0.64	5.00	0.00	0.05	0.05
9.65	0.45	0.64	5.00	0.00	0.04	0.04
9.70	0.45	0.64	5.00	0.00	0.04	0.04
9.75	0.44	0.64	5.00	0.00	0.03	0.03
9.80	0.44	0.64	5.00	0.00	0.02	0.02
9.85	0.44	0.64	5.00	0.00	0.02	0.02
9.90	0.44	0.64	5.00	0.00	0.01	0.01

						Liquefy.sum
9.95	0.43	0.64	5.00	0.00	0.00	0.00
10.00	2.00	0.64	5.00	0.00	0.00	0.00
10.05	2.00	0.64	5.00	0.00	0.00	0.00
10.10	2.00	0.64	5.00	0.00	0.00	0.00
10.15	2.00	0.64	5.00	0.00	0.00	0.00
10.20	2.00	0.64	5.00	0.00	0.00	0.00
10.25	2.00	0.64	5.00	0.00	0.00	0.00
10.30	2.00	0.64	5.00	0.00	0.00	0.00
10.35	2.00	0.63	5.00	0.00	0.00	0.00
10.40	2.00	0.63	5.00	0.00	0.00	0.00
10.45	2.00	0.63	5.00	0.00	0.00	0.00
10.50	2.00	0.63	5.00	0.00	0.00	0.00
10.55	2.00	0.63	5.00	0.00	0.00	0.00
10.60	2.00	0.63	5.00	0.00	0.00	0.00
10.65	2.00	0.63	5.00	0.00	0.00	0.00
10.70	2.00	0.63	5.00	0.00	0.00	0.00
10.75	2.00	0.63	5.00	0.00	0.00	0.00
10.80	2.00	0.63	5.00	0.00	0.00	0.00
10.85	2.00	0.63	5.00	0.00	0.00	0.00
10.90	2.00	0.63	5.00	0.00	0.00	0.00
10.95	2.00	0.63	5.00	0.00	0.00	0.00
11.00	2.00	0.63	5.00	0.00	0.00	0.00
11.05	2.00	0.63	5.00	0.00	0.00	0.00
11.10	2.00	0.63	5.00	0.00	0.00	0.00
11.15	2.00	0.63	5.00	0.00	0.00	0.00
11.20	2.00	0.63	5.00	0.00	0.00	0.00
11.25	2.00	0.63	5.00	0.00	0.00	0.00
11.30	2.00	0.63	5.00	0.00	0.00	0.00
11.35	2.00	0.63	5.00	0.00	0.00	0.00
11.40	2.00	0.63	5.00	0.00	0.00	0.00
11.45	2.00	0.63	5.00	0.00	0.00	0.00
11.50	2.00	0.63	5.00	0.00	0.00	0.00
11.55	2.00	0.63	5.00	0.00	0.00	0.00
11.60	2.00	0.63	5.00	0.00	0.00	0.00
11.65	2.00	0.63	5.00	0.00	0.00	0.00
11.70	2.00	0.63	5.00	0.00	0.00	0.00
11.75	2.00	0.63	5.00	0.00	0.00	0.00
11.80	2.00	0.63	5.00	0.00	0.00	0.00
11.85	2.00	0.63	5.00	0.00	0.00	0.00
11.90	2.00	0.63	5.00	0.00	0.00	0.00
11.95	2.00	0.63	5.00	0.00	0.00	0.00
12.00	2.00	0.63	5.00	0.00	0.00	0.00
12.05	2.00	0.63	5.00	0.00	0.00	0.00
12.10	2.00	0.63	5.00	0.00	0.00	0.00
12.15	2.00	0.63	5.00	0.00	0.00	0.00
12.20	2.00	0.63	5.00	0.00	0.00	0.00
12.25	2.00	0.63	5.00	0.00	0.00	0.00
12.30	2.00	0.63	5.00	0.00	0.00	0.00
12.35	2.00	0.63	5.00	0.00	0.00	0.00
12.40	2.00	0.63	5.00	0.00	0.00	0.00
12.45	2.00	0.63	5.00	0.00	0.00	0.00
12.50	2.00	0.63	5.00	0.00	0.00	0.00
12.55	2.00	0.63	5.00	0.00	0.00	0.00
12.60	2.00	0.63	5.00	0.00	0.00	0.00
12.65	2.00	0.63	5.00	0.00	0.00	0.00
12.70	2.00	0.63	5.00	0.00	0.00	0.00
12.75	2.00	0.63	5.00	0.00	0.00	0.00
12.80	2.00	0.63	5.00	0.00	0.00	0.00
12.85	2.00	0.63	5.00	0.00	0.00	0.00
12.90	2.00	0.63	5.00	0.00	0.00	0.00
12.95	2.00	0.63	5.00	0.00	0.00	0.00
13.00	2.00	0.63	5.00	0.00	0.00	0.00
13.05	2.00	0.63	5.00	0.00	0.00	0.00
13.10	2.00	0.63	5.00	0.00	0.00	0.00
13.15	2.00	0.63	5.00	0.00	0.00	0.00
13.20	2.00	0.63	5.00	0.00	0.00	0.00
13.25	2.00	0.63	5.00	0.00	0.00	0.00

13.30	2.00	0.63	5.00	0.00	0.00	0.00
13.35	2.00	0.63	5.00	0.00	0.00	0.00
13.40	2.00	0.63	5.00	0.00	0.00	0.00
13.45	2.00	0.63	5.00	0.00	0.00	0.00
13.50	2.00	0.63	5.00	0.00	0.00	0.00
13.55	2.00	0.63	5.00	0.00	0.00	0.00
13.60	2.00	0.63	5.00	0.00	0.00	0.00
13.65	2.00	0.63	5.00	0.00	0.00	0.00
13.70	2.00	0.63	5.00	0.00	0.00	0.00
13.75	2.00	0.63	5.00	0.00	0.00	0.00
13.80	2.00	0.63	5.00	0.00	0.00	0.00
13.85	2.00	0.63	5.00	0.00	0.00	0.00
13.90	2.00	0.63	5.00	0.00	0.00	0.00
13.95	2.00	0.63	5.00	0.00	0.00	0.00
14.00	2.00	0.63	5.00	0.00	0.00	0.00
14.05	2.00	0.63	5.00	0.00	0.00	0.00
14.10	2.00	0.63	5.00	0.00	0.00	0.00
14.15	2.00	0.63	5.00	0.00	0.00	0.00
14.20	2.00	0.63	5.00	0.00	0.00	0.00
14.25	2.00	0.63	5.00	0.00	0.00	0.00
14.30	2.00	0.63	5.00	0.00	0.00	0.00
14.35	2.00	0.63	5.00	0.00	0.00	0.00
14.40	2.00	0.63	5.00	0.00	0.00	0.00
14.45	2.00	0.63	5.00	0.00	0.00	0.00
14.50	2.00	0.63	5.00	0.00	0.00	0.00
14.55	2.00	0.63	5.00	0.00	0.00	0.00
14.60	2.00	0.63	5.00	0.00	0.00	0.00
14.65	2.00	0.63	5.00	0.00	0.00	0.00
14.70	2.00	0.63	5.00	0.00	0.00	0.00
14.75	2.00	0.63	5.00	0.00	0.00	0.00
14.80	2.00	0.63	5.00	0.00	0.00	0.00
14.85	2.00	0.63	5.00	0.00	0.00	0.00
14.90	2.00	0.63	5.00	0.00	0.00	0.00
14.95	2.00	0.63	5.00	0.00	0.00	0.00
15.00	2.00	0.63	5.00	0.00	0.00	0.00
15.05	2.00	0.63	5.00	0.00	0.00	0.00
15.10	2.00	0.63	5.00	0.00	0.00	0.00
15.15	2.00	0.63	5.00	0.00	0.00	0.00
15.20	2.00	0.63	5.00	0.00	0.00	0.00
15.25	2.00	0.63	5.00	0.00	0.00	0.00
15.30	2.00	0.63	5.00	0.00	0.00	0.00
15.35	2.00	0.63	5.00	0.00	0.00	0.00
15.40	2.00	0.63	5.00	0.00	0.00	0.00
15.45	2.00	0.63	5.00	0.00	0.00	0.00
15.50	2.00	0.63	5.00	0.00	0.00	0.00
15.55	2.00	0.63	5.00	0.00	0.00	0.00
15.60	2.00	0.63	5.00	0.00	0.00	0.00
15.65	2.00	0.63	5.00	0.00	0.00	0.00
15.70	2.00	0.63	5.00	0.00	0.00	0.00
15.75	2.00	0.63	5.00	0.00	0.00	0.00
15.80	2.00	0.63	5.00	0.00	0.00	0.00
15.85	2.00	0.63	5.00	0.00	0.00	0.00
15.90	2.00	0.63	5.00	0.00	0.00	0.00
15.95	2.00	0.63	5.00	0.00	0.00	0.00
16.00	2.00	0.63	5.00	0.00	0.00	0.00
16.05	2.00	0.63	5.00	0.00	0.00	0.00
16.10	2.00	0.63	5.00	0.00	0.00	0.00
16.15	2.00	0.63	5.00	0.00	0.00	0.00
16.20	2.00	0.63	5.00	0.00	0.00	0.00
16.25	2.00	0.63	5.00	0.00	0.00	0.00
16.30	2.00	0.63	5.00	0.00	0.00	0.00
16.35	2.00	0.63	5.00	0.00	0.00	0.00
16.40	2.00	0.63	5.00	0.00	0.00	0.00
16.45	2.00	0.63	5.00	0.00	0.00	0.00
16.50	2.00	0.63	5.00	0.00	0.00	0.00
16.55	2.00	0.63	5.00	0.00	0.00	0.00
16.60	2.00	0.63	5.00	0.00	0.00	0.00

						Liquefy.sum
16.65	2.00	0.63	5.00	0.00	0.00	0.00
16.70	2.00	0.63	5.00	0.00	0.00	0.00
16.75	2.00	0.63	5.00	0.00	0.00	0.00
16.80	2.00	0.63	5.00	0.00	0.00	0.00
16.85	2.00	0.63	5.00	0.00	0.00	0.00
16.90	2.00	0.63	5.00	0.00	0.00	0.00
16.95	2.00	0.62	5.00	0.00	0.00	0.00
17.00	2.00	0.62	5.00	0.00	0.00	0.00
17.05	2.00	0.63	5.00	0.00	0.00	0.00
17.10	2.00	0.63	5.00	0.00	0.00	0.00
17.15	2.00	0.63	5.00	0.00	0.00	0.00
17.20	2.00	0.63	5.00	0.00	0.00	0.00
17.25	2.00	0.63	5.00	0.00	0.00	0.00
17.30	2.00	0.63	5.00	0.00	0.00	0.00
17.35	2.00	0.63	5.00	0.00	0.00	0.00
17.40	2.00	0.63	5.00	0.00	0.00	0.00
17.45	2.00	0.63	5.00	0.00	0.00	0.00
17.50	2.00	0.63	5.00	0.00	0.00	0.00
17.55	2.00	0.63	5.00	0.00	0.00	0.00
17.60	2.00	0.64	5.00	0.00	0.00	0.00
17.65	2.00	0.64	5.00	0.00	0.00	0.00
17.70	2.00	0.64	5.00	0.00	0.00	0.00
17.75	2.00	0.64	5.00	0.00	0.00	0.00
17.80	2.00	0.64	5.00	0.00	0.00	0.00
17.85	2.00	0.64	5.00	0.00	0.00	0.00
17.90	2.00	0.64	5.00	0.00	0.00	0.00
17.95	2.00	0.64	5.00	0.00	0.00	0.00
18.00	2.00	0.64	5.00	0.00	0.00	0.00
18.05	2.00	0.64	5.00	0.00	0.00	0.00
18.10	2.00	0.64	5.00	0.00	0.00	0.00
18.15	2.00	0.65	5.00	0.00	0.00	0.00
18.20	2.00	0.65	5.00	0.00	0.00	0.00
18.25	2.00	0.65	5.00	0.00	0.00	0.00
18.30	2.00	0.65	5.00	0.00	0.00	0.00
18.35	2.00	0.65	5.00	0.00	0.00	0.00
18.40	2.00	0.65	5.00	0.00	0.00	0.00
18.45	2.00	0.65	5.00	0.00	0.00	0.00
18.50	2.00	0.65	5.00	0.00	0.00	0.00
18.55	2.00	0.65	5.00	0.00	0.00	0.00
18.60	2.00	0.65	5.00	0.00	0.00	0.00
18.65	2.00	0.65	5.00	0.00	0.00	0.00
18.70	2.00	0.65	5.00	0.00	0.00	0.00
18.75	2.00	0.66	5.00	0.00	0.00	0.00
18.80	2.00	0.66	5.00	0.00	0.00	0.00
18.85	2.00	0.66	5.00	0.00	0.00	0.00
18.90	2.00	0.66	5.00	0.00	0.00	0.00
18.95	2.00	0.66	5.00	0.00	0.00	0.00
19.00	2.00	0.66	5.00	0.00	0.00	0.00
19.05	2.00	0.66	5.00	0.00	0.00	0.00
19.10	2.00	0.66	5.00	0.00	0.00	0.00
19.15	2.00	0.66	5.00	0.00	0.00	0.00
19.20	2.00	0.66	5.00	0.00	0.00	0.00
19.25	2.00	0.66	5.00	0.00	0.00	0.00
19.30	2.00	0.66	5.00	0.00	0.00	0.00
19.35	2.00	0.67	5.00	0.00	0.00	0.00
19.40	2.00	0.67	5.00	0.00	0.00	0.00
19.45	2.00	0.67	5.00	0.00	0.00	0.00
19.50	2.00	0.67	5.00	0.00	0.00	0.00
19.55	2.00	0.67	5.00	0.00	0.00	0.00
19.60	2.00	0.67	5.00	0.00	0.00	0.00
19.65	2.00	0.67	5.00	0.00	0.00	0.00
19.70	2.00	0.67	5.00	0.00	0.00	0.00
19.75	2.00	0.67	5.00	0.00	0.00	0.00
19.80	2.00	0.67	5.00	0.00	0.00	0.00
19.85	2.00	0.67	5.00	0.00	0.00	0.00
19.90	2.00	0.67	5.00	0.00	0.00	0.00
19.95	2.00	0.68	5.00	0.00	0.00	0.00

20.00	2.00	0.68	5.00	0.00	0.00	0.00
20.05	2.00	0.68	5.00	0.00	0.00	0.00
20.10	2.00	0.68	5.00	0.00	0.00	0.00
20.15	2.00	0.68	5.00	0.00	0.00	0.00
20.20	2.00	0.68	5.00	0.00	0.00	0.00
20.25	2.00	0.68	5.00	0.00	0.00	0.00
20.30	2.00	0.68	5.00	0.00	0.00	0.00
20.35	2.00	0.68	5.00	0.00	0.00	0.00
20.40	2.00	0.68	5.00	0.00	0.00	0.00
20.45	2.00	0.68	5.00	0.00	0.00	0.00
20.50	2.00	0.68	5.00	0.00	0.00	0.00
20.55	2.00	0.68	5.00	0.00	0.00	0.00
20.60	2.00	0.69	5.00	0.00	0.00	0.00
20.65	2.00	0.69	5.00	0.00	0.00	0.00
20.70	2.00	0.69	5.00	0.00	0.00	0.00
20.75	2.00	0.69	5.00	0.00	0.00	0.00
20.80	2.00	0.69	5.00	0.00	0.00	0.00
20.85	2.00	0.69	5.00	0.00	0.00	0.00
20.90	2.00	0.69	5.00	0.00	0.00	0.00
20.95	2.00	0.69	5.00	0.00	0.00	0.00
21.00	2.00	0.69	5.00	0.00	0.00	0.00
21.05	2.00	0.69	5.00	0.00	0.00	0.00
21.10	2.00	0.69	5.00	0.00	0.00	0.00
21.15	2.00	0.69	5.00	0.00	0.00	0.00
21.20	2.00	0.69	5.00	0.00	0.00	0.00
21.25	2.00	0.69	5.00	0.00	0.00	0.00
21.30	2.00	0.70	5.00	0.00	0.00	0.00
21.35	2.00	0.70	5.00	0.00	0.00	0.00
21.40	2.00	0.70	5.00	0.00	0.00	0.00
21.45	2.00	0.70	5.00	0.00	0.00	0.00
21.50	2.00	0.70	5.00	0.00	0.00	0.00
21.55	2.00	0.70	5.00	0.00	0.00	0.00
21.60	2.00	0.70	5.00	0.00	0.00	0.00
21.65	2.00	0.70	5.00	0.00	0.00	0.00
21.70	2.00	0.70	5.00	0.00	0.00	0.00
21.75	2.00	0.70	5.00	0.00	0.00	0.00
21.80	2.00	0.70	5.00	0.00	0.00	0.00
21.85	2.00	0.70	5.00	0.00	0.00	0.00
21.90	2.00	0.70	5.00	0.00	0.00	0.00
21.95	2.00	0.70	5.00	0.00	0.00	0.00
22.00	2.00	0.71	5.00	0.00	0.00	0.00
22.05	2.00	0.71	5.00	0.00	0.00	0.00
22.10	2.00	0.71	5.00	0.00	0.00	0.00
22.15	2.00	0.71	5.00	0.00	0.00	0.00
22.20	2.00	0.71	5.00	0.00	0.00	0.00
22.25	2.00	0.71	5.00	0.00	0.00	0.00
22.30	2.00	0.71	5.00	0.00	0.00	0.00
22.35	2.00	0.71	5.00	0.00	0.00	0.00
22.40	2.00	0.71	5.00	0.00	0.00	0.00
22.45	2.00	0.71	5.00	0.00	0.00	0.00
22.50	2.00	0.71	5.00	0.00	0.00	0.00
22.55	2.00	0.71	5.00	0.00	0.00	0.00
22.60	2.00	0.71	5.00	0.00	0.00	0.00
22.65	2.00	0.71	5.00	0.00	0.00	0.00
22.70	2.00	0.71	5.00	0.00	0.00	0.00
22.75	2.00	0.72	5.00	0.00	0.00	0.00
22.80	2.00	0.72	5.00	0.00	0.00	0.00
22.85	2.00	0.72	5.00	0.00	0.00	0.00
22.90	2.00	0.72	5.00	0.00	0.00	0.00
22.95	2.00	0.72	5.00	0.00	0.00	0.00
23.00	2.00	0.72	5.00	0.00	0.00	0.00
23.05	2.00	0.72	5.00	0.00	0.00	0.00
23.10	2.00	0.72	5.00	0.00	0.00	0.00
23.15	2.00	0.72	5.00	0.00	0.00	0.00
23.20	2.00	0.72	5.00	0.00	0.00	0.00
23.25	2.00	0.72	5.00	0.00	0.00	0.00
23.30	2.00	0.72	5.00	0.00	0.00	0.00

23.35	2.00	0.72	5.00	0.00	0.00	0.00
23.40	2.00	0.72	5.00	0.00	0.00	0.00
23.45	2.00	0.72	5.00	0.00	0.00	0.00
23.50	2.00	0.73	5.00	0.00	0.00	0.00
23.55	2.00	0.73	5.00	0.00	0.00	0.00
23.60	2.00	0.73	5.00	0.00	0.00	0.00
23.65	2.00	0.73	5.00	0.00	0.00	0.00
23.70	2.00	0.73	5.00	0.00	0.00	0.00
23.75	2.00	0.73	5.00	0.00	0.00	0.00
23.80	2.00	0.73	5.00	0.00	0.00	0.00
23.85	2.00	0.73	5.00	0.00	0.00	0.00
23.90	2.00	0.73	5.00	0.00	0.00	0.00
23.95	2.00	0.73	5.00	0.00	0.00	0.00
24.00	2.00	0.73	5.00	0.00	0.00	0.00
24.05	2.00	0.73	5.00	0.00	0.00	0.00
24.10	2.00	0.73	5.00	0.00	0.00	0.00
24.15	2.00	0.73	5.00	0.00	0.00	0.00
24.20	2.00	0.73	5.00	0.00	0.00	0.00
24.25	2.00	0.73	5.00	0.00	0.00	0.00
24.30	2.00	0.74	5.00	0.00	0.00	0.00
24.35	2.00	0.74	5.00	0.00	0.00	0.00
24.40	2.00	0.74	5.00	0.00	0.00	0.00
24.45	2.00	0.74	5.00	0.00	0.00	0.00
24.50	2.00	0.74	5.00	0.00	0.00	0.00
24.55	2.00	0.74	5.00	0.00	0.00	0.00
24.60	2.00	0.74	5.00	0.00	0.00	0.00
24.65	2.00	0.74	5.00	0.00	0.00	0.00
24.70	2.00	0.74	5.00	0.00	0.00	0.00
24.75	2.00	0.74	5.00	0.00	0.00	0.00
24.80	2.00	0.74	5.00	0.00	0.00	0.00
24.85	2.00	0.74	5.00	0.00	0.00	0.00
24.90	2.00	0.74	5.00	0.00	0.00	0.00
24.95	2.00	0.74	5.00	0.00	0.00	0.00
25.00	2.00	0.74	5.00	0.00	0.00	0.00
25.05	2.00	0.74	5.00	0.00	0.00	0.00
25.10	2.00	0.74	5.00	0.00	0.00	0.00
25.15	2.00	0.74	5.00	0.00	0.00	0.00
25.20	2.00	0.75	5.00	0.00	0.00	0.00
25.25	2.00	0.75	5.00	0.00	0.00	0.00
25.30	2.00	0.75	5.00	0.00	0.00	0.00
25.35	2.00	0.75	5.00	0.00	0.00	0.00
25.40	2.00	0.75	5.00	0.00	0.00	0.00
25.45	2.00	0.75	5.00	0.00	0.00	0.00
25.50	2.00	0.75	5.00	0.00	0.00	0.00
25.55	2.00	0.75	5.00	0.00	0.00	0.00
25.60	2.00	0.75	5.00	0.00	0.00	0.00
25.65	2.00	0.75	5.00	0.00	0.00	0.00
25.70	2.00	0.75	5.00	0.00	0.00	0.00
25.75	2.00	0.75	5.00	0.00	0.00	0.00
25.80	2.00	0.75	5.00	0.00	0.00	0.00
25.85	2.00	0.75	5.00	0.00	0.00	0.00
25.90	2.00	0.75	5.00	0.00	0.00	0.00
25.95	2.00	0.75	5.00	0.00	0.00	0.00
26.00	2.00	0.75	5.00	0.00	0.00	0.00
26.05	2.00	0.75	5.00	0.00	0.00	0.00
26.10	2.00	0.76	5.00	0.00	0.00	0.00
26.15	2.00	0.76	5.00	0.00	0.00	0.00
26.20	2.00	0.76	5.00	0.00	0.00	0.00
26.25	2.00	0.76	5.00	0.00	0.00	0.00
26.30	2.00	0.76	5.00	0.00	0.00	0.00
26.35	2.00	0.76	5.00	0.00	0.00	0.00
26.40	2.00	0.76	5.00	0.00	0.00	0.00
26.45	2.00	0.76	5.00	0.00	0.00	0.00
26.50	2.00	0.76	5.00	0.00	0.00	0.00
26.55	2.00	0.76	5.00	0.00	0.00	0.00
26.60	2.00	0.76	5.00	0.00	0.00	0.00
26.65	2.00	0.76	5.00	0.00	0.00	0.00

26.70	2.00	0.76	5.00	0.00	0.00	0.00
26.75	2.00	0.76	5.00	0.00	0.00	0.00
26.80	2.00	0.76	5.00	0.00	0.00	0.00
26.85	2.00	0.76	5.00	0.00	0.00	0.00
26.90	2.00	0.76	5.00	0.00	0.00	0.00
26.95	2.00	0.76	5.00	0.00	0.00	0.00
27.00	2.00	0.76	5.00	0.00	0.00	0.00
27.05	2.00	0.77	5.00	0.00	0.00	0.00
27.10	2.00	0.77	5.00	0.00	0.00	0.00
27.15	2.00	0.77	5.00	0.00	0.00	0.00
27.20	2.00	0.77	5.00	0.00	0.00	0.00
27.25	2.00	0.77	5.00	0.00	0.00	0.00
27.30	2.00	0.77	5.00	0.00	0.00	0.00
27.35	2.00	0.77	5.00	0.00	0.00	0.00
27.40	2.00	0.77	5.00	0.00	0.00	0.00
27.45	2.00	0.77	5.00	0.00	0.00	0.00
27.50	2.00	0.77	5.00	0.00	0.00	0.00
27.55	2.00	0.77	5.00	0.00	0.00	0.00
27.60	2.00	0.77	5.00	0.00	0.00	0.00
27.65	2.00	0.77	5.00	0.00	0.00	0.00
27.70	2.00	0.77	5.00	0.00	0.00	0.00
27.75	2.00	0.77	5.00	0.00	0.00	0.00
27.80	2.00	0.77	5.00	0.00	0.00	0.00
27.85	2.00	0.77	5.00	0.00	0.00	0.00
27.90	2.00	0.77	5.00	0.00	0.00	0.00
27.95	2.00	0.77	5.00	0.00	0.00	0.00
28.00	2.00	0.77	5.00	0.00	0.00	0.00
28.05	2.00	0.78	5.00	0.00	0.00	0.00
28.10	2.00	0.78	5.00	0.00	0.00	0.00
28.15	2.00	0.78	5.00	0.00	0.00	0.00
28.20	2.00	0.78	5.00	0.00	0.00	0.00
28.25	2.00	0.78	5.00	0.00	0.00	0.00
28.30	2.00	0.78	5.00	0.00	0.00	0.00
28.35	2.00	0.78	5.00	0.00	0.00	0.00
28.40	2.00	0.78	5.00	0.00	0.00	0.00
28.45	2.00	0.78	5.00	0.00	0.00	0.00
28.50	2.00	0.78	5.00	0.00	0.00	0.00
28.55	2.00	0.78	5.00	0.00	0.00	0.00
28.60	2.00	0.78	5.00	0.00	0.00	0.00
28.65	2.00	0.78	5.00	0.00	0.00	0.00
28.70	2.00	0.78	5.00	0.00	0.00	0.00
28.75	2.00	0.78	5.00	0.00	0.00	0.00
28.80	2.00	0.78	5.00	0.00	0.00	0.00
28.85	2.00	0.78	5.00	0.00	0.00	0.00
28.90	2.00	0.78	5.00	0.00	0.00	0.00
28.95	2.00	0.78	5.00	0.00	0.00	0.00
29.00	2.00	0.78	5.00	0.00	0.00	0.00
29.05	2.00	0.78	5.00	0.00	0.00	0.00
29.10	2.00	0.78	5.00	0.00	0.00	0.00
29.15	2.00	0.79	5.00	0.00	0.00	0.00
29.20	2.00	0.79	5.00	0.00	0.00	0.00
29.25	2.00	0.79	5.00	0.00	0.00	0.00
29.30	2.00	0.79	5.00	0.00	0.00	0.00
29.35	2.00	0.79	5.00	0.00	0.00	0.00
29.40	2.00	0.79	5.00	0.00	0.00	0.00
29.45	2.00	0.79	5.00	0.00	0.00	0.00
29.50	2.00	0.79	5.00	0.00	0.00	0.00
29.55	2.00	0.79	5.00	0.00	0.00	0.00
29.60	2.00	0.79	5.00	0.00	0.00	0.00
29.65	2.00	0.79	5.00	0.00	0.00	0.00
29.70	2.00	0.79	5.00	0.00	0.00	0.00
29.75	2.00	0.79	5.00	0.00	0.00	0.00
29.80	2.00	0.79	5.00	0.00	0.00	0.00
29.85	2.00	0.79	5.00	0.00	0.00	0.00
29.90	2.00	0.79	5.00	0.00	0.00	0.00
29.95	2.00	0.79	5.00	0.00	0.00	0.00
30.00	2.00	0.79	5.00	0.00	0.00	0.00

30.05	2.00	0.79	5.00	0.00	0.00	0.00
30.10	2.00	0.79	5.00	0.00	0.00	0.00
30.15	2.00	0.79	5.00	0.00	0.00	0.00
30.20	2.00	0.79	5.00	0.00	0.00	0.00
30.25	2.00	0.79	5.00	0.00	0.00	0.00
30.30	2.00	0.79	5.00	0.00	0.00	0.00
30.35	2.00	0.79	5.00	0.00	0.00	0.00
30.40	2.00	0.79	5.00	0.00	0.00	0.00
30.45	2.00	0.79	5.00	0.00	0.00	0.00
30.50	2.00	0.79	5.00	0.00	0.00	0.00
30.55	2.00	0.79	5.00	0.00	0.00	0.00
30.60	2.00	0.79	5.00	0.00	0.00	0.00
30.65	2.00	0.79	5.00	0.00	0.00	0.00
30.70	2.00	0.79	5.00	0.00	0.00	0.00
30.75	2.00	0.80	5.00	0.00	0.00	0.00
30.80	2.00	0.80	5.00	0.00	0.00	0.00
30.85	2.00	0.80	5.00	0.00	0.00	0.00
30.90	2.00	0.80	5.00	0.00	0.00	0.00
30.95	2.00	0.80	5.00	0.00	0.00	0.00
31.00	2.00	0.80	5.00	0.00	0.00	0.00
31.05	2.00	0.80	5.00	0.00	0.00	0.00
31.10	2.00	0.80	5.00	0.00	0.00	0.00
31.15	2.00	0.80	5.00	0.00	0.00	0.00
31.20	2.00	0.80	5.00	0.00	0.00	0.00
31.25	2.00	0.80	5.00	0.00	0.00	0.00
31.30	2.00	0.80	5.00	0.00	0.00	0.00
31.35	2.00	0.80	5.00	0.00	0.00	0.00
31.40	2.00	0.80	5.00	0.00	0.00	0.00
31.45	2.00	0.80	5.00	0.00	0.00	0.00
31.50	2.00	0.80	5.00	0.00	0.00	0.00
31.55	2.00	0.80	5.00	0.00	0.00	0.00
31.60	2.00	0.80	5.00	0.00	0.00	0.00
31.65	2.00	0.80	5.00	0.00	0.00	0.00
31.70	2.00	0.80	5.00	0.00	0.00	0.00
31.75	2.00	0.80	5.00	0.00	0.00	0.00
31.80	2.00	0.80	5.00	0.00	0.00	0.00
31.85	2.00	0.80	5.00	0.00	0.00	0.00
31.90	2.00	0.80	5.00	0.00	0.00	0.00
31.95	2.00	0.80	5.00	0.00	0.00	0.00
32.00	2.00	0.80	5.00	0.00	0.00	0.00
32.05	2.00	0.80	5.00	0.00	0.00	0.00
32.10	2.00	0.80	5.00	0.00	0.00	0.00
32.15	2.00	0.80	5.00	0.00	0.00	0.00
32.20	2.00	0.80	5.00	0.00	0.00	0.00
32.25	2.00	0.80	5.00	0.00	0.00	0.00
32.30	2.00	0.80	5.00	0.00	0.00	0.00
32.35	2.00	0.80	5.00	0.00	0.00	0.00
32.40	2.00	0.80	5.00	0.00	0.00	0.00
32.45	2.00	0.80	5.00	0.00	0.00	0.00
32.50	2.00	0.80	5.00	0.00	0.00	0.00
32.55	2.00	0.80	5.00	0.00	0.00	0.00
32.60	2.00	0.80	5.00	0.00	0.00	0.00
32.65	2.00	0.80	5.00	0.00	0.00	0.00
32.70	2.00	0.80	5.00	0.00	0.00	0.00
32.75	2.00	0.80	5.00	0.00	0.00	0.00
32.80	2.00	0.80	5.00	0.00	0.00	0.00
32.85	2.00	0.80	5.00	0.00	0.00	0.00
32.90	2.00	0.80	5.00	0.00	0.00	0.00
32.95	2.00	0.80	5.00	0.00	0.00	0.00
33.00	2.00	0.80	5.00	0.00	0.00	0.00
33.05	2.00	0.80	5.00	0.00	0.00	0.00
33.10	2.00	0.80	5.00	0.00	0.00	0.00
33.15	2.00	0.80	5.00	0.00	0.00	0.00
33.20	2.00	0.80	5.00	0.00	0.00	0.00
33.25	2.00	0.80	5.00	0.00	0.00	0.00
33.30	2.00	0.80	5.00	0.00	0.00	0.00
33.35	2.00	0.80	5.00	0.00	0.00	0.00

33.40	2.00	0.80	5.00	0.00	0.00	0.00
33.45	2.00	0.80	5.00	0.00	0.00	0.00
33.50	2.00	0.80	5.00	0.00	0.00	0.00
33.55	2.00	0.80	5.00	0.00	0.00	0.00
33.60	2.00	0.80	5.00	0.00	0.00	0.00
33.65	2.00	0.80	5.00	0.00	0.00	0.00
33.70	2.00	0.80	5.00	0.00	0.00	0.00
33.75	2.00	0.80	5.00	0.00	0.00	0.00
33.80	2.00	0.80	5.00	0.00	0.00	0.00
33.85	2.00	0.80	5.00	0.00	0.00	0.00
33.90	2.00	0.80	5.00	0.00	0.00	0.00
33.95	2.00	0.80	5.00	0.00	0.00	0.00
34.00	2.00	0.80	5.00	0.00	0.00	0.00
34.05	2.00	0.80	5.00	0.00	0.00	0.00
34.10	2.00	0.80	5.00	0.00	0.00	0.00
34.15	2.00	0.80	5.00	0.00	0.00	0.00
34.20	2.00	0.80	5.00	0.00	0.00	0.00
34.25	2.00	0.80	5.00	0.00	0.00	0.00
34.30	2.00	0.80	5.00	0.00	0.00	0.00
34.35	2.00	0.80	5.00	0.00	0.00	0.00
34.40	2.00	0.80	5.00	0.00	0.00	0.00
34.45	2.00	0.80	5.00	0.00	0.00	0.00
34.50	2.00	0.80	5.00	0.00	0.00	0.00
34.55	2.00	0.80	5.00	0.00	0.00	0.00
34.60	2.00	0.80	5.00	0.00	0.00	0.00
34.65	2.00	0.80	5.00	0.00	0.00	0.00
34.70	2.00	0.80	5.00	0.00	0.00	0.00
34.75	2.00	0.80	5.00	0.00	0.00	0.00
34.80	2.00	0.80	5.00	0.00	0.00	0.00
34.85	2.00	0.80	5.00	0.00	0.00	0.00
34.90	2.00	0.80	5.00	0.00	0.00	0.00
34.95	2.00	0.80	5.00	0.00	0.00	0.00
35.00	2.00	0.80	5.00	0.00	0.00	0.00
35.05	2.00	0.80	5.00	0.00	0.00	0.00
35.10	2.00	0.80	5.00	0.00	0.00	0.00
35.15	2.00	0.80	5.00	0.00	0.00	0.00
35.20	2.00	0.80	5.00	0.00	0.00	0.00
35.25	2.00	0.80	5.00	0.00	0.00	0.00
35.30	2.00	0.80	5.00	0.00	0.00	0.00
35.35	2.00	0.80	5.00	0.00	0.00	0.00
35.40	2.00	0.80	5.00	0.00	0.00	0.00
35.45	2.00	0.80	5.00	0.00	0.00	0.00
35.50	2.00	0.80	5.00	0.00	0.00	0.00
35.55	2.00	0.80	5.00	0.00	0.00	0.00
35.60	2.00	0.80	5.00	0.00	0.00	0.00
35.65	2.00	0.80	5.00	0.00	0.00	0.00
35.70	2.00	0.80	5.00	0.00	0.00	0.00
35.75	2.00	0.80	5.00	0.00	0.00	0.00
35.80	2.00	0.80	5.00	0.00	0.00	0.00
35.85	2.00	0.80	5.00	0.00	0.00	0.00
35.90	2.00	0.80	5.00	0.00	0.00	0.00
35.95	2.00	0.80	5.00	0.00	0.00	0.00
36.00	2.00	0.80	5.00	0.00	0.00	0.00
36.05	2.00	0.80	5.00	0.00	0.00	0.00
36.10	2.00	0.80	5.00	0.00	0.00	0.00
36.15	2.00	0.80	5.00	0.00	0.00	0.00
36.20	2.00	0.80	5.00	0.00	0.00	0.00
36.25	2.00	0.80	5.00	0.00	0.00	0.00
36.30	2.00	0.80	5.00	0.00	0.00	0.00
36.35	2.00	0.80	5.00	0.00	0.00	0.00
36.40	2.00	0.80	5.00	0.00	0.00	0.00
36.45	2.00	0.80	5.00	0.00	0.00	0.00
36.50	2.00	0.80	5.00	0.00	0.00	0.00
36.55	2.00	0.80	5.00	0.00	0.00	0.00
36.60	2.00	0.80	5.00	0.00	0.00	0.00
36.65	2.00	0.80	5.00	0.00	0.00	0.00
36.70	2.00	0.80	5.00	0.00	0.00	0.00

36.75	2.00	0.80	5.00	0.00	0.00	0.00
36.80	2.00	0.80	5.00	0.00	0.00	0.00
36.85	2.00	0.80	5.00	0.00	0.00	0.00
36.90	2.00	0.80	5.00	0.00	0.00	0.00
36.95	2.00	0.80	5.00	0.00	0.00	0.00
37.00	2.00	0.80	5.00	0.00	0.00	0.00
37.05	2.00	0.80	5.00	0.00	0.00	0.00
37.10	2.00	0.80	5.00	0.00	0.00	0.00
37.15	2.00	0.80	5.00	0.00	0.00	0.00
37.20	2.00	0.80	5.00	0.00	0.00	0.00
37.25	2.00	0.80	5.00	0.00	0.00	0.00
37.30	2.00	0.80	5.00	0.00	0.00	0.00
37.35	2.00	0.80	5.00	0.00	0.00	0.00
37.40	2.00	0.80	5.00	0.00	0.00	0.00
37.45	2.00	0.80	5.00	0.00	0.00	0.00
37.50	2.00	0.80	5.00	0.00	0.00	0.00
37.55	2.00	0.80	5.00	0.00	0.00	0.00
37.60	2.00	0.80	5.00	0.00	0.00	0.00
37.65	2.00	0.80	5.00	0.00	0.00	0.00
37.70	2.00	0.80	5.00	0.00	0.00	0.00
37.75	2.00	0.80	5.00	0.00	0.00	0.00
37.80	2.00	0.80	5.00	0.00	0.00	0.00
37.85	2.00	0.80	5.00	0.00	0.00	0.00
37.90	2.00	0.80	5.00	0.00	0.00	0.00
37.95	2.00	0.80	5.00	0.00	0.00	0.00
38.00	2.00	0.80	5.00	0.00	0.00	0.00
38.05	2.00	0.80	5.00	0.00	0.00	0.00
38.10	2.00	0.80	5.00	0.00	0.00	0.00
38.15	2.00	0.80	5.00	0.00	0.00	0.00
38.20	2.00	0.80	5.00	0.00	0.00	0.00
38.25	2.00	0.80	5.00	0.00	0.00	0.00
38.30	2.00	0.80	5.00	0.00	0.00	0.00
38.35	2.00	0.80	5.00	0.00	0.00	0.00
38.40	2.00	0.80	5.00	0.00	0.00	0.00
38.45	2.00	0.80	5.00	0.00	0.00	0.00
38.50	2.00	0.80	5.00	0.00	0.00	0.00
38.55	2.00	0.80	5.00	0.00	0.00	0.00
38.60	2.00	0.80	5.00	0.00	0.00	0.00
38.65	2.00	0.80	5.00	0.00	0.00	0.00
38.70	2.00	0.80	5.00	0.00	0.00	0.00
38.75	2.00	0.80	5.00	0.00	0.00	0.00
38.80	2.00	0.80	5.00	0.00	0.00	0.00
38.85	2.00	0.80	5.00	0.00	0.00	0.00
38.90	2.00	0.80	5.00	0.00	0.00	0.00
38.95	2.00	0.80	5.00	0.00	0.00	0.00
39.00	2.00	0.80	5.00	0.00	0.00	0.00
39.05	2.00	0.80	5.00	0.00	0.00	0.00
39.10	2.00	0.80	5.00	0.00	0.00	0.00
39.15	2.00	0.80	5.00	0.00	0.00	0.00
39.20	2.00	0.80	5.00	0.00	0.00	0.00
39.25	2.00	0.80	5.00	0.00	0.00	0.00
39.30	2.00	0.80	5.00	0.00	0.00	0.00
39.35	2.00	0.80	5.00	0.00	0.00	0.00
39.40	2.00	0.80	5.00	0.00	0.00	0.00
39.45	2.00	0.80	5.00	0.00	0.00	0.00
39.50	2.00	0.80	5.00	0.00	0.00	0.00
39.55	2.00	0.80	5.00	0.00	0.00	0.00
39.60	2.00	0.80	5.00	0.00	0.00	0.00
39.65	2.00	0.80	5.00	0.00	0.00	0.00
39.70	2.00	0.80	5.00	0.00	0.00	0.00
39.75	2.00	0.80	5.00	0.00	0.00	0.00
39.80	2.00	0.80	5.00	0.00	0.00	0.00
39.85	2.00	0.80	5.00	0.00	0.00	0.00
39.90	2.00	0.80	5.00	0.00	0.00	0.00
39.95	2.00	0.80	5.00	0.00	0.00	0.00
40.00	2.00	0.80	5.00	0.00	0.00	0.00
40.05	2.00	0.80	5.00	0.00	0.00	0.00

40.10	2.00	0.80	5.00	0.00	0.00	0.00
40.15	2.00	0.80	5.00	0.00	0.00	0.00
40.20	2.00	0.80	5.00	0.00	0.00	0.00
40.25	2.00	0.80	5.00	0.00	0.00	0.00
40.30	2.00	0.80	5.00	0.00	0.00	0.00
40.35	2.00	0.80	5.00	0.00	0.00	0.00
40.40	2.00	0.80	5.00	0.00	0.00	0.00
40.45	2.00	0.80	5.00	0.00	0.00	0.00
40.50	2.00	0.80	5.00	0.00	0.00	0.00
40.55	2.00	0.80	5.00	0.00	0.00	0.00
40.60	2.00	0.80	5.00	0.00	0.00	0.00
40.65	2.00	0.80	5.00	0.00	0.00	0.00
40.70	2.00	0.80	5.00	0.00	0.00	0.00
40.75	2.00	0.80	5.00	0.00	0.00	0.00
40.80	2.00	0.80	5.00	0.00	0.00	0.00
40.85	2.00	0.80	5.00	0.00	0.00	0.00
40.90	2.00	0.80	5.00	0.00	0.00	0.00
40.95	2.00	0.80	5.00	0.00	0.00	0.00
41.00	2.00	0.80	5.00	0.00	0.00	0.00
41.05	2.00	0.80	5.00	0.00	0.00	0.00
41.10	2.00	0.80	5.00	0.00	0.00	0.00
41.15	2.00	0.80	5.00	0.00	0.00	0.00
41.20	2.00	0.80	5.00	0.00	0.00	0.00
41.25	2.00	0.80	5.00	0.00	0.00	0.00
41.30	2.00	0.80	5.00	0.00	0.00	0.00
41.35	2.00	0.80	5.00	0.00	0.00	0.00
41.40	2.00	0.80	5.00	0.00	0.00	0.00
41.45	2.00	0.80	5.00	0.00	0.00	0.00
41.50	2.00	0.80	5.00	0.00	0.00	0.00
41.55	2.00	0.80	5.00	0.00	0.00	0.00
41.60	2.00	0.80	5.00	0.00	0.00	0.00
41.65	2.00	0.80	5.00	0.00	0.00	0.00
41.70	2.00	0.80	5.00	0.00	0.00	0.00
41.75	2.00	0.80	5.00	0.00	0.00	0.00
41.80	2.00	0.80	5.00	0.00	0.00	0.00
41.85	2.00	0.80	5.00	0.00	0.00	0.00
41.90	2.00	0.80	5.00	0.00	0.00	0.00
41.95	2.00	0.80	5.00	0.00	0.00	0.00
42.00	2.00	0.80	5.00	0.00	0.00	0.00
42.05	2.00	0.80	5.00	0.00	0.00	0.00
42.10	2.00	0.80	5.00	0.00	0.00	0.00
42.15	2.00	0.80	5.00	0.00	0.00	0.00
42.20	2.00	0.80	5.00	0.00	0.00	0.00
42.25	2.00	0.80	5.00	0.00	0.00	0.00
42.30	2.00	0.80	5.00	0.00	0.00	0.00
42.35	2.00	0.80	5.00	0.00	0.00	0.00
42.40	2.00	0.80	5.00	0.00	0.00	0.00
42.45	2.00	0.80	5.00	0.00	0.00	0.00
42.50	2.00	0.80	5.00	0.00	0.00	0.00
42.55	2.00	0.80	5.00	0.00	0.00	0.00
42.60	2.00	0.80	5.00	0.00	0.00	0.00
42.65	2.00	0.80	5.00	0.00	0.00	0.00
42.70	2.00	0.80	5.00	0.00	0.00	0.00
42.75	2.00	0.80	5.00	0.00	0.00	0.00
42.80	2.00	0.80	5.00	0.00	0.00	0.00
42.85	2.00	0.80	5.00	0.00	0.00	0.00
42.90	2.00	0.80	5.00	0.00	0.00	0.00
42.95	2.00	0.80	5.00	0.00	0.00	0.00
43.00	2.00	0.80	5.00	0.00	0.00	0.00
43.05	2.00	0.80	5.00	0.00	0.00	0.00
43.10	2.00	0.80	5.00	0.00	0.00	0.00
43.15	2.00	0.80	5.00	0.00	0.00	0.00
43.20	2.00	0.80	5.00	0.00	0.00	0.00
43.25	2.00	0.80	5.00	0.00	0.00	0.00
43.30	2.00	0.80	5.00	0.00	0.00	0.00
43.35	2.00	0.80	5.00	0.00	0.00	0.00
43.40	2.00	0.80	5.00	0.00	0.00	0.00

43.45	2.00	0.80	5.00	0.00	0.00	0.00
43.50	2.00	0.80	5.00	0.00	0.00	0.00
43.55	2.00	0.80	5.00	0.00	0.00	0.00
43.60	2.00	0.80	5.00	0.00	0.00	0.00
43.65	2.00	0.80	5.00	0.00	0.00	0.00
43.70	2.00	0.80	5.00	0.00	0.00	0.00
43.75	2.00	0.80	5.00	0.00	0.00	0.00
43.80	2.00	0.80	5.00	0.00	0.00	0.00
43.85	2.00	0.79	5.00	0.00	0.00	0.00
43.90	2.00	0.79	5.00	0.00	0.00	0.00
43.95	2.00	0.79	5.00	0.00	0.00	0.00
44.00	2.00	0.79	5.00	0.00	0.00	0.00
44.05	2.00	0.79	5.00	0.00	0.00	0.00
44.10	2.00	0.79	5.00	0.00	0.00	0.00
44.15	2.00	0.79	5.00	0.00	0.00	0.00
44.20	2.00	0.79	5.00	0.00	0.00	0.00
44.25	2.00	0.79	5.00	0.00	0.00	0.00
44.30	2.00	0.79	5.00	0.00	0.00	0.00
44.35	2.00	0.79	5.00	0.00	0.00	0.00
44.40	2.00	0.79	5.00	0.00	0.00	0.00
44.45	2.00	0.79	5.00	0.00	0.00	0.00
44.50	2.00	0.79	5.00	0.00	0.00	0.00
44.55	2.00	0.79	5.00	0.00	0.00	0.00
44.60	2.00	0.79	5.00	0.00	0.00	0.00
44.65	2.00	0.79	5.00	0.00	0.00	0.00
44.70	2.00	0.79	5.00	0.00	0.00	0.00
44.75	2.00	0.79	5.00	0.00	0.00	0.00
44.80	2.00	0.79	5.00	0.00	0.00	0.00
44.85	2.00	0.79	5.00	0.00	0.00	0.00
44.90	2.00	0.79	5.00	0.00	0.00	0.00
44.95	2.00	0.79	5.00	0.00	0.00	0.00
45.00	2.00	0.79	5.00	0.00	0.00	0.00
45.05	2.00	0.79	5.00	0.00	0.00	0.00
45.10	2.00	0.79	5.00	0.00	0.00	0.00
45.15	2.00	0.79	5.00	0.00	0.00	0.00
45.20	2.00	0.79	5.00	0.00	0.00	0.00
45.25	2.00	0.79	5.00	0.00	0.00	0.00
45.30	2.00	0.79	5.00	0.00	0.00	0.00
45.35	2.00	0.79	5.00	0.00	0.00	0.00
45.40	2.00	0.79	5.00	0.00	0.00	0.00
45.45	2.00	0.79	5.00	0.00	0.00	0.00
45.50	2.00	0.79	5.00	0.00	0.00	0.00
45.55	2.00	0.79	5.00	0.00	0.00	0.00
45.60	2.00	0.79	5.00	0.00	0.00	0.00
45.65	2.00	0.79	5.00	0.00	0.00	0.00
45.70	2.00	0.79	5.00	0.00	0.00	0.00
45.75	2.00	0.79	5.00	0.00	0.00	0.00
45.80	2.00	0.79	5.00	0.00	0.00	0.00
45.85	2.00	0.79	5.00	0.00	0.00	0.00
45.90	2.00	0.79	5.00	0.00	0.00	0.00
45.95	2.00	0.79	5.00	0.00	0.00	0.00
46.00	2.00	0.79	5.00	0.00	0.00	0.00
46.05	2.00	0.79	5.00	0.00	0.00	0.00
46.10	2.00	0.79	5.00	0.00	0.00	0.00
46.15	2.00	0.79	5.00	0.00	0.00	0.00
46.20	2.00	0.79	5.00	0.00	0.00	0.00
46.25	2.00	0.79	5.00	0.00	0.00	0.00
46.30	2.00	0.79	5.00	0.00	0.00	0.00
46.35	2.00	0.79	5.00	0.00	0.00	0.00
46.40	2.00	0.79	5.00	0.00	0.00	0.00
46.45	2.00	0.79	5.00	0.00	0.00	0.00
46.50	2.00	0.79	5.00	0.00	0.00	0.00
46.55	2.00	0.79	5.00	0.00	0.00	0.00
46.60	2.00	0.79	5.00	0.00	0.00	0.00
46.65	2.00	0.79	5.00	0.00	0.00	0.00
46.70	2.00	0.79	5.00	0.00	0.00	0.00
46.75	2.00	0.79	5.00	0.00	0.00	0.00

						Liquefy.sum
46.80	2.00	0.79	5.00	0.00	0.00	0.00
46.85	2.00	0.79	5.00	0.00	0.00	0.00
46.90	2.00	0.79	5.00	0.00	0.00	0.00
46.95	2.00	0.79	5.00	0.00	0.00	0.00
47.00	2.00	0.79	5.00	0.00	0.00	0.00
47.05	2.00	0.79	5.00	0.00	0.00	0.00
47.10	2.00	0.79	5.00	0.00	0.00	0.00
47.15	2.00	0.79	5.00	0.00	0.00	0.00
47.20	2.00	0.79	5.00	0.00	0.00	0.00
47.25	2.00	0.79	5.00	0.00	0.00	0.00
47.30	2.00	0.78	5.00	0.00	0.00	0.00
47.35	2.00	0.78	5.00	0.00	0.00	0.00
47.40	2.00	0.78	5.00	0.00	0.00	0.00
47.45	2.00	0.78	5.00	0.00	0.00	0.00
47.50	2.00	0.78	5.00	0.00	0.00	0.00
47.55	2.00	0.78	5.00	0.00	0.00	0.00
47.60	2.00	0.78	5.00	0.00	0.00	0.00
47.65	2.00	0.78	5.00	0.00	0.00	0.00
47.70	2.00	0.78	5.00	0.00	0.00	0.00
47.75	2.00	0.78	5.00	0.00	0.00	0.00
47.80	2.00	0.78	5.00	0.00	0.00	0.00
47.85	2.00	0.78	5.00	0.00	0.00	0.00
47.90	2.00	0.78	5.00	0.00	0.00	0.00
47.95	2.00	0.78	5.00	0.00	0.00	0.00
48.00	2.00	0.78	5.00	0.00	0.00	0.00
48.05	2.00	0.78	5.00	0.00	0.00	0.00
48.10	2.00	0.78	5.00	0.00	0.00	0.00
48.15	2.00	0.78	5.00	0.00	0.00	0.00
48.20	2.00	0.78	5.00	0.00	0.00	0.00
48.25	2.00	0.78	5.00	0.00	0.00	0.00
48.30	2.00	0.78	5.00	0.00	0.00	0.00
48.35	2.00	0.78	5.00	0.00	0.00	0.00
48.40	2.00	0.78	5.00	0.00	0.00	0.00
48.45	2.00	0.78	5.00	0.00	0.00	0.00
48.50	2.00	0.78	5.00	0.00	0.00	0.00
48.55	2.00	0.78	5.00	0.00	0.00	0.00
48.60	2.00	0.78	5.00	0.00	0.00	0.00
48.65	2.00	0.78	5.00	0.00	0.00	0.00
48.70	2.00	0.78	5.00	0.00	0.00	0.00
48.75	2.00	0.78	5.00	0.00	0.00	0.00
48.80	2.00	0.78	5.00	0.00	0.00	0.00
48.85	2.00	0.78	5.00	0.00	0.00	0.00
48.90	2.00	0.78	5.00	0.00	0.00	0.00
48.95	2.00	0.78	5.00	0.00	0.00	0.00
49.00	2.00	0.78	5.00	0.00	0.00	0.00
49.05	2.00	0.78	5.00	0.00	0.00	0.00
49.10	2.00	0.78	5.00	0.00	0.00	0.00
49.15	2.00	0.78	5.00	0.00	0.00	0.00
49.20	2.00	0.78	5.00	0.00	0.00	0.00
49.25	2.00	0.78	5.00	0.00	0.00	0.00
49.30	2.00	0.78	5.00	0.00	0.00	0.00
49.35	2.00	0.78	5.00	0.00	0.00	0.00
49.40	2.00	0.78	5.00	0.00	0.00	0.00
49.45	2.00	0.78	5.00	0.00	0.00	0.00
49.50	2.00	0.78	5.00	0.00	0.00	0.00
49.55	2.00	0.78	5.00	0.00	0.00	0.00
49.60	2.00	0.78	5.00	0.00	0.00	0.00
49.65	2.00	0.78	5.00	0.00	0.00	0.00
49.70	2.00	0.78	5.00	0.00	0.00	0.00
49.75	2.00	0.78	5.00	0.00	0.00	0.00
49.80	2.00	0.78	5.00	0.00	0.00	0.00
49.85	2.00	0.78	5.00	0.00	0.00	0.00
49.90	2.00	0.78	5.00	0.00	0.00	0.00
49.95	2.00	0.78	5.00	0.00	0.00	0.00
50.00	2.00	0.77	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

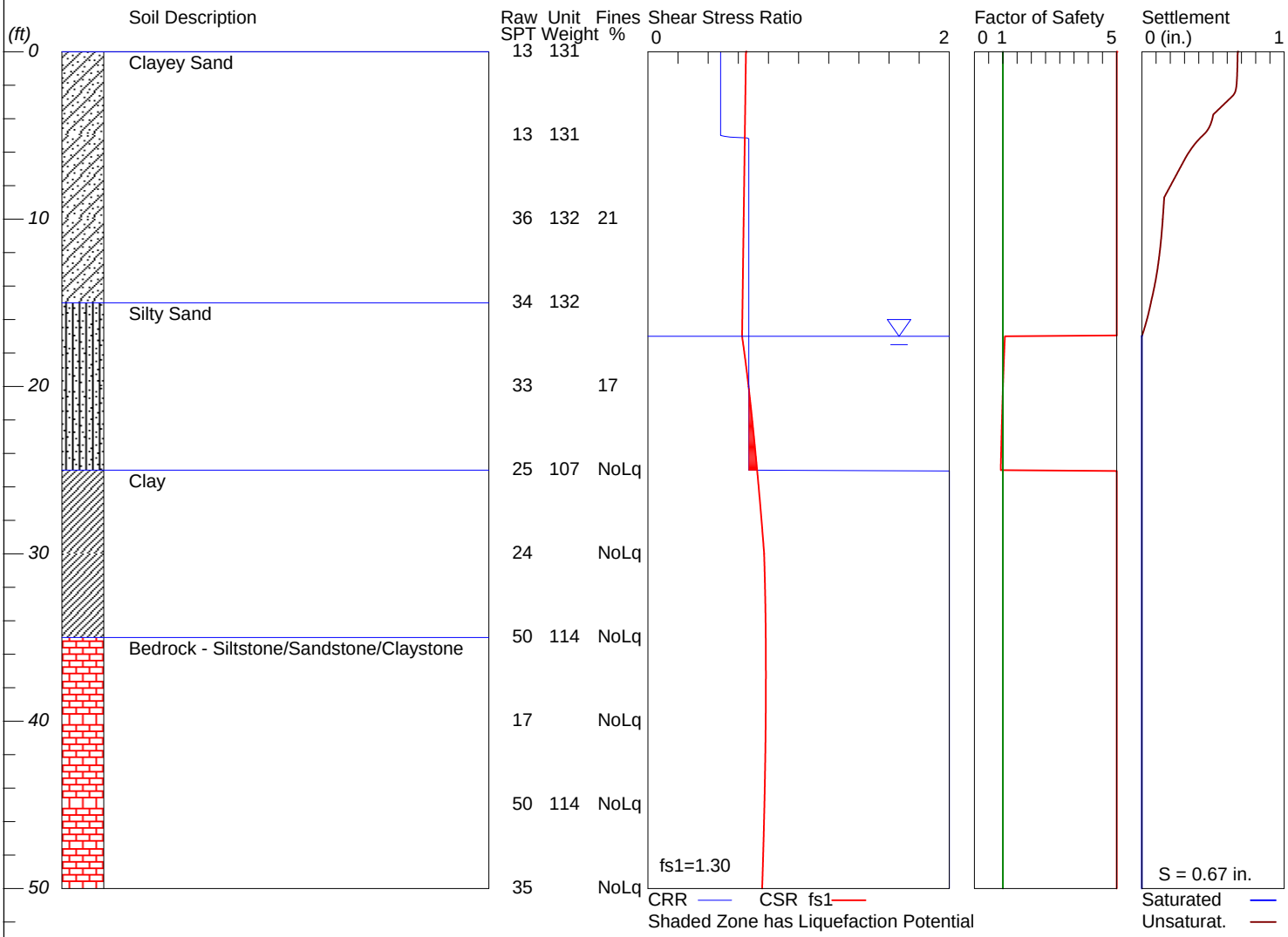
CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

LIQUEFACTION ANALYSIS

Mt. SAC Athletics Complex East

Hole No.=BH-26 Water Depth=17 ft Surface Elev.=741

Magnitude=6.69
Acceleration=0.77g



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LIQUEFACTION ANALYSIS SUMMARY
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Input File Name: L:\2014\31\14-31-124 Mt. SAC - Proposed Athletic Complex\Analyses\14-31-124-01-LQ-BH14.liq
Title: Mt. SAC Athletics Complex East
Subtitle: 14-31-124-01

Surface Elev.=741
Hole No.=BH-26
Depth of Hole= 50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration= 0.77 g
Earthquake Magnitude= 6.69

Input Data:
Surface Elev.=741
Hole No.=BH-26
Depth of Hole=50.00 ft
Water Table during Earthquake= 17.00 ft
Water Table during In-Situ Testing= 17.00 ft
Max. Acceleration=0.77 g
Earthquake Magnitude=6.69
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Tokimatsu/Seed
3. Fines Correction for Liquefaction: Stark/Olson et al.*
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.25
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.2
9. User request factor of safety (apply to CSR) , User= 1.3
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	13.00	131.00	0.00
5.00	13.00	131.00	0.00
10.00	36.00	132.00	21.00
15.00	34.00	132.00	21.00
20.00	33.00	132.00	17.00
25.00	25.00	107.00	NoLiq
30.00	24.00	107.00	NoLiq
35.00	50.00	114.00	NoLiq
40.00	17.00	114.00	NoLiq
45.00	50.00	114.00	NoLiq
50.00	35.00	114.00	NoLiq

Output Results:
Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.67 in.
Total Settlement of Saturated and Unsaturated Sands=0.67 in.
Differential Settlement=0.337 to 0.444 in.

Depth	CRRm	CSRfs	F.S.	S_sat.	S_dry	S_all

ft				in.	in.	Liquefy.sum in.
0.00	0.48	0.65	5.00	0.00	0.67	0.67
0.05	0.48	0.65	5.00	0.00	0.67	0.67
0.10	0.48	0.65	5.00	0.00	0.67	0.67
0.15	0.48	0.65	5.00	0.00	0.67	0.67
0.20	0.48	0.65	5.00	0.00	0.67	0.67
0.25	0.48	0.65	5.00	0.00	0.67	0.67
0.30	0.48	0.65	5.00	0.00	0.67	0.67
0.35	0.48	0.65	5.00	0.00	0.67	0.67
0.40	0.48	0.65	5.00	0.00	0.67	0.67
0.45	0.48	0.65	5.00	0.00	0.67	0.67
0.50	0.48	0.65	5.00	0.00	0.67	0.67
0.55	0.48	0.65	5.00	0.00	0.67	0.67
0.60	0.48	0.65	5.00	0.00	0.67	0.67
0.65	0.48	0.65	5.00	0.00	0.67	0.67
0.70	0.48	0.65	5.00	0.00	0.67	0.67
0.75	0.48	0.65	5.00	0.00	0.67	0.67
0.80	0.48	0.65	5.00	0.00	0.67	0.67
0.85	0.48	0.65	5.00	0.00	0.67	0.67
0.90	0.48	0.65	5.00	0.00	0.67	0.67
0.95	0.48	0.65	5.00	0.00	0.67	0.67
1.00	0.48	0.65	5.00	0.00	0.67	0.67
1.05	0.48	0.65	5.00	0.00	0.67	0.67
1.10	0.48	0.65	5.00	0.00	0.67	0.67
1.15	0.48	0.65	5.00	0.00	0.67	0.67
1.20	0.48	0.65	5.00	0.00	0.67	0.67
1.25	0.48	0.65	5.00	0.00	0.67	0.67
1.30	0.48	0.65	5.00	0.00	0.67	0.67
1.35	0.48	0.65	5.00	0.00	0.67	0.67
1.40	0.48	0.65	5.00	0.00	0.67	0.67
1.45	0.48	0.65	5.00	0.00	0.67	0.67
1.50	0.48	0.65	5.00	0.00	0.67	0.67
1.55	0.48	0.65	5.00	0.00	0.67	0.67
1.60	0.48	0.65	5.00	0.00	0.67	0.67
1.65	0.48	0.65	5.00	0.00	0.67	0.67
1.70	0.48	0.65	5.00	0.00	0.67	0.67
1.75	0.48	0.65	5.00	0.00	0.67	0.67
1.80	0.48	0.65	5.00	0.00	0.67	0.67
1.85	0.48	0.65	5.00	0.00	0.67	0.67
1.90	0.48	0.65	5.00	0.00	0.67	0.67
1.95	0.48	0.65	5.00	0.00	0.67	0.67
2.00	0.48	0.65	5.00	0.00	0.67	0.67
2.05	0.48	0.65	5.00	0.00	0.66	0.66
2.10	0.48	0.65	5.00	0.00	0.66	0.66
2.15	0.48	0.65	5.00	0.00	0.66	0.66
2.20	0.48	0.65	5.00	0.00	0.66	0.66
2.25	0.48	0.65	5.00	0.00	0.66	0.66
2.30	0.48	0.65	5.00	0.00	0.66	0.66
2.35	0.48	0.65	5.00	0.00	0.66	0.66
2.40	0.48	0.65	5.00	0.00	0.66	0.66
2.45	0.48	0.65	5.00	0.00	0.65	0.65
2.50	0.48	0.65	5.00	0.00	0.65	0.65
2.55	0.48	0.65	5.00	0.00	0.65	0.65
2.60	0.48	0.65	5.00	0.00	0.64	0.64
2.65	0.48	0.65	5.00	0.00	0.64	0.64
2.70	0.48	0.65	5.00	0.00	0.63	0.63
2.75	0.48	0.65	5.00	0.00	0.62	0.62
2.80	0.48	0.65	5.00	0.00	0.62	0.62
2.85	0.48	0.65	5.00	0.00	0.61	0.61
2.90	0.48	0.65	5.00	0.00	0.61	0.61
2.95	0.48	0.65	5.00	0.00	0.60	0.60
3.00	0.48	0.65	5.00	0.00	0.59	0.59
3.05	0.48	0.65	5.00	0.00	0.59	0.59
3.10	0.48	0.65	5.00	0.00	0.58	0.58
3.15	0.48	0.65	5.00	0.00	0.58	0.58
3.20	0.48	0.65	5.00	0.00	0.57	0.57

						Liquefy.sum
3.25	0.48	0.65	5.00	0.00	0.56	0.56
3.30	0.48	0.65	5.00	0.00	0.56	0.56
3.35	0.48	0.65	5.00	0.00	0.55	0.55
3.40	0.48	0.65	5.00	0.00	0.54	0.54
3.45	0.48	0.65	5.00	0.00	0.54	0.54
3.50	0.48	0.65	5.00	0.00	0.53	0.53
3.55	0.48	0.65	5.00	0.00	0.53	0.53
3.60	0.48	0.65	5.00	0.00	0.52	0.52
3.65	0.48	0.65	5.00	0.00	0.51	0.51
3.70	0.48	0.65	5.00	0.00	0.51	0.51
3.75	0.48	0.64	5.00	0.00	0.50	0.50
3.80	0.48	0.64	5.00	0.00	0.50	0.50
3.85	0.48	0.64	5.00	0.00	0.50	0.50
3.90	0.48	0.64	5.00	0.00	0.50	0.50
3.95	0.48	0.64	5.00	0.00	0.50	0.50
4.00	0.48	0.64	5.00	0.00	0.50	0.50
4.05	0.48	0.64	5.00	0.00	0.49	0.49
4.10	0.48	0.64	5.00	0.00	0.49	0.49
4.15	0.48	0.64	5.00	0.00	0.49	0.49
4.20	0.48	0.64	5.00	0.00	0.49	0.49
4.25	0.48	0.64	5.00	0.00	0.49	0.49
4.30	0.48	0.64	5.00	0.00	0.48	0.48
4.35	0.48	0.64	5.00	0.00	0.48	0.48
4.40	0.48	0.64	5.00	0.00	0.48	0.48
4.45	0.48	0.64	5.00	0.00	0.48	0.48
4.50	0.48	0.64	5.00	0.00	0.47	0.47
4.55	0.48	0.64	5.00	0.00	0.47	0.47
4.60	0.48	0.64	5.00	0.00	0.47	0.47
4.65	0.48	0.64	5.00	0.00	0.46	0.46
4.70	0.48	0.64	5.00	0.00	0.46	0.46
4.75	0.48	0.64	5.00	0.00	0.46	0.46
4.80	0.48	0.64	5.00	0.00	0.45	0.45
4.85	0.48	0.64	5.00	0.00	0.45	0.45
4.90	0.48	0.64	5.00	0.00	0.44	0.44
4.95	0.48	0.64	5.00	0.00	0.43	0.43
5.00	0.48	0.64	5.00	0.00	0.43	0.43
5.05	0.51	0.64	5.00	0.00	0.42	0.42
5.10	0.55	0.64	5.00	0.00	0.42	0.42
5.15	0.66	0.64	5.00	0.00	0.41	0.41
5.20	0.67	0.64	5.00	0.00	0.40	0.40
5.25	0.67	0.64	5.00	0.00	0.40	0.40
5.30	0.67	0.64	5.00	0.00	0.39	0.39
5.35	0.67	0.64	5.00	0.00	0.39	0.39
5.40	0.67	0.64	5.00	0.00	0.38	0.38
5.45	0.67	0.64	5.00	0.00	0.38	0.38
5.50	0.67	0.64	5.00	0.00	0.37	0.37
5.55	0.67	0.64	5.00	0.00	0.37	0.37
5.60	0.67	0.64	5.00	0.00	0.36	0.36
5.65	0.67	0.64	5.00	0.00	0.36	0.36
5.70	0.67	0.64	5.00	0.00	0.36	0.36
5.75	0.67	0.64	5.00	0.00	0.35	0.35
5.80	0.67	0.64	5.00	0.00	0.35	0.35
5.85	0.67	0.64	5.00	0.00	0.34	0.34
5.90	0.67	0.64	5.00	0.00	0.34	0.34
5.95	0.67	0.64	5.00	0.00	0.33	0.33
6.00	0.67	0.64	5.00	0.00	0.33	0.33
6.05	0.67	0.64	5.00	0.00	0.33	0.33
6.10	0.67	0.64	5.00	0.00	0.32	0.32
6.15	0.67	0.64	5.00	0.00	0.32	0.32
6.20	0.67	0.64	5.00	0.00	0.32	0.32
6.25	0.67	0.64	5.00	0.00	0.31	0.31
6.30	0.67	0.64	5.00	0.00	0.31	0.31
6.35	0.67	0.64	5.00	0.00	0.31	0.31
6.40	0.67	0.64	5.00	0.00	0.30	0.30
6.45	0.67	0.64	5.00	0.00	0.30	0.30
6.50	0.67	0.64	5.00	0.00	0.30	0.30
6.55	0.67	0.64	5.00	0.00	0.29	0.29

6.60	0.67	0.64	5.00	0.00	0.29	0.29
6.65	0.67	0.64	5.00	0.00	0.29	0.29
6.70	0.67	0.64	5.00	0.00	0.28	0.28
6.75	0.67	0.64	5.00	0.00	0.28	0.28
6.80	0.67	0.64	5.00	0.00	0.28	0.28
6.85	0.67	0.64	5.00	0.00	0.27	0.27
6.90	0.67	0.64	5.00	0.00	0.27	0.27
6.95	0.67	0.64	5.00	0.00	0.27	0.27
7.00	0.67	0.64	5.00	0.00	0.26	0.26
7.05	0.67	0.64	5.00	0.00	0.26	0.26
7.10	0.67	0.64	5.00	0.00	0.26	0.26
7.15	0.67	0.64	5.00	0.00	0.26	0.26
7.20	0.67	0.64	5.00	0.00	0.25	0.25
7.25	0.67	0.64	5.00	0.00	0.25	0.25
7.30	0.67	0.64	5.00	0.00	0.25	0.25
7.35	0.67	0.64	5.00	0.00	0.24	0.24
7.40	0.67	0.64	5.00	0.00	0.24	0.24
7.45	0.67	0.64	5.00	0.00	0.24	0.24
7.50	0.67	0.64	5.00	0.00	0.23	0.23
7.55	0.67	0.64	5.00	0.00	0.23	0.23
7.60	0.67	0.64	5.00	0.00	0.23	0.23
7.65	0.67	0.64	5.00	0.00	0.22	0.22
7.70	0.67	0.64	5.00	0.00	0.22	0.22
7.75	0.67	0.64	5.00	0.00	0.22	0.22
7.80	0.67	0.64	5.00	0.00	0.21	0.21
7.85	0.67	0.64	5.00	0.00	0.21	0.21
7.90	0.67	0.64	5.00	0.00	0.21	0.21
7.95	0.67	0.64	5.00	0.00	0.20	0.20
8.00	0.67	0.64	5.00	0.00	0.20	0.20
8.05	0.67	0.64	5.00	0.00	0.20	0.20
8.10	0.67	0.64	5.00	0.00	0.20	0.20
8.15	0.67	0.64	5.00	0.00	0.19	0.19
8.20	0.67	0.64	5.00	0.00	0.19	0.19
8.25	0.67	0.64	5.00	0.00	0.19	0.19
8.30	0.67	0.64	5.00	0.00	0.18	0.18
8.35	0.67	0.64	5.00	0.00	0.18	0.18
8.40	0.67	0.64	5.00	0.00	0.18	0.18
8.45	0.67	0.64	5.00	0.00	0.17	0.17
8.50	0.67	0.64	5.00	0.00	0.17	0.17
8.55	0.67	0.64	5.00	0.00	0.17	0.17
8.60	0.67	0.64	5.00	0.00	0.16	0.16
8.65	0.67	0.64	5.00	0.00	0.16	0.16
8.70	0.67	0.64	5.00	0.00	0.16	0.16
8.75	0.67	0.64	5.00	0.00	0.16	0.16
8.80	0.67	0.64	5.00	0.00	0.16	0.16
8.85	0.67	0.64	5.00	0.00	0.16	0.16
8.90	0.67	0.64	5.00	0.00	0.16	0.16
8.95	0.67	0.64	5.00	0.00	0.16	0.16
9.00	0.67	0.64	5.00	0.00	0.15	0.15
9.05	0.67	0.64	5.00	0.00	0.15	0.15
9.10	0.67	0.64	5.00	0.00	0.15	0.15
9.15	0.67	0.64	5.00	0.00	0.15	0.15
9.20	0.67	0.64	5.00	0.00	0.15	0.15
9.25	0.67	0.64	5.00	0.00	0.15	0.15
9.30	0.67	0.64	5.00	0.00	0.15	0.15
9.35	0.67	0.64	5.00	0.00	0.15	0.15
9.40	0.67	0.64	5.00	0.00	0.15	0.15
9.45	0.67	0.64	5.00	0.00	0.15	0.15
9.50	0.67	0.64	5.00	0.00	0.15	0.15
9.55	0.67	0.64	5.00	0.00	0.15	0.15
9.60	0.67	0.64	5.00	0.00	0.15	0.15
9.65	0.67	0.64	5.00	0.00	0.15	0.15
9.70	0.67	0.64	5.00	0.00	0.15	0.15
9.75	0.67	0.64	5.00	0.00	0.15	0.15
9.80	0.67	0.64	5.00	0.00	0.15	0.15
9.85	0.67	0.64	5.00	0.00	0.15	0.15
9.90	0.67	0.64	5.00	0.00	0.15	0.15

						Liquefy.sum
9.95	0.67	0.64	5.00	0.00	0.15	0.15
10.00	0.67	0.64	5.00	0.00	0.15	0.15
10.05	0.67	0.64	5.00	0.00	0.15	0.15
10.10	0.67	0.64	5.00	0.00	0.15	0.15
10.15	0.67	0.64	5.00	0.00	0.15	0.15
10.20	0.67	0.64	5.00	0.00	0.15	0.15
10.25	0.67	0.64	5.00	0.00	0.14	0.14
10.30	0.67	0.64	5.00	0.00	0.14	0.14
10.35	0.67	0.63	5.00	0.00	0.14	0.14
10.40	0.67	0.63	5.00	0.00	0.14	0.14
10.45	0.67	0.63	5.00	0.00	0.14	0.14
10.50	0.67	0.63	5.00	0.00	0.14	0.14
10.55	0.67	0.63	5.00	0.00	0.14	0.14
10.60	0.67	0.63	5.00	0.00	0.14	0.14
10.65	0.67	0.63	5.00	0.00	0.14	0.14
10.70	0.67	0.63	5.00	0.00	0.14	0.14
10.75	0.67	0.63	5.00	0.00	0.14	0.14
10.80	0.67	0.63	5.00	0.00	0.14	0.14
10.85	0.67	0.63	5.00	0.00	0.14	0.14
10.90	0.67	0.63	5.00	0.00	0.14	0.14
10.95	0.67	0.63	5.00	0.00	0.14	0.14
11.00	0.67	0.63	5.00	0.00	0.14	0.14
11.05	0.67	0.63	5.00	0.00	0.14	0.14
11.10	0.67	0.63	5.00	0.00	0.14	0.14
11.15	0.67	0.63	5.00	0.00	0.14	0.14
11.20	0.67	0.63	5.00	0.00	0.14	0.14
11.25	0.67	0.63	5.00	0.00	0.13	0.13
11.30	0.67	0.63	5.00	0.00	0.13	0.13
11.35	0.67	0.63	5.00	0.00	0.13	0.13
11.40	0.67	0.63	5.00	0.00	0.13	0.13
11.45	0.67	0.63	5.00	0.00	0.13	0.13
11.50	0.67	0.63	5.00	0.00	0.13	0.13
11.55	0.67	0.63	5.00	0.00	0.13	0.13
11.60	0.67	0.63	5.00	0.00	0.13	0.13
11.65	0.67	0.63	5.00	0.00	0.13	0.13
11.70	0.67	0.63	5.00	0.00	0.13	0.13
11.75	0.67	0.63	5.00	0.00	0.13	0.13
11.80	0.67	0.63	5.00	0.00	0.13	0.13
11.85	0.67	0.63	5.00	0.00	0.13	0.13
11.90	0.67	0.63	5.00	0.00	0.13	0.13
11.95	0.67	0.63	5.00	0.00	0.13	0.13
12.00	0.67	0.63	5.00	0.00	0.13	0.13
12.05	0.67	0.63	5.00	0.00	0.12	0.12
12.10	0.67	0.63	5.00	0.00	0.12	0.12
12.15	0.67	0.63	5.00	0.00	0.12	0.12
12.20	0.67	0.63	5.00	0.00	0.12	0.12
12.25	0.67	0.63	5.00	0.00	0.12	0.12
12.30	0.67	0.63	5.00	0.00	0.12	0.12
12.35	0.67	0.63	5.00	0.00	0.12	0.12
12.40	0.67	0.63	5.00	0.00	0.12	0.12
12.45	0.67	0.63	5.00	0.00	0.12	0.12
12.50	0.67	0.63	5.00	0.00	0.12	0.12
12.55	0.67	0.63	5.00	0.00	0.12	0.12
12.60	0.67	0.63	5.00	0.00	0.12	0.12
12.65	0.67	0.63	5.00	0.00	0.12	0.12
12.70	0.67	0.63	5.00	0.00	0.11	0.11
12.75	0.67	0.63	5.00	0.00	0.11	0.11
12.80	0.67	0.63	5.00	0.00	0.11	0.11
12.85	0.67	0.63	5.00	0.00	0.11	0.11
12.90	0.67	0.63	5.00	0.00	0.11	0.11
12.95	0.67	0.63	5.00	0.00	0.11	0.11
13.00	0.67	0.63	5.00	0.00	0.11	0.11
13.05	0.67	0.63	5.00	0.00	0.11	0.11
13.10	0.67	0.63	5.00	0.00	0.11	0.11
13.15	0.67	0.63	5.00	0.00	0.11	0.11
13.20	0.67	0.63	5.00	0.00	0.11	0.11
13.25	0.67	0.63	5.00	0.00	0.10	0.10

						Liquefy.sum
13.30	0.67	0.63	5.00	0.00	0.10	0.10
13.35	0.67	0.63	5.00	0.00	0.10	0.10
13.40	0.67	0.63	5.00	0.00	0.10	0.10
13.45	0.67	0.63	5.00	0.00	0.10	0.10
13.50	0.67	0.63	5.00	0.00	0.10	0.10
13.55	0.67	0.63	5.00	0.00	0.10	0.10
13.60	0.67	0.63	5.00	0.00	0.10	0.10
13.65	0.67	0.63	5.00	0.00	0.10	0.10
13.70	0.67	0.63	5.00	0.00	0.10	0.10
13.75	0.67	0.63	5.00	0.00	0.09	0.09
13.80	0.67	0.63	5.00	0.00	0.09	0.09
13.85	0.67	0.63	5.00	0.00	0.09	0.09
13.90	0.67	0.63	5.00	0.00	0.09	0.09
13.95	0.67	0.63	5.00	0.00	0.09	0.09
14.00	0.67	0.63	5.00	0.00	0.09	0.09
14.05	0.67	0.63	5.00	0.00	0.09	0.09
14.10	0.67	0.63	5.00	0.00	0.09	0.09
14.15	0.67	0.63	5.00	0.00	0.09	0.09
14.20	0.67	0.63	5.00	0.00	0.08	0.08
14.25	0.67	0.63	5.00	0.00	0.08	0.08
14.30	0.67	0.63	5.00	0.00	0.08	0.08
14.35	0.67	0.63	5.00	0.00	0.08	0.08
14.40	0.67	0.63	5.00	0.00	0.08	0.08
14.45	0.67	0.63	5.00	0.00	0.08	0.08
14.50	0.67	0.63	5.00	0.00	0.08	0.08
14.55	0.67	0.63	5.00	0.00	0.08	0.08
14.60	0.67	0.63	5.00	0.00	0.07	0.07
14.65	0.67	0.63	5.00	0.00	0.07	0.07
14.70	0.67	0.63	5.00	0.00	0.07	0.07
14.75	0.67	0.63	5.00	0.00	0.07	0.07
14.80	0.67	0.63	5.00	0.00	0.07	0.07
14.85	0.67	0.63	5.00	0.00	0.07	0.07
14.90	0.67	0.63	5.00	0.00	0.07	0.07
14.95	0.67	0.63	5.00	0.00	0.06	0.06
15.00	0.67	0.63	5.00	0.00	0.06	0.06
15.05	0.67	0.63	5.00	0.00	0.06	0.06
15.10	0.67	0.63	5.00	0.00	0.06	0.06
15.15	0.67	0.63	5.00	0.00	0.06	0.06
15.20	0.67	0.63	5.00	0.00	0.06	0.06
15.25	0.67	0.63	5.00	0.00	0.06	0.06
15.30	0.67	0.63	5.00	0.00	0.06	0.06
15.35	0.67	0.63	5.00	0.00	0.05	0.05
15.40	0.67	0.63	5.00	0.00	0.05	0.05
15.45	0.67	0.63	5.00	0.00	0.05	0.05
15.50	0.67	0.63	5.00	0.00	0.05	0.05
15.55	0.67	0.63	5.00	0.00	0.05	0.05
15.60	0.67	0.63	5.00	0.00	0.05	0.05
15.65	0.67	0.63	5.00	0.00	0.05	0.05
15.70	0.67	0.63	5.00	0.00	0.04	0.04
15.75	0.67	0.63	5.00	0.00	0.04	0.04
15.80	0.67	0.63	5.00	0.00	0.04	0.04
15.85	0.67	0.63	5.00	0.00	0.04	0.04
15.90	0.67	0.63	5.00	0.00	0.04	0.04
15.95	0.67	0.63	5.00	0.00	0.04	0.04
16.00	0.67	0.63	5.00	0.00	0.04	0.04
16.05	0.67	0.63	5.00	0.00	0.03	0.03
16.10	0.67	0.63	5.00	0.00	0.03	0.03
16.15	0.67	0.63	5.00	0.00	0.03	0.03
16.20	0.67	0.63	5.00	0.00	0.03	0.03
16.25	0.67	0.63	5.00	0.00	0.03	0.03
16.30	0.67	0.63	5.00	0.00	0.03	0.03
16.35	0.67	0.63	5.00	0.00	0.02	0.02
16.40	0.67	0.63	5.00	0.00	0.02	0.02
16.45	0.67	0.63	5.00	0.00	0.02	0.02
16.50	0.67	0.63	5.00	0.00	0.02	0.02
16.55	0.67	0.63	5.00	0.00	0.02	0.02
16.60	0.67	0.63	5.00	0.00	0.02	0.02

					Liquefy.sum	
16.65	0.67	0.63	5.00	0.00	0.01	0.01
16.70	0.67	0.63	5.00	0.00	0.01	0.01
16.75	0.67	0.63	5.00	0.00	0.01	0.01
16.80	0.67	0.63	5.00	0.00	0.01	0.01
16.85	0.67	0.63	5.00	0.00	0.01	0.01
16.90	0.67	0.63	5.00	0.00	0.00	0.00
16.95	0.67	0.62	5.00	0.00	0.00	0.00
17.00	0.67	0.62	1.07	0.00	0.00	0.00
17.05	0.67	0.63	1.07	0.00	0.00	0.00
17.10	0.67	0.63	1.07	0.00	0.00	0.00
17.15	0.67	0.63	1.07	0.00	0.00	0.00
17.20	0.67	0.63	1.07	0.00	0.00	0.00
17.25	0.67	0.63	1.07	0.00	0.00	0.00
17.30	0.67	0.63	1.06	0.00	0.00	0.00
17.35	0.67	0.63	1.06	0.00	0.00	0.00
17.40	0.67	0.63	1.06	0.00	0.00	0.00
17.45	0.67	0.63	1.06	0.00	0.00	0.00
17.50	0.67	0.63	1.06	0.00	0.00	0.00
17.55	0.67	0.63	1.06	0.00	0.00	0.00
17.60	0.67	0.63	1.06	0.00	0.00	0.00
17.65	0.67	0.63	1.05	0.00	0.00	0.00
17.70	0.67	0.64	1.05	0.00	0.00	0.00
17.75	0.67	0.64	1.05	0.00	0.00	0.00
17.80	0.67	0.64	1.05	0.00	0.00	0.00
17.85	0.67	0.64	1.05	0.00	0.00	0.00
17.90	0.67	0.64	1.05	0.00	0.00	0.00
17.95	0.67	0.64	1.05	0.00	0.00	0.00
18.00	0.67	0.64	1.05	0.00	0.00	0.00
18.05	0.67	0.64	1.04	0.00	0.00	0.00
18.10	0.67	0.64	1.04	0.00	0.00	0.00
18.15	0.67	0.64	1.04	0.00	0.00	0.00
18.20	0.67	0.64	1.04	0.00	0.00	0.00
18.25	0.67	0.64	1.04	0.00	0.00	0.00
18.30	0.67	0.64	1.04	0.00	0.00	0.00
18.35	0.67	0.65	1.04	0.00	0.00	0.00
18.40	0.67	0.65	1.04	0.00	0.00	0.00
18.45	0.67	0.65	1.04	0.00	0.00	0.00
18.50	0.67	0.65	1.03	0.00	0.00	0.00
18.55	0.67	0.65	1.03	0.00	0.00	0.00
18.60	0.67	0.65	1.03	0.00	0.00	0.00
18.65	0.67	0.65	1.03	0.00	0.00	0.00
18.70	0.67	0.65	1.03	0.00	0.00	0.00
18.75	0.67	0.65	1.03	0.00	0.00	0.00
18.80	0.67	0.65	1.03	0.00	0.00	0.00
18.85	0.67	0.65	1.03	0.00	0.00	0.00
18.90	0.67	0.65	1.03	0.00	0.00	0.00
18.95	0.67	0.65	1.02	0.00	0.00	0.00
19.00	0.67	0.65	1.02	0.00	0.00	0.00
19.05	0.67	0.66	1.02	0.00	0.00	0.00
19.10	0.67	0.66	1.02	0.00	0.00	0.00
19.15	0.67	0.66	1.02	0.00	0.00	0.00
19.20	0.67	0.66	1.02	0.00	0.00	0.00
19.25	0.67	0.66	1.02	0.00	0.00	0.00
19.30	0.67	0.66	1.02	0.00	0.00	0.00
19.35	0.67	0.66	1.02	0.00	0.00	0.00
19.40	0.67	0.66	1.01	0.00	0.00	0.00
19.45	0.67	0.66	1.01	0.00	0.00	0.00
19.50	0.67	0.66	1.01	0.00	0.00	0.00
19.55	0.67	0.66	1.01	0.00	0.00	0.00
19.60	0.67	0.66	1.01	0.00	0.00	0.00
19.65	0.67	0.66	1.01	0.00	0.00	0.00
19.70	0.67	0.66	1.01	0.00	0.00	0.00
19.75	0.67	0.66	1.01	0.00	0.00	0.00
19.80	0.67	0.67	1.01	0.00	0.00	0.00
19.85	0.67	0.67	1.01	0.00	0.00	0.00
19.90	0.67	0.67	1.00	0.00	0.00	0.00
19.95	0.67	0.67	1.00	0.00	0.00	0.00

20.00	0.67	0.67	1.00	0.00	0.00	0.00
20.05	0.67	0.67	1.00	0.00	0.00	0.00
20.10	0.67	0.67	1.00	0.00	0.00	0.00
20.15	0.67	0.67	1.00*	0.00	0.00	0.00
20.20	0.67	0.67	1.00*	0.00	0.00	0.00
20.25	0.67	0.67	1.00*	0.00	0.00	0.00
20.30	0.67	0.67	1.00*	0.00	0.00	0.00
20.35	0.67	0.67	1.00*	0.00	0.00	0.00
20.40	0.67	0.67	1.00*	0.00	0.00	0.00
20.45	0.67	0.67	0.99*	0.00	0.00	0.00
20.50	0.67	0.67	0.99*	0.00	0.00	0.00
20.55	0.67	0.67	0.99*	0.00	0.00	0.00
20.60	0.67	0.68	0.99*	0.00	0.00	0.00
20.65	0.67	0.68	0.99*	0.00	0.00	0.00
20.70	0.67	0.68	0.99*	0.00	0.00	0.00
20.75	0.67	0.68	0.99*	0.00	0.00	0.00
20.80	0.67	0.68	0.99*	0.00	0.00	0.00
20.85	0.67	0.68	0.99*	0.00	0.00	0.00
20.90	0.67	0.68	0.99*	0.00	0.00	0.00
20.95	0.67	0.68	0.99*	0.00	0.00	0.00
21.00	0.67	0.68	0.98*	0.00	0.00	0.00
21.05	0.67	0.68	0.98*	0.00	0.00	0.00
21.10	0.67	0.68	0.98*	0.00	0.00	0.00
21.15	0.67	0.68	0.98*	0.00	0.00	0.00
21.20	0.67	0.68	0.98*	0.00	0.00	0.00
21.25	0.67	0.68	0.98*	0.00	0.00	0.00
21.30	0.67	0.68	0.98*	0.00	0.00	0.00
21.35	0.67	0.68	0.98*	0.00	0.00	0.00
21.40	0.67	0.69	0.98*	0.00	0.00	0.00
21.45	0.67	0.69	0.98*	0.00	0.00	0.00
21.50	0.67	0.69	0.98*	0.00	0.00	0.00
21.55	0.67	0.69	0.98*	0.00	0.00	0.00
21.60	0.67	0.69	0.97*	0.00	0.00	0.00
21.65	0.67	0.69	0.97*	0.00	0.00	0.00
21.70	0.67	0.69	0.97*	0.00	0.00	0.00
21.75	0.67	0.69	0.97*	0.00	0.00	0.00
21.80	0.67	0.69	0.97*	0.00	0.00	0.00
21.85	0.67	0.69	0.97*	0.00	0.00	0.00
21.90	0.67	0.69	0.97*	0.00	0.00	0.00
21.95	0.67	0.69	0.97*	0.00	0.00	0.00
22.00	0.67	0.69	0.97*	0.00	0.00	0.00
22.05	0.67	0.69	0.97*	0.00	0.00	0.00
22.10	0.67	0.69	0.97*	0.00	0.00	0.00
22.15	0.67	0.69	0.97*	0.00	0.00	0.00
22.20	0.67	0.69	0.96*	0.00	0.00	0.00
22.25	0.67	0.69	0.96*	0.00	0.00	0.00
22.30	0.67	0.70	0.96*	0.00	0.00	0.00
22.35	0.67	0.70	0.96*	0.00	0.00	0.00
22.40	0.67	0.70	0.96*	0.00	0.00	0.00
22.45	0.67	0.70	0.96*	0.00	0.00	0.00
22.50	0.67	0.70	0.96*	0.00	0.00	0.00
22.55	0.67	0.70	0.96*	0.00	0.00	0.00
22.60	0.67	0.70	0.96*	0.00	0.00	0.00
22.65	0.67	0.70	0.96*	0.00	0.00	0.00
22.70	0.67	0.70	0.96*	0.00	0.00	0.00
22.75	0.67	0.70	0.96*	0.00	0.00	0.00
22.80	0.67	0.70	0.96*	0.00	0.00	0.00
22.85	0.67	0.70	0.95*	0.00	0.00	0.00
22.90	0.67	0.70	0.95*	0.00	0.00	0.00
22.95	0.67	0.70	0.95*	0.00	0.00	0.00
23.00	0.67	0.70	0.95*	0.00	0.00	0.00
23.05	0.67	0.70	0.95*	0.00	0.00	0.00
23.10	0.67	0.70	0.95*	0.00	0.00	0.00
23.15	0.67	0.70	0.95*	0.00	0.00	0.00
23.20	0.67	0.71	0.95*	0.00	0.00	0.00
23.25	0.67	0.71	0.95*	0.00	0.00	0.00
23.30	0.67	0.71	0.95*	0.00	0.00	0.00

23.35	0.67	0.71	0.95*	0.00	0.00	0.00
23.40	0.67	0.71	0.95*	0.00	0.00	0.00
23.45	0.67	0.71	0.95*	0.00	0.00	0.00
23.50	0.67	0.71	0.94*	0.00	0.00	0.00
23.55	0.67	0.71	0.94*	0.00	0.00	0.00
23.60	0.67	0.71	0.94*	0.00	0.00	0.00
23.65	0.67	0.71	0.94*	0.00	0.00	0.00
23.70	0.67	0.71	0.94*	0.00	0.00	0.00
23.75	0.67	0.71	0.94*	0.00	0.00	0.00
23.80	0.67	0.71	0.94*	0.00	0.00	0.00
23.85	0.67	0.71	0.94*	0.00	0.00	0.00
23.90	0.67	0.71	0.94*	0.00	0.00	0.00
23.95	0.67	0.71	0.94*	0.00	0.00	0.00
24.00	0.67	0.71	0.94*	0.00	0.00	0.00
24.05	0.67	0.71	0.94*	0.00	0.00	0.00
24.10	0.67	0.72	0.94*	0.00	0.00	0.00
24.15	0.67	0.72	0.94*	0.00	0.00	0.00
24.20	0.67	0.72	0.93*	0.00	0.00	0.00
24.25	0.67	0.72	0.93*	0.00	0.00	0.00
24.30	0.67	0.72	0.93*	0.00	0.00	0.00
24.35	0.67	0.72	0.93*	0.00	0.00	0.00
24.40	0.67	0.72	0.93*	0.00	0.00	0.00
24.45	0.67	0.72	0.93*	0.00	0.00	0.00
24.50	0.67	0.72	0.93*	0.00	0.00	0.00
24.55	0.67	0.72	0.93*	0.00	0.00	0.00
24.60	0.67	0.72	0.93*	0.00	0.00	0.00
24.65	0.67	0.72	0.93*	0.00	0.00	0.00
24.70	0.67	0.72	0.93*	0.00	0.00	0.00
24.75	0.67	0.72	0.93*	0.00	0.00	0.00
24.80	0.67	0.72	0.93*	0.00	0.00	0.00
24.85	0.67	0.72	0.93*	0.00	0.00	0.00
24.90	0.67	0.72	0.93*	0.00	0.00	0.00
24.95	0.67	0.72	0.92*	0.00	0.00	0.00
25.00	0.67	0.72	0.92*	0.00	0.00	0.00
25.05	2.00	0.73	5.00	0.00	0.00	0.00
25.10	2.00	0.73	5.00	0.00	0.00	0.00
25.15	2.00	0.73	5.00	0.00	0.00	0.00
25.20	2.00	0.73	5.00	0.00	0.00	0.00
25.25	2.00	0.73	5.00	0.00	0.00	0.00
25.30	2.00	0.73	5.00	0.00	0.00	0.00
25.35	2.00	0.73	5.00	0.00	0.00	0.00
25.40	2.00	0.73	5.00	0.00	0.00	0.00
25.45	2.00	0.73	5.00	0.00	0.00	0.00
25.50	2.00	0.73	5.00	0.00	0.00	0.00
25.55	2.00	0.73	5.00	0.00	0.00	0.00
25.60	2.00	0.73	5.00	0.00	0.00	0.00
25.65	2.00	0.73	5.00	0.00	0.00	0.00
25.70	2.00	0.73	5.00	0.00	0.00	0.00
25.75	2.00	0.73	5.00	0.00	0.00	0.00
25.80	2.00	0.73	5.00	0.00	0.00	0.00
25.85	2.00	0.73	5.00	0.00	0.00	0.00
25.90	2.00	0.73	5.00	0.00	0.00	0.00
25.95	2.00	0.73	5.00	0.00	0.00	0.00
26.00	2.00	0.73	5.00	0.00	0.00	0.00
26.05	2.00	0.74	5.00	0.00	0.00	0.00
26.10	2.00	0.74	5.00	0.00	0.00	0.00
26.15	2.00	0.74	5.00	0.00	0.00	0.00
26.20	2.00	0.74	5.00	0.00	0.00	0.00
26.25	2.00	0.74	5.00	0.00	0.00	0.00
26.30	2.00	0.74	5.00	0.00	0.00	0.00
26.35	2.00	0.74	5.00	0.00	0.00	0.00
26.40	2.00	0.74	5.00	0.00	0.00	0.00
26.45	2.00	0.74	5.00	0.00	0.00	0.00
26.50	2.00	0.74	5.00	0.00	0.00	0.00
26.55	2.00	0.74	5.00	0.00	0.00	0.00
26.60	2.00	0.74	5.00	0.00	0.00	0.00
26.65	2.00	0.74	5.00	0.00	0.00	0.00

26.70	2.00	0.74	5.00	0.00	0.00	0.00
26.75	2.00	0.74	5.00	0.00	0.00	0.00
26.80	2.00	0.74	5.00	0.00	0.00	0.00
26.85	2.00	0.74	5.00	0.00	0.00	0.00
26.90	2.00	0.74	5.00	0.00	0.00	0.00
26.95	2.00	0.74	5.00	0.00	0.00	0.00
27.00	2.00	0.74	5.00	0.00	0.00	0.00
27.05	2.00	0.75	5.00	0.00	0.00	0.00
27.10	2.00	0.75	5.00	0.00	0.00	0.00
27.15	2.00	0.75	5.00	0.00	0.00	0.00
27.20	2.00	0.75	5.00	0.00	0.00	0.00
27.25	2.00	0.75	5.00	0.00	0.00	0.00
27.30	2.00	0.75	5.00	0.00	0.00	0.00
27.35	2.00	0.75	5.00	0.00	0.00	0.00
27.40	2.00	0.75	5.00	0.00	0.00	0.00
27.45	2.00	0.75	5.00	0.00	0.00	0.00
27.50	2.00	0.75	5.00	0.00	0.00	0.00
27.55	2.00	0.75	5.00	0.00	0.00	0.00
27.60	2.00	0.75	5.00	0.00	0.00	0.00
27.65	2.00	0.75	5.00	0.00	0.00	0.00
27.70	2.00	0.75	5.00	0.00	0.00	0.00
27.75	2.00	0.75	5.00	0.00	0.00	0.00
27.80	2.00	0.75	5.00	0.00	0.00	0.00
27.85	2.00	0.75	5.00	0.00	0.00	0.00
27.90	2.00	0.75	5.00	0.00	0.00	0.00
27.95	2.00	0.75	5.00	0.00	0.00	0.00
28.00	2.00	0.75	5.00	0.00	0.00	0.00
28.05	2.00	0.75	5.00	0.00	0.00	0.00
28.10	2.00	0.75	5.00	0.00	0.00	0.00
28.15	2.00	0.76	5.00	0.00	0.00	0.00
28.20	2.00	0.76	5.00	0.00	0.00	0.00
28.25	2.00	0.76	5.00	0.00	0.00	0.00
28.30	2.00	0.76	5.00	0.00	0.00	0.00
28.35	2.00	0.76	5.00	0.00	0.00	0.00
28.40	2.00	0.76	5.00	0.00	0.00	0.00
28.45	2.00	0.76	5.00	0.00	0.00	0.00
28.50	2.00	0.76	5.00	0.00	0.00	0.00
28.55	2.00	0.76	5.00	0.00	0.00	0.00
28.60	2.00	0.76	5.00	0.00	0.00	0.00
28.65	2.00	0.76	5.00	0.00	0.00	0.00
28.70	2.00	0.76	5.00	0.00	0.00	0.00
28.75	2.00	0.76	5.00	0.00	0.00	0.00
28.80	2.00	0.76	5.00	0.00	0.00	0.00
28.85	2.00	0.76	5.00	0.00	0.00	0.00
28.90	2.00	0.76	5.00	0.00	0.00	0.00
28.95	2.00	0.76	5.00	0.00	0.00	0.00
29.00	2.00	0.76	5.00	0.00	0.00	0.00
29.05	2.00	0.76	5.00	0.00	0.00	0.00
29.10	2.00	0.76	5.00	0.00	0.00	0.00
29.15	2.00	0.76	5.00	0.00	0.00	0.00
29.20	2.00	0.76	5.00	0.00	0.00	0.00
29.25	2.00	0.76	5.00	0.00	0.00	0.00
29.30	2.00	0.77	5.00	0.00	0.00	0.00
29.35	2.00	0.77	5.00	0.00	0.00	0.00
29.40	2.00	0.77	5.00	0.00	0.00	0.00
29.45	2.00	0.77	5.00	0.00	0.00	0.00
29.50	2.00	0.77	5.00	0.00	0.00	0.00
29.55	2.00	0.77	5.00	0.00	0.00	0.00
29.60	2.00	0.77	5.00	0.00	0.00	0.00
29.65	2.00	0.77	5.00	0.00	0.00	0.00
29.70	2.00	0.77	5.00	0.00	0.00	0.00
29.75	2.00	0.77	5.00	0.00	0.00	0.00
29.80	2.00	0.77	5.00	0.00	0.00	0.00
29.85	2.00	0.77	5.00	0.00	0.00	0.00
29.90	2.00	0.77	5.00	0.00	0.00	0.00
29.95	2.00	0.77	5.00	0.00	0.00	0.00
30.00	2.00	0.77	5.00	0.00	0.00	0.00

30.05	2.00	0.77	5.00	0.00	0.00	0.00
30.10	2.00	0.77	5.00	0.00	0.00	0.00
30.15	2.00	0.77	5.00	0.00	0.00	0.00
30.20	2.00	0.77	5.00	0.00	0.00	0.00
30.25	2.00	0.77	5.00	0.00	0.00	0.00
30.30	2.00	0.77	5.00	0.00	0.00	0.00
30.35	2.00	0.77	5.00	0.00	0.00	0.00
30.40	2.00	0.77	5.00	0.00	0.00	0.00
30.45	2.00	0.77	5.00	0.00	0.00	0.00
30.50	2.00	0.77	5.00	0.00	0.00	0.00
30.55	2.00	0.77	5.00	0.00	0.00	0.00
30.60	2.00	0.77	5.00	0.00	0.00	0.00
30.65	2.00	0.77	5.00	0.00	0.00	0.00
30.70	2.00	0.77	5.00	0.00	0.00	0.00
30.75	2.00	0.77	5.00	0.00	0.00	0.00
30.80	2.00	0.77	5.00	0.00	0.00	0.00
30.85	2.00	0.77	5.00	0.00	0.00	0.00
30.90	2.00	0.77	5.00	0.00	0.00	0.00
30.95	2.00	0.77	5.00	0.00	0.00	0.00
31.00	2.00	0.77	5.00	0.00	0.00	0.00
31.05	2.00	0.77	5.00	0.00	0.00	0.00
31.10	2.00	0.77	5.00	0.00	0.00	0.00
31.15	2.00	0.77	5.00	0.00	0.00	0.00
31.20	2.00	0.77	5.00	0.00	0.00	0.00
31.25	2.00	0.78	5.00	0.00	0.00	0.00
31.30	2.00	0.78	5.00	0.00	0.00	0.00
31.35	2.00	0.78	5.00	0.00	0.00	0.00
31.40	2.00	0.78	5.00	0.00	0.00	0.00
31.45	2.00	0.78	5.00	0.00	0.00	0.00
31.50	2.00	0.78	5.00	0.00	0.00	0.00
31.55	2.00	0.78	5.00	0.00	0.00	0.00
31.60	2.00	0.78	5.00	0.00	0.00	0.00
31.65	2.00	0.78	5.00	0.00	0.00	0.00
31.70	2.00	0.78	5.00	0.00	0.00	0.00
31.75	2.00	0.78	5.00	0.00	0.00	0.00
31.80	2.00	0.78	5.00	0.00	0.00	0.00
31.85	2.00	0.78	5.00	0.00	0.00	0.00
31.90	2.00	0.78	5.00	0.00	0.00	0.00
31.95	2.00	0.78	5.00	0.00	0.00	0.00
32.00	2.00	0.78	5.00	0.00	0.00	0.00
32.05	2.00	0.78	5.00	0.00	0.00	0.00
32.10	2.00	0.78	5.00	0.00	0.00	0.00
32.15	2.00	0.78	5.00	0.00	0.00	0.00
32.20	2.00	0.78	5.00	0.00	0.00	0.00
32.25	2.00	0.78	5.00	0.00	0.00	0.00
32.30	2.00	0.78	5.00	0.00	0.00	0.00
32.35	2.00	0.78	5.00	0.00	0.00	0.00
32.40	2.00	0.78	5.00	0.00	0.00	0.00
32.45	2.00	0.78	5.00	0.00	0.00	0.00
32.50	2.00	0.78	5.00	0.00	0.00	0.00
32.55	2.00	0.78	5.00	0.00	0.00	0.00
32.60	2.00	0.78	5.00	0.00	0.00	0.00
32.65	2.00	0.78	5.00	0.00	0.00	0.00
32.70	2.00	0.78	5.00	0.00	0.00	0.00
32.75	2.00	0.78	5.00	0.00	0.00	0.00
32.80	2.00	0.78	5.00	0.00	0.00	0.00
32.85	2.00	0.78	5.00	0.00	0.00	0.00
32.90	2.00	0.78	5.00	0.00	0.00	0.00
32.95	2.00	0.78	5.00	0.00	0.00	0.00
33.00	2.00	0.78	5.00	0.00	0.00	0.00
33.05	2.00	0.78	5.00	0.00	0.00	0.00
33.10	2.00	0.78	5.00	0.00	0.00	0.00
33.15	2.00	0.78	5.00	0.00	0.00	0.00
33.20	2.00	0.78	5.00	0.00	0.00	0.00
33.25	2.00	0.78	5.00	0.00	0.00	0.00
33.30	2.00	0.78	5.00	0.00	0.00	0.00
33.35	2.00	0.78	5.00	0.00	0.00	0.00

33.40	2.00	0.78	5.00	0.00	0.00	0.00
33.45	2.00	0.78	5.00	0.00	0.00	0.00
33.50	2.00	0.78	5.00	0.00	0.00	0.00
33.55	2.00	0.78	5.00	0.00	0.00	0.00
33.60	2.00	0.78	5.00	0.00	0.00	0.00
33.65	2.00	0.78	5.00	0.00	0.00	0.00
33.70	2.00	0.78	5.00	0.00	0.00	0.00
33.75	2.00	0.78	5.00	0.00	0.00	0.00
33.80	2.00	0.78	5.00	0.00	0.00	0.00
33.85	2.00	0.78	5.00	0.00	0.00	0.00
33.90	2.00	0.78	5.00	0.00	0.00	0.00
33.95	2.00	0.78	5.00	0.00	0.00	0.00
34.00	2.00	0.78	5.00	0.00	0.00	0.00
34.05	2.00	0.78	5.00	0.00	0.00	0.00
34.10	2.00	0.78	5.00	0.00	0.00	0.00
34.15	2.00	0.78	5.00	0.00	0.00	0.00
34.20	2.00	0.78	5.00	0.00	0.00	0.00
34.25	2.00	0.78	5.00	0.00	0.00	0.00
34.30	2.00	0.78	5.00	0.00	0.00	0.00
34.35	2.00	0.78	5.00	0.00	0.00	0.00
34.40	2.00	0.78	5.00	0.00	0.00	0.00
34.45	2.00	0.78	5.00	0.00	0.00	0.00
34.50	2.00	0.78	5.00	0.00	0.00	0.00
34.55	2.00	0.78	5.00	0.00	0.00	0.00
34.60	2.00	0.78	5.00	0.00	0.00	0.00
34.65	2.00	0.78	5.00	0.00	0.00	0.00
34.70	2.00	0.78	5.00	0.00	0.00	0.00
34.75	2.00	0.78	5.00	0.00	0.00	0.00
34.80	2.00	0.78	5.00	0.00	0.00	0.00
34.85	2.00	0.78	5.00	0.00	0.00	0.00
34.90	2.00	0.78	5.00	0.00	0.00	0.00
34.95	2.00	0.78	5.00	0.00	0.00	0.00
35.00	2.00	0.78	5.00	0.00	0.00	0.00
35.05	2.00	0.78	5.00	0.00	0.00	0.00
35.10	2.00	0.78	5.00	0.00	0.00	0.00
35.15	2.00	0.78	5.00	0.00	0.00	0.00
35.20	2.00	0.78	5.00	0.00	0.00	0.00
35.25	2.00	0.78	5.00	0.00	0.00	0.00
35.30	2.00	0.78	5.00	0.00	0.00	0.00
35.35	2.00	0.78	5.00	0.00	0.00	0.00
35.40	2.00	0.78	5.00	0.00	0.00	0.00
35.45	2.00	0.78	5.00	0.00	0.00	0.00
35.50	2.00	0.78	5.00	0.00	0.00	0.00
35.55	2.00	0.78	5.00	0.00	0.00	0.00
35.60	2.00	0.78	5.00	0.00	0.00	0.00
35.65	2.00	0.78	5.00	0.00	0.00	0.00
35.70	2.00	0.78	5.00	0.00	0.00	0.00
35.75	2.00	0.78	5.00	0.00	0.00	0.00
35.80	2.00	0.78	5.00	0.00	0.00	0.00
35.85	2.00	0.78	5.00	0.00	0.00	0.00
35.90	2.00	0.78	5.00	0.00	0.00	0.00
35.95	2.00	0.78	5.00	0.00	0.00	0.00
36.00	2.00	0.78	5.00	0.00	0.00	0.00
36.05	2.00	0.78	5.00	0.00	0.00	0.00
36.10	2.00	0.78	5.00	0.00	0.00	0.00
36.15	2.00	0.78	5.00	0.00	0.00	0.00
36.20	2.00	0.78	5.00	0.00	0.00	0.00
36.25	2.00	0.78	5.00	0.00	0.00	0.00
36.30	2.00	0.78	5.00	0.00	0.00	0.00
36.35	2.00	0.78	5.00	0.00	0.00	0.00
36.40	2.00	0.78	5.00	0.00	0.00	0.00
36.45	2.00	0.78	5.00	0.00	0.00	0.00
36.50	2.00	0.78	5.00	0.00	0.00	0.00
36.55	2.00	0.78	5.00	0.00	0.00	0.00
36.60	2.00	0.78	5.00	0.00	0.00	0.00
36.65	2.00	0.78	5.00	0.00	0.00	0.00
36.70	2.00	0.78	5.00	0.00	0.00	0.00

36.75	2.00	0.78	5.00	0.00	0.00	0.00
36.80	2.00	0.78	5.00	0.00	0.00	0.00
36.85	2.00	0.78	5.00	0.00	0.00	0.00
36.90	2.00	0.78	5.00	0.00	0.00	0.00
36.95	2.00	0.78	5.00	0.00	0.00	0.00
37.00	2.00	0.78	5.00	0.00	0.00	0.00
37.05	2.00	0.78	5.00	0.00	0.00	0.00
37.10	2.00	0.78	5.00	0.00	0.00	0.00
37.15	2.00	0.78	5.00	0.00	0.00	0.00
37.20	2.00	0.78	5.00	0.00	0.00	0.00
37.25	2.00	0.78	5.00	0.00	0.00	0.00
37.30	2.00	0.78	5.00	0.00	0.00	0.00
37.35	2.00	0.78	5.00	0.00	0.00	0.00
37.40	2.00	0.78	5.00	0.00	0.00	0.00
37.45	2.00	0.78	5.00	0.00	0.00	0.00
37.50	2.00	0.78	5.00	0.00	0.00	0.00
37.55	2.00	0.78	5.00	0.00	0.00	0.00
37.60	2.00	0.78	5.00	0.00	0.00	0.00
37.65	2.00	0.78	5.00	0.00	0.00	0.00
37.70	2.00	0.78	5.00	0.00	0.00	0.00
37.75	2.00	0.78	5.00	0.00	0.00	0.00
37.80	2.00	0.78	5.00	0.00	0.00	0.00
37.85	2.00	0.78	5.00	0.00	0.00	0.00
37.90	2.00	0.78	5.00	0.00	0.00	0.00
37.95	2.00	0.78	5.00	0.00	0.00	0.00
38.00	2.00	0.78	5.00	0.00	0.00	0.00
38.05	2.00	0.78	5.00	0.00	0.00	0.00
38.10	2.00	0.78	5.00	0.00	0.00	0.00
38.15	2.00	0.78	5.00	0.00	0.00	0.00
38.20	2.00	0.78	5.00	0.00	0.00	0.00
38.25	2.00	0.78	5.00	0.00	0.00	0.00
38.30	2.00	0.78	5.00	0.00	0.00	0.00
38.35	2.00	0.78	5.00	0.00	0.00	0.00
38.40	2.00	0.78	5.00	0.00	0.00	0.00
38.45	2.00	0.78	5.00	0.00	0.00	0.00
38.50	2.00	0.78	5.00	0.00	0.00	0.00
38.55	2.00	0.78	5.00	0.00	0.00	0.00
38.60	2.00	0.78	5.00	0.00	0.00	0.00
38.65	2.00	0.78	5.00	0.00	0.00	0.00
38.70	2.00	0.78	5.00	0.00	0.00	0.00
38.75	2.00	0.78	5.00	0.00	0.00	0.00
38.80	2.00	0.78	5.00	0.00	0.00	0.00
38.85	2.00	0.78	5.00	0.00	0.00	0.00
38.90	2.00	0.78	5.00	0.00	0.00	0.00
38.95	2.00	0.78	5.00	0.00	0.00	0.00
39.00	2.00	0.78	5.00	0.00	0.00	0.00
39.05	2.00	0.78	5.00	0.00	0.00	0.00
39.10	2.00	0.78	5.00	0.00	0.00	0.00
39.15	2.00	0.78	5.00	0.00	0.00	0.00
39.20	2.00	0.78	5.00	0.00	0.00	0.00
39.25	2.00	0.78	5.00	0.00	0.00	0.00
39.30	2.00	0.78	5.00	0.00	0.00	0.00
39.35	2.00	0.78	5.00	0.00	0.00	0.00
39.40	2.00	0.78	5.00	0.00	0.00	0.00
39.45	2.00	0.78	5.00	0.00	0.00	0.00
39.50	2.00	0.78	5.00	0.00	0.00	0.00
39.55	2.00	0.78	5.00	0.00	0.00	0.00
39.60	2.00	0.78	5.00	0.00	0.00	0.00
39.65	2.00	0.78	5.00	0.00	0.00	0.00
39.70	2.00	0.78	5.00	0.00	0.00	0.00
39.75	2.00	0.78	5.00	0.00	0.00	0.00
39.80	2.00	0.78	5.00	0.00	0.00	0.00
39.85	2.00	0.78	5.00	0.00	0.00	0.00
39.90	2.00	0.78	5.00	0.00	0.00	0.00
39.95	2.00	0.78	5.00	0.00	0.00	0.00
40.00	2.00	0.78	5.00	0.00	0.00	0.00
40.05	2.00	0.78	5.00	0.00	0.00	0.00

40.10	2.00	0.78	5.00	0.00	0.00	0.00
40.15	2.00	0.78	5.00	0.00	0.00	0.00
40.20	2.00	0.78	5.00	0.00	0.00	0.00
40.25	2.00	0.78	5.00	0.00	0.00	0.00
40.30	2.00	0.78	5.00	0.00	0.00	0.00
40.35	2.00	0.78	5.00	0.00	0.00	0.00
40.40	2.00	0.78	5.00	0.00	0.00	0.00
40.45	2.00	0.78	5.00	0.00	0.00	0.00
40.50	2.00	0.78	5.00	0.00	0.00	0.00
40.55	2.00	0.78	5.00	0.00	0.00	0.00
40.60	2.00	0.78	5.00	0.00	0.00	0.00
40.65	2.00	0.78	5.00	0.00	0.00	0.00
40.70	2.00	0.78	5.00	0.00	0.00	0.00
40.75	2.00	0.78	5.00	0.00	0.00	0.00
40.80	2.00	0.78	5.00	0.00	0.00	0.00
40.85	2.00	0.78	5.00	0.00	0.00	0.00
40.90	2.00	0.78	5.00	0.00	0.00	0.00
40.95	2.00	0.78	5.00	0.00	0.00	0.00
41.00	2.00	0.78	5.00	0.00	0.00	0.00
41.05	2.00	0.78	5.00	0.00	0.00	0.00
41.10	2.00	0.78	5.00	0.00	0.00	0.00
41.15	2.00	0.78	5.00	0.00	0.00	0.00
41.20	2.00	0.78	5.00	0.00	0.00	0.00
41.25	2.00	0.78	5.00	0.00	0.00	0.00
41.30	2.00	0.78	5.00	0.00	0.00	0.00
41.35	2.00	0.78	5.00	0.00	0.00	0.00
41.40	2.00	0.78	5.00	0.00	0.00	0.00
41.45	2.00	0.78	5.00	0.00	0.00	0.00
41.50	2.00	0.78	5.00	0.00	0.00	0.00
41.55	2.00	0.78	5.00	0.00	0.00	0.00
41.60	2.00	0.78	5.00	0.00	0.00	0.00
41.65	2.00	0.78	5.00	0.00	0.00	0.00
41.70	2.00	0.78	5.00	0.00	0.00	0.00
41.75	2.00	0.78	5.00	0.00	0.00	0.00
41.80	2.00	0.78	5.00	0.00	0.00	0.00
41.85	2.00	0.78	5.00	0.00	0.00	0.00
41.90	2.00	0.78	5.00	0.00	0.00	0.00
41.95	2.00	0.78	5.00	0.00	0.00	0.00
42.00	2.00	0.78	5.00	0.00	0.00	0.00
42.05	2.00	0.78	5.00	0.00	0.00	0.00
42.10	2.00	0.78	5.00	0.00	0.00	0.00
42.15	2.00	0.78	5.00	0.00	0.00	0.00
42.20	2.00	0.78	5.00	0.00	0.00	0.00
42.25	2.00	0.78	5.00	0.00	0.00	0.00
42.30	2.00	0.78	5.00	0.00	0.00	0.00
42.35	2.00	0.78	5.00	0.00	0.00	0.00
42.40	2.00	0.78	5.00	0.00	0.00	0.00
42.45	2.00	0.78	5.00	0.00	0.00	0.00
42.50	2.00	0.78	5.00	0.00	0.00	0.00
42.55	2.00	0.78	5.00	0.00	0.00	0.00
42.60	2.00	0.78	5.00	0.00	0.00	0.00
42.65	2.00	0.78	5.00	0.00	0.00	0.00
42.70	2.00	0.78	5.00	0.00	0.00	0.00
42.75	2.00	0.78	5.00	0.00	0.00	0.00
42.80	2.00	0.78	5.00	0.00	0.00	0.00
42.85	2.00	0.78	5.00	0.00	0.00	0.00
42.90	2.00	0.78	5.00	0.00	0.00	0.00
42.95	2.00	0.78	5.00	0.00	0.00	0.00
43.00	2.00	0.78	5.00	0.00	0.00	0.00
43.05	2.00	0.78	5.00	0.00	0.00	0.00
43.10	2.00	0.78	5.00	0.00	0.00	0.00
43.15	2.00	0.78	5.00	0.00	0.00	0.00
43.20	2.00	0.78	5.00	0.00	0.00	0.00
43.25	2.00	0.78	5.00	0.00	0.00	0.00
43.30	2.00	0.78	5.00	0.00	0.00	0.00
43.35	2.00	0.78	5.00	0.00	0.00	0.00
43.40	2.00	0.78	5.00	0.00	0.00	0.00

43.45	2.00	0.78	5.00	0.00	0.00	0.00
43.50	2.00	0.78	5.00	0.00	0.00	0.00
43.55	2.00	0.78	5.00	0.00	0.00	0.00
43.60	2.00	0.78	5.00	0.00	0.00	0.00
43.65	2.00	0.78	5.00	0.00	0.00	0.00
43.70	2.00	0.78	5.00	0.00	0.00	0.00
43.75	2.00	0.78	5.00	0.00	0.00	0.00
43.80	2.00	0.78	5.00	0.00	0.00	0.00
43.85	2.00	0.78	5.00	0.00	0.00	0.00
43.90	2.00	0.78	5.00	0.00	0.00	0.00
43.95	2.00	0.78	5.00	0.00	0.00	0.00
44.00	2.00	0.78	5.00	0.00	0.00	0.00
44.05	2.00	0.78	5.00	0.00	0.00	0.00
44.10	2.00	0.78	5.00	0.00	0.00	0.00
44.15	2.00	0.78	5.00	0.00	0.00	0.00
44.20	2.00	0.77	5.00	0.00	0.00	0.00
44.25	2.00	0.77	5.00	0.00	0.00	0.00
44.30	2.00	0.77	5.00	0.00	0.00	0.00
44.35	2.00	0.77	5.00	0.00	0.00	0.00
44.40	2.00	0.77	5.00	0.00	0.00	0.00
44.45	2.00	0.77	5.00	0.00	0.00	0.00
44.50	2.00	0.77	5.00	0.00	0.00	0.00
44.55	2.00	0.77	5.00	0.00	0.00	0.00
44.60	2.00	0.77	5.00	0.00	0.00	0.00
44.65	2.00	0.77	5.00	0.00	0.00	0.00
44.70	2.00	0.77	5.00	0.00	0.00	0.00
44.75	2.00	0.77	5.00	0.00	0.00	0.00
44.80	2.00	0.77	5.00	0.00	0.00	0.00
44.85	2.00	0.77	5.00	0.00	0.00	0.00
44.90	2.00	0.77	5.00	0.00	0.00	0.00
44.95	2.00	0.77	5.00	0.00	0.00	0.00
45.00	2.00	0.77	5.00	0.00	0.00	0.00
45.05	2.00	0.77	5.00	0.00	0.00	0.00
45.10	2.00	0.77	5.00	0.00	0.00	0.00
45.15	2.00	0.77	5.00	0.00	0.00	0.00
45.20	2.00	0.77	5.00	0.00	0.00	0.00
45.25	2.00	0.77	5.00	0.00	0.00	0.00
45.30	2.00	0.77	5.00	0.00	0.00	0.00
45.35	2.00	0.77	5.00	0.00	0.00	0.00
45.40	2.00	0.77	5.00	0.00	0.00	0.00
45.45	2.00	0.77	5.00	0.00	0.00	0.00
45.50	2.00	0.77	5.00	0.00	0.00	0.00
45.55	2.00	0.77	5.00	0.00	0.00	0.00
45.60	2.00	0.77	5.00	0.00	0.00	0.00
45.65	2.00	0.77	5.00	0.00	0.00	0.00
45.70	2.00	0.77	5.00	0.00	0.00	0.00
45.75	2.00	0.77	5.00	0.00	0.00	0.00
45.80	2.00	0.77	5.00	0.00	0.00	0.00
45.85	2.00	0.77	5.00	0.00	0.00	0.00
45.90	2.00	0.77	5.00	0.00	0.00	0.00
45.95	2.00	0.77	5.00	0.00	0.00	0.00
46.00	2.00	0.77	5.00	0.00	0.00	0.00
46.05	2.00	0.77	5.00	0.00	0.00	0.00
46.10	2.00	0.77	5.00	0.00	0.00	0.00
46.15	2.00	0.77	5.00	0.00	0.00	0.00
46.20	2.00	0.77	5.00	0.00	0.00	0.00
46.25	2.00	0.77	5.00	0.00	0.00	0.00
46.30	2.00	0.77	5.00	0.00	0.00	0.00
46.35	2.00	0.77	5.00	0.00	0.00	0.00
46.40	2.00	0.77	5.00	0.00	0.00	0.00
46.45	2.00	0.77	5.00	0.00	0.00	0.00
46.50	2.00	0.77	5.00	0.00	0.00	0.00
46.55	2.00	0.77	5.00	0.00	0.00	0.00
46.60	2.00	0.77	5.00	0.00	0.00	0.00
46.65	2.00	0.77	5.00	0.00	0.00	0.00
46.70	2.00	0.77	5.00	0.00	0.00	0.00
46.75	2.00	0.77	5.00	0.00	0.00	0.00

						Liquefy.sum
46.80	2.00	0.77	5.00	0.00	0.00	0.00
46.85	2.00	0.77	5.00	0.00	0.00	0.00
46.90	2.00	0.77	5.00	0.00	0.00	0.00
46.95	2.00	0.77	5.00	0.00	0.00	0.00
47.00	2.00	0.77	5.00	0.00	0.00	0.00
47.05	2.00	0.77	5.00	0.00	0.00	0.00
47.10	2.00	0.77	5.00	0.00	0.00	0.00
47.15	2.00	0.77	5.00	0.00	0.00	0.00
47.20	2.00	0.77	5.00	0.00	0.00	0.00
47.25	2.00	0.77	5.00	0.00	0.00	0.00
47.30	2.00	0.77	5.00	0.00	0.00	0.00
47.35	2.00	0.77	5.00	0.00	0.00	0.00
47.40	2.00	0.77	5.00	0.00	0.00	0.00
47.45	2.00	0.77	5.00	0.00	0.00	0.00
47.50	2.00	0.77	5.00	0.00	0.00	0.00
47.55	2.00	0.77	5.00	0.00	0.00	0.00
47.60	2.00	0.77	5.00	0.00	0.00	0.00
47.65	2.00	0.77	5.00	0.00	0.00	0.00
47.70	2.00	0.77	5.00	0.00	0.00	0.00
47.75	2.00	0.77	5.00	0.00	0.00	0.00
47.80	2.00	0.77	5.00	0.00	0.00	0.00
47.85	2.00	0.77	5.00	0.00	0.00	0.00
47.90	2.00	0.77	5.00	0.00	0.00	0.00
47.95	2.00	0.76	5.00	0.00	0.00	0.00
48.00	2.00	0.76	5.00	0.00	0.00	0.00
48.05	2.00	0.76	5.00	0.00	0.00	0.00
48.10	2.00	0.76	5.00	0.00	0.00	0.00
48.15	2.00	0.76	5.00	0.00	0.00	0.00
48.20	2.00	0.76	5.00	0.00	0.00	0.00
48.25	2.00	0.76	5.00	0.00	0.00	0.00
48.30	2.00	0.76	5.00	0.00	0.00	0.00
48.35	2.00	0.76	5.00	0.00	0.00	0.00
48.40	2.00	0.76	5.00	0.00	0.00	0.00
48.45	2.00	0.76	5.00	0.00	0.00	0.00
48.50	2.00	0.76	5.00	0.00	0.00	0.00
48.55	2.00	0.76	5.00	0.00	0.00	0.00
48.60	2.00	0.76	5.00	0.00	0.00	0.00
48.65	2.00	0.76	5.00	0.00	0.00	0.00
48.70	2.00	0.76	5.00	0.00	0.00	0.00
48.75	2.00	0.76	5.00	0.00	0.00	0.00
48.80	2.00	0.76	5.00	0.00	0.00	0.00
48.85	2.00	0.76	5.00	0.00	0.00	0.00
48.90	2.00	0.76	5.00	0.00	0.00	0.00
48.95	2.00	0.76	5.00	0.00	0.00	0.00
49.00	2.00	0.76	5.00	0.00	0.00	0.00
49.05	2.00	0.76	5.00	0.00	0.00	0.00
49.10	2.00	0.76	5.00	0.00	0.00	0.00
49.15	2.00	0.76	5.00	0.00	0.00	0.00
49.20	2.00	0.76	5.00	0.00	0.00	0.00
49.25	2.00	0.76	5.00	0.00	0.00	0.00
49.30	2.00	0.76	5.00	0.00	0.00	0.00
49.35	2.00	0.76	5.00	0.00	0.00	0.00
49.40	2.00	0.76	5.00	0.00	0.00	0.00
49.45	2.00	0.76	5.00	0.00	0.00	0.00
49.50	2.00	0.76	5.00	0.00	0.00	0.00
49.55	2.00	0.76	5.00	0.00	0.00	0.00
49.60	2.00	0.76	5.00	0.00	0.00	0.00
49.65	2.00	0.76	5.00	0.00	0.00	0.00
49.70	2.00	0.76	5.00	0.00	0.00	0.00
49.75	2.00	0.76	5.00	0.00	0.00	0.00
49.80	2.00	0.76	5.00	0.00	0.00	0.00
49.85	2.00	0.76	5.00	0.00	0.00	0.00
49.90	2.00	0.76	5.00	0.00	0.00	0.00
49.95	2.00	0.76	5.00	0.00	0.00	0.00
50.00	2.00	0.76	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2,   CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

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1 atm (atmosphere) = 1 tsf (ton/ft2)

CRRm	Cyclic resistance ratio from soils
CSRsf	Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S.	Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat	Settlement from saturated sands
S_dry	Settlement from Unsaturated Sands
S_all	Total Settlement from Saturated and Unsaturated Sands
NoLiq	No-Liquefy Soils

APPENDIX D

PERCOLATION TESTING

APPENDIX D

PERCOLATION TESTING

Percolation testing was performed utilizing exploratory borings BH-22 and BH-29 on June 19, 2013. The continuous pre-soak falling-head test method for water percolation testing was utilized to evaluate soil infiltration rates of the fill and native soils encountered between depths of 0 to 10 feet below the ground surface at the respective boring locations in accordance with LA County Low Impact Development, Best Management Practices Guidelines. The test locations were prepared by placing a perforated 2-inch diameter PVC pipe surrounded by pea gravel after drilling and sampling. Water was filled to the ground surface to pre-soak prior to testing.

The boring was cased using a two-inch diameter perforated casing. Water was added to the bore hole until the water level was as near the ground surface as could be achieved, and allowed to pre-soak for at least 24 hours. After pre-soak, water was added to the bore hole until the water level was as near the ground surface as could be achieved. The water level was measured to the nearest 1/100-foot and recorded every 10 minutes for 30 minutes. There were four (4) sets of measurements taken for each test and each set consisted of at least three (3) measurements (10 minute intervals). The results of the percolation tests are tabulated below.

Table No. D-1, Percolation Test Results

Boring No.	Depth of Boring* (feet)	Predominant Soil Types (USCS)	Average Percolation Rate (inches/hour)	Lowest Percolation Rate (inches/hour)
BH-22	10	Clay (CL)	0.28	0.12
BH-29	10	Clayey Sand (SC)	0.92	0.59

*Approximate

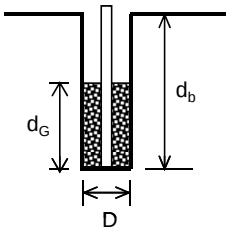
Based on our review of percolation rates, the site soil has poor to low percolation rates for infiltration systems in general. In accordance with County of Los Angeles requirements, the minimum percolation rate for design of infiltration system for storm water management is 0.5 inch per hour. Based on the test results, the site soils in the vicinity of the practice field in the northeastern portion of the site are not considered suitable for infiltration drainage systems. The site soils in the parking lot area in the northwestern portion of the site meet the minimum rate and are considered suitable for percolation drainage systems. The project Civil Engineer should review the raw data of percolation test presented herein to determine specific soil layers and percolation rates for design of the proposed infiltration system. Such systems should be constructed a minimum distance of 10 feet laterally from any existing or future planned building or subsurface structure as not to disturb or undermine foundations. The percolation rates

were determined in general accordance with Los Angeles County guidelines. The detailed percolation test results are shown on the following data sheet.

Percolation Testing

Job Name: Mt. SAC Athletics Complex East
Job No.: 14-31-124-01
Location: BH-22
Test Date: 06.19.14

Test Boring No. **BH-22**
Depth of Boring (d_b): 10.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: M. Malim



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Presoak	6/18/2014	24									
Percolation Test											
7:32:00 AM	7:42:00 AM	0.17	0.00	0.30	10.00	9.70	0.30	9.85	21.60	30.4	0.71
7:42:00 AM	7:52:00 AM	0.17	0.30	0.40	9.70	9.60	0.10	9.65	7.20	29.8	0.24
7:52:00 AM	8:02:00 AM	0.17	0.40	0.45	9.60	9.55	0.05	9.58	3.60	29.6	0.12
8:02:00 AM	8:12:00 AM	0.17	0.45	0.50	9.55	9.50	0.05	9.53	3.60	29.4	0.12
8:12:00 AM	8:22:00 AM	0.17	0.50	0.55	9.50	9.45	0.05	9.48	3.60	29.3	0.12
8:22:00 AM	8:32:00 AM	0.17	0.55	0.60	9.45	9.40	0.05	9.43	3.60	29.1	0.12
8:32:00 AM	8:42:00 AM	0.17	0.60	0.70	9.40	9.30	0.10	9.35	7.20	28.9	0.25
8:42:00 AM	8:52:00 AM	0.17	0.70	0.80	9.30	9.20	0.10	9.25	7.20	28.6	0.25
8:52:00 AM	9:02:00 AM	0.17	0.80	0.90	9.20	9.10	0.10	9.15	7.20	28.3	0.25
9:05:00 AM	9:15:00 AM	0.17	0.00	0.25	10.00	9.75	0.25	9.88	18.00	30.5	0.59
9:15:00 AM	9:25:00 AM	0.17	0.25	0.35	9.75	9.65	0.10	9.70	7.20	30.0	0.24
9:25:00 AM	9:35:00 AM	0.17	0.35	0.40	9.65	9.60	0.05	9.63	3.60	29.7	0.12
9:37:00 AM	9:47:00 AM	0.17	0.00	0.25	10.00	9.75	0.25	9.88	18.00	30.5	0.59
9:47:00 AM	9:57:00 AM	0.17	0.25	0.35	9.75	9.65	0.10	9.70	7.20	30.0	0.24
9:57:00 AM	10:07:00 AM	0.17	0.35	0.40	9.65	9.60	0.05	9.63	3.60	29.7	0.12
10:10:00 AM	10:20:00 AM	0.17	0.00	0.25	10.00	9.75	0.25	9.88	18.00	30.5	0.59
10:20:00 AM	10:30:00 AM	0.17	0.25	0.35	9.75	9.65	0.10	9.70	7.20	30.0	0.24
10:30:00 AM	10:40:00 AM	0.17	0.35	0.40	9.65	9.60	0.05	9.63	3.60	29.7	0.12

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

Lowest Percolation Rate = 0.12 inch/hr

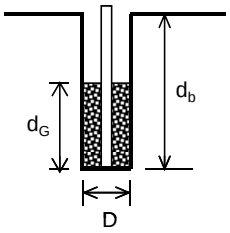
Average Percolation Rate = 0.28 inch/hr

Reference: Los Angeles County (2011). Adminstrative Manual - Low Impact Development Best Management Practice Guideline for Design, Investigation, and Reporting, 01/03/11.

Percolation Testing

Job Name: Mt. SAC Athletics Complex East
Job No.: 14-31-124-01
Location: BH-29
Test Date: 06.19.14

Test Boring No. **BH-29**
Depth of Boring (d_b): 10.0 feet
Diameter of Boring (D): 0.67 feet
Test Performer: M. Malim



Time of Testing			Water Level Measurement		Water Level Calculations				Percolation Rate Calculations		
Initial Time	Final Time	Time Interval	Initial depth to water	Final depth to water	Initial Height of water column	Final Height of water column	Drop in Height	Average height of water column	Pre-adjusted Percolation Rate	Reduction Factor	Adjusted Percolation Rate
T_i	T_f	ΔT	d_1	d_2	d_i	d_f	$\Delta d = d_i - d_f$	L_{ave}	$k_i = \Delta d / \Delta T$	R_f	$k = k_i / R_f$
		(hr)	(feet)	(feet)	(feet)	(feet)	(feet)	(feet)	(inch/hr)		(inch/hr)
Presoak	6/18/2014	24									
Percolation Test											
7:38:00 AM	7:48:00 AM	0.17	0.10	0.60	9.90	9.40	0.50	9.65	36.00	29.8	1.21
7:48:00 AM	7:58:00 AM	0.17	0.60	1.00	9.40	9.00	0.40	9.20	28.80	28.5	1.01
7:58:00 AM	8:08:00 AM	0.17	1.00	1.30	9.00	8.70	0.30	8.85	21.60	27.4	0.79
8:08:00 AM	8:18:00 AM	0.17	1.30	1.60	8.70	8.40	0.30	8.55	21.60	26.5	0.81
8:18:00 AM	8:28:00 AM	0.17	1.60	2.00	8.40	8.00	0.40	8.20	28.80	25.5	1.13
8:28:00 AM	8:38:00 AM	0.17	2.00	2.20	8.00	7.80	0.20	7.90	14.40	24.6	0.59
8:38:00 AM	8:48:00 AM	0.17	2.20	2.40	7.80	7.60	0.20	7.70	14.40	24.0	0.60
8:48:00 AM	8:58:00 AM	0.17	2.40	2.60	7.60	7.40	0.20	7.50	14.40	23.4	0.62
8:58:00 AM	9:08:00 AM	0.17	2.60	2.80	7.40	7.20	0.20	7.30	14.40	22.8	0.63
9:10:00 AM	9:20:00 AM	0.17	0.25	0.80	9.75	9.20	0.55	9.48	39.60	29.3	1.35
9:20:00 AM	9:30:00 AM	0.17	0.80	1.25	9.20	8.75	0.45	8.98	32.40	27.8	1.17
9:30:00 AM	9:40:00 AM	0.17	1.25	1.50	8.75	8.50	0.25	8.63	18.00	26.7	0.67
9:45:00 AM	9:55:00 AM	0.17	0.00	0.60	10.00	9.40	0.60	9.70	43.20	30.0	1.44
9:55:00 AM	10:05:00 AM	0.17	0.60	1.00	9.40	9.00	0.40	9.20	28.80	28.5	1.01
10:05:00 AM	10:15:00 AM	0.17	1.00	1.25	9.00	8.75	0.25	8.88	18.00	27.5	0.65
10:17:00 AM	10:27:00 AM	0.17	0.25	0.75	9.75	9.25	0.50	9.50	36.00	29.4	1.23
10:27:00 AM	10:37:00 AM	0.17	0.75	1.10	9.25	8.90	0.35	9.08	25.20	28.1	0.90
10:37:00 AM	10:47:00 AM	0.17	1.10	1.40	8.90	8.60	0.30	8.75	21.60	27.1	0.80

Note: Reduction Factor, $R_f = (2*d_i - \Delta d)/D + 1$

Lowest Percolation Rate = 0.59 inch/hr

Average Percolation Rate = 0.92 inch/hr

Reference: Los Angeles County (2011). Adminstrative Manual - Low Impact Development Best Management Practice Guideline for Design, Investigation, and Reporting, 01/03/11.

APPENDIX E

EARTHWORK SPECIFICATIONS

APPENDIX E

EARTHWORK SPECIFICATIONS

E1.1 Scope of Work

The work includes all labor, supplies and construction equipment required to construct the building pads in a good, workmanlike manner, as shown on the drawings and herein specified. The major items of work covered in this section include the following:

- Site Inspection
- Authority of Geotechnical Engineer
- Site Clearing
- Excavations
- Preparation of Fill Areas
- Placement and Compaction of Fill
- Observation and Testing

E1.2 Site Inspection

1. The Contractor shall carefully examine the site and make all inspections necessary, in order to determine the full extent of the work required to make the completed work conform to the drawings and specifications. The Contractor shall satisfy himself as to the nature and location of the work, ground surface and the characteristics of equipment and facilities needed prior to and during prosecution of the work. The Contractor shall satisfy himself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered. Any inaccuracies or discrepancies between the actual field conditions and the drawings, or between the drawings and specifications must be brought to the Owner's attention in order to clarify the exact nature of the work to be performed.

2. This *Geoseismic/Geotechnical Study Report* by Converse Consultants may be used as a reference to the surface and subsurface conditions on this project. The information presented in this report is intended for use in design and is subject to confirmation of the conditions encountered during construction. The exploration logs and related information depict subsurface conditions only at the particular time and location designated on the boring logs. Subsurface conditions at other locations may differ from conditions encountered at the exploration locations. In addition, the passage of time may result in a change in subsurface conditions at the exploration locations. Any review of this information shall not relieve the Contractor from performing such independent investigation and evaluation to satisfy himself as to the nature of the surface and subsurface

conditions to be encountered and the procedures to be used in performing his work.

E1.3 Authority of the Geotechnical Engineer

1. The Geotechnical Engineer will observe the placement of compacted fill and will take sufficient tests to evaluate the uniformity and degree of compaction of filled ground.

2. As the Owner's representative, the Geotechnical Engineer will (a) have the authority to cause the removal and replacement of loose, soft, disturbed and other unsatisfactory soils and uncontrolled fill; (b) have the authority to approve the preparation of native ground to receive fill material; and (c) have the authority to approve or reject soils proposed for use in building areas.

3. The Civil Engineer and/or Owner will decide all questions regarding (a) the interpretation of the drawings and specifications, (b) the acceptable fulfillment of the contract on the part of the Contractor and (c) the matters of compensation.

E1.4 Site Clearing

1. Clearing and grubbing shall consist of the removal from building areas to be graded of all existing structures, pavement, utilities, and vegetation.

2. Organic and inorganic materials resulting from the clearing and grubbing operations shall be hauled away from the areas to be graded.

E1.5 Excavations

1. Based on observations made during our field explorations, the surficial soils can be excavated with conventional earthwork equipment.

E1.6 Preparation of Fill Areas

1. All organic material, organic soils, incompetent alluvium, undocumented fill soils and debris should be removed from the proposed building areas.

2. In order to provide a relative uniform bearing material below shallow foundations, over-excavation and re-compaction of below the foundations and slab-on-grade are recommended. We recommend a minimum 3 feet of onsite soils below the bottom of foundations should be removed, moisture-conditioned if necessary, and replaced as compacted fill. At least the six (6) inches of soil at bottom of over-excavation, cut and transition areas should be scarified and compacted. All undocumented fill should be removed and replaced with compacted fill. The

excavation to remove unsuitable soils should be extended to five (5) feet beyond the building limits and appendages where space is available. All loose, soft or disturbed earth materials should be removed from the bottom of excavations before placing structural fill. The actual depth of removal should be determined based on observations made during grading. After the required removals have been made, the exposed native earth materials shall be excavated to provide a zone of structural fill for the support of footings, slabs-on-grade, and exterior flatwork. The fill thickness under structures should not vary.

3. The subgrade in all areas to receive fill shall be scarified to a minimum depth of six (6) inches, the soil moisture adjusted within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils, and then compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. Scarification may be terminated on moderately hard to hard, cemented earth materials with the approval of the Geotechnical Engineer.

4. Compacted fill may be placed on native soils that have been properly scarified and recompacted as discussed above.

5. All areas to receive compacted fill will be observed and approved by the Geotechnical Engineer before the placement of fill.

E1.7 Placement and Compaction of Fill

1. Compacted fill placed for the support of footings, slabs-on-grade, exterior concrete flatwork, and driveways will be considered structural fill. Structural fill may consist of approved on-site soils or imported fill that meets the criteria indicated below.

2. Fill consisting of selected on-site earth materials or imported soils approved by the Geotechnical Engineer shall be placed in layers on approved earth materials. Soils used as compacted structural fill shall have the following characteristics:

    a. All fill soil particles shall not exceed three (3) inches in nominal size, and shall be free of organic matter and miscellaneous inorganic debris and inert rubble.

    b. Imported fill materials shall have an Expansion Index (EI) less than 20. All imported fill should be compacted to at least 90 percent of the laboratory maximum dry density (ASTM Standard D1557) at about three (3) percent above optimum moisture for fine grained soils, and within three (3) percent of optimum for granular soils.

3. Fill soils shall be evenly spread in maximum 8-inch lifts, watered or dried as necessary, mixed and compacted to at least the density specified below. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer.

4. All fill placed at the site shall be compacted to at least 90 percent of the laboratory maximum dry density as determined by ASTM Standard D1557 test method. The on-site soils shall be moisture conditioned within three (3) percent of the optimum moisture for granular soils and at above approximately three (3) percent of the optimum moisture for fine-grained soils. At least the upper 12 inches of subgrade soils underneath the concrete apron, pavement and parking areas should be compacted to a minimum of 95 percent relative compaction.

5. Fill exceeding five (5) feet in height shall not be placed on native slopes that are steeper than 5:1 horizontal:vertical (H:V). Where native slopes are steeper than 5:1 H:V, and the height of the fill is greater than five (5) feet, the fill shall be benched into competent materials. The height and width of the benches shall be at least two (2) feet.

6. Representative samples of materials being used, as compacted fill will be analyzed in the laboratory by the Geotechnical Engineer to obtain information on their physical properties. Maximum laboratory density of each soil type used in the compacted fill will be determined by the ASTM Standard D1557 compaction method.

7. Fill materials shall not be placed, spread or compacted during unfavorable weather conditions. When site grading is interrupted by heavy rain, filling operations shall not resume until the Geotechnical Engineer approves the moisture and density conditions of the previously placed fill.

8. It shall be the Grading Contractor's obligation to take all measures deemed necessary during grading to provide erosion control devices in order to protect slope areas and adjacent properties from storm damage and flood hazard originating on this project. It shall be the contractor's responsibility to maintain slopes in their as-graded form until all slopes are in satisfactory compliance with job specifications, all berms have been properly constructed, and all associated drainage devices meet the requirements of the Civil Engineer.

E1.8 Trench Backfill

The following specifications are recommended to provide a basis for quality control during the placement of trench backfill.

1. Trench excavations to receive backfill shall be free of trash, debris or other unsatisfactory materials at the time of backfill placement.

2. Trench backfill shall be compacted to a minimum relative compaction of 90 percent as per ASTM Standard D1557 test method.

3. Rocks larger than one (1) inch should not be placed within 12 inches of the top of the pipeline or within the upper 12 inches of pavement or structure subgrade. No more than 30 percent of the backfill volume shall be larger than 3/4-inch in largest dimension diameter, and rocks shall be well mixed with finer soil.

4. The pipe design engineer should select bedding material for the pipe. Bedding materials generally should have a Sand Equivalent (SE) greater than or equal to 30, as determined by the ASTM Standard D2419 test method.

5. Trench backfill shall be compacted by mechanical methods, such as sheepsfoot, vibrating or pneumatic rollers, or mechanical tampers, to achieve the density specified herein. The backfill materials shall be brought to within three (3) percent of optimum moisture content for granular soils and fine-grained soils, then placed in horizontal layers. The thickness of uncompacted layers should not exceed eight (8) inches. Each layer shall be evenly spread, moistened or dried as necessary, and then tamped or rolled until the specified density has been achieved.

6. The contractor shall select the equipment and processes to be used to achieve the specified density without damage to adjacent ground and completed work.

7. The field density of the compacted soil shall be measured by the ASTM Standard D1556 or ASTM Standard D2922 test methods or equivalent.

8. Observation and field tests should be performed by Converse during construction to confirm that the required degree of compaction has been obtained. Where compaction is less than that specified, additional compactive effort shall be made with adjustment of the moisture content as necessary, until the specified compaction is obtained.

9. It should be the responsibility of the Contractor to maintain safe conditions during cut and/or fill operations.

10. Trench backfill shall not be placed, spread or rolled during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until field tests by the project's geotechnical consultant indicate that the moisture content and density of the fill are as previously specified.

E1.9 Observation and Testing

1. During the progress of grading, the Geotechnical Engineer will provide observation of the fill placement operations.

2. Field density tests will be made during grading to provide an opinion on the degree of compaction being obtained by the contractor. Where compaction of less than specified herein is indicated, additional compactive effort with adjustment of the moisture content shall be made as necessary, until the required degree of compaction is obtained.

3. A sufficient number of field density tests will be performed to provide an opinion to the degree of compaction achieved. In general, density tests will be performed on each one-foot lift of fill, but not less than one for each 500 cubic yards of fill placed.

APPENDIX F

GUIDE SPECIFICATIONS FOR INSTALLATION AND ACCEPTANCE OF TIE-BACK ANCHORS

APPENDIX F

GUIDE SPECIFICATIONS FOR INSTALLATION AND ACCEPTANCE OF TIEBACK ANCHORS

F1.1 Installation

1. Tie-back installation shall be performed during continuous observation by Geotechnical Consultant to confirm that the recommended earth materials are penetrated, that the dimensions of the installed anchors are at least as large as that indicated on the shoring plan, and that anchor installation has been performed as specified. The Contractor shall provide access and necessary facilities, including lighting, at their expense, to accommodate observations.

2. All anchors shall be installed at the specified locations, to the required depth, and at the specified angle of inclination. A tolerance of 3o will be permitted on the required angle of inclination.

3. After drilling, all holes shall be cleaned of loose soils. Concrete shall be placed by pumping from the tip of the anchor to the active wedge. Concrete placement shall begin within four hours after completion of drilling. The portion of the anchor within the active wedge shall be backfilled with sand-cement slurry after the anchor has been tested as specified below. However, if excessive caving occurs, the active wedge portion of the excavation can be filled with slurry as the casing is pulled. A zone of soft soil shall (in this case) be placed between the anchor and slurry (before testing).

4. If a hollow-stem auger or casing is used due to caving, concrete shall be placed by pumping as the auger or casing is withdrawn while always maintaining a head of concrete inside the casing or auger.

5. Concrete placement shall be continuous without interruption, and at such a rate that fresh concrete will not be deposited on concrete hardened sufficiently to form seams and planes of weakness.

6. Any anchor deemed by the Owner or Geotechnical Consultant to be defective shall be replaced with substitute anchor(s) as directed by the Owner or Shoring Designer. The cost of installation of such substitute anchors shall be borne by the Contractor. Costs associated with analysis and design of substitute anchor(s) shall also be borne by the Contractor.

F1.2 Acceptance Criteria

1. Actual capacities of anchors shall be determined by testing designated Test Anchors and all Production Anchors. Testing of anchors will enable evaluation of the applicability of design values for the chosen method of tieback construction.

2. All anchors shall be check-tested to at least 150% of the designed working load in accordance with the following procedures:

    a. Test load anchors to 150% of the design-working load, incrementally noting loads, tendon extensions and soldier pile deflections. Hold load for 15 minutes. After pulling slack, the anchor movement shall not exceed 0.10 inch during the 15-minute load period. If the deflection is acceptable, reduce load to 100% of the design load and lock off.

    b. Where an anchor shows excessive movement for additional 15-minute intervals, the load should be reduced until the rate of movement is 0.10 inch per 15 minutes or less. The load at which acceptable movement is attained should be divided by 1.5 to establish the working load of the anchor and additional measures taken to carry the required load.

3. Geotechnical Consultant shall designate at least 5% of all proposed anchors as 200% Test Anchors. Additional anchor steel reinforcement will likely be required for the 200 percent load test anchors, and should be appropriately considered prior to anchor installation. Half of the 200% Test Anchors shall be tested for 30 minutes. The remaining Test Anchors shall be tested for a 24-hour period. Test anchors shall be tested in the following manner:

    a. For the 30-minute test anchors, incrementally load the anchors to 200% of the design-working load noting loads, tendon/bar extensions and soldier pile deflections. Hold load for 30 minutes. Anchor movement shall not exceed 0.3 inch during the 30-minute load period. If the deflection is acceptable, reduce load to design load and lock off; otherwise, reduce the test load by 50% and repeat this step.

    b. For 24-hour test anchors, incrementally load to 200% and hold for 24 hours; check load after 24 hours. If a pre-stress loss of 8% or less is recorded, restore load to 100% of working load and lock off. If loss of pre-stress exceeds 8%, restore load to 150% of working load and hold for an additional 24 hours. Check load after second 24-hour hold and, if loss of pre-stress is less than 8%; restore to 100% and lock off as before.

    c. Where an anchor shows a continuous loss of pre-stress during a subsequent 24-hour period, the test load shall continue to be reduced by

50% until loss of pre-stress is negligible. Then the test load shall be divided by 1.5 to establish the working load of that anchor and additional measures taken to carry the required shoring load.

4. Any anchor pulled more than 12 inches shall not be used.

5. Immediately after testing, the active wedge portion of tieback excavations should be filled with slurry.

APPENDIX G

GUIDE SPECIFICATIONS FOR DRILLED PILE INSTALLATION

APPENDIX G

GUIDE SPECIFICATIONS FOR DRILLED PILE INSTALLATION

It should be the responsibility of the contractor to select proper construction equipment and method to correctly install the piles based on his own interpretation of the information presented in this report. The following recommendations are provided as a guide for preparing plans and specifications and for quality control:

Drilled Piles

- Prior to starting any foundation work, staking should be checked by the project Civil/Structural Engineer. Variations in the alignment from the vertical greater than ¼-inch per foot of length should not be permitted. Any pile installed having a center more than three (3) inches off plan centerline will require structural analysis.

- Some variations in the final pile tip elevations should be expected. The actual tip elevation should be determined by the project geotechnical engineer during excavation based on observation of the actual field conditions.

- Sandy alluvial soils with gravel were encountered during our filed exploration. Layers with cobbles and boulders also exist within the alluvial soils and will be encountered during drilling of CIDH piles.

- Caving during excavations may occur within the sandy soils. Casing, or other methods approved by the project geotechnical consultant, should be used to support the sides of the pile excavation. Casing should be used at the discretion of the contractor. Casing should be advanced as drilling proceeds by drilling with a flight or bucket auger smaller in diameter than the inside of the casing. Occasional hammering may be required to advance the casing with the excavation. Casing should be pulled as the concrete is being poured, while always maintaining a head of concrete inside the casing. Drilling fluids should not be used to support the sides of the excavation without prior approval by the project geotechnical consultants. The contractor should have equipment on-site with sufficient pulling capacity to pull the casing at the proper time. The casing should have outside diameter not less than the specified diameter of the pile.

- In the event that the pile excavation becomes bell-shaped and cannot be advanced due to severe caving, the caved region may be filled with sand and Portland Cement slurry. Drilling may continue when the slurry has reached its initial set. In this case, it may be prudent to utilize casing or other special methods to facilitate continued drilling after the slurry has set. Sufficient space should be provided in the pier-

reinforcing cage during fabrication to allow insertion of a concrete pump pipe or tremie tube for concrete placement.

- The bottoms of the excavations should be cleaned of any loose cuttings before placing concrete. All applicable state and federal OSHA safety regulations must be satisfied during construction.

- The reinforcing bars in the piles should have a minimum concrete cover of 3 inches. Sufficient space should be provided in the reinforcing cage to allow insertion of a concrete tremie tube for concrete placement.

- The reinforcing cage must be carefully placed in uncased holes to prevent gouging of the sides. This will cause loose material to fall into the hole. The cage of reinforcing steel should be placed to the depth required by the plans, and adequately supported at the top.

- Pile shafts spaced closer than six (6) diameters center-to-center shall be drilled and filled with concrete alternatively, allowing at least 12 hours after concrete placement in one shaft before drilling of an adjacent shaft.

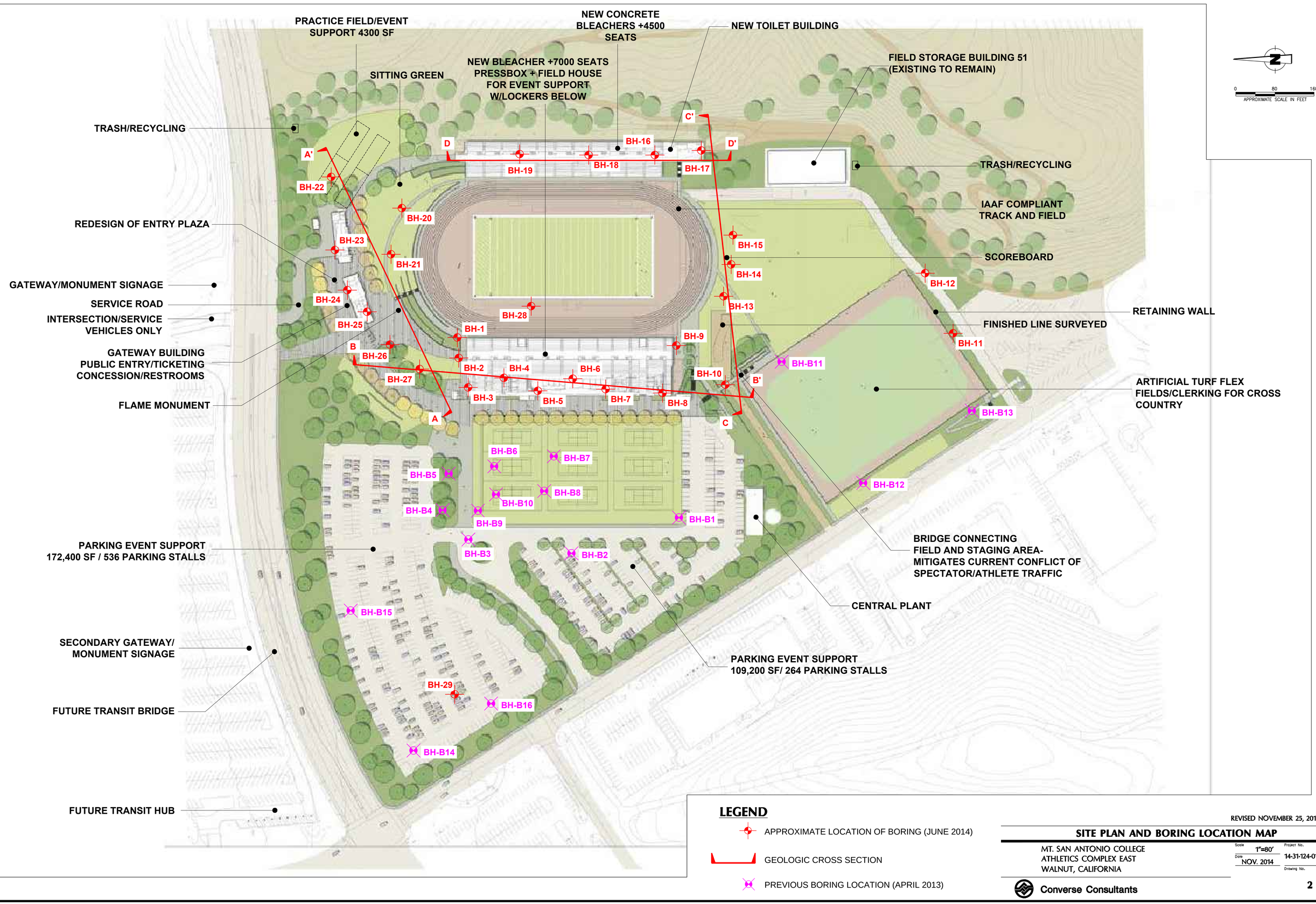
- All piles should be concreted immediately after drilling and clean out. Concrete should be placed through a tremie to prevent segregation and unnecessary splashing on the reinforcing steel. The concrete should be directed towards the center of the pile. Free fall of concrete should not exceed three (3) feet.

- The concrete should be flowable, non-segregating concrete with slump near the maximum allowable to obtain satisfactory consolidation without vibration, and to facilitate filling of all voids outside the casing. Concrete should not exhibit rapid slump loss. The slump for uncased drilled piles should be determined by the structural engineer. When casing is withdrawn, the minimum slump should be 6.0-in for specially designed concrete with retard to prevent arching of concrete during casing withdrawal, or setting of the concrete until after the casing is withdrawn, should be used. The slump can be 8±1 inches for concrete placed under groundwater determined by the structural engineer.

- Casing should be pulled as the concrete is being poured, while always maintaining a head of concrete inside the casing. The bottom of the casing should be maintained not more than five (5) feet nor less than one (1) foot below the top of the concrete during withdrawal and placing operations.

- Place concrete in pile in one continuous operation. Care should be taken to ensure that the concrete in the hole is dense and homogeneous. After the hole has been filled with concrete, the top 10 feet or the length of the reinforcing, whichever is greater should be vibrated.

- Drilled pile installation shall be performed under continuous observation by the project geotechnical consultant to confirm that the subsurface soils are similar to the soils encountered during our field study, which have formed the basis of our pier design recommendations. Further, the soils consultant should confirm that the dimensions of the installed piers are at least as large as those indicated on the foundation plan, and that pier installation has been performed as specified in this report. The contractor shall provide access and necessary facilities, including droplights, at his expense, to accommodate pier observations.
- Drilled pile installation shall be performed such that compliance with all safety rules and requirements is achieved. Drilling equipment, casing, reinforcement, and other items required for installation shall be kept at a safe distance from all overhead power lines and utilities.



LEGEND

- APPROXIMATE LOCATION OF BORING (JUNE 2014)
- GEOLOGIC CROSS SECTION
- PREVIOUS BORING LOCATION (APRIL 2013)

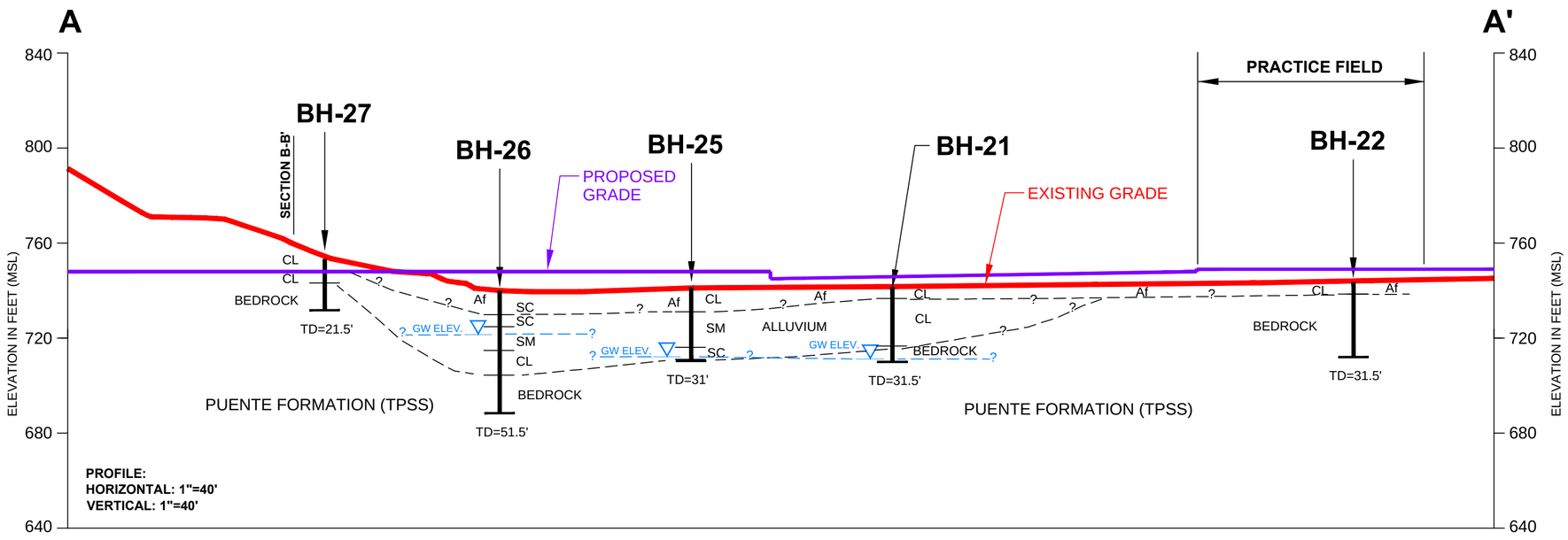
REVISED NOVEMBER 25, 2014

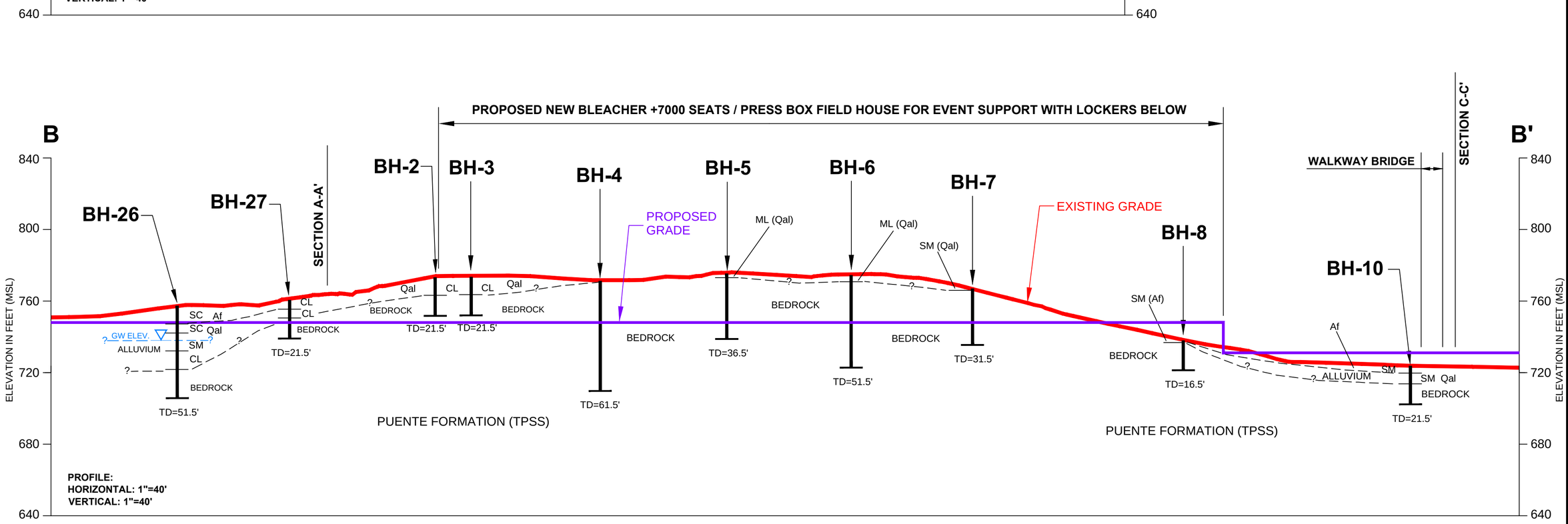
SITE PLAN AND BORING LOCATION MAP

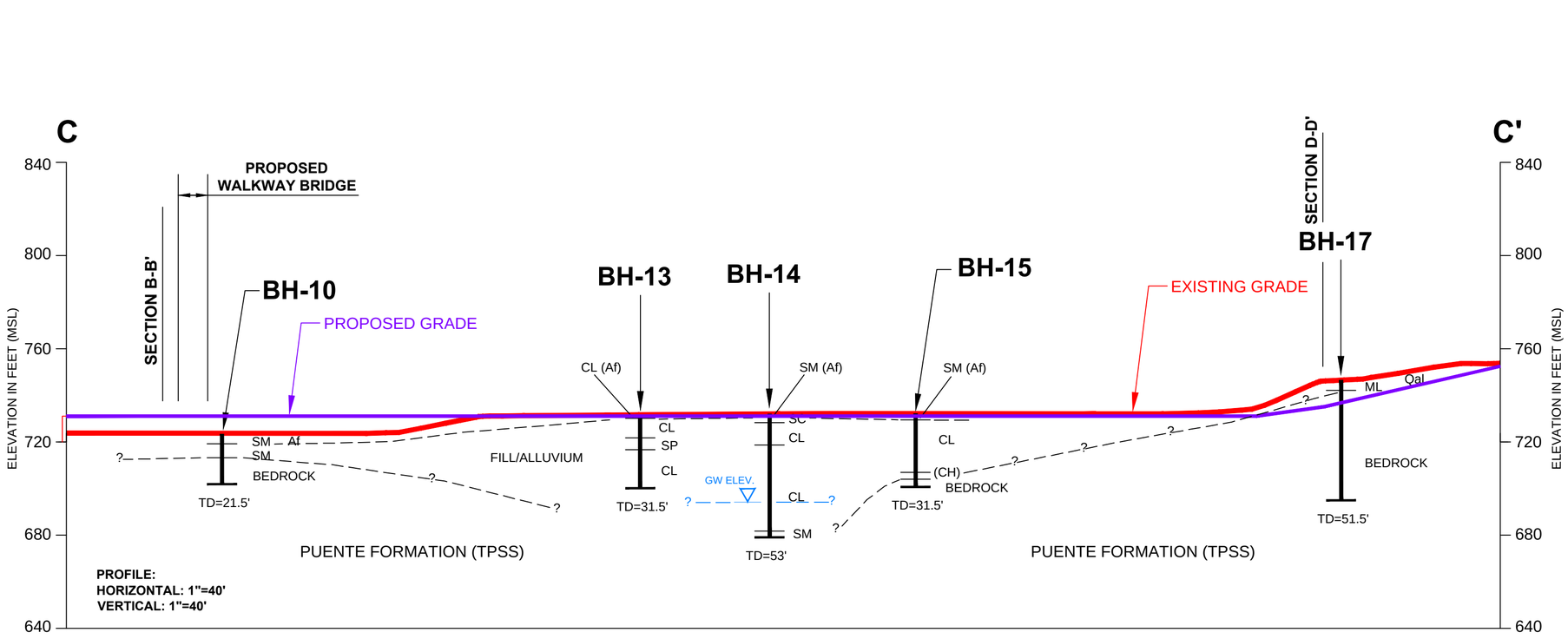
MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

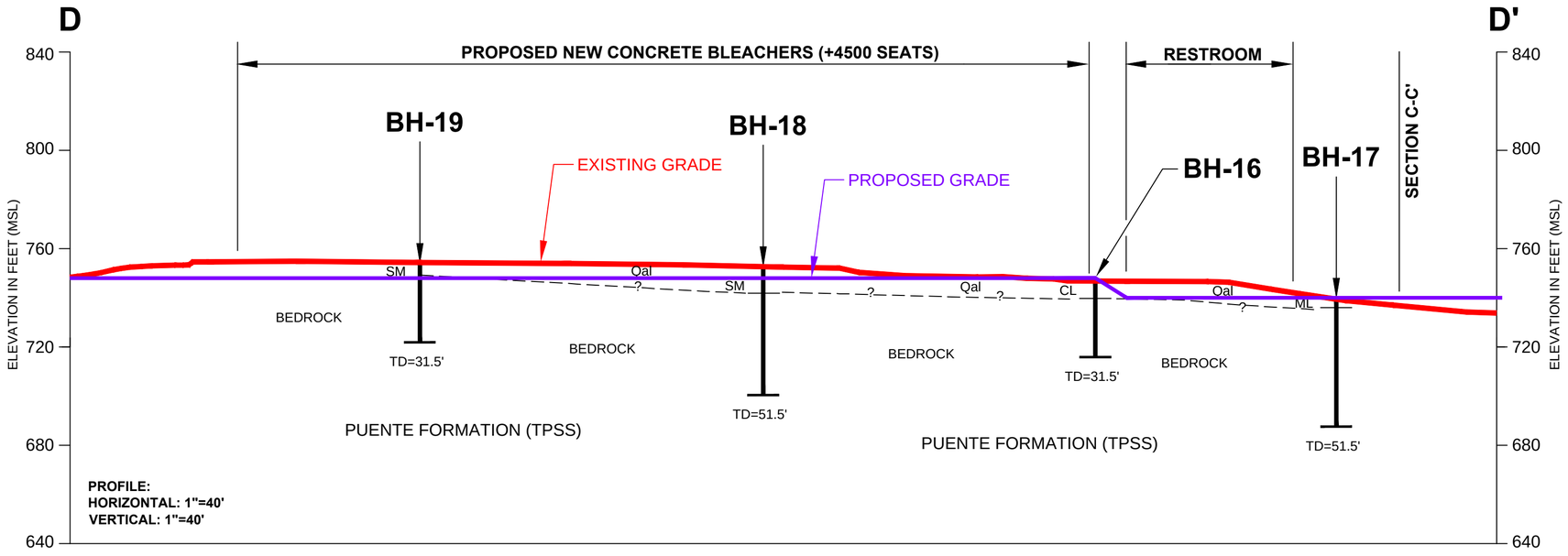
Scale 1"=80'
Date NOV. 2014
Project No. 14-31-124-01
Drawing No. 2

Converse Consultants









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CROSS SECTION A-A', B-B', C-C', D-D'

MT. SAN ANTONIO COLLEGE
ATHLETICS COMPLEX EAST
WALNUT, CALIFORNIA

Scale 1"=40'
Date AUG. 2014
Project No. 14-31-124-01
Drawing No. 4

Converse Consultants

STORMWATER POLLUTION PREVENTION PLAN

for

Athletics Complex East

RISK LEVEL ***2***

Legally Responsible Person [LRP):

Mt.San Antonio College
1100 North Grand Avenue
Walnut, CA 91789
Gary Nellesen
Director of Facilities, Planning and Management
(909) 274-5176

Approved Signatory:

Rebecca Mitchel
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Project Address:

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SWPPP Prepared by:

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Michael P. Mulgrew, PE, QSP/D. ENV SP

SWPPP Preparation Date

September 3, 2015

Estimated Project Dates:

Start of Construction	**October 3, 2016**	Completion of Construction	**August 6, 2018**

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Qualified SWPPP Developer

Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: *Athletics Complex East*

"This Stormwater Pollution Prevention Plan and Attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Orders No. 2009-009-DWQ as amended by Order 2010-0014-DWQ and Order 2012-0006-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD Signature	*Date*
Michael P. Mulgrew	24526
QSD Name	*QSD Certificate Number*
Project Engineer, PSOMAS	(213) 223-1575
Title and Affiliation	*Telephone Number*
michael.mulgrew@psomas.com	
Email	

Legally Responsible Person

Approval and Certification of the Stormwater Pollution Prevention Plan

Project Name: Athletics *Complex East*

"I certify under penalty of law that this document and all Attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Gary Nellesen, Director of Facilities,
Planning and Management

Legally Responsible Person

Signature of Legally Responsible Person or Approved Signatory	Date
Gary Nellesen	(909) 274-5176
Name of Legally Responsible Person or Approved Signatory	Telephone Number

Amendment Log

Project Name: *ATHLETICS COMPLEX EAST*

Amendment No.	Date	Brief Description of Amendment, include section and page number	Prepared and Approved By
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#
			Name: QSD#

Section 1 SWPPP Requirements

1.1 INTRODUCTION

The Athletics Complex East project comprises approximately 32.62 acres and is located 1100 North Grand Avenue in the city of Walnut, California. The property is owned by Mt. San Antonio College and is being developed by College. The projects location is shown on the Site Map in Appendix B.

This Stormwater Pollution Prevention Plan (SWPPP) is designed to comply with California's General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) Order No. 2009-0009-DWQ as amended in 2010 and 2012 (NPDES No. CAS000002) issued by the State Water Resources Control Board (State Water Board). This SWPPP has been prepared following the SWPPP Template provided on the California Stormwater Quality Association Stormwater *Best Management Practice Handbook Portal: Construction* (CASQA, 2012). In accordance with the General Permit, Section XIV, this SWPPP is designed to address the following:

- Pollutants and their sources, including sources of sediment associated with construction, construction site erosion and other activities associated with construction activity are controlled;
- Where not otherwise required to be under a Regional Water Quality Control Board (Regional Water Board) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;
- Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;

Calculations and design details as well as BMP controls for are complete and correct, Appendix A.

The project QSP will develop a Rain Event Action Plan (REAP) in accordance with the Construction General Permit and provide the REAP to the contractor for implementation in advance of qualifying precipitation events.

1.2 PERMIT REGISTRATION DOCUMENTS

Required Permit Registration Documents (PRDs) shall be submitted to the State Water Board via the Stormwater Multi Application and Report Tracking System (SMARTS) by the Legally Responsible Person (LRP), or authorized personnel (i.e., Approved Signatory) under the direction of the LRP. The project-specific PRDs include:

1. Notice of Intent (NOI);
2. Risk Assessment (Construction Site Sediment and Receiving Water Risk Determination);
3. Site Map;
4. Annual Fee;

5. Signed Certification Statement (LRP Certification is provided electronically with SMARTS PRD submittal); and
6. SWPPP.

Post-construction water balance calculation will be submitted prior to the Notice of Termination.

Site Maps can be found in Appendix B. A copy of the submitted PRDs shall also be kept in Appendix C along with the Waste Discharge Identification (WDID) confirmation.

1.3 SWPPP AVAILABILITY AND IMPLEMENTATION

The discharger shall make the SWPPP available at the construction site during working hours (see Section 7.5 of CSMP for working hours) while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone. (CGP Section XIV.C)

The SWPPP shall be implemented concurrently with the start of ground disturbing activities.

1.4 SWPPP AMENDMENTS

The SWPPP should be revised when:

- If there is a General Permit violation.
- When there is a reduction or increase in total disturbed acreage (General Permit Section II Part C).
- BMPs do not meet the objectives of reducing or eliminating pollutants in stormwater discharges.

Additionally, the SWPPP shall be amended when:

- There is a change in construction or operations which may affect the discharge of pollutants to surface waters, groundwater(s), or a municipal separate storm sewer system (MS4);
- When there is a change in the project duration that changes the project's risk level; or
- When deemed necessary by the QSD. The QSD has determined that the changes listed in Table 1.1 can be field determined by the QSP. All other changes shall be made by the QSD as formal amendments to the SWPPP.

The following items shall be included in each amendment:

- Who requested the amendment;
- The location of proposed change;
- The reason for change;
- The original BMP proposed, if any; and
- The new BMP proposed.

Amendment shall be logged at the front of the SWPPP and certification kept in Appendix D. The SWPPP text shall be revised replaced, and/or hand annotated as necessary to properly convey the amendment. SWPPP amendments must be made by a QSD. The following changes have been designated by the QSD as "to be field determined" and constitute minor changes that the QSP may implement based on field conditions.

Table 1.1 List of Changes to be Field Determined

Candidate changes for field location or determination by QSP[(1)]	Check changes that can be field located or field determined by QSP
Increase quantity of an Erosion or Sediment Control Measure	✓
Relocate/Add stockpiles or stored materials	✓
Relocate or add toilets	✓
Relocate vehicle storage and/or fueling locations	✓
Relocate areas for waste storage	✓
Relocate water storage and/or water transfer location	✓
Changes to access points (entrance/exits)	✓
Change type of Erosion or Sediment Control Measure	✓
Changes to location of erosion or sediment control	✓
Minor changes to schedule or phases	✓
Changes in construction materials	✓
(1) Any field changes not identified for field location or field determination by QSP must be approved by QSD	

1.5 RETENTION OF RECORDS

Paper or electronic records of documents required by this SWPPP shall be retained for a minimum of three years from the date generated or date submitted, whichever is later.

These records shall be available at the Site until construction is complete. Records assisting in the determination of compliance with the General Permit shall be made available within a reasonable time, to the Regional Water Board, State Water Board or U.S. Environmental Protection Agency (EPA) upon request. Requests by the Regional Water Board for retention of records for a period longer than three years shall be adhered to.

1.6 REQUIRED NON-COMPLIANCE REPORTING

If a General Permit discharge violation occurs the QSP shall immediately notify the LRP. The LRP shall include information on the violation with the Annual Report. Corrective measures will be implemented immediately following identification of the discharge or written notice of non-compliance from the Regional Water Board. Discharges and corrective actions must be documented and include the following items:

- The date, time, location, nature of operation and type of unauthorized discharge.
- The cause or nature of the notice or order.
- The control measures (BMPs) deployed before the discharge event, or prior to receiving notice or order.
- The date of deployment and type of control measures (BMPs) deployed after the discharge event, or after receiving the notice or order, including additional measures installed or planned to reduce or prevent re-occurrence.

Reporting requirements for Numeric Action Levels (NALs) exceedances are discussed in Section 7.7.2.7.

1.7 ANNUAL REPORT

The General Permit requires that permittees prepare, certify, and electronically submit an Annual Report no later than September 1st of each year. Reporting requirements are identified in Section XVI of the General Permit. Annual reports will be filed in SMARTS and in accordance with information required by the on-line forms.

1.8 CHANGES TO PERMIT COVERAGE

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when: a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, shall be logged at the front of the SWPPP and cetrification of SWPPP amendments are to be kept in Appendix D. Updated PRDs submitted electronically via SMARTS can be found in Appendix E.

1.9 NOTICE OF TERMINATION

A Notice of Termination (NOT) must be submitted electronically by the LRP via SMARTS to terminate coverage under the General Permit. The NOT must include a final Site Map and representative photographs of the project site that demonstrate final stabilization has been achieved. The NOT shall be submitted within 90 days of completion of construction. The Regional Water Board will consider a construction site complete when the conditions of the General Permit, Section II.D have been met.

Section 2 Project Information

2.1 PROJECT AND SITE DESCRIPTION

2.1.1 Site Description

The Athletics Complex East project site comprises approximately 32.62 acres and is located at the east side of the campus between Pomona Drive and La Puente Drive in the City of Walnut, California approximately 1.25 miles south of Interstate 10 and 2.4 miles west of State Route 57. The project is located at 34.04846, -117.84722 and is identified on the Site Map in Appendix B.

2.1.2 Existing Conditions

As of the initial date of this SWPPP, the project site consists of Athletics complex, impervious parking lots. About 30 percent of the project site is undeveloped. There are no known historic sources of contamination at the site.

2.1.3 Existing Drainage

The project site generally slopes towards south west. The elevations of the project site ranges from 770 to 714 feet above mean sea level (msl). Surface drainage at the site currently flows southwest towards various storm drain inlets. Stormwater is conveyed mainly through surface and underground storm drain systems. Stormwater discharges, from the site are not considered direct discharges, as defined by the State Water Board. Existing site topography, drainage patterns, and stormwater conveyance systems are shown on Erosion Control Plan in Appendix B.

The project ultimately discharges to San Jose Creek Reach 2 that is listed for water quality impairment on the most recent 303(d)-list for:

- Coliforms

2.1.4 Geology and Groundwater

The site is underlain by existing fill soils placed during previous site grading operations, natural alluvial soils and sedimentary bedrock of the Puente Formation, refer to the Geotechnical Study Report dated January 23, 2015, prepared by Converse Consultants (Converse project no. 14-31-124-01). Local zones of perched groundwater seepage were encountered during subsurface exploration ranging from 17 feet to 38 feet below ground surface. Perched groundwater may be encountered during future grading and excavation.

2.1.5 Project Description

Project grading will occur on approximately 32-acres of the project, which comprises approximately 99 percent of the total area. The limits of grading are shown on in Appendix B. Grading will include both cut and fill activities, with the total graded material estimated to be 163,000 cubic yards. No fill material will be imported during grading activities. Graded materials are expected to be balanced onsite. Construction activities will not be phased.

2.1.6 Developed Condition

Post construction surface drainage will be directed towards south west along the services road. The runoff is mostly directed as surface flow and through stormwater conveyance systems and will discharge to a public storm drain system owned by the City of Walnut.

Post construction drainage patterns and conveyance systems are presented on Erosion Control Plan in Appendix B.

Table 2.1 Construction Site Estimates

Construction site area	32.62	acres
Percent impervious before construction	50	%
Runoff coefficient before construction	0.8	
Percent impervious after construction	80	%
Runoff coefficient after construction	0.85	

2.2 PERMITS AND GOVERNING DOCUMENTS

In addition to the General Permit, the following documents have been taken into account while preparing this SWPPP

- Regional Water Board requirements
- Contract Documents
- Air Quality Regulations and Permits
- Clean Water Act Section 401 Water Quality Certifications and 404 Permits

2.3 STORMWATER RUN-ON FROM OFFSITE AREAS

There is no anticipated offsite run-on to this construction site because of the existing detention basin located upstream of the project in the adjacent landfill property.

2.4 FINDINGS OF THE CONSTRUCTION SITE SEDIMENT AND RECEIVING WATER RISK DETERMINATION

A construction site risk assessment has been performed for the project and the resultant risk level is Risk Level 2.

The risk level was determined through the use of the K and LS factors provided in SMARTS. The risk level is based on project duration, location, proximity to impaired receiving waters and soil conditions. A copy of the Risk Level determination submitted on SMARTS with the PRDs is included in Appendix C.

Table 2.2 and Table 2.3 summarize the sediment and receiving water risk factors and document the sources of information used to derive the factors.

Table 2.2 Summary of Sediment Risk

RUSLE Factor	Value	Method for establishing value
R	67.06	RUSLE equation
K	0.32	SMARTS populated based on project location
LS	4.19	SMARTS populated based on project location
Total Predicted Sediment Loss (tons/acre)		
Overall Sediment Risk Low Sediment Risk < 15 tons/ acre Medium Sediment Risk >= 15 and < 75 tons/acre High Sediment Risk >= 75 tons/acre		☐ **Low** ☐ **Medium** ☒ **High**

Runoff from the project site discharges into private on-site storm drain systems that discharge into municipal storm drain owned by the City of Walnut, which in turn discharges to San Jose Creek Reach 2 and ultimately the Pacific Ocean.

Table 2.3 Summary of Receiving Water Risk

Receiving Water Name	303(d) Listed for Sediment Related Pollutant[(1)]	TMDL for Sediment Related Pollutant[(1)]	Beneficial Uses of COLD, SPAWN, and MIGRATORY[(1)]
San Jose Creek Reach 2	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No
Overall Receiving Water Risk			☒ **Low** ☐ **High**
(1) If yes is selected for any option the Receiving Water Risk is High			

Risk Level 2 sites are subject to both the narrative effluent limitations and numeric effluent standards. The narrative effluent limitations require stormwater discharges associated with construction activity to minimize or prevent pollutants in stormwater and authorized non-stormwater through the use of controls, structures and best management practices. Discharges from Risk Level 2 site are subject to NALs for pH and turbidity shown in Table 2-4. This SWPPP has been prepared to address Risk Level 2 requirements (General Permit Attachment D).

Table 2.4 Numeric Action Levels

Parameter	Unit	Numeric Action Level Daily Average
pH	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	NTU	250 NTU

2.5 CONSTRUCTION SCHEDULE

The site sediment risk was determined based on construction taking place between October 3, 2016 and August 6, 2018. Modification or extension of the schedule (start and end dates) may affect risk determination and permit requirements. The LRP shall contact the QSD if the schedule changes during construction to address potential impact to the SWPPP. The estimated schedule for planned work can be found in Appendix F.

2.6 POTENTIAL CONSTRUCTION ACTIVITY AND POLLUTANT SOURCES

Appendix G includes a list of construction activities and associated materials that are anticipated to be used onsite. These activities and associated materials will or could potentially contribute pollutants, other than sediment, to stormwater runoff.

The anticipated activities and associated pollutants were used in Section 3 to select the Best Management Practices for the project. Location of anticipated pollutants and associated BMPs are show on the Site Map in Appendix B.

For sampling requirements for non-visible pollutants associated with construction activity please refer to Section 7.7.1. For a full and complete list of onsite pollutants, refer to the Material Safety Data Sheets (MSDS), which are retained onsite at the construction trailer.

2.7 IDENTIFICATION OF NON-STORMWATER DISCHARGES

Non-stormwater discharges consist of discharges which do not originate from precipitation events. The General Permit provides allowances for specified non-stormwater discharges that do not cause erosion or carry other pollutants.

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit and listed in the SWPPP, or authorized under a separate NPDES permit, are prohibited.

Non-stormwater discharges that are authorized from this project site include the following:

- Fire Hydrant Flushing
- Irrigation of vegetative erosion control measures
- Pipe flushing and testing

- Water used for dust control

These authorized non-stormwater discharges will be managed with the stormwater and non-stormwater BMPs described in Section 3 of this SWPPP and will be minimized by the QSP.

Activities at this site that may result in unauthorized non-stormwater discharges include:

- Vehicles and equipment wash water
- Sanitary wastes
- Chemical leaks and/or spills of any kind, including but not limited to petroleum, vehicles , and equipment

Steps will be taken, including the implementation of appropriate BMPs, to ensure that unauthorized discharges are eliminated, controlled, disposed, or treated on-site.

Discharges of construction materials and wastes, such as fuel or paint, resulting from dumping, spills, or direct contact with rainwater or stormwater runoff, are also prohibited.

The following non-stormwater discharges have been authorized by Order No. R4-2012-0175, NPDES number CAS004001:

- Authorized non-storm water discharges separately regulated by an individual or general NPDES permit
- Temporary non-storm water discharges authorized by USEPA3 pursuant to sections 104(a) or 104(b) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) that either: (i) will comply with water quality standards as applicable or relevant and appropriate requirements ("ARARs") under section 121(d)(2) of CERCLA; or (ii) are subject to either (a) a written waiver of ARARs by USEPA pursuant to section 121(d)(4) of CERCLA or (b) a written determination by USEPA that compliance with ARARs is not practicable considering the exigencies of the situation pursuant to 40 CFR. section 300.415(j)
- Authorized non-storm water discharges from emergency firefighting activities
- Natural flows, including natural springs, flows from riparian habitats and wetlands, diverted stream flows, authorized by the State or Regional Water Board, uncontaminated ground water infiltration, and rising ground waters where ground water seepage is not otherwise covered by a NPDES permit
- Conditionally Exempt Essential Non-Storm Water Discharges consisting of: Discharges from essential non-emergency firefighting activities provided appropriate BMPs are implemented based on the CAL FIRE, Office of the State Fire Marshal's Water-Based Fire Protection Systems Discharge Best Management Practices Manual (September 2011) for water-based fire protection system discharges, and based on Riverside County's Best Management Practices Plan for Urban Runoff Management (May 1, 2004) or equivalent BMP manual for fire training activities and post-emergency firefighting activities; and discharges from drinking water supplier distribution systems, where not otherwise regulated by an individual or general NPDES permit, provided appropriate BMPs are

implemented based on the American Water Works Association (California-Nevada Section) Guidelines for the Development of Your Best Management Practices (BMP) Manual for Drinking Water System Releases (2005) or equivalent industry standard BMP manual. Additionally, each Permittee shall work with drinking water suppliers that may discharge to the Permittee's MS4 to ensure for all discharges greater than 100,000 gallons: (1) notification at least 72 hours prior to a planned discharge and as soon as possible after an unplanned discharge; (2) monitoring of any pollutants of concern in the drinking water supplier distribution system release; and (3) record keeping by the drinking water supplier. Permittees shall require that the following information is maintained by the drinking water supplier(s) for all discharges to the MS4 (planned and unplanned) greater than 100,000 gallons: name of discharger, date and time of notification (for planned discharges), method of notification, location of discharge, discharge pathway, receiving water, date of discharge, time of the beginning and end of the discharge, duration of the discharge, flow rate or velocity, total number of gallons discharged, type of dechlorination equipment used, type of dechlorination chemicals used, concentration of residual chlorine, type(s) of sediment controls used, pH of discharge, type(s) of volumetric and velocity controls used, and field and laboratory monitoring data. Records shall be retained for five years and made available upon request by the Permittee or Regional Water Board

- Those discharges that fall within one of the following categories, provided that the discharge itself is not a source of pollutants and meets all required conditions specified in Table 8 of Order No. R4-2012-0175 or as otherwise specified or approved by the Regional Water Board Executive Officer: Dewatering of lakes, landscape irrigation, dechlorinated/debrominated swimming pool/spa discharges, where no otherwise regulated by a separate NPDES permit, dewater of decorative fountains, non-commercial car washing by residents or by non-profit organizations, and street/sidewalk wash water.
- Pursuant to the California Ocean Plans, discharges that are essential for emergency response purposes, structural stability, slope stability, or occur naturally, including the following: Foundation and footing drains, water from crawl space or basement pumps, hillside dewatering, naturally occurring ground water seepage via a MS4, and non-anthropogenic flows from a naturally occurring stream via a culvert or MS4, as long as there are no contributions of anthropogenic runoff.

2.8 REQUIRED SITE MAP INFORMATION

The construction project's Site Map showing the project location, surface water boundaries, geographic features, construction site perimeter and general topography and other requirements identified in Attachment B of the General Permit is located in Appendix B. Table 2.5 identifies Map or Sheet Nos. where required elements are illustrated.

Table 2.5 Required Map Information

Included on Map/Plan Sheet No. (1)	Required Element
Site Map	The project's surrounding area (vicinity)

Table 2.5 Required Map Information

Included on Map/Plan Sheet No. (1)	Required Element
Site Plan	Site layout
Erosion Control Plan	Construction site boundaries
Erosion Control Plan	Drainage areas
Erosion Control Plan	Discharge locations
Erosion Control Plan	Sampling locations
Erosion Control Plan	Areas of soil disturbance (temporary or permanent)
Erosion Control Plan	Active areas of soil disturbance (cut or fill)
Erosion Control Plan	Locations of runoff BMPs
Erosion Control Plan	Locations of erosion control BMPs
Erosion Control Plan	Locations of sediment control BMPs
N/A	ATS location (if applicable)
N/A	Locations of sensitive habitats, watercourses, or other features which are not to be disturbed
Erosion Control Plan	Locations of all post construction BMPs
Erosion Control Plan	Waste storage areas
Erosion Control Plan	Vehicle storage areas
Erosion Control Plan	Material storage areas
Erosion Control Plan	Entrance and Exits
Erosion Control Plan	Fueling Locations

Notes: (1) Indicate maps or drawings that information is included on (e.g., Vicinity Map, Site Map, Drainage Plans, Grading Plans, Progress Maps, etc.)

Section 3 Best Management Practices

3.1 SCHEDULE FOR BMP IMPLEMENTATION

Table 3.1 BMP Implementation Schedule

	BMP	Implementation	Duration
Erosion Control	EC-1, Scheduling	Prior to Construction	Entirety of Project
	EC-2, Preservation of Existing Vegetation	Start of Construction	Entirety of Project
Sediment Control	SE-1, Silt Fence	Start of Construction	Entirety of Project
	SE-6, Fiber Roll	Start of Construction	Entirety of Project
	SE-8, Sand Bags	Start of Construction	Entirety of Project
	SE-10, Storm Drain Inlet Protection	Start of Construction	Entirety of Project
Tracking Control	TC-1, Stabilized Construction Entrance/Exit	Prior to Construction	Entirety of Project
Wind Erosion	WE-1, Wind Erosion Control	Apply to active areas	As needed

3.2 EROSION AND SEDIMENT CONTROL

Erosion and sediment controls are required by the General Permit to provide effective reduction or elimination of sediment related pollutants in stormwater discharges and authorized non-stormwater discharges from the Site. Applicable BMPs are identified in this section for erosion control, sediment control, tracking control, and wind erosion control.

3.2.1 Erosion Control

Erosion control, also referred to as soil stabilization, consists of source control measures that are designed to prevent soil particles from detaching and becoming transported in stormwater runoff. Erosion control BMPs protect the soil surface by covering and/or binding soil particles.

This construction project will implement the following practices to provide effective temporary and final erosion control during construction:

1. Preserve existing vegetation where required and when feasible.
2. The area of soil disturbing operations shall be controlled such that the Contractor is able to implement erosion control BMPs quickly and effectively.
3. Stabilize non-active areas within 14 days of cessation of construction activities or sooner if stipulated by local requirements.
4. Control erosion in concentrated flow paths by applying erosion control blankets, check dams, erosion control seeding or alternate methods.
5. Prior to the completion of construction, apply permanent erosion control to remaining disturbed soil areas.

Sufficient erosion control materials shall be maintained onsite to allow implementation in conformance with this SWPPP.

The following temporary erosion control BMP selection table indicates the BMPs that shall be implemented to control erosion on the construction site. Fact Sheets for temporary erosion control BMPs are provided in Appendix H.

Table 3.2 Temporary Erosion Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP Used		If not used, state reason
			YES	NO	
EC-1	Scheduling	✓	✓		
EC-2	Preservation of Existing Vegetation	✓	✓		
EC-3	Hydraulic Mulch	✓[2]		✓	Not applicable to the project
EC-4	Hydroseed	✓[2]		✓	Not applicable to the project
EC-5	Soil Binders	✓[2]		✓	Not applicable to the project
EC-6	Straw Mulch	✓[2]		✓	Not applicable to the project
EC-7	Geotextiles and Mats	✓[2]		✓	Not applicable to the project
EC-8	Wood Mulching	✓[2]		✓	Not applicable to the project
EC-9	Earth Dike and Drainage Swales	✓[3]		✓	Not applicable to the project
EC-10	Velocity Dissipation Devices			✓	Not applicable to the project
EC-11	Slope Drains			✓	Not applicable to the project
EC-12	Stream Bank Stabilization			✓	Not applicable to the project
EC-14	Compost Blankets	✓[2]		✓	Not applicable to the project
EC-15	Soil Preparation-Roughening			✓	Not applicable to the project
EC-16	Non-Vegetated Stabilization	✓[2]		✓	Not applicable to the project
WE-1	Wind Erosion Control	✓	✓		
Alternate BMPs Used:					**If used, state reason:**

[1] Applicability to a specific project shall be determined by the QSD.
[2] The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the Risk Level requirements.
[3] Run-on from offsite shall be directed away from all disturbed areas, diversion of offsite flows may require design/analysis by a licensed civil engineer and/or additional environmental permitting

These temporary erosion control BMPs shall be implemented in conformance with the following guidelines and as outlined in the BMP Factsheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.2.2 Sediment Controls

Sediment controls are temporary or permanent structural measures that are intended to complement the selected erosion control measures and reduce sediment discharges from active construction areas. Sediment controls are designed to intercept and settle out soil particles that have been detached and transported by the force of water.

The following sediment control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Fact Sheets for temporary sediment control BMPs are provided in Appendix H.

Table 3.3 Temporary Sediment Control BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
SE-1	Silt Fence	✓[2] [3]	✓		
SE-2	Sediment Basin			✓	Not applicable to the project
SE-3	Sediment Trap			✓	Not applicable to the project
SE-4	Check Dams			✓	Not applicable to the project
SE-5	Fiber Rolls	✓[2][3]	✓		
SE-6	Gravel Bag Berm	✓[3]	✓		
SE-7	Street Sweeping	✓	✓		
SE-8	Sandbag Barrier		✓		
SE-9	Straw Bale Barrier			✓	Not applicable to the project
SE-10	Storm Drain Inlet Protection	✓ RL2&3	✓		
SE-11	ATS			✓	Not applicable to the project
SE-12	Manufactured Linear Sediment Controls			✓	Not applicable to the project
SE-13	Compost Sock and Berm	✓[3]		✓	Not applicable to the project
SE-14	Biofilter Bags	✓[3]		✓	Not applicable to the project
TC-1	Stabilized Construction Entrance and Exit	✓	✓		
TC-2	Stabilized Construction Roadway			✓	Not applicable to the project
TC-3	Entrance Outlet Tire Wash			✓	Not applicable to the project
Alternate BMPs Used:					**If used, state reason:**

[1] Applicability to a specific project shall be determined by the QSD
[2] The QSD shall ensure implementation of one of the minimum measures listed or a combination thereof to achieve and maintain the Risk Level requirements
[3]Risk Level 2 &3 shall provide linear sediment control along toe of slope, face of slope, and at the grade breaks of exposed slope

These temporary sediment control BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.3 NON-STORMWATER CONTROLS AND WASTE AND MATERIALS MANAGEMENT

3.3.1 Non-Stormwater Controls

Non-stormwater discharges into storm drainage systems or waterways, which are not authorized under the General Permit, are prohibited. Non-stormwater discharges for which a separate NPDES permit is required by the local Regional Water Board are prohibited unless coverage under the separate NPDES permit has been obtained for the discharge. The selection of non-stormwater BMPs is based on the list of construction activities with a potential for non-stormwater discharges identified in Section 2.7 of this SWPPP.

The following non-stormwater control BMP selection table indicates the BMPs that shall be implemented to control sediment on the construction site. Fact Sheets for temporary non-stormwater control BMPs are provided in Appendix H.

Table 3.4 Temporary Non-Stormwater BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
NS-1	Water Conservation Practices	✓	✓		
NS-2	Dewatering Operation	✓		✓	Not applicable to the project
NS-3	Paving and Grinding Operation		✓		
NS-4	Temporary Stream Crossing			✓	Not applicable to the project
NS-5	Clear Water Diversion			✓	Not applicable to the project
NS-6	Illicit Connection/Discharge	✓	✓		
NS-7	Potable Water/Irrigation		✓		
NS-8	Vehicle and Equipment Cleaning	✓	✓		
NS-9	Vehicle and Equipment Fueling	✓	✓		
NS-10	Vehicle and Equipment Maintenance	✓	✓		
NS-11	Pile Driving Operation			✓	Not applicable to the project
NS-12	Concrete Curing		✓		
NS-13	Concrete Finishing		✓		
NS-14	Material and Equipment Use Over Water			✓	Not applicable to the project
NS-15	Demolition Removal Adjacent to Water			✓	Not applicable to the project
NS-16	Temporary Batch Plants			✓	Not applicable to the project
Alternate BMPs Used:			**If used, state reason:**		

[1] Applicability to a specific project shall be determined by the QSD

Non-stormwater BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

3.3.2 Materials Management and Waste Management

Materials management control practices consist of implementing procedural and structural BMPs for handling, storing and using construction materials to prevent the release of those materials into stormwater discharges. The amount and type of construction materials to be utilized at the Site will depend upon the type of construction and the length of the construction period. The materials may be used continuously, such as fuel for vehicles and equipment, or the materials may be used for a discrete period, such as soil binders for temporary stabilization.

Waste management consist of implementing procedural and structural BMPs for handling, storing and ensuring proper disposal of wastes to prevent the release of those wastes into stormwater discharges.

Materials and waste management pollution control BMPs shall be implemented to minimize stormwater contact with construction materials, wastes and service areas; and to prevent materials and wastes from being discharged off-site. The primary mechanisms for stormwater contact that shall be addressed include:

- Direct contact with precipitation
- Contact with stormwater run-on and runoff
- Wind dispersion of loose materials
- Direct discharge to the storm drain system through spills or dumping
- Extended contact with some materials and wastes, such as asphalt cold mix and treated wood products, which can leach pollutants into stormwater.

A list of construction activities is provided in Section 2.6. The following Materials and Waste Management BMP selection table indicates the BMPs that shall be implemented to handle materials and control construction site wastes associated with these construction activities. Fact Sheets for Materials and Waste Management BMPs are provided in Appendix H.

Table 3.5 Temporary Materials Management BMPs

CASQA Fact Sheet	BMP Name	Meets a Minimum Requirement[1]	BMP used		If not used, state reason
			YES	NO	
WM-01	Material Delivery and Storage	✓	✓		
WM-02	Material Use	✓	✓		
WM-03	Stockpile Management	✓	✓		
WM-04	Spill Prevention and Control	✓	✓		
WM-05	Solid Waste Management	✓	✓		
WM-06	Hazardous Waste Management	✓		✓	Not applicable to the project
WM-07	Contaminated Soil Management			✓	Not applicable to the project
WM-08	Concrete Waste Management	✓	✓		
WM-09	Sanitary-Septic Waste Management	✓	✓		
WM-10	Liquid Waste Management			✓	Not applicable to the project
Alternate BMPs Used:				**If used, state reason:**	

[1] Applicability to a specific project shall be determined by the QSD.

Material management BMPs shall be implemented in conformance with the following guidelines and in accordance with the BMP Fact Sheets provided in Appendix H. If there is a conflict between documents, the Site Map will prevail over narrative in the body of the SWPPP or guidance in the BMP Fact Sheets. Site specific details in the Site Map prevail over standard details included in the Site Map. The narrative in the body of the SWPPP prevails over guidance in the BMP Fact Sheets.

A plan for the post construction funding and maintenance of these BMPs has been developed to address at minimum five years following construction. The post construction BMPs that are described above shall be funded and maintained by the LRP. If required, post construction funding and maintenance will be submitted with the NOT.

Section 4 BMP Inspection, Maintenance, and Rain Event Action Plans

4.1 BMP INSPECTION AND MAINTENANCE

The General Permit requires routine weekly inspections of BMPs, along with inspections before, during, and after qualifying rain events. A BMP inspection checklist must be filled out for inspections and maintained on-site with the SWPPP. The inspection checklist includes the necessary information covered in Section 7.6. A blank inspection checklist can be found in Appendix I. Completed checklists shall be kept in CSMP Attachment 2 "Monitoring Records.

BMPs shall be maintained regularly to ensure proper and effective functionality. If necessary, corrective actions shall be implemented within 72 hours of identified deficiencies and associated amendments to the SWPPP shall be prepared by the QSD.

Specific details for maintenance, inspection, and repair of Construction Site BMPs can be found in the BMP Factsheets in Appendix H.

4.2 RAIN EVENT ACTION PLANS

The Rain Event Action Plans (REAP) is written document designed to be used as a planning tool by the QSP to protect exposed portions of project sites and to ensure that the discharger has adequate materials, staff, and time to implement erosion and sediment control measures. These measures are intended to reduce the amount of sediment and other pollutants that could be generated during the rain event. It is the responsibility of the QSP to be aware of precipitation forecast and to obtain and print copies of forecasted precipitation from NOAA's National Weather Service Forecast Office.

The SWPPP includes REAP templates but the QSP will need to customize them for each rain event. Site-specific REAP templates for each applicable project phase can be found in Appendix J. The QSP shall maintain a paper copy of completed REAPs in compliance with the record retention requirements Section 1.5 of this SWPPP. Completed REAPs shall be maintained in Appendix J.

The QSP will develop an event specific REAP 48 hours in advance of a precipitation event forecast to have a 50% or greater chance of producing precipitation in the project area. The REAP will be onsite and be implemented 24 hours in advance of any the predicted precipitation event.

At minimum the REAP will include the following site and phase-specific information:

1. Site Address;
2. Calculated Risk Level (2 or 3);
3. Site Stormwater Manager Information including the name, company and 24-hour emergency telephone number;
4. Erosion and Sediment Control Provider information including the name, company and 24-hour emergency telephone number;

5. Stormwater Sampling Agent information including the name, company, and 24-hour emergency telephone number;
6. Activities associated with each construction phase;
7. Trades active on the construction site during each construction phase;
8. Trade contractor information; and
9. Recommended actions for each project phase.

Section 5 Training

Appendix L identifies the QSPs for the project. To promote stormwater management awareness specific for this project, periodic training of job-site personnel shall be included as part of routine project meetings (e.g. daily/weekly tailgate safety meetings), or task specific trainings as needed.

The QSP shall be responsible for providing this information at the meetings, and subsequently completing the training logs shown in Appendix K, which identifies the site-specific stormwater topics covered as well as the names of site personnel who attended the meeting. Tasks may be delegated to trained employees by the QSP provided adequate supervision and oversight is provided. Training shall correspond to the specific task delegated including: SWPPP implementation; BMP inspection and maintenance; and record keeping.

Documentation of training activities (formal and informal) is retained in SWPPP Appendix K.

Section 6 Responsible Parties and Operators

6.1 RESPONSIBLE PARTIES

Approved Signatory who is responsible for SWPPP implementation and have authority to sign permit-related documents is listed below. Written authorizations from the LRP for these individuals are provided in Appendix L. The Approved Signatory assigned to this project is:

Name	Title	Phone Number
Rebecca Mitchel	Manager, Facility Support Services	(909) 274-5175

QSPs identified for the project are identified in Appendix L. The QSP shall have primary responsibility and significant authority for the implementation, maintenance and inspection/monitoring of SWPPP requirements. The QSP will be available at all times throughout the duration of the project. Duties of the QSP include but are not limited to:

- Implementing all elements of the General Permit and SWPPP, including but not limited to:
  - Ensuring all BMPs are implemented, inspected, and properly maintained;
  - Performing non-stormwater and stormwater visual observations and inspections;
  - Performing non-stormwater and storm sampling and analysis, as required;
  - Performing routine inspections and observations;
  - Implementing non-stormwater management, and materials and waste management activities such as: monitoring discharges; general Site clean-up; vehicle and equipment cleaning, fueling and maintenance; spill control; ensuring that no materials other than stormwater are discharged in quantities which will have an adverse effect on receiving waters or storm drain systems; etc.;
- The QSP may delegate these inspections and activities to an appropriately trained employee, but shall ensure adequacy and adequate deployment.
- Ensuring elimination of unauthorized discharges.
- The QSPs shall be assigned authority by the LRP to mobilize crews in order to make immediate repairs to the control measures.
- Coordinate with the Contractor(s) to assure all of the necessary corrections/repairs are made immediately and that the project complies with the SWPPP, the General Permit and approved plans at all times.
- Notifying the LRP or Authorized Signatory immediately of off-site discharges or other non-compliance events.

6.2 CONTRACTOR LIST

Contractor

Name: Matt Breyer

Title: Senior Project Manager

Company: Tilden-Coil Contractors

Address: 3612 Mission Inn Ave, Riverside, CA 92501

Phone Number: (909) 274-5070

Number (24/7): (951) 377-5531

Section 7 Construction Site Monitoring Program

7.1 Purpose

This Construction Site Monitoring Program was developed to address the following objectives:

1. To demonstrate that the site is in compliance with the Discharge Prohibitions and Numeric Action Levels (NALs) of the Construction General Permit;
2. To determine whether non-visible pollutants are present at the construction site and are causing or contributing to exceedances of water quality objectives;
3. To determine whether immediate corrective actions, additional Best Management Practices (BMP) implementation, or SWPPP revisions are necessary to reduce pollutants in stormwater discharges and authorized non-stormwater discharges;
4. To determine whether BMPs included in the SWPPP and REAP are effective in preventing or reducing pollutants in stormwater discharges and authorized non-stormwater discharges.

7.2 Applicability of Permit Requirements

This project has been determined to be a Risk Level 2 project. The General Permit identifies the following types of monitoring as being applicable for a Risk Level 2 project.

Risk Level 2

- Visual inspections of Best Management Practices (BMPs);
- Visual monitoring of the site related to qualifying storm events;
- Visual monitoring of the site for non-stormwater discharges;
- Sampling and analysis of construction site runoff for pH and turbidity;
- Sampling and analysis of construction site runoff for non-visible pollutants when applicable; and
- Sampling and analysis of non-stormwater discharges when applicable.

7.3. Weather and Rain Event Tracking

Visual monitoring, inspections, and sampling requirements of the General Permit are triggered by a qualifying rain event. The General Permit defines a qualifying rain event as any event that produces ½ inch of precipitation. A minimum of 48 hours of dry weather will be used to distinguish between separate qualifying storm events.

For the purposes of assessing exceptions to the Receiving Water Monitoring Triggers the General Permit establishes the compliance storm event at the 5-year, 24-hour event. Based on the Western Regional Climate Center, the 5-year, 24-hour event for this project is 4 inches.

7.3.1 Weather Tracking

The QSP should daily consult the National Oceanographic and Atmospheric Administration (NOAA) for the weather forecasts. These forecasts can be obtained at http://www.srh.noaa.gov/. Weather reports should be printed and maintained with the SWPPP in CSMP Attachment 1 "Weather Reports".

7.3.2 Rain Gauges

The QSP shall install 1 rain gauge(s) on the project site. Locate the gauge in an open area away from obstructions such as trees or overhangs. Mount the gauge on a post at a height of 3 to 5 feet with the gauge extending several inches beyond the post. Make sure that the top of the gauge is level. Make sure the post is not in an area where rainwater can indirectly splash from sheds, equipment, trailers, etc.

The rain gauge(s) shall be read daily during normal site scheduled hours. The rain gauge should be read at approximately the same time every day and the date and time of each reading recorded. Log rain gauge readings in CSMP Attachment 1 "Weather Records". Follow the rain gauge instructions to obtain accurate measurements.

Once the rain gauge reading has been recorded, accumulated rain shall be emptied and the gauge reset.

For comparison with the site rain gauge, the nearest appropriate governmental rain gauge(s) is located at http://cdec.water.ca.gov/cgi-progs/staMeta?station_id=pdd.

7.4 Monitoring Locations

Monitoring locations are shown on the Site Maps in Appendix B. Monitoring locations are described in the Sections 7.6 and 7.7.

Whenever changes in the construction site might affect the appropriateness of sampling locations, the sampling locations shall be revised accordingly. All such revisions shall be implemented as soon as feasible and the SWPPP amended. Temporary changes that result in a one-time additional sampling location do not require a SWPPP amendment.

7.5 Safety and Monitoring Exemptions

Safety practices for sample collection will be in accordance with the contractor's Health and Safety Plan.

This project is not required to collect samples or conduct visual observations (inspections) under the following conditions:

- During dangerous weather conditions such as flooding and electrical storms.
- Outside of scheduled site business hours.

Scheduled site business hours are: Mon-Fri 7am-4pm.

If monitoring (visual monitoring or sample collection) of the site is unsafe because of the dangerous conditions noted above then the QSP shall document the conditions for why an exception to performing the monitoring was necessary. The exemption documentation shall be filed in CSMP Attachment 2 "Monitoring Records".

7.6 Visual Monitoring

Visual monitoring includes observations and inspections. Inspections of BMPs are required to identify and record BMPs that need maintenance to operate effectively, that have failed, or that could fail to operate as intended. Visual observations of the site are required to observe storm water drainage areas to identify any spills, leaks, or uncontrolled pollutant sources.

Table 7.1 identifies the required frequency of visual observations and inspections. Inspections and observations will be conducted at the locations identified in Section 7.6.3.

Table 7.1 Summary of Visual Monitoring and Inspections

Type of Inspection	Frequency
Routine Inspections	
BMP Inspections	Weekly[1]
BMP Inspections – Tracking Control	Daily
Non-Stormwater Discharge Observations	Quarterly during daylight hours
Rain Event Triggered Inspections	
Site Inspections Prior to a Qualifying Event	Within 48 hours of a qualifying event [2]
BMP Inspections During an Extended Storm Event	Every 24-hour period of a rain event[3]
Site Inspections Following a Qualifying Event	Within 48 hours of a qualifying event[2]

[1] Most BMPs must be inspected weekly; those identified below must be inspected more frequently.

[2] Inspections are required during scheduled site operating hours.

[3] Inspections are required during scheduled site operating hours regardless of the amount of precipitation on any given day.

7.6.1 Routine Observations and Inspections

Routine site inspections and visual monitoring are necessary to ensure that the project is in compliance with the requirements of the Construction General Permit.

7.6.1.1 Routine BMP Inspections

Inspections of BMPs are conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

7.6.1.2 Non-Stormwater Discharge Observations

Each drainage area will be inspected for the presence of or indications of prior unauthorized and authorized non-stormwater discharges. Inspections will record:

- Presence or evidence of any non-stormwater discharge (authorized or unauthorized);
- Pollutant characteristics (floating and suspended material, sheen, discoloration, turbidity, odor, etc.); and
- Source of discharge.

7.6.2 Rain-Event Triggered Observations and Inspections

Visual observations of the site and inspections of BMPs are required prior to a qualifying rain event; following a qualifying rain event, and every 24-hour period during a qualifying rain event. Pre-rain inspections will be conducted after consulting NOAA and determining that a precipitation event with a 50% or greater probability of precipitation has been predicted.

7.6.2.1 Visual Observations Prior to a Forecasted Qualifying Rain Event

Within 48-hours prior to a qualifying event a stormwater visual monitoring site inspection will include observations of the following locations:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly implemented;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard.

Consistent with guidance from the State Water Resources Control Board, pre-rain BMP inspections and visual monitoring will be triggered by a NOAA forecast that indicates a probability of precipitation of 50% or more in the project area.

7.6.2.2 BMP Inspections During an Extended Storm Event

During an extended rain event BMP inspections will be conducted to identify and record:

- BMPs that are properly installed;
- BMPs that need maintenance to operate effectively;
- BMPs that have failed; or
- BMPs that could fail to operate as intended.

If the construction site is not accessible during the rain event, the visual inspections shall be performed at all relevant outfalls, discharge points, downstream locations. The inspections should record any projected maintenance activities.

7.6.2.3 Visual Observations Following a Qualifying Rain Event

Within 48 hours following a qualifying rain event (0.5 inches of rain) a stormwater visual monitoring site inspection is required to observe:

- Stormwater drainage areas to identify any spills, leaks, or uncontrolled pollutant sources;
- BMPs to identify if they have been properly designed, implemented, and effective;
- Need for additional BMPs;
- Any stormwater storage and containment areas to detect leaks and ensure maintenance of adequate freeboard; and
- Discharge of stored or contained rain water.

7.6.3 Visual Monitoring Procedures

Visual monitoring shall be conducted by the QSP or staff trained by and under the supervision of the QSP.

The name(s) and contact number(s) of the site visual monitoring personnel are listed below and their training qualifications are provided in Appendix K.

Assigned inspector: TBD Contact phone: -

Stormwater observations shall be documented on the *Visual Inspection Field Log Sheet* (see CSMP Attachment 3 "Example Forms"). BMP inspections shall be documented on the site specific BMP inspection checklist. Any photographs used to document observations will be referenced on stormwater site inspection report and maintained with the Monitoring Records in Attachment 2.

The QSP shall submit copies of the completed *Inspection Field Log Sheet* or *BMP Inspection Report* with the corrective actions to the contractor and the owner.

The completed reports will be kept in CSMP Attachment 2 "Monitoring Records".

7.6.4 Visual Monitoring Follow-Up and Reporting

Correction of deficiencies identified by the observations or inspections, including required repairs or maintenance of BMPs, shall be initiated and completed as soon as possible.

If identified deficiencies require design changes, including additional BMPs, the implementation of changes will be initiated within 72 hours of identification and be completed as soon as possible. When design changes to BMPs are required, the SWPPP shall be amended to reflect the changes.

Deficiencies identified in site inspection reports and correction of deficiencies will be tracked on the *Inspection Field Log Sheet* or *BMP Inspection Report* and shall be submitted to the QSP and shall be kept in CSMP Attachment 2 "Monitoring Records".

The QSP shall submit copies of the completed *Inspection Field Log Sheet* or *BMP Inspection Report* with the corrective actions to the contractor and the owner.

Results of visual monitoring must be summarized and reported in the Annual Report.

7.6.5 Visual Monitoring Locations

The inspections and observations identified in Sections 7.6.1 and 7.6.2 will be conducted at the locations identified in this section.

BMP locations are shown on the Site Maps in SWPPP Appendix A.

There is one drainage area on the project site and the contractor's yard, staging areas, and storage areas. Drainage area is shown on the Erosion Control Plan in Appendix B and Table 7.2 identifies each drainage area by location.

Table 7.2 Site Drainage Areas

Location No.	Location
1	Project Site

There are no stormwater storage or containment areas on the project site. Table 7.3 will be completed at a future date to identify eash stormwater storage or containment area by location, if necessary.

Table 7.3 Stormwater Storage and Containment Areas

Location No.	Location
	N/A

There are three surface discharge locations along the south west boundary of the project site. Several underground storm drain inlets also discharges from the project site as shown on the Erosion Control Plan in Appendix B.

Table 7.4 Site Stormwater Discharge Locations

Location No.	Location
	Various surface drainage and underground storm drain inlets

7.7 Water Quality Sampling and Analysis

7.7.1 Sampling and Analysis Plan for Non-Visible Pollutants in Stormwater Runoff Discharges

This Sampling and Analysis Plan for Non-Visible Pollutants describes the sampling and analysis strategy and schedule for monitoring non-visible pollutants in stormwater runoff discharges from the project site.

Sampling for non-visible pollutants will be conducted when (1) a breach, leakage, malfunction, or spill is observed; and (2) the leak or spill has not been cleaned up prior to the rain event; and (3) there is the potential for discharge of non-visible pollutants to surface waters or drainage system.

The following construction materials, wastes, or activities, as identified in Section 2.6, are potential sources of non-visible pollutants to stormwater discharges from the project. Storage, use, and operational locations are shown on the Site Maps in Appendix B.

- Construction Vehicles and Equipment

7.7.1.1 Sampling Schedule

Samples for the potential non-visible pollutant(s) and a sufficiently large unaffected background sample shall be collected during the first two hours of discharge from rain events that result in a sufficient discharge for sample collection. Samples shall be collected during the site's scheduled hours and shall be collected regardless of the time of year and phase of the construction.

Collection of discharge samples for non-visible pollutant monitoring will be triggered when any of the following conditions are observed during site inspections conducted prior to or during a rain event.

- Materials or wastes containing potential non-visible pollutants are not stored under watertight conditions. Watertight conditions are defined as (1) storage in a watertight container, (2) storage under a watertight roof or within a building, or (3) protected by temporary cover and containment that prevents stormwater contact and runoff from the storage area.
- Materials or wastes containing potential non-visible pollutants are stored under watertight conditions, but (1) a breach, malfunction, leakage, or spill is observed, (2) the leak or spill is not cleaned up prior to the rain event, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- A construction activity, including but not limited to those in Section 2.6, with the potential to contribute non-visible pollutants (1) was occurring during or within 24 hours prior to the rain event, (2) BMPs were observed to be breached, malfunctioning, or improperly implemented, and (3) there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Soil amendments that have the potential to change the chemical properties, engineering properties, or erosion resistance of the soil have been applied, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.
- Stormwater runoff from an area contaminated by historical usage of the site has been observed to combine with stormwater runoff from the site, and there is the potential for discharge of non-visible pollutants to surface waters or a storm drain system.

7.7.1.2 Sampling Locations

Sampling locations are based on proximity to planned non-visible pollutant storage, occurrence or use; accessibility for sampling, and personnel safety. Planned non-visible pollutant sampling locations are shown on the Site Maps in Appendix B and include the locations identified in Tables 7.5 through 7.9.

Two sampling locations on the project site and the contractor's yard have been identified for the collection of samples of runoff from planned material and waste storage areas and areas where non-visible pollutant producing construction activities are planned.

Table 7.5 Non-Visible Pollutant Sample Locations – Contractors' Yard		
Sample Location Number	**Sample Location Description**	**Sample Location Latitude and Longitude** (Decimal Degrees)
1	West of the project site along Service Road	Determined in the field
2	North west of the Flex Field	Determined in the field

One sampling location has been identified for the collection of an uncontaminated sample of runoff as a background sample for comparison with the samples being analyzed for non-visible pollutants. This location was selected such that the sample will not have come in contact with the operations, activities, or areas identified in Section 7.7.1 or with disturbed soils areas.

Table 7.8 Non-Visible Pollutant Sample Locations – Background (Unaffected Sample)		
Sample Location Number	**Sample Location**	**Sample Location Latitude and Longitude** (Decimal Degrees)
1	South of the Flex Field	Determined in the field

If a stormwater visual monitoring site inspection conducted prior to or during a storm event identifies the presence of a material storage, waste storage, or operations area with spills or the potential for the discharge of non-visible pollutants to surface waters or a storm drain system that is at a location not listed above and has not been identified on the Site Maps, sampling locations will be selected by the QSP using the same rationale as that used to identify planned locations. Non-visible pollutant sampling locations shall be identified by the QSP on the pre-rain event inspection form and Rain Event Action Plan prior to a forecasted qualifying rain event.

7.7.1.3 Monitoring Preparation

Non-visible pollutant samples will be collected by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

Samples on the project site will be collected by the following laboratory:

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Ave.

City, State Zip: Industry, CA 91745

Telephone Number: (626) 336-2139

The QSP or his/her designee will contact the project owner 24 hours prior to a predicted rain event or for an unpredicted event, as soon as a rain event begins if one of the triggering conditions is identified during an inspection to ensure that adequate sample collection personnel and supplies for monitoring non-visible pollutants are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

7.7.1.4 Analytical Constituents

Table 7.10 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.10 Potential Non-Visible Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Asphalt Work		VOCs
Concrete/Masonry Work	Sealant	SVOC
Concrete/Masonry Work	Curing compounds	VOCs, SVOCs, pH
Concrete/Masonry Work	Ash, slag, sand	pH, Al, Ca, Va, Zn
Insulation		Al, Zn
Landscaping	Pesticides/Herbicides	Product dependent
Landscaping	Fertilizers	TKN, NO_3, BOD, COD, DOC, Sulfate, NH_3, Phosphate, Potassium
Landscaping	Aluminum sulfate	Al, TDS, Sulfate
Painting	Resins	COD, SVOCs
Painting	Thinners	COD, VOCs
Painting	Strippers	VOCs, SVOCs, metals
Painting	Sealants	COD
Painting	Adhesives	Phenols, SVOCs
Plumbing	Solder, flux, pipe fitting	Cu, Pb, Sn, Zn
Roofing		Cu, Pb, VOCs
Sanitary Waste	Portable toilets	BOD, Total/Fecal coliform
Utility Line Testing and Flushing		Residual chlorine, chloramines
Vehicle and Equipment Use	Batteries	Sulfuric acid, Pb, pH

7.7.1.5 Sample Collection

Samples of discharge shall be collected at the designated non-visible pollutant sampling locations shown on the Site Maps in Appendix B or in the locations determined by observed breaches, malfunctions, leakages, spills, operational areas, soil amendment application areas, and historical site usage areas that triggered the sampling event.

Grab samples shall be collected and preserved in accordance with the methods identified in the Table, "Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants" provided in Section 7.7.1.6. Only the QSP, or personnel trained in water quality sampling under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.1.6 Sample Analysis

Samples shall be analyzed using the analytical methods identified in the Table 7.11.

Samples will be analyzed by:

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Ave.
City, State Zip:	Industry, CA 91745
Telephone Number:	(626) 336-2139

Samples will be delivered to the laboratory by:

Driven by Contractor	☒ Yes	☐ No
Picked up by Laboratory Courier	☒ Yes	☐ No
Shipped	☒ Yes	☐ No

Table 7.11 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
VOCs - Solvents	EPA 8260B	3 x 40 mL	VOA-glass	Store at 4°C, HCl to pH<2	1 ug/L	14 days	- -	Constituent specific	
SVOCs	EPA 8270C	1 x 1000 mL	Glass-Amber	Store at 4°C	10 ug/L	7 days	- -	Constituent specific	
Pesticides/PCBs	EPA 8081A/8082	1 x 1000 mL	Glass-Amber	Store at 4°C	0.1 ug/L	7 days	25%	Constituent specific	
Herbicides	EPA 8151A	1 x 1000 mL	Glass-Amber	Store at 4°C	0.080-10 ug/L	7 days	30%	20%	150%
BOD	EPA 405.1	1 x 500 mL	Polypropylene	Store at 4°C	1 mg/L	48 hours	20%	80%	120%
COD	EPA 410.1	1 x 100 mL	Glass-Amber	Store at 4°C, H_2SO_4 to pH<2	10 mg/L	28 days	20%	80%	120%
pH	EPA 150.1	1 x 100 mL	Polypropylene	None	0.01 pH units	Immediate	20%	NA	NA
Alkalinity	SM 2320B	1 x 250 mL	Polypropylene	Store at 4°C	1 mg/L	14 days	20%	80%	120%
Metals (Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, Se, Na, Th, Va, Zn)	EPA 200.8	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.2-5 ug/L	6 months	20%	75%	125%
Anions (Sulfate, Nitrate, Bromide, Chloride, Flouride, Nitrite, O-Phosphorus)	EPA 300.0	1 x 125 mL	Polypropylene	None	0.05-0.5 mg/L	28 days	20%	90%	110%
Potassium	EPA 7610	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.5 mg/L	6 months	20%	80%	120%
Calcium	EPA 6010B	1 x 250 mL	Polypropylene	Store at 4°C, HNO_3 to pH<2	0.5 mg/L	6 months	20%	80%	120%
Acidity	EPA 305.1	1 x 125 mL	Polypropylene	Store at 4°C	2 mg/L	14 days	20%	80%	120%
TDS	EPA 160.1	1 x 100 mL	Polypropylene	Store at 4°C	1 mg/L	7 days	20%	80%	120%
Sulfate	EPA 375.4	1 x 125 mL	Polypropylene	Store at 4°C	1 mg/L	28 days	20%	90%	110%
Nitrate	EPA 300.0	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	0.1 mg/L	48 hours	20%	80%	120%
Total Phosphorus	EPA 300.0	1 x 100 mL	Polypropylene	Store at 4°C	0.1 mg/L	28 days	20%	80%	120%
TKN	EPA 351.3	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	0.10 mg/L	28 days	<1	80%	120%

Table 7.11 Sample Collection, Preservation and Analysis for Monitoring Non-Visible Pollutants

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
TOC	EPA 415.1	1 x 100 mL	Polypropylene	Store at 4°C, H_2SO_4 to pH<2	1 mg/L	28 days	- -	80%	120%
Total Residual Chlorine	SM 4500	1 x 500 mL	Glass-Amber	Do not expose to light	0.1 mg/L	Immediate	- -	- -	- -
Total Phenolics	EPA 420.1/9065	1 x 1000 mL	Glass-Amber	Store at 4°C, H_2SO_4 to pH<2	0.03 mg/L	28 days	0	80%	120%

Notes:

°C	-	Degree Celsius	ug/L	-	micrograms per liter
BOD	-	Biological Oxygen Demand	mL	-	milliliter
COD	-	Chemical Oxygen Demand	PCB	-	Polychlorinated Biphenyl
VOC	-	Volatile Organic Compound	SVOC	-	Semi-Volatile Organic Compound
EPA	-	Environmental Protection Agency	HCl	-	Hydrogen Chloride
H_2SO_4	-	Hydrogen Sulfide	VOA	-	Volatile Organic Analysis
HNO_3	-	Nitric Acid	mg/L	-	milligrams per liter
TDS	-	Total Dissolved Solids	TOC	-	Total Organic Carbon (water)
L	-	Liter	TKN	-	Total Kjeldahl Nitrogen
NA	-	Not Applicable			
RPD	-	Relative percent difference between duplicate analyses.			

Recovery, lower and upper limits refer to analysis of spiked samples.

7.7.1.7 Data Evaluation and Reporting

The QSP shall complete an evaluation of the water quality sample analytical results.

Runoff/downgradient results shall be compared with the associated upgradient/unaffected results and any associated run-on results. Should the runoff/downgradient sample show an increased level of the tested analyze relative to the unaffected background sample, which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

The General Permit prohibits the storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board and other agencies as required by 40 C.F.R. §§ 117.3 and 302.4.

Results of non-visible pollutant monitoring shall be reported in the Annual Report.

7.7.2 Sampling and Analysis Plan for pH and Turbidity in Stormwater Runoff Discharges

Sampling and analysis of runoff for pH and turbidity is required for this project. This Sampling and Analysis Plan describes the strategy for monitoring turbidity and pH levels of stormwater runoff discharges from the project site and run-on that may contribute to an exceedance of a Numeric Action Level (NAL) or the exceedance of a Receiving Water Monitoring Trigger.

Samples for turbidity will be collected from all drainage areas with disturbed soil areas and samples for pH will be collected from all drainage areas with a high risk of pH altering discharge.

7.7.2.1 Sampling Schedule

Stormwater runoff samples shall be collected for turbidity from each day of a qualifying rain event that results in a discharge from the project site. At minimum, turbidity samples will be collected from each site discharge location draining a disturbed area. A minimum of three samples will be collected per day of discharge during a qualifying event. Samples should be representative of the total discharge from the project each day of discharge during the qualifying event. Typically representative samples will be spaced in time throughout the daily discharge event.

Stormwater runoff samples shall be collected for pH from each day of qualifying rain events that result in a discharge from the project site. Note that pH samples are only required to be collected during project phases and from drainage areas with a high risk of pH altering discharge. A minimum of three samples will be collected per day of discharge during a qualifying event. Samples should be representative of the total discharge from the location each day of discharge during the qualifying event. Typically representative samples will be spaced in time throughout the daily discharge event.

Stored or collected water from a qualifying storm event when discharged shall be tested for turbidity and pH (when applicable). Stored or collected water from a qualifying event may be sampled at the point it is released from the storage or containment area or at the site discharge location.

Run-on samples shall be collected whenever the QSP identifies that run-on has the potential to contribute to an exceedance of a NAL or the exceedance of a Receiving Water Monitoring Trigger.

7.7.2.2 Sampling Locations

Sampling locations are based on the site runoff discharge locations and locations where run-on enters the site; accessibility for sampling; and personnel safety. Planned pH and turbidity sampling locations are shown on the Site Maps in Appendix B and include the locations identified in Table 7.13 and Table 7-14.

Two sampling locations on the project site and the contractor's yard have been identified for the collection of runoff samples. Table 7.12 also provides an estimate of the site's area that drains to each location.

Table 7.12 Turbidity and pH Runoff Sample Locations

Sample Location Number	Sample Location	Estimate of Site (%)
1	West of the project site along Service Road	65%
2	North west of the Flex Field	35%

The project does not receive run-on with the potential to exceed NALs or Receiving Water Monitoring Triggers.

7.7.2.3 Monitoring Preparation

Turbidity and pH samples will be collected and analyzed by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

Samples on the project site will be collected by the following Laboratory:

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Ave.
City, State Zip:	Industry, CA 91745
Telephone Number:	(626) 336-2139

The QSP or his/her designee will contact the project owner 24 hours prior to a predicted rain event or for an unpredicted event, as soon as a rain event begins to ensure that adequate sample

collection personnel, supplies for monitoring pH and turbidity are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

7.7.2.4 Field Parameters

Samples shall be analyzed for the constituents indicated in the Table 7.14.

Table 7.14 Sample Collection and Analysis for Monitoring Turbidity and pH

Parameter	Test Method	Minimum Sample Volume[(1)]	Sample Collection Container Type	Detection Limit (minimum)
Turbidity	Field meter/probe with calibrated portable instrument	500 mL	Polypropylene or Glass (Do not collect in meter sample cells)	1 NTU
pH	Field meter/probe with calibrated portable instrument or calibrated pH test kit	100 mL	Polypropylene	0.2 pH units

Notes: [1] Minimum sample volume recommended. Specific volume requirements will vary by instrument; check instrument manufacturer instructions.

L – Liter
mL – Milliliter
NTU – Nephelometric Turbidity Unit

7.7.2.5 Sample Collection

Samples of discharge shall be collected at the designated runoff and run-on sampling locations shown on the Erosion Control Plan in Appendix B. Run-on samples shall be collected within close proximity of the point of run-on to the project.

Only personnel trained in water quality sampling and field measurements working under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.2.6 Field Measurements

Samples collected for field analysis, collection, analysis and equipment calibration shall be in accordance with the field instrument manufacturer's specifications.

Immediately following collection, samples for field analysis shall be tested in accordance with the field instrument manufacturer's instructions and results recorded on the *Effluent Sampling Field Log Sheet*.

The manufacturers' instructions are included in CSMP Attachment 4 "Field Meter Instructions". Field sampling staff shall review the instructions prior to each sampling event and follow the instructions in completing measurement of the samples.

- The instrument(s) shall be maintained in accordance with manufacturer's instructions.
- The instrument(s) shall be calibrated before each sampling and analysis event.

- Maintenance and calibration records shall be maintained with the SWPPP.

The QSP may authorize alternate equipment provided that the equipment meets the Construction General Permit's requirements and the manufacturers' instructions for calibration and use are added to CSMP Attachment 4 "Field Meter Instructions".

7.7.2.7 Data Evaluation and Reporting

Immediately upon completing the measurements for the sampling event, provide the *Effluent Sampling Field Log Sheets* to the QSP for evaluation.

Numeric Action Levels

This project is subject to NALs for pH and turbidity (Table 7.16). Compliance with the NAL for pH and turbidity is based on daily average. Upon receiving the field log sheets, the QSP shall immediately calculate the arithmetic average of the turbidity samples, and the logarithmic average of the pH samples[1] to determine if the NALs, shown in the table below, have been exceeded.

Table 7.16 Numeric Action Levels

Parameter	Unit	Daily Average
pH	pH units	Lower NAL = 6.5 Upper NAL = 8.5
Turbidity	NTU	250 NTU

The QSP shall submit copies of the completed *Effluent Sampling Field Log Sheets* to the contractor and the owner.

In the event that the pH or turbidity NAL is exceeded, the QSP shall immediately notify the Owner's Representative (LRP) and investigate the cause of the exceedance and identify corrective actions.

Exceedances of NALs shall be electronically reported to the State Water Board by QSP through the SMARTs system within 10 days of the conclusion of the storm event. If requested by the Regional Board, a NAL Exceedance report will be submitted. The NAL Exceedance Report must contain the following information:

- Analytical method(s), method reporting unit(s), and MDL(s) of each parameter;
- Date, place, time of sampling, visual observation, and/or measurements, including precipitation; and
- Description of the current BMPs associated with the sample that exceeded the NAL and the proposed corrective actions taken.

[1] Daily average pH values must be calculated through the logarithmic method. In order to calculate an average, you must: (1) Convert the pH measurements from logarithms to real numbers; (2) Take the average of the real numbers; and (3) Convert the average of the real numbers back to a logarithm.

7.7.3 Sampling and Analysis Plan for pH, Turbidity, and SSC in Receiving Water

This project is not subject to Receiving Water Monitoring.

7.7.4 Sampling and Analysis Plan for Non-Stormwater Discharges

This Sampling and Analysis Plan for non-stormwater discharges describes the sampling and analysis strategy and schedule for monitoring pollutants in authorized and unauthorized non-stormwater discharges from the project site in accordance with the requirements of the Construction General Permit.

Sampling of non-stormwater discharges will be conducted when an authorized or unauthorized non-stormwater discharge is observed discharging from the project site. In the event that non-stormwater discharges run-on to the project site from offsite locations, and this run-on has the potential to contribute to a violation of a NAL, the run-on will also be sampled.

The following authorized non-stormwater discharges identified in Section 2.7, have the potential to be discharged from the project site.

- Fire Hydrant flushing
- Irrigation of vegetative erosion control measure
- Pipe flushing and testing
- Water used for dust control

In addition to the above authorized stormwater discharges, some construction activities have the potential to result in an unplanned (unauthorized) non-stormwater discharge if BMPs fail. These activities include:

- Vehicle and equipment wash water
- Sanitary wastes
- Chemical leaks and/or spills of any kind, including but not limited to petroleum, vehicles, and equipment

7.7.4.1 Sampling Schedule

Samples of authorized or unauthorized non-stormwater discharges shall be collected when they are observed.

7.7.4.2 Sampling Locations

Samples shall be collected from the discharge point of the construction site where the non-stormwater discharge is running off the project site. Site discharge locations are shown on the Site Maps in the SWPPP appendix.

Sampling locations on the project site will be field identified where non-stormwater discharges may runoff from the project site.

7.7.4.3 Monitoring Preparation

Non-stormwater discharge samples will be collected by:

Contractor	☐ Yes	☒ No
Consultant	☒ Yes	☐ No
Laboratory	☒ Yes	☐ No

Samples on the project site will be collected by the following Laboratory:

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Ave.
City, State Zip:	Industry, CA 91745
Telephone Number:	(626) 336-2139

The QSP or his/her designee will contact the project owner, 24 hours prior to a planned non-stormwater discharge or as soon as an unplanned non-stormwater discharge is observed to ensure that adequate sample collection personnel, supplies for non-stormwater discharge monitoring are available and will be mobilized to collect samples on the project site in accordance with the sampling schedule.

7.7.4.4 Analytical Constituents

All non-stormwater discharges that flow through a disturbed area shall, at minimum, be monitored for turbidity.

All non-stormwater discharges that flow through an area where they are exposed to pH altering materials shall be monitored for pH.

The QSP shall identify additional pollutants to be monitored for each non-stormwater discharge incident based on the source of the non-stormwater discharge. If the source of an unauthorized non-stormwater discharge is not known, monitoring for pH, turbidity, MBAS, TOC, and residual chlorine or chloramines is recommended to help identify the source of the discharge.

Non-stormwater discharge run-on shall be monitored, at minimum, for pH and turbidity. The QSP shall identify additional pollutants to be monitored for each non-stormwater discharge incident based on the source of the non-stormwater discharge. If the source of an unauthorized non-stormwater discharge is not known, monitoring for pH, turbidity, MBAS, TOC, and residual chlorine or chloramines is recommended to help identify the source of the discharge.

Table 7.22 lists the specific sources and types of potential non-visible pollutants on the project site and the water quality indicator constituent(s) for that pollutant.

Table 7.22 Potential Non-Stormwater Discharge Pollutants and Water Quality Indicator Constituents

Pollutant Source	Pollutant	Water Quality Indicator Constituent
Disturbed Areas	Sediment	Turbidity
Concrete Work	pH	pH

7.7.4.5 Sample Collection

Samples shall be collected at the discharge locations where the non-stormwater discharge is leaving the project site. Potential discharge locations are shown on the Site Maps in Appendix B and identified in Section 7.7.4.2.

Grab samples shall be collected and preserved in accordance with the methods identified in Table 7.23. Only personnel trained in water quality sampling under the direction of the QSP shall collect samples.

Sample collection and handling requirements are described in Section 7.7.7.

7.7.4.6 Sample Analysis

Samples shall be analyzed using the analytical methods identified in Table 7.23.

7.7.4.7 Data Evaluation and Reporting

The QSP shall complete an evaluation of the water quality sample analytical results.

Turbidity and pH results shall be evaluated for compliance with NALs as identified in Section 7.7.2.7.

Runoff results shall also be evaluated for the constituents suspected in the non-stormwater discharge. Should the runoff sample indicate the discharge of a pollutant which cannot be explained by run-on results, the BMPs, site conditions, and surrounding influences shall be assessed to determine the probable cause for the increase.

As determined by the site and data evaluation, appropriate BMPs shall be repaired or modified to mitigate discharges of non-visible pollutant concentrations. Any revisions to the BMPs shall be recorded as an amendment to the SWPPP.

Non-storm water discharge results shall be submitted with the Annual Report.

The General Permit prohibits the non-storm water discharges that contain hazardous substances equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4. The results of any non-stormwater discharge results that indicate the presence of a hazardous substance in excess of established reportable quantities shall be immediately reported to the Regional Water Board.

Table 7.23 Sample Collection, Preservation and Analysis for Monitoring Pollutants in Non-Stormwater Discharges

Constituent	Analytical Method	Minimum Sample Volume	Sample Bottle	Sample Preservation	Reporting Limit	Maximum Holding Time	Maximum Allowable RPD	Recovery Lower Limit	Recovery Upper Limit
pH	EPA 150.1	1 x 100 mL	Polypropylene	None	0.01 pH units	Immediate	20%	NA	NA
Anions (Sulfate, Nitrate, Bromide, Chloride, Flouride, Nitrite, O-Phosphorus)	EPA 300.0	1 x 125 mL	Polypropylene	None	0.05-0.5 mg/L	28 days	20%	90%	110%
TDS	EPA 160.1	1 x 100 mL	Polypropylene	Store at 4°C	1 mg/L	7 days	20%	80%	120%
Total Residual Chlorine	SM 4500	1 x 500 mL	Glass-Amber	Do not expose to light	0.1 mg/L	Immediate	- -	- -	- -

Notes:

ug/L - micrograms per liter
mL - milliliter
EPA - Environmental Protection Agency
mg/L - milligrams per liter
TDS - Total Dissolved Solids
Recovery, lower and upper limits refer to analysis of spiked samples.

7.7.5 Sampling and Analysis Plan for Other Pollutants Required by the Regional Water Board

The Regional Water Board has not specified monitoring for additional pollutants. 7.7.6 Training of Sampling Personnel

Sampling personnel shall be trained to collect, maintain, and ship samples in accordance with the Surface Water Ambient Monitoring program (SWAMP) 2008 Quality Assurance Program Plan (QAPrP). Training records of designated contractor sampling personnel are provided in Appendix K.

7.7.7 Sample Collection and Handling

7.7.7.1 Sample Collection

Samples shall be collected at the designated sampling locations shown on the Site Maps and listed in the preceding sections. Samples shall be collected, maintained and shipped in accordance with the SWAMP 2008 Quality Assurance Program Plan (QAPrP).

Grab samples shall be collected and preserved in accordance with the methods identified in preceding sections.

To maintain sample integrity and prevent cross-contamination, sample collection personnel shall follow the protocols below.

- Collect samples (for laboratory analysis) only in analytical laboratory-provided sample containers;
- Wear clean, powder-free nitrile gloves when collecting samples;
- Change gloves whenever something not known to be clean has been touched;
- Change gloves between sites;
- Decontaminate all equipment (e.g. bucket, tubing) prior to sample collection using a trisodium phosphate water wash, distilled water rinse, and final rinse with distilled water. (Dispose of wash and rinse water appropriately, i.e., do not discharge to storm drain or receiving water). Do not decontaminate laboratory provided sample containers;
- Do not smoke during sampling events;
- Never sample near a running vehicle;
- Do not park vehicles in the immediate sample collection area (even non-running vehicles);
- Do not eat or drink during sample collection; and
- Do not breathe, sneeze, or cough in the direction of an open sample container.

The most important aspect of grab sampling is to collect a sample that represents the entire runoff stream. Typically, samples are collected by dipping the collection container in the runoff flow paths and streams as noted below.

i. For small streams and flow paths, simply dip the bottle facing upstream until full.
ii. For larger stream that can be safely accessed, collect a sample in the middle of the flow stream by directly dipping the mouth of the bottle. Once again making sure that the opening of the bottle is facing upstream as to avoid any contamination by the sampler.

iii. For larger streams that cannot be safely waded, pole-samplers may be needed to safely access the representative flow.
iv. Avoid collecting samples from ponded, sluggish or stagnant water.
v. Avoid collecting samples directly downstream from a bridge as the samples can be affected by the bridge structure or runoff from the road surface.

Note, that depending upon the specific analytical test, some containers may contain preservatives. These containers should **never** be dipped into the stream, but filled indirectly from the collection container.

7.7.7.2 Sample Handling

Turbidity and pH measurements must be conducted immediately. Do not store turbidity or pH samples for later measurement.

Samples for laboratory analysis must be handled as follows. Immediately following sample collection:

- Cap sample containers;
- Complete sample container labels;
- Sealed containers in a re-sealable storage bag;
- Place sample containers into an ice-chilled cooler;
- Document sample information on the *Effluent Sampling Field Log Sheet*; and
- Complete the CoC.

All samples for laboratory analysis must be maintained between 0-6 degrees Celsius during delivery to the laboratory. Samples must be kept on ice, or refrigerated, from sample collection through delivery to the laboratory. Place samples to be shipped inside coolers with ice. Make sure the sample bottles are well packaged to prevent breakage and secure cooler lids with packaging tape.

Ship samples that will be laboratory analyzed to the analytical laboratory right away. Hold times are measured from the time the sample is collected to the time the sample is analyzed. The General Permit requires that samples be received by the analytical laboratory within 48 hours of the physical sampling (unless required sooner by the analytical laboratory).

Company Name:	Weck Laboratories, Inc.
Street Address:	14859 E. Clark Ave.
City, State Zip:	Industry, CA 91745
Telephone Number:	(626) 336-2139

7.7.7.3 Sample Documentation Procedures

All original data documented on sample bottle identification labels, *Effluent Sampling Field Log Sheet*, and CoCs shall be recorded using waterproof ink. These shall be considered accountable documents. If an error is made on an accountable document, the individual shall make corrections by lining through the error and entering the correct information. The erroneous information shall not be obliterated. All corrections shall be initialed and dated.

Duplicate samples shall be identified consistent with the numbering system for other samples to prevent the laboratory from identifying duplicate samples. Duplicate samples shall be identified in the Effluent Sampling Field Log Sheet.

Sample documentation procedures include the following:

Sample Bottle Identification Labels: Sampling personnel shall attach an identification label to each sample bottle. Sample identification shall uniquely identify each sample location.

Field Log Sheets: Sampling personnel shall complete the *Effluent Sampling Field Log Sheet* and *Receiving Water Sampling Field Log Sheet* for each sampling event, as appropriate.

Chain of Custody: Sampling personnel shall complete the CoC for each sampling event for which samples are collected for laboratory analysis. The sampler will sign the CoC when the sample(s) is turned over to the testing laboratory or courier.

7.8 Active Treatment System Monitoring

An Active Treatment System (ATS) will be deployed on the site?

☐ Yes ☒ No

This project does not require a project specific Sampling and Analysis Plan for an ATS because deployment of an ATS is not planned.

7.9 Bioassessment Monitoring

This project is not subject to bioassessment monitoring because it is not a Risk Level 3 project.

7.10 Watershed Monitoring Option

This project is not participating in a watershed monitoring option.

7.11 Quality Assurance and Quality Control

An effective Quality Assurance and Quality Control (QA/QC) plan shall be implemented as part of the CSMP to ensure that analytical data can be used with confidence. QA/QC procedures to be initiated include the following:

- Field logs;
- Clean sampling techniques;
- CoCs;
- QA/QC Samples; and
- Data verification.

Each of these procedures is discussed in more detail in the following sections.

7.11.1 Field Logs

The purpose of field logs is to record sampling information and field observations during monitoring that may explain any uncharacteristic analytical results. Sampling information to be included in the field log include the date and time of water quality sample collection, sampling personnel, sample container identification numbers, and types of samples that were collected. Field observations should be noted in the field log for any abnormalities at the sampling location

(color, odor, BMPs, etc.). Field measurements for pH and turbidity should also be recorded in the field log. A Visual Inspection Field Log, an Effluent Sampling Field Log Sheet are included in CSMP Attachment 3 "Example Forms".

7.11.2 Clean Sampling Techniques

Clean sampling techniques involve the use of certified clean containers for sample collection and clean powder-free nitrile gloves during sample collection and handling. As discussed in Section 7.7.7, adoption of a clean sampling approach will minimize the chance of field contamination and questionable data results.

7.11.3 Chain of Custody

The sample CoC is an important documentation step that tracks samples from collection through analysis to ensure the validity of the sample. Sample CoC procedures include the following:

- Proper labeling of samples;
- Use of CoC forms for all samples; and
- Prompt sample delivery to the analytical laboratory.

Analytical laboratories usually provide CoC forms to be filled out for sample containers. An example CoC is included in CSMP Attachment 3 "Example Forms".

7.11.4 QA/QC Samples

QA/QC samples provide an indication of the accuracy and precision of the sample collection; sample handling; field measurements; and analytical laboratory methods. The following types of QA/QC will be conducted for this project:

☒ Field Duplicates at a frequency of
(Required for all sampling plans with field measurements or laboratory analysis)

☐ Equipment Blanks

☐ Field Blanks

☐ Travel Blanks

7.11.4.1 Field Duplicates

Field duplicates provide verification of laboratory or field analysis and sample collection. Duplicate samples shall be collected, handled, and analyzed using the same protocols as primary samples. The sample location where field duplicates are collected shall be randomly selected from the discharge locations. Duplicate samples shall be collected immediately after the primary sample has been collected. Duplicate samples must be collected in the same manner and as close in time as possible to the original sample. Duplicate samples shall not influence any evaluations or conclusion.

7.11.4.2 Equipment Blanks

Equipment blanks provide verification that equipment has not introduced a pollutant into the sample. Equipment blanks are typically collected when:

- New equipment is used;

- Equipment that has been cleaned after use at a contaminated site;
- Equipment that is not dedicated for surface water sampling is used; or
- Whenever a new lot of filters is used when sampling metals.

7.11.4.3 Field Blanks

Field blanks assess potential sample contamination levels that occur during field sampling activities. De-ioninzed water field blanks are taken to the field, transferred to the appropriate container, and treated the same as the corresponding sample type during the course of a sampling event.

7.11.4.4 Travel Blanks

Travel blanks assess the potential for cross-contamination of volatile constituents between sample containers during shipment from the field to the laboratory. De-ioninzed water blanks are taken along for the trip and held unopened in the same cooler with the VOC samples.

7.11.5 Data Verification

After results are received from the analytical laboratory, the QSP shall verify the data to ensure that it is complete, accurate, and the appropriate QA/QC requirements were met. Data must be verified as soon as the data reports are received. Data verification shall include:

- Check the CoC and laboratory reports.
  Make sure all requested analyses were performed and all samples are accounted for in the reports.
- Check laboratory reports to make sure hold times were met and that the reporting levels meet or are lower than the reporting levels agreed to in the contract.
- Check data for outlier values and follow up with the laboratory.
  Occasionally typographical errors, unit reporting errors, or incomplete results are reported and should be easily detected. These errors need to be identified, clarified, and corrected quickly by the laboratory. The QSP should especially note data that is an order of magnitude or more different than similar locations, or is inconsistent with previous data from the same location.
- Check laboratory QA/QC results.
  EPA establishes QA/QC checks and acceptable criteria for laboratory analyses. These data are typically reported along with the sample results. The QSP shall evaluate the reported QA/QC data to check for contamination (method, field, and equipment blanks), precision (laboratory matrix spike duplicates), and accuracy (matrix spikes and laboratory control samples). When QA/QC checks are outside acceptable ranges, the laboratory must flag the data, and usually provides an explanation of the potential impact to the sample results.
- Check the data set for outlier values and, accordingly, confirm results and re-analyze samples where appropriate.
  Sample re-analysis should only be undertaken when it appears that some part of the QA/QC resulted in a value out of the accepted range. Sample results may not be discounted unless the analytical laboratory identifies the required QA/QC criteria were not met and confirms this in writing.

Field data including inspections and observations must be verified as soon as the field logs are received, typically at the end of the sampling event. Field data verification shall include:

- Check field logs to make sure all required measurements were completed and appropriately documented;
- Check reported values that appear out of the typical range or inconsistent; Follow-up immediately to identify potential reporting or equipment problems, if appropriate, recalibrate equipment after sampling;
- Verify equipment calibrations;
- Review observations noted on the field logs; and
- Review notations of any errors and actions taken to correct the equipment or recording errors.

7.12 Records Retention

All records of stormwater monitoring information and copies of reports (including Annual Reports) must be retained for a period of at least three years from date of submittal or longer if required by the Regional Water Board.

Results of visual monitoring, field measurements, and laboratory analyses must be kept in the SWPPP along with CoCs, and other documentation related to the monitoring.

Records are to be kept onsite while construction is ongoing. Records to be retained include:

- The date, place, and time of inspections, sampling, visual observations, and/or measurements, including precipitation;
- The individual(s) who performed the inspections, sampling, visual observation, and/or field measurements;
- The date and approximate time of field measurements and laboratory analyses;
- The individual(s) who performed the laboratory analyses;
- A summary of all analytical results, the method detection limits and reporting limits, and the analytical techniques or methods used;
- Rain gauge readings from site inspections;
- QA/QC records and results;
- Calibration records;
- Visual observation and sample collection exemption records;
- The records of any corrective actions and follow-up activities that resulted from analytical results, visual observations, or inspections; and
- NAL Exceedance Reports

CSMP Attachment 1: Weather Reports

CSMP Attachment 2: Monitoring Records

CSMP Attachment 3: Example Forms

Rain Gauge Log Sheet				
Construction Site Name:				
WDID #:				
Date (mm/dd/yy)	Time (24-hr)	Initials	Rainfall Depth (Inches)	Notes:

Risk Level 1, 2, 3 ***Visual Inspection Field Log Sheet***						
Date and Time of Inspection:				Report Date:		
Inspection Type:	☐ Weekly	☐ Before predicted rain	☐ During rain event	☐ Following qualifying rain event	☐ Contained stormwater release	☐ Quarterly non-stormwater
Site Information						
Construction Site Name:						
Construction stage and completed activities:				Approximate area of exposed site:		
Weather and Observations						
Date Rain Predicted to Occur:				Predicted % chance of rain:		
Estimate storm beginning: _____ (date and time)		Estimate storm duration:_____ (hours)		Estimate time since last storm: _____ (days or hours)	Rain gauge reading:_ _____ (inches)	
Observations: If yes identify location						
Odors	Yes ☐ No ☐					
Floating material	Yes ☐ No ☐					
Suspended Material	Yes ☐ No ☐					
Sheen	Yes ☐ No ☐					
Discolorations	Yes ☐ No ☐					
Turbidity	Yes ☐ No ☐					
Site Inspections						
Outfalls or BMPs Evaluated			**Deficiencies Noted**			
(add additional sheets or attached detailed BMP Inspection Checklists)						
Photos Taken:	Yes ☐	No ☐	Photo Reference IDs:			
Corrective Actions Identified (note if SWPPP/REAP change is needed)						
Inspector Information						

Inspector Name:	Inspector Title:
Signature:	Date:

Risk Level 2
Effluent Sampling Field Log Sheets

Construction Site Name:	Date:	Time Start:
Sampler:		

Sampling Event Type:	☐ Stormwater	☐ Non-stormwater	☐ Non-visible pollutant

Field Meter Calibration

pH Meter ID No./Desc.: Calibration Date/Time:	Turbidity Meter ID No./Desc.: Calibration Date/Time:

Field pH and Turbidity Measurements

Discharge Location Description	pH	Turbidity	Time

Grab Samples Collected

Discharge Location Description	Sample Type	Time

Additional Sampling Notes:
Time End:

Risk Level 3 ***Effluent Sampling Field Log Sheets***			
Construction Site Name:		Date:	Time Start:
Sampler:			
Sampling Event Type:	☐ Stormwater	☐ Non-stormwater	☐ Non-visible pollutant
Field Meter Calibration			
pH Meter ID No./Desc.: Calibration Date/Time:		Turbidity Meter ID No./Desc.: Calibration Date/Time:	
Field pH and Turbidity Measurements			
Discharge Location Description	pH	Turbidity	Time
Grab Samples Collected			
Discharge Location Description	Other (specify)		Time
Additional Sampling Notes:			
Time End:			

Risk Level 3 ***Receiving Water Sampling Field Log Sheets***		
Construction Site Name:	Date:	Time Start:
Sampler:		
Receiving Water Description and Observations		
Receiving Water Name/ID:		
Observations:		
Odors	Yes ☐ No ☐	
Floating material	Yes ☐ No ☐	
Suspended Material	Yes ☐ No ☐	
Sheen	Yes ☐ No ☐	
Discolorations	Yes ☐ No ☐	
Turbidity	Yes ☐ No ☐	
Field Meter Calibration		
pH Meter ID No./Desc.: Calibration Date/Time:		Turbidity Meter ID No./Desc.: Calibration Date/Time:

Field pH and Turbidity Measurements and SSC Grab Sample			
Upstream Location			
Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes ☐ No ☐		
Downstream Location			
Type	Result	Time	Notes
pH			
Turbidity			
SSC	Collected Yes ☐ No ☐		

Additional Sampling Notes:
Time End:

NAL Exceedance Evaluation Summary Report	Page __ of __
Project Name	
Project WDID	
Project Location	
Date of Exceedance	
Type of Exceedance	**NAL Daily Average** ☐ **pH** ☐ **Turbidity** ☐ **Other (specify) _____**
Measurement or Analytical Method	☐ **Field meter** **(Sensitivity: _____)** ☐ **Lab method (specify) _____** **(Reporting Limit: _____)** **(MDL: _____)**
Calculated Daily Average	☐ **pH _____ pH units** ☐ **Turbidity _____ NTU**
Rain Gauge Measurement	**_____ inches**
Compliance Storm Event	**_____ inches (5-year, 24-hour event)**
Visual Observations on Day of Exceedance	

NAL Exceedance Evaluation Summary Report	Page __ of __
Description of BMPs in Place at Time of Event	
Initial Assessment of Cause	
Corrective Actions Taken (deployed after exceedance)	
Additional Corrective Actions Proposed	
Report Completed By	_____ **(Print Name, Title)**
Signature	_____

CHAIN-OF-CUSTODY **DATE:** **Lab ID:**

DESTINATION LAB: ATTN: **ADDRESS:** **Office Phone:** **Cell Phone:**							REQUESTED ANALYSIS				Notes:
SAMPLED BY:											
Contact:											
Project Name											
Client Sample ID	**Sample Date**	**Sample Time**	**Sample Matrix**	**Container #**	**Container Type**	**Container Pres.**					

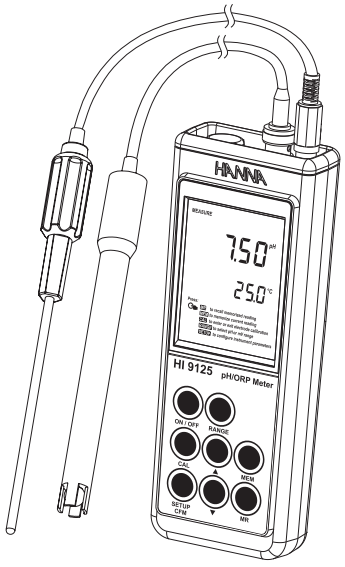
SENDER COMMENTS:	**RELINQUISHED BY**	
	Signature:	
	Print:	
	Company:	
	Date:	TIME:
LABORATORY COMMENTS:	**RECEIVED BY**	
	Signature:	
	Print:	
	Company:	
	Date:	TIME:

CSMP Attachment 4: Field Meter Instructions

Instruction Manual

HI 9124 HI 9125

Portable Waterproof pH Meters



HANNA® instruments
www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Instruments product.

Please read this instruction manual carefully before using these instruments. This manual will provide you with the necessary information for correct use of these instruments, as well as a precise idea of their versatility. If you need additional technical information, do not hesitate to e-mail us at tech@hannainst.com.

WARRANTY

HI 9124 & **HI 9125** are guaranteed for two years against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. Electrodes and probes are guaranteed for six months. This warranty is limited to repair or replacement free of charge.

Damage due to accidents, misuse, tampering or lack of prescribed maintenance is not covered.

If service is required, contact the dealer from whom you purchased these instruments. If under warranty, report the model number, date of purchase, serial number and the nature of the problem. If the repair is not covered by the warranty, you will be notified of the charges incurred. If these instruments are to be returned to Hanna Instruments, first obtain a Returned Goods Authorization number from the Technical Service department and then send it with shipping costs prepaid. When shipping any instrument, make sure it is properly packed for complete protection.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping.

If there is any damage, notify your dealer or the nearest Hanna Customer Service Center.

Each meter is supplied with:

- **HI 1230B** non refillable combination double-junction pH electrode with gelled electrolyte.
- **HI 7662** stainless steel temperature probe with 1 m (3.3") cable
- **pH 4.01 & pH 7.01** buffer solutions, 20 mL sachet
- 100 mL plastic beaker
- 3 x 1.5V AAA, batteries
- Instruction manual
- Rugged carrying case

Note: Save all packing material until you are sure that the instrument functions correctly. All defective items must be returned in the original packing with the supplied accessories.

GENERAL DESCRIPTION

The **HI 9124** and **HI 9125** are state-of-the-art rugged waterproof, hand held pH meters designed to provide laboratory results and accuracy under harsh industrial conditions.

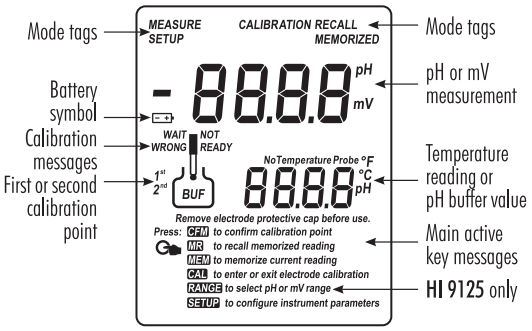
A large multi-level LCD, with clear indications related to the electrode and instrument status, pH and temperature displayed simultaneously, and user friendly symbols and text instructions during calibration.

The pH calibration procedure is automatic with 5 auto recognized buffers (4.01, 6.86, 7.01, 9.18 and 10.01) and automatic temperature compensation.

The **HI 9125** can be used with ORP (Oxidation Reduction Potential) electrodes. mV measurements automatically change from 0.1 to 1 mV resolution when the reading reaches 700 mV.

LCD MESSAGE GUIDE

TAGS & SYMBOLS



- **Mode tags** lights up for indicating the corresponding active mode, and blinks for warning the user.

  MEASURE on: measurement mode.

  SETUP on: SETUP menu mode has been entered.

  CALIBRATION on: calibration mode has been entered.

  MEMORIZE on: measurement stored in the internal memory and frozen on the display

  RECALL MEMORIZED on: stored value recalled.

- **Battery symbol blinking**: low battery condition. Batteries should be replaced.

- **Calibration messages**.

  WAIT NOT READY blinking: buffer has been recognized, but reading is not stable.

  READY on: buffer has been recognized and reading is stable.

  WRONG (BUF) **and WRONG** (probe) **blinking** alternatively: wrong buffer, value not recognized.

- **Main active key messages** light up for indicating the corresponding active key.

  CFM blinking: ask for confirmation of calibration or set value.

  MR on: MR key available.

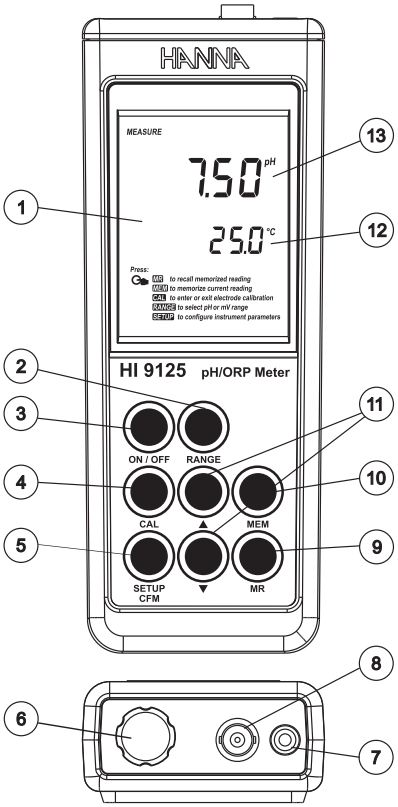
  MEM on: MEM key available.

  CAL on: CAL key available.

  RANGE on: RANGE key available. (**HI 9125** only)

  SETUP on: SETUP key available.

FUNCTIONAL DESCRIPTION



1) Liquid Crystal Display (LCD).
2) **RANGE** key, to select pH or mV (**HI 9125** only).
3) **ON/OFF** key, to turn the meter ON and OFF.
4) **CAL** key, to enter or exit calibration mode.
5) **SETUP/CFM** key, to enter SETUP mode or to confirm calibration.
6) Battery compartment cap.
7) Temperature probe socket.
8) BNC electrode connector.
9) **MR** key, to recall stored value from memory.
10) **MEM** key, to store reading in memory.
11) ▲ and ▼ keys, for manual temperature setting, or selecting pH buffer value.
12) Secondary display.
13) Primary display.

SPECIFICATIONS

RANGE	-2.00 to 16.00 pH
	±699.9 mV / ±1999 mV (HI 9125 only)
	-20.0 to 120.0 °C (-4.0 to 248.0 °F)
RESOLUTION	0.01 pH
	0.1 mV / 1 mV (**HI 9125** only)
	0.1 °C (0.1 °F)
ACCURACY @ 20 °C / 68 °F	±0.01 pH
	±0.2 mV / ±1 mV (**HI 9125** only)
	±0.4 °C (±0.8 °F) (excluding probe error)
Typical EMC Deviation	±0.02 pH
	±0.2 mV / ±1 mV (**HI 9125** only)
	±0.4 °C (±0.8 °F)
pH Calibration	1 or 2-point, with 5 memorized buffers (4.01, 6.86, 7.01, 9.18, 10.01)
Offset Calibration	±1 pH
Slope Calibration	From 80 to 108%
Temperature Compensation	Automatic, from -20.0 to 120.0 °C (-4.0 to 248.0 °F) or manual, without temperature probe
pH Electrode	**HI 1230B** (included)
Temperature Probe	**HI 7662** (included)
Input Impedance	10^{12} ohms
Battery Type & Life	3 x 1.5V AAA batteries approx. 200 hours of continuous use
Auto-off	User selectable: 20 minutes or disabled
Dimensions	185x72x36 mm (7.3x2.8x1.4")
Weight	300 g (10.6 oz.)
Environment	0 — 50 °C (32 — 122 °F) max RH 100%
Warranty	2 years

OPERATIONAL GUIDE

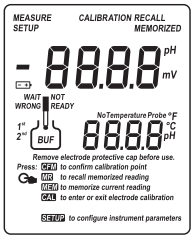
INITIAL PREPARATION

The instrument is supplied with batteries. In order to place the batteries inside the instrument follow the instructions from page 16.

To prepare the instrument for use, connect the pH electrode and the temperature probe to the BNC and temperature sockets on the top of the instrument. The temperature probe can be used independently to take temperature measurements, or it can be used in conjunction with the pH electrode to utilize Automatic Temperature Compensation (ATC) mode. If the probe is disconnected, temperature can also be set manually with the **ARROW** keys.

Turn the instrument ON by pressing **ON/OFF**.

At start-up the display will show all the LCD segments and then the battery percentage while the instrument performs a self check (or as long as the button is held).



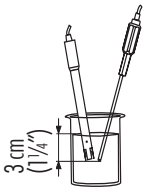
The meter automatically enters measurement mode.

After measurement, switch the meter off. Clean the electrode and store it with a few drops of **HI 70300** storage solution in the protective cap.

To save batteries, the auto-off feature turns the meter off after 20 minutes with no button pressed. To disable this feature, see "Setup Menu" section on page 14.

pH MEASUREMENTS

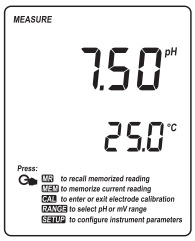
Calibrate the meter and pH electrode before taking measurements. See page 10 for details. To take a pH measurement remove the electrode's protective cap, rinse off pH sensing tip. Submerse the electrode and the temperature probe 3 cm (1¼") into the sample and stir gently.



If necessary, press the **RANGE** key until the display shows pH mode (**HI 9125** only).

Allow time for the reading to stabilize.

The LCD will show the pH measurement and the temperature of the sample.



If several measurements are taken successively in different samples, rinse the electrode thoroughly with deionized or tap water and a small amount of the sample to be measured.

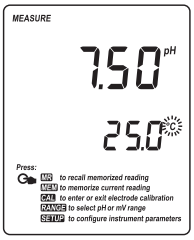
The pH value of the sample is directly affected by temperature. In order for the meter to measure the pH accurately, the value must be compensated for temperature. If the sample temperature is different from the temperature at which the pH electrode was kept, allow a few minutes for thermal equilibrium.

To use the meter's Automatic Temperature Compensation feature, submerse the temperature probe into the sample as close to the electrode as possible and wait for a few minutes.

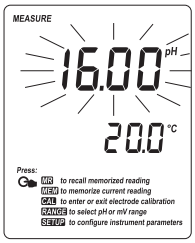
If manual temperature compensation is desired the temperature probe must be disconnected from the instrument.

The display will show the default temperature of "**25 °C**", or the last temperature set with the "**°C**" (or "**°F**") indicator blinking.

The temperature can now be adjusted with the **ARROW** keys. Set the value at the sample temperature.



Notes:
- When the reading is out of range, the display will flash the closest full-scale value.
- If using pH electrode while in mV mode, the meter will measure the mV generated by the pH electrode.

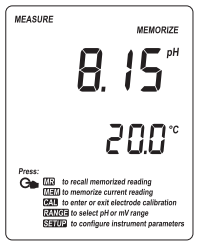


ORP MEASUREMENTS (HI 9125 only)

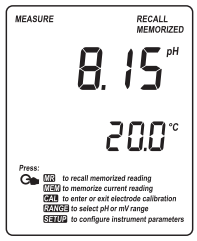
To perform ORP measurements, connect an optional ORP electrode (see "Accessories" section) to the meter and turn it ON.
If necessary, enter the mV mode by pressing **RANGE** until the display changes to mV.
Submerse the ORP electrode 3 cm (1¼") into the sample to be tested and wait a few minutes for the reading to stabilize.
Measurements within the ±699.9 mV range are displayed with 0.1 mV resolution, while outside this range the resolution automatically switches to 1 mV.
For accurate ORP measurements, the surface of the electrode must be clean and smooth. Pretreatment solutions are available to condition the electrode and improve its response time (see "Accessories" section).

MEM & MR FUNCTIONS

The instrument allows the user to store the current measurement (pH and temperature, or mV and temperature) into internal memory by pressing the **MEM** key. The "**MEMORIZE**" tag lights up on display.



Stored values can be recalled by pressing **MR**: the display will show the values and the "**RECALL MEMORIZED**" tag as long as the button is pressed.



pH CALIBRATION

It is recommended to calibrate the instrument frequently, especially if high accuracy is required.

The pH range should be recalibrated:

- Whenever the pH electrode or temperature probe is replaced.
- At least once a week.
- After testing aggressive chemicals.
- When extreme accuracy is required.

PREPARATION

Pour a small quantity of buffer solution into clean beakers. For accurate calibration use two beakers for each buffer solution, the first one for rinsing the electrode and the second one for calibration.

PROCEDURE

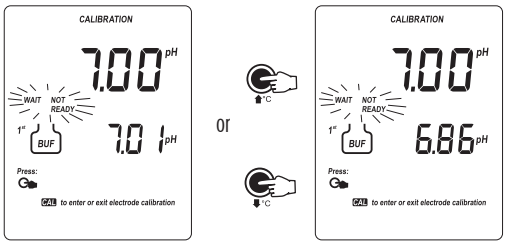
In order to perform pH calibration:

- Make sure that the meter is in the pH mode (**HI 9125** only).
- Remove the protective cap and rinse the electrode with some of the buffer solution to be used for the first calibration point.

There is a choice of 5 memorized buffers: 4.01, 6.86, 7.01, 9.18 and 10.01 pH.

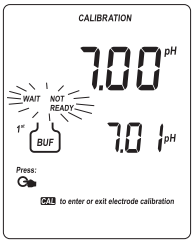
TWO-POINT CALIBRATION

- Press the **CAL** key. The "**CAL**" and "BUF" indicators will be displayed. The secondary LCD will display buffer "**7.01**". If a different calibration buffer is desired (e.g. "**6.86**"), use the **ARROW** keys to change the displayed value.

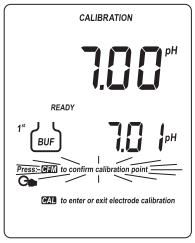


- Submerse the electrode approx. 3 cm (1¼") into the solution, place the temperature probe as close as possible to the electrode and stir gently.

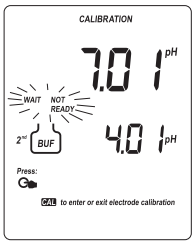
- The LCD will flash the "**WAIT NOT READY**" message.



- Once the reading is stable, if it is not close to the selected buffer, "**WRONG** BUF" and "**WRONG**" will blink alternatively; if it is close to the selected buffer the display will change to "**READY**" and blinking "**Press: CFM to confirm calibration point**".



- Press the **CFM** key to confirm the calibration: the meter stores the offset calibration point. The calibrated reading is then displayed on the primary LCD while the secondary LCD will show the second buffer to be used for calibration (pH 4.01).



- After the first calibration point is confirmed, submerse the electrode into the second buffer (pH 4.01, 10.01 or 9.18) and stir gently. Choose pH 4.01 for acidic samples, and pH 10.01 or 9.18 for alkaline solutions.
- Submerse the electrode approx. 3 cm (1¼") into the solution, place the temperature probe as close as possible to the electrode and stir gently.
- Select the second buffer value on the secondary display by pressing the **ARROW** keys.

- If the reading is not close to the selected buffer, "**WRONG** BUF" and "**WRONG** ↕" will blink alternatively;
- If the reading is close to the selected buffer and the reading is stable, the "**READY**" symbol is displayed and the "**CFM**" symbol starts blinking on the LCD, asking for confirmation.
- Press the **CFM** key: the value is stored into memory and the meter returns to normal mode.

Notes: • The meter automatically skips the buffer used for the first calibration point to avoid erroneous procedure. A difference of at least 1.5 pH unit is required between the two buffers used for the offset and slope calibration: once calibrated at either pH 7.01 or 6.86, the instrument automatically ignores the other value for the second point (same for pH 10.01 and 9.18).

- During calibration, the secondary LCD shows the selected buffer value. For the **HI 9125** model, it is possible to display the buffer temperature during calibration by pressing **RANGE**.
- To clear a previous calibration and return to the default values, in calibration mode press **CFM**, then **CAL** before the first buffer is accepted. The LCD will show "**CLr CAL**" for one second, and then will return to normal mode.

ONE-POINT CALIBRATION

For optimum accuracy it is always recommended to perform a two-point calibration, but for a faster operation a single-point calibration can be used. pH 7.01 or pH 6.86 (NIST) are normally used for this purpose, even though the meters can be calibrated with any of the 5 memorized calibration values.

After calibrating the first point (see above), press the **CAL** key to end the calibration procedure.

pH BUFFER TEMPERATURE DEPENDENCE

Temperature has an effect on pH. The calibration buffer solutions are affected by temperature changes to a lesser degree than normal solutions. During calibration the instrument will automatically calibrate to the pH value corresponding to the measured or set temperature.

TEMP		pH BUFFERS				
°C	°F	4.01	6.86	7.01	9.18	10.01
0	32	4.01	6.98	7.13	9.46	10.32
5	41	4.00	6.95	7.10	9.39	10.24
10	50	4.00	6.92	7.07	9.33	10.18
15	59	4.00	6.90	7.05	9.27	10.12
20	68	4.00	6.88	7.03	9.22	10.06
25	77	4.01	6.86	7.01	9.18	10.01
30	86	4.02	6.85	7.00	9.14	9.96
35	95	4.03	6.84	6.99	9.11	9.92
40	104	4.04	6.84	6.98	9.07	9.88
45	113	4.05	6.83	6.98	9.04	9.85
50	122	4.06	6.83	6.98	9.01	9.82
55	131	4.08	6.84	6.98	8.99	9.79
60	140	4.09	6.84	6.98	8.97	9.77
65	149	4.11	6.84	6.99	8.95	9.76
70	158	4.12	6.85	6.99	8.93	9.75
75	167	4.14	6.86	7.00	8.91	9.74
80	176	4.16	6.87	7.01	8.89	9.74
85	185	4.17	6.87	7.02	8.87	9.74
90	194	4.19	6.88	7.03	8.85	9.75
95	203	4.20	6.89	7.04	8.83	9.76

During calibration the instrument will display the pH buffer value at 25 °C.

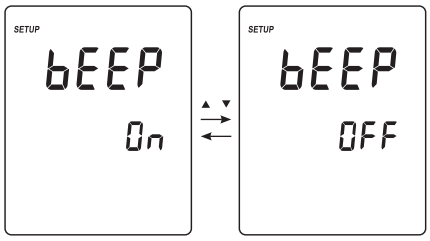
SETUP MENU

Instrument allows the user to configure several parameters through the Setup Menu.

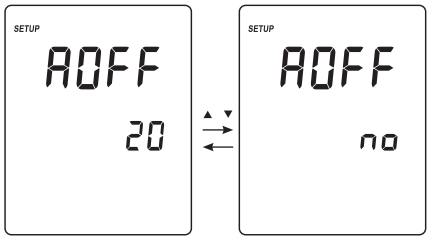
To enter the SETUP mode, while in measurement mode, press and hold the **SETUP** key for about 5 seconds. When the key is released the first parameter will be displayed.

Once the menu is entered, each parameter can be changed by using the **ARROW** keys; then pressing the **CFM** key will confirm the value and scroll to the next parameter.

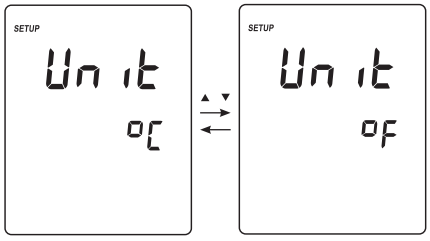
1. Audible signal: On (default) or Off



2. Auto-off feature: 20 minutes (default) or disabled



3. Temperature measure unit: °C (default) or °F



After setting the last parameter, pressing the **CFM** key will confirm the value and return to measurement mode.

mV CALIBRATION (HI 9125 only)

HI 9125 has been precalibrated for mV range at the factory.

For optimum accuracy, it is recommended to recalibrate the meter for mV readings at least once a year. Contact your Dealer or the nearest Hanna Customer Service Center for more information.

TEMPERATURE CALIBRATION

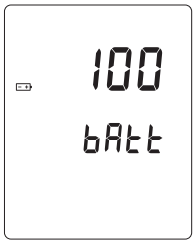
HI 9124 & HI 9125 have been precalibrated for temperature at the factory.

For optimum accuracy, it is recommended to recalibrate the meter for temperature at least once a year. Contact your Dealer or the nearest Hanna Customer Service Center for more information.

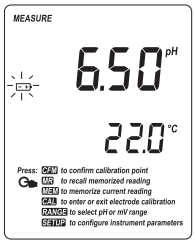
BATTERIES REPLACEMENT

The instrument is supplied with batteries. First time you start working with the instrument, insert the supplied batteries in the battery compartment observing the correct polarity (see page 17).

At start-up the battery percentage is displayed.



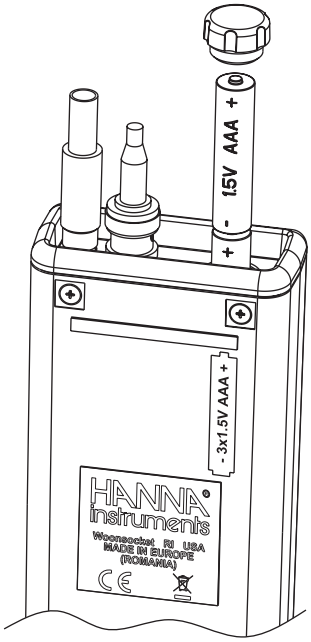
If the batteries become weak, the display will flash the battery symbol to advise the user that approximately 1 hour of working time remains. It is recommended to change the batteries as soon as the battery symbol appears blinking.



The instrument is also provided with the BEPS (Battery Error Prevention System) feature which automatically turns the instrument off when the battery level is too low to ensure reliable readings. At start-up the display will show "**0 batt**" for few seconds, then the instrument automatically turns off.

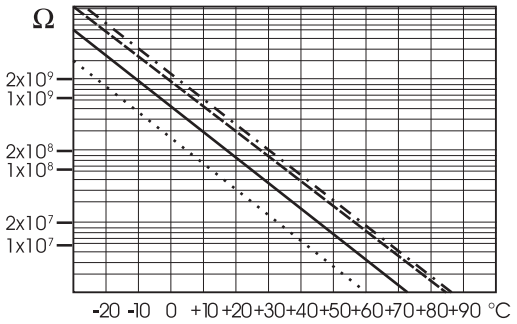
To replace the batteries, follow the next steps:

- Turn the instrument OFF.
- Open the battery compartment cap (located on the top of the instrument).
- Remove old batteries.
- Insert three new 1.5V AAA batteries in the battery compartment, observing the polarity on the rear of the instrument.
- Reattach the battery compartment cap.



TEMPERATURE CORRELATION FOR pH SENSITIVE GLASS

The resistance of glass electrodes partially depends on temperature. The lower the temperature, the higher the resistance. It takes more time for the reading to stabilize if the resistance is higher. In addition, the response time will suffer to a greater degree at temperatures below 25 °C.



Since the resistance of the pH electrode is in the range of 50 – 200 Mohms, the current across the membrane is in the pico Ampere range. Large currents can disturb the calibration of the electrode for many hours.

For these reasons high humidity environments, short circuits and static discharges can be detrimental to a stable pH reading.

The pH electrode's life also depends on the temperature. If constantly used at high temperatures, the electrode life is drastically reduced.

Typical Electrode Life

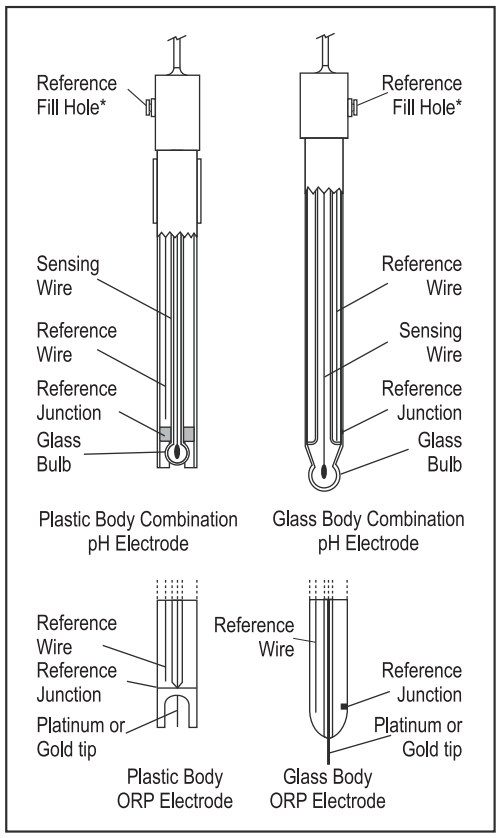
Ambient Temperature	1 – 3 years
90 °C	Less than 4 months
120 °C	Less than 1 month

Alkaline Error

High concentrations of sodium ions interfere with readings in alkaline solutions. The pH at which the interference starts to be significant depends upon the composition of the glass. This interference is called alkaline error and causes the pH to be underestimated. Hanna's glass formulations have the indicated characteristics.

Sodium Ion Correction for Glass at 20-25 °C		
Concentration	pH	Error
0.1 Mol L^{-1} Na^+	13.00	0.10
	13.50	0.14
	14.00	0.20
1.0 Mol L^{-1} Na^+	12.50	0.10
	13.00	0.18
	13.50	0.29
	14.00	0.40

ELECTRODE CONDITIONING & MAINTENANCE



* Not present in gel electrodes.

PREPARATION PROCEDURE

Remove the electrode protective cap.

DO NOT BE ALARMED IF ANY SALT DEPOSITS ARE PRESENT. This is normal with electrodes and they will disappear when rinsed with water.

During transport tiny bubbles of air may have formed inside the glass bulb. The electrode cannot function properly under these conditions. These bubbles can be removed by "shaking down" the electrode as you would do with a glass thermometer.

If the bulb and/or junction are dry, soak the electrode in **HI 70300** Storage Solution for at least one hour or longer.

For refillable electrodes, if the refill solution (electrolyte) is more than 2½ cm (1") below the fill hole, add the appropriate Electrolyte Solution.

MEASUREMENT

Rinse the electrode tip with distilled water, submerse it 3 cm (1¼") in the sample and stir gently for a few seconds.
For a faster response and to avoid cross contamination of the samples, rinse the electrode tip with the solution to be tested, before taking any measurements.

STORAGE PROCEDURE

To minimize clogging and ensure a quick response time, the glass bulb and the junction should always be kept moist.
When not in use, store it with a few drops of **HI 70300** storage solution in the protective cap.
NEVER STORE THE ELECTRODE IN DISTILLED OR DEIONIZED WATER.

PERIODIC MAINTENANCE

Inspect electrode and cable. The cable must be intact. No cracks should be seen on the electrode stem or bulb. If any scratches or cracks are present, replace the electrode. Rinse off any salt deposits with water.
Connectors must be perfectly clean and dry.

For refillable electrodes:

Refill the electrode with fresh electrolyte (see the electrode's specifications to select the correct refilling solution). Allow the electrode to stand upright for 1 hour. Follow the Storage Procedure above.

For nonrefillable electrodes:

Do not be concerned if crystals form in the gel. This will not effect pH electrode response.

CLEANING PROCEDURE

• General	Soak in Hanna **HI 7061** General Cleaning Solution for approximately ½ hour.
• Protein	Soak in Hanna **HI 7073** Protein Cleaning Solution for 15 min.
• Inorganic	Soak in Hanna **HI 7074** Inorganic CleaningSolution for 15 min.
• Oil/grease	Rinse with Hanna **HI 7077** Oil & Fat Cleaning Solution for 1 min.

IMPORTANT: After performing any of the cleaning procedures, rinse the electrode thoroughly with distilled water and soak it in **HI 70300** Storage Solution for at least 1 hour before taking measurements.

TROUBLESHOOTING GUIDE

SYMPTOMS	PROBLEM	SOLUTION
Slow reponse/excessive drift.	Dirty pH electrode.	The electrode needs to be cleaned. Follow the cleaning procedure on page 20.
Reading fluctuates up and down (noise).	Clogged/dirty junction. Low electrolyte level (refillable electrodes only).	Clean the electrode. Refill with fresh electrolyte (refillable electrodes only). Check cable and connector.
Display shows blinking full scale value.	Reading out of range.	Verify the electrode is connected. Check that the sample is within measurable range. Verify that the electrode is in contact with the solution.
Display shows blinking "°C" or "°F".	Broken temperature probe.	Replace temperature probe.
Meter does not work with temperature probe.	Broken temperature probe. Wrong temperature probe.	Replace temperature probe.
Display shows blinking battery symbol.	Low battery level.	Replace the batteries.
Meter fails to calibrate or gives faulty readings.	Broken pH electrode.	Replace electrode.
"**WRONG CALIBRATION**" is displayed during pH calibration procedure.	Wrong or contaminated buffer.	Check that buffer solution is correct and fresh.
Meter shuts off.	Dead batteries or Auto-off feature is enabled: in this case, meter shuts off after 20 min of non-use.	Replace the batteries; Press **ON/OFF**.
"**Er0**", "**Er1**", "**Er2**" message at start up.	EEPROM error.	Contact your dealer or any Hanna Service Center.
"**Clr**" message at start up.	Loaded default pH calibration values.	Perform pH calibration.

ACCESSORIES

pH CALIBRATION SOLUTIONS

HI 70004P	pH 4.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 70007P	pH 7.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 70010P	pH 10.01 Buffer Solution, 20 mL sachet, 25 pcs
HI 7004L	pH 4.01 Buffer Solution, 500 mL bottle
HI 7004M	pH 4.01 Buffer Solution, 230 mL bottle
HI 7006L	pH 6.86 Buffer Solution, 500 mL bottle
HI 7006M	pH 6.86 Buffer Solution, 230 mL bottle
HI 7007M	pH 7.01 Buffer Solution, 500 mL bottle
HI 7007M	pH 7.01 Buffer Solution, 230 mL bottle
HI 7009L	pH 9.18 Buffer Solution, 500 mL bottle
HI 7009M	pH 9.18 Buffer Solution, 230 mL bottle
HI 7010L	pH 10.01 Buffer Solution, 500 mL bottle
HI 7010M	pH 10.01 Buffer Solution, 230 mL bottle

ELECTRODE STORAGE SOLUTION

HI 70300L	Storage Solution, 500 mL bottle
HI 70300M	Storage Solution, 230 mL bottle

ELECTRODE CLEANING SOLUTIONS

HI 70000P	Electrode Rinse Solution, 20 mL sachet, 25 pcs
HI 7061L	General Cleaning Solution, 500 mL bottle
HI 7061M	General Cleaning Solution, 230 mL bottle
HI 7073L	Protein Cleaning Solution, 500 mL bottle
HI 7073M	Protein Cleaning Solution, 230 mL bottle
HI 7074L	Inorganic Cleaning Solution, 500 mL bottle
HI 7074M	Inorganic Cleaning Solution, 230 mL bottle
HI 7077L	Oil & Fat Cleaning Solution, 500 mL bottle
HI 7077M	Oil & Fat Cleaning Solution, 230 mL bottle

REFILLING ELECTROLYTE SOLUTIONS (50 mL, 4 pcs)

HI 7071	3.5M KCl + AgCl Electrolyte for single junction electrodes
HI 7072	1M KNO_3 Electrolyte
HI 7082	3.5M KCl Electrolyte for double junction electrodes
HI 8093	1M KCl + AgCl Electrolyte

ORP PRETREATMENT SOLUTIONS

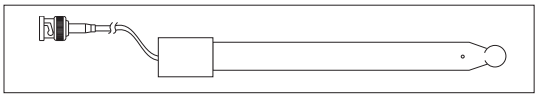
HI 7091L	Reducing Pretreatment Solution, 500 mL bottle
HI 7091M	Reducing Pretreatment Solution, 230 mL bottle
HI 7092L	Oxidizing Pretreatment Solution, 500 mL bottle
HI 7092M	Oxidizing Pretreatment Solution, 230 mL bottle

ORP SOLUTIONS

HI 7020L	Test Solution 200-275 mV, 500 mL bottle
HI 7020M	Test Solution 200-275 mV, 230 mL bottle
HI 7021L	Test Solution 240 mV, 500 mL bottle
HI 7021M	Test Solution 240 mV, 230 mL bottle
HI 7022L	Test Solution 470 mV, 500 mL bottle
HI 7022M	Test Solution 470 mV, 230 mL bottle

pH ELECTRODES

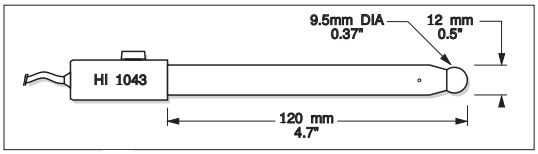
All electrodes part numbers ending in B are supplied with a BNC connector and 1 m (3.3') cable, as shown below:



HI 1043B

Glass-body, double junction, refillable, combination **pH** electrode.

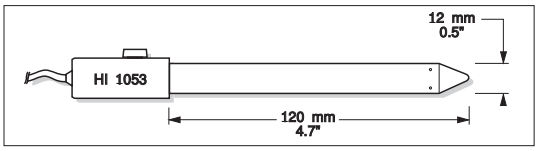
Use: strong acid/alkali.



HI 1053B

Glass-body, triple ceramic, conic shape, refillable, combination **pH** electrode.

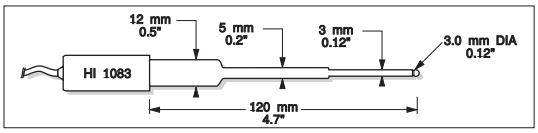
Use: emulsions.



HI 1083B

Glass-body, micro, Viscolene, non-refillable, combination **pH** electrode.

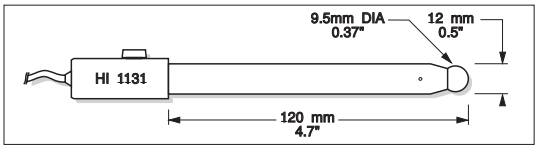
Use: biotechnology, micro titration.



HI 1131B

Glass-body, single junction, refillable, combination **pH** electrode.

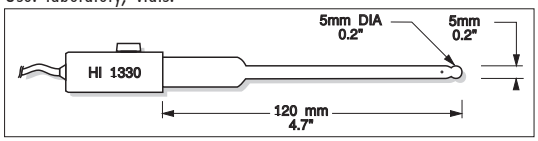
Use: general purpose.



HI 1330B

Glass-body, semimicro, single junction, refillable, combination **pH** electrode.

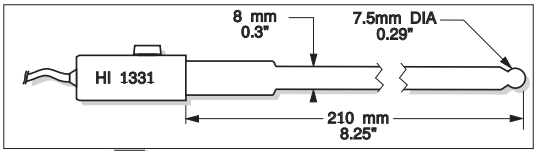
Use: laboratory, vials.



HI 1331B

Glass-body, semimicro, single junction, refillable, combination **pH** electrode.

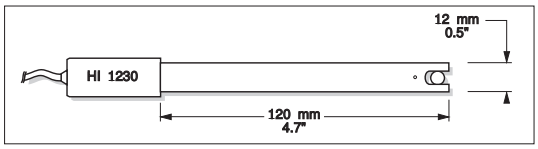
Use: flasks.



HI 1230B

Plastic-body (**PES**), double junction, gel-filled, combination **pH** electrode.

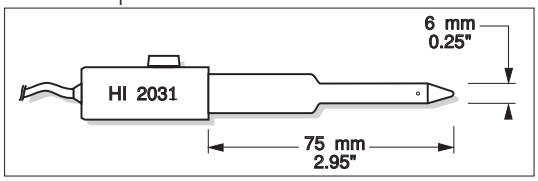
Use: general, field.



HI 2031B

Glass-body, semimicro, conic, refillable, combination **pH** electrode.

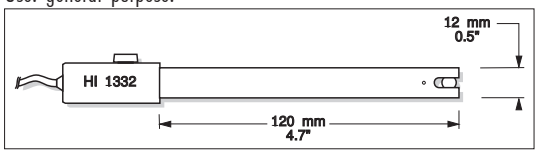
Use: semisolid products.



HI 1332B

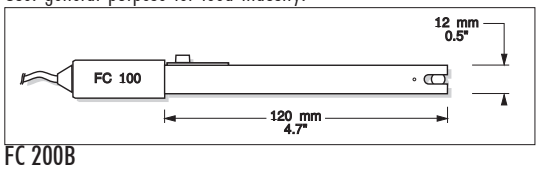
Plastic-body (**PES**), double junction, refillable, combination **pH** electrode.

Use: general purpose.



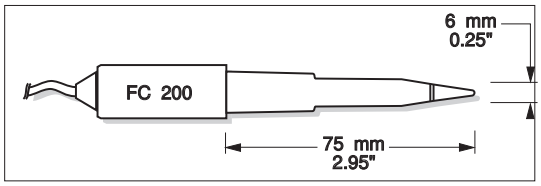
FC 100B

Plastic-body (**PVDF**), double junction, refillable, combination **pH** electrode.
Use: general purpose for food industry.



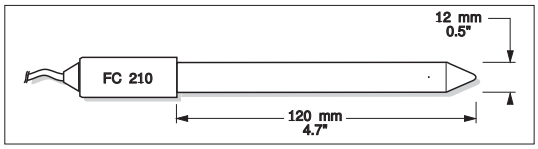
FC 200B

Plastic-body (**PVDF**), open junction, conic, Viscolene, non-refillable, combination **pH** electrode.
Use: meat & cheese.



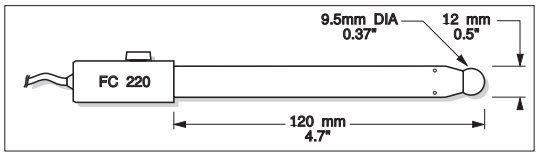
FC 210B

Glass-body, double junction, conic, Viscolene, non-refillable, combination **pH** electrode.
Use: milk, yogurt.



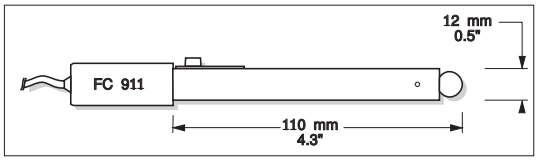
FC 220B

Glass-body, triple-ceramic, single junction, refillable, combination **pH** electrode.
Use: food processing.



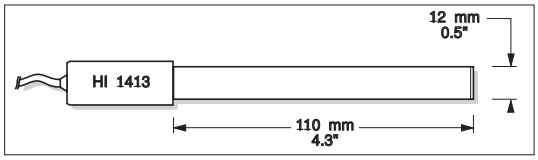
FC 911B

Plastic-body (**PVDF**), double junction, refillable with built-in amplifier, combination **pH** electrode. Use: very high humidity.



HI 1413B

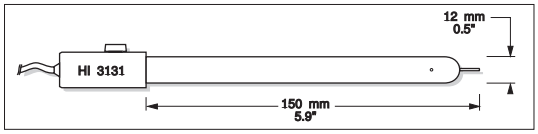
Glass-body, single junction, flat tip, Viscolene, non-refillable, combination **pH** electrode. Use: surface measurement.



ORP ELECTRODES

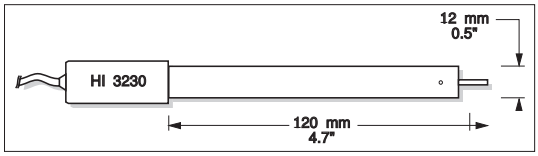
HI 3131B

Glass-body, refillable, combination platinum **ORP** electrode.
Use: titration.



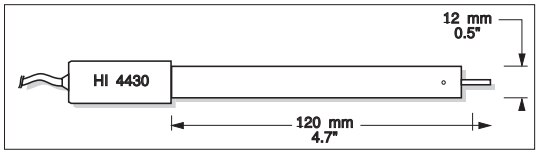
HI 3230B

Plastic-body (**PES**), gel-filled, combination platinum **ORP** electrode.
Use: general purpose.



HI 4430B

Plastic-body (**PES**), gel-filled, combination gold **ORP** electrode.
Use: general purpose.



Consult the Hanna General Catalog for a complete and wide selection of electrodes.

OTHER ACCESSORIES

HI 721317	Rugged carrying case
HI 740157	Plastic electrode refilling pipet (20 pcs)
HI 76405	Electrode holder
HI 7662	Temperature probe with 1 m (3.3') screened cable
HI 8427	pH and ORP electrode simulator with 1 m (3.3') coaxial cable ending in female BNC connectors
HI 931001	pH and ORP electrode simulator with LCD and 1 m (3.3') coaxial cable ending in female BNC connectors

RECOMMENDATIONS FOR USERS

Before using these products, make sure they are entirely suitable for the environment in which they are used.

Operation of these instruments in residential areas could cause unacceptable interferences to radio and TV equipment, requiring the operator to follow all necessary steps to correct interferences.

The glass bulb at the end of the pH electrode is sensitive to electrostatic discharges. Avoid touching this glass bulb at all times.

During operation, ESD wrist straps should be worn to avoid possible damage to the electrode by electrostatic discharges.

Any variation introduced by the user to the supplied equipment may degrade the instruments' EMC performance.

To avoid electrical shock, do not use these instruments when voltages at the measurement surface exceed 24 VAC or 60 VDC.

To avoid damage or burns, do not perform any measurement in microwave ovens.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

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Instruction Manual

HI 93703

Portable Microprocessor Turbidity Meter

HANNA instruments®

Dear Customer,

Thank you for choosing a HANNA instruments® product.

Please read this instruction manual carefully before using the instrument.

This manual will provide you with all the necessary information for the correct use of the instrument. If you need additional technical information, do not hesitate to e-mail us at **tech@hannainst.com**.

This instrument is in compliance with the CE directives.

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PRELIMINARY EXAMINATION

Remove the instrument from the packing material and examine it to make sure that no damage has occurred during shipping. If there is any damage, notify your dealer.

HI 93703 is supplied complete with:
- Glass cuvet with cap
- Batteries (4 x 1.5V AA) and instructions

HI 93703C is a complete kit supplied with:
- 2 glass cuvets with caps
- Batteries (4 x 1.5V AA) and instructions
- **HI 93703-0** & **HI 93703-10** cal. solutions
- **HI 93703-50** cleaning solution
- Tissue for wiping cuvets
- Rugged carrying case

Note: Save all packing material until you are sure that the meter functions correctly. All defective items must be returned in its original packaging with the supplied accessories.

GENERAL DESCRIPTION

With **HI 93703** turbidity measurements can be performed with high precision in the field as well as in the laboratory.

HI 93703 turbidity meter is a portable, microprocessor-based instrument used to determine the turbidity of water and wastewater. The meter covers a 0 to 1000 FTU range in two scales: 0.00 to 50.00 FTU and 50 to 1000 FTU. The auto-ranging feature sets the appropriate range for the measurement.

HI 93703 has been designed according to the ISO7027 International Standard, consequently the turbidity unit is the FTU (Formazine Turbidity Unit). FTU is equivalent to the other internationally recognized unit: NTU (Nephelometric Turbidity Unit).

The meter housing is a rugged and lightweight case, with an easy-to-read LCD.

To save battery-life, the instrument is equipped with an automatic shut-off feature which is activated after 4 minutes of non-use.

The meter is very simple to use: all operations can be carried out with only four keys and troubleshooting functions can be performed with displayed error code guides.

An exclusive positive-locking system guarantees that the cuvet is firmly placed in the cell. The keypad is water-resistant and can be wiped with a moist cloth for quick cleanups.

The one-point calibration at 10 FTU* can be easily performed using the available standard. In addition, **HI 93703** is the first portable turbidity meter that allows to store the last calibration date and to retrieve it at the user's convenience.

HANNA instruments has chosen 10 FTU* as the calibration point because it is the value that best fits the water turbidity measurements in different applications, from drinking water to wastewater treatment.

HANNA instruments uses the primary standard AMCO-AEPA-1 to avoid all formazine-related problems. Formazine is a very toxic, unstable substance, which requires particular care: its standards have to be prepared only a few minutes before performing the calibration, and cannot be reused because of their short life. Hanna Instruments standards are extremely stable, can be reused, and last up to six months, if free from contamination.

HI 93703 can be used with both standards.

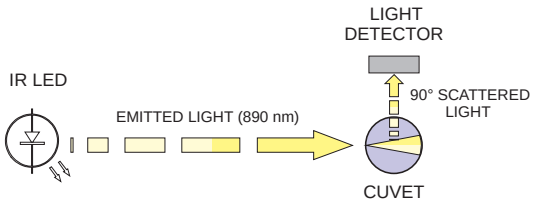
* 1 FTU = 1 NTU

PRINCIPLE OF OPERATION

HI 93703 has been designed to perform measurements according to the ISO 7027 International Standard.

The instrument functions by passing a beam of infrared light through a vial containing the sample being measured.
The light source is a High Emission Infrared LED with a wavelength peaking at 890 nm, ensuring that the interference caused by colored samples is minimum.

A sensor, positioned at 90° with respect to the direction of light, detects the amount of light scattered by the undissolved particles present in the sample. The microprocessor converts such readings into FTU* values.

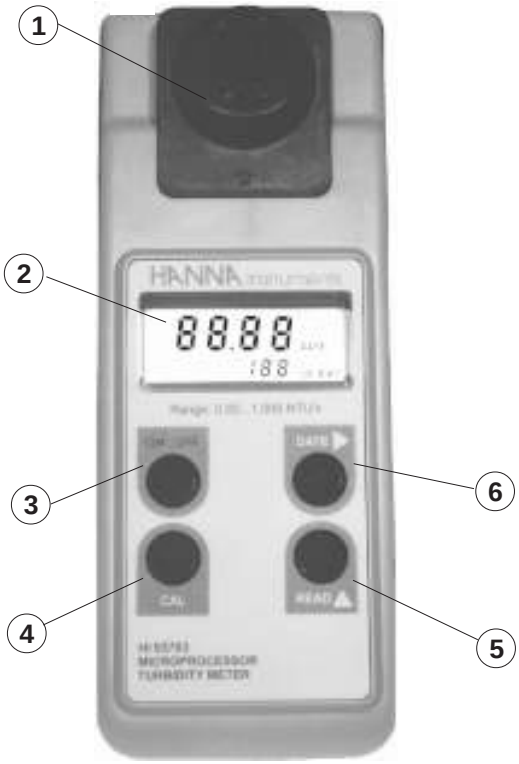


As noted above, FTU unit is equal to the NTU unit. However, there are other known measurement units for turbidity: Jackson Turbidity Unit (JTU) based on the old method of Jackson's candle, and Silica Unit (mg/L of SiO_2). For your reference the conversion table between these measurement units is shown below:

	JTU	FTU/NTU	SiO_2 (mg/L)
JTU	1	19	2.5
FTU/NTU	0.053	1	0.13
SiO_2 (mg/L)	0.4	7.5	1

* 1 FTU = 1 NTU

FUNCTIONAL DESCRIPTION



1) Measurement cell
2) LCD (Liquid Crystal Display)
3) ON/OFF key
4) CAL key, to enter the calibration mode
5) READ/⇑ key, to perform measurements and to set the date (day and month) of the last calibration
6) DATE/⇒ key, to display the last calibration date and to select either the month or the day of last calibration

SPECIFICATIONS

Range	0.00 to 50.00 FTU * 50 to 1000 FTU *
Resolution	0.01 and 1 FTU *
Accuracy	±0.5 FTU* or ±5% of reading (whichever is greater)
Typical EMC Deviation	±2% FS
Calibration	3 point (0, 10 and 500 FTU*)
Light Source	Infrared LED
Light Source Life	Life of the instrument
Light Detector	Silicon Photocell
Battery Type	4 x 1.5V AA alkaline
Battery Life	Approx. 60 hours of use or 900 measurements
Auto-off	After 5 minutes of non-use
Environment	0 to 50°C (32 to 122°F); RH max 95% non-condensing
Dimensions	220 x 82 x 66 mm (8.7 x 3.2 x 2.6")
Weight	510 g (1.1 lb.)

* 1 FTU = 1 NTU

OPERATIONAL GUIDE

To prepare the instrument for taking measurements, first install the batteries (see Battery Replacement section on page 17) and then turn the instrument on.

To maximize the battery life the meter is automatically switched off after 5 minutes of non-use. To reactivate it, simply press the ON/OFF key.

MEASUREMENT PROCEDURE

- Turn the meter on by pressing the ON/OFF key.

- The meter will carry out a self-test displaying a full set of figures. After the test, the LCD will change to the measurement mode.

- When the LCD displays "----" the meter is ready to measure.

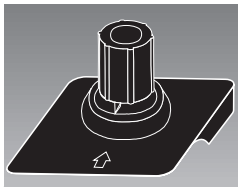
- Fill a clean cuvette up to one quarter inch (0.5 cm) from its rim with the thoroughly agitated sample.

- Allow sufficient time for bubbles to escape before securing the cap.

- Wipe the cuvette thoroughly with a lint-free tissue (HI 93703-70) before inserting into the measurement cell. The cuvette must be completely free of fingerprints and other oil or dirt, particularly in the area where the light goes through (approximately the bottom 2 cm/1 inch of the cuvette).

- Place the cuvette into the cell and check that the notch on the cap is positioned securely into the groove.

- The mark on the cuvette cap should point towards the LCD.



- Press the READ/⇑ key and the LCD will display a blinking "SIP" (Sampling in Process). The turbidity value will appear after approximately 25 seconds.

- Even though **HI93703** covers a very wide range of turbidity values, for very accurate measurements of samples exceeding 40 FTU*, Standard Methods require dilution. In such cases, the correct amount of **HI 93703-0** or turbidity-free water to be added to the sample can be calculated as follows:

Vos = 3000 / T

where: Vos = volume of sample (mL) to be combined with HI 93703-0 to obtain the final volume of 100 mL.
T = HI 93703 reading (exceeding 40 FTU*)

E.g.: HI 93703 reading = 200 FTU *
3000 / 200 = 15 mL (Vos)
15 mL (Vos)+85 mL (HI 93703-0) = 100 mL

At this point, take a sample of this solution and measure turbidity.
The correct turbidity value of the original sample will be:

$$T_n \times 100\ mL / Vos = T_a$$

where: T_n = new HI 93703 reading
T_a = actual turbidity value of the original sample

* 1 FTU = 1 NTU

HOW TO ENSURE ACCURATE MEASUREMENTS

- Each time the cuvette is used, tighten the cap to the same degree.
- Discard the sample soon after the reading is taken to avoid permanently clouding the glass.
- All glassware used to contain the standards and the samples should be maintained clean, washed with **HI 93703-50** cleaning solution and rinsed with **HI 93703-0** or turbidity-free water.
- Collect the samples in clean glass or plastic bottles, fit stoppers and perform the analysis quickly. If unavoidable, store the sample in a cool, dark place, but not for longer than 24 hours (the sample needs to be kept at room temperature prior to the analysis).
- To obtain a representative sample, gently, but thoroughly, mix it before samples are taken. Do not shake (to prevent air bubbles) and do not let the sample settle.
- It is recommended to monthly calibrate the meter with the supplied **HI 93703-10** @10 FTU* standard or more frequently for greatest accuracy.
- Before inserting vials into the instrument, wipe them with **HI 93703-70** soft, lint-free tissue. Handle vials so that no fingerprints can get on the areas where light passes (approximately 2 cm/1 inch from the bottom of the vial).

If you experience any problems in taking measurements, please contact your dealer or the nearest Hanna Instruments Customer Service Department.

* 1 FTU = 1 NTU

SOURCES OF INTERFERENCE

- Presence of floating debris and coarse sediments which settle out rapidly will give false readings.
- The infrared light source used for **HI 93703** turbidity meter, according to ISO 7027 International Standard, can effectively minimize errors due to colored dissolved substances. This effect, named "true color", is a common interference for most commercially available instruments operating in the range of visible light.
- Air bubbles and the effect of vibrations that disturb the surface of the sample will give false results.
- Dirty glassware could also affect readings along with scratched or edged vials.

CALIBRATION

A monthly calibration is recommended. To check the date of last calibration, simply hold the DATE/⇒ key down for few seconds.

A more frequent check of the instrument is suggested by using the supplied standard solution.

CALIBRATION PROCEDURE

- Turn the meter on and wait for the display to show "----".

- Press the CAL key once, the "CAL" message will blink on the display for about 6 seconds, then the calibration mode stops.

- While the "CAL" message is still blinking, press CAL again. The instrument is now in the calibration mode and a "CL" will appear on the lower part of the display. The date of calibration can be edited now by simply pressing the DATE/⇒ key. To scroll to the correct number press the READ/⇑ key. The default blinking parameter is the month, on the left hand of the display (MM.DD).

- To confirm the displayed data values and to go to the next step, press the CAL key once. A blinking "ZERO" message will appear.

- Take the **HI 93703-0** bottle containing the ZERO FTU* Standard (or turbidity-free dilution water) and fill the measurement cuvette.

Note: In order to minimize any error introduced by the cuvette, it is recommended to use, during calibration, the same cuvette you are going to use to perform the measurement.

- Insert the cuvette with the **HI 93703-0** @ ZERO FTU* standard solution (or turbidity-free dilution water) into the measurement cell and press the CAL key. A blinking "SIP" message indicates that the instrument is performing the measurement. After approximately 50 seconds the instrument will ask for the **HI 93703-10** standard solution @10 FTU* by displaying "10.0".

- Repeat the same procedure with **HI 93703-10** @ 10FTU * standard solution.

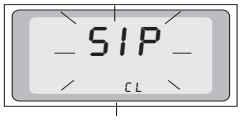
- Insert the cuvette with the **HI 93703-10** AMCO-AEPA-1 standard @10 FTU* into the measurement cell and press the CAL key again.

- After the second calibration point (10.00 FTU*) has been accepted, the meter will display “500”, asking for the 500 FTU* solution to be placed in the cuvet holder.

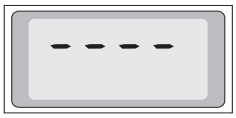
Note: At this point the user can exit the calibration mode and save the two-point calibration by pressing READ.

To perform a three-point calibration, place the 500 FTU* standard solution in the cuvet holder.

- Press CAL: “SIP” and “CL” will start blinking.



- After approximately 30 seconds, the display will show "----".



Now the meter is calibrated and ready for use.

Note: If "ERR1" is displayed, the calibration data are maintained

* 1 FTU = 1 NTU

HOW TO ENSURE ACCURATE CALIBRATION

The instructions listed below should be carefully followed during testing and during calibration:

- All glassware that comes into contact with standards should be maintained clean. Wash with **HI 93703-50** cleaning solution and rinse with **HI 93703-0** or turbidity free water.
- Rinse the vial twice with 5 ml of the liquid to be tested. This removes the effect of any previous liquid and any dust or foreign matter that may be present inside. Gently pour the liquid down the side of the vial to reduce air bubbles (no mixing is required when **HI 93703-0** and **HI 93703-10** AMCO-AEPA-1 standards are used).
- Before inserting the vial into the instrument, wipe it with **HI 93703-70** soft, lint-free tissue. Handle vials so that no fingerprints can get on the areas where light passes (approx. 2 cm/ 1" from the bottom of the vial).

STANDARD SUSPENSION

Presently, there are only two recognized primary standards: AMCO-AEPA-1 and formazine.

HANNA instruments supplies **HI 93703** with the AMCO-AEPA-1 which has a much longer shelf life at all concentrations (approximately six months, if free from contamination). In addition, no special handling or disposal is required and a much higher stability of suspended particles has been observed.

On the other hand, formazine is a very toxic substance, generated by a known carcinogen, its stability is poor (particles flocculate and settle quickly). Lower concentrations change value within a few days or hours after dilution from stock solutions.

The consistency of **HI 93703** readings by using both standards has been separately established by Advanced Polymer Systems and HANNA instruments.

Additional documentation about the formazine standard and more complex calibration procedures is available upon request.

VIEWING THE CALIBRATION DATE

- Turn the meter on and wait for the display to show "----".

- Press and hold the DATE/⇒ key and a "MM.DD" message appears while the key is held.

Note: The displayed date is the date that was input by the user at the beginning of the last calibration.

BATTERY REPLACEMENT

All components have been selected to minimize current drain without compromising functionality.

In order to minimize the battery consumption, the meter is equipped with an auto-off function which switches the meter off after 5 minutes of non-use.

The power source are 4 alkaline batteries (1.5V AA) with an expected life of 60 hours, or 900 measurements.

To always grant accurate measurements, the batteries are monitored to ensure that readings are not taken when there is insufficient power. A "**LO BAT**" indication will appear on the lower right corner of the display when the batteries are weak and require replacement. The instrument can still perform approx. 50 measurements.

A "**-BA-**" indication will appear on the display when the batteries are too weak to perform reliable measurements. The message appears for a few seconds, and then the meter will automatically switch off. Batteries must be immediately replaced.

Battery replacement must only take place in a safe area and using the battery types specified in this instruction manual.

To install or replace the batteries, turn the unit off and unscrew the 2 screws located on the back of the meter.

Remove the battery cover and insert the new batteries in the compartment while paying attention to the polarity.

After the batteries have been installed, close the battery cover and tighten the 2 screws.

LCD AND ERROR MESSAGES

HI 93703 will display several different LCD messages to help the user throughout all operations.

The meter is in a ready state and measurement or calibration can be performed.

Calibration mode is active. If the CAL key is not pressed within 6 seconds, the meter will automatically switch to the measurement mode.

Calibration date setting mode is active.

0 FTU* standard for calibration is required.

Calibration is in progress.

10 FTU* standard for calibration is required.

Last calibration date (MM.DD).

* 1 FTU = 1 NTU

"Sample In Progress": measurement is being performed.

Low battery: when this message appears, the instrument can still perform approx. 50 measurements.

Batteries are too weak to ensure reliable measurements. This message appears for a few seconds, then the meter will automatically switch off. Batteries must be replaced immediately.

* 1 FTU = 1 NTU

ACCESSORIES

HI 731318	Tissue for wiping cuvets (4 pcs)
HI 731321	Spare glass cuvet (4 pcs)
HI 731313	Maintenance kit: rugged carrying case including **HI 93703-0** and **HI 93703-10** calibration solutions, **HI 93703-50** cuvet cleaning solution, 1 tissue for wiping cuvets and 2 cuvets
HI 93703-0	AMCO-AEPA-1 @0 FTU* calibration solution, 30 mL
HI 93703-05	AMCO-AEPA-1 @500 FTU* calibration solution, 30 mL
HI 93703-10	AMCO-AEPA-1 @10 FTU* calibration solution, 30 mL
HI 93703-50	Cuvet cleaning solution, 230 mL

WARRANTY

All Hanna Instruments **meters are warranted for two years** against defects in workmanship and materials when used for their intended purpose and maintained according to instructions. This warranty is limited to repair or replacement free of charge. Damages due to accidents, misuse, tampering or lack of prescribed maintenance are not covered. If service is required, contact the dealer from whom you purchased the instrument. If under warranty, report the model number, date of purchase, serial number and the nature of the failure.
First obtain a Returned Goods Authorization number from the Customer Service department, then return the instrument with the Authorization # included along with shipment costs prepaid. If the repair is not covered by the warranty, you will be notified of the charges. When shipping any instrument, make sure it is properly packaged for complete protection.

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* 1 FTU = 1 NTU

CE DECLARATION OF CONFORMITY

HANNA instruments

CE

DECLARATION OF CONFORMITY

We

Hanna Instruments Italia Srl
via E.Fermi, 10
35030 Sarmeola di Rubano - PD
ITALY

herewith certify that the turbidity meter

HI 93703

has been tested and found to be in compliance with EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC according to the following applicable normatives:

EN 50082-1: Electromagnetic Compatibility - Generic Immunity Standard
IEC 801-2 Electrostatic Discharge
IEC 801-3 RF Radiated

EN 50081-1: Electromagnetic Compatibility - Generic Emission Standard
EN 55022 Radiated, Class B

EN61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use

Date of Issue: 27-11-1998

P. Cesa - Technical Director
On behalf of
Hanna Instruments S.r.l.

Recommendations for Users

Before using this product, make sure that it is entirely suitable for the environment in which it is used.

Operation of this instrument in residential area could cause unacceptable interferences to radio and TV equipments, requiring the operator to take all necessary steps to correct interferences.

Any variation introduced by the user to the supplied equipment may degrade the instrument's EMC performance.

To avoid electrical shock, do not use this instrument when voltages at the measurement surface exceed 24 Vac or 60 Vdc.

To avoid damages or burns, do not perform any measurement in microwave ovens.

Hanna Instruments reserves the right to modify the design, construction and appearance of its products without advance notice.

SALES & TECHNICAL SERVICE CONTACTS

Australia:
Tel. (03) 9769.0666 • Fax (03) 9769.0699

China:
Tel. (10) 88570068 • Fax (10) 88570060

Egypt:
Tel. & Fax (02) 2758.683

Germany:
Tel. (07851) 9129-0 • Fax (07851) 9129-99

Greece:
Tel. (210) 823.5192 • Fax (210) 884.0210

Indonesia:
Tel. (21) 4584.2941 • Fax (21) 4584.2942

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South Africa:
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Taiwan:
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Thailand:
Tel. 66.2619.0708 • Fax 66.2619.0061

United Kingdom:
Tel. (01525) 850.855 • Fax (01525) 853.668

USA:
Tel. (401) 765.7500 • Fax (401) 765.7575

MANTURBR4 08/05

For e-mail contacts and complete list of Sales and Technical offices, please see ***www.hannainst.com***

CSMP Attachment 5: Supplemental Information

Section 8 References

Project Plans dated January 15, 2015, prepared by PSOMAS.

State Water Resources Control Board (2009). Order 2009-0009-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

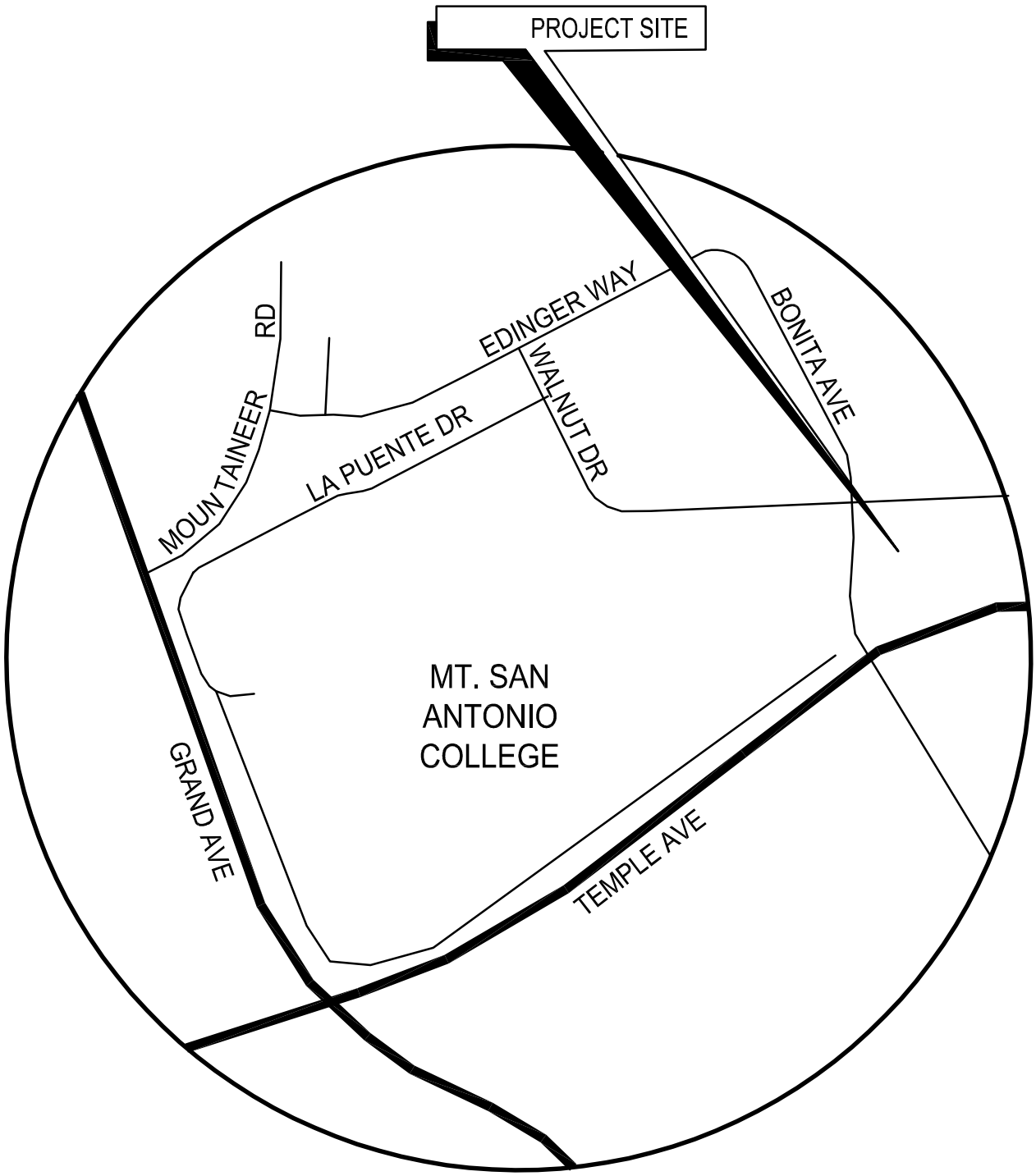
State Water Resources Control Board (2010). Order 2010-0014-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

State Water Resources Control Board (2012). Order 2012-0006-DWQ, NPDES General Permit No. CAS000002: National Pollutant Discharges Elimination System (NPDES) California General Permit for Storm Water Discharge Associated with Construction and Land Disturbing Activities. Available on-line at: http://www.waterboards.ca.gov/water_issues/programs/stormwater/construction.shtml.

CASQA 2009, *Stormwater BMP Handbook Portal: Construction*, November 2009, www.casqa.org

Appendix A: Calculations

Appendix B: Site Maps



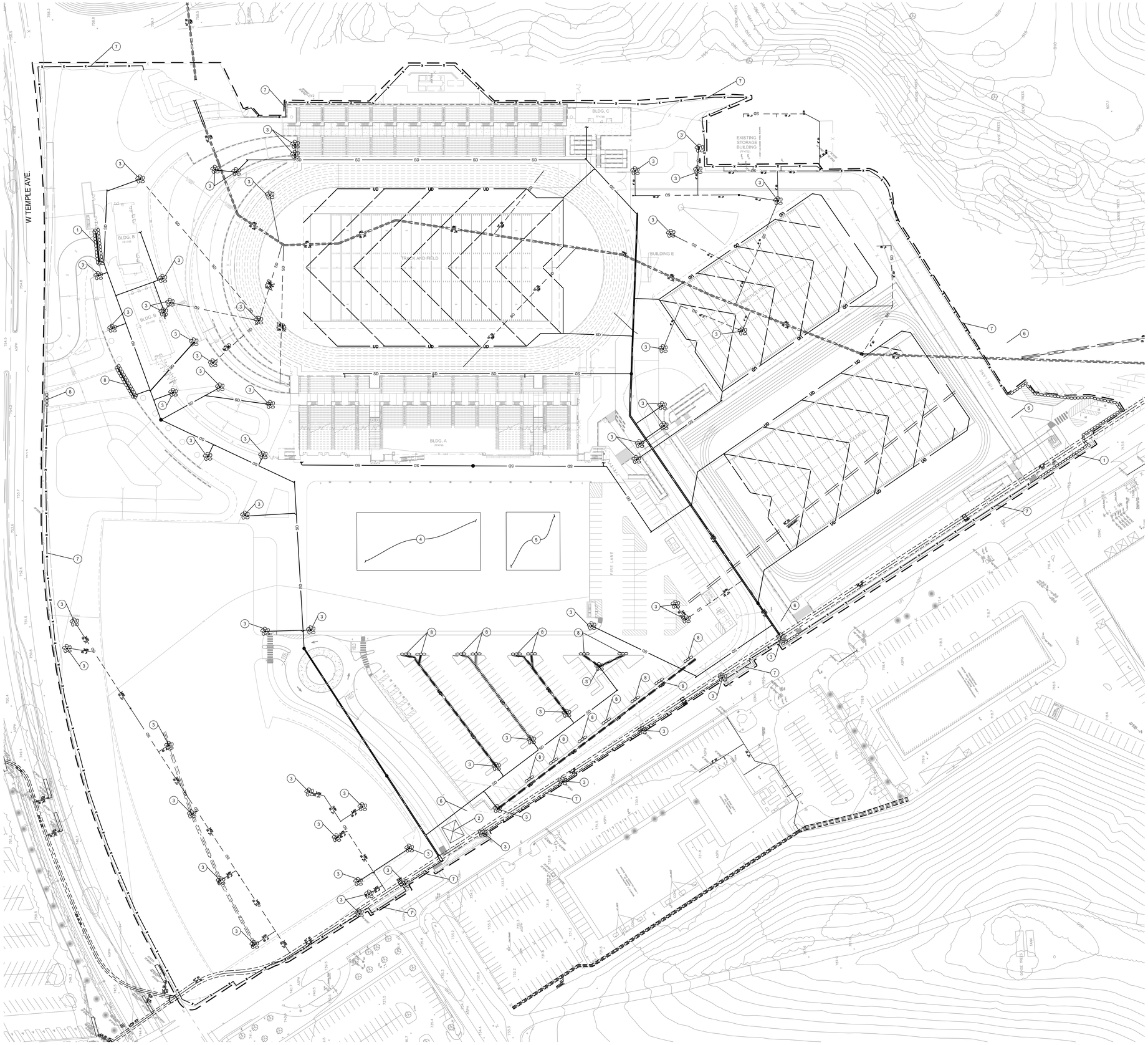
Vicinity Map
N.T.S.

PSOMAS

Mt. San Antonio College

DATE: 09-03-2015 REVISED ON:
JOB No:1HMC015001

SHEET 1 OF 1



CONSTRUCTION NOTES:

CONSTRUCT

1. INSTALL GRAVEL BAG BERM PER SE-6, TWO BAGS HIGH
2. INSTALL STABILIZED CONSTRUCTION ENTRANCE PER TC-1
3. INSTALL STORM DRAIN INLET PROTECTION PER SE-10
4. IMPLEMENT STAGING AREA FOR VEHICLE AND EQUIPMENT CLEANING PER NS-8, VEHICLE AND EQUIPMENT FUELING PER NS-9, VEHICLE AND EQUIPMENT MAINTENANCE PER NS-10, AND MATERIAL DELIVERY AND STORAGE PER WM-1, LOCATION SHALL BE FIELD DETERMINED BY CONTRACTOR.
5. CONCRETE WASTE MANAGEMENT PER WM-8, LOCATION SHALL BE FIELD DETERMINED BY CONTRACTOR.
6. SAMPLING LOCATION
7. INSTALL SILT FENCE PER SE-1
8. INSTALL SAND BAG PER SE-8

LEGEND:

- SILT FENCE
- LIMIT OF WORK
- GRAVEL BAG BERM/SAND BAG
- FIBER ROLL
- BUILDING FOOTPRINT
- INLET PROTECTION

NOTES:

1. REFER TO THE LATEST EDITION OF THE CALIFORNIA STORMWATER BEST MANAGEMENT PRACTICE HANDBOOK FOR THE BMP OUTLINED ON THIS PLAN.

50' 25' 0' 50' 100'

GRAPHIC SCALE
SCALE: 1" = 50'

PLEASE RECYCLE

3546 Concours Street / Ontario, CA 91764
T 909 989 9979/ www.hmcarchitects.com

PSOMAS
555 South Flower Street, Suite 4300
Los Angeles, CA 90071
Tel. (213) 223-1400 Fax (213) 223-1444

NOTES

Key Plan

Consultant Seal

REGISTERED PROFESSIONAL ENGINEER ALISON J. WILLARD No. C69927 CIVIL STATE OF CALIFORNIA

Agency Approval FILE NO.

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APPL. ----
ACS_____ FLS_____ SSS_____
DATE _____

Project Title

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:

EROSION CONTROL PLAN

Architect's Seal

Designed:	MM	Project No.	1HMC015001
Drawn:	SA	Scale:	AS SHOWN
QAQC	AW	Drawing No.	ECP
Date:	09/03/2015		

Appendix C: Permit Registration Documents

Permit Registration Documents included in this Appendix

Y/N	Permit Registration Document
Y	Notice of Intent
Y	Risk Assessment
Y	Certification
N/A	Post Construction Water Balance
N/A	Copy of Annual Fee Receipt
N/A	ATS Design Documents
Y	Site Map, see Appendix B

Appendix D: SWPPP Amendment Certifications

SWPPP Amendment No. _____

Project Name: _____

Project Number: _____

Qualified SWPPP Developer's Certification of the

Stormwater Pollution Prevention Plan Amendment

"This Stormwater Pollution Prevention Plan and attachments were prepared under my direction to meet the requirements of the California Construction General Permit (SWRCB Order No. 2009-009-DWQ as amended by 2010-0014-DWQ and 2012-00xx-DWQ). I certify that I am a Qualified SWPPP Developer in good standing as of the date signed below."

QSD's Signature	Date
QSD Name	QSD Certificate Number
Title and Affiliation	Telephone
Address	Email

Appendix E: Submitted Changes to PRDs

Log of Updated PRDs

The General Permit allows for the reduction or increase of the total acreage covered under the General Permit when a portion of the project is complete and/or conditions for termination of coverage have been met; when ownership of a portion of the project is purchased by a different entity; or when new acreage is added to the project.

Modified PRDs shall be filed electronically within 30 days of a reduction or increase in total disturbed area if a change in permit covered acreage is to be sought. The SWPPP shall be modified appropriately, with revisions and amendments recorded in Appendix C. Updated PRDs submitted electronically via SMARTS can be found in this Appendix.

This appendix includes all of the following updated PRDs (check all that apply):

☐ Revised Notice of Intent (NOI);

☐ Revised Site Map;

☐ Revised Risk Assessment;

☐ New landowner's information (name, address, phone number, email address); and

☐ New signed certification statement.

_____

Legally Responsible Person

_____ _____

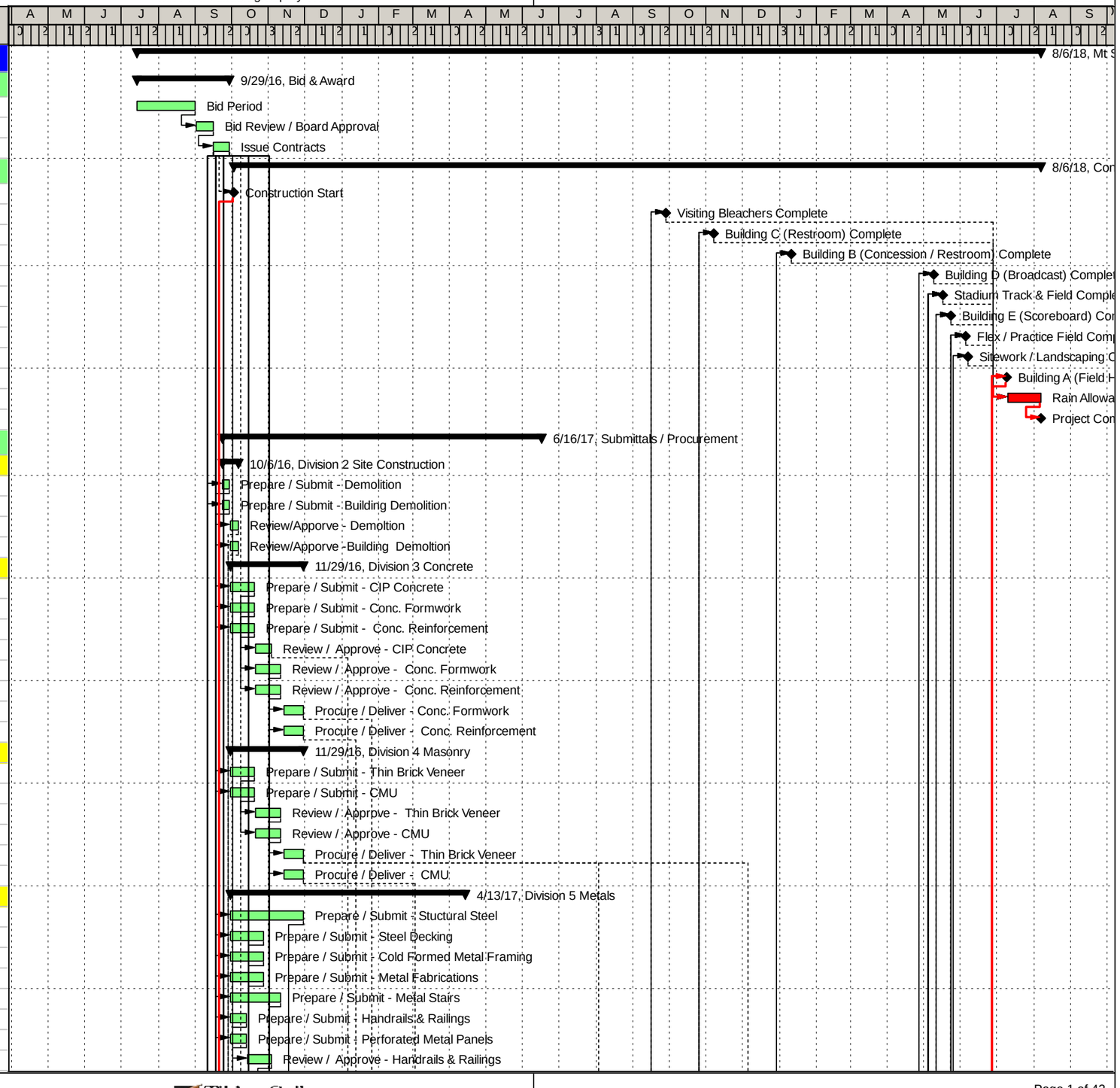
Signature of Legally Responsible Person or Approved Signatory | Date

_____ _____

Name of Legally Responsible Person or Approved Signatory | Telephone Number

Appendix F: Construction Schedule

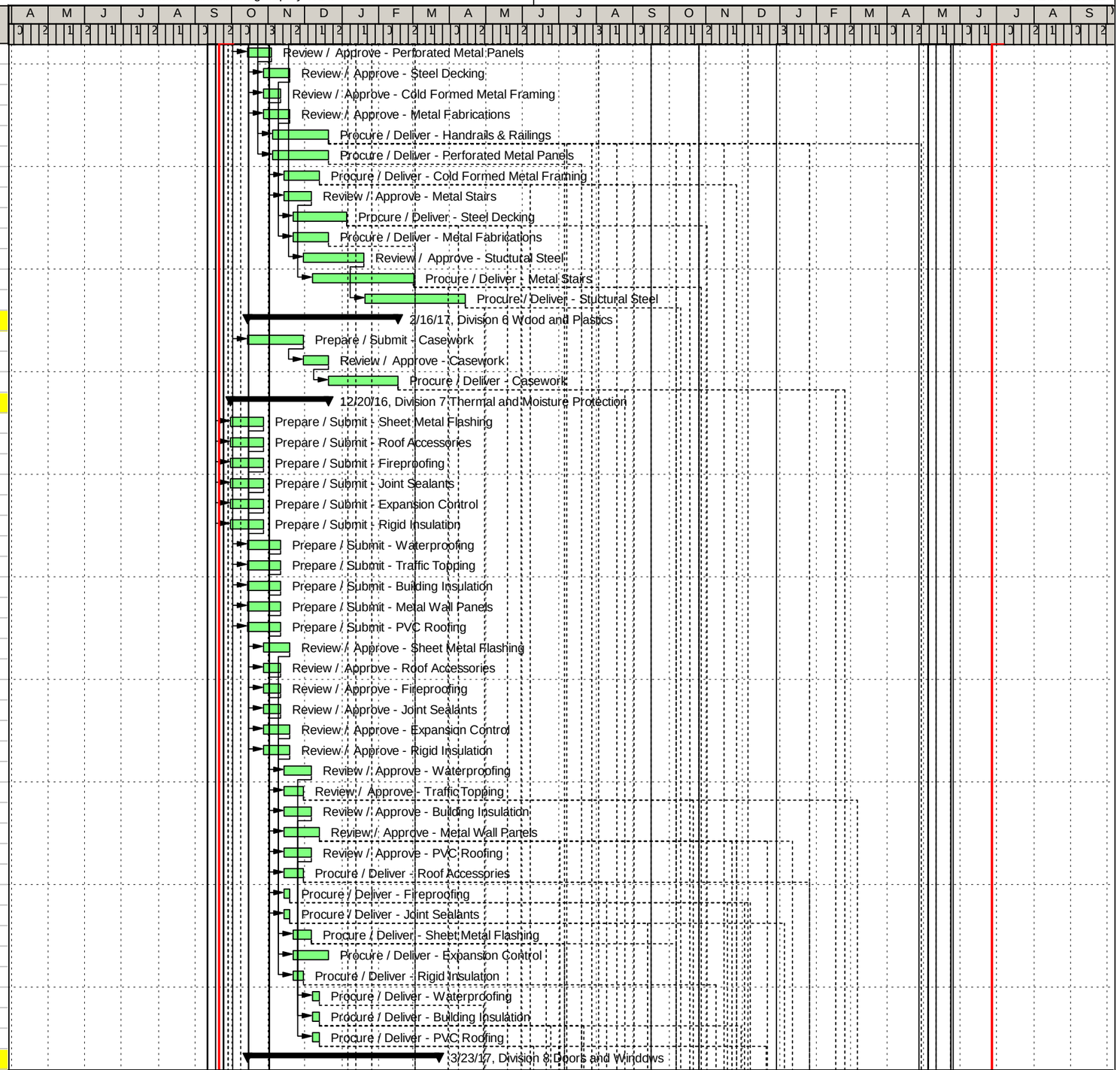
Activity ID	Activity Name	Original Duration	Start	Finish
Mt SAC Athletic Facility - Baseline Draft		522	7/14/16	8/6/18
Bid & Award		55	7/14/16	9/29/16
PC-1000	Bid Period	35	7/14/16*	8/31/16
PC-1010	Bid Review / Board Approval	10	9/1/16	9/15/16
PC-1020	Issue Contracts	10	9/16/16	9/29/16
Construction Milestones		466	10/3/16	8/6/18
MS-1000	Construction Start	0	10/3/16*	
MS-1060	Visiting Bleachers Complete	0		9/28/17
MS-1030	Building C (Restroom) Complete	0		11/7/17
MS-1020	Building B (Concession / Restroom) Comple	0		1/10/18
MS-1050	Building D (Broadcast) Complete	0		5/9/18
MS-1070	Stadium Track & Field Complete	0		5/17/18
MS-1040	Building E (Scoreboard) Complete	0		5/23/18
MS-1080	Flex / Practice Field Complete	0		6/5/18
MS-1110	Sitework / Landscaping Complete	0		6/7/18
MS-1010	Building A (Field House / Stadium) Complete	0		7/9/18
MS-1100	Rain Allowance	20	7/10/18	8/6/18
MS-1090	Project Complete	0		8/6/18
Submittals / Procurement		185	9/23/16	6/16/17
Division 2 Site Construction		10	9/23/16	10/6/16
024100-10	Prepare / Submit - Demolition	5	9/23/16	9/29/16
024116-10	Prepare / Submit - Building Demolition	5	9/23/16	9/29/16
024100-20	Review/Apporve - Demoltion	5	9/30/16	10/6/16
024116-20	Review/Apporve -Building Demoltion	5	9/30/16	10/6/16
Division 3 Concrete		40	9/30/16	11/29/16
033000-10	Prepare / Submit - CIP Concrete	15	9/30/16	10/20/16
031000-10	Prepare / Submit - Conc. Formwork	15	9/30/16	10/20/16
032000-10	Prepare / Submit - Conc. Reinforcement	15	9/30/16	10/20/16
033000-20	Review / Approve - CIP Concrete	10	10/21/16	11/3/16
031000-20	Review / Approve - Conc. Formwork	15	10/21/16	11/10/16
032000-20	Review / Approve - Conc. Reinforcement	15	10/21/16	11/10/16
031000-30	Procure / Deliver - Conc. Formwork	10	11/14/16	11/29/16
032000-30	Procure / Deliver - Conc. Reinforcement	10	11/14/16	11/29/16
Division 4 Masonry		40	9/30/16	11/29/16
042115-10	Prepare / Submit - Thin Brick Veneer	15	9/30/16	10/20/16
042200-10	Prepare / Submit - CMU	15	9/30/16	10/20/16
042115-20	Review / Approve - Thin Brick Veneer	15	10/21/16	11/10/16
042200-20	Review / Approve - CMU	15	10/21/16	11/10/16
042115-30	Procure / Deliver - Thin Brick Veneer	10	11/14/16	11/29/16
042200-30	Procure / Deliver - CMU	10	11/14/16	11/29/16
Division 5 Metals		135	9/30/16	4/13/17
051200-10	Prepare / Submit - Stuctural Steel	40	9/30/16	11/29/16
053100-10	Prepare / Submit - Steel Decking	20	9/30/16	10/27/16
054000-10	Prepare / Submit - Cold Formed Metal Fram	20	9/30/16	10/27/16
055000-10	Prepare / Submit - Metal Fabrications	20	9/30/16	10/27/16
055100-10	Prepare / Submit - Metal Stairs	30	9/30/16	11/10/16
055213-10	Prepare / Submit - Handrails & Railings	10	9/30/16	10/13/16
057313-10	Prepare / Submit - Perforated Metal Panels	10	9/30/16	10/13/16
055213-20	Review / Approve - Handrails & Railings	15	10/14/16	11/3/16



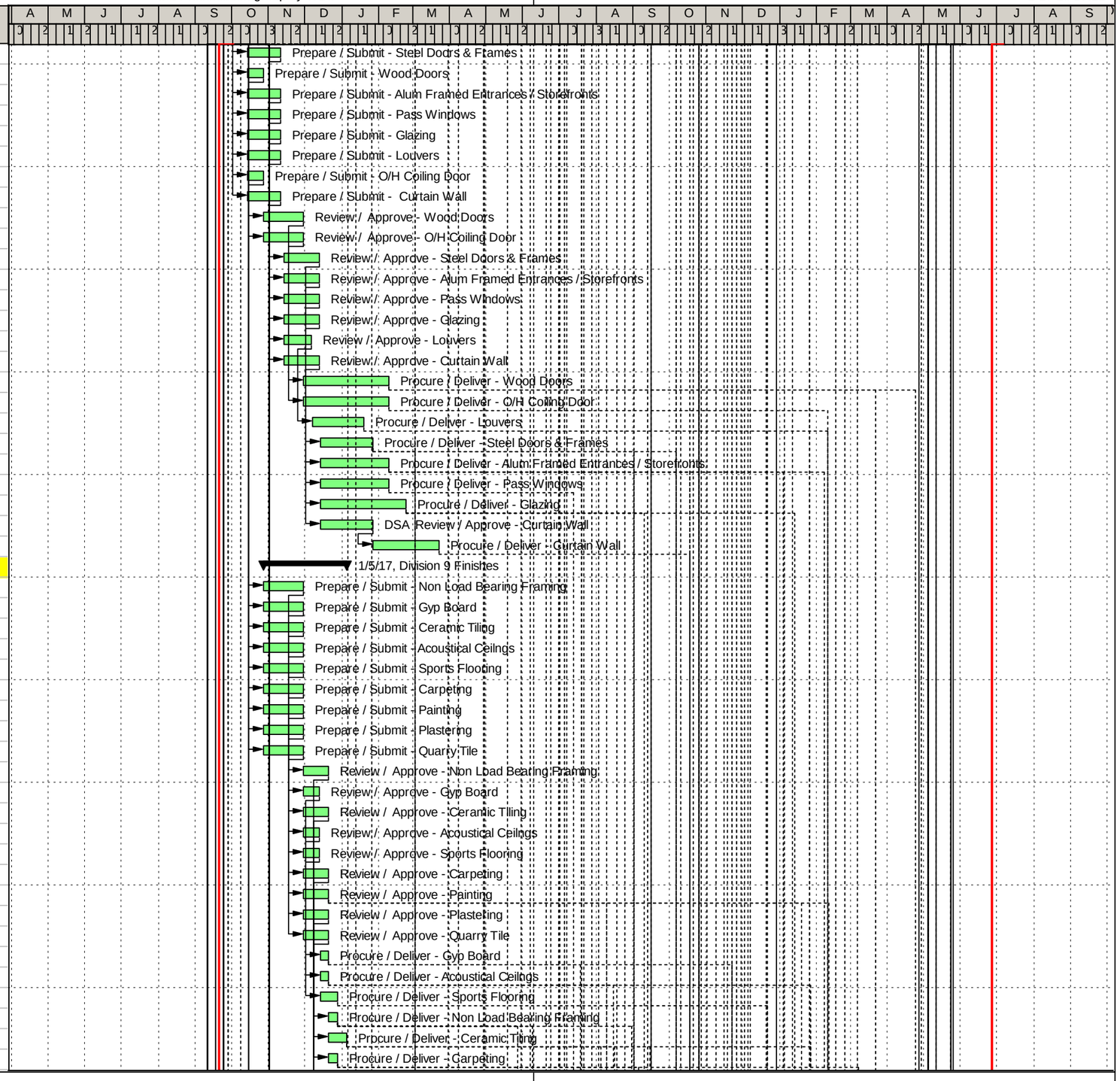
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Tilden-Coil Constructors

Activity ID	Activity Name	Original Duration	Start	Finish
057313-20	Review / Approve - Perforated Metal Panels	15	10/14/16	11/3/16
053100-20	Review / Approve - Steel Decking	15	10/28/16	11/18/16
054000-20	Review / Approve - Cold Formed Metal Fra	10	10/28/16	11/10/16
055000-20	Review / Approve - Metal Fabrications	15	10/28/16	11/18/16
055213-30	Procure / Deliver - Handrails & Railings	30	11/4/16	12/20/16
057313-30	Procure / Deliver - Perforated Metal Panels	30	11/4/16	12/20/16
054000-30	Procure / Deliver - Cold Formed Metal Fram	20	11/14/16	12/13/16
055100-20	Review / Approve - Metal Stairs	15	11/14/16	12/6/16
053100-30	Procure / Deliver - Steel Decking	30	11/21/16	1/5/17
055000-30	Procure / Deliver - Metal Fabrications	20	11/21/16	12/20/16
051200-20	Review / Approve - Stuctural Steel	35	11/30/16	1/19/17
055100-30	Procure / Deliver - Metal Stairs	60	12/7/16	3/2/17
051200-30	Procure / Deliver - Stuctural Steel	60	1/20/17	4/13/17
Division 6 Wood and Plastics		85	10/14/16	2/16/17
0641000-10	Prepare / Submit - Casework	30	10/14/16	11/29/16
0641000-20	Review / Approve - Casework	15	11/30/16	12/20/16
0641000-30	Procure / Deliver - Casework	40	12/21/16	2/16/17
Division 7 Thermal and Moisture Protection		55	9/30/16	12/20/16
076200-10	Prepare / Submit - Sheet Metal Flashing	20	9/30/16	10/27/16
077200-10	Prepare / Submit - Roof Accessories	20	9/30/16	10/27/16
078116-10	Prepare / Submit - Fireproofing	20	9/30/16	10/27/16
079200-10	Prepare / Submit - Joint Sealants	20	9/30/16	10/27/16
079500-10	Prepare / Submit - Expansion Control	20	9/30/16	10/27/16
072113-10	Prepare / Submit - Rigid Insulation	20	9/30/16	10/27/16
071326-10	Prepare / Submit - Waterproofing	20	10/14/16	11/10/16
071813-10	Prepare / Submit - Traffic Topping	20	10/14/16	11/10/16
072100-10	Prepare / Submit - Building Insulation	20	10/14/16	11/10/16
074243-10	Prepare / Submit - Metal Wall Panels	20	10/14/16	11/10/16
075419-10	Prepare / Submit - PVC Roofing	20	10/14/16	11/10/16
076200-20	Review / Approve - Sheet Metal Flashing	15	10/28/16	11/18/16
077200-20	Review / Approve - Roof Accessories	10	10/28/16	11/10/16
078116-20	Review / Approve - Fireproofing	10	10/28/16	11/10/16
079200-20	Review / Approve - Joint Sealants	10	10/28/16	11/10/16
079500-20	Review / Approve - Expansion Control	15	10/28/16	11/18/16
072113-20	Review / Approve - Rigid Insulation	15	10/28/16	11/18/16
071326-20	Review / Approve - Waterproofing	15	11/14/16	12/6/16
071813-20	Review / Approve - Traffic Topping	10	11/14/16	11/29/16
072100-20	Review / Approve - Building Insulation	15	11/14/16	12/6/16
074243-20	Review / Approve - Metal Wall Panels	20	11/14/16	12/13/16
075419-20	Review / Approve - PVC Roofing	15	11/14/16	12/6/16
077200-30	Procure / Deliver - Roof Accessories	10	11/14/16	11/29/16
078116-30	Procure / Deliver - Fireproofing	5	11/14/16	11/18/16
079200-30	Procure / Deliver - Joint Sealants	5	11/14/16	11/18/16
076200-30	Procure / Deliver - Sheet Metal Flashing	10	11/21/16	12/6/16
079500-30	Procure / Deliver - Expansion Control	20	11/21/16	12/20/16
072113-30	Procure / Deliver - Rigid Insulation	5	11/21/16	11/29/16
071326-30	Procure / Deliver - Waterproofing	5	12/7/16	12/13/16
072100-30	Procure / Deliver - Building Insulation	5	12/7/16	12/13/16
075419-30	Procure / Deliver - PVC Roofing	5	12/7/16	12/13/16
Division 8 Doors and Windows		110	10/14/16	3/23/17

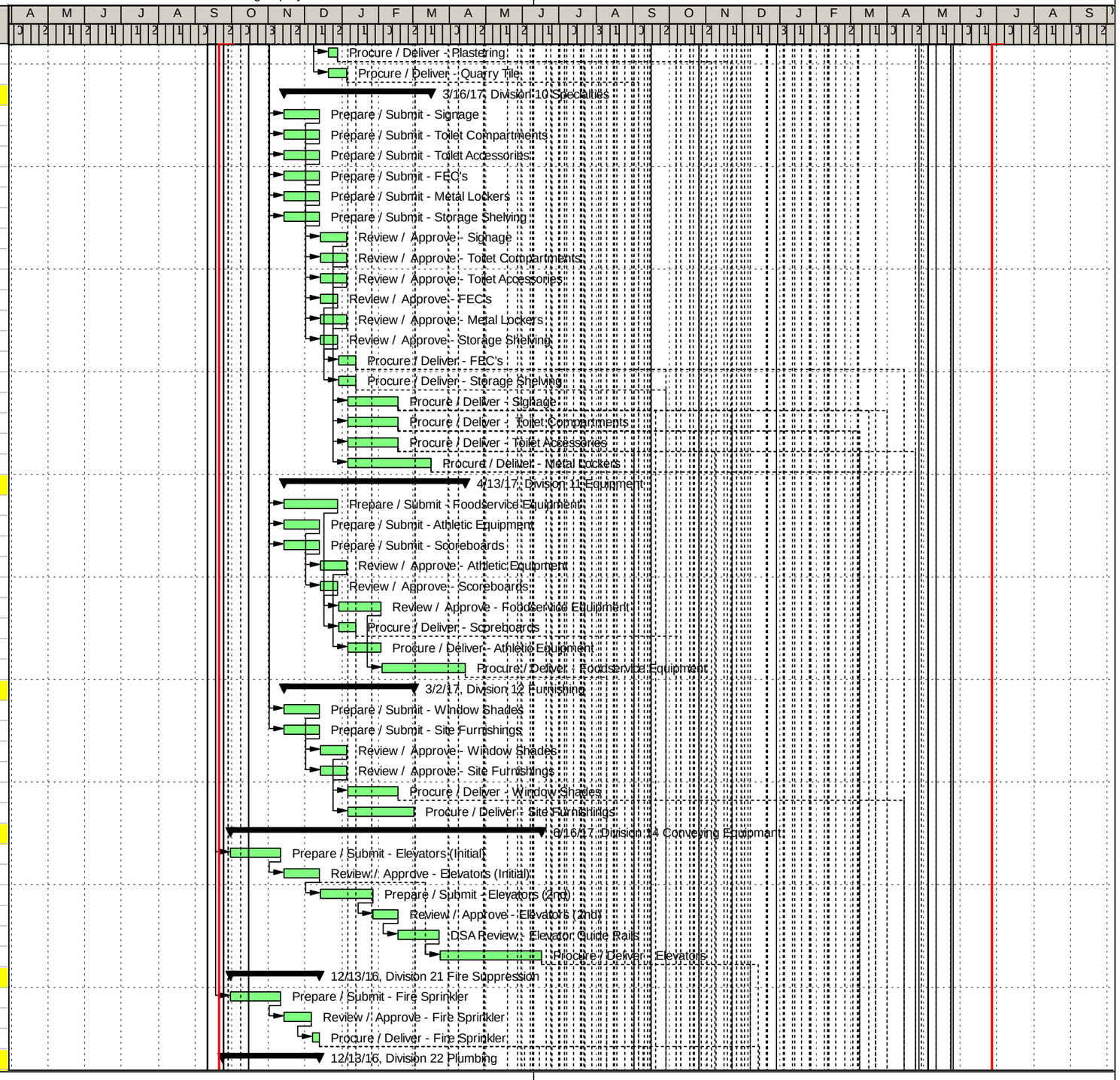


Activity ID	Activity Name	Original Duration	Start	Finish
081113-10	Prepare / Submit - Steel Doors & Frames	20	10/14/16	11/10/16
081416-10	Prepare / Submit - Wood Doors	10	10/14/16	10/27/16
084113-10	Prepare / Submit - Alum Framed Entrances	20	10/14/16	11/10/16
085619-10	Prepare / Submit - Pass Windows	20	10/14/16	11/10/16
088000-10	Prepare / Submit - Glazing	20	10/14/16	11/10/16
089000-10	Prepare / Submit - Louvers	20	10/14/16	11/10/16
083323-10	Prepare / Submit - O/H Coiling Door	10	10/14/16	10/27/16
084414-10	Prepare / Submit - Curtain Wall	20	10/14/16	11/10/16
081416-20	Review / Approve - Wood Doors	20	10/28/16	11/29/16
083323-20	Review / Approve - O/H Coiling Door	20	10/28/16	11/29/16
081113-20	Review / Approve - Steel Doors & Frames	20	11/14/16	12/13/16
084113-20	Review / Approve - Alum Framed Entrances	20	11/14/16	12/13/16
085619-20	Review / Approve - Pass Windows	20	11/14/16	12/13/16
088000-20	Review / Approve - Glazing	20	11/14/16	12/13/16
089000-20	Review / Approve - Louvers	15	11/14/16	12/6/16
084414-20	Review / Approve - Curtain Wall	20	11/14/16	12/13/16
081416-30	Procure / Deliver - Wood Doors	50	11/30/16	2/9/17
083323-30	Procure / Deliver - O/H Coiling Door	50	11/30/16	2/9/17
089000-30	Procure / Deliver - Louvers	30	12/7/16	1/19/17
081113-30	Procure / Deliver - Steel Doors & Frames	30	12/14/16	1/26/17
084113-30	Procure / Deliver - Alum Framed Entrances	40	12/14/16	2/9/17
085619-30	Procure / Deliver - Pass Windows	40	12/14/16	2/9/17
088000-30	Procure / Deliver - Glazing	50	12/14/16	2/23/17
084414-25	DSA Review / Approve - Curtain Wall	30	12/14/16	1/26/17
084414-30	Procure / Deliver - Curtain Wall	40	1/27/17	3/23/17
Division 9 Finishes		45	10/28/16	1/5/17
092216-10	Prepare / Submit - Non Load Bearing Frami	20	10/28/16	11/29/16
092900-10	Prepare / Submit - Gyp Board	20	10/28/16	11/29/16
093000-10	Prepare / Submit - Ceramic Tiling	20	10/28/16	11/29/16
095113-10	Prepare / Submit - Acoustical Ceilngs	20	10/28/16	11/29/16
096567-10	Prepare / Submit - Sports Flooring	20	10/28/16	11/29/16
096813-10	Prepare / Submit - Carpeting	20	10/28/16	11/29/16
099100-10	Prepare / Submit - Painting	20	10/28/16	11/29/16
092400-10	Prepare / Submit - Plastering	20	10/28/16	11/29/16
093016-10	Prepare / Submit - Quarry Tile	20	10/28/16	11/29/16
092216-20	Review / Approve - Non Load Bearing Fram	15	11/30/16	12/20/16
092900-20	Review / Approve - Gyp Board	10	11/30/16	12/13/16
093000-20	Review / Approve - Ceramic Tiling	15	11/30/16	12/20/16
095113-20	Review / Approve - Acoustical Ceilngs	10	11/30/16	12/13/16
096567-20	Review / Approve - Sports Flooring	10	11/30/16	12/13/16
096813-20	Review / Approve - Carpeting	15	11/30/16	12/20/16
099100-20	Review / Approve - Painting	15	11/30/16	12/20/16
092400-20	Review / Approve - Plastering	15	11/30/16	12/20/16
093016-20	Review / Approve - Quarry Tile	15	11/30/16	12/20/16
092900-30	Procure / Deliver - Gyp Board	5	12/14/16	12/20/16
095113-30	Procure / Deliver - Acoustical Ceilngs	5	12/14/16	12/20/16
096567-30	Procure / Deliver - Sports Flooring	10	12/14/16	12/28/16
092216-30	Procure / Deliver - Non Load Bearing Framii	5	12/21/16	12/28/16
093000-30	Procure / Deliver - Ceramic Tiling	10	12/21/16	1/5/17
096813-30	Procure / Deliver - Carpeting	5	12/21/16	12/28/16



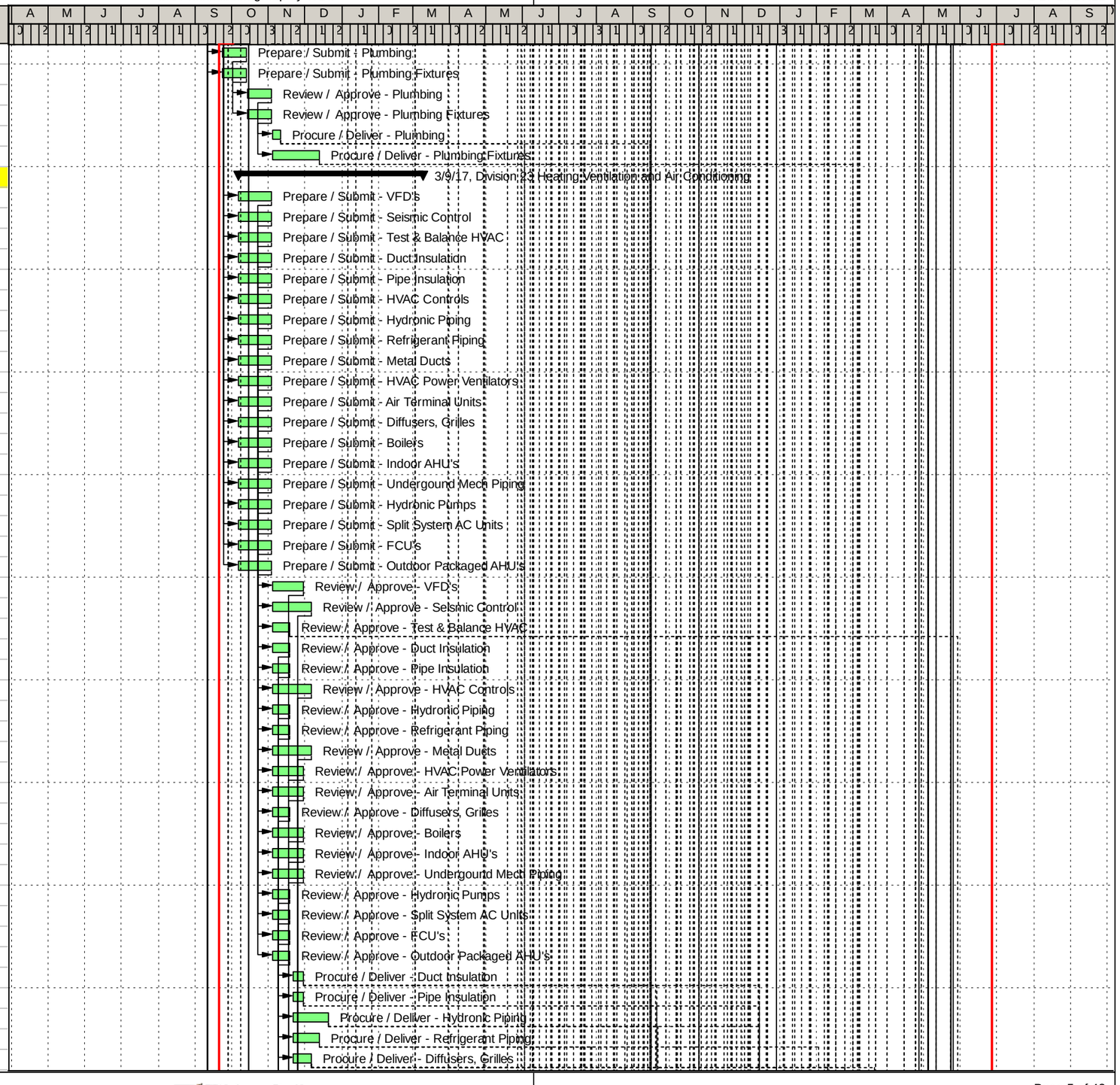
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
092400-30	Procure / Deliver - Plastering	5	12/21/16	12/28/16
093016-30	Procure / Deliver - Quarry Tile	10	12/21/16	1/5/17
Division 10 Specialties		85	11/14/16	3/16/17
101400-10	Prepare / Submit - Signage	20	11/14/16	12/13/16
102113-10	Prepare / Submit - Toilet Compartments	20	11/14/16	12/13/16
102800-10	Prepare / Submit - Toilet Accessories	20	11/14/16	12/13/16
104400-10	Prepare / Submit - FEC's	20	11/14/16	12/13/16
105113-10	Prepare / Submit - Metal Lockers	20	11/14/16	12/13/16
105000-10	Prepare / Submit - Storage Shelving	20	11/14/16	12/13/16
101400-20	Review / Approve - Signage	15	12/14/16	1/5/17
102113-20	Review / Approve - Toilet Compartments	15	12/14/16	1/5/17
102800-20	Review / Approve - Toilet Accessories	15	12/14/16	1/5/17
104400-20	Review / Approve - FEC's	10	12/14/16	12/28/16
105113-20	Review / Approve - Metal Lockers	15	12/14/16	1/5/17
105000-20	Review / Approve - Storage Shelving	10	12/14/16	12/28/16
104400-30	Procure / Deliver - FEC's	10	12/29/16	1/12/17
105000-30	Procure / Deliver - Storage Shelving	10	12/29/16	1/12/17
101400-30	Procure / Deliver - Signage	30	1/6/17	2/16/17
102113-30	Procure / Deliver - Toilet Compartments	30	1/6/17	2/16/17
102800-30	Procure / Deliver - Toilet Accessories	30	1/6/17	2/16/17
105113-30	Procure / Deliver - Metal Lockers	50	1/6/17	3/16/17
Division 11 Equipment		105	11/14/16	4/13/17
114000-10	Prepare / Submit - Foodservice Equipment	30	11/14/16	12/28/16
116600-10	Prepare / Submit - Athletic Equipment	20	11/14/16	12/13/16
116844-10	Prepare / Submit - Scoreboards	20	11/14/16	12/13/16
116600-20	Review / Approve - Athletic Equipment	15	12/14/16	1/5/17
116844-20	Review / Approve - Scoreboards	10	12/14/16	12/28/16
114000-20	Review / Approve - Foodservice Equipment	25	12/29/16	2/2/17
116844-30	Procure / Deliver - Scoreboards	10	12/29/16	1/12/17
116600-30	Procure / Deliver - Athletic Equipment	20	1/6/17	2/2/17
114000-30	Procure / Deliver - Foodservice Equipment	50	2/3/17	4/13/17
Division 12 Furnishing		75	11/14/16	3/2/17
122413-10	Prepare / Submit - Window Shades	20	11/14/16	12/13/16
129300-10	Prepare / Submit - Site Furnishings	20	11/14/16	12/13/16
122413-20	Review / Approve - Window Shades	15	12/14/16	1/5/17
129300-20	Review / Approve - Site Furnishings	15	12/14/16	1/5/17
122413-30	Procure / Deliver - Window Shades	30	1/6/17	2/16/17
129300-30	Procure / Deliver - Site Furnishings	40	1/6/17	3/2/17
Division 14 Conveying Equipmant		180	9/30/16	6/16/17
142100-10	Prepare / Submit - Elevators (Initial)	30	9/30/16	11/10/16
142100-20	Review / Approve - Elevators (Initial)	20	11/14/16	12/13/16
142100-40	Prepare / Submit - Elevators (2nd)	30	12/14/16	1/26/17
142100-50	Review / Approve - Elevators (2nd)	15	1/27/17	2/16/17
142100-60	DSA Review - Elevator Guide Rails	25	2/17/17	3/23/17
142100-70	Procure / Deliver - Elevators	60	3/24/17	6/16/17
Division 21 Fire Suppression		50	9/30/16	12/13/16
211313-10	Prepare / Submit - Fire Sprinkler	30	9/30/16	11/10/16
211313-20	Review / Approve - Fire Sprinkler	15	11/14/16	12/6/16
211313-30	Procure / Deliver - Fire Sprinkler	5	12/7/16	12/13/16
Division 22 Plumbing		55	9/23/16	12/13/16



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
220500-10	Prepare / Submit - Plumbing	15	9/23/16	10/13/16
224000-10	Prepare / Submit - Plumbing Fixtures	15	9/23/16	10/13/16
220500-20	Review / Approve - Plumbing	15	10/14/16	11/3/16
224000-20	Review / Approve - Plumbing Fixtures	15	10/14/16	11/3/16
220500-30	Procure / Deliver - Plumbing	5	11/4/16	11/10/16
224000-30	Procure / Deliver - Plumbing Fixtures	25	11/4/16	12/13/16
Division 23 Heating Ventilation and Air Conditioning		105	10/7/16	3/9/17
232923-10	Prepare / Submit - VFD's	20	10/7/16	11/3/16
230549-10	Prepare / Submit - Seismic Control	20	10/7/16	11/3/16
230593-10	Prepare / Submit - Test & Balance HVAC	20	10/7/16	11/3/16
230713-10	Prepare / Submit - Duct Insulation	20	10/7/16	11/3/16
230719-10	Prepare / Submit - Pipe Insulation	20	10/7/16	11/3/16
230900-10	Prepare / Submit - HVAC Controls	20	10/7/16	11/3/16
232113-10	Prepare / Submit - Hydronic Piping	20	10/7/16	11/3/16
232300-10	Prepare / Submit - Refrigerant Piping	20	10/7/16	11/3/16
233113-10	Prepare / Submit - Metal Ducts	20	10/7/16	11/3/16
233423-10	Prepare / Submit - HVAC Power Ventilators	20	10/7/16	11/3/16
233600-10	Prepare / Submit - Air Terminal Units	20	10/7/16	11/3/16
233713-10	Prepare / Submit - Diffusers, Grilles	20	10/7/16	11/3/16
235216-10	Prepare / Submit - Boilers	20	10/7/16	11/3/16
237413-10	Prepare / Submit - Indoor AHU's	20	10/7/16	11/3/16
232117-10	Prepare / Submit - Undergound Mech Piping	20	10/7/16	11/3/16
232123-10	Prepare / Submit - Hydronic Pumps	20	10/7/16	11/3/16
238126-10	Prepare / Submit - Split System AC Units	20	10/7/16	11/3/16
238219-10	Prepare / Submit - FCU's	20	10/7/16	11/3/16
237413-40	Prepare / Submit - Outdoor Packaged AHU's	20	10/7/16	11/3/16
232923-20	Review / Approve - VFD's	15	11/4/16	11/29/16
230549-20	Review / Approve - Seismic Control	20	11/4/16	12/6/16
230593-20	Review / Approve - Test & Balance HVAC	10	11/4/16	11/18/16
230713-20	Review / Approve - Duct Insulation	10	11/4/16	11/18/16
230719-20	Review / Approve - Pipe Insulation	10	11/4/16	11/18/16
230900-20	Review / Approve - HVAC Controls	20	11/4/16	12/6/16
232113-20	Review / Approve - Hydronic Piping	10	11/4/16	11/18/16
232300-20	Review / Approve - Refrigerant Piping	10	11/4/16	11/18/16
233113-20	Review / Approve - Metal Ducts	20	11/4/16	12/6/16
233423-20	Review / Approve - HVAC Power Ventilators	15	11/4/16	11/29/16
233600-20	Review / Approve - Air Terminal Units	15	11/4/16	11/29/16
233713-20	Review / Approve - Diffusers, Grilles	10	11/4/16	11/18/16
235216-20	Review / Approve - Boilers	15	11/4/16	11/29/16
237413-20	Review / Approve - Indoor AHU's	15	11/4/16	11/29/16
232117-20	Review / Approve - Undergound Mech Pipin	15	11/4/16	11/29/16
232123-20	Review / Approve - Hydronic Pumps	10	11/4/16	11/18/16
238126-20	Review / Approve - Split System AC Units	10	11/4/16	11/18/16
238219-20	Review / Approve - FCU's	10	11/4/16	11/18/16
237413-50	Review / Approve - Outdoor Packaged AHU	10	11/4/16	11/18/16
230713-30	Procure / Deliver - Duct Insulation	5	11/21/16	11/29/16
230719-30	Procure / Deliver - Pipe Insulation	5	11/21/16	11/29/16
232113-30	Procure / Deliver - Hydronic Piping	20	11/21/16	12/20/16
232300-30	Procure / Deliver - Refrigerant Piping	15	11/21/16	12/13/16
233713-30	Procure / Deliver - Diffusers, Grilles	10	11/21/16	12/6/16



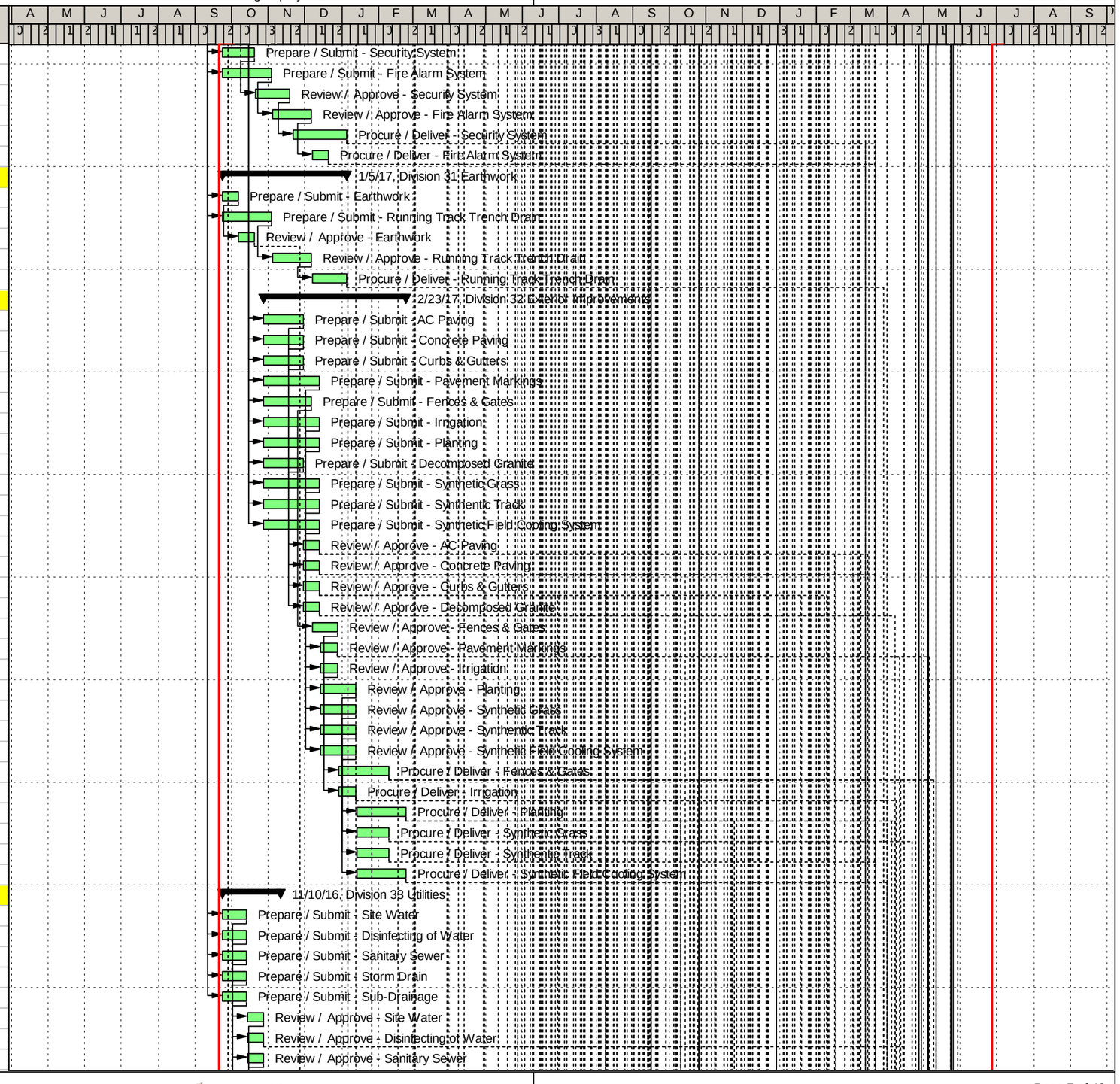
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
232123-30	Procure / Deliver - Hydronic Pumps	20	11/21/16	12/20/16
238126-30	Procure / Deliver - Split System AC Units	20	11/21/16	12/20/16
238219-30	Procure / Deliver - FCU's	30	11/21/16	1/5/17
237413-60	Procure / Deliver - Outdoor Packaged AHU's	35	11/21/16	1/12/17
232923-30	Procure / Deliver - VFD's	30	11/30/16	1/12/17
233423-30	Procure / Deliver - HVAC Power Ventilators	30	11/30/16	1/12/17
233600-30	Procure / Deliver - Air Terminal Units	30	11/30/16	1/12/17
235216-30	Procure / Deliver - Boilers	70	11/30/16	3/9/17
237413-30	Procure / Deliver - Indoor AHU's	50	11/30/16	2/9/17
232117-30	Procure / Deliver - Undergound Mech Piping	20	11/30/16	12/28/16
230549-30	Procure / Deliver - Seismic Control	20	12/7/16	1/5/17
230900-30	Procure / Deliver - HVAC Controls	20	12/7/16	1/5/17
233113-30	Procure / Deliver - Metal Ducts	20	12/7/16	1/5/17
Division 26 Electrical		100	9/23/16	2/16/17
260126-10	Prepare / Submit - Electrical Acceptance Tes	20	9/23/16	10/20/16
260533-10	Prepare / Submit - Elec Racways / Boxes	20	9/23/16	10/20/16
260513-10	Prepare / Submit - Medium Voltage Cables	20	9/23/16	10/20/16
260543-10	Prepare / Submit - U/G Electrical	20	9/23/16	10/20/16
262413-10	Prepare / Submit - Switchboards	30	9/23/16	11/3/16
262416-10	Prepare / Submit - Panelboards	20	9/23/16	10/20/16
262726-10	Prepare / Submit - Wiring Devices	20	9/23/16	10/20/16
265100-10	Prepare / Submit - Lighting	20	9/23/16	10/20/16
260126-20	Review / Approve - Electrical Acceptance Te	10	10/21/16	11/3/16
260533-20	Review / Approve - Elec Racways / Boxes	10	10/21/16	11/3/16
260513-20	Review / Approve - Medium Voltage Cables	10	10/21/16	11/3/16
260543-20	Review / Approve - U/G Electrical	10	10/21/16	11/3/16
262416-20	Review / Approve - Panelboards	20	10/21/16	11/18/16
262726-20	Review / Approve - Wiring Devices	10	10/21/16	11/3/16
265100-20	Review / Approve - Lighting	20	10/21/16	11/18/16
260513-30	Procure / Deliver - Medium Voltage Cables	30	11/4/16	12/20/16
260543-30	Procure / Deliver - U/G Electrical	10	11/4/16	11/18/16
262413-20	Review / Approve - Switchboards	20	11/4/16	12/6/16
262726-30	Procure / Deliver - Wiring Devices	10	11/4/16	11/18/16
262416-30	Procure / Deliver - Panelboards	20	11/21/16	12/20/16
265100-30	Procure / Deliver - Lighting	60	11/21/16	2/16/17
262413-30	Procure / Deliver - Switchboards	50	12/7/16	2/16/17
Division 27 Communications		100	9/23/16	2/16/17
274116-10	Prepare / Submit - AV System	30	9/23/16	11/3/16
270543-10	Prepare / Submit - U/G Communication	30	9/23/16	11/3/16
270528-10	Prepare / Submit - Pathway for Comm Syste	30	9/23/16	11/3/16
271300-10	Prepare / Submit - Comm Cabling	30	9/23/16	11/3/16
274116-20	Review / Approve - AV System	20	11/4/16	12/6/16
270543-20	Review / Approve - U/G Communication	20	11/4/16	12/6/16
270528-20	Review / Approve - Pathway for Comm Syst	20	11/4/16	12/6/16
271300-20	Review / Approve - Comm Cabling	20	11/4/16	12/6/16
274116-30	Procure / Deliver - AV System	50	12/7/16	2/16/17
270543-30	Procure / Deliver - U/G Communication	10	12/7/16	12/20/16
270528-30	Procure / Deliver - Pathway for Comm Syste	10	12/7/16	12/20/16
271300-30	Procure / Deliver - Comm Cabling	20	12/7/16	1/5/17
Division 28 Electronic Safety and Security		70	9/23/16	1/5/17

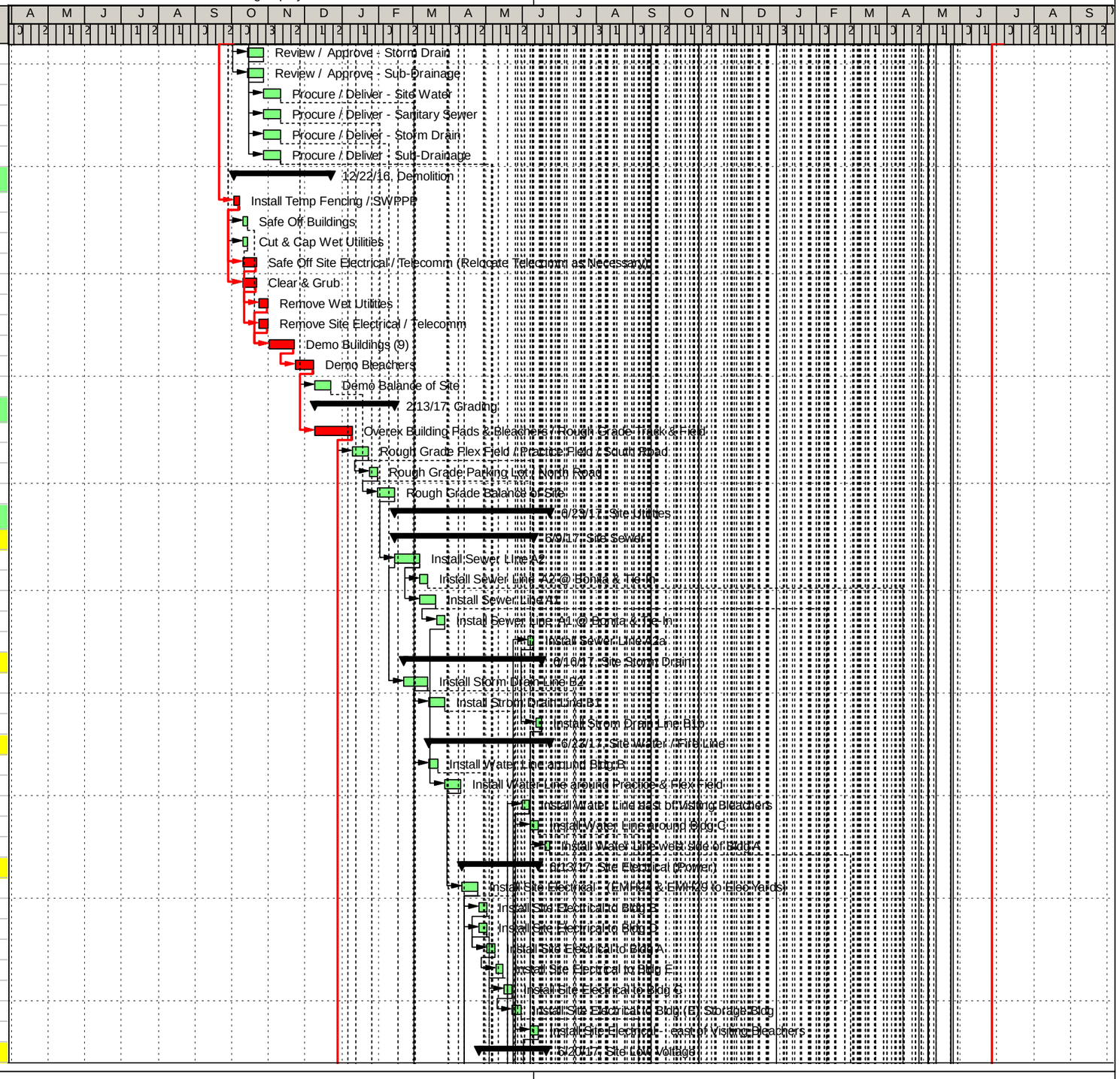
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Tilden-Coil Constructors

Activity ID	Activity Name	Original Duration	Start	Finish
282300-10	Prepare / Submit - Security System	20	9/23/16	10/20/16
283111-10	Prepare / Submit - Fire Alarm System	30	9/23/16	11/3/16
282300-20	Review / Approve - Security System	20	10/21/16	11/18/16
283111-20	Review / Approve - Fire Alarm System	20	11/4/16	12/6/16
282300-30	Procure / Deliver - Security System	30	11/21/16	1/5/17
283111-30	Procure / Deliver - Fire Alarm System	10	12/7/16	12/20/16
Division 31 Earthwork		70	9/23/16	1/5/17
312300-10	Prepare / Submit - Earthwork	10	9/23/16	10/6/16
314101-10	Prepare / Submit - Running Track Trench Dr	30	9/23/16	11/3/16
312300-20	Review / Approve - Earthwork	10	10/7/16	10/20/16
314101-20	Review / Approve - Running Track Trench D	20	11/4/16	12/6/16
314101-30	Procure / Deliver - Running Track Trench Dr	20	12/7/16	1/5/17
Division 32 Exterior Improvements		80	10/28/16	2/23/17
321216-10	Prepare / Submit - AC Paving	20	10/28/16	11/29/16
321313-10	Prepare / Submit - Concrete Paving	20	10/28/16	11/29/16
321613-10	Prepare / Submit - Curbs & Gutters	20	10/28/16	11/29/16
321723-10	Prepare / Submit - Pavement Markings	30	10/28/16	12/13/16
323119-10	Prepare / Submit - Fences & Gates	25	10/28/16	12/6/16
328400-10	Prepare / Submit - Irrigation	30	10/28/16	12/13/16
329300-10	Prepare / Submit - Planting	30	10/28/16	12/13/16
321510-10	Prepare / Submit - Decomposed Granite	20	10/28/16	11/29/16
321814-10	Prepare / Submit - Synthetic Grass	30	10/28/16	12/13/16
321828-10	Prepare / Submit - Synthentic Track	30	10/28/16	12/13/16
328424-10	Prepare / Submit - Synthetic Field Cooling S	30	10/28/16	12/13/16
321216-20	Review / Approve - AC Paving	10	11/30/16	12/13/16
321313-20	Review / Approve - Concrete Paving	10	11/30/16	12/13/16
321613-20	Review / Approve - Curbs & Gutters	10	11/30/16	12/13/16
321510-20	Review / Approve - Decomposed Granite	10	11/30/16	12/13/16
323119-20	Review / Approve - Fences & Gates	15	12/7/16	12/28/16
321723-20	Review / Approve - Pavement Markings	10	12/14/16	12/28/16
328400-20	Review / Approve - Irrigation	10	12/14/16	12/28/16
329300-20	Review / Approve - Planting	20	12/14/16	1/12/17
321814-20	Review / Approve - Synthetic Grass	20	12/14/16	1/12/17
321828-20	Review / Approve - Synthentic Track	20	12/14/16	1/12/17
328424-20	Review / Approve - Synthetic Field Cooling S	20	12/14/16	1/12/17
323119-30	Procure / Deliver - Fences & Gates	30	12/29/16	2/9/17
328400-30	Procure / Deliver - Irrigation	10	12/29/16	1/12/17
329300-30	Procure / Deliver - Planting	30	1/13/17	2/23/17
321814-30	Procure / Deliver - Synthetic Grass	20	1/13/17	2/9/17
321828-30	Procure / Deliver - Synthentic Track	20	1/13/17	2/9/17
328424-30	Procure / Deliver - Synthetic Field Cooling S	30	1/13/17	2/23/17
Division 33 Utilities		35	9/23/16	11/10/16
331000-10	Prepare / Submit - Site Water	15	9/23/16	10/13/16
331300-10	Prepare / Submit - Disinfecting of Water	15	9/23/16	10/13/16
333000-10	Prepare / Submit - Sanitary Sewer	15	9/23/16	10/13/16
334000-10	Prepare / Submit - Storm Drain	15	9/23/16	10/13/16
334100-10	Prepare / Submit - Sub-Drainage	15	9/23/16	10/13/16
331000-20	Review / Approve - Site Water	10	10/14/16	10/27/16
331300-20	Review / Approve - Disinfecting of Water	10	10/14/16	10/27/16
333000-20	Review / Approve - Sanitary Sewer	10	10/14/16	10/27/16

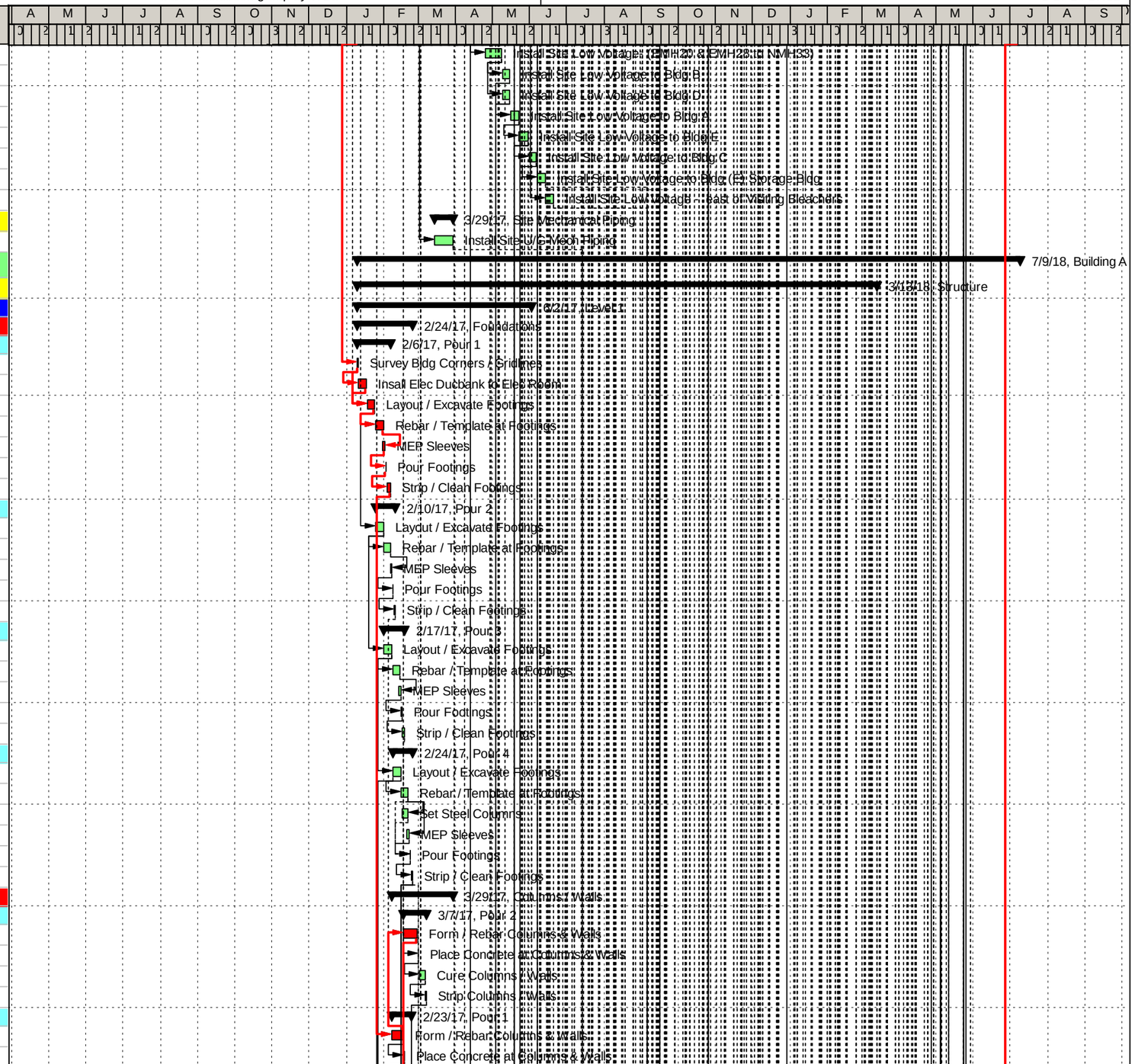


Activity ID	Activity Name	Original Duration	Start	Finish
334000-20	Review / Approve - Storm Drain	10	10/14/16	10/27/16
334100-20	Review / Approve - Sub-Drainage	10	10/14/16	10/27/16
331000-30	Procure / Deliver - Site Water	10	10/28/16	11/10/16
333000-30	Procure / Deliver - Sanitary Sewer	10	10/28/16	11/10/16
334000-30	Procure / Deliver - Storm Drain	10	10/28/16	11/10/16
334100-30	Procure / Deliver - Sub-Drainage	10	10/28/16	11/10/16
Demolition		56	10/3/16	12/22/16
AF-S-1000	Install Temp Fencing / SWPPP	5	10/3/16	10/7/16
AF-S-1010	Safe Off Buildings	5	10/10/16	10/14/16
AF-S-1020	Cut & Cap Wet Utilities	5	10/10/16	10/14/16
AF-S-1030	Safe Off Site Electrical / Telecomm (Relocate	10	10/10/16	10/21/16
AF-S-1130	Clear & Grub	10	10/10/16	10/21/16
AF-S-1040	Remove Wet Utilities	6	10/24/16	10/31/16
AF-S-1050	Remove Site Electrical / Telecomm	6	10/24/16	10/31/16
AF-S-1060	Demo Buildings (9)	15	11/1/16	11/22/16
AF-S-1070	Demo Bleachers	10	11/23/16	12/8/16
AF-S-1080	Demo Balance of Site	10	12/9/16	12/22/16
Grading		45	12/9/16	2/13/17
AF-S-1090	Overex Building Pads & Bleachers / Rough G	20	12/9/16	1/9/17
AF-S-1100	Rough Grade Flex Field / Practice Field / So	10	1/10/17	1/23/17
AF-S-1110	Rough Grade Parking Lot / North Road	5	1/24/17	1/30/17
AF-S-1120	Rough Grade Balance of Site	10	1/31/17	2/13/17
Site Utilities		93	2/14/17	6/23/17
Site Sewer		83	2/14/17	6/9/17
AF-SU-1000	Install Sewer LIne A2	15	2/14/17	3/6/17
AF-SU-1020	Install Sewer Line A2 @ Bonita & Tie-In	5	3/7/17	3/13/17
AF-SU-1030	Install Sewer Line A1	10	3/7/17	3/20/17
AF-SU-1060	Install Sewer Line A1 @ Bonita & Tie-In	5	3/21/17	3/27/17
AF-SU-1090	Install Sewer LIne A2a	5	6/5/17	6/9/17
Site Storm Drain		83	2/21/17	6/16/17
AF-SU-1010	Install Storm Drain Line B2	15	2/21/17	3/13/17
AF-SU-1040	Install Strom Drain Line B1	10	3/14/17	3/27/17
AF-SU-1110	Install Strom Drain Line B1b	5	6/12/17	6/16/17
Site Water / Fire Line		73	3/14/17	6/23/17
AF-SU-1050	Install Water Line around Bldg B	7	3/14/17	3/22/17
AF-SU-1070	Install Water Line around Practice & Flex Fie	10	3/28/17	4/10/17
AF-SU-1080	Install Water Line east of Visiting Bleachers	5	5/31/17	6/6/17
AF-SU-1100	Install Water Line around Bldg C	5	6/7/17	6/13/17
AF-SU-1120	Install Water Line west side of Bldg A	5	6/19/17	6/23/17
Site Electrical (Power)		45	4/11/17	6/13/17
AF-SE-1000	Install Site Electrical - (EMH24 & EMH29 to E	10	4/11/17	4/24/17
AF-SE-1010	Install Site Electrical to Bldg B	5	4/25/17	5/1/17
AF-SE-1020	Install Site Electrical to Bldg D	5	4/25/17	5/1/17
AF-SE-1040	Install Site Electrical to Bldg A	5	5/2/17	5/8/17
AF-SE-1050	Install Site Electrical to Bldg E	5	5/9/17	5/15/17
AF-SE-1080	Install Site Electrical to Bldg C	5	5/16/17	5/22/17
AF-SE-1100	Install Site Electrical to Bldg (E) Storage Bldg	5	5/23/17	5/30/17
AF-SE-1120	Install Site Electrical - east of Visiting Bleach	5	6/7/17	6/13/17
Site Low Voltage		40	4/25/17	6/20/17



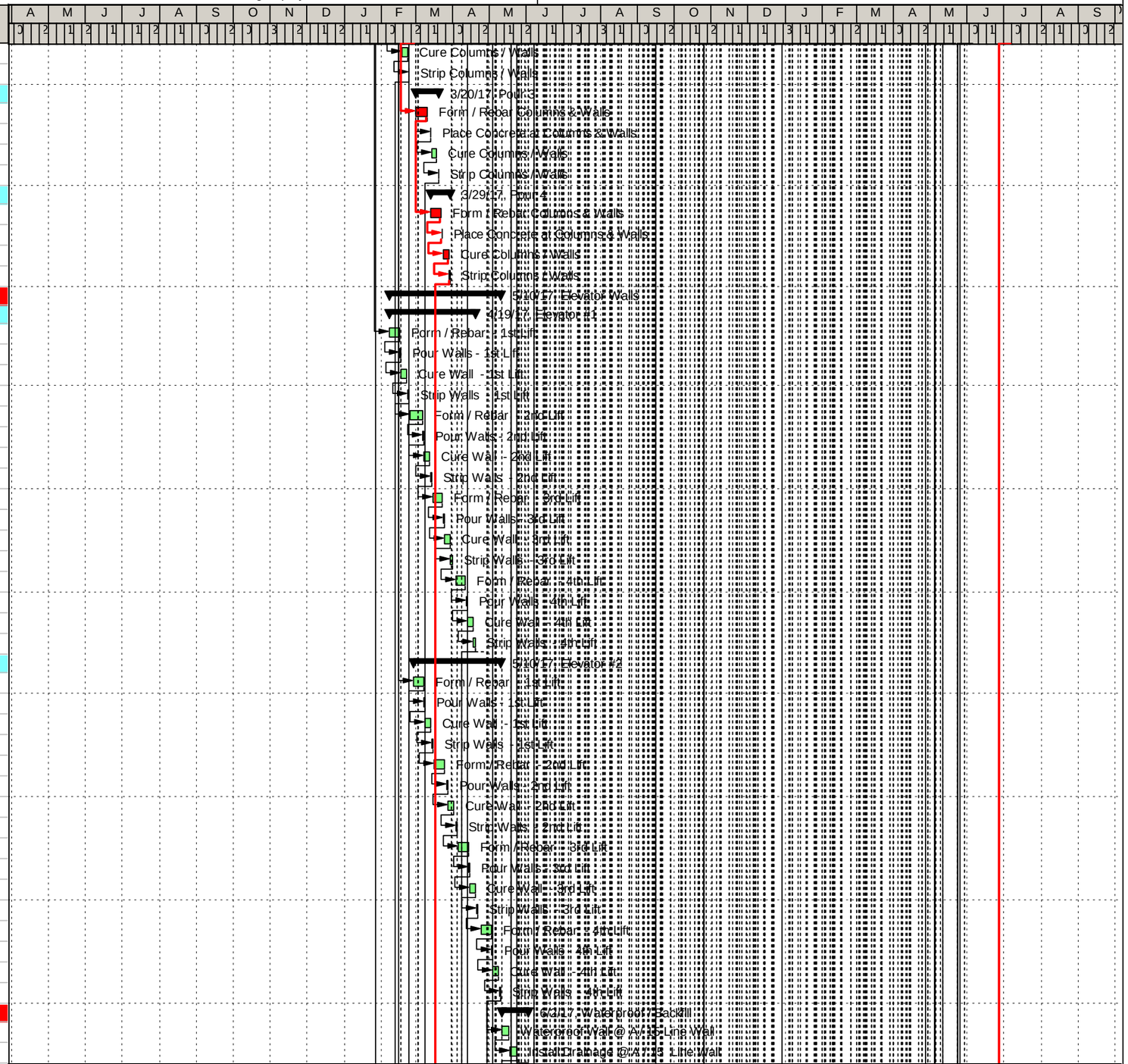
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-SE-1030	Install Site Low Voltage- (EMH20 & EMH28 t	10	4/25/17	5/8/17
AF-SE-1060	Install Site Low Voltage to Bldg B	5	5/9/17	5/15/17
AF-SE-1070	Install Site Low Voltage to Bldg D	5	5/9/17	5/15/17
AF-SE-1090	Install Site Low Voltage to Bldg A	5	5/16/17	5/22/17
AF-SE-1110	Install Site Low Voltage to Bldg E	5	5/23/17	5/30/17
AF-SE-1130	Install Site Low Voltage to Bldg C	5	5/31/17	6/6/17
AF-SE-1140	Install Site Low Voltage to Bldg (E) Storage I	5	6/7/17	6/13/17
AF-SE-1150	Install Site Low Voltage - east of Visiting Ble	5	6/14/17	6/20/17
Site Mechanical Piping		12	3/14/17	3/29/17
AF-SM-1000	Install Site U/G Mech Piping	12	3/14/17	3/29/17
Building A / Home Bleachers		380	1/10/17	7/9/18
Structure		298	1/10/17	3/13/18
Level 1		103	1/10/17	6/2/17
Foundations		34	1/10/17	2/24/17
Pour 1		20	1/10/17	2/6/17
AF-A1	Survey Bldg Corners / Gridlines	1	1/10/17	1/10/17
AF-A1	Insall Elec Ducbank to Elec Room	5	1/11/17	1/17/17
AF-A1	Layout / Excavate Footings	5	1/18/17	1/24/17
AF-A1	Rebar / Template at Footings	5	1/25/17	1/31/17
AF-A1	MEP Sleeves	2	1/31/17	2/1/17
AF-A1	Pour Footings	1	2/2/17	2/2/17
AF-A1	Strip / Clean Footings	2	2/3/17	2/6/17
Pour 2		13	1/25/17	2/10/17
AF-A1	Layout / Excavate Footings	5	1/25/17	1/31/17
AF-A1	Rebar / Template at Footings	4	2/1/17	2/6/17
AF-A1	MEP Sleeves	2	2/6/17	2/7/17
AF-A1	Pour Footings	1	2/8/17	2/8/17
AF-A1	Strip / Clean Footings	2	2/9/17	2/10/17
Pour 3		13	2/1/17	2/17/17
AF-A1	Layout / Excavate Footings	5	2/1/17	2/7/17
AF-A1	Rebar / Template at Footings	4	2/8/17	2/13/17
AF-A1	MEP Sleeves	2	2/13/17	2/14/17
AF-A1	Pour Footings	1	2/15/17	2/15/17
AF-A1	Strip / Clean Footings	2	2/16/17	2/17/17
Pour 4		13	2/8/17	2/24/17
AF-A1	Layout / Excavate Footings	5	2/8/17	2/14/17
AF-A1	Rebar / Template at Footings	4	2/15/17	2/20/17
AF-A1	Set Steel Columns	3	2/16/17	2/20/17
AF-A1	MEP Sleeves	2	2/20/17	2/21/17
AF-A1	Pour Footings	1	2/22/17	2/22/17
AF-A1	Strip / Clean Footings	2	2/23/17	2/24/17
Columns / Walls		37	2/7/17	3/29/17
Pour 2		13	2/17/17	3/7/17
AF-A1	Form / Rebar Columns & Walls	8	2/17/17	2/28/17
AF-A1	Place Concrete at Columns & Walls	1	3/1/17	3/1/17
AF-A1	Cure Columns / Walls	5	3/2/17	3/6/17
AF-A1	Strip Columns / Walls	1	3/7/17	3/7/17
Pour 1		13	2/7/17	2/23/17
AF-A1	Form / Rebar Columns & Walls	8	2/7/17	2/16/17
AF-A1	Place Concrete at Columns & Walls	1	2/17/17	2/17/17



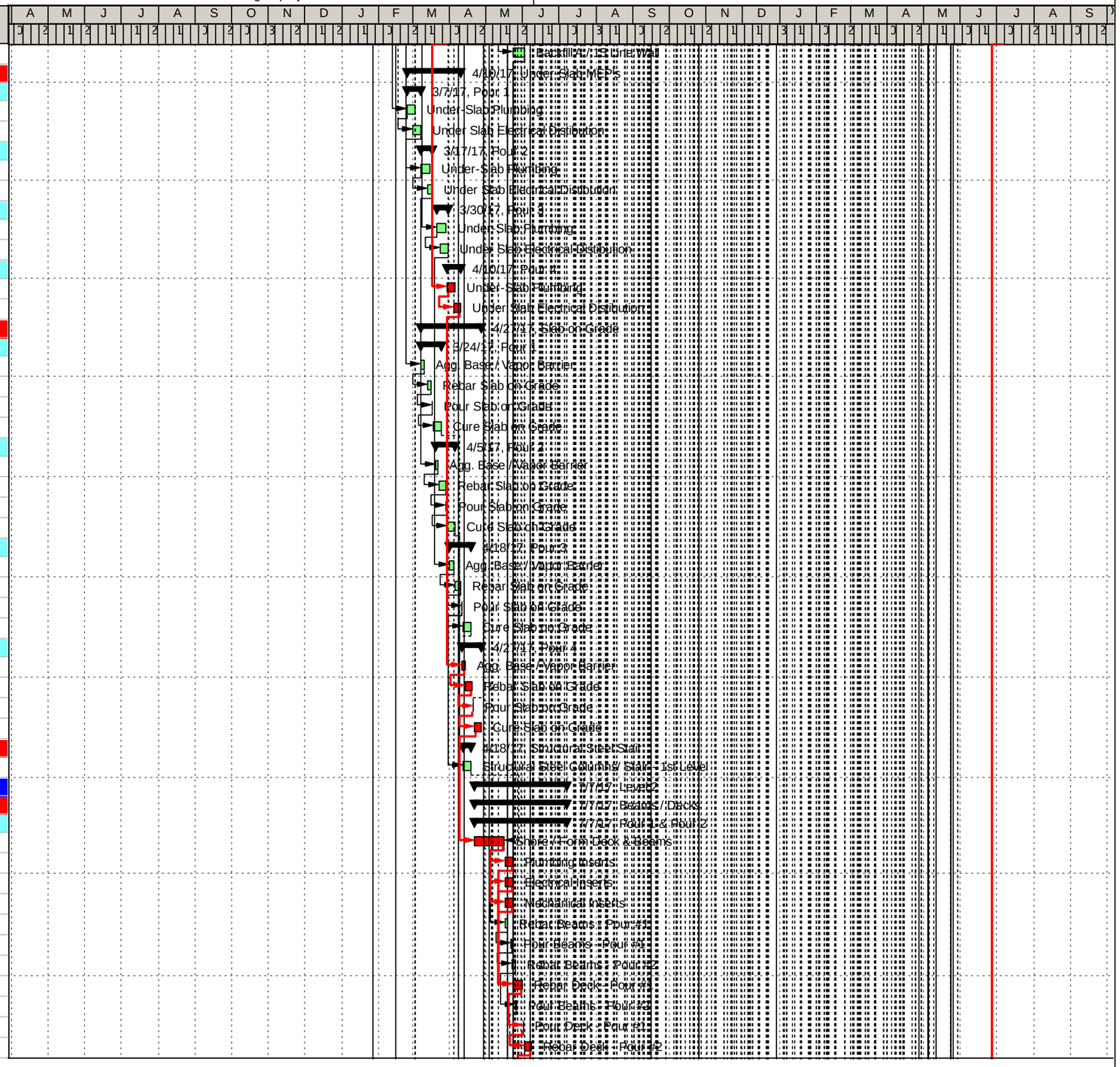
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A1	Cure Columns / Walls	5	2/18/17	2/22/17
AF-A1	Strip Columns / Walls	1	2/23/17	2/23/17
Pour 3		14	3/1/17	3/20/17
AF-A1	Form / Rebar Columns & Walls	8	3/1/17	3/10/17
AF-A1	Place Concrete at Columns & Walls	1	3/13/17	3/13/17
AF-A1	Cure Columns / Walls	5	3/14/17	3/18/17
AF-A1	Strip Columns / Walls	1	3/20/17	3/20/17
Pour 4		13	3/13/17	3/29/17
AF-A1	Form / Rebar Columns & Walls	8	3/13/17	3/22/17
AF-A1	Place Concrete at Columns & Walls	1	3/23/17	3/23/17
AF-A1	Cure Columns / Walls	5	3/24/17	3/28/17
AF-A1	Strip Columns / Walls	1	3/29/17	3/29/17
Elevator Walls		67	2/7/17	5/10/17
Elevator #1		52	2/7/17	4/19/17
AF-A1	Form / Rebar - 1st Lift	7	2/7/17	2/15/17
AF-A1	Pour Walls - 1st Lift	1	2/16/17	2/16/17
AF-A1	Cure Wall - 1st Lift	5	2/17/17	2/21/17
AF-A1	Strip Walls - 1st Lift	2	2/22/17	2/23/17
AF-A1	Form / Rebar - 2nd Lift	7	2/24/17	3/6/17
AF-A1	Pour Walls - 2nd Lift	1	3/7/17	3/7/17
AF-A1	Cure Wall - 2nd Lift	5	3/8/17	3/12/17
AF-A1	Strip Walls - 2nd Lift	2	3/13/17	3/14/17
AF-A1	Form / Rebar - 3rd Lift	7	3/15/17	3/23/17
AF-A1	Pour Walls - 3rd Lift	1	3/24/17	3/24/17
AF-A1	Cure Wall - 3rd Lift	5	3/25/17	3/29/17
AF-A1	Strip Walls - 3rd Lift	2	3/30/17	3/31/17
AF-A1	Form / Rebar - 4th Lift	7	4/3/17	4/11/17
AF-A1	Pour Walls - 4th Lift	1	4/12/17	4/12/17
AF-A1	Cure Wall - 4th Lift	5	4/13/17	4/17/17
AF-A1	Strip Walls - 4th Lift	2	4/18/17	4/19/17
Elevator #2		53	2/27/17	5/10/17
AF-A1	Form / Rebar - 1st Lift	7	2/27/17	3/7/17
AF-A1	Pour Walls - 1st Lift	1	3/8/17	3/8/17
AF-A1	Cure Wall - 1st Lift	5	3/9/17	3/13/17
AF-A1	Strip Walls - 1st Lift	2	3/14/17	3/15/17
AF-A1	Form / Rebar - 2nd Lift	7	3/16/17	3/24/17
AF-A1	Pour Walls - 2nd Lift	1	3/27/17	3/27/17
AF-A1	Cure Wall - 2nd Lift	5	3/28/17	4/1/17
AF-A1	Strip Walls - 2nd Lift	2	4/3/17	4/4/17
AF-A1	Form / Rebar - 3rd Lift	7	4/5/17	4/13/17
AF-A1	Pour Walls - 3rd Lift	1	4/14/17	4/14/17
AF-A1	Cure Wall - 3rd Lift	5	4/15/17	4/19/17
AF-A1	Strip Walls - 3rd Lift	2	4/20/17	4/21/17
AF-A1	Form / Rebar - 4th Lift	7	4/24/17	5/2/17
AF-A1	Pour Walls - 4th Lift	1	5/3/17	5/3/17
AF-A1	Cure Wall - 4th Lift	5	5/4/17	5/8/17
AF-A1	Strip Walls - 4th Lift	2	5/9/17	5/10/17
Waterproof / Backfill		16	5/11/17	6/2/17
AF-A1-S	Waterproof Wall @ A / 15 Line Wall	5	5/11/17	5/17/17
AF-A1-S	Install Drainage @ A / 15 Line Wall	4	5/18/17	5/23/17

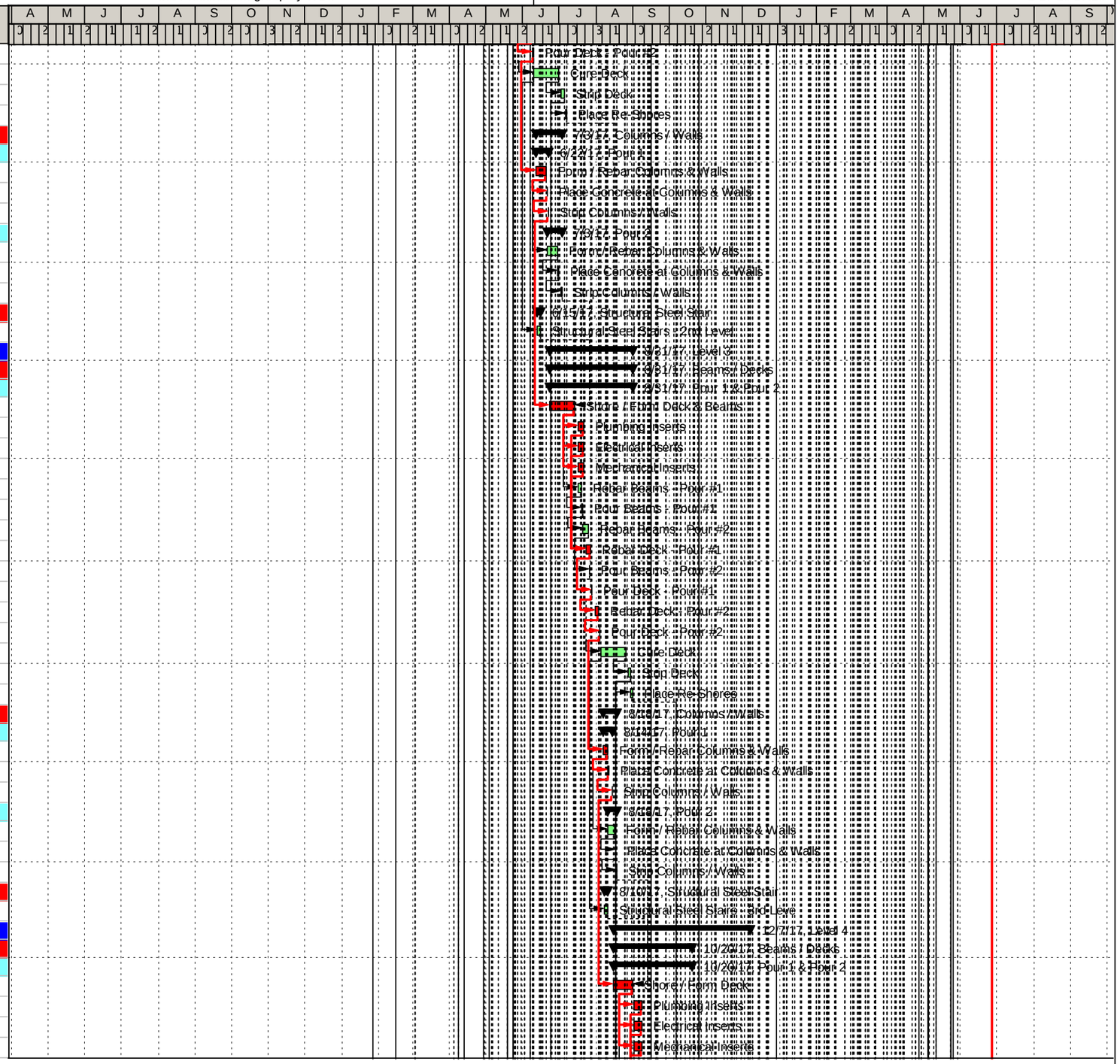


Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

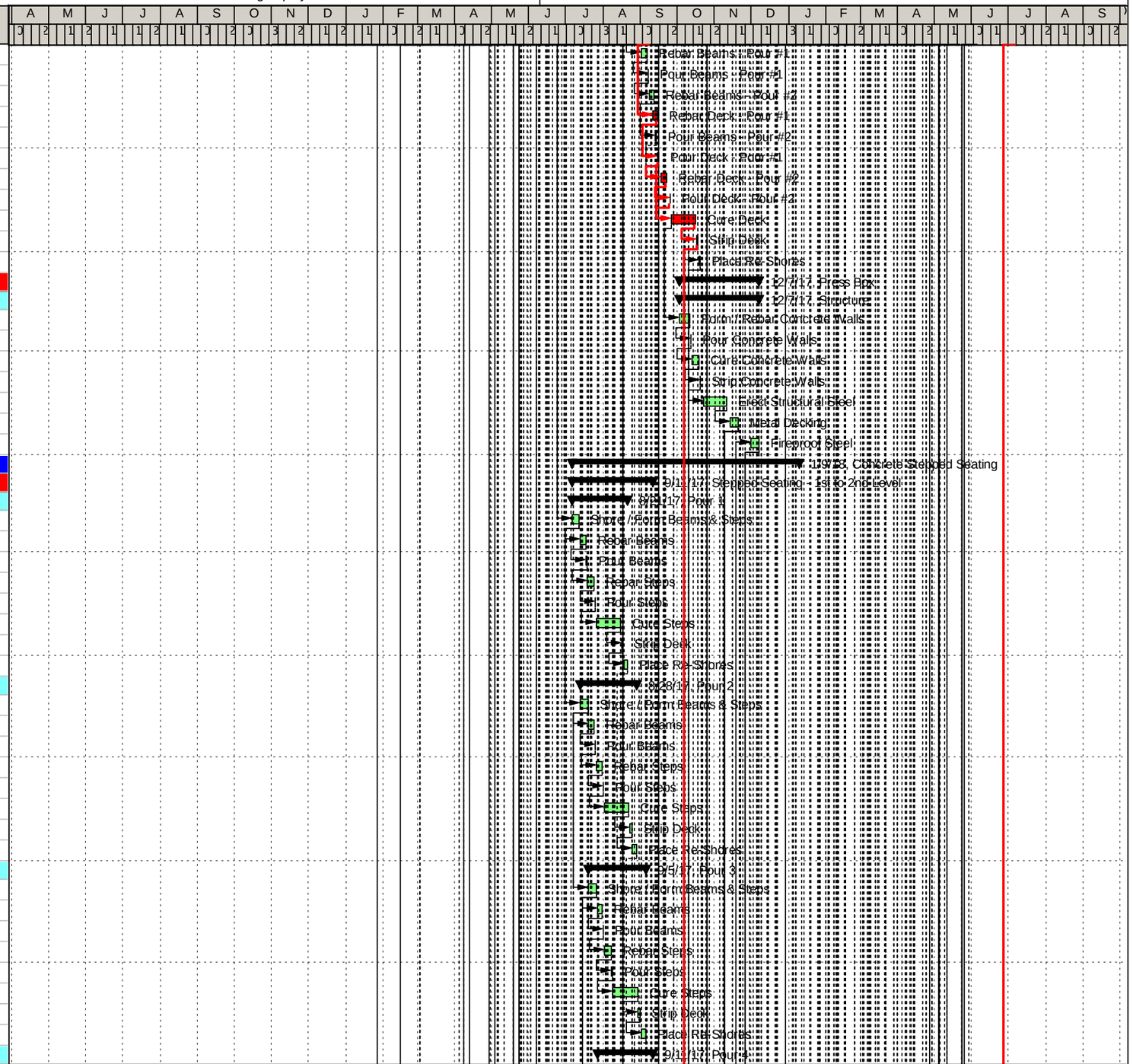
Activity ID	Activity Name	Original Duration	Start	Finish
AF-A1-S	Backfill A / 15 Line Wall	7	5/24/17	6/2/17
Under-Slab MEP's		32	2/24/17	4/10/17
Pour 1		8	2/24/17	3/7/17
AF-A1	Under-Slab Plumbing	6	2/24/17	3/3/17
AF-A1	Under Slab Electrical Distibution	5	3/1/17	3/7/17
Pour 2		8	3/8/17	3/17/17
AF-A1	Under-Slab Plumbing	6	3/8/17	3/15/17
AF-A1	Under Slab Electrical Distibution	5	3/13/17	3/17/17
Pour 3		8	3/21/17	3/30/17
AF-A1	Under-Slab Plumbing	6	3/21/17	3/28/17
AF-A1	Under Slab Electrical Distibution	5	3/24/17	3/30/17
Pour 4		8	3/30/17	4/10/17
AF-A1	Under-Slab Plumbing	5	3/30/17	4/5/17
AF-A1	Under Slab Electrical Distibution	5	4/4/17	4/10/17
Slab on Grade		37	3/8/17	4/27/17
Pour 1		13	3/8/17	3/24/17
AF-A1	Agg. Base / Vapor Barrier	3	3/8/17	3/10/17
AF-A1	Rebar Slab on Grade	4	3/13/17	3/16/17
AF-A1	Pour Slab on Grade	1	3/17/17	3/17/17
AF-A1	Cure Slab on Grade	7	3/18/17	3/24/17
Pour 2		13	3/20/17	4/5/17
AF-A1	Agg. Base / Vapor Barrier	3	3/20/17	3/22/17
AF-A1	Rebar Slab on Grade	4	3/23/17	3/28/17
AF-A1	Pour Slab on Grade	1	3/29/17	3/29/17
AF-A1	Cure Slab on Grade	7	3/30/17	4/5/17
Pour 3		13	3/31/17	4/18/17
AF-A1	Agg. Base / Vapor Barrier	3	3/31/17	4/4/17
AF-A1	Rebar Slab on Grade	4	4/5/17	4/10/17
AF-A1	Pour Slab on Grade	1	4/11/17	4/11/17
AF-A1	Cure Slab on Grade	7	4/12/17	4/18/17
Pour 4		13	4/11/17	4/27/17
AF-A1	Agg. Base / Vapor Barrier	3	4/11/17	4/13/17
AF-A1	Rebar Slab on Grade	4	4/14/17	4/19/17
AF-A1	Pour Slab on Grade	1	4/20/17	4/20/17
AF-A1	Cure Slab on Grade	7	4/21/17	4/27/17
Structural Steel Stair		5	4/12/17	4/18/17
AF-A1-S	Structural Steel Columns/ Stair - 1st Level	5	4/12/17	4/18/17
Level 2		54	4/21/17	7/7/17
Beams / Decks		54	4/21/17	7/7/17
Pour 1 & Pour 2		54	4/21/17	7/7/17
AF-A2	Shore / Form Deck & Beams	18	4/21/17	5/16/17
AF-A2	Plumbing Inserts	5	5/17/17	5/23/17
AF-A2	Electrical Inserts	5	5/17/17	5/23/17
AF-A2	Mechanical Inserts	5	5/17/17	5/23/17
AF-A2	Rebar Beams - Pour #1	3	5/17/17	5/19/17
AF-A2	Pour Beams - Pour #1	1	5/22/17	5/22/17
AF-A2	Rebar Beams - Pour #2	3	5/23/17	5/25/17
AF-A2	Rebar Deck - Pour #1	5	5/24/17	5/31/17
AF-A2	Pour Beams - Pour #2	1	5/26/17	5/26/17
AF-A2	Pour Deck - Pour #1	1	6/1/17	6/1/17
AF-A2	Rebar Deck - Pour #2	5	6/2/17	6/8/17



Activity ID	Activity Name	Original Duration	Start	Finish
AF-A2	Pour Deck - Pour #2	1	6/9/17	6/9/17
AF-A2	Cure Deck	21	6/10/17	6/30/17
AF-A2	Strip Deck	2	7/3/17	7/5/17
AF-A2	Place Re-Shores	2	7/6/17	7/7/17
Columns / Walls		16	6/12/17	7/3/17
Pour 1		9	6/12/17	6/22/17
AF-A2	Form / Rebar Columns & Walls	7	6/12/17	6/20/17
AF-A2	Place Concrete at Columns & Walls	1	6/21/17	6/21/17
AF-A2	Strip Columns / Walls	1	6/22/17	6/22/17
Pour 2		9	6/21/17	7/3/17
AF-A2	Form / Rebar Columns & Walls	7	6/21/17	6/29/17
AF-A2	Place Concrete at Columns & Walls	1	6/30/17	6/30/17
AF-A2	Strip Columns / Walls	1	7/3/17	7/3/17
Structural Steel Stair		3	6/13/17	6/15/17
AF-A2-S	Structural Steel Stairs - 2nd Level	3	6/13/17	6/15/17
Level 3		49	6/23/17	8/31/17
Beams / Decks		49	6/23/17	8/31/17
Pour 1 & Pour 2		49	6/23/17	8/31/17
AF-A3	Shore / Form Deck & Beams	15	6/23/17	7/14/17
AF-A3	Plumbing Inserts	5	7/17/17	7/21/17
AF-A3	Electrical Inserts	5	7/17/17	7/21/17
AF-A3	Mechanical Inserts	5	7/17/17	7/21/17
AF-A3	Rebar Beams - Pour #1	3	7/17/17	7/19/17
AF-A3	Pour Beams - Pour #1	1	7/20/17	7/20/17
AF-A3	Rebar Beams - Pour #2	3	7/21/17	7/25/17
AF-A3	Rebar Deck - Pour #1	4	7/24/17	7/27/17
AF-A3	Pour Beams - Pour #2	1	7/26/17	7/26/17
AF-A3	Pour Deck - Pour #1	1	7/28/17	7/28/17
AF-A3	Rebar Deck - Pour #2	4	7/31/17	8/3/17
AF-A3	Pour Deck - Pour #2	1	8/4/17	8/4/17
AF-A3	Cure Deck	21	8/5/17	8/25/17
AF-A3	Strip Deck	2	8/28/17	8/29/17
AF-A3	Place Re-Shores	2	8/30/17	8/31/17
Columns / Walls		10	8/7/17	8/18/17
Pour 1		6	8/7/17	8/14/17
AF-A3	Form / Rebar Columns & Walls	4	8/7/17	8/10/17
AF-A3	Place Concrete at Columns & Walls	1	8/11/17	8/11/17
AF-A3	Strip Columns / Walls	1	8/14/17	8/14/17
Pour 2		6	8/11/17	8/18/17
AF-A3	Form / Rebar Columns & Walls	4	8/11/17	8/16/17
AF-A3	Place Concrete at Columns & Walls	1	8/17/17	8/17/17
AF-A3	Strip Columns / Walls	1	8/18/17	8/18/17
Structural Steel Stair		3	8/8/17	8/10/17
AF-A3-S	Structural Steel Stairs - 3rd Leve	3	8/8/17	8/10/17
Level 4		79	8/15/17	12/7/17
Beams / Decks		48	8/15/17	10/20/17
Pour 1 & Pour 2		48	8/15/17	10/20/17
AF-A4	Shore / Form Deck	13	8/15/17	8/31/17
AF-A4	Plumbing Inserts	5	9/1/17	9/8/17
AF-A4	Electrical Inserts	5	9/1/17	9/8/17
AF-A4	Mechanical Inserts	5	9/1/17	9/8/17



Activity ID	Activity Name	Original Duration	Start	Finish
AF-A<	Rebar Beams - Pour #1	3	9/1/17	9/6/17
AF-A<	Pour Beams - Pour #1	1	9/7/17	9/7/17
AF-A<	Rebar Beams - Pour #2	3	9/8/17	9/12/17
AF-A<	Rebar Deck - Pour #1	4	9/11/17	9/14/17
AF-A<	Pour Beams - Pour #2	1	9/13/17	9/13/17
AF-A<	Pour Deck - Pour #1	1	9/15/17	9/15/17
AF-A<	Rebar Deck - Pour #2	5	9/18/17	9/22/17
AF-A<	Pour Deck - Pour #2	1	9/25/17	9/25/17
AF-A<	Cure Deck	21	9/26/17	10/16/17
AF-A<	Strip Deck	2	10/17/17	10/18/17
AF-A<	Place Re-Shores	2	10/19/17	10/20/17
Press Box		45	10/3/17	12/7/17
Structure		45	10/3/17	12/7/17
AF-A<	Form / Rebar Concrete Walls	7	10/3/17	10/11/17
AF-A<	Pour Concrete Walls	1	10/12/17	10/12/17
AF-A<	Cure Concrete Walls	7	10/13/17	10/19/17
AF-A<	Strip Concrete Walls	1	10/20/17	10/20/17
AF-A<	Erect Structural Steel	15	10/23/17	11/10/17
AF-A<	Metal Decking	5	11/14/17	11/20/17
AF-A<	Fireproof Steel	5	12/1/17	12/7/17
Concrete Stepped Seating		128	7/6/17	1/9/18
Stepped Seating - 1st to 2nd Level		47	7/6/17	9/11/17
Pour 1		33	7/6/17	8/21/17
AF-A_	Shore / Form Beams & Steps	5	7/6/17	7/12/17
AF-A_	Rebar Beams	3	7/13/17	7/17/17
AF-A_	Pour Beams	1	7/18/17	7/18/17
AF-A_	Rebar Steps	4	7/19/17	7/24/17
AF-A_	Pour Steps	1	7/25/17	7/25/17
AF-A_	Cure Steps	21	7/26/17	8/15/17
AF-A_	Strip Deck	2	8/16/17	8/17/17
AF-A_	Place Re-Shores	2	8/18/17	8/21/17
Pour 2		33	7/13/17	8/28/17
AF-A_	Shore / Form Beams & Steps	5	7/13/17	7/19/17
AF-A_	Rebar Beams	3	7/20/17	7/24/17
AF-A_	Pour Beams	1	7/25/17	7/25/17
AF-A_	Rebar Steps	4	7/26/17	7/31/17
AF-A_	Pour Steps	1	8/1/17	8/1/17
AF-A_	Cure Steps	21	8/2/17	8/22/17
AF-A_	Strip Deck	2	8/23/17	8/24/17
AF-A_	Place Re-Shores	2	8/25/17	8/28/17
Pour 3		33	7/20/17	9/5/17
AF-A_	Shore / Form Beams & Steps	5	7/20/17	7/26/17
AF-A_	Rebar Beams	3	7/27/17	7/31/17
AF-A_	Pour Beams	1	8/1/17	8/1/17
AF-A_	Rebar Steps	4	8/2/17	8/7/17
AF-A_	Pour Steps	1	8/8/17	8/8/17
AF-A_	Cure Steps	21	8/9/17	8/29/17
AF-A_	Strip Deck	2	8/30/17	8/31/17
AF-A_	Place Re-Shores	2	9/1/17	9/5/17
Pour 4		32	7/27/17	9/11/17

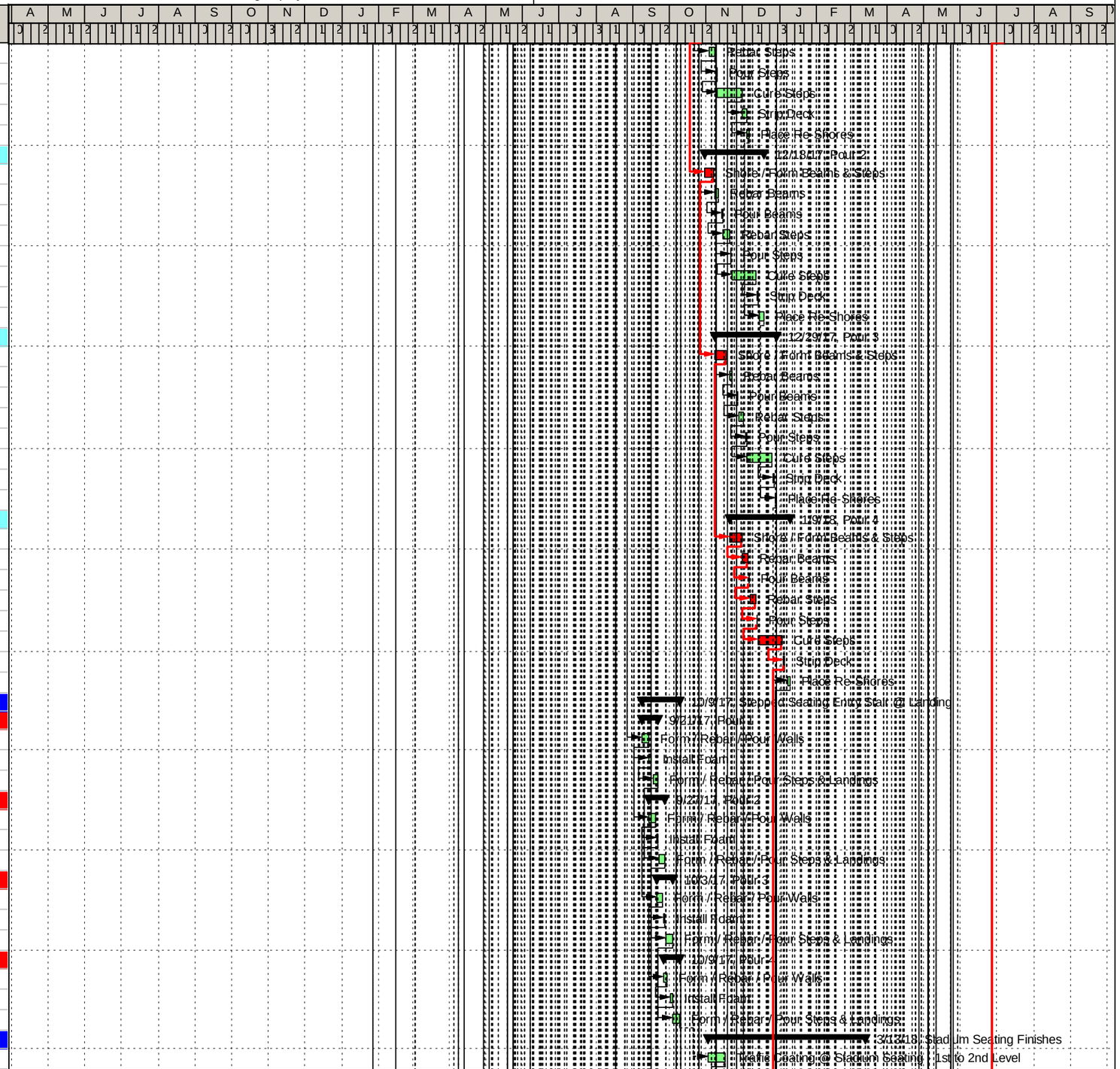


Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

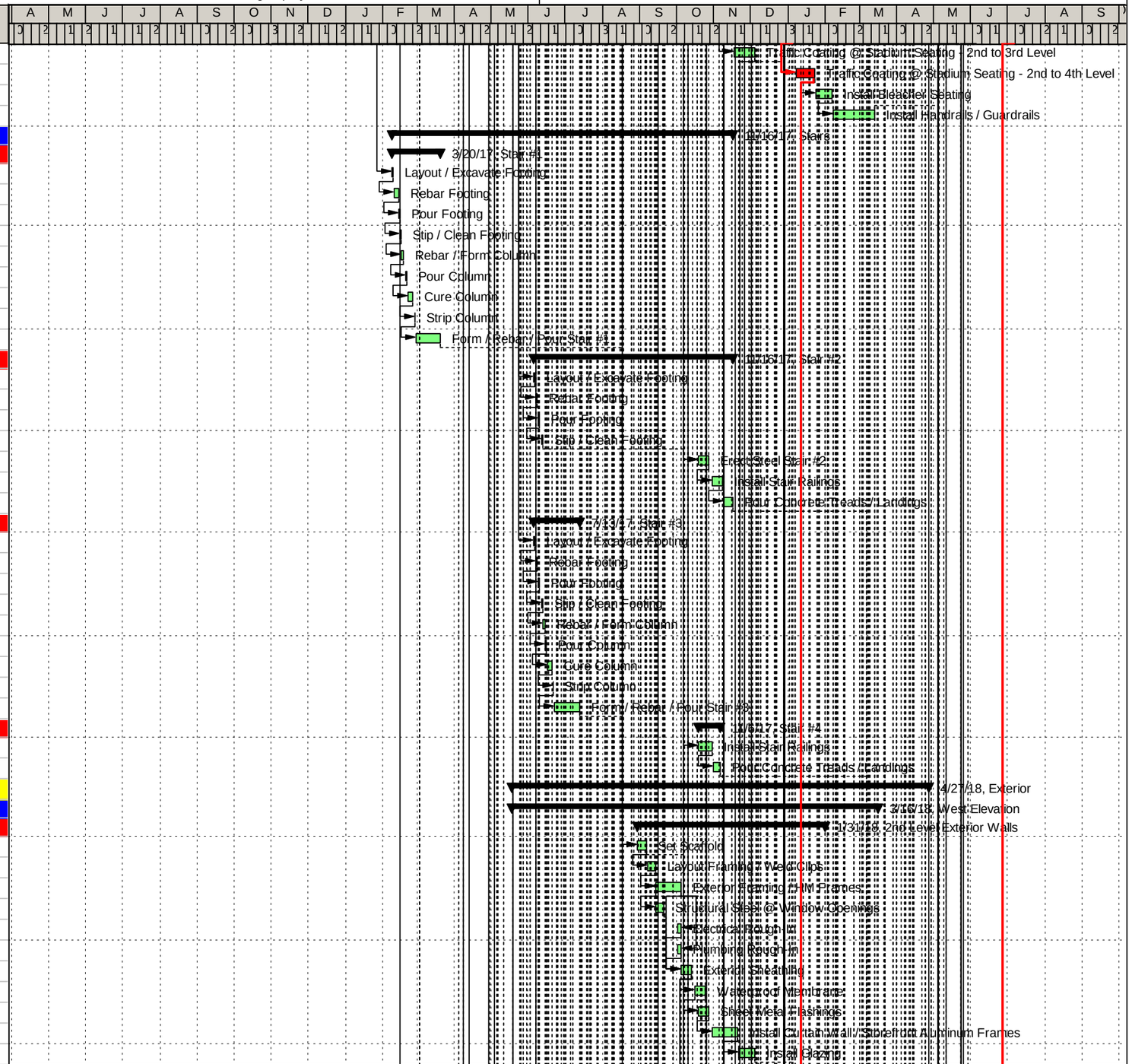
Activity ID	Activity Name	Original Duration	Start	Finish
AF-A_	Shore / Form Beams & Steps	5	7/27/17	8/2/17
AF-A_	Rebar Beams	3	8/3/17	8/7/17
AF-A_	Pour Beams	1	8/8/17	8/8/17
AF-A_	Rebar Steps	4	8/9/17	8/14/17
AF-A_	Pour Steps	1	8/15/17	8/15/17
AF-A_	Cure Steps	21	8/16/17	9/5/17
AF-A_	Strip Deck	2	9/6/17	9/7/17
AF-A_	Place Re-Shores	2	9/8/17	9/11/17
Stepped Seating - 2nd Level to 3rd Level		52	8/30/17	11/10/17
Pour 1		34	8/30/17	10/17/17
AF-A_	Shore / Form Beams & Steps	6	8/30/17	9/7/17
AF-A_	Rebar Beams	3	9/8/17	9/12/17
AF-A_	Pour Beams	1	9/13/17	9/13/17
AF-A_	Rebar Steps	4	9/14/17	9/19/17
AF-A_	Pour Steps	1	9/20/17	9/20/17
AF-A_	Cure Steps	21	9/21/17	10/11/17
AF-A_	Strip Deck	2	10/12/17	10/13/17
AF-A_	Place Re-Shores	2	10/16/17	10/17/17
Pour 2		34	9/8/17	10/25/17
AF-A_	Shore / Form Beams & Steps	6	9/8/17	9/15/17
AF-A_	Rebar Beams	3	9/18/17	9/20/17
AF-A_	Pour Beams	1	9/21/17	9/21/17
AF-A_	Rebar Steps	4	9/22/17	9/27/17
AF-A_	Pour Steps	1	9/28/17	9/28/17
AF-A_	Cure Steps	21	9/29/17	10/19/17
AF-A_	Strip Deck	2	10/20/17	10/23/17
AF-A_	Place Re-Shores	2	10/24/17	10/25/17
Pour 3		34	9/18/17	11/2/17
AF-A_	Shore / Form Beams & Steps	6	9/18/17	9/25/17
AF-A_	Rebar Beams	3	9/26/17	9/28/17
AF-A_	Pour Beams	1	9/29/17	9/29/17
AF-A_	Rebar Steps	4	10/2/17	10/5/17
AF-A_	Pour Steps	1	10/6/17	10/6/17
AF-A_	Cure Steps	21	10/7/17	10/27/17
AF-A_	Strip Deck	2	10/30/17	10/31/17
AF-A_	Place Re-Shores	2	11/1/17	11/2/17
Pour 4		34	9/26/17	11/10/17
AF-A_	Shore / Form Beams & Steps	6	9/26/17	10/3/17
AF-A_	Rebar Beams	3	10/4/17	10/6/17
AF-A_	Pour Beams	1	10/9/17	10/9/17
AF-A_	Rebar Steps	4	10/10/17	10/13/17
AF-A_	Pour Steps	1	10/16/17	10/16/17
AF-A_	Cure Steps	21	10/17/17	11/6/17
AF-A_	Strip Deck	2	11/7/17	11/8/17
AF-A_	Place Re-Shores	2	11/9/17	11/10/17
Stepped Seating - 2nd Level to 4th Level		54	10/19/17	1/9/18
Pour 1		32	10/19/17	12/6/17
AF-A_	Shore / Form Beams & Steps	7	10/19/17	10/27/17
AF-A_	Rebar Beams	3	10/30/17	11/1/17
AF-A_	Pour Beams	1	11/2/17	11/2/17

Actual Work | Remaining Work | Critical Remaining Work | Summary | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A_	Rebar Steps	4	11/3/17	11/8/17
AF-A_	Pour Steps	1	11/9/17	11/9/17
AF-A_	Cure Steps	21	11/10/17	11/30/17
AF-A_	Strip Deck	2	12/1/17	12/4/17
AF-A_	Place Re-Shores	2	12/5/17	12/6/17
Pour 2		33	10/30/17	12/18/17
AF-A_	Shore / Form Beams & Steps	7	10/30/17	11/7/17
AF-A_	Rebar Beams	3	11/8/17	11/10/17
AF-A_	Pour Beams	1	11/14/17	11/14/17
AF-A_	Rebar Steps	4	11/15/17	11/20/17
AF-A_	Pour Steps	1	11/21/17	11/21/17
AF-A_	Cure Steps	21	11/22/17	12/12/17
AF-A_	Strip Deck	2	12/13/17	12/14/17
AF-A_	Place Re-Shores	2	12/15/17	12/18/17
Pour 3		34	11/8/17	12/29/17
AF-A_	Shore / Form Beams & Steps	7	11/8/17	11/17/17
AF-A_	Rebar Beams	3	11/20/17	11/22/17
AF-A_	Pour Beams	1	11/27/17	11/27/17
AF-A_	Rebar Steps	4	11/28/17	12/1/17
AF-A_	Pour Steps	1	12/4/17	12/4/17
AF-A_	Cure Steps	21	12/5/17	12/25/17
AF-A_	Strip Deck	2	12/26/17	12/27/17
AF-A_	Place Re-Shores	2	12/28/17	12/29/17
Pour 4		33	11/20/17	1/9/18
AF-A_	Shore / Form Beams & Steps	7	11/20/17	11/30/17
AF-A_	Rebar Beams	3	12/1/17	12/5/17
AF-A_	Pour Beams	1	12/6/17	12/6/17
AF-A_	Rebar Steps	4	12/7/17	12/12/17
AF-A_	Pour Steps	1	12/13/17	12/13/17
AF-A_	Cure Steps	21	12/14/17	1/3/18
AF-A_	Strip Deck	2	1/4/18	1/5/18
AF-A_	Place Re-Shores	2	1/8/18	1/9/18
Stepped Seating Entry Stair @ Landing		22	9/8/17	10/9/17
Pour 1		10	9/8/17	9/21/17
AF-A_ST	Form / Rebar / Pour Walls	4	9/8/17	9/13/17
AF-A_ST	Install Foam	2	9/14/17	9/15/17
AF-A_ST	Form / Rebar / Pour Steps & Landings	4	9/18/17	9/21/17
Pour 2		10	9/14/17	9/27/17
AF-A_ST	Form / Rebar / Pour Walls	4	9/14/17	9/19/17
AF-A_ST	Install Foam	2	9/20/17	9/21/17
AF-A_ST	Form / Rebar / Pour Steps & Landings	4	9/22/17	9/27/17
Pour 3		10	9/20/17	10/3/17
AF-A_ST	Form / Rebar / Pour Walls	4	9/20/17	9/25/17
AF-A_ST	Install Foam	2	9/26/17	9/27/17
AF-A_ST	Form / Rebar / Pour Steps & Landings	4	9/28/17	10/3/17
Pour 4		10	9/26/17	10/9/17
AF-A_ST	Form / Rebar / Pour Walls	4	9/26/17	9/29/17
AF-A_ST	Install Foam	2	10/2/17	10/3/17
AF-A_ST	Form / Rebar / Pour Steps & Landings	4	10/4/17	10/9/17
Stadium Seating Finishes		89	11/2/17	3/13/18
AF-A_STEF	Traffic Coating @ Stadium Seating - 1st to 2	10	11/2/17	11/16/17

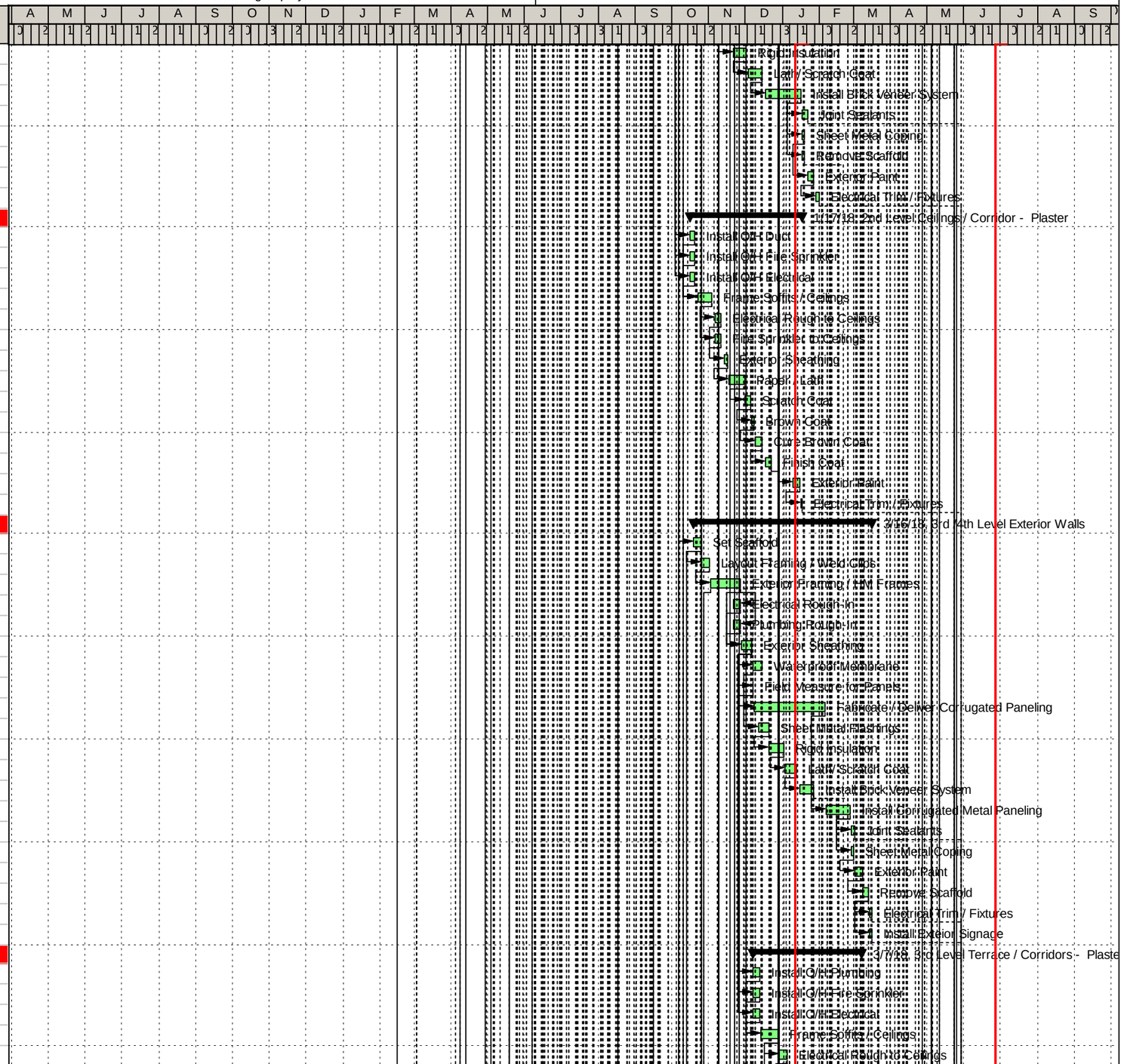


Activity ID	Activity Name	Original Duration	Start	Finish
AF-A-STEF	Traffic Coating @ Stadium Seating - 2nd to 3	10	11/17/17	12/4/17
AF-A-STEF	Traffic Coating @ Stadium Seating - 2nd to 4	12	1/8/18	1/23/18
AF-A-STEF	Install Bleacher Seating	10	1/24/18	2/6/18
AF-A-STEF	Install Handrails / Guardrails	25	2/7/18	3/13/18
Stairs		198	2/8/17	11/16/17
Stair #1		29	2/8/17	3/20/17
AF-A_ST	Layout / Excavate Footing	2	2/8/17	2/9/17
AF-A_ST	Rebar Footing	2	2/10/17	2/13/17
AF-A_ST	Pour Footing	1	2/14/17	2/14/17
AF-A_ST	Stip / Clean Footing	1	2/15/17	2/15/17
AF-A_ST	Rebar / Form Column	2	2/16/17	2/17/17
AF-A_ST	Pour Column	1	2/20/17	2/20/17
AF-A_ST	Cure Column	5	2/21/17	2/25/17
AF-A_ST	Strip Column	1	2/27/17	2/27/17
AF-A_ST	Form / Rebar / Pour Stair #1	15	2/28/17	3/20/17
Stair #2		116	6/5/17	11/16/17
AF-A_ST	Layout / Excavate Footing	2	6/5/17	6/6/17
AF-A_ST	Rebar Footing	2	6/7/17	6/8/17
AF-A_ST	Pour Footing	1	6/9/17	6/9/17
AF-A_ST	Stip / Clean Footing	1	6/12/17	6/12/17
AF-A_ST	Erect Steel Stair #2	7	10/19/17	10/27/17
AF-A_ST	Install Stair Railings	8	10/30/17	11/8/17
AF-A_ST	Pour Concrete Treads / Landings	5	11/9/17	11/16/17
Stair #3		28	6/5/17	7/13/17
AF-A_ST	Layout / Excavate Footing	2	6/5/17	6/6/17
AF-A_ST	Rebar Footing	2	6/7/17	6/8/17
AF-A_ST	Pour Footing	1	6/9/17	6/9/17
AF-A_ST	Stip / Clean Footing	1	6/12/17	6/12/17
AF-A_ST	Rebar / Form Column	2	6/13/17	6/14/17
AF-A_ST	Pour Column	1	6/15/17	6/15/17
AF-A_ST	Cure Column	5	6/16/17	6/20/17
AF-A_ST	Strip Column	1	6/21/17	6/21/17
AF-A_ST	Form / Rebar / Pour Stair #3	15	6/22/17	7/13/17
Stair #4		13	10/19/17	11/6/17
AF-A_ST	Install Stair Railings	8	10/19/17	10/30/17
AF-A_ST	Pour Concrete Treads / Landings	5	10/31/17	11/6/17
Exterior		239	5/18/17	4/27/18
West Elevation		209	5/18/17	3/16/18
2nd Level Exterior Walls		105	8/30/17	1/31/18
AF-A-EX	Set Scaffold	5	8/30/17	9/6/17
AF-A-EX	Layout Framing / Weld Clips	5	9/7/17	9/13/17
AF-A-EX	Exterior Framing / HM Frames	15	9/14/17	10/4/17
AF-A-EX	Structural Steel @ Window Openings	5	9/14/17	9/20/17
AF-A-EX	Electrical Rough-In	3	10/2/17	10/4/17
AF-A-EX	Plumbing Rough-In	3	10/2/17	10/4/17
AF-A-EX	Exterior Sheathing	7	10/5/17	10/13/17
AF-A-EX	Waterproof Membrane	7	10/16/17	10/24/17
AF-A-EX	Sheet Metal Flashings	7	10/19/17	10/27/17
AF-A-EX	Install Curtain Wall / Storefront Aluminum Fr	15	10/30/17	11/20/17
AF-A-EX	Install Glazing	8	11/21/17	12/4/17



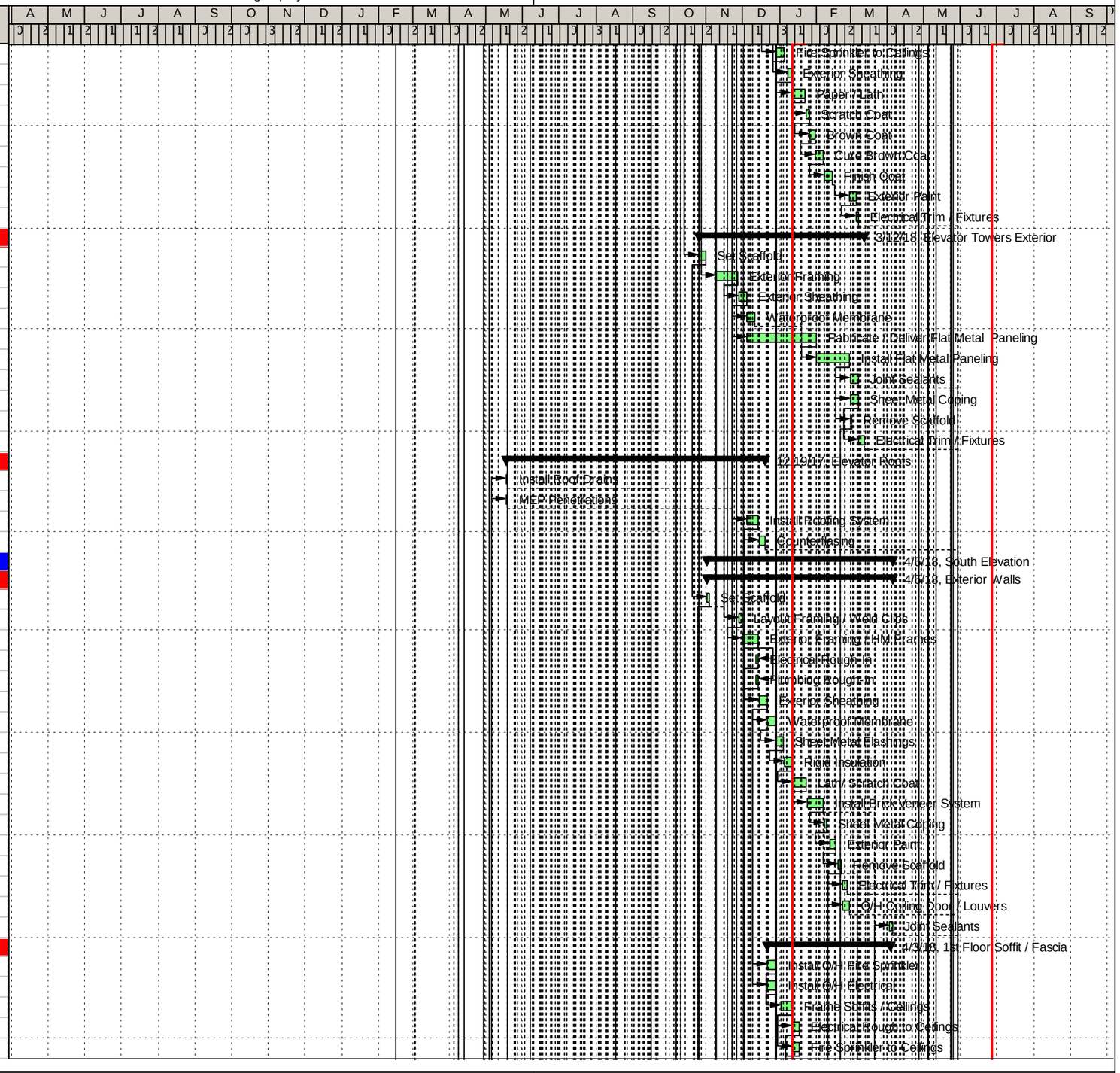
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A-EX	Rigid Insulation	7	11/21/17	12/1/17
AF-A-EX	Lath/ Scratch Coat	10	12/4/17	12/15/17
AF-A-EX	Install Brick Veneer System	20	12/18/17	1/16/18
AF-A-EX	Joint Sealants	4	1/17/18	1/22/18
AF-A-EX	Sheet Metal Coping	3	1/17/18	1/19/18
AF-A-EX	Remove Scaffold	3	1/17/18	1/19/18
AF-A-EX	Exterior Paint	5	1/22/18	1/26/18
AF-A-EX	Electrical Trim / Fixtures	3	1/29/18	1/31/18
2nd Level Ceilings / Corridor - Plaster		63	10/16/17	1/17/18
AF-A-EX	Install O/H Duct	5	10/16/17	10/20/17
AF-A-EX	Install O/H Fire Sprinkler	5	10/16/17	10/20/17
AF-A-EX	Install O/H Electrical	5	10/16/17	10/20/17
AF-A-EX	Frame Soffits / Ceilings	10	10/23/17	11/3/17
AF-A-EX	Electrical Rough to Ceilings	5	11/6/17	11/10/17
AF-A-EX	Fire Sprinkler to Ceilings	5	11/6/17	11/10/17
AF-A-EX	Exterior Sheathing	3	11/14/17	11/16/17
AF-A-EX	Paper / Lath	8	11/17/17	11/30/17
AF-A-EX	Scratch Coat	3	12/1/17	12/5/17
AF-A-EX	Brown Coat	3	12/6/17	12/8/17
AF-A-EX	Cure Brown Coat	7	12/9/17	12/15/17
AF-A-EX	Finish Coat	5	12/18/17	12/22/17
AF-A-EX	Exterior Paint	4	1/10/18	1/15/18
AF-A-EX	Electrical Trim / Fixtures	2	1/16/18	1/17/18
3rd /4th Level Exterior Walls		102	10/19/17	3/16/18
AF-A-EX	Set Scaffold	5	10/19/17	10/25/17
AF-A-EX	Layout Framing / Weld Clips	5	10/26/17	11/1/17
AF-A-EX	Exterior Framing / HM Frames	15	11/2/17	11/27/17
AF-A-EX	Electrical Rough-In	3	11/21/17	11/27/17
AF-A-EX	Plumbing Rough-In	3	11/21/17	11/27/17
AF-A-EX	Exterior Sheathing	7	11/28/17	12/6/17
AF-A-EX	Waterproof Membrane	7	12/7/17	12/15/17
AF-A-EX	Field Measure for Panels	1	12/7/17	12/7/17
AF-A-EX	Fabricate / Deliver Corrugated Paneling	40	12/8/17	2/5/18
AF-A-EX	Sheet Metal Flashings	7	12/12/17	12/20/17
AF-A-EX	Rigid Insulation	7	12/21/17	1/2/18
AF-A-EX	Lath/ Scratch Coat	8	1/3/18	1/12/18
AF-A-EX	Install Brick Veneer System	10	1/15/18	1/26/18
AF-A-EX	Install Corrugated Metal Paneling	15	2/6/18	2/26/18
AF-A-EX	Joint Sealants	4	2/27/18	3/2/18
AF-A-EX	Sheet Metal Coping	3	2/27/18	3/1/18
AF-A-EX	Exterior Paint	5	3/2/18	3/8/18
AF-A-EX	Remove Scaffold	3	3/9/18	3/13/18
AF-A-EX	Electrical Trim / Fixtures	3	3/14/18	3/16/18
AF-A-EX	Install Exteior Signage	3	3/14/18	3/16/18
3rd Level Terrace / Corridors - Plaster		63	12/7/17	3/7/18
AF-A-EX	Install O/H Plumbing	5	12/7/17	12/13/17
AF-A-EX	Install O/H Fire Sprinkler	5	12/7/17	12/13/17
AF-A-EX	Install O/H Electrical	5	12/7/17	12/13/17
AF-A-EX	Frame Soffits / Ceilings	10	12/14/17	12/28/17
AF-A-EX	Electrical Rough to Ceilings	5	12/29/17	1/5/18

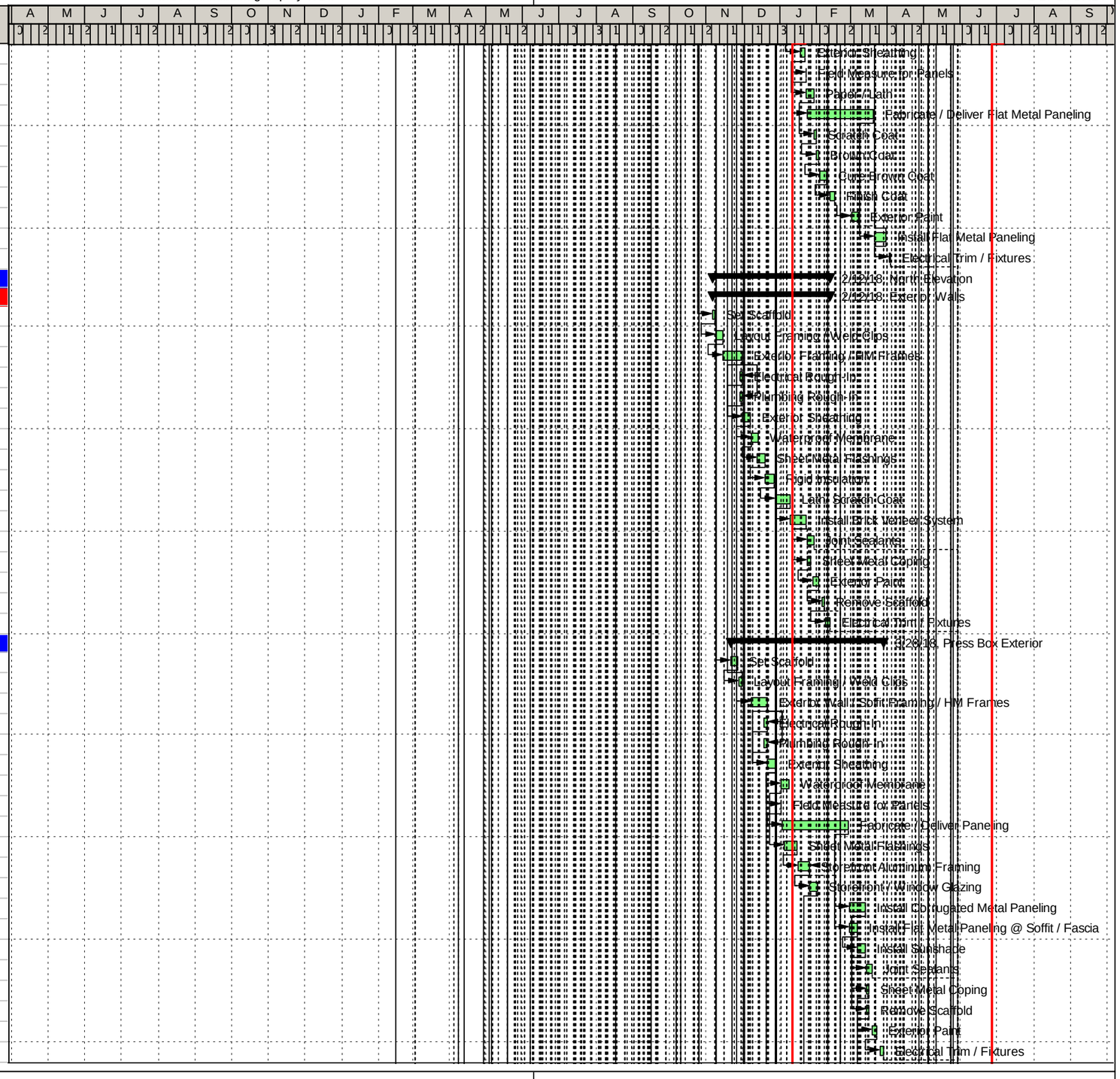


Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A-EX	Fire Sprinkler to Ceilings	5	12/29/17	1/5/18
AF-A-EX	Exterior Sheathing	3	1/8/18	1/10/18
AF-A-EX	Paper / Lath	8	1/11/18	1/22/18
AF-A-EX	Scratch Coat	3	1/23/18	1/25/18
AF-A-EX	Brown Coat	3	1/26/18	1/30/18
AF-A-EX	Cure Brown Coat	7	1/31/18	2/6/18
AF-A-EX	Finish Coat	5	2/7/18	2/13/18
AF-A-EX	Exterior Paint	4	2/28/18	3/5/18
AF-A-EX	Electrical Trim / Fixtures	2	3/6/18	3/7/18
Elevator Towers Exterior		93	10/26/17	3/12/18
AF-A-EX	Set Scaffold	4	10/26/17	10/31/17
AF-A-EX	Exterior Framing	10	11/9/17	11/27/17
AF-A-EX	Exterior Sheathing	5	11/28/17	12/4/17
AF-A-EX	Waterproof Membrane	5	12/5/17	12/11/17
AF-A-EX	Fabricate / Deliver Flat Metal Paneling	40	12/5/17	1/31/18
AF-A-EX	Install Flat Metal Paneling	20	2/1/18	2/28/18
AF-A-EX	Joint Sealants	5	3/1/18	3/7/18
AF-A-EX	Sheet Metal Coping	5	3/1/18	3/7/18
AF-A-EX	Remove Scaffold	2	3/1/18	3/2/18
AF-A-EX	Electrical Trim / Fixtures	3	3/8/18	3/12/18
Elevator Roofs		148	5/18/17	12/19/17
AF-A-EX	Install Roof Drains	2	5/18/17	5/19/17
AF-A-EX	MEP Penetrations	2	5/18/17	5/19/17
AF-A-EX	Install Roofing System	8	12/5/17	12/14/17
AF-A-EX	Counterflasing	3	12/15/17	12/19/17
South Elevation		107	11/1/17	4/5/18
Exterior Walls		107	11/1/17	4/5/18
AF-A-EX	Set Scaffold	3	11/1/17	11/3/17
AF-A-EX	Layout Framing / Weld Clips	3	11/28/17	11/30/17
AF-A-EX	Exterior Framing / HM Frames	10	12/1/17	12/14/17
AF-A-EX	Electrical Rough-In	3	12/12/17	12/14/17
AF-A-EX	Plumbing Rough-In	3	12/12/17	12/14/17
AF-A-EX	Exterior Sheathing	5	12/15/17	12/21/17
AF-A-EX	Waterproof Membrane	5	12/22/17	12/29/17
AF-A-EX	Sheet Metal Flashings	5	12/28/17	1/4/18
AF-A-EX	Rigid Insulation	5	1/5/18	1/11/18
AF-A-EX	Lath/ Scratch Coat	8	1/12/18	1/23/18
AF-A-EX	Install Brick Veneer System	10	1/24/18	2/6/18
AF-A-EX	Sheet Metal Coping	3	2/7/18	2/9/18
AF-A-EX	Exterior Paint	5	2/12/18	2/16/18
AF-A-EX	Remove Scaffold	3	2/19/18	2/21/18
AF-A-EX	Electrical Trim / Fixtures	3	2/22/18	2/26/18
AF-A-EX	O/H Coiling Door / Louvers	5	2/22/18	2/28/18
AF-A-EX	Joint Sealants	4	4/2/18	4/5/18
1st Floor Soffit / Fascia		71	12/22/17	4/3/18
AF-A-EX	Install O/H Fire Sprinkler	5	12/22/17	12/29/17
AF-A-EX	Install O/H Electrical	5	12/22/17	12/29/17
AF-A-EX	Frame Soffits / Ceilings	8	1/2/18	1/11/18
AF-A-EX	Electrical Rough to Ceilings	4	1/12/18	1/17/18
AF-A-EX	Fire Sprinkler to Ceilings	4	1/12/18	1/17/18

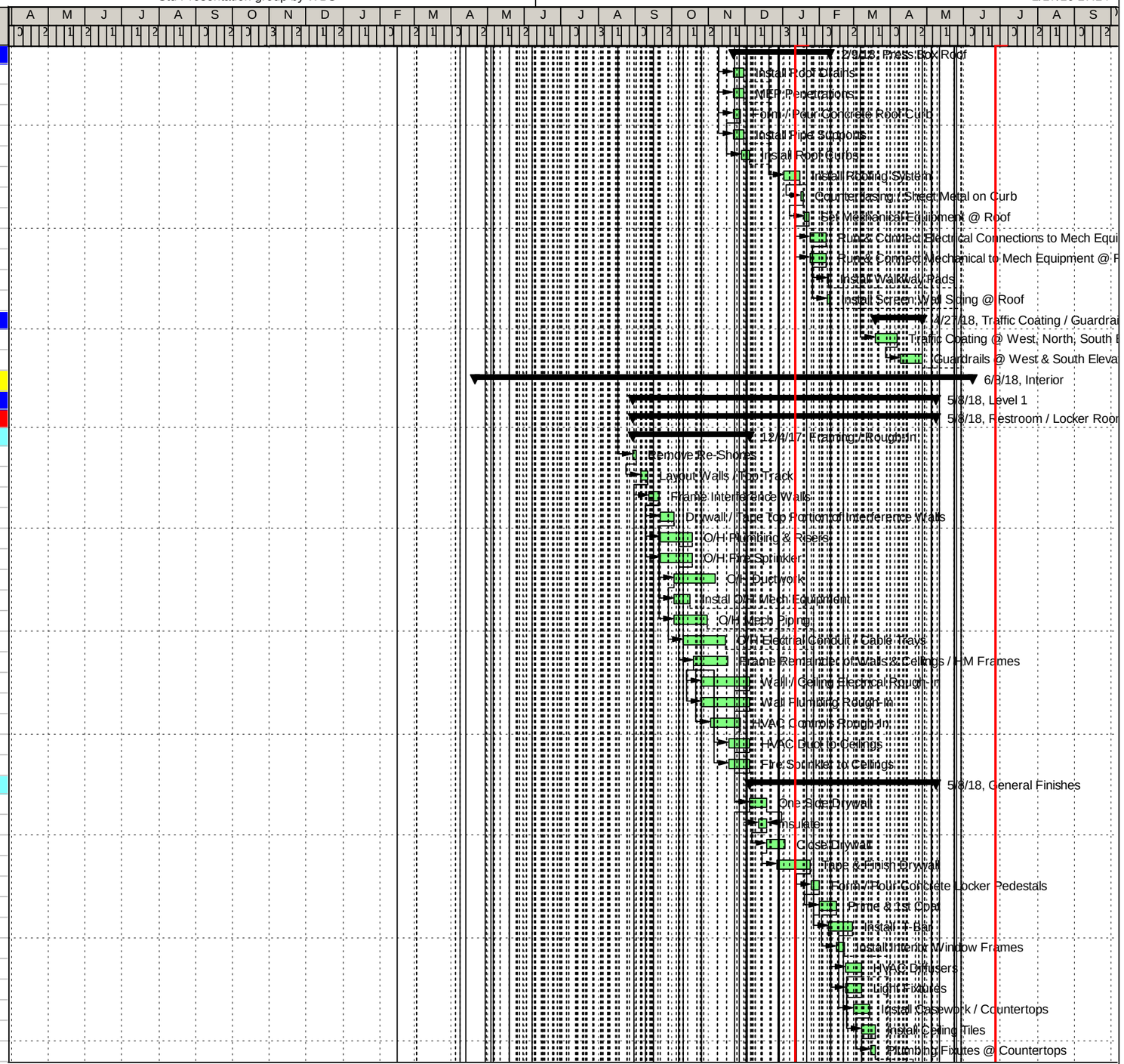


Activity ID	Activity Name	Original Duration	Start	Finish
AF-A-EX	Exterior Sheathing	3	1/18/18	1/22/18
AF-A-EX	Field Measure for Panels	1	1/23/18	1/23/18
AF-A-EX	Paper / Lath	5	1/23/18	1/29/18
AF-A-EX	Fabricate / Deliver Flat Metal Paneling	40	1/24/18	3/20/18
AF-A-EX	Scratch Coat	2	1/30/18	1/31/18
AF-A-EX	Brown Coat	2	2/1/18	2/2/18
AF-A-EX	Cure Brown Coat	7	2/3/18	2/9/18
AF-A-EX	Finish Coat	4	2/12/18	2/15/18
AF-A-EX	Exterior Paint	4	3/2/18	3/7/18
AF-A-EX	Install Flat Metal Paneling	8	3/21/18	3/30/18
AF-A-EX	Electrical Trim / Fixtures	2	4/2/18	4/3/18
North Elevation		66	11/6/17	2/12/18
Exterior Walls		66	11/6/17	2/12/18
AF-A-EX	Set Scaffold	3	11/6/17	11/8/17
AF-A-EX	Layout Framing / Weld Clips	3	11/9/17	11/14/17
AF-A-EX	Exterior Framing / HM Frames	10	11/15/17	11/30/17
AF-A-EX	Electrical Rough-In	2	11/29/17	11/30/17
AF-A-EX	Plumbing Rough-In	2	11/29/17	11/30/17
AF-A-EX	Exterior Sheathing	5	12/1/17	12/7/17
AF-A-EX	Waterproof Membrane	5	12/8/17	12/14/17
AF-A-EX	Sheet Metal Flashings	5	12/13/17	12/19/17
AF-A-EX	Rigid Insulation	5	12/20/17	12/27/17
AF-A-EX	Lath/ Scratch Coat	8	12/28/17	1/9/18
AF-A-EX	Install Brick Veneer System	10	1/10/18	1/23/18
AF-A-EX	Joint Sealants	4	1/24/18	1/29/18
AF-A-EX	Sheet Metal Coping	3	1/24/18	1/26/18
AF-A-EX	Exterior Paint	5	1/29/18	2/2/18
AF-A-EX	Remove Scaffold	3	2/5/18	2/7/18
AF-A-EX	Electrical Trim / Fixtures	3	2/8/18	2/12/18
Press Box Exterior		88	11/21/17	3/28/18
AF-PB-EXT	Set Scaffold	3	11/21/17	11/27/17
AF-PB-EXT	Layout Framing / Weld Clips	3	11/28/17	11/30/17
AF-PB-EXT	Exterior Wall / Soffit Framing / HM Frames	10	12/8/17	12/21/17
AF-PB-EXT	Electrical Rough-In	3	12/19/17	12/21/17
AF-PB-EXT	Plumbing Rough-In	3	12/19/17	12/21/17
AF-PB-EXT	Exterior Sheathing	5	12/22/17	12/29/17
AF-PB-EXT	Waterproof Membrane	5	1/2/18	1/8/18
AF-PB-EXT	Field Measure for Panels	1	1/2/18	1/2/18
AF-PB-EXT	Fabricate / Deliver Paneling	40	1/3/18	2/27/18
AF-PB-EXT	Sheet Metal Flashings	7	1/5/18	1/15/18
AF-PB-EXT	Storefront Aluminum Framing	8	1/16/18	1/25/18
AF-PB-EXT	Storefront / Window Glazing	5	1/26/18	2/1/18
AF-PB-EXT	Install Corrugated Metal Paneling	10	2/28/18	3/13/18
AF-PB-EXT	Install Flat Metal Paneling @ Soffit / Fascia	5	2/28/18	3/6/18
AF-PB-EXT	Install Sunshade	5	3/7/18	3/13/18
AF-PB-EXT	Joint Sealants	4	3/14/18	3/19/18
AF-PB-EXT	Sheet Metal Coping	3	3/14/18	3/16/18
AF-PB-EXT	Remove Scaffold	3	3/14/18	3/16/18
AF-PB-EXT	Exterior Paint	5	3/19/18	3/23/18
AF-PB-EXT	Electrical Trim / Fixtures	3	3/26/18	3/28/18



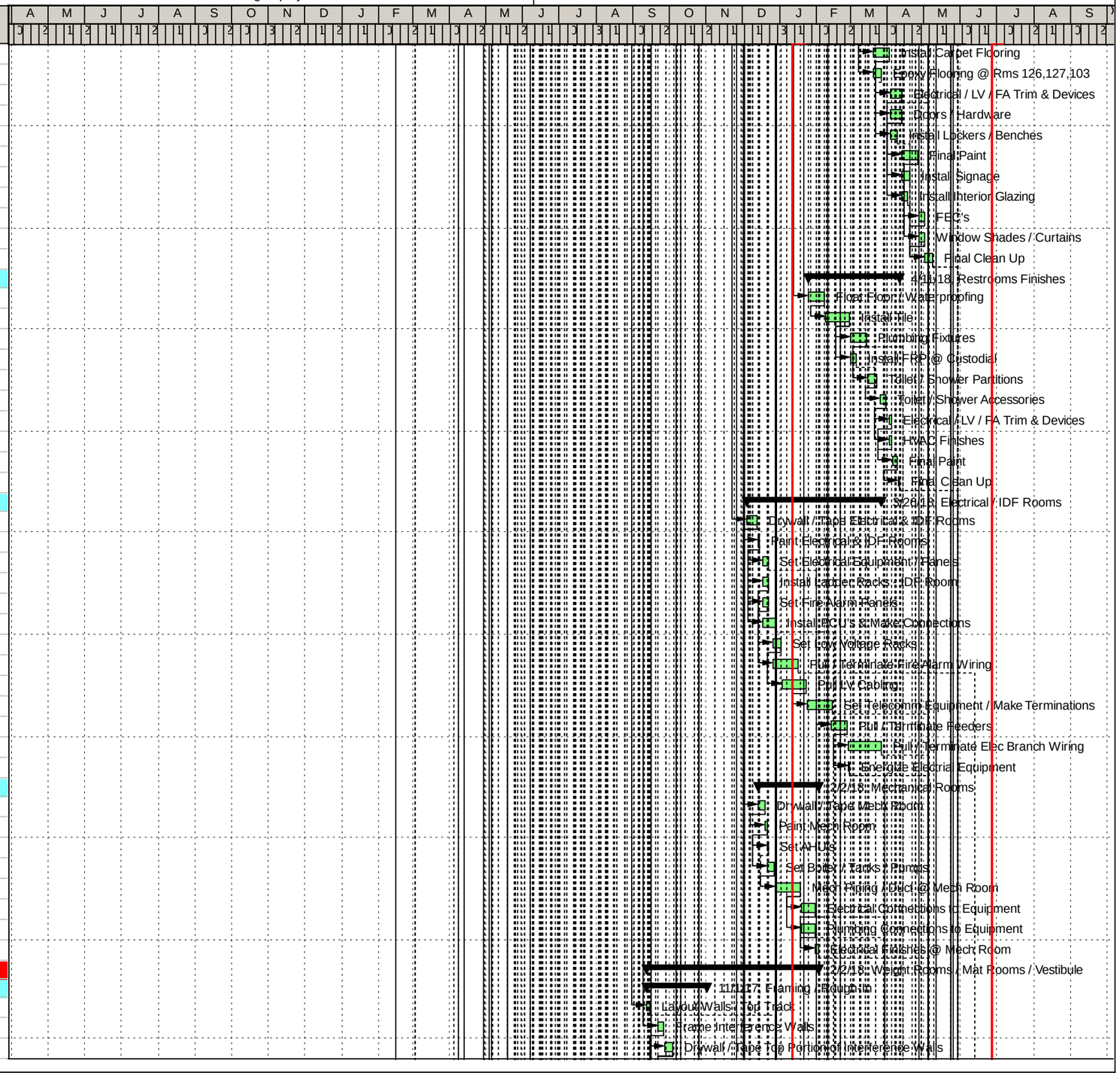
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
Press Box Roof		55	11/21/17	2/9/18
AF-PB-RF-	Install Roof Drains	5	11/21/17	11/29/17
AF-PB-RF-	MEP Penetrations	5	11/21/17	11/29/17
AF-PB-RF-	Form / Pour Concrete Roof Curb	3	11/21/17	11/27/17
AF-PB-RF-	Install Pipe Supports	5	11/21/17	11/29/17
AF-PB-RF-	Install Roof Curbs	5	11/28/17	12/4/17
AF-PB-RF-	Install Roofing System	10	1/2/18	1/15/18
AF-PB-RF-	Counterflasing / Sheet Metal on Curb	3	1/16/18	1/18/18
AF-PB-RF-	Set Mechanical Equipment @ Roof	3	1/19/18	1/23/18
AF-PB-RF-	Run & Connect Electrical Connections to Me	10	1/24/18	2/6/18
AF-PB-RF-	Run & Connect Mechanical to Mech Equipm	10	1/24/18	2/6/18
AF-PB-RF-	Install Walkway Pads	2	2/7/18	2/8/18
AF-PB-RF-	Install Screen Wall Siding @ Roof	3	2/7/18	2/9/18
Traffic Coating / Guardrails		30	3/19/18	4/27/18
AF-A-EXT-5	Traffic Coating @ West, North, South Elevat	15	3/19/18	4/6/18
AF-A-EXT-5	Guardrails @ West & South Elevations	15	4/9/18	4/27/18
Interior		288	4/20/17	6/8/18
Level 1		174	8/30/17	5/8/18
Restroom / Locker Room / Team Room (GL A- C.2 &		174	8/30/17	5/8/18
Framing / Rough-In		65	8/30/17	12/4/17
AF-A1	Remove Re-Shores	3	8/30/17	9/1/17
AF-A1	Layout Walls / Top Track	5	9/5/17	9/11/17
AF-A1	Frame Interference Walls	7	9/12/17	9/20/17
AF-A1	Drywall / Tape Top Portion of Interference W	8	9/21/17	10/2/17
AF-A1	O/H Plumbing & Risers	20	9/21/17	10/18/17
AF-A1	O/H Fire Sprinkler	20	9/21/17	10/18/17
AF-A1	O/H Ductwork	25	10/3/17	11/6/17
AF-A1	Instal O/H Mech Equipment	10	10/3/17	10/16/17
AF-A1	O/H Mech Piping	20	10/3/17	10/30/17
AF-A1	O/H Electrial Conduit / Cable Trays	25	10/10/17	11/14/17
AF-A1	Frame Remainder of Walls & Ceilings / HM I	20	10/19/17	11/16/17
AF-A1	Walll / Ceiling Electrical Rough-In	25	10/26/17	12/4/17
AF-A1	Wall Plumbing Rough-In	25	10/26/17	12/4/17
AF-A1	HVAC Controls Rough-In	15	11/2/17	11/27/17
AF-A1	HVAC Duct to Ceilings	10	11/17/17	12/4/17
AF-A1	Fire Sprinkler to Ceilings	10	11/17/17	12/4/17
General Finishes		109	12/5/17	5/8/18
AF-A1	One Side Drywall	10	12/5/17	12/18/17
AF-A1	Insulate	5	12/12/17	12/18/17
AF-A1	Close Drywall	10	12/19/17	1/3/18
AF-A1	Tape & Finish Drywall	20	12/27/17	1/24/18
AF-A1	Form / Pour Concrete Locker Pedestals	5	1/25/18	1/31/18
AF-A1	Prime & 1st Coat	10	2/1/18	2/14/18
AF-A1	Install T-Bar	15	2/8/18	2/28/18
AF-A1	Install Interior Window Frames	5	2/15/18	2/21/18
AF-A1	HVAC Diffusers	10	2/22/18	3/7/18
AF-A1	Light Fixtures	10	2/22/18	3/7/18
AF-A1	Install Casework / Countertops	10	3/1/18	3/14/18
AF-A1	Install Ceiling Tiles	8	3/8/18	3/19/18
AF-A1	Plumbing Fixutes @ Countertops	3	3/15/18	3/19/18



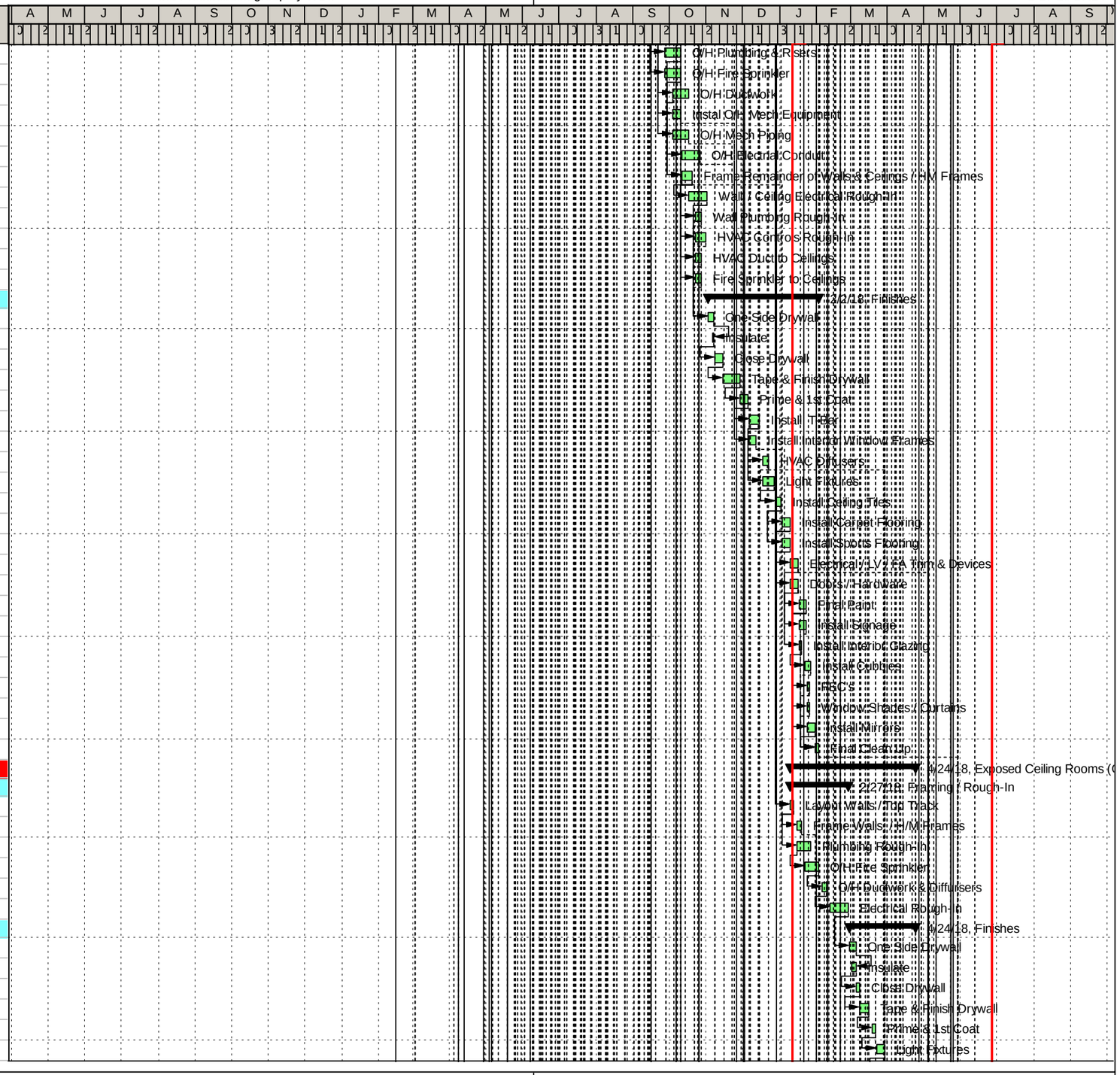
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A1	Install Carpet Flooring	10	3/20/18	4/2/18
AF-A1	Epoxy Flooring @ Rms 126,127,103	5	3/20/18	3/26/18
AF-A1	Electrical / LV / FA Trim & Devices	8	4/3/18	4/12/18
AF-A1	Doors / Hardware	8	4/3/18	4/12/18
AF-A1	Install Lockers / Benches	5	4/3/18	4/9/18
AF-A1	Final Paint	10	4/13/18	4/26/18
AF-A1	Install Signage	5	4/13/18	4/19/18
AF-A1	Install Interior Glazing	3	4/13/18	4/17/18
AF-A1	FEC's	3	4/27/18	5/1/18
AF-A1	Window Shades / Curtains	3	4/27/18	5/1/18
AF-A1	Final Clean Up	5	5/2/18	5/8/18
Restrooms Finishes		55	1/25/18	4/11/18
AF-A1	Float Floor / Waterproofing	10	1/25/18	2/7/18
AF-A1	Install Tile	15	2/8/18	2/28/18
AF-A1	Plumbing Fixtures	10	3/1/18	3/14/18
AF-A1	Install FRP @ Custodial	3	3/1/18	3/5/18
AF-A1	Toilet / Shower Partitions	7	3/15/18	3/23/18
AF-A1	Toilet / Shower Accessories	5	3/26/18	3/30/18
AF-A1	Electrical / LV / FA Trim & Devices	3	4/2/18	4/4/18
AF-A1	HVAC Finishes	3	4/2/18	4/4/18
AF-A1	Final Paint	3	4/5/18	4/9/18
AF-A1	Final Clean Up	2	4/10/18	4/11/18
Electrical / IDF Rooms		78	12/5/17	3/26/18
AF-A1	Drywall / Tape Electrical & IDF Rooms	7	12/5/17	12/13/17
AF-A1	Paint Electrical & IDF Rooms	2	12/14/17	12/15/17
AF-A1	Set Electrical Equipment / Panels	5	12/18/17	12/22/17
AF-A1	Install Ladder Racks - IDF Room	5	12/18/17	12/22/17
AF-A1	Set Fire Alarm Panels	5	12/18/17	12/22/17
AF-A1	Install FCU's & Make Connections	8	12/18/17	12/28/17
AF-A1	Set Low Voltage Racks	5	12/26/17	1/2/18
AF-A1	Pull / Terminate Fire Alarm Wiring	15	12/26/17	1/16/18
AF-A1	Pull LV Cabling	15	1/3/18	1/23/18
AF-A1	Set Telecomm Equipment / Make Terminatio	15	1/24/18	2/13/18
AF-A1	Pull / Terminate Feeders	10	2/13/18	2/26/18
AF-A1	Pull / Terminate Elec Branch Wiring	20	2/27/18	3/26/18
AF-A1	Energize Electrial Equipment	2	2/27/18	2/28/18
Mechanical Rooms		35	12/14/17	2/2/18
AF-A1	Drywall / Tape Mech Room	4	12/14/17	12/19/17
AF-A1	Paint Mech Room	2	12/20/17	12/21/17
AF-A1	Set AHU's	1	12/22/17	12/22/17
AF-A1	Set Boiler / Tanks / Pumps	3	12/22/17	12/27/17
AF-A1	Mech Piping / Duct @ Mech Room	15	12/28/17	1/18/18
AF-A1	Electrical Connections to Equipment	8	1/19/18	1/30/18
AF-A1	Plumbing Connections to Equipment	8	1/19/18	1/30/18
AF-A1	Electrical Finishes @ Mech Room	3	1/31/18	2/2/18
Weight Rooms / Mat Rooms / Vestibule		99	9/12/17	2/2/18
Framing / Rough-In		37	9/12/17	11/1/17
AF-A1	Layout Walls / Top Track	3	9/12/17	9/14/17
AF-A1	Frame Interference Walls	4	9/21/17	9/26/17
AF-A1	Drywall / Tape Top Portion of Interference W	5	9/27/17	10/3/17



Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

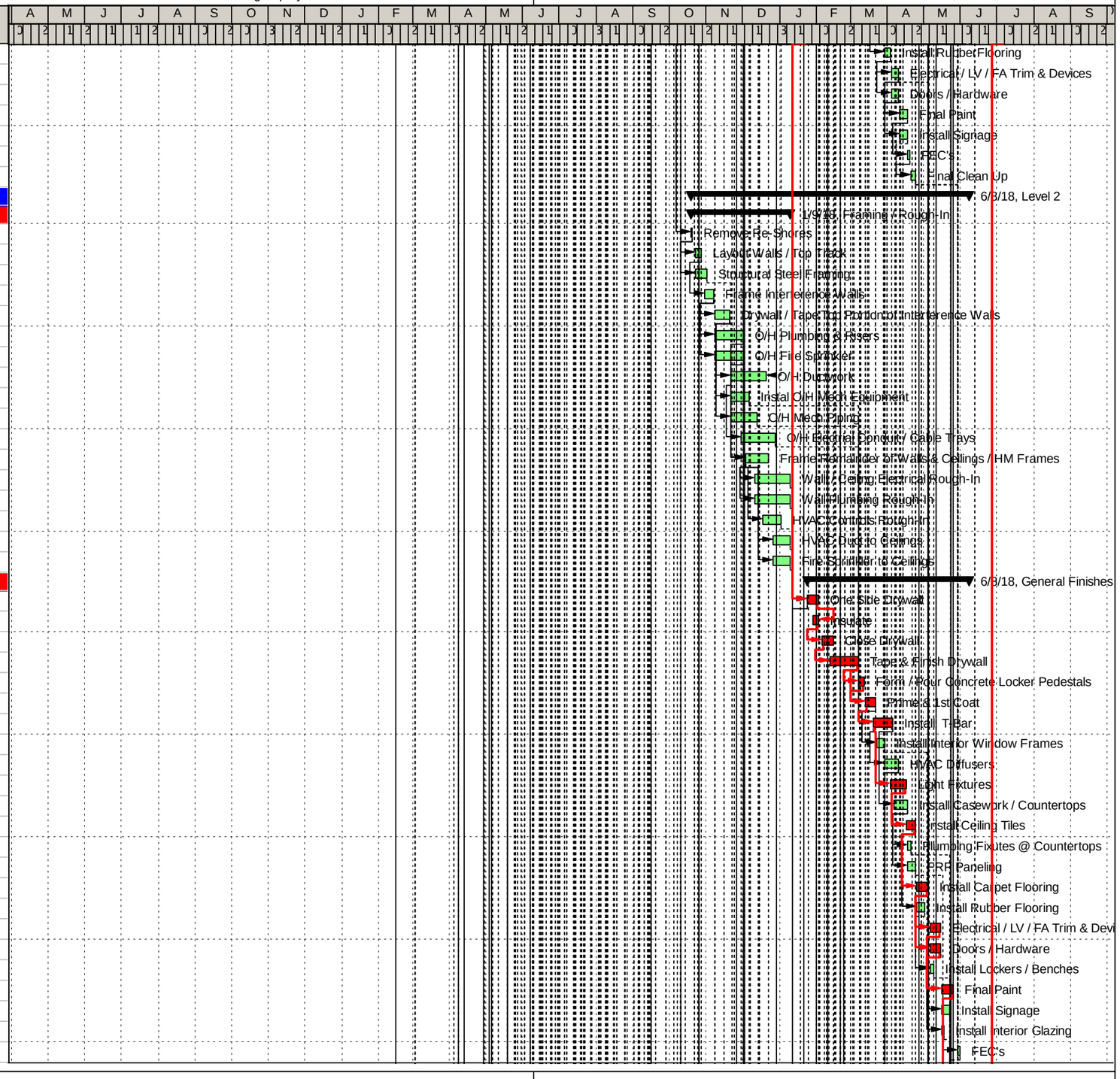
Activity ID	Activity Name	Original Duration	Start	Finish
AF-A1	O/H Plumbing & Risers	10	9/27/17	10/10/17
AF-A1	O/H Fire Sprinkler	10	9/27/17	10/10/17
AF-A1	O/H Ductwork	10	10/4/17	10/17/17
AF-A1	Instal O/H Mech Equipment	5	10/4/17	10/10/17
AF-A1	O/H Mech Piping	10	10/4/17	10/17/17
AF-A1	O/H Electrial Conduit	12	10/11/17	10/26/17
AF-A1	Frame Remainder of Walls & Ceilings / HM I	8	10/11/17	10/20/17
AF-A1	Walll / Ceiling Electrical Rough-In	12	10/17/17	11/1/17
AF-A1	Wall Plumbing Rough-In	5	10/23/17	10/27/17
AF-A1	HVAC Controls Rough-In	7	10/23/17	10/31/17
AF-A1	HVAC Duct to Ceilings	5	10/23/17	10/27/17
AF-A1	Fire Sprinkler to Ceilings	5	10/23/17	10/27/17
Finishes		62	11/2/17	2/2/18
AF-A1	One Side Drywall	4	11/2/17	11/7/17
AF-A1	Insulate	2	11/6/17	11/7/17
AF-A1	Close Drywall	4	11/8/17	11/14/17
AF-A1	Tape & Finish Drywall	8	11/15/17	11/28/17
AF-A1	Prime & 1st Coat	5	11/29/17	12/5/17
AF-A1	Install T-Bar	8	12/6/17	12/15/17
AF-A1	Install Interior Window Frames	5	12/6/17	12/12/17
AF-A1	HVAC Diffusers	5	12/18/17	12/22/17
AF-A1	Light Fixtures	7	12/18/17	12/27/17
AF-A1	Install Ceiling Tiles	3	12/28/17	1/2/18
AF-A1	Install Carpet Flooring	5	1/3/18	1/9/18
AF-A1	Install Sports Flooring	5	1/3/18	1/9/18
AF-A1	Electrical / LV / FA Trim & Devices	5	1/10/18	1/16/18
AF-A1	Doors / Hardware	5	1/10/18	1/16/18
AF-A1	Final Paint	5	1/17/18	1/23/18
AF-A1	Install Signage	5	1/17/18	1/23/18
AF-A1	Install Interior Glazing	3	1/17/18	1/19/18
AF-A1	Install Cubbies	5	1/22/18	1/26/18
AF-A1	FEC's	2	1/24/18	1/25/18
AF-A1	Window Shades / Curtains	2	1/24/18	1/25/18
AF-A1	Install Mirrors	5	1/24/18	1/30/18
AF-A1	Final Clean Up	3	1/31/18	2/2/18
Exposed Ceiling Rooms (GL C.2 - D)		75	1/10/18	4/24/18
Framing / Rough-In		35	1/10/18	2/27/18
AF-A1	Layout Walls / Top Track	3	1/10/18	1/12/18
AF-A1	Frame Walls / H/M Frames	5	1/15/18	1/19/18
AF-A1	Plumbing Rough-In	10	1/15/18	1/26/18
AF-A1	O/H Fire Sprinkler	10	1/22/18	2/2/18
AF-A1	O/H Ductwork & Diffursers	5	2/5/18	2/9/18
AF-A1	Electrical Rough-In	12	2/12/18	2/27/18
Finishes		40	2/28/18	4/24/18
AF-A1	One Side Drywall	4	2/28/18	3/5/18
AF-A1	Insulate	2	3/2/18	3/5/18
AF-A1	Close Drywall	3	3/6/18	3/8/18
AF-A1	Tape & Finish Drywall	6	3/9/18	3/16/18
AF-A1	Prime & 1st Coat	4	3/19/18	3/22/18
AF-A1	Light Fixtures	5	3/23/18	3/29/18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

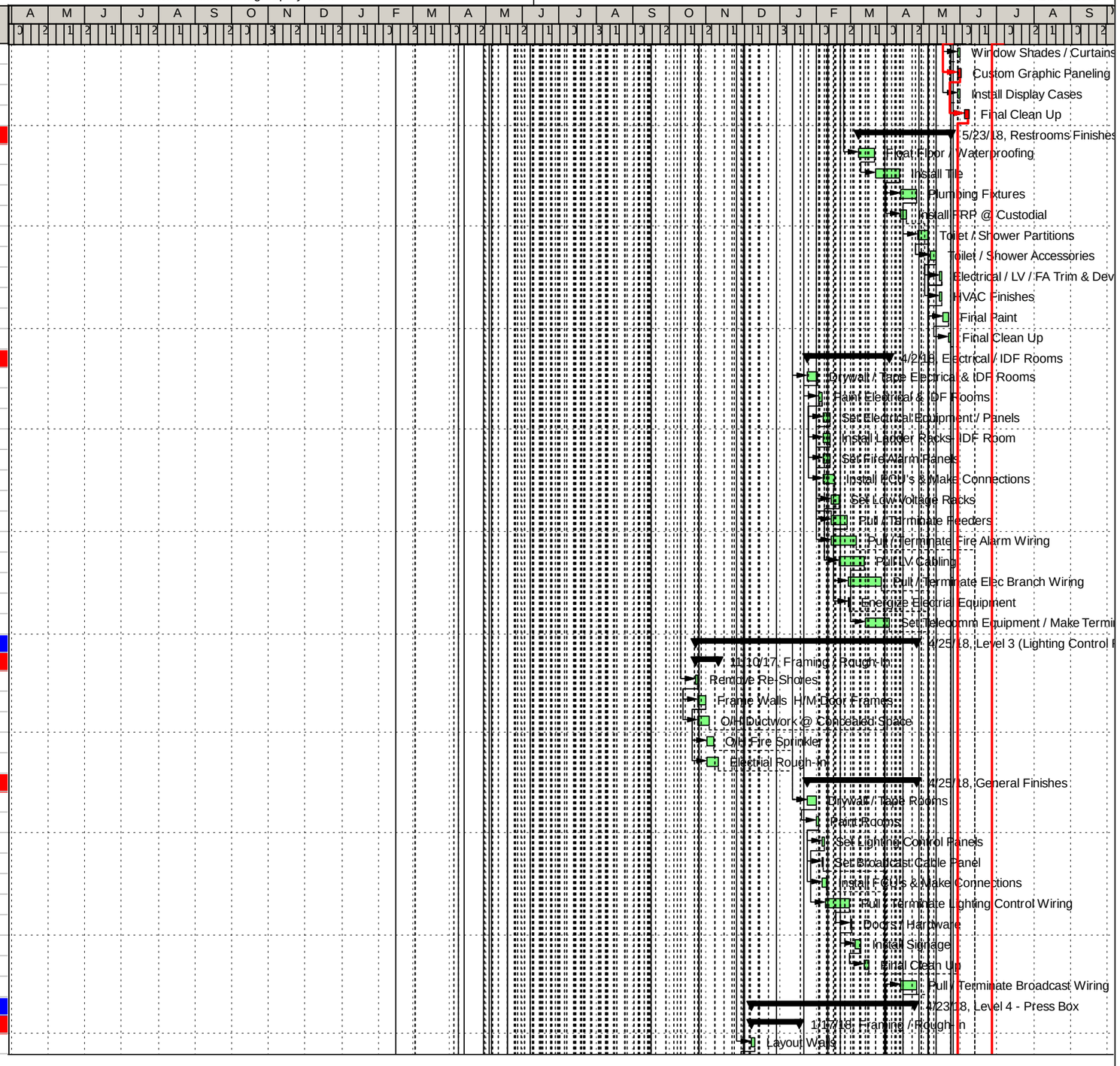
Tilden-Coil Constructors

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A1	Install RubberFlooring	3	3/30/18	4/3/18
AF-A1	Electrical / LV / FA Trim & Devices	5	4/4/18	4/10/18
AF-A1	Doors / Hardware	5	4/4/18	4/10/18
AF-A1	Final Paint	5	4/11/18	4/17/18
AF-A1	Install Signage	5	4/11/18	4/17/18
AF-A1	FEC's	2	4/18/18	4/19/18
AF-A1	Final Clean Up	3	4/20/18	4/24/18
Level 2		161	10/19/17	6/8/18
Framing / Rough-In		54	10/19/17	1/9/18
AF-A2-IN	Remove Re-Shores	2	10/19/17	10/20/17
AF-A2-IN	Layout Walls / Top Track	5	10/23/17	10/27/17
AF-A2-IN	Structural Steel Framing	8	10/23/17	11/1/17
AF-A2-IN	Frame Interference Walls	7	10/30/17	11/7/17
AF-A2-IN	Drywall / Tape Top Portion of Interference W	8	11/8/17	11/20/17
AF-A2-IN	O/H Plumbing & Risers	15	11/8/17	12/1/17
AF-A2-IN	O/H Fire Sprinkler	15	11/8/17	12/1/17
AF-A2-IN	O/H Ductwork	20	11/21/17	12/20/17
AF-A2-IN	Instal O/H Mech Equipment	10	11/21/17	12/6/17
AF-A2-IN	O/H Mech Piping	15	11/21/17	12/13/17
AF-A2-IN	O/H Electrial Conduit / Cable Trays	20	11/30/17	12/28/17
AF-A2-IN	Frame Remainder of Walls & Ceilings / HM I	15	12/4/17	12/22/17
AF-A2-IN	Walll / Ceiling Electrical Rough-In	20	12/11/17	1/9/18
AF-A2-IN	Wall Plumbing Rough-In	20	12/11/17	1/9/18
AF-A2-IN	HVAC Controls Rough-In	10	12/18/17	1/2/18
AF-A2-IN	HVAC Duct to Ceilings	10	12/26/17	1/9/18
AF-A2-IN	Fire Sprinkler to Ceilings	10	12/26/17	1/9/18
General Finishes		97	1/24/18	6/8/18
AF-A2-IN	One Side Drywall	8	1/24/18	2/2/18
AF-A2-IN	Insulate	5	1/29/18	2/2/18
AF-A2-IN	Close Drywall	8	2/5/18	2/14/18
AF-A2-IN	Tape & Finish Drywall	18	2/12/18	3/7/18
AF-A2-IN	Form / Pour Concrete Locker Pedestals	3	3/8/18	3/12/18
AF-A2-IN	Prime & 1st Coat	8	3/13/18	3/22/18
AF-A2-IN	Install T-Bar	13	3/20/18	4/5/18
AF-A2-IN	Install Interior Window Frames	5	3/23/18	3/29/18
AF-A2-IN	HVAC Diffusers	8	3/30/18	4/10/18
AF-A2-IN	Light Fixtures	10	4/3/18	4/16/18
AF-A2-IN	Install Casework / Countertops	8	4/6/18	4/17/18
AF-A2-IN	Install Ceiling Tiles	6	4/17/18	4/24/18
AF-A2-IN	Plumbing Fixutes @ Countertops	3	4/18/18	4/20/18
AF-A2-IN	FRP Paneling	5	4/18/18	4/24/18
AF-A2-IN	Install Carpet Flooring	8	4/25/18	5/4/18
AF-A2-IN	Install Rubber Flooring	5	4/25/18	5/1/18
AF-A2-IN	Electrical / LV / FA Trim & Devices	7	5/7/18	5/15/18
AF-A2-IN	Doors / Hardware	7	5/7/18	5/15/18
AF-A2-IN	Install Lockers / Benches	3	5/7/18	5/9/18
AF-A2-IN	Final Paint	8	5/16/18	5/25/18
AF-A2-IN	Install Signage	5	5/16/18	5/22/18
AF-A2-IN	Install Interior Glazing	3	5/16/18	5/18/18
AF-A2-IN	FEC's	3	5/29/18	5/31/18



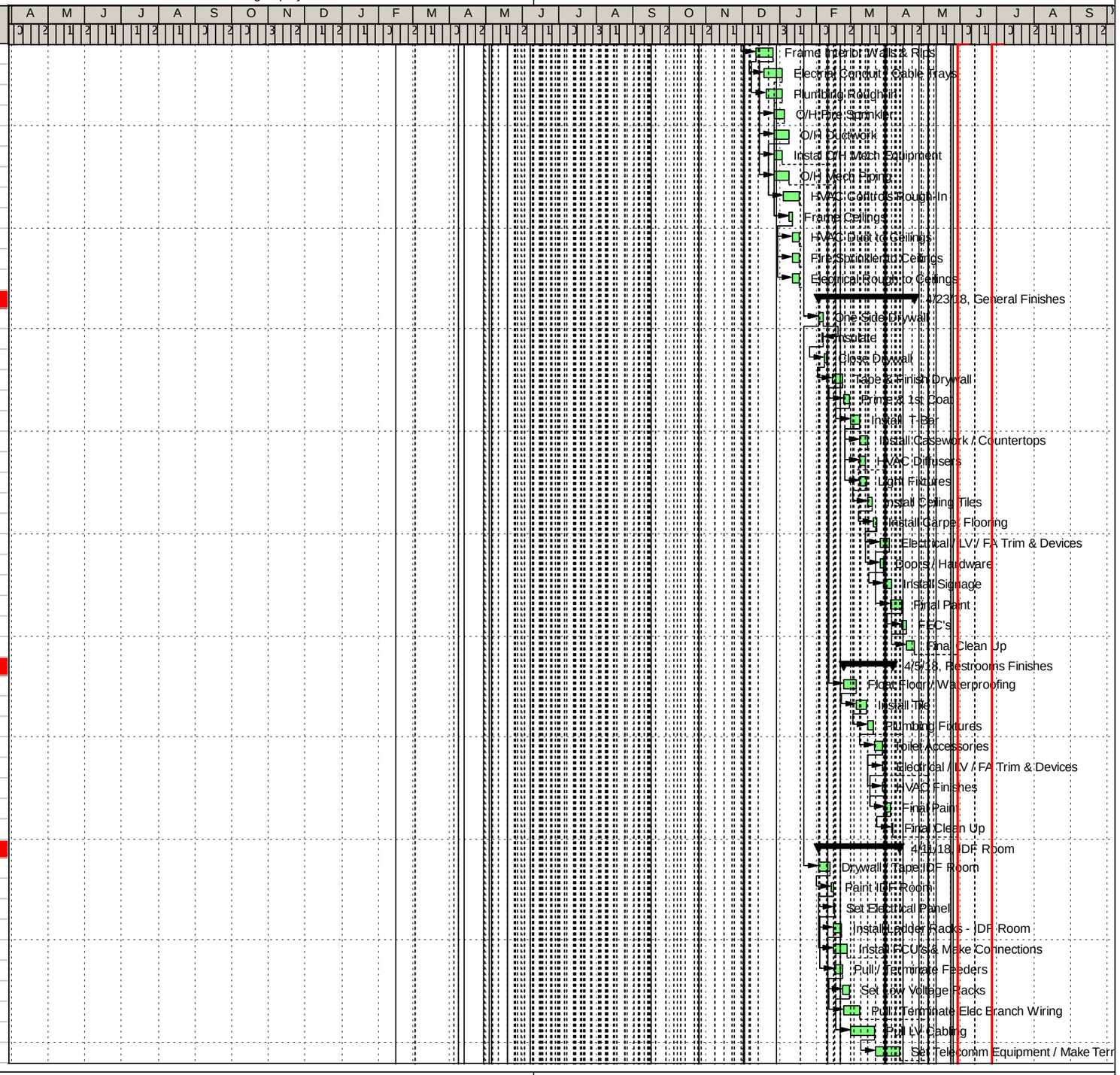
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-A2-IN	Window Shades / Curtains	3	5/29/18	5/31/18
AF-A2-IN	Custom Graphic Paneling	4	5/29/18	6/1/18
AF-A2-IN	Install Display Cases	3	5/29/18	5/31/18
AF-A2-IN	Final Clean Up	5	6/4/18	6/8/18
Restrooms Finishes		55	3/8/18	5/23/18
AF-A2-IN	Float Floor / Waterproofing	10	3/8/18	3/21/18
AF-A2-IN	Install Tile	15	3/22/18	4/11/18
AF-A2-IN	Plumbing Fixtures	10	4/12/18	4/25/18
AF-A2-IN	Install FRP @ Custodial	3	4/12/18	4/16/18
AF-A2-IN	Toilet / Shower Partitions	7	4/26/18	5/4/18
AF-A2-IN	Toilet / Shower Accessories	5	5/7/18	5/11/18
AF-A2-IN	Electrical / LV / FA Trim & Devices	3	5/14/18	5/16/18
AF-A2-IN	HVAC Finishes	3	5/14/18	5/16/18
AF-A2-IN	Final Paint	3	5/17/18	5/21/18
AF-A2-IN	Final Clean Up	2	5/22/18	5/23/18
Electrical / IDF Rooms		49	1/24/18	4/2/18
AF-A2-IN	Drywall / Tape Electrical & IDF Rooms	7	1/24/18	2/1/18
AF-A2-IN	Paint Electrical & IDF Rooms	2	2/2/18	2/5/18
AF-A2-IN	Set Electrical Equipment / Panels	5	2/6/18	2/12/18
AF-A2-IN	Install Ladder Racks- IDF Room	5	2/6/18	2/12/18
AF-A2-IN	Set Fire Alarm Panels	5	2/6/18	2/12/18
AF-A2-IN	Install FCU's & Make Connections	8	2/6/18	2/15/18
AF-A2-IN	Set Low Voltage Racks	5	2/13/18	2/19/18
AF-A2-IN	Pull / Terminate Feeders	10	2/13/18	2/26/18
AF-A2-IN	Pull / Terminate Fire Alarm Wiring	15	2/13/18	3/5/18
AF-A2-IN	Pull LV Cabling	15	2/20/18	3/12/18
AF-A2-IN	Pull / Terminate Elec Branch Wiring	20	2/27/18	3/26/18
AF-A2-IN	Energize Electrial Equipment	2	2/27/18	2/28/18
AF-A2-IN	Set Telecomm Equipment / Make Terminatio	15	3/13/18	4/2/18
Level 3 (Lighting Control Rm / Storage Rm)		128	10/23/17	4/25/18
Framing / Rough-In		15	10/23/17	11/10/17
AF-A3-IN	Remove Re-Shores	2	10/23/17	10/24/17
AF-A3-IN	Frame Walls H/M Door Frames	5	10/25/17	10/31/17
AF-A3-IN	O/H Ductwork @ Concealed Space	8	10/25/17	11/3/17
AF-A3-IN	O/H Fire Sprinkler	5	11/1/17	11/7/17
AF-A3-IN	Electrial Rough-In	8	11/1/17	11/10/17
General Finishes		66	1/24/18	4/25/18
AF-A3-IN	Drywall / Tape Rooms	6	1/24/18	1/31/18
AF-A3-IN	Paint Rooms	2	2/1/18	2/2/18
AF-A3-IN	Set Lighting Control Panels	3	2/5/18	2/7/18
AF-A3-IN	Set Broadcast Cable Panel	2	2/5/18	2/6/18
AF-A3-IN	Install FCU's & Make Connections	5	2/5/18	2/9/18
AF-A3-IN	Pull / Terminate Lighting Control Wiring	15	2/8/18	2/28/18
AF-A3-IN	Doors / Hardware	2	3/1/18	3/2/18
AF-A3-IN	Install Signage	5	3/5/18	3/9/18
AF-A3-IN	Final Clean Up	5	3/12/18	3/16/18
AF-A3-IN	Pull / Terminate Broadcast Wiring	10	4/12/18	4/25/18
Level 4 - Press Box		95	12/8/17	4/23/18
Framing / Rough-In		27	12/8/17	1/17/18
AF-PB-IN	Layout Walls	2	12/8/17	12/11/17



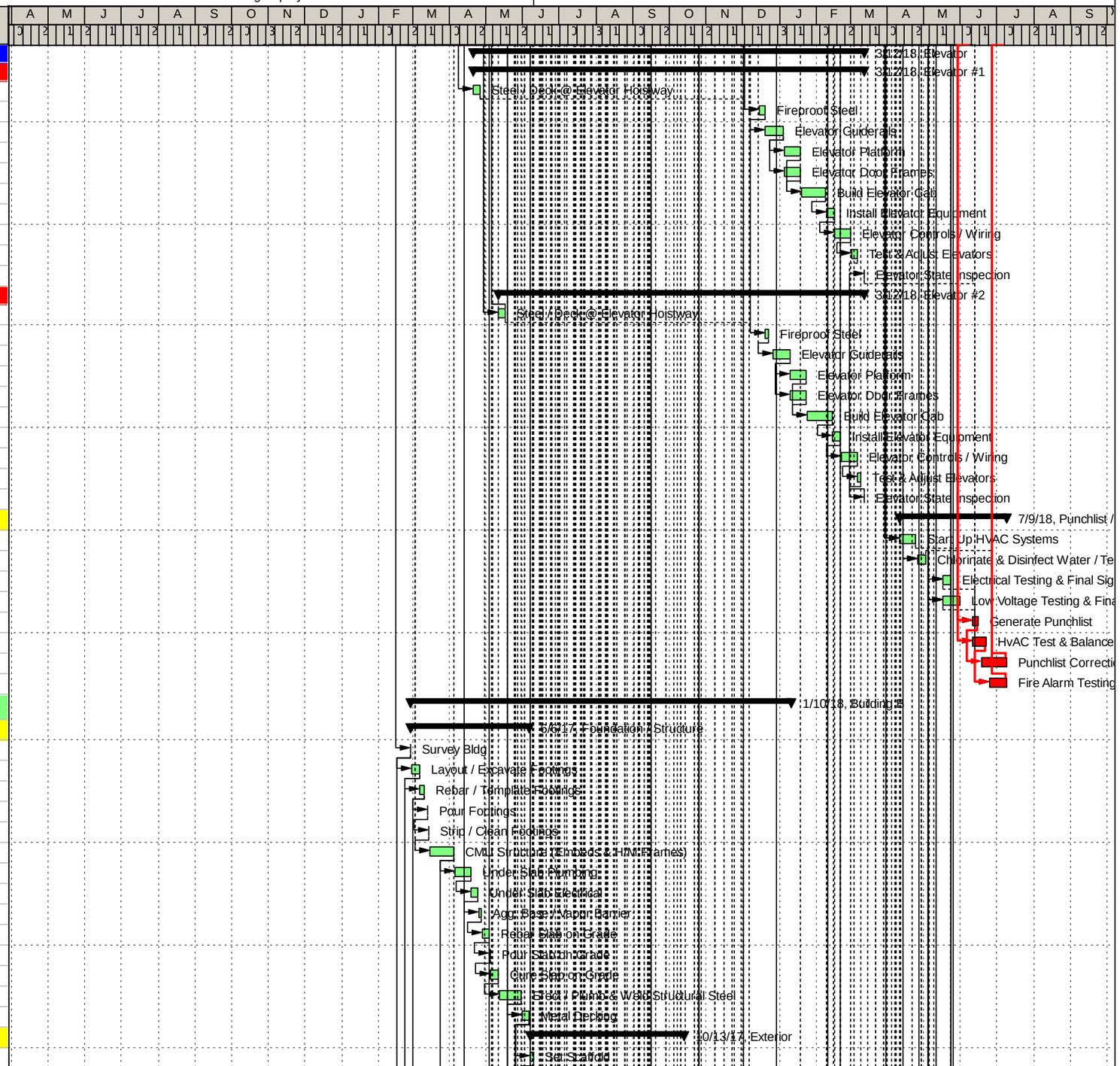
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-PB-IN	Frame Interior Walls & Rips	10	12/12/17	12/26/17
AF-PB-IN	Electrial Conduit / Cable Trays	10	12/19/17	1/3/18
AF-PB-IN	Plumbing Rough-in	8	12/21/17	1/3/18
AF-PB-IN	O/H Fire Sprinkler	7	12/27/17	1/5/18
AF-PB-IN	O/H Ductwork	8	12/27/17	1/8/18
AF-PB-IN	Instal O/H Mech Equipment	5	12/27/17	1/3/18
AF-PB-IN	O/H Mech Piping	8	12/27/17	1/8/18
AF-PB-IN	HVAC Controls Rough-In	10	1/4/18	1/17/18
AF-PB-IN	Frame Ceilings	3	1/9/18	1/11/18
AF-PB-IN	HVAC Duct to Ceilings	4	1/12/18	1/17/18
AF-PB-IN	Fire Sprinkler to Ceilings	4	1/12/18	1/17/18
AF-PB-IN	Electrical Rough to Ceilings	4	1/12/18	1/17/18
General Finishes		57	2/2/18	4/23/18
AF-PB-IN	One Side Drywall	3	2/2/18	2/6/18
AF-PB-IN	Insulate	2	2/5/18	2/6/18
AF-PB-IN	Close Drywall	3	2/7/18	2/9/18
AF-PB-IN	Tape & Finish Drywall	7	2/14/18	2/22/18
AF-PB-IN	Prime & 1st Coat	4	2/23/18	2/28/18
AF-PB-IN	Install T-Bar	6	3/1/18	3/8/18
AF-PB-IN	Install Casework / Countertops	5	3/9/18	3/15/18
AF-PB-IN	HVAC Diffusers	3	3/9/18	3/13/18
AF-PB-IN	Light Fixtures	4	3/9/18	3/14/18
AF-PB-IN	Install Ceiling Tiles	3	3/15/18	3/19/18
AF-PB-IN	Install Carpet Flooring	4	3/20/18	3/23/18
AF-PB-IN	Electrical / LV / FA Trim & Devices	6	3/26/18	4/2/18
AF-PB-IN	Doors / Hardware	3	3/26/18	3/28/18
AF-PB-IN	Install Signage	5	3/29/18	4/4/18
AF-PB-IN	Final Paint	8	4/3/18	4/12/18
AF-PB-IN	FEC's	2	4/13/18	4/16/18
AF-PB-IN	Final Clean Up	5	4/17/18	4/23/18
Restrooms Finishes		30	2/23/18	4/5/18
AF-PB-IN	Float Floor / Waterproofing	7	2/23/18	3/5/18
AF-PB-IN	Install Tile	7	3/6/18	3/14/18
AF-PB-IN	Plumbing Fixtures	4	3/15/18	3/20/18
AF-PB-IN	Toilet Accessories	5	3/21/18	3/27/18
AF-PB-IN	Electrical / LV / FA Trim & Devices	2	3/28/18	3/29/18
AF-PB-IN	HVAC Finishes	2	3/28/18	3/29/18
AF-PB-IN	Final Paint	3	3/30/18	4/3/18
AF-PB-IN	Final Clean Up	2	4/4/18	4/5/18
IDF Room		49	2/2/18	4/11/18
AF-PB-IN	Drywall / Tape IDF Room	7	2/2/18	2/12/18
AF-PB-IN	Paint IDF Room	2	2/13/18	2/14/18
AF-PB-IN	Set Electrical Panel	1	2/15/18	2/15/18
AF-PB-IN	Install Ladder Racks - IDF Room	5	2/15/18	2/21/18
AF-PB-IN	Install FCU's & Make Connections	8	2/15/18	2/26/18
AF-PB-IN	Pull / Terminate Feeders	5	2/16/18	2/22/18
AF-PB-IN	Set Low Voltage Racks	5	2/22/18	2/28/18
AF-PB-IN	Pull / Terminate Elec Branch Wiring	10	2/23/18	3/8/18
AF-PB-IN	Pull LV Cabling	15	3/1/18	3/21/18
AF-PB-IN	Set Telecomm Equipment / Make Terminatio	15	3/22/18	4/11/18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

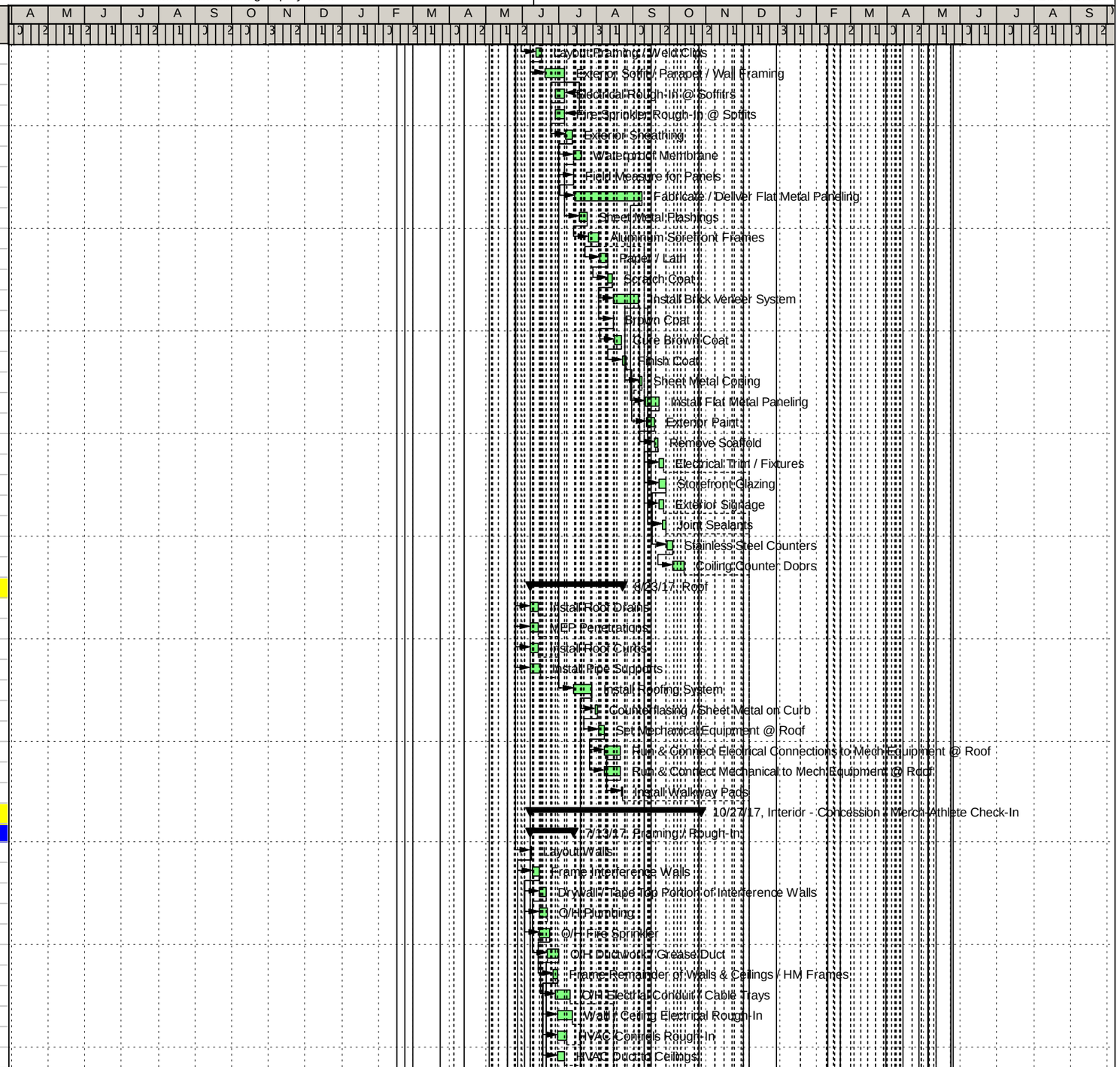
Activity ID	Activity Name	Original Duration	Start	Finish
Elevator		225	4/20/17	3/12/18
Elevator #1		225	4/20/17	3/12/18
AF-A-EL	Steel / Deck @ Elevator Hoistway	5	4/20/17	4/26/17
AF-A-EL	Fireproof Steel	3	12/15/17	12/19/17
AF-A-EL	Elevator Guiderails	10	12/20/17	1/4/18
AF-A-EL	Elevator Platform	10	1/5/18	1/18/18
AF-A-EL	Elevator Door Frames	10	1/5/18	1/18/18
AF-A-EL	Build Elevator Cab	15	1/19/18	2/8/18
AF-A-EL	Install Elevator Equipment	5	2/9/18	2/15/18
AF-A-EL	Elevator Controls / Wiring	10	2/16/18	3/1/18
AF-A-EL	Test & Adjust Elevators	3	3/2/18	3/6/18
AF-A-EL	Elevator State Inspection	1	3/12/18	3/12/18
Elevator #2		210	5/11/17	3/12/18
AF-A-EL	Steel / Deck @ Elevator Hoistway	5	5/11/17	5/17/17
AF-A-EL	Fireproof Steel	3	12/20/17	12/22/17
AF-A-EL	Elevator Guiderails	10	12/26/17	1/9/18
AF-A-EL	Elevator Platform	10	1/10/18	1/23/18
AF-A-EL	Elevator Door Frames	10	1/10/18	1/23/18
AF-A-EL	Build Elevator Cab	15	1/24/18	2/13/18
AF-A-EL	Install Elevator Equipment	5	2/14/18	2/20/18
AF-A-EL	Elevator Controls / Wiring	10	2/21/18	3/6/18
AF-A-EL	Test & Adjust Elevators	3	3/7/18	3/9/18
AF-A-EL	Elevator State Inspection	1	3/12/18	3/12/18
Punchlist / Testing		62	4/11/18	7/9/18
AF-A-7420	Start Up HVAC Systems	10	4/11/18	4/24/18
AF-A-7630	Chlorinate & Disinfect Water / Test & Sign Of	5	4/26/18	5/2/18
AF-A-7880	Electrical Testing & Final Sign Off	5	5/17/18	5/23/18
AF-A-7900	Low Voltage Testing & Final Sign Off	10	5/17/18	5/31/18
AF-A-8010	Generate Punchlist	5	6/11/18	6/15/18
AF-A-8020	HvAC Test & Balance	10	6/11/18	6/22/18
AF-A-8030	Punchlist Corrections	15	6/18/18	7/9/18
AF-A-8040	Fire Alarm Testing & Final Sign Off	10	6/25/18	7/9/18
Building B		220	2/27/17	1/10/18
Foundation / Structure		71	2/27/17	6/6/17
AF-B-STR-100	Survey Bldg	1	2/27/17	2/27/17
AF-B-STR-101	Layout / Excavate Footings	5	2/28/17	3/6/17
AF-B-STR-102	Rebar / Template Footings	4	3/7/17	3/10/17
AF-B-STR-103	Pour Footings	1	3/13/17	3/13/17
AF-B-STR-104	Strip / Clean Footings	1	3/14/17	3/14/17
AF-B-STR-105	CMU Structure (Embeds & H/M Frames)	15	3/15/17	4/4/17
AF-B-STR-106	Under Slab Plumbing	10	4/5/17	4/18/17
AF-B-STR-107	Under Slab Electrical	4	4/19/17	4/24/17
AF-B-STR-108	Agg. Base / Vapor Barrier	3	4/25/17	4/27/17
AF-B-STR-109	Rebar Slab on Grade	4	4/28/17	5/3/17
AF-B-STR-110	Pour Slab on Grade	1	5/4/17	5/4/17
AF-B-STR-111	Cure Slab on Grade	7	5/5/17	5/11/17
AF-B-STR-112	Erect / Plumb & Weld Structural Steel	12	5/12/17	5/30/17
AF-B-STR-113	Metal Decking	5	5/31/17	6/6/17
Exterior		91	6/7/17	10/13/17
AF-B-EXT-1000	Set Scaffold	3	6/7/17	6/9/17



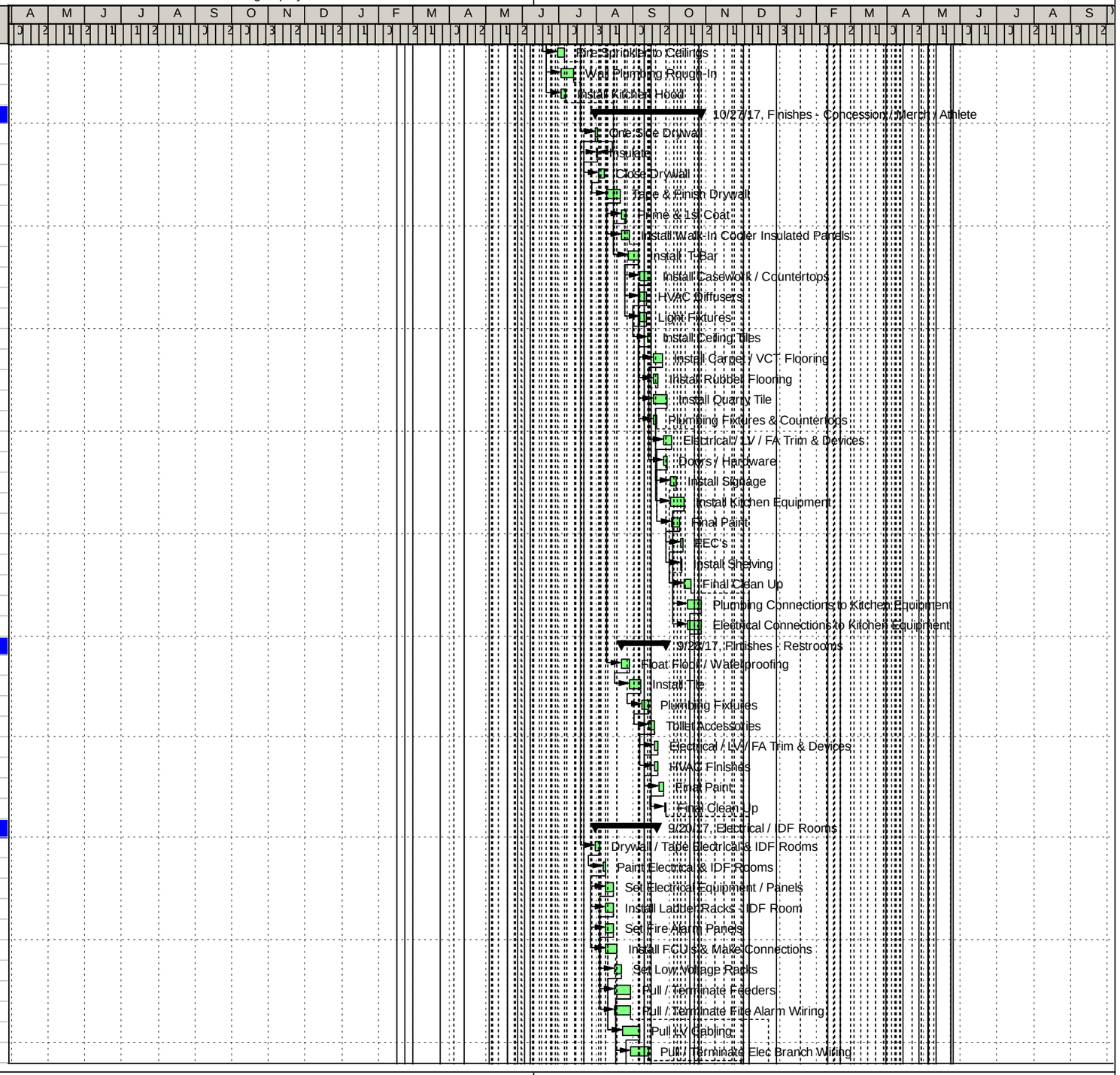
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Tilden-Coil Constructors

Activity ID	Activity Name	Original Duration	Start	Finish
AF-B-EXT-1010	Layout Framing / Weld Clips	5	6/12/17	6/16/17
AF-B-EXT-1020	Exterior Soffit / Parapet / Wall Framing	12	6/19/17	7/5/17
AF-B-EXT-1030	Electrical Rough-In @ Soffitrs	5	6/28/17	7/5/17
AF-B-EXT-1040	Fire Sprinkler Rough-In @ Soffits	5	6/28/17	7/5/17
AF-B-EXT-1050	Exterior Sheathing	5	7/6/17	7/12/17
AF-B-EXT-1060	Waterproof Membrane	5	7/13/17	7/19/17
AF-B-EXT-1070	Field Measure for Panels	1	7/13/17	7/13/17
AF-B-EXT-1080	Fabricate / Deliver Flat Metal Paneling	40	7/14/17	9/8/17
AF-B-EXT-1090	Sheet Metal Flashings	5	7/18/17	7/24/17
AF-B-EXT-1100	Aluminum Sorefront Frames	8	7/25/17	8/3/17
AF-B-EXT-1110	Paper / Lath	5	8/4/17	8/10/17
AF-B-EXT-1120	Scratch Coat	2	8/11/17	8/14/17
AF-B-EXT-1130	Install Brick Veneer System	15	8/15/17	9/5/17
AF-B-EXT-1140	Brown Coat	1	8/15/17	8/15/17
AF-B-EXT-1150	Cure Brown Coat	7	8/16/17	8/22/17
AF-B-EXT-1160	Finish Coat	3	8/23/17	8/25/17
AF-B-EXT-1170	Sheet Metal Coping	3	9/6/17	9/8/17
AF-B-EXT-1180	Install Flat Metal Paneling	10	9/11/17	9/22/17
AF-B-EXT-1190	Exterior Paint	5	9/12/17	9/18/17
AF-B-EXT-1200	Remove Scaffold	3	9/19/17	9/21/17
AF-B-EXT-1210	Electrical Trim / Fixtures	3	9/22/17	9/26/17
AF-B-EXT-1220	Storefront Glazing	5	9/22/17	9/28/17
AF-B-EXT-1230	Exterior Signage	3	9/22/17	9/26/17
AF-B-EXT-1240	Joint Sealants	4	9/25/17	9/28/17
AF-B-EXT-1250	Stainless Steel Counters	3	9/29/17	10/3/17
AF-B-EXT-1260	Coiling Counter Doors	8	10/4/17	10/13/17
Roof		55	6/7/17	8/23/17
AF-B-RF-1000	Install Roof Drains	5	6/7/17	6/13/17
AF-B-RF-1010	MEP Penetrations	5	6/7/17	6/13/17
AF-B-RF-1020	Install Roof Curbs	5	6/7/17	6/13/17
AF-B-RF-1030	Install Pipe Supports	7	6/7/17	6/15/17
AF-B-RF-1040	Install Roofing System	12	7/13/17	7/28/17
AF-B-RF-1050	Counterflasing / Sheet Metal on Curb	3	7/31/17	8/2/17
AF-B-RF-1060	Set Mechanical Equipment @ Roof	3	8/3/17	8/7/17
AF-B-RF-1070	Run & Connect Electrical Connections to Me	10	8/8/17	8/21/17
AF-B-RF-1080	Run & Connect Mechanical to Mech Equipm	10	8/8/17	8/21/17
AF-B-RF-1090	Install Walkway Pads	2	8/22/17	8/23/17
Interior - Concession / Merch-Athlete Check-In		101	6/7/17	10/27/17
Framing / Rough-In		26	6/7/17	7/13/17
AF-B-INT-1	Layout Walls	2	6/7/17	6/8/17
AF-B-INT-1	Frame Interference Walls	4	6/9/17	6/14/17
AF-B-INT-1	Drywall / Tape Top Portion of Interference W	4	6/15/17	6/20/17
AF-B-INT-1	O/H Plumbing	5	6/15/17	6/21/17
AF-B-INT-1	O/H Fire Sprinkler	7	6/15/17	6/23/17
AF-B-INT-1	O/H Ductwork / Grease Duct	8	6/21/17	6/30/17
AF-B-INT-1	Frame Remainder of Walls & Ceilings / HM I	4	6/26/17	6/29/17
AF-B-INT-1	O/H Electrial Conduit / Cable Trays	8	6/28/17	7/10/17
AF-B-INT-1	Walll / Ceiling Electrical Rough-In	8	6/30/17	7/12/17
AF-B-INT-1	HVAC Controls Rough-In	5	6/30/17	7/7/17
AF-B-INT-1	HVAC Duct to Ceilings	3	6/30/17	7/5/17

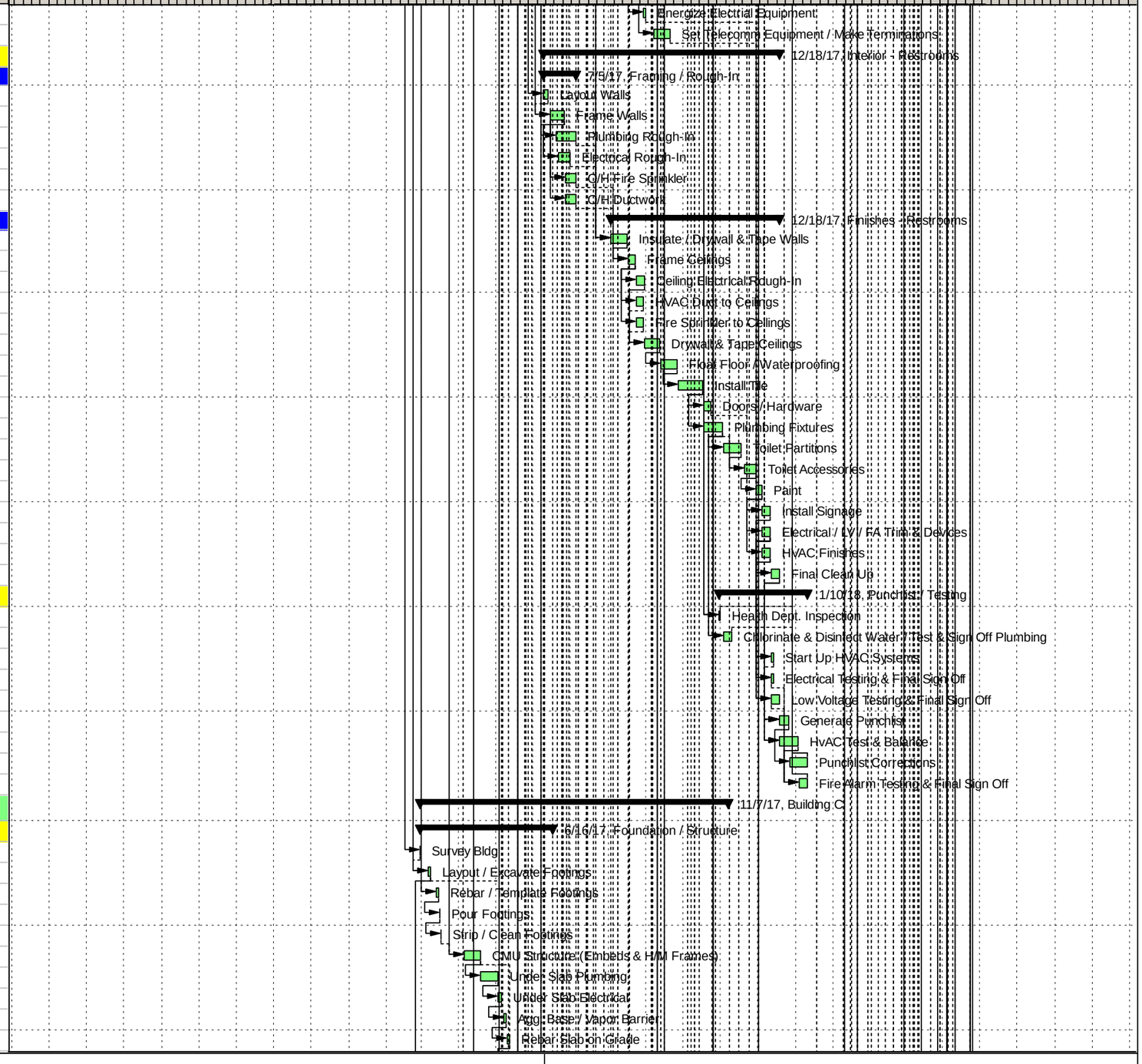


Activity ID	Activity Name	Original Duration	Start	Finish
AF-B-INT-1	Fire Sprinkler to Ceilings	3	6/30/17	7/5/17
AF-B-INT-1	Wall Plumbing Rough-In	8	7/3/17	7/13/17
AF-B-INT-1	Install Kitchen Hood	3	7/3/17	7/6/17
Finishes - Concession / Merch / Athlete		64	7/31/17	10/27/17
AF-B-INT-1	One Side Drywall	3	7/31/17	8/2/17
AF-B-INT-1	Insulate	2	8/1/17	8/2/17
AF-B-INT-1	Close Drywall	3	8/3/17	8/7/17
AF-B-INT-1	Tape & Finish Drywall	8	8/10/17	8/21/17
AF-B-INT-1	Prime & 1st Coat	4	8/22/17	8/25/17
AF-B-INT-1	Install Walk-In Cooler Insulated Panels	5	8/22/17	8/28/17
AF-B-INT-1	Install T-Bar	6	8/28/17	9/5/17
AF-B-INT-1	Install Casework / Countertops	8	9/6/17	9/15/17
AF-B-INT-1	HVAC Diffusers	5	9/6/17	9/12/17
AF-B-INT-1	Light Fixtures	5	9/6/17	9/12/17
AF-B-INT-1	Install Ceiling Tiles	3	9/13/17	9/15/17
AF-B-INT-1	Install Carpet / VCT Flooring	6	9/18/17	9/25/17
AF-B-INT-1	Install Rubber Flooring	4	9/18/17	9/21/17
AF-B-INT-1	Install Quarry Tile	10	9/18/17	9/29/17
AF-B-INT-1	Plumbing Fixtures & Countertops	3	9/18/17	9/20/17
AF-B-INT-1	Electrical / LV / FA Trim & Devices	5	9/26/17	10/2/17
AF-B-INT-1	Doors / Hardware	4	9/26/17	9/29/17
AF-B-INT-1	Install Signage	5	10/2/17	10/6/17
AF-B-INT-1	Install Kitchen Equipment	10	10/2/17	10/13/17
AF-B-INT-1	Final Paint	5	10/3/17	10/9/17
AF-B-INT-1	FEC's	3	10/10/17	10/12/17
AF-B-INT-1	Install Shelving	2	10/10/17	10/11/17
AF-B-INT-1	Final Clean Up	5	10/13/17	10/19/17
AF-B-INT-1	Plumbing Connections to Kitchen Equipment	10	10/16/17	10/27/17
AF-B-INT-1	Electrical Connections to Kitchen Equipment	10	10/16/17	10/27/17
Finiishes - Restrooms		27	8/22/17	9/28/17
AF-B-INT-1	Float Floor / Waterproofing	5	8/22/17	8/28/17
AF-B-INT-1	Install Tile	7	8/29/17	9/7/17
AF-B-INT-1	Plumbing Fixtures	4	9/8/17	9/13/17
AF-B-INT-1	Toilet Accessories	3	9/14/17	9/18/17
AF-B-INT-1	Electrical / LV / FA Trim & Devices	3	9/19/17	9/21/17
AF-B-INT-1	HVAC Finishes	3	9/19/17	9/21/17
AF-B-INT-1	Final Paint	3	9/22/17	9/26/17
AF-B-INT-1	Final Clean Up	2	9/27/17	9/28/17
Electrical / IDF Rooms		37	7/31/17	9/20/17
AF-B-INT-1	Drywall / Tape Electrical & IDF Rooms	5	7/31/17	8/4/17
AF-B-INT-1	Paint Electrical & IDF Rooms	2	8/7/17	8/8/17
AF-B-INT-1	Set Electrical Equipment / Panels	5	8/9/17	8/15/17
AF-B-INT-1	Install Ladder Racks - IDF Room	5	8/9/17	8/15/17
AF-B-INT-1	Set Fire Alarm Panels	5	8/9/17	8/15/17
AF-B-INT-1	Install FCU's & Make Connections	8	8/9/17	8/18/17
AF-B-INT-1	Set Low Voltage Racks	5	8/16/17	8/22/17
AF-B-INT-1	Pull / Terminate Feeders	10	8/16/17	8/29/17
AF-B-INT-1	Pull / Terminate Fire Alarm Wiring	10	8/16/17	8/29/17
AF-B-INT-1	Pull LV Cabling	10	8/23/17	9/6/17
AF-B-INT-1	Pull / Terminate Elec Branch Wiring	10	8/30/17	9/13/17

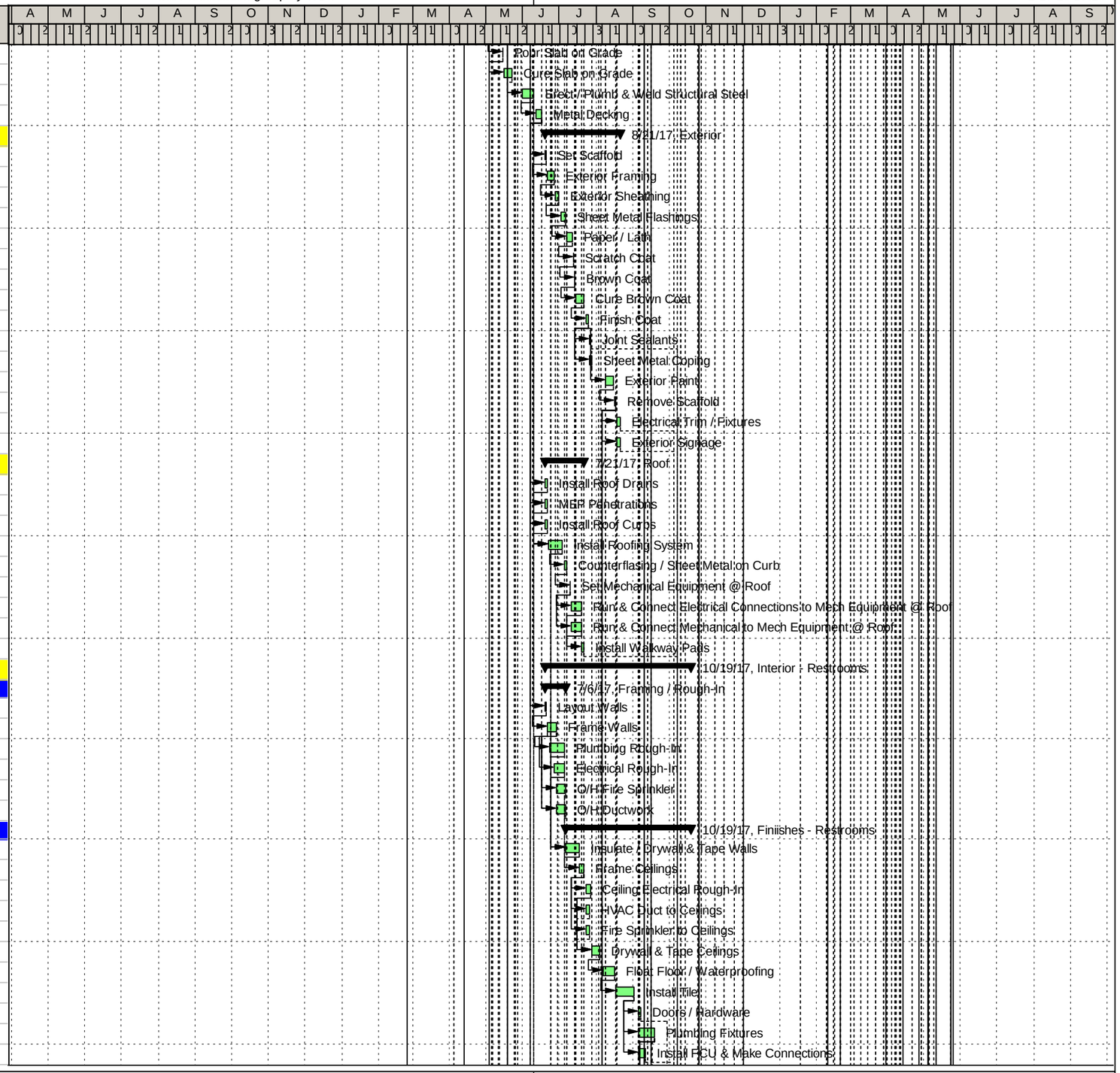


Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
AF-B-INT-1	Energize Electrial Equipment	2	8/30/17	8/31/17
AF-B-INT-1	Set Telecomm Equipment / Make Terminatio	10	9/7/17	9/20/17
Interior - Restrooms		132	6/9/17	12/18/17
Framing / Rough-In		18	6/9/17	7/5/17
AF-B-INT-1	Layout Walls	2	6/9/17	6/12/17
AF-B-INT-1	Frame Walls	8	6/15/17	6/26/17
AF-B-INT-1	Plumbing Rough-In	12	6/19/17	7/5/17
AF-B-INT-1	Electrical Rough-In	8	6/21/17	6/30/17
AF-B-INT-1	O/H Fire Sprinkler	6	6/27/17	7/5/17
AF-B-INT-1	O/H Ductwork	6	6/27/17	7/5/17
Finiishes - Restrooms		94	8/3/17	12/18/17
AF-B-INT-1	Insulate / Drywall & Tape Walls	10	8/3/17	8/16/17
AF-B-INT-1	Frame Ceilings	5	8/17/17	8/23/17
AF-B-INT-1	Ceiling Electrical Rough-In	5	8/24/17	8/30/17
AF-B-INT-1	HVAC Duct to Ceilings	4	8/24/17	8/29/17
AF-B-INT-1	Fire Sprinkler to Ceilings	4	8/24/17	8/29/17
AF-B-INT-1	Drywall & Tape Ceilings	8	8/31/17	9/12/17
AF-B-INT-1	Float Floor / Waterproofing	10	9/13/17	9/26/17
AF-B-INT-1	Install Tile	15	9/27/17	10/17/17
AF-B-INT-1	Doors / Hardware	4	10/18/17	10/23/17
AF-B-INT-1	Plumbing Fixtures	12	10/18/17	11/2/17
AF-B-INT-1	Toilet Partitions	10	11/3/17	11/17/17
AF-B-INT-1	Toilet Accessories	6	11/20/17	11/29/17
AF-B-INT-1	Paint	3	11/30/17	12/4/17
AF-B-INT-1	Install Signage	5	12/5/17	12/11/17
AF-B-INT-1	Electrical / LV / FA Trim & Devices	5	12/5/17	12/11/17
AF-B-INT-1	HVAC Finishes	5	12/5/17	12/11/17
AF-B-INT-1	Final Clean Up	5	12/12/17	12/18/17
Punchlist / Testing		48	10/30/17	1/10/18
AF-B-2270	Health Dept. Inspection	2	10/30/17	10/31/17
AF-B-2290	Chlorinate & Disinfect Water / Test & Sign Of	5	11/3/17	11/9/17
AF-B-2360	Start Up HVAC Systems	3	12/12/17	12/14/17
AF-B-2370	Electrical Testing & Final Sign Off	3	12/12/17	12/14/17
AF-B-2380	Low Voltage Testing & Final Sign Off	5	12/12/17	12/18/17
AF-B-2390	Generate Punchlist	5	12/19/17	12/26/17
AF-B-2400	HvAC Test & Balance	10	12/19/17	1/3/18
AF-B-2410	Punchlist Corrections	10	12/27/17	1/10/18
AF-B-2420	Fire Alarm Testing & Final Sign Off	5	1/4/18	1/10/18
Building C		178	2/28/17	11/7/17
Foundation / Structure		78	2/28/17	6/16/17
AF-C-STR-10(	Survey Bldg	1	2/28/17	2/28/17
AF-C-STR-10:	Layout / Excavate Footings	2	3/7/17	3/8/17
AF-C-STR-10:	Rebar / Template Footings	3	3/13/17	3/15/17
AF-C-STR-10:	Pour Footings	1	3/16/17	3/16/17
AF-C-STR-10-	Strip / Clean Footings	1	3/17/17	3/17/17
AF-C-STR-10!	CMU Structure (Embeds & H/M Frames)	10	4/5/17	4/18/17
AF-C-STR-10(	Under Slab Plumbing	10	4/19/17	5/2/17
AF-C-STR-10:	Under Slab Electrical	3	5/3/17	5/5/17
AF-C-STR-10!	Agg. Base / Vapor Barrier	2	5/8/17	5/9/17
AF-C-STR-10!	Rebar Slab on Grade	3	5/10/17	5/12/17

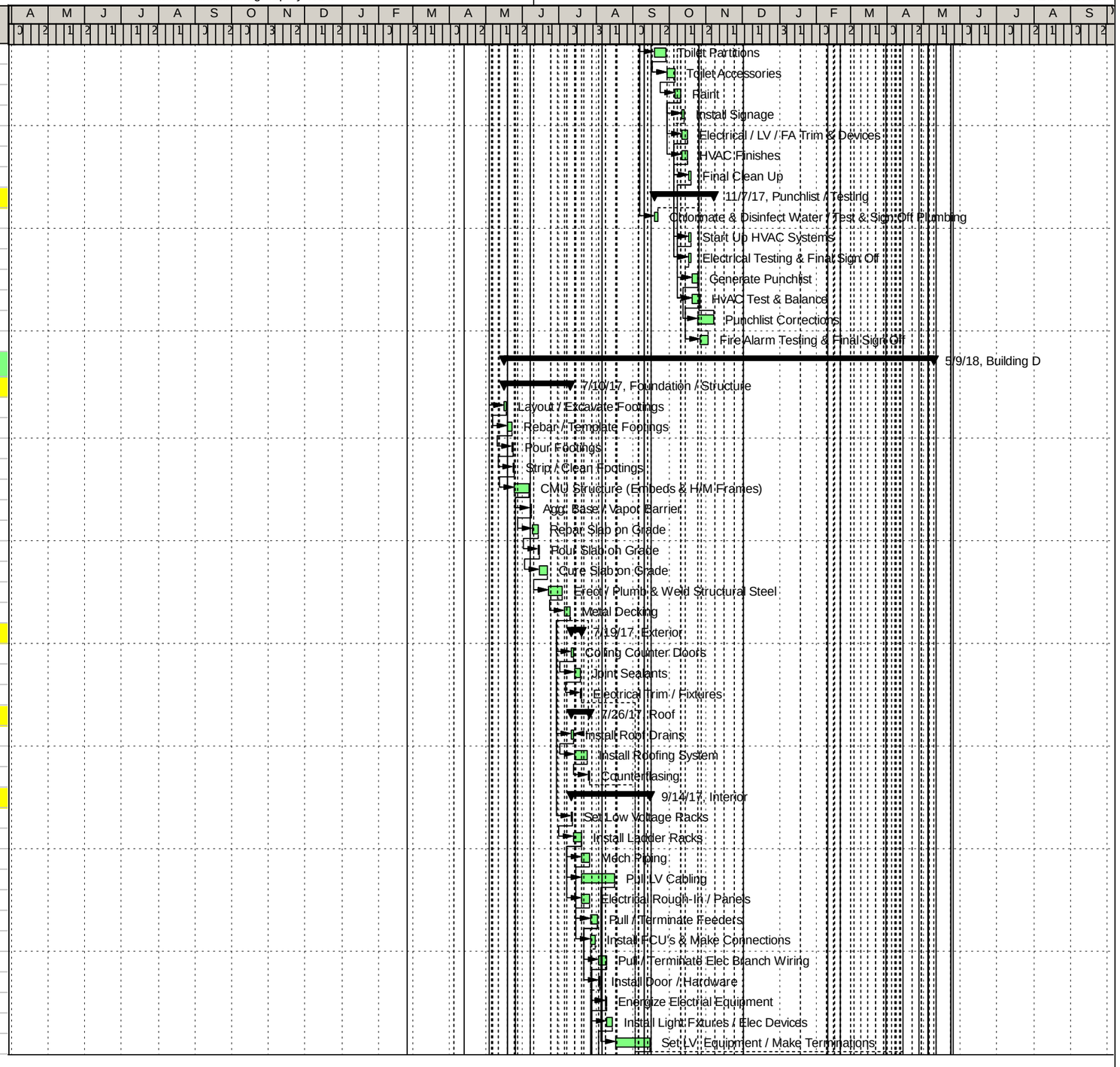


Activity ID	Activity Name	Original Duration	Start	Finish
AF-C-STR-110	Pour Slab on Grade	1	5/15/17	5/15/17
AF-C-STR-111	Cure Slab on Grade	7	5/16/17	5/22/17
AF-C-STR-112	Erect / Plumb & Weld Structural Steel	8	5/31/17	6/9/17
AF-C-STR-113	Metal Decking	5	6/12/17	6/16/17
Exterior		45	6/19/17	8/21/17
AF-C-EXT-100	Set Scaffold	2	6/19/17	6/20/17
AF-C-EXT-101	Exterior Framing	5	6/21/17	6/27/17
AF-C-EXT-102	Exterior Sheathing	3	6/28/17	6/30/17
AF-C-EXT-103	Sheet Metal Flashings	3	7/3/17	7/6/17
AF-C-EXT-104	Paper / Lath	4	7/7/17	7/12/17
AF-C-EXT-105	Scratch Coat	1	7/13/17	7/13/17
AF-C-EXT-106	Brown Coat	1	7/14/17	7/14/17
AF-C-EXT-107	Cure Brown Coat	7	7/15/17	7/21/17
AF-C-EXT-108	Finish Coat	2	7/24/17	7/25/17
AF-C-EXT-109	Joint Sealants	2	7/26/17	7/27/17
AF-C-EXT-110	Sheet Metal Coping	3	7/26/17	7/28/17
AF-C-EXT-111	Exterior Paint	5	8/9/17	8/15/17
AF-C-EXT-112	Remove Scaffold	2	8/16/17	8/17/17
AF-C-EXT-113	Electrical Trim / Fixtures	2	8/18/17	8/21/17
AF-C-EXT-114	Exterior Signage	2	8/18/17	8/21/17
Roof		24	6/19/17	7/21/17
AF-C-RF-1000	Install Roof Drains	3	6/19/17	6/21/17
AF-C-RF-1010	MEP Penetrations	3	6/19/17	6/21/17
AF-C-RF-1020	Install Roof Curbs	3	6/19/17	6/21/17
AF-C-RF-1030	Install Roofing System	8	6/22/17	7/3/17
AF-C-RF-1040	Counterflasing / Sheet Metal on Curb	3	7/5/17	7/7/17
AF-C-RF-1050	Set Mechanical Equipment @ Roof	1	7/10/17	7/10/17
AF-C-RF-1060	Run & Connect Electrical Connections to Me	7	7/11/17	7/19/17
AF-C-RF-1070	Run & Connect Mechanical to Mech Equipm	7	7/11/17	7/19/17
AF-C-RF-1080	Install Walkway Pads	2	7/20/17	7/21/17
Interior - Restrooms		87	6/19/17	10/19/17
Framing / Rough-In		13	6/19/17	7/6/17
AF-C-INT-1	Layout Walls	2	6/19/17	6/20/17
AF-C-INT-1	Frame Walls	6	6/21/17	6/28/17
AF-C-INT-1	Plumbing Rough-In	8	6/23/17	7/5/17
AF-C-INT-1	Electrical Rough-In	6	6/27/17	7/5/17
AF-C-INT-1	O/H Fire Sprinkler	5	6/29/17	7/6/17
AF-C-INT-1	O/H Ductwork	5	6/29/17	7/6/17
Finiishes - Restrooms		75	7/6/17	10/19/17
AF-C-INT-1	Insulate / Drywall & Tape Walls	8	7/6/17	7/17/17
AF-C-INT-1	Frame Ceilings	4	7/18/17	7/21/17
AF-C-INT-1	Ceiling Electrical Rough-In	4	7/24/17	7/27/17
AF-C-INT-1	HVAC Duct to Ceilings	3	7/24/17	7/26/17
AF-C-INT-1	Fire Sprinkler to Ceilings	3	7/24/17	7/26/17
AF-C-INT-1	Drywall & Tape Ceilings	6	7/28/17	8/4/17
AF-C-INT-1	Float Floor / Waterproofing	8	8/7/17	8/16/17
AF-C-INT-1	Install Tile	12	8/17/17	9/1/17
AF-C-INT-1	Doors / Hardware	3	9/5/17	9/7/17
AF-C-INT-1	Plumbing Fixtures	10	9/5/17	9/18/17
AF-C-INT-1	Install FCU & Make Connections	5	9/5/17	9/11/17



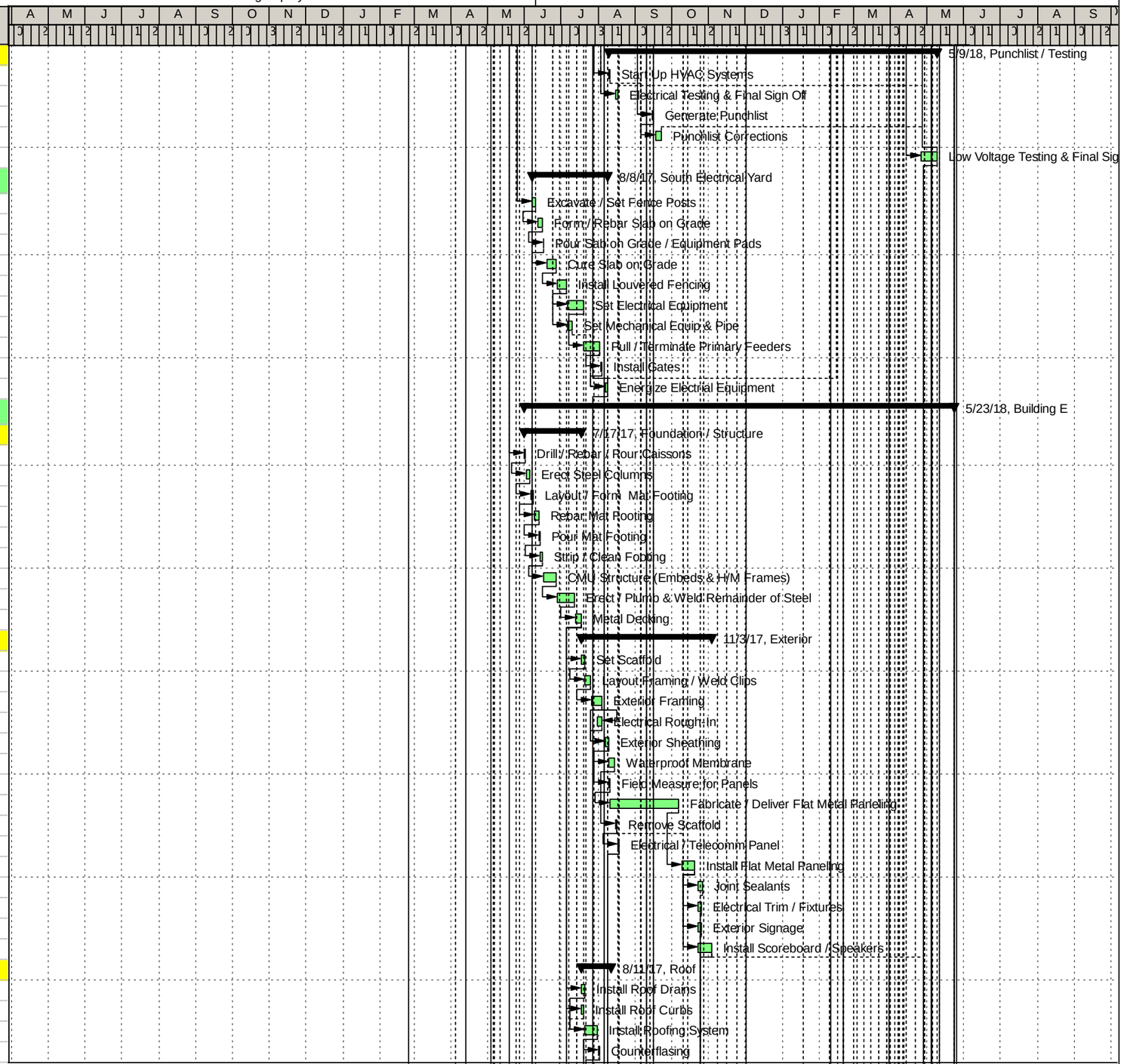
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-C-INT-1	Toilet Partitions	8	9/19/17	9/28/17
AF-C-INT-1	Toilet Accessories	5	9/29/17	10/5/17
AF-C-INT-1	Paint	3	10/6/17	10/10/17
AF-C-INT-1	Install Signage	3	10/11/17	10/13/17
AF-C-INT-1	Electrical / LV / FA Trim & Devices	4	10/11/17	10/16/17
AF-C-INT-1	HVAC Finishes	4	10/11/17	10/16/17
AF-C-INT-1	Final Clean Up	3	10/17/17	10/19/17
Punchlist / Testing		36	9/19/17	11/7/17
AF-C-1560	Chlorinate & Disinfect Water / Test & Sign Of	3	9/19/17	9/21/17
AF-C-1630	Start Up HVAC Systems	3	10/17/17	10/19/17
AF-C-1640	Electrical Testing & Final Sign Off	3	10/17/17	10/19/17
AF-C-1650	Generate Punchlist	3	10/20/17	10/24/17
AF-C-1660	HvAC Test & Balance	5	10/20/17	10/26/17
AF-C-1670	Punchlist Corrections	10	10/25/17	11/7/17
AF-C-1680	Fire Alarm Testing & Final Sign Off	5	10/27/17	11/2/17
Building D		249	5/16/17	5/9/18
Foundation / Structure		38	5/16/17	7/10/17
AF-D-STR-10(	Layout / Excavate Footings	3	5/16/17	5/18/17
AF-D-STR-10	Rebar / Template Footings	2	5/19/17	5/22/17
AF-D-STR-10	Pour Footings	1	5/23/17	5/23/17
AF-D-STR-10	Strip / Clean Footings	1	5/24/17	5/24/17
AF-D-STR-10	CMU Structure (Embeds & H/M Frames)	8	5/25/17	6/6/17
AF-D-STR-10	Agg. Base / Vapor Barrier	2	6/7/17	6/8/17
AF-D-STR-10(	Rebar Slab on Grade	3	6/9/17	6/13/17
AF-D-STR-10	Pour Slab on Grade	1	6/14/17	6/14/17
AF-D-STR-10	Cure Slab on Grade	7	6/15/17	6/21/17
AF-D-STR-10	Erect / Plumb & Weld Structural Steel	8	6/22/17	7/3/17
AF-D-STR-11(	Metal Decking	4	7/5/17	7/10/17
Exterior		7	7/11/17	7/19/17
AF-D-EXT-10(	Coiling Counter Doors	3	7/11/17	7/13/17
AF-D-EXT-101	Joint Sealants	3	7/14/17	7/18/17
AF-D-EXT-102	Electrical Trim / Fixtures	1	7/19/17	7/19/17
Roof		12	7/11/17	7/26/17
AF-D-RF-1000	Install Roof Drains	3	7/11/17	7/13/17
AF-D-RF-1010	Install Roofing System	7	7/14/17	7/24/17
AF-D-RF-1020	Counterflasing	2	7/25/17	7/26/17
Interior		47	7/11/17	9/14/17
AF-D-INT-1000	Set Low Voltage Racks	2	7/11/17	7/12/17
AF-D-INT-1010	Install Ladder Racks	5	7/13/17	7/19/17
AF-D-INT-1020	Mech Piping	5	7/20/17	7/26/17
AF-D-INT-1030	Pull LV Cabling	20	7/20/17	8/16/17
AF-D-INT-1040	Electrical Rough-In / Panels	5	7/20/17	7/26/17
AF-D-INT-1050	Pull / Terminate Feeders	5	7/27/17	8/2/17
AF-D-INT-1060	Install FCU's & Make Connections	3	7/27/17	7/31/17
AF-D-INT-1070	Pull / Terminate Elec Branch Wiring	5	8/3/17	8/9/17
AF-D-INT-1080	Install Door / Hardware	2	8/3/17	8/4/17
AF-D-INT-1090	Energize Electrial Equipment	1	8/9/17	8/9/17
AF-D-INT-1100	Install Light Fxtures / Elec Devices	3	8/10/17	8/14/17
AF-D-INT-1110	Set LV Equipment / Make Terminations	20	8/17/17	9/14/17



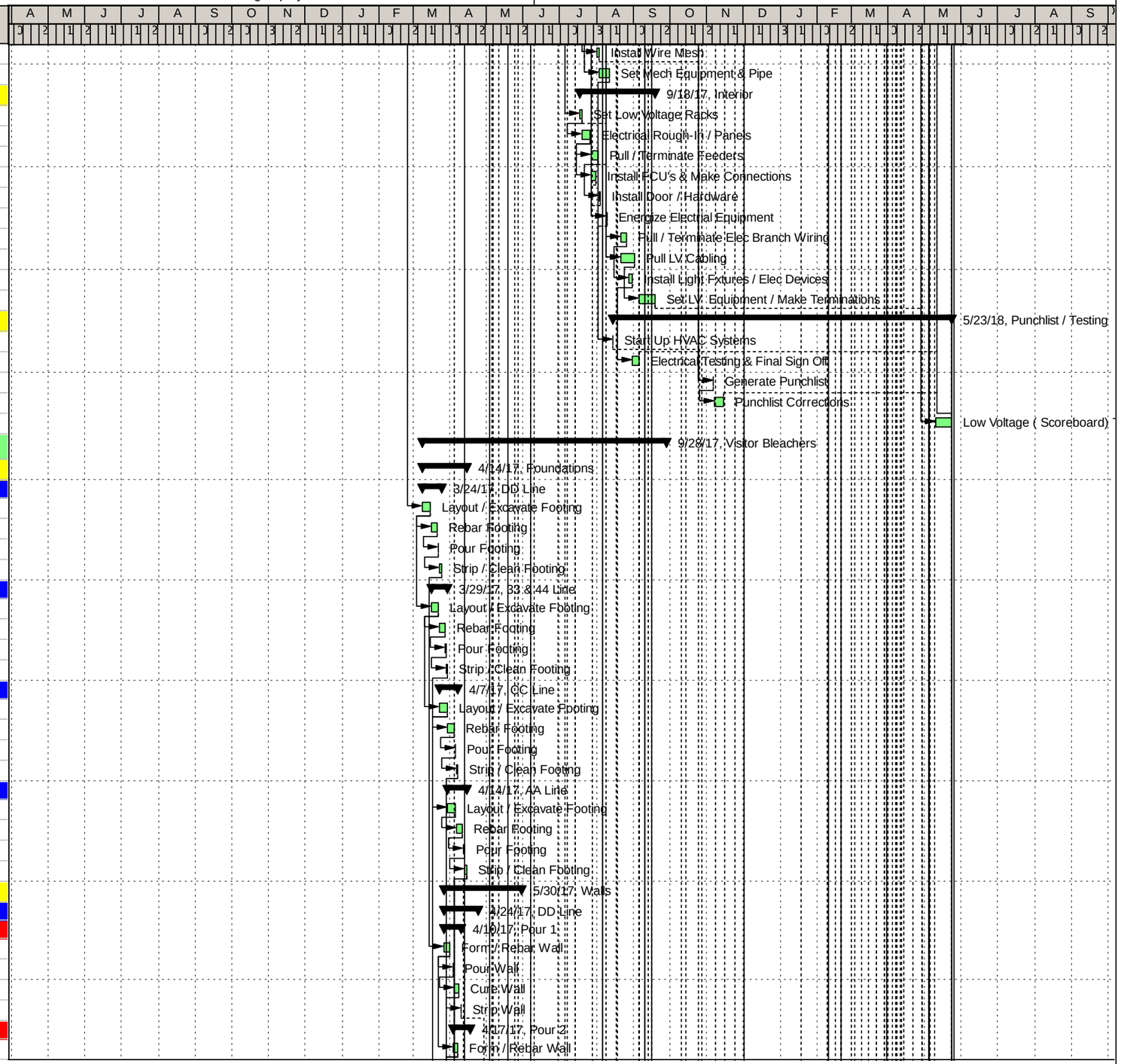
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
Punchlist / Testing		189	8/10/17	5/9/18
AF-D-5000	Start Up HVAC Systems	1	8/10/17	8/10/17
AF-D-5010	Electrical Testing & Final Sign Off	3	8/15/17	8/17/17
AF-D-5020	Generate Punchlist	1	9/15/17	9/15/17
AF-D-5030	Punchlist Corrections	5	9/18/17	9/22/17
AF-D-5040	Low Voltage Testing & Final Sign Off	10	4/26/18	5/9/18
South Electrical Yard		44	6/7/17	8/8/17
AF-SEY-1000	Excavate / Set Fence Posts	3	6/7/17	6/9/17
AF-SEY-1010	Form / Rebar Slab on Grade	4	6/12/17	6/15/17
AF-SEY-1020	Pour Sab on Grade / Equipment Pads	1	6/16/17	6/16/17
AF-SEY-1030	Cure Slab on Grade	7	6/19/17	6/27/17
AF-SEY-1040	Install Louvered Fencing	5	6/28/17	7/5/17
AF-SEY-1050	Set Electrical Equipment	10	7/6/17	7/19/17
AF-SEY-1060	Set Mechanical Equip & Pipe	3	7/6/17	7/10/17
AF-SEY-1070	Pull / Terminate Primary Feeders	10	7/20/17	8/2/17
AF-SEY-1080	Install Gates	2	8/3/17	8/4/17
AF-SEY-1090	Energize Electrial Equipment	2	8/7/17	8/8/17
Building E		249	5/31/17	5/23/18
Foundation / Structure		33	5/31/17	7/17/17
AF-E-STR-100	Drill / Rebar / Pour Caissons	2	5/31/17	6/1/17
AF-E-STR-101	Erect Steel Columns	2	6/2/17	6/5/17
AF-E-STR-102	Layout / Form Mat Footing	3	6/6/17	6/8/17
AF-E-STR-103	Rebar Mat Footing	2	6/9/17	6/12/17
AF-E-STR-104	Pour Mat Footing	1	6/13/17	6/13/17
AF-E-STR-105	Strip / Clean Footing	2	6/14/17	6/15/17
AF-E-STR-106	CMU Structure (Embeds & H/M Frames)	8	6/16/17	6/27/17
AF-E-STR-107	Erect / Plumb & Weld Remainder of Steel	10	6/28/17	7/12/17
AF-E-STR-108	Metal Decking	3	7/13/17	7/17/17
Exterior		78	7/18/17	11/3/17
AF-E-EXT-1000	Set Scaffold	3	7/18/17	7/20/17
AF-E-EXT-1010	Layout Framing / Weld Clips	3	7/21/17	7/25/17
AF-E-EXT-1020	Exterior Framing	8	7/26/17	8/4/17
AF-E-EXT-1030	Electrical Rough-In	5	7/31/17	8/4/17
AF-E-EXT-1040	Exterior Sheathing	3	8/7/17	8/9/17
AF-E-EXT-1050	Waterproof Membrane	3	8/10/17	8/14/17
AF-E-EXT-1060	Field Measure for Panels	1	8/10/17	8/10/17
AF-E-EXT-1070	Fabricate / Deliver Flat Metal Paneling	40	8/11/17	10/6/17
AF-E-EXT-1080	Remove Scaffold	2	8/15/17	8/16/17
AF-E-EXT-1090	Electrical / Telecomm Panel	2	8/17/17	8/18/17
AF-E-EXT-1100	Install Flat Metal Paneling	10	10/9/17	10/20/17
AF-E-EXT-1110	Joint Sealants	4	10/23/17	10/26/17
AF-E-EXT-1120	Electrical Trim / Fixtures	3	10/23/17	10/25/17
AF-E-EXT-1130	Exterior Signage	3	10/23/17	10/25/17
AF-E-EXT-1140	Install Scoreboard / Speakers	10	10/23/17	11/3/17
Roof		19	7/18/17	8/11/17
AF-E-RF-1000	Install Roof Drains	3	7/18/17	7/20/17
AF-E-RF-1010	Install Roof Curbs	2	7/18/17	7/19/17
AF-E-RF-1020	Install Roofing System	7	7/21/17	7/31/17
AF-E-RF-1030	Counterflasing	2	8/1/17	8/2/17



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

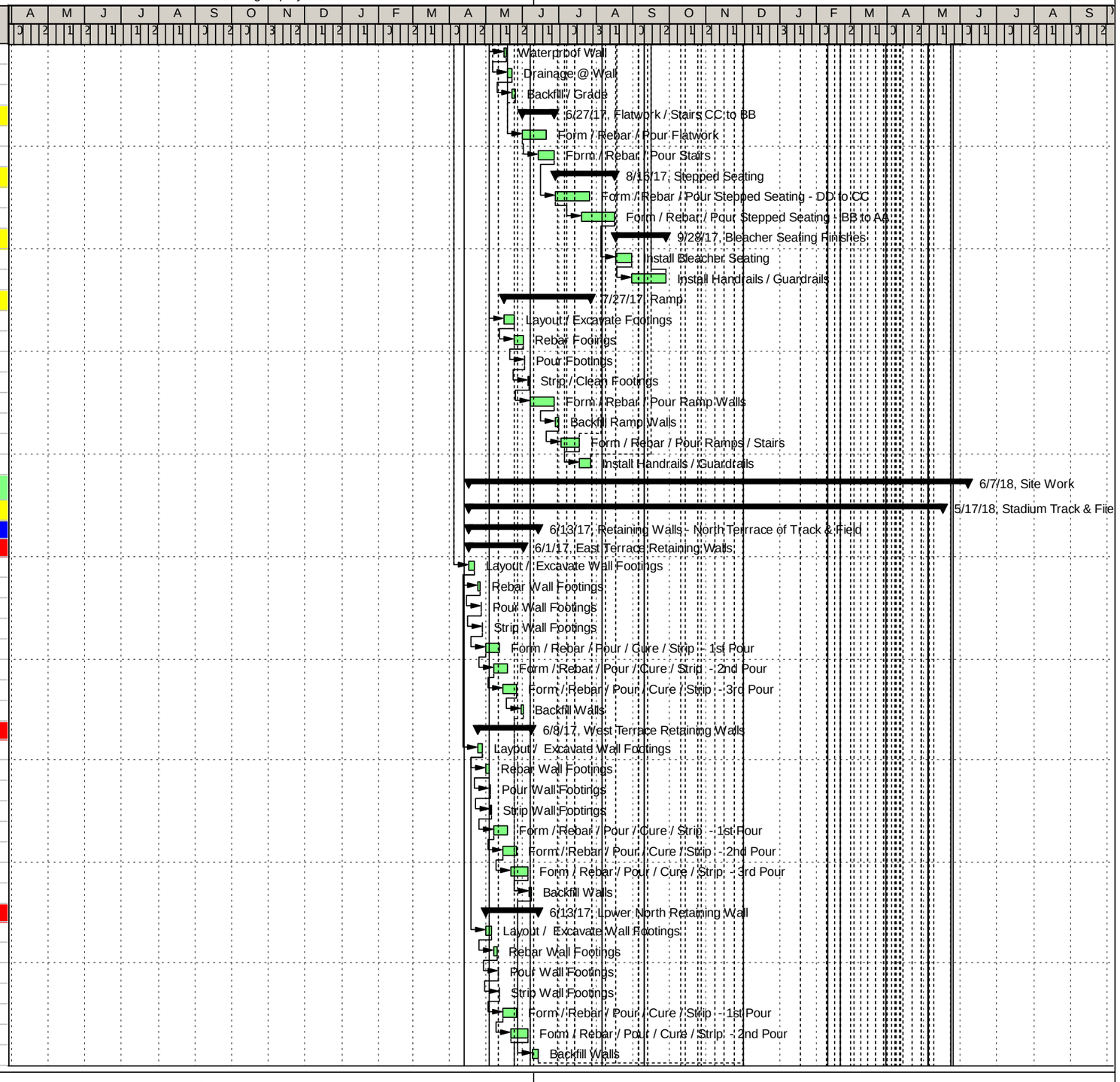
Activity ID	Activity Name	Original Duration	Start	Finish
AF-E-RF-1040	Install Wire Mesh	3	8/1/17	8/3/17
AF-E-RF-1050	Set Mech Equipment & Pipe	7	8/3/17	8/11/17
Interior		44	7/18/17	9/18/17
AF-E-INT-1000	Set Low Voltage Racks	2	7/18/17	7/19/17
AF-E-INT-1010	Electrical Rough-In / Panels	5	7/20/17	7/26/17
AF-E-INT-1020	Pull / Terminate Feeders	5	7/27/17	8/2/17
AF-E-INT-1030	Install FCU's & Make Connections	3	7/27/17	7/31/17
AF-E-INT-1040	Install Door / Hardware	2	8/3/17	8/4/17
AF-E-INT-1050	Energize Electrial Equipment	1	8/9/17	8/9/17
AF-E-INT-1060	Pull / Terminate Elec Branch Wiring	5	8/21/17	8/25/17
AF-E-INT-1070	Pull LV Cabling	10	8/21/17	9/1/17
AF-E-INT-1080	Install Light Fxtures / Elec Devices	3	8/28/17	8/30/17
AF-E-INT-1090	Set LV Equipment / Make Terminations	10	9/5/17	9/18/17
Punchlist / Testing		197	8/14/17	5/23/18
AF-E-1000	Start Up HVAC Systems	1	8/14/17	8/14/17
AF-E-1010	Electrical Testing & Final Sign Off	3	8/31/17	9/5/17
AF-E-1020	Generate Punchlist	1	11/6/17	11/6/17
AF-E-1030	Punchlist Corrections	5	11/7/17	11/14/17
AF-E-1040	Low Voltage (Scoreboard) Testing & Final S	10	5/10/18	5/23/18
Visitor Bleachers		143	3/9/17	9/28/17
Foundations		27	3/9/17	4/14/17
DD Line		12	3/9/17	3/24/17
AF-VB-1000	Layout / Excavate Footing	5	3/9/17	3/15/17
AF-VB-1010	Rebar Footing	4	3/16/17	3/21/17
AF-VB-1030	Pour Footing	1	3/22/17	3/22/17
AF-VB-1040	Strip / Clean Footing	2	3/23/17	3/24/17
33 & 44 Line		10	3/16/17	3/29/17
AF-VB-1020	Layout / Excavate Footing	5	3/16/17	3/22/17
AF-VB-1050	Rebar Footing	3	3/23/17	3/27/17
AF-VB-1080	Pour Footing	1	3/28/17	3/28/17
AF-VB-1090	Strip / Clean Footing	1	3/29/17	3/29/17
CC Line		12	3/23/17	4/7/17
AF-VB-1060	Layout / Excavate Footing	5	3/23/17	3/29/17
AF-VB-1100	Rebar Footing	4	3/30/17	4/4/17
AF-VB-1160	Pour Footing	1	4/5/17	4/5/17
AF-VB-1170	Strip / Clean Footing	2	4/6/17	4/7/17
AA Line		12	3/30/17	4/14/17
AF-VB-1110	Layout / Excavate Footing	5	3/30/17	4/5/17
AF-VB-1180	Rebar Footing	4	4/6/17	4/11/17
AF-VB-1260	Pour Footing	1	4/12/17	4/12/17
AF-VB-1270	Strip / Clean Footing	2	4/13/17	4/14/17
Walls		46	3/27/17	5/30/17
DD Line		21	3/27/17	4/24/17
Pour 1		11	3/27/17	4/10/17
AF-VB-1	Form / Rebar Wall	5	3/27/17	3/31/17
AF-VB-1	Pour Wall	1	4/3/17	4/3/17
AF-VB-1	Cure Wall	5	4/4/17	4/8/17
AF-VB-1	Strip Wall	1	4/10/17	4/10/17
Pour 2		11	4/3/17	4/17/17
AF-VB-1	Form / Rebar Wall	5	4/3/17	4/7/17



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

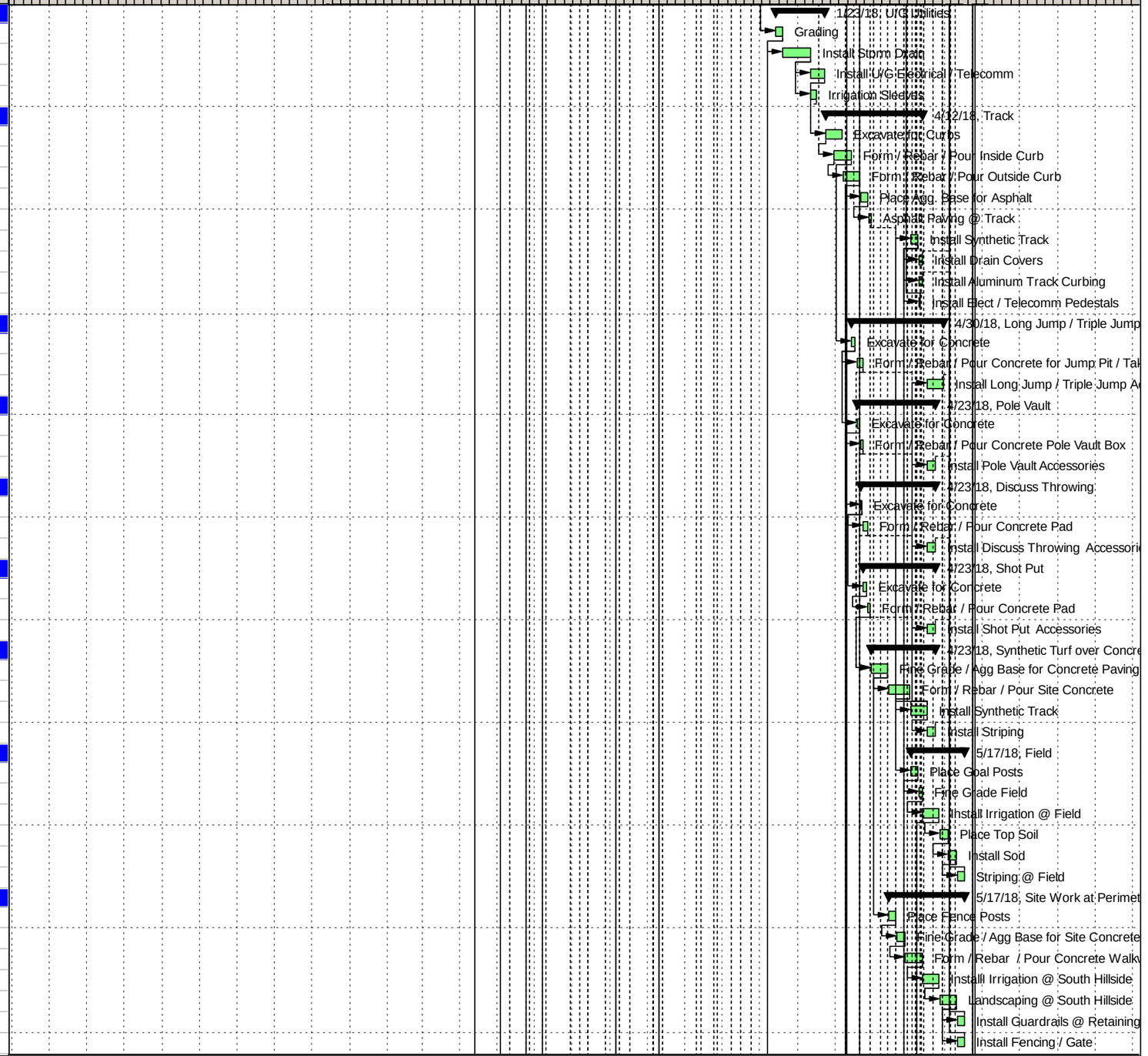
Activity ID	Activity Name	Original Duration	Start	Finish
AF-VB-1	Pour Wall	1	4/10/17	4/10/17
AF-VB-1	Cure Wall	5	4/11/17	4/15/17
AF-VB-1	Strip Wall	1	4/17/17	4/17/17
Pour 3		11	4/10/17	4/24/17
AF-VB-1	Form / Rebar Wall	5	4/10/17	4/14/17
AF-VB-1	Pour Wall	1	4/17/17	4/17/17
AF-VB-1	Cure Wall	5	4/18/17	4/22/17
AF-VB-1	Strip Wall	1	4/24/17	4/24/17
33 & 44 Line		13	3/30/17	4/17/17
Pour 1		13	3/30/17	4/17/17
AF-VB-1	Form / Rebar Wall	7	3/30/17	4/7/17
AF-VB-1	Pour Wall	1	4/10/17	4/10/17
AF-VB-1	Cure Wall	5	4/11/17	4/15/17
AF-VB-1	Strip Wall	1	4/17/17	4/17/17
CC Line / Stair Walls		23	4/10/17	5/10/17
Pour 1		11	4/10/17	4/24/17
AF-VB-1	Form / Rebar Wall	6	4/10/17	4/17/17
AF-VB-1	Pour Wall	1	4/18/17	4/18/17
AF-VB-1	Cure Wall	5	4/19/17	4/23/17
AF-VB-1	Strip Wall	1	4/24/17	4/24/17
Pour 2		11	4/18/17	5/2/17
AF-VB-1	Form / Rebar Wall	6	4/18/17	4/25/17
AF-VB-1	Pour Wall	1	4/26/17	4/26/17
AF-VB-1	Cure Wall	5	4/27/17	5/1/17
AF-VB-1	Strip Wall	1	5/2/17	5/2/17
Pour 3		11	4/26/17	5/10/17
AF-VB-1	Form / Rebar Wall	6	4/26/17	5/3/17
AF-VB-1	Pour Wall	1	5/4/17	5/4/17
AF-VB-1	Cure Wall	5	5/5/17	5/9/17
AF-VB-1	Strip Wall	1	5/10/17	5/10/17
Backfill DD to CC		13	5/11/17	5/30/17
AF-VB-1560	Waterproof Wall	5	5/11/17	5/17/17
AF-VB-1600	Drainage @ Wall	3	5/18/17	5/22/17
AF-VB-1630	Backfill / Grade	5	5/23/17	5/30/17
AA Line		21	4/17/17	5/15/17
Pour 1		11	4/17/17	5/1/17
AF-VB-1	Form / Rebar Wall	5	4/17/17	4/21/17
AF-VB-1	Pour Wall	1	4/24/17	4/24/17
AF-VB-1	Cure Wall	5	4/25/17	4/29/17
AF-VB-1	Strip Wall	1	5/1/17	5/1/17
Pour 2		11	4/24/17	5/8/17
AF-VB-1	Form / Rebar Wall	5	4/24/17	4/28/17
AF-VB-1	Pour Wall	1	5/1/17	5/1/17
AF-VB-1	Cure Wall	5	5/2/17	5/6/17
AF-VB-1	Strip Wall	1	5/8/17	5/8/17
Pour 3		11	5/1/17	5/15/17
AF-VB-1	Form / Rebar Wall	5	5/1/17	5/5/17
AF-VB-1	Pour Wall	1	5/8/17	5/8/17
AF-VB-1	Cure Wall	5	5/9/17	5/13/17
AF-VB-1	Strip Wall	1	5/15/17	5/15/17
Backfill to AA Wall		8	5/16/17	5/25/17

Activity ID	Activity Name	Original Duration	Start	Finish
AF-VB-1570	Waterproof Wall	3	5/16/17	5/18/17
AF-VB-1590	Drainage @ Wall	2	5/19/17	5/22/17
AF-VB-1610	Backfill / Grade	3	5/23/17	5/25/17
Flatwork / Stairs CC to BB		20	5/31/17	6/27/17
AF-VB-1660	Form / Rebar / Pour Flatwork	15	5/31/17	6/20/17
AF-VB-1680	Form / Rebar / Pour Stairs	10	6/14/17	6/27/17
Stepped Seating		35	6/28/17	8/16/17
AF-VB-1710	Form / Rebar / Pour Stepped Seating - DD t	20	6/28/17	7/26/17
AF-VB-1720	Form / Rebar / Pour Stepped Seating - BB t	20	7/20/17	8/16/17
Bleacher Seating Finishes		30	8/17/17	9/28/17
AF-VB-1730	Install Bleacher Seating	10	8/17/17	8/30/17
AF-VB-1740	Install Handrails / Guardrails	20	8/31/17	9/28/17
Ramp		51	5/16/17	7/27/17
AF-VB-1580	Layout / Excavate Footings	7	5/16/17	5/24/17
AF-VB-1620	Rebar Fooings	5	5/25/17	6/1/17
AF-VB-1640	Pour Footings	1	6/2/17	6/2/17
AF-VB-1650	Strip / Clean Footings	2	6/5/17	6/6/17
AF-VB-1670	Form / Rebar / Pour Ramp Walls	15	6/7/17	6/27/17
AF-VB-1690	Backfill Ramp Walls	3	6/28/17	6/30/17
AF-VB-1700	Form / Rebar / Pour Ramps / Stairs	10	7/3/17	7/17/17
AF-VB-2170	Install Handrails / Guardrails	8	7/18/17	7/27/17
Site Work		290	4/17/17	6/7/18
Stadium Track & Fiield		276	4/17/17	5/17/18
Retaining Walls - North Terrrace of Track & Field		41	4/17/17	6/13/17
East Terrace Retaining Walls		33	4/17/17	6/1/17
AF-TF-1	Layout / Excavate Wall Footings	5	4/17/17	4/21/17
AF-TF-1	Rebar Wall Footings	3	4/24/17	4/26/17
AF-TF-1	Pour Wall Footings	1	4/27/17	4/27/17
AF-TF-1	Strip Wall Footings	1	4/28/17	4/28/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 1st Pour	10	5/1/17	5/12/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 2nd Poı	10	5/8/17	5/19/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 3rd Pour	10	5/15/17	5/26/17
AF-TF-1	Backfill Walls	3	5/30/17	6/1/17
West Terrace Retaining Walls		33	4/24/17	6/8/17
AF-TF-1	Layout / Excavate Wall Footings	5	4/24/17	4/28/17
AF-TF-1	Rebar Wall Footings	3	5/1/17	5/3/17
AF-TF-1	Pour Wall Footings	1	5/4/17	5/4/17
AF-TF-1	Strip Wall Footings	1	5/5/17	5/5/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 1st Pour	10	5/8/17	5/19/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 2nd Poı	10	5/15/17	5/26/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 3rd Pour	10	5/22/17	6/5/17
AF-TF-1	Backfill Walls	3	6/6/17	6/8/17
Lower North Retaining Wall		31	5/1/17	6/13/17
AF-TF-1	Layout / Excavate Wall Footings	5	5/1/17	5/5/17
AF-TF-1	Rebar Wall Footings	3	5/8/17	5/10/17
AF-TF-1	Pour Wall Footings	1	5/11/17	5/11/17
AF-TF-1	Strip Wall Footings	1	5/12/17	5/12/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 1st Pour	10	5/15/17	5/26/17
AF-TF-1	Form / Rebar / Pour / Cure / Strip - 2nd Poı	10	5/22/17	6/5/17
AF-TF-1	Backfill Walls	3	6/9/17	6/13/17



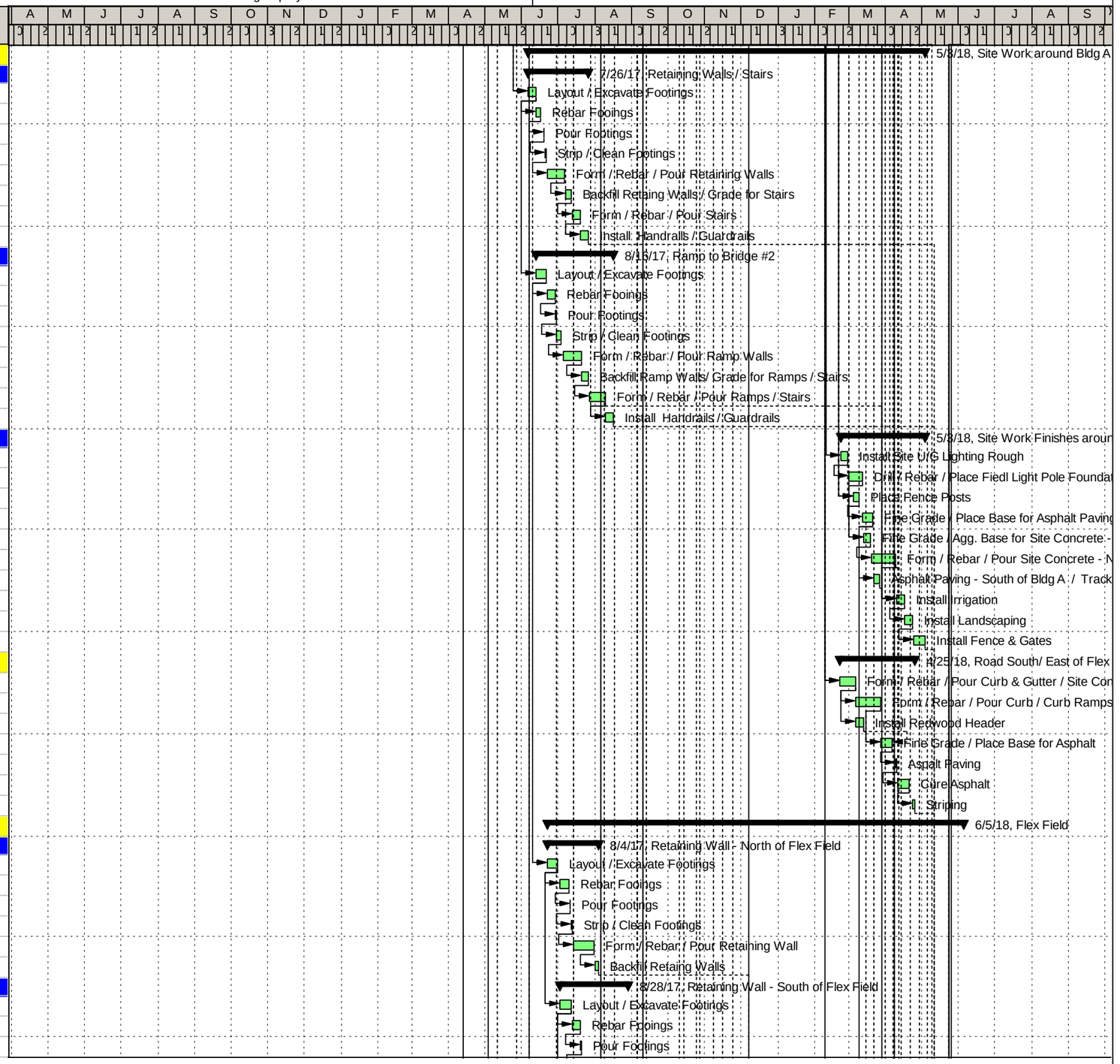
Actual Work | Remaining Work | Critical Remaining Work | Milestone | Summary

Activity ID	Activity Name	Original Duration	Start	Finish
U/G Utilities		27	12/14/17	1/23/18
AF-TF-1230	Grading	4	12/14/17	12/19/17
AF-TF-1240	Install Storm Drain	15	12/20/17	1/11/18
AF-TF-1250	Install U/G Electrical / Telecomm	8	1/12/18	1/23/18
AF-TF-1260	Irrigation Sleeves	3	1/12/18	1/16/18
Track		57	1/24/18	4/12/18
AF-TF-1270	Excavate for Curbs	10	1/24/18	2/6/18
AF-TF-1280	Form / Rebar / Pour Inside Curb	10	1/31/18	2/13/18
AF-TF-1290	Form / Rebar / Pour Outside Curb	10	2/7/18	2/20/18
AF-TF-1330	Place Agg. Base for Asphalt	5	2/21/18	2/27/18
AF-TF-1390	Asphalt Paving @ Track	3	2/28/18	3/2/18
AF-TF-1450	Install Synthetic Track	5	4/3/18	4/9/18
AF-TF-1480	Install Drain Covers	3	4/10/18	4/12/18
AF-TF-1490	Install Aluminum Track Curbing	3	4/10/18	4/12/18
AF-TF-1500	Install Elect / Telecomm Pedestals	2	4/10/18	4/11/18
Long Jump / Triple Jump		54	2/14/18	4/30/18
AF-TF-1300	Excavate for Concrete	3	2/14/18	2/16/18
AF-TF-1310	Form / Rebar / Pour Concrete for Jump Pit /	5	2/19/18	2/23/18
AF-TF-1540	Install Long Jump / Triple Jump Accessories	10	4/17/18	4/30/18
Pole Vault		46	2/19/18	4/23/18
AF-TF-1320	Excavate for Concrete	2	2/19/18	2/20/18
AF-TF-1340	Form / Rebar / Pour Concrete Pole Vault Bo	3	2/21/18	2/23/18
AF-TF-1550	Install Pole Vault Accessories	5	4/17/18	4/23/18
Discuss Throwing		44	2/21/18	4/23/18
AF-TF-1350	Excavate for Concrete	2	2/21/18	2/22/18
AF-TF-1360	Form / Rebar / Pour Concrete Pad	3	2/23/18	2/27/18
AF-TF-1560	Install Discuss Throwing Accessories	5	4/17/18	4/23/18
Shot Put		42	2/23/18	4/23/18
AF-TF-1370	Excavate for Concrete	2	2/23/18	2/26/18
AF-TF-1380	Form / Rebar / Pour Concrete Pad	3	2/27/18	3/1/18
AF-TF-1570	Install Shot Put Accessories	5	4/17/18	4/23/18
Synthetic Turf over Concrete Paving		37	3/2/18	4/23/18
AF-TF-1400	Fine Grade / Agg Base for Concrete Paving	10	3/2/18	3/15/18
AF-TF-1410	Form / Rebar / Pour Site Concrete	12	3/16/18	4/2/18
AF-TF-1460	Install Synthetic Track	10	4/3/18	4/16/18
AF-TF-1580	Install Striping	5	4/17/18	4/23/18
Field		33	4/3/18	5/17/18
AF-TF-1470	Place Goal Posts	5	4/3/18	4/9/18
AF-TF-1510	Fine Grade Field	3	4/10/18	4/12/18
AF-TF-1520	Install Irrigation @ Field	10	4/13/18	4/26/18
AF-TF-1590	Place Top Soil	5	4/27/18	5/3/18
AF-TF-1610	Install Sod	5	5/4/18	5/10/18
AF-TF-1620	Striping @ Field	5	5/11/18	5/17/18
Site Work at Perimeter of Track & Field		45	3/16/18	5/17/18
AF-TF-1420	Place Fence Posts	5	3/16/18	3/22/18
AF-TF-1430	Fine Grade / Agg Base for Site Concrete @	5	3/23/18	3/29/18
AF-TF-1440	Form / Rebar / Pour Concrete Walkways @	10	3/30/18	4/12/18
AF-TF-1530	Installl Irrigation @ South Hillside	10	4/13/18	4/26/18
AF-TF-1600	Landscaping @ South Hillside	10	4/27/18	5/10/18
AF-TF-1630	Install Guardrails @ Retaining Wall	5	5/11/18	5/17/18
AF-TF-1640	Install Fencing / Gate	5	5/11/18	5/17/18



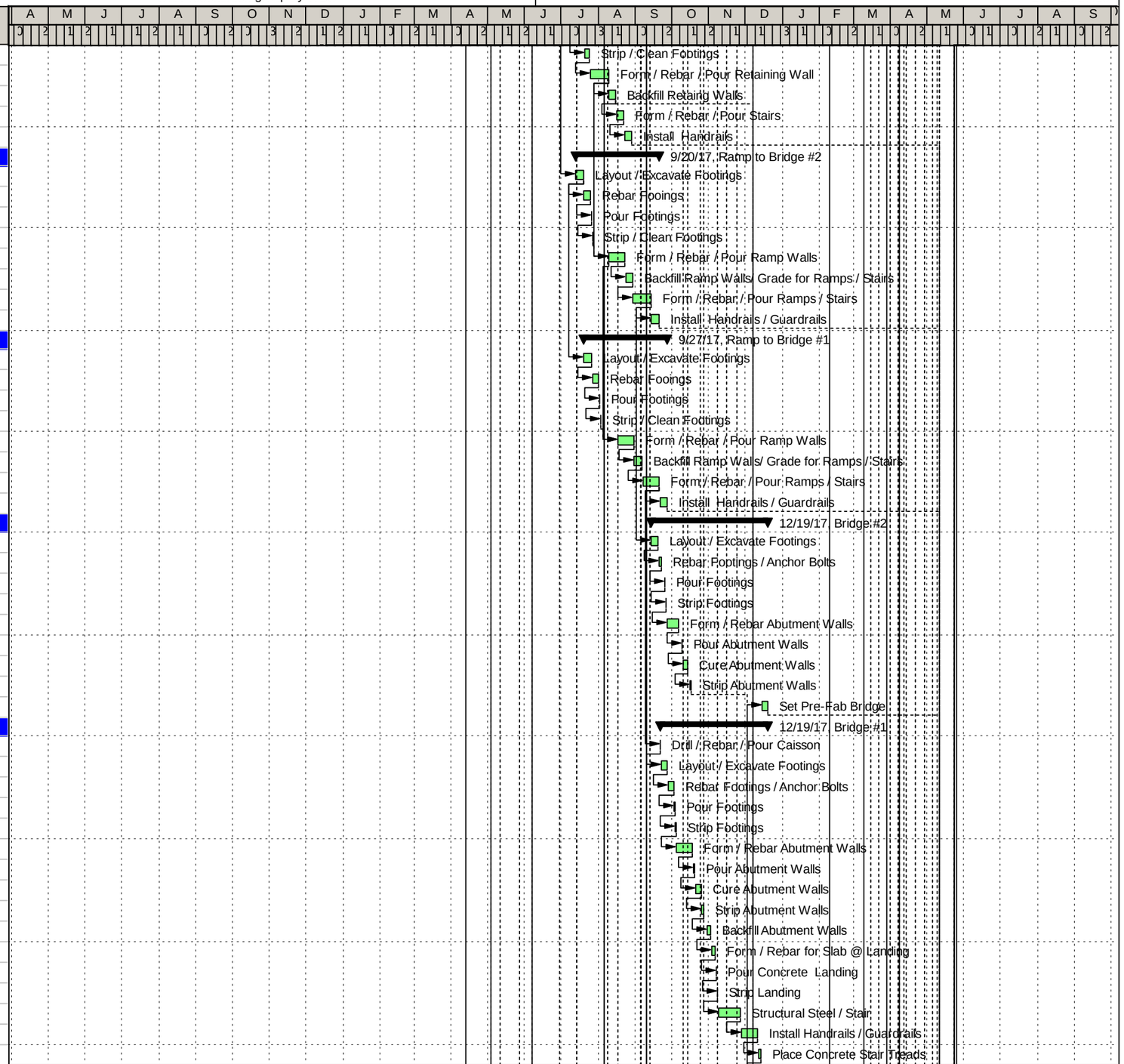
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
Site Work around Bldg A		231	6/6/17	5/3/18
Retaining Walls / Stairs		36	6/6/17	7/26/17
AF-SA-1000	Layout / Excavate Footings	5	6/6/17	6/12/17
AF-SA-1020	Rebar Fooings	4	6/13/17	6/16/17
AF-SA-1030	Pour Footings	1	6/19/17	6/19/17
AF-SA-1040	Strip / Clean Footings	2	6/20/17	6/21/17
AF-SA-1060	Form / Rebar / Pour Retaining Walls	10	6/22/17	7/6/17
AF-SA-1100	Backfill Retaing Walls / Grade for Stairs	4	7/7/17	7/12/17
AF-SA-1110	Form / Rebar / Pour Stairs	5	7/13/17	7/19/17
AF-SA-1120	Install Handrails / Guardrails	5	7/20/17	7/26/17
Ramp to Bridge #2		46	6/13/17	8/16/17
AF-SA-1010	Layout / Excavate Footings	7	6/13/17	6/21/17
AF-SA-1050	Rebar Fooings	5	6/22/17	6/28/17
AF-SA-1070	Pour Footings	1	6/29/17	6/29/17
AF-SA-1080	Strip / Clean Footings	2	6/30/17	7/3/17
AF-SA-1090	Form / Rebar / Pour Ramp Walls	12	7/5/17	7/20/17
AF-SA-1130	Backfill Ramp Walls/ Grade for Ramps / Stai	4	7/21/17	7/26/17
AF-SA-1140	Form / Rebar / Pour Ramps / Stairs	10	7/27/17	8/9/17
AF-SA-1150	Install Handrails / Guardrails	5	8/10/17	8/16/17
Site Work Finishes around Bldg A		51	2/22/18	5/3/18
AF-SA-1160	Install Site U/G Lighting Rough	5	2/22/18	2/28/18
AF-SA-1170	Drill / Rebar / Place Fiedl Light Pole Foundat	8	3/1/18	3/12/18
AF-SA-1180	Place Fence Posts	5	3/5/18	3/9/18
AF-SA-1190	Fine Grade / Place Base for Asphalt Paving -	8	3/12/18	3/21/18
AF-SA-1200	Fine Grade / Agg. Base for Site Concrete - N	5	3/13/18	3/19/18
AF-SA-1210	Form / Rebar / Pour Site Concrete - North /	15	3/20/18	4/9/18
AF-SA-1220	Asphalt Paving - South of Bldg A / Track & F	3	3/22/18	3/26/18
AF-SA-1230	Install Irrigation	5	4/10/18	4/16/18
AF-SA-1240	Install Landscaping	5	4/17/18	4/23/18
AF-SA-1250	Install Fence & Gates	8	4/24/18	5/3/18
Road South/ East of Flex Field / Practice Field		46	2/21/18	4/25/18
AF-RS-1000	Form / Rebar / Pour Curb & Gutter / Site Cc	10	2/21/18	3/6/18
AF-RS-1010	Form / Rebar / Pour Curb / Curb Ramps So	15	3/7/18	3/27/18
AF-RS-1020	Install Redwood Header	5	3/7/18	3/13/18
AF-RS-1030	Fine Grade / Place Base for Asphalt	8	3/28/18	4/6/18
AF-RS-1040	Aspalt Paving	2	4/9/18	4/10/18
AF-RS-1050	Cure Asphalt	10	4/11/18	4/20/18
AF-RS-1060	Striping	3	4/23/18	4/25/18
Flex Field		241	6/22/17	6/5/18
Retaining Wall - North of Flex Field		31	6/22/17	8/4/17
AF-FF-1000	Layout / Excavate Footings	7	6/22/17	6/30/17
AF-FF-1010	Rebar Fooings	5	7/3/17	7/10/17
AF-FF-1030	Pour Footings	1	7/11/17	7/11/17
AF-FF-1040	Strip / Clean Footings	2	7/12/17	7/13/17
AF-FF-1070	Form / Rebar / Pour Retaining Wall	12	7/14/17	7/31/17
AF-FF-1160	Backfill Retaing Walls	4	8/1/17	8/4/17
Retaining Wall - South of Flex Field		40	7/3/17	8/28/17
AF-FF-1020	Layout / Excavate Footings	7	7/3/17	7/12/17
AF-FF-1050	Rebar Fooings	5	7/13/17	7/19/17
AF-FF-1090	Pour Footings	1	7/20/17	7/20/17



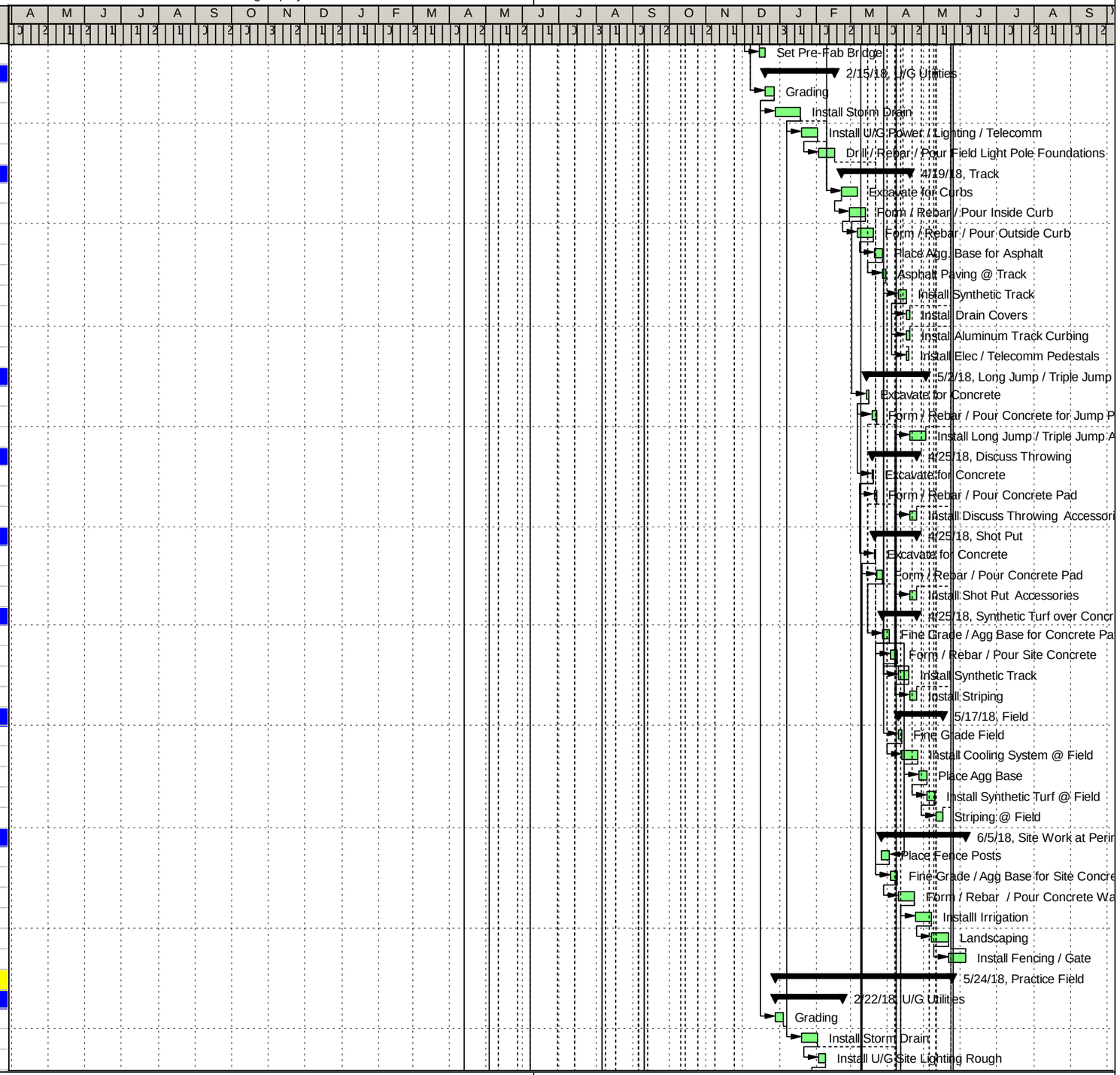
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-FF-1110	Strip / Clean Footings	2	7/21/17	7/24/17
AF-FF-1120	Form / Rebar / Pour Retaining Wall	12	7/25/17	8/9/17
AF-FF-1190	Backfill Retaing Walls	4	8/10/17	8/15/17
AF-FF-1210	Form / Rebar / Pour Stairs	5	8/16/17	8/22/17
AF-FF-1230	Install Handrails	4	8/23/17	8/28/17
Ramp to Bridge #2		49	7/13/17	9/20/17
AF-FF-1060	Layout / Excavate Footings	5	7/13/17	7/19/17
AF-FF-1100	Rebar Fooings	4	7/20/17	7/25/17
AF-FF-1130	Pour Footings	1	7/26/17	7/26/17
AF-FF-1150	Strip / Clean Footings	1	7/27/17	7/27/17
AF-FF-1200	Form / Rebar / Pour Ramp Walls	10	8/10/17	8/23/17
AF-FF-1240	Backfill Ramp Walls/ Grade for Ramps / Stai	4	8/24/17	8/29/17
AF-FF-1250	Form / Rebar / Pour Ramps / Stairs	10	8/30/17	9/13/17
AF-FF-1290	Install Handrails / Guardrails	5	9/14/17	9/20/17
Ramp to Bridge #1		49	7/20/17	9/27/17
AF-FF-1080	Layout / Excavate Footings	5	7/20/17	7/26/17
AF-FF-1140	Rebar Fooings	4	7/27/17	8/1/17
AF-FF-1170	Pour Footings	1	8/2/17	8/2/17
AF-FF-1180	Strip / Clean Footings	1	8/3/17	8/3/17
AF-FF-1220	Form / Rebar / Pour Ramp Walls	10	8/17/17	8/30/17
AF-FF-1260	Backfill Ramp Walls/ Grade for Ramps / Stai	4	8/31/17	9/6/17
AF-FF-1270	Form / Rebar / Pour Ramps / Stairs	10	9/7/17	9/20/17
AF-FF-1320	Install Handrails / Guardrails	5	9/21/17	9/27/17
Bridge #2		66	9/14/17	12/19/17
AF-FF-1280	Layout / Excavate Footings	4	9/14/17	9/19/17
AF-FF-1300	Rebar Footings / Anchor Bolts	3	9/20/17	9/22/17
AF-FF-1340	Pour Footings	1	9/25/17	9/25/17
AF-FF-1350	Strip Footings	1	9/26/17	9/26/17
AF-FF-1360	Form / Rebar Abutment Walls	8	9/27/17	10/6/17
AF-FF-1410	Pour Abutment Walls	1	10/9/17	10/9/17
AF-FF-1420	Cure Abutment Walls	5	10/10/17	10/14/17
AF-FF-1430	Strip Abutment Walls	2	10/16/17	10/17/17
AF-FF-1550	Set Pre-Fab Bridge	3	12/15/17	12/19/17
Bridge #1		61	9/21/17	12/19/17
AF-FF-1310	Drill / Rebar / Pour Caisson	1	9/21/17	9/21/17
AF-FF-1330	Layout / Excavate Footings	4	9/22/17	9/27/17
AF-FF-1370	Rebar Footings / Anchor Bolts	3	9/28/17	10/2/17
AF-FF-1380	Pour Footings	1	10/3/17	10/3/17
AF-FF-1390	Strip Footings	1	10/4/17	10/4/17
AF-FF-1400	Form / Rebar Abutment Walls	10	10/5/17	10/18/17
AF-FF-1440	Pour Abutment Walls	2	10/19/17	10/20/17
AF-FF-1450	Cure Abutment Walls	5	10/21/17	10/25/17
AF-FF-1460	Strip Abutment Walls	2	10/26/17	10/27/17
AF-FF-1470	Backfill Abutment Walls	4	10/30/17	11/2/17
AF-FF-1480	Form / Rebar for Slab @ Landing	2	11/3/17	11/6/17
AF-FF-1490	Pour Concrete Landing	1	11/7/17	11/7/17
AF-FF-1500	Strip Landing	1	11/8/17	11/8/17
AF-FF-1510	Structural Steel / Stair	10	11/9/17	11/27/17
AF-FF-1520	Install Handrails / Guardrails	10	11/28/17	12/11/17
AF-FF-1530	Place Concrete Stair Treads	3	12/12/17	12/14/17



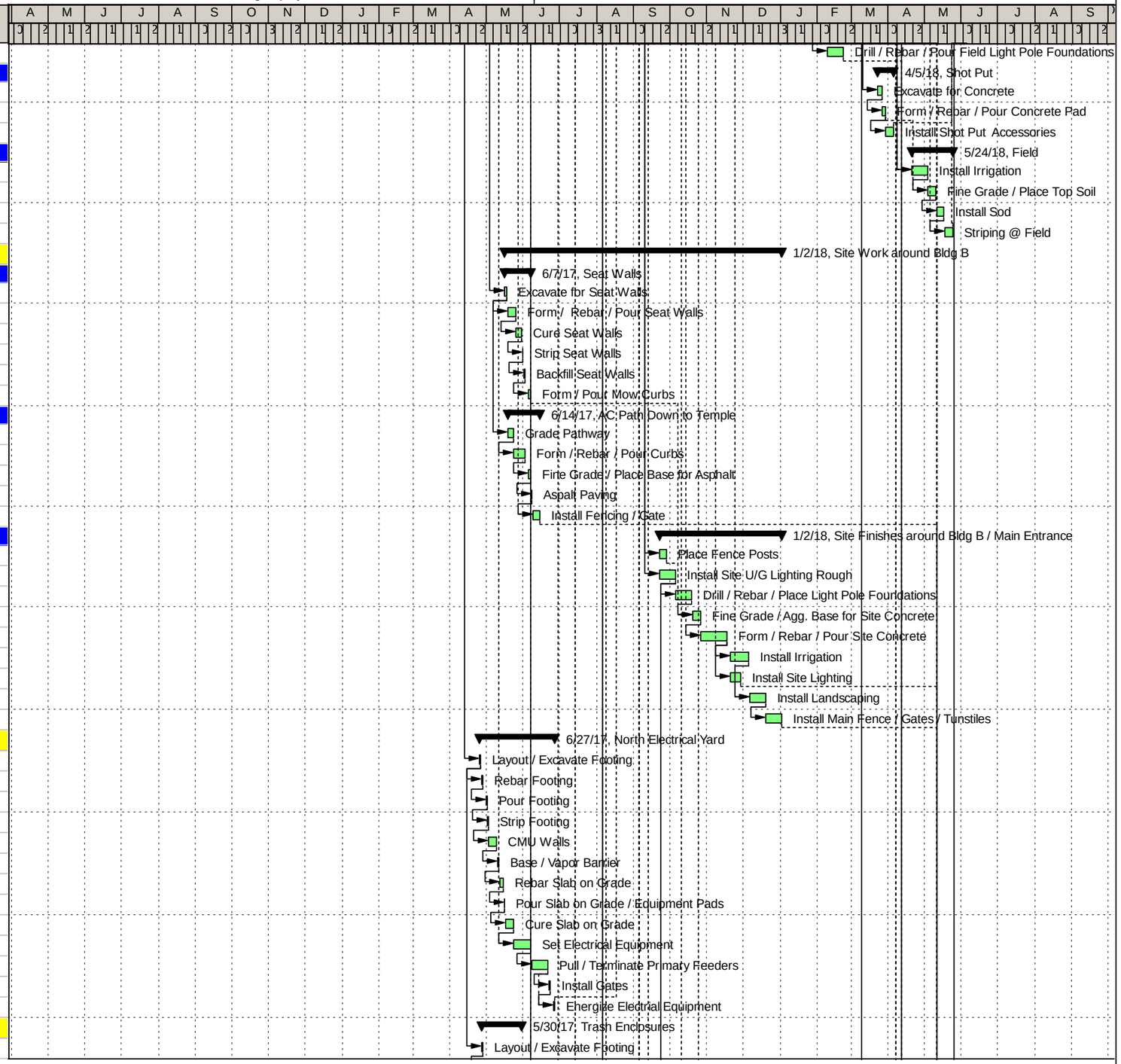
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-FF-1540	Set Pre-Fab Bridge	3	12/15/17	12/19/17
U/G Utilities		40	12/20/17	2/15/18
AF-FF-1560	Grading	5	12/20/17	12/27/17
AF-FF-1570	Install Storm Drain	15	12/28/17	1/18/18
AF-FF-1580	Install U/G Power / Lighting / Telecomm	10	1/19/18	2/1/18
AF-FF-1590	Drill / Rebar / Pour Field Light Pole Foundati	10	2/2/18	2/15/18
Track		42	2/21/18	4/19/18
AF-FF-1600	Excavate for Curbs	10	2/21/18	3/6/18
AF-FF-1610	Form / Rebar / Pour Inside Curb	10	2/28/18	3/13/18
AF-FF-1620	Form / Rebar / Pour Outside Curb	10	3/7/18	3/20/18
AF-FF-1660	Place Agg. Base for Asphalt	5	3/21/18	3/27/18
AF-FF-1710	Asphalt Paving @ Track	3	3/28/18	3/30/18
AF-FF-1750	Install Synthetic Track	5	4/10/18	4/16/18
AF-FF-1800	Install Drain Covers	3	4/17/18	4/19/18
AF-FF-1810	Install Aluminum Track Curbing	3	4/17/18	4/19/18
AF-FF-1820	Install Elec / Telecomm Pedestals	2	4/17/18	4/18/18
Long Jump / Triple Jump		36	3/14/18	5/2/18
AF-FF-1630	Excavate for Concrete	3	3/14/18	3/16/18
AF-FF-1640	Form / Rebar / Pour Concrete for Jump Pit /	5	3/19/18	3/23/18
AF-FF-1830	Install Long Jump / Triple Jump Accessories	10	4/19/18	5/2/18
Discuss Throwing		28	3/19/18	4/25/18
AF-FF-1650	Excavate for Concrete	2	3/19/18	3/20/18
AF-FF-1670	Form / Rebar / Pour Concrete Pad	3	3/21/18	3/23/18
AF-FF-1840	Install Discuss Throwing Accessories	5	4/19/18	4/25/18
Shot Put		26	3/21/18	4/25/18
AF-FF-1680	Excavate for Concrete	2	3/21/18	3/22/18
AF-FF-1690	Form / Rebar / Pour Concrete Pad	3	3/23/18	3/27/18
AF-FF-1850	Install Shot Put Accessories	5	4/19/18	4/25/18
Synthetic Turf over Concrete Paving		21	3/28/18	4/25/18
AF-FF-1720	Fine Grade / Agg Base for Concrete Paving	4	3/28/18	4/2/18
AF-FF-1730	Form / Rebar / Pour Site Concrete	5	4/3/18	4/9/18
AF-FF-1760	Install Synthetic Track	7	4/10/18	4/18/18
AF-FF-1860	Install Striping	5	4/19/18	4/25/18
Field		28	4/10/18	5/17/18
AF-FF-1770	Fine Grade Field	3	4/10/18	4/12/18
AF-FF-1790	Install Cooling System @ Field	10	4/13/18	4/26/18
AF-FF-1880	Place Agg Base	5	4/27/18	5/3/18
AF-FF-1890	Install Synthetic Turf @ Field	5	5/4/18	5/10/18
AF-FF-1910	Striping @ Field	5	5/11/18	5/17/18
Site Work at Perimeter of Flex Field		50	3/27/18	6/5/18
AF-FF-1700	Place Fence Posts	5	3/27/18	4/2/18
AF-FF-1740	Fine Grade / Agg Base for Site Concrete @	5	4/3/18	4/9/18
AF-FF-1780	Form / Rebar / Pour Concrete Walkways @	10	4/10/18	4/23/18
AF-FF-1870	Installl Irrigation	10	4/24/18	5/7/18
AF-FF-1900	Landscaping	10	5/8/18	5/21/18
AF-FF-1920	Install Fencing / Gate	10	5/22/18	6/5/18
Practice Field		105	12/28/17	5/24/18
U/G Utilities		40	12/28/17	2/22/18
AF-PF-1000	Grading	5	12/28/17	1/4/18
AF-PF-1010	Install Storm Drain	10	1/19/18	2/1/18
AF-PF-1020	Install U/G Site Lighting Rough	5	2/2/18	2/8/18



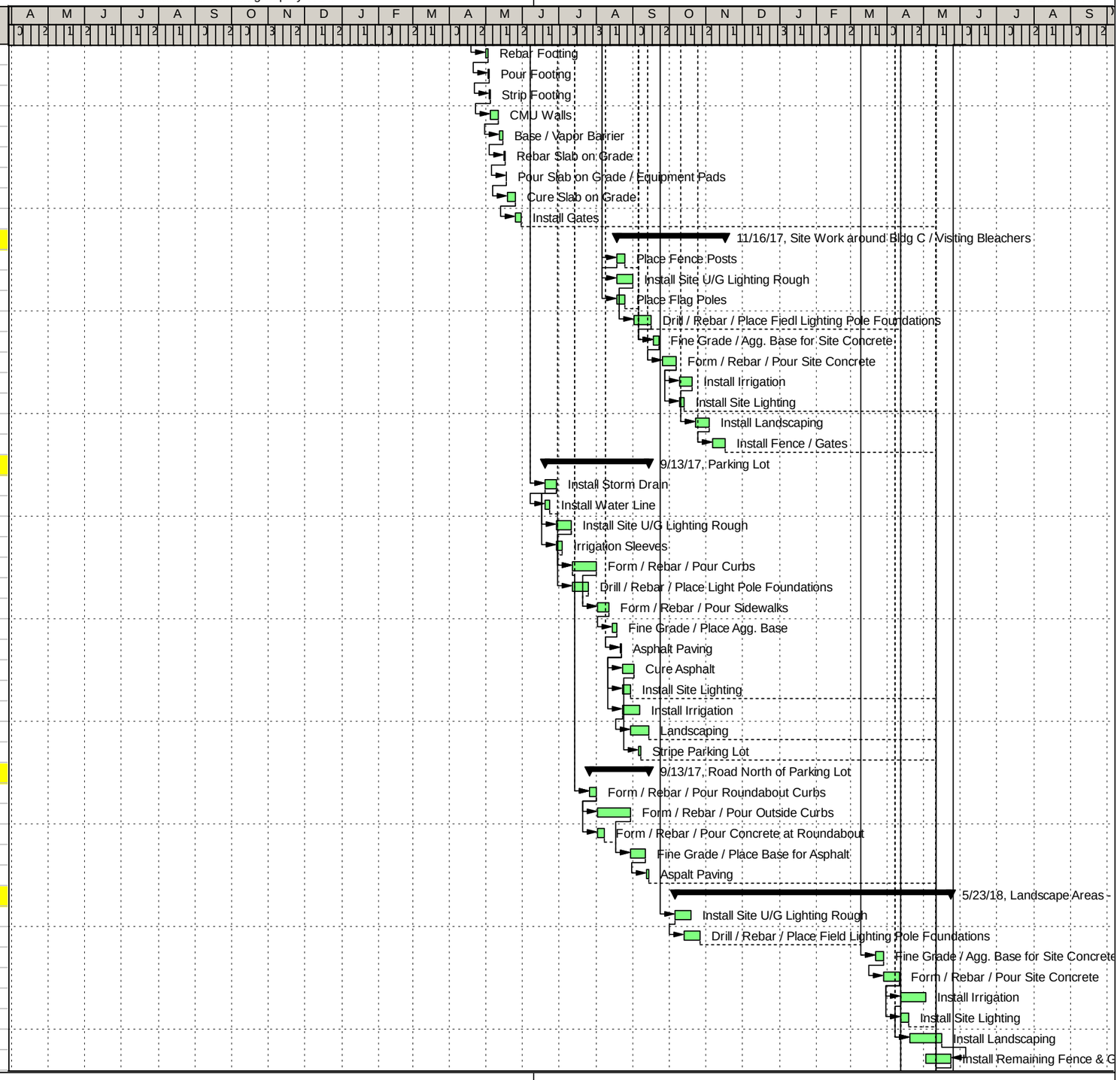
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-PF-1030	Drill / Rebar / Pour Field Light Pole Foundati	10	2/9/18	2/22/18
Shot Put		10	3/23/18	4/5/18
AF-PF-1040	Excavate for Concrete	2	3/23/18	3/26/18
AF-PF-1050	Form / Rebar / Pour Concrete Pad	3	3/27/18	3/29/18
AF-PF-1060	Install Shot Put Accessories	5	3/30/18	4/5/18
Field		25	4/20/18	5/24/18
AF-PF-1070	Install Irrigation	10	4/20/18	5/3/18
AF-PF-1080	Fine Grade / Place Top Soil	5	5/4/18	5/10/18
AF-PF-1090	Install Sod	5	5/11/18	5/17/18
AF-PF-1100	Striping @ Field	5	5/18/18	5/24/18
Site Work around Bldg B		158	5/16/17	1/2/18
Seat Walls		16	5/16/17	6/7/17
AF-SB-1000	Excavate for Seat Walls	3	5/16/17	5/18/17
AF-SB-1010	Form / Rebar / Pour Seat Walls	5	5/19/17	5/25/17
AF-SB-1040	Cure Seat Walls	2	5/26/17	5/30/17
AF-SB-1050	Strip Seat Walls	1	5/31/17	5/31/17
AF-SB-1060	Backfill Seat Walls	2	6/1/17	6/2/17
AF-SB-1070	Form / Pour Mow Curbs	3	6/5/17	6/7/17
AC Path Down to Temple		18	5/19/17	6/14/17
AF-SB-1020	Grade Pathway	3	5/19/17	5/23/17
AF-SB-1030	Form / Rebar / Pour Curbs	7	5/24/17	6/2/17
AF-SB-1080	Fine Grade / Place Base for Asphalt	3	6/5/17	6/7/17
AF-SB-1090	Aspalt Paving	1	6/8/17	6/8/17
AF-SB-1100	Install Fencing / Gate	4	6/9/17	6/14/17
Site Finishes around Bldg B / Main Entrance		68	9/22/17	1/2/18
AF-SB-1110	Place Fence Posts	5	9/22/17	9/28/17
AF-SB-1120	Install Site U/G Lighting Rough	10	9/22/17	10/5/17
AF-SB-1130	Drill / Rebar / Place Light Pole Foundations	10	10/6/17	10/19/17
AF-SB-1140	Fine Grade / Agg. Base for Site Concrete	5	10/20/17	10/26/17
AF-SB-1150	Form / Rebar / Pour Site Concrete	15	10/27/17	11/17/17
AF-SB-1160	Install Irrigation	10	11/20/17	12/5/17
AF-SB-1170	Install Site Lighting	5	11/20/17	11/28/17
AF-SB-1180	Install Landscaping	10	12/6/17	12/19/17
AF-SB-1190	Install Main Fence / Gates / Tunstiles	8	12/20/17	1/2/18
North Electrical Yard		45	4/25/17	6/27/17
AF-NEY-1000	Layout / Excavate Footing	2	4/25/17	4/26/17
AF-NEY-1010	Rebar Footing	2	4/27/17	4/28/17
AF-NEY-1020	Pour Footing	1	5/1/17	5/1/17
AF-NEY-1030	Strip Footing	1	5/2/17	5/2/17
AF-NEY-1040	CMU Walls	5	5/3/17	5/9/17
AF-NEY-1050	Base / Vapor Barrier	2	5/10/17	5/11/17
AF-NEY-1060	Rebar Slab on Grade	2	5/12/17	5/15/17
AF-NEY-1070	Pour Slab on Grade / Equipment Pads	1	5/16/17	5/16/17
AF-NEY-1080	Cure Slab on Grade	7	5/17/17	5/23/17
AF-NEY-1090	Set Electrical Equipment	10	5/24/17	6/7/17
AF-NEY-1100	Pull / Terminate Primary Feeders	10	6/8/17	6/21/17
AF-NEY-1110	Install Gates	2	6/22/17	6/23/17
AF-NEY-1120	Energize Electrial Equipment	2	6/26/17	6/27/17
Trash Enclosures		23	4/27/17	5/30/17
AF-TE-1000	Layout / Excavate Footing	2	4/27/17	4/28/17



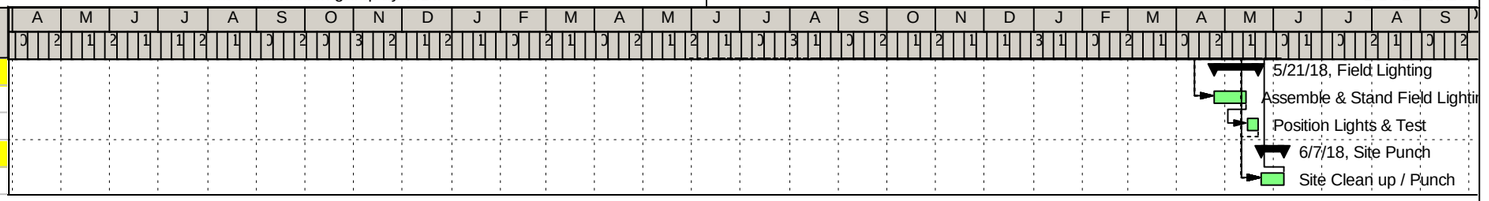
Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
AF-TE-1010	Rebar Footing	2	5/1/17	5/2/17
AF-TE-1020	Pour Footing	1	5/3/17	5/3/17
AF-TE-1030	Strip Footing	1	5/4/17	5/4/17
AF-TE-1040	CMU Walls	5	5/5/17	5/11/17
AF-TE-1050	Base / Vapor Barrier	2	5/12/17	5/15/17
AF-TE-1060	Rebar Slab on Grade	2	5/16/17	5/17/17
AF-TE-1070	Pour Slab on Grade / Equipment Pads	1	5/18/17	5/18/17
AF-TE-1080	Cure Slab on Grade	7	5/19/17	5/25/17
AF-TE-1090	Install Gates	2	5/26/17	5/30/17
Site Work around Bldg C / Visiting Bleachers		63	8/18/17	11/16/17
AF-SC-1000	Place Fence Posts	5	8/18/17	8/24/17
AF-SC-1010	Install Site U/G Lighting Rough	10	8/18/17	8/31/17
AF-SC-1020	Place Flag Poles	5	8/18/17	8/24/17
AF-SC-1030	Drill / Rebar / Place Fiedl Lighting Pole Foun	10	9/1/17	9/15/17
AF-SC-1040	Fine Grade / Agg. Base for Site Concrete	5	9/18/17	9/22/17
AF-SC-1050	Form / Rebar / Pour Site Concrete	10	9/25/17	10/6/17
AF-SC-1060	Install Irrigation	10	10/9/17	10/20/17
AF-SC-1070	Install Site Lighting	5	10/9/17	10/13/17
AF-SC-1080	Install Landscaping	10	10/23/17	11/3/17
AF-SC-1090	Install Fence / Gates	8	11/6/17	11/16/17
Parking Lot		61	6/19/17	9/13/17
AF-PL-1000	Install Storm Drain	8	6/19/17	6/28/17
AF-PL-1010	Install Water Line	5	6/19/17	6/23/17
AF-PL-1020	Install Site U/G Lighting Rough	8	6/29/17	7/11/17
AF-PL-1030	Irrigation Sleeves	3	6/29/17	7/3/17
AF-PL-1040	Form / Rebar / Pour Curbs	15	7/12/17	8/1/17
AF-PL-1050	Drill / Rebar / Place Light Pole Foundations	10	7/12/17	7/25/17
AF-PL-1060	Form / Rebar / Pour Sidewalks	8	8/2/17	8/11/17
AF-PL-1070	Fine Grade / Place Agg. Base	5	8/14/17	8/18/17
AF-PL-1080	Asphalt Paving	2	8/21/17	8/22/17
AF-PL-1090	Cure Asphalt	10	8/23/17	9/1/17
AF-PL-1100	Install Site Lighting	5	8/23/17	8/29/17
AF-PL-1110	Install Irrigation	10	8/23/17	9/6/17
AF-PL-1120	Landscaping	10	8/30/17	9/13/17
AF-PL-1130	Stripe Parking Lot	3	9/5/17	9/7/17
Road North of Parking Lot		35	7/26/17	9/13/17
AF-RN-1000	Form / Rebar / Pour Roundabout Curbs	5	7/26/17	8/1/17
AF-RN-1010	Form / Rebar / Pour Outside Curbs	20	8/2/17	8/29/17
AF-RN-1020	Form / Rebar / Pour Concrete at Roundabo	4	8/2/17	8/7/17
AF-RN-1030	Fine Grade / Place Base for Asphalt	8	8/30/17	9/11/17
AF-RN-1040	Aspalt Paving	2	9/12/17	9/13/17
Landscape Areas - Northwest		159	10/6/17	5/23/18
AF-SNW-1000	Install Site U/G Lighting Rough	10	10/6/17	10/19/17
AF-SNW-1010	Drill / Rebar / Place Field Lighting Pole Foun	10	10/13/17	10/26/17
AF-SNW-1020	Fine Grade / Agg. Base for Site Concrete	5	3/22/18	3/28/18
AF-SNW-1030	Form / Rebar / Pour Site Concrete	10	3/29/18	4/11/18
AF-SNW-1040	Install Irrigation	15	4/12/18	5/2/18
AF-SNW-1050	Install Site Lighting	5	4/12/18	4/18/18
AF-SNW-1060	Install Landscaping	20	4/19/18	5/16/18
AF-SNW-1070	Install Remaining Fence & Gate	15	5/3/18	5/23/18



Actual Work | Critical Remaining Work | Summary
Remaining Work | Milestone

Activity ID	Activity Name	Original Duration	Start	Finish
Field Lighting		20	4/24/18	5/21/18
AF-4260	Assemble & Stand Field Lighting	15	4/24/18	5/14/18
AF-4270	Position Lights & Test	5	5/15/18	5/21/18
Site Punch		10	5/24/18	6/7/18
AF-4230	Site Clean up / Punch	10	5/24/18	6/7/18



Appendix G: Construction Activities, Materials Used, and Associated Pollutants

Table G.a POLLUTANTS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

General Work Activity/ Products With Potential Stormwater Pollutants	Specific Work Activity/Products With Potential Stormwater Pollutants	Pollutant Categories
Adhesives	• Adhesives, glues, resins, epoxy synthetics, PVC cement • Caulks, sealers, putty, sealing agents and • Coal tars (naphtha, pitch)	Oil and Grease, Synthetic Organics[1]
Asphalt paving/curbs	• Hot and cold mix asphalt	Oil and Grease
Cleaners	• Polishes (metal, ceramic, tile) • Etching agents • Cleaners, ammonia, lye, caustic sodas, bleaching agents and chromate salts	Metals, Synthetic Organics
Concrete / Masonry	• Cement and brick dust • Colored chalks • Concrete curing compounds • Glazing compounds • Surfaces cleaners • Saw cut slurries • Tile cutting	Metals, Synthetic Organics
Drywall	• Saw-cutting drywall	Metals
Framing/Carpentry	• Sawdust, particle board dust, and treated woods • Saw cut slurries	Metals, Synthetic Organics
Heating, Ventilation, Air Conditioning	• Demolition or construction of air condition and heating systems	Metals, Synthetic Organics
Insulation	• Demolition or construction involving insulation, venting systems	Metals, Synthetic Organics
Liquid waste	• Wash waters • Irrigation line testing/flushing	Metals, Synthetic Organics
Painting	• Paint thinners, acetone, methyl ethyl ketone, stripper paints, lacquers, varnish, enamels, turpentine, gum spirit, solvents, dyes, stripping pigments and sanding	Metals, Synthetic Organics
Planting / Vegetation Management	• Vegetation control (pesticides/herbicides) • Planting • Plant maintenance • Vegetation removal	Nutrients, Metals, Synthetic Organics
Plumbing	• Solder (lead, tin), flux (zinc chloride), pipe fitting • Galvanized metal in nails, fences, and electric wiring	Metals, Synthetic Organics
Pools/fountains	• Chlorinated water	Synthetic Organics
Removal of existing structures	• Demolition of asphalt, concrete, masonry, framing, roofing, metal structures.	Metals, Oil and Grease, Synthetic Organics
Roofing	• Flashing • Saw cut slurries (tile cutting) • Shingle scrap and debris	Metals, Oil and Grease, Synthetic Organics
Sanitary waste	• Portable toilets • Disturbance of existing sewer lines.	Nutrients

Table G.a POLLUTANTS ASSOCIATED WITH CONSTRUCTION ACTIVITIES

General Work Activity/ Products With Potential Stormwater Pollutants	Specific Work Activity/Products With Potential Stormwater Pollutants	Pollutant Categories
Soil preparation/amendments	• Use of soil additives/amendments	Nutrients
Solid waste	• Litter, trash and debris • Vegetation	Gross Pollutants
Utility line testing and flushing	• Hydrostatic test water • Pipe flushing	Synthetic Organics
Vehicle and equipment use	• Equipment operation • Equipment maintenance • Equipment washing • Equipment fueling	Oil and Grease

[1] Synthetic Organics are defined in Table 1.2 of the CASQA *Stormwater BMP Handbook Portal: Construction* as adhesives, cleaners, sealants, solvents, etc. These are generally categorized as VOCs or SVOCs.

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Paving	Hot Asphalt	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
	Asphalt Emulsion				
	Liquid Asphalt (tack coat)				
	Cold Mix				
	Crumb Rubber	Yes – Black, solid material	Visually Observable - No Testing Required		
	Asphalt Concrete (Any Type)	Yes - Rainbow Surface or Brown Suspension	Visually Observable - No Testing Required		
Cleaning	Acids	No	**pH** Acidity Anions (acetic acid, phosphoric acid, sulfuric acid, nitric acid, hydrogen chloride)	pH Meter Acidity Test Kit	EPA 150.1 (pH) SM 2310B (Acidity) EPA 300.0 (Anion)
	Bleaches	No	Residual Chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
	Detergents	Yes - Foam	Visually Observable - No Testing Required		
	TSP	No	Phosphate	Phosphate	EPA 365.3 (Phosphate)
	Solvents	No	**VOC**	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
Concrete & Masonry	Portland Cement (PCC)	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Masonry	No	**pH**	pH Meter	EPA 150.1 (pH)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	products		Alkalinity	Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
	Sealant (Methyl Methacrylate - MMA)	No	Methyl Methacrylate	None	EPA 625 (SVOC)
			Cobalt		EPA 200.8 (Metal)
			Zinc		
	Incinerator Bottom Ash Bottom Ash Steel Slag Foundry Sand Fly Ash Municipal Solid Waste	No	**Aluminum Calcium Vanadium Zinc**	Calcium Test	EPA 200.8 (Metal) EPA 200.7 (Calcium)
	Mortar	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Concrete Rinse Water	Yes - Milky Liquid	Visually Observable - No Testing Required		
	Non-Pigmented Curing Compounds	No	Acidity	pH Meter Alkalinity or Acidity Test Kit	SM 2310B (Acidity)
			Alkalinity		SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
Landscaping	Aluminum Sulfate	No	Aluminum	TDS Meter Sulfate	EPA 200.8 (Metal)
			TDS		EPA 160.1 (TDS)
			Sulfate		EPA 300.0 (Sulfate)
	Sulfur-Elemental	No	Sulfate	Sulfate	EPA 300.0 (Sulfate)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Fertilizers-Inorganic [4]	No	Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Phosphate	Phosphate	EPA 365.3 (Phosphate)
			Organic Nitrogen	None	EPA 351.3 (TKN)
			Potassium	None	EPA 200.8 (Metal)
	Fertilizers-Organic	No	TOC	Nitrate	EPA 415.1 (TOC)
			Nitrate		EPA 300.0 (Nitrate)
			Organic Nitrogen		EPA 351.3 (TKN)
			COD		EPA 410.4 (COD)
	Natural Earth (Sand, Gravel, and Topsoil)	Yes - Cloudiness and turbidity	Visually Observable - No Testing Required		
	Herbicide	No	Herbicide	None	Check lab for specific herbicide or pesticide
	Pesticide		Pesticide		
	Lime		Alkalinity	pH Meter Alkalinity or Acidity Test Kit	SM 2320 (Alkalinity)
			pH		EPA 150.1 (pH)
Painting	Paint	Yes	Visually Observable - No Testing Required		
	Paint Strippers	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			SVOC	None	EPA 625 (SVOC)
	Resins	No	COD	None	EPA 410.4 (COD)
			SVOC		EPA 625 (SVOC)
	Sealants	No	COD	None	EPA 410.4 (COD)
	Solvents	No	COD	None	EPA 410.4 (COD)

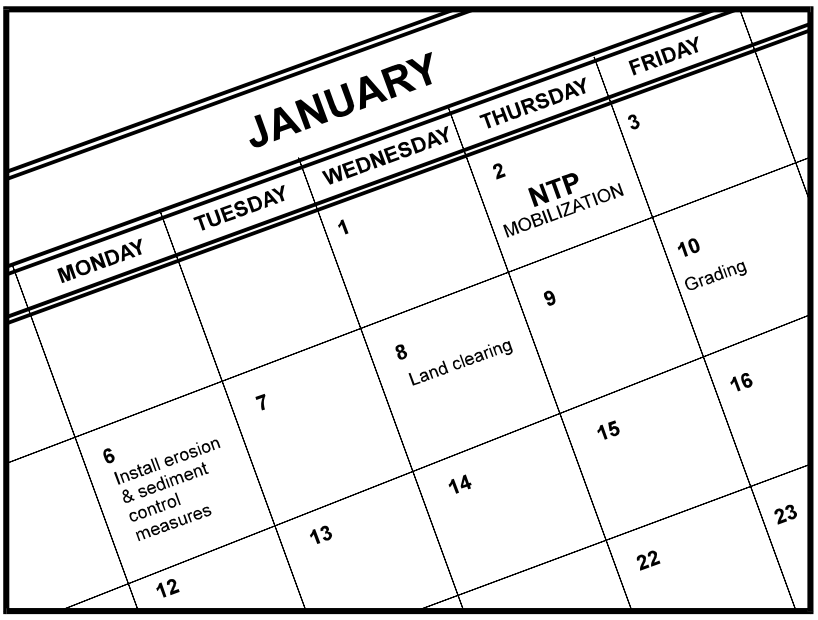
Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Lacquers, Varnish, Enamels, and Turpentine	No	COD	None	EPA 410.4 (COD)
			VOC		EPA 601/602 or EPA 624 (VOC)
			SVOC		EPA 625 (SVOC)
	Thinners	No	VOC	None	EPA 601/602 or EPA 624 (VOC)
			COD		EPA 410.4 (COD)
Portable Toilets	Portable Toilet Waste	Yes	Visually Observable - No Testing Required		
Contaminated Soil [5]	Aerially Deposited Lead[3]	No	Lead	None	EPA 200.8 (Metal)
	Petroleum	Yes – Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
	Other	No	Contaminant Specific	Contaminant Specific	Contaminant Specific
Line Flushing Products	Chlorinated Water	No	Total chlorine	Chlorine	SM 4500-CL G (Res. Chlorine)
Adhesives	Adhesives	No	COD	None	EPA 410.4 (COD)
			Phenols	Phenol	EPA 420.1 (Phenol)
			SVOC	None	EPA 625 (SVOC)
Dust Palliative Products	Salts (Magnesium Chloride, Calcium	No	Chloride	Chloride	EPA 300.0 (Chloride)
			TDS	TDS Meter	EPA 160.1 (TDS)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
	Chloride, and Natural Brines)		Cations (Sodium, Magnesium, Calcium)	None	EPA 200.7 (Cations)
Vehicle	Antifreeze and Other Vehicle Fluids	Yes - Colored Liquid	Visually Observable - No Testing Required		
	Batteries	No	Sulfuric Acid	None	EPA 300.0 (Sulfate)
			Lead	None	EPA 200.8 (Metal)
			pH	pH Meter Alkalinity or Acidity Test Kit	EPA 150.1 (pH)
	Fuels, Oils, Lubricants	Yes - Rainbow Surface Sheen and Odor	Visually Observable - No Testing Required		
Soil Amendment/ Stabilization Products	Polymer/Copolymer [6,7]	No	Organic Nitrogen	None	EPA 351.3 (TKN)
			BOD	None	EPA 405.1 (BOD)
			COD	None	EPA 410.4 (COD)
			DOC	None	EPA 415.1 (DOC)
			Nitrate	Nitrate	EPA 300.0 (Nitrate)
			Sulfate	Sulfate	EPA 300.0 (Sulfate)
			Nickel	None	EPA 200.8 (Metal)
	Straw/Mulch	Yes - Solids	Visually Observable - No Testing Required		
	Lignin Sulfonate	No	Alkalinity	Alkalinity	SM 2320 (Alkalinity)
			TDS	TDS Meter	EPA 160.1 (TDS)
	Psyllium	No	COD	None	EPA 410.4 (COD)
			TOC		EPA 415.1 (TOC)
	Guar/Plant	No	COD	None	EPA 410.4 (COD)

Activity	Construction Site Material	Visually Observable?	Pollutant Indicators [2]	Suggested Analyses Field [3]	Laboratory
Land Disturbance –	Sediment	Yes	Turbidity		

Appendix H: CASQA Stormwater BMP Handbook Portal: Construction Fact Sheets

Scheduling EC-1



Objectives

EC	Erosion Control	☑
SE	Sediment Control	☒
TR	Tracking Control	☒
WE	Wind Erosion Control	☒
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Scheduling is the development of a written plan that includes sequencing of construction activities and the implementation of BMPs such as erosion control and sediment control while taking local climate (rainfall, wind, etc.) into consideration. The purpose is to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking, and to perform the construction activities and control practices in accordance with the planned schedule.

Suitable Applications

Proper sequencing of construction activities to reduce erosion potential should be incorporated into the schedule of every construction project especially during rainy season. Use of other, more costly yet less effective, erosion and sediment control BMPs may often be reduced through proper construction sequencing.

Limitations

- Environmental constraints such as nesting season prohibitions reduce the full capabilities of this BMP.

Implementation

- Avoid rainy periods. Schedule major grading operations during dry months when practical. Allow enough time before rainfall begins to stabilize the soil with vegetation or physical means or to install sediment trapping devices.
- Plan the project and develop a schedule showing each phase of construction. Clearly show how the rainy season relates to soil

disturbing and re-stabilization activities. Incorporate the construction schedule into the SWPPP.

- Include on the schedule, details on the rainy season implementation and deployment of:
  - Erosion control BMPs
  - Sediment control BMPs
  - Tracking control BMPs
  - Wind erosion control BMPs
  - Non-stormwater BMPs
  - Waste management and materials pollution control BMPs
- Include dates for activities that may require non-stormwater discharges such as dewatering, sawcutting, grinding, drilling, boring, crushing, blasting, painting, hydro-demolition, mortar mixing, pavement cleaning, etc.
- Work out the sequencing and timetable for the start and completion of each item such as site clearing and grubbing, grading, excavation, paving, foundation pouring utilities installation, etc., to minimize the active construction area during the rainy season.
  - Sequence trenching activities so that most open portions are closed before new trenching begins.
  - Incorporate staged seeding and re-vegetation of graded slopes as work progresses.
  - Schedule establishment of permanent vegetation during appropriate planting time for specified vegetation.
- Non-active areas should be stabilized as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.
- Monitor the weather forecast for rainfall.
- When rainfall is predicted, adjust the construction schedule to allow the implementation of soil stabilization and sediment treatment controls on all disturbed areas prior to the onset of rain.
- Be prepared year round to deploy erosion control and sediment control BMPs. Erosion may be caused during dry seasons by un-seasonal rainfall, wind, and vehicle tracking. Keep the site stabilized year round, and retain and maintain rainy season sediment trapping devices in operational condition.
- Apply permanent erosion control to areas deemed substantially complete during the project's defined seeding window.

Costs

Construction scheduling to reduce erosion may increase other construction costs due to reduced economies of scale in performing site grading. The cost effectiveness of scheduling techniques should be compared with the other less effective erosion and sedimentation controls to achieve a cost effective balance.

Inspection and Maintenance

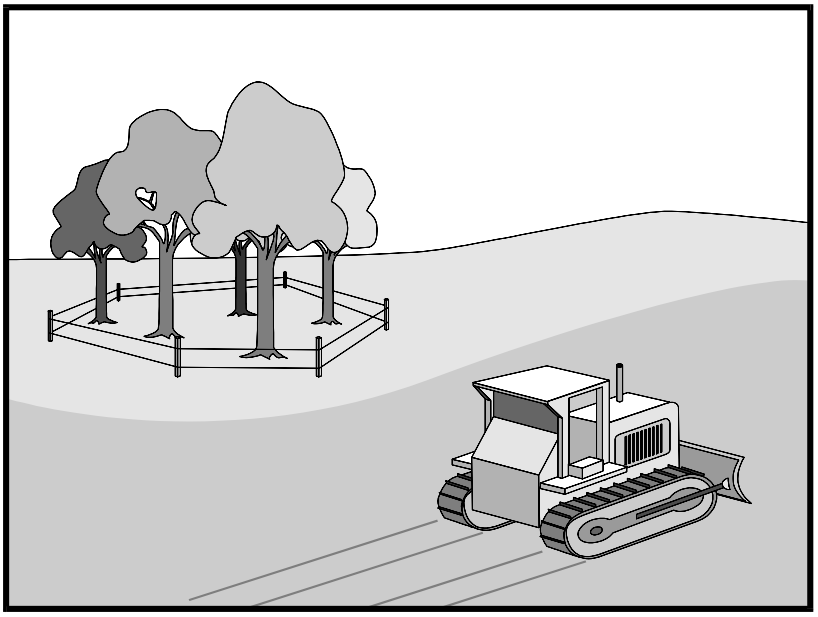
- Verify that work is progressing in accordance with the schedule. If progress deviates, take corrective actions.
- Amend the schedule when changes are warranted.
- Amend the schedule prior to the rainy season to show updated information on the deployment and implementation of construction site BMPs.

References

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities Developing Pollution Prevention Plans and Best Management Practices (EPA 832-R-92-005), U.S. Environmental Protection Agency, Office of Water, September 1992.

Preservation Of Existing Vegetation EC-2



Objectives

EC	Erosion Control	☑
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs, and grasses that protect soil from erosion.

Suitable Applications

Preservation of existing vegetation is suitable for use on most projects. Large project sites often provide the greatest opportunity for use of this BMP. Suitable applications include the following:

- Areas within the site where no construction activity occurs, or occurs at a later date. This BMP is especially suitable to multi year projects where grading can be phased.
- Areas where natural vegetation exists and is designated for preservation. Such areas often include steep slopes, watercourse, and building sites in wooded areas.
- Areas where local, state, and federal government require preservation, such as vernal pools, wetlands, marshes, certain oak trees, etc. These areas are usually designated on the plans, or in the specifications, permits, or environmental documents.
- Where vegetation designated for ultimate removal can be temporarily preserved and be utilized for erosion control and sediment control.

EC-2 Preservation Of Existing Vegetation

Limitations

- Requires forward planning by the owner/developer, contractor, and design staff.
- Limited opportunities for use when project plans do not incorporate existing vegetation into the site design.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactory for the planned development.

Implementation

The best way to prevent erosion is to not disturb the land. In order to reduce the impacts of new development and redevelopment, projects may be designed to avoid disturbing land in sensitive areas of the site (e.g., natural watercourses, steep slopes), and to incorporate unique or desirable existing vegetation into the site's landscaping plan. Clearly marking and leaving a buffer area around these unique areas during construction will help to preserve these areas as well as take advantage of natural erosion prevention and sediment trapping.

Existing vegetation to be preserved on the site must be protected from mechanical and other injury while the land is being developed. The purpose of protecting existing vegetation is to ensure the survival of desirable vegetation for shade, beautification, and erosion control. Mature vegetation has extensive root systems that help to hold soil in place, thus reducing erosion. In addition, vegetation helps keep soil from drying rapidly and becoming susceptible to erosion. To effectively save existing vegetation, no disturbances of any kind should be allowed within a defined area around the vegetation. For trees, no construction activity should occur within the drip line of the tree.

Timing

- Provide for preservation of existing vegetation prior to the commencement of clearing and grubbing operations or other soil disturbing activities in areas where no construction activity is planned or will occur at a later date.

Design and Layout

- Mark areas to be preserved with temporary fencing. Include sufficient setback to protect roots.
  - Orange colored plastic mesh fencing works well.
  - Use appropriate fence posts and adequate post spacing and depth to completely support the fence in an upright position.
- Locate temporary roadways, stockpiles, and layout areas to avoid stands of trees, shrubs, and grass.
- Consider the impact of grade changes to existing vegetation and the root zone.
- Maintain existing irrigation systems where feasible. Temporary irrigation may be required.
- Instruct employees and subcontractors to honor protective devices. Prohibit heavy equipment, vehicular traffic, or storage of construction materials within the protected area.

Costs

There is little cost associated with preserving existing vegetation if properly planned during the project design, and these costs may be offset by aesthetic benefits that enhance property values. During construction, the cost for preserving existing vegetation will likely be less than the cost of applying erosion and sediment controls to the disturbed area. Replacing vegetation inadvertently destroyed during construction can be extremely expensive, sometimes in excess of $10,000 per tree.

Inspection and Maintenance

During construction, the limits of disturbance should remain clearly marked at all times. Irrigation or maintenance of existing vegetation should be described in the landscaping plan. If damage to protected trees still occurs, maintenance guidelines described below should be followed:

- Verify that protective measures remain in place. Restore damaged protection measures immediately.
- Serious tree injuries shall be attended to by an arborist.
- Damage to the crown, trunk, or root system of a retained tree shall be repaired immediately.
- Trench as far from tree trunks as possible, usually outside of the tree drip line or canopy. Curve trenches around trees to avoid large roots or root concentrations. If roots are encountered, consider tunneling under them. When trenching or tunneling near or under trees to be retained, place tunnels at least 18 in. below the ground surface, and not below the tree center to minimize impact on the roots.
- Do not leave tree roots exposed to air. Cover exposed roots with soil as soon as possible. If soil covering is not practical, protect exposed roots with wet burlap or peat moss until the tunnel or trench is ready for backfill.
- Cleanly remove the ends of damaged roots with a smooth cut.
- Fill trenches and tunnels as soon as possible. Careful filling and tamping will eliminate air spaces in the soil, which can damage roots.
- If bark damage occurs, cut back all loosened bark into the undamaged area, with the cut tapered at the top and bottom and drainage provided at the base of the wood. Limit cutting the undamaged area as much as possible.
- Aerate soil that has been compacted over a trees root zone by punching holes 12 in. deep with an iron bar, and moving the bar back and forth until the soil is loosened. Place holes 18 in. apart throughout the area of compacted soil under the tree crown.
- Fertilization
  - Fertilize stressed or damaged broadleaf trees to aid recovery.
  - Fertilize trees in the late fall or early spring.

- Apply fertilizer to the soil over the feeder roots and in accordance with label instructions, but never closer than 3 ft to the trunk. Increase the fertilized area by one-fourth of the crown area for conifers that have extended root systems.

- Retain protective measures until all other construction activity is complete to avoid damage during site cleanup and stabilization.

References

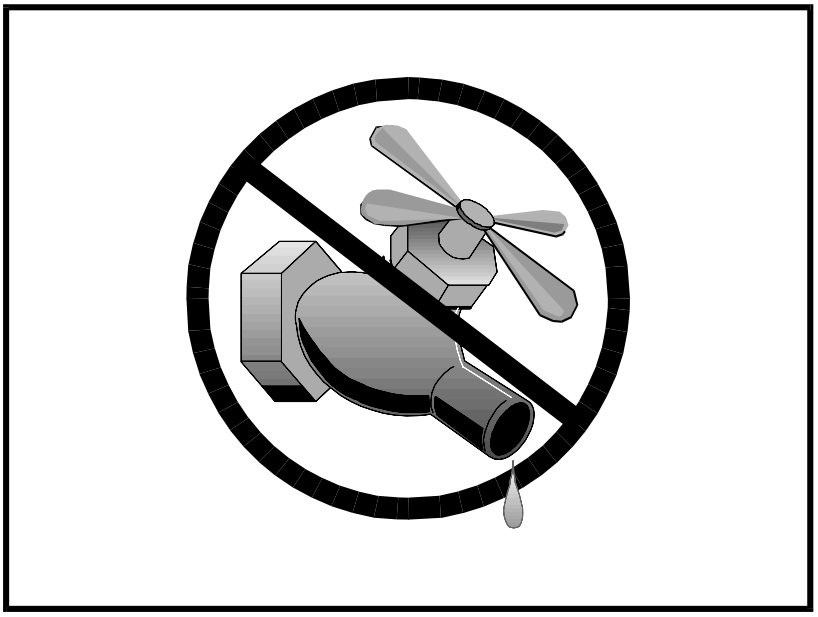
County of Sacramento Tree Preservation Ordinance, September 1981.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Water Quality Management Plan for The Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Water Conservation Practices NS-1



Objectives		
EC	Erosion Control	☒
SE	Sediment Control	☒
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ Primary Objective
☒ Secondary Objective

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Water conservation practices are activities that use water during the construction of a project in a manner that avoids causing erosion and the transport of pollutants offsite. These practices can reduce or eliminate non-stormwater discharges.

Suitable Applications

Water conservation practices are suitable for all construction sites where water is used, including piped water, metered water, trucked water, and water from a reservoir.

Limitations

- None identified.

Implementation

- Keep water equipment in good working condition.
- Stabilize water truck filling area.
- Repair water leaks promptly.
- Washing of vehicles and equipment on the construction site is discouraged.
- Avoid using water to clean construction areas. If water must be used for cleaning or surface preparation, surface should be swept and vacuumed first to remove dirt. This will minimize amount of water required.

- Direct construction water runoff to areas where it can soak into the ground or be collected and reused.
- Authorized non-stormwater discharges to the storm drain system, channels, or receiving waters are acceptable with the implementation of appropriate BMPs.
- Lock water tank valves to prevent unauthorized use.

Costs

The cost is small to none compared to the benefits of conserving water.

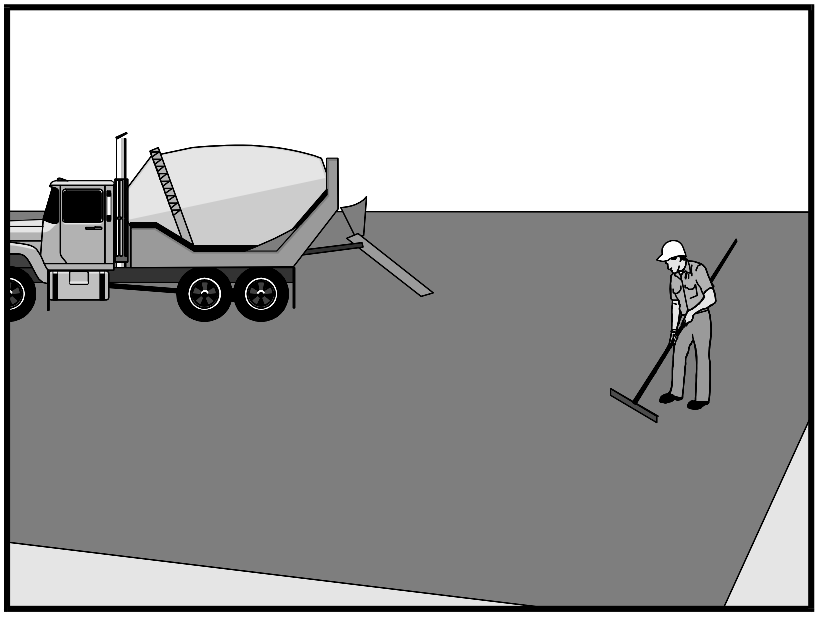
Inspection and Maintenance

- Inspect and verify that activity based BMPs are in place prior to the commencement of authorized non-stormwater discharges.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges are occuring.
- Repair water equipment as needed to prevent unintended discharges.
  - Water trucks
  - Water reservoirs (water buffalos)
  - Irrigation systems
  - Hydrant connections

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Paving and Grinding Operations NS-3



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☒

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants from paving operations, using measures to prevent runon and runoff pollution, properly disposing of wastes, and training employees and subcontractors.

Suitable Applications

These procedures are implemented where paving, surfacing, resurfacing, or sawcutting, may pollute stormwater runoff or discharge to the storm drain system or watercourses.

Limitations

- Finer solids are not effectively removed by filtration systems.
- Paving opportunities may be limited during wet weather.

Implementation

General

- Avoid paving during the wet season when feasible.
- Reschedule paving and grinding activities if rain is in the forecast.
- Train employees and sub-contractors in pollution prevention and reduction.
- Store materials away from drainage courses to prevent stormwater runon (see WM-1, Material Delivery and Storage).

- Protect drainage courses, particularly in areas with a grade, by employing BMPs to divert runoff or to trap and filter sediment.
- If paving involves an onsite mixing plant, follow the stormwater permitting requirements for industrial activities.
- Stockpile material removed from roadways away from drain inlets, drainage ditches, and watercourses, These materials should be stored consistent with WM-3, Stockpile Management.
- Disposal of PCC and AC waste should be in conformance with WM-8, Concrete Waste Management.

Saw Cutting, Grinding, and Pavement Removal

- Shovel or vacuum saw-cut slurry and remove from site. Cover or barricade storm drains during saw cutting to contain slurry.
- When paving involves AC, the following steps should be implemented to prevent the discharge of grinding residue, uncompacted or loose AC, tack coats, equipment cleaners, or unrelated paving materials:
  - AC grindings, pieces, or chunks used in embankments or shoulder backing must not be allowed to enter any storm drains or watercourses. Install silt fence until structure is stabilized or permanent controls are in place. Examples of temporary perimeter controls can be found in EC-9, Earth Dikes and Drainage Swales; SE-1, Silt Fence; or SE-5, Fiber Rolls.
  - Collect and remove all broken asphalt and recycle when practical. Old or spilled asphalt must be recycled or disposed.
  - Any AC chunks and pieces used in embankments must be placed above the water table and covered by at least 1 ft of material.
- Do not allow saw-cut slurry to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine, should not be allowed to flow across the pavement, and should not be left on the surface of the pavement. See also WM-8, Concrete Waste Management, and WM-10, Liquid Waste Management.
- Dig out activities should not be conducted in the rain.
- Collect dig out material by mechanical or manual methods. This material may be recycled for use as shoulder backing or base material.
- If dig out material cannot be recycled, transport the material back to an approved storage site.

Asphaltic Concrete Paving

- If paving involves asphaltic cement concrete, follow these steps:

- Do not allow sand or gravel placed over new asphalt to wash into storm drains, streets, or creeks. Vacuum or sweep loose sand and gravel and properly dispose of this waste by referring to WM-5, Solid Waste Management.

- Old asphalt must be disposed of properly. Collect and remove all broken asphalt from the site and recycle whenever possible.

Portland Cement Concrete Paving

- Do not wash sweepings from exposed aggregate concrete into a storm drain system. Collect and return to aggregate base stockpile or dispose of properly.

- Allow aggregate rinse to settle. Then, either allow rinse water to dry in a temporary pit as described in WM-8, Concrete Waste Management, or pump the water to the sanitary sewer if allowed by the local wastewater authority.

Sealing Operations

- During chip seal application and sweeping operations, petroleum or petroleum covered aggregate must not be allowed to enter any storm drain or water courses. Apply temporary perimeter controls until structure is stabilized.

- Drainage inlet structures and manholes should be covered with filter fabric during application of seal coat, tack coat, slurry seal, and fog seal.

- Seal coat, tack coat, slurry seal, or fog seal should not be applied if rainfall is predicted to occur during the application or curing period.

Paving Equipment

- Leaks and spills from paving equipment can contain toxic levels of heavy metals and oil and grease. Place drip pans or absorbent materials under paving equipment when not in use. Clean up spills with absorbent materials rather than burying. See NS-10, Vehicle and Equipment Maintenance, WM-4, Spill Prevention and Control, and WM-10, Liquid Waste Management.

- Substances used to coat asphalt transport trucks, and asphalt spreading equipment should not contain soap and should be non-foaming and non-toxic.

- Use only non-toxic substances to coat asphalt transport trucks and asphalt spreading equipment.

- Paving equipment parked onsite should be parked over plastic to prevent soil contamination.

- Clean asphalt coated equipment offsite whenever possible. When cleaning dry, hardened asphalt from equipment, manage hardened asphalt debris as described in WM-5, Solid Waste Management. Any cleaning onsite should follow NS-8, Vehicle and Equipment Cleaning.

Thermoplastic Striping

- Thermoplastic striper and pre-heater equipment shutoff valves should be inspected to ensure that they are working properly to prevent leaking thermoplastic from entering drain inlets, the stormwater drainage system, or watercourses.
- Pre-heaters should be filled carefully to prevent splashing or spilling of hot thermoplastic. Leave six inches of space at the top of the pre-heater container when filling thermoplastic to allow room for material to move when the vehicle is deadheaded.
- Do not pre-heat, transfer, or load thermoplastic near drain inlets or watercourses.
- Clean truck beds daily of loose debris and melted thermoplastic. When possible, recycle thermoplastic material.

Raised/Recessed Pavement Marker Application and Removal

- Do not transfer or load bituminous material near drain inlets, the stormwater drainage system, or watercourses.
- Melting tanks should be loaded with care and not filled to beyond six inches from the top to leave room for splashing when vehicle is deadheaded.
- When servicing or filling melting tanks, ensure all pressure is released before removing lids to avoid spills.
- On large-scale projects, use mechanical or manual methods to collect excess bituminous material from the roadway after removal of markers.

Costs

- All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep ample supplies of drip pans or absorbent materials onsite.
- Inspect and maintain machinery regularly to minimize leaks and drips.

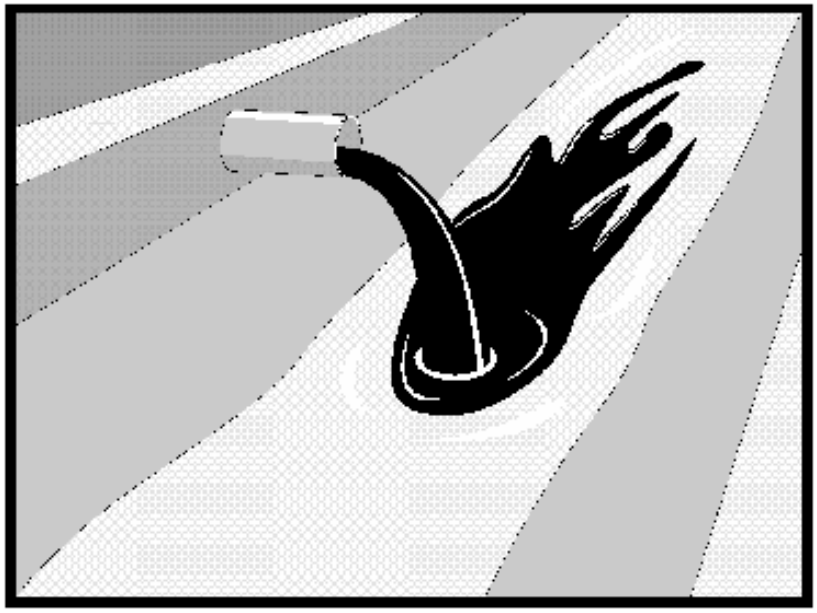
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Hot Mix Asphalt-Paving Handbook AC 150/5370-14, Appendix I, U.S. Army Corps of Engineers, July 1991.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Illicit Connection / Discharge NS-6



Description and Purpose

Procedures and practices designed for construction contractors to recognize illicit connections or illegally dumped or discharged materials on a construction site and report incidents.

Suitable Applications

This best management practice (BMP) applies to all construction projects. Illicit connection/discharge and reporting is applicable anytime an illicit connection or discharge is discovered or illegally dumped material is found on the construction site.

Limitations

Illicit connections and illegal discharges or dumping, for the purposes of this BMP, refer to discharges and dumping caused by parties other than the contractor. If pre-existing hazardous materials or wastes are known to exist onsite, they should be identified in the SWPPP and handled as set forth in the SWPPP.

Implementation

Planning

- Review the SWPPP. Pre-existing areas of contamination should be identified and documented in the SWPPP.
- Inspect site before beginning the job for evidence of illicit connections, illegal dumping or discharges. Document any pre-existing conditions and notify the owner.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Inspect site regularly during project execution for evidence of illicit connections, illegal dumping or discharges.
- Observe site perimeter for evidence for potential of illicitly discharged or illegally dumped material, which may enter the job site.

Identification of Illicit Connections and Illegal Dumping or Discharges

- **General –** unlabeled and unidentifiable material should be treated as hazardous.
- **Solids** - Look for debris, or rubbish piles. Solid waste dumping often occurs on roadways with light traffic loads or in areas not easily visible from the traveled way.
- **Liquids** - signs of illegal liquid dumping or discharge can include:
  - Visible signs of staining or unusual colors to the pavement or surrounding adjacent soils
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Abnormal water flow during the dry weather season
- **Urban Areas** - Evidence of illicit connections or illegal discharges is typically detected at storm drain outfall locations or at manholes. Signs of an illicit connection or illegal discharge can include:
  - Abnormal water flow during the dry weather season
  - Unusual flows in sub drain systems used for dewatering
  - Pungent odors coming from the drainage systems
  - Discoloration or oily substances in the water or stains and residues detained within ditches, channels or drain boxes
  - Excessive sediment deposits, particularly adjacent to or near active offsite construction projects
- **Rural Areas** - Illicit connections or illegal discharges involving irrigation drainage ditches are detected by visual inspections. Signs of an illicit discharge can include:
  - Abnormal water flow during the non-irrigation season
  - Non-standard junction structures
  - Broken concrete or other disturbances at or near junction structures

Reporting

Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery. For illicit connections or discharges to the storm drain system, notify the local stormwater management agency. For illegal dumping, notify the local law enforcement agency.

Cleanup and Removal

The responsibility for cleanup and removal of illicit or illegal dumping or discharges will vary by location. Contact the local stormwater management agency for further information.

Costs

Costs to look for and report illicit connections and illegal discharges and dumping are low. The best way to avoid costs associated with illicit connections and illegal discharges and dumping is to keep the project perimeters secure to prevent access to the site, to observe the site for vehicles that should not be there, and to document any waste or hazardous materials that exist onsite before taking possession of the site.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect the site regularly to check for any illegal dumping or discharge.
- Prohibit employees and subcontractors from disposing of non-job related debris or materials at the construction site.
- Notify the owner of any illicit connections and illegal dumping or discharge incidents at the time of discovery.

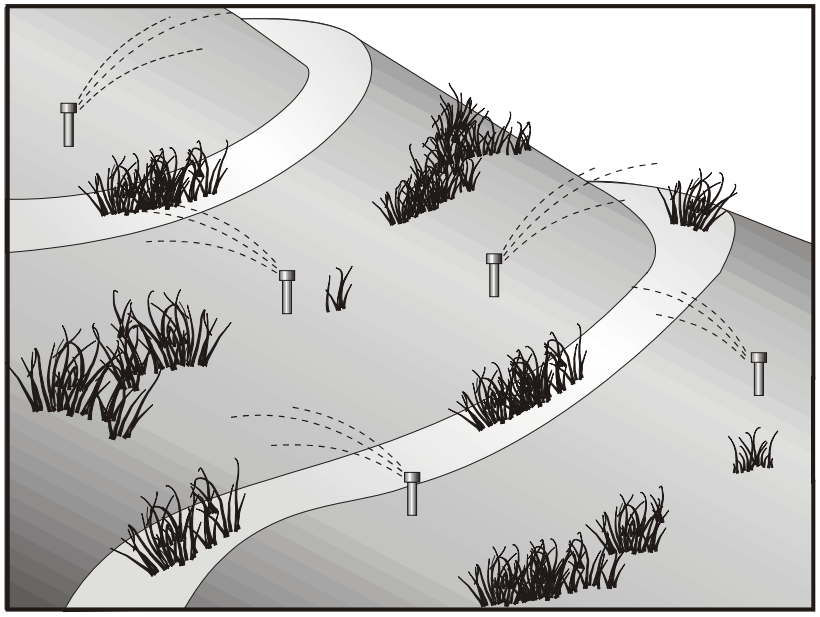
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Potable Water/Irrigation NS-7



Description and Purpose

Potable Water/Irrigation consists of practices and procedures to manage the discharge of potential pollutants generated during discharges from irrigation water lines, landscape irrigation, lawn or garden watering, planned and unplanned discharges from potable water sources, water line flushing, and hydrant flushing.

Suitable Applications

Implement this BMP whenever potable water or irrigation water discharges occur at or enter a construction site.

Limitations

None identified.

Implementation

- Direct water from offsite sources around or through a construction site, where feasible, in a way that minimizes contact with the construction site.
- Discharges from water line flushing should be reused for landscaping purposes where feasible.
- Shut off the water source to broken lines, sprinklers, or valves as soon as possible to prevent excess water flow.
- Protect downstream stormwater drainage systems and watercourses from water pumped or bailed from trenches excavated to repair water lines.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

- Inspect irrigated areas within the construction limits for excess watering. Adjust watering times and schedules to ensure that the appropriate amount of water is being used and to minimize runoff. Consider factors such as soil structure, grade, time of year, and type of plant material in determining the proper amounts of water for a specific area.

Costs

Cost to manage potable water and irrigation are low and generally considered to be a normal part of related activities.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Repair broken water lines as soon as possible.
- Inspect irrigated areas regularly for signs of erosion and/or discharge.

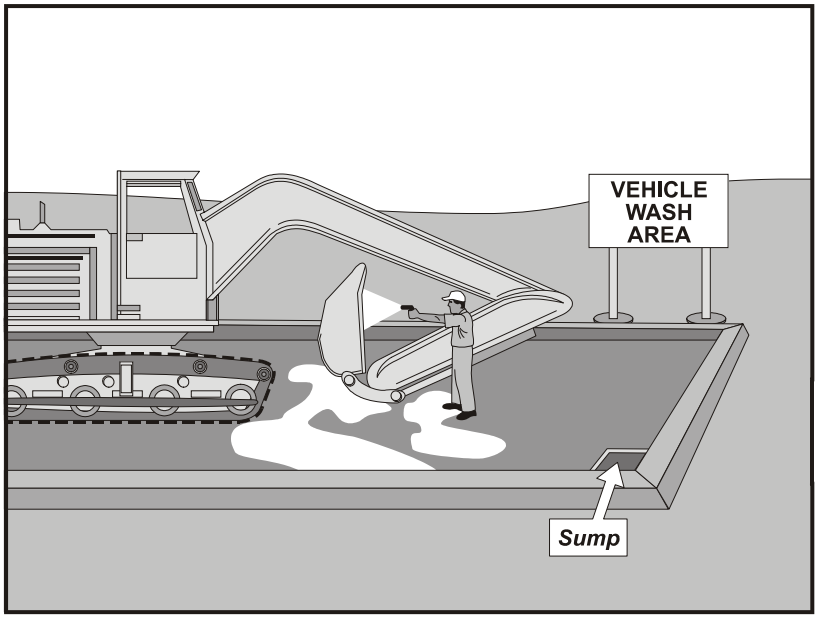
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle and Equipment Cleaning NS-8



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Vehicle and equipment cleaning procedures and practices eliminate or reduce the discharge of pollutants to stormwater from vehicle and equipment cleaning operations. Procedures and practices include but are not limited to: using offsite facilities; washing in designated, contained areas only; eliminating discharges to the storm drain by infiltrating the wash water; and training employees and subcontractors in proper cleaning procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment cleaning is performed.

Limitations

Even phosphate-free, biodegradable soaps have been shown to be toxic to fish before the soap degrades. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Implementation

Other options to washing equipment onsite include contracting with either an offsite or mobile commercial washing business. These businesses may be better equipped to handle and dispose of the wash waters properly. Performing this work offsite can also be economical by eliminating the need for a separate washing operation onsite.

If washing operations are to take place onsite, then:

- Use phosphate-free, biodegradable soaps.
- Educate employees and subcontractors on pollution prevention measures.
- Do not permit steam cleaning onsite. Steam cleaning can generate significant pollutant concentrates.
- Cleaning of vehicles and equipment with soap, solvents or steam should not occur on the project site unless resulting wastes are fully contained and disposed of. Resulting wastes should not be discharged or buried, and must be captured and recycled or disposed according to the requirements of WM-10, Liquid Waste Management or WM-6, Hazardous Waste Management, depending on the waste characteristics. Minimize use of solvents. Use of diesel for vehicle and equipment cleaning is prohibited.
- All vehicles and equipment that regularly enter and leave the construction site must be cleaned offsite.
- When vehicle and equipment washing and cleaning must occur onsite, and the operation cannot be located within a structure or building equipped with appropriate disposal facilities, the outside cleaning area should have the following characteristics:
  - Located away from storm drain inlets, drainage facilities, or watercourses
  - Paved with concrete or asphalt and bermed to contain wash waters and to prevent runon and runoff
  - Configured with a sump to allow collection and disposal of wash water
  - No discharge of wash waters to storm drains or watercourses
  - Used only when necessary
- When cleaning vehicles and equipment with water:
  - Use as little water as possible. High-pressure sprayers may use less water than a hose and should be considered
  - Use positive shutoff valve to minimize water usage
  - Facility wash racks should discharge to a sanitary sewer, recycle system or other approved discharge system and must not discharge to the storm drainage system, watercourses, or to groundwater

Costs

Cleaning vehicles and equipment at an offsite facility may reduce overall costs for vehicle and equipment cleaning by eliminating the need to provide similar services onsite. When onsite cleaning is needed, the cost to establish appropriate facilities is relatively low on larger, long-duration projects, and moderate to high on small, short-duration projects.

Inspection and Maintenance

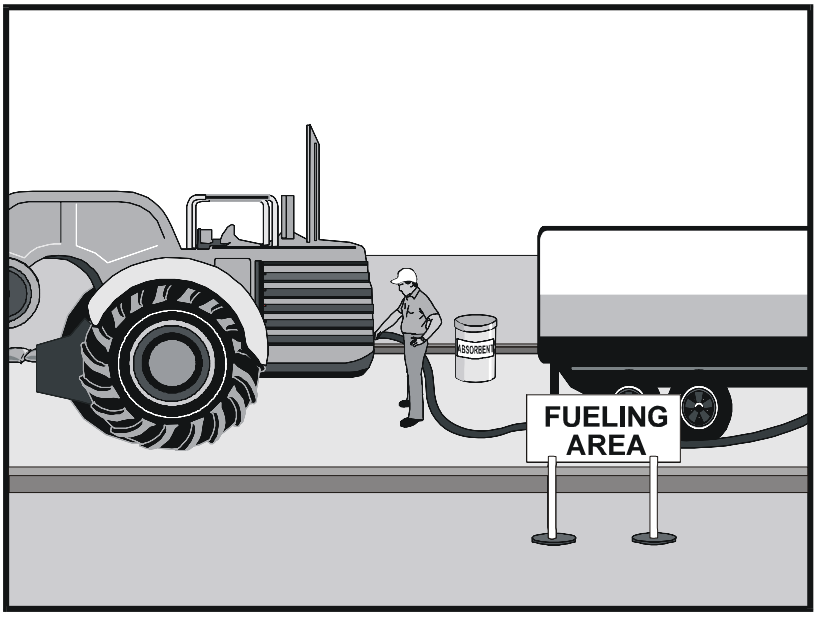
- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Inspection and maintenance is minimal, although some berm repair may be necessary.
- Monitor employees and subcontractors throughout the duration of the construction project to ensure appropriate practices are being implemented.
- Inspect sump regularly and remove liquids and sediment as needed.
- Prohibit employees and subcontractors from washing personal vehicles and equipment on the construction site.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Swisher, R.D. Surfactant Biodegradation, Marcel Decker Corporation, 1987.

Vehicle and Equipment Fueling NS-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Vehicle equipment fueling procedures and practices are designed to prevent fuel spills and leaks, and reduce or eliminate contamination of stormwater. This can be accomplished by using offsite facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors in proper fueling procedures.

Suitable Applications

These procedures are suitable on all construction sites where vehicle and equipment fueling takes place.

Limitations

Onsite vehicle and equipment fueling should only be used where it is impractical to send vehicles and equipment offsite for fueling. Sending vehicles and equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/ Exit.

Implementation

- Use offsite fueling stations as much as possible. These businesses are better equipped to handle fuel and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate fueling area at a site.
- Discourage "topping-off" of fuel tanks.

- Absorbent spill cleanup materials and spill kits should be available in fueling areas and on fueling trucks, and should be disposed of properly after use.
- Drip pans or absorbent pads should be used during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
- Use absorbent materials on small spills. Do not hose down or bury the spill. Remove the adsorbent materials promptly and dispose of properly.
- Avoid mobile fueling of mobile construction equipment around the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and large excavators, most vehicles should be able to travel to a designated area with little lost time.
- Train employees and subcontractors in proper fueling and cleanup procedures.
- When fueling must take place onsite, designate an area away from drainage courses to be used. Fueling areas should be identified in the SWPPP.
- Dedicated fueling areas should be protected from stormwater runon and runoff, and should be located at least 50 ft away from downstream drainage facilities and watercourses. Fueling must be performed on level-grade areas.
- Protect fueling areas with berms and dikes to prevent runon, runoff, and to contain spills.
- Nozzles used in vehicle and equipment fueling should be equipped with an automatic shutoff to control drips. Fueling operations should not be left unattended.
- Use vapor recovery nozzles to help control drips as well as air pollution where required by Air Quality Management Districts (AQMD).
- Federal, state, and local requirements should be observed for any stationary above ground storage tanks.

Costs

- All of the above measures are low cost except for the capital costs of above ground tanks that meet all local environmental, zoning, and fire codes.

Inspection and Maintenance

- Vehicles and equipment should be inspected each day of use for leaks. Leaks should be repaired immediately or problem vehicles or equipment should be removed from the project site.
- Keep ample supplies of spill cleanup materials onsite.
- Immediately clean up spills and properly dispose of contaminated soil and cleanup materials.

References

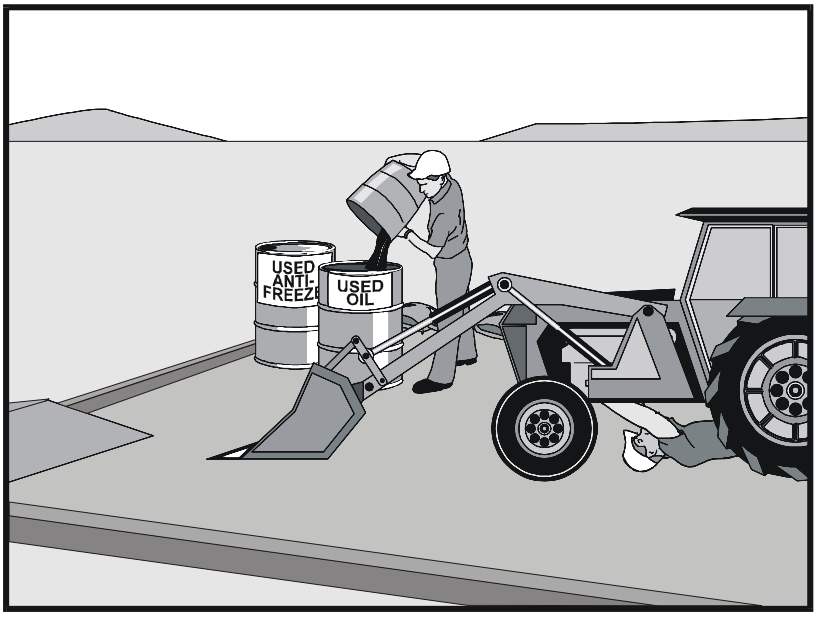
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Vehicle & Equipment Maintenance NS-10



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the contamination of stormwater resulting from vehicle and equipment maintenance by running a "dry and clean site". The best option would be to perform maintenance activities at an offsite facility. If this option is not available then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

Suitable Applications

These procedures are suitable on all construction projects where an onsite yard area is necessary for storage and maintenance of heavy equipment and vehicles.

Limitations

Onsite vehicle and equipment maintenance should only be used where it is impractical to send vehicles and equipment offsite for maintenance and repair. Sending vehicles/equipment offsite should be done in conjunction with TR-1, Stabilized Construction Entrance/Exit.

Outdoor vehicle or equipment maintenance is a potentially significant source of stormwater pollution. Activities that can contaminate stormwater include engine repair and service, changing or replacement of fluids, and outdoor equipment storage and parking (engine fluid leaks). For further information on vehicle or equipment servicing, see NS-8, Vehicle and Equipment Cleaning, and NS-9, Vehicle and Equipment Fueling.

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NS-10 Vehicle & Equipment Maintenance

Implementation

- Use offsite repair shops as much as possible. These businesses are better equipped to handle vehicle fluids and spills properly. Performing this work offsite can also be economical by eliminating the need for a separate maintenance area.
- If maintenance must occur onsite, use designated areas, located away from drainage courses. Dedicated maintenance areas should be protected from stormwater runon and runoff, and should be located at least 50 ft from downstream drainage facilities and watercourses.
- Drip pans or absorbent pads should be used during vehicle and equipment maintenance work that involves fluids, unless the maintenance work is performed over an impermeable surface in a dedicated maintenance area.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- All fueling trucks and fueling areas are required to have spill kits and/or use other spill protection devices.
- Use adsorbent materials on small spills. Remove the absorbent materials promptly and dispose of properly.
- Inspect onsite vehicles and equipment daily at startup for leaks, and repair immediately.
- Keep vehicles and equipment clean; do not allow excessive build-up of oil and grease.
- Segregate and recycle wastes, such as greases, used oil or oil filters, antifreeze, cleaning solutions, automotive batteries, hydraulic and transmission fluids. Provide secondary containment and covers for these materials if stored onsite.
- Train employees and subcontractors in proper maintenance and spill cleanup procedures.
- Drip pans or plastic sheeting should be placed under all vehicles and equipment placed on docks, barges, or other structures over water bodies when the vehicle or equipment is planned to be idle for more than 1 hour.
- For long-term projects, consider using portable tents or covers over maintenance areas if maintenance cannot be performed offsite.
- Consider use of new, alternative greases and lubricants, such as adhesive greases, for chassis lubrication and fifth-wheel lubrication.
- Properly dispose of used oils, fluids, lubricants, and spill cleanup materials.
- Do not place used oil in a dumpster or pour into a storm drain or watercourse.
- Properly dispose of or recycle used batteries.
- Do not bury used tires.
- Repair leaks of fluids and oil immediately.

Listed below is further information if you must perform vehicle or equipment maintenance onsite.

Safer Alternative Products

- Consider products that are less toxic or hazardous than regular products. These products are often sold under an "environmentally friendly" label.
- Consider use of grease substitutes for lubrication of truck fifth-wheels. Follow manufacturers label for details on specific uses.
- Consider use of plastic friction plates on truck fifth-wheels in lieu of grease. Follow manufacturers label for details on specific uses.

Waste Reduction

Parts are often cleaned using solvents such as trichloroethylene, trichloroethane, or methylene chloride. Many of these cleaners are listed in California Toxic Rule as priority pollutants. These materials are harmful and must not contaminate stormwater. They must be disposed of as a hazardous waste. Reducing the number of solvents makes recycling easier and reduces hazardous waste management costs. Often, one solvent can perform a job as well as two different solvents. Also, if possible, eliminate or reduce the amount of hazardous materials and waste by substituting non-hazardous or less hazardous materials. For example, replace chlorinated organic solvents with non-chlorinated solvents. Non-chlorinated solvents like kerosene or mineral spirits are less toxic and less expensive to dispose of properly. Check the list of active ingredients to see whether it contains chlorinated solvents. The "chlor" term indicates that the solvent is chlorinated. Also, try substituting a wire brush for solvents to clean parts.

Recycling and Disposal

Separating wastes allows for easier recycling and may reduce disposal costs. Keep hazardous wastes separate, do not mix used oil solvents, and keep chlorinated solvents (like,-trichloroethane) separate from non-chlorinated solvents (like kerosene and mineral spirits). Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around. Provide cover and secondary containment until these materials can be removed from the site.

Oil filters can be recycled. Ask your oil supplier or recycler about recycling oil filters.

Do not dispose of extra paints and coatings by dumping liquid onto the ground or throwing it into dumpsters. Allow coatings to dry or harden before disposal into covered dumpsters.

Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Costs

All of the above are low cost measures. Higher costs are incurred to setup and maintain onsite maintenance areas.

NS-10 Vehicle & Equipment Maintenance

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Keep ample supplies of spill cleanup materials onsite.
- Maintain waste fluid containers in leak proof condition.
- Vehicles and equipment should be inspected on each day of use. Leaks should be repaired immediately or the problem vehicle(s) or equipment should be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

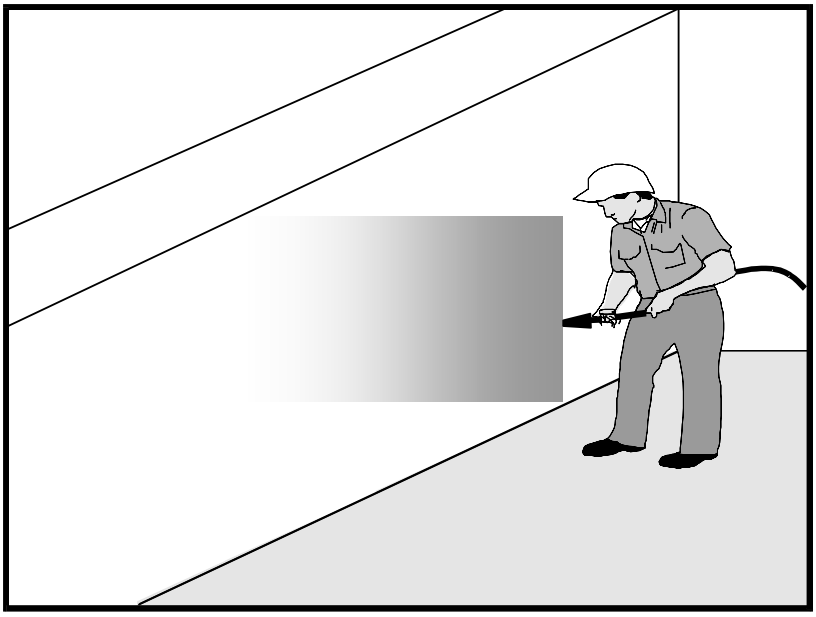
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program; Program Development and Approval Guidance, Working Group, Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Concrete Curing NS-12



Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Concrete curing is used in the construction of structures such as bridges, retaining walls, pump houses, large slabs, and structured foundations. Concrete curing includes the use of both chemical and water methods. Discharges of stormwater and non-stormwater exposed to concrete during curing may have a high pH and may contain chemicals, metals, and fines. Proper procedures reduce or eliminate the contamination of stormwater runoff during concrete curing.

Suitable Applications

Suitable applications include all projects where Portland Cement Concrete (PCC) and concrete curing chemicals are placed where they can be exposed to rainfall, runoff from other areas, or where runoff from the PCC will leave the site.

Limitations

None identified.

Implementation

Chemical Curing

- Avoid over spray of curing compounds.
- Minimize the drift of chemical cure as much as possible by applying the curing compound close to the concrete surface. Apply an amount of compound that covers the surface, but does not allow any runoff of the compound.

- Use proper storage and handling techniques for concrete curing compounds. Refer to WM-1, Material Delivery and Storage.
- Protect drain inlets prior to the application of curing compounds.
- Refer to WM-4, Spill Prevention and Control.

Water Curing for Bridge Decks, Retaining Walls, and other Structures

- Direct cure water away from inlets and watercourses to collection areas for infiltration or other means of removal in accordance with all applicable permits.
- Collect cure water at the top of slopes and transport or dispose of water in a non-erodible manner. See EC-9 Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.
- Utilize wet blankets or a similar method that maintains moisture while minimizing the use and possible discharge of water.

Costs

All of the above measures are generally low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Ensure that employees and subcontractors implement appropriate measures for storage, handling, and use of curing compounds.
- Inspect cure containers and spraying equipment for leaks.

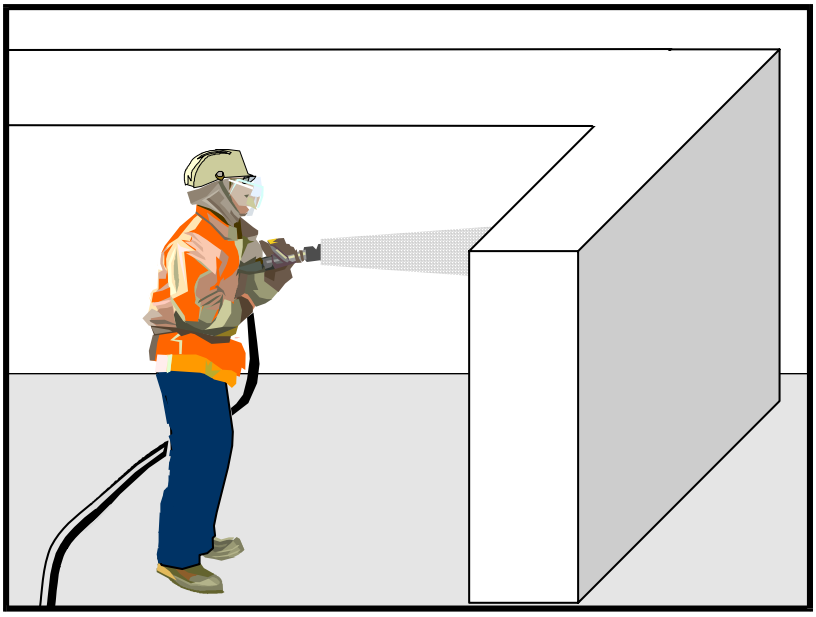
References

Blue Print for a Clean Bay-Construction-Related Industries: Best Management Practices for Stormwater Pollution Prevention; Santa Clara Valley Non Point Source Pollution Control Program, 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Concrete Finishing NS-13



Description and Purpose

Concrete finishing methods are used for bridge deck rehabilitation, paint removal, curing compound removal, and final surface finish appearances. Methods include sand blasting, shot blasting, grinding, or high pressure water blasting. Stormwater and non-stormwater exposed to concrete finishing by-products may have a high pH and may contain chemicals, metals, and fines. Proper procedures and implementation of appropriate BMPs can minimize the impact that concrete-finishing methods may have on stormwater and non-stormwater discharges.

Suitable Applications

These procedures apply to all construction locations where concrete finishing operations are performed.

Limitations

None identified.

Implementation

- Collect and properly dispose of water from high-pressure water blasting operations.
- Collect contaminated water from blasting operations at the top of slopes. Transport or dispose of contaminated water while using BMPs such as those for erosion control. Refer to EC-9, Earth Dikes and Drainage Swales, EC-10, Velocity Dissipation Devices, and EC-11, Slope Drains.

Objectives

EC	Erosion Control	
SE	Sediment Control	
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	☑
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	☑

Potential Alternatives

None

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- Direct water from blasting operations away from inlets and watercourses to collection areas for infiltration or other means of removal (dewatering). Refer to NS-2 De-Watering Operations.
- Protect inlets during sandblasting operations. Refer to SE-10, Storm Drain Inlet Protection.
- Refer to WM-8, Concrete Waste Management for disposal of concrete based debris.
- Minimize the drift of dust and blast material as much as possible by keeping the blasting nozzle close to the surface.
- When blast residue contains a potentially hazardous waste, refer to WM-6, Hazardous Waste Management.

Costs

These measures are generally of low cost.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharges daily while non-stormwater discharges occur.
- Sweep or vacuum up debris from sandblasting at the end of each shift.
- At the end of each work shift, remove and contain liquid and solid waste from containment structures, if any, and from the general work area.

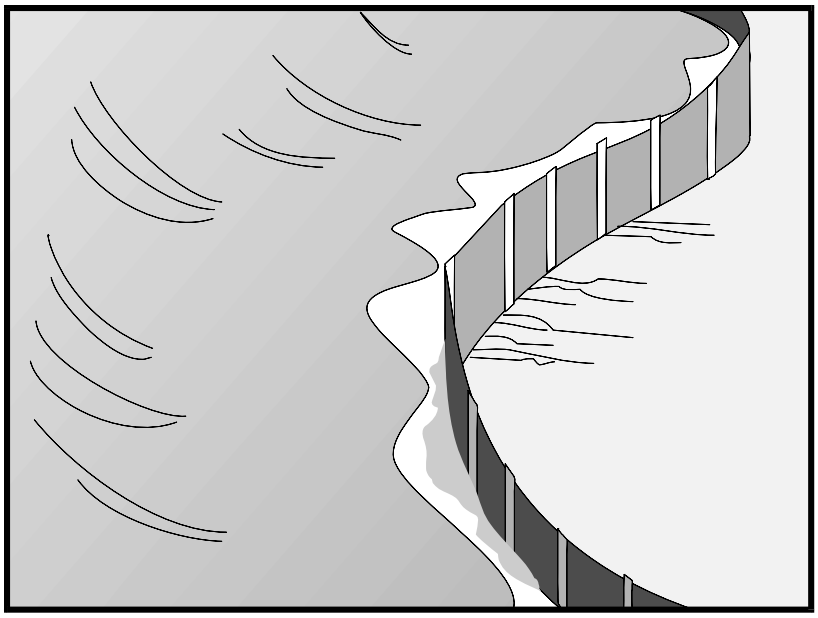
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities, Developing Pollution Prevention Plans and Best Management Practices, EPA 832-R-92005; USEPA, April 1992.

Silt Fence SE-1



Objectives

EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.

Suitable Applications

Silt fences are suitable for perimeter control, placed below areas where sheet flows discharge from the site. They should also be used as interior controls below disturbed areas where runoff may occur in the form of sheet and rill erosion. Silt fences are generally ineffective in locations where the flow is concentrated and are only applicable for sheet or overland flows. Silt fences are most effective when used in combination with erosion controls. Suitable applications include:

- Along the perimeter of a project.
- Below the toe or down slope of exposed and erodible slopes.
- Along streams and channels.
- Around temporary spoil areas and stockpiles.
- Below other small cleared areas.

Limitations

- Do not use in streams, channels, drain inlets, or anywhere flow is concentrated.

- Do not use in locations where ponded water may cause flooding.
- Do not place fence on a slope, or across any contour line. If not installed at the same elevation throughout, silt fences will create erosion.
- Filter fences will create a temporary sedimentation pond on the upstream side of the fence and may cause temporary flooding. Fences not constructed on a level contour will be overtopped by concentrated flow resulting in failure of the filter fence.
- Improperly installed fences are subject to failure from undercutting, overlapping, or collapsing.
  - Not effective unless trenched and keyed in.
  - Not intended for use as mid-slope protection on slopes greater than 4:1 (H:V).
  - Do not allow water depth to exceed 1.5 ft at any point.

Implementation

General

A silt fence is a temporary sediment barrier consisting of filter fabric stretched across and attached to supporting posts, entrenched, and, depending upon the strength of fabric used, supported with plastic or wire mesh fence. Silt fences trap sediment by intercepting and detaining small amounts of sediment-laden runoff from disturbed areas in order to promote sedimentation behind the fence.

Silt fences are preferable to straw bale barriers in many cases. Laboratory work at the Virginia Highway and Transportation Research Council has shown that silt fences can trap a much higher percentage of suspended sediments than can straw bales. While the failure rate of silt fences is lower than that of straw bale barriers, there are many instances where silt fences have been improperly installed. The following layout and installation guidance can improve performance and should be followed:

- Use principally in areas where sheet flow occurs.
- Don't use in streams, channels, or anywhere flow is concentrated. Don’t use silt fences to divert flow.
- Don't use below slopes subject to creep, slumping, or landslides.
- Select filter fabric that retains 85% of soil by weight, based on sieve analysis, but that is not finer than an equivalent opening size of 70.
- Install along a level contour, so water does not pond more than 1.5 ft at any point along the silt fence.
- The maximum length of slope draining to any point along the silt fence should be 200 ft or less.
- The maximum slope perpendicular to the fence line should be 1:1.

- Provide sufficient room for runoff to pond behind the fence and to allow sediment removal equipment to pass between the silt fence and toes of slopes or other obstructions. About 1200 ft^2 of ponding area should be provided for every acre draining to the fence.
- Turn the ends of the filter fence uphill to prevent stormwater from flowing around the fence.
- Leave an undisturbed or stabilized area immediately down slope from the fence where feasible.
- Silt fences should remain in place until the disturbed area is permanently stabilized.

Design and Layout

Selection of a filter fabric is based on soil conditions at the construction site (which affect the equivalent opening size (EOS) fabric specification) and characteristics of the support fence (which affect the choice of tensile strength). The designer should specify a filter fabric that retains the soil found on the construction site yet that it has openings large enough to permit drainage and prevent clogging. The following criteria is recommended for selection of the equivalent opening size:

1. If 50 percent or less of the soil, by weight, will pass the U.S. Standard Sieve No. 200, select the EOS to retain 85 % of the soil. The EOS should not be finer than EOS 70.
2. For all other soil types, the EOS should be no larger than the openings in the U.S. Standard Sieve No. 70 except where direct discharge to a stream, lake, or wetland will occur, then the EOS should be no larger than Standard Sieve No. 100.

To reduce the chance of clogging, it is preferable to specify a fabric with openings as large as allowed by the criteria. No fabric should be specified with an EOS smaller than U.S. Standard Sieve No. 100. If 85% or more of a soil, by weight, passes through the openings in a No. 200 sieve, filter fabric should not be used. Most of the particles in such a soil would not be retained if the EOS was too large and they would clog the fabric quickly if the EOS were small enough to capture the soil.

The fence should be supported by a plastic or wire mesh if the fabric selected does not have sufficient strength and bursting strength characteristics for the planned application (as recommended by the fabric manufacturer). Filter fabric material should contain ultraviolet inhibitors and stabilizers to provide a minimum of six months of expected usable construction life at a temperature range of 0 °F to 120 °F.

- Layout in accordance with attached figures.
- For slopes steeper than 2:1 (H:V) and that contain a high number of rocks or large dirt clods that tend to dislodge, it may be necessary to install additional protection immediately adjacent to the bottom of the slope, prior to installing silt fence. Additional protection may be a chain link fence or a cable fence.
- For slopes adjacent to sensitive receiving waters or Environmentally Sensitive Areas (ESAs), silt fence should be used in conjunction with erosion control BMPs.

Materials

- Silt fence fabric should be woven polypropylene with a minimum width of 36 in. and a minimum tensile strength of 100 lb force. The fabric should conform to the requirements in ASTM designation D4632 and should have an integral reinforcement layer. The reinforcement layer should be a polypropylene, or equivalent, net provided by the manufacturer. The permittivity of the fabric should be between 0.1 sec^{-1} and 0.15 sec^{-1} in conformance with the requirements in ASTM designation D4491.

- Wood stakes should be commercial quality lumber of the size and shape shown on the plans. Each stake should be free from decay, splits or cracks longer than the thickness of the stake or other defects that would weaken the stakes and cause the stakes to be structurally unsuitable.

- Staples used to fasten the fence fabric to the stakes should be not less than 1.75 in. long and should be fabricated from 15 gauge or heavier wire. The wire used to fasten the tops of the stakes together when joining two sections of fence should be 9 gauge or heavier wire. Galvanizing of the fastening wire will not be required.

- There are new products that may use prefabricated plastic holders for the silt fence and use bar reinforcement instead of wood stakes. If bar reinforcement is used in lieu of wood stakes, use number four or greater bar. Provide end protection for any exposed bar reinforcement.

Installation Guidelines

Silt fences are to be constructed on a level contour. Sufficient area should exist behind the fence for ponding to occur without flooding or overtopping the fence.

- A trench should be excavated approximately 6 in. wide and 6 in. deep along the line the proposed silt fence.

- Bottom of the silt fence should be keyed-in a minimum of 12 in.

- Posts should be spaced a maximum of 6 ft apart and driven securely into the ground a minimum of 18 in. or 12 in. below the bottom of the trench.

- When standard strength filter fabric is used, a plastic or wire mesh support fence should be fastened securely to the upslope side of posts using heavy–duty wire staples at least 1 in. long. The mesh should extend into the trench. When extra-strength filter fabric and closer post spacing are used, the mesh support fence may be eliminated. Filter fabric should be purchased in a long roll, and then cut to the length of the barrier. When joints are necessary, filter cloth should be spliced together only at a support post, with a minimum 6 in. overlap and both ends securely fastened to the post.

- The trench should be backfilled with compacted native material.

- Construct silt fences with a setback of at least 3 ft from the toe of a slope. Where a silt fence is determined to be not practicable due to specific site conditions, the silt fence may be constructed at the toe of the slope, but should be constructed as far from the toe of the slope as practicable. Silt fences close to the toe of the slope will be less effective and difficult to maintain.

- Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the barrier; in no case should the reach exceed 500 ft.

Costs

- Average annual cost for installation and maintenance (assumes 6 month useful life): $7 per lineal foot ($850 per drainage acre). Range of cost is $3.50 - $9.10 per lineal foot.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair undercut silt fences.
- Repair or replace split, torn, slumping, or weathered fabric. The lifespan of silt fence fabric is generally 5 to 8 months.
- Silt fences that are damaged and become unsuitable for the intended purpose should be removed from the site of work, disposed of, and replaced with new silt fence barriers.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Silt fences should be left in place until the upstream area is permanently stabilized. Until then, the silt fence must be inspected and maintained.
- Holes, depressions, or other ground disturbance caused by the removal of the silt fences should be backfilled and repaired.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, United States Environmental Protection Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group-Working Paper, USEPA, April 1992.

Sedimentation and Erosion Control Practices, and Inventory of Current Practices (Draft), UESPA, 1990.

Southeastern Wisconsin Regional Planning Commission (SWRPC). Costs of Urban Nonpoint Source Water Pollution Control Measures. Technical Report No. 31. Southeastern Wisconsin Regional Planning Commission, Waukesha, WI. 1991

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

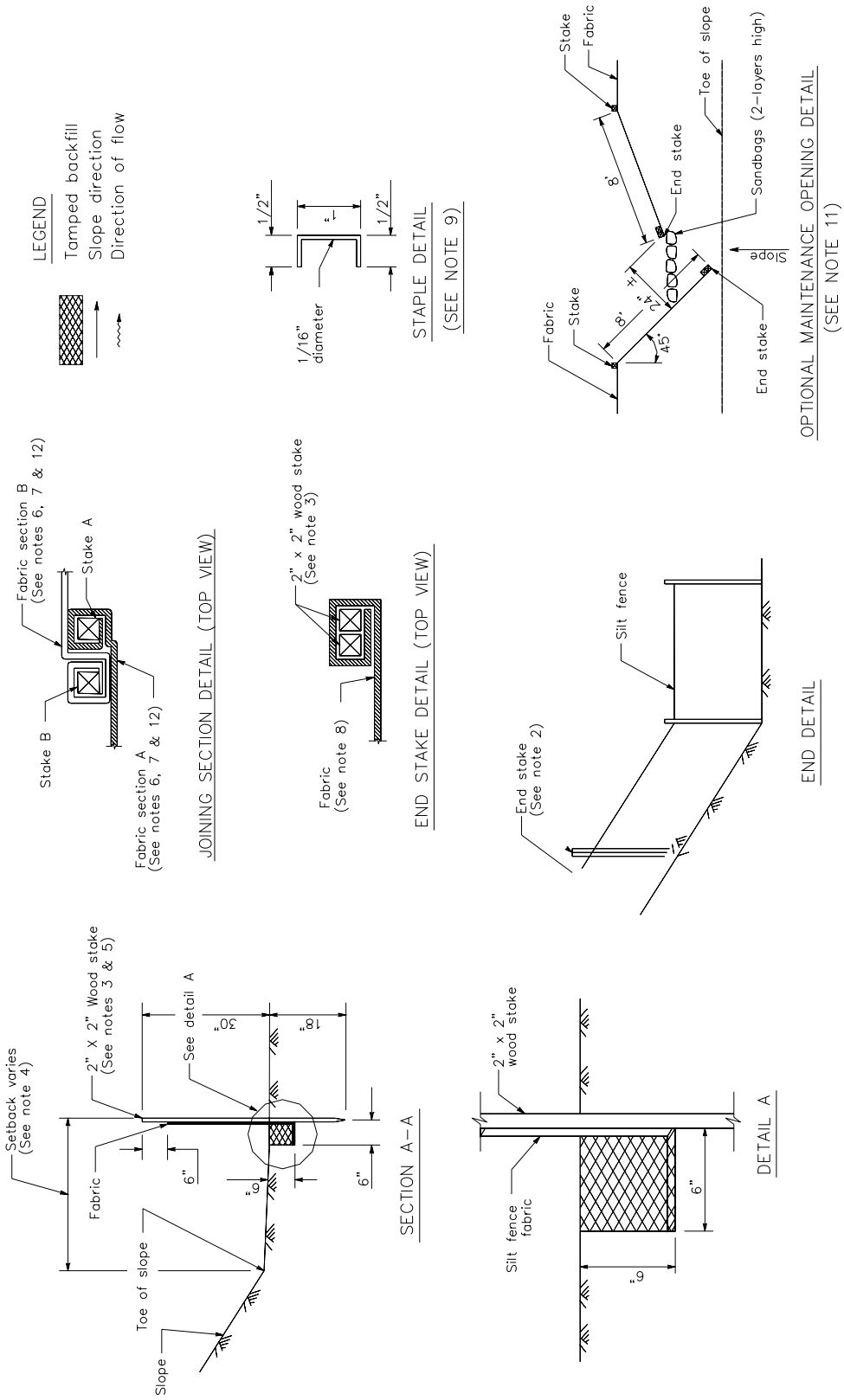
Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.

U.S. Environmental Protection Agency (USEPA). Stormwater Management for Industrial Activities: Developing Pollution Prevention Plans and Best Management Practices. U.S. Environmental Protection Agency, Office of Water, Washington, DC, 1992.

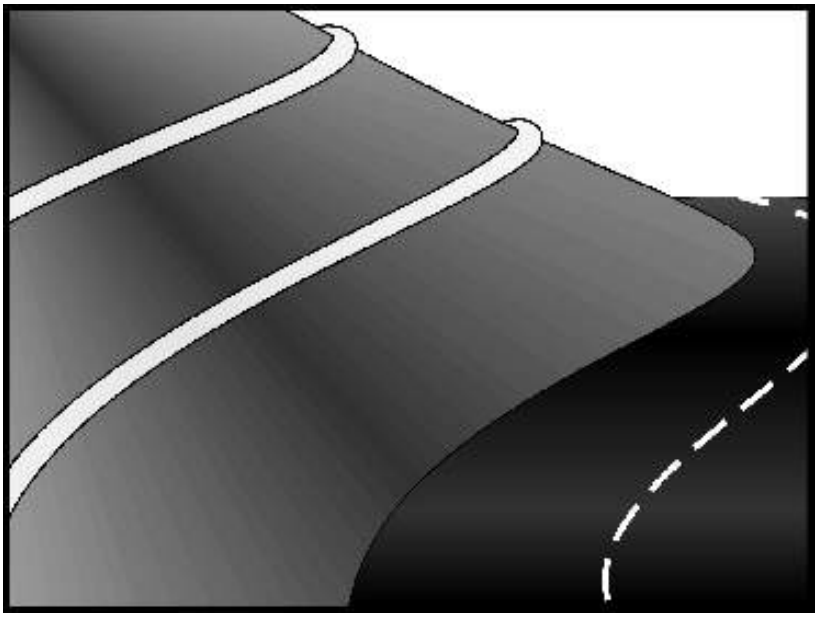
Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/3 the height of the linear barrier, in no case shall the reach length exceed 500'.
2. The last 8'–0" of fence shall be turned up slope.
3. Stake dimensions are nominal.
4. Dimension may vary to fit field condition.
5. Stakes shall be spaced at 8'–0" maximum and shall be positioned on downstream side of fence.
6. Stakes to overlap and fence fabric to fold around each stake one full turn. Secure fabric to stake with 4 staples.
7. Stakes shall be driven tightly together to prevent potential flow–through of sediment at joint. The tops of the stakes shall be secured with wire.
8. For end stake, fence fabric shall be folded around two stakes one full turn and secured with 4 staples.
9. Minimum 4 staples per stake. Dimensions shown are typical.
10. Cross barriers shall be a minimum of 1/3 and a maximum of 1/2 the height of the linear barrier.
11. Maintenance openings shall be constructed in a manner to ensure sediment remains behind silt fence.
12. Joining sections shall not be placed at sump locations.
13. Sandbag rows and layers shall be offset to eliminate gaps.


LEGEND
Tamped backfill
Slope direction
Direction of flow
1/2"
1"
1/2"
1/16" diameter
STAPLE DETAIL
(SEE NOTE 9)
Stake
Fabric
Toe of slope
8'
End stake
Sandbags (2-layers high)
Slope
4'
2'
8"
45°
Fabric
Stake
End stake
OPTIONAL MAINTENANCE OPENING DETAIL
(SEE NOTE 11)
Fabric section B
(See notes 6, 7 & 12)
Stake A
Stake B
Fabric section A
(See notes 6, 7 & 12)
JOINING SECTION DETAIL (TOP VIEW)
2" x 2" wood stake
(See note 3)
Fabric
(See note 8)
END STAKE DETAIL (TOP VIEW)
Silt fence
End stake
(See note 2)
END DETAIL
Setback varies
(See note 4)
2" X 2" Wood stake
(See notes 3 & 5)
See detail A
30"
18"
Fabric
6"
6"
6"
Toe of slope
Slope
SECTION A-A
2" x 2"
wood stake
Silt fence
fabric
6"
6"
DETAIL A

Fiber Rolls SE-5



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-6 Gravel Bag Berm

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A fiber roll consists of straw, flax, or other similar materials bound into a tight tubular roll. When fiber rolls are placed at the toe and on the face of slopes, they intercept runoff, reduce its flow velocity, release the runoff as sheet flow, and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce erosion.

Suitable Applications

Fiber rolls may be suitable:

- Along the toe, top, face, and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the end of a downward slope where it transitions to a steeper slope
- Along the perimeter of a project
- As check dams in unlined ditches
- Down-slope of exposed soil areas
- Around temporary stockpiles

Limitations

- Fiber rolls are not effective unless trenched

- Fiber rolls at the toe of slopes greater than 5:1 (H:V) should be a minimum of 20 in. diameter or installations achieving the same protection (i.e. stacked smaller diameter fiber rolls, etc.).
- Difficult to move once saturated.
- If not properly staked and trenched in, fiber rolls could be transported by high flows.
- Fiber rolls have a very limited sediment capture zone.
- Fiber rolls should not be used on slopes subject to creep, slumping, or landslide.

Implementation

Fiber Roll Materials

- Fiber rolls should be either prefabricated rolls or rolled tubes of erosion control blanket.

Assembly of Field Rolled Fiber Roll

- Roll length of erosion control blanket into a tube of minimum 8 in. diameter.
- Bind roll at each end and every 4 ft along length of roll with jute-type twine.

Installation

- Locate fiber rolls on level contours spaced as follows:
  - Slope inclination of 4:1 (H:V) or flatter: Fiber rolls should be placed at a maximum interval of 20 ft.
  - Slope inclination between 4:1 and 2:1 (H:V): Fiber Rolls should be placed at a maximum interval of 15 ft. (a closer spacing is more effective).
  - Slope inclination 2:1 (H:V) or greater: Fiber Rolls should be placed at a maximum interval of 10 ft. (a closer spacing is more effective).
- Turn the ends of the fiber roll up slope to prevent runoff from going around the roll.
- Stake fiber rolls into a 2 to 4 in. deep trench with a width equal to the diameter of the fiber roll.
  - Drive stakes at the end of each fiber roll and spaced 4 ft maximum on center.
  - Use wood stakes with a nominal classification of 0.75 by 0.75 in. and minimum length of 24 in.
- If more than one fiber roll is placed in a row, the rolls should be overlapped, not abutted.

Removal

- Fiber rolls are typically left in place.

- If fiber rolls are removed, collect and dispose of sediment accumulation, and fill and compact holes, trenches, depressions or any other ground disturbance to blend with adjacent ground.

Costs

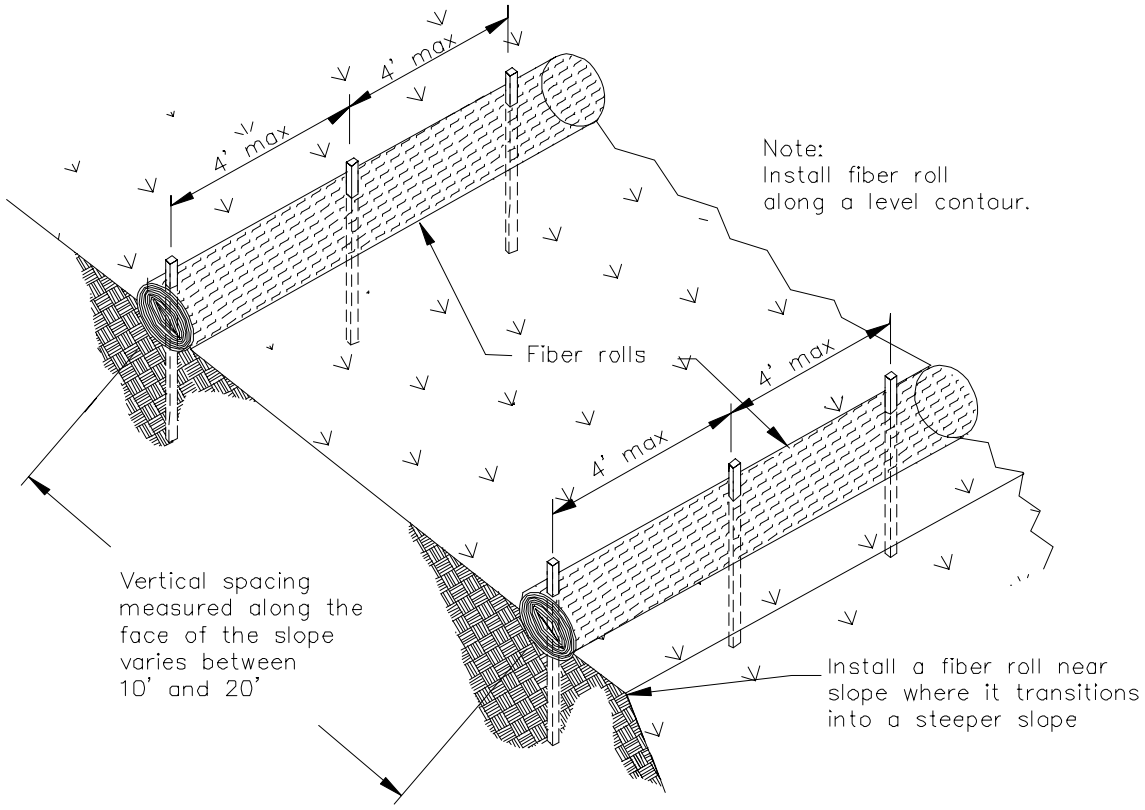
Material costs for fiber rolls range from $20 - $30 per 25 ft roll.

Inspection and Maintenance

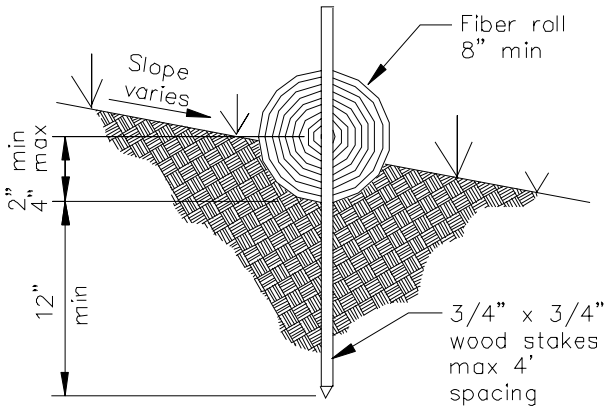
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Repair or replace split, torn, unraveling, or slumping fiber rolls.
- If the fiber roll is used as a sediment capture device, or as an erosion control device to maintain sheet flows, sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when sediment accumulation reaches one-half the designated sediment storage depth, usually one-half the distance between the top of the fiber roll and the adjacent ground surface. Sediment removed during maintenance may be incorporated into earthwork on the site of disposed at an appropriate location.
- If fiber rolls are used for erosion control, such as in a mini check dam, sediment removal should not be required as long as the system continues to control the grade. Sediment control BMPs will likely be required in conjunction with this type of application.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

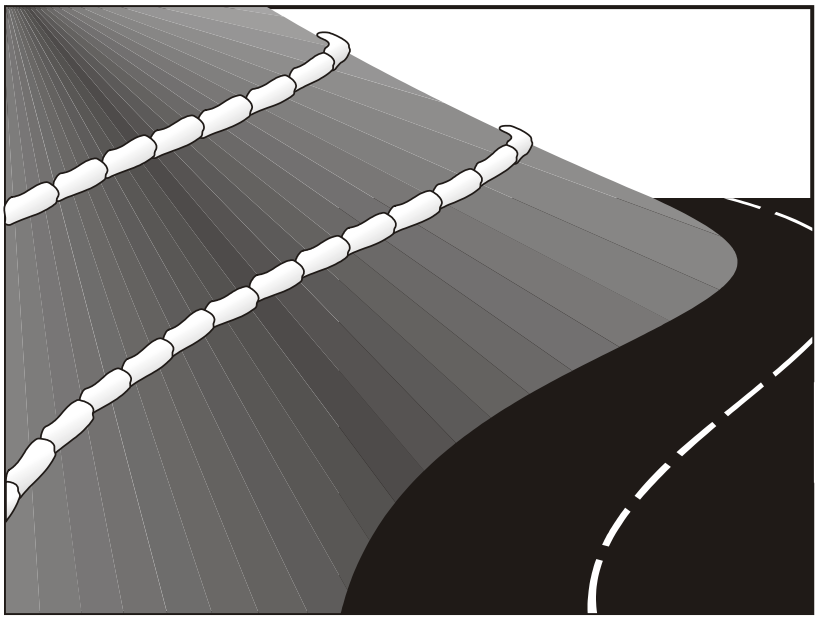


TYPICAL FIBER ROLL INSTALLATION
N.T.S.



ENTRENCHMENT DETAIL
N.T.S.

Gravel Bag Berm SE-6



Objectives

EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Roll

SE-8 Sandbag Barrier

SE-9 Straw Bale Barrier

Description and Purpose

A gravel bag berm is a series of gravel-filled bags placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out, and release runoff slowly as sheet flows, preventing erosion.

Suitable Applications

Gravel bag berms may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:

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- Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow
- At the top of slopes to divert runoff away from disturbed slopes
- As check dams across mildly sloped construction roads

Limitations

- Gravel berms may be difficult to remove.
- Removal problems limit their usefulness in landscaped areas.
- Gravel bag berm may not be appropriate for drainage areas greater than 5 acres.
- Runoff will pond upstream of the filter, possibly causing flooding if sufficient space does not exist.
- Degraded gravel bags may rupture when removed, spilling contents.
- Installation can be labor intensive.
- Berms may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.

Implementation

General

A gravel bag berm consists of a row of open graded gravel–filled bags placed on a level contour. When appropriately placed, a gravel bag berm intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. The open graded gravel in the bags is porous, which allows the ponded runoff to flow slowly through the bags, releasing the runoff as sheet flows. Gravel bag berms also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets, which erode rills, and ultimately gullies, into disturbed, sloped soils. Gravel bag berms are similar to sand bag barriers, but are more porous.

Design and Layout

- Locate gravel bag berms on level contours.
  - Slopes between 20:1 and 2:1 (H:V): Gravel bags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: Gravel bags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed the slope toe.
- Turn the ends of the gravel bag barriers up slope to prevent runoff from going around the berm.
- Allow sufficient space up slope from the gravel bag berm to allow ponding, and to provide room for sediment storage.

- For installation near the toe of the slope, consider moving the gravel bag barriers away from the slope toe to facilitate cleaning. To prevent flows behind the barrier, bags can be placed perpendicular to a berm to serve as cross barriers.
- Drainage area should not exceed 5 acres.
- In Non-Traffic Areas:
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Top width = 12 in. minimum for one or two layer construction
  - Side slopes = 2:1 or flatter
- In Construction Traffic Areas:
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Top width = 12 in. minimum for one or two layer construction.
  - Side slopes = 2:1 or flatter.
- Butt ends of bags tightly
- On multiple row, or multiple layer construction, overlapp butt joints of adjacent row and row beneath.
- Use a pyramid approach when stacking bags.

Materials

- ***Bag Material:*** Bags should be woven polypropylene, polyethylene or polyamide fabric or burlap, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355.
- ***Bag Size:*** Each gravel-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** Fill material should be 0.5 to 1 in. Class 2 aggregate base, clean and free from clay, organic matter, and other deleterious material, or other suitable open graded, non-cohesive, porous gravel.

Costs

Gravel filter: Expensive, since off-site materials, hand construction, and demolition/removal are usually required. Material costs for gravel bags are average of $2.50 per empty gravel bag. Gravel costs range from $20-$35 per yd^3.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Gravel bags exposed to sunlight will need to be replaced every two to three months due to degrading of the bags.
- Reshape or replace gravel bags as needed.
- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove gravel bag berms when no longer needed. Remove sediment accumulation and clean, re-grade, and stabilize the area. Removed sediment should be incorporated in the project or disposed of.

References

Handbook of Steel Drainage and Highway Construction, American Iron and Steel Institute, 1983.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Pollution Plan Handbook, First Edition, State of California, Department of Transportation Division of New Technology, Materials and Research, October 1992.

Street Sweeping and Vacuuming SE-7

Objectives		
EC	Erosion Control	
SE	Sediment Control	☒
TR	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	☑
Organics	

Potential Alternatives

None

Description and Purpose

Street sweeping and vacuuming includes use of self-propelled and walk-behind equipment to remove sediment from streets and roadways, and to clean paved surfaces in preparation for final paving. Sweeping and vacuuming prevents sediment from the project site from entering storm drains or receiving waters.

Suitable Applications

Sweeping and vacuuming are suitable anywhere sediment is tracked from the project site onto public or private paved streets and roads, typically at points of egress. Sweeping and vacuuming are also applicable during preparation of paved surfaces for final paving.

Limitations

Sweeping and vacuuming may not be effective when sediment is wet or when tracked soil is caked (caked soil may need to be scraped loose).

Implementation

- Controlling the number of points where vehicles can leave the site will allow sweeping and vacuuming efforts to be focused, and perhaps save money.
- Inspect potential sediment tracking locations daily.
- Visible sediment tracking should be swept or vacuumed on a daily basis.

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- Do not use kick brooms or sweeper attachments. These tend to spread the dirt rather than remove it.
- If not mixed with debris or trash, consider incorporating the removed sediment back into the project

Costs

Rental rates for self-propelled sweepers vary depending on hopper size and duration of rental. Expect rental rates from $58/hour (3 yd^3 hopper) to $88/hour (9 yd^3 hopper), plus operator costs. Hourly production rates vary with the amount of area to be swept and amount of sediment. Match the hopper size to the area and expect sediment load to minimize time spent dumping.

Inspection and Maintenance

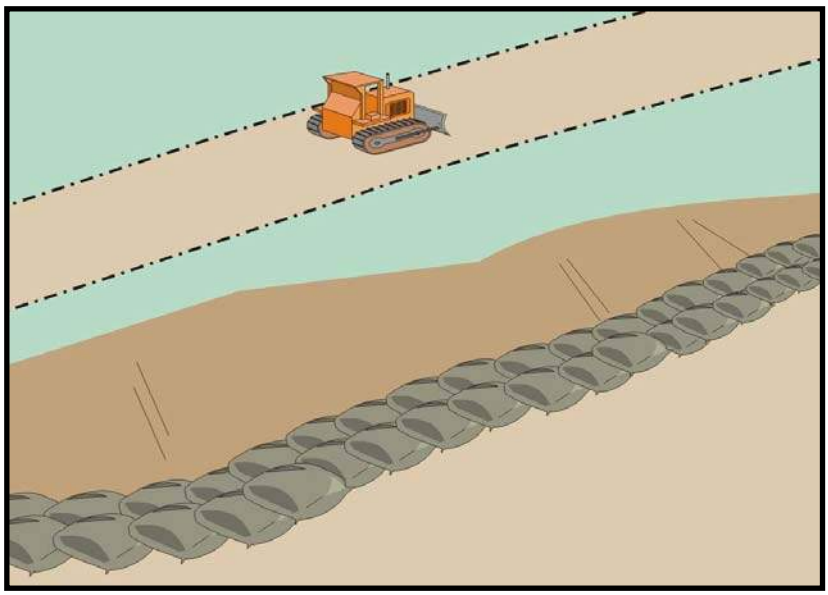
- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- When actively in use, points of ingress and egress must be inspected daily.
- When tracked or spilled sediment is observed outside the construction limits, it must be removed at least daily. More frequent removal, even continuous removal, may be required in some jurisdictions.
- Be careful not to sweep up any unknown substance or any object that may be potentially hazardous.
- Adjust brooms frequently; maximize efficiency of sweeping operations.
- After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Labor Surcharge and Equipment Rental Rates, State of California Department of Transportation (Caltrans), April 1, 2002 – March 31, 2003.

Sandbag Barrier SE-8



Objectives		
EC	Erosion Control	☒
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Description and Purpose

A sandbag barrier is a series of sand-filled bags placed on a level contour to intercept sheet flows. Sandbag barriers pond sheet flow runoff, allowing sediment to settle out.

Suitable Applications

Sandbag barriers may be suitable:

- As a linear sediment control measure:
  - Below the toe of slopes and erodible slopes
  - As sediment traps at culvert/pipe outlets
  - Below other small cleared areas
  - Along the perimeter of a site
  - Down slope of exposed soil areas
  - Around temporary stockpiles and spoil areas
  - Parallel to a roadway to keep sediment off paved areas
  - Along streams and channels
- As linear erosion control measure:
  - Along the face and at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence

SE-5 Fiber Rolls

SE-6 Gravel Bag Berm

SE-9 Straw Bale Barrier

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- At the top of slopes to divert runoff away from disturbed slopes
- As check dams across mildly sloped construction roads

Limitations

- It is necessary to limit the drainage area upstream of the barrier to 5 acres.
- Degraded sandbags may rupture when removed, spilling sand.
- Installation can be labor intensive.
- Barriers may have limited durability for long-term projects.
- When used to detain concentrated flows, maintenance requirements increase.
- Burlap should not be used for sandbags.

Implementation

General

A sandbag barrier consists of a row of sand-filled bags placed on a level contour. When appropriately placed, a sandbag barrier intercepts and slows sheet flow runoff, causing temporary ponding. The temporary ponding provides quiescent conditions allowing sediment to settle. While the sand-filled bags are porous, the fine sand tends to quickly plug with sediment, limiting the rate of flow through the barrier. If a porous barrier is desired, consider SE-1, Silt Fence, SE-5, Fiber Rolls, SE-6, Gravel Bag Berms, or SE-9, Straw Bale Barriers. Sandbag barriers also interrupt the slope length and thereby reduce erosion by reducing the tendency of sheet flows to concentrate into rivulets which erode rills, and ultimately gullies, into disturbed, sloped soils. Sandbag barriers are similar to ground bag berms, but less porous.

Design and Layout

- Locate sandbag barriers on a level contour.
  - Slopes between 20:1 and 2:1 (H:V): Sandbags should be placed at a maximum interval of 50 ft (a closer spacing is more effective), with the first row near the slope toe.
  - Slopes 2:1 (H:V) or steeper: Sandbags should be placed at a maximum interval of 25 ft (a closer spacing is more effective), with the first row placed near the slope toe.
- Turn the ends of the sandbag barrier up slope to prevent runoff from going around the barrier.
- Allow sufficient space up slope from the barrier to allow ponding, and to provide room for sediment storage.
- For installation near the toe of the slope, consider moving the barrier away from the slope toe to facilitate cleaning. To prevent flow behind the barrier, sandbags can be placed perpendicular to the barrier to serve as cross barriers.
- Drainage area should not exceed 5 acres.

- Stack sandbags at least three bags high.
- Butt ends of bags tightly.
- Overlapp butt joints of row beneath with each successive row.
- Use a pyramid approach when stacking bags.
- In non-traffic areas
  - Height = 18 in. maximum
  - Top width = 24 in. minimum for three or more layer construction
  - Side slope = 2:1 or flatter
- In construction traffic areas
  - Height = 12 in. maximum
  - Top width = 24 in. minimum for three or more layer construction.
  - Side slopes = 2:1 or flatter.

Materials

- ***Sandbag Material:*** Sandbag should be woven polypropylene, polyethylene or polyamide fabric, minimum unit weight of 4 ounces/yd^2, Mullen burst strength exceeding 300 lb/in^2 in conformance with the requirements in ASTM designation D3786, and ultraviolet stability exceeding 70% in conformance with the requirements in ASTM designation D4355. Use of burlap may not acceptable in some jurisdictions.
- ***Sandbag Size:*** Each sand-filled bag should have a length of 18 in., width of 12 in., thickness of 3 in., and mass of approximately 33 lbs. Bag dimensions are nominal, and may vary based on locally available materials.
- ***Fill Material:*** All sandbag fill material should be non-cohesive, Class 1 or Class 2 permeable material free from clay and deleterious material.

Costs

Sandbag barriers are more costly, but typically have a longer useful life than other barriers. Empty sandbags cost $0.25 - $0.75. Average cost of fill material is $8 per yd^3. Pre-filled sandbags are more expensive at $1.50 - $2.00 per bag.

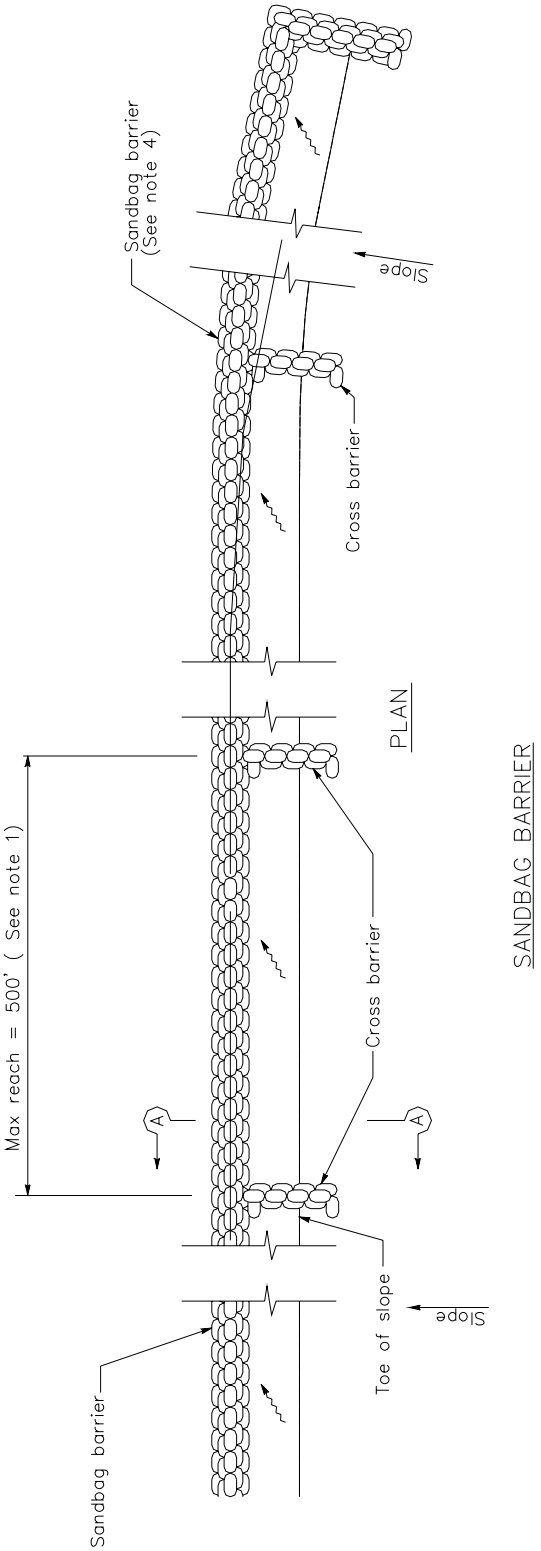
Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.
- Sandbags exposed to sunlight will need to be replaced every two to three months due to degradation of the bags.
- Reshape or replace sandbags as needed.

- Repair washouts or other damage as needed.
- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site or disposed at an appropriate location.
- Remove sandbags when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

References

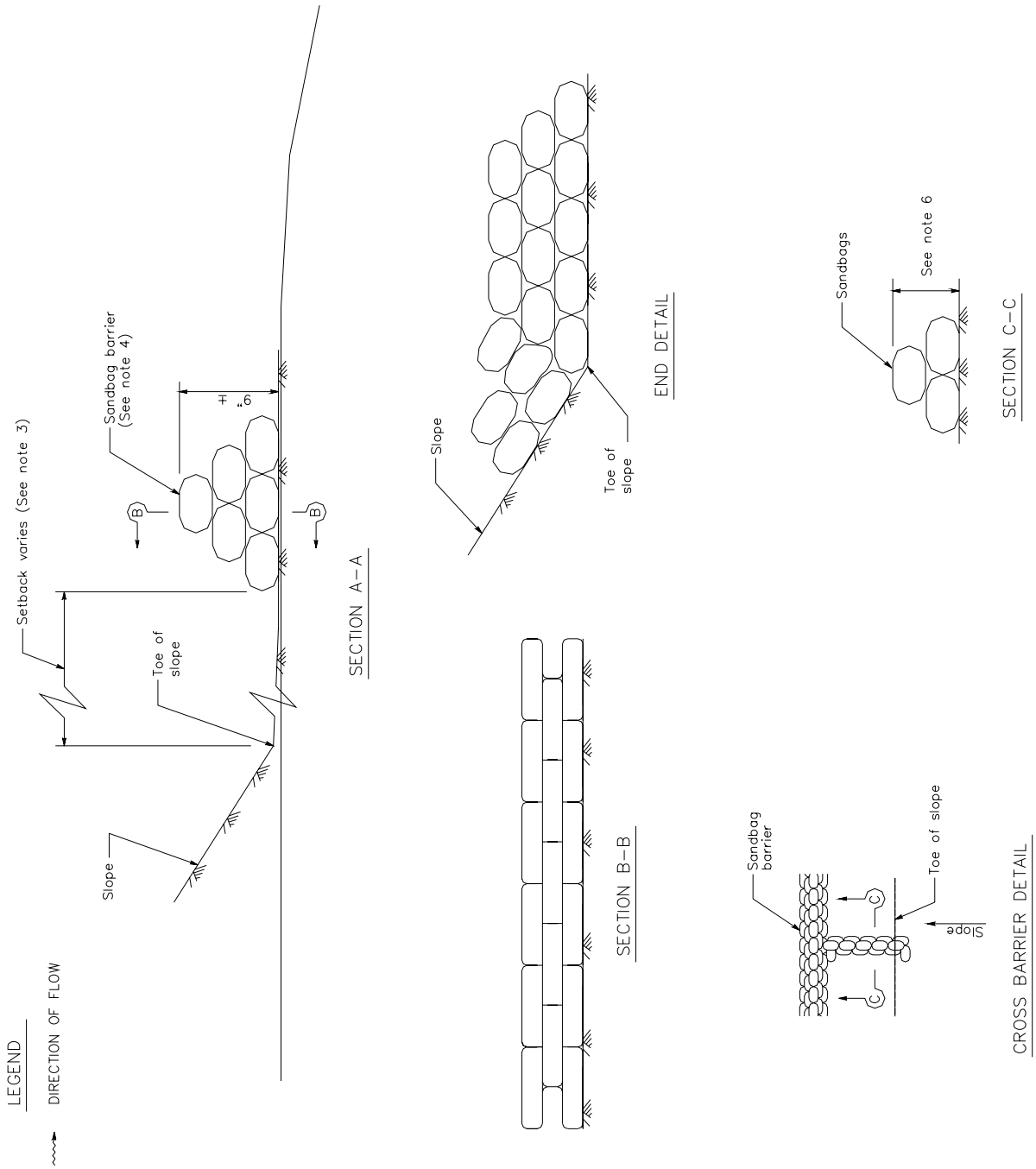
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.



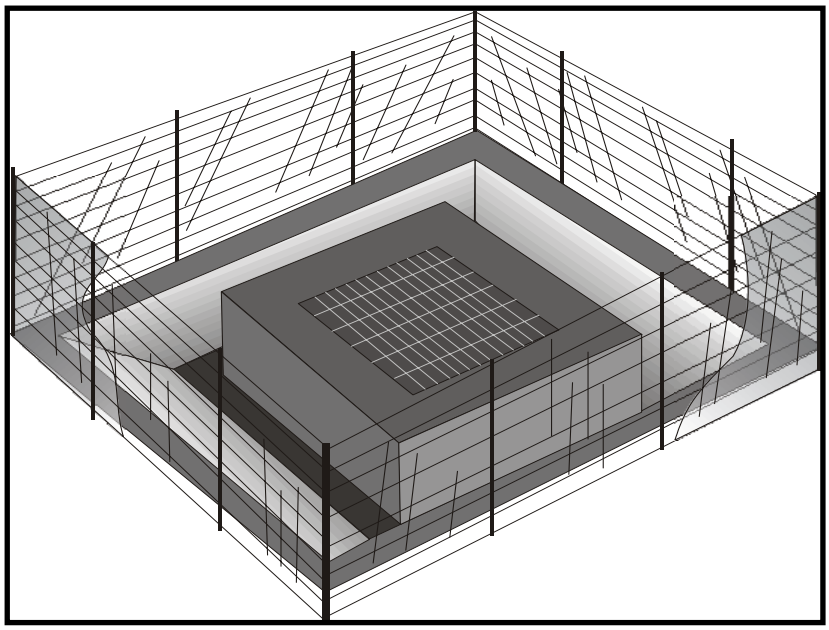
SANDBAG BARRIER

NOTES

1. Construct the length of each reach so that the change in base elevation along the reach does not exceed 1/2 the height of the linear barrier. In no case shall the reach length exceed 500'.
2. Place sandbags tightly.
3. Dimension may vary to fit field condition.
4. Sandbag barrier shall be a minimum of 3 bags high.
5. The end of the barrier shall be turned up slope.
6. Cross barriers shall be a min of 1/2 and a max of 2/3 the height of the linear barrier.
7. Sandbag rows and layers shall be staggered to eliminate gaps.


LEGEND
DIRECTION OF FLOW
Setback varies (See note 3)
Sandbag barrier (See note 4)
H
9"
B
B
Toe of slope
Slope
SECTION A–A
Slope
Toe of slope
END DETAIL
SECTION B–B
Sandbags
See note 6
SECTION C–C
Sandbag barrier
C
C
Toe of slope
CROSS BARRIER DETAIL

Storm Drain Inlet Protection SE-10



Objectives		
EC	Erosion Control	
SE	Sediment Control	☑
TR	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

SE-1 Silt Fence
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
SE-8 Sandbag Barrier
SE-9 Straw Bale Barrier

Description and Purpose

Storm drain inlet protection consists of a sediment filter or an impounding area around or upstream of a storm drain, drop inlet, or curb inlet. Storm drain inlet protection measures temporarily pond runoff before it enters the storm drain, allowing sediment to settle. Some filter configurations also remove sediment by filtering, but usually the ponding action results in the greatest sediment reduction.

Suitable Applications

Every storm drain inlet receiving sediment-laden runoff should be protected.

Limitations

- Drainage area should not exceed 1 acre.
- Straw bales, while potentially effective, have not produced in practice satisfactory results, primarily due to improper installation.
- Requires an adequate area for water to pond without encroaching into portions of the roadway subject to traffic.
- Inlet protection usually requires other methods of temporary protection to prevent sediment-laden stormwater and non-stormwater discharges from entering the storm drain system.
- Sediment removal may be difficult in high flow conditions or if runoff is heavily sediment laden. If high flow conditions are

expected, use other onsite sediment trapping techniques in conjunction with inlet protection.

- Frequent maintenance is required.
- For drainage areas larger than 1 acre, runoff should be routed to a sediment-trapping device designed for larger flows. See BMPs SE-2, Sediment Basin, and SE-3, Sediment Traps.
- Excavated drop inlet sediment traps are appropriate where relatively heavy flows are expected, and overflow capability is needed.

Implementation

General

Large amounts of sediment may enter the storm drain system when storm drains are installed before the upslope drainage area is stabilized, or where construction is adjacent to an existing storm drain. In cases of extreme sediment loading, the storm drain itself may clog and lose a major portion of its capacity. To avoid these problems, it is necessary to prevent sediment from entering the system at the inlets.

Inlet control measures presented in this handbook should not be used for inlets draining more than one acre. Runoff from larger disturbed areas should be first routed through SE-2, Sediment Basin or SE-3, Sediment Trap. Different types of inlet protection are appropriate for different applications depending on site conditions and the type of inlet. Inlet protection methods not presented in this handbook should be approved by the local stormwater management agency.

Design and Layout

Identify existing and planned storm drain inlets that have the potential to receive sediment-laden surface runoff. Determine if storm drain inlet protection is needed and which method to use.

- Limit upstream drainage area to 1 acre maximum. For larger drainage areas, use SE-2, Sediment Basin, or SE-3, Sediment Trap, upstream of the inlet protection device.
- The key to successful and safe use of storm drain inlet protection devices is to know where runoff will pond or be diverted.
  - Determine the acceptable location and extent of ponding in the vicinity of the drain inlet. The acceptable location and extent of ponding will influence the type and design of the storm drain inlet protection device.
  - Determine the extent of potential runoff diversion caused by the storm drain inlet protection device. Runoff ponded by inlet protection devices may flow around the device and towards the next downstream inlet. In some cases, this is acceptable; in other cases, serious erosion or downstream property damage can be caused by these diversions. The possibility of runoff diversions will influence whether or not storm drain inlet protection is suitable; and, if suitable, the type and design of the device.
- The location and extent of ponding, and the extent of diversion, can usually be controlled through appropriate placement of the inlet protection device. In some cases, moving the

inlet protection device a short distance upstream of the actual inlet can provide more efficient sediment control, limit ponding to desired areas, and prevent or control diversions.

- Four types of inlet protection are presented below. However, it is recognized that other effective methods and proprietary devices exist and may be selected.
  - Filter Fabric Fence: Appropriate for drainage basins with less than a 5% slope, sheet flows, and flows under 0.5 cfs.
  - Excavated Drop Inlet Sediment Trap: An excavated area around the inlet to trap sediment (SE-3).
  - Gravel bag barrier: Used to create a small sediment trap upstream of inlets on sloped, paved streets. Appropriate for sheet flow or when concentrated flow may exceed 0.5 cfs, and where overtopping is required to prevent flooding.
  - Block and Gravel Filter: Appropriate for flows greater than 0.5 cfs.
- Select the appropriate type of inlet protection and design as referred to or as described in this fact sheet.
- Provide area around the inlet for water to pond without flooding structures and property.
- Grates and spaces around all inlets should be sealed to prevent seepage of sediment-laden water.
- Excavate sediment sumps (where needed) 1 to 2 ft with 2:1 side slopes around the inlet.

Installation

- ***DI Protection Type 1 - Filter Fabric Fence -*** The filter fabric fence (Type 1) protection is shown in the attached figure. Similar to constructing a silt fence; see BMP SE-1, Silt Fence. Do not place filter fabric underneath the inlet grate since the collected sediment may fall into the drain inlet when the fabric is removed or replaced.
  1. Excavate a trench approximately 6 in. wide and 6 in. deep along the line of the silt fence inlet protection device.
  2. Place 2 in. by 2 in. wooden stakes around the perimeter of the inlet a maximum of 3 ft apart and drive them at least 18 in. into the ground or 12 in. below the bottom of the trench. The stakes must be at least 48 in.
  3. Lay fabric along bottom of trench, up side of trench, and then up stakes. See SE-1, Silt Fence, for details. The maximum silt fence height around the inlet is 24 in.
  4. Staple the filter fabric (for materials and specifications, see SE-1, Silt Fence) to wooden stakes. Use heavy-duty wire staples at least 1 in. in length.
  5. Backfill the trench with gravel or compacted earth all the way around.
- ***DI Protection Type 2 - Excavated Drop Inlet Sediment Trap -*** The excavated drop inlet sediment trap (Type 2) is shown in the attached figures. Install filter fabric fence in

accordance with DI Protection Type 1. Size excavated trap to provide a minimum storage capacity calculated at the rate 67 yd^3/acre of drainage area.

- ***DI Protection Type 3 - Gravel bag -*** The gravel bag barrier (Type 3) is shown in the figures. Flow from a severe storm should not overtop the curb. In areas of high clay and silts, use filter fabric and gravel as additional filter media. Construct gravel bags in accordance with SE-6, Gravel Bag Berm. Gravel bags should be used due to their high permeability.

  1. Use sand bag made of geotextile fabric (not burlap) and fill with 0.75 in. rock or 0.25 in. pea gravel.

  2. Construct on gently sloping street.

  3. Leave room upstream of barrier for water to pond and sediment to settle.

  4. Place several layers of sand bags – overlapping the bags and packing them tightly together.

  5. Leave gap of one bag on the top row to serve as a spillway. Flow from a severe storm (e.g., 10 year storm) should not overtop the curb.

- ***DI Protection Type 4 – Block and Gravel Filter -*** The block and gravel filter (Type 4) is shown in the figures. Block and gravel filters are suitable for curb inlets commonly used in residential, commercial, and industrial construction.

  1. Place hardware cloth or comparable wire mesh with 0.5 in. openings over the drop inlet so that the wire extends a minimum of 1 ft beyond each side of the inlet structure. If more than one strip is necessary, overlap the strips. Place filter fabric over the wire mesh.

  2. Place concrete blocks lengthwise on their sides in a single row around the perimeter of the inlet, so that the open ends face outward, not upward. The ends of adjacent blocks should abut. The height of the barrier can be varied, depending on design needs, by stacking combinations of blocks that are 4 in., 8 in., and 12 in. wide. The row of blocks should be at least 12 in. but no greater than 24 in. high.

  3. Place wire mesh over the outside vertical face (open end) of the concrete blocks to prevent stone from being washed through the blocks. Use hardware cloth or comparable wire mesh with 0.5 in. opening.

  4. Pile washed stone against the wire mesh to the top of the blocks. Use 0.75 to 3 in.

Costs

- Average annual cost for installation and maintenance (one year useful life) is $200 per inlet.

Inspection and Maintenance

- Inspect BMPs prior to forecast rain, daily during extended rain events, after rain events, weekly during the rainy season, and at two-week intervals during the non-rainy season.

- Filter Fabric Fences. If the fabric becomes clogged, torn, or degrades, it should be replaced. Make sure the stakes are securely driven in the ground and are in good shape (i.e., not bent, cracked, or splintered, and are reasonably perpendicular to the ground). Replace damaged stakes.

- Gravel Filters. If the gravel becomes clogged with sediment, it must be carefully removed from the inlet and either cleaned or replaced. Since cleaning gravel at a construction site may be difficult, consider using the sediment-laden stone as fill material and put fresh stone around the inlet. Inspect bags for holes, gashes, and snags, and replace bags as needed. Check gravel bags for proper arrangement and displacement.

- Sediment that accumulates in the BMP must be periodically removed in order to maintain BMP effectiveness. Sediment should be removed when the sediment accumulation reaches one-third of the barrier height. Sediment removed during maintenance may be incorporated into earthwork on the site ore disposed at an appropriate location.

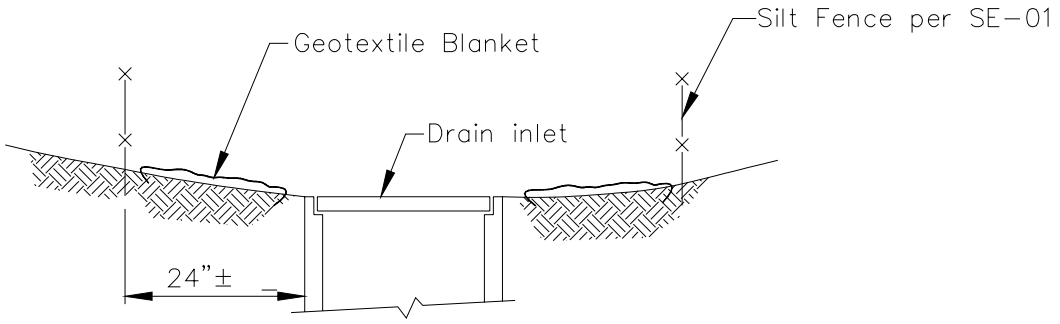
- Remove storm drain inlet protection once the drainage area is stabilized.

  - Clean and regrade area around the inlet and clean the inside of the storm drain inlet as it must be free of sediment and debris at the time of final inspection.

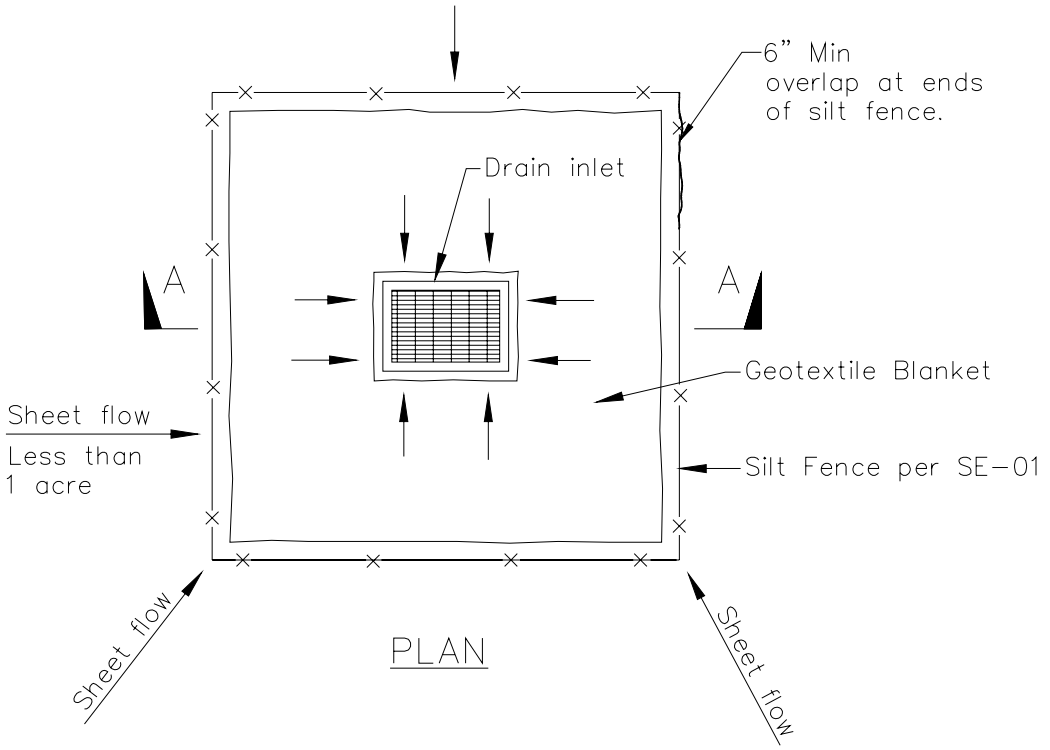
References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management Manual for The Puget Sound Basin, Washington State Department of Ecology, Public Review Draft, 1991.



SECTION A–A

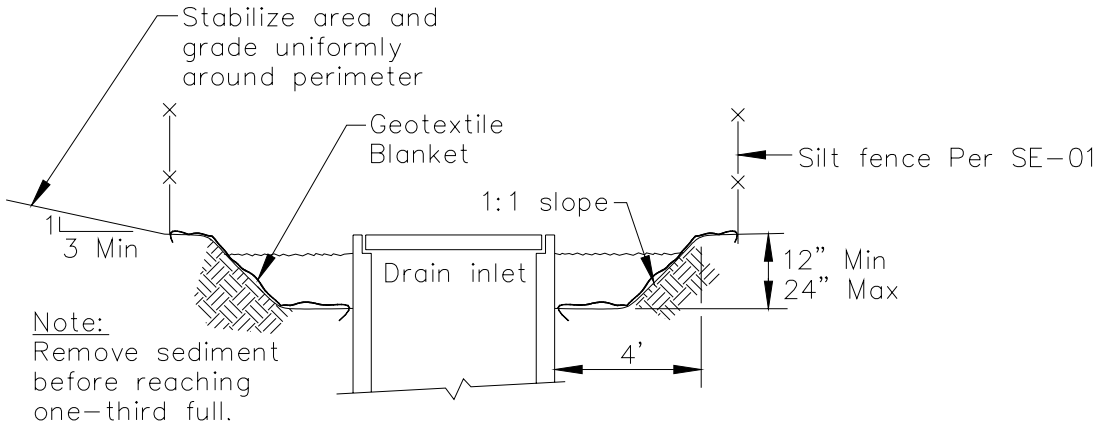


PLAN

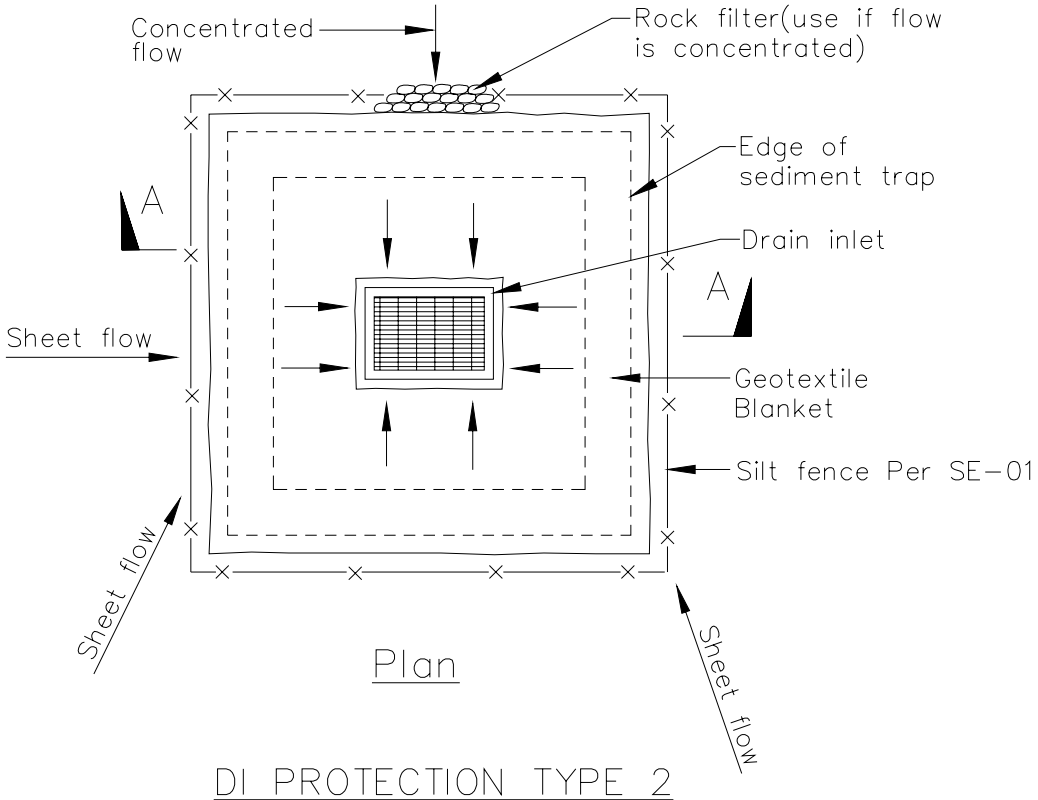
DI PROTECTION TYPE 1
NOT TO SCALE

NOTES:

1. For use in areas where grading has been completed and final soil stabilization and seeding are pending.
2. Not applicable in paved areas.
3. Not applicable with concentrated flows.



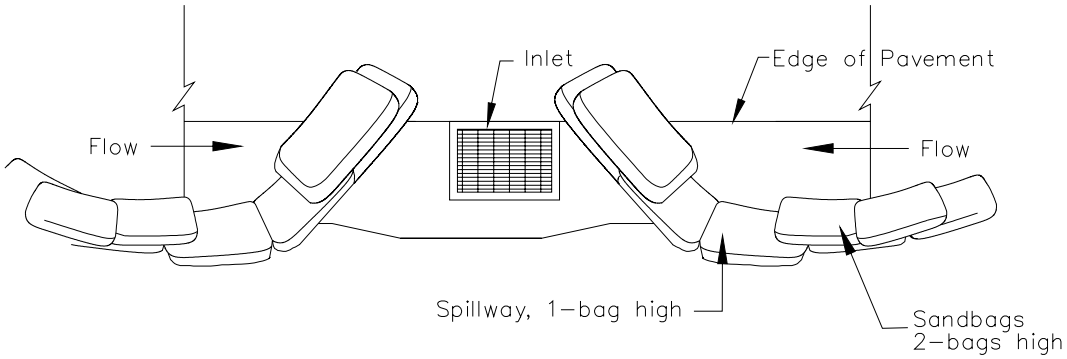
Section A–A



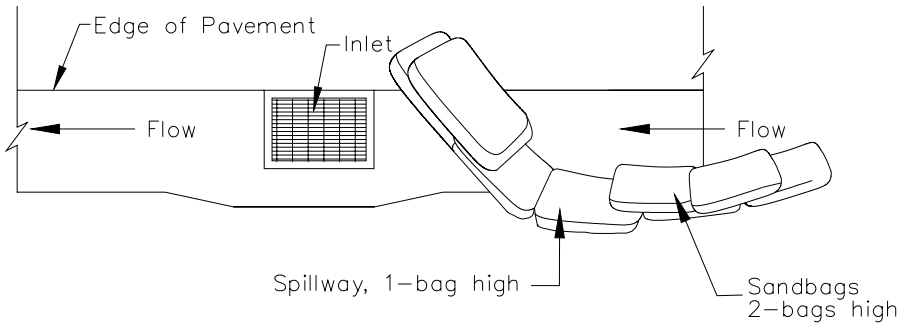
Plan

DI PROTECTION TYPE 2
NOT TO SCALE

Notes
1. For use in cleared and grubbed and in graded areas.
2. Shape basin so that longest inflow area faces longest length of trap.
3. For concentrated flows, shape basin in 2:1 ratio with length oriented towards direction of flow.



TYPICAL PROTECTION FOR INLET ON SUMP

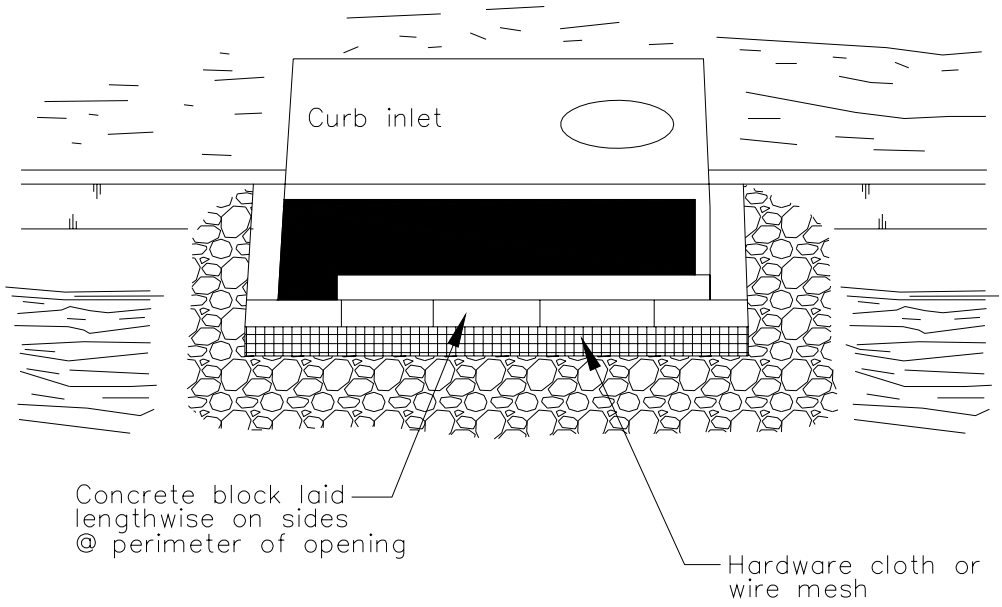


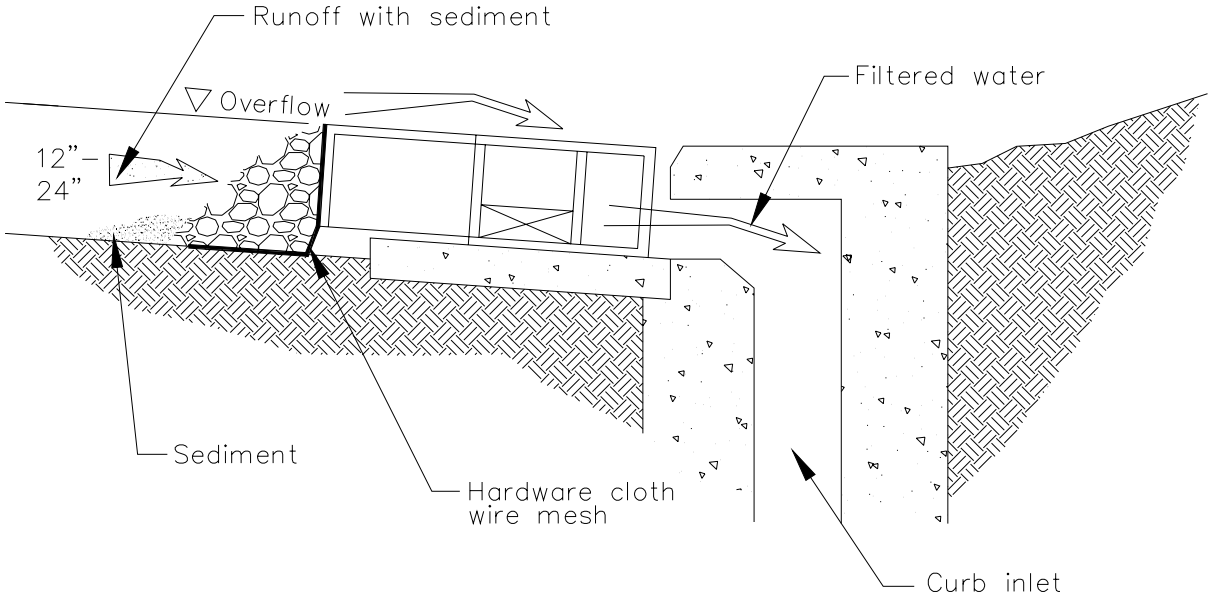
TYPICAL PROTECTION FOR INLET ON GRADE

NOTES:

1. Intended for short–term use.
2. Use to inhibit non–storm water flow.
3. Allow for proper maintenance and cleanup.
4. Bags must be removed after adjacent operation is completed
5. Not applicable in areas with high silts and clays without filter fabric.

DI PROTECTION TYPE 3
NOT TO SCALE

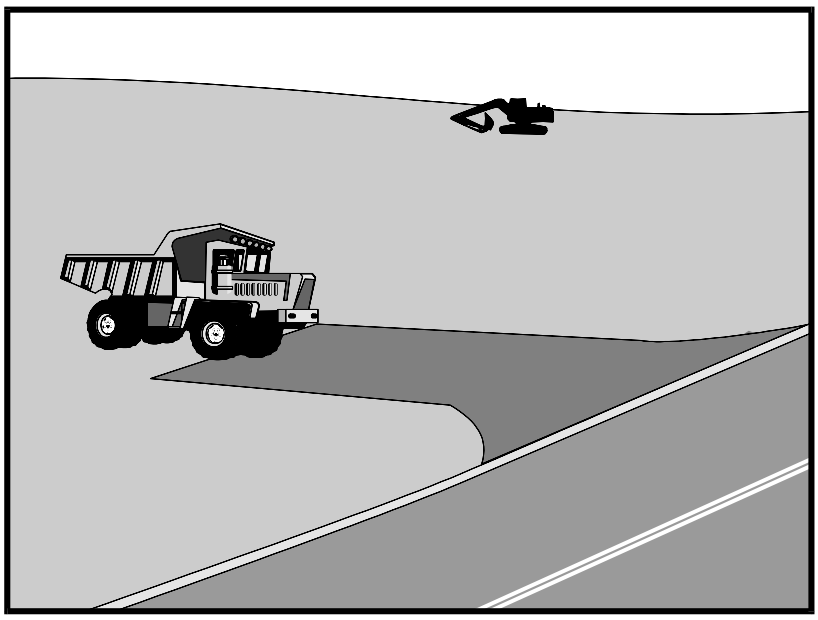




DI PROTECTION – TYPE 4

NOT TO SCALE

Stabilized Construction Entrance / Exit TC-1



Objectives		
EC	Erosion Control	☒
SE	Sediment Control	☒
TC	Tracking Control	☑
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.

Suitable Applications

Use at construction sites:

- Where dirt or mud can be tracked onto public roads.
- Adjacent to water bodies.
- Where poor soils are encountered.
- Where dust is a problem during dry weather conditions.

Limitations

- Entrances and exits require periodic top dressing with additional stones.
- This BMP should be used in conjunction with street sweeping on adjacent public right of way.
- Entrances and exits should be constructed on level ground only.
- Stabilized construction entrances are rather expensive to construct and when a wash rack is included, a sediment trap of some kind must also be provided to collect wash water runoff.

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Implementation

General

A stabilized construction entrance is a pad of aggregate underlain with filter cloth located at any point where traffic will be entering or leaving a construction site to or from a public right of way, street, alley, sidewalk, or parking area. The purpose of a stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights of way or streets. Reducing tracking of sediments and other pollutants onto paved roads helps prevent deposition of sediments into local storm drains and production of airborne dust.

Where traffic will be entering or leaving the construction site, a stabilized construction entrance should be used. NPDES permits require that appropriate measures be implemented to prevent tracking of sediments onto paved roadways, where a significant source of sediments is derived from mud and dirt carried out from unpaved roads and construction sites.

Stabilized construction entrances are moderately effective in removing sediment from equipment leaving a construction site. The entrance should be built on level ground. Advantages of the Stabilized Construction Entrance/Exit is that it does remove some sediment from equipment and serves to channel construction traffic in and out of the site at specified locations. Efficiency is greatly increased when a washing rack is included as part of a stabilized construction entrance/exit.

Design and Layout

- Construct on level ground where possible.
- Select 3 to 6 in. diameter stones.
- Use minimum depth of stones of 12 in. or as recommended by soils engineer.
- Construct length of 50 ft minimum, and 30 ft minimum width.
- Rumble racks constructed of steel panels with ridges and installed in the stabilized entrance/exit will help remove additional sediment and to keep adjacent streets clean.
- Provide ample turning radii as part of the entrance.
- Limit the points of entrance/exit to the construction site.
- Limit speed of vehicles to control dust.
- Properly grade each construction entrance/exit to prevent runoff from leaving the construction site.
- Route runoff from stabilized entrances/exits through a sediment trapping device before discharge.
- Design stabilized entrance/exit to support heaviest vehicles and equipment that will use it.
- Select construction access stabilization (aggregate, asphaltic concrete, concrete) based on longevity, required performance, and site conditions. Do not use asphalt concrete (AC) grindings for stabilized construction access/roadway.

- If aggregate is selected, place crushed aggregate over geotextile fabric to at least 12 in. depth, or place aggregate to a depth recommended by a geotechnical engineer. A crushed aggregate greater than 3 in. but smaller than 6 in. should be used.
- Designate combination or single purpose entrances and exits to the construction site.
- Require that all employees, subcontractors, and suppliers utilize the stabilized construction access.
- Implement SE-7, Street Sweeping and Vacuuming, as needed.
- All exit locations intended to be used for more than a two-week period should have stabilized construction entrance/exit BMPs.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMPs are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect local roads adjacent to the site daily. Sweep or vacuum to remove visible accumulated sediment.
- Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
- Keep all temporary roadway ditches clear.
- Check for damage and repair as needed.
- Replace gravel material when surface voids are visible.
- Remove all sediment deposited on paved roadways within 24 hours.
- Remove gravel and filter fabric at completion of construction

Costs

Average annual cost for installation and maintenance may vary from $1,200 to $4,800 each, averaging $2,400 per entrance. Costs will increase with addition of washing rack, and sediment trap. With wash rack, costs range from $1,200 - $6,000 each, averaging $3,600 per entrance.

References

Manual of Standards of Erosion and Sediment Control Measures, Association of Bay Area Governments, May 1995.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas, USEPA Agency, 2002.

Proposed Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters, Work Group Working Paper, USEPA, April 1992.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

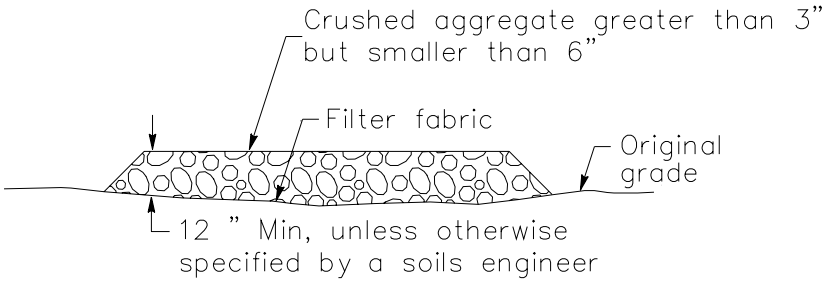
Stormwater Management of the Puget Sound Basin, Technical Manual, Publication #91-75, Washington State Department of Ecology, February 1992.

Virginia Erosion and Sedimentation Control Handbook, Virginia Department of Conservation and Recreation, Division of Soil and Water Conservation, 1991.

Guidance Specifying Management Measures for Nonpoint Pollution in Coastal Waters, EPA 840-B-9-002, USEPA, Office of Water, Washington, DC, 1993.

Water Quality Management Plan for the Lake Tahoe Region, Volume II, Handbook of Management Practices, Tahoe Regional Planning Agency, November 1988.

Stabilized Construction Entrance / Exit TC-1



SECTION B–B
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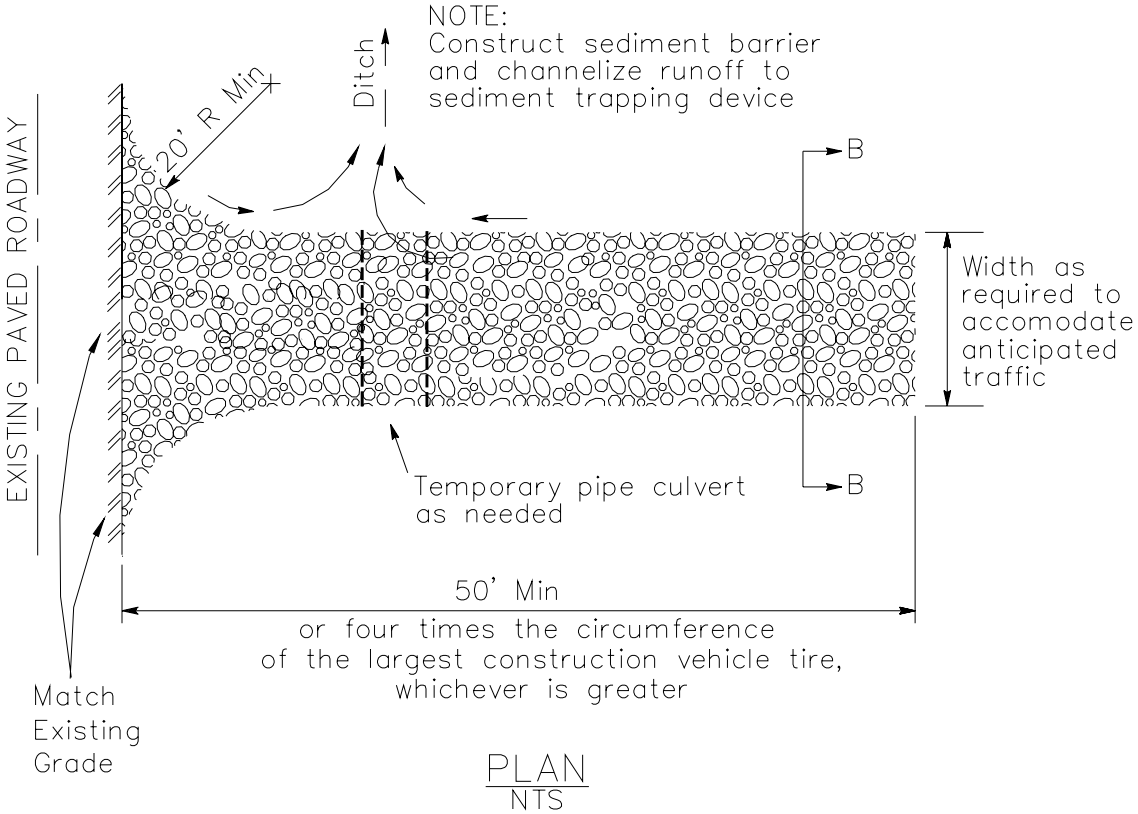

PLAN
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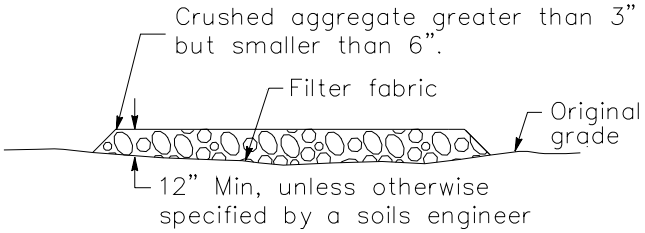
Stabilized Construction Entrance / Exit TC-1



SECTION B–B
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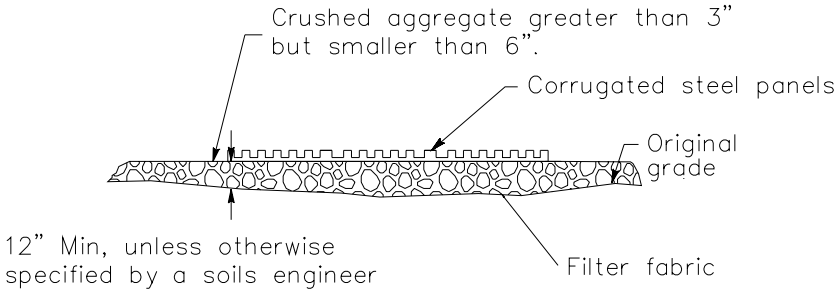

SECTION A–A
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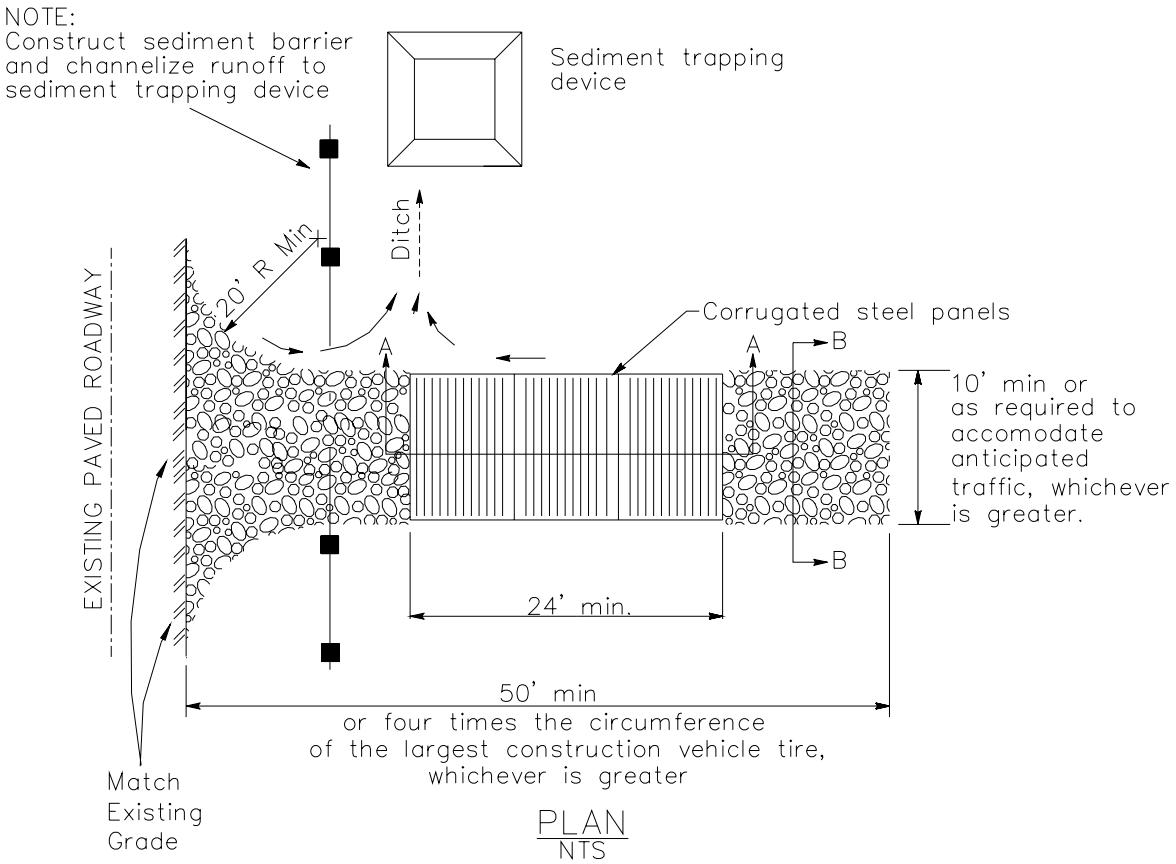
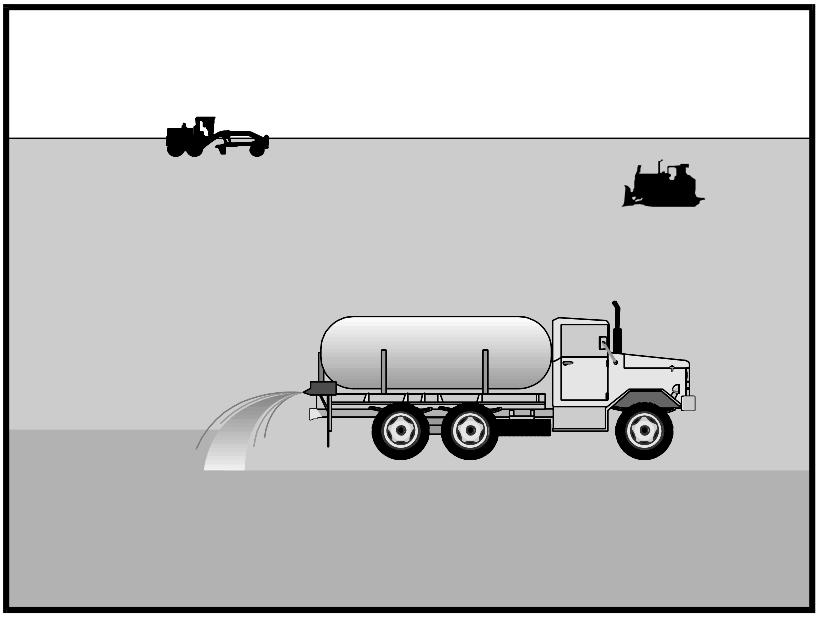


PLAN
NTS

Wind Erosion Control WE-1



Objectives

EC	Erosion Control	
SE	Sediment Control	☒
TC	Tracking Control	
WE	Wind Erosion Control	☑
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	
Trash	
Metals	
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Wind erosion or dust control consists of applying water or other dust palliatives as necessary to prevent or alleviate dust nuisance generated by construction activities. Covering small stockpiles or areas is an alternative to applying water or other dust palliatives.

Suitable Applications

Wind erosion control BMPs are suitable during the following construction activities:

- Construction vehicle traffic on unpaved roads
- Drilling and blasting activities
- Sediment tracking onto paved roads
- Soils and debris storage piles
- Batch drop from front-end loaders
- Areas with unstabilized soil
- Final grading/site stabilization

Limitations

- Watering prevents dust only for a short period and should be applied daily (or more often) to be effective.
- Over watering may cause erosion.

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- Oil or oil-treated subgrade should not be used for dust control because the oil may migrate into drainageways and/or seep into the soil.
- Effectiveness depends on soil, temperature, humidity, and wind velocity.
- Chemically treated sub grades may make the soil water repellant, interfering with long-term infiltration and the vegetation/re-vegetation of the site. Some chemical dust suppressants may be subject to freezing and may contain solvents and should be handled properly.
- Asphalt, as a mulch tack or chemical mulch, requires a 24-hour curing time to avoid adherence to equipment, worker shoes, etc. Application should be limited because asphalt surfacing may eventually migrate into the drainage system.
- In compacted areas, watering and other liquid dust control measures may wash sediment or other constituents into the drainage system.

Implementation

General

California's Mediterranean climate, with short wet seasons and long hot dry seasons, allows the soils to thoroughly dry out. During these dry seasons, construction activities are at their peak, and disturbed and exposed areas are increasingly subject to wind erosion, sediment tracking and dust generated by construction equipment.

Dust control, as a BMP, is a practice that is already in place for many construction activities. Los Angeles, the North Coast, and Sacramento, among others, have enacted dust control ordinances for construction activities that cause dust to be transported beyond the construction project property line.

Recently, the State Air Resources Control Board has, under the authority of the Clean Air Act, started to address air quality in relation to inhalable particulate matter less than 10 microns (PM-10). Approximately 90 percent of these small particles are considered to be dust. Existing dust control regulations by local agencies, municipal departments, public works department, and public health departments are in place in some regions within California.

Many local agencies require dust control in order to comply with local nuisance laws, opacity laws (visibility impairment) and the requirements of the Clean Air Act. The following are measures that local agencies may have already implemented as requirements for dust control from contractors:

- Construction and Grading Permits: Require provisions for dust control plans.
- Opacity Emission Limits: Enforce compliance with California air pollution control laws.
- Increase Overall Enforcement Activities: Priority given to cases involving citizen complaints.
- Maintain Field Application Records: Require records of dust control measures from contractor;
- Stormwater Pollution Prevention Plan: (SWPPP): Integrate dust control measures into SWPPP.

Dust Control Practices

Dust control BMPs generally stabilize exposed surfaces and minimize activities that suspend or track dust particles. The following table shows dust control practices that can be applied to site conditions that cause dust. For heavily traveled and disturbed areas, wet suppression (watering), chemical dust suppression, gravel asphalt surfacing, temporary gravel construction entrances, equipment wash-out areas, and haul truck covers can be employed as dust control applications. Permanent or temporary vegetation and mulching can be employed for areas of occasional or no construction traffic. Preventive measures would include minimizing surface areas to be disturbed, limiting onsite vehicle traffic to 15 mph, and controlling the number and activity of vehicles on a site at any given time.

SITE CONDITION	DUST CONTROL PRACTICES								
	Permanent Vegetation	Mulching	Wet Suppression (Watering)	Chemical Dust Suppression	Gravel or Asphalt	Silt Fences	Temporary Gravel Construction Entrances/Equipment Wash Down	Haul Truck Covers	Minimize Extent of Disturbed Area
Disturbed Areas not Subject to Traffic	X	X	X	X	X				X
Disturbed Areas Subject to Traffic			X	X	X		X		X
Material Stock Pile Stabilization			X	X		X			X
Demolition			X				X	X	
Clearing/ Excavation			X	X		X			X
Truck Traffic on Unpaved Roads			X	X	X		X	X	
Mud/Dirt Carry Out					X		X		

Additional preventive measures include:

- Schedule construction activities to minimize exposed area (EC-1, Scheduling).
- Quickly stabilize exposed soils using vegetation, mulching, spray-on adhesives, calcium chloride, sprinkling, and stone/gravel layering.
- Identify and stabilize key access points prior to commencement of construction.
- Minimize the impact of dust by anticipating the direction of prevailing winds.
- Direct most construction traffic to stabilized roadways within the project site.
- Water should be applied by means of pressure-type distributors or pipelines equipped with a spray system or hoses and nozzles that will ensure even distribution.
- All distribution equipment should be equipped with a positive means of shutoff.
- Unless water is applied by means of pipelines, at least one mobile unit should be available at all times to apply water or dust palliative to the project.

- If reclaimed waste water is used, the sources and discharge must meet California Department of Health Services water reclamation criteria and the Regional Water Quality Control Board requirements. Non-potable water should not be conveyed in tanks or drain pipes that will be used to convey potable water and there should be no connection between potable and non-potable supplies. Non-potable tanks, pipes, and other conveyances should be marked, "NON-POTABLE WATER - DO NOT DRINK."
- Materials applied as temporary soil stabilizers and soil binders also generally provide wind erosion control benefits.
- Pave or chemically stabilize access points where unpaved traffic surfaces adjoin paved roads.
- Provide covers for haul trucks transporting materials that contribute to dust.
- Provide for wet suppression or chemical stabilization of exposed soils.
- Provide for rapid clean up of sediments deposited on paved roads. Furnish stabilized construction road entrances and vehicle wash down areas.
- Stabilize inactive construction sites using vegetation or chemical stabilization methods.
- Limit the amount of areas disturbed by clearing and earth moving operations by scheduling these activities in phases.

For chemical stabilization, there are many products available for chemically stabilizing gravel roadways and stockpiles. If chemical stabilization is used, the chemicals should not create any adverse effects on stormwater, plant life, or groundwater.

Costs

Installation costs for water and chemical dust suppression are low, but annual costs may be quite high since these measures are effective for only a few hours to a few days.

Inspection and Maintenance

- Inspect and verify that activity-based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two-week intervals in the non-rainy season to verify continued BMP implementation.
- Check areas protected to ensure coverage.
- Most dust control measures require frequent, often daily, or multiple times per day attention.

References

Best Management Practices and Erosion Control Manual for Construction Sites, Flood Control District of Maricopa County, Arizona, September 1992.

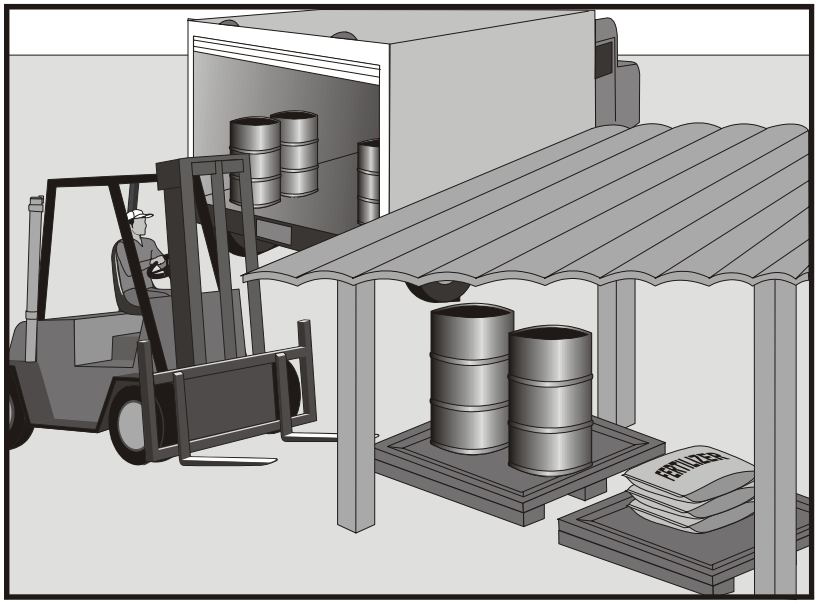
California Air Pollution Control Laws, California Air Resources Board, 1992.

Caltrans, Standard Specifications, Sections 10, “Dust Control”; Section 17, “Watering”; and Section 18, “Dust Palliative”.

Prospects for Attaining the State Ambient Air Quality Standards for Suspended Particulate Matter (PM10), Visibility Reducing Particles, Sulfates, Lead, and Hydrogen Sulfide, California Air Resources Board, April 1991.

Stormwater Quality Handbooks Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Material Delivery and Storage WM-1



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, installing secondary containment, conducting regular inspections, and training employees and subcontractors.

This best management practice covers only material delivery and storage. For other information on materials, see WM-2, Material Use, or WM-4, Spill Prevention and Control. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Soil stabilizers and binders
- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and concrete components

- Hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

- Space limitation may preclude indoor storage.
- Storage sheds often must meet building and fire code requirements.

Implementation

The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored.
- Construction site areas should be designated for material delivery and storage.
- Material delivery and storage areas should be located near the construction entrances, away from waterways, if possible.
  - Avoid transport near drainage paths or waterways.
  - Surround with earth berms. See EC-9, Earth Dikes and Drainage Swales.
  - Place in an area which will be paved.
- Storage of reactive, ignitable, or flammable liquids must comply with the fire codes of your area. Contact the local Fire Marshal to review site materials, quantities, and proposed storage area to determine specific requirements. See the Flammable and Combustible Liquid Code, NFPA30.
- An up to date inventory of materials delivered and stored onsite should be kept.
- Hazardous materials storage onsite should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the rainy season, consider storing materials in a covered area. Store materials in secondary containments such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.

- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.
- Chemicals should be kept in their original labeled containers.
- Employees and subcontractors should be trained on the proper material delivery and storage practices.
- Employees trained in emergency spill cleanup procedures must be present when dangerous materials or liquid chemicals are unloaded.
- If significant residual materials remain on the ground after construction is complete, properly remove materials and any contaminated soil. See WM-7, Contaminated Soil Management. If the area is to be paved, pave as soon as materials are removed to stabilize the soil.

Material Storage Areas and Practices

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 should be stored in approved containers and drums and should not be overfilled. Containers and drums should be placed in temporary containment facilities for storage.
- A temporary containment facility should provide for a spill containment volume able to contain precipitation from a 25 year storm event, plus the greater of 10% of the aggregate volume of all containers or 100% of the capacity of the largest container within its boundary, whichever is greater.
- A temporary containment facility should be impervious to the materials stored therein for a minimum contact time of 72 hours.
- A temporary containment facility should be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills should be collected and placed into drums. These liquids should be handled as a hazardous waste unless testing determines them to be non-hazardous. All collected liquids or non-hazardous liquids should be sent to an approved disposal site.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- Incompatible materials, such as chlorine and ammonia, should not be stored in the same temporary containment facility.
- Throughout the rainy season, each temporary containment facility should be covered during non-working days, prior to, and during rain events.
- Materials should be stored in their original containers and the original product labels should be maintained in place in a legible condition. Damaged or otherwise illegible labels should be replaced immediately.

- Bagged and boxed materials should be stored on pallets and should not be allowed to accumulate on the ground. To provide protection from wind and rain throughout the rainy season, bagged and boxed materials should be covered during non-working days and prior to and during rain events.
- Stockpiles should be protected in accordance with WM-3, Stockpile Management.
- Materials should be stored indoors within existing structures or sheds when available.
- Proper storage instructions should be posted at all times in an open and conspicuous location.
- An ample supply of appropriate spill clean up material should be kept near storage areas.
- Also see WM-6, Hazardous Waste Management, for storing of hazardous materials.

Material Delivery Practices

- Keep an accurate, up-to-date inventory of material delivered and stored onsite.
- Arrange for employees trained in emergency spill cleanup procedures to be present when dangerous materials or liquid chemicals are unloaded.

Spill Cleanup

- Contain and clean up any spill immediately.
- Properly remove and dispose of any hazardous materials or contaminated soil if significant residual materials remain on the ground after construction is complete. See WM-7, Contaminated Soil Management.
- See WM-4, Spill Prevention and Control, for spills of chemicals and/or hazardous materials.

Cost

- The largest cost of implementation may be in the construction of a materials storage area that is covered and provides secondary containment.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Keep an ample supply of spill cleanup materials near the storage area.
- Keep storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored.
- Repair or replace perimeter controls, containment structures, covers, and liners as needed to maintain proper function.

References

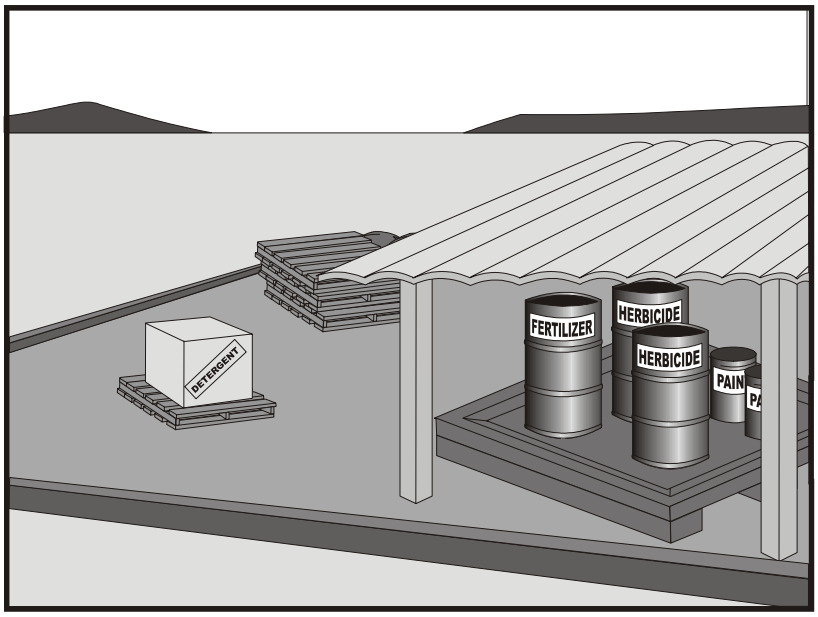
Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Material Use WM-2



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to the storm drain system or watercourses from material use by using alternative products, minimizing hazardous material use onsite, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for use at all construction projects. These procedures apply when the following materials are used or prepared onsite:

- Pesticides and herbicides
- Fertilizers
- Detergents
- Plaster
- Petroleum products such as fuel, oil, and grease
- Asphalt and other concrete components
- Other hazardous chemicals such as acids, lime, glues, adhesives, paints, solvents, and curing compounds
- Concrete compounds
- Other materials that may be detrimental if released to the environment

Limitations

Safer alternative building and construction products may not be available or suitable in every instance.

Implementation

The following steps should be taken to minimize risk:

- Minimize use of hazardous materials onsite.
- Follow manufacturer instructions regarding uses, protective equipment, ventilation, flammability, and mixing of chemicals.
- Train personnel who use pesticides. The California Department of Pesticide Regulation and county agricultural commissioners license pesticide dealers, certify pesticide applicators, and conduct onsite inspections.
- Do not over-apply fertilizers, herbicides, and pesticides. Prepare only the amount needed. Follow the recommended usage instructions. Over-application is expensive and environmentally harmful. Unless on steep slopes, till fertilizers into the soil rather than hydro seeding. Apply surface dressings in several smaller applications, as opposed to one large application, to allow time for infiltration and to avoid excess material being carried offsite by runoff. Do not apply these chemicals just before it rains.
- Train employees and subcontractors in proper material use.
- Supply Material Safety Data Sheets (MSDS) for all materials.
- Dispose of latex paint and paint cans, used brushes, rags, absorbent materials, and drop cloths, when thoroughly dry and are no longer hazardous, with other construction debris.
- Do not remove the original product label; it contains important safety and disposal information. Use the entire product before disposing of the container.
- Mix paint indoors or in a containment area. Never clean paintbrushes or rinse paint containers into a street, gutter, storm drain, or watercourse. Dispose of any paint thinners, residue, and sludge(s) that cannot be recycled, as hazardous waste.
- For water-based paint, clean brushes to the extent practicable, and rinse to a drain leading to a sanitary sewer where permitted, or into a concrete washout pit or temporary sediment trap. For oil-based paints, clean brushes to the extent practicable, and filter and reuse thinners and solvents.
- Use recycled and less hazardous products when practical. Recycle residual paints, solvents, non-treated lumber, and other materials.
- Use materials only where and when needed to complete the construction activity. Use safer alternative materials as much as possible. Reduce or eliminate use of hazardous materials onsite when practical.

- Require contractors to complete the "Report of Chemical Spray Forms" when spraying herbicides and pesticides.
- Keep an ample supply of spill clean up material near use areas. Train employees in spill clean up procedures.
- Avoid exposing applied materials to rainfall and runoff unless sufficient time has been allowed for them to dry.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and at two–week intervals in the non-rainy season to verify continued BMP implementation.
- Maintenance of this best management practice is minimal.
- Spot check employees and subcontractors throughout the job to ensure appropriate practices are being employed.

References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Coastal Nonpoint Pollution Control Program: Program Development and Approval Guidance, Working Group Working Paper; USEPA, April 1992.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Stockpile Management WM-3

Objectives		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Stockpile Management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials such as portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub base or pre-mixed aggregate, asphalt minder (so called "cold mix" asphalt), and pressure treated wood.

Suitable Applications

Implement in all projects that stockpile soil and other materials.

Limitations

None identified.

Implementation

Protection of stockpiles is a year-round requirement. To properly manage stockpiles:

- Locate stockpiles a minimum of 50 ft away from concentrated flows of stormwater, drainage courses, and inlets.
- Protect all stockpiles from stormwater runon using a temporary perimeter sediment barrier such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers.

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- Implement wind erosion control practices as appropriate on all stockpiled material. For specific information, see WE-1, Wind Erosion Control.
- Manage stockpiles of contaminated soil in accordance with WM-7, Contaminated Soil Management.
- Place bagged materials on pallets and under cover.

Protection of Non-Active Stockpiles

Non-active stockpiles of the identified materials should be protected further as follows:

Soil stockpiles

- During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times.
- During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, or aggregate sub base

- During the rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier at all times.
- During the non-rainy season, the stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation.

Stockpiles of "cold mix"

- During the rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material at all times.
- During the non-rainy season, cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Stockpiles/Storage of pressure treated wood with copper, chromium, and arsenic or ammonical, copper, zinc, and arsenate

- During the rainy season, treated wood should be covered with plastic or comparable material at all times.
- During the non-rainy season, treated wood should be covered with plastic or comparable material at all times and cold mix stockpiles should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Protection of Active Stockpiles

Active stockpiles of the identified materials should be protected further as follows:

- All stockpiles should be protected with a temporary linear sediment barrier prior to the onset of precipitation.
- Stockpiles of "cold mix" should be placed on and covered with plastic or comparable material prior to the onset of precipitation.

Costs

All of the above are low cost measures.

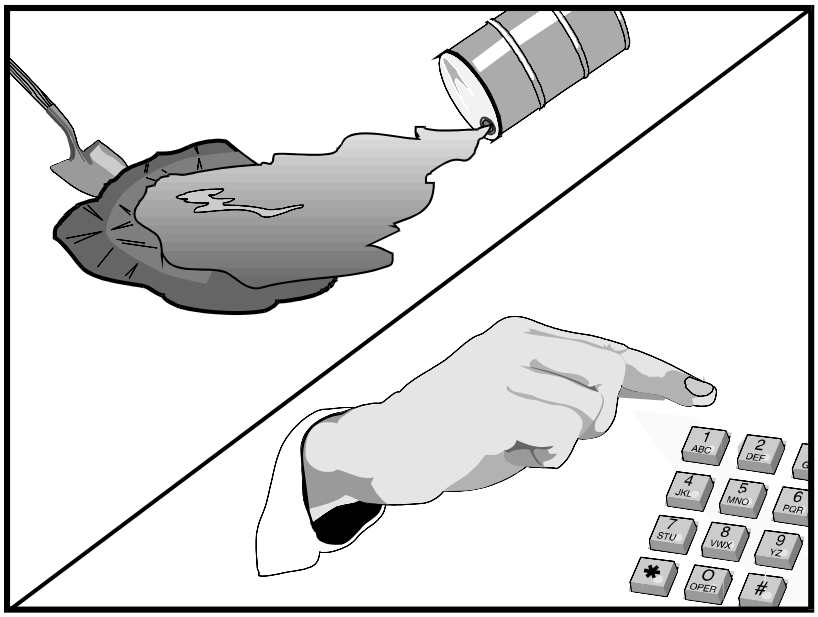
Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation
- Repair and/or replace perimeter controls and covers as needed to keep them functioning properly.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Spill Prevention and Control WM-4



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to drainage systems or watercourses from leaks and spills by reducing the chance for spills, stopping the source of spills, containing and cleaning up spills, properly disposing of spill materials, and training employees.

This best management practice covers only spill prevention and control. However, WM-1, Materials Delivery and Storage, and WM-2, Material Use, also contain useful information, particularly on spill prevention. For information on wastes, see the waste management BMPs in this section.

Suitable Applications

This BMP is suitable for all construction projects. Spill control procedures are implemented anytime chemicals or hazardous substances are stored on the construction site, including the following materials:

- Soil stabilizers/binders
- Dust palliatives
- Herbicides
- Growth inhibitors
- Fertilizers
- Deicing/anti-icing chemicals

- Fuels
- Lubricants
- Other petroleum distillates

Limitations

- In some cases it may be necessary to use a private spill cleanup company.
- This BMP applies to spills caused by the contractor and subcontractors.
- Procedures and practices presented in this BMP are general. Contractor should identify appropriate practices for the specific materials used or stored onsite

Implementation

The following steps will help reduce the stormwater impacts of leaks and spills:

Education

- Be aware that different materials pollute in different amounts. Make sure that each employee knows what a "significant spill" is for each material they use, and what is the appropriate response for "significant" and "insignificant" spills.
- Educate employees and subcontractors on potential dangers to humans and the environment from spills and leaks.
- Hold regular meetings to discuss and reinforce appropriate disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.
- Have contractor's superintendent or representative oversee and enforce proper spill prevention and control measures.

General Measures

- To the extent that the work can be accomplished safely, spills of oil, petroleum products, substances listed under 40 CFR parts 110,117, and 302, and sanitary and septic wastes should be contained and cleaned up immediately.
- Store hazardous materials and wastes in covered containers and protect from vandalism.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Train employees in spill prevention and cleanup.
- Designate responsible individuals to oversee and enforce control measures.
- Spills should be covered and protected from stormwater runon during rainfall to the extent that it doesn't compromise clean up activities.
- Do not bury or wash spills with water.

- Store and dispose of used clean up materials, contaminated materials, and recovered spill material that is no longer suitable for the intended purpose in conformance with the provisions in applicable BMPs.
- Do not allow water used for cleaning and decontamination to enter storm drains or watercourses. Collect and dispose of contaminated water in accordance with WM-10, Liquid Waste Management.
- Contain water overflow or minor water spillage and do not allow it to discharge into drainage facilities or watercourses.
- Place proper storage, cleanup, and spill reporting instructions for hazardous materials stored or used on the project site in an open, conspicuous, and accessible location.
- Keep waste storage areas clean, well organized, and equipped with ample cleanup supplies as appropriate for the materials being stored. Perimeter controls, containment structures, covers, and liners should be repaired or replaced as needed to maintain proper function.

Cleanup

- Clean up leaks and spills immediately.
- Use a rag for small spills on paved surfaces, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to either a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Clean up as much of the material as possible and dispose of properly. See the waste management BMPs in this section for specific information.

Minor Spills

- Minor spills typically involve small quantities of oil, gasoline, paint, etc. which can be controlled by the first responder at the discovery of the spill.
- Use absorbent materials on small spills rather than hosing down or burying the spill.
- Absorbent materials should be promptly removed and disposed of properly.
- Follow the practice below for a minor spill:
  - Contain the spread of the spill.
  - Recover spilled materials.
  - Clean the contaminated area and properly dispose of contaminated materials.

Semi-Significant Spills

- Semi-significant spills still can be controlled by the first responder along with the aid of other personnel such as laborers and the foreman, etc. This response may require the cessation of all other activities.

- Spills should be cleaned up immediately:
  - Contain spread of the spill.
  - Notify the project foreman immediately.
  - If the spill occurs on paved or impermeable surfaces, clean up using "dry" methods (absorbent materials, cat litter and/or rags). Contain the spill by encircling with absorbent materials and do not let the spill spread widely.
  - If the spill occurs in dirt areas, immediately contain the spill by constructing an earthen dike. Dig up and properly dispose of contaminated soil.
  - If the spill occurs during rain, cover spill with tarps or other material to prevent contaminating runoff.

Significant/Hazardous Spills

- For significant or hazardous spills that cannot be controlled by personnel in the immediate vicinity, the following steps should be taken:
  - Notify the local emergency response by dialing 911. In addition to 911, the contractor will notify the proper county officials. It is the contractor's responsibility to have all emergency phone numbers at the construction site.
  - Notify the Governor's Office of Emergency Services Warning Center, (916) 845-8911.
  - For spills of federal reportable quantities, in conformance with the requirements in 40 CFR parts 110,119, and 302, the contractor should notify the National Response Center at (800) 424-8802.
  - Notification should first be made by telephone and followed up with a written report.
  - The services of a spills contractor or a Haz-Mat team should be obtained immediately. Construction personnel should not attempt to clean up until the appropriate and qualified staffs have arrived at the job site.
  - Other agencies which may need to be consulted include, but are not limited to, the Fire Department, the Public Works Department, the Coast Guard, the Highway Patrol, the City/County Police Department, Department of Toxic Substances, California Division of Oil and Gas, Cal/OSHA, etc.

Reporting

- Report significant spills to local agencies, such as the Fire Department; they can assist in cleanup.
- Federal regulations require that any significant oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hours).

Use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- If maintenance must occur onsite, use a designated area and a secondary containment, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Regularly inspect onsite vehicles and equipment for leaks and repair immediately
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Place drip pans or absorbent materials under paving equipment when not in use.
- Use absorbent materials on small spills rather than hosing down or burying the spill. Remove the absorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around
- Oil filters disposed of in trashcans or dumpsters can leak oil and pollute stormwater. Place the oil filter in a funnel over a waste oil-recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask the oil supplier or recycler about recycling oil filters.
- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- If fueling must occur onsite, use designate areas, located away from drainage courses, to prevent the runon of stormwater and the runoff of spills.
- Discourage "topping off" of fuel tanks.
- Always use secondary containment, such as a drain pan, when fueling to catch spills/ leaks.

Costs

Prevention of leaks and spills is inexpensive. Treatment and/ or disposal of contaminated soil or water can be quite expensive.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur.

- Keep ample supplies of spill control and cleanup materials onsite, near storage, unloading, and maintenance areas.
- Update your spill prevention and control plan and stock cleanup materials as changes occur in the types of chemicals onsite.

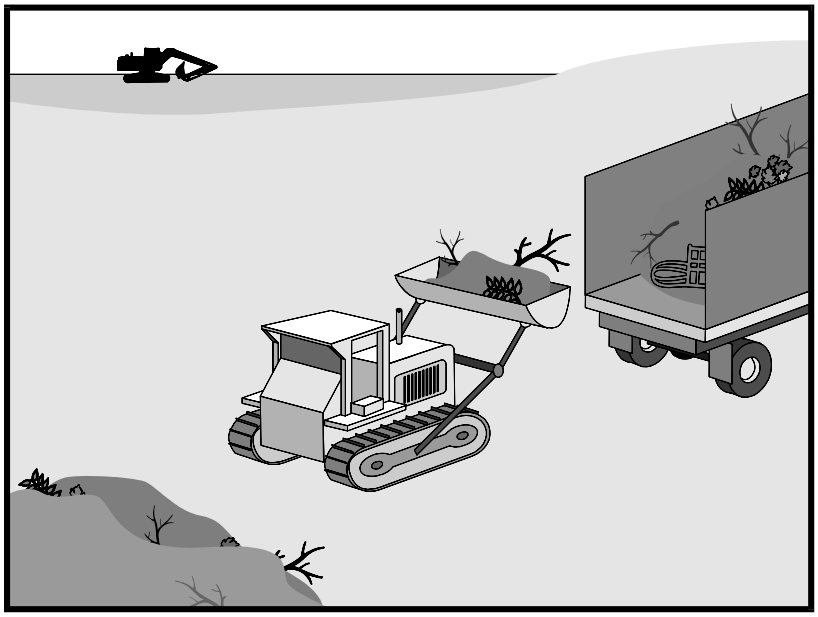
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Solid Waste Management WM-5



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	
Oil and Grease	☑
Organics	☑

Potential Alternatives

None

Description and Purpose

Solid waste management procedures and practices are designed to prevent or reduce the discharge of pollutants to stormwater from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

Suitable Applications

This BMP is suitable for construction sites where the following wastes are generated or stored:

- Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction
- Packaging materials including wood, paper, and plastic
- Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces and masonry products
- Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes
- Construction wastes including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, styrofoam and other materials used to transport and package construction materials

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- Highway planting wastes, including vegetative material, plant containers, and packaging materials

Limitations

Temporary stockpiling of certain construction wastes may not necessitate stringent drainage related controls during the non-rainy season or in desert areas with low rainfall.

Implementation

The following steps will help keep a clean site and reduce stormwater pollution:

- Select designated waste collection areas onsite.
- Inform trash-hauling contractors that you will accept only watertight dumpsters for onsite use. Inspect dumpsters for leaks and repair any dumpster that is not watertight.
- Locate containers in a covered area or in a secondary containment.
- Provide an adequate number of containers with lids or covers that can be placed over the container to keep rain out or to prevent loss of wastes when it is windy.
- Plan for additional containers and more frequent pickup during the demolition phase of construction.
- Collect site trash daily, especially during rainy and windy conditions.
- Remove this solid waste promptly since erosion and sediment control devices tend to collect litter.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.
- Do not hose out dumpsters on the construction site. Leave dumpster cleaning to the trash hauling contractor.
- Arrange for regular waste collection before containers overflow.
- Clean up immediately if a container does spill.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.

Education

- Have the contractor's superintendent or representative oversee and enforce proper solid waste management procedures and practices.
- Instruct employees and subcontractors on identification of solid waste and hazardous waste.
- Educate employees and subcontractors on solid waste storage and disposal procedures.

- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Require that employees and subcontractors follow solid waste handling and storage procedures.
- Prohibit littering by employees, subcontractors, and visitors.
- Minimize production of solid waste materials wherever possible.

Collection, Storage, and Disposal

- Littering on the project site should be prohibited.
- To prevent clogging of the storm drainage system, litter and debris removal from drainage grates, trash racks, and ditch lines should be a priority.
- Trash receptacles should be provided in the contractor's yard, field trailer areas, and at locations where workers congregate for lunch and break periods.
- Litter from work areas within the construction limits of the project site should be collected and placed in watertight dumpsters at least weekly, regardless of whether the litter was generated by the contractor, the public, or others. Collected litter and debris should not be placed in or next to drain inlets, stormwater drainage systems, or watercourses.
- Dumpsters of sufficient size and number should be provided to contain the solid waste generated by the project.
- Full dumpsters should be removed from the project site and the contents should be disposed of by the trash hauling contractor.
- Construction debris and waste should be removed from the site biweekly or more frequently as needed.
- Construction material visible to the public should be stored or stacked in an orderly manner.
- Stormwater runon should be prevented from contacting stored solid waste through the use of berms, dikes, or other temporary diversion structures or through the use of measures to elevate waste from site surfaces.
- Solid waste storage areas should be located at least 50 ft from drainage facilities and watercourses and should not be located in areas prone to flooding or ponding.
- Except during fair weather, construction and highway planting waste not stored in watertight dumpsters should be securely covered from wind and rain by covering the waste with tarps or plastic.
- Segregate potentially hazardous waste from non-hazardous construction site waste.
- Make sure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acids, pesticides, additives, curing compounds) are not disposed of in dumpsters designated for construction debris.

- For disposal of hazardous waste, see WM-6, Hazardous Waste Management. Have hazardous waste hauled to an appropriate disposal and/or recycling facility.

- Salvage or recycle useful vegetation debris, packaging and surplus building materials when practical. For example, trees and shrubs from land clearing can be used as a brush barrier, or converted into wood chips, then used as mulch on graded areas. Wood pallets, cardboard boxes, and construction scraps can also be recycled.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Inspect BMPs subject to non-stormwater discharge daily while non-stormwater discharges occur

- Inspect construction waste area regularly.

- Arrange for regular waste collection.

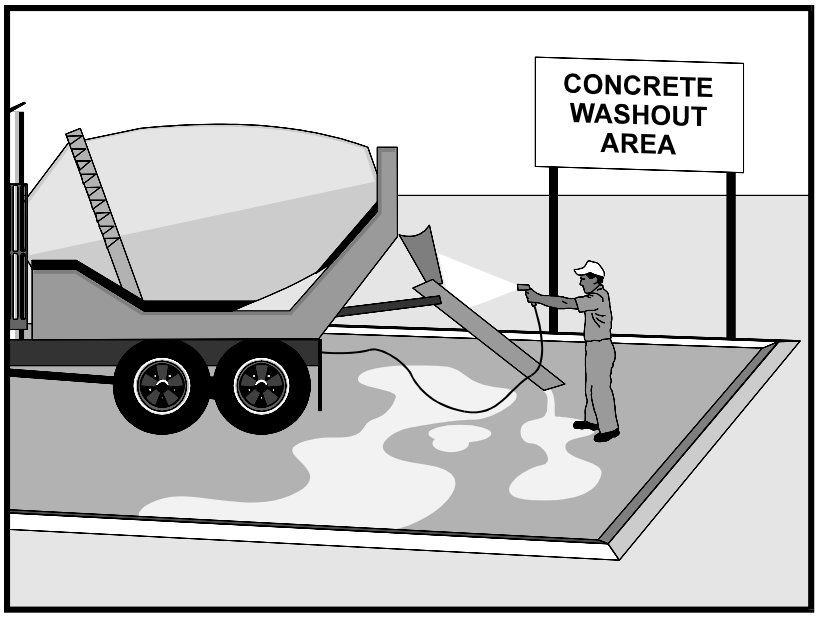
References

Processes, Procedures and Methods to Control Pollution Resulting from All Construction Activity, 430/9-73-007, USEPA, 1973.

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Concrete Waste Management WM-8



Objectives		
EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:
☑ **Primary Objective**
☒ **Secondary Objective**

Targeted Constituents	
Sediment	☑
Nutrients	
Trash	
Metals	☑
Bacteria	
Oil and Grease	
Organics	

Potential Alternatives

None

Description and Purpose

Prevent or reduce the discharge of pollutants to stormwater from concrete waste by conducting washout offsite, performing onsite washout in a designated area, and training employee and subcontractors.

Suitable Applications

Concrete waste management procedures and practices are implemented on construction projects where:

- Concrete is used as a construction material or where concrete dust and debris result form demolition activities
- Slurries containing portland cement concrete (PCC) or asphalt concrete (AC) are generated, such as from saw cutting, coring, grinding, grooving, and hydro-concrete demolition
- Concrete trucks and other concrete-coated equipment are washed onsite
- Mortar-mixing stations exist
- See also NS-8, Vehicle and Equipment Cleaning

Limitations

- Offsite washout of concrete wastes may not always be possible.

Implementation

The following steps will help reduce stormwater pollution from concrete wastes:

- Discuss the concrete management techniques described in this BMP (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
- Incorporate requirements for concrete waste management into material supplier and subcontractor agreements.
- Store dry and wet materials under cover, away from drainage areas.
- Avoid mixing excess amounts of fresh concrete.
- Perform washout of concrete trucks offsite or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- For onsite washout:
  - Locate washout area at least 50 feet from storm drains, open ditches, or water bodies. Do not allow runoff from this area by constructing a temporary pit or bermed area large enough for liquid and solid waste.
  - Wash out wastes into the temporary pit where the concrete can set, be broken up, and then disposed properly.
- Avoid creating runoff by draining water to a bermed or level area when washing concrete to remove fine particles and expose the aggregate.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose in the trash.

Education

- Educate employees, subcontractors, and suppliers on the concrete waste management techniques described herein.
- Arrange for contractor's superintendent or representative to oversee and enforce concrete waste management procedures.

Concrete Slurry Wastes

- PCC and AC waste should not be allowed to enter storm drains or watercourses.
- PCC and AC waste should be collected and disposed of or placed in a temporary concrete washout facility.
- A sign should be installed adjacent to each temporary concrete washout facility to inform concrete equipment operators to utilize the proper facilities.

- Below grade concrete washout facilities are typical. Above grade facilities are used if excavation is not practical.

- A foreman or construction supervisor should monitor onsite concrete working tasks, such as saw cutting, coring, grinding and grooving to ensure proper methods are implemented.

- Saw-cut PCC slurry should not be allowed to enter storm drains or watercourses. Residue from grinding operations should be picked up by means of a vacuum attachment to the grinding machine. Saw cutting residue should not be allowed to flow across the pavement and should not be left on the surface of the pavement. See also NS-3, Paving and Grinding Operations; and WM-10, Liquid Waste Management.

- Slurry residue should be vacuumed and disposed in a temporary pit (as described in OnSite Temporary Concrete Washout Facility, Concrete Transit Truck Washout Procedures, below) and allowed to dry. Dispose of dry slurry residue in accordance with WM-5, Solid Waste Management.

Onsite Temporary Concrete Washout Facility, Transit Truck Washout Procedures

- Temporary concrete washout facilities should be located a minimum of 50 ft from storm drain inlets, open drainage facilities, and watercourses. Each facility should be located away from construction traffic or access areas to prevent disturbance or tracking.

- A sign should be installed adjacent to each washout facility to inform concrete equipment operators to utilize the proper facilities.

- Temporary concrete washout facilities should be constructed above grade or below grade at the option of the contractor. Temporary concrete washout facilities should be constructed and maintained in sufficient quantity and size to contain all liquid and concrete waste generated by washout operations.

- Temporary washout facilities should have a temporary pit or bermed areas of sufficient volume to completely contain all liquid and waste concrete materials generated during washout procedures.

- Washout of concrete trucks should be performed in designated areas only.

- Only concrete from mixer truck chutes should be washed into concrete wash out.

- Concrete washout from concrete pumper bins can be washed into concrete pumper trucks and discharged into designated washout area or properly disposed of offsite.

- Once concrete wastes are washed into the designated area and allowed to harden, the concrete should be broken up, removed, and disposed of per WM-5, Solid Waste Management. Dispose of hardened concrete on a regular basis.

- Temporary Concrete Washout Facility (Type Above Grade)

  - Temporary concrete washout facility (type above grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and

minimum width of 10 ft, but with sufficient quantity and volume to contain all liquid and concrete waste generated by washout operations.

- Straw bales, wood stakes, and sandbag materials should conform to the provisions in SE-9, Straw Bale Barrier.

- Plastic lining material should be a minimum of 10 mil in polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

- Temporary Concrete Washout Facility (Type Below Grade)

  - Temporary concrete washout facilities (type below grade) should be constructed as shown on the details at the end of this BMP, with a recommended minimum length and minimum width of 10 ft. The quantity and volume should be sufficient to contain all liquid and concrete waste generated by washout operations.

  - Lath and flagging should be commercial type.

  - Plastic lining material should be a minimum of 10 mil polyethylene sheeting and should be free of holes, tears, or other defects that compromise the impermeability of the material.

Removal of Temporary Concrete Washout Facilities

- When temporary concrete washout facilities are no longer required for the work, the hardened concrete should be removed and disposed of. Materials used to construct temporary concrete washout facilities should be removed from the site of the work and disposed of.

- Holes, depressions or other ground disturbance caused by the removal of the temporary concrete washout facilities should be backfilled and repaired.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.

- Temporary concrete washout facilities should be maintained to provide adequate holding capacity with a minimum freeboard of 4 in. for above grade facilities and 12 in. for below grade facilities. Maintaining temporary concrete washout facilities should include removing and disposing of hardened concrete and returning the facilities to a functional condition. Hardened concrete materials should be removed and disposed of.

- Washout facilities must be cleaned, or new facilities must be constructed and ready for use once the washout is 75% full.

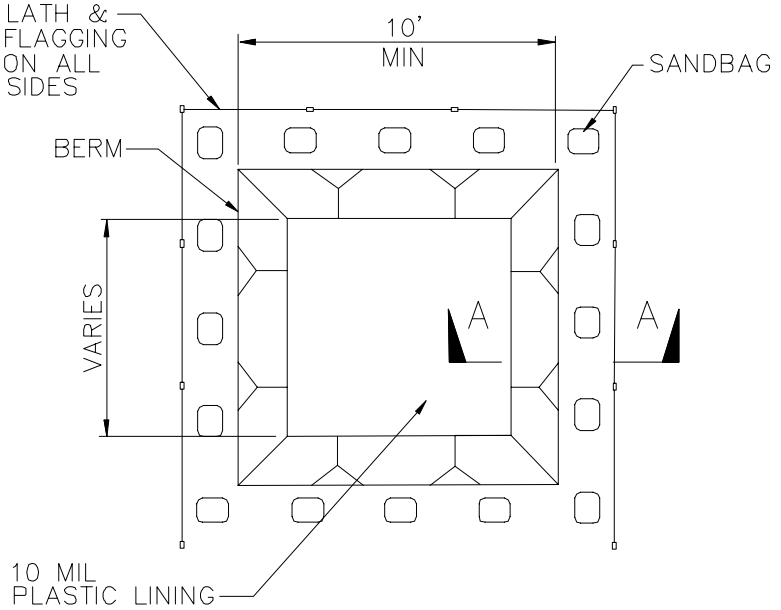
References

Blueprint for a Clean Bay: Best Management Practices to Prevent Stormwater Pollution from Construction Related Activities; Santa Clara Valley Nonpoint Source Pollution Control Program, 1995.

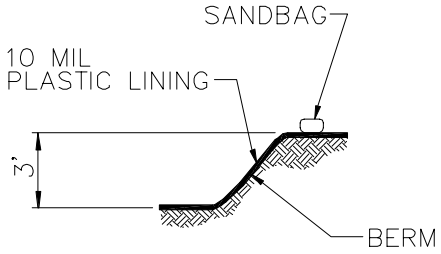
Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

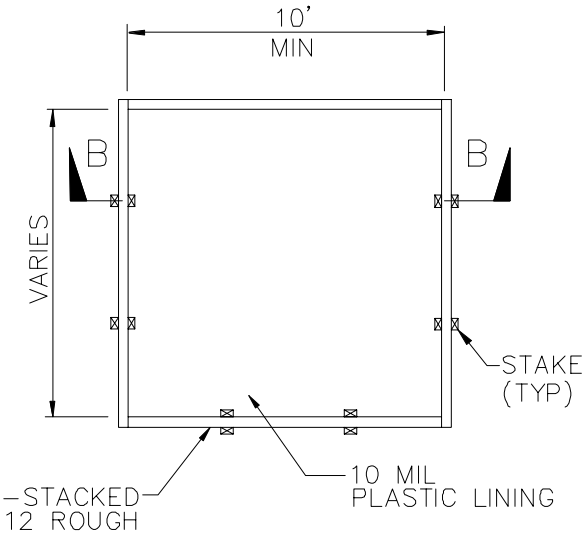
WM-8 Concrete Waste Management



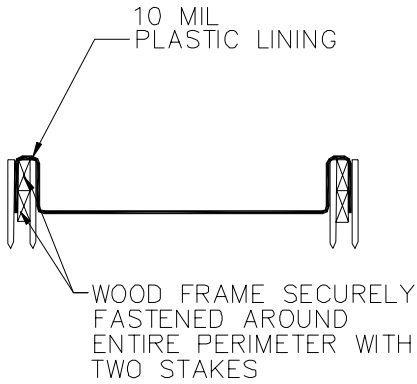
PLAN
NOT TO SCALE
TYPE "BELOW GRADE"



SECTION A–A
NOT TO SCALE



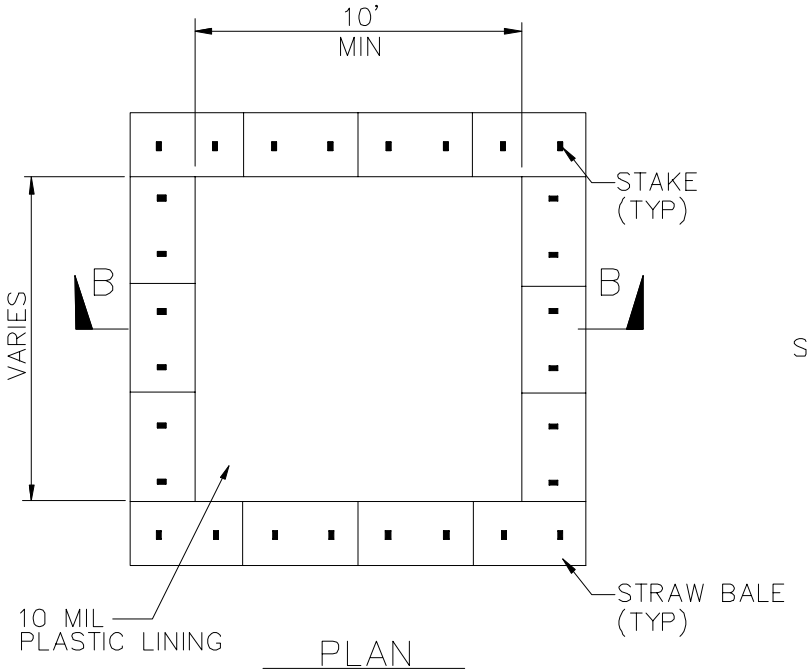
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"



SECTION B–B
NOT TO SCALE

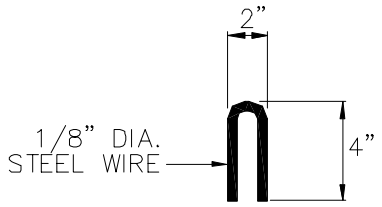
NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

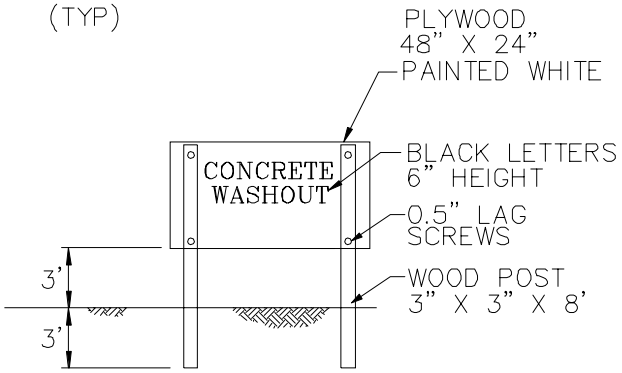


PLAN
NOT TO SCALE

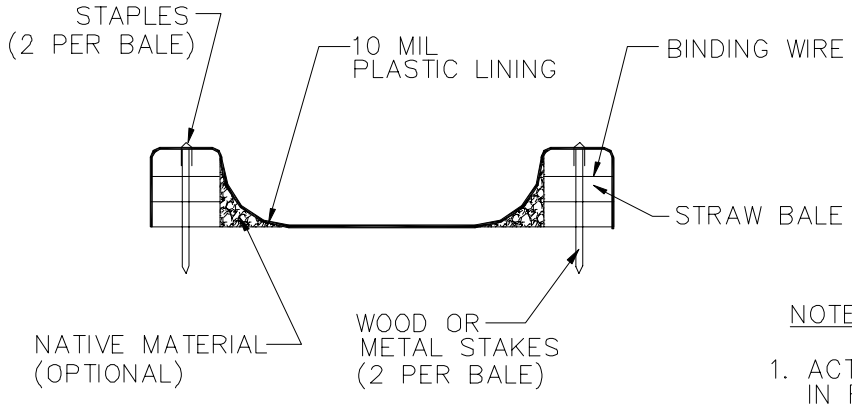
TYPE "ABOVE GRADE"
WITH STRAW BALES



STAPLE DETAIL



CONCRETE WASHOUT
SIGN DETAIL
(OR EQUIVALENT)

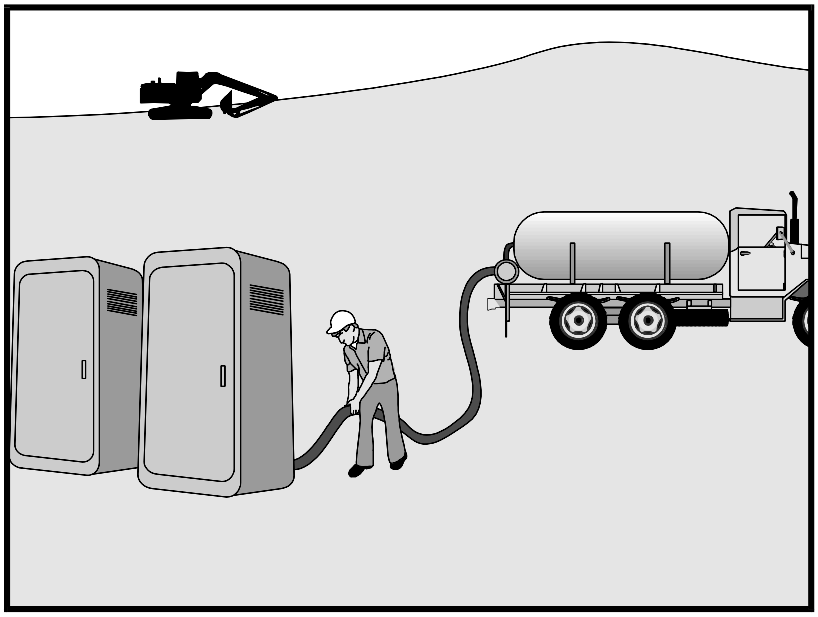


SECTION B–B
NOT TO SCALE

NOTES

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

Sanitary/Septic Waste Management WM-9



Objectives

EC	Erosion Control	
SE	Sediment Control	
TC	Tracking Control	
WE	Wind Erosion Control	
NS	Non-Stormwater Management Control	
WM	Waste Management and Materials Pollution Control	☑

Legend:

☑ **Primary Objective**

☒ **Secondary Objective**

Targeted Constituents

Sediment	
Nutrients	☑
Trash	☑
Metals	
Bacteria	☑
Oil and Grease	
Organics	☑

Potential Alternatives

None

Description and Purpose

Proper sanitary and septic waste management prevent the discharge of pollutants to stormwater from sanitary and septic waste by providing convenient, well-maintained facilities, and arranging for regular service and disposal.

Suitable Applications

Sanitary septic waste management practices are suitable for use at all construction sites that use temporary or portable sanitary and septic waste systems.

Limitations

None identified.

Implementation

Sanitary or septic wastes should be treated or disposed of in accordance with state and local requirements. In many cases, one contract with a local facility supplier will be all that it takes to make sure sanitary wastes are properly disposed.

Storage and Disposal Procedures

- Temporary sanitary facilities should be located away from drainage facilities, watercourses, and from traffic circulation. When subjected to high winds or risk of high winds, temporary sanitary facilities should be secured to prevent overturning.
- Wastewater should not be discharged or buried within the project site.

- Sanitary and septic systems that discharge directly into sanitary sewer systems, where permissible, should comply with the local health agency, city, county, and sewer district requirements.
- Only reputable, licensed sanitary and septic waste haulers should be used.
- Sanitary facilities should be located in a convenient location.
- Untreated raw wastewater should never be discharged or buried.
- Temporary septic systems should treat wastes to appropriate levels before discharging.
- If using an onsite disposal system (OSDS), such as a septic system, local health agency requirements must be followed.
- Temporary sanitary facilities that discharge to the sanitary sewer system should be properly connected to avoid illicit discharges.
- Sanitary and septic facilities should be maintained in good working order by a licensed service.
- Regular waste collection by a licensed hauler should be arranged before facilities overflow.

Education

- Educate employees, subcontractors, and suppliers on sanitary and septic waste storage and disposal procedures.
- Educate employees, subcontractors, and suppliers of potential dangers to humans and the environment from sanitary and septic wastes.
- Instruct employees, subcontractors, and suppliers in identification of sanitary and septic waste.
- Hold regular meetings to discuss and reinforce disposal procedures (incorporate into regular safety meetings).
- Establish a continuing education program to indoctrinate new employees.

Costs

All of the above are low cost measures.

Inspection and Maintenance

- Inspect and verify that activity–based BMPs are in place prior to the commencement of associated activities. While activities associated with the BMP are under way, inspect weekly during the rainy season and of two-week intervals in the non-rainy season to verify continued BMP implementation.
- Arrange for regular waste collection.
- If high winds are expected, portable sanitary facilities must be secured with spikes or weighed down to prevent over turning.

References

Stormwater Quality Handbooks - Construction Site Best Management Practices (BMPs) Manual, State of California Department of Transportation (Caltrans), November 2000.

Stormwater Management for Construction Activities; Developing Pollution Prevention Plans and Best Management Practice, EPA 832-R-92005; USEPA, April 1992.

Appendix I: BMP Inspection Form

BMP INSPECTION REPORT

Date and Time of Inspection:			Date Report Written:	
Inspection Type: (Circle one)	Weekly *Complete Parts I,II,III and VII*	Pre-Storm *Complete Parts I,II,III,IV and VII*	During Rain Event *Complete Parts I, II, III, V, and VII*	Post-Storm *Complete Parts I,II,III,VI and VII*

Part I. General Information

Site Information

Construction Site Name:	
Construction stage and completed activities:	Approximate area of site that is exposed:

Photos Taken: (Circle one)	Yes	No	Photo Reference IDs:

Weather

Estimate storm beginning: (date and time)	Estimate storm duration: (hours)
Estimate time since last storm: (days or hours)	Rain gauge reading and location: (in)

Is a "Qualifying Event" predicted or did one occur (i.e., 0.5" rain with 48-hrs or greater between events)? (Y/N)
If yes, summarize forecast:

Exemption Documentation (explanation required if inspection could not be conducted). Visual inspections are not required outside of business hours or during dangerous weather conditions such as flooding or electrical storms.

Inspector Information

Inspector Name:	Inspector Title:
Signature:	Date:

Part II. BMP Observations. Describe deficiencies in Part III.

Minimum BMPs for Risk Level _____ Sites	Failures or other short comings (yes, no, N/A)	Action Required (yes/no)	Action Implemented (Date)
Good Housekeeping for Construction Materials			
Inventory of products (excluding materials designed to be outdoors)			
Stockpiled construction materials not actively in use are covered and bermed			
All chemicals are stored in watertight containers with appropriate secondary containment, or in a completely enclosed storage shed			
Construction materials are minimally exposed to precipitation			
BMPs preventing the off-site tracking of materials are implemented and properly effective			
Good Housekeeping for Waste Management			
Wash/rinse water and materials are prevented from being disposed into the storm drain system			
Portable toilets are contained to prevent discharges of waste			
Sanitation facilities are clean and with no apparent for leaks and spills			
Equipment is in place to cover waste disposal containers at the end of business day and during rain events			
Discharges from waste disposal containers are prevented from discharging to the storm drain system / receiving water			
Stockpiled waste material is securely protected from wind and rain if not actively in use			
Procedures are in place for addressing hazardous and non-hazardous spills			
Appropriate spill response personnel are assigned and trained			
Equipment and materials for cleanup of spills is available onsite			
Washout areas (e.g., concrete) are contained appropriately to prevent discharge or infiltration into the underlying soil			
Good Housekeeping for Vehicle Storage and Maintenance			
Measures are in place to prevent oil, grease, or fuel from leaking into the ground, storm drains, or surface waters			
All equipment or vehicles are fueled, maintained, and stored in a designated area with appropriate BMPs			
Vehicle and equipment leaks are cleaned immediately and disposed of properly			

Part II. BMP Observations Continued. Describe deficiencies in Part III.			
Minimum BMPs for Risk Level _____ Sites	Adequately designed, implemented and effective	Action Required (yes/no)	Action Implemented (Date)

	(yes, no, N/A)		
Good Housekeeping for Landscape Materials			
Stockpiled landscape materials such as mulches and topsoil are contained and covered when not actively in use			
Erodible landscape material has not been applied 2 days before a forecasted rain event or during an event			
Erodible landscape materials are applied at quantities and rates in accordance with manufacturer recommendations			
Bagged erodible landscape materials are stored on pallets and covered			
Good Housekeeping for Air Deposition of Site Materials			
Good housekeeping measures are implemented onsite to control the air deposition of site materials and from site operations			
Non-Stormwater Management			
Non-Stormwater discharges are properly controlled			
Vehicles are washed in a manner to prevent non-stormwater discharges to surface waters or drainage systems			
Streets are cleaned in a manner to prevent unauthorized non-stormwater discharges to surface waters or drainage systems.			
Erosion Controls			
Wind erosion controls are effectively implemented			
Effective soil cover is provided for disturbed areas inactive (i.e., not scheduled to be disturbed for 14 days) as well as finished slopes, open space, utility backfill, and completed lots			
The use of plastic materials is limited in cases when a more sustainable, environmentally friendly alternative exists.			
Sediment Controls			
Perimeter controls are established and effective at controlling erosion and sediment discharges from the site			
Entrances and exits are stabilized to control erosion and sediment discharges from the site			
Sediment basins are properly maintained			
Linear sediment control along toe of slope, face of slope an at grade breaks (Risk Level 2 & 3 Only)			
Limit construction activity to and from site to entrances and exits that employ effective controls to prevent offsite tracking (Risk Level 2 & 3 Only)			
Ensure all storm, drain inlets and perimeter controls, runoff control BMPs and pollutants controls at entrances and exits are maintained and protected from activities the reduce their effectiveness (Risk Level 2 & 3 Only)			
Inspect all immediate access roads daily (Risk Level 2 & 3 Only)			
Run-On and Run-Off Controls			

Run-on to the site is effectively managed and directed away from all disturbed areas.			
Other			
Are the project SWPPP and BMP plan up to date, available on-site and being properly implemented?			

Part III. Descriptions of BMP Deficiencies		
Deficiency	**Repairs Implemented: Note - Repairs must begin within 72 hours of identification and, complete repairs as soon as possible.**	
	Start Date	**Action**
1.		
2.		
3.		
4.		

Part IV. Additional Pre-Storm Observations. **Note the presence or absence of floating and suspended materials, sheen, discoloration, turbidity, odors, and source(s) of pollutants(s).**	
	Yes, No, N/A
Do stormwater storage and containment areas have adequate freeboard? If no, complete Part III.	
Are drainage areas free of spills, leaks, or uncontrolled pollutant sources? If no, complete Part VII and describe below.	
Notes:	
Are stormwater storage and containment areas free of leaks? If no, complete Parts III and/or VII and describe below.	
Notes:	

Part V. Additional During Storm Observations. **If BMPs cannot be inspected during inclement weather, list the results of visual inspections at all relevant outfalls, discharge points, and downstream locations. Note odors or visible sheen on the surface of discharges. Complete Part VII (Corrective Actions) as needed.**	
Outfall, Discharge Point, or Other Downstream Location	
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description
Location	Description

Part VI. Additional Post-Storm Observations. **Visually observe (inspect) stormwater discharges at all discharge locations within two business days (48 hours) after each qualifying rain event, and observe (inspect) the discharge of stored or contained stormwater that is derived from and discharged subsequent to a qualifying rain event producing precipitation of ½ inch or more at the time of discharge. Complete Part VII (Corrective Actions) as needed.**	
Discharge Location, Storage or Containment Area	**Visual Observation**

Part VII. Additional Corrective Actions Required. **Identify additional corrective actions not included with BMP Deficiencies (Part III) above. Note if SWPPP change is required.**	
Required Actions	**Implementation Date**

Appendix J: Project Specific Rain Event Action Plan Template

Rain Event Action Plan (REAP)

Date of REAP		**WDID Number:**	
Date Rain Predicted to Occur:		**Predicted % chance of rain:**	

Predicted Rain Event Triggered Actions

Below is a list of suggested actions and items to review for this project. Each active Trade should check all material storage areas, stockpiles, waste management areas, vehicle and equipment storage and maintenance, areas of active soil disturbance, and areas of active work to ensure the proper implementation of BMPs. Project-wide BMPs should be checked and cross-referenced to the BMP progress map.

Trade or Activity	Suggested action(s) to perform / item(s) to review prior to rain event
❑ Information & Scheduling	❑ Inform trade supervisors of predicted rain ❑ Check scheduled activities and reschedule as needed ❑ Alert erosion/sediment control provider ❑ Alert sample collection contractor (if applicable) ❑ Schedule staff for extended rain inspections ❑ Check Erosion and Sediment Control (ESC) material stock ❑ Review BMP progress map ❑ Other:_____ ❑ _____ ❑ _____
❑ Material storage areas	❑ Material under cover or in sheds (ex: treated woods and metals) ❑ Perimeter control around stockpiles ❑ Other:_____ ❑ _____ ❑ _____
❑ Waste management areas	❑ Dumpsters closed ❑ Drain holes plugged ❑ Recycling bins covered ❑ Sanitary stations bermed and protected from tipping ❑ Other:_____ ❑ _____ ❑ _____
❑ Trade operations	❑ Exterior operations shut down for event (e.g., no concrete pours or paving) ❑ Soil treatments (e.g., fertilizer) ceased within 24 hours of event ❑ Materials and equipment (e.g., tools) properly stored and covered ❑ Waste and debris disposed in covered dumpsters or removed from site ❑ Trenches and excavations protected ❑ Perimeter controls around disturbed areas ❑ Fueling and repair areas covered and bermed ❑ Other:_____ ❑ _____ ❑ _____
❑ Site ESC BMPs	❑ Adequate capacity in sediment basins and traps ❑ Site perimeter controls in place ❑ Catch basin and drop inlet protection in place and cleaned ❑ Temporary erosion controls deployed ❑ Temporary perimeter controls deployed around disturbed areas and stockpiles ❑ Roads swept; site ingress and egress points stabilized ❑ Other:_____ ❑ _____ ❑ _____
❑ Concrete rinse out area	❑ Adequate capacity for rain ❑ Wash-out bins covered ❑ Other:_____ ❑ _____ ❑ _____
❑ Spill and drips	❑ All incident spills and drips, including paint, stucco, fuel, and oil cleaned ❑ Drip pans emptied ❑ Other:_____ ❑ _____ ❑ _____

Continued on next page.

❑ Other / Discussion / Diagrams	❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____ ❑ _____

Attach a printout of the weather forecast from the NOAA website to the REAP.

I certify under penalty of law that this Rain Event Action Plan (REAP) will be performed in accordance with the General Permit by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

_____Date: _____

Qualified SWPPP Practitioner (Use ink please)

Appendix K: Training Reporting Form

CERTIFICATE OF TRAINING

CALIFORNIA CONSTRUCTION GENERAL PERMIT

QUALIFIED SWPPP DEVELOPER (QSD)
AND
QUALIFIED SWPPP PRACTITIONER (QSP)

Michael Mulgrew

Jun 18, 2015 - Aug 14, 2017

Certificate # 24526

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

California Stormwater Quality Association and
California Construction General Permit Training Team

Trained Contractor Personnel Log

Stormwater Management Training Log and Documentation

Project Name: _____
WDID #: _____

Stormwater Management Topic: (check as appropriate)

☐ Erosion Control
☐ Sediment Control
☐ Wind Erosion Control
☐ Tracking Control
☐ Non-Stormwater Management
☐ Waste Management and Materials Pollution Control
☐ Stormwater Sampling

Specific Training Objective: _____

Location: _____ Date: _____

Instructor:_____ Telephone: _____

Course Length (hours): _____

Attendee Roster (Attach additional forms if necessary)

Name	Company	Phone

As needed, add proof of external training (e.g., course completion certificates, credentials for QSP, QSD).

Appendix L: Responsible Parties

Authorization of Approved Signatories

Project Name: Athletics Complex East

WDID #: _____

Name of Personnel	Project Role	Company	Signature	Date
Rebecca Mitchel	Manger, Facility Support Services	Mt. SAC		

Signature of Legally Responsible Person or Approved Signatory	Date
Gary Nellesen	(909) 274-5176
Name of Legally Responsible Person or Approved Signatory	Telephone Number

Identification of QSP

Project Name: Athletics Complex East

WDID #: _____

The following are QSPs associated with this project

Name of Personnel(1)	Company	Date

(1) If additional QSPs are required on the job site add additional lines and include information here

Authorization of Data Submitters

Project Name: Athletics Complex East

WDID #: _____

Name of Personnel	Project Role	Company	Signature	Date
Michael P. Mulgrew	QSP/QSD			

_____ _____

Approved Signatory's Signature Date

_____ _____

Approved Signatory Telephone Number

Name and Title

Appendix M:Contractors and Subcontractors

Contractor

Name: Matt Breyer

Title: Senior Project Manager

Company: Tilden-Coil Contractors

Address: 3612 Mission Inn Ave, Riverside, CA 92501

Phone Number: (909) 274-5070

Number (24/7): (951) 377-5531

Appendix N: Construction General Permit

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Arnold Schwarzenegger
Governor

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5463 • http://www.waterboards.ca.gov

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE
ACTIVITIES

ORDER NO. 2009-0009-DWQ
NPDES NO**. CAS000002**

This Order was adopted by the State Water Resources Control Board on:	**September 2, 2009**
This Order shall become effective on:	**July 1, 2010**
This Order shall expire on:	**September 2, 2014**

IT IS HEREBY ORDERED, that this Order supersedes Order No. 99-08-DWQ [as amended by Order No. 2010-0014-DWQ] except for enforcement purposes. The Discharger shall comply with the requirements in this Order to meet the provisions contained in Division 7 of the California Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal Clean Water Act and regulations and guidelines adopted thereunder.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on September 2, 2009.

AYE: Vice Chair Frances Spivy-Weber
Board Member Arthur G. Baggett, Jr.
Board Member Tam M. Doduc

NAY: Chairman Charles R. Hoppin

ABSENT: None

ABSTAIN: None

Jeanine Townsend
Clerk to the Board

Linda S. Adams
Secretary for
Environmental Protection

State Water Resources Control Board

Division of Water Quality
1001 I Street • Sacramento, California 95814 • (916) 341-5455
Mailing Address: P.O. Box 100 • Sacramento, California • 95812-0100
Fax (916) 341-5463 • http://www.waterboards.ca.gov

Arnold Schwarzenegger
Governor

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) GENERAL PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

ORDER NO. 2010-0014-DWQ
NPDES NO. CAS000002

Order No. 2009-0009-DWQ was adopted by the State Water Resources Control Board on:	**September 2, 2009**
Order No. 2009-0009-DWQ became effective on:	**July 1, 2010**
Order No. 2009-0009-DWQ shall expire on:	**September 2, 2014**
This Order, which amends Order No. 2009-0009-DWQ, was adopted by the State Water Resources Control Board on:	**November 16, 2010**
This Order shall become effective on:	**February 14, 2011**

IT IS HEREBY ORDERED that this Order amends Order No. 2009-0009-DWQ. Additions to Order No. 2009-0009-DWQ are reflected in blue-underline text and deletions are reflected in red-strikeout text.

IT IS FURTHER ORDERED that staff are directed to prepare and post a conformed copy of Order No. 2009-0009-DWQ incorporating the revisions made by this Order.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on **November 16, 2010.**

AYE:	Chairman Charles R. Hoppin Vice Chair Frances Spivy-Weber Board Member Arthur G. Baggett, Jr. Board Member Tam M. Doduc
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

CALIFORNIA
Water Boards

EDMUND G. BROWN JR.
GOVERNOR

MATTHEW RODRIQUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)
GENERAL PERMIT FOR
STORM WATER DISCHARGES
ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

ORDER NO. 2012-0006-DWQ
NPDES NO**. CAS000002**

Order No. 2009-0009-DWQ was adopted by the State Water Resources Control Board on:	**September 2, 2009**
Order No. 2009-0009-DWQ became effective on:	**July 1, 2010**
Order No. 2010-0014-DWQ became effective on:	**February 14, 2011**
Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ shall expire on:	**September 2, 2014**
This Order, which amends Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ, was adopted by the State Water Resources Control Board on:	**July 17, 2012**
This Order No. 2012-0006-DWQ shall become effective on:	**July 17, 2012**

IT IS HEREBY ORDERED that this Order amends Order No. 2009-0009-DWQ. Additions to Order No. 2009-0009-DWQ are reflected in blue-underline text and deletions are reflected in red-strikeout text.

IT IS FURTHER ORDERED that staff are directed to prepare and post a conformed copy of Order No. 2009-000-DWQ incorporating the revisions made by this Order.

I, Jeanine Townsend, Clerk to the Board, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the State Water Resources Control Board, on July 17, 2012.

AYE:	Chairman Charles R. Hoppin Vice Chair Frances Spivy-Weber Board Member Tam M. Doduc Board Member Steven Moore Board Member Felicia Marcus
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

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Attachment A.1 – LUP Type Determination
Attachment A.2 – LUP Permit Registration Documents
Attachment B – Permit Registration Documents
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Attachment F – Active Treatment System (ATS) Requirements

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Appendix 1 – Risk Determination Worksheet
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Appendix 5 – Glossary
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STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2009-0009-DWQ
[AS AMENDED BY ORDER NO. 2010-0014-DWQ]
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
GENERAL PERMIT NO. CAS000002

WASTE DISCHARGE REQUIREMENTS
FOR
DISCHARGES OF STORM WATER RUNOFF ASSOCIATED WITH CONSTRUCTION AND LAND DISTURBANCE ACTIVITIES

I. FINDINGS

A. General Findings

The State Water Resources Control Board (State Water Board) finds that:

1. The federal Clean Water Act (CWA) prohibits certain discharges of storm water containing pollutants except in compliance with a National Pollutant Discharge Elimination System (NPDES) permit (Title 33 United States Code (U.S.C.) §§ 1311 and 1342(p); also referred to as Clean Water Act (CWA) §§ 301 and 402(p)). The U.S. Environmental Protection Agency (U.S. EPA) promulgates federal regulations to implement the CWA's mandate to control pollutants in storm water runoff discharges. (Title 40 Code of Federal Regulations (C.F.R.) Parts 122, 123, and 124). The federal statutes and regulations require discharges to surface waters comprised of storm water associated with construction activity, including demolition, clearing, grading, and excavation, and other land disturbance activities (except operations that result in disturbance of less than one acre of total land area and which are not part of a larger common plan of development or sale), to obtain coverage under an NPDES permit. The NPDES permit must require implementation of Best Available Technology Economically Achievable (BAT) and Best Conventional Pollutant Control Technology (BCT) to reduce or eliminate pollutants in storm water runoff. The NPDES permit must also include additional requirements necessary to implement applicable water quality standards.

2. This General Permit authorizes discharges of storm water associated with construction activity so long as the dischargers comply with all requirements, provisions, limitations and prohibitions in the permit. In addition, this General Permit regulates the discharges of storm water associated with construction activities from all Linear

Underground/Overhead Projects resulting in the disturbance of greater than or equal to one acre (Attachment A).

3. This General Permit regulates discharges of pollutants in storm water associated with construction activity (storm water discharges) to waters of the United States from construction sites that disturb one or more acres of land surface, or that are part of a common plan of development or sale that disturbs more than one acre of land surface.

4. This General Permit does not preempt or supersede the authority of local storm water management agencies to prohibit, restrict, or control storm water discharges to municipal separate storm sewer systems or other watercourses within their jurisdictions.

5. This action to adopt a general NPDES permit is exempt from the provisions of Chapter 3 of the California Environmental Quality Act (CEQA) (Public Resources Code Section 21100, et seq.), pursuant to Section 13389 of the California Water Code.

6. Pursuant to 40 C.F.R. § 131.12 and State Water Board Resolution No. 68-16,[1] which incorporates the requirements of § 131.12 where applicable, the State Water Board finds that discharges in compliance with this General Permit will not result in the lowering of water quality standards, and are therefore consistent with those provisions. Compliance with this General Permit will result in improvements in water quality.

7. This General Permit serves as an NPDES permit in compliance with CWA § 402 and will take effect on July 1, 2010 by the State Water Board provided the Regional Administrator of the U.S. EPA has no objection. If the U.S. EPA Regional Administrator objects to its issuance, the General Permit will not become effective until such objection is withdrawn.

8. Following adoption and upon the effective date of this General Permit, the Regional Water Quality Control Boards (Regional Water Boards) shall enforce the provisions herein.

9. Regional Water Boards establish water quality standards in Basin Plans. The State Water Board establishes water quality standards in various statewide plans, including the California Ocean Plan. U.S. EPA establishes water quality standards in the National Toxic Rule (NTR) and the California Toxic Rule (CTR).

[1] Resolution No. 68-16 generally requires that existing water quality be maintained unless degradation is justified based on specific findings.

10. This General Permit does not authorize discharges of fill or dredged material regulated by the U.S. Army Corps of Engineers under CWA § 404 and does not constitute a waiver of water quality certification under CWA § 401.

11. The primary storm water pollutant at construction sites is excess sediment. Excess sediment can cloud the water, which reduces the amount of sunlight reaching aquatic plants, clog fish gills, smother aquatic habitat and spawning areas, and impede navigation in our waterways. Sediment also transports other pollutants such as nutrients, metals, and oils and greases.

12. Construction activities can impact a construction site's runoff sediment supply and transport characteristics. These modifications, which can occur both during and after the construction phase, are a significant cause of degradation of the beneficial uses established for water bodies in California. Dischargers can avoid these effects through better construction site design and activity practices.

13. This General Permit recognizes four distinct phases of construction activities. The phases are Grading and Land Development Phase, Streets and Utilities Phase, Vertical Construction Phase, and Final Landscaping and Site Stabilization Phase. Each phase has activities that can result in different water quality effects from different water quality pollutants. This General Permit also recognizes inactive construction as a category of construction site type.

14. Compliance with any specific limits or requirements contained in this General Permit does not constitute compliance with any other applicable requirements.

15. Following public notice in accordance with State and Federal laws and regulations, the State Water Board heard and considered all comments and testimony in a public hearing on 06/03/2009. The State Water Board has prepared written responses to all significant comments.

16. Construction activities obtaining coverage under the General Permit may have multiple discharges subject to requirements that are specific to general, linear, and/or active treatment system discharge types.

17. The State Water Board may reopen the permit if the U.S. EPA adopts a final effluent limitation guideline for construction activities.

B. Activities Covered Under the General Permit

18. Any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre.

19. Construction activity that results in land surface disturbances of less than one acre if the construction activity is part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

20. Construction activity related to residential, commercial, or industrial development on lands currently used for agriculture including, but not limited to, the construction of buildings related to agriculture that are considered industrial pursuant to U.S. EPA regulations, such as dairy barns or food processing facilities.

21. Construction activity associated with Linear Underground/Overhead Utility Projects (LUPs) including, but not limited to, those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities) and include, but are not limited to, underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/or pavement repair or replacement, and stockpile/borrow locations.

22. Discharges of sediment from construction activities associated with oil and gas exploration, production, processing, or treatment operations or transmission facilities.[2]

23. Storm water discharges from dredge spoil placement that occur outside of U.S. Army Corps of Engineers jurisdiction (upland sites) and that disturb one or more acres of land surface from construction activity are covered by this General Permit. Construction sites that intend to disturb one or more acres of land within the jurisdictional boundaries of

[2] Pursuant to the Ninth Circuit Court of Appeals' decision in *NRDC v. EPA* (9th Cir. 2008) 526 F.3d 591, and subsequent denial of the U.S. EPA's petition for reconsideration in November 2008, oil and gas construction activities discharging storm water contaminated only with sediment are no longer exempt from the NPDES program.

a CWA § 404 permit should contact the appropriate Regional Water Board to determine whether this permit applies to the site.

C. Activities Not Covered Under the General Permit

24. Routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility.

25. Disturbances to land surfaces solely related to agricultural operations such as disking, harrowing, terracing and leveling, and soil preparation.

26. Discharges of storm water from areas on tribal lands; construction on tribal lands is regulated by a federal permit.

27. Construction activity and land disturbance involving discharges of storm water within the Lake Tahoe Hydrologic Unit. The Lahontan Regional Water Board has adopted its own permit to regulate storm water discharges from construction activity in the Lake Tahoe Hydrologic Unit (Regional Water Board 6SLT). Owners of construction sites in this watershed must apply for the Lahontan Regional Water Board permit rather than the statewide Construction General Permit.

28. Construction activity that disturbs less than one acre of land surface, and that is not part of a larger common plan of development or the sale of one or more acres of disturbed land surface.

29. Construction activity covered by an individual NPDES Permit for storm water discharges.

30. Discharges from small (1 to 5 acre) construction activities with an approved Rainfall Erosivity Waiver authorized by U.S. EPA Phase II regulations certifying to the State Board that small construction activity will occur only when the Rainfall Erosivity Factor is less than 5 (“R” in the Revised Universal Soil Loss Equation).

31. Landfill construction activity that is subject to the Industrial General Permit.

32. Construction activity that discharges to Combined Sewer Systems.

33. Conveyances that discharge storm water runoff combined with municipal sewage.

34. Discharges of storm water identified in CWA § 402(*l*)(2), 33 U.S.C. § 1342(*l*)(2).

35. Discharges occurring in basins that are not tributary or hydrologically connected to waters of the United States (for more information contact your Regional Water Board).

D. Obtaining and Modifying General Permit Coverage

36. This General Permit requires all dischargers to electronically file all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting, and other compliance documents required by this General Permit through the State Water Board's Storm water Multi-Application and Report Tracking System (SMARTS) website.

37. Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

38. This General Permit grants an exception from the Risk Determination requirements for existing sites covered under Water Quality Orders No. 99-08-DWQ, and No. 2003-0007-DWQ. For certain sites, adding additional requirements may not be cost effective. Construction sites covered under Water Quality Order No. 99-08-DWQ shall obtain permit coverage at the Risk Level 1. LUPs covered under Water Quality Order No. 2003-0007-DWQ shall obtain permit coverage as a Type 1 LUP. The Regional Water Boards have the authority to require Risk Determination to be performed on sites currently covered under Water Quality Orders No. 99-08-DWQ and No. 2003-0007-DWQ where they deem it necessary. The State Water Board finds that there are two circumstances when it may be appropriate for the Regional Water Boards to require a discharger that had filed an NOI under State Water Board Order No. 99-08-DWQ to recalculate the site's risk level. These circumstances are: (1) when the discharger has a demonstrated history of noncompliance with State Water Board Order No. 99-08-DWQ or; (2) when the discharger's site poses a significant risk of causing or contributing to an exceedance of a water quality standard without the implementation of the additional Risk Level 2 or 3 requirements.

E. Prohibitions

39. All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit. Non-storm water discharges include a wide variety of sources, including improper dumping, spills, or leakage from storage tanks or transfer areas. Non-storm water discharges may

contribute significant pollutant loads to receiving waters. Measures to control spills, leakage, and dumping, and to prevent illicit connections during construction must be addressed through structural as well as non-structural Best Management Practices (BMPs)[3]. The State Water Board recognizes, however, that certain non-storm water discharges may be necessary for the completion of construction.

40. This General Permit prohibits all discharges which contain a hazardous substance in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

41. This General Permit incorporates discharge prohibitions contained in water quality control plans, as implemented by the State Water Board and the nine Regional Water Boards.

42. Pursuant to the Ocean Plan, discharges to Areas of Special Biological Significance (ASBS) are prohibited unless covered by an exception that the State Water Board has approved.

43. This General Permit prohibits the discharge of any debris[4] from construction sites. Plastic and other trash materials can cause negative impacts to receiving water beneficial uses. The State Water Board encourages the use of more environmentally safe, biodegradable materials on construction sites to minimize the potential risk to water quality.

F. Training

44. In order to improve compliance with and to maintain consistent enforcement of this General Permit, all dischargers are required to appoint two positions - the Qualified SWPPP Developer (QSD) and the Qualified SWPPP Practitioner (QSP) - who must obtain appropriate training. Together with the key stakeholders, the State and Regional Water Boards are leading the development of this curriculum through a collaborative organization called The Construction General Permit (CGP) Training Team.

45. The Professional Engineers Act (Bus. & Prof. Code section 6700, et seq.) requires that all engineering work must be performed by a California licensed engineer.

[3] BMPs are scheduling of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

[4] Litter, rubble, discarded refuse, and remains of destroyed inorganic anthropogenic waste.

G. Determining and Reducing Risk

46. The risk of accelerated erosion and sedimentation from wind and water depends on a number of factors, including proximity to receiving water bodies, climate, topography, and soil type.

47. This General Permit requires dischargers to assess the risk level of a site based on both sediment transport and receiving water risk. This General Permit contains requirements for Risk Levels 1, 2 and 3, and LUP Risk Type 1, 2, and 3 (Attachment A). Risk levels are established by determining two factors: first, calculating the site's sediment risk; and second, receiving water risk during periods of soil exposure (i.e. grading and site stabilization). Both factors are used to determine the site-specific Risk Level(s). LUPs can be determined to be Type 1 based on the flowchart in Attachment A.1.

48. Although this General Permit does not mandate specific setback distances, dischargers are encouraged to set back their construction activities from streams and wetlands whenever feasible to reduce the risk of impacting water quality (e.g., natural stream stability and habitat function). Because there is a reduced risk to receiving waters when setbacks are used, this General Permit gives credit to setbacks in the risk determination and post-construction storm water performance standards. The risk calculation and runoff reduction mechanisms in this General Permit are expected to facilitate compliance with any Regional Water Board and local agency setback requirements, and to encourage voluntary setbacks wherever practicable.

49. Rain events can occur at any time of the year in California. Therefore, a Rain Event Action Plan (REAP) is necessary for Risk Level 2 and 3 traditional construction projects (LUPs exempt) to ensure that active construction sites have adequate erosion and sediment controls implemented prior to the onset of a storm event, even if construction is planned only during the dry season.

50. Soil particles smaller than 0.02 millimeters (mm) (i.e., finer than medium silt) do not settle easily using conventional measures for sediment control (i.e., sediment basins). Given their long settling time, dislodging these soils results in a significant risk that fine particles will be released into surface waters and cause unacceptable downstream impacts. If operated correctly, an Active Treatment System (ATS[5]) can prevent or reduce the release of fine particles from construction sites.

[5] An ATS is a treatment system that employs chemical coagulation, chemical flocculation, or electro coagulation in order to reduce turbidity caused by fine suspended sediment.

Use of an ATS can effectively reduce a site's risk of impacting receiving waters.

51. Dischargers located in a watershed area where a Total Maximum Daily Load (TMDL) has been adopted or approved by the Regional Water Board or U.S. EPA may be required by a separate Regional Water Board action to implement additional BMPs, conduct additional monitoring activities, and/or comply with an applicable waste load allocation and implementation schedule. Such dischargers may also be required to obtain an individual Regional Water Board permit specific to the area.

H. Effluent Standards

52. The State Water Board convened a blue ribbon panel of storm water experts that submitted a report entitled, "The Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities," dated June 19, 2006. The panel concluded that numeric limits or action levels are technically feasible to control construction storm water discharges, provided that certain conditions are considered. The panel also concluded that numeric effluent limitations (NELs) are feasible for discharges from construction sites that utilize an ATS. The State Water Board has incorporated the expert panel's suggestions into this General Permit, which includes numeric action levels (NALs) for pH and turbidity, and special numeric limits for ATS discharges.

Determining Compliance with Numeric Limitations

53. This General Permit sets a pH NAL of 6.5 to 8.5, and a turbidity NAL of 250 NTU. The purpose of the NAL and its associated monitoring requirement is to provide operational information regarding the performance of the measures used at the site to minimize the discharge of pollutants and to protect beneficial uses and receiving waters from the adverse effects of construction-related storm water discharges. An exceedance of a NAL does not constitute a violation of this General Permit.

54. This General Permit requires dischargers with NAL exceedances to immediately implement additional BMPs and revise their Storm Water Pollution Prevention Plans (SWPPPs) accordingly to either prevent pollutants and authorized non-storm water discharges from contaminating storm water, or to substantially reduce the pollutants to levels consistently below the NALs. NAL exceedances are reported in the State Water Boards SMARTS system, and the discharger is

required to provide an NAL Exceedance Report when requested by a Regional Water Board.

I. Receiving Water Limitations

55. This General Permit requires all enrolled dischargers to determine the receiving waters potentially affected by their discharges and to comply with all applicable water quality standards, including any more stringent standards applicable to a water body.

J. Sampling, Monitoring, Reporting and Record Keeping

56. Visual monitoring of storm water and non-storm water discharges is required for all sites subject to this General Permit.

57. Records of all visual monitoring inspections are required to remain on-site during the construction period and for a minimum of three years.

58. For all Risk Level 3/LUP Type 3 and Risk Level 2/LUP Type 2 sites, this General Permit requires effluent monitoring for pH and turbidity. Sampling, analysis and monitoring requirements for effluent monitoring for pH and turbidity are contained in this General Permit.

59. Risk Level 3 and LUP Type 3 sites with effluent that exceeds the Receiving Water Monitoring Triggers contained in this General Permit and with direct discharges to receiving water are required to conduct receiving water monitoring. An exceedance of a Receiving Water Monitoring Trigger does not constitute a violation of this General Permit.

60. This General Permit establishes a 5 year, 24 hour (expressed in inches of rainfall) as an exemptions to the receiving water monitoring requirements for Risk Level 3 and LUP Type 3 dischargers.

61. If run-on is caused by a forest fire or any other natural disaster, then receiving water monitoring triggers do not apply.

62. For Risk Level 3 and LUP Type 3 sites larger than 30 acres and with direct discharges to receiving waters, this General Permit requires bioassessment sampling before and after site completion to determine if significant degradation to the receiving water's biota has occurred. Bioassessment sampling guidelines are contained in this General Permit.

63. A summary and evaluation of the sampling and analysis results will be submitted in the Annual Reports.

64. This General Permit contains sampling, analysis and monitoring requirements for non-visible pollutants at all sites subject to this General Permit.

65. Compliance with the General Permit relies upon dischargers to electronically self-report any discharge violations and to comply with any Regional Water Board enforcement actions.

66. This General Permit requires that all dischargers maintain a paper or electronic copy of all required records for three years from the date generated or date submitted, whichever is last. These records must be available at the construction site until construction is completed. For LUPs, these documents may be retained in a crew member's vehicle and made available upon request.

K. Active Treatment System (ATS) Requirements

67. Active treatment systems add chemicals to facilitate flocculation, coagulation and filtration of suspended sediment particles. The uncontrolled release of these chemicals to the environment can negatively affect the beneficial uses of receiving waters and/or degrade water quality (e.g., acute and chronic toxicity). Additionally, the batch storage and treatment of storm water through an ATS' can potentially cause physical impacts on receiving waters if storage volume is inadequate or due to sudden releases of the ATS batches and improperly designed outfalls.

68. If designed, operated and maintained properly an ATS can achieve very high removal rates of suspended sediment (measured as turbidity), albeit at sometimes significantly higher costs than traditional erosion/sediment control practices. As a result, this General Permit establishes NELs consistent with the expected level of typical ATS performance.

69. This General Permit requires discharges of storm water associated with construction activity that undergo active treatment to comply with special operational and effluent limitations to ensure that these discharges do not adversely affect the beneficial uses of the receiving waters or cause degradation of their water quality.

70. For ATS discharges, this General Permit establishes technology-based NELs for turbidity.

71. This General Permit establishes a 10 year, 24 hour (expressed in inches of rainfall) Compliance Storm Event exemption from the technology-based numeric effluent limitations for ATS discharges. Exceedances of the ATS turbidity NEL constitutes a violation of this General Permit.

L. Post-Construction Requirements

72. This General Permit includes performance standards for post-construction that are consistent with State Water Board Resolution No. 2005-0006, "Resolution Adopting the Concept of Sustainability as a Core Value for State Water Board Programs and Directing Its Incorporation," and 2008-0030, "Requiring Sustainable Water Resources Management." The requirement for all construction sites to match pre-project hydrology will help ensure that the physical and biological integrity of aquatic ecosystems are sustained. This "runoff reduction" approach is analogous in principle to Low Impact Development (LID) and will serve to protect related watersheds and waterbodies from both hydrologic-based and pollution impacts associated with the post-construction landscape.

73. LUP projects are not subject to post-construction requirements due to the nature of their construction to return project sites to pre-construction conditions.

M. Storm Water Pollution Prevention Plan Requirements

74. This General Permit requires the development of a site-specific SWPPP. The SWPPP must include the information needed to demonstrate compliance with all requirements of this General Permit, and must be kept on the construction site and be available for review. The discharger shall ensure that a QSD develops the SWPPP.

75. To ensure proper site oversight, this General Permit requires a Qualified SWPPP Practitioner to oversee implementation of the BMPs required to comply with this General Permit.

N. Regional Water Board Authorities

76. Regional Water Boards are responsible for implementation and enforcement of this General Permit. A general approach to permitting is not always suitable for every construction site and environmental circumstances. Therefore, this General Permit recognizes that Regional Water Boards must have some flexibility and authority to alter, approve, exempt, or rescind permit authority granted under this

General Permit in order to protect the beneficial uses of our receiving waters and prevent degradation of water quality.

IT IS HEREBY ORDERED that all dischargers subject to this General Permit shall comply with the following conditions and requirements (including all conditions and requirements as set forth in Attachments A, B, C, D, E and F)[6]:

II. CONDITIONS FOR PERMIT COVERAGE

A. Linear Underground/Overhead Projects (LUPs)

1. Linear Underground/Overhead Projects (LUPs) include, but are not limited to, any conveyance, pipe, or pipeline for the transportation of any gaseous, liquid (including water and wastewater for domestic municipal services), liquescent, or slurry substance; any cable line or wire for the transmission of electrical energy; any cable line or wire for communications (e.g. telephone, telegraph, radio or television messages); and associated ancillary facilities. Construction activities associated with LUPs include, but are not limited to, (a) those activities necessary for the installation of underground and overhead linear facilities (e.g., conduits, substructures, pipelines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment, and associated ancillary facilities); and include, but are not limited to, (b) underground utility mark-out, potholing, concrete and asphalt cutting and removal, trenching, excavation, boring and drilling, access road and pole/tower pad and cable/wire pull station, substation construction, substructure installation, construction of tower footings and/or foundations, pole and tower installations, pipeline installations, welding, concrete and/ or pavement repair or replacement, and stockpile/borrow locations.

2. The Legally Responsible Person is responsible for obtaining coverage under the General Permit where the construction of pipelines, utility lines, fiber-optic cables, or other linear underground/overhead projects will occur across several properties unless the LUP construction activities are covered under another construction storm water permit.

3. Only LUPs shall comply with the conditions and requirements in Attachment A, A.1 & A.2 of this Order. The balance of this Order is not applicable to LUPs except as indicated in Attachment A.

[6] These attachments are part of the General Permit itself and are not separate documents that are capable of being updated independently by the State Water Board.

B. Obtaining Permit Coverage Traditional Construction Sites

1. The Legally Responsible Person (LRP) (see Special Provisions, Electronic Signature and Certification Requirements, Section IV.I.1) must obtain coverage under this General Permit.

2. To obtain coverage, the LRP must electronically file Permit Registration Documents (PRDs) prior to the commencement of construction activity. Failure to obtain coverage under this General Permit for storm water discharges to waters of the United States is a violation of the CWA and the California Water Code.

3. PRDs shall consist of:

   a. Notice of Intent (NOI)
   b. Risk Assessment (Section VIII)
   c. Site Map
   d. Storm Water Pollution Prevention Plan (Section XIV)
   e. Annual Fee
   f. Signed Certification Statement

   Any information provided to the Regional Water Board shall comply with the Homeland Security Act and any other federal law that concerns security in the United States; any information that does not comply should not be submitted.

   Attachment B contains additional PRD information. Dischargers must electronically file the PRDs, and mail the appropriate annual fee to the State Water Board.

4. This permit is effective on July 1, 2010.

   a. **Dischargers Obtaining Coverage On or After July 1, 2010:** All dischargers requiring coverage on or after July 1, 2010, shall electronically file their PRDs prior to the commencement of construction activities, and mail the appropriate annual fee no later than seven days prior to the commencement of construction activities. Permit coverage shall not commence until the PRDs and the annual fee are received by the State Water Board, and a WDID number is assigned and sent by SMARTS.

   b. **Dischargers Covered Under 99-08-DWQ and 2003-0007-DWQ:** Existing dischargers subject to State Water Board Order No. 99-08-DWQ (existing dischargers) will continue coverage under 99-08-DWQ until July 1, 2010. After July 1, 2010, all NOIs subject to State Water Board Order No. 99-08-DWQ will be terminated.

Existing dischargers shall electronically file their PRDs no later than July 1, 2010. If an existing discharger's site acreage subject to the annual fee has changed, it shall mail a revised annual fee no less than seven days after receiving the revised annual fee notification, **or else lose permit coverage**. All existing dischargers shall be exempt from the risk determination requirements in Section VIII of this General Permit until two years after permit adoption. All existing dischargers are therefore subject to Risk Level 1 requirements regardless of their site's sediment and receiving water risks. However, a Regional Board retains the authority to require an existing discharger to comply with the Section VIII risk determination requirements.

5. The discharger is only considered covered by this General Permit upon receipt of a Waste Discharger Identification (WDID) number assigned and sent by the State Water Board Storm water Multi-Application and Report Tracking System (SMARTS). In order to demonstrate compliance with this General Permit, the discharger must obtain a WDID number and must present documentation of a valid WDID upon demand.

6. During the period this permit is subject to review by the U.S. EPA, the prior permit (State Water Board Order No. 99-08-DWQ) remains in effect. Existing dischargers under the prior permit will continue to have coverage under State Water Board Order No. 99-08-DWQ until this General Permit takes effect on July 1, 2010. Dischargers who complete their projects and electronically file an NOT prior to July 1, 2010, are not required to obtain coverage under this General Permit.

7. Small Construction Rainfall Erosivity Waiver

   EPA's Small Construction Erosivity Waiver applies to sites between one and five acres demonstrating that there are no adverse water quality impacts.

   Dischargers eligible for a Rainfall Erosivity Waiver based on low erosivity potential shall complete the electronic Notice of Intent (NOI) and Sediment Risk form through the State Water Board's SMARTS system, certifying that the construction activity will take place during a period when the value of the rainfall erosivity factor is less than five. Where the LRP changes or another LRP is added during construction, the new LRP must also submit a waiver certification through the SMARTS system.

   If a small construction site continues beyond the projected completion date given on the waiver certification, the LRP shall recalculate the

rainfall erosivity factor for the new project duration and submit this information through the SMARTS system. If the new R factor is below five (5), the discharger shall update through SMARTS all applicable information on the waiver certification and retain a copy of the revised waiver onsite. The LRP shall submit the new waiver certification 30 days prior to the projected completion date listed on the original waiver form to assure exemption from permitting requirements is uninterrupted. If the new R factor is five (5) or above, the LRP shall be required to apply for coverage under this Order.

8. In the case of a public emergency that requires immediate construction activities, a discharger shall submit a brief description of the emergency construction activity within five days of the onset of construction, and then shall submit all PRDs within thirty days.

C. Revising Permit Coverage for Change of Acreage or New Ownership

1. The discharger may reduce or increase the total acreage covered under this General Permit when a portion of the site is complete and/or conditions for termination of coverage have been met (See Section II.D Conditions for Termination of Coverage); when ownership of a portion of the site is sold to a different entity; or when new acreage, subject to this General Permit, is added to the site.

2. Within 30 days of a reduction or increase in total disturbed acreage, the discharger shall electronically file revisions to the PRDs that include:

   a. A revised NOI indicating the new project size;

   b. A revised site map showing the acreage of the site completed, acreage currently under construction, acreage sold/transferred or added, and acreage currently stabilized in accordance with the Conditions for Termination of Coverage in Section II.D below.

   c. SWPPP revisions, as appropriate; and

   d. Certification that any new landowners have been notified of applicable requirements to obtain General Permit coverage. The certification shall include the name, address, telephone number, and e-mail address of the new landowner.

   e. If the project acreage has increased, dischargers shall mail payment of revised annual fees within 14 days of receiving the revised annual fee notification.

3. The discharger shall continue coverage under the General Permit for any parcel that has not achieved "Final Stabilization" as defined in Section II.D.

4. When an LRP with active General Permit coverage transfers its LRP status to another person or entity that qualifies as an LRP, the existing LRP shall inform the new LRP of the General Permit's requirements. In order for the new LRP to continue the construction activity on its parcel of property, the new LRP, or the new LRP's approved signatory, must submit PRDs in accordance with this General Permit's requirements.

D. Conditions for Termination of Coverage

1. Within 90 days of when construction is complete or ownership has been transferred, the discharger shall electronically file a Notice of Termination (NOT), a final site map, and photos through the State Water Boards SMARTS system. Filing a NOT certifies that all General Permit requirements have been met. The Regional Water Board will consider a construction site complete only when all portions of the site have been transferred to a new owner, or all of the following conditions have been met:

   a. For purposes of "final stabilization," the site will not pose any additional sediment discharge risk than it did prior to the commencement of construction activity;

   b. There is no potential for construction-related storm water pollutants to be discharged into site runoff;

   c. Final stabilization has been reached;

   d. Construction materials and wastes have been disposed of properly;

   e. Compliance with the Post-Construction Standards in Section XIII of this General Permit has been demonstrated;

   f. Post-construction storm water management measures have been installed and a long-term maintenance plan[7] has been established; and

   g. All construction-related equipment, materials and any temporary BMPs no longer needed are removed from the site.

[7] For the purposes of this requirement a long-term maintenance plan will be designed for a minimum of five years, and will describe the procedures to ensure that the post-construction storm water management measures are adequately maintained.

2. The discharger shall certify that final stabilization conditions are satisfied in their NOT. Failure to certify shall result in continuation of permit coverage and annual billing.

3. The NOT must demonstrate through photos, RUSLE or RUSLE2, or results of testing and analysis that the site meets all of the conditions above (Section II.D.1) and the final stabilization condition (Section II.D.1.a) is attained by one of the following methods:

   a. "70% final cover method," no computational proof required

      OR:

   b. "RUSLE or RUSLE2 method," computational proof required

      OR:

   c. "Custom method", the discharger shall demonstrate in some other manner than a or b, above, that the site complies with the "final stabilization" requirement in Section II.D.1.a.

III. DISCHARGE PROHIBITIONS

A. Dischargers shall not violate any discharge prohibitions contained in applicable Basin Plans or statewide water quality control plans. Waste discharges to Areas of Special Biological Significance (ASBS) are prohibited by the California Ocean Plan, unless granted an exception issued by the State Water Board.

B. All discharges are prohibited except for the storm water and non-storm water discharges specifically authorized by this General Permit or another NPDES permit.

C. Authorized non-storm water discharges may include those from de-chlorinated potable water sources such as: fire hydrant flushing, irrigation of vegetative erosion control measures, pipe flushing and testing, water to control dust, uncontaminated ground water from dewatering, and other discharges not subject to a separate general NPDES permit adopted by a Regional Water Board. The discharge of non-storm water is authorized under the following conditions:

1. The discharge does not cause or contribute to a violation of any water quality standard;

2. The discharge does not violate any other provision of this General Permit;

3. The discharge is not prohibited by the applicable Basin Plan;

4. The discharger has included and implemented specific BMPs required by this General Permit to prevent or reduce the contact of the non-storm water discharge with construction materials or equipment.

5. The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;

6. The discharge is monitored and meets the applicable NALs; and

7. The discharger reports the sampling information in the Annual Report.

If any of the above conditions are not satisfied, the discharge is not authorized by this General Permit. The discharger shall notify the Regional Water Board of any anticipated non-storm water discharges not already authorized by this General Permit or another NPDES permit, to determine whether a separate NPDES permit is necessary.

D. Debris resulting from construction activities are prohibited from being discharged from construction sites.

E. When soil contamination is found or suspected and a responsible party is not identified, or the responsible party fails to promptly take the appropriate action, the discharger shall have those soils sampled and tested to ensure proper handling and public safety measures are implemented. The discharger shall notify the appropriate local, State, and federal agency(ies) when contaminated soil is found at a construction site, and will notify the appropriate Regional Water Board.

IV. SPECIAL PROVISIONS

A. Duty to Comply

1. The discharger shall comply with all of the conditions of this General Permit. Any permit noncompliance constitutes a violation of the Clean Water Act (CWA) and the Porter-Cologne Water Quality Control Act and is grounds for enforcement action and/or removal from General Permit coverage.

2. The discharger shall comply with effluent standards or prohibitions established under Section 307(a) of the CWA for toxic pollutants within the time provided in the regulations that establish these standards or prohibitions, even if this General Permit has not yet been modified to incorporate the requirement.

B. General Permit Actions

1. This General Permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the discharger for a General Permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not annul any General Permit condition.

2. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under Section 307(a) of the CWA for a toxic pollutant which is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this General Permit, this General Permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition and the dischargers so notified.

C. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this General Permit.

D. Duty to Mitigate

The discharger shall take all responsible steps to minimize or prevent any discharge in violation of this General Permit, which has a reasonable likelihood of adversely affecting human health or the environment.

E. Proper Operation and Maintenance

The discharger shall at all times properly operate and maintain any facilities and systems of treatment and control (and related appurtenances) which are installed or used by the discharger to achieve compliance with the conditions of this General Permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. Proper operation and maintenance may require the operation of backup or auxiliary facilities or similar systems installed by a discharger when necessary to achieve compliance with the conditions of this General Permit.

F. Property Rights

This General Permit does not convey any property rights of any sort or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor does it authorize any infringement of Federal, State, or local laws or regulations.

G. Duty to Maintain Records and Provide Information

1. The discharger shall maintain a paper or electronic copy of all required records, including a copy of this General Permit, for three years from the date generated or date submitted, whichever is last. These records shall be available at the construction site until construction is completed.

2. The discharger shall furnish the Regional Water Board, State Water Board, or U.S. EPA, within a reasonable time, any requested information to determine compliance with this General Permit. The discharger shall also furnish, upon request, copies of records that are required to be kept by this General Permit.

H. Inspection and Entry

The discharger shall allow the Regional Water Board, State Water Board, U.S. EPA, and/or, in the case of construction sites which discharge through a municipal separate storm sewer, an authorized representative of the municipal operator of the separate storm sewer system receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the discharger's premises at reasonable times where a regulated construction activity is being conducted or where records must be kept under the conditions of this General Permit;

2. Access and copy at reasonable times any records that must be kept under the conditions of this General Permit;

3. Inspect at reasonable times the complete construction site, including any off-site staging areas or material storage areas, and the erosion/sediment controls; and

4. Sample or monitor at reasonable times for the purpose of ensuring General Permit compliance.

I. Electronic Signature and Certification Requirements

1. All Permit Registration Documents (PRDs) and Notices of Termination (NOTs) shall be electronically signed, certified, and submitted via SMARTS to the State Water Board. Either the Legally Responsible Person (LRP), as defined in Appendix 5 – Glossary, or a person legally authorized to sign and certify PRDs and NOTs on behalf of the LRP (the LRP's Approved Signatory, as defined in Appendix 5 - Glossary) must submit all information electronically via SMARTS.

2. Changes to Authorization. If an Approved Signatory's authorization is no longer accurate, a new authorization satisfying the requirements of paragraph (a) of this section must be submitted via SMARTS prior to or together with any reports, information or applications to be signed by an Approved Signatory.

3. All Annual Reports, or other information required by the General Permit (other than PRDs and NOTs) or requested by the Regional Water Board, State Water Board, U.S. EPA, or local storm water management agency shall be certified and submitted by the LRP or the LRP's Approved Signatory.

J. Certification

Any person signing documents under Section IV.I above, shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, to the best of my knowledge and belief, the information submitted is, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

K. Anticipated Noncompliance

The discharger shall give advance notice to the Regional Water Board and local storm water management agency of any planned changes in the construction activity, which may result in noncompliance with General Permit requirements.

L. Bypass

Bypass[8] is prohibited. The Regional Water Board may take enforcement action against the discharger for bypass unless:

1. Bypass was unavoidable to prevent loss of life, personal injury or severe property damage;[9]

2. There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated waste, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that could occur during normal periods of equipment downtime or preventative maintenance;

3. The discharger submitted a notice at least ten days in advance of the need for a bypass to the Regional Water Board; or

4. The discharger may allow a bypass to occur that does not cause effluent limitations to be exceeded, but only if it is for essential maintenance to assure efficient operation. In such a case, the above bypass conditions are not applicable. The discharger shall submit notice of an unanticipated bypass as required.

M. Upset

1. A discharger that wishes to establish the affirmative defense of an upset[10] in an action brought for noncompliance shall demonstrate,

[8] The intentional diversion of waste streams from any portion of a treatment facility

[9] Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

[10] An exceptional incident in which there is unintentional and temporary noncompliance the technology based numeric effluent limitations because of factors beyond the reasonable control of the discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An upset occurred and that the discharger can identify the cause(s) of the upset

b. The treatment facility was being properly operated by the time of the upset

c. The discharger submitted notice of the upset as required; and

d. The discharger complied with any remedial measures required

2. No determination made before an action of noncompliance occurs, such as during administrative review of claims that noncompliance was caused by an upset, is final administrative action subject to judicial review.

3. In any enforcement proceeding, the discharger seeking to establish the occurrence of an upset has the burden of proof

N. Penalties for Falsification of Reports

Section 309(c)(4) of the CWA provides that any person who knowingly makes any false material statement, representation, or certification in any record or other document submitted or required to be maintained under this General Permit, including reports of compliance or noncompliance shall upon conviction, be punished by a fine of not more than $10,000 or by imprisonment for not more than two years or by both.

O. Oil and Hazardous Substance Liability

Nothing in this General Permit shall be construed to preclude the institution of any legal action or relieve the discharger from any responsibilities, liabilities, or penalties to which the discharger is or may be subject to under Section 311 of the CWA.

P. Severability

The provisions of this General Permit are severable; and, if any provision of this General Permit or the application of any provision of this General Permit to any circumstance is held invalid, the application of such provision to other circumstances and the remainder of this General Permit shall not be affected thereby.

Q. Reopener Clause

This General Permit may be modified, revoked and reissued, or terminated for cause due to promulgation of amended regulations, receipt of U.S. EPA guidance concerning regulated activities, judicial decision, or in accordance with 40 Code of Federal Regulations (CFR) 122.62, 122.63, 122.64, and 124.5.

R. Penalties for Violations of Permit Conditions

1. Section 309 of the CWA provides significant penalties for any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the CWA or any permit condition or limitation implementing any such section in a permit issued under Section 402. Any person who violates any permit condition of this General Permit is subject to a civil penalty not to exceed $37,500[11] per calendar day of such violation, as well as any other appropriate sanction provided by Section 309 of the CWA.

2. The Porter-Cologne Water Quality Control Act also provides for civil and criminal penalties, which in some cases are greater than those under the CWA.

S. Transfers

This General Permit is not transferable.

T. Continuation of Expired Permit

This General Permit continues in force and effect until a new General Permit is issued or the SWRCB rescinds this General Permit. Only those dischargers authorized to discharge under the expiring General Permit are covered by the continued General Permit.

[11] May be further adjusted in accordance with the Federal Civil Penalties Inflation Adjustment Act.

V. EFFLUENT STANDARDS & RECEIVING WATER MONITORING

A. Narrative Effluent Limitations

1. Storm water discharges and authorized non-storm water discharges regulated by this General Permit shall not contain a hazardous substance equal to or in excess of reportable quantities established in 40 C.F.R. §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

2. Dischargers shall minimize or prevent pollutants in storm water discharges and authorized non-storm water discharges through the use of controls, structures, and management practices that achieve BAT for toxic and non-conventional pollutants and BCT for conventional pollutants.

Table 1- Numeric Action Levels, Test Methods, Detection Limits, and Reporting Units

Parameter	Test Method	Discharge Type	Min. Detection Limit	Units	Numeric Action Level
pH	Field test with calibrated portable instrument	Risk Level 2	0.2	pH units	lower NAL = 6.5 upper NAL = 8.5
		Risk Level 3			lower NAL = 6.5 upper NAL = 8.5
Turbidity	EPA 0180.1 and/or field test with calibrated portable instrument	Risk Level 2	1	NTU	250 NTU
		Risk Level 3			250 NTU

B. Numeric Action Levels (NALs)

1. For Risk Level 2 and 3 dischargers, the lower storm event average NAL for pH is 6.5 pH units and the upper storm event average NAL for

pH is 8.5 pH units. The discharger shall take actions as described below if the discharge is outside of this range of pH values.

2. For Risk Level 2 and 3 dischargers, the NAL storm event daily average for turbidity is 250 NTU. The discharger shall take actions as described below if the discharge is outside of this range of turbidity values.

3. Whenever the results from a storm event daily average indicate that the discharge is below the lower NAL for pH, exceeds the upper NAL for pH, or exceeds the turbidity NAL (as listed in Table 1), the discharger shall conduct a construction site and run-on evaluation to determine whether pollutant source(s) associated with the site's construction activity may have caused or contributed to the NAL exceedance and shall immediately implement corrective actions if they are needed.

4. The site evaluation shall be documented in the SWPPP and specifically address whether the source(s) of the pollutants causing the exceedance of the NAL:

   a. Are related to the construction activities and whether additional BMPs are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) determine what corrective action(s) were taken or will be taken and with a description of the schedule for completion.

      AND/OR:

   b. Are related to the run-on associated with the construction site location and whether additional BMPs measures are required to (1) meet BAT/BCT requirements; (2) reduce or prevent pollutants in storm water discharges from causing exceedances of receiving water objectives; and (3) what corrective action(s) were taken or will be taken with a description of the schedule for completion.

C. Receiving Water Monitoring Triggers

1. The receiving water monitoring triggers for Risk Level 3 dischargers with direct discharges to surface waters are triggered when the daily average effluent pH values during any site phase when there is a high risk of pH discharge[12] fall outside of the range of 6.0 and 9.0 pH units, or when the daily average effluent turbidity exceeds 500 NTU.

2. Risk Level 3 dischargers with with direct discharges to surface waters shall conduct receiving water monitoring whenever their effluent monitoring results exceed the receiving water monitoring triggers. If the pH trigger is exceeded, the receiving water shall be monitored for pH for the duration of coverage under this General Permit. If the turbidity trigger is exceeded, the receiving water shall be monitored for turbidity and SSC for the duration of coverage under this general permit.

3. Risk Level 3 dischargers with direct discharges to surfaces waters shall initiate receiving water monitoring when the triggers are exceeded unless the storm event causing the exceedance is determined after the fact to equal to or greater than the 5-year 24-hour storm (expressed in inches of rainfall) as determined by using these maps:

   http://www.wrcc.dri.edu/pcpnfreq/nca5y24.gif
   http://www.wrcc.dri.edu/pcpnfreq/sca5y24.gif

   Verification of the 5-year 24-hour storm event shall be done by reporting on-site rain gauge readings as well as nearby governmental rain gauge readings.

4. If run-on is caused by a forest fire or any other natural disaster, then receiving water monitoring triggers do not apply.

[12] A period of high risk of pH discharge is defined as a project's complete utilities phase, complete vertical build phase, and any portion of any phase where significant amounts of materials are placed directly on the land at the site in a manner that could result in significant alterations of the background pH of the discharges.

VI. RECEIVING WATER LIMITATIONS

A. The discharger shall ensure that storm water discharges and authorized non-storm water discharges to any surface or ground water will not adversely affect human health or the environment.

B. The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants in quantities that threaten to cause pollution or a public nuisance.

C. The discharger shall ensure that storm water discharges and authorized non-storm water discharges will not contain pollutants that cause or contribute to an exceedance of any applicable water quality objectives or water quality standards (collectively, WQS) contained in a Statewide Water Quality Control Plan, the California Toxics Rule, the National Toxics Rule, or the applicable Regional Water Board's Water Quality Control Plan (Basin Plan).

D. Dischargers located within the watershed of a CWA § 303(d) impaired water body, for which a TMDL has been approved by the U.S. EPA, shall comply with the approved TMDL if it identifies "construction activity" or land disturbance as a source of the pollution.

VII. TRAINING QUALIFICATIONS AND CERTIFICATION REQUIREMENTS

A. General

The discharger shall ensure that all persons responsible for implementing requirements of this General Permit shall be appropriately trained in accordance with this Section. Training should be both formal and informal, occur on an ongoing basis, and should include training offered by recognized governmental agencies or professional organizations. Those responsible for preparing and amending SWPPPs shall comply with the requirements in this Section VII.

The discharger shall provide documentation of all training for persons responsible for implementing the requirements of this General Permit in the Annual Reports.

B. SWPPP Certification Requirements

1. **Qualified SWPPP Developer:** The discharger shall ensure that SWPPPs are written, amended and certified by a Qualified SWPPP Developer (QSD). A QSD shall have one of the following registrations or certifications, and appropriate experience, as required for:

   a. A California registered professional civil engineer;

   b. A California registered professional geologist or engineering geologist;

   c. A California registered landscape architect;

   d. A professional hydrologist registered through the American Institute of Hydrology;

   e. A Certified Professional in Erosion and Sediment Control (CPESC) ™ registered through Enviro Cert International, Inc.;

   f. A Certified Professional in Storm Water Quality (CPSWQ) ™ registered through Enviro Cert International, Inc.; or

   g. A professional in erosion and sediment control registered through the National Institute for Certification in Engineering Technologies (NICET).

Effective two years after the adoption date of this General Permit, a QSD shall have attended a State Water Board-sponsored or approved QSD training course.

2. The discharger shall list the name and telephone number of the currently designated Qualified SWPPP Developer(s) in the SWPPP.

3. **Qualified SWPPP Practitioner:** The discharger shall ensure that all BMPs required by this General Permit are implemented by a Qualified SWPPP Practitioner (QSP). A QSP is a person responsible for non-storm water and storm water visual observations, sampling and analysis. Effective two years from the date of adoption of this General Permit, a QSP shall be either a QSD or have one of the following certifications:

   a. A certified erosion, sediment and storm water inspector registered through Enviro Cert International, Inc.; or

   b. A certified inspector of sediment and erosion control registered through Certified Inspector of Sediment and Erosion Control, Inc.

   Effective two years after the adoption date of this General Permit, a QSP shall have attended a State Water Board-sponsored or approved QSP training course.

4. The LRP shall list in the SWPPP, the name of any Approved Signatory, and provide a copy of the written agreement or other mechanism that provides this authority from the LRP in the SWPPP.

5. The discharger shall include, in the SWPPP, a list of names of all contractors, subcontractors, and individuals who will be directed by the Qualified SWPPP Practitioner. This list shall include telephone numbers and work addresses. Specific areas of responsibility of each subcontractor and emergency contact numbers shall also be included.

6. The discharger shall ensure that the SWPPP and each amendment will be signed by the Qualified SWPPP Developer. The discharger shall include a listing of the date of initial preparation and the date of each amendment in the SWPPP.

VIII. RISK DETERMINATION

The discharger shall calculate the site's sediment risk and receiving water risk during periods of soil exposure (i.e. grading and site stabilization) and use the calculated risks to determine a Risk Level(s) using the methodology in

Appendix 1. For any site that spans two or more planning watersheds,[13] the discharger shall calculate a separate Risk Level for each planning watershed. The discharger shall notify the State Water Board of the site's Risk Level determination(s) and shall include this determination as a part of submitting the PRDs. If a discharger ends up with more than one Risk Level determination, the Regional Water Board may choose to break the project into separate levels of implementation.

IX. RISK LEVEL 1 REQUIREMENTS

Risk Level 1 Dischargers shall comply with the requirements included in Attachment C of this General Permit.

X. RISK LEVEL 2 REQUIREMENTS

Risk Level 2 Dischargers shall comply with the requirements included in Attachment D of this General Permit.

XI. RISK LEVEL 3 REQUIREMENTS

Risk Level 3 Dischargers shall comply with the requirements included in Attachment E of this General Permit.

XII. ACTIVE TREATMENT SYSTEMS (ATS)

Dischargers choosing to implement an ATS on their site shall comply with all of the requirements in Attachment F of this General Permit.

[13] Planning watershed: defined by the Calwater Watershed documents as a watershed that ranges in size from approximately 3,000 to 10,000 acres http://cain.ice.ucdavis.edu/calwater/calwfaq.html, http://gis.ca.gov/catalog/BrowseRecord.epl?id=22175 .

XIII. POST-CONSTRUCTION STANDARDS

A. All dischargers shall comply with the following runoff reduction requirements unless they are located within an area subject to post-construction standards of an active Phase I or II municipal separate storm sewer system (MS4) permit that has an approved Storm Water Management Plan.

1. This provision shall take effect three years from the adoption date of this permit, or later at the discretion of the Executive Officer of the Regional Board.

2. The discharger shall demonstrate compliance with the requirements of this section by submitting with their NOI a map and worksheets in accordance with the instructions in Appendix 2. The discharger shall use non-structural controls unless the discharger demonstrates that non-structural controls are infeasible or that structural controls will produce greater reduction in water quality impacts.

3. The discharger shall, through the use of non-structural and structural measures as described in Appendix 2, replicate the pre-project water balance (for this permit, defined as the volume of rainfall that ends up as runoff) for the smallest storms up to the 85th percentile storm event (or the smallest storm event that generates runoff, whichever is larger). Dischargers shall inform Regional Water Board staff at least 30 days prior to the use of any structural control measure used to comply with this requirement. Volume that cannot be addressed using non-structural practices shall be captured in structural practices and approved by the Regional Water Board. When seeking Regional Board approval for the use of structural practices, dischargers shall document the infeasibility of using non-structural practices on the project site, or document that there will be fewer water quality impacts through the use of structural practices.

4. For sites whose disturbed area exceeds two acres, the discharger shall preserve the pre-construction drainage density (miles of stream length per square mile of drainage area) for all drainage areas within the area serving a first order stream[14] or larger stream and ensure that post-project time of runoff concentration is equal or greater than pre-project time of concentration.

[14] A first order stream is defined as a stream with no tributaries.

B. All dischargers shall implement BMPs to reduce pollutants in storm water discharges that are reasonably foreseeable after all construction phases have been completed at the site (Post-construction BMPs).

XIV. SWPPP REQUIREMENTS

A. The discharger shall ensure that the Storm Water Pollution Prevention Plans (SWPPPs) for all traditional project sites are developed and amended or revised by a QSD. The SWPPP shall be designed to address the following objectives:

1. All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;

2. Where not otherwise required to be under a Regional Water Board permit, all non-storm water discharges are identified and either eliminated, controlled, or treated;

3. Site BMPs are effective and result in the reduction or elimination of pollutants in storm water discharges and authorized non-storm water discharges from construction activity to the BAT/BCT standard;

4. Calculations and design details as well as BMP controls for site run-on are complete and correct, and

5. Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

B. To demonstrate compliance with requirements of this General Permit, the QSD shall include information in the SWPPP that supports the conclusions, selections, use, and maintenance of BMPs.

C. The discharger shall make the SWPPP available at the construction site during working hours while construction is occurring and shall be made available upon request by a State or Municipal inspector. When the original SWPPP is retained by a crewmember in a construction vehicle and is not currently at the construction site, current copies of the BMPs and map/drawing will be left with the field crew and the original SWPPP shall be made available via a request by radio/telephone.

XV. REGIONAL WATER BOARD AUTHORITIES

A. In the case where the Regional Water Board does not agree with the discharger's self-reported risk level (e.g., they determine themselves to be a Level 1 Risk when they are actually a Level 2 Risk site), Regional Water Boards may either direct the discharger to reevaluate the Risk Level(s) for their site or terminate coverage under this General Permit.

B. Regional Water Boards may terminate coverage under this General Permit for dischargers who fail to comply with its requirements or where they determine that an individual NPDES permit is appropriate.

C. Regional Water Boards may require dischargers to submit a Report of Waste Discharge / NPDES permit application for Regional Water Board consideration of individual requirements.

D. Regional Water Boards may require additional Monitoring and Reporting Program Requirements, including sampling and analysis of discharges to sediment-impaired water bodies.

E. Regional Water Boards may require dischargers to retain records for more than the three years required by this General Permit.

XVI. ANNUAL REPORTING REQUIREMENTS

A. All dischargers shall prepare and electronically submit an Annual Report no later than September 1 of each year.

B. The discharger shall certify each Annual Report in accordance with the Special Provisions.

C. The discharger shall retain an electronic or paper copy of each Annual Report for a minimum of three years after the date the annual report is filed.

D. The discharger shall include storm water monitoring information in the Annual Report consisting of:

1. a summary and evaluation of all sampling and analysis results, including copies of laboratory reports;

2. the analytical method(s), method reporting unit(s), and method detection limit(s) of each analytical parameter (analytical results that are less than the method detection limit shall be reported as "less than the method detection limit");

3. a summary of all corrective actions taken during the compliance year;

4. identification of any compliance activities or corrective actions that were not implemented;

5. a summary of all violations of the General Permit;

6. the names of individual(s) who performed the facility inspections, sampling, visual observation (inspections), and/or measurements;

7. the date, place, time of facility inspections, sampling, visual observation (inspections), and/or measurements, including precipitation (rain gauge); and

8. the visual observation and sample collection exception records and reports specified in Attachments C, D, and E.

E. The discharger shall provide training information in the Annual Report consisting of:

1. documentation of all training for individuals responsible for all activities associated with compliance with this General Permit;

2. documentation of all training for individuals responsible for BMP installation, inspection, maintenance, and repair; and

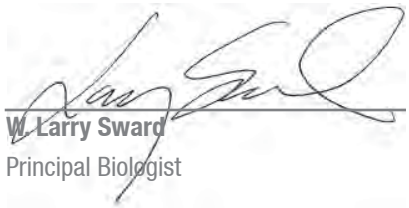
3. documentation of all training for individuals responsible for overseeing, revising, and amending the SWPPP.

HELIX
Environmental Planning

Mt. San Antonio College
2015 Facilities Master Plan Update

Biological Technical Report

April 14, 2016



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Mt. San Antonio College 2015 Facilities Master Plan Update
Biological Technical Report

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1.0 INTRODUCTION

Mt. San Antonio College (Mt. SAC) has proposed a 2015 Facilities Master Plan Update (FMPU). Three proposed elements of the Mt. SAC 2012 Master Plan Update occur in areas that have not previously been developed. These elements include (1) irrigation well site, (2) detention basin upgrade, and (3) fire academy relocation. This biological technical report analyzes the biological impacts of these elements. These elements cover approximately 13 acres of the 420-acre campus.

1.1 PROJECT LOCATION

Mt. SAC is located in the San Gabriel Valley in southeast Los Angeles County, California (Figure 1). The college is situated near the intersection of North Grand and Temple Avenues in the City of Walnut. It is within un-sectioned land of the Puente Land Grant, Township 2 South, Range 9 East on the U.S. Geological Survey (USGS) 7.5-minute San Dimas quadrangle map (Figures 2 and 3).

1.2 SITE DESCRIPTION

The study area is approximately 22 acres and supports a mix of developed and undeveloped land with landscaping and native, naturalized, and disturbed habitat communities (Figures 4a through 4c). The study area includes the impact footprint in the three impact areas (irrigation well, detention basin, and fire academy) and a 100-foot-wide area beyond the impact footprint/work area. Elevations within the study area range from approximately 715 to 975 feet above mean sea level.

The FMPU includes additional elements such as re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue including demolition of the existing stadium and construction of a new stadium. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. These elements of the FMPU, while shown as work areas on the figures, are not analyzed in this report because they occur in previously developed portions of the campus. In addition, the Wildlife Sanctuary designation would be increased from 10 acres to 26 acres. Within the expanded Wildlife Sanctuary (Figure 4d), Mt. SAC is also planning to restore the extensive agriculture to coastal sage scrub, create 0.06 acre of mule fat scrub, and weed the existing sage scrub and wetland habitats. A portion of the Wildlife Sanctuary that is planned for coastal sage scrub restoration was mistakenly paved during the recent paving of Lot M. The pavement within the restoration area and 50-foot buffer will be removed to allow for the restoration project, which will provide mitigation for a previously approved solar project on the west side of Grand Avenue. The expansion and restoration of the Wildlife Sanctuary is not analyzed in this report because it is expected to improve the habitat quality of the campus.

1.3 SURROUNDING LAND USE

Residential land uses exist on the north, west, and south sides of the campus. To the east of the campus is the Spadra Landfill and undeveloped land. Within the campus, the detention basin site is surrounded by the stadium complex to the west, a parking lot to the north, and a larger maintained detention basin to the east, with a trail through California walnut woodland to the southeast. The fire academy site is located within an asphalt parking lot and surrounded by wildlife preserve, undeveloped land, and trails. The irrigation well site is located on a steep, heavily grazed hillside adjacent to an existing water tank, surrounded by grazing land and agricultural facilities.

2.0 SURVEYS AND METHODS

Prior to conducting biological field surveys, HELIX Environmental Planning, Inc. (HELIX) performed a review of existing literature, including searches of the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB; 2016) and the California Native Plant Society (CNPS; 2016) online database for information regarding sensitive species reported in the project vicinity. Results of previous analyses of the 2008 and 2012 Master Plan Updates (HELIX 2008a, b, and c; 2012a) were also consulted.

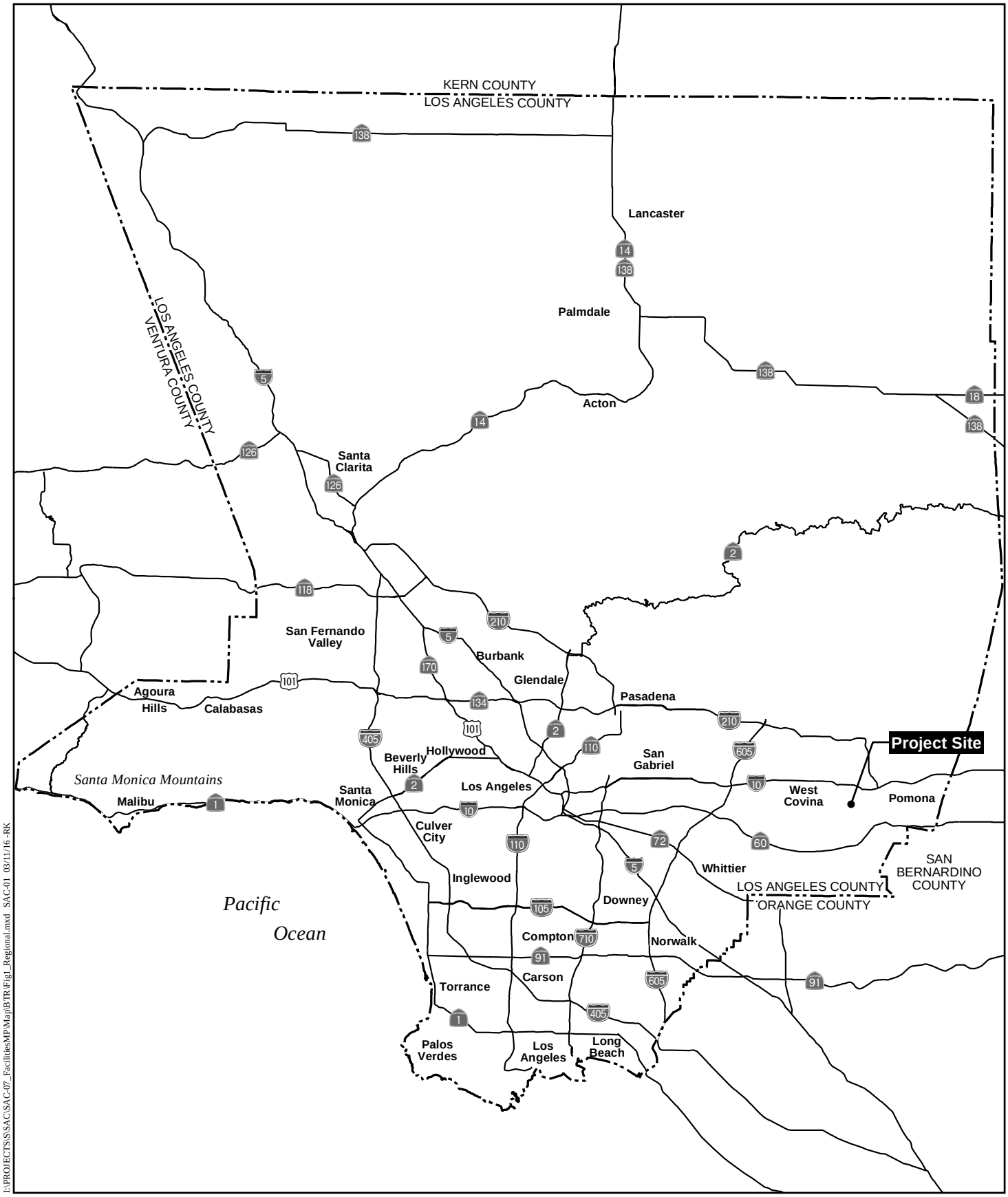
Vegetation mapping, general botanical, and zoological surveys were conducted on March 4, 2016 by HELIX biologist Beth Ehsan. Vegetation communities and sensitive species observed or detected were mapped on a 1"=200' scale aerial photograph map. Upland vegetation communities were mapped to the nearest tenth of an acre and wetland communities were mapped to the nearest hundredth of an acre. A protocol burrowing owl habitat assessment and burrow survey was conducted by HELIX biologist Rob Hogenauer on March 22, 2016.

Vegetation community classifications follow Holland (1986). Plants were identified according to Baldwin, et. al. (2012), while common names are derived from either Baldwin, et. al., CNPS (2016), or Calflora (2016). Sensitive plant status follows the CNPS (2016) and CDFW CNDDB (2016). Animal nomenclature used in this report is taken from Crother (2001) for amphibians and reptiles, American Ornithologists' Union (2015) for birds, and Baker et al. (2003) for mammals. Sensitive animal status follows the CDFW CNDDB (2016).

3.0 RESULTS OF RESEARCH, SURVEYS, AND MAPPING

3.1 VEGETATION COMMUNITIES

Four native or naturalized vegetation communities occur within the study area (Table 1; Figures 4a through 4c). The majority of the campus is either in active use for agriculture or has been significantly altered by improvements for the college. Large portions of the study area have been mapped as extensive agriculture because of past and ongoing grazing, which is particularly evident at the irrigation well site. The other mapped habitats (i.e., mule fat scrub, California walnut woodland, and Venturan coastal sage scrub) retain significant native and naturalized



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Regional Location Map

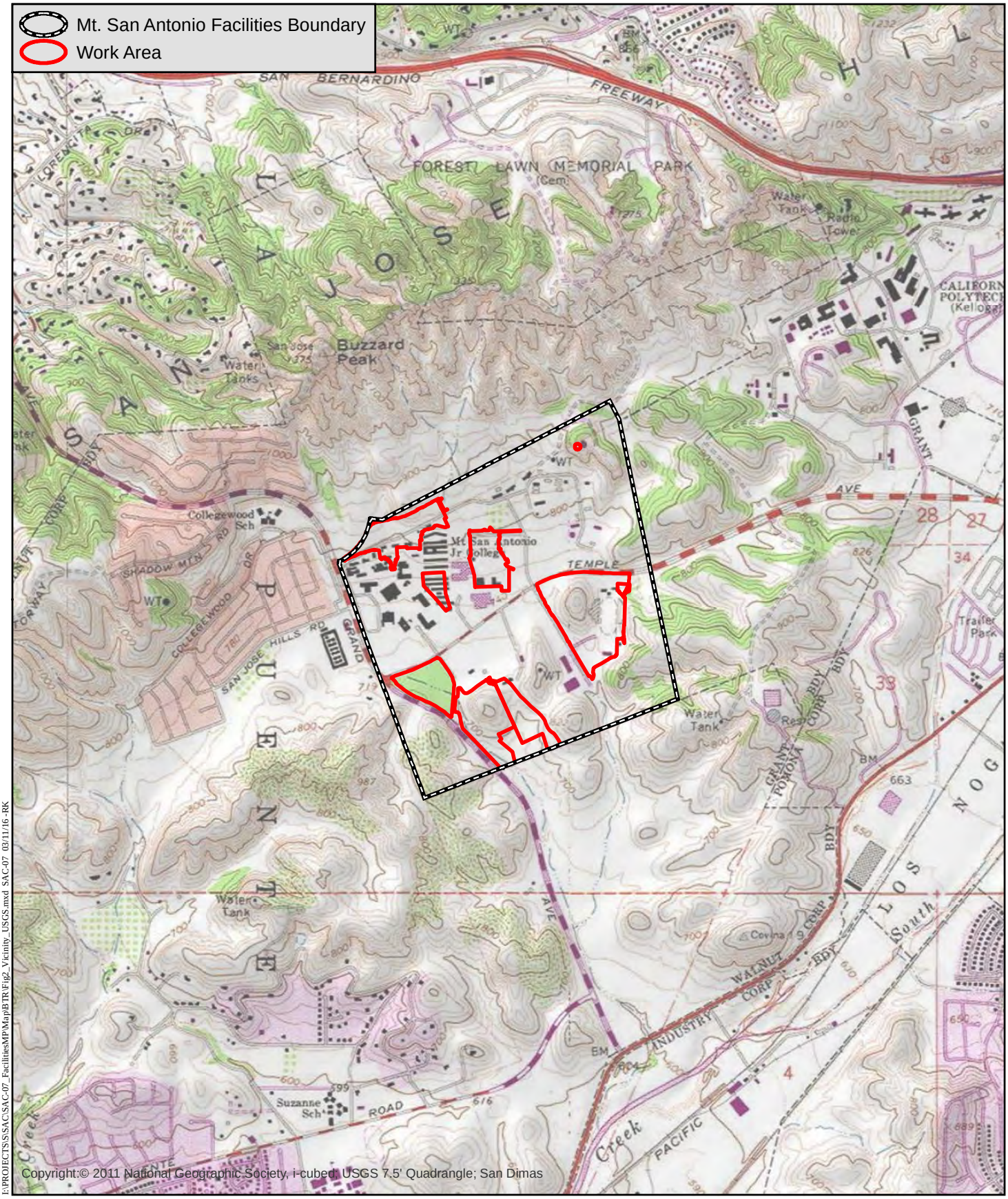
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N

0 10 Miles

Figure 1



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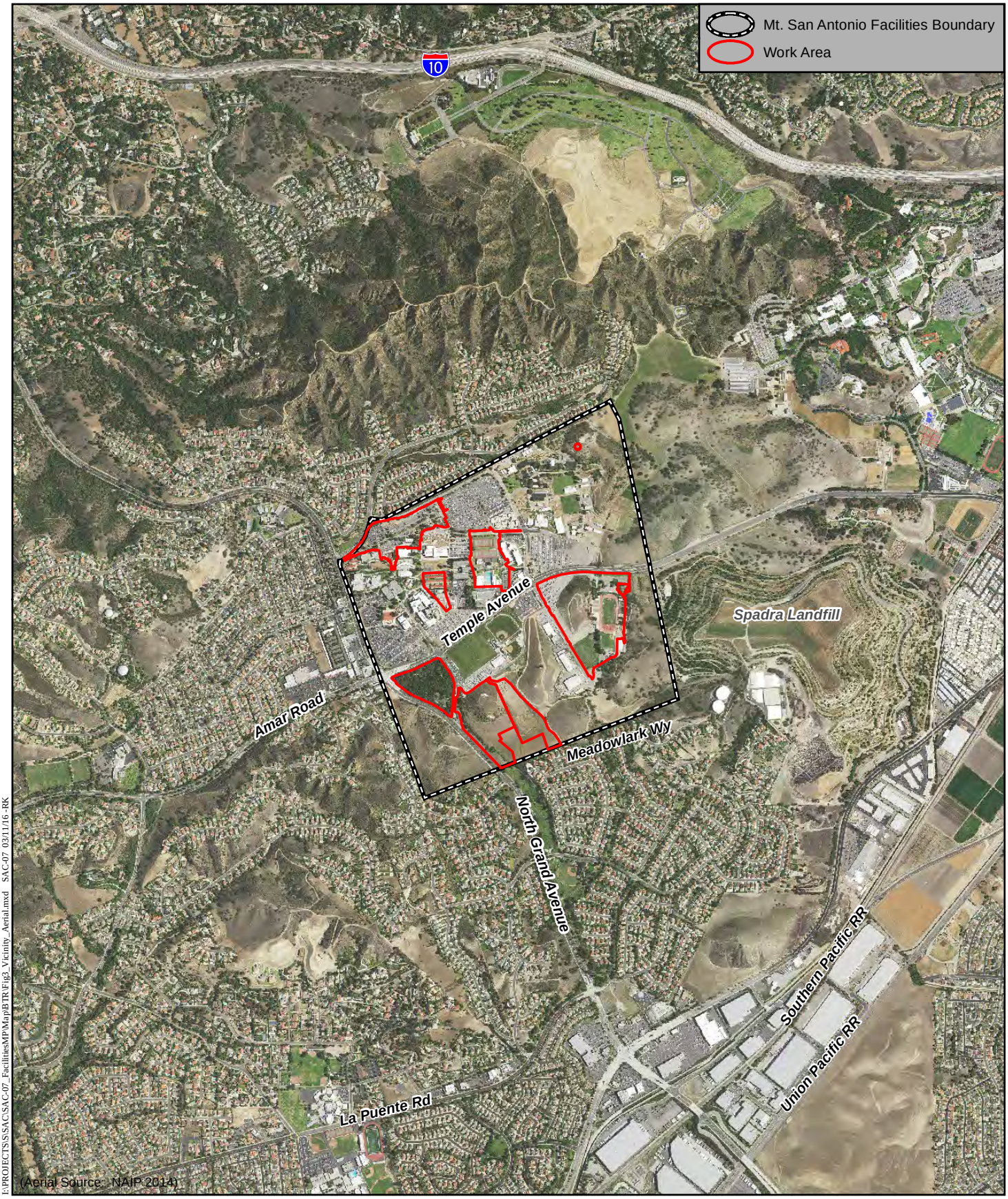
Project Vicinity Map (USGS Topography)

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 2,000 Feet

Figure 2



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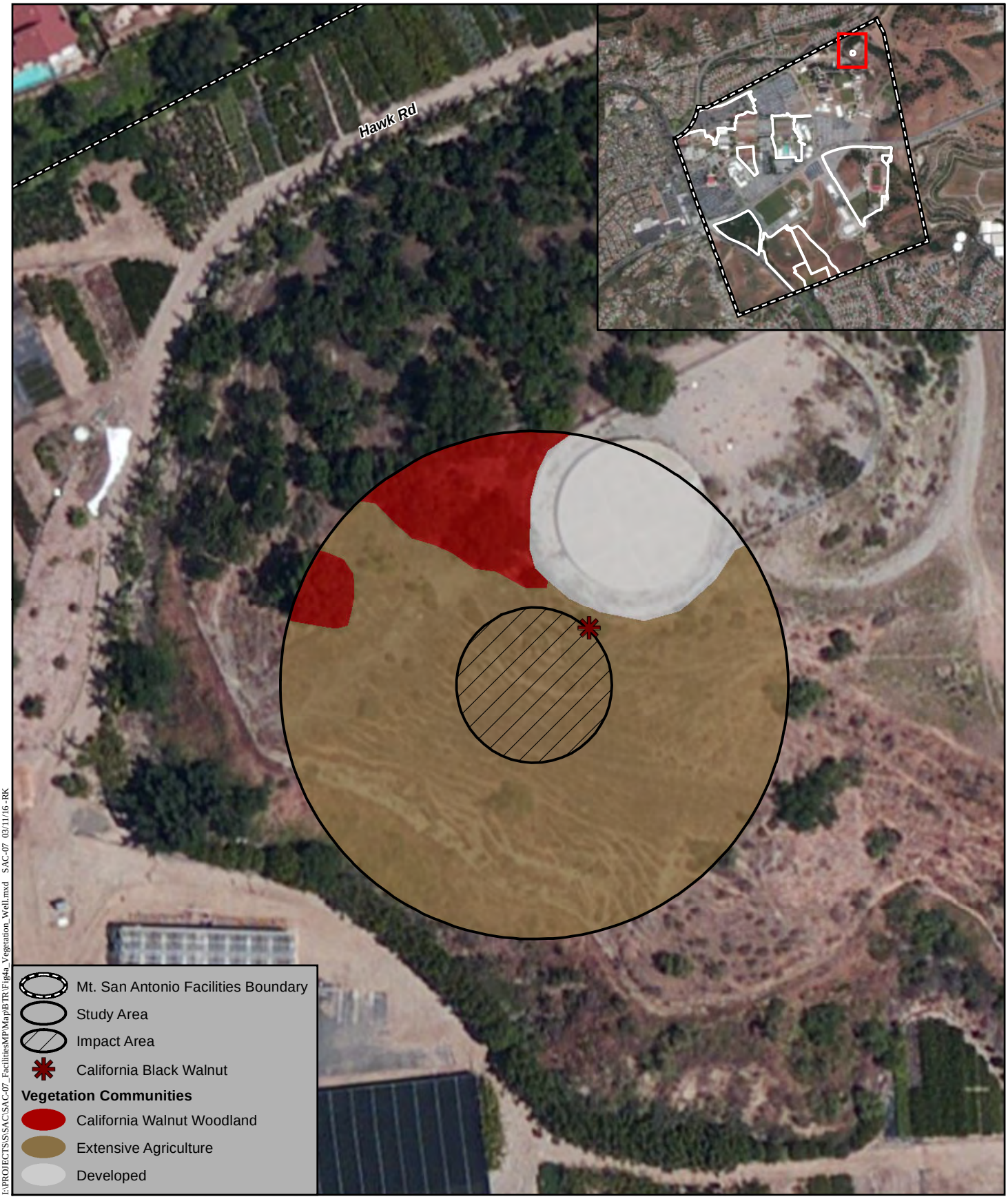
Project Vicinity Map (Aerial Photograph)

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3



I:\PROJECTS\SAC\SAC-07_FacilitiesMP\Mxd\BTR\Fig4a_Vegetation_Well.mxd SAC-07 03/11/16 -RK

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

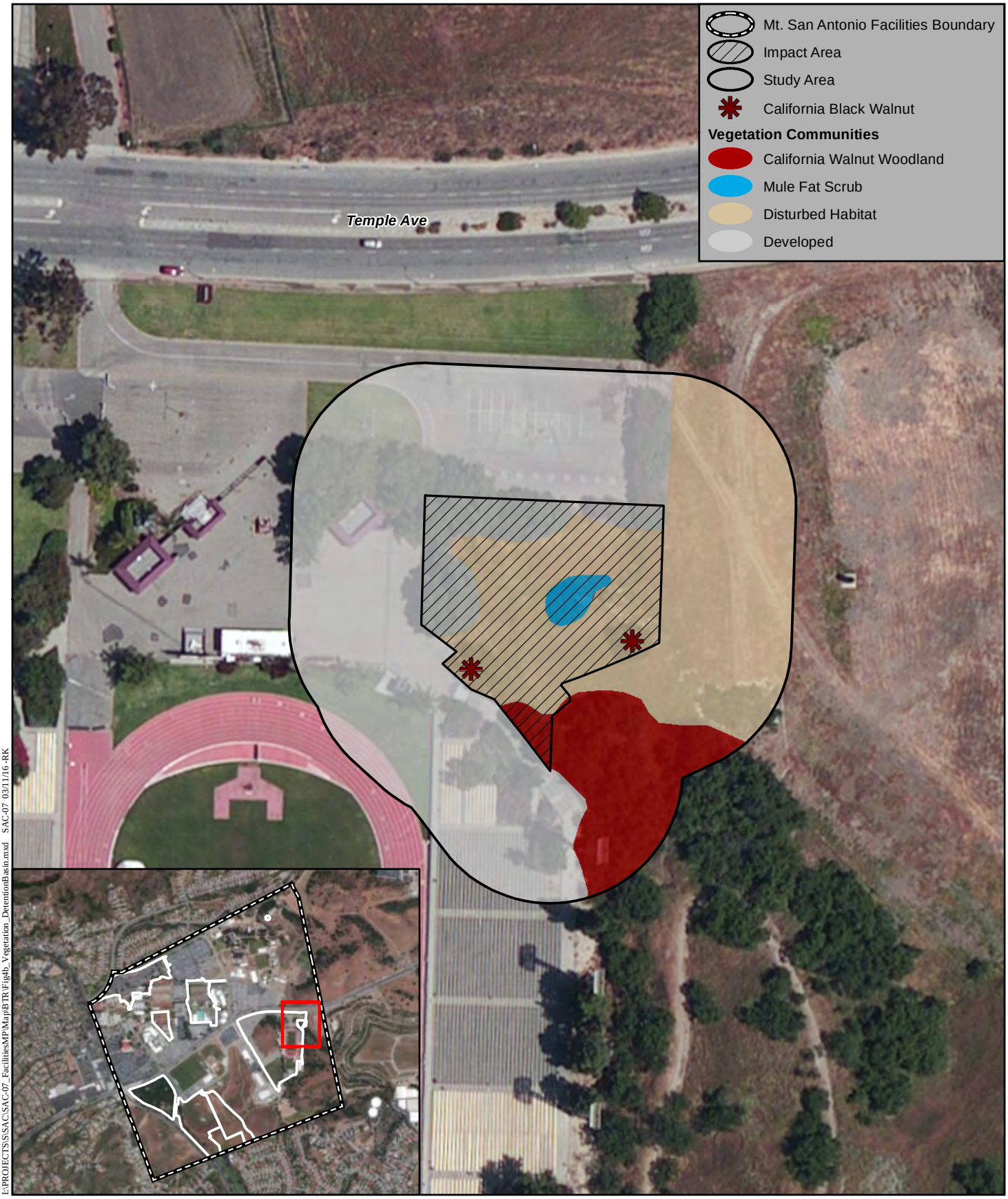
Vegetation Map - Irrigation Well

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 75 Feet

Figure 4a



I:\PROJECTS\SAC\SAC-07_FacilitiesMP\Map\BTR\Fig4b_Vegetation_DetentionBasin.mxd SAC-07 03/11/16 -RK

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

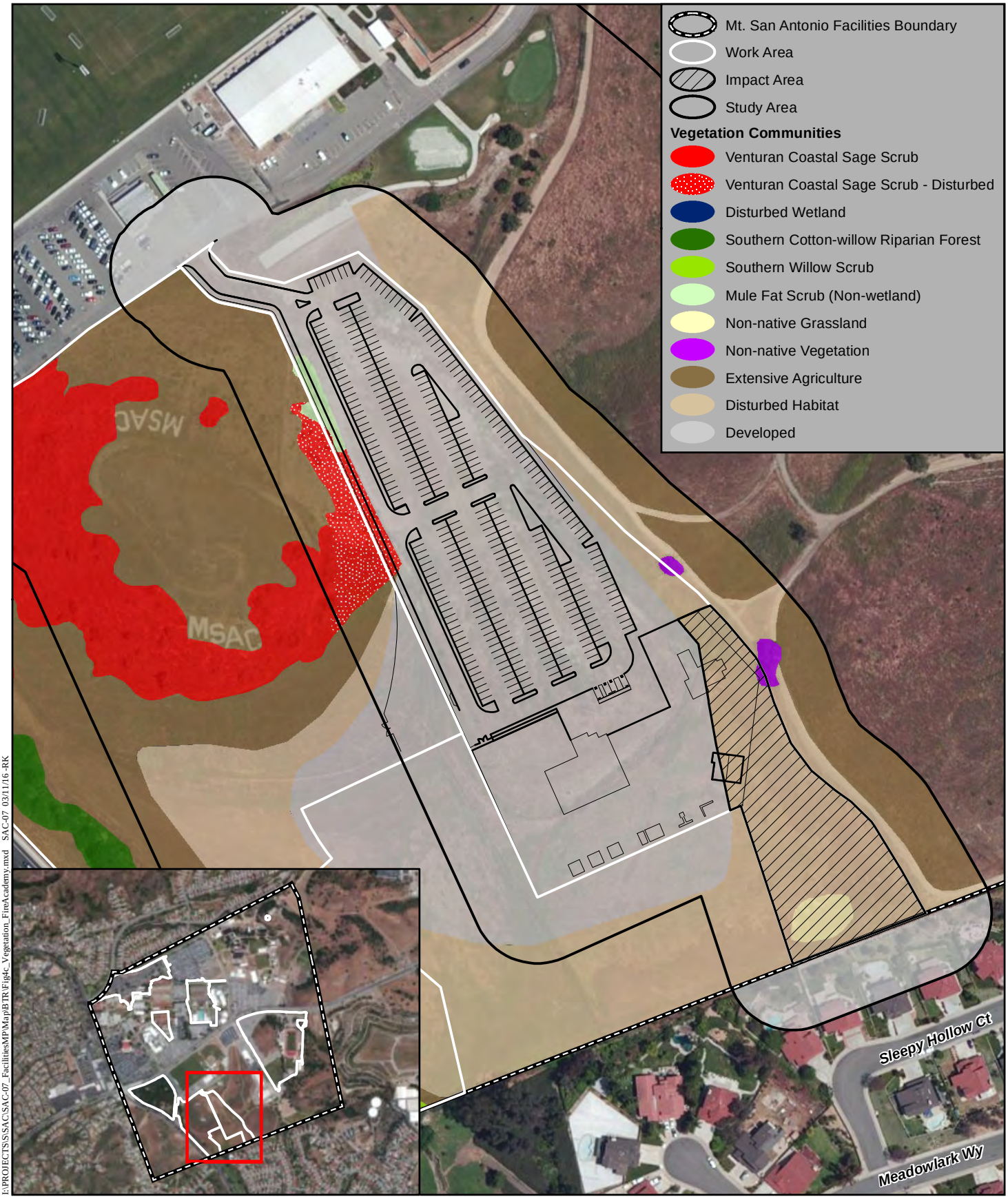
Vegetation Map - Detention Basin

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 100 Feet

Figure 4b



I:\PROJECTS\SAC\SAC-07_FacilitiesMP\Map\BTR\Fig4c_Vegetation_FireAcademy.mxd SAC-07 03/11/16 RK

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

Vegetation Map - Fire Academy

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 200 Feet

Figure 4c

I:\PROJECTS\S\SAC\SAC-07_FacilitiesMP\Map\BTR\Fig4d_Vegetation_WildlifeSanctuary.mxd SAC-07 03/11/16 RK

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

Vegetation Map - Wildlife Sanctuary

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 250 Feet

Figure 4d

species, but have also been affected by grazing. These effects include decreased species diversity, trampling, and the relatively high cover of broad-leaved weed species. Descriptions of these communities are provided below. The non-native grassland in the study area is protected from grazing by a fence along the trail on the east side and a paved parking lot and silt fencing on the west side.

Table 1
EXISTING VEGETATION COMMUNITIES

NATIVE AND NATURALIZED VEGETATION	ACREAGE
Mule fat scrub (in detention basin)	0.03
Mule fat scrub (upland)	0.1
Venturan coastal sage scrub (including disturbed)	0.5
Non-native grassland	0.1
California walnut woodland	0.5
Subtotal	**1.23**
ACTIVE USE AND ALTERED AREAS	
Extensive agriculture	3.9
Non-native vegetation	0.1
Disturbed habitat	4.8
Developed	12.1
Subtotal	**20.9**
TOTAL	**22.13**

3.1.1 Mule Fat Scrub

Mule fat is rated as facultative (FAC) in the U.S. Army Corps of Engineers (USACE) list of wetland plants (Lichvar et. al. 2014). This rating is for plants that have an equal probability of occurring in a wetland or an upland. The landscape position is the determining factor for whether or not mule fat scrub is a wetland or an upland.

Mule fat scrub as a wetland habitat is a shrubby riparian scrub community dominated by mule fat (*Baccharis salicifolia*) and usually interspersed with shrubby willows (*Salix* spp.; Holland 1986). The mule fat scrub in the detention basin is in a wetland landscape position and consists of mule fat located at the bottom of a manmade detention basin, surrounded by short-pod mustard (*Hirschfeldia incana*) and other non-native weedy species. It does not qualify as jurisdictional wetland because it occurs within a constructed detention basin fed by pipes and a riprap drainage channel. It is a stormwater facility, not a lake or stream. There is 0.03 acre of mule fat scrub in the detention basin.

The mule fat scrub in the fire academy area occurs in an upland landscape position and likely functions as disturbed coastal sage scrub consistent with the nearest habitat. As an upland habitat, it is not regarded as a sensitive habitat. Approximately 0.1 acre of upland mule fat scrub occurs within the study area.

3.1.2 Venturan Coastal Sage Scrub

Coastal sage scrub is one of the two major shrub types that occur in cismontane southern California, with the other shrub type being chaparral. Sage scrub occupies relatively xeric sites characterized by shallow soils. Significant portions of sage scrub habitat in southern California have been destroyed or modified, primarily as a result of urban expansion. Venturan coastal sage scrub is dominated by low, soft-woody shrubs with crowns usually touching (and typically with bare ground beneath and between them). Growth occurs in late winter and early spring, following the onset of the winter rains. Characteristic species of Venturan coastal sage scrub include California sagebrush (*Artemisia californica*), various buckwheats (*Eriogonum fasciculatum, E. cinereum,* and *E. parvifolium*), white sage (*Salvia apiana*), black sage (*S. mellifera*), and lemonade berry (*Rhus integrifolia*). This habitat type also occurs as a sparse, low-growing disturbed phase. Approximately 0.5 acre of Venturan coastal sage scrub (including the disturbed phase) occurs adjacent to the fire academy area. This habitat occurs within the study area primarily in the disturbed phase. Disturbed stands have a lower density of shrubs, which may also be smaller than the undisturbed stands, and a greater cover of weedy herbaceous species.

3.1.3 Non-native Grassland

Non-native grassland is a dense to sparse cover of annual grasses often associated with numerous species of showy-flowered native annual forbs. This association occurs on gradual slopes with deep, fine-textured, usually clay soils. This habitat occurs in the southern end of the fire academy hillside clearing area. Common species present in non-native grassland within the project area include ripgut grass (*Bromus diandrus*), red brome (*B. Madritensis* ssp. *rubens*) Mediterranean barley (*Hordeum murinum*), filaree (*Erodium cicutarium*), short-pod mustard (*Hirschfeldia incana*), and Russian thistle (*Salsola tragus*). Approximately 0.1 acre of non-native grassland occurs within the study area.

3.1.4 California Walnut Woodland

California walnut woodland is similar to and intergrades with coast live oak woodland, but has a more open tree canopy and is locally dominated by southern California black walnut (*Juglans californica*). The open tree canopy allows for the development of a grassy understory, which usually comprises introduced winter-active annuals that complete most of their growth cycles before the deciduous black walnuts begin to show their leaves in the spring. The vegetation community is found on relatively moist, fine-textured soils of valley slopes and bottoms, as well as encircling rocky outcrops. Approximately 0.5 acre of California walnut woodland occurs within the project study area.

3.1.5 Extensive Agriculture

Extensive agriculture includes those parts of the study area that are actively grazed and support an herbaceous-dominated community. The extensive agriculture in the irrigation well site appears heavily grazed with substantial areas of bare dirt and species including tocalote (*Centaurea melitensis*), short-pod mustard, Indian sweet clover (*Melilotus indicus*), Russian

thistle, and cheeseweed (*Malva parviflora*). The extensive agriculture near the fire academy site is more vegetated and also includes non-native grasses. Approximately 3.9 acres of extensive agriculture occur within the study area.

3.1.6 Non-native Vegetation

Non-native vegetation areas are those areas that support ornamental species that have either become naturalized or were once part of a maintained landscape but were then abandoned. Two large Peruvian pepper (*Schinus molle*) trees occur in the fire academy study area and constitute 0.1 acre.

3.1.7 Disturbed Habitat

Disturbed habitat includes land cleared of vegetation (e.g., dirt roads) and land containing a preponderance of non-native ruderal species that colonize disturbed or previously cleared areas, without a significant grass component. The disturbed habitat in the detention basin area is dominated by short-pod mustard. The disturbed habitat in the fire academy area is dominated by cheeseweed and Russian thistle. Disturbed habitat totals approximately 4.8 acres within the study area.

3.1.8 Developed Land

Developed land was mapped where permanent structures, pavement, and/or maintained landscaping have been placed. This includes the large asphalt parking lot that was installed in the fire academy site since the aerial photo was taken, as well as planted landscape trees near the detention basin. Developed land within the study area comprises approximately 12.1 acres.

3.2 PLANT SPECIES

Forty-six plant species were observed on site (Appendix A). Thirty-three of these species, or 72 percent, were non-native. This is a relatively large percent of non-native species and reflects the extensive disturbance to the study area.

3.3 ANIMAL SPECIES

Eighteen animal species were observed on site, including 14 birds, three insects, and one mammal (Appendix B).

3.4 SENSITIVE RESOURCES

3.4.1 Sensitive Vegetation Communities

Four vegetation communities found on the project site are considered sensitive by the resource agencies: mule fat scrub, Venturan coastal sage scrub, California walnut woodland, and non-native grassland.

3.4.2 Sensitive Plant Species

No sensitive plant species (listed species and Rare Plant Rank 3 and above) were observed during the current or previous surveys. One locally significant species, California black walnut, was observed on site. California walnut woodland was mapped in the irrigation well and detention basin sites, and three mature California black walnut trees were mapped within disturbed habitat and extensive agriculture at those sites.

Sensitive Plant Species with Potential to Occur

A database search revealed that 35 sensitive plant species, as defined above, are known from the vicinity of Mt. SAC. Four of these are not expected to occur within the study area because they are only known from places with a higher elevation (Greata's aster [*Symphyotrichum greatae*], lemon lily [*Lilium parry*], San Bernardino grass-of-Parnassus [*Parnassia cirrata* var. *cirrata*], and San Gabriel bedstraw [*Galium grande*]). Nine others are not expected in the study area because their appropriate habitat is absent:

- alkaline soils near hot springs (hot-springs fimbristylis [*Fimbristylis thermalis*]);
- granitic cliffs and canyon walls (San Gabriel Mountains dudleya [*Dudleya densiflora*]);
- alkaline soils (chaparral ragwort [*Senecio aphanactis*]; smooth tarplant [*Centromadia pungens* spp. *laevis*]; Davidson's saltscale [*Atriplex serenana* var. *davidsonii*]; and salt spring checkerbloom [*Sidalcea neomexicana*]);
- chaparral with granitic soil (San Gabriel River dudleya [*Dudleya cymosa* ssp. *crebrifolia*]);
- recently burned or disturbed areas with sandstone soils with carbonate layers (Braunton's milk-vetch [*Astragalus brauntonii*]); and
- coastal salt marshes and swamps, playas, and vernal pools (Coulter's goldfields [*Lasthenia glabrata* ssp. *coulteri*]).

Twenty-two other sensitive species potentially occur in the study area (Table 2). Differences in the climate from year-to-year can influence the size of certain herbaceous species; however, the site was surveyed in the spring of a year with near normal precipitation and none of these species were observed. This is consistent with the results of previous surveys of Mt. SAC, none of which observed any sensitive plant species. Because the entire impact area has been previously disturbed and/or currently grazed, the project site has a very low potential to support sensitive species, as evidenced by the dominance of non-native ruderal species.

Table 2
POTENTIALLY OCCURRING SENSITIVE PLANT SPECIES

SPECIES	STATUS*	POTENTIAL TO OCCUR	NOTES
Chaparral sand-verbena (*Abronia villosa* var. *aurita*)	--/-- CNPS Rank 1B.1	Low	Flowers from June to September. Coastal sage scrub. Annual.
Coulter's saltbush (*Atriplex coulteri*)	--/-- CNPS Rank 1B.2	Low	Flowers from May to October. Coastal sage scrub in clay soils. Perennial herb.
Nevin's barberry (*Berberis nevinii*)	FE/SE CNPS List 1B.1	Low	Flowers March to June. Chaparral, woodland, coastal, and riparian scrubs. Would have been observed if present.
Thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE CNPS Rank 1B.1	Low	Flowers from March to June. Clay soils in woodlands, coastal sage scrub, and grasslands. Perennial herb.
Round-leaved filaree (*California macrophylla*)	--/-- CNPS Rank 1B.2	Low	Flowers from March to May. Clay soils in woodland and grassland. Annual.
Slender mariposa lily (*Calochortus clavatus* var. *gracilis*)	--/-- CNPS Rank 1B.2	Low	Flowers from March to June. Coastal sage scrub and grassland. Perennial herb.
Intermediate mariposa lily (*Calochortus weedii* var. *intermedius*)	--/-- CNPS Rank 1B.2	Low	Flowers May to July. Coastal sage scrub and grassland. Perennial herb.
Lucky morning glory (*Calystegia felix*)	--/-- CNPS Rank 3.1	Low	Flowers March to September. Meadows and seeps (sometimes alkaline), alluvial riparian scrub. Annual rhizomatous herb.
Lewis' evening-primrose (*Camissonia lewisii*)	--/-- CNPS Rank 3	Low	Flowers March to June. Sandy or clay soils in coastal bluff scrub, dunes, cismontane woodland, valley and foothill grassland.
Southern tarplant (*Centromadia parryi* ssp. *australis*)	--/-- CNPS Rank 1B.1	Low	Flowers from May to November. Margins of freshwater marsh and vernally mesic grasslands. Annual.
Parry's spineflower (*Chorizanthe parryi* var. *parryi*)	--/-- CNPS Rank 1B.1	Low	Flowers from May to July. Sandy or rocky soil in coastal sage scrub. Annual.
California sawgrass (*Cladium californicum*)	--/-- CNPS Rank 2B.2	None	Flowers from June to September. Freshwater marsh. Large perennial herb.

Table 2 (cont.)
POTENTIALLY OCCURRING SENSITIVE PLANT SPECIES

SPECIES	STATUS*	POTENTIAL TO OCCUR	NOTES
Slender-horned spineflower (*Dodecahema leptoceras*)	FE/SE CNPS Rank 1B.1	Low	Flowers from April to June. Sandy areas in woodlands. Annual.
Many-stemmed dudleya (*Dudleya multicaulis*)	--/-- CNPS Rank 1B.2	None	Flowers from April to July. Coastal sage scrub and grassland. Perennial herb.
Mesa horkelia (*Horkelia cuneata* var. *puberula*)	--/-- CNPS Rank 1B.1	None	Flowers from February to September. Sandy or gravelly soils in coastal sage scrub. Perennial herb.
California satintail (*Imperata brevifolia*)	--/-- CNPS Rank 2B.1	None	Flowers from September to May. Riparian scrub along Snow Creek. Perennial herb.
Prostrate navarretia (*Navarretia prostrata*)	--/-- CNPS 1B.1	Low	Flowers from April to June. Mesic coastal sage scrub and grasslands. Annual.
South coast branching phacelia (*Phacelia ramosissima* var. *austrolitoralis*)	--/-- CNPS Rank 3.2	Low	Flowers from March to August. Sandy, sometimes rocky chaparral, coastal dunes, coastal scrub, marshes, and swamps. Perennial herb.
Brand's star phacelia (*Phacelia stellaris*)	FC/-- CNPS Rank 1B.1	Low	Flowers from March to June. Coastal sage scrub. Annual
White rabbit-tobacco (*Pseudognaphalium leucocephalum*)	--/-- CNPS Rank 2B.2	Low	Flowers from July to December. Sandy and rocky soils in woodlands, coastal sage scrub, and grasslands. Perennial herb.
San Bernardino aster (*Symphyotrichum defoliatum*)	--/-- CNPS Rank 1B.2	Low	Flowers from July to November. Near ditches, streams and springs in woodlands, scrubs, forests, meadows, marshes, and grasslands. Perennial rhizomatous herb.
Sonoran maiden fern (*Thelypteris puberula* var. *sonorensis*)	--/-- CNPS Rank 2B.2	Low	Flowers from June to September. Meadows and seeps. Perennial herb.

*A listing and explanation of status and sensitivity codes can be found in Appendix C.

3.4.3 Sensitive Animal Species

Three sensitive animal species have been previously observed in or near the study area: the federally listed threatened coastal California gnatcatcher (*Polioptila californica californica*), California Species of Special Concern coastal cactus wren (*Campylorhynchus Brunneicapillus sandiegensis*), and the federally and state listed endangered Least Bell's vireo (*Vireo pusillus bellii*).

Coastal California gnatcatcher (*Polioptila californica californica*)
Listing: FT/SSC
Distribution: Occurs throughout coastal lowlands.
Habitat(s): Coastal sage scrub and open chaparral.
Status on site: Observed in coastal sage scrub on Mt. SAC hill. A pair was observed on May 30, 2012 on the southeast part of the hill. A male was observed on June 15, 2012 on the west side of the hill. Protocol surveys conducted in 2015 on the west side of Grand Avenue also found gnatcatchers. These observations indicate that all of the Venturan coastal sage scrub in the study area is occupied by this species.

Coastal cactus wren (*Campylorhynchus Brunneicapillus sandiegensis*)
Listing: --/SSC
Distribution: Subspecies occurs throughout desert and coastal areas of southern California.
Habitat(s): Restricted to clumps of native prickly pear (*Opuntia littoralis* and *O. oricola*) or cholla (*Cylindropuntia prolifera*) growing in coastal sage scrub or along washes.
Status on site: Individuals were heard vocalizing in the coastal sage scrub located on Mt. SAC hill on May 30 and June 15, 2012. These observations indicate that the Venturan coastal sage scrub in the study area is likely occupied by this species.

Least Bell's vireo (*Vireo bellii pusillus*)
Listing: FE/SE
Distribution: Breeding distribution occurs in California from San Diego to Santa Clara counties.
Habitat(s): Uncommon in willow dominated riparian areas with a dense understory.
Status on site: During focused surveys for this species in 2008, an individual occurred once on the slope of the larger detention basin east of the detention basin area, in an area of Venturan coastal sage scrub – coyote brush phase. This is not regarded as typical least Bell's vireo habitat. This and the fact that an individual was only observed once over the eight survey protocol indicate that it was a transitory individual and not an inhabitant of the study area. In 2008, the larger detention basin supported disturbed wetland and a small patch of southern willow scrub. HELIX conducted a habitat assessment of this area in 2016 and determined no suitable habitat to be present for the least Bell's vireo. The entire bottom of the basin was recently cleared and no willows or riparian scrub are present, nor was there any water or evidence of recent ponding. It is apparent that this detention basin is regularly maintained by Mt. SAC to maintain its function. The site is considered unoccupied by least Bell's vireo based on the lack of suitable habitat.

Twenty-eight other sensitive animal species potentially occur in the study area (Table 3).

Table 3
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR
VERTEBRATES		
Amphibians		
Coast Range newt (*Taricha torosa*)	--/SSC	Low. Lives in terrestrial habitats and will migrate over 1 kilometer to breed in ponds, reservoirs, and slow moving streams.
Western spadefoot (*Spea hammondii*)	--/SSC	Low. Some habitat occurs on campus in the pools of the sanctuary. Habitat is grassland, sage scrub, or occasionally chaparral. Standing water, puddles, and vernal pools needed for reproduction.
Reptiles		
Coastal western whiptail (*Aspidoscelis tigris stejnegeri*)	--/--	Moderate. Found in a variety of ecosystems, primarily hot and dry open areas with sparse foliage - chaparral, woodland, and riparian areas.
Red-diamond rattlesnake (*Crotalus exsul*)	--/SSC	Low to moderate. Favors rocky outcrops (limited on site) in coastal sage scrub, chaparral, creosote bush scrub, and areas dominated by cactus.
San Diego horned lizard (*Phrynosoma coronatum blainvillei*)	--/SSC	Low. Occurs in chaparral, open sage scrub, and away from development, in areas containing loose soil.
Two-striped garter snake (*Thamnophis hammondii*)	--/SSC	Low. Property contains a limited amount of marginal habitat. Stream course with adjacent dense vegetation.
Western patch-nosed snake (*Salvadora hexalepis virgultea*)	--/SSC	Low. Occurs primarily in chaparral and occasionally in coastal sage scrub.

Table 3 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR**
VERTEBRATES (cont.)		
Birds		
Burrowing owl (*Athene cunicularia hypugea*)	--/SSC	Very Low. Prefers flat grassland, open sage scrub, and desert habitats. A protocol habitat assessment conducted on March 22, 2016 concluded that there is very low potential for burrowing owls within any of the impact sites, and further protocol surveys were not warranted.
California horned lark (*Eremophila alpestris actia*)	--/SSC	Moderate. Common in agricultural fields and disturbed grasslands throughout southern California. Small flock observed in 2008.
Cooper's hawk (*Accipiter cooperii*)	--/SSC	Moderate. Inhabits streamside groves, lowland riparian areas, and woodlands in proximity to suitable foraging areas such as scrublands or fields. Observed in the Wildlife Sanctuary during 2008 surveys.
Long-eared owl (*Asio otus)*	--/SSC	Low. Species inhabits open woodlands, forest edges, riparian strips along rivers, hedgerows, juniper thickets, woodlots, and wooded ravines and gullies. Nests in thickly wooded areas with nearby open habitats for hunting. Winters in dense conifer groves or brushy thickets. Roosting sites are usually in the heaviest forest cover available. Will also roost in hedgerows or caves, and cracks in rock canyons.
Merlin (*Falco columbarius*)	--/WL	Low. Winters in California. Occurs in grassland, estuaries, open woodlands, savannahs, and anywhere that small birds flock including farms and ranches.
Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)	--/SSC	Moderate. Occurs in coastal sage scrub on rocky hillsides and in open chaparral. Open areas of sage scrub occur in the study area.
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE	Not expected. A few areas with marginal habitat occur on campus. Dense mature riparian woodland with willows and/or cottonwoods.

Table 3 (cont.)
LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR

SPECIES	STATUS*	POTENTIAL TO OCCUR
VERTEBRATES (cont.)		
Birds (cont.)		
Tri-colored blackbird (*Agelaius tricolor*)	--/SSC	Not expected. Occurs in marsh habitat near grasslands, pastures, and agricultural fields.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	--/SE	Not expected. Very limited habitat on campus. Dense, thick riparian with willows, dense understory, slow-moving watercourses. Species rare.
Yellow breasted chat (*Icteria virens*)	--/SSC	Not expected. Wide riparian woodland, dense willow thickets, with well-developed understory. Riparian area on campus not wide or dense, and has limited understory.
Mammals		
American badger (*Taxidea taxus*)	--/SSC	Not expected. Upland grasslands, meadows, and fields. Some marginal habitat occurs on campus.
Big free-tailed bat **(***Nyctinomops macrotis)*	--/SSC	Low. Mainly inhabits rugged and rocky terrain. Prefers rocky cliffs in weathered rock fissures and crevices, but has also been discovered roosting in buildings and in terrestrial plants, including ponderosa pines, Douglas firs, and desert shrubs. May be limited by suitable drinking sites. Appears to need large and obstacle-free ponds from which to drink.
Hoary bat **(***Lasiurus cinereus***)**	--/--	Moderate to High. Species thought to prefer trees at the edge of clearings, but has been found in trees in heavy forests, open wooded glades, and shade trees along urban streets and in city parks.
Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)	--/SSC	Moderate. The northwestern San Diego pocket mouse inhabits coastal sage scrub, sage scrub/grassland ecotones, and chaparral communities. Inhabits open, sandy areas of both the Upper and Lower Sonoran life-zones of southwestern California and northern Baja California, Mexico.
Pallid bat (*Antrozous pallidus*)	--/SSC	Moderate. Roosts in caves, mines, crevices, and abandoned buildings. Could forage on site.

Table 3 (cont.) **LISTED OR SENSITIVE ANIMAL SPECIES WITH POTENTIAL TO OCCUR**		
SPECIES	**STATUS***	**POTENTIAL TO OCCUR**
VERTEBRATES (cont.)		
Mammals (cont.)		
Pocketed free-tailed bat (*Nyctinomops femorosaccus*)	--/SSC	Not expected. Roosting habitat does not occur in study area. Usually found in desert scrub. Roosts in cliffs and rocky crevices in small colonies.
San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)	--/SSC	Low. Occurs primarily in open habitats, including coastal sage scrub, chaparral, grasslands, croplands, and open, disturbed areas if there is at least some shrub cover present.
San Diego desert woodrat (*Neotoma lepida intermedia*)	--/SSC	Low. Occurs in open chaparral and coastal sage scrub, often building large stick nests in rock outcrops or around clumps of cactus or yucca.
Western mastiff bat (*Eumops perotis californicus*)	--/SSC	Low. Limited roosting areas within the study site. Usually inhabits rocky areas and cliff faces. Known to roost in buildings.
Western yellow bat (*Lasiurus xanthinus*)	--/--	Low. Habitat is desert grassland and scrub with an associated water feature.
Yuma myotis **(***Myotis yumanensis***)**	--/--	Moderate to High. Found in a variety of habitats, ranging from juniper and riparian woodlands to desert regions near open water. Roosts in caves, attics, buildings, mines, underneath bridges, and other similar structures.

*A listing and explanation of status codes for plant and animal species can be found in Appendix C.

4.0 REGIONAL AND REGULATORY CONTEXT

Biological resources are subject to regulatory review by the federal government and State of California. The federal government administers non-marine plant- and wildlife-related issues through the U.S. Fish and Wildlife Service (USFWS), while waters of the U.S. (WUS) issues are administered by the USACE. California law relating to wetland, water-related, and wildlife issues is administered by the CDFW. The State Water Resources Control Board (SWRCB) also has a role in permitting impacts to WUS.

4.1 FEDERAL GOVERNMENT

Administered by the USFWS, the federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) that are identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a "take" under the ESA. Section

9(a) of the ESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." "Harm" and "harass" are further defined in federal regulations and case law to include actions that adversely impair or disrupt a listed species' behavioral patterns.

Sections 4(d), 7 and 10(a) of the federal ESA regulate actions that could jeopardize endangered or threatened species. A special rule under Section 4(d) was finalized, which authorizes incidental take of certain protected species within subregions that are actively preparing a Natural Communities Conservation Programs (NCCP) plan or under approved NCCPs, which are administered by the states. Section 7 describes a process of federal interagency consultation for use when federal actions may adversely affect listed species. Federal actions by private, state, or local entities typically consist of activities that involve federal approvals/permits or federal funding. A biological assessment is required for any major construction activity if it may affect listed species. In this case, take can be authorized via a letter of biological opinion issued by the USFWS for non-marine related listed species issues. A Section 7 consultation (formal or informal) is required when there is a nexus between endangered species' impacts and issuance of a Clean Water Act (CWA) permit by the USACE for work in jurisdictional areas or other federal actions. Section 10(a) allows issuance of permits for "incidental" take of endangered or threatened species with preparation of a habitat conservation plan (HCP). The term "incidental" applies if the taking of a listed species is incidental to (and not the purpose of) an otherwise lawful activity. An HCP demonstrating how the taking would be minimized and how steps taken would ensure the species' survival must be submitted for issuance of Section 10(a) permits.

All migratory bird species that are native to the United States or its territories are protected under the federal Migratory Bird Treaty Act (MBTA), as amended under the Migratory Bird Treaty Reform Act of 2004 (FR Doc. 05-5127; USFWS 2004). The MBTA is generally protective of migratory birds but does not actually stipulate the type of protection required. In common practice, the USFWS places restrictions on disturbances allowed near active raptor nests.

Federal wetland regulation (non-marine issues) is guided by the Rivers and Harbors Act of 1899 and the CWA. The Rivers and Harbors Act deals primarily with discharges into navigable waters, while the purpose of the CWA is to restore and maintain the chemical, physical, and biological integrity of all WUS. Permitting for projects filling WUS (including wetlands) is overseen by the USACE under Section 404 of the CWA. Projects are permitted on an individual basis or by a general or nationwide permit. Individual permits are assessed individually based on the type of action, amount of fill, etc., and typically require substantial time (often longer than 6 months) to review and approve. Nationwide permits, on the other hand, are pre-approved if a project meets certain conditions and maximum areas of affect. A Section 401 certification or waiver under the federal CWA would also be required from the SWRCB in conjunction with any Section 404 permit that is required.

4.2 STATE OF CALIFORNIA

The California ESA is similar to the federal ESA in that it contains a process for listing of species and regulating potential impacts to listed species. Section 2081 of the California ESA authorizes the CDFW to enter into a memorandum of agreement for take of listed species for scientific, educational, or management purposes.

The Native Plant Protection Act (NPPA) enacted a process by which plants are listed as rare or endangered. The NPPA regulates the collection, transport, and commerce in plants that are listed. The California ESA follows the NPPA and covers both plants and animals that are determined to be endangered or threatened with extinction. Plants listed as rare under the NPPA are also designated as rare under the California ESA.

The California Fish and Game Code (Sections 1600 et seq.) requires an agreement with the CDFW for projects affecting riparian and wetland habitats through issuance of a Streambed Alteration Agreement (SAA).

The California Environmental Quality Act (CEQA) and its implementing guidelines (CEQA Guidelines) require discretionary projects with potentially significant effects (or impacts) on the environment to be submitted for environmental review. Mitigation for significant impacts to the environment is determined through the environmental review process, in accordance with existing laws and regulations.
Mt. SAC is the Lead Agency for this project's CEQA review process. As Lead Agency, Mt. SAC will be responsible for certifying the CEQA document and making a decision on the 2015 FMPU.

Mt. SAC is not a participant in the NCCP, nor is it within an HCP planning area. The California NCCP Act (Section 2835) allows the CDFW to authorize take of species covered by plans in agreement with NCCP guidelines (CDFW 1997). An NCCP initiated by the State of California under Section 4(d) of the federal ESA focuses on conserving coastal sage scrub in order to avoid the need for future federal and state listing of coastal sage scrub- dependent species. The coastal California gnatcatcher is presently listed as threatened under the federal ESA, while several additional species inhabiting coastal sage scrub are candidates for federal listing. Because Mt. SAC is not enrolled as a participant in the NCCP, the proposed 2015 Master Plan Update cannot rely on a habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing HCP for the study area, any projects that would cause "take" of a listed species would require an application to the USFWS for issuance of a Section 10(a) permit for "incidental" take of endangered or threatened species (with preparation of an HCP.).

4.3 WILDLIFE CORRIDORS

Wildlife corridors can be local or regional in scale and may function in different ways, depending on species and time of year. They represent areas where wildlife movement is concentrated due to natural or manmade constraints. Local corridors provide access to resources such as food, water, and shelter. Animals can use these corridors (such as hillsides and tributary drainages to main drainages) to travel among different habitats (i.e., riparian and upland

habitats). Some animals require riparian habitat for breeding and upland habitat for burrowing. Regional corridors provide these functions and also link two or more large areas of open space. They provide avenues for wildlife dispersal, migration, and contact between otherwise distinct populations.

None of the three impact sites are expected to function as wildlife corridors for the following reasons. The irrigation well site is steep and bare of any substantial vegetation, and there is fencing at the base of the hill to confine cattle grazing, which would also block medium and large mammals. The California walnut woodland on the other side of the hill is more likely to support wildlife movement. The detention basin site is fenced on three sides and surrounded by the stadium area, a parking lot, and a maintained detention basin. The fire academy site is fenced on the east and south sides and the west side is a large paved parking lot and associated fill slopes.

5.0 IMPACTS

Impacts addressed in this section are considered either direct or indirect. A direct impact occurs when the primary effects of the project replace existing habitat with graded or developed areas. All of the project area is considered impacted for the purposes of this report. An indirect impact consists of secondary effects of a project such as exotic species invasion, increased lighting, noise, and increased human intrusion. The magnitude of an indirect impact can be the same as a direct impact; however, the effect usually takes a longer time to become apparent.

5.1 THRESHOLDS OF SIGNIFICANCE

Significance thresholds identified for biological resource issues include effects to rare, threatened, or endangered species or their associated habitats, and interference with the movements of resident or migratory fish or wildlife species. For purposes of this report, significance thresholds are summarized as follows: (1) 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 CDFW or USFWS; (2) a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFW or USFWS; (3) a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA through direct removal, filling, hydrological interruption, or other means; (4) a substantial interference with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; (5) a conflict with any applicable policies protecting biological resources; and (6) a conflict with the provisions of an adopted HCP, NCCP, or other applicable HCP. In response to the sixth threshold, it should be noted that there are no adopted plans applicable to the Mt. SAC study site.

5.2 DIRECT IMPACTS

5.2.1 Vegetation Communities and Developed Land

The project would directly impact three native vegetation types, as well as extensive agriculture, disturbed habitat, non-native vegetation, and developed land (Table 4; Figures 4a through 4c; photos in Appendix D). A total of 2.33 acres would be impacted by the project. As shown on Figure 4c, the impact area for the fire academy is smaller than the work area because most of the work area is paved parking lot.

Table 4
VEGETATION IMPACTS

VEGETATION TYPE	IMPACT ACREAGE
NATIVE AND NATURALIZED VEGETATION	
Mule fat scrub (in detention basin)	0.03
Non-native grassland	0.1
California walnut woodland	<0.1
Subtotal	**0.13**
ACTIVE USE AND ALTERED AREAS	
Extensive agriculture	0.1
Non-native vegetation	<0.1
Disturbed habitat	1.9
Developed	0.2
Subtotal	**2.2**
TOTAL	**2.33**

5.2.2 Sensitive Vegetation Communities

Direct impacts will occur to 0.03 acre of mule fat scrub and 0.1 acre of non-native grassland. The impact to mule fat scrub is not considered significant because although it is a wetland habitat, the mule fat scrub is growing in a manmade detention basin, and would not persist without runoff water directed into the basin by pipes. Because the detention basin is a stormwater facility, it is not a jurisdictional wetland or water and can be maintained by Mt. SAC without requiring permitting and mitigation. The impacts to the remaining habitats or areas are not significant because the habitat is not regarded as sensitive habitat (extensive agriculture, non-native vegetation, disturbed habitat, and developed areas), or because of the de minimus acreage of the impact (California walnut woodland, non-native grassland).

5.2.3 Sensitive Plants

The only sensitive plant species within the impact area is the California black walnut. Two mature California black walnut trees are located within disturbed habitat in the detention basin impact area, two within California walnut woodland in the detention basin impact area, and one within extensive agriculture on the edge of the irrigation well impact area. While impacts to five trees might be considered de minimus on their own, the loss of individual trees is significant in this case based on the cumulative impacts to California walnut woodland from previous projects on campus.

5.2.4 Sensitive Animals

Marginally suitable habitat for burrowing owl (*Athene cunicularia hypugea*) exists in portions of the survey area; therefore, a protocol habitat assessment and burrow survey was conducted (Appendix E). Based on the habitat assessment, the probability of this species inhabiting Mt. SAC appears low, with no to very low potential within proposed impact areas. No owls or evidence of occupied burrows were observed in protocol burrowing owl surveys conducted in 2008 or 2015, or during any of the other surveys conducted on campus. The CNDDB records show that the nearest burrowing owl record is approximately 9 miles southwest of Mt. SAC, in the City of Chino Hills (Danbury Park). However, because there is low potential for owls to occur within 500 feet of the impact areas, there is a potential for impact to burrowing owls from nest disruption during project construction.

Raptors

Construction of the proposed project would potentially directly impact potential raptor foraging and nesting habitat through construction activity. Although non-native grassland can support raptor foraging, the loss of 0.1 acre of non-native grassland is considered less than significant in this case based on the small size of the impact, its location within a disturbed area, and the large amount of developed habitat nearby. Direct impacts to active raptor nests are prohibited under the federal MBTA. No nests were observed during surveys. There remains, however, a potential for impacts to raptors from nest disruption during project construction.

5.3 INDIRECT IMPACTS

Potential indirect impacts from project construction could include decreased water quality (i.e., through sedimentation, contaminants, or fuel release), fugitive dust, colonization of non-native plant species in previously undisturbed areas, edge effects, animal behavioral changes, roadkill, night lighting, errant construction impacts, and noise. The proposed project will be subject to the restrictions and requirements that address erosion and runoff, including the federal CWA. Best management practices also should be used throughout construction to further reduce impacts. A discussion of potential indirect impacts follows.

5.3.1 Water Quality

Water quality can be adversely affected by potential surface runoff and sedimentation. The use of petroleum products (i.e., fuels, oils, and lubricants) could potentially contaminate surface water and affect biological resources. Decreased water quality may adversely affect vegetation, aquatic animals, and terrestrial wildlife that depend on these resources. However, Mt. SAC must comply with control requirements of the National Pollutant Discharge Elimination System (enforced by the SWRCB) during the construction and operation of the proposed facilities. Compliance with the water quality regulations would mean that the potential impacts to downstream biological resources would be less than significant.

5.3.2 Fugitive Dust

Fugitive dust can disperse onto sensitive vegetation, and a continual cover of dust may reduce the overall vigor of individual plants by reducing their photosynthetic capabilities and increasing their susceptibility to pests or disease. In turn, this could affect animals that are dependent on these plants. Construction activities (including clearing and grading) occurring within or adjacent to vegetation could result in the deposition of significant amounts of dust on plants and trees, which could cause a significant impact. Implementation of dust control measures during clearing, grading, and construction (as required for air quality impacts) would reduce potential dust impacts on biological resources to less than significant levels.

5.3.3 Non-native Plant Species

Non-native plants can colonize disturbed areas and can sometimes spread into adjacent native habitats. Many of these non-native plants are highly invasive and can displace native vegetation, reducing native species diversity. Compared to pristine habitat, an abundance of non-native species could potentially increase flammability and fire frequency, change ground and surface water levels, or adversely affect native wildlife that are dependent on native plant species. Revegetation for erosion control and the use of landscaping can increase colonization by non-native plant species in non-impact areas that contain native vegetation. The majority of the habitats on site already contain a large number of non-native plant species; however, additional species could potentially enter the native Venturan coastal sage scrub habitat if invasive landscaping plants are planted as part of the landscaping plans. Potential impacts by non-native plant species and the resulting degradation of habitat used by native species could be considered a significant impact.

5.3.4 Human Activity/Edge Effects

Urbanization and increases in human activity can result in degradation to sensitive vegetation by fragmenting the land and forming edges between developed areas and habitat. These edges make it easier for non-native plant species to invade native habitats and for native and non-native predators to access prey that may have otherwise been protected within large, contiguous blocks of habitat. In addition, secondary extinctions through disruption of predator-prey, parasite-host, and plant-pollinator relations can also occur (Soulé 1986). Edge effects can be particularly significant. For example, when a nest parasite such as the brown-headed cowbird (*Molothrus*

ater) has easy access to other birds' nests, brood parasitism in that area will increase. Illegal dumping of trash may also increase in these areas.

Human activity and edge effects resulting from the proposed project are not considered significant. Once constructed, neither the detention basin nor the irrigation well will involve substantial human activity. The fire academy will involve human activity; however, with the exception of hillside clearing, all activity will occur in the area of an existing paved parking lot where people and cars already come and go on a regular basis.

5.3.5 Roadkill

This project is not expected to significantly increase the amount of traffic in the area following construction; therefore, effects due to roadkill are not expected to be significant.

5.3.6 Night Lighting

Night lighting exposes wildlife species to an unnatural light regime and may alter their behavior patterns, which could result in a loss of species diversity. Night lighting on native habitats also can provide nocturnal predators with an unnatural advantage over their prey. This could cause an increased loss in native wildlife. This impact would only be significant if the facility is illuminated at night. Unless appropriate measures are taken during the building design phase to prevent release of light into adjacent habitat, night lighting could result in a significant impact.

5.3.7 Errant Construction Impacts

Another potentially significant indirect impact of project construction is errant construction impacts outside the limits of construction (i.e., construction vehicles encroaching beyond the limits of work and entering native habitat). Any such activities occurring outside the construction limits within sensitive habitat would be considered a significant indirect impact.

5.3.8 Noise

Noise can cause animals to flee, which could be especially significant to birds that may abandon active nests. Additionally, birds may be susceptible to disturbances other than noise from construction activity. For example, construction activity within 500 feet of an active raptor nest may cause the nest to be abandoned and that impact would be considered significant. Although no active raptor nests were observed on site during the general survey, it is possible that they may occur on or adjacent to the study site near areas where construction activity is planned.

6.0 MITIGATION

This section lists each of the significant impacts anticipated from construction of the proposed project. Following each impact is the corresponding mitigation measure(s) (MM) to reduce each impact to less than significant.

6.1 DIRECT IMPACTS

6.1.1 Sensitive Vegetation Communities

Impact 6.1.1 Impacts to mule fat scrub, non-native grassland, walnut woodland, and walnut trees were documented on site. The impact to mule fat scrub is considered less than significant due to the small area affected and the location within a manmade stormwater facility. Impacts to 0.1 acre of non-native grassland and less than 0.1 acre of California walnut woodland are considered less than significant due to the small area affected and the disturbed surroundings; however, the loss of individual California black walnut trees considered significant.

MM 6.1.1 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). These trees should be planted in an area to be preserved and maintained and monitored for 2 years. The campus already has a California Black Walnut Management Plan (HELIX 2012b) and these trees could be added to the planting required under that plan.

Table 5
VEGETATION MITIGATION ANALYSIS

SENSITIVE RESOURCE	IMPACT	MINIMUM MITIGATION RATIO	MITIGATION
California black walnut trees	5 trees	1:1	5 trees

6.1.2 Sensitive Animals

Impacts were calculated under the assumption that all structures and improvements for the fire academy will be contained within the existing disturbed footprint of the existing paved parking lot, and no further clearing or grading will be required except for the slope clearing training area on the southeast side of Lot M. This limitation must be followed because any clearing or grading on the west side of the fire academy site (west side of Lot M against Mt. SAC Hill) would directly impact occupied coastal California gnatcatcher habitat. Because Mt. SAC is not enrolled as a participant in the NCCP, the proposed Master Plan cannot rely on a habitat loss permit under Section 4(d) of the federal ESA. Since there is not an existing HCP for the study area, any projects that would cause "take" of a listed species would require an application to the USFWS for issuance of a Section 10(a) permit for "incidental" take of endangered or threatened species (with preparation of an HCP). Any impacts to coastal sage scrub would require mitigation at a 2:1 ratio.

Impact 6.1.2 Construction activities during the bird breeding season could potentially indirectly impact burrowing owls, raptors, and other species protected by the MBTA, which would be significant if not mitigated. Impacts could occur from either habitat loss or noise impacts, and may be significant.

MM 6.1.2 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 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, 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).

6.2 INDIRECT IMPACTS

Indirect impacts due to the following causes are less than significant due to compliance with state law or with project design features:

- Dust related to construction shall be controlled through implementation of measures required per dust control mandates, including the application of water on unvegetated, unpaved surfaces during construction.

- Degraded surface water quality will be prevented by implementation of Best Management Practices in accordance with SWRCB guidelines.

6.2.1 Non-native Plant Species

Impact 6.2.1 Non-native plant species have the potential to colonize non-impact areas and would result in degradation of habitat used by native species, which could be considered a significant impact.

MM 6.2.1 Erosion control seed mixes and landscape plans for the projects should be reviewed by a qualified biologist prior to final approval to ensure that no species on the California Invasive Plant Council (Cal-IPC) list of problem species would be incorporated into the plan(s).

6.2.2 Night Lighting

Impact 6.2.2 Night lighting on native habitats may result in altered behavioral patterns of wildlife species and possibly a decrease in native species diversity of the site.

MM 6.2.2 All new lighting standards for the fire academy, Lot M, and Lot W immediately adjacent to the sensitive biological habitat areas (i.e., Wildlife Sanctuary/Open Space Zone, Mt. SAC Hill, and Reservoir Hill) shall not exceed 0.2 foot candles at 5 feet outside of the parking lot boundary. Lot M and Lot W lighting near Mt. SAC Hill shall employ automatic shutoff devices to ensure that the parking lot lighting intrusion is minimized unless required for public safety and security. Facilities Planning and Management shall monitor compliance.

6.2.3 Errant Construction Activities

Impact 6.2.3 Construction activities occurring outside the construction limits may significantly impact adjacent sensitive habitats.

MM 6.2.3 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.

7.0 SIGNIFICANCE AFTER MITIGATION

With implementation of the mitigation measures for significant impacts to sensitive resources (listed in Section 6.0), impacts from implementation of the proposed FMPU to sensitive biological resources would be less than significant.

8.0 CERTIFICATION/QUALIFICATION

The following individuals contributed to the fieldwork and/or preparation of this report.

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Appendix A

PLANT SPECIES OBSERVED

Appendix A
PLANT SPECIES OBSERVED
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT
Adoxaceae	*Sambucus nigra ssp. canadensis*	black elderberry	3
Anacardiaceae	*Schinus molle**	Peruvian pepper tree	2
	*Schinus terebinthifolius**	Brazilian pepper tree	1
Arecaceae	*Washingtonia robusta**	Mexican fan palm	2
Asteraceae	*Artemisia californica*	California sagebrush	3,4
	Baccharis pilularis	coyote brush	2
	Baccharis salicifolia	mule fat	5
	*Bidens pilosa**	common beggar's tick	2
	*Centaurea melitensis**	tocalote	2,3,4
	Encelia californica	California encelia	3
	*Lactuca serriola**	wild lettuce	4
	Malacothrix saxatilis	cliff aster	3
	*Senecio vulgaris**	common groundsel	2
	*Silybum marianum**	milk thistle	2,4
	*Sonchus oleraceus**	common sow thistle	2
Boraginaceae	*Amsinckia intermedia*	rancher's fiddleneck	4
Brassicaceae	*Capsella bursa-pastoris**	shepherd's purse	3
	*Hirschfeldia incana**	short-pod mustard	2,3,4
	*Raphanus sativus**	wild radish	2
	*Sisymbrium orientale **	hare's ear cabbage	2,4
Chenopodiaceae	*Chenopodium album**	pigweed	4
	*Chenopodium murale**	nettle-leaf goosefoot	2,4
	*Salsola tragus**	Russian thistle	2,3,4
Euphorbiaceae	*Ricinus communis**	castor bean	3
Fabaceae	*Acmispon maritimus*	alkali lotus	3
	Lupinus succulentus	arroyo lupine	2
	*Melilotus indicus**	Indian sweet clover	3
Geraniaceae	*Erodium cicutarium**	redstem filaree	2
	*Erodium moschatum**	green-stem filaree	2
Juglandaceae	*Juglans californica var. californica*	Southern California black walnut	2,3
Lamiaceae	*Lamium amplexicaule**	henbit	2
Malvaceae	*Malva parviflora**	cheeseweed	2,3,4
Myrtaceae	*Callistemon sp.**	bottle brush	1
Oleaceae	*Fraxinus uhdei**	shamel ash	1
Poaceae	*Avena barbata**	slender oat	4
	*Bromus diandrus**	common ripgut grass	2,4
	*Bromus madritensis ssp. Rubens**	red brome	2,4
	*Festuca perennis**	Italian ryegrass	4

Appendix A (cont.)
PLANT SPECIES OBSERVED
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

FAMILY	SCIENTIFIC NAME	COMMON NAME	HABITAT
Poaceae (cont.)	*Hordeum murinum**	Mediterranean barley	4
Polygonaceae	*Rumex crispus**	curly dock	2
Rubiaceae	*Galium aparine*	goosegrass	2
Solanaceae	*Datura wrightii*	jimson weed	2
	*Nicotiana glauca**	tree tobacco	2,3
	Solanum douglasii	Douglas nightshade	2
	*Solanum lycopersicum**	tomato	2
Urticaceae	*Urtica urens**	dwarf nettle	2

*Non-native species
Habitats: 1 = developed, 2 = disturbed, 3 = extensive agriculture, 4 = non-native grassland, 5 = mule fat scrub

Appendix B

ANIMAL SPECIES OBSERVED OR DETECTED

Appendix B
ANIMAL SPECIES OBSERVED OR DETECTED
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

FAMILY	SCIENTIFIC NAME	COMMON NAME
Invertebrates		
Apidae	*Apis mellifera mellifera*	honey bee
Coccinellidae	*Hippodamia convergens*	ladybird beetle
Lycaenidae	*Strymon melinus pudica*	gray hairstreak
Birds		
Accipitridae	*Buteo jamaicensis*	red-tailed Hawk
Aegithalidae	*Psaltriparus minimus*	bushtit
Columbidae	*Zenaida macroura*	mourning dove
Corvidae	*Aphelocoma californica*	Western scrub-jay
Corvidae	*Corvus brachyrhynchos*	American crow
Emberizidae	*Melozone crissalis*	California towhee
Emberizidae	*Melospiza melodia*	song sparrow
Emberizidae	*Zonotrichia leucophrys*	white-crowned sparrow
Fringillidae	*Haemorhous mexicanus*	house finch
Fringillidae	*Spinus psaltria*	lesser goldfinch
Mimidae	*Mimus polyglottos*	Northern mockingbird
Turdidae	*Sialia mexicana*	Western bluebird
Tyrannidae	*Sayornis nigricans*	black phoebe
Tyrannidae	*Sayornis saya*	Say's phoebe
Mammals		
Sciuridae	*Spermophilus beecheyi*	California ground squirrel

†Listed or sensitive species

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Appendix C

EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

Appendix C
EXPLANATION OF STATUS CODES FOR PLANT AND ANIMAL SPECIES

FEDERAL, STATE, AND LOCAL CODES

U.S. Fish and Wildlife Service (USFWS)

FE Federally listed endangered
FT Federally listed threatened

California Department of Fish and Wildlife (CDFW)

SE State listed endangered
ST State listed threatened
SSC State species of special concern
Fully Protected May not be taken or possessed at any time, except for recovery activities for state-listed species.

CALIFORNIA RARE PLANT RANKS

Lists

1A = Presumed extinct.

1B = Rare, threatened, or endangered in California and elsewhere. Eligible for state listing.

2A = Plants presumed extinct in California, but more common elsewhere.

2B = Rare, threatened, or endangered in California, but more common elsewhere. Eligible for state listing.

3 = Distribution, endangerment, ecology, and/or taxonomic information needed. Some eligible for state listing.

4 = A watch list for species of limited distribution. Needs monitoring for changes in population status. Few (if any) eligible for state listing.

Threat Code Extensions

.1 = Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat)

.2 = Fairly endangered in California (20 to –80 percent occurrences threatened)

.3 = Not very endangered in California (less than 20 percent of occurrences threatened or no current threats known)

Note that all List 1A (presumed extinct in California) and some List 3 (need more information- a review list) plants lacking any threat information receive no threat code extension. Also, these Threat Code guidelines represent a starting point in the assessment of threat level. Other factors, such as habitat vulnerability and specificity, distribution, and condition of occurrences, are also considered in setting the Threat Code.

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Appendix D

REPRESENTATIVE SITE PHOTOS

Water Tank Site

Disturbed habitat, mule fat scrub, and California black walnut tree in detention basin area

Mule fat scrub and disturbed habitat in detention basin area

Paved parking lot and disturbed hillside in Fire Academy area

Non-native grassland on hillside in Fire Academy area

Appendix E

BURROWING OWL HABITAT ASSESSMENT AND BURROW SURVEY

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April 14, 2016 SAC-07

Ms. Mikaela Klein
Mt. San Antonio College
Facilities Planning and Management Department
1100 North Grand Ave.
Walnut, CA 91789

Subject: Results of Burrowing Owl Habitat Assessment and Burrow Survey for the Mt. San Antonio College (Mt. SAC) 2015 Facilities Master Plan Update Located in the City of Walnut, County of Los Angeles, California

Dear Ms. Klein:

At your request, HELIX Environmental Planning, Inc. (HELIX) conducted a burrowing owl (*Athene cunicularia*) habitat assessment and burrow survey for the Mt. SAC Facilities Master Plan Update (FMPU). This report presents the results of the habitat assessment and burrow survey.

PROPERTY LOCATION/DESCRIPTION

Mt. SAC is located in the San Gabriel Valley, in southeast Los Angeles County, California (Figure 1). The college is situated near the intersection of North Grand and Temple Avenues in the City of Walnut. It is within un-sectioned land of the Puente Land Grant, Township 2 South, Range 9 East on the U.S. Geological Survey (USGS) 7.5-minute San Dimas quadrangle map (Figures 2 and 3).

The study area is approximately 22 acres and supports a mix of developed and undeveloped land with landscaping and native, naturalized, and disturbed habitat communities (Figures 4a through 4c). The study area includes the impact footprint in the three impact areas (irrigation well, detention basin, and fire academy) and a 100-foot-wide area beyond the impact footprint/work area. Elevations within the study area range from approximately 715 to 975 feet above mean sea level.

The FMPU includes additional elements such as re-design of the athletic facilities south of Temple Avenue and east of Bonita Avenue including demolition of the existing stadium and construction of a new stadium. Other changes for the 2015 FMPU include the relocation of the Public Transportation Center to Lot D3, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. These elements of the FMPU, while shown as work areas on the figures, are not analyzed in this report because they occur in previously developed portions of the campus. In addition, the Wildlife Sanctuary designation would be increased from 10 to 26 acres. Within the expanded Wildlife Sanctuary, Mt. SAC is also planning to restore the extensive agriculture to coastal sage scrub, create 0.06 acre of mule fat scrub, and weed the existing sage scrub and wetland habitats. The expansion and restoration of the Wildlife Sanctuary is not analyzed in this report because it is expected to improve the habitat quality of the campus.

METHODS

The habitat assessment and burrow survey was conducted by HELIX biologist Rob Hogenauer in accordance with the current burrowing owl survey protocol (California Department of Fish and Wildlife [CDFW] 2012). The survey occurred between 0635 hours and 0930 hours on March 22, 2016. Sunrise occurred at 0650 hours. The temperature ranged from 57 to 61 degrees Fahrenheit. There was less than 20 percent cloud cover and wind was minimal at 1 to 2 miles per hour. Mr. Hogenauer conducted a habitat assessment on the impact areas and within a buffer of up to 500 feet where potential burrowing owl habitat bordered the proposed impact areas. Transects no greater that 20 meters wide were surveyed where potential burrowing owl habitat occurs. The biologist walked slowly and methodically, closely checking the areas that met the basic requirements of owl habitat:

- Open expanses of sparsely vegetated areas (less than 30 percent canopy cover from trees and shrubs),
- Gently rolling or level terrain,
- An abundance of small mammal burrows, especially those of California ground squirrel (*Spermophilus beecheyi*),
- Fence posts, rock, or other low perching locations.

All potential owl burrows were checked for sign of recent owl occupation, which includes:

- Pellets/casting (regurgitated fur, bones, and insect parts),
- White wash (excrement),
- Feathers.

RESULTS

The project comprises three areas: irrigation well, detention basin, and fire academy (Figures 4a through 4c). The irrigation well area is on the top of a hill in agricultural habitat that is highly impacted by grazing. The majority of the 500-foot buffer in this area was made up of habitat that does not have potential to support burrowing owl. This habitat includes developed land,

California walnut woodland, steep slopes, and active agriculture (nursery). A single burrow was observed in the irrigation well survey area. This burrow was covered with plant debris and a spider web, and lacked sign of burrowing owl use. There is very low potential for burrowing owl to occur in the irrigation well area.

The detention basin area is located adjacent to the school stadium. Habitats adjacent to the detention basin include developed, California Walnut woodland, and disturbed habitat. The basin is ringed with ornamental trees, and includes a palm tree, black walnut trees, mule fat scrub, and a thick dense understory of mustards (*Hirschfeldia incana*) within the basin. A few burrows of the proper size for use by burrowing owl occur on the slope of the basin. These burrows occur adjacent to the ornamental trees that border the basin and are not within habitat typically associated with burrowing owl. The disturbed habitat in the 500-foot buffer area to the east includes a larger detention basin with minimal vegetation and no trees. A few burrows with potential to support burrowing owl were observed on the edge of the basin in the buffer. No burrowing owl or burrowing owl sign was observed in the basin area. There is very little to no potential for burrowing owl to occur in the basin impact area and a low potential for burrowing owl to occur within the eastern portion of the buffer.

The fire academy area occurs adjacent to an existing parking lot. Habitat in the fire academy impact area includes non-native grassland and disturbed habitat. No burrows with potential to support burrowing owls occur in the proposed fire academy impact area. The buffer habitat comprises developed land, coastal sage scrub, non-native vegetation, agriculture, and disturbed habitat. The agriculture and disturbed habitat included a few burrows with potential to support burrowing owls. There is no potential (due to a lack of burrows) for burrowing owls to occur within the proposed impact area of the fire academy. There is low potential for burrowing owl to occur in the buffer of the fire academy area.

The Mt. SAC FMPU project occurs in the U.S. Geological Survey (USGS) 7.5-minute San Dimas quadrangle. A California Natural Diversity Database (CNDDB) search revealed that no burrowing owl sighting have been documented within this quadrangle. The nearest burrowing owl sightings in the CNDDB database occur over 8 miles away in the cities of Chino and Chino Hills area.

A full 4-visit protocol burrowing owl survey is not recommended for this project. This conclusion is based on:

1. the lack of burrows with potential to support burrowing owls in the impact area,
2. the low to very low potential for burrowing owls to occur in the buffer zone,
3. the high level of human activity from agriculture and other school related functions,
4. the lack of CNNDB records of burrowing owl in the vicinity, and
5. the lack of burrowing owl sign at the burrows that do occur.

A pre-construction burrowing owl survey is recommended to ensure the project does not result in an impact to burrowing owls.

Please call me at (562) 537-2426 if you have any questions.

Sincerely,

Rob Hogenauer
Biologist

Enclosures:

Figure 1 Regional Location Map
Figure 2 Project Vicinity Map (USGS Topography)
Figure 3 Project Vicinity Map (Aerial Photograph)
Figure 4a Vegetation Map – Irrigation Well
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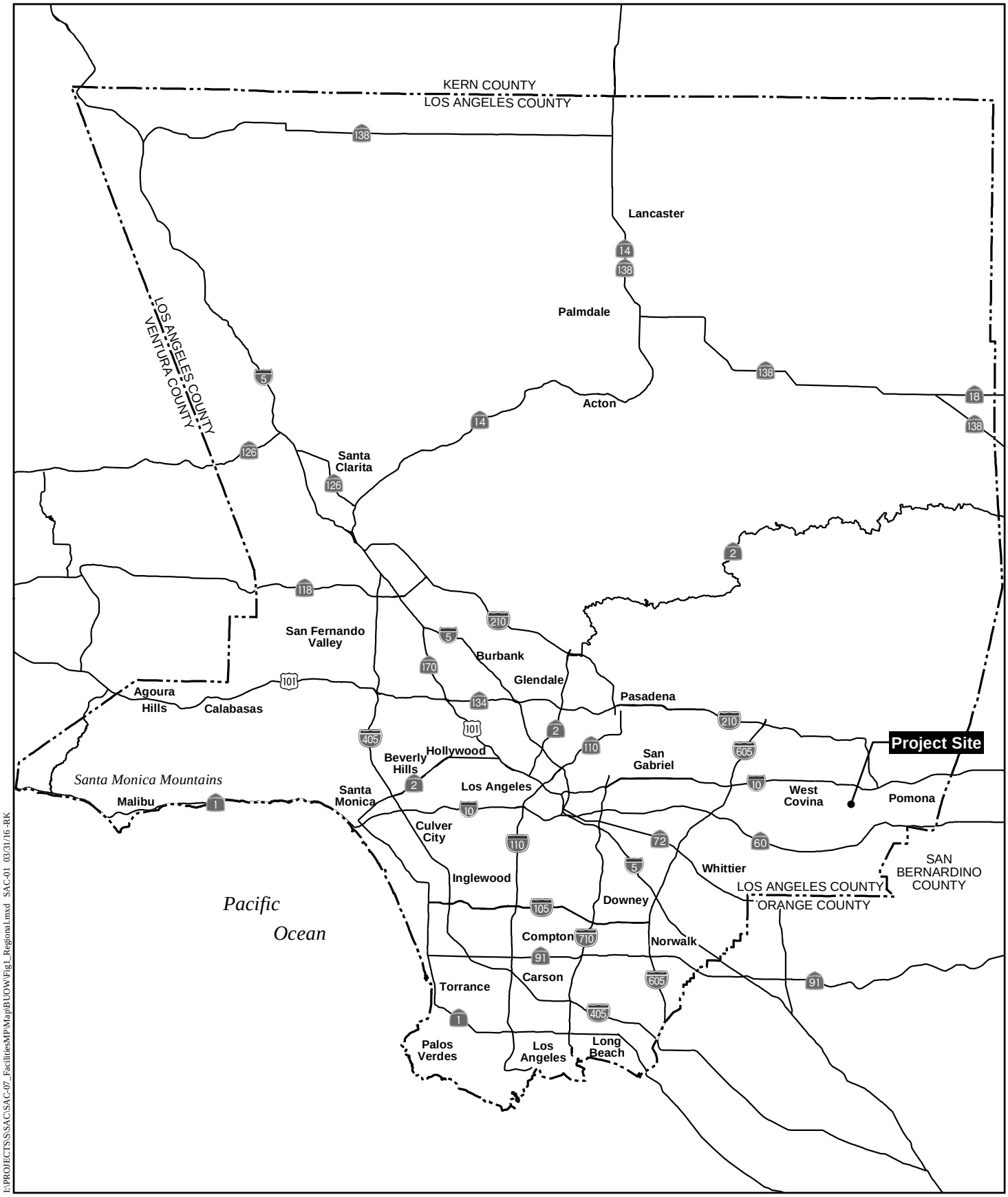
REFERENCES

California Department of Fish and Wildlife (CDFW) 2012. State of California. Natural Resource Agency. Department of Fish and Game. Staff report on burrowing owl mitigation. March 7.



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Regional Location Map

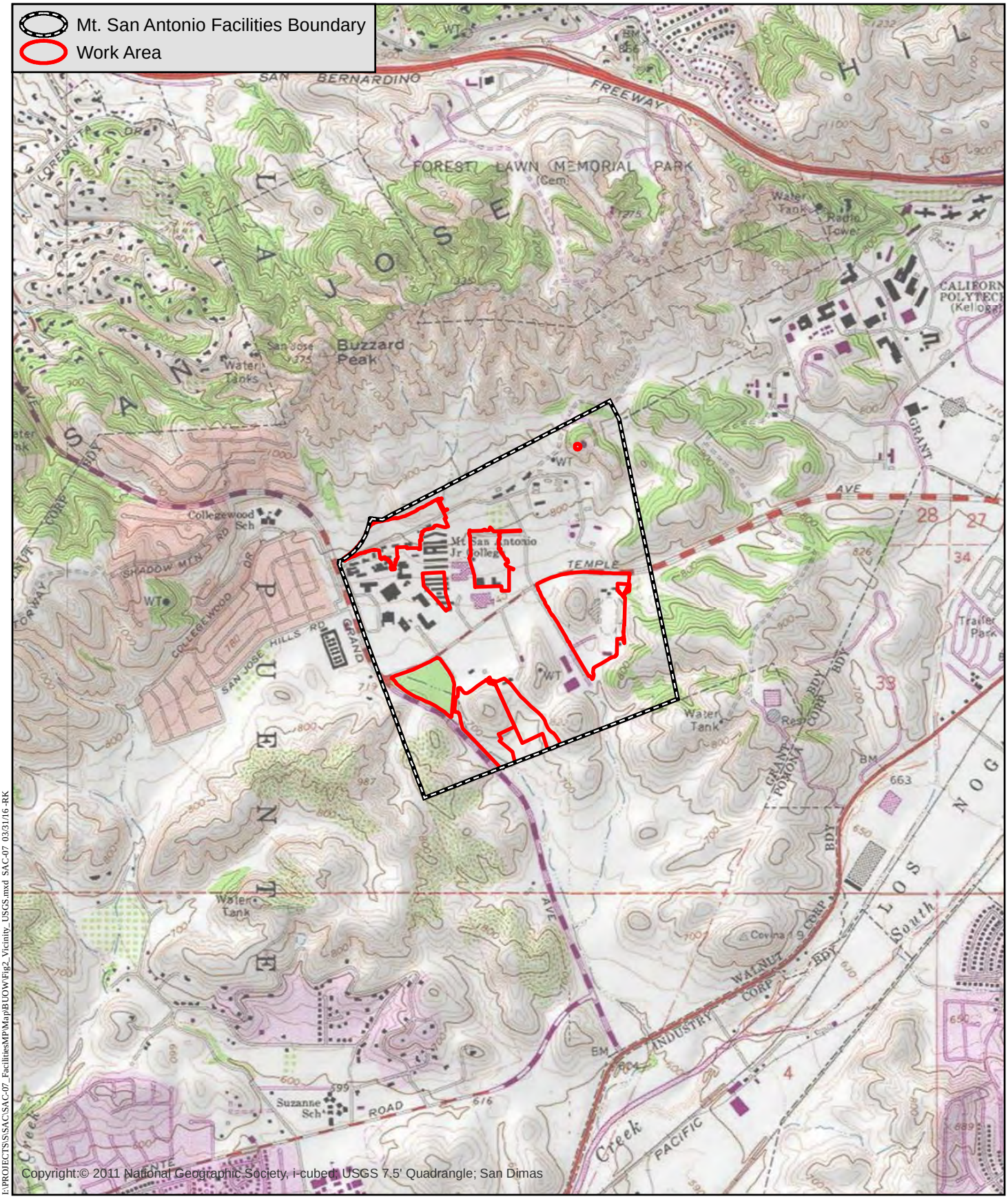
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N

0 10 Miles

Figure 1



Copyright:© 2011 National Geographic Society, i-cubed; USGS 7.5' Quadrangle; San Dimas

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Project Vicinity Map (USGS Topography)

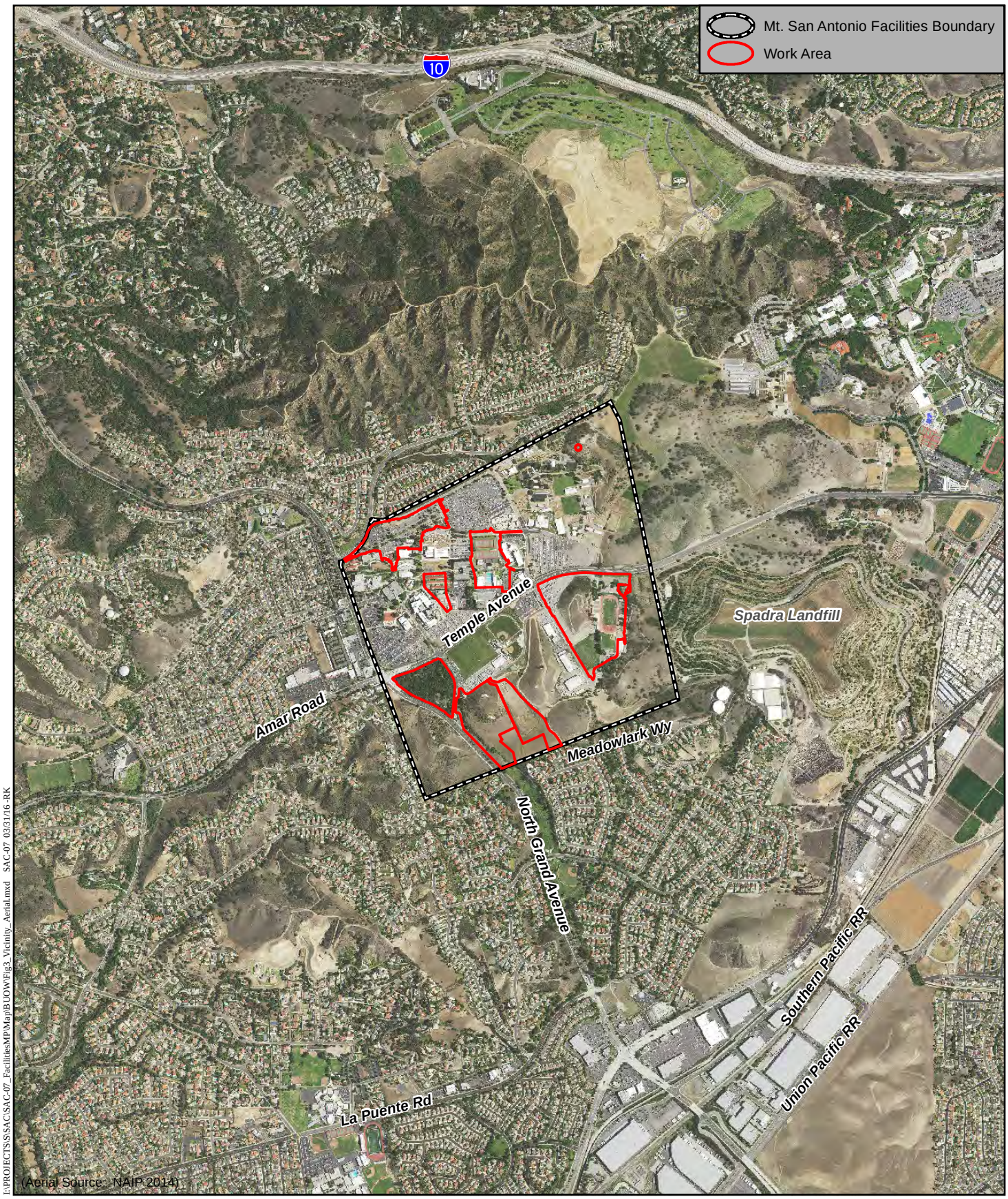
MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N

0 2,000 Feet

Figure 2



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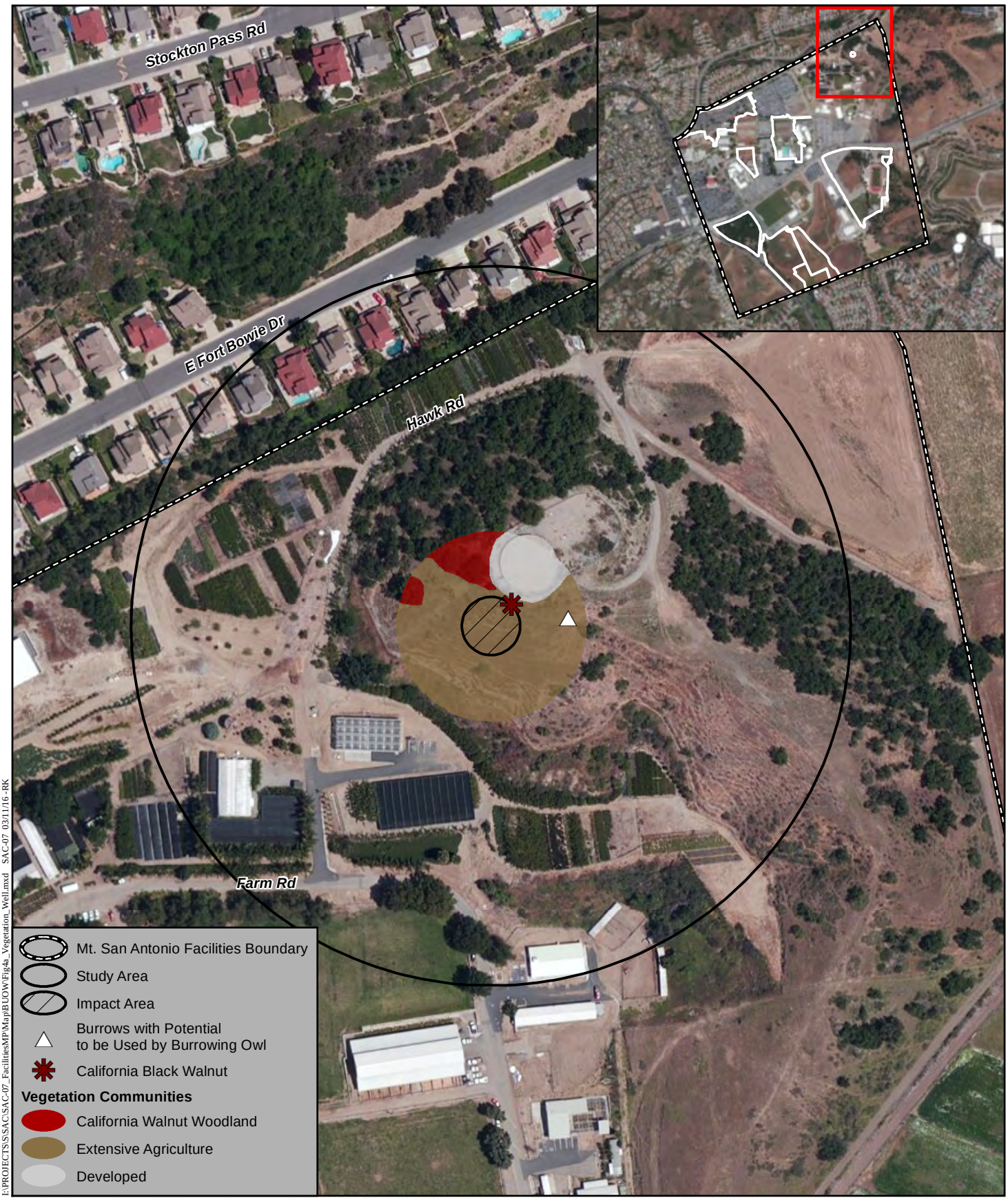
Project Vicinity Map (Aerial Photograph)

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 2,000 Feet

Figure 3



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Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

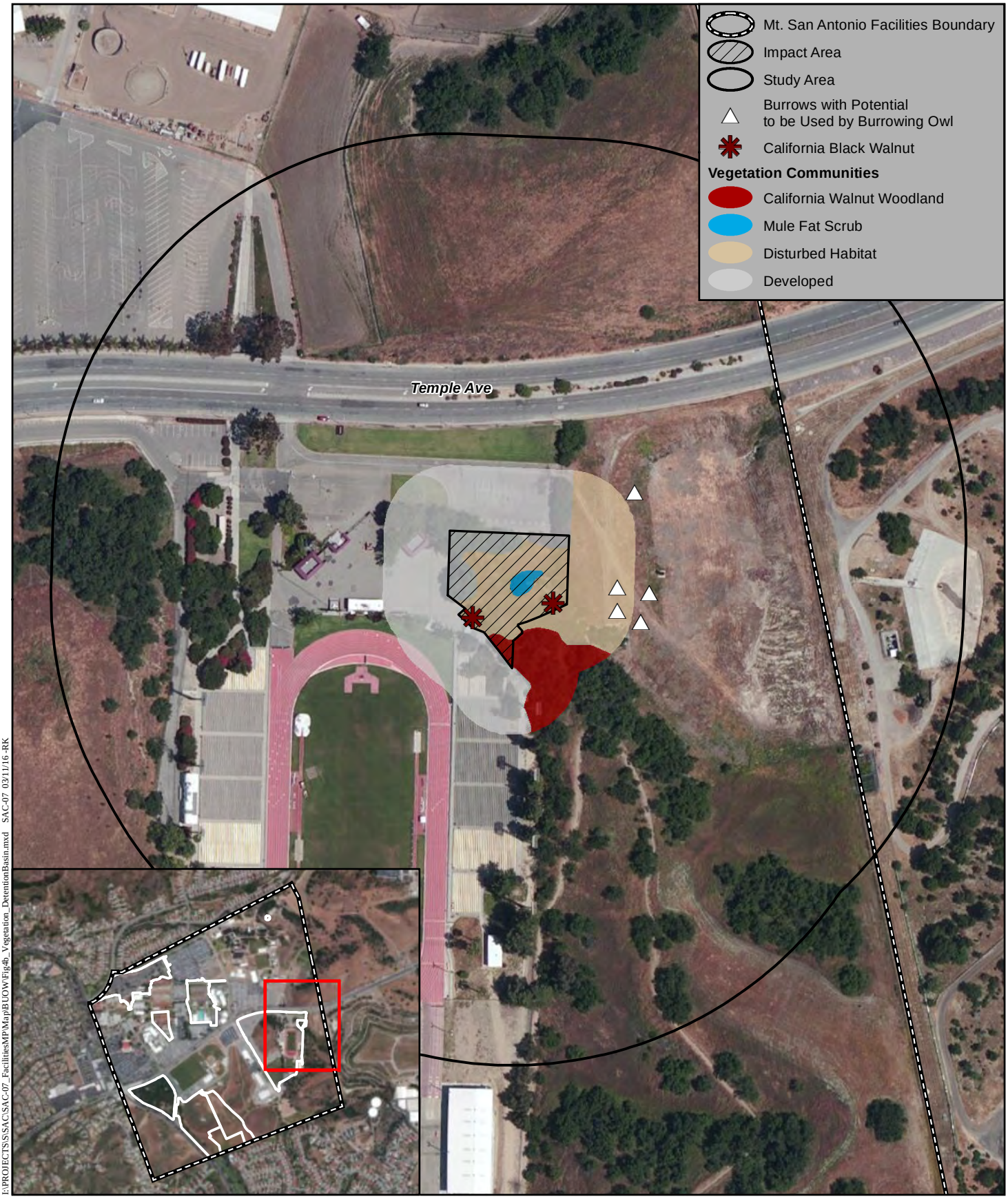
Vegetation Map - Irrigation Well

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 200 Feet

Figure 4a



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Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

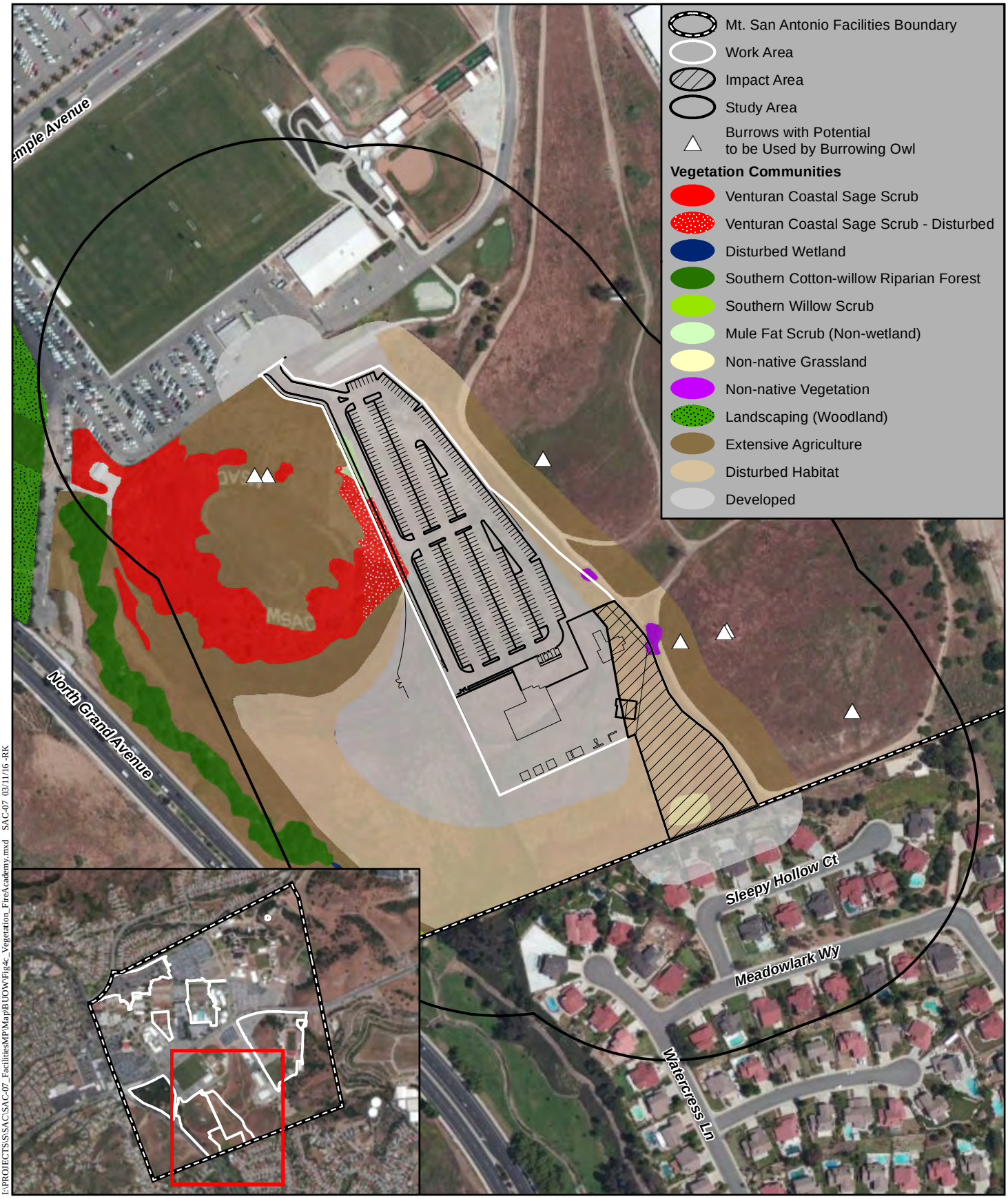
Vegetation Map - Detention Basin

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 200 Feet

Figure 4b



I:\PROJECTS\SAC\SAC-07_FacilitiesMP\Map\BUOW\Fig4c_Vegetation_FireAcademy.mxd SAC-07 03/11/16 RK

Source: Esri, i-cubed, USDA, USGS, AEX, GeoEye, Getmapping, Aerogrid, IGN, IGP, and the GIS User Community (May 2014)

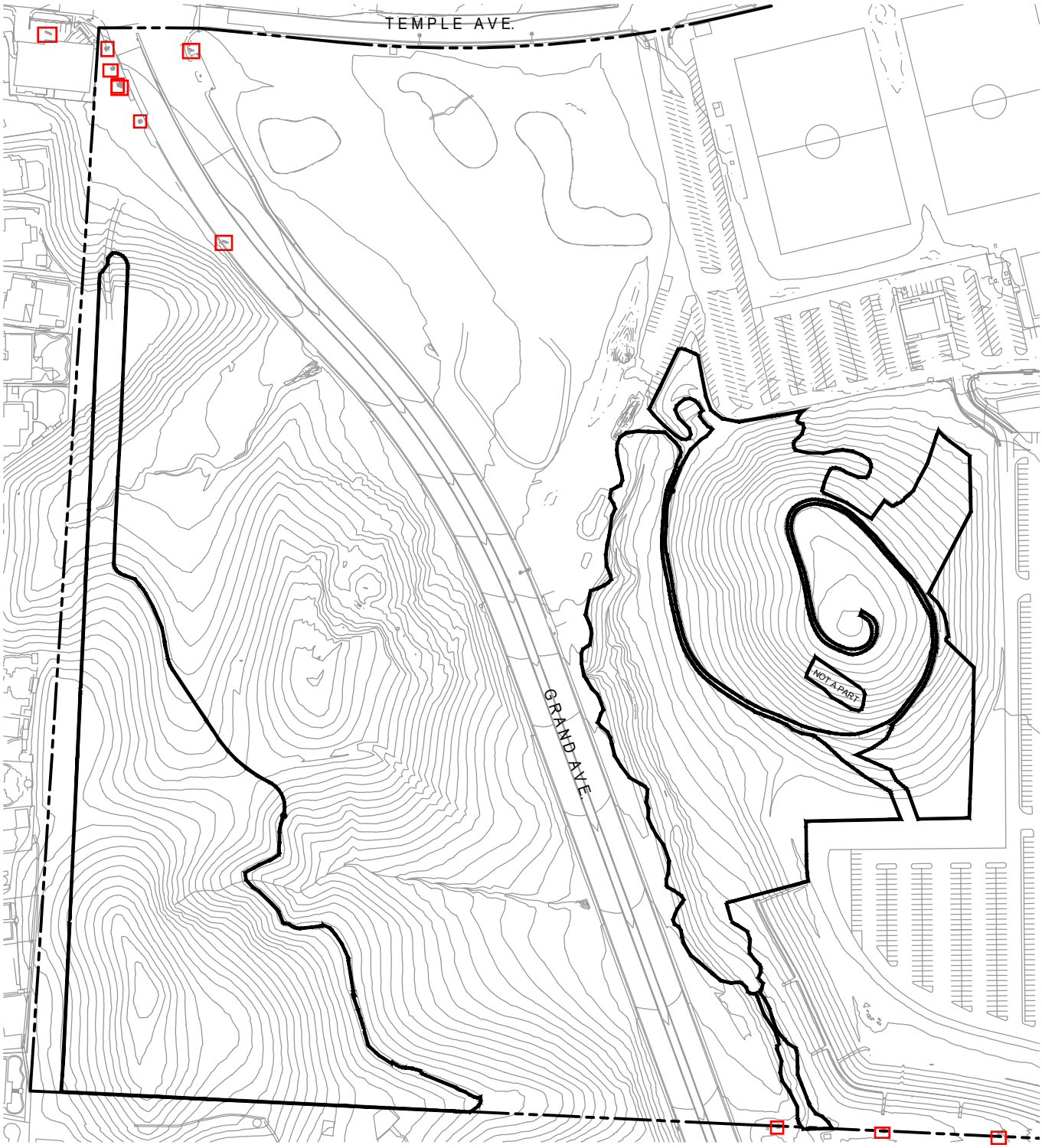
Vegetation Map - Fire Academy

MT. SAN ANTONIO COLLEGE 2015 FACILITIES MASTER PLAN UPDATE

HELIX Environmental Planning

N 0 300 Feet

Figure 4c



LEGEND

APPROXIMATE METES AND BOUNDS SURVEY BOUNDARY

APN 8709-023-917 BOUNDARY

EXHIBIT D
DEPICTION OF HABITAT AREAS

6.April.2016

Cultural Resource Evaluation Report for Mt. SAC SEIR for 2015 Facilities Master Plan Update and Physical Education Projects, Walnut, Los Angeles County, California

April 2016

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EXECUTIVE SUMMARY

This cultural resources report has been prepared in support of the Supplemental EIR (SEIR) for the Mount San Antonio College (Mt. SAC) 2015 Facilities Master Plan Update (2015 FMPU) and Physical Education Projects (PEP) (Project). The Project includes several construction and renovation projects for the Mt SAC community college campus located at 1100 North Grand Avenue, in Walnut, California. The California Environmental Quality Act (CEQA) applies to discretionary projects undertaken, approved, or funded by a public agency. As such, the proposed 2015 FMPU and PEP are subject to CEQA. The Mt. San Antonio Community College District is the "lead agency" under CEQA and is responsible for the 2015 FMPU and PEP.

ASM Affiliates, Inc. (ASM), under contract to Mt. SAC, has prepared this report to evaluate whether the proposed Project would impact any historic resources within the Project's Area of Potential Effects (APE). This assessment of impacts was conducted in compliance with CEQA and guided by the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (SOI Standards). CEQA Guidelines Section 15064.5 define significant impacts as a substantial adverse change to a historic resource, encompassing "demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired."

The Mount San Antonio College Historic District (Mt. SAC Historic District) is located within the Project APE. As such, the Project poses the potential to cause significant direct and/or indirect impacts to a CEQA historic resource. The Project entails multiple construction projects, including demolition and reconstruction of the Hilmer Lodge Stadium (50A-H), demolition of Oden House (12A/B), expansion of the Wildlife Sanctuary, and renovation of buildings 6, 9A, and 28A/B.

As a result of this cultural resources report, ASM surveyed 22 potentially new contributing resources to the Mt. SAC Historic District. Twenty of those are recommended as eligible contributing resources (3CD) to Mt. SAC Historic District. Ten buildings previously identified as eligible contributing resources were found to have been demolished; one additional resource (12A/B) was found to have lost integrity and is now recommended as a non-contributing resource. As the district retains approximately 75 percent of its eligible contributing resources, ASM recommends that the Mt. SAC Historic District continues to be eligible for the CRHR under Criterion 1, for the Theme of Education, with a period of significance of 1948-1972. ASM also identified two individually eligible properties: Hilmer Lodge Stadium (50A-H) eligible under Criterion 1, for the Themes of Education and Recreation, with a period of significance of 1948-1972; and the Technology Center (28A/B) under Criterion 3, for the Theme of Architecture, with a period of significance of 1971.

The Project will result in adverse direct and indirect visual impacts to the Mt. SAC Historic District, and to the individually eligible Hilmer Lodge Stadium. ASM recommends Mt. SAC implement the mitigation measures detailed in Chapter 7 to reduce the significant adverse impacts in accordance with CEQA. However, those mitigation measures will not result in less than significant impacts, and the Project will result in a substantial adverse change to a historic resource pursuant to CEQA Section 21084.1.

1. INTRODUCTION

This report describes the goals, methods, and findings of the impacts analysis conducted by ASM Affiliates, Inc. (ASM), for the Mount San Antonio College (Mt. SAC) 2015 Facilities Master Plan Update (2015 FMPU) and Physical Education Projects (PEP) (Project). The Project includes several construction and renovation projects for the Mt SAC community college campus located at 1100 North Grand Avenue, in Walnut, California. The California Environmental Quality Act (CEQA) applies to discretionary projects undertaken, approved, or funded by a public agency. As such, the proposed 2015 FMPU and PEP are subject to CEQA. The Mt. San Antonio Community College District is the "lead agency" under CEQA and is responsible for the 2015 FMPU and PEP.

ASM Affiliates, Inc. (ASM), under contract to Mt. SAC, has prepared this report to evaluate whether the proposed Project would impact any historic resources within the project's Area of Potential Effects (APE). This report provides an assessment and evaluation of direct and indirect impacts on those historic resources as a result of the proposed Project. This report is divided into the following sections: Introduction, Regulatory Framework, Historic Context, Identification of Historic Resources, Impacts Assessment, and Conclusion. Several appendices are included, specifically: California Department of Parks and Recreation (DPR) forms (Appendix A), records search (Appendix B), Native American Heritage Commission (NAHC) and Tribal correspondence (Appendix C), original architectural drawings (Appendix D), and structural description and assessment of the Stadium (Appendix E).

The Mount San Antonio College Historic District (Mt. SAC Historic District) is located within the APE, and the project specifically has the potential to impact contributing resources to the district: the Hilmer Lodge Stadium (50A-H), Oden House (12A/B), Wildlife Sanctuary, and buildings 6, 9A, and 28A/B. The historic district and of its potential contributors are evaluated for their eligibility for designation on the local, state, and national level as individual resources and potential contributors to a historic district, in accordance with CEQA and California Register of Historical Resources (CRHR) guidelines. Section 21084.1 of CEQA defines a historical resource as any resource listed in, or eligible for listing in, the CRHR. Mt. SAC Historic District has previously been evaluated and identified as a CEQA historical resource.

1.1 PROJECT LOCATION AND SETTING

The proposed Project is located in the City of Walnut, Los Angeles County, California. Walnut is located approximately 20 miles (mi.) east of the City of Los Angeles within eastern Los Angeles County (Figures 1 and 2). The Mt. SAC campus occupies 421 acres at 1100 North Grand Avenue situated in a flat valley between the Puente and San Jose hills in the San Gabriel Valley. Mount San Antonio is the dominant landscape feature of the setting to the north. The Project is located on the campus of Mt. SAC owned by the Mt. San Antonio Community College District. The direct APE constitutes those areas where specific projects have been identified in the FMUP and PEP, and includes all areas of ground disturbance (Figure 3). The Mt. SAC Historic District is located within the APE and includes buildings proposed for demolition and/or renovation. As such, the Project constitutes potential direct impacts to a CEQA historic resource. The indirect APE is defined as the boundaries of the entire historic district to ensure consideration of indirect impacts on all contributing resources of the historic district (see Figure 3). The Mt. SAC Historic District contains buildings and structures constructed between 1946 and 1972 that are associated with the theme of Education. The buildings were constructed in varying architectural styles such as Spanish Colonial Revival, neo-Romanesque, and Mid-Century Modern. In between the buildings are concrete walkways and landscaped courtyards of grass lawns, low-scale vegetation, and trees.

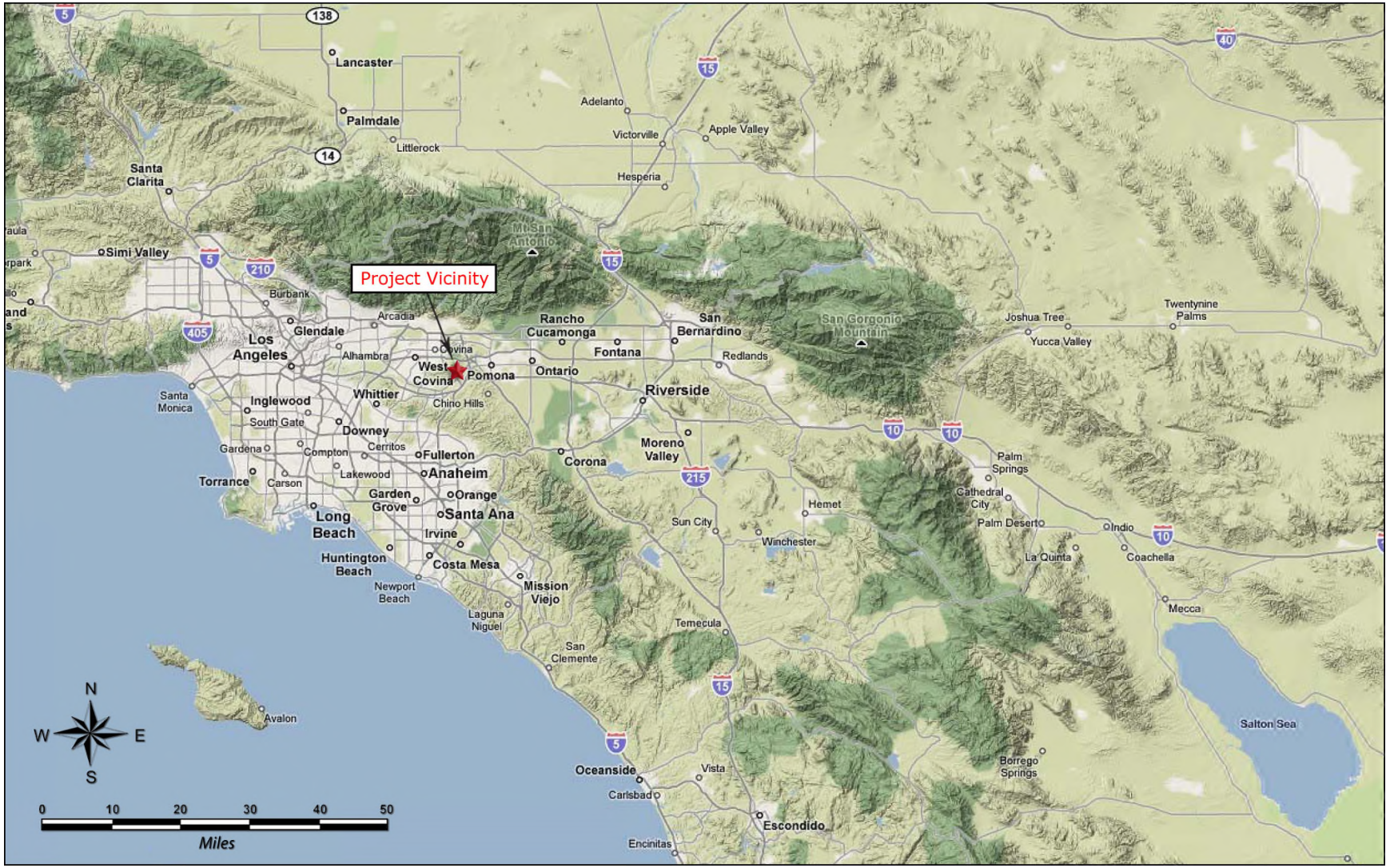

Figure 1. Project vicinity map.

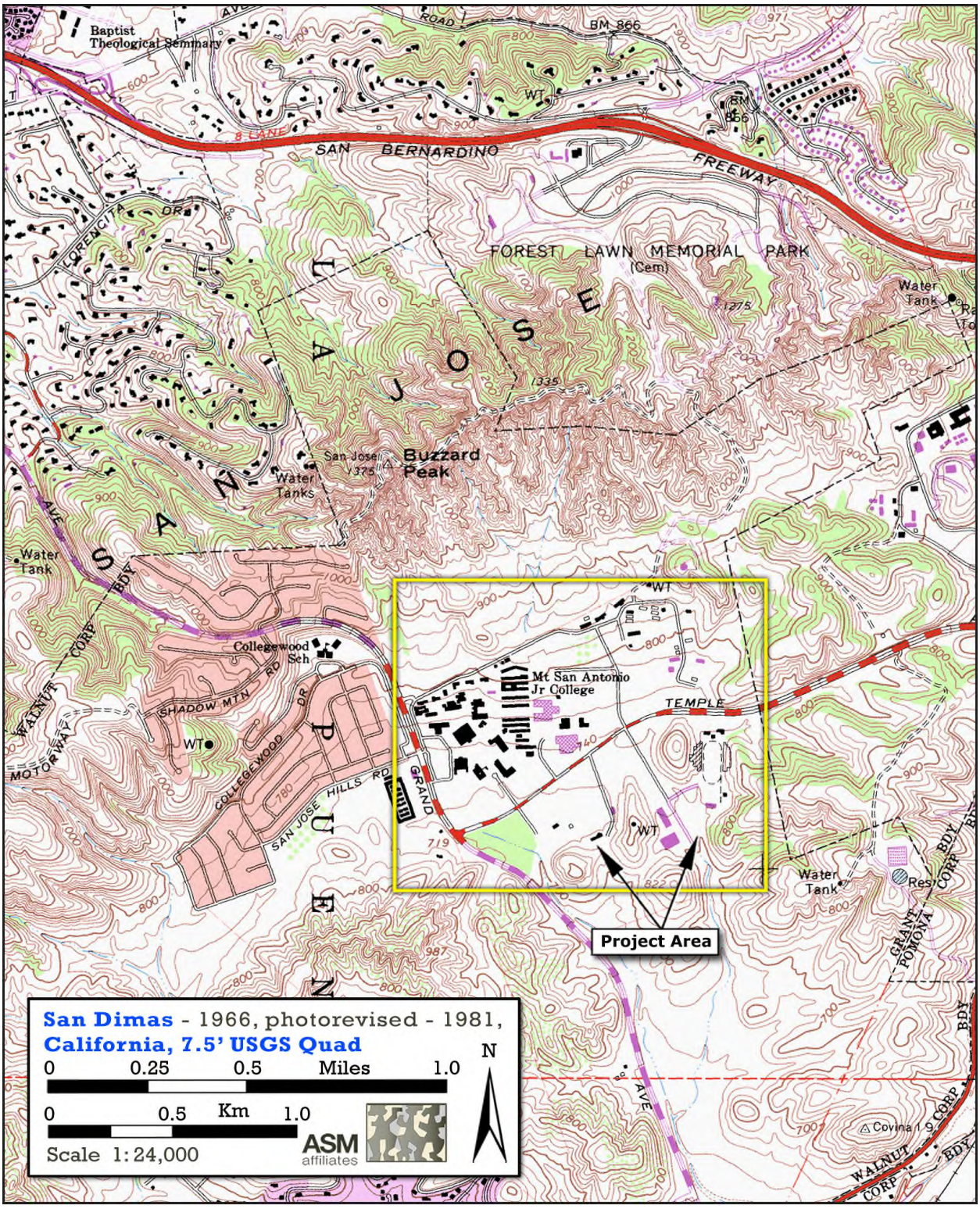

Figure 2. Project location map on USGS topographic map.

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Figure 3. Project area map with Area of Potential Effect (direct and indirect) highlighted.

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1.2 PROJECT DESCRIPTION

Mt. San Antonio Community College District has proposed a 2015 FMPU and the corresponding Land Use Plan is shown as Figure 3. The major change from the 2012 FMP is the re-design of the athletic facilities/Hilmer Lodge Stadium (50A-H) south of Temple Avenue and east of Bonita Avenue. The existing stadium will be demolished and a new stadium built at the same location. Other changes for the 2015 FMPU include the demolition of the Oden House (12A/B), relocation of the Public Transportation Center to Lot D3, an expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F. The net increase in square footage at 2015 FMPU buildout is approximately 500,000 gross square feet. Special annual events will continue to be held on campus that include the Mt. SAC/Brooks Relays and the Mt. SAC Cross-Country Invitational (XC Invite). The District is also filing an application to host the eight-day 2020 Olympic Track & Field Trials in late July or August 2020.

1.3 METHODOLOGY

ASM reviewed previous documentation and architectural drawings of the buildings and landscapes that required survey and evaluation for this report. Previous documentation included the *Historic Resources on the Campus of Mt. San Antonio College* report by Tim Gregory (Gregory 2003). In 2012, ASM prepared a letter report, *Historic Resources Analysis for Five Buildings at Mount San Antonio College*, in which the following buildings were evaluated: Student Life Center (9C), Marie T. Mills Aquatic Facility (Aquatic Facility) (27B), Locker Rooms (formerly the Women's Locker Facilities) (27C), Exercise Science/Wellness Center (formerly the Men's Locker Facilities) (27A), and Mount San Antonio College Snack Bar (19C) (Davis 2012). In this report, ASM utilized the 2003 Gregory report to define district boundaries and identify district contributors. The result was a list of contributors that included 24 buildings; however, by 2012 only 16 were extant. Since 2012, two more buildings have been demolished, resulting in 14 documented contributors that remained as of November 2015.

ASM performed an on-site survey of the Project APE overall a period of several days (November 17, 2015, and January 21 and March 11-25, 2016). The intensive level survey included the extant 14 contributing resources to the Mt. SAC Historic District (with a focus on those proposed for demolition: Oden House and the Stadium). Previous evaluation of the historic district did not include all buildings and structures that could be contributing resources to the historic district that were constructed or utilized by the college during the district's period of significance (1946-1972). As such, this survey included all potential contributors to the historic district that have not previously been documented or evaluated: the Art Center (1A), Administration (4), Library (6), Science South (7), Bookstore (9A), Science North (11), Counseling Support (12), Humanities North/East/South (26A/B/D), Planetarium (26C), Technology Center (28A/B), Maintenance/Facilities (47), Receiving/Transport (48), Horticulture Unit (F1), Farm Offices (F2A), Horticulture Storage (F2B), Old Dairy Unit (F3A), Swine Market Pens (F4A), Vivarium (F5), Breeding Barn (F6A), Equipment Tech Unit (F7), Greenhouse (G2), and the Wildlife Sanctuary. Twenty-two new potential contributing resources were documented during the survey; the 14 previously determined contributing resources were also documented to determine if they are still eligible as contributing resources and/or individually eligible historic resources. During the site visits, all of the resources were photographed and detailed field notes were recorded.

An intensive pedestrian archaeological survey was also conducted, encompassing all accessible areas of the Project APE where ground disturbance is proposed. All visible ground surface was surveyed.

As part of the current study, ASM reviewed archival documents located in Mt. SAC library "Vault" specific to the history of the buildings and landscapes surveyed. Documents reviewed included newspaper and memorabilia scrapbooks, yearbooks, college newspapers, and coursebooks (Scrapbook 2016). ASM also

reviewed historic aerial photographs to confirm construction dates of the buildings surveyed, as well as recent demolition projects (historicaerials.com 1948, 1953, 2003, 2004, 2012).

1.4 RECORDS SEARCH RESULTS

An archival records search was conducted by personnel of the South Central Coastal Information Center (SCCIC), located at California State University, Fullerton. The records search included a 1/2-mi. radius around the Project area (Appendix B).

As a result of this records search, it was determined that nine cultural resource inventories and/or research projects have occurred within a 1/2-mi. radius of the Project (Table 1). These have resulted in the documentation of a single resource within that radius, which is the college itself (Table 2). No reports were found at the SCCIC that directly address the Project area. However, reports that previously addressed eligibility of the Mt. SAC Historic District (Gregory 2003; Davis 2012) were consulted for this study and supplied by Mt. SAC.

Table 1. Previously Conducted Cultural Resource Projects within 1/2-Mile Radius of the SEIR Project Area

NADB Number	Author(s)	Date	Report Title
LA-00342	Taylor, Thomas T.	1978	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District
LA-00481	Van Horn, David M.	1979	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California
LA-01268	Mason, Roger D., and Nancy Whitney-Desautels	1983	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca
LA-01346	Brock, James P.	1984	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)
LA-02679	Cottrell, Marie G.	1979	Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract
LA-03835	Cottrell, Marie G.	1979	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California
LA-05644	Duke, Curt	2002	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California
LA-05646	Duke, Curt	2001	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California
LA-06262	Duke, Curt	2002	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California

Table 2. Previously Documented Resources within 1/2-Mile Radius of the SEIR Project Area

Primary #	Site Type	Description	Construction Date	California Status Code
P-19-186869	HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)	Mt San Antonio College 1100 N. Grand Ave.	1946	5S1*

**In 2003, the California Status Code for 5S1 was defined as "Not eligible for the National Register, but of local interest and eligible for listing in a local historic resources survey." The California status codes have since been re-categorized. As of 2016, this definition is listed under the code "5S3."*

1.5 NATIVE AMERICAN HERITAGE COMMISSION

ASM submitted a request to the California Native American Heritage Commission (NAHC) for a search of their Sacred Lands File (SLF) to inquire if they have registered any cultural resources, traditional cultural properties, or areas of heritage sensitivity within the proposed Project APE. A response was provided by the NAHC on February 10, 2016, stating that the SLF search failed to indicate the presence of Native American traditional cultural places/sites in the Project area. However, the NAHC also stresses that the absence of specific site information in the SLF does not indicate the absence of Native American cultural resources in any APE. The NAHC also provided a list of nine Native American Tribes and individuals to contact for more information. ASM sent letters to each of the contacts provided by the NAHC to solicit their input regarding any information or concerns that they may have about the proposed Project. To date, two tribal representatives have responded. One requested additional information regarding the ground-disturbing impacts of the proposed construction activities. Both felt that the Project area should be treated as sensitive and request the presence of Native American monitors during construction-related ground-disturbance. All related correspondence received to date is provided in Appendix C; responses received after the finalization of this report will be forwarded to the lead agency.

1.6 PROJECT PERSONNEL

ASM Senior Architectural Historian, Shannon Davis, M.A., was the Project Manager and team leader conducting the field survey, archival research, and impacts analysis. Ms. Davis exceeds the professional qualification standards for Architectural Historian and Historian as identified in the *Secretary of the Interior's Standards for Archeology and Historic Preservation* (36 CFR 61). As an Architectural Historian at ASM, Ms. Davis has documented and evaluated numerous cultural resources for California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA) compliance, impacts/effects analysis, Historic Structures Reports (HSRs), Historic American Building Survey (HABS), and NRHP nominations. Ms. Davis additionally has past professional experience with the cultural resources programs of the National Park Service (NPS) including eight years as an Historian with the NRHP.

ASM Senior Archaeologist, Sherri Andrews, M.A., RPA, conducted the archaeological survey. Ms. Andrews exceeds the professional qualification standards for Archaeology as identified in the *Secretary of the Interior's Standards for Archeology and Historic Preservation* (36 CFR 61). As an Archaeologist at ASM, Ms. Andrews has served as Principal Investigator, Co-Principal Investigator, and Field Director. Ms. Andrews has experience in all aspects of project management, ranging from records searches and fieldwork to report writing and preparation. She also has experience in laboratory management, including artifact analysis, cataloging and curation, and has served as laboratory director for three university-run field schools, including the San Clemente Island Eel Point field school run by California State University, Northridge, and the San Elijo Lagoon project run by ASM and University of California, San Diego.

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2. REGULATORY FRAMEWORK

2.1 CALIFORNIA REGISTER OF HISTORICAL RESOURCES

The CRHR program encourages public recognition and protection of resources of architectural, historical, archaeological, and cultural significance; identifies historical resources for state and local planning purposes; determines eligibility for state historic preservation grant funding; and affords certain protections under CEQA. The criteria established for eligibility for the CRHR are directly comparable to the national criteria established for the NRHP.

In order to be eligible for listing in the CRHR, a resource must satisfy at least one of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

Archaeologists assess sites based on all four of the above criteria but usually focus on the fourth criterion provided above. Historical resources eligible for listing in the CRHR must also retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. For the purposes of eligibility for the CRHR, integrity is defined as "the authenticity of an historical resource's physical identity evidenced by the survival of characteristics that existed during the resource's period of significance" (California Office of Historic Preservation 2001). This general definition is generally strengthened by the more specific definition offered by the NRHP—the criteria and guidelines upon which the CRHR criteria and guidelines are based.

2.1.1 Integrity

In order to be eligible for listing in the CRHR, a property must retain sufficient integrity to convey its significance. The NRHP publication *How to Apply the National Register Criteria for Evaluation*, National Register Bulletin 15, establishes how to evaluate the integrity of a property: "Integrity is the ability of a property to convey its significance" (National Park Service, National Register of Historic Places 1998). The evaluation of integrity must be grounded in an understanding of a property's physical features, and how they relate to the concept of integrity. Determining which of these aspects are most important to a property requires knowing why, where, and when a property is significant. To retain historic integrity, a property must possess several, and usually most, aspects of integrity:

1. **Location** is the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** is the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** is the physical environment of a historic property, and refers to the character of the site and the relationship to surrounding features and open space. Setting often refers to the basic physical conditions under which a property was built and the functions it was

intended to serve. These features can be either natural or manmade, including vegetation, paths, fences, and relationships between other features or open space.

4. **Materials** are the physical elements that were combined or deposited during a particular period or time, and in a particular pattern or configuration to form a historic property.
5. **Workmanship** is the physical evidence of crafts of a particular culture or people during any given period of history or prehistory, and can be applied to the property as a whole, or to individual components.
6. **Feeling** is a property's expression of the aesthetic or historic sense of a particular period of time. It results from the presence of physical features that, when taken together, convey the property's historic character.
7. **Association** is the direct link between the important historic event or person and a historic property.

2.2 CEQA HISTORIC RESOURCES

CEQA Guidelines 15064.5 *Determining the Significance of Impacts to Archeological and Historical Resources* requires that all private and public activities not specifically exempted be evaluated for potential environmental impacts, including impacts to historical resources. CEQA (PRC Section 21084.1) states that significant impacts may occur if a project "may cause a substantial adverse change in the significance of an historic resource." CEQA defines historical resources as "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California."

Lead agencies have a responsibility to evaluate a Project's impacts to historical resources (including archaeological resources) and to determine whether those impacts are significant. Mitigation of significant impacts is required if the proposed Project will cause substantial adverse change to a historical resource. Substantial adverse change includes "demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired." While demolition and destruction are fairly obvious significant impacts, it is more difficult to assess when change, alteration, or relocation crosses the threshold of substantial adverse change. The CEQA Guidelines provide that a Project that demolishes or alters those physical characteristics of an historical resource that convey its historical significance (i.e., its character-defining features) can be considered to materially impair the resource's significance.

For purposes of CEQA, a "historical resource" is a resource listed in or eligible for listing in the CRHR. The CRHR includes resources listed in, or formally determined eligible for listing in, the NRHP, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts), or that have been identified in a local historical resources inventory, may be eligible for listing in the CRHR and are presumed to be historic resources for purposes of CEQA unless a preponderance of evidence indicates otherwise.

Generally, a resource shall be considered by the lead agency to be a "historical resource" if it:

1. Is listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the CRHR (PRC Section 5024.1, Title 14 CCR, Section 4850 et seq.).
2. Is included in a local register of historical resources, or is identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the PRC.

3. Is a building or structure determined to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource is considered "historically significant" if it meets the criteria for listing in the CRHR.

CEQA also requires the lead agency to consider whether a project would have a significant effect on unique archaeological resources, and to avoid these resources when feasible or mitigate any effects to less-than-significant levels (PRC Section 21083.2 and Section 21084.1). These are defined as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability of meeting any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;
- Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
- Is directly associated with a scientifically recognized important prehistoric or historic event or person [PRC Section 21083.2(g)].

No further consideration need be given to a non-unique archaeological resource, "other than the simple recording of its existence by the lead agency if it so elects" (PRC Section 21083.2(h)).

2.3 SECRETARY OF THE INTERIOR'S STANDARDS

The SOI *Standards* were codified in 1995 (36 CFR 68) to establish professional standards that apply to all proposed development grant-in-aid projects assisted through the National Historic Preservation Fund and serve as general guidance for work on any other historic building (Weeks et al. 2001). The *Standards* apply to historic properties of all periods, styles, types, materials, and sizes. The *Standards* also encompass related landscape features, the site, and environment as well as attached, adjacent, or related new construction. The SOI *Standards* for *Rehabilitation* are the appropriate approach to apply to this project, and are identified below (Weeks et al. 2001).

1) A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2) The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property will be avoided.
3) Each property will be recognized as a physical record of its time, place, and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.
4) Changes to a property that have acquired historic significance in their own right will be retained and preserved.
5) Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.
6) Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture, and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.
7) Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.
8) Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9) New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10) New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

Weeks et al. (2001) references new construction within historic districts as part of the guidelines for "Setting." The section pertaining to "Alterations/Additions for the New Use" were considered in the analysis of direct impacts. Below are the "recommended" and "not recommended" treatments applicable to the project.

Recommended

- Designing and constructing new additions to historic buildings when required by the new use. New work should be compatible with the historic character of the setting in terms of size, scale design, material, color, and texture.

Not Recommended

- Introducing new construction into historic districts that is visually incompatible or that destroys historic relationships within the setting.

2.4 CRITERIA FOR ASSESSING VISUAL IMPACTS

Because there is no universally accepted yardstick for measuring visual impacts, and because those impacts do not always damage the defining characteristics of an historic property in any physical manner, assessing them can be difficult and complicated. If we are to consider that an historic property is affected when its historic significance and integrity have been diminished, determining how a Project harms a resource's historical significance and integrity is essential to any assessment. In assessing the indirect impacts for historic resources, the criteria for significance and the aspects of integrity are factors that require careful evaluation and can provide a defensible qualitative method for determining visual impacts on historic resources.

To ensure a thorough and complete analysis of visual impacts, ASM augmented the nationally recognized guidance of Section 106 (36 CFR 800) regulations of the NHPA and SOI Standards with more specific guidance that has been developed by two state agencies—the Delaware State Historic Preservation Office (Delaware SHPO 2003) and the Wyoming Bureau of Land Management and Wyoming State Historic Preservation Office (Wyoming BLM 2006).

2.4.1 Definitions

For purposes of this analysis, the following definitions have been employed:

Historic Property or Historic Resource: a historic site, district, building, structure, or object that is either eligible for inclusion in the NRHP, or listed therein.

Adverse Visual Impact: an impact that negatively affects the integrity of the setting or feeling of an historic property, to the extent that significance and eligibility for listing in the NRHP are compromised. In particular, adverse visual impacts can be seen as negatively affecting the following characteristics of integrity: setting, feeling, or association.

Obstructive Visual Impacts: any visual impact that carries the potential to obstruct any part of the view of an historic property, or the scenic view from such a resource. Adverse obtrusive impacts can obstruct all or a portion of an historic property and/or its viewshed, in turn negatively affecting the property's historic character.

Scenic Views: any scenic resources or resources that are visually and aesthetically important and that contribute to an historic property's significance.

Viewsheds: those areas visible from a specified location or locations.

Visual Impacts: any aspect of a proposed undertaking that will be seen from or will be in the view of an historic property. A visual impact may be beneficial or adverse and may affect the historic property in an aesthetic or obstructive manner. The determination that a visual impact exists does not automatically imply that the impact is adverse.

2.4.2 Adverse Visual Impacts

Adverse visual impacts may be created when an undertaking is visible within the viewshed of the historic property, when it blocks a view toward the historic property, or when it introduces an element that is incompatible with the criteria under which the property is eligible.

Simply because an undertaking will be visible from an historic property does not mean it automatically will create an adverse visual impact. Therefore, it is necessary to evaluate the visual changes and alterations the undertaking will introduce to the resource. In assessing adverse visual impacts on a historic property, it is necessary to identify the criterion or criteria under which the resource is eligible and what qualities or characteristics of the resource contribute to its significance or eligibility. For example, if a resource is eligible for its innovative engineering qualities, visual impacts on the property may not be adverse, whereas if the property is eligible on the basis of its architectural significance, an adverse impact very well may be created.

An adverse visual impact may be obstructive, which is to say it may block the view to or from an historic property; it may also not be obstructive and still create an adverse visual impact in that it introduces elements so incompatible with the criterion or criteria under which the property is eligible for listing that it diminishes the property's significance to a substantial degree. For example, a highway proposed to run alongside an historic rural church, while it would not directly obstruct the view to or from the building, might still introduce an element so incompatible with the rural setting of the property that it would have a diminishing impact upon the integrity of the property's setting.

Adverse visual impacts should be determined on a case-by-case basis, weighing the following factors:

- **Significance.** An historic built-environment resource's historical significance and its key aspects of integrity must be taken into account in order to evaluate the Project's impacts on the property's eligibility for listing in the NRHP.

- **Character-Defining Features.** The alteration of character-defining features at the Project location (including open space) can affect the view from the historic built-environment resource and possibly the location, feeling, setting, and association of that resource.

- **Compatibility.** Whether in an open space or a developed area, the compatibility of the Project with the character of the Project's location and surrounding area, including historic resources, is important. The character of the historic property's site and architectural

features should be the basis for determining the appropriate characteristics of the proposed Project. The compatibility of the Project is determined by:

- Mass—the arrangement of the Project's spaces;
- Scale and proportion—the size and the proportion of the Project to the surrounding structures and features;
- Height—sometimes it may be necessary that a Project height extend beyond that of the surrounding buildings and other features within view of the Project; it is important that the height of the Project not cause the line of sight to move so far up that the surrounding features are out of view, thereby detracting from the original view;
- Shadows;
- Color;
- The degree to which the Project would contribute to the area's aesthetic value;
- The degree of contrast, or lack thereof, between the Project and the background, surrounding scenery, or neighborhood; and
- The amount of open space.

2.4.3 Obstructive Impacts

Whether a Project is on or near an historic property, it can block the resource from being viewed, or block a view seen from that resource, thereby possibly diminishing its integrity. Determination of adverse obstructive impacts should be made on a case-by-case basis, considering the following factors:

- The historic property's significance. It is necessary to understand the resource's historic significance and its key aspects of integrity in order to evaluate the Project's impacts on the resource's eligibility for listing in the NRHP.
- Nature and quality of the view from the historic property. This includes such features as natural topography, settings, man-made or natural features of visual interest, and other historic property seen from the historic built-environment resource, any of which would contribute to its significance and integrity.
- Extent of obstruction. This includes total blockage, partial interruption, or interference with a person's enjoyment and appreciation of a scenic view or historic property viewed from the historic property, to the extent it affects the integrity of the historic property.
- Obstruction of an historic property. The Project might obstruct the historic property from being viewed from the Project site or other area. If the historic property is visually appreciated from surrounding viewpoints, obstructing its view may affect its feeling, setting, location, or association.

3. HISTORIC CONTEXT

3.1 BRIEF HISTORY OF THE SAN GABRIEL VALLEY AND WALNUT, CALIFORNIA

The first occupants of the San Gabriel Valley were the Gabrielino Indians of Shoshonean origin. After the arrival of the Spanish in the late 1700s, large ranches, extensive agricultural development occurred and residences were constructed. The first land grants included the Rancho de San Jose, established in 1837 by Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales, presented in 1840 to Jose de la Cruz Linares; and La Puente Rancho, issued to John Rowland and William Workman in 1842. Prior to the establishment of these land grants, the land had been used for cattle and sheep grazing by the San Gabriel Mission (Gregory 2003).

Walnut originally obtained its name from Rancho de los Nogales (*nogal* is the Spanish word for "walnut tree"), the land the city came to occupy. The Rancho obtained its name from the black walnut trees located along the hillsides. The name of the town was originally Lemon, due to the many citrus trees in the area and the name of the town's station (Lemon Station) for the Southern Pacific Railroad. The name "Walnut" was adopted as the community's official name in 1912 with the construction of the new post office (Gregory 2003).

From the 1880s to just after World War II, the area was used predominantly for cattle-raising and farming, well-known particularly for its walnut and citrus groves. Walnut as well as the surrounding communities remained primarily rural, Pomona being the only major city (Gregory 2003).

After World War II, returning veterans created an increasing demand for housing across southern California, including the city of Walnut. The small rural town developed quickly and, fearing that they might be annexed by their faster-growing neighbors, the residents of Walnut decided to incorporate with approximately 7.5 mi.^{2} of territory and about 1,000 residents in January 1959 (Gregory 2003).

Between 1980 and 1990, Walnut grew by 133 percent, to a population of 29,105, and became the second-fastest-growing city in Los Angeles County (Gregory 2003). Today, Walnut has a population of 29,661. Four elementary schools, three middle schools, two high schools, and Mt. SAC are located within the city boundaries (City of Walnut 2012).

3.2 EARLY EDUCATIONAL FACILITIES IN WALNUT AND SAN GABRIEL VALLEY

Walnut's first school was constructed ca. 1876. After the schoolhouse burned in 1892, students transferred to Spadra School. The Lemon School District, of which Walnut was a part, was established in 1893. High school students traveled to Pomona and El Monte until 1915, when La Puente High School was constructed (Gregory 2003).

When the first junior colleges were established in California at the beginning of the twentieth century, most (two-thirds) were begun either on high school campuses or as parts of high school districts. Citrus College, located in Glendora and founded in 1915, is the oldest junior college in Los Angeles County and the fifth oldest in the state. One of the first junior colleges in the San Gabriel Valley was Pomona Junior College, planned in 1916 and established on the Pomona High School campus in 1917. Oscar H. Edinger was the director of the college (Hall and Pietzsch 1996). Chaffey, located in Rancho Cucamonga, was first established as a private college in 1883 and became public in 1916. Pasadena City College was established in 1924, and Glendale Community College was founded in 1927.

With the return of young men and women after World War II, the San Gabriel Valley, along with much of the state, increasingly recognized the limitations of having colleges set on high school campuses, and pushed for the establishment of junior colleges independent from high schools. Pomona Junior College was seen as inadequate to accommodate the many veterans seeking higher education. Thus, in October 1945, the California State Board of Education was petitioned by the school districts of Pomona, Covina, Puente, and Bonita for a junior college to serve the combined communities (Pomona, La Verne, San Dimas, Covina, Baldwin Park, West Covina, Puente, Otterbein, Walnut, and Spadra). Edgar Rothrock, chairman of the Board of Trustees for Bonita High School, and Carl L. Lorbeer, president of the Pomona Board of Education, were particularly influential in encouraging community members to support the creation of the college. In his 1945 statement as candidate to be president of the Pomona Board of Education, Mr. Lorbeer advocated for "the formation of a junior college not only for general relief of the school system but to separate the high school and junior college activities. It would be my intention, if elected, to immediately have a representative committee appointed to make a thorough study of the entire junior college situation" (*Mt. SACourier* 1966). Voters approved the formation of a new college by a 7-to-1 vote margin, and the first Board of Trustees was formed (Hall and Pietzsch 1996). The new college was to replace Pomona Junior College, and Mt. SAC became one of the first junior colleges to be established as independent from a high school campus at the time of its foundation.

A few different locations were considered for the new college, including Kellogg Ranch in Pomona, the Voorhis School in San Dimas, and the Naval Hospital located in Walnut. The Naval Hospital was eventually chosen as the location for the school, as it was considered an ideal location at the center of the proposed college district. The Kellogg Ranch and the Voorhis School were soon after acquired by California Polytechnic School for their southern California branch (Cal Poly Pomona 2012; Hall and Pietzsch 1996).

3.3 MT. SAC PROPERTY HISTORY

In 1920, the State of California purchased lots 6 and 7 of the C. M. Wright Tract on the eastern edge of the original La Puente Rancho, consisting of 800 acres. The land had previously been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and later became the site of the California Polytechnic University, Pomona Campus. Lot 6, the location of the current Mt. SAC, was used to establish the Pacific Colony, an institution for the insane, founded in 1921. The Pacific Colony only operated briefly at this location, as it closed in 1923 due to an inadequate water supply, later reopening in 1927 on Pomona Boulevard (Gregory 2003).

In the early 1930s, lot 6 was occupied by the State Narcotic Hospital, and during World War II, the United States Government leased the property for a U.S. Army Hospital and later a U.S. Naval Hospital. In February 1945, the Pomona Chamber of Commerce requested the state to make the hospital site (which was scheduled to close in 1946) the temporary location for a new junior college which eventually became Mt. SAC (Gregory 2003).

The first staff of the new junior college included several members of surrounding educational facilities: Dr. George H. Bell, superintendent of education for Bonita High School District, became president; Oscar H. Edinger, former director of Pomona Junior College, became director of instruction; Ernest W. Carl, an officer in the Navy, became director of business; and Marie T. Mills, physical education teacher for Covina High School, became dean of women. Additionally, a small group of support staff and 23 faculty members were selected (Hall and Pietzsch 1996).

The new staff and faculty were faced with the almost impossible task of preparing the buildings of the old Naval Hospital for college classes in only a matter of months. (The property was authorized in July 1946, and the college was to open in September that same year.) Community members as well as prospective

students contributed countless hours as well as small sums of money to prepare the campus for opening day (Hall and Pietzsch 1996).

The temporary name for the college was the East Los Angeles County Junior College. A contest was held to choose the official name for the college, resulting in its official name being changed to Mt. SAC, named after the most visible snow-capped mountain north of the college (Hall and Pietzsch 1996).

When Mt. SAC opened in 1946, nine permanent buildings and 99 temporary barrack buildings from the site's previous uses were utilized as classrooms and faculty housing. A two-story building used by the director of the hospital became the home of President Bell and his family (Hall and Pietzsch 1996).

When registration began in August 1946, the college advertised seven divisions and 12 departments, including art, commerce, English and speech arts, foreign languages, homemaking, math and engineering, music, physical education and hygiene, science, social sciences, vocational agriculture, and trades and industries. There were 682 students the first year. Over half the students were veterans, and the average age was 25 (Hall and Pietzsch 1996).

In March 1947, the college Advisory Committee requested a $1,750,000 bond to aid in the construction of new classrooms and service buildings. The bond issue received an overwhelming approval ratio of 11 to 1. On June 14, 1947, the day of the first commencement, Governor Earl Warren approved Assembly Bill 1904 to allow the college to acquire the former hospital site as their permanent home (Hall and Pietzsch 1996). The first campus master plan, known as Building Plan "M", was designed by President Bell and Pasadena architect Frederick H. Kennedy, Jr. The first buildings designed and approved were the stadium, field houses, shops, gymnasium, and library (Hall and Pietzsch 1996).

Enrollment continued to increase and the college grew, with construction of new buildings ongoing until the early 1970s, when the development of the college was complete and its growth reached a plateau. With a Walnut city population increase of 133 percent between 1980 and 1990, the college experienced a new period of growth and construction, and become one of the largest community colleges in the state; additional buildings were added to the campus in the 1990s and early 2000s. Today, Mt. SAC is the largest of six community colleges located in the San Gabriel Valley (including Glendale Community College, Chaffey College, Pasadena City College, Citrus College, and Rio Hondo College), and one of the largest of California's 112 junior colleges. The college serves approximately 20 communities and one million residents in the San Gabriel Valley, and offers more than 200 degree and certificate programs. More than 35,000 students are currently enrolled for credit at the junior college (Mt. San Antonio College 2012).

3.3.1 Mount San Antonio Athletic Facilities

From the time the college was established, physical education and athletics have been an integral part of campus life. Two of the first buildings constructed for the college were the stadium and the gymnasium, further exemplifying the campus's commitment to athletic activities. Sports quickly drew attention from the students as well as the community. When the college opened, Archie Nisbet was the only full-time instructor for physical education; however, several faculty members, including Marie T. Mills, assisted in teaching physical education and coaching various sporting activities (Hall and Pietzsch 1996).

During the 1950s and 1960s, major changes occurred in the physical education arena, as interest in and participation in physical education grew tremendously. Women in particular were deeply affected by this change in outlook, and they began to play a much more active role in physical activity. Campus programs began to reflect these changes in attitudes, and in 1971, Linda Garrison started the community fitness program (Hall and Pietzsch 1996).

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4. IDENTIFICATION OF HISTORIC RESOURCES

4.1 ARCHITECTURAL HISTORY SURVEY

During the field survey of the APE, ASM identified the previously documented Mt. SAC Historic District, as well as an additional 20 buildings that were never before documented.

4.1.1 Mt. SAC Historic District

As of November 2015, the Mt. SAC Historic District contained 14 contributing resources (Davis 2012; Gregory 2003). Table 3 and Figure 4 illustrate those buildings that have been previously identified as contributors to the historic district. Of the 24 buildings previously identified within the historic district, 8 have been demolished between 2003 and 2012, and two from 2012 to November 2015 for a total loss of 10 contributing resources (FMPU 213).

Table 3. Contributing Resources to the Mt. SAC Historic District, November 2015

Building Number	Building Name	Current Status
1B/C	Art Center/Gallery	Extant
3	Gym	Extant
5/5A	Information Educational Technology	Demolished (Sept. 2009)
8	Campus Café	Demolished (Nov. 2015)
9C	Student Life Center	Extant
10	Founder's Hall	Extant
12A/B	Oden House	Extant
13	Design Technology	Demolished (Sept. 2009)
14N	Biology	Demolished (Sept. 2009)
14S	History/Geography/Political Science	Demolished (Sept. 2009)
15	Modern Languages	Demolished (Sept. 2009)
16	Building 16	Demolished (Dec. 2013)
17	Building 17	Extant
18	Building 18	Extant
19A	Building 19A	Extant
19B	Building 19B	Extant
20	Building 20	Extant
21	Building 21	Demolished (Feb. 2013)
22	Welding	Demolished (2007?)
27A	Exercise Science/Wellness Center	Extant
27B	Pool	Extant
27C	Physical Education Center	Extant
F-9	Livestock Pavilion	Demolished (2003?)
50A-H	Stadium	Extant

Figure 4. Mt. SAC Historic District identifying contributing resources and demolished contributors, as of November 2015.

The district was previously recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of Education, for its association with the development of Walnut, California, and its surrounding communities. The college served 10 different communities and thousands of residents and is today the largest community college in the San Gabriel Valley and one of the largest in California. Mt. SAC was one of the first junior colleges in California and the San Gabriel Valley to be established as independent from a high school campus. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). The college was built to accommodate the increased need for an independent community college (not located on a high school campus) in the area after World War II, and became one of the largest and most significant junior colleges in the San Gabriel Valley. Mt. SAC is the largest of six junior colleges in the San Gabriel Valley, with more than 35,000 students enrolled. The Student Life Center, Aquatic Facility, Women's Locker Facilities, and the Exercise Science/Wellness Center each reflect the college's long-standing efforts to foster student participation in extracurricular and recreational activities during the first 25 years of its establishment. Each building/structure contributes to the educational theme of the historic district and was built during the period of significance. Additionally, the resources maintain good integrity in all seven aspects.

The historic district was not recommended as eligible under CRHR Criterion 2, as the campus is not associated with anyone of great historical significance to the area. The district was also recommended as not eligible under CRHR Criterion 3. Although both Frederick H. Kennedy, Jr., the architect and planner for the college between 1947 and 1953, and Austin, Field & Fry Architects, the designers of several of the college's buildings including the five herein evaluated, were prominent architects in Los Angeles County, their works were not substantial enough for them to be considered master architects. Additionally, the campus does not embody distinctive characteristics of a type, period or method of construction that would distinguish the district as eligible architecturally.

The district was not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

4.1.2 Hilmer Lodge Stadium (Buildings 50A-H)

In 1947, the Mt. SAC administration began to plan a new football stadium to be constructed southeast of the campus as part of the larger master plan for the campus. The location was chosen based on the flatness of the terrain situated between two hills, which reduced construction costs (Scrapbook 2016). It was designed by Frederick H. Kennedy, Jr. and was finished in 1948 (Figures 5-10). The builder was the West-Douglas Company, a firm from Los Angeles.

In October of 1948, the stadium was dedicated "To Those Who Served Their Country." Then-State representative Richard M. Nixon was presiding speaker (Gregory 2003; Scrapbook 2016). The stadium was later renamed the Hilmer Lodge Stadium after the college's first track coach, Hilmer Lodge. He is known for founding the Mt. SAC track relays in 1959. These relays soon became one of the world's largest track and field meets, held annually in April. Mr. Lodge retired in 1963 and passed away in 1977 (Mt. SAC Relays 2016). The stadium has been the venue for the 1962, 1979, and 1980 U.S. National Track & Field Championships. It is also the host of the Mt. SAC Cross Country Invitational, the world's largest cross-country event (LA Sports 2016; Mt. SAC Relays 2016).

The stadium is situated between two hills in the southeast portion of Mt. SAC's campus. The stadium consists of several elements including the press box (50F), concession stand (50H), Physical Education Center Field House (50G), ticket booth (50A), four restrooms (50B-E), running track, football field, two

sections of bleachers, and scoreboard. The cross-country track runs west and south of the stadium. A fitness course runs south and east of the stadium.

The stadium holds a maximum of 15,000 spectators between the two sections of concrete bleachers on either side of the track and field. The seating consists of both wood board benches and metal benches, all with back supports. Seating is accessed by concrete steps with metal railings at various areas along the bleachers. On the rear peak of each side of bleachers are two elevated metal structures that hold the arena lighting fixtures. The football field is natural grass. The track is 400 meters of polyurethane athletic surface with nine lanes. The scoreboard is located to the north of the field and is free-standing.

At the peak of the west bleachers sits the stadium press box, Building 50F. This building is rectangular in form and faces east toward the track and field. It consists of a concrete foundation, vertical wood boards, and a flat roof. The building is single story with a bottom level that is accessed on the west façade; the bottom level is enclosed with doors that lead to the mezzanine level. The mezzanine consists of an unenclosed recessed deck that has seating and a metal and glass-enclosed press box. There are rectangular fluorescent light fixtures on the ceiling and an open metal grid-pattern wall on either end of the building within this level. On top of the mezzanine is an open upper deck with a metal railing. The east façade of the building reads “Mt. San Antonio College” on the fascia between the upper deck and the mezzanine level, and “Home of the Mounties” on the fascia between the mezzanine level and lower level.

At the north end of the track and field is Building 50H, the stadium concession stand. This is a single-story brick building with a shed roof. The footprint is rectangular and the foundation is concrete. It has boarded-over concession stand openings on the north and east façades. The roof has exposed rafter tails and overhanging eaves. On the south façade are three doors, two with metal security doors and one flush wood. The interior of the building consists of a concrete floor and a metal industrial sink.

The Physical Education Center Field House, Building 50G is located south of the track and field and was constructed in 1972. This building contains the men’s and women’s locker rooms, and track and field and other offices. The building is composed of a single-story concrete building, irregular in footprint with a concrete foundation. The exterior siding is scored concrete. The roof is flat with a concrete canopy surrounding the roofline. The windows are primarily aluminum fixed and awning. The primary entrance is on the north façade and consists of a partial-width recessed porch with a concrete breeze block wing wall to the east of the entrance. The primary door is metal and surrounded by aluminum sidelights and transoms. The interior of the building has glass and metal enclosed offices, linoleum tile and carpeted floors, flush wood doors, and drop tile ceilings.

Other buildings associated with the stadium include two sets of men’s and women’s restroom buildings. The earlier set are single-story concrete buildings located to the southwest and southeast of the track and field on the south ends of the bleachers. These buildings consist of rectangular footprints, concrete foundations, scored concrete exterior walls, and flat roofs with an overhang on the primary façades. The buildings are divided into two rooms, each with an entrance on either end of the primary façade, with one leading to the women’s restrooms and the other leading to the men’s. The buildings appear to have been constructed c. 1970 (historicaerials.com 1966, 1972).

To the north of the track and field are ticket sales and general admission buildings with concrete walls and metal gates. There is another restroom building as well. These buildings are similar in style with concrete brick siding, single-story, metal flush doors with metal pent roofs. They appear to have been built c. 1985 and replaced the original 1948 ticket sales and general admission buildings (historicaerials.com 1980, 1995; Mt. SAC 1948).

Hilmer Lodge Stadium (consisting of Buildings 50A-H as well as other related elements built prior to 1973) is a contributor to the Mt. SAC Historic District.

Figure 5. View looking southwest at Hilmer Lodge Stadium, including the track, western bleachers, and press box (50D).

Figure 6. View looking east from western bleachers toward eastern bleachers.

Figure 7. Press box (50F), view looking west of east façade.

Figure 8. Field House (50G), view looking southeast of east and north façades.

Figure 9. Concessions building (50H), view looking west of east and north façades.

Figure 10. Detail view of track, view looking southeast of southwest section.

4.1.3 Oden House (Buildings 12A/B)

Buildings 12A/B were constructed in 1947 as a single-family residence in the Spanish Colonial Revival style (Figure 11). They served as the residence for the college's first campus maintenance supervisor. According to the 2003 Gregory DPR form, the building is referred to as the "Oden House," presumably named after the first college maintenance supervisor; however, no other documentation or mention of this name is given in the report or DPR (Gregory 2003). Building 12A is the residence. Building 12B is believed to have served as a garage for the residence, but unusually contains a vented cupola at the top of the hipped roof that housed a siren.

Figure 11. Oden House (12A) and garage (12B) to the right, view looking north at south façade.

Oden House is located in the northwest part of the campus, south of Edinger Way and Walnut Drive. At the time of the survey, the building was vacant and in a partial state of demolition. The single-story building has a concrete foundation and a T-shaped footprint. It was covered in stucco prior to partial demolition. The exterior siding at the time of the survey consisted of diagonal wood boards that were originally used as lathing for the stucco exterior. The roof is cross-gable with shallow eaves and is clad in red clay tiles. Concrete steps with an iron railing lead to the primary entrance which is located within the northeast corner of the south façade and consists of a recessed entrance with a wood door. Since demolition began, the windows have been removed. Originally they consisted of wood casements. Other features of the building include bird's nest vents made of red clay tiles located under the apex of the gable end projections. The building has a chimney on the west gable end lateral interior. The interior of the building consists of wood floors, plaster walls, arched entryways, pocket doors, and exposed beams on the ceiling. The building plan consists of eight rooms (Oden House 1999).

Extensive modifications to the building include the removal of the stucco, windows, chimney cap, as well as the addition of the ramp that is on the south façade. This ramp does not appear in a 2003 photo of the building, only the concrete steps that lead to an open stoop in front of the primary entrance door (Gregory 2003). As a result, there has been a significant loss of integrity of materials, design, workmanship, feeling, and association.

The detached garage building (12B) is located east of the residence. The garage consists of a single-story building clad in textured stucco with overhanging eaves and exposed rafters. The roof is pyramidal and clad in red clay tiles. There is a metal vented cupola at the peak of the roof housing a siren. The garage also has paired aluminum sash windows and two pedestrian doors on the east and west façades, and a metal roll top garage door on the south façade.

4.1.4 Building 1A

Building 1A, the Art Center, was constructed in 1972 (Figure 12). The Modern single-story building has a rectangular floor plan and concrete foundation. The educational building has brick and poured concrete siding and a flat roof. The windows are primarily fixed steel and are located on the north façade. Concrete steps with metal railings lead to the primary entrance on the south façade that consists of a partial-width arcade with rectangular concrete columns. At the center of the walkway within the arcade is a large glass display case flanked by walls of built-in lockers. In between the columns of the arcade are large concrete bulkheads adorned with geometric mosaics facing south; the north sides of the bulkheads have built-in lockers. Within the arcade are five entrances consisting of flush metal doors, some with partial glazing.

Figure 12. View of the south façade of Building 1A.

On the north, the façade consists of a poured concrete exterior with squared pilasters. In between the pilasters are boarded-over window openings with small partitions in between. Above the row of boarded-over windows are rows of steel-framed windows. Some classroom entrances are located on this façade, as well as a recessed porch entrance with mechanical equipment within. There is a kiln for the ceramics department located on the east façade within a walled partition. Secondary entrances are located on the east and west façades.

Modifications to the building include the boarding-over of windows on the north façade. Landscape features include walled-in garden beds on the south façade, and grass lawns between concrete walkways. The interior of the building consists of concrete tile floors, locker partitions, drop tile ceilings, and classroom tables and chairs. The integrity of the building is good as the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was designed by the architectural firm Austin, Field, & Fry.

4.1.5 Building 4

Building 4, the Administration building, was constructed in 1965 in the Modern style (Figure 13). It is a two-story building located on the northeast of Temple and Grand avenues on the southwest side of the Mt. SAC campus. The administration building has a rectangular footprint with a concrete foundation. The upper portion of the building's exterior is clad in brick with scored concrete siding on the lower portion of the building. The brick is laid in three sections of running bond with a single sailor course in between each section. The concrete on the lower portion of the building is scored in a grid pattern. The roof is flat and has a poured concrete parapet cap. There is a penthouse on the roof that houses mechanical equipment. The primary entrance is located on the east façade and consists of a centrally-located recessed aluminum and glass entryway with a steel canopy over the double doors that have steel beams and screens to shade the entrance. The recessed entrance has been framed-in with steel posts and beams and accommodates lighting fixtures at the ceiling of the entryway. A secondary entrance is located on the north façade where a non-original steel canopy has also been installed. The south and west façades also have secondary entrances located within the lower portion of the building that has scored concrete siding. These entrances, like the east and north, consist of aluminum-framed glass entryways.

Figure 13. View of the primary (west) façade of Building 4.

Modifications to the building include two additional fixed windows on the north façade, four additional fixed windows on the east façade, the steel post and beam framing and canopy on the east entrance, the canopy on the north façade's entrance, and the addition of five windows on south façade. According to original building plans, the narrow paired windows on the north and south façades were originally filled in with colored glass block windows, and have since been replaced with fixed metal windows. The interior of the building consists of carpet and tile floors, squared columns and a designed angular, cut-out ceiling. The building retains high integrity of material, location, setting, and association. The building has lost some integrity of design and workmanship with the installation of a number of additional windows that change the fenestration of the building. The building retains sufficient overall integrity.

Building 4 was originally constructed to function as the administration center for registration, admission counseling, and other auxiliary services. The architectural firm Austin, Field, & Fry designed the building and the Steed Brothers Construction Company of Alhambra were the building contractors.

Figure 14. Oblique view of the north and west façades of Building 6.

4.1.6 Building 6

Building 6, the Library, was constructed in 1963 in the Modern style (Figure 14, above). It is a three-story building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The educational building has a rectangular footprint with a concrete foundation. The exterior is clad in brick and scored concrete siding. The brick is laid in three sections of running bond with a single

sailor course in between each section. Precast concrete panels are located in groupings of three, creating projecting bays along the upper-stories' exterior plane. The roof is flat and has a screened projection that holds mechanical equipment. The primary entrance is located on the south façade and consists of a glass and metal entryway underneath a partial-width porch with a canopy projection that is supported by two perforated brick walls. A secondary entrance is located on the north façade and consists of a recessed entryway with two electronic sliding doors surmounted by scored concrete siding. Windows are located on the side of the bay projections and are fixed glass. There are louvered vent openings along the lower portion of the building. The interior of the building includes large linoleum tile floors and drop-tile ceilings with a large cut-out on the ceiling at the south entrance that leads to a rotunda on the second floor.

Modifications to the building include the redesigning of the concrete bays. According to original building plans, the concrete bays were precast in a Mid-Century Modern geometric design. Other modifications include replacement doors, the addition of windows along the bay projections, and the replacement of the south façade's porch canopy. The building has experienced some loss of integrity of materials, design, workmanship, and feeling.

The building was designed by the architectural firm Austin, Field, & Fry; the building contractors were the Steed Bros. of Alhambra, California. It was originally constructed to house a library with four sections: biological-applied sciences and physical sciences, technical trades, social science, and the humanities.

4.1.7 Building 7

Building 7, the Science South building, was constructed in 1960 in the Modern style (Figure 15). It is a two-story building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC College campus. The educational building has an L-shaped floor plan with a concrete foundation. The exterior is clad in scored concrete siding with a brick bulkhead along the east. The roof is flat and has a screened projection that holds mechanical equipment. The primary entrance is located on the southwest corner of the building and consists of concrete steps and a concrete ramp that lead to three metal and glass double-doors located within a recessed entryway covered by a flat canopy porch roof. On the south section of the L, the building is single-story. There is a secondary entrance on the east end of this section which consists of a recessed entryway with a metal canopy. This section has no windows, but there are louvered vents on the south façade. On the north façade the exterior siding is flush concrete with the brick bulkhead. The north section of the L consists of two stories. On the inside of the L on the east façade of the north section, there are two rows of fixed metal windows that line the façade. These rows of windows are interrupted by vertical projections that create bays along the façade. On the north façade of the north section is another entrance to the building that has a metal canopy over a recessed entryway. Above this entryway are two columns of windows. The west façade of the north section of the building consists of another entrance that is within a brick and concrete entrance on the northwest corner of the building. The west façade is also lined with two rows of fixed metal windows. The interior of the building includes linoleum tile floors, a floating brick wall within the south entrance, and plaster ceilings.

Modifications to the building include the additional door on the south façade, addition of the canopy on the entrance on the south section of the L's east façade, the replacement of all the windows, the removal of the louvered shade projections over the windows, the canopy over the entrance on north façade, and the new entryway projection on the northwest corner of the building. These modifications have resulted in some loss of integrity of materials, design, workmanship, feeling, and association.

The building was designed by the architectural firm Austin, Field, & Fry.

Figure 15. Oblique view of the west and south façades of Building 7.

Figure 16. Oblique view of the south and east façades of Building 9A.

4.1.8 Building 9A

Building 9A, the Bookstore, was constructed in 1969 in the Modern style (Figure 16, previous page). It is a single-story educational building located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The bookstore has a rectangular plan with a concrete foundation. The exterior is clad in brick siding with vertical concrete post inlays. The roof is flat with concrete parapet caps. The primary entrance is located south façade and consists of a full-width porch canopy made of a poured concrete roof and squared posts. Within this arcade are three recessed entrances surrounded by sidelights and transom windows. There are also two illuminated display cases built into the wall plane as well as two pass-thru counter windows on this façade. There is a secondary entrance located on the west façade that has a metal canopy and a mosaic tile wing wall covering part of the recessed entrance. On the north façade is a sloped driveway that leads to a loading dock. Modifications to the building include replacement doors. The building retains integrity of materials, design, workmanship, feeling, association, setting, and location.

The building was designed as the Student Union and Activity Facility by the architectural firm Austin, Field, & Fry.

Figure 17. Oblique view of the east and south façades of Building 11.

4.1.9 Building 11

Building 11 was constructed in 1960 as the second unit in a new physical science complex on the Mt. San Antonio College campus (Figure 17, above). Building 11 is a generally L-shaped one-story Modern educational building with a basement. A lower, windowless addition at the southwest tip of the building is clad in smooth stucco. The building primarily has brick and smooth stucco cladding and a flat roof with no eaves. A wing wall at the southeast façade of the main wing is clad in smooth stucco with widely spaced scoring. Deep, flat metal-clad cantilevered roofs shelter the open passageways extending across the

northeast and southwest façades of the main wing. A series of stucco-clad pylons support the roof at the south end of the southwest façade of the main wing. A metal pergola extends across the northwest façade. Back-to-back classrooms are accessed from open corridors on both sides of the building, and breezeways provide access through the two wings of the building. Fixed-pane windows and flat metal doors mark the locations of the classrooms. Lecture halls are located in the southwest wing, with a metal pergola and corrugated metal canopies over the doors.

Modifications to the building include the addition to the secondary wing at the western terminus of the original building, the metal pergolas at the northwest façade and at the southwest façade of the secondary wing, and a series of concrete ramps, stairs, and paths with steel tubular railings. These modifications have resulted in some loss of integrity of materials, design, workmanship, feeling, and association.

4.1.10 Building 12

Building 12, the Counseling Support or North Hall building, was constructed in 1963 in the Modern style (Figure 18). It is a single-story educational building located on the located on the northeast side of Temple and Grand avenues on the west side of the Mt. SAC campus. The building has a V-shaped plan with a concrete foundation. The exterior is clad in brick siding. The roof is a low-pitched hipped roof with overhanging eaves and clad in metal. The primary entrance is located within a full-width recessed arcade on the south façade and consists of several doors that lead to offices and classrooms. The porch arcade is supported by large rectangular columns of scored concrete. The doors and windows have been replaced since the building's original construction and consist of metal-framed opaque windows and doors. There is a central breezeway that leads to the rear of the building, which has a parking lot. The north façade of the building consists of multi-light fixed metal-framed windows. There is a chimney near the center of the building along the rear of the ridgeline along the roof. Modifications to the building include the replacement of doors and windows and roofing material. According to original building plans, the roof was made of tile, and the north façade did not have windows. Landscape features include a concrete central courtyard to the south of the building with planting beds and a central walkway. These modifications have resulted in significant loss of integrity of materials, design, workmanship, feeling, and association.

The building was designed as the Agricultural Science Building and originally had animal labs, offices, and classroom space. It was designed by the architectural firm Austin, Field, & Fry.

4.1.11 Buildings 26A/B/D

Buildings 26A, B, and D (Humanities North, Humanities East, and Humanities South, respectively) were constructed in 1967 as a complex of educational buildings for the humanities (Figures 19-21). The Modern-style buildings have flat roofs and are clad in red brick with a wide band of poured concrete at the top and base of the buildings. Because of the grade of the site, the complex is three stories in height at the north and four stories at the south. The three buildings are arranged in an H shape, forming a courtyard at the west and an area to accommodate Building 26C (the Planetarium) at the east. The buildings are connected by continuous open passageways. A series of regularly spaced rectangular concrete columns extend from the ground level to the roof, and metal railings span the distance between the columns. The floor of each passageway provides a shelter for the passageway below, and a wide, deep roof provides shelter for the passageway at the highest level. The complex has interior staircases at each end of the two larger buildings; at the west façades, elevators are housed in scored-concrete elements that project from the brick façade of the building.

The focal point of the complex is the spacious landscaped courtyard. At the east end of the courtyard is a three-story suspended concrete staircase anchored by a multi-story curved brick-clad pylon. At the center of the concave side of the pylon is a dramatic modern clock with stylized numbers and hands separately mounted on the façade.

Figure 18. View of the south façade of Building 12.

Figure 19. View of the east façade of Building 26A.

Figure 20. View of the breezeway between Buildings 26A and B.

Figure 21. View of the second story corridor of Building 26D.

The buildings have back-to-back classrooms accessed from the open corridors. Classrooms have flat metal doors, generally with a single large light. Windows are sparse throughout the complex, consisting of one or two fixed-pane windows for each classroom.

The complex was designed by campus architects Austin, Field & Fry. The contract for the "social science center" for $3,053,000 was awarded to Steed Bros. Construction Co. of Alhambra in March 1966. At the time, the project was said to be the largest construction project in Mt. SAC's history. The complex was planned for 102,000 square feet, including 63 classrooms, five laboratories, 50 offices, and a lecture room in the connecting building. It was to house the sociology, psychology and philosophy, historic and political science, and public service and safety departments (*Progress-Bulletin* 1966).

Modifications to Buildings 26A/B/D include addition of elevators to the west façades of Buildings 26A and 26C and a pedestrian bridge from the second floor of Building 26A north to the parking lot. As a result, there are minor losses of integrity of materials, design, and workmanship. The interiors were not accessible at the time of the survey.

Figure 22. View of the south façade entrance of Building 26C.

4.1.12 Building 26C

Building 26C, constructed in 1967, houses the Planetarium (Figure 22, above). It is associated with the Humanities complex (Buildings 26A/B/D) and is stylistically similar. Building 26C is a Modern one-and-a-half-story building with an irregular floor plan. The nearly flat roof of the building extends slightly upward toward the east. At the west end, it is physically connected to Building 26B, and it intrudes on the space between Buildings 26A and 26D without touching.

Building 26C is clad in red brick with a wide band of poured concrete at the top and base. The exterior walls are vertically scored. Two identical primary entrances are aligned with each other at the north and south façades. The primary entrances are inset into the main mass of the building and are defined by a projecting one-story poured-concrete frame with two square cut-outs on one side and a concrete planter box below. Individually mounted aluminum letters reading "Jim and Eleanor Randall Planetarium" is mounted on a wall of rectangular, vertically laid brown glazed ceramic tile to the side of each door. Each entrance has a double aluminum-framed glass door with a glass transom above and side lights. A series of three bubble-style acrylic skylights is above each entrance. Two secondary entrances consisting of flat metal doors are at the north façade. Other than the lights near the primary entrances, the building has no windows.

Building 26C was built as part of the new social science center (now called Humanities). Constructed at a cost of $88,000, it housed a 50-seat planetarium (*Valley Tribune* 1966). It was designed by campus architects Austin, Field and Fry and built by Steed Brothers Construction Co. of Alhambra (*Progress-Bulletin* 1966).

Exterior modifications to Building 26C appear to be minimal, and it retains high integrity in all seven aspects. Architectural plans show renovations in about 2001. The interior of the Planetarium was not accessible at the time of the survey.

4.1.13 Buildings 28A/B

Buildings 28A and 28B were constructed in 1971 as a single complex to house the Technology Center (Figure 23). The complex has an irregular plan with sections of varying heights. The Modern complex has a flat roof and is clad in red brick with poured concrete with scoring. The east portion of Building 28A is clad in aggregate poured concrete with vertical scoring. There are no eaves, with the exception of the four-story Building 28B to the south, which has a dramatic flat, deep overhang on all four sides. At the west and east façades of Building 28B, a poured concrete slab with a scored grid extends the full height of the building. It is offset from the brick façade, and a door and a vertical row of windows is tucked behind each side of the projection. In contrast, the north and south façades are simple brick-clad walls with squared projecting concrete pilasters extending the full height of the building.

A one-story wing connects Building 28B to Building 26A to the north and east. The primary entrance recessed below a heavy horizontal concrete shelter consists of a double set of aluminum-framed glass doors set in a wall of glazing. A row of evenly spaced vertical windows extends along to the façade to the south of the entrance at the west façade, and a one-and-a-half-story windowless wing housing a large lecture hall is to the north. There is a secondary entrance with a small canopy at the north façade.

The interiors of the west and south sections of the complex consist of double-loaded interior corridors with classrooms accessible on both sides. The ceilings are acoustical tile with recessed fluorescent lighting, the walls are painted brick and plaster, and the floors are asphalt tile. There is an elevator and two staircases. The staircases have mosaic tile wainscoting, an ornamental feature that is repeated in the first-floor hallways.

The Technology Center opened in the fall of 1971, although the shop-laboratory was in use by fall of 1969 It housed space for aeronautics, machine tool, drafting, electronics, and other technical vocational programs (*Progress-Bulletin* 1971). It was designed by architects Austin, Field & Fry, who were responsible for the redevelopment plan of the campus in the late 1950s and who designed several of the individual buildings added to the campus in the postwar period and into the 1970s.

Buildings 28A and 28B appear to be minimally altered, although some of the corrugated concrete sections toward the northeast appear to have been added later. The buildings retain high integrity in all seven aspects.

Figure 23. Oblique view of south and east facades of Building 28 A/B.

4.1.14 Building 47

Building 47, the Maintenance and Facilities building, was constructed in 1968 in the Modern style (Figure 24). It is a single-story maintenance building located on the southwest side of Temple Avenue and Service Road on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in baked enamel finished galvanized steel siding with a concrete block bulkhead. The roof is a low-pitched side gable roof with overhanging eaves and clad in metal. The primary entrance is located on the north façade. The windows are primarily aluminum sliding windows. There are also roll-top metal garage doors for maintenance equipment and vehicles. On the gable ends are large steel frames that sit over the steel siding. There is no ornamentation on the building. The interior of the building includes tile and carpet floors with garage spaces and offices.

Constructed as the Maintenance and Operations building, it was designed to house five offices and shops for carpenters, electricians, plumbers, general maintenance, painters, and gardeners. It was part of a larger complex which included Building 48 to consolidate facilities, maintenance, operations, receiving-distribution, and transportation departments in a single modern complex called the College Service Center. The cost was $1.1 million, including outdoor storage areas and the construction of Bonita Drive. The complex was designed by Mt. SAC campus architects Austin, Field & Fry as an element of the college master plan, with Hartman Construction Company of San Bernardino as contractor. The modern concrete block-and-steel buildings are Type V-N construction. Groundbreaking for the center was August 1967, with completion on August 2, 1968 (Mt. SAC c. 1948).

Figure 24. Oblique view toward the west of the northeast and southeast façades of Building 47.

The center originally included two buildings, as well as parking lots and storage yards. Building 47, with an area of 21,000 square feet, was dedicated to maintenance and operations and included air-conditioned offices, locker rooms, and custodian, grounds, plumbing, heating-ventilating, electrical, paint, and carpenter shops. Building 48, with an area of 34,450 square feet, was dedicated to transportation and receiving-distribution. It included offices, a large warehouse, hydraulic dock levels, and a three-bay garage with two hoists.

Modifications to Building 47 include the replacement metal-framed windows on the northeast corner of the building. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

4.1.15 Building 48

Building 48, the Warehouse and Transportation building, was constructed in 1968 in no particular architectural style (Figure 25). It is a single-story maintenance building located on the southwest side of Temple Avenue and Service Road on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in vertically-oriented steel siding with a concrete block bulkhead. The roof is a low-pitched side gable roof with overhanging eaves and clad in metal. The primary entrance is located on the north façade. The windows are primarily multi-light steel security windows. The building also has metal louvered vents under the roofline and over the roll-top metal garage doors. There is no ornamentation on the building. The interior of the building includes bays for equipment and vehicles as well as a large warehouse space with a concrete floor, a tall exposed metal frame ceiling, and metal shelving for storage.

Figure 25. Oblique view toward the south of the northwest and northeast façades of Building 48.

The building was constructed as the Maintenance and Operations building and was designed to house three offices and warehouse storage space as well as an adjustable dock by the architectural firm Austin, Field & Fry.

There appear to be no major modifications to the building. As such, the building retains integrity of design, materials, workmanship, feeling, association, location, and setting.

4.1.16 Farm Buildings History

The Mt. SAC School Farm has been an integral part of the campus since at least the postwar era. In the 1950s, there were areas dedicated to horticulture, turkeys, chickens, pigs, and cattle. There were orchards of citrus and avocados, as well as vineyards. During the 1950s, a beef barn and corrals, an agricultural engineering building, and tractor storage buildings were constructed. In the 1970s, the animal sciences curriculum was expanded, and a veterinary laboratory and small animal vivarium (F5) were built (Hall and Pietzsch 1996:77). The buildings on the farm were simple utilitarian structures that were initially considered temporary. The first permanent agricultural facility to be built at the college was the agricultural sciences building (Building 12), which is on the main campus and not a part of the farm per se. In 1969, campus architects Austin, Field & Fry reported on campus buildings that did not conform to the earthquake specifications of the Field Act. Among the 13 buildings slated to the replaced or remodeled during the 1969-1970 school year, most were in the agricultural sciences area (Mt. SAC archives, "SAC Accepts Campus Architectural Report," no source, n.d.).

Building F1

Building F1, the Horticulture Unit/G3, was constructed in 1959 in no particular architectural style (Figure 26). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. It has a rectangular, open plan sitting on a poured-concrete foundation. The moderately pitched front-gabled roof is covered in asphalt shingles. Three turban-style aluminum ventilation units sit at the ridgeline of the roof. The walls consist of horizontal wood boards on the lower portion and screens or aluminum slider windows on the upper portion. A Greenhouse (G3) is connected to the north end of the building. The entrance is a flat double metal door at the south façade.

At the interior a wall of glazing with a central door separates Building F1 from Building G3. The ceiling is exposed wood beams with plywood in between. The major beams are supposed by round steel poles. The floor is poured concrete. Lighting is rows of hanging fluorescent fixtures. Modifications to the building include the replacement windows on the east façade. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Horticulture Head House by the architectural firm Austin, Field & Fry.

Building F2A

Building F2A, the Horticultural Offices, was constructed in 1971 in no particular architectural style (Figure 27). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. It has a rectangular plan. The front-gabled roof has a small clerestory at the ridgeline and is covered in corrugated metal. Wide eaves at the north and south façades have exposed rafters. There are large centrally located barn-style doors at the west and east façades. The walls and doors are constructed of corrugated metal. Horizontal openings at the top of the south wall are covered in wire screen. The interior is a single open space. It has exposed wood beam ceilings and poured concrete and dirt flooring. Lighting consists of strings of bare lightbulbs. Modifications to the building include the boarding over of windows on the east and west façades with wood paneling, and replacement of the primary entrance door. The building has undergone loss of integrity of materials, design, workmanship, and association.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.

Building F2B

Building F2B, the Horticultural Offices, was constructed in 1960 in no specific architectural style (Figure 28). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a front gable roof clad in standing seam metal sheets. Wide eaves at the north and south façades have exposed rafters. The primary entrance is located on the west façade and consists of a top hinged sliding metal door. A row of metal-framed windows line the south façade and sit underneath the overhanging eaves. There are no windows on the north façade. The interior is a single open space. It has exposed wood beam ceilings and poured concrete and dirt flooring. Modifications to the building include the boarding over of the north façade with wood paneling, and replacement of the east façade door. The building has undergone loss of integrity of materials, design, workmanship, and association.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.

Figure 26. View of the south façade of Building F1.

Figure 27. View of the west façade of Building F2A.

Figure 28. View of the west façade of Building F2B.

Building F3A

Building F3A, the Old Dairy Unit, was constructed in 1960 in no particular architectural style (Figure 29). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in cement plaster siding. The roof is a front gable roof clad in standing seam metal sheets. The primary entrance is located on the west façade and consists of two metal-framed glass door. A row of metal-framed windows line the south façade and sit underneath the overhanging eaves. There are also galvanized metal vertical louvers on the south end of the building that is on the south and north façades. There is a breezeway on the south and north façades that is connected by the continuation of the front gable roof and has a sliding metal door. Modifications to the building include the removal of a concrete wall on the north façade. Despite these modifications, the building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Dairy Unit by the architectural firm Austin, Field & Fry.

Building F4A

Building F4A, the Swine Market Pens, was constructed in 1971 in no specific architectural style (Figure 30). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in galvanized metal siding on the west end of the building. The building is mostly unenclosed on the east part of the building, and has no exterior walls. There are concrete curbs along the east, north, and south façades. There appear to be no modifications to the building. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed as the Swine Unit by the architectural firm Austin, Field & Fry.

Figure 29. Oblique view of the north and west façades of Building F3A.

Figure 30. Oblique view of the north and west façades of Building F4A.

Building F5

Building F5, the Vivarium, was constructed in 1971 in no particular architectural style (Figure 31). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The primary entrance is located on the west façade and consists of a single flush wood door. There is a secondary entrance on the south façade and consists of a single flush wood door next to double partially-vented doors. The east end of the building is open on the south façade. Modifications include replacement siding and possible alterations in fenestration. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

Figure 31. View of the west façade of Building F5.

Building F6A

Building F6A, the Breeding Barn, was constructed c. 2000 in no specific architectural style (Figure 32). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in metal shed siding. The roof is a front gable roof with shed roof extensions that are clad in standing seam metal sheets. The primary entrance is located on the east façade and consists of a top-hinged sliding metal door. A row of metal-framed windows line the south and north façades that sit underneath the overhanging eaves of the front gable roof. There are secondary entrances on the north and south façades and a corral on the south end of the building. The interior is made of metal-framed horse stalls with a concrete tile floor.

Figure 32. Oblique view of the east and north façades of Building F6A.

Building F7

Building F7, the Equipment Tech Unit, was constructed in 1971 in no specific architectural style (Figure 33). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a front gable roof clad in standing seam metal sheets. The primary entrance is located on the east façade and consists of a top-hinged sliding metal door. The windows are metal industrial jalousie windows. Modifications to the building include the boarding over of the north façade with wood paneling and replacement of the east façade door. The building retains integrity of materials, design, workmanship, location, setting, feeling, and association.

The building was constructed by the architectural firm Austin, Field & Fry.

Building G2

Building G2, the Greenhouse, was constructed in 1963 in no particular architectural style (Figure 34). It is a single-story agricultural building located on the southeast side of Farm Road and Bonita Drive on the east side of the Mt. SAC campus. The building has a rectangular floor plan with a concrete foundation. The exterior is clad in corrugated metal sheet siding. The roof is a curved semicircular roof clad in vinyl sheets. The primary entrance is located on the south façade and consists of a top-hinged sliding metal door. There are no windows on the building. The building appears to be completely remodeled from its original construction.

The building was constructed as the Poultry Warehouse by the architectural firm Austin, Field & Fry.

Figure 33. View of the east façade of Building F7.

Figure 34. View of the south façade of Building G2.

4.1.17 Wildlife Sanctuary

In 1965, Mt. SAC college officials began to make plans for the Wildlife Sanctuary to the east of the intersection of Temple and Grand avenues, at a corner where a gas station had been considered (*Los Angeles Times* 1965). Located on an 18-acre triangular site, the proposed sanctuary was organized around an existing flood channel, which had been a naturally flowing creek until the 1960s (historicaerials.com 1953, 1964). In addition to extensive planting, landscaping included a lake, marshes, a meadow, a pond, an amphitheater, and a network of bridges and paths (Figure 35). The main goal was to use the landscaped area for educational purposes, but it was also intended for wildlife observation and recreation by the public. Paul Shaddle, chair of the biological sciences department, and Professor Bill Hawkins developed the plan for the Wildlife Sanctuary (*Valley Tribune* 1965), which was designed by Santa Barbara landscape architect John R. Russell and constructed by contractor Roy C. Barnett. The Sanctuary was completed in March 1967, but did not open until later that year to allow native animals displaced by construction to return and give vegetation a chance to grow (*Walnut Valley Bulletin* 1967). Biology students were trained to conduct tours for faculty, students, and the public.

Figure 35. View of a dirt path and field within the Wildlife Sanctuary.

The current Wildlife Sanctuary is a landscaped area situated on a fenced 10-acre site to the east of the intersection of Temple and Grand avenues. To the northeast of the Sanctuary are the campus soccer fields and a parking lot. The primarily heavily wooded Sanctuary includes a Walnut Woodland, a Native Plant Exhibit, a Lake Shelter, Sycamore Woodland, as well as open grassy areas. Vegetation consists of a wide variety of both native and non-indigenous species, including sumac, toyon, bay trees, live oak, sycamore, and black walnut. Within the Sanctuary are water features including a lake, a swamp, and a pond, with a central stream running through the site in a northwest to southeast direction. A system of bridges, paths, and walkways provides pedestrian circulation throughout. Several small amphitheaters, shelters, and

seating areas are scattered throughout the site. At the time of the survey, construction was under way to expand the Sanctuary by continuing the creek to the southeast.

A hill to the southeast of the Sanctuary displays lettering reading "MSAC" in white-painted concrete on the north and south flanks. According to Sanctuary personnel, the hill was added to the Sanctuary as a mitigation for the widening of Grand Avenue, which meant a loss of acreage to the Sanctuary (personal communication, Janine Petersen, March 25, 2016).

4.1.18 Previously Documented Contributing Resources

Buildings documented as contributing resources to the historic district in 2002 had not been surveyed for more than five years. As such, during the current survey effort, those buildings were re-documented and included Buildings 1B/C, 3, 10, 17, 18, 19, and 20 (Figures 36-40). All buildings were found to still be extant and that no major alterations had taken place since they were recommended eligible in 2002.

Buildings 27A, B, and C and Building 9C had been documented in 2012, and in accordance with guidelines from the California State Historic Preservation Office, did not require resurvey as that survey look place within five years. However, the prior survey report was reviewed (Davis 2012), and the buildings were visually inspected during this effort to confirm that no major alterations had taken place.

Figure 36. Detail of mosaic on east façade of Building 1B/C.

Figure 37. Primary (north façade) of Building 3.

Figure 38. View of the west façade of Building 10.

Figure 39. Oblique of east and north façades of Buildings 17, 18, 19.

Figure 40. Oblique view of the west and south façades of Building 20. Building 18 is to the left of the photo.

4.2 ARCHAEOLOGICAL SURVEY

Intensive pedestrian archaeological survey was conducted by ASM Senior Archaeologist Sherri Andrews. Survey was undertaken primarily within the area of the Stadium and the Mt. SAC Wildlife Sanctuary, as the other Project areas are currently developed with ground surfaces obscured by buildings, sidewalks, parking lots, and introduced landscaping.

The Stadium area survey was conducted on January 21, 2016. This entire area has been heavily modified by construction of the Stadium and its surrounding facilities, as well as additional sports fields, parking lots, etc. (Figure 41). There was little evidence of extant original landforms or ground surfaces in the area. Only areas of exposed soils within and surrounding the structures were available to be examined for evidence of the presence of prehistoric or historic artifacts or deposits.

Figure 41. View looking southeast of disturbed ground west of Stadium's press box (50F).

As some modifications in the form of additions to the Mt. SAC Wildlife Sanctuary are also part of the Project, the Sanctuary was surveyed on March 26, 2016. Descriptions of the history of the Sanctuary (see above) indicate that its creation included extensive landscaping within its 10-acre boundaries. As such, while this represents one of the last open spaces on the campus, it is unclear the degree to which the ground surface and original features and topography were modified at that time or since. As in the Stadium area, all accessible areas within the Sanctuary were examined for the presence of archaeological artifacts or deposits. Accessible areas were primarily found along the edges of the maintained paths that have been constructed throughout the Sanctuary and around areas cleared for use as teaching locales. In fact, on the date of the survey, a large group of school children was present in the Sanctuary for a day-long teaching experience about Native American lifeways. Additionally, it was observed that significant ground disturbance was already underway in the area to the south of the Sanctuary where its expansion will be taking place. That area was under active construction and as such, not accessible for survey.

4.3 SUMMARY

No previously undocumented archaeological artifacts, features, or deposits were encountered or identified within the Project area as a result of the archaeological surveys.

Twenty-two potential contributing resources to the Mt. SAC Historic District were documented as a result of this survey from November 2015-March 2016. Of those 22, one was determined to not be old enough to be a potential contributor (F6), and one was found to not retain sufficient integrity (12). Of the 24 buildings previously identified as contributing resources to the historic district, 10 were found to have been demolished, and one additional resource was documented as having lost integrity (12A/B).

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5. EVALUATION OF HISTORIC RESOURCES

5.1 MT. SAC HISTORIC DISTRICT

ASM concurs with our prior recommendation of eligibility of the Mt. SAC Historic District, with the addition of 20 additional contributing resources, and a boundary expansion as indicated on Table 4 and Figure 42. Consistent with our prior recommendation, the district is recommended as eligible for the CRHR under Criterion 1 at the local level, under the theme of Education, for its association with the development of Walnut, California, and its surrounding communities. The period of significance for the district is 1946-1972, reflecting the date the present site of the college became its permanent residence, its early years of development and growth, and ending with the construction of the last major campus facility (the Marie T. Mills Aquatic Facility) to be built until the 1990s, before the growth of the college plateaued (only two buildings being constructed between 1972 and 1990). Each eligible building/structure contributes to the educational theme of the historic district, was built during the period of significance, and is located within the boundaries of the historic district. All contributing resources also maintain good individual integrity in all seven aspects.

ASM seriously considered whether the historic district as a whole retains sufficient overall integrity, given the new construction and demolition that has taken place within the district since it was first identified in 2003 (Figure 43). Four major permanent buildings have been constructed since 2003. Buildings 60 and 61 were built in 2006 and 2009, respectively. More recently, the Design Technology Center, Building 13 (2012) and the New Food Services building (2015) have been constructed. A few other buildings have been constructed in the south and east area of campus. Building 9B, built in 1994, was significantly expanded in 2009. Additionally, 10 buildings originally identified as contributing resources in 2003 have since been demolished, and one more has lost integrity. As a result of this evaluation, 44 contributing resources to the Mt. SAC Historic District have now been identified. Of those 44 contributing resources, 33 (75 percent) remain as eligible contributing resources. The NRHP bulletin *How to Apply the National Register Criteria for Evaluation* discussion on integrity for historic districts notes "[f]or a district to retain integrity as a whole, the majority of the components that make up the district's historic character must possess integrity even if they are individually undistinguished" (National Park Service 1991:46). The Mt. SAC Historic District retains significantly more than a majority of its contributing resources, and despite the four major buildings added to the historic center of campus, the district still retains sufficient continuity and cohesion to convey the sense of its historic environment from the end of its period of significance. A comparison of its appearance in 1972 to a contemporary aerial photograph is a good illustration of the similarities and differences (Figures 44 and 45).

Furthermore, NRHP bulletin *How to Apply the National Register Criteria for Evaluation* states that for properties eligible for association under Criterion A (comparable to CRHR Criterion 1), "integrity of design and workmanship might not be as important to the significance of the property" as the other aspects of integrity (National Park Service 1991:48). Although the Mt. SAC Historic District retains sufficient integrity in all seven aspects, it especially retains those most important aspects of integrity for associational significance: location, setting, materials, feeling, and association. Finally, it passes the "basic integrity test" as defined by the NRHP: "whether a historical contemporary would recognize the property as it exists today" (National Park Service 1991:48).

The historic district is not recommended as eligible under CRHR Criterion 2 or Criterion 3. The district is also not recommended as eligible under CRHR Criterion 4. It is a common property type in that it does not have the potential to provide information about history or prehistory that is not available through historic research.

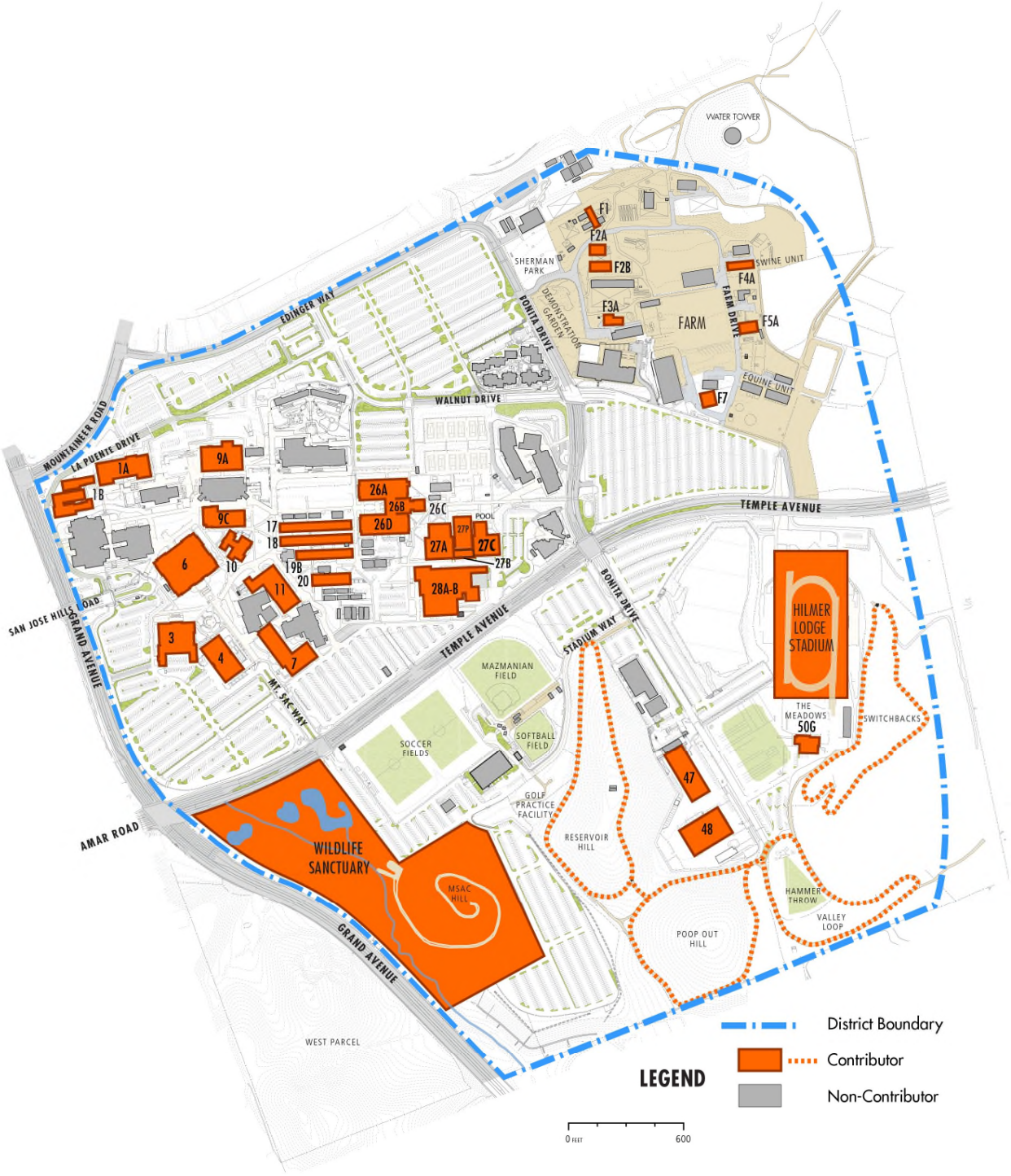

Figure 42. Mt. SAC Historic District identifying contributing resources for comprehensively surveyed campus, April 2016.

Figure 43. Historic aerial photograph of the Mt. SAC campus at the end of the period of significance, 1972.

(*Courtesy of Historicaerials.com*)

Figure 44. Current aerial photograph of the Mt. SAC campus.

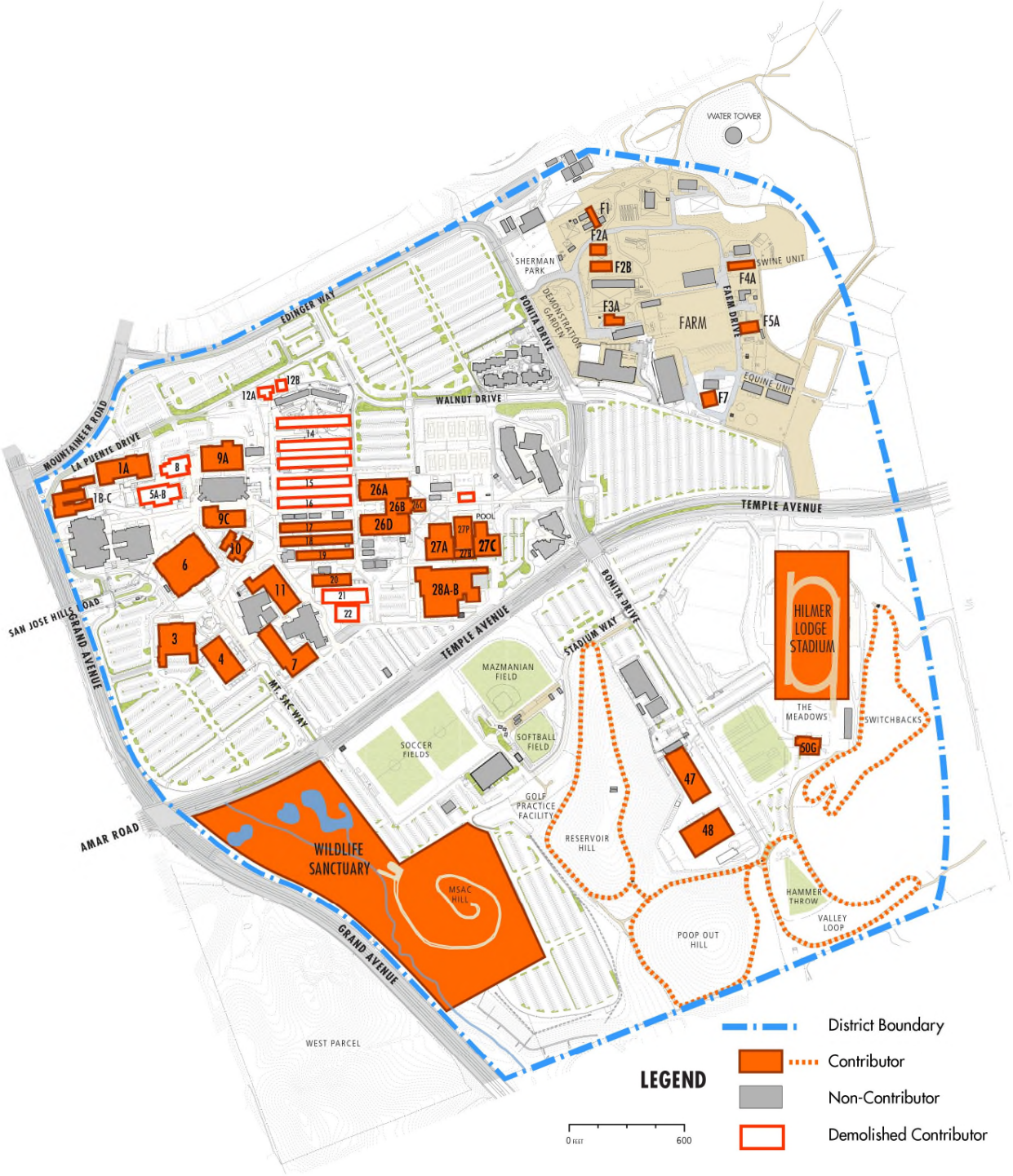

Figure 45. Mt. SAC Historic District illustrating extant contributing resources and demolished contributing resources since 2003 establishment of historic district, April 2016.

Several buildings are non-contributing resources. Counseling Support (12) and Oden House (12A/B) no longer retain sufficient integrity to the period of significance—as such, they are not recommended as contributors. ASM concurs with our prior recommendation that the Mountie Grill (19C) is not directly associated with the theme of Education, and therefore is a non-contributing resource. Finally, although Mt. SAC's current records indicate that the Breeding Barn (F6A/B) was constructed in 1971, the building is not evident on aerial photographs until 2002. It is likely that the date of construction on record is incorrect. As the Breeding Barn (F6A/B) was not constructed during the period of significance, it is also a non-contributing resource. All new buildings constructed within the historic district are also non-contributing resources, as illustrated on Figure 42.

Table 4. Contributing and Non-Contributing Resources to the Mt. SAC Historic District, April 2016*

Building Number	Building Name	Current Status	Contributing Resource	Individually Eligibility	CA SHPO Status Code
1A	Art Center	Extant	Yes		3CD
1B/C	Art Center/Gallery	Extant	**Yes**		**3CD**
3	Gym	Extant	**Yes**		**3CD**
4	Administration	Extant	**Yes**		**3CD**
5/5A	Information Educational Technology	Demolished	No longer		
6	Library	Extant	**Yes**		**3CD**
7	Science South	Extant	**Yes**		**3CD**
8	Campus Café	Demolished	No longer		
9A	Bookstore/Auxiliary Services	Extant	**Yes**		**3CD**
9C	Student Life Center	Extant	**Yes**		**3CD**
10	Founder's Hall	Extant	**Yes**		**3CD**
11	Science North	Extant	**Yes**		**3CD**
12	Counseling Support	Extant	**No**		6Z
12A/B	Oden House	Extant	**No longer**		6Z
13	Design Technology	Demolished	No longer		
14N	Biology	Demolished	**No longer**		
14S	History/Geography/Political Science	Demolished	No longer		
15	Modern Languages	Demolished	No longer		
16	Building 16	Demolished	No longer		
17	Building 17	Extant	**Yes**		**3CD**
18	Building 18	Extant	**Yes**		**3CD**
19A	Building 19A	Extant	**Yes**		**3CD**
19B	Building 19B	Extant	**Yes**		**3CD**
19C	Mountie Grill	Extant	No (Davis 2012)		6Z
20	Building 20	Extant	**Yes**		**3CD**

21	Building 21	Demolished	No longer		
22	Welding	Demolished	No longer		
26A/B/D	Technology Center	Extant	**Yes**		**3CD**
26C	Planetarium	Extant	**Yes**		**3CD**
27A	Exercise Science/Wellness Center	Extant	**Yes**		**3CD**
27B	Pool	Extant	**Yes**		**3CD**
27C	Physical Education Center	Extant	**Yes**		**3CD**
28A/B	Technology Center	Extant	**Yes**	Yes, Criterion 3	3CB
47	Maintenance/Facilities	Extant	**Yes**		**3CD**
48	Receiving/Transport	Extant	**Yes**		**3CD**
F1	Horticulture Unit/G3	Extant	**Yes**		**3CD**
F2A	Farm Offices	Extant	**Yes**		**3CD**
F2B	Horticulture Storage	Extant	**Yes**		**3CD**
F3A	Old Dairy Unit	Extant	**Yes**		**3CD**
F4A	Swine Market Pens	Extant	**Yes**		**3CD**
F5	Vivarium	Extant	**Yes**		**3CD**
F6	Breeding Barn	Extant	**No**		6Z
F7	Equipment Tech Unit	Extant	**Yes**		**3CD**
F9	Livestock Pavilion	Demolished	**No longer**		
G2	Greenhouse	Extant	**Yes**		
50A-H	Stadium	Extant	**Yes**	Yes, Criterion 1	3CB
	Wildlife Sanctuary	Extant	**Yes**		**3CD**

*Recommendations date to April 2016. Status of each building surveyed is based on date of survey of that specific building, conducted between November 2015 and March 2016.

5.2 INDIVIDUAL ELIGIBILITY

ASM carefully considered each of the contributors to the historic district to determine whether they are individually eligible for the CRHR under Criteria 1, 2, 3, or 4. With the exception of the Hilmer Lodge Stadium (50A-H) and the Technology Center (28A/B), none of the contributors meet these criteria, as described below.

ASM considered whether any of the contributors are eligible under CRHR Criterion 1 for association with the themes of Education, Recreation, or other any other broad historical theme. However, with the exception of the Hilmer Lodge Stadium (50A-H), none of the contributors were found to be good representations of any of these themes on a larger regional level, and therefore none are recommended individually eligible under Criterion 1. ASM also considered whether any of the contributors are eligible under CRHR Criterion 2 for association with the lives of any person of historical significance. As no evidence of such association was found, none of the contributors are recommended individually eligible under Criterion 2.

Additionally, ASM considered whether any of the contributors are eligible under CRHR Criterion 3 for architectural significance. ASM considered each of the contributors as examples of the Spanish Colonial Revival or Modern architectural styles, or a vernacular property types. However, with the exception of Buildings 28A/B, none of the contributors individually embody the distinctive characteristics of these architectural style or method of construction. The original design of Building 6 was a good representation of Modernism, however, it has experienced too many alterations and does not retain sufficient to be individually eligible. Mt. SAC campus architects Austin, Field & Fry, designers of the [1959] master plan and of several of the college's buildings addressed in this report, were prominent architects in Los Angeles County. However, their works were not important or influential enough for them to be considered master architects. Therefore, none of the contributors are recommended individually eligible under Criterion 3.

Finally, ASM considered whether any of the contributors are eligible under CRHR Criterion 4. They are all common property types that do not have the potential to provide information about history or prehistory that is not available through historic research. Therefore, none of the contributors are recommended individually eligible under Criterion 4.

5.2.1 Technology Center (28A/B)

The Technology Center (28A/B) embodies the distinctive characteristics of the Modern architectural style. The building exhibits this style through its character-defining features, which include exterior materials of concrete and brick veneer, the wide cantilevered overhanging flat roof, the heavy rectangular Neoclassical pilasters on Building 28B, the full-height stepped-out concrete plane at the east and west façades of Building 28B, the irregular massing, and the lack of emphasis on entrances in the recessed central entrance between buildings 28A and 28B and the doors at the sides of the concrete planes. The building has not experienced any significant alterations and as such retains a high degree of integrity of materials, design, and workmanship–the most important aspects of integrity under Criterion 3 (National Park Service 1991:48). In comparison with other local examples of the Modern style in Walnut, specifically with other examples found on the Mt. SAC campus, the building is a relatively good local representation of Modernism (National Park Service 1991:47). Therefore, the Technology Center (28A/B) is recommended individually eligible for the CRHR under Criterion 3 under the Theme of Architecture, with a period of significance of 1971.

5.2.2 Hilmer Lodge Stadium (50A-H)

Hilmer Lodge Stadium (50A-H) played a prominent role at the school's early athletic program and reflects the college's long-standing efforts to foster student participation in extracurricular and recreational activities. The Stadium was one of the first buildings constructed for the new college in 1948. Mt. SAC has since hosted several national and international track and field events. The Mt. SAC relays soon became one of the world's largest track and field meets, held annually in April. As a result of the events that took place at Hilmer Lodge Stadium, Mt. SAC garnered a worldwide reputation in the third quarter of the twentieth century as one of the largest venues for track and field relays. Historically, athletic and /recreation has been a major influence in the educational focus of the college, which has played a strong role regionally as well at the community college level. Therefore, Hilmer Lodge Stadium (50A-H) is recommended individually eligible for the CRHR under Criterion 1 under the Themes of Education and Recreation, with a period of significance of 1948-1972.

6. IMPACTS ASSESSMENT

6.1 DIRECT IMPACTS

6.1.1 Demolition

Because of the demolition proposed, the Project poses the potential to cause an adverse direct impact (Figure 46). The Project will result in the demolition of two contributors within the Mt. SAC Historic District: the Stadium (50A-H) and Oden House (12A/B). Additionally, the Stadium is an individually eligible CEQA historical resource. In 2010, IDS Group conducted a structural assessment to identify necessary repairs to make the Stadium (excluding the Press Box) safer and more functional and to minimize future damage. IDS Group estimated the cost of those repairs at $560,225 (Appendix E).

The demolition of the Stadium constitutes an adverse effect because the Project results in the complete loss of contributing resources to a historic district, as well as an individually eligible resource. As such, the Project will result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

As Oden House (12A/B) is no longer a contributing resource to the historic district, its demolition will not result in a direct adverse impact on a CEQA historical resource.

6.1.2 Renovation

Because the FMP proposes renovation of the Library (6), Bookstore (9A), and Technology Center (28A/B) the Project poses the potential to cause an adverse direct impact to those buildings (Figure 46). Specific designs for the renovations and/or additions have not yet been developed. As long as the designs for the renovations and/or additions to those buildings comply with the SOI *Standards for Rehabilitation* (see Section 2.3), those aspects of the Project will not result in a significant direct impact pursuant to CEQA Section 15064.5.

An architectural historian or historic architect who meets the SOI *Professional Qualification Standards* (https://www.nps.gov/history/local-law/arch_stnds_9.htm) for either of those two disciplines must review the proposed architectural drawings and renderings to ensure compliance with the *Standards for Rehabilitation.* It is preferable that this qualified individual be involved with the project from its earliest conception to ensure adherence to the Standards for Rehabilitation and to minimize alterations to plans later in the design process.

6.2 INDIRECT IMPACTS

The new construction proposed as part of the Project poses the potential to cause adverse indirect visual impacts. Visual impacts upon the historic district and individually eligible resources potentially include views to and from the district and buildings. Mid-ground views of the historic district towards and from the contributing resources are character-defining features. Distant views are not a character-defining feature of the historic district, due to the dense concentration of buildings and/or topography of the land.

Traveling west on Temple Avenue, the Stadium is the first building or area of the campus that is visible upon approaching the school. The Stadium is a visual demarcation of the campus at this location, and of the eastern edge of the campus and historic district. As a prominently sited building, demolition of the Stadium will result in a significant change to the historic district's integrity of location, setting, design, materials, workmanship, feeling, and association. As such, its demolition constitutes not just a direct impact, but an adverse visual impact on the historic district as a whole. At the time of this analysis, plans have not yet been drawn for the proposed new stadium, so it is not possible to assess whether the new Stadium would be a beneficial or adverse visual impact.

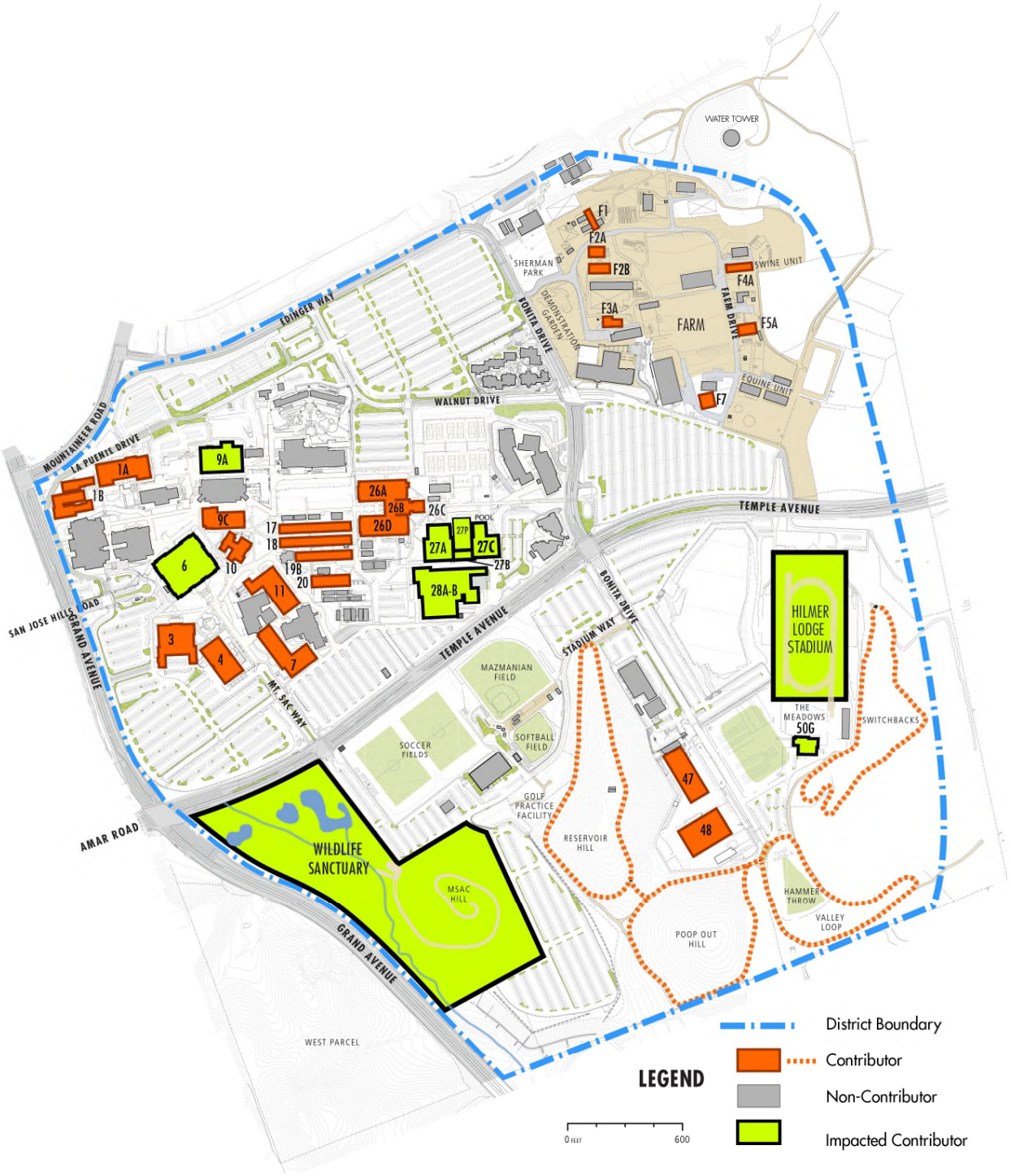

Figure 46. Contributing resources to the Mt. SAC Historic District that could potentially be impacted by the SEIR.

New construction is also proposed for the expansion of the Wildlife Sanctuary. Based on ASM's conversation with Mt. SAC staff familiar with the design plans, it does not appear that the proposed expansion will result in an adverse indirect impact on the historic district. The design of the proposed expansion will be visible from the Wildlife Sanctuary, but it will not introduce an element that is incompatible with the criteria under which the property is eligible nor will it result in obstructive views. The design will be compatible with the character-defining features of the Wildlife Sanctuary. The overall impact to the historic district's integrity of setting, feeling, or association as a whole is minimal; there is no impact on the historic district's integrity of location, design, materials, and workmanship. As such, this aspect of the project will not result in any adverse indirect visual impacts.

A pedestrian bridge will be constructed across Temple Avenue connecting the Physical Education Complex to Parking Lot F. The pedestrian bridge will be visible from individually eligible Buildings 28A/B; however, viewshed from that resource is not one its character-defining features. This pedestrian bridge will create a minor, partial visual interruption of the mid-ground views from contributing resources in the historic district. As the visual interruption is partial and minor, the overall impact to the historic district's integrity of setting, feeling, or association as a whole is minimal; there is no impact on the historic district's integrity of location, design, materials, and workmanship. As such, this aspect of the project will not result in any adverse indirect visual impacts.

Finally, the Project includes a series of special annual events to be held on campus that include the Mt. SAC/Brooks Relays, the Mt. SAC XC Invite, and 2020 Olympic Track & Field Trials in 2020. It is not anticipated that any of those events will result in adverse indirect visual impacts. Any disruption in the historic views from and towards the historic district and its contributing resources will be a temporary visual intrusion, and therefore, not adverse.

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7. MITIGATION MEASURES

7.1 ARCHAEOLOGICAL MITIGATION MEASURES

The archaeological investigations discussed above have not identified any prehistoric sites, historic sites, isolated artifacts, or human remains within Project boundaries. However, as the majority of construction undertaken on the Mt. SAC campus took place before the institution of the NHPA and CEQA, the Project areas have never been fully assessed for the presence or absence of archaeological remains. Further, various local Native American tribes claim this area as part of their ancestral and traditional territory (see Appendix C). As such, there is a possibility of unanticipated and accidental archaeological discoveries during ground-disturbing Project-related activities.

No mitigation measures specific to archaeology exist within the current EIR documents. We recommend that the mitigation measures detailed below should be undertaken to minimize any potentially significant impacts in accordance with CEQA.

- 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.
- 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.

7.2 HISTORIC RESOURCE MITIGATION MEASURES

The Project, as proposed, will result in adverse direct and indirect visual impacts to the Mt. SAC Historic District and individually eligible Hilmer Lodge Stadium (50A-H). The preferred mitigation approach is project redesign to avoid demolition of a CEQA historic resource.

- **Avoid Demolition, Evaluate Feasible Options**
  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

- **Mitigation Measures if No Feasible Alternatives**
  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 (2) Hilmer Lodge Stadium consistent with *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 of the campus website. The Facilities Planning & Management Department shall ensure compliance.

  a) HABS Level II Narrative Historical Report
  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.

  b) HABS Level II Large-format Photographs
  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.

To date, several buildings have already been photographed to HABS Level II standards, including the following: 08, 12A, 17, 18, 19B, 20, 27A-C, and 50.

c) HABS Level II Reproduction of select existing drawings (if available).
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.

d) Establishment of Heritage Hall
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 the 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.

e) Establishment of a "Mt. SAC History" section on the school's website
To further recognition of the history of Mt. SAC, a page or series of pages should be developed for inclusion on the school'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.

Although the above recommended mitigation measures are recommended by ASM to lessen the significant adverse impacts, demolition or complete loss of eligibility of a CEQA resource cannot be mitigated to less than significant. As such, even after the implementation of the mitigation measures, the Project will still result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

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8. CUMULATIVE IMPACTS

In consideration of cumulative impacts within the APE, several prior Projects have been conducted that resulted in adverse impacts. The 2003 Facilities Master Plan resulted in the demolition of several contributing resources to the Mt. SAC Historic District, as identified by Tim Gregory (Gregory 2003). The 2015 Facilities Master Plan resulted in the demolition of several additional contributing resources to the Mt. SAC Historic District, as identified by Gregory in 2003 and ASM in 2012 (Gregory 2003; Davis 2012). The Cultural Resources Survey conducted by Applied EarthWorks, Inc. for the current adjacent West Parcel Solar Project did not identify any impacts to historic resources (Thomas and Smallwood 2014).

As the prior two Facilities Master Plans identified adverse impacts, combined with the currently identified adverse impacts, the Updated FMP and PEP will result in adverse cumulative impacts to a CEQA historic resource, specifically, the Mt. SAC Historic District.

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9. CONCLUSION

As a result of this cultural resources report, ASM surveyed 22 potentially new contributing resources to the Mt. SAC Historic District. Twenty of those are recommended as eligible contributing resources (3CD) to Mt. SAC Historic District. As the district retains approximately 75 percent of its eligible contributing resources, ASM recommends that the Mt. SAC Historic District continues to be eligible for the CRHR under Criterion 1, for the Theme of Education, with a period of significance of 1948-1972. ASM also identified two individually eligible properties: Hilmer Lodge Stadium (50A-H) eligible under Criterion 1, for the Themes of Education and Recreation, with a period of significance of 1948-1972; and the Technology Center (28A/B) under Criterion 3, for the Theme of Architecture, with a period of significance of 1971.

The Mt. SAC Historic District, Hilmer Lodge Stadium (50A-H), and the Technology Center (28A/B) are located within the Project APE. The Mt. SAC Historic District and Hilmer Lodge Stadium (50A-H) are directly and indirectly impacted by the Project. The demolition of the Hilmer Lodge Stadium (50A-H) constitutes an adverse direct and indirect visual effect as the loss of individually eligible and contributing resources to the Mt. SAC Historic District. As such, the Project will result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Section 21084.1 and a significant direct impact pursuant to CEQA Section 15064.5.

The preferred mitigation approach is project redesign to avoid these potential impacts. If project redesign is not feasible, the mitigation measures detailed in Chapter 7 are recommended to minimize the potentially significant impacts in accordance with CEQA. However, demolition of a CEQA resource cannot be mitigated to less than significant. As such, even after the implementation of the mitigation measures, the Project will still result in a significant direct impact pursuant to CEQA Section 15064.5.

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1964 Aerial photo of Mt. SAC property, Walnut, California.
1972 Aerial photo of Mt. SAC property, Walnut, California.
1980 Aerial photo of Mt. SAC property, Walnut, California.
1995 Aerial photo of Mt. SAC property, Walnut, California.
2003 Aerial photo of Mt. SAC property, Walnut, California.
2004 Aerial photo of Mt. SAC property, Walnut, California.
2012 Aerial photo of Mt. SAC property, Walnut, California.

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c. 1948 MSAC Service Center Brochure, likely produced for open house after completion in 1948.
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APPENDICES

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APPENDIX A

DPR-523 Forms

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APPENDIX B

SCCIC Records Search

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Report Detail: LA-00342

Identifiers

Report No.: LA-00342
Other IDs:
Cross-refs:

Citation information

Author(s): Taylor, Thomas T.
Year: 1978
Title: Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District
Affliliation:
No. pages:
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

Primary No.	*Trinomial*	*Name*
P-19-000883	CA-LAN-000883	ELEPHANT HILL

No. resources: 1
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): BALDWIN PARK, LA HABRA, SAN DIMAS, YORBA LINDA
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/12/2015	agarcia

IC actions:

Date	*User*	*Action taken*
5/6/2008	jay	Appended records from old Surveys database.
3/12/2015	agarcia	GIS QC

Record status:

Report Detail: LA-00481

Identifiers

Report No.: LA-00481
Other IDs:
Cross-refs:

Citation information

Author(s): Van Horn, David M.
Year: 1979
Title: Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California
Affliliation: Archaeological Associates, Ltd.
No. pages: 5
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/12/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/12/2015	agarcia	GIS QC

Record status:

Report Detail: LA-01268

Identifiers

Report No.: LA-01268
Other IDs:
Cross-refs:

Citation information

Author(s): Mason, Roger D. and Nancy Whitney-Desautels
Year: 1983
Title: Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca
Affliliation: Scientific Resource Surveys, Inc.
No. pages: 14
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/13/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/13/2015	agarcia	GIS QC

Record status:

Report Detail: LA-01346

Identifiers

Report No.: LA-01346
Other IDs:
Cross-refs:

Citation information

Author(s): Brock, James P.
Year: 1984
Title: Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)
Affliliation: Archaeological Advisory Group
No. pages: 17
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/13/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/13/2015	agarcia	GIS QC

Record status:

Report Detail: LA-02679

Identifiers

Report No.: LA-02679
Other IDs:
Cross-refs:

Citation information

Author(s): Cottrell, Marie G.
Year: 1979
Title: Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract
Affliliation: ARMC
No. pages: 23
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/16/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/16/2015	agarcia	GIS QC

Record status:

Report Detail: LA-03835

Identifiers

Report No.: LA-03835
Other IDs:
Cross-refs:

Citation information

Author(s): Cottrell, Marie G.
Year: 1979
Title: Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California
Affliliation: Archaeological Resource Management Corp.
No. pages: 4
No. maps:
Attributes: Archaeological, Field study
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*	
Entered:	5/5/2008	jay	
Last modified:	3/16/2015	agarcia	
IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/16/2015	agarcia	GIS QC

Record status:

Report Detail: LA-05644

Identifiers

Report No.: LA-05644

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2002
Title: Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 8
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/18/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/18/2015	agarcia	GIS QC

Record status:

Report Detail: LA-05646

Identifiers

Report No.: LA-05646

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2001
Title: Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 8
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/18/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/18/2015	agarcia	GIS QC

Record status:

Report Detail: LA-06262

Identifiers

Report No.: LA-06262

Other IDs:	*Type*	*Name*
	Cellular	

Cross-refs:

Citation information

Author(s): Duke, Curt
Year: 2002
Title: Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California
Affliliation: LSA Associates, Inc.
No. pages: 16
No. maps:
Attributes: Literature search
Inventory size: QC
Disclosure:
Collections:

General notes

Associated resources

No. resources: 0
Has informals:

Location information

County(ies): Los Angeles
USGS quad(s): SAN DIMAS
Address:
PLSS:

Database record metadata

	Date	*User*
Entered:	5/5/2008	jay
Last modified:	3/19/2015	agarcia

IC actions:	*Date*	*User*	*Action taken*
	5/6/2008	jay	Appended records from old Surveys database.
	3/19/2015	agarcia	GIS QC

Record status:

Report List

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
LA-00342		1978	Taylor, Thomas T.	Report of the Archaeological Survey of Five Possible Steel Tank Reservoir Sites and Pipe Routes for the Walnut Valley Water District		19-000883
LA-00481		1979	Van Horn, David M.	Archaeological Survey Report: a Parcel Located in the City of Walnut in the County of Los Angeles, California	Archaeological Associates, Ltd.	
LA-01268		1983	Mason, Roger D. and Nancy Whitney-Desautels	Archaeological Survey Report and Records Search on Proposed Revised Tract 32158 in the City of Walnut, Los Angeles County, Ca	Scientific Resource Surveys, Inc.	
LA-01346		1984	Brock, James P.	Archaeological Assessment Report for Proposed Sanitary Landfill Expansion Adjacent to the Spadra Landfill Los Angeles County (140 +/- Total Acres)	Archaeological Advisory Group	
LA-02679		1979	Cottrell, Marie G.	Focused Draft Environmental Impact Report for Via Verde Development Company Residential Development Tentative Tract	ARMC	
LA-03835		1979	Cottrell, Marie G.	Records Search and an Archaeological Survey for the 400 Acre Parcel Designated South Ranch, City of Walnut, Los Angeles County, California	Archaeological Resource Management Corp.	
LA-05644	Cellular -	2002	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy 130-02 Los Angeles County, California	LSA Associates, Inc.	
LA-05646	Cellular -	2001	Duke, Curt	Cultural Resource Assessment: Cingular Wireless Facility No. Vy-130-01 Los Angeles County, California	LSA Associates, Inc.	
LA-06262	Cellular -	2002	Duke, Curt	Cultural Resource Assessment Cingular Wireless Facility No. Vy 130-04 Los Angeles County, California	LSA Associates, Inc.	

Resource List

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-19-186869		Resource Name - Mt San Antonio College	Building	Historic	HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)	2003 (T. Gregory, The Building Biographer)	

Resource Detail: P-19-186869

Identifying information

Primary No.: P-19-186869
Trinomial:
Name: Mt San Antonio College
Other IDs:

Type	*Name*
Resource Name	Mt San Antonio College

Cross-refs:

Attributes

Resource type: Building
Age: Historic
Information base: Other
Attribute codes: HP15 (Educational building); HP41 (Hospital); HP42 (Stadium/sports arena)
Disclosure: Unrestricted
Collections:
Accession no(s):
Facility:

General notes

Recording events

Date	*Recorder(s)*	*Affiliation*	*Notes*
5/27/2003	T. Gregory	The Building Biographer	

Associated reports

Location information

County: Los Angeles
USGS quad(s): SAN DIMAS
Address:

Address	*City*	*Assessor's parcel no.*	*Zip code*
1100 N Grand Ave	Walnut		

PLSS:
UTMs:

Management status

Database record metadata

	Date	*User*
Entered:	5/1/2008	jay
Last modified:	7/25/2012	sstjames

IC actions:

Date	*User*	*Action taken*
5/1/2008	jay	Appended records from Encodent database.

Record status:

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI #
Trinomial 19-186869
NRHP Status Code 5S1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Mt. San Antonio College Campus

P1. Other Identifier:

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T 1S ; R 9W ; NE ¼ of NW¼ of Sec 32 ; M.D. S.B. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422100 mE/ 3767500 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Mount San Antonio College campus occupies 421 acres northeast and southeast of the intersection of Grand Avenue and Temple Avenue in the City of Walnut. The campus occupies a fairly flat valley between the Puente and San Jose Hills--low, rolling grass- and chaparral-covered hills that show signs of increasing urbanization. On clear days, Mount San Antonio is the dominant landscape feature to the north. The campus consists of at least sixty buildings of varying architectural styles, some of which date back to the 1930s. The buildings are separated, for the most part, by well-landscaped areas of grass and trees. Vast parking lots occupy the peripheral areas. Of the sixty buildings, thirteen buildings or clusters of connected buildings contribute to the historical significance of the campus. Of the thirteen, seven are used for direct educational purposes and six are used for student or physical plant supportive services.

*P3b. Resource Attributes: (List attributes and codes) Hospital (HP41); Educational Building (HP15); Stadium/Sports Arena (HP42)

*P4. Resources Present: ☐Building ☐Structure ☐Object ☐Site ☑District ☐Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)

*P6. Date Constructed/Age and Sources: ☑Historic ☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

*NRHP Status Code: 5S1

*Resource Name or # (Assigned by recorder): Mt. San Antonio College Campus

D1. Historic Name: D2. Common Name:

*D3. Detailed Description (Discuss overall coherence of the district, its setting, visual characteristics, and minor features. List all elements of district.): The Mount San Antonio College campus occupies 421 acres northeast and southeast of the intersection of Grand Avenue and Temple Avenue in the City of Walnut. The campus occupies a fairly flat area surrounded by low, rolling grass- and chaparral-covered hills that show signs of increasing urbanization. On clear days, Mount San Antonio is the dominant landscape feature to the north. The campus consists of at least sixty buildings of varying architectural styles, some of which date back to the 1930s. The buildings are separated, for the most part, by well-landscaped areas of grass and trees. Vast parking lots occupy the peripheral areas. Thirteen buildings or clusters of connected buildings contribute to the historical significance of the campus and are documented on separate Primary Record forms. They are: Art Center/Gallery (01); Physical Education Center (03); Campus Inn (08); Staff Center (10); Classroom Buildings (13, 14N, 14S, 15, 16, 17, 18, and 19B); Stadium (50); Information Technology/Nursing (05); Oden House (12A); Child Development Center South (19A); Family and Consumer Sciences (20); Air Conditioning (21); Welding (22); Beef Unit (F9).

*D4. Boundary Description (Describe limits of district and attach map showing boundary and district elements.):
The boundary of the district is the same as the boundaries of the college itself, as shown on the attached map.

*D5. Boundary Justification: The significant buildings of the district are spread throughout the campus among other structures of little or no significance.

*D6. Significance: Theme: Education Area: Los Angeles County
Period of Significance: 1947- Applicable Criteria: A, C (Discuss district's importance in terms of its historical context as defined by theme, period of significance, and geographic scope. Also address the integrity of the district as a whole.)

A) ***Brief History of Walnut***: The first residents of this area can be traced back to the Gabrielino Indians who were of Shoshoean origin. Walnut has one recorded site of archaeological significance dating from the era of Native-American habitation. (This site is not on the campus of Mount San Antonio College.)

The arrival of the Spanish in the area introduced large ranches, the beginnings of agricultural development, and the creation of extensive home-sites. The first land grants in the Walnut area were those of the Rancho de San Jose (22,340 acres), presented in 1837 to Don Ricardo Vejar and Don Ygnacio Palomares; the Rancho de los Nogales (4,340 acres), issued in 1840 to Jose de la Cruz Linares; and La Puente Rancho, consisting of 48,790 acres, issued to John Rowland and William Workman in 1842. All this land had first been used as grazing for the cattle and sheep of the San Gabriel Mission. (see continuation sheet)

*D7. References (Give full citations including the names and addresses of any informants, where possible.):
Hall, Barbara Ann and Odette Marie Pietezsch *Mt. San Antonio College: The First Fifty Years.* The College, 1996.
King, William F. *The Vintage Years: Our Valley Before 1945.* 1975.
Swain, J. G. *Walnut Before and After Incorporation* in *The Historical Volumes and Reference Works*, Vol. II, 1963.
Los Angeles Times
Pomona Valley Historian

*D8. Evaluator: Tim Gregory Date: 5/27/03
Affiliation and Address: DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

Jose de la Cruz Linares died in 1846, and his wife had to sell part of their rancho to Ricardo Vejar to help pay her husband's debts. Vejar's home was in the bend of the hills near the springs of the San Jose Creek, which is now known as Spadra, within the city limits of Pomona. Serving all of the Vejar family's needs, their adobe consisted of living quarters, a chapel, blacksmith shop, silver working shop, and a stable. Ricardo Vejar's adobe served as a social center for the people of the valley in those days. A team change station for the Butterfield Overland Stage Company was also located near the Vejar home from 1858 until 1861.

A second adobe, located in what is now Walnut's Lemon Creek Park, has been preserved as one of the City's most important historical resources. The William R. Rowland Adobe Redwood Ranch House was designated a point of historical interest by the State of California in 1975. This mixed adobe and redwood structure, built in 1883, served as the home of Rowland's ranch foreman and is one of the last original ranch houses in the area.

Walnut originally obtained its name from the Rancho de los Nogales land grant–*nogal* being the Spanish word for "walnut." The Rancho itself had derived its name from the many wild black walnut trees that covered nearby hillsides. The Southern Pacific Railroad came through in 1874, bringing with it more visitors and potential residents. A stop was established, called the Lemon Station because it was situated on Lemon Street and because of the many citrus trees then in the area. "Lemon" became the town's informal name. "Walnut" was not adopted as the community's official name until 1912, with the building of a new post office.

Walnut's first school was established in about 1876, the teacher taking the train back and forth to El Monte every day. After the schoolhouse burned in 1892, students attended Spadra School. The Lemon School District, which incorporated Walnut, was established in 1893. High school students had to travel to Pomona or El Monte until La Puente High School was constructed in 1915. In 1884, Pierre Carrey, originally from France, and his wife Maria settled in Walnut. Carrey, who had worked for William Rowland when the latter was a sheriff, had received part of his pay in land consisting of forty acres above Valley Blvd. on the south side of La Puente Road and east of Lemon Street. The Carrey family operated the first Walnut store and post office on Valley Blvd. Other enterprising French emigres, as well as Basques and Italians, acquired land in the Walnut-Spadra area.

Another historically significant figure, Captain William Banning, son of Phineas Banning, retired to what is now Walnut, transporting there the Banning Stable that had housed the first Los Angeles- Wilmington stages. Another important landowner was Alvan T. Currier, formerly of Maine. In 1869, he purchased 2,400 acres between Spadra and Walnut along the Southern Pacific tracks. He was later elected County Sheriff in 1881 and served as a State Senator beginning in 1898. Currier helped found the Walnut Fruit Growers Association which, in 1906, built the first packing house to handle both citrus and walnut crops. In would function for the next fifty years. Currier also developed the first reliable water sources in Walnut when he established seven wells on the southern fork of San Jose Creek. Another important source of water was the southern branch of the San Jose Creek (sometimes called Walnut Creek).

From the 1880s until just after World War II, the valley's land was used for farming and cattle-raising. It became known as one of the finest agricultural areas in the state, particularly for citrus and walnuts. (The first commercial walnut grove was established in 1912, but the industry had more or less faded by 1940 after many of the trees had succumbed to disease .) Walnut and other neighboring communities remained small and rural, the only city of any major size being Pomona. Numerous fruit packing houses, the major local industry, were linked with each other and with the nation's urban markets by the railroad's freight lines. Only a narrow paved highway, Valley Boulevard, connected the valley to Los Angeles.

A pioneer in the pre-World War II establishment of Walnut's image as a rural retreat was Percy G. Winnett, the founder, with John G. Bullock, of the Bullocks Wilshire chain. He bought eighty acres in Walnut in the 1930s, turning the hay and grain farm into an equestrian showcase. He raised thoroughbred racehorses and threw parties, barbeques, and fox hunts.

Immediately following the war, returning G.I.'s unloosed a pent-up demand for housing all over Southern California, and the Walnut area was no exception. The rural lifestyle of open rolling hills, oranges, and horses began to be supplanted with freeways and housing tracts. Fearing they might be swallowed up by other fast-growing neighboring cities, the citizens of Walnut voted to incorporate in 1958 with about 7.5 miles of territory and about one thousand residents. The eastern boundary of the new city was the easterly edge of the Mt. San Antonio College campus.

By 1990, Walnut, with a population of 29,105 (a 133% increase over 1980), was the second-fastest-growing city in Los Angeles County. It was also quickly becoming a multiethnic community, with Asian Americans and Latinos constituting about 60% of the population.
(See continuation sheet)

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

B) ***Brief History of the Campus of Mount San Antonio College (to 1956)*:** In 1920, the State of California purchased 800 acres in Walnut--adjacent Lots 6 and 7 of the C. M Wright Tract on the eastern edge of the original La Puente Rancho. The land had been owned by the Stern Realty Company since 1914. Lot 7 was transferred to the Regents of the University of California and would become the future site of the Pomona campus of California Polytechnic University.

In 1915, the state Legislature had passed a bill that called for a comprehensive study of "feeble-mindedness." A committee studied the issue and recommended the creation of an institution for the insane in Southern California. In March 1921, the Pacific Colony was founded in Walnut on the above-mentioned Lot 6 (about 388 acres). Nineteen male patients were transferred to it from the state facility in Sonoma. However, the site did not have an adequate water supply and closed in January 1923. The state reopened the Pacific Colony in May 1927 on Pomona Blvd., a facility that is now known as the Lanterman Developmental Center.

In the early 1930s, the State Narcotic Hospital occupied the Lot 6 site and a number of still-extant buildings were constructed. During World War II, the facility was leased to the United States Government as the location of a U.S. Army Hospital, and later a U.S. Naval Hospital. There were eventually 9 permanent buildings and 99 temporary barracks-like structures spread over the site.

In February 1945, the Pomona Chamber of Commerce adopted a resolution requesting the state to make the hospital site (which was scheduled for closure in 1946) the temporary quarters for a new junior college in Eastern Los Angeles County. The rising population had made the area's only junior college in Pomona woefully too small to meet the demand for post-secondary education, especially among returning older students. In October 1945, the California State Board of Education was petitioned by four school districts–Pomona, Covina, Puente, and Bonita–for a junior college to serve the combined areas. In December of that year, voters approved the establishment of a new junior college district which would incorporate the old Pomona district.

A two-year lease was negotiated with the state for use of the U.S. Naval Hospital site. It was an ideal location, in the center of the new district, seven miles east of Puente and seven miles west of Pomona. Also, it would be a physically independent campus, not sharing a site with a high school, which the majority of junior colleges did in those days. The perennial problem of obtaining a guaranteed flow of water to the campus was solved when an agreement was reached with the Metropolitan Water District in December 1947.

The almost impossible task of organizing a junior college from scratch began in earnest on July 1, 1946. Twenty-three faculty members were hired initially. Dr. George H. Bell, the newly hired president, and his family moved into the former hospital director's house (now known as the Staff Center–Building 10), which was then surrounded with gardens. Tom Oden, the chief of maintenance, and his family lived in what is now the Oden House (Building 12A). Some naval personnel remained on the site until the complete changeover from hospital uses was accomplished. What is now the Information Building (Building 05) housed the first administrative offices. It had served as the narcotics treatment center of the hospital and had bars on the windows, special therapy rooms, and jacuzzi baths. The driveway to the campus was lined with camphor trees and there was a small orange grove just south of Building 05.

Instruction on the new campus began in September 1946, many of the first 682 registered students attending class in the non-air-conditioned old barracks buildings, connected by clay and weed-choked paths. Apple- and orange-crates were used for furnishings until war surplus furniture could be purchased. Money remained tight during the first year or two of the college's existence. The old state and military buildings had not been maintained, and Mr. Oden was credited with keeping everything going by patching and repairing where possible, often at his own expense. Nevertheless, a tremendous amount of financial and volunteer time was donated by faculty, students (the average age was 25), administrators, and committed members of the community, creating the legendary "spirit of Mt. San Antonio College" to make it all work.

Barbara Ann Hall and Odette Marie Pietzsch in their history of the college entitled *Mt. San Antonio College: the First Fifty Years* vividly describe the college's early setting:

> Being surrounded by foothills, the college supported an abundance of wildlife. Many native birds nested in the swamp at the south edge of the property. Occasional road runners, coyotes and skunks roamed the grounds. Above the area where the stadium was to be constructed, a bob-tailed bobcat was reported. Several deer grazed near the east boundary of the campus. Large tarantulas burrowed into the hillsides and roamed the campus during their migration, and rattlesnakes basked in the sun. Oden reported killing a rattlesnake about three feet long (Hall 8).

Until 1948, the campus was still considered a temporary site. While the state Department of Mental Health was considering other uses for the 445-acre leased property, a building program could not be instituted. Finally, in March 1947, a bond election was conducted. The amount requested, $1.75 million, was to be used to purchase land and construct the first classrooms and support facilities specifically designed for Mt. San Antonio College. The bond issue received an overwhelming approval of almost 11 to 1. At the first commencement exercises in June 1947, word was received from Governor Warren that the state had decided to sell the former hospital land to the college. The sales price turned out to be $270,000. (see continuation sheet)

*Recorded by: Tim Gregory *Date: 5/27/03 ☑ Continuation ☐ Update

In May 1947, architect Frederick H. Kennedy, Jr., was hired to create a campus master plan and to design the first real college buildings. Mr. Kennedy would be retained as the campus architect until 1955. (Please see Appendix 4 for a biographical essay on Mr. Kennedy and his career.) The first buildings of which Mr. Kennedy supervised the design were the stadium, field houses, shops, gymnasium, and library. With the exception of the shop buildings, all roofs were to be of mission tile. Form was to follow function, so that what took place in the buildings was to dictate the design. Faculty, recognized as specialists in their field, were to have a great deal to say in the lay-out of the academic buildings.

In November 1947, the board of trustees approved the plans for a new football stadium. The natural bowl between the hills in the southeast corner of the property adjoining Cal Poly was the selected site. Only the west side of the bowl was scheduled to have bleachers, to seat 11,000. The stadium was planned to have a state-of-the-art cinder track. Built at a cost of $100,000, the stadium, said to be the largest such facility in the San Gabriel Valley, was dedicated by State Representative Richard M. Nixon in 1948.

Anticipating a greatly expanded student body of 2,000 by 1957, Mt. San Antonio College embarked upon another building campaign. In March 1950, a financing election was held, but this time it was a pay-as-you-go tax override rather than a bond issue. It carried, 1,220 to 828.

Dr. Bell retired from the college's presidency in 1956. It was at this time his home was converted to the Faculty and Staff Center.

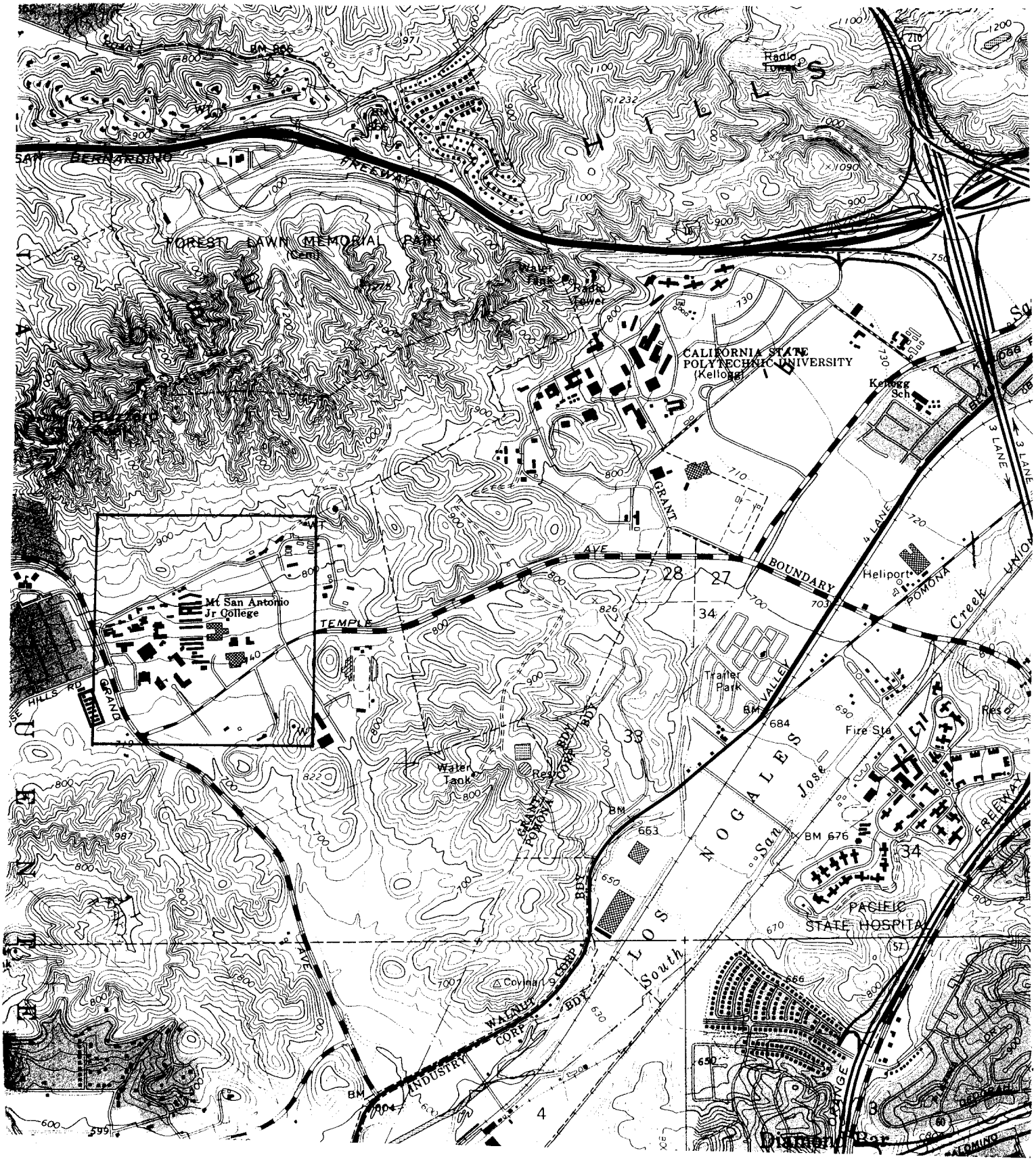
C) ***Summary of Significance***: The significance of the Mt. San Antonio College Campus district is based on both Criteria A and C. The evolution of the site from the Pacific Colony of 1927, to the State Narcotic Hospital of the 1930s, to a U.S. Naval Hospital during World War II, and finally to a community college campus in 1946 is documented by surviving buildings from each era. Many of the post-war buildings were designed between 1947 and 1955 by Frederick H. Kennedy, Jr., an architect of regional renown in the areas of residential, school, and church design. Mr. Kennedy also prepared the campus master plan of 1947.

Thirteen buildings or clusters of buildings contribute to the historical significance of the district. These are recorded on their own Primary Record forms. The exteriors of all these significant buildings have good to excellent integrity, meaning that the physical characteristics that existed during their period of significance are still intact and have not been removed, substantially altered, or lost due to neglect, etc.

State of California — The Resources Agency DEPARTMENT OF PARKS AND RECREATION **LOCATION MAP**	Primary # HRI# Trinomial 19-186869

Page 6 **of** 20 ***Resource Name or #:** Mt. San Antonio College Campus

***Map Name:** San Dimas ***Scale** 2.5" = 1 mile ***Date of Map:** 1981



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

SKETCH MAP

Primary #
HRI# 19-186869
Trinomial

 Resource Name or #: Mt. San Antonio College Campus

***Drawn By:** The College

***Date:** 5/27/03

SEE ATTACHED

NOTE: Include bar scale and north arrow.

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Art Center/Gallery

P1. Other Identifier: Building 1 B/C; Art Center West, Mt. San Antonio College

***P2. Location:** ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422300 mE/ 3767540 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This is an inter-connected 13,200-square-foot complex of three one- and two-story buildings of Spanish Colonial Revival style. The basically rectangular buildings have plaster walls, multi-paned metal sash (some having been replaced), and gabled tile roofs of low pitch. The central building has return gables. A newer mosaic occupies the east gable-end of the central building. Stucco chimneys with arched caps punctuate the roofs of the north and south buildings. Arcades sheltered by flat roofs supported by brick piers and metal posts link the buildings and run along their side walls. The north sides of the central and northerly buildings have large studio-type multi-paned windows. The northerly building extends further east than the others and has eight-paned casement windows on both the north and south sides of the extension.

The north and south buildings of the complex were probably designed by the State of California in 1931 as part of the old state narcotics hospital that once occupied the College site. As such, these parts of the complex are the oldest still-extant structures on the campus. The central building, a rear two-story extension of the north building, and the connecting arcades appear to have been designed around 1947 by campus architect Frederick H. Kennedy, Jr., when the rest of the campus was expanded. The complex is surrounded by mature landscaping and low brick walls with metal railings. The integrity of the buildings is good.

***P3b. Resource Attributes:** (List attributes and codes) Educational Building (HP15)

***P4. Resources Present:** ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)

P5b. Description of Photo: (View, date, accession #)
East side, looking west 6/5/02

***P6. Date Constructed/Age and Sources:** ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

***P7. Owner and Address:**
Mt. St. Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

***P8. Recorded by:** (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

***P9. Date Recorded:** 5/27/03

***P10. Survey Type:** (Describe)
Reconnaissance survey as part of campus master planning

***Attachments:** ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Physical Education Center/Gymnasium

P1. Other Identifier: Building 03; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted

*a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: Date: T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422160 mE/ 3767300 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This two-story basically rectangular building of a contemporary neo-Romanesque style has a gabled tiled roof, plaster walls, and steel sash. Three louvered vents appear in the gable-ends on the east and west sides. These sides also each have eight windows having transom tops and bottoms with six panes of stationary glass in between. Brick detailing appears at the corners of the building with courses of counter-laid brick. Intaglios of figures engaged in sports activities have been cut into the second-floor exterior northerly wall. Below them is a one-story flat-roofed brick-walled extension with small-paned windows high on the walls. The main entrance is centered in this wall recessed under a flat-roofed canopy supported by pairs of slender steel poles. The entrance consists of three pairs of double-doors evenly spaced, each with an upper glass panel and six rectangular-paned stationary transoms above. There are shed-roofed brick-walled extensions of the building on both its southeast and southwest corners. Brick detailing also appears around each of the two door openings on the south side as well as on the balustrades of the parallel staircases leading up to them.

This 22,921-square-foot building, designed in 1950 by campus architect Frederick H. Kennedy, Jr., is the largest still-extant structure from the campus' earliest years. It was built in a style that blends the Mediterranean architecture prescribed in the campus' original general plan with more "modern" school design concepts. It represents a departure from architect Kennedy's usual output. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5

P5b. Description of Photo: (View, date, accession #) North and east sides, looking southwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P

*At ilding, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Campus Inn

P1. Other Identifier: Building 08; College Dining Hall; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422120 mE/ 3767560 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

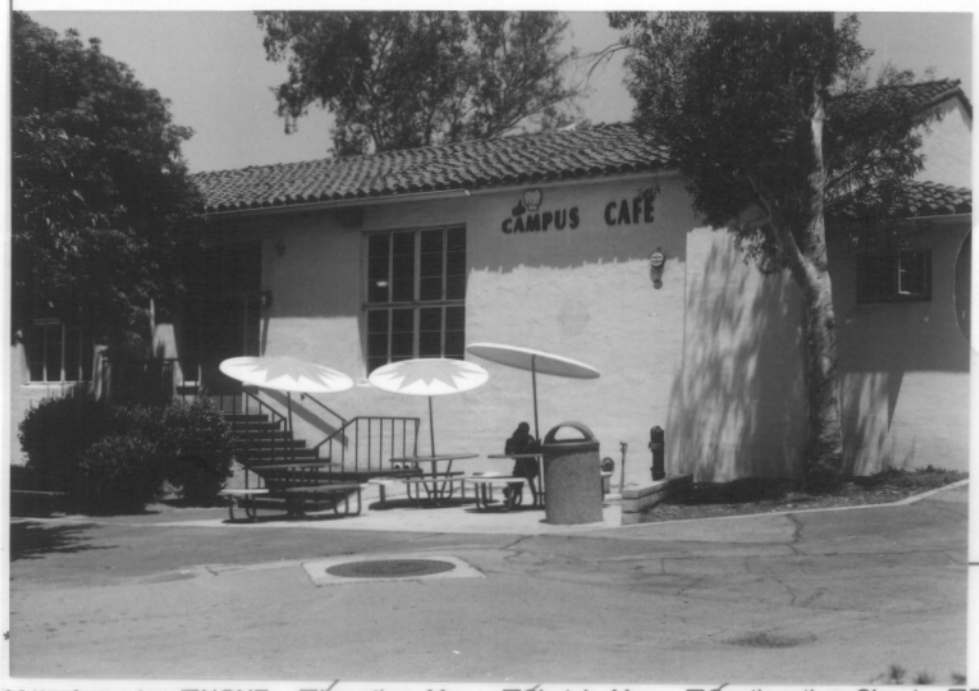
This is a basically rectangular one-story building in the Spanish Colonial Revival style with a tile roof, stucco walls, and steel sash. Its recessed main entrance on the southerly façade is approached by a side staircase with wrought-iron railings. Tall double casement windows with multi-panes flank the main entrance. A paved area outside the main entrance is used for outdoor dining. Another entrance into a small wing on the west end of the front façade is sheltered by a shed-like roof supported by a single stucco pier and is approached by a perpendicular staircase. There is a chimney at the west end of the building. On the east side there is a door to the deli recessed on the south end; a door to the café recessed centrally and flanked by two large casement windows like those in the front; and two large recessed windows on the north end flanked by stucco engaged pilasters. Chevron-shaped venting appears in the gable-end above these windows. The north side of the building has two sets of double wood-paneled doors. The west side of the building has been significantly altered.

This building was designed by the State of California in 1941 and has served as a social gathering center for all three past and present tenants of the site: two hospitals and the school. Although the northerly section has been somewhat altered, the general integrity of the building is good.

*P3b. Resource Attributes: (List attributes and codes) Community Center/Social Hall (HP13)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
South side, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 East North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Staff Center

P1. Other Identifier: Building 10; Faculty Center; Mt. San Antonio College

***P2. Location:** ☐ Not for Publication ☑ Unrestricted ***a. County:** Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad:** San Dimas **Date:** 1981 **T** ; **R** ; **¼ of** **¼ of Sec** ; M.D. **B.M.**

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422060 mE/ 3767480 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This basically T-shaped one-and-two-story building is in the Spanish Colonial Revival style. It has a gabled tile roof, stucco walls, and wood sash. Tiled venting appears in the gable-ends. The front (northerly) façade has a large multi-paned double-casement window positioned centrally in the wall to the east of the front door. It has a projecting canopy made of stucco and is protected by a wrought-iron grille. The front entrance consists of a recessed arched wood-paneled door with a an elongated glass panel and a decorative tile surround, protected by its own shed-like tile roof supported by scrolled wood brackets. Wrought-iron light fixtures appear on both sides of the entrance porch with has a tiled floor and is approached by tiled steps. A cut-out plaster grille covers a recessed window on the easterly end of the wall. On the second floor above the large window are two French doors on the second floor that share a wrought-iron balcony. A pair of small casements are placed east of the French doors. The one-story west side of the house features a stepped chimney flanked by elongated multi-paned casement windows. The south side of this west wing has a double door centered in it which is flanked by arched multi-paned windows and is surmounted by a fanlight in a similar style. There is another set of double doors perpendicular to it on the west side of the "T" at the rear of the house which is approached by tiled steps with a wrought-iron railing. These doors are flanked by large windows that have a stationary pane in the center with four-paned casements to each side.

This 3,769-square-foot house was originally built by the State of California in 1931 as a residence for the director of the state narcotics hospital and was later used by the directors of the military hospitals that once occupied the site. It was also the home of the College's first president. Its integrity is moderately good, but it has been somewhat altered by blocked-up or replaced windows and by a non-sympathetic addition on the southeast corner.

***P3b. Resource Attributes:** (List attributes and codes) Single Family Property (HP2)

***P4. Resources Present:** ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5

P5b. Description of Photo: (View, date, accession #)
North side, looking southeast 6/5/02

***P6. Date Constructed/Age and Sources:** ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

***P7. Owner and Address:**
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

***P8. Recorded by:** (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

***P9. Date Recorded:** 5/27/03

***P10. Survey Type:** (Describe)
Reconnaissance survey as part of campus master planning

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") None

***Attachments:** ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Biological Sciences; Liberal Arts; Business Education Classrooms

P1. Other Identifier: Buildings 13, 14N, 14S, 15, 16, 17, 18, 19B; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423880 mE/ 3767500 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

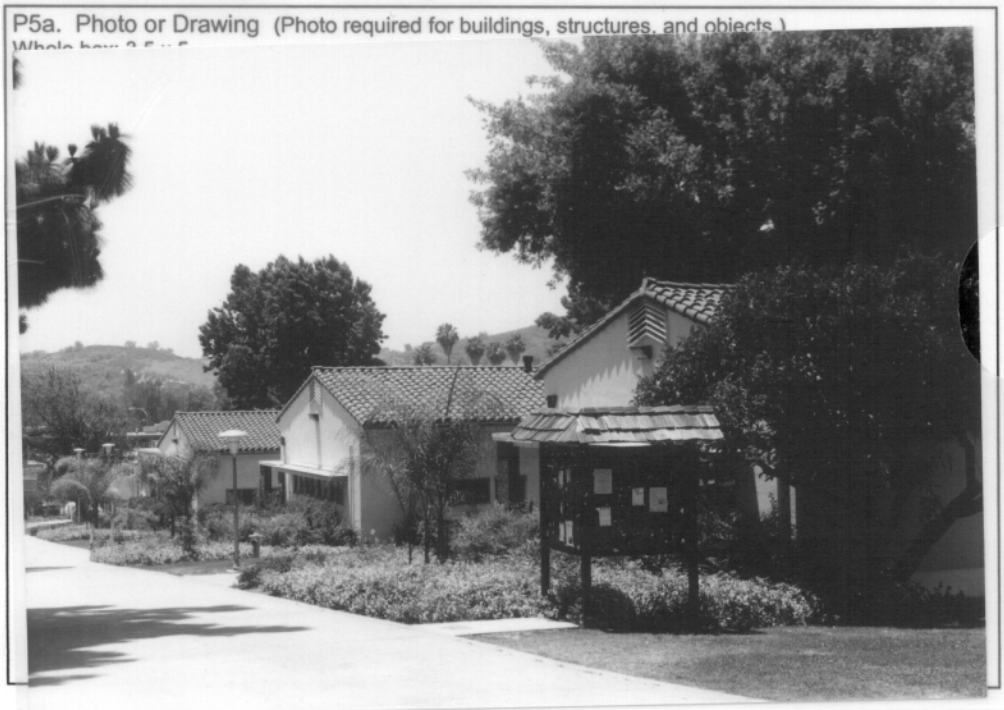
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The eight long, one-story rectangular buildings in this classroom complex are designed in a neo-Spanish Colonial Revival style and are stair-stepped up their hillside site. They have gabled tiled roofs, stucco walls, chevron-shaped venting in the gable-ends (although there are some older-looking tile venting in places on the west ends), and continuous flat-roofed outdoor passageways, supported by brick piers and steel columns, on the southerly sides onto which the classroom and faculty office doors face. The northerly sides of the buildings have bands of tall multi-paned (mixed transom and fixed) windows that look out onto landscaping planted between the buildings. Each of the east ends of the buildings has a band of four two-paned windows high on the wall. The mid-points of some of the buildings are connected by covered passageways placed perpendicularly to them.

This complex was the historic academic center of the campus, its buildings among the first to be specifically designed to reflect the needs of one of California's first post-war colleges. Built over a period of four years as funds became available, they were designed as a single master-planned unit. In February 1976, *Los Angeles Times* columnist Jack Smith described his discovery of this tile-roofed complex "was like coming upon an unexpected village in the Italian countryside...low buildings on the west slope of the greening hills between the San Gabriel and Pomona Valleys." The lay-out reflected the emerging, rather revolutionary philosophy of educational architecture espoused by the designer Frederick H. Kennedy, Jr. It allowed for the introduction of as much natural north light as possible and the opening up of both sides of the classroom to an outside environment of landscaped courts rather than the traditional practice of enclosing the entrances within an interior hallway. The buildings show fairly good integrity, but air-conditioning equipment was later installed in an insensitive manner and detracts from the appearance of the westerly ends of the buildings.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)



P5b. Description of Photo: (View, date, accession #)
Bldg. 14 in foreground, looking south 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

*Required information

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary # 19-186869
HRI#
Trinomial

***Resource Name or #** (Assigned by recorder) Biological Sciences, etc.

***Recorded by:** Tim Gregory

***Date:** 5/27/03 ☐ Continuation ☐ Update

Building 16 in foreground, looking northwest 6/5/02

*Recorded by: Tim Gregory *Date: 5/27/03 ☐ Continuation ☐ Update

1) Building 14, north side, looking southwest 6/5/02
2) Building 14, north side, looking southeast 6/5/02

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Stadium

P1. Other Identifier: Building 50; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423220 mE/ 3767340 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

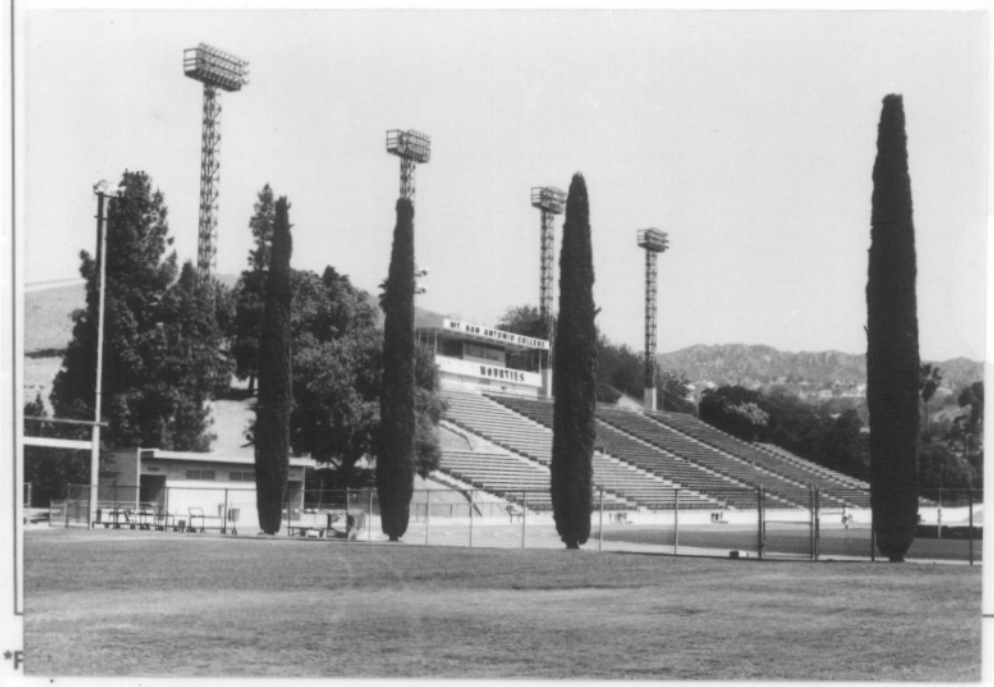
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The stadium consists of two raked concrete seating areas facing each other on the west and east sides of an oval track made of composite material with grass in the center. Each seating area has rows of bleacher-like benches, broken into six sections by seven stairway-aisles. A press-box with glass and partly-open walls is situated at the top of the west side of the stadium and, above this, are four tall steel-lattice columns surmounted by banks of lights. Similar banks of lights appear on the east side of the stadium. Adjacent to the seating areas to the south on both the west and east sides are one-story flat-roofed utility buildings made of concrete block. A manual scoreboard appears on the north end of the stadium beyond which is a park-like landscaped area and a view of the hills.

Designed as part of the campus master plan in 1948 by Frederick H. Kennedy, Jr., this is the largest such stadium in the San Gabriel Valley and was considered state-of-the-art when dedicated in 1948 by then-State Representative Richard M. Nixon. The annual amateur U.S. track and field meet is held at the stadium, bringing it national attention. It has been a historical landmark over the last 54 years for the campus and the surrounding community. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Stadium/Sports Arena (HP42)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
Westerly seating area, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Information Technology/Nursing

P1. Other Identifier: Buildings 05 and 05A/Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted

*a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 422180 mE/ 3767540 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a U-shaped building with a hipped tiled roof and stucco walls designed in a modern interpretation of Spanish Colonial Revival. Metal cupolas with finial tops appear on the east end of the roof and at the northwest corner of the building. Small steel casement windows, each with six panes, are positioned in groups of twos and threes on the west end of the south facade. Windows on the east end are larger and double-hung, but also arranged in groups of twos and threes. Tapered stucco chimneys pierce the ridge-line of the roof in several places. The entrance porch is located easterly of the central point on the building's southerly façade. Its hipped tiled roof is supported by four large square stucco posts. The southern section of a stepped-back addition on the west end of the building appears to be newer than the rest. A solid door with a molding surround appears on the easternmost end of the south façade. Building 5A was apparently built onto the rear of the older structure at a later date. Its gable-ends have chevron-shaped venting. There is a square brick-detailed bay with a multi-paned window on its west end. An outdoor passage running along the addition's southern façade (which faces the northern façade of the older building) is sheltered by a slanted tile roof supported by stucco piers. Still clearly visible on the east end of the north façade of the original building is a molded arch recessed under which is an entrance porch with a southerly wooden door with artistically arranged metal studs. An entrance into the building from the west side of the porch has been plastered over.

Designed in 1941 by the State of California and probably added to by architect Frederick H. Kennedy, Jr., during the campus expansion program of 1947, this 8,890-square-foot building was originally used as a treatment center for narcotics addicts and later as the campus' first administration building. It is of interest because of its early uses and its dominant siting on the campus. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5

P5b. Description of Photo: (View, date, accession #)
South side looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D1

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Oden House

P1. Other Identifier: Building 12A; Custodial Center; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423980 mE/ 3767680 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is an L-shaped, 2,153-square-foot Spanish Colonial Revival cottage with a gabled tiled roof, stucco walls, and single and double wood casement windows, each side of the casement having four panes. Vents, consisting of a triangular arrangement of six roofing tiles, appear in the gable-ends. The front door, with an ornate wooden screen, is recessed on the east end of the westerly leg of the "L". It is approached by a flight of concrete steps with a wrought-iron railing. A stucco chimney, capped with an arch, appears on the west end of the house. There is a small wing that juts out at the northeast corner of the building. It has a cut-out plaster grille over a recessed window on the west end of its south façade.

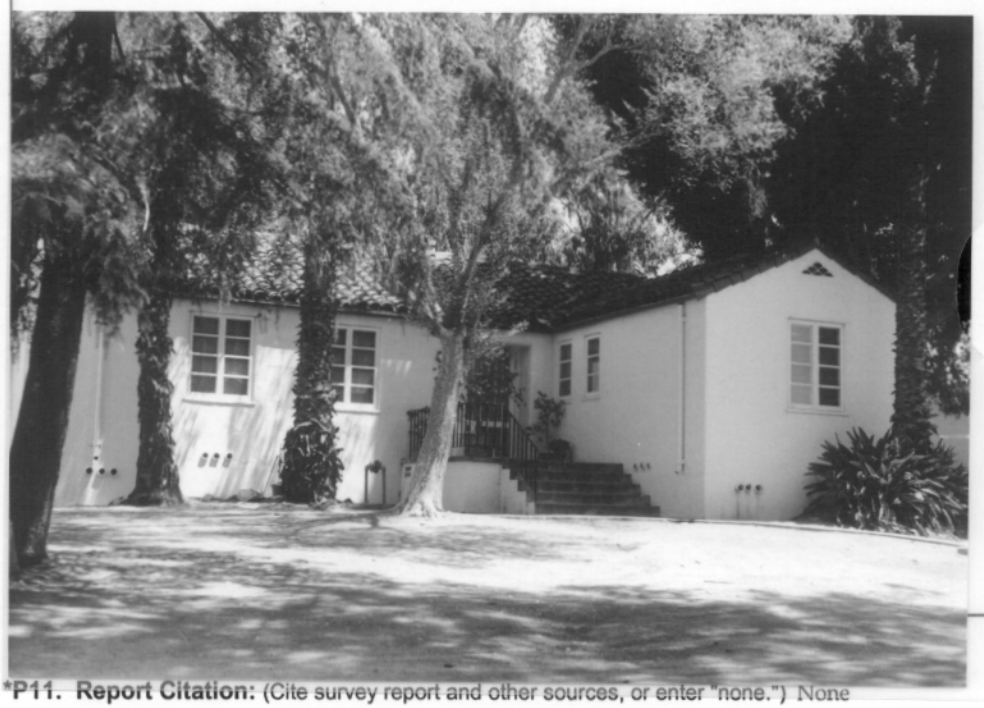
Although this building's official construction date is 1949, there are historical references to the college's first maintenance supervisor having moved into it as early as 1947. However, its architecture is very similar to those of other buildings on campus that date from the early 1930s, which means it was probably built during the site's earlier use as a hospital. If so, it would have been designed by the State of California as one of the two original residences on the grounds. Integrity is good, although some window openings have been stuccoed over. There is some physical evidence that the building may have been moved from its original location.

Adjacent to the northeast is a square garage building with stucco walls and a pyramidical tiled roof topped with a round-roofed hexagonal cupola. The roof's overhanging eaves are supported by molded beam-ends. Two large vehicle openings on the south side have been plastered over, but the concrete driveway apron remains. On the east side, a utility door on the south end and a window opening on the north end have also been plastered over. A band of newer steel sash windows appears between them. On the west side of the building are a newer utility door and a pair of steel windows.

*P3b. Resource Attributes: (List attributes and codes) Single Family Property (HP2)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
West and south sides, looking northeast

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI # 19-186869
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Child Development Center South

P1. Other Identifier: Building 19A; Nursery School; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423960 mE/ 3767460 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

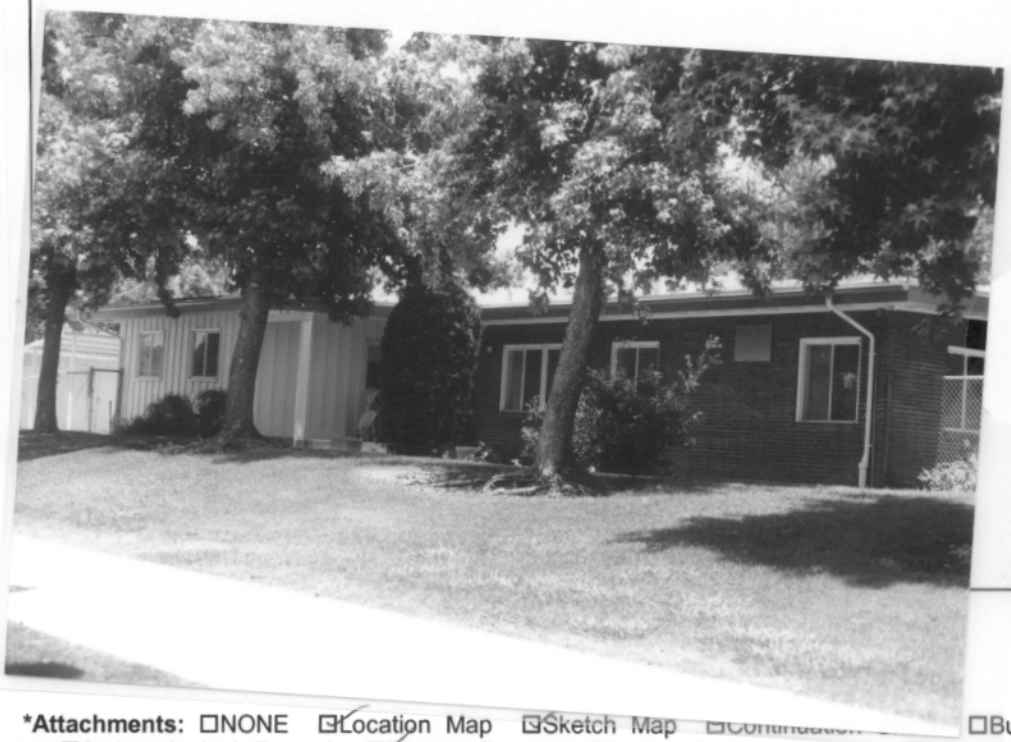
*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a basically flat-roofed, small home-like building of 1,686 square feet in the shape of an "L." Designed in a contemporary style, it has deep eaves with exposed rafter-tails, metal casement and fixed windows, and brick walls on its east and southeast sides and board-and-batten walls on its west, north, and southwest sides. The main entrance to the building is on the south facade where the southerly projecting leg of the "L" begins. The entry porch is protected by the projecting roof of the wing, supported by a single wooden post. The play area at the easterly rear of the building is situated under a projecting part of the roof.

Built in 1952 and designed by campus architect Frederick H. Kennedy, Jr., this is one of the earlier structures built especially for the college, probably funded by the second financing election of 1950. It is of some historical interest, because the construction of a nursery school on the campus would have been a rather revolutionary concept in 1952. It has good integrity.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
South side, looking northwest 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☐Continuation ☐Building, Structure, and Object Record
☐Archaeological Record ☐District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

*Resource Name or #: Family and Consumer Sciences

P1. Other Identifier: Building 20; Homemaking 2; Langdon Hall; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789

d. UTM: Zone: 11 ; 423880 mE/ 3767410 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

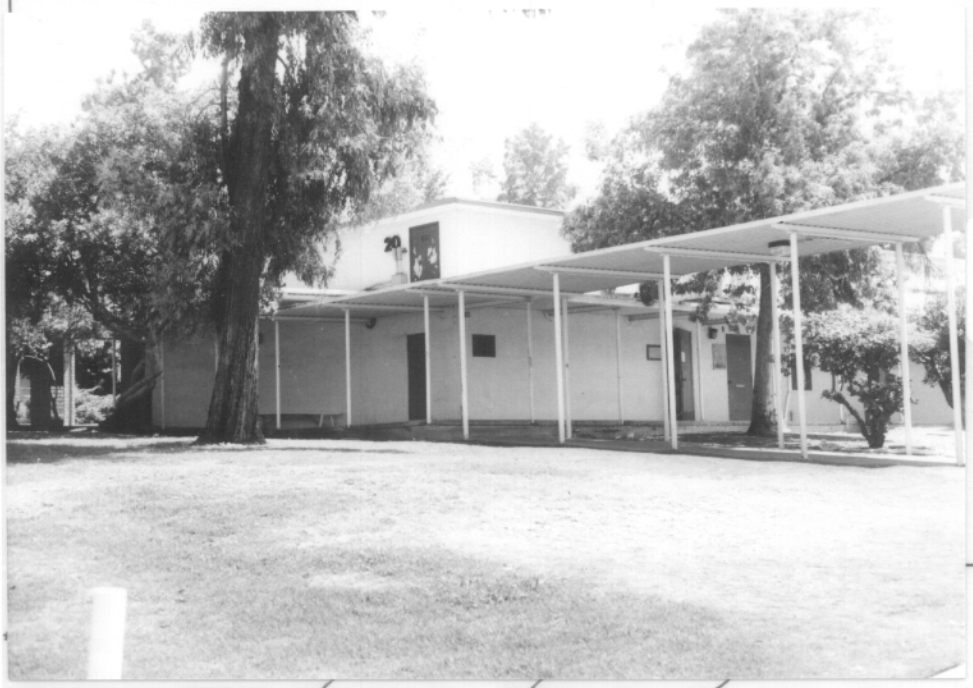
A 1 ½-story classroom complex designed in a contemporary style with a flat roof, an outdoor hallway with a roof supported by thin metal poles, and solid classroom doors bordering the hallway on the south side. Bands of painted-over transom windows in groups of three, separated by pilasters, appear above the hallway roof, each window having eight panes. The north side, with a wall of mixed stucco and vertical siding, has three bands of tall transom windows, each with ten panes. A metal plaque mounted at the west end of the south façade reads: "Langdon Hall/dedicated to the memory of Herbert G. Langdon/founder-trustee-friend/of/Mt. San Antonio College." The building has a stripped-down industrial look, but its open layout is similar to other more traditionally styled classroom structures on the campus.

This 7,095-square-foot building was designed in 1948 by the campus architect Frederick H. Kennedy, Jr. It is one of the three oldest still-extant buildings designed specifically for the new college. Its contemporary style was unusual, since Spanish Colonial Revival was the prevalent style for other campus structures that were built beginning just one year later. It is reminiscent of the elementary schools that the architect was designing at that time for many Southern California school districts. Integrity is good, except for deferred maintenance and the evidence that a bay on the west end of the north façade has been filled in with siding and newer windows.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5



P5b. Description of Photo: (View, date, accession #)
West and south sides, looking northeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Air Conditioning Building

P1. Other Identifier: Building 21; Shop Building; Mt. San Antonio College

*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.

c. Address: 1100 North Grand Avenue City: Walnut Zip: 91689

d. UTM: Zone: 11 ; 423880 mE/ 3767370 mN (G.P.S.)

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This is a plain, 1 ½-story flat-roofed rectangular building of 7,205 square feet designed in a contemporary style of form following function. Its westerly side is plain stucco with a flat-roofed outdoor passageway along the entire façade (which links it with Building 20), the roof of which is roof supported by slender metal poles. The northerly façade has bands of continuous steel transom multi-paned windows, each with 27 panes. The southerly façade consists of a solid wall onto which open solid classroom doors. The outdoor hallway that runs along this façade is sheltered by a continuation of the flat roof of the west façade. Bands of eight-panedwindows, arranged in groups of three separated by pilasters, appear above the hallway roof. These windows have all been painted over and are partially obscured by the ducts of a later-added air-conditioning system.

This building was designed and built in 1948 by the campus architect Frederick H. Kennedy, Jr. An addition with walls of corrugated-metal and brick has been added to the east end of the building. The original building has fairly good integrity despite evidence of deferred maintenance.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)

*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for buildings, structures, and objects.)
Whole box: 3.5 x 5

P5b. Description of Photo: (View, date, accession #)
North and west sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record ☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record ☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary #
HRI #
Trinomial 19-186869
NRHP Status Code 5D3

Other Listings
Review Code Reviewer Date

 *Resource Name or #: Welding Building

P1. Other Identifier: Building 22; Welding Shop; Mt. San Antonio College
*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.
c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789
d. UTM: Zone: 11 ; 423860 mE/ 3767340 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
This is a 6,419-square-foot two-story square utilitarian building designed in a contemporary style. It has a flat roof, steel sash, and stucco walls. On the west (front) side are bands of windows on each floor—9 panes each on the first floor and 12 panes each on the second floor. The north side has a band of three 20-paned transom windows on the west end of the second floor and a band of nine taller windows, each with 44 panes, on the east end that covers both floors. The rear (east) side of the building was once open but is now covered with movable sections of vertical wood siding. Large metal horizontal louvers cover all the windows on the south side of the building.

Built in 1948, this building was designed by campus architect Frederick H. Kennedy, Jr. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Educational Building (HP15)
*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #)
West and north sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☑Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # 19-186869
HRI #
Trinomial
NRHP Status Code 5D3

Other Listings
Review Code | Reviewer | Date

*Resource Name or #: Beef Unit

P1. Other Identifier: Building F9; Mt. San Antonio College
*P2. Location: ☐ Not for Publication ☑ Unrestricted *a. County: Los Angeles
and (P2b and P2c or P2d. Attach a Location Map as necessary.)
*b. USGS 7.5' Quad: San Dimas Date: 1981 T ; R ; ¼ of ¼ of Sec ; M.D. B.M.
c. Address: 1100 North Grand Avenue City: Walnut Zip: 91789
d. UTM: Zone: 11 ; 423620 mE/ 3767180 mN (G.P.S.)
e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

*P3a. Description: (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The Beef Unit consists of a barn and an attached feed shed with a combined square footage of 2,301. Both of these buildings, designed in a vernacular style, have gabled corrugated-metal roofs. The walls of the barn are also corrugated-metal. Two ventilators pierce the ridgeline of the barn roof. The walls of the feed shed are open, except on its west end, the roof supported by wooden posts. A shed with open walls and its own metal roof is attached to the northerly side of the barn. Corrals, fenced with wood or metal, surround the buildings. A round feed hopper is immediately adjacent to the east side of the barn.

The barn and feed shed were constructed in 1954 under the general oversight of the campus architect Frederick H. Kennedy, Jr. They are the oldest still-extant agricultural buildings on the campus and hark back to the days when the college was still in the middle of a prosperous rural area. Integrity is good.

*P3b. Resource Attributes: (List attributes and codes) Farm/Ranch (HP33)
*P4. Resources Present: ☑Building ☐Structure ☐Object ☐Site ☐District ☑Element of District ☐Other (Isolates, etc.)

P5a. Photo or Drawing (Photo required for building)

P5b. Description of Photo: (View, date, accession #)
North and west sides, looking southeast 6/5/02

*P6. Date Constructed/Age and Sources: ☑Historic
☐Prehistoric ☐Both
Facilities Action Plan

*P7. Owner and Address:
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

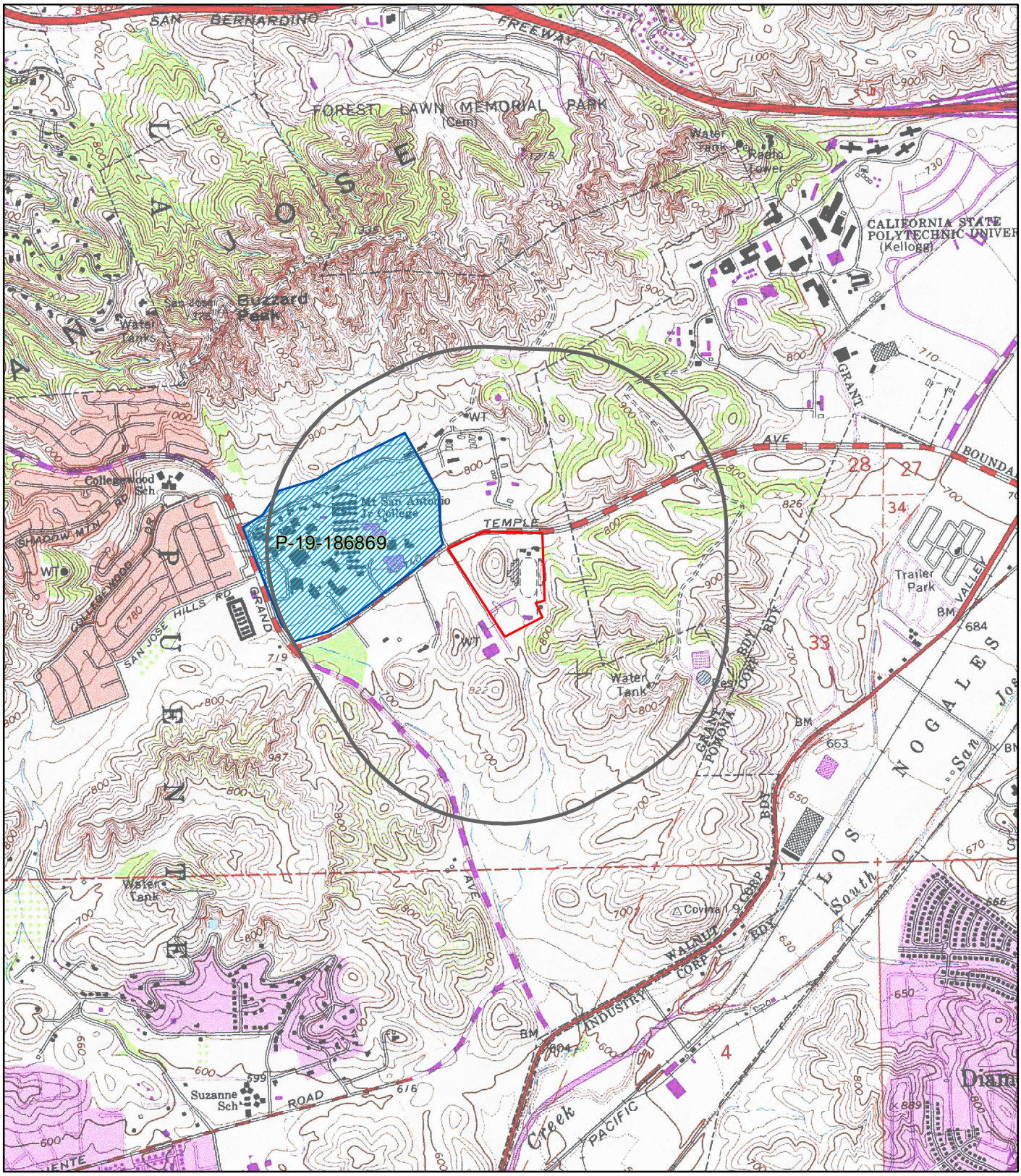
*P8. Recorded by: (Name, affiliation, and address)
Tim Gregory DBA The Building Biographer
400 E. California Blvd., #3
Pasadena, CA 91106

*P9. Date Recorded: 5/27/03

*P10. Survey Type: (Describe)
Reconnaissance survey as part of campus master planning

*P11. Report Citation: (Cite survey report and other sources, or enter "none.") None

*Attachments: ☐NONE ☑Location Map ☑Sketch Map ☐Continuation Sheet ☐Building, Structure, and Object Record
☐Archaeological Record ☑District Record ☐Linear Feature Record ☐Milling Station Record ☐Rock Art Record
☐Artifact Record ☐Photograph Record ☐ Other (List):



Miles
0 0.15 0.3 0.6

Kilometers
0 0.15 0.3 0.6

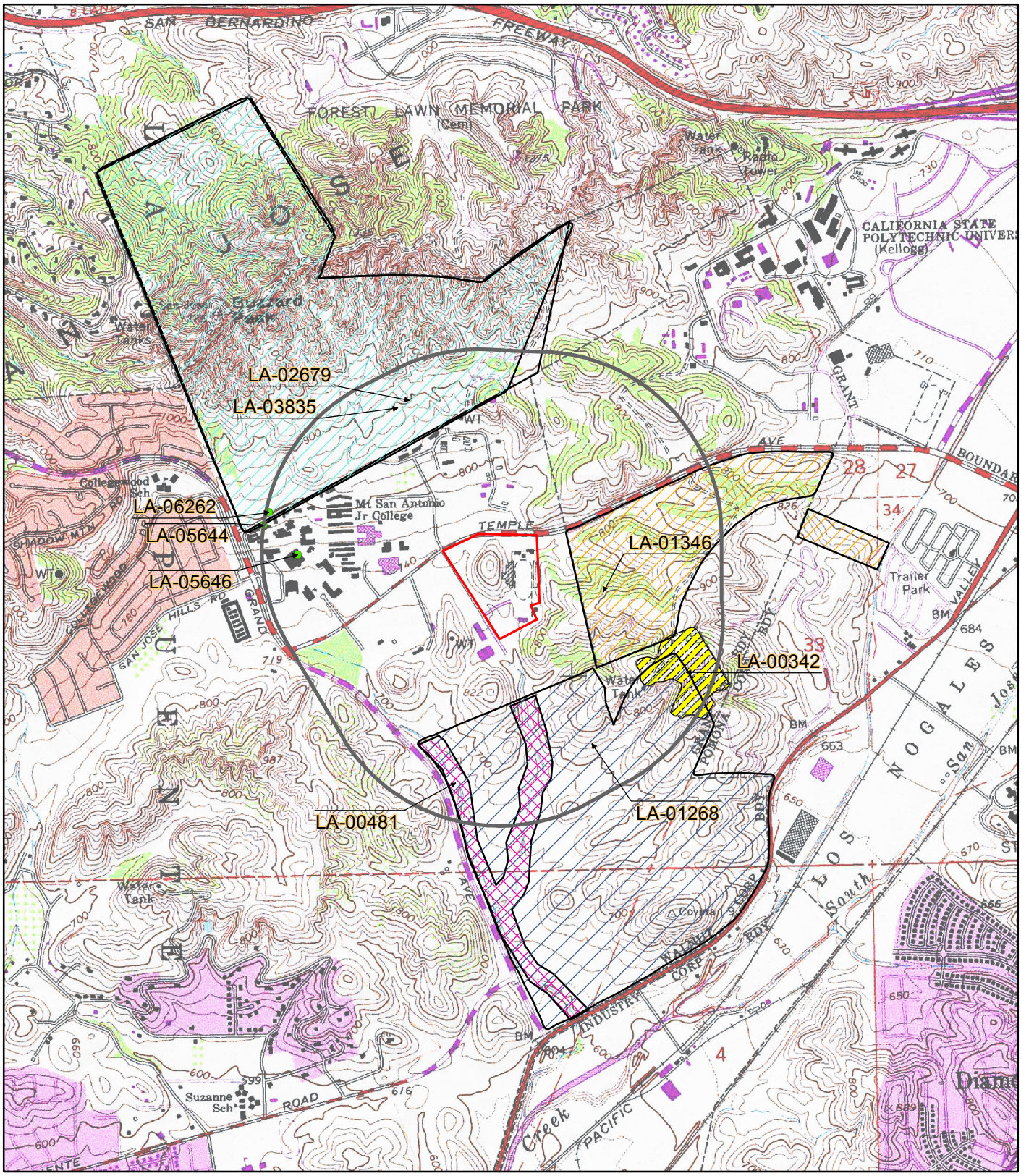
N
W E
S

South Central Coastal Information Center

Resources, 1/2-mile APE:
19-186869

San Dimas, CA
USGS 7.5'
PR: 1981 | 1:24,000
Inv. #15911
Jan 2016

May contain confidential information, NOT for public distribution



South Central Coastal Information Center

Reports, 1/2-mile APE:
LA342, LA481, LA1268, LA1346, LA2679, LA3835, LA5644, LA5646, LA6262

San Dimas, CA
USGS 7.5'
PR: 1981 | 1:24,000
Inv. #15911
Jan 2016

May contain confidential information, NOT for public distribution

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CALIFORNIA
POMONA QUADRANGLE

(Mt. Wilson 15'000) 118°00' R.11 W. (Chileno Canyon 15'000) R.10 W. 55' (Camp Rincon 15'000) 50' R.9 W. (Camp Bonita 15'000) R.8 W. 117°45' (San Antonio)

34°15' T.2 N.

(Mt. Wilson 15'000)

(Sierra Madre 15'000)

T.1 N.

Club House

West Fork San Gabriel River

Bear Creek

North Fork

Burrow Canyon

Susanna Canyon

Graveyard Canyon

Roberts Canyon

San Gabriel River

Cattle Canyon

Cape Horn Canyon

Horse Canyon

East Fork

A N G E L E S

S A N G A B R I E L M O U N T A I N S

CANYON

Browns Gulch

Monrovia Peak

Rankin Peak

N A T I O N A L F O R E S T

Islip Canyon

Silver Mt.

Deer Park

Fish Canyon

Roberts Canyon

Water Canyon

Pine Canyon

Sawpit Canyon

R.11 W.

R.10 W.

Van Tassel Canyon

Harrow Canyon

Little Dalton Canyon

Big Dalton Canyon

Lewis Paul Canyon

Monroe Canyon

Volfe Canyon

Bell Canyon

West Fork

San Dimas Canyon

Wolfskill Canyon

Johnstone Pk.

Sycamore Flat

R.9 W.

R.8 W.

T.1 N.

SANTA ANITA

Monrovia

Duarte

A Z U S A

D U A R T E

ATCHISON TOPEKA AND SANTA FE R.R.

Azusa

AZUSA DITCH

COVINA CANAL

Glendora

(SOUTHERN PACIFIC)

Alosta

A Z U S A

D A L T O N

S A N J O S E

EL WASH

T.1 N.
T.1 S.

BASE T.1 N. LINE
T.1 S.

(Cucamonga)

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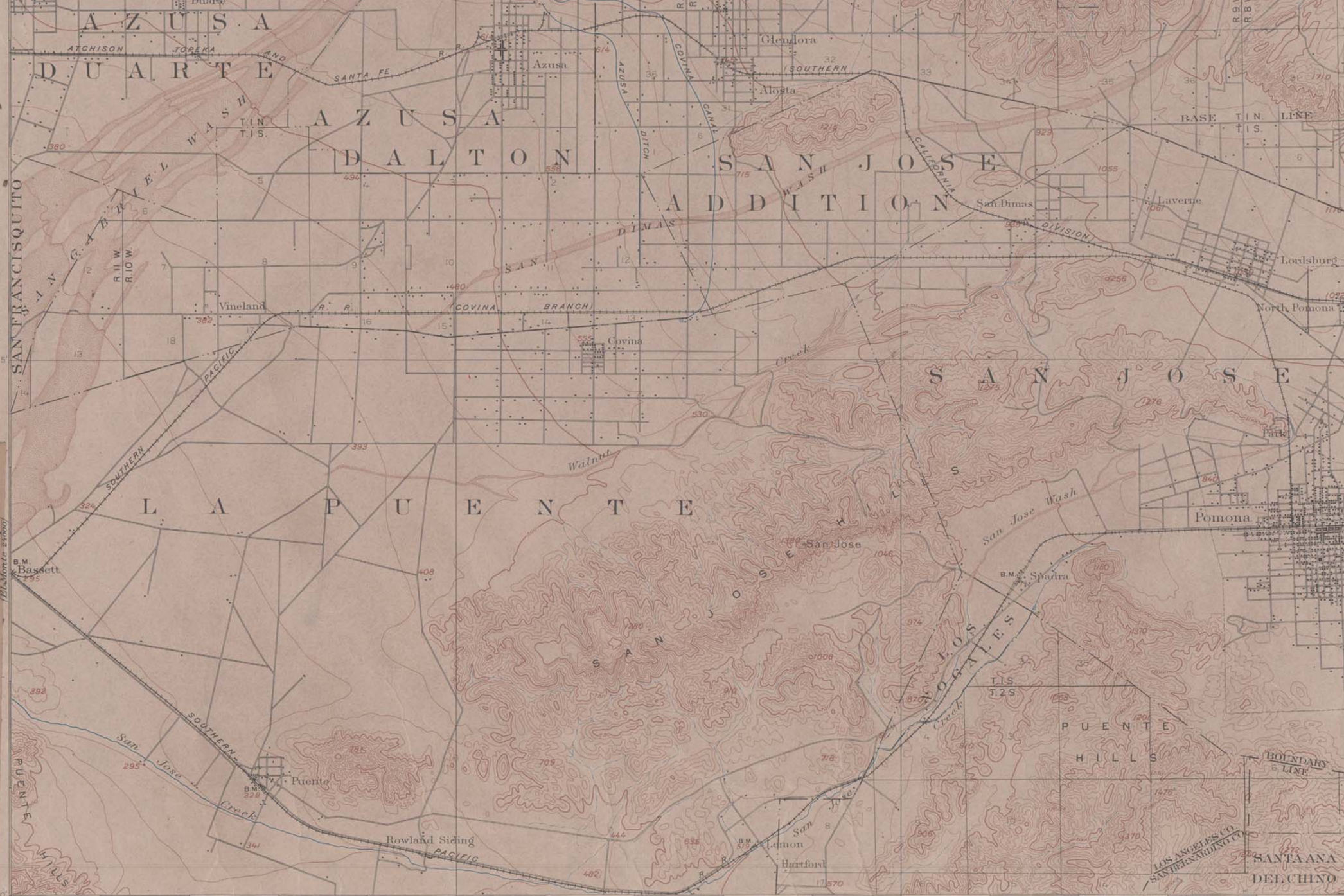

Henry Gannett, Chief Topographer.
R.U.Goode, Geographer in charge.
Triangulation by A.P.Davis.
Topography by L.C.Fletcher and T.G.Gerdine.
Surveyed in 1894.

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION 1902

SCALE 1:62500

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

Polyconic projection. To place on 1927 North American datum move projection lines 560 feet south and 560 feet west

This area also covered by 1:24 000-scale maps of Glendora; Azusa, Baldwin Park, and San Dimas 7.5-minute quadrangles, surveyed in 1953

POMONA, CALIF.
N3400—W11745/15
1894

FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER 25, COLORADO OR WASHINGTON 25, D. C.
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

M

LOS ANGELES

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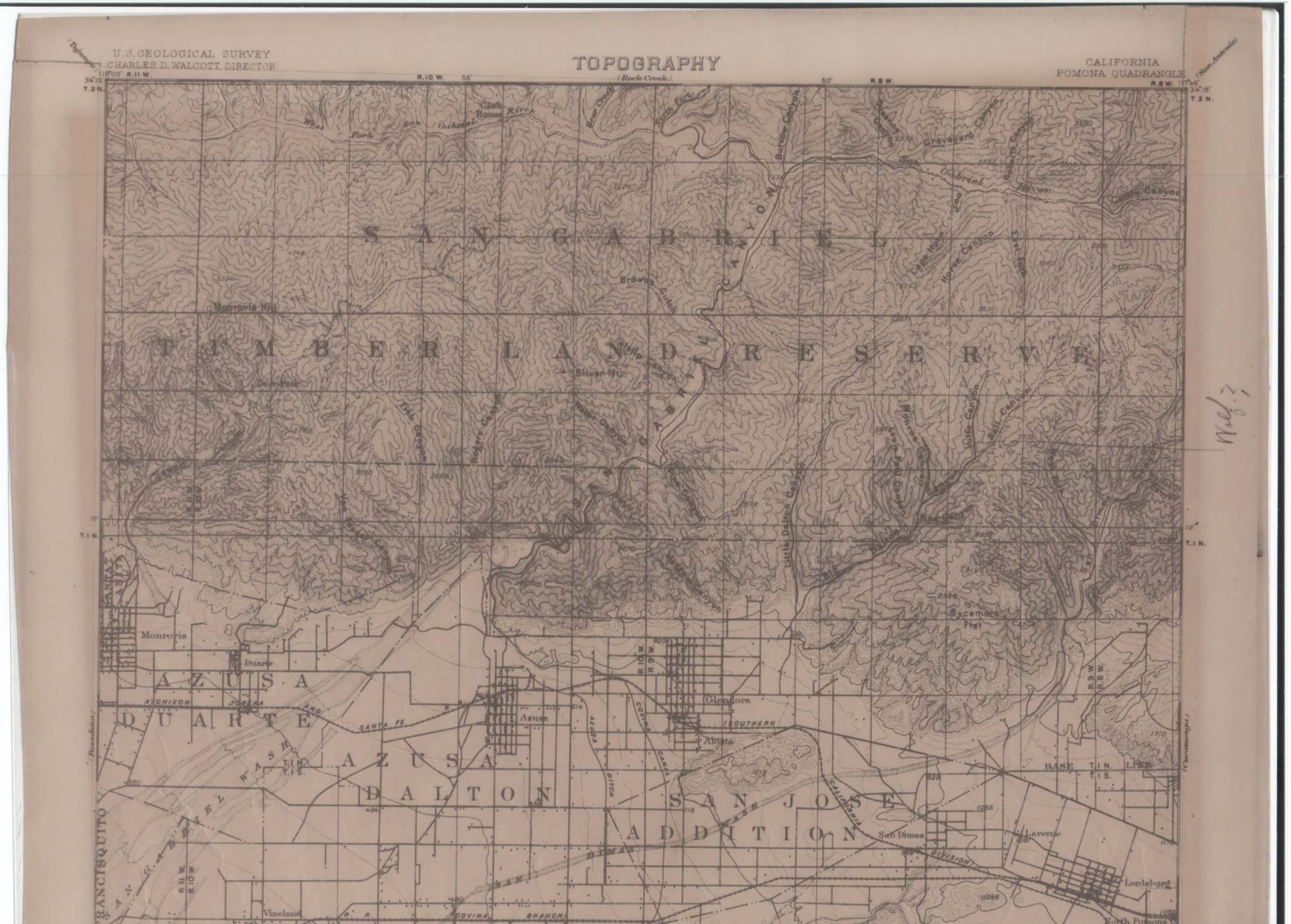
U.S. GEOLOGICAL SURVEY
CHARLES D. WALCOTT, DIRECTOR

TOPOGRAPHY

CALIFORNIA
POMONA QUADRANGLE



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U.S.G.G.
FILE COPY
Ed. Div. Topographic Maps.

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FILE COPY
Ed. Div. Topographic Maps.
USGS
Historical File
Topographic Division

U.S.G.G.
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U.S. Geological Survey,
Historical File
Topographic Division
APR 11 1904 3116
Ed. Div. Topographic Maps.

Pomona, Cal.

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APPENDIX C

NAHC Response Letter

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NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

February 10, 2016

Sherri Andrews, M.A., J.D., RPA
ASM Affiliates

Sent by Email: sandrews@asmaffiliates.com
Number of Pages: 2

RE: Proposed 2015 Traffic Study and Physical Education Division Projects, City of Walnut, Los Angeles County, California

Dear Ms.Andrews:

A record search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above with negative results. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American cultural resources in any APE.

I suggest you contact all of the listed Tribes. If they cannot supply information, they might recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will be better able to respond to claims of failure to consult. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact via email: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton
Associate Governmental Program Analyst

Native American Contact List
Los Angeles County
February 10, 2016

Tongva Ancestral Territorial Tribal Nation
John Tommy Rosas, Tribal Admin.
, Gabrielino Tongva
tattnlaw@gmail.com
(310) 570-6567

Gabrielino-Tongva Tribe
Linda Candelaria, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067
(626) 676-1184 Cell

Gabrieleno/Tongva San Gabriel Band of Mission Indians
Anthony Morales, Chairperson
P.O. Box 693 Gabrielino Tongva
San Gabriel , CA 91778
GTTribalcouncil@aol.com
(626) 483-3564 Cell

(626) 286-1262 Fax

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393 Gabrielino
Covina , CA 91723
gabrielenoindians@yahoo.com
(626) 926-4131

Gabrielino /Tongva Nation
Sandonne Goad, Chairperson
106 1/2 Judge John Aiso St., #231 Gabrielino Tongva
Los Angeles , CA 90012
sgoad@gabrielino-tongva.com
(951) 807-0479

Gabrielino-Tongva Tribe
Conrad Acuna
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

Gabrielino Tongva Indians of California Tribal Council
Robert F. Dorame, Tribal Chair/Cultural Resources
P.O. Box 490 Gabrielino Tongva
Bellflower , CA 90707
gtongva@verizon.net
(562) 761-6417 Voice/Fax

Gabrielino /Tongva Nation
Sam Dunlap, Cultural Resources Director
P.O. Box 86908 Gabrielino Tongva
Los Angeles , CA 90086
samdunlap@earthlink.net
(909) 262-9351

Gabrielino-Tongva Tribe
Bernie Acuna, Co-Chairperson
1999 Avenue of the Stars, Suite 1100 Gabrielino
Los Angeles , CA 90067

(310) 428-5690 Cell

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed 2015 Traffic Study and Physical Education Division Project, City of Walnut, Los Angeles County, California.

APPENDIX D

Original Architectural Drawings

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APPENDIX D - ORIGINAL ARCHITECTURAL DRAWINGS INDEX

1. Building 1A: First Floor Plan
2. Building 1A: Building Elevations
3. Building 4: Lower Floor Plan
4. Building 4: Upper Floor Plan
5. Building 4: Building Elevations
6. Building 6: Building Elevations
7. Building 7: Second Floor Plan
8. Building 7: Building Elevations
9. Building 7: North Elevation
10. Building 9A: Building Floor Plan
11. Building 9A: Building Elevations
12. Building 12: Building Floor Plans
13. Building 12: Building Elevations
14. Building 47: Building Floor Plans
15. Building 47: Building Elevations
16. Building 48: Building Floor Plan
17. Building 48: Building Elevations

18–25. Building 50ABC: Building Elevations, Plans, Sections

26. Buildings F1-F4A: Site Plan
27. Building F2A: Building Elevations
28. Building F3A: Building Elevations
29. Building F4A: Building Elevations
30. Building G2: Building Floor Plan
31. Wildlife Sanctuary: Site Plan

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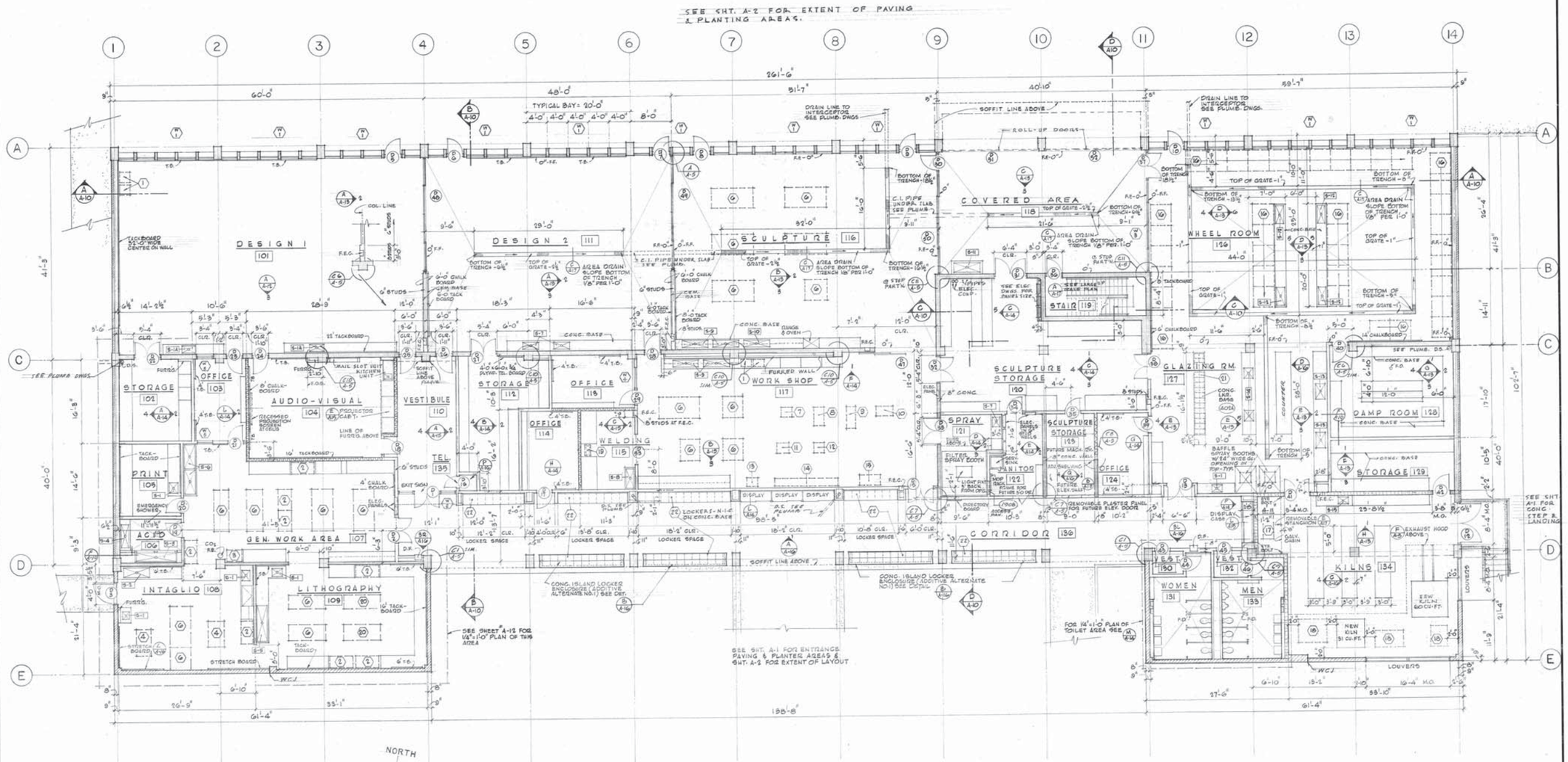

FIRST FLOOR PLAN

SCALE 1/8" = 1'-0"

DATUM: FINISH SLAB ELEVATION 780.8'

NOTE: VERIFY EXACT LOCATION OF WORKSHOP EQUIPMENT OUTLETS WITH OWNER BEFORE PROCEEDING WITH POURING OF FLOOR SLAB

SINK SCHEDULE

SINK Nº	SIZE	MATERIAL	GA.	FITTING	RM. LOCATION
S-1	24 x 21 x 8	SEE PLUMB. DWGS.	—	——	109, 106, 108, 127
S-1A	30 x 21 x 8	SEE PLUMB. DWGS.	—	——	101
S-2	60 x 24 x 12	STAINLESS STL. #302	#16	A - 2"	108
S-3	60 x 24½ x 6	STAINLESS STL. #302	#16	A - 2"	106
S-4	54 x 18 x 8	STAINLESS STL. #316	#16	A - 2"	106
S-5	84 x 24 x 9	STAINLESS STL. #302	#16	A - 2"	108
S-6	54 x 24 x 10	STAINLESS STL. #302	#16	A - 2"	107
S-7	30 x 19 x 8	GALV. IRON	#14	A - 2"	111, 121
S-8	54 x 20 x 18	"	#14	A - 2"	115
S-9	60 x 19 x 12	"	#14	A - 3"	116, 117
S-10	60 x 19 x 18	"	#14	A - 3"	116
S-11	60 x 24 x 24	"	#14	B	118
S-12	42 x 18 x 12	"	#14	A - 2"	120
S-13	36 x 20 x 12	"	#14	A - 2"	127
S-14	24 x 20 x 12	"	#14	A - 2"	127
S-15	24 x 19 x 12	"	#14	A - 2"	134

FITTING DESCRIPTION

A - WASTE FITTING AND LEVER HANDLE - ELKAY #87R
B - J.R. SMITH #7940 DRAIN W/GROUND JOINT PLUG-S# PROVIDE CHAIN FOR PLUG.

SINKS IDENTIFIED THUS ON PLAN S-4

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
SEP 8 1971

N.I.C. EQUIPMENT SCHEDULE

Nº	DESCRIPTION	RM. LOCATION
(1)	FUTURE ELECTRIC KILNS	101, 117
(2)	6 SPEED RACK	107, 108, 109
(3)	AQUA-TINT BOX	107
(4)	ETCH PRESS	108
(5)	ELECTRIC HOT PLATE	109
(6)	TABLE	107, 108, 109, 117
(7)	BAND SAW	117
(8)	JIG SAW	117
(9)	JOINTER - FUTURE	117
(10)	TABLE SAW - FUTURE	117
(11)	DISC/BELT SANDER	117
(12)	DISC/BELT SANDER - FUTURE	117
(13)	DRILL	117
(14)	PANEL SAW - FUTURE	117
(15)	RADIAL ARM SAW - FUTURE	117
(16)	ELECTRIC POTTERS WHEELS	126
(17)	PUG MILL	134
(18)	KILNS, GAS FIRED	134
(19)	PORTABLE TANK CART	118
(20)	LITHO PRESS	109
(21)	MET. BOX LOCKERS	127
(22)	CORRIDOR, STUDENT LOCKERS	136

BUILDING AREA:

1ST. FLOOR	21,345 S.F.
MECH. EQUIP. FLOOR	2,450 S.F.
COVERED AREA #2	1,195 S.F.
TOTAL	24,990 S.F.
OCCUPANCY	C
TYPE OF CONSTRUCTION	I
FIRE ZONE	3

LEGEND

- 4" MET. STUDS UNLESS NOTED OTHERWISE DET. (C-4/A-5)
- CONCRETE
- CONCRETE BLOCK
- BRICK
- SOUND INSULATED WALLS - DET. (C-4/A-5)
- (15) EQUIPMENT - N.I.C. SEE EQUIPMENT SCHEDULE
- EQUIPMENT - IN CONTRACT

AS-BUILT DRAWING
DATE OCT. 1, 1973

REVISIONS		

STATE OF CALIFORNIA — THE RESOURCES AGENCY — OFFICE OF ARCHITECTURE AND CONSTRUCTION
3431 APPROVED SEP 8 - 1971

ENGINEER: LICENSE NO. 5E-484

ARCHITECT: LICENSE NO. C-324

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

FIRST FLOOR PLAN
ART CENTER BLDG. N & IA
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

PROJECT XIX
COMM. 1560
DATE 6-14-71
DRAWN MARTIN
CHECKED DB

SHEET A-6
6 OF 45

8/69 DIETZGEN-POST CLEARPRINT 1000H

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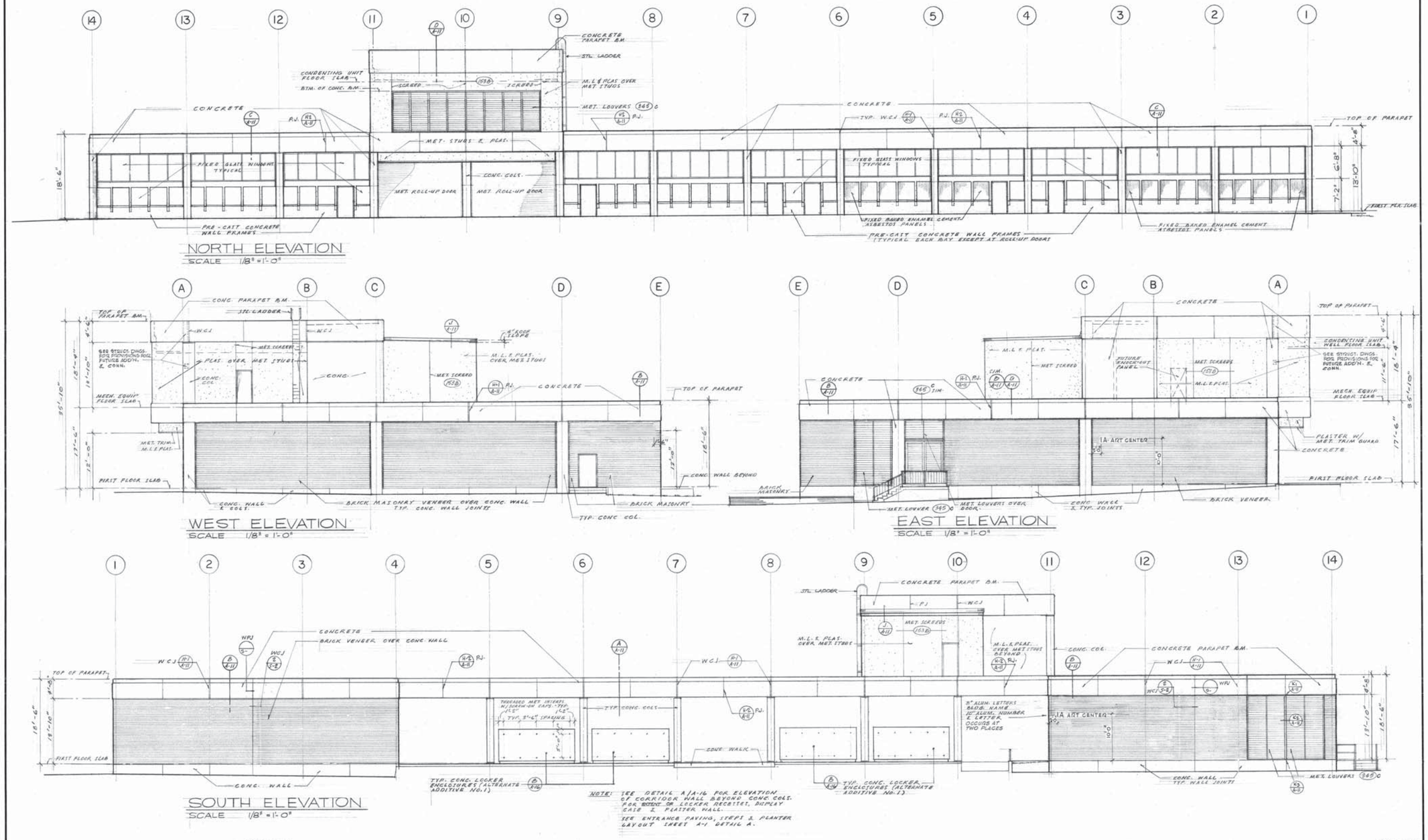

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
SEP 7 1971
BY

AS-BUILT DRAWING
DATE OCT. 1, 1973

REVISIONS		ENGINEER	ARCHITECT
	STATE OF CALIFORNIA – DEPARTMENT OF GENERAL SERVICES 34311 APPROVED SEP 8 - 1971 APPLICATION NO. For D.K. Tyler	William J. Wheeler LICENSE NO. SE-486	Charles E. Fry LICENSE NO. C-324

AUSTIN FIELD & FRY
Architects Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.
DUNKIRK 8-1326

EXTERIOR ELEVATIONS
ART CENTER BLDG. No 1A
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

PROJECT XIX

COMM. 1560
DATE 6-14-71
DRAWN BARCELONA
CHECKED D.B.

SHEET A-9
9 OF 43

DIA-7101-009

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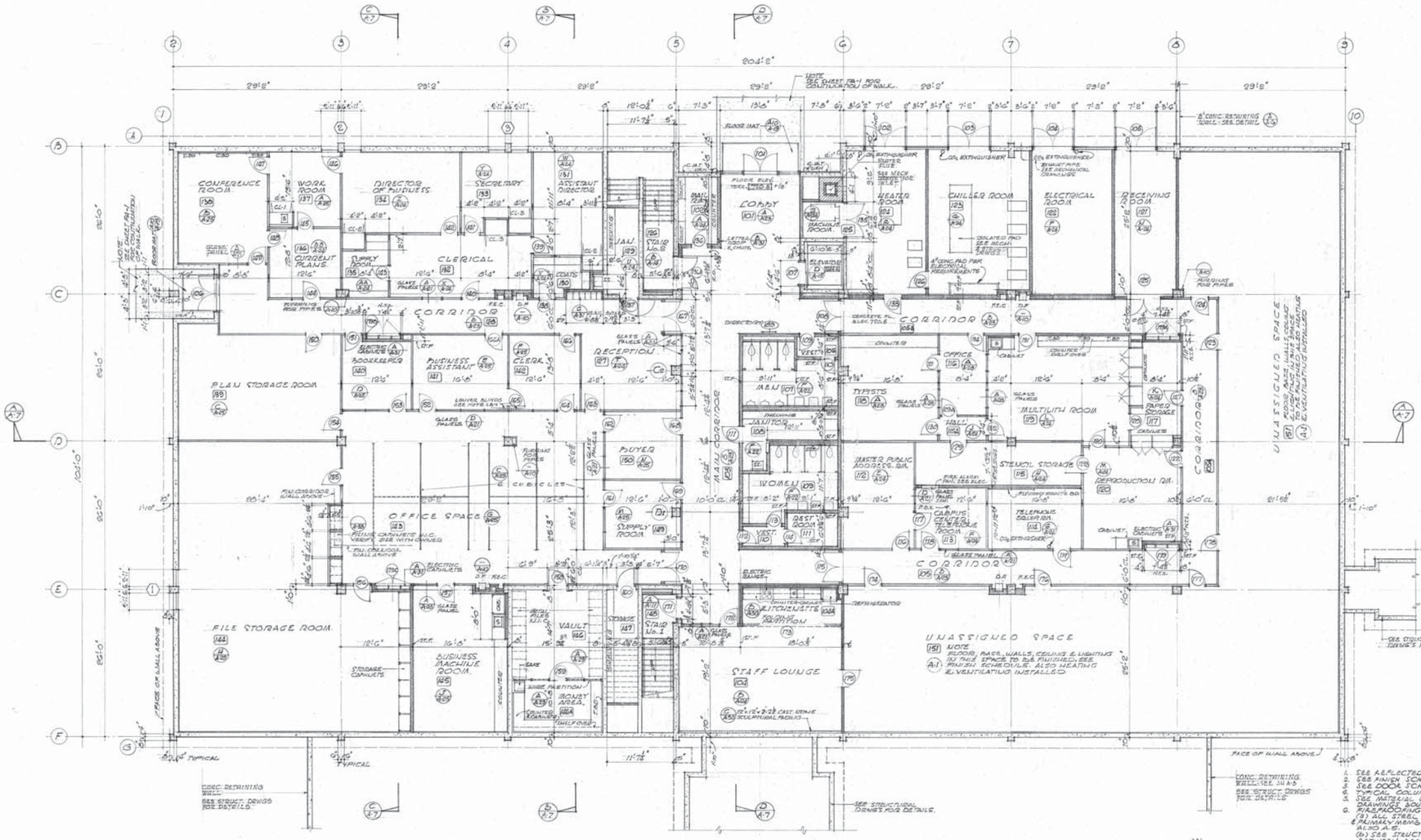

NOTES

1. SEE REFLECTED CEILING PLAN - SHEET A-1C.
2. SEE FINISH SCHEDULE & FINISH TYPES SHEET A-1
3. SEE DOOR SCHEDULE & DOOR TYPES SHEET A-9
4. TYPICAL COLUMN DETAILS FOR FIN. & MAS'Y SHEET A-10
5. SEE MATERIAL LEGEND & ABBREVIATIONS ON STANDARD DRAWINGS BOUND IN BACK OF SPECIFICATIONS
6. FIRE PROOFING:
   (a) ALL STEEL COLUMNS, PURLINS, BEAMS, GIRDERS, SP. DECKING & PRIMARY MEMBERS SHALL BE FIREPROOFED. SEE SHEET A-10 AND A-8.
   (b) SEE STRUCTURAL DRAWINGS FOR DISTINCTION BETWEEN BEAMS & GIRDERS.
7. SEE WINDOW DETAILS SHEET A-9D.
8. ALL CONCRETE WALLS OF BUILDING BELOW GRADE SHALL BE WATERPROOFED - SEE SPECIFICATIONS
9. FOR CLY THRU CLT SEE 24, A-B2

NOTE, L & L-1:
LOUVER BLINDS (PBR SPECS.) AT WINDOWS # 1, 2, 3 AND AT GLASS PANELS IN RMS # 140, 141, 142, 169 & 180. AT INTERIOR PARTITIONS RAILS OF BLINDS SHALL BE ATTACHED TO WINDOW BLIND FRAME.

PARTITION LEGEND

- 2½" THICK MOVABLE GYP. BD. PARTITION
- METAL STUD PARTITION W/ GYP. BD. FINISH
- METAL STUD PARTITION
- METAL STUD PARTITION - 2 HOUR CONSTRUCTION
- DOUBLE METAL STUD PARTITION W/ 1" FIBER BOARD INSULATION BETWEEN. A.M.S. 1228 TYPE A & 1236
- ALUM. FRAMED GLASS PANELS, IN 2½" THICK GYP. BD. PARTITION
- EXTERIOR & INTERIOR CORES WITH PLASTER OR BONDING AGENT SEE ECHED. FOR OTHER FINISHES OVER PLASTER

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
23614 APPROVED AUG 1 51963
APPLICATION NO. By E. Vleary

STATE FIRE MARSHAL
APPROVED AUG 1 51963
OFFICE OF STATE FIRE MARSHAL
STATE OF CALIFORNIA

REVISIONS		ENGINEER	ARCHITECT
		William J. Kuhler LICENSE NO. 12566	Charles E. Fry LICENSE NO. C-524

AUSTIN & FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

LOWER FLOOR PLAN. SCALE: 1/8" = 1'-0"
COLLEGE CENTER BUILDING # 4
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA

PROJECT IX
COMM. 1378
DATE MAY 1, 1963
DRAWN HENRY
CHECKED MAY

SHEET A-2 OF 75

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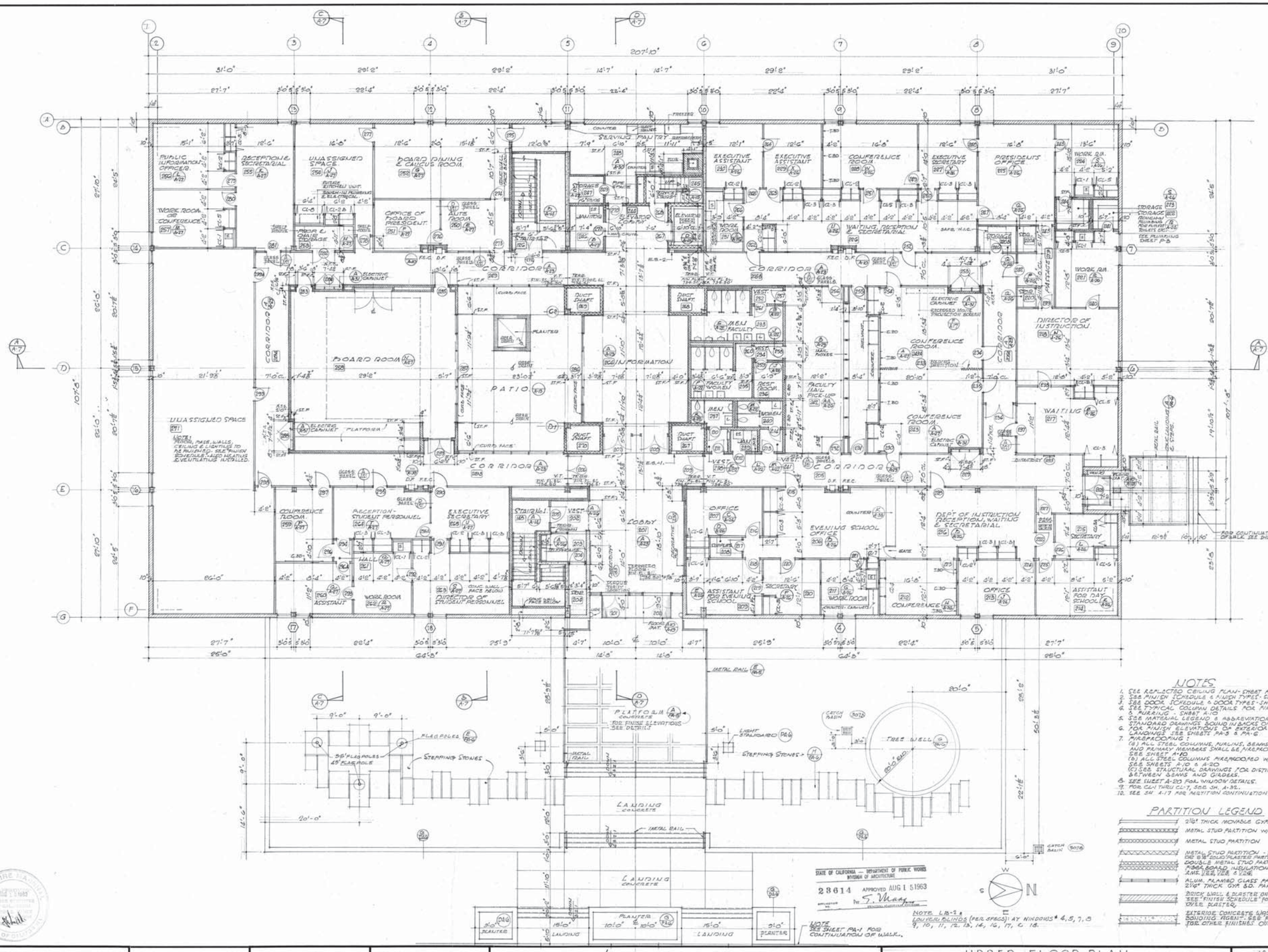

NOTES

1. SEE REFLECTED CEILING PLAN - SHEET A-17
2. SEE FINISH SCHEDULE & FINISH TYPES - SHEET A-1
3. SEE DOOR SCHEDULE & DOOR TYPES - SHEET A-4
4. SEE TYPICAL COLUMN DETAILS FOR FINISHES & FURRING - SHEET A-10
5. SEE MATERIAL LEGEND & ABBREVIATIONS ON STANDARD DRAWINGS BOUND IN BACKS OF SPECS.
6. FOR FINISH ELEVATIONS OF EXTERIOR STEP LANDINGS SEE SHEETS PA-5 & PA-6
7. FIREPROOFING:
   (a) ALL STEEL COLUMNS, PURLINS, BEAMS, GIRDERS, BECKING, AND PRIMARY MEMBERS SHALL BE FIREPROOFED SEE SHEET A-10
   (b) ALL STEEL COLUMNS FIREPROOFED W/ CONC. SEE SHEETS A-10 & A-20
   (c) SEE STRUCTURAL DRAWINGS FOR DISTINCTION BETWEEN BEAMS AND GIRDERS.
8. SEE SHEET A-20 FOR WINDOW DETAILS.
9. FOR CL-1 THRU CL-7, SEE SH. A-32.
10. SEE SH. A-17 FOR PARTITION CONTINUATION ABOVE CEILINGS.

PARTITION LEGEND

- 2 1/4" THICK MOVABLE GYP. BD. PARTITION
- METAL STUD PARTITION W/ GYP. BD. FINISH
- METAL STUD PARTITION
- METAL STUD PARTITION - 2 HOUR CONSTRUCTION OR 8 1/4" SOLID PLASTER PARTITION.
- DOUBLE METAL STUD PARTITION W/ 1" FIBER BOARD INSULATION BETWEEN RMS. 122, 123, & 124.
- ALUM. FRAMED GLASS PANELS IN 2 1/4" THICK GYP. BD. PARTITION
- BRICK WALL & PLASTER ON BONDING AGENT SEE "FINISH SCHEDULE" FOR OTHER FINISHES OVER PLASTER.
- EXTERIOR CONCRETE WALL & PLASTER ON BONDING AGENT - SEE "FINISH SCHEDULE" FOR OTHER FINISHES OVER PLASTER.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
23614 APPROVED AUG 1 5 1963
Per S. Maag

NOTE LB-2:
LOUVER BLINDS (PER SPECS): AT WINDOWS # 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, & 18.

REVISIONS	ENGINEER	ARCHITECT			
	William H. Wheeler LICENSE NO. 5848C	Charles E. Fry LICENSE NO. C-324	AUSTIN FIELD & FRY Architects Engineers 2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326 JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.	UPPER FLOOR PLAN. SCALE: 1/8" = 1'0" COLLEGE CENTER BUILDING #4 MT. SAN ANTONIO COLLEGE WALNUT, CALIFORNIA PROJECT IX	COMM. 1378 DATE MAY 1, 1963 DRAWN HENRY CHECKED BERRY SHEET A-3 OF 75

04-6301-010

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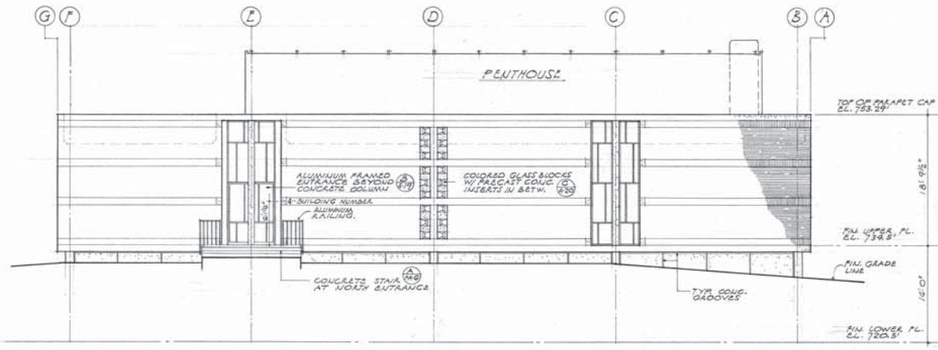
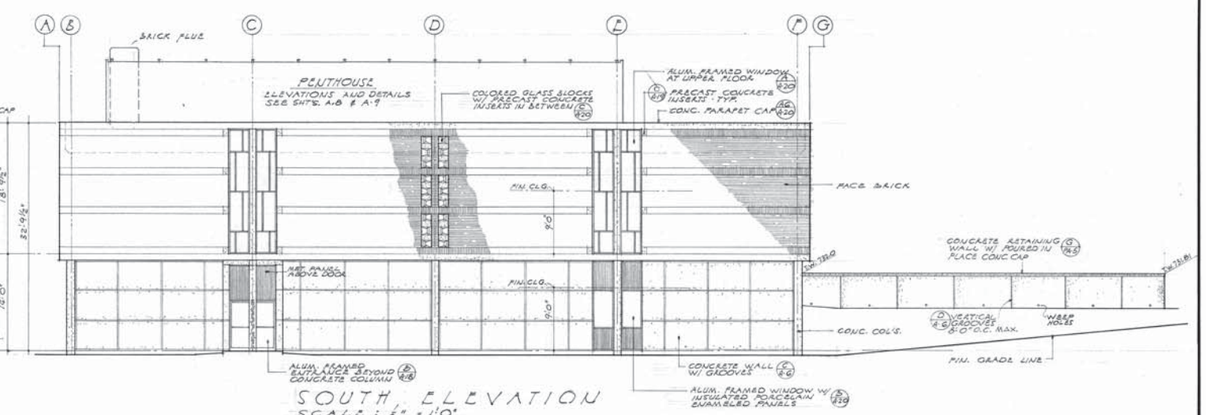


NORTH ELEVATION
SCALE: 1/8" = 1'-0"



SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

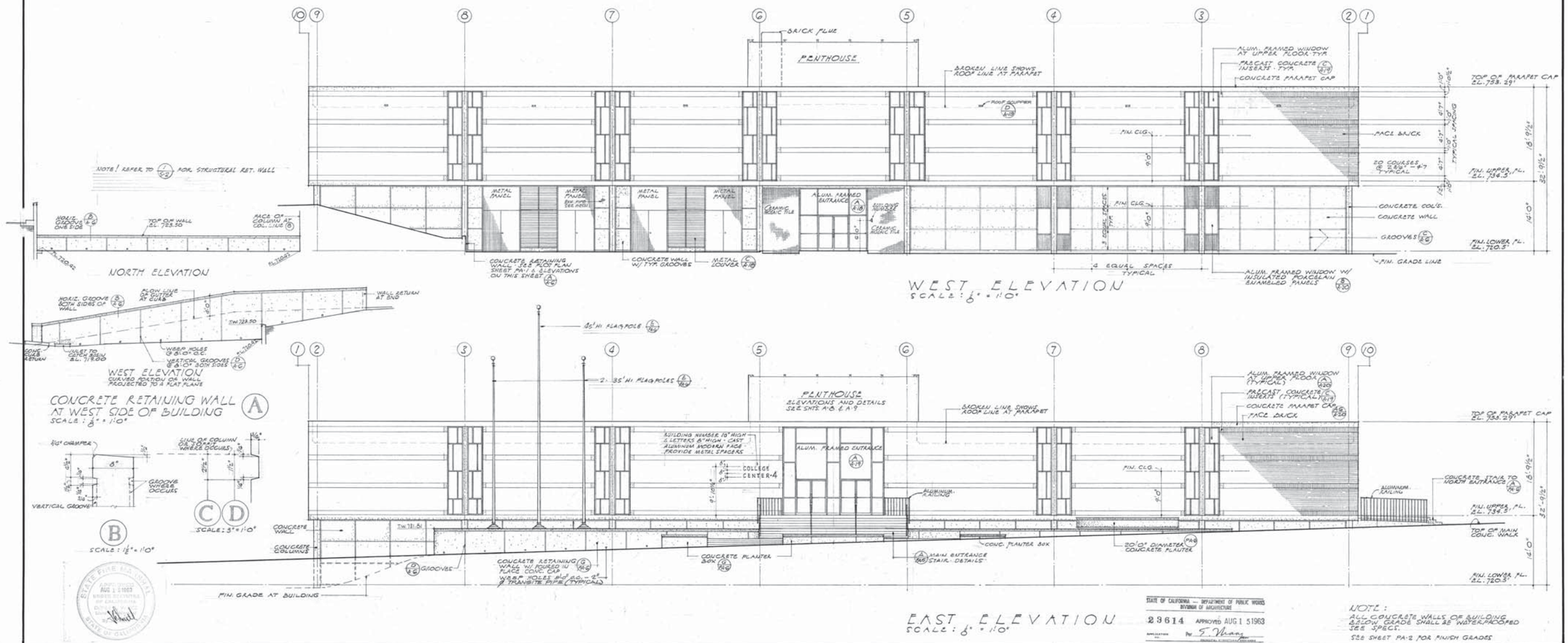
NORTH ELEVATION

WEST ELEVATION
CURVED PORTION OF WALL PROJECTED TO A FLAT PLANE

CONCRETE RETAINING WALL AT WEST SIDE OF BUILDING (A)
SCALE: 3/8" = 1'-0"

B
SCALE: 1½" = 1'-0"

C D
SCALE: 3" = 1'-0"



WEST ELEVATION
SCALE: 1/8" = 1'-0"

EAST ELEVATION
SCALE: 1/8" = 1'-0"

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
23614 APPROVED AUG 1 51963
By E. Neary

NOTE:
ALL CONCRETE WALLS OF BUILDING BELOW GRADE SHALL BE WATERPROOFED SEE SPECS.
SEE SHEET PA-2 FOR FINISH GRADES

REVISIONS		ENGINEER	ARCHITECT
		William W. Kuhler LICENSE NO. 5F 4886	Earl E. Fry LICENSE NO. C 5246

AUSTIN, FIELD & FRY
Architects & Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

EXTERIOR ELEVATIONS
COLLEGE CENTER - BUILDING #4
MT. SAN ANTONIO COLLEGE
WALNUT, CALIFORNIA
PROJECT IX

COMM. 1378
DATE May 1, 1963
DRAWN NATSUNO
CHECKED MOORE

SHEET A-6 OF 75

64-6501-015

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REVISIONS		ENGINEER	ARCHITECT			
	STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE 21407 APPROVED AUG 27 1961 Tel. Moody DIVISION ENGINEER, ARCHITECT	William Wheeler LICENSE NO. 486	Charles E. Fry LICENSE NO. C-324	AUSTIN FIELD & FRY Architects Engineers TWENTY-THREE ELEVEN WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.	ELEVATIONS LIBRARY BUILDING MT. SAN ANTONIO COLLEGE WALNUT CALIFORNIA

SCALE 1/8" = 1'-0"
PROJECT VI
COMM. 1045
DATE 6-9-61
DWN. F.E.L. BOODMAN
CHKD. H.O.A.J.
SHEET NO. A-8

6-6101-013

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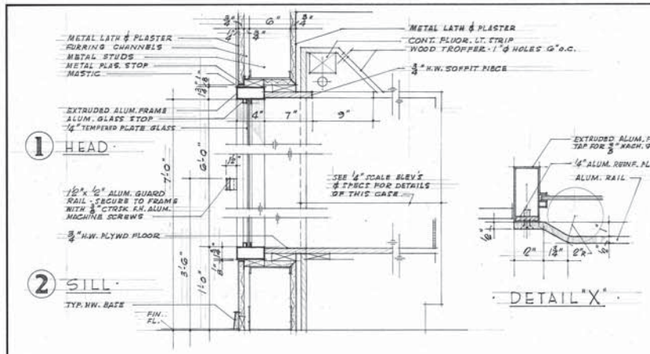
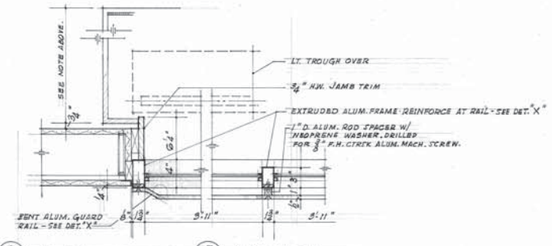
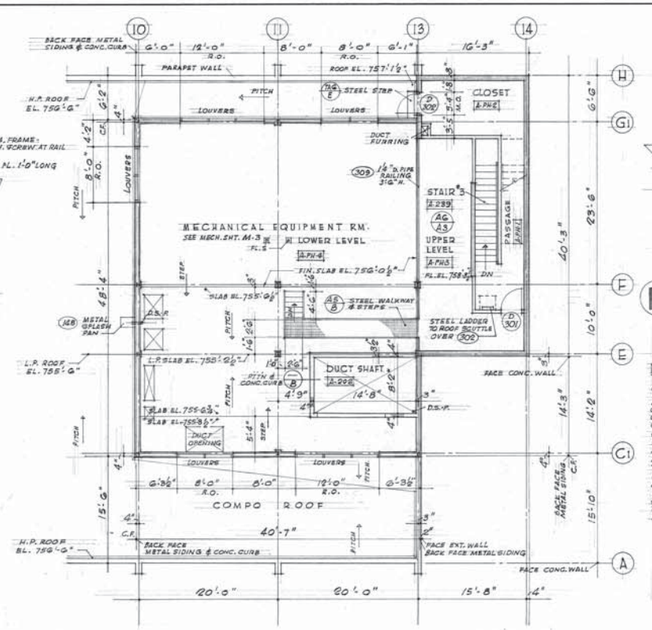




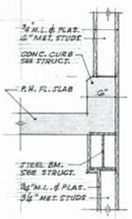
DISPLAY WINDOW DETAILS CORRIDOR A-102 (A)

SCALE 1½" = 1'-0"



PENTHOUSE FLOOR PLAN

NOTE: SEE STRUCTURAL & MECH. DWGS FOR TIES & LOCATION OF DUCT OPEN'GS IN P.H. FLOOR.

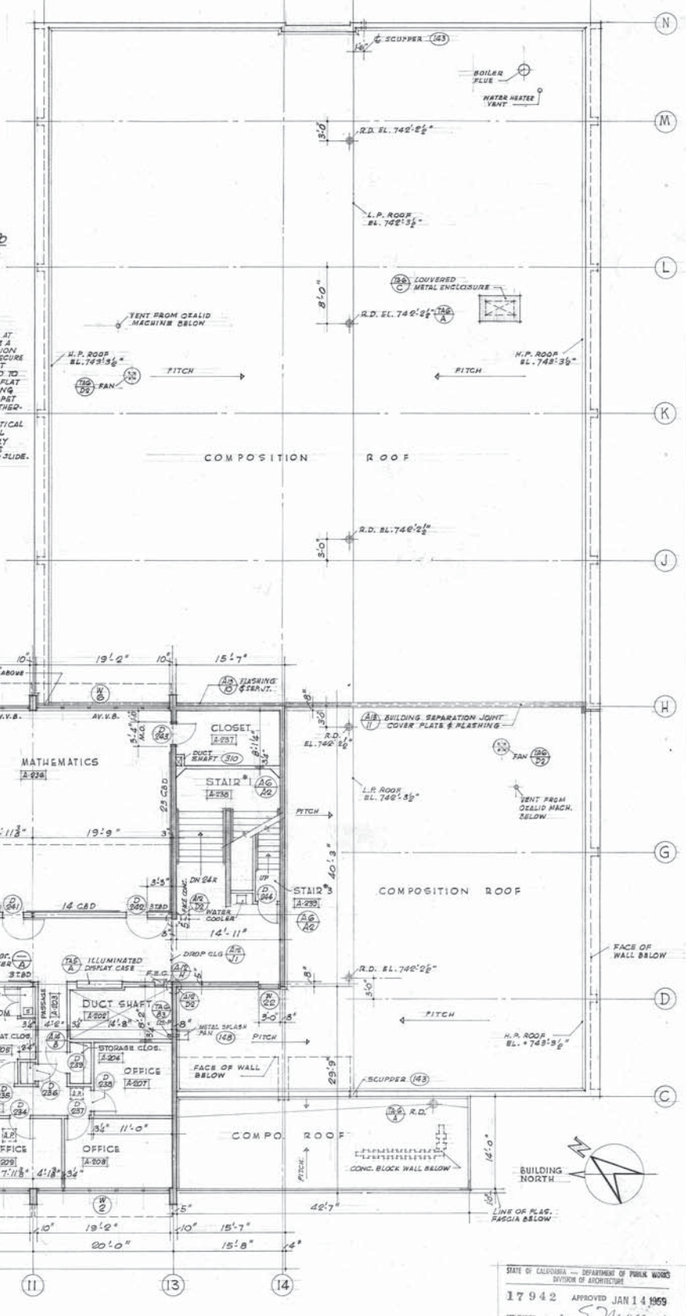


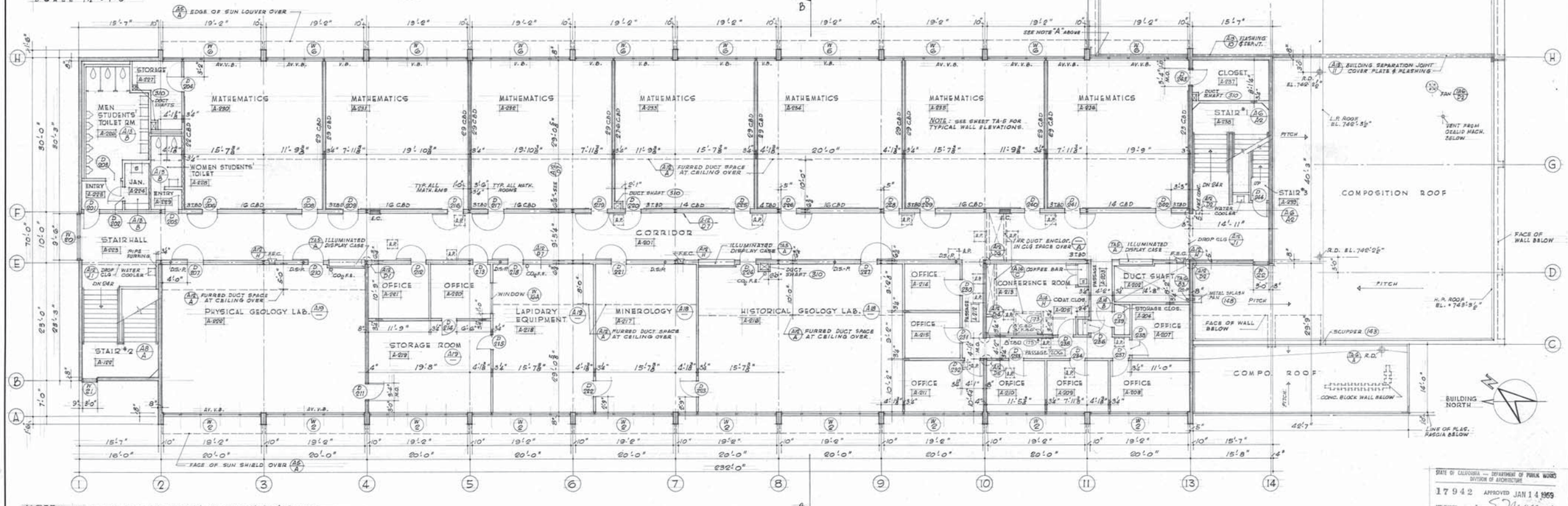
13 DETAIL OF CURB AT DUCT SHAFT

SCALE 1" = 1'-0"

NOTE "A"

PROVIDE 26 GA. G.I. MET. FLASHING AT TOP OF PARAPET. FLASHING TO HAVE A FLAT SEAM TO ALLOW SLIDING ACTION OF METAL IN TWO DIRECTIONS. SECURE ONE END OF FLASHING IN REGLET OF TWO STORY WALL & OTHER END TO CONC. PARAPET BEFORE FORMING FLAT SEAM. EXTEND THE METAL FLASHING A MIN. OF 18" ALONG TOP OF PARAPET AND TURN DOWN TO FORM A WEATHER-TIGHT CONNECTION. TURN DOWN METAL FLASHING ON INSIDE VERTICAL FACE OF PARAPET AND LAP METAL WALL FLASHING ALONG TWO STORY PORTION OF BUILDING. ALL JOINTS TO BE WEATHER-TIGHT BUT FREE TO SLIDE. SEE DET'L. A-19/10.





NOTE: ALL CEILING ACCESS PANELS (A.P.) ARE TO BE 8'-0" x 2'-0" UNLESS NOTED OTHERWISE. SEE (?) FOR DETAIL. SEE NOTE 16, SHEET PA-1 RE: LOCATION.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
17942 APPROVED JAN 14 1959
by S. Murray

Remarks | Revisions | Engineers | Approvals

DRAWN | CHECKED | ARCHITECT — LICENSE #C-5[illegible]

AUSTIN · FIELD & IRY
Architects A.I.A.
Engineers
2311 WEST THIRD STREET
LOS ANGELES 57, CALIFORNIA
DUnkirk 8-1326

BUILDING

SECOND FLOOR AND PENTHOUSE PLAN.

PHYSICAL SCIENCE & ENGINEERING CENTER
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

DATE 10/28/58 | COMM. 1532 | PROJ. NO. III | SCALE 1/8" = 1'-0" | SHEET NUMBER A1-3

(A1)

L-7-1960

PA-111

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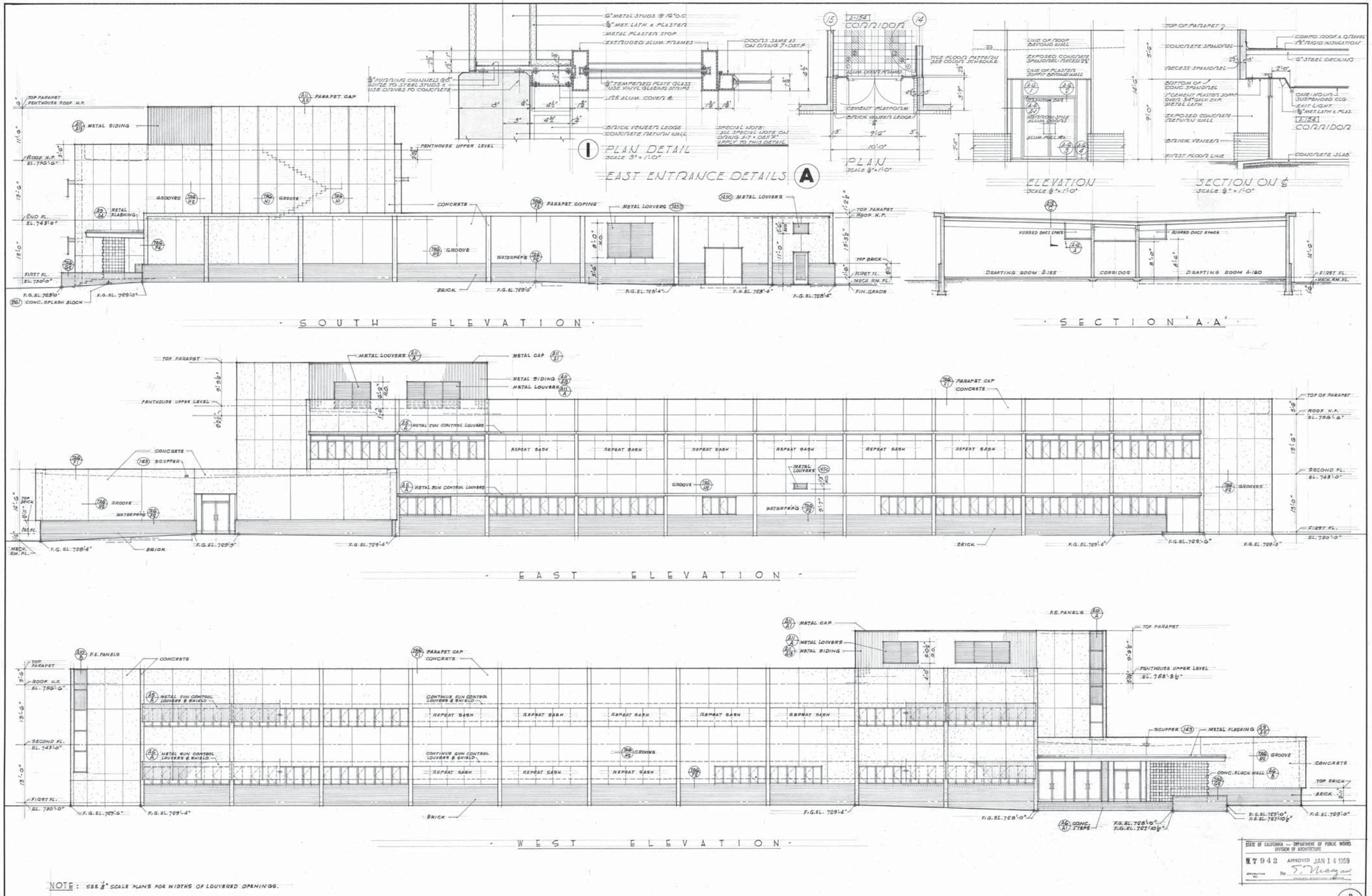

NOTE: SEE 1/8" SCALE PLANS FOR WIDTHS OF LOUVERED OPENINGS.

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
17942 APPROVED JAN 14 1959
APPLICATION NO. Per T. Nagy and PROJECT MINISTERIAL ENGINEER

Remarks	Revisions	Engineers	Approvals

DRAWN: Bonnie Bonnie — CHECKED: Rockwell
ARCHITECT — LICENSE # C-3886

AUSTIN · FIELD & FRY
Architects A.I.A.
Engineers
2311 WEST THIRD STREET
LOS ANGELES 57, CALIFORNIA
DUnkirk 8-1326

BUILDING
EXTERIOR ELEVATIONS AND SECTION
PHYSICAL SCIENCE & ENGINEERING CENTER
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

PROJ. NO. III
SCALE 1/8" = 1'-0"
DATE 10/28/58
COMM. 1232
SHEET NUMBER A-4

7-5801-010

PA-112

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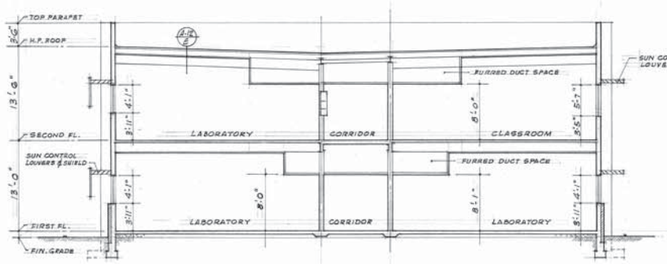
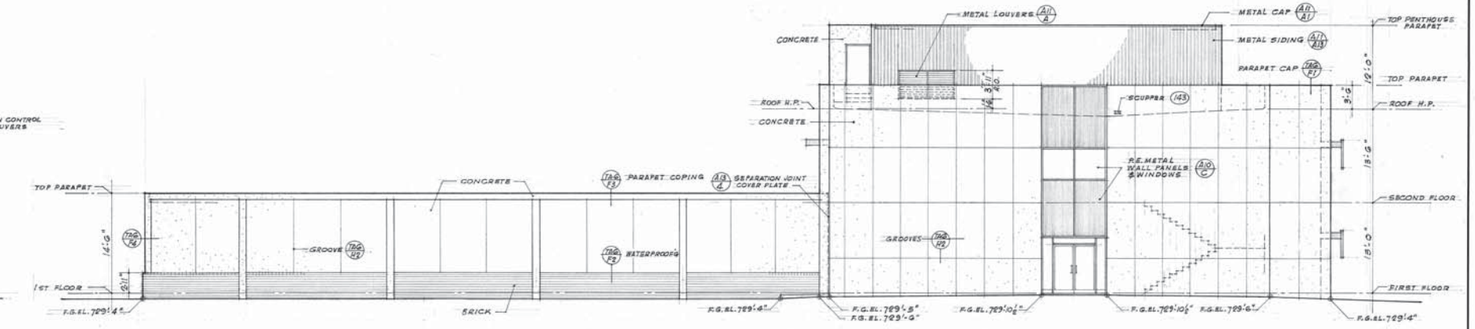
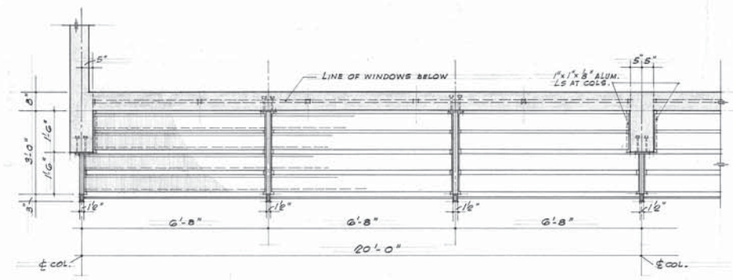


· SECTION 'B-B' ·

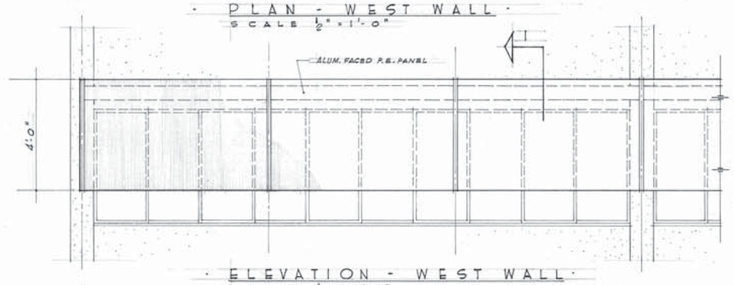


· NORTH ELEVATION ·

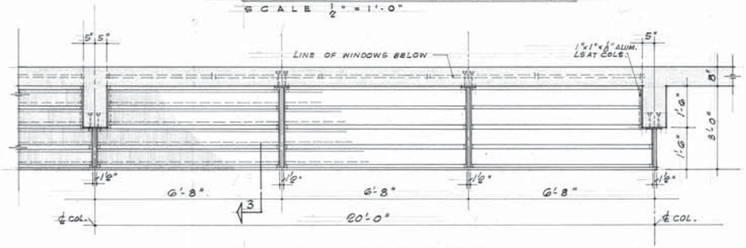
NOTE : SEE ¼" SCALE PLANS FOR WIDTH OF MET. LOUVERS



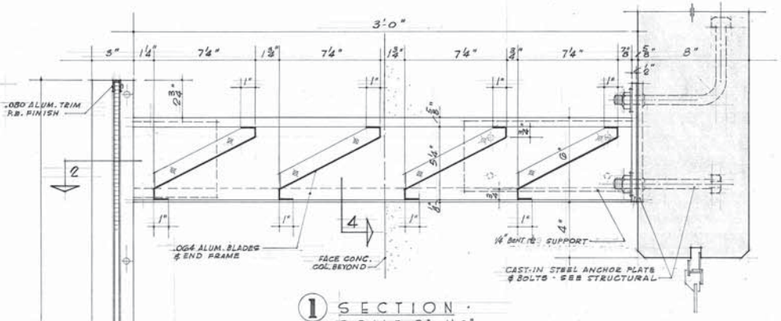
· PLAN - WEST WALL ·
SCALE ½" = 1'-0"



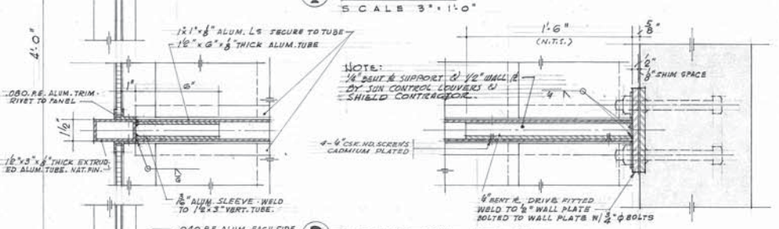
· ELEVATION - WEST WALL ·
SCALE ½" = 1'-0"



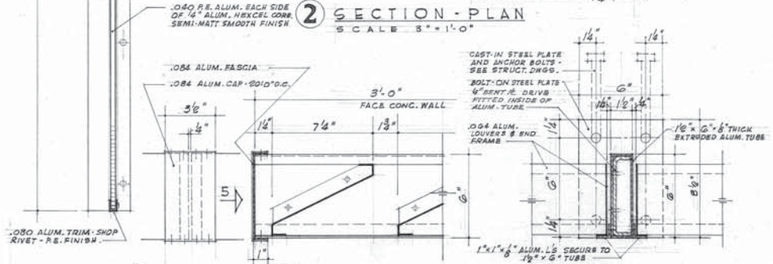
· PLAN - EAST WALL ·
SCALE ½" = 1'-0"



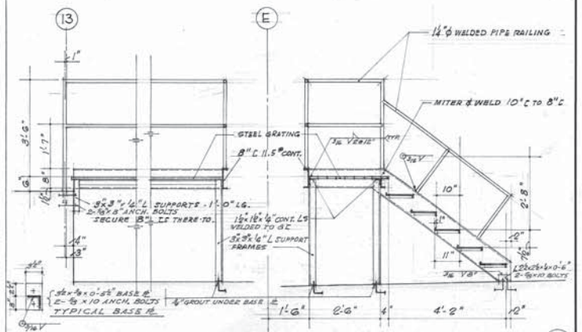
① SECTION ·
SCALE 3" = 1'-0"

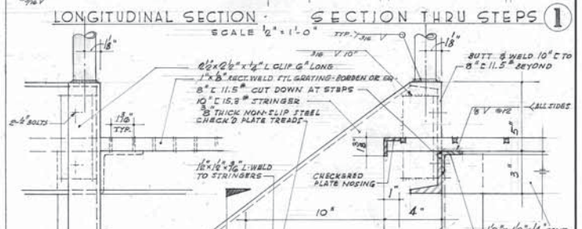


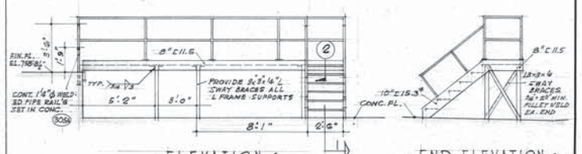
② SECTION - PLAN
SCALE 3" = 1'-0"



⑤ ELEV. ③ SECTION · ④ SECTION ·
SCALE 3" = 1'-0"







· ELEVATION ·
SCALE ½" = 1'-0"

· END ELEVATION ·
SCALE ½" = 1'-0"

NOTE : SEE PLAN, SHT A-3 FOR ADDITIONAL DIMENSIONS.

(A) DETAILS OF SUN CONTROL LOUVERS AND SHIELD ·

(13) DETAILS - PENTHOUSE WALKWAY (A1)

BUILDING

STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
17942 APPROVED JAN 14 1959
by S. Wray
APPROVED UNDER APPLICATION NO.
FINANCIAL INTEREST CERTIFICATION

Remarks | Revisions | Engineers | Approvals

DRAWN | CHECKED | ARCHITECT — LICENSE # C-24

AUSTIN · FIELD & FRY
Architects A.I.A.
Engineers
2311 WEST THIRD STREET
LOS ANGELES 57, CALIFORNIA
DUnkirk 8-1326

EXT. ELEVATION, SECTION, SUN CONTROL LOUVERS & P.H. DET'L'S
PHYSICAL SCIENCE & ENGINEERING CENTER
MT. SAN ANTONIO COLLEGE
WALNUT CALIFORNIA

DATE 10/16/58
DOWN 1255
SHEET NUMBER
PROJ. NO. III
SCALE AS NOTED
A-5

T-5901-611

PA-120

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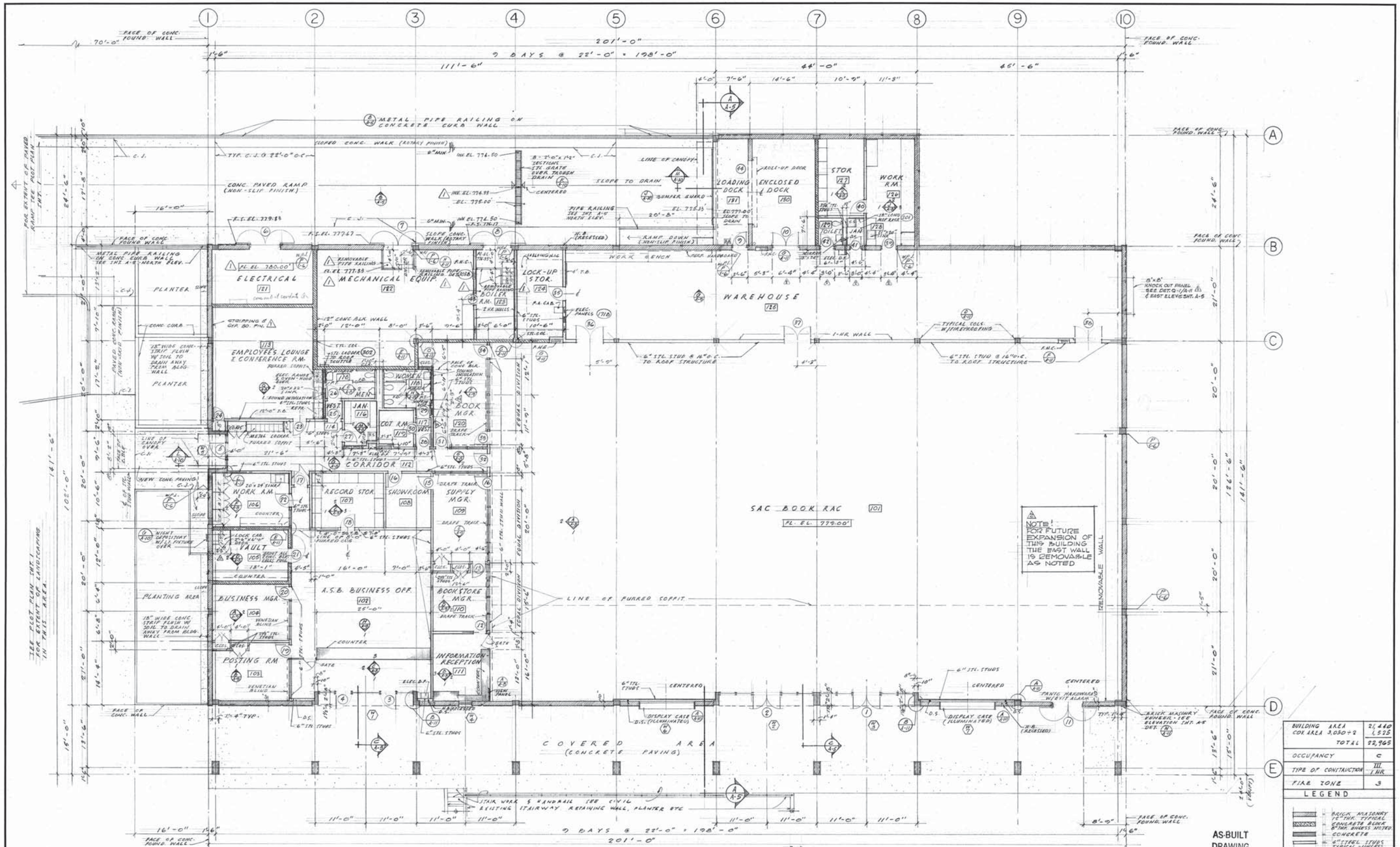

FLOOR PLAN

SCALE 1/8" = 1'-0"

DATUM 779.00'

NOTE: CARRY 6" STEEL STUDS UP TO STEEL ROOF STRUCTURE AT ± 4'-0" O.C. & BRACED AS DETAILED ON STRUCT. DWGS.

AS-BUILT DRAWING
DATE DEC 30 1969

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 23 1968
BY

BUILDING AREA	21,440
COV. AREA 3,050 ÷ 2	1,525
TOTAL	22,965
OCCUPANCY	C
TYPE OF CONSTRUCTION	III / 1 HR
FIRE ZONE	3

LEGEND

- BRICK MASONRY 12" THK. TYPICAL
- CONCRETE BLOCK 8" THK. UNLESS NOTED
- CONCRETE
- 6" STEEL STUDS TYPICAL - UNLESS NOTED OTHERWISE.
- 302 AUSTIN, FIELD & FRY STANDARD DETAIL SHEETS BOUND W/ SPECIFICATIONS
- 2 A/A-5 INDICATE VIEW OF INTERIOR WALL
- A/A-5 INDICATES SECTION THRU BUILDING OR PARTIAL SECTION

REVISIONS	
1 9-19-68 REVISED PIN FLOOR ELEV.	
2 12-17-69 AS BUILT CHANGES	

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF ARCHITECTURE AND CONSTRUCTION
AS REVISED SEP 24 1968 BY PL.
AS BUILT APPROVED JUL 23 1968
APPLICATION NO. PROJECT ARCHITECT

ENGINEER: William H. Wheeler — LICENSE NO. SE 4996

ARCHITECT: Charles E. Fry — LICENSE NO. C-324

AUSTIN FIELD & FRY
Architects Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326

JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.

FLOOR PLAN
STUDENT UNION & ACTIVITY FACILITY
MT. SAN ANTONIO COLLEGE BLDG. No. 9A
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XIV

COMM. 1487
DATE 6-1-68
DRAWN CHINN
CHECKED BARLOW

SHEET A-3
4 OF 35

9A-6801-008

2/68 DIETERICH-POST CLEARPRINT 1000H

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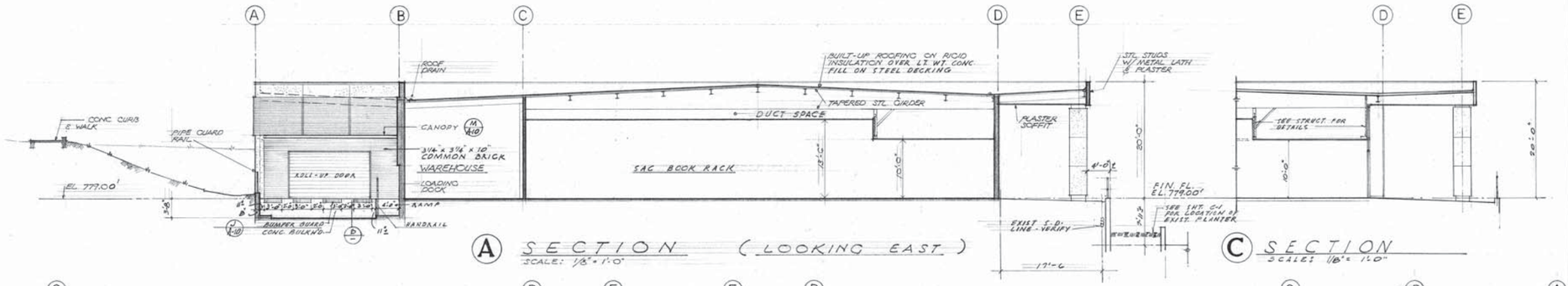

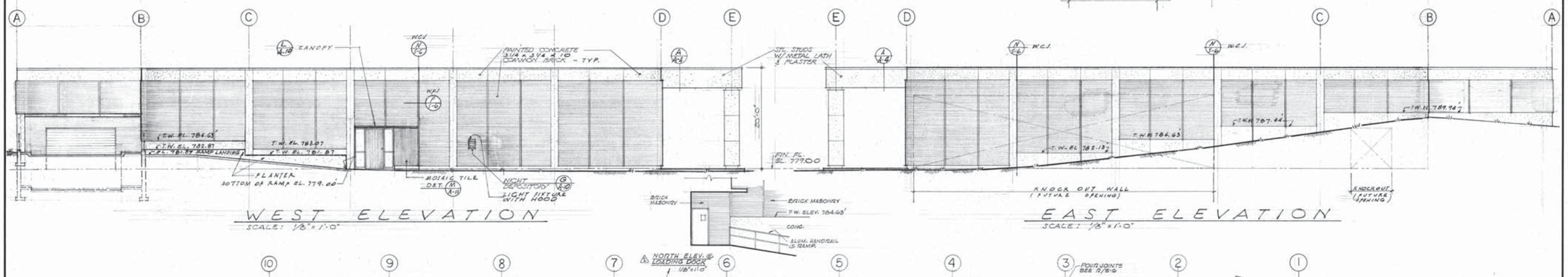

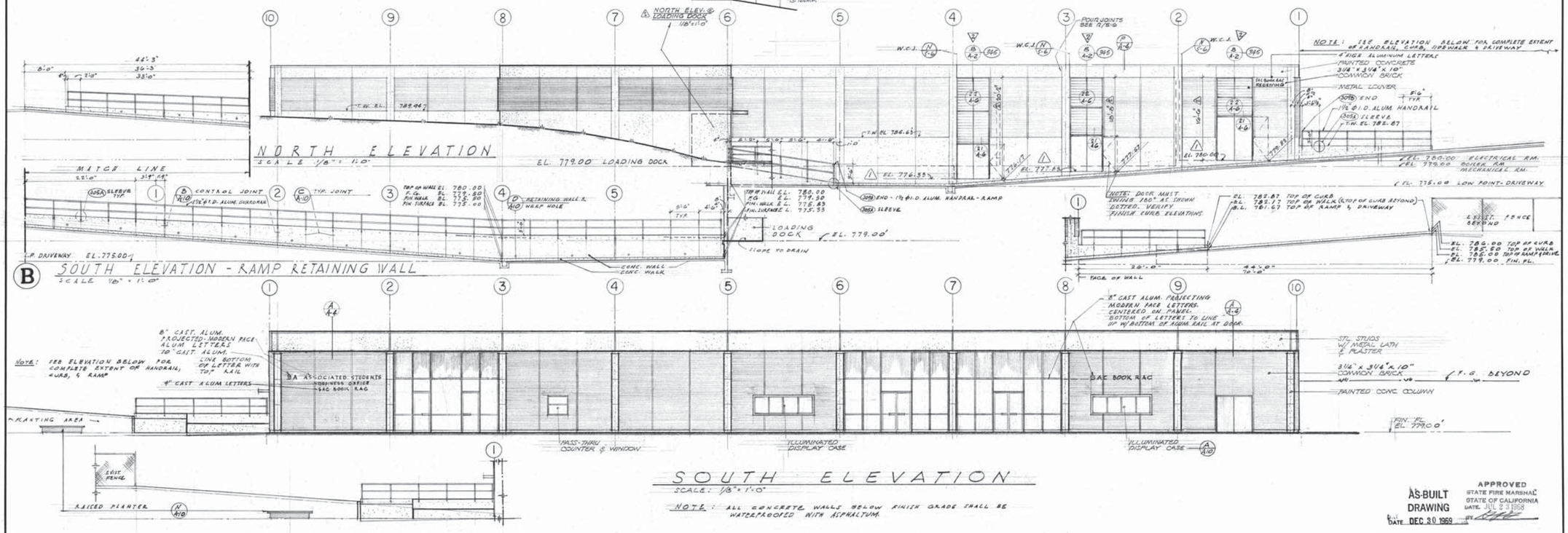

AS-BUILT DRAWING
DATE DEC 30 1969

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 23 1968
BY

REVISIONS		ENGINEER	ARCHITECT
7-26-68 REVISED FIN. FLOOR ELEV.	STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES DIVISION OF ARCHITECTURE AND CONSTRUCTION	William J. Wheeler	Charles E. Fry
10-1-69 AS BUILT CHANGES	AS REVISED SEP 24 1969 APPROVED JUL 23 1968	LICENSE NO. C-9781	LICENSE NO. C-3247

AUSTIN FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, A.I.A.
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

EXTERIOR ELEVATIONS & SECTIONS
STUDENT UNION & ACTIVITY FACILITY
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XIV
BLDG NO. 9A

COMM. 1487
DATE 6-1-68
DRAWN KOTTRA
CHECKED EARLEW

SHEET A-5
4 OF 35

9A-6801-010

6/68 DIETZGEN-POST CLEARPRINT 1088H

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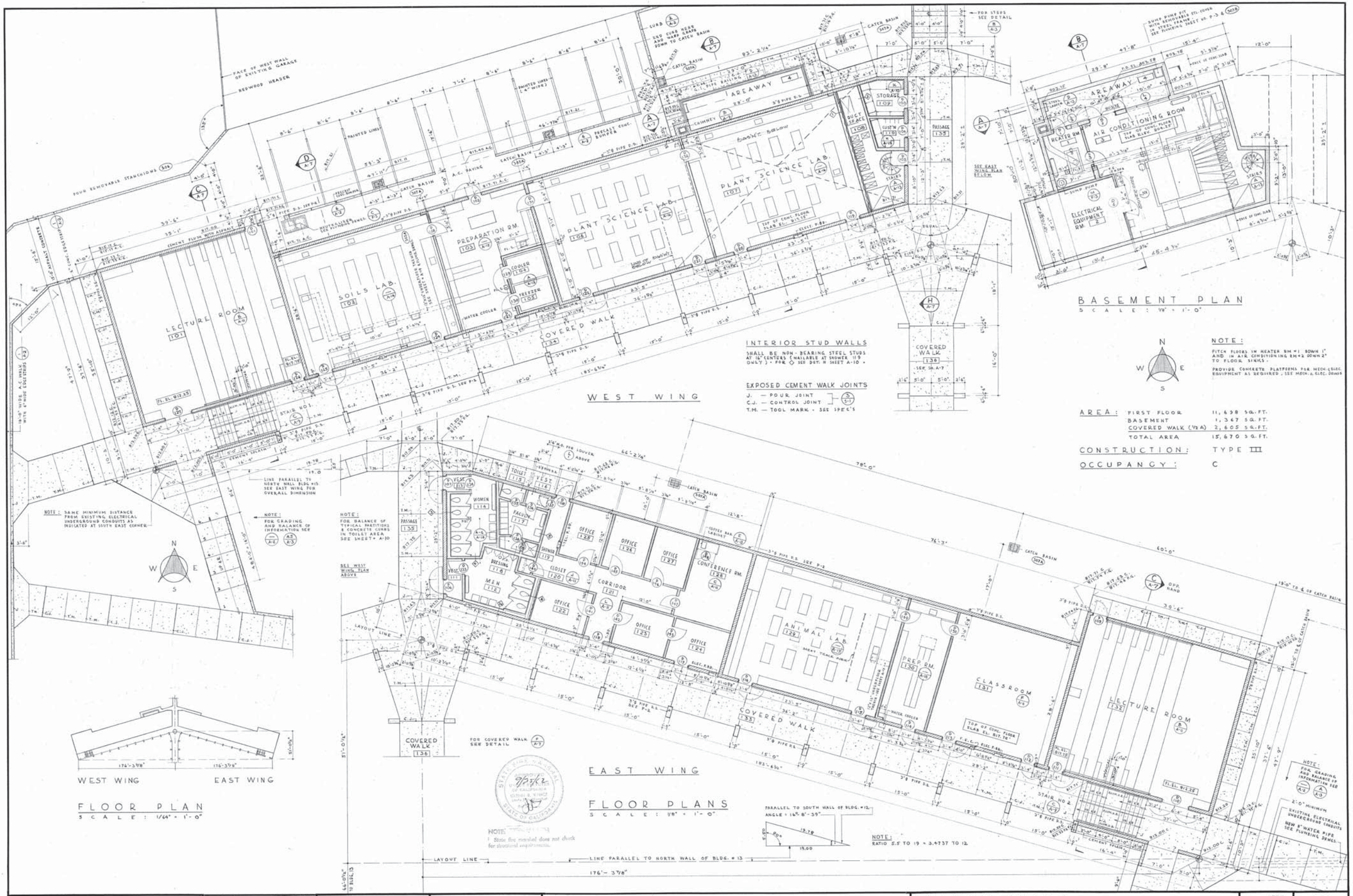

REVISIONS		ENGINEER	ARCHITECT		FLOOR PLANS		SHEET
	STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE 22786 APPROVED SEP 25 1962	William H. Wheeler LICENSE NO. 5486	Charles E. Fry LICENSE NO. C-324	AUSTIN FIELD & FRY Architects Engineers 2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.	AGRICULTURAL SCIENCE BLDG. # 12 MT. SAN ANTONIO COLLEGE WALNUT CALIFORNIA	PROJECT VIII	COMM. 1377 DATE 8-1-62 DRAWN R. GUYOT CHECKED NORRIS	A-5 OF 35

12-6201-005

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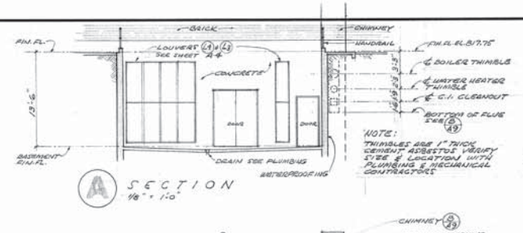
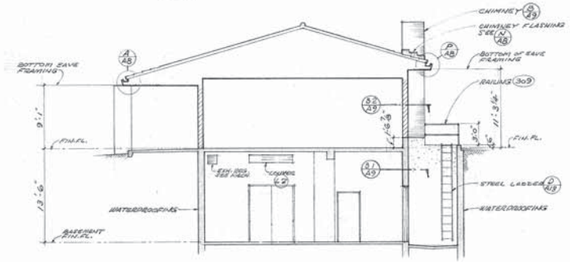
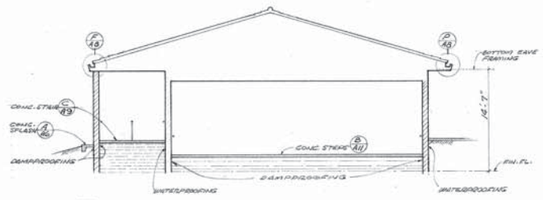


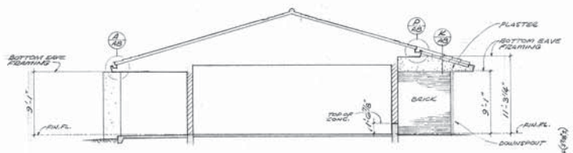
A SECTION
1/8" = 1'-0"



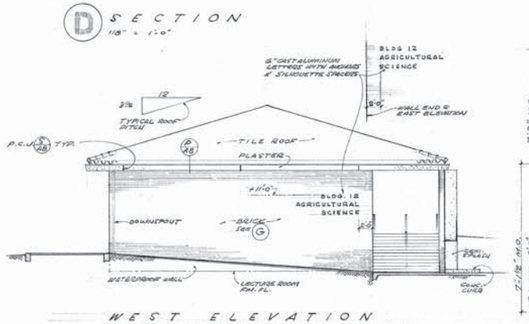
B SECTION
1/8" = 1'-0"



C SECTION
1/8" = 1'-0"

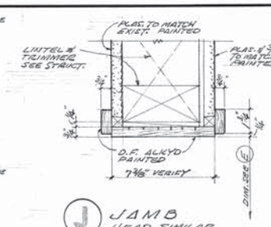


D SECTION
1/8" = 1'-0"



WEST ELEVATION
EAST ELEVATION SIMILAR & OPP. HAND
1/8" = 1'-0"

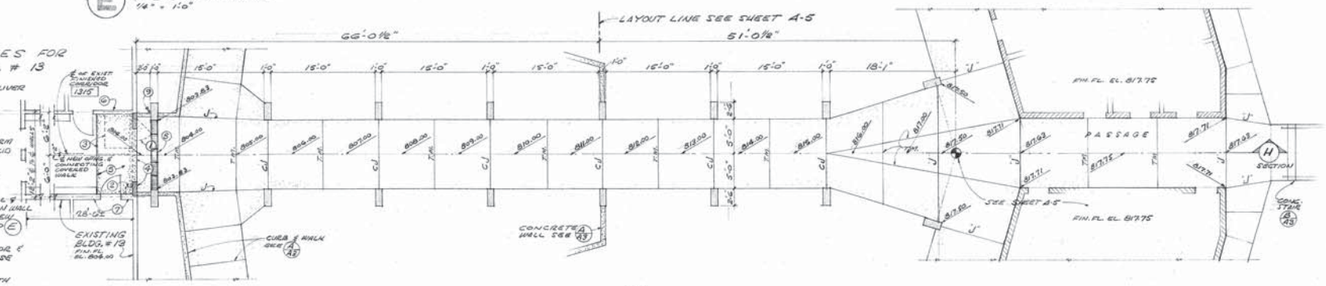
E ELEVATION
1/4" = 1'-0"



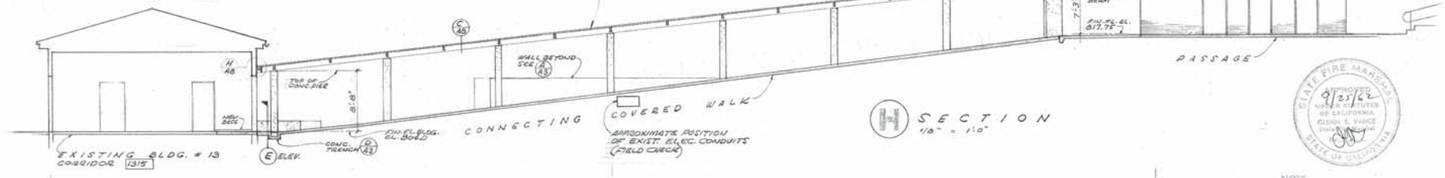
J JAMB
HEAD SIMILAR
3"=1'-0"

REMODELING NOTES FOR EXISTING BLDG. # 13

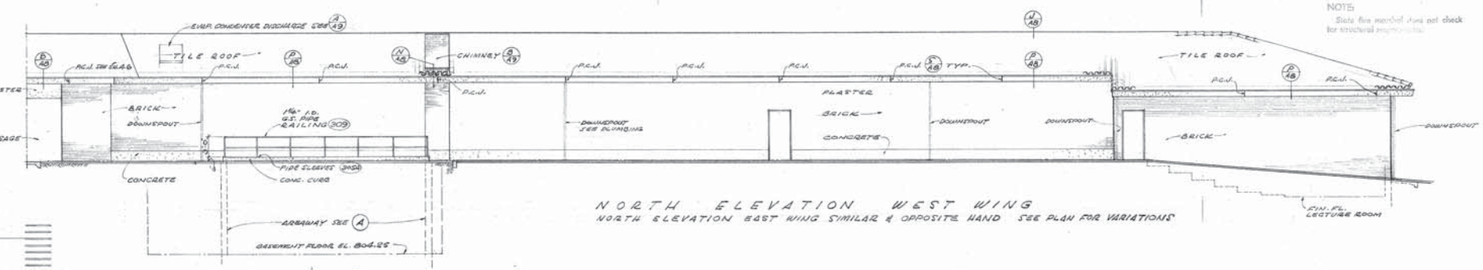
1. REMOVE EXIST. DOOR & DELIVER TO DISTRICT.
2. REMOVE EXIST. CONC. LOCKER, BASE.
3. REMOVE EXIST. CONC. PLATFORMS & STEPS. REPLACE WITH NEW 4000 P.S.I. STAINED CEMENT FLOOR & RAMP. BASE TO JOIN & MATCH EXIST. - PATCH EXIST. WALL AS REQUIRED
4. REMOVE EXIST. 2 x 6 STUD WALL & WINDOWS & CONC. FOUNDATION WALL AS REQ'D. - CONSTRUCT NEW WALL & OPENING AS INDICATED SEE STRUCT. FOR LINTEL
5. REMOVE EXIST. CEMENT FLOOR & REPLACE WITH NEW FLOOR & BASE SEE NOTE 2
6. EXIST. 2 x 6 STUD WALL WITH PLASTER EACH SIDE.
7. EXIST. 2 x 6 STUD WALL WITH 1/4 DIAG. SHEATHING EACH SIDE & PLASTER ON 1x8 STRIPPING EACH SIDE
8. NEW FRAME & GRATING OVER CONC. DRAINAGE TRENCH - SEE
9. DOWNSPOUT BOOT SEE PLUMBING DWGS.



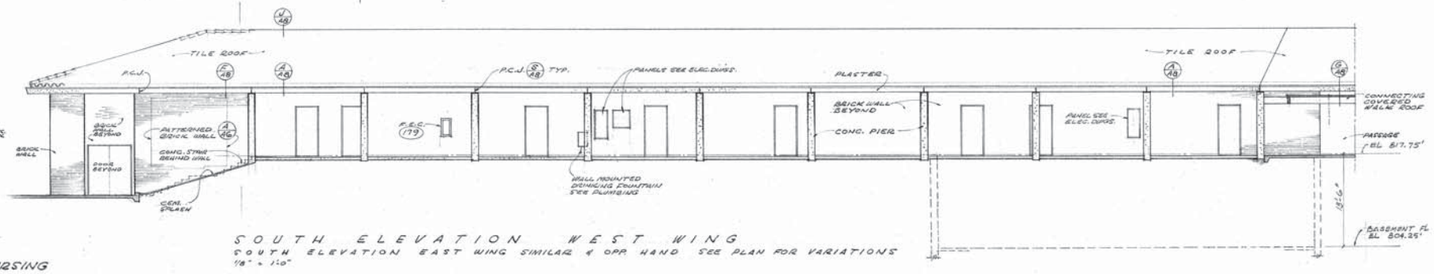
F PLAN — CONNECTING COVERED WALK
1/8" = 1'-0"



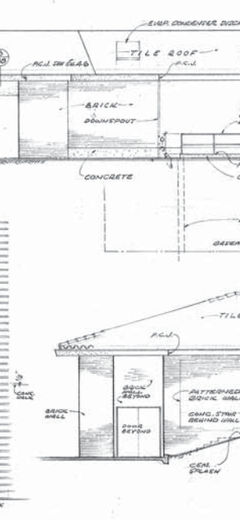
H SECTION
1/8" = 1'-0"



NORTH ELEVATION WEST WING
NORTH ELEVATION EAST WING SIMILAR & OPPOSITE HAND SEE PLAN FOR VARIATIONS



SOUTH ELEVATION WEST WING
SOUTH ELEVATION EAST WING SIMILAR & OPP. HAND SEE PLAN FOR VARIATIONS
1/8" = 1'-0"



G BRICK COURSING

STATE FIRE MARSHAL APPROVED 9/23/62 UNIV. INSTITUTES OF CALIFORNIA ELDON S. VANCE STATE FIRE MARSHAL

NOTE: State fire marshal does not check for structural requirements

REVISIONS		STATE OF CALIFORNIA — DEPARTMENT OF PUBLIC WORKS	ENGINEER	ARCHITECT	AUSTIN FIELD & FRY Architects Engineers	ELEVATIONS, SECTIONS & CONNECTING WALK	COMM. 1377	SHEET
		22786, APPROVED SEP 25 1962			JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, A.I.A.	AGRICULTURAL SCIENCE BLDG # 12 MT. SAN ANTONIO COLLEGE	DATE 9-1-62	A.7
			LICENSE NO. [illegible]	LICENSE NO. C-[illegible]	2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	WALNUT CALIFORNIA	PROJECT VIII	OF 35
							DRAWN DRICKER CHECKED [illegible]	

12-1029-007

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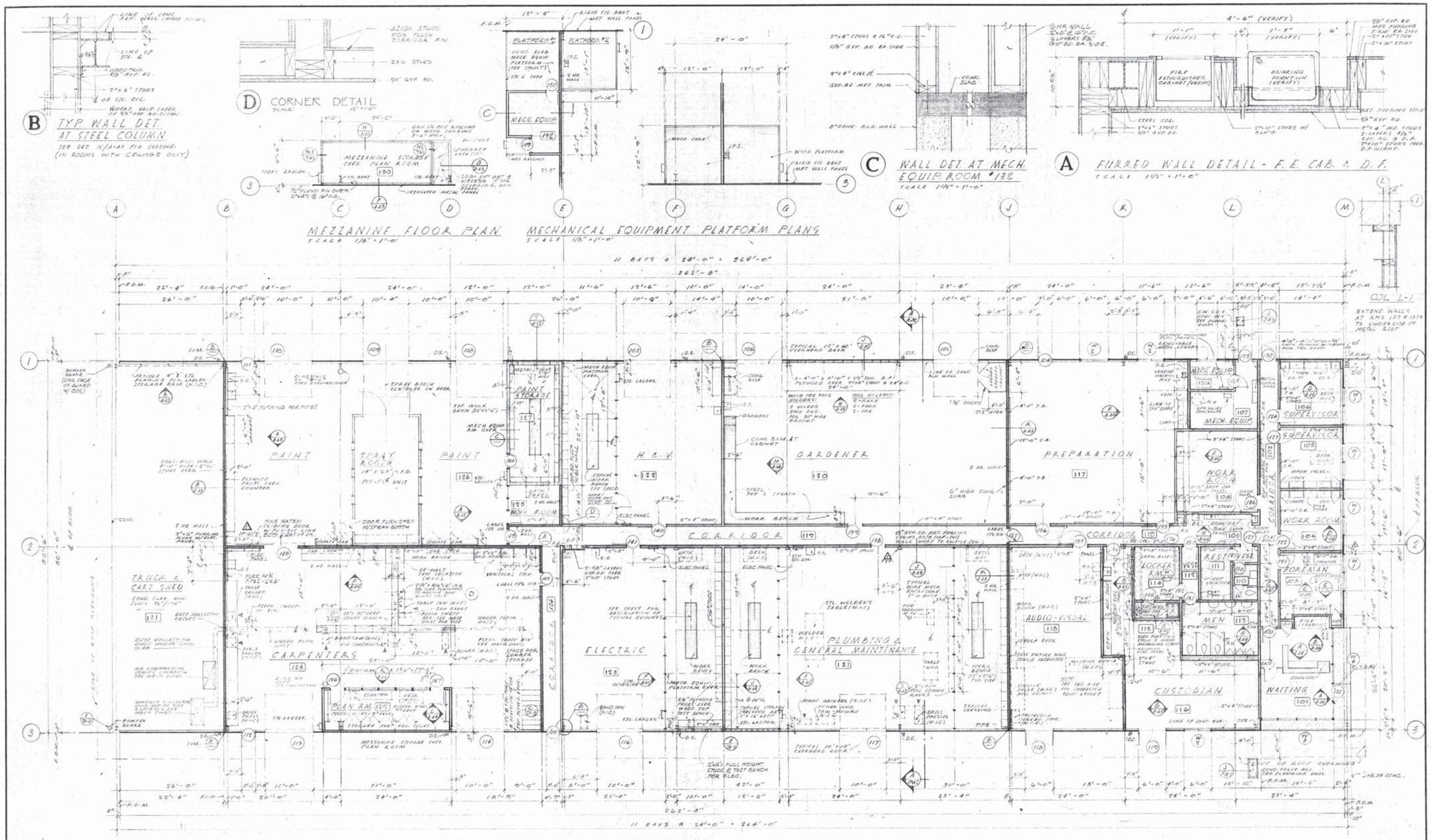

NOTE!
THIS CONTRACTOR SHALL INSTALL THE FOLLOWING EQUIPMENT BY PERMANENTLY FASTENING TO THE FLOOR - OR COUNTER ETC.

A. CARPENTERS SHOP
1. BAND SAW
2. JIG SAW
3. JOINER
4. DE WALT SAW
5. DRILL PRESS
6. ONE TABLE SANDER
7. TABLE SAW

B. PLUMBING & MAINTENANCE SHOP
1. POWER GRINDER
2. STEEL WELDER'S TABLE
3. TWO DRILL PRESSES
4. PIPE THREADER

C. ELECTRIC SHOP
1. BAND SAW

5. AT SINKS IN SHOPS PROVIDE SURFACE MOUNTED PAPER TOWEL CABINET & SOAP DISPENSER. TYPICAL

APPROVED
STATE OF CALIFORNIA
DIV. OF ARCHITECTURE

GENERAL NOTES:
1. MASONRY OPENINGS - DOORS & OTHER OPENINGS ON FLOOR PLANS ARE FINISH SIZES. WIDTH OF MASONRY OPENINGS SHALL BE DETERMINED BY METAL BUILDING CONTRACTOR AFTER DOOR POST SIZES HAVE BEEN DETERMINED.
2. ALL LOUVERS IN CORRIDOR DOORS SHALL HAVE FUSIBLE LINKS.
3. SEE STRUCTURAL DRAWINGS FOR LOCATIONS OF EXPANSION JOINTS IN CONCRETE SLAB AT COLUMN BASE.
4. DIMENSIONS GO TO ℄ OF STUDS & FACE OF MASONRY.

FINISH FLOOR ELEV. 716.50'

FLOOR PLAN
SCALE 1/8" = 1'-0"

LEGEND:
= 2"x6" WOOD STUD WALL UNLESS NOTED OTHERWISE.
= BUTLER "MONOPANE" WALL SYSTEM OR EQUAL.
= 2 HOUR PARTITION (2"x6" STUDS) UNLESS OTHERWISE NOTED
= CONCRETE MASONRY WALL (STACK BOND - TYPICAL)

T = OPERATOR'S SIDE.
(176) = AUSTIN, FIELD & FRY STANDARD DETAIL SHEETS BOUND IN THE BACK OF THE SPECIFICATIONS.

MAINTENANCE & OPERATIONS BLDG. 'A' (47)

NOV. 1, 1968

LEGEND	
BUILDING AREAS:	
MAINTENANCE	15,460
PAINT & CARPENTER	5,600
TOTAL SQ. FT.	21,040
OCCUPANCY:	
PAINT SHOP	F-2
ALL OTHERS	F-2
TYPE OF CONSTRUCTION	V-N

REVISIONS		ENGINEER	ARCHITECT
1 AS BUILT - NOV. 1, 1968		William [illegible] LICENSE NO. C-486	Charles E. Fry LICENSE NO. C-824

AUSTIN FIELD & FRY
Architects Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.

FLOOR PLANS
COLLEGE SERVICE CENTER
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XII

COMM. 1904
DATE APR. 28, 1967
DRAWN CHINN
CHECKED DEB

SHEET A-A1
16 OF 55

47-6701-016

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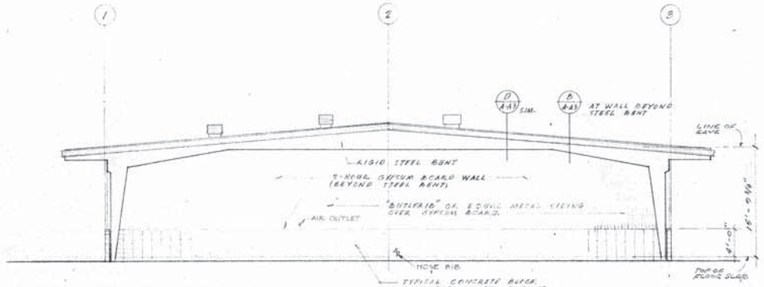
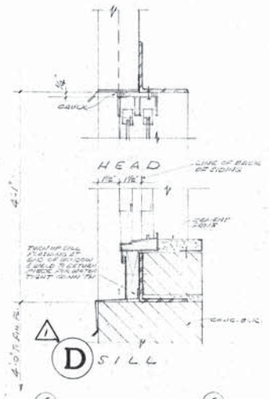
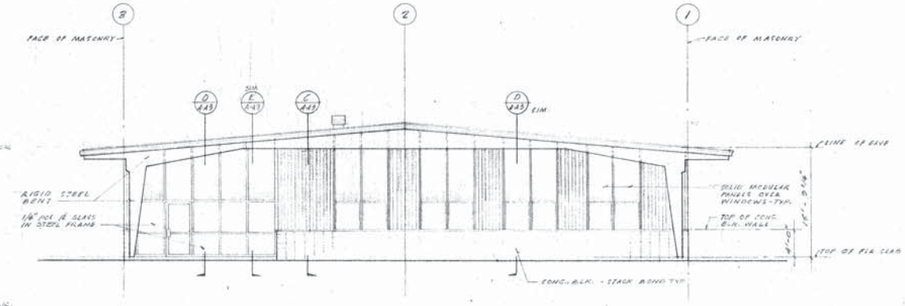


SOUTH

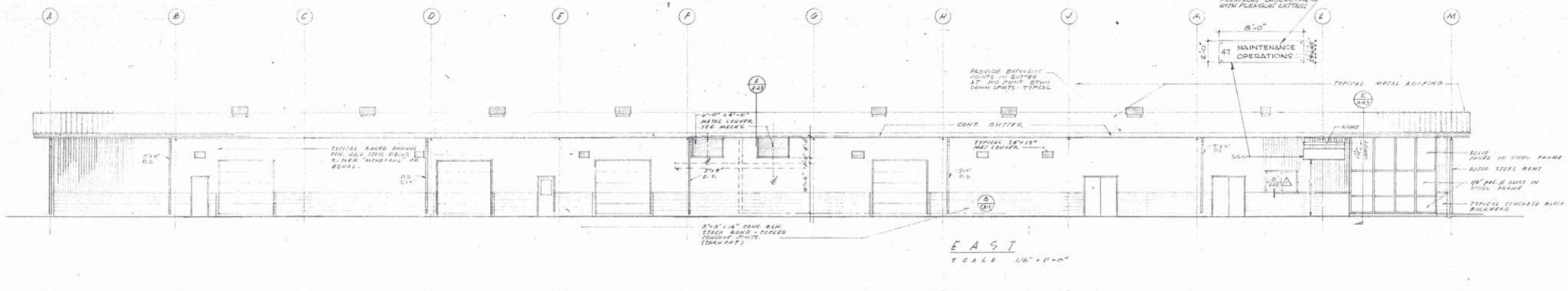
SCALE 1/8" = 1'-0"





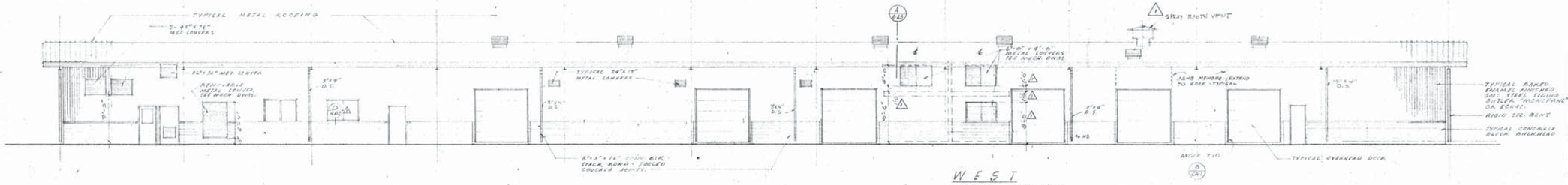
NORTH

SCALE 1/8" = 1'-0"



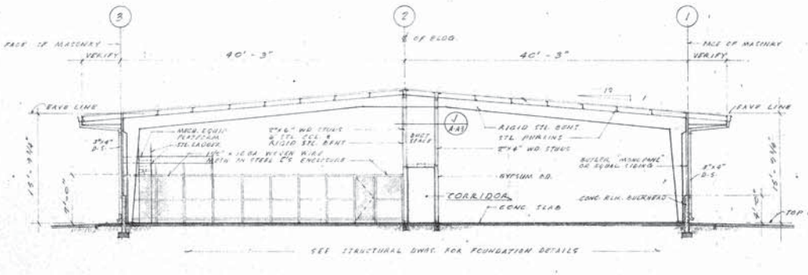
EAST

SCALE 1/8" = 1'-0"



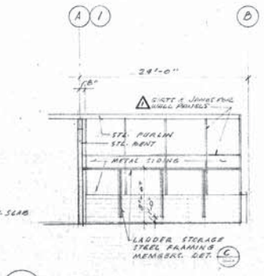
WEST

SCALE 1/8" = 1'-0"



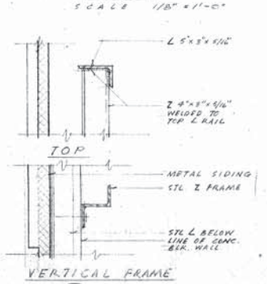
A SECTION

SCALE 1/16" = 1'-0"



B 182 WEST TRUCK & CAR SHED ELEVATION

SCALE 1/8" = 1'-0"



C STEEL FRAME FOR LADDER STORAGE

SCALE 1½" = 1'-0"

MAINTENANCE & OPERATIONS BUILDING "A" (47) MT. S. 1967

APPROVED
STATE ARCHITECT
STATE OF CALIFORNIA

REVISIONS	ENGINEER	ARCHITECT
△1 AS BUILT - NOV. 1, 1968	William M. White	Charles E. Fry
	LICENSE NO. SE-486	LICENSE NO. C-926

AUSTIN FIELD & FRY Architects Engineers

JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.

2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

EXTERIOR ELEVATIONS & SECTIONS

COLLEGE SERVICE CENTER

MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XII

COMM. 1894
DATE APR. 28, 1967
DRAWN CHINN
CHECKED JSG

SHEET A-A2
17 OF 55

47-1017

8/68 DIETERICH-POST CLEARPRINT 1000H

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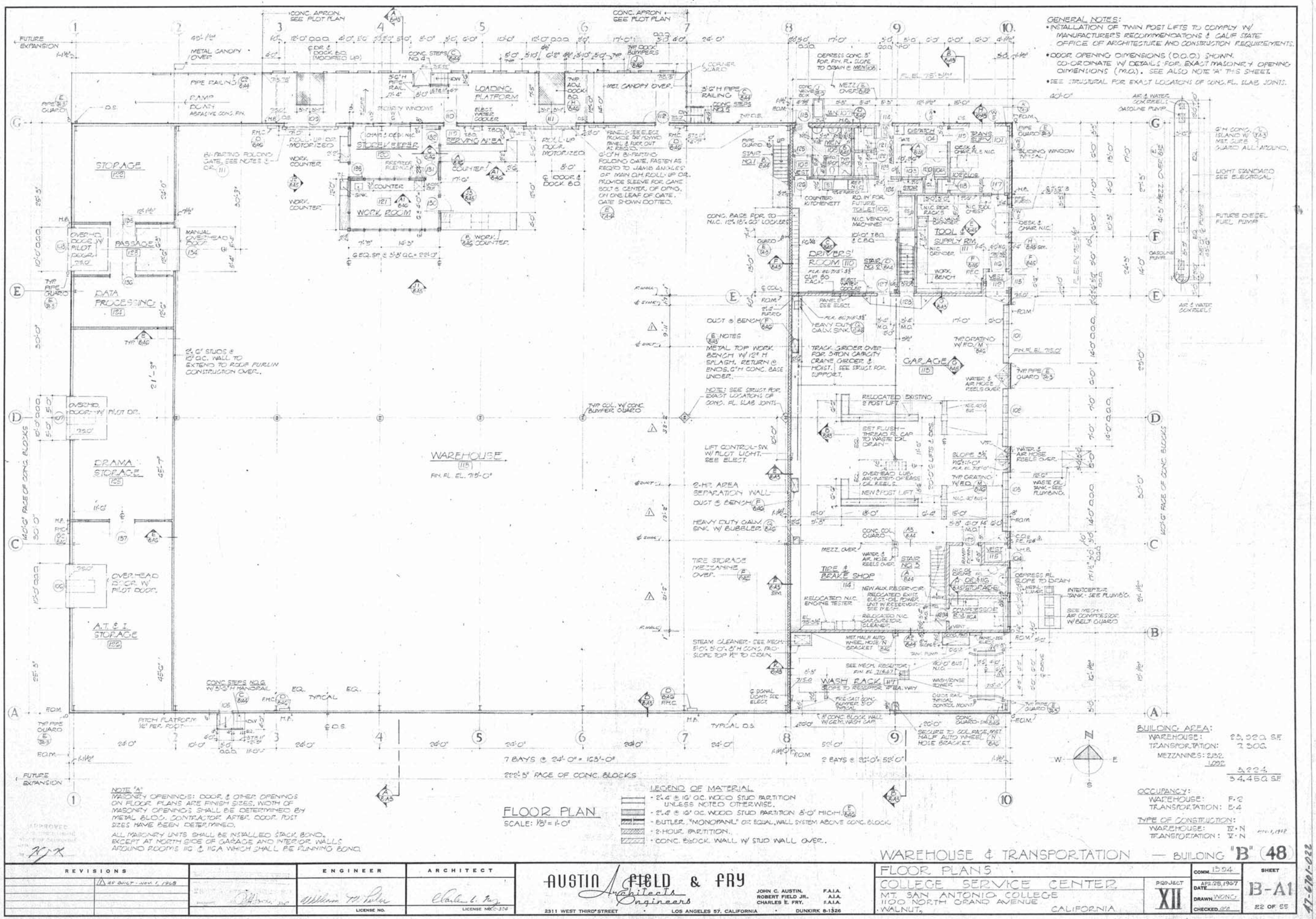

WAREHOUSE & TRANSPORTATION — BUILDING "B" (48)

REVISIONS	ENGINEER	ARCHITECT		
⚠ 48' SHIFT - NOV. 1, 1968	William W. Fuller	Charles E. Fry	AUSTIN FIELD & FRY Architects Engineers	FLOOR PLANS
	LICENSE NO.	LICENSE NO. C-314	2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	COLLEGE SERVICE CENTER
			JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, F.A.I.A.	MT. SAN ANTONIO COLLEGE 1100 NORTH GRAND AVENUE WALNUT, CALIFORNIA

PROJECT XII | COMM. 1504 | DATE APR. 28, 1967 | DRAWN WONG | CHECKED GFE | SHEET B-A1 | 22 OF 55

47-681-022

6/68 DIETZGEN-POST CLEARPRINT 1000H

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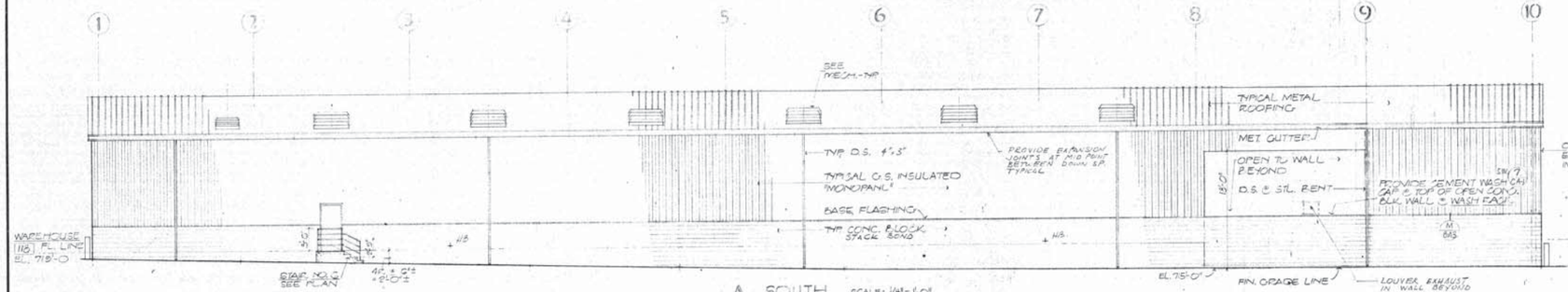
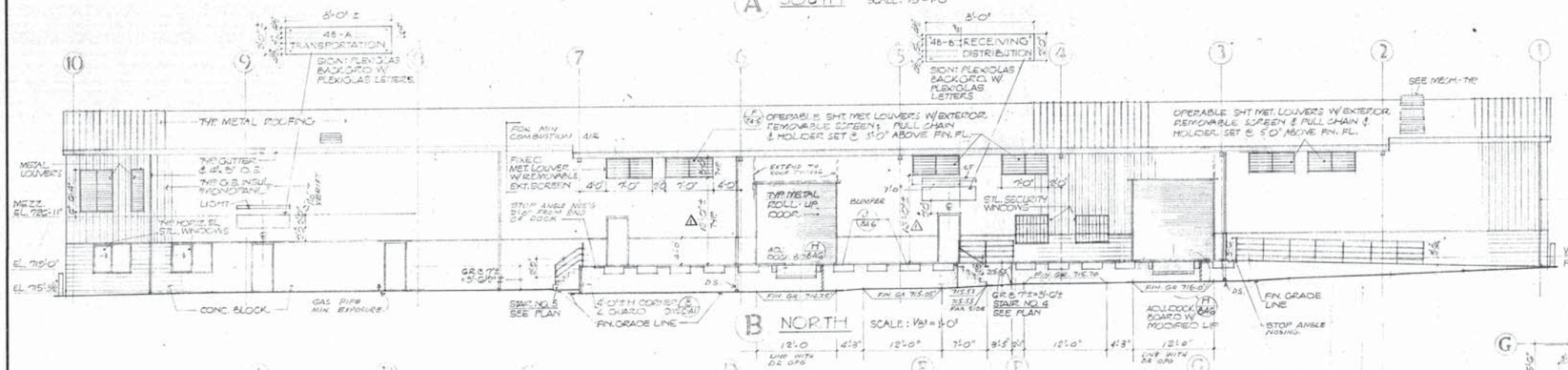
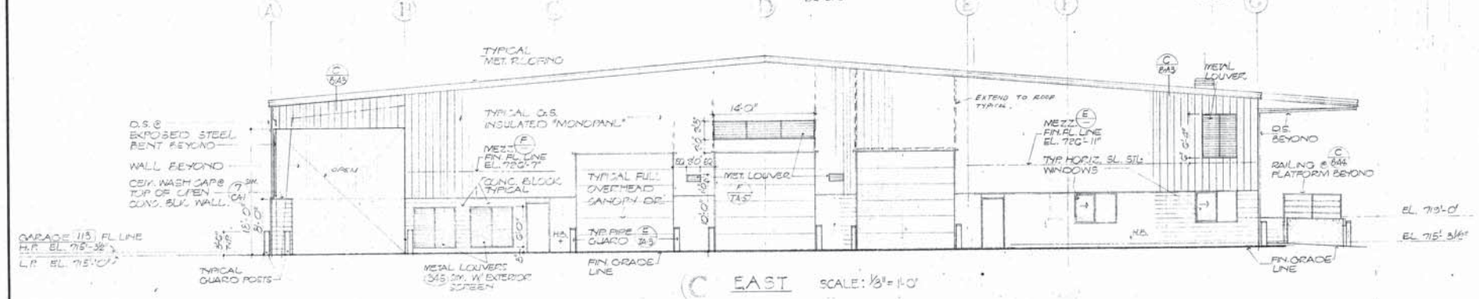


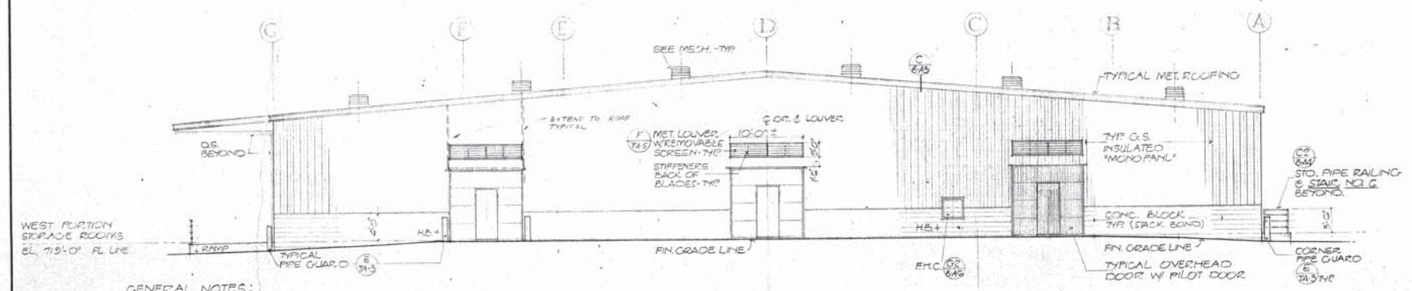
A SOUTH SCALE: 1/8"=1'-0"



B NORTH SCALE: 1/8"=1'-0"



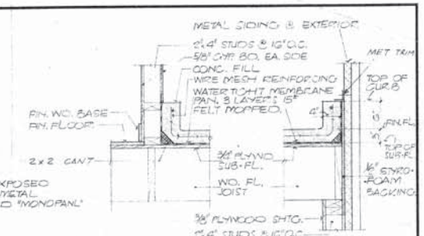
C EAST SCALE: 1/8"=1'-0"



D WEST SCALE: 1/8"=1'-0"

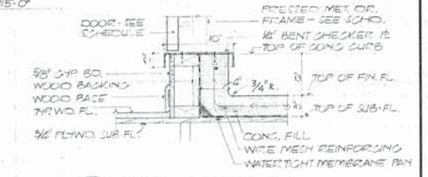
GENERAL NOTES:
- GALV. STEEL INSULATED "MONOPANL", WHERE NOTED, TO BE BAKED ENAMEL FINISHED, BUTLER OR APPROVED EQ.
- STEEL FABRICATOR TO PROVIDE ALL NECESSARY STRUCTURAL FRAMING & SUPPORTS AS REQUIRED FOR ALL OPENINGS.
- PROVIDE 4 MESH 18 GA. GALV. REMOVABLE SCREEN @ EXTERIOR FACE @ ALL LOUVER OPNG'S.
- MECH. EQUIPMT. WHERE SHOWN OR OCCURS @ ROOF, SEE ROOF PLAN & MECHANICAL.

APPROVED STATE OF CALIFORNIA DEPT. OF GENERAL SERVICES



1 SECT. @ CONC. FL. SCALE: 1"=1'-0"

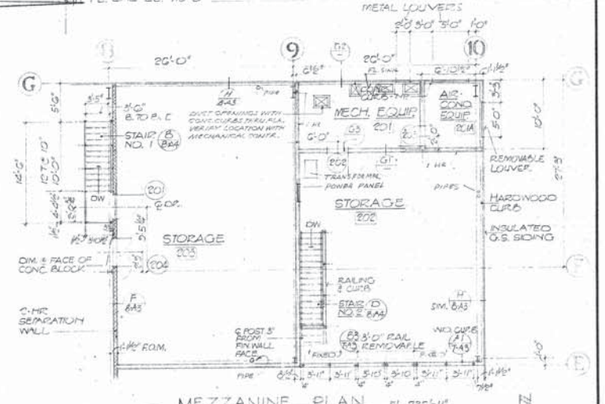
2 CURB @ WALL SCALE: 1"=1'-0"



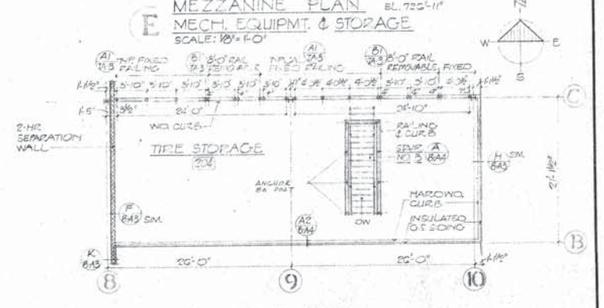
3 CURB @ DOOR SILL SCALE: 1"=1'-0"

GEN. NOTES:
- PROVIDE 6"H CONC. CURB UNDER PARTITION PERIM. ENDS. MECH. EQUIP. RM. & AIR COND. EQUIP.
- 6"H x 4" THICK CONC. CURBS AROUND DUCT OPENINGS.

G MEZZANINE CURBS SCALE: AS NOTED



E MEZZANINE PLAN MECH. EQUIPMT. & STORAGE SCALE: 1/8"=1'-0"



F MEZZANINE PLAN TIRE STORAGE SCALE: 1/8"=1'-0"

NOV. 1, 1968

WAREHOUSE & TRANSPORTATION — BUILDING "B" (48)

REVISIONS	ENGINEER	ARCHITECT
1 ADDEND. - NOV. 1, 1968	William T. Wolfe, License No. 12456	Charles E. Fry, License No. C-1324

AUSTIN FIELD & FRY Architects Engineers
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A. · ROBERT FIELD JR., A.I.A. · CHARLES E. FRY, F.A.I.A.

EXTERIOR ELEVATIONS & MEZZANINE PLANS
COLLEGE SERVICE CENTER
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XII
COMM. 1594
DATE APR. 28, 1967
DRAWN WONG
CHECKED DFB

SHEET B-A2 23 OF 95

41-6701-013

6/66 DIETZGEN-POST CLEARPRINT 3000H

3x486

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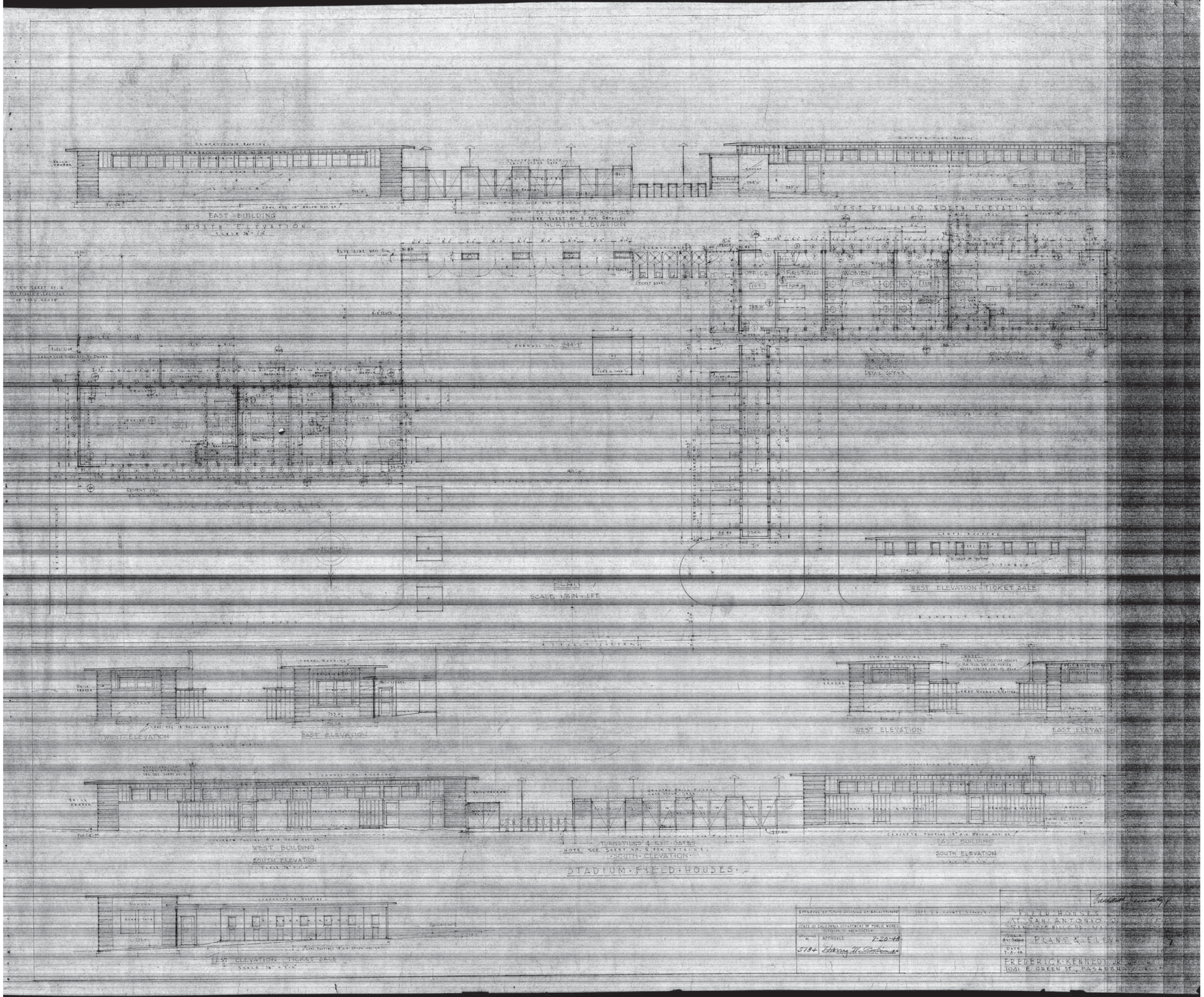
EAST BUILDING
NORTH ELEVATION
EXIT GATES & TURNSTILES
NORTH ELEVATION
WEST BUILDING NORTH ELEVATION
OFFICE
FIRST AID
WOMEN
MEN
TEAM
PLAN
SCALE 1/8 IN = 1 FT
WEST ELEVATION - TICKET SALE
WEST ELEVATION
EAST ELEVATION
WEST ELEVATION
EAST ELEVATION
WEST BUILDING
SOUTH ELEVATION
TURNSTILES & EXIT GATES
NOTE: SEE SHEET NO. 6 FOR DETAILS.
SOUTH ELEVATION
EAST BUILDING
SOUTH ELEVATION
STADIUM · FIELD · HOUSES ·
EAST ELEVATION - TICKET SALE
APPROVED BY STATE DIVISION OF ARCHITECTURE
STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
DIVISION OF ARCHITECTURE
APPROVED 7-20-48
5784
SUPT. S.A. COUNTY SCHOOLS
FIELD HOUSES
PLANS & ELEVATIONS
FREDERICK KENNEDY JR.
1041 E. GREEN ST., PASADENA

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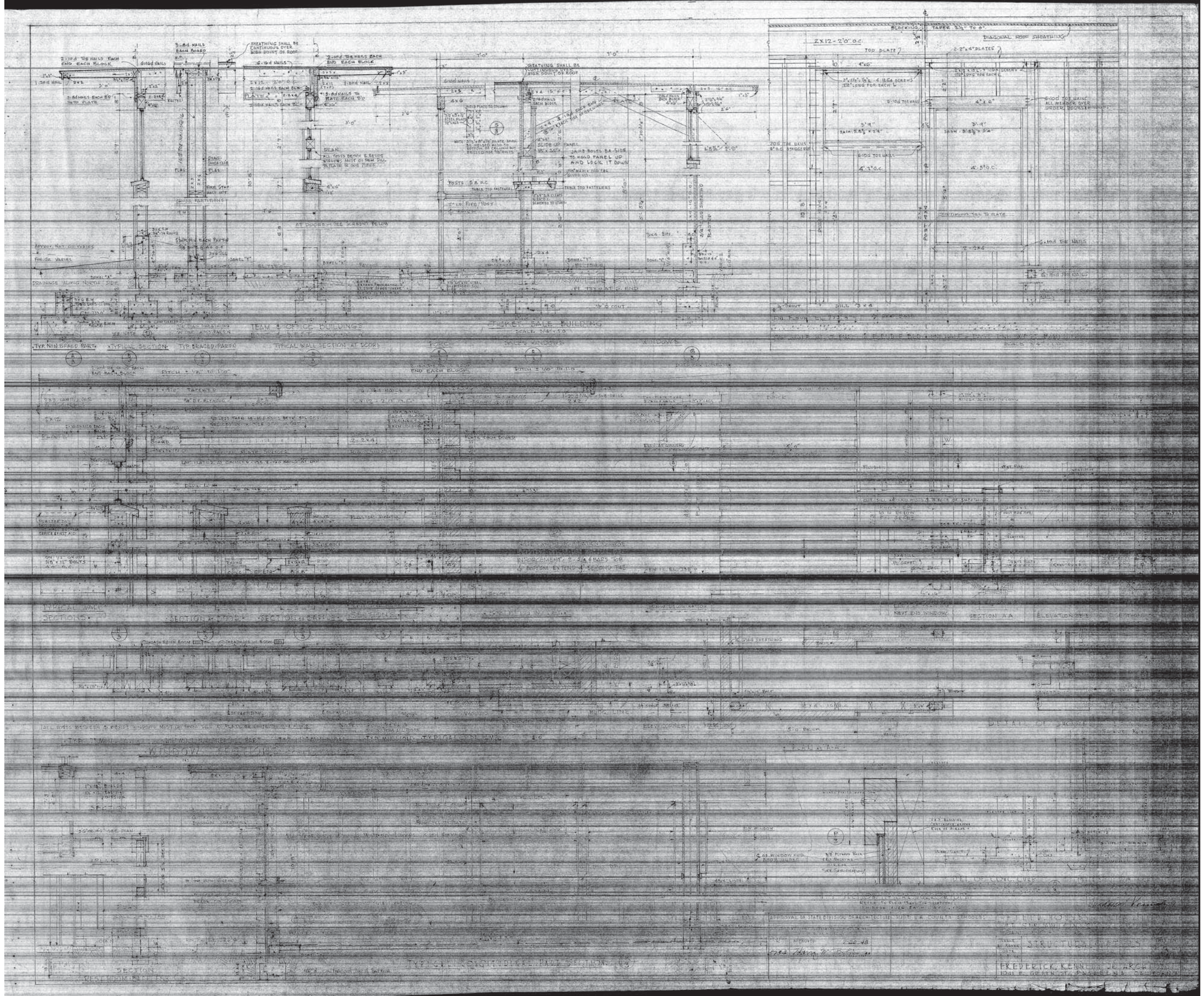
TEAM & OFFICE BUILDINGS
TYPICAL WALL SECTION AT DOORS
TICKET SALE BUILDING
SALES WINDOWS
WINDOWS
DIAGONAL ROOF SHEATHING
TOP PLATE
SECTION A-A
ELEVATION
DETAIL OF SHOWER
WINDOW SECTIONS
TYPICAL CONCITUDINAL PART SECTION
APPROVAL OF STATE DIVISION OF ARCHITECTURE
STRUCTURAL DETAILS
FREDERICK KENNEDY JR. ARCHITECT

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NORTH ELEVATION - TICKET SALES & WEST BLDG.

SOUTH - ELEVATION - CORNER WEST BLDG.

EAST ELEVATION - TICKET SALES

ELEVATION TYP PIER & EXIT GATES

PLAN

GENERAL PLAN ENTRANCES & EXITS.

PLAN - TYPICAL TURNSTILE

FRONT ELEV.

END ELEV.

PLAN

BENCHES - TEAM ROOMS

APPROVED 7-22-48

FIELD HOUSES - STADIA
MT. SAN ANTONIO COLLEGE

EXIT GATES
PLANS, ELEVATIONS & DETAILS

FREDERICK KENNEDY, ARCHITECT
1041 E. GREEN ST., PASADENA, CALIF.

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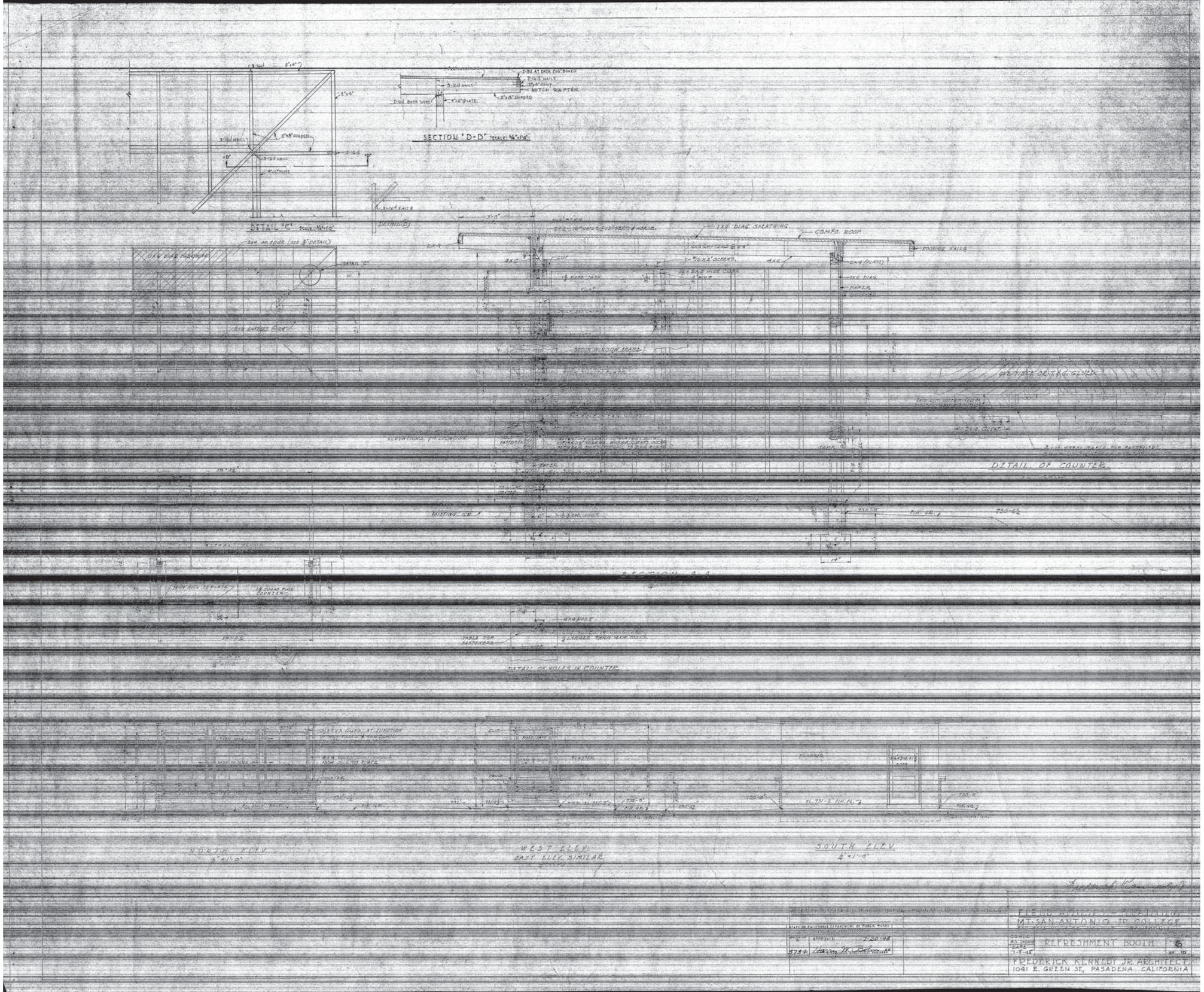
SECTION "D-D"
DETAIL "C"
DETAIL OF COUNTER
DETAIL OF HOLES IN COUNTER
NORTH ELEV
WEST ELEV.
EAST ELEV. SIMILAR
SOUTH ELEV.
1x6 DIAG. SHEATHING
COMPO. ROOF
ROOFING NAILS
STOCK WINDOW FRAME
EXISTING GR.
FIN. GR.
ELEVATIONS 1ST LOCATION
TABLE TOP FASTENERS
FIELD HOUSES - STADIUM
MT. SAN ANTONIO JR. COLLEGE
REFRESHMENT BOOTH
SCALE AS SHOWN
DATE 7-8-48
SHEET NO. 6
OF 10
FREDERICK KENNEDY JR. ARCHITECT
1041 E. GREEN ST., PASADENA CALIFORNIA
STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
APPROVED 2-20-48
5784

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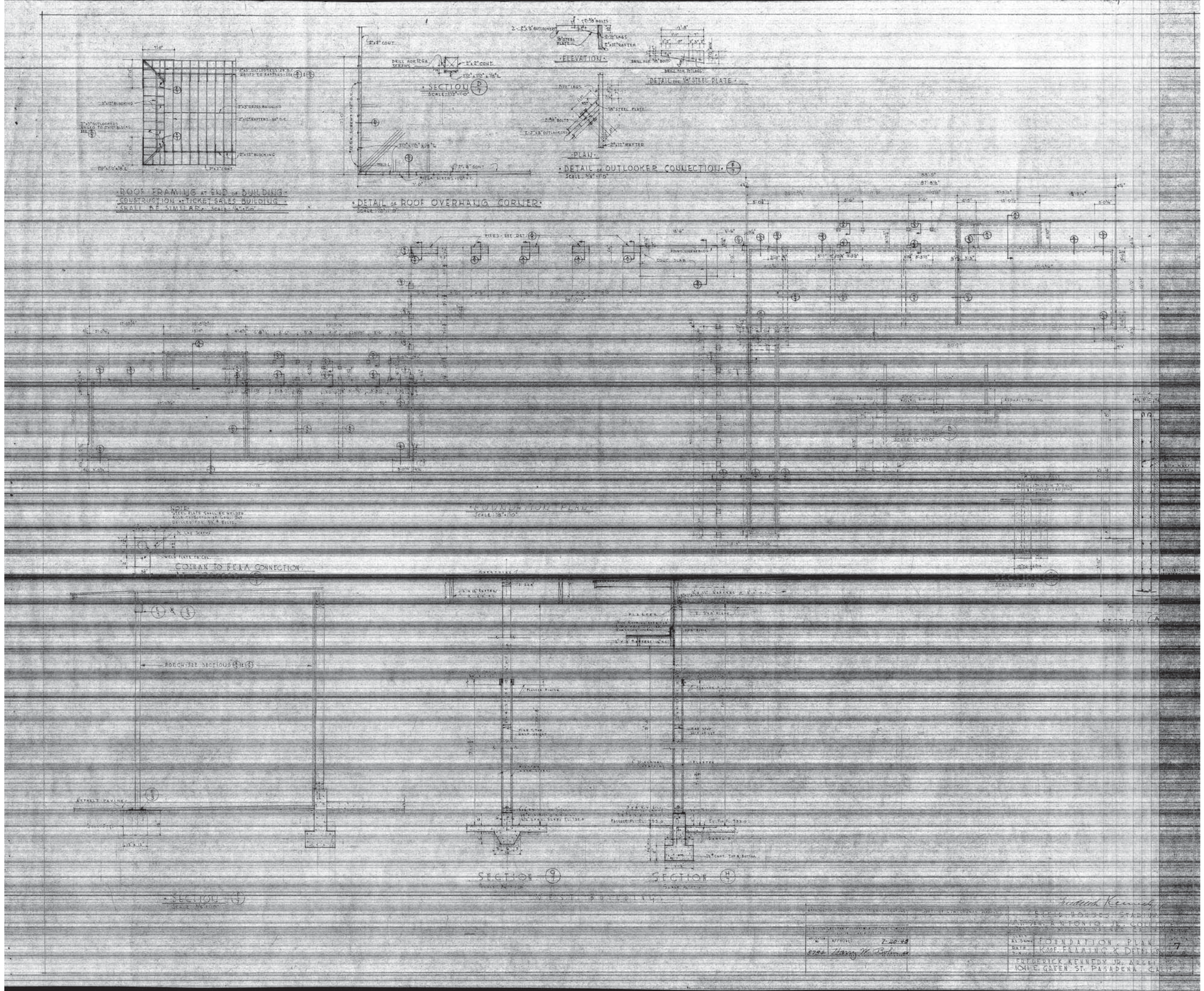
ROOF FRAMING AT END OF BUILDING
CONSTRUCTION AT TICKET SALES BUILDING
SHALL BE SIMILAR
SECTION
DETAIL OF ROOF OVERHANG CORNER
ELEVATION
PLAN
DETAIL OF OUTLOOKER CONNECTION
DETAIL FOR 1/8" STEEL PLATE
FOUNDATION PLAN
COLUMN TO BEAM CONNECTION
SECTION
SECTION
SECTION
SECTION
WEST BUILDING
APPROVED
7-20-48
Harry W. Bolton
FOUNDATION PLAN
ROOF FRAMING & DETAILS
FREDERICK KENNEDY JR. ARCHITECT
1041 E. GREEN ST. PASADENA, CALIF.
7

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NAILING SCHEDULE

JOISTS TO SIDE OR STUDS
2"x6" : 3-16d
2"x8" : 4-16d

JOISTS OR RAFTERS TO ALL BEARINGS
TOE NAIL EACH SIDE : 2-10d NAILS

STUDS TO WALL PLATE : 2-10d NAILS
TOP & BOTTOM PLATES TO STUDS : 2-16d NAILS

BLOCKING BETWEEN RAFTERS
TO RAFTERS : TOE NAIL EA SIDE & END : 2-10d
TO RAFTER BEARING FOR UNIT BEARING : 2-10d

SHEATHING
1"x8" : 2-8d AT BEARINGS : 3-8d AT ENDS
1"x6" : 3-8d AT BEARINGS : 4-8d AT ENDS

RIBBONS TO STUDS : 1" THICK : 2-8d

DOUBLE TOP PLATES :
LOWER PLATE TO TOP OF STUDS : 8-8d
UPPER PLATE TO LOWER PLATE UNSPECIFIED

NAIL HOLES SHALL BE DRILLED WHERE SPLITTING MIGHT OTHERWISE RESULT.

GENERAL NOTES

SPECIFICATIONS ARE A PART OF APPROVED PLANS

CONCRETE 3000 LBS AT 28 DAYS

SOIL : IS DENSE CLAY, BEARING VALUE 3000 LBS.

DEAD & LIVE LOAD PER CODE

BORE FOR WOOD SCREWS, HOLE DIAMETER TO EQUAL DIAMETER OF SHANK, DEPTH OF HOLE TO EQUAL DEPTH OF SHANK

HOLES FOR BOLTS IN WOOD TO BE THE SAME DIAMETER AS BOLT. BORE OR BRACE FOR PROPER SPACING AND WASHERS.

WASHERS FOR BOLTS SHALL BE OF FOLLOWING SIZES:
FOR 5/8" BOLTS : 2-1/4" x 2" CUT STEEL PLATE
FOR 3/4" BOLTS : 2-1/2" x 2" CUT STEEL PLATE
FOR 7/8" BOLTS : 2-3/4" x 2" CUT STEEL PLATE

FOR 5/8" BOLTS : 3" DIAM. CAST IRON (CLAMP)
FOR 3/4" BOLTS : 3-1/2" DIAM. CAST IRON (CLAMP)
FOR 7/8" BOLTS : 4" DIAM. CAST IRON (CLAMP)

FRAMING LUMBER : SHALL BE DOUGLAS FIR, NO. 1 GRADE

SHEATHING : SHALL BE #1 COMMON D.F.

FOUNDATIONS : SHALL BE OF CONCRETE OF 2000 LBS. STRENGTH

SILLS : SHALL BE OF NO. 1 GRADE REDWOOD

VERTICAL SECTION THRU SASH AT FRONT
HALF FULL SIZE

SECTION "1-1"
HALF FULL SIZE

CORNICE at FRONT ELEVATION
SCALE 1/2"=1'0"

FOUNDATION PLAN
SCALE 1/8"=1'0"

DETAIL OF CONC WALK & CONC CURB

DETAIL OF BAYS
AT SOUTH ELEVATION & AT NORTH ELEVATION
SCALE 1/4"=1'0"

SECTION "3-3"
HALF FULL SIZE

SECTION "2-2"
HALF FULL SIZE

SECTION "4-4"

SECTION "5-5"

SECTION "6-6"

SECTION "7-7"

SECTION "8-8"

DIAGRAM OF NAILING TRUSSES AND SHEATHING

PLOT PLAN

DETAIL OF GIRDER SPLICE

SECTION

BEAM SPLICE and POST-BEAM CONNECTION

SOUTH ELEVATION

WEST ELEVATION

EAST ELEVATION

FRONT ELEVATION

PLAN

SECTION THRU STOOP

APPROVAL OF STATE BUILDING & HOUSING DIVISION
STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS
APPROVED 7-20-43
5784

EQUITY SHEET AS SCHOOLS

Sheet 10

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INTERPRETATIONS FOR SCORE BOARD FOOTINGS

DEPTH = 3.81 | 4.25 | 4.71

ASSUMED 2000# SOIL VALUE @ 4'-0" DEPTH

WIND = 16(7 x 15 x 14 = 3.00 KIPS PER POST

REPEAT LIGHTS & HANGERS

SCORE BOARD - SEE IN THIS CONTRACT

FENCE

EXISTING 1" CONDUIT

1" CONDUIT IN THIS CONTRACT

CAP 1.00' ABOVE GRADE

CUT EXIST CONDUIT

PROVIDE PULLBOX 2'-0" SQ. INSIDE 4 CONC. WALLS, 4" BOTTOM 1 CONC. TOP WITH LIFT RING 1 LAY. #6 WIREMESH REINF.

CHECK SCORE BOARD

PANEL D

TO PAN. A 75 #

PLAN OF REFRESHMENT BOOTH

Scale ¼"=1'-0"

SEE ARCH. PLOT PLAN FOR LOCATION

TYP. FOR GATE STRUCTURE BY OTHERS

MASONRY PIER

CONCRETE

POLE FOR FIXTURE H

Scale ¾"=1'-0"

PLAN - MEN'S BLDG.

PLAN - WEST BLDG.

PANEL A

CIRCUIT	NO. FIXTURES	WATTS	BREAKER	NOTES
A1	8	900	15	
3	7	420	15	
4	6	1000	20	PLUGS
5	6	1000	20	PLUGS
7	2	240	15	
9	3	300	15	
10	3	1000	20	PLUGS
11	1	300	15	
12	1	1000	20	PLUGS

FIXTURE SCHEDULE

M WLH (SPANDRIL DOME SOCKET TYPE REFLECTOR)

C COMMERCIAL FIXTURES C CEILING FLANGE - HANGER - FITTER - PYREX GLASS

D DECORATIVE FIXTURE

E CROUSE-HINDS - EVITORC

F SAME AS "E" EXCEPT FLANGE AND GLASS

G

H

J

K

LEGEND

WALL OUTLET - UNLESS NOTED

DUPLEX RECEPTACLE - UP 1'-6" UNLESS NOTED

JUNCTION BOX

SINGLE POLE SWITCH - UP 4'-0" TO CENTER

LEAD COVERED COPPER

PANEL B

CIRCUIT	NO. FIXTURES	WATTS	BREAKER	NOTES
E1	11	330	15	
2	2	1000	20	PLUGS
3	4	420	15	
5	SPARE	1000	15	
6				
8				

PANEL C

CIRCUIT	NO. FIXTURES	WATTS	BREAKER	NOTES
C1	3	300	15	
2	3	1000	20	PLUGS
3	1	1000	20	FLOOD
4	1	1000	20	
6	SPARE	1000	15	
7	SPARE	1000	15	

PANEL D

CIRCUIT	NO. FIXTURES	WATTS	BREAKER	NOTES
D1	4	600	15	
2	8	1000	20	PLUGS
3	SPARE		30	3 POLE

DEPARTMENT OF STATE DIVISION OF ARCHITECTURE

STATE OF CALIFORNIA DEPARTMENT OF PUBLIC WORKS DIVISION OF ARCHITECTURE

APPROVED 7-20-48

5784 Leroy Mac Robertson

STATE OFFICIAL WORK

FIELD HOUSE & CONCESSION BUILDING

FOR

SAN JOSE HILLS RD. WALNUT, CALIFORNIA

SHEET NO. 9

DATE 6-48

SHEET OF

CLINTON A. MILNE A.I.A. ARCHITECT

1041 E. KATELLA ST. ANAHEIM, CALIF.

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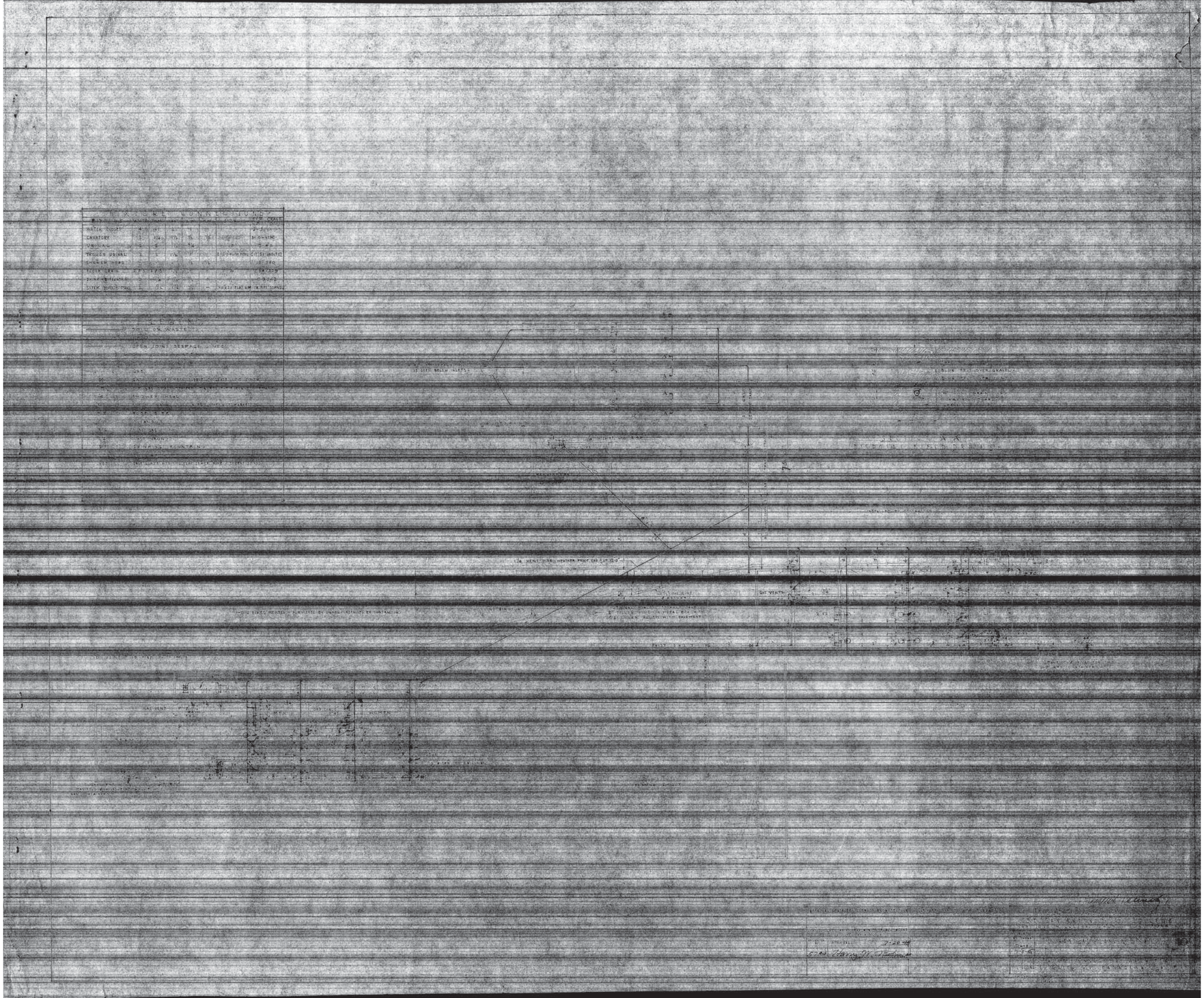

FIXTURE CONNECTIONS
WATER CLOSET
LAVATORY
URINAL
TROUGH URINAL
SHOWER HEAD
FLOOR DRAIN
SINK OR FLOOR
LEGEND
SOLID OR WASTE
OPEN JOINT SEEPAGE LINES
GAS
SHOWER HEAD
ROSE BIBB
DRINKING FOUNTAIN
GAS VENTS

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SITE PLAN
SCALE 1" = 200'

INDEX TO DRAWINGS

SHT. No.	DESCRIPTION -
	ARCHITECTURAL
A-1	SITE PLAN & DRAWING INDEX
A-2	PLOT PLANS
A-3	STABLE UNIT & HEADHOUSE
A-4	POULTRY BUILDINGS
A-5	SWINE UNIT
A-6	DAIRY UNIT
A-7	DETAILS
A-8	EXISTING SWINE BLDG. #46 REHABILITATION
A-9	FINISH SCHEDULE & DOOR SCHEDULE
	STRUCTURAL
S-1	STRUCTURAL NOTES & TYPICAL DETAIL
S-2	DAIRY UNIT - STRUCTURAL PLANS & SECTIONS
S-3	FOUNDATION PLANS & DETAILS
	MECHANICAL
M-1	SWINE, POULTRY & STABLE UNIT FLOOR PLANS & DETAILS
M-2	DAIRY UNIT FLOOR PLAN, SECTIONS & DETAILS
	ELECTRICAL
E-1	ELECTRICAL PLOT PLAN - SOUTH, SYMBOLS AND NOTES.
E-2	ELECTRICAL PLOT PLAN - NORTH.
E-3	STABLE UNIT - ELECTRICAL PLANS
E-4	POULTRY UNIT & WAREHOUSE - ELECTRICAL PLANS.
E-5	HEAD HOUSE & SWINE UNIT - ELECTRICAL PLANS
E-6	DAIRY UNIT - ELECTRICAL PLANS.

STANDARD DETAILS
(BOUND IN BACK OF SPECIFICATIONS)

(131)	MOP OR KICK PLATES
(147)	MIRROR & SHELF DETAILS
(184)	ROOM NAME & NUMBER PLATES
(261)	SPLASH BLOCKS
(346)	LOUVERS.
(97)	ABBREVIATIONS
(98)	ABBREVIATIONS

BUILDING NOTES

GROSS AREAS OF BUILDINGS:

STABLE UNIT	1356	SQ. FT.
HORTICULTURE HEADHOUSE	1203	" "
POULTRY UNIT	1048	" "
POULTRY WAREHOUSE	7040	" "
SWINE UNIT	2880	" "
DAIRY UNIT	2316	" "
	15743	" " TOTAL

ENGINEER
SAMPSON, RANDALL & PFEIL, INC.
CONSULTING ELECTRICAL ENGINEERS
R.P. Randall LICENSE NO. 4848

APPROVED
STATE FIRE MARSHAL
STATE OF CALIFORNIA
DATE JUL 14 1970
BY D.E. Cannaday Jr.

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF ARCHITECTURE AND CONSTRUCTION
33269 APPROVED JUL 14 1970
APPLICATION NO. PRINCIPAL STRUCTURE: YES-NO

These drawings Nos. 1 to 20 incl. approved this 17th day of July 1970
R.T. Wilson
Supervising Engr. Specs. Serv. Coord.
Los Angeles County Schools

AS-BUILT DRAWING
DATE APR 28 1971

REVISIONS	
A. AS BUILT REVISIONS	

MECHANICAL DEPARTMENT
APPROVED
Samuel A. C. Bin
LICENSE No. M 11579

ENGINEER
WHEELER & GRAY
CONSULTING ENGINEERS
William Wheeler
LICENSE NO. 486

ARCHITECT
LICENSE NO. C-21[illegible]

AUSTIN, FIELD & FRY
Architects
Engineers
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326
JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.

SITE PLAN & DRAWING INDEX
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1538A
DATE JUNE 15, 1970
DRAWN DB, JL
CHECKED DB

SHEET A-1
1 OF 20

120-101-F1

6/68 DIETZGEN-POST CLEARPRINT 3000H

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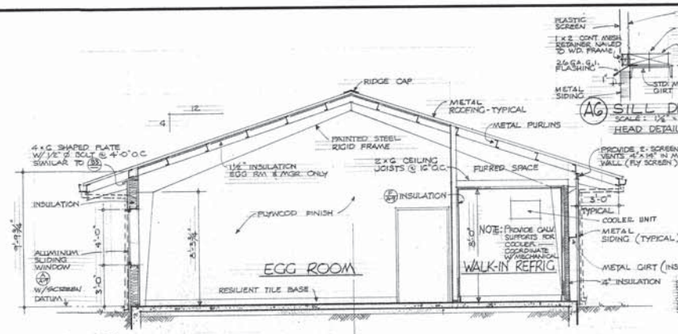

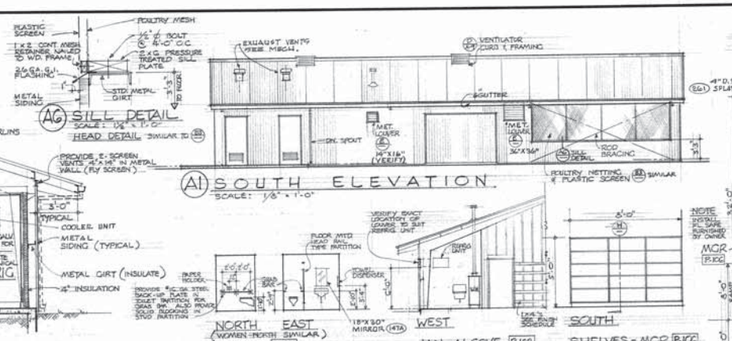

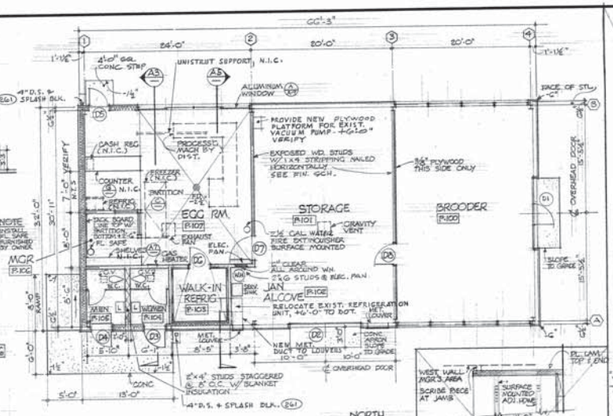

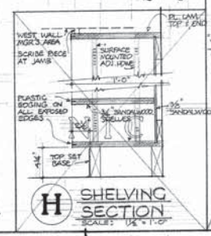

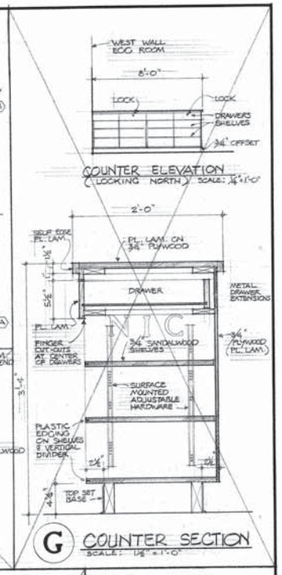

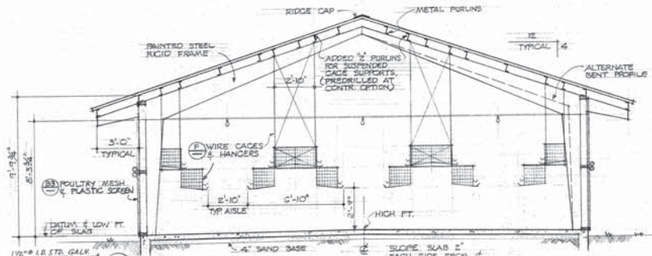

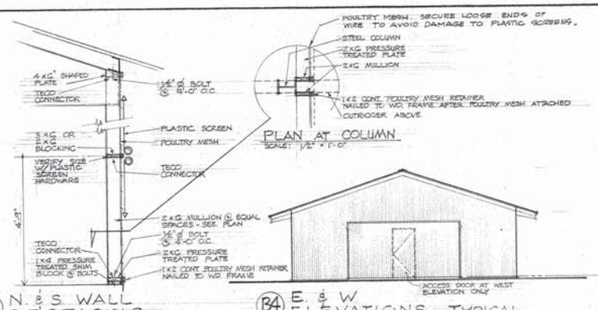

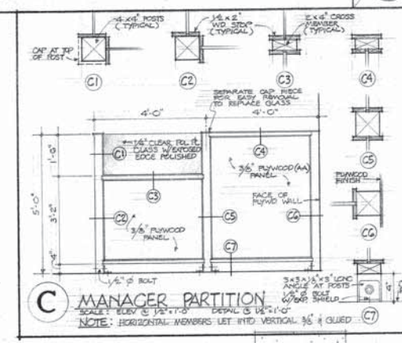

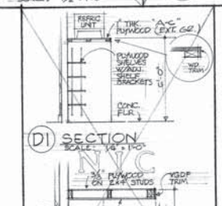

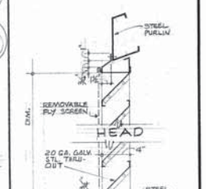

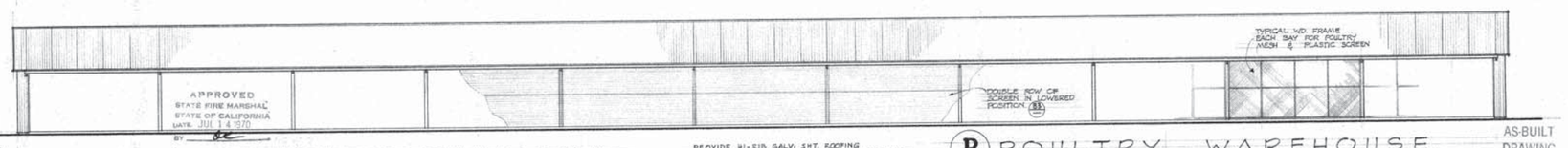

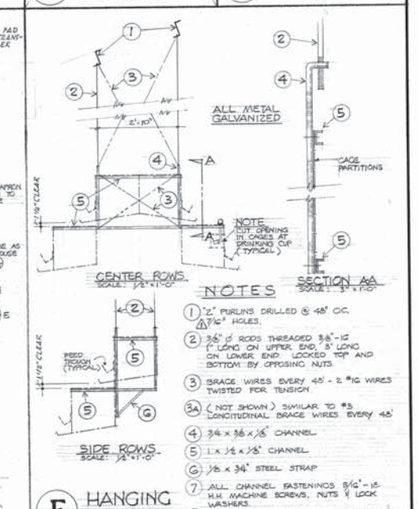

REVISIONS		ENGINEER	ARCHITECT
⚠ AS BUILT REVISIONS.		William Wheeler	Charles E. Fry
		LICENSE NO. 486	LICENSE NO. C-5247

BOARD OF FIRE CONTROL — APPROVED — JUL 14 1970 — 38269 — APPLICATION NO. — BY R. A. Henderson

AUSTIN / FIELD & FRY Architects Engineers
JOHN C. AUSTIN, F.A.I.A. — ROBERT FIELD JR., A.I.A. — CHARLES E. FRY, F.A.I.A.
2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326

POULTRY BUILDINGS
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1535A
DATE JUNE 15/70
DRAWN M.M.
CHECKED D.B.

SHEET A-4 4 OF 20

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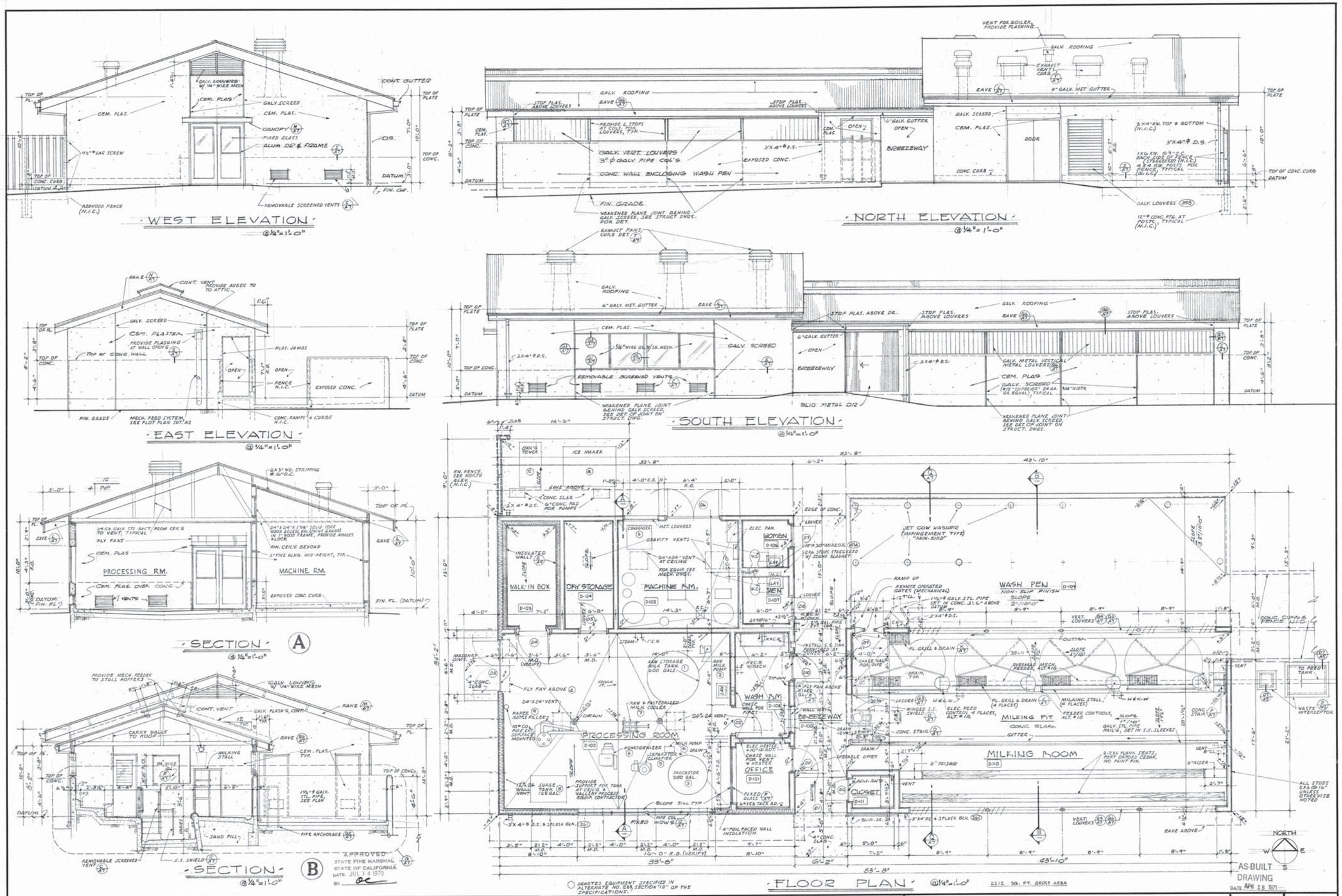

REVISIONS		ENGINEER	ARCHITECT
1 AS BUILT REVISIONS		William T. Wheeler	Charles E. Fry
		LICENSE NO. 486	LICENSE NO. C-324

STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES
OFFICE OF PROGRESSIVE ARCHITECTURE
38269 APPROVED JUL 14 1970
APPLICATION NO. 1 BY B. S. Hanks
ARCHITECT OF RECORD

AUSTIN FIELD & FRY
Architects Engineers
2311 WEST THIRD STREET • LOS ANGELES 57, CALIFORNIA • DUNKIRK 8-1326

JOHN C. AUSTIN, F.A.I.A.
ROBERT FIELD JR., A.I.A.
CHARLES E. FRY, F.A.I.A.

DAIRY UNIT
AGRICULTURE SCIENCE BUILDINGS
MT. SAN ANTONIO COLLEGE
1100 NORTH GRAND AVENUE
WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1538A
DATE JUNE 15, 1970
DRAWN D.B., J.L.
CHECKED D.B.

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6 OF 20

F1-7001-006

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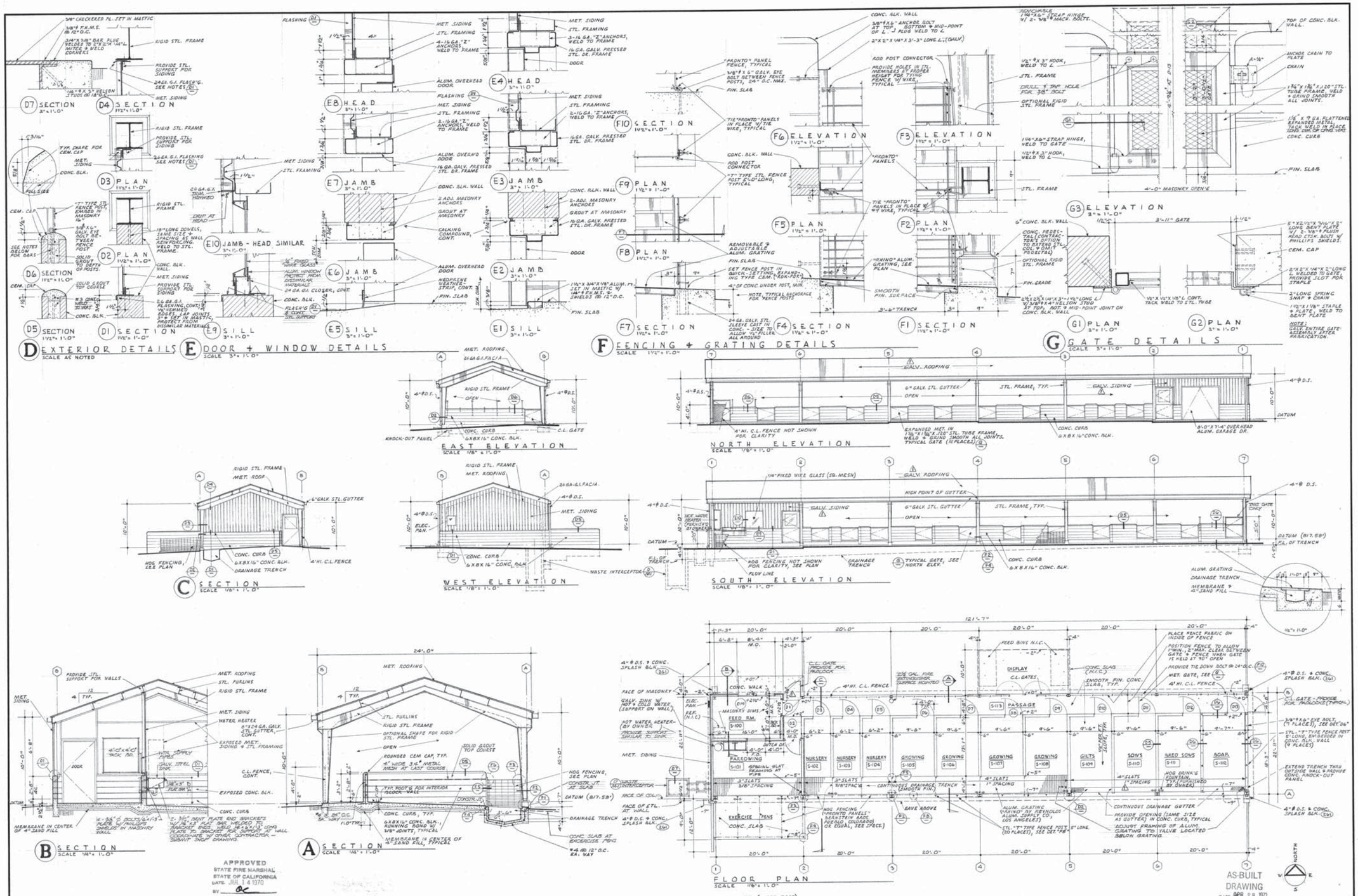

REVISIONS							
1 AS BUILT REVISIONS		STATE OF CALIFORNIA — DEPARTMENT OF GENERAL SERVICES OFFICE OF ENGINEERING AND ARCHITECTURE 33269 APPROVED JUL 14 1970	ENGINEER William T. Wheeler LICENSE NO. 486	ARCHITECT Charles E. Fry LICENSE NO. C-324	AUSTIN FIELD & FRY Architects Engineers 2311 WEST THIRD STREET · LOS ANGELES 57, CALIFORNIA · DUNKIRK 8-1326	JOHN C. AUSTIN, F.A.I.A. ROBERT FIELD JR., A.I.A. CHARLES E. FRY, F.A.I.A.	SWINE UNIT AGRICULTURE SCIENCE BUILDINGS MT. SAN ANTONIO COLLEGE 1100 NORTH GRAND AVENUE WALNUT, CALIFORNIA

PROJECT XV-C

COMM. 1538A
DATE JUNE 15, 1970
DRAWN J.L.
CHECKED D.B.

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5 OF 20

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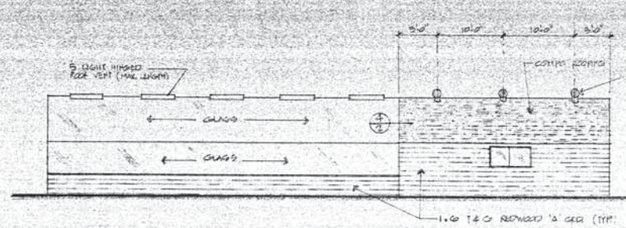
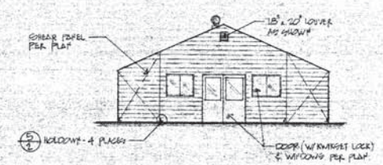
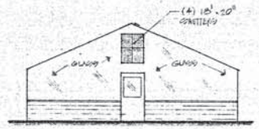


SOUTH ELEVATION (NORTH SIM.)
SCALE: 1/8"=1'-0"



EAST ELEV.



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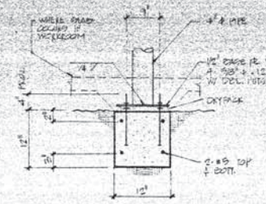
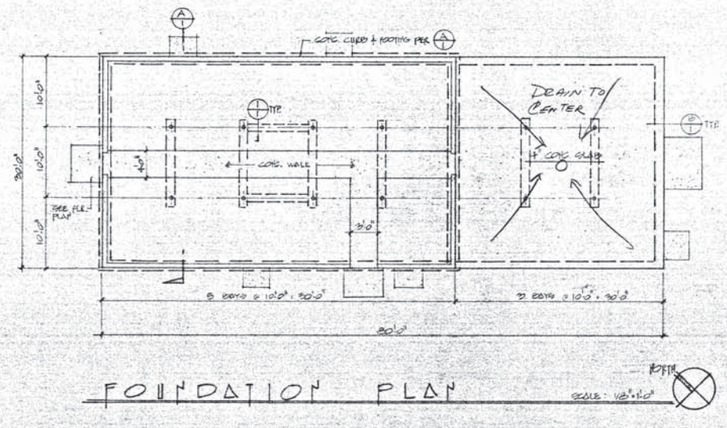


DETAIL

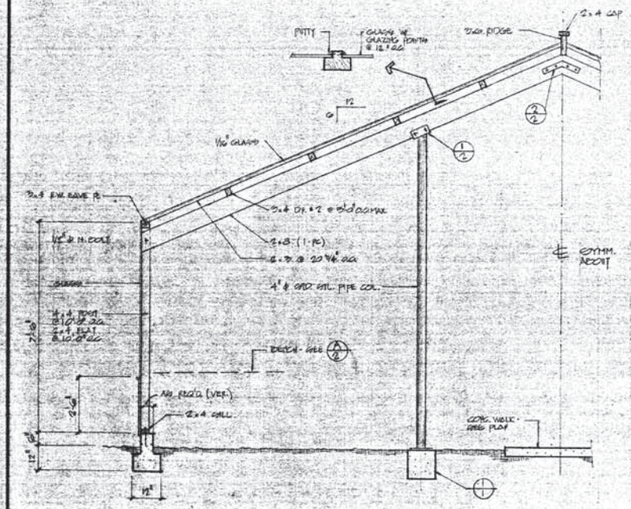
SPECIFICATIONS

LUMBER — GRADE MARKED, DF, #2 (LESS) (STD)
CONCRETE — GUIFORD, 2500 PSI
PIPE — ASTM A53 - 52 T GRADE B
WELDING - STR. WELDERS IN SHOP.

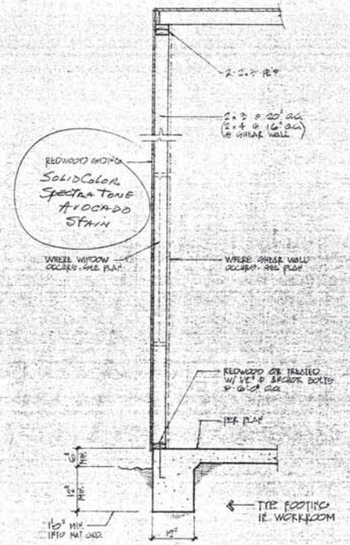
STEEL — ASTM A 36
BOLTS — MIN. BEARING CLASSIFICATION OF 1000 PSI



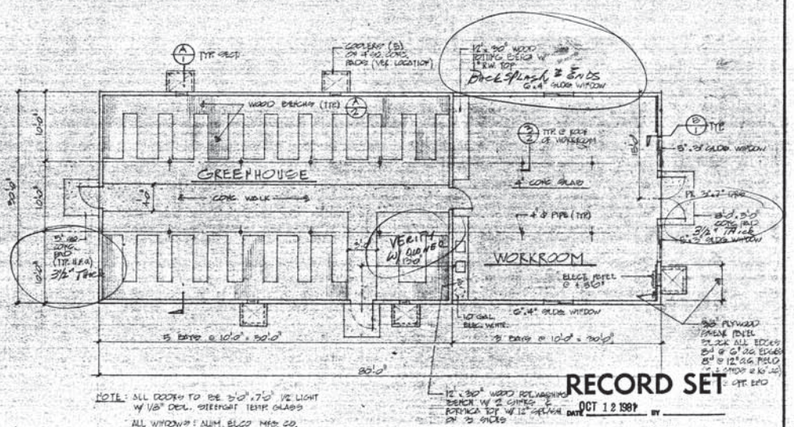
FOUNDATION PLAN
SCALE: 1/8"=1'-0"



SECTION
SCALE: 1/4"=1'-0"



SECTION
SCALE: 1/4"=1'-0"



NOTE: ALL GLASS TO BE 5'-0" x 7'-0" 1/8" LIGHT W/ 1/8" DBL. STRENGTH TEMP. GLASS
ALL WINDOWS: ALUM. BLDG. MFG. CO.

FLOOR PLAN
SCALE: 1/8"=1'-0"

RECORD SET
OCT 12 1981 DATE BY

AUG 19 1981
HANRICH, INC.

REVISION:	DRAWN BY T.D CHECKED BY A.M. DATE CHECKED 8-12-81	H. M. HANSEN STRUCTURAL ENGINEER S. E. #824	HANRICH, INC. STRUCTURAL ENGINEERING COMMERCIAL & INDUSTRIAL PLANNING	(HANSEN & DISTRICH) 9126 LAS TUNAS DR. TEMPLE CITY, CALIF. 91780 PH. (213) 286-8137 & 283-6721	GREENHOUSE FOR: MT. SAN ANTONIO COLLEGE WALNUT, CALIFORNIA	ELEVATIONS PLANS SECTIONS	JOB NO. 81-230 DATE Aug. 10, 1981 REV. DATE	SHEET NO. 1 OF

F-8101-001

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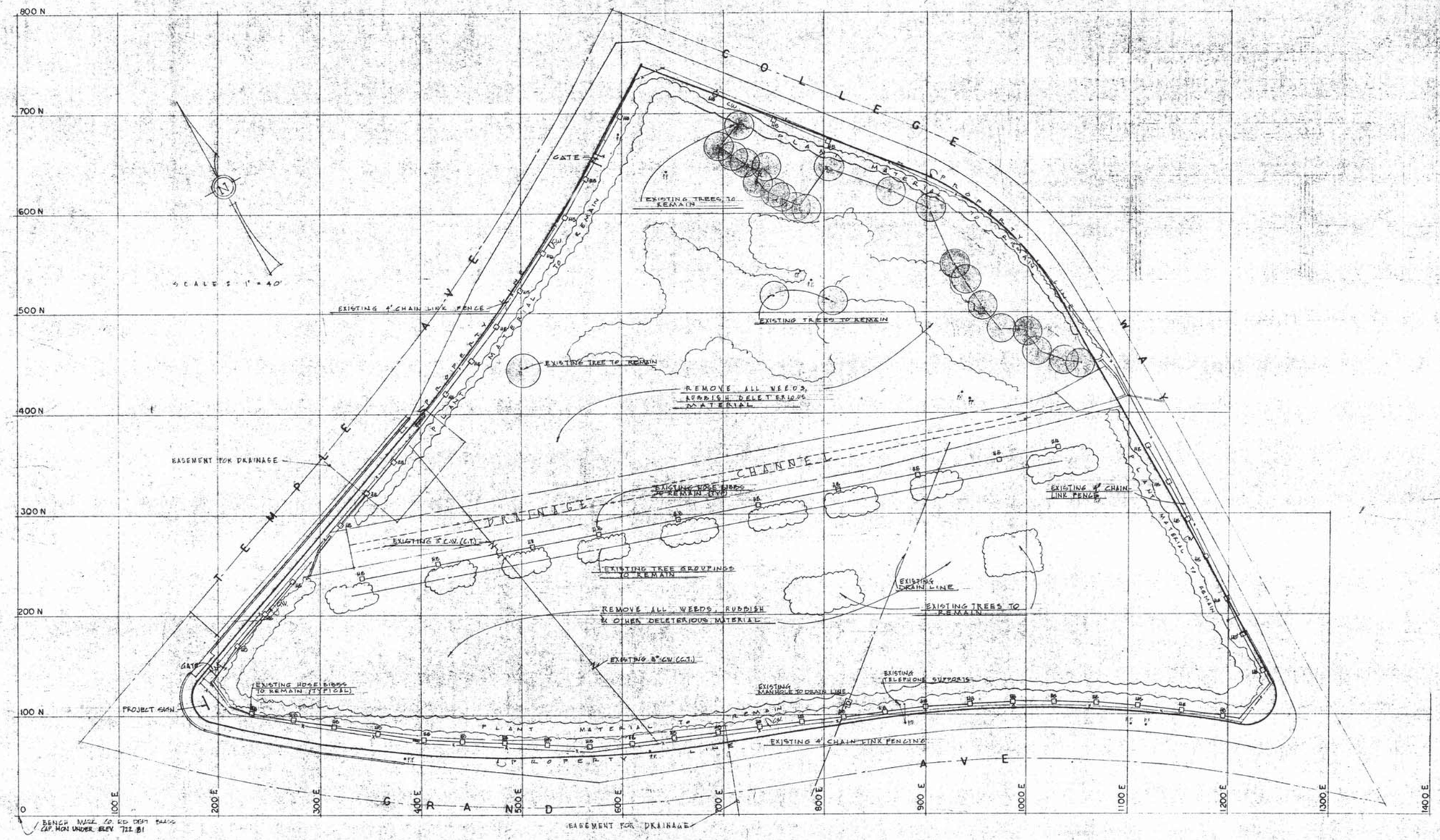

SITE PREPARATION

SCALE: 1" = 40'-0"

REVISIONS

no:	date:	description:	by:

JOHN ROBERT RUSSELL
LANDSCAPE ARCHITECT
16 W. MISSION ST. STUDIO "C", SANTA BARBARA, CALIFORNIA
PHONE (7 6) 5-1 0 0 1

scale: 1"=40'0"	date: AUG 1, 1966	title: SITE PREPARATION	sheet no.
drawn: M.H.	approved:	project: MT. SAN ANTONIO COLLEGE WILDLIFE SANCTUARY	L 1
checked:	job no: 66-619		

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APPENDIX E

Facility Description of the Stadium Press Box

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IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606
(949) 387-8500, Fax: (949) 387-0800

Sheet:	A6		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Rough Constr. Cost	
S1	Large cracking at slab on grade initiating from face of steps extending to the center of slab. Resulted in full-depth rupture of the slab with visible vertical offset.	S1a to S1d	75 ft	Damaged portion of the slab shall be demolished to pour new concrete and tied to existing slab using epoxy dowels.	$13,400	##
S2	Top of concrete retaining wall is tilted. This is possibly caused by rotation of the foundation due to the soil and water pressure and has created slab rupture indicated in item 1.	S2a & S2b	4ft tall & 36 ft long	Retaining wall to be periodically monitored for further rotation and future reconstruction.	A/R	
S3	Cracking at slab with width ±1/8"	S3	10 ft	Infill with epoxy injection.	$1,000	##
S4	Separation of concrete at the bottom of the step	S4	16 ft	To be sealed with epoxy injection or other means.	$1,200	##
S5	Exposed bar at joint	S5		Cover bar with epoxy coating.	$150	##
S6	Concrete break down at railing support	S6a & S6b	4 plcs	Remove broken and cracked concrete around railing. Place new concrete repair mortar and connect to existing by epoxy dowels.	$1,700	##
S7	Approximately 2/3 of the wood seats are rotten and damaged. Connection screws are loose and separated in many locations.	S7a to S7i	Approx. 5,000 linear ft	Replace all the seats.	$205,000	##
S8	Slab reinforcing is exposed	S8a &S8b	8 plcs	Infill with epoxy to restore original shape and provide cover for exposed bar.	$1,350	##
S9	Separation of concrete at the bottom of the step	S9	60ft	To be sealed with epoxy injection or other means.	$4,500	##
S10	Concrete break down with tripping hazard. Possible nest for snakes	S10a & S10b	6ft	Remove broken and cracked concrete . Pour new concrete and connect to existing by epoxy dowels.	$1,200	##
S11	Vertical offset of ±2" between walkway and seat section. This is due to differential settlement between south and north portion of the stand. The south portion was added in 1957 and is supported by concrete columns, beams and footings while the north portion is older construction (probably) with slab on grade and shows more settlement.	S11a to S11d	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$10,500	##
S12	Separation of concrete at the bottom of the step ±2"	S12	6 ft	To be sealed with epoxy injection or other means.	$225	##
S13	Vertical offset of ±1" at separation joint with tripping hazard	S13	20 ft	Some portions of the concrete shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,500	##

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IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606
(949) 387-8500, Fax: (949) 387-0800

Sheet:	A7		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation(continued)

S14	Large separation of concrete at the bottom of the step ±2"	S14	40ft	To be sealed with epoxy injection or other means.	$1,500	##
S15	Vertical offset of ±1/2" at separation joint with tripping hazard	S15	10 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$6,300	##
S16	Vertical offset of ±1/2" at separation joint with tripping hazard	S16	4 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth transition between two sides.	$3,900	##
S17	Separation of concrete at the bottom of the step ±2"	S17	50ft	To be sealed with epoxy injection or other means.	$3,000	##
S18	Separation of concrete at the bottom of the step ±1"	S18	40ft	To be sealed with epoxy injection or other means.	$2,400	##
S19	Separation of concrete at the bottom of the step ±1"	S19	30 ft	To be sealed with epoxy injection or other means.	$2,000	##
S20	Vegetation inside construction joints	S20		Clean all the vegetation and trash.	$2,600	##
S21	Approximately 2/3 of the Wood seats are rotten and damaged. Connection screws are loose and separated in many locations. Some of the seats are totally broken.	S21	Approx. 6,500 linear ft	Replace all the seats.	$265,000	##
S22	Separation of concrete at the bottom of the step ±1"	S22	60 ft	To be sealed with epoxy injection or other means.	$3,600	##
S23	Vertical offset of ±1/2" at separation joint with tripping hazard	S23	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,000	##
S24	Cracking at slab with width ±1/8"	S24a & S24b	60 ft	Infill with epoxy injection. Concrete around seat support shall be demolished and new concrete to be poured with epoxy dowel connection.	$6,800	##
S25	Damaged concrete with exposed bar and slab cracking	S25	6 ft	Remove damaged portions of concrete and infill with epoxy injection.	$400	##
S25	Exposed bar at joint	S26a & S26b	8plcs	Cover bar with epoxy coating.	$2,000	##
S26	Cracking at slab with width less tahn 1/8"		1,000 linear ft (assumed)	Cover bar Sealant.	$12,000	##
						##

Total Estimated Costs= **$560,225**

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Assessment of Distress
At Mt. San Antonio Stadium

On Call Engineering Services

June 18, 2010

IDS GROUP

1 Peters Canyon Road, Suite 140, Irvine, CA 92606 949-387-8500 fax: 949-387-0800

IDS GROUP
Integrated Design Services

June 18, 2010

Mr. Gary Nellesen
Director
Facility Planning & Management
Mt. San Antonio College
1100 North Grand Avenue
Walnut, CA 91789-1399

Subject: ***Assessment of the Distress at Mt. San Antonio Stadium***
IDS Project Number: 29.157.03

Dear Mr. Nellesen:

At your request, IDS Group, Inc. (IDS) completed the assessment of the distress observed at the main stadium at Mt. San Antonio College (MTSAC) located at 1100 North Grand Avenue, Walnut, California. Our scope of work for this review consisted of:

1. A site visit to observe the existing structure.
2. Review of project drawings.
3. Providing a priority list of repair items.
4. Providing recommendations for methods of repair.
5. Providing an opinion of the repair cost.
6. Providing recommendations if there are any DSA implications for life safety.

In addition, a civil engineering study of storm water has been performed and results are presented as part of our investigations.

This letter and its attachments represent our opinions and recommendations and will serve as the project report. Note that this report does not include the press box structure, which will be provided under a separate report.

Project Description

The Mt. San Antonio Stadium (Also Known as Hilmer Lodge Stadium) is located at the southeast corner of the campus, south of W. Temple Avenue (see the site plan below). The original stadium construction is consisted of concrete stands formed and cast on grade. It appears that the original construction is dated in the later 1940's. No plans of the original construction were available for our review. In a 1957 modification, additional stands were added using elevated concrete framing supported by concrete columns, beams and footings at both the east and west sides (see the structural key plan).

Site Observations

After receiving a notice to proceed with this study, IDS visited the site on April 27, 2010 and May 5, 2010 and met with Mr. Roger Sneeds, the facility manager. The site visit performed by our team of a structural engineer, ADA architects, and civil engineers. We evaluated the stadium structure, ADA conformance, and storm water control. Please refer to the attached key plans and photos taken during our site visits.

Our observations indicate that:

- The concrete slabs on grade are cracked in many areas. The crack widths vary from hairline to larger than 1/8". Full depth rupture of the concrete slab was observed in several locations.
- Differential settlement at slab on grade joints is noticeable in several locations and exceeds 2" in some areas.
- Separation of concrete between vertical and horizontal portions of the stepped concrete slab has created gaps as large as 2" in numerous locations.
- The wood seats in both the East and West stands are severely damaged. It appears that over two-thirds of the seats are cracked, broken, rotten or loose.
- Storm water investigations indicate that siltation and clogging in several V ditches and basins has significantly lowered the capacity of the drainage system and contributed to settlement of the stands.
- Handicapped areas do not meet current ADA requirements.

Detailed results of the site observation are identified on key plans and are reflected in the attached evaluation matrices.

Conclusions

Based on our site visits and review of existing drawings for the stadium we indicate the following primary factors in relation to the distressed conditions at stadium:

- The cracking in the concrete slabs has occurred due to long term shrinkage of the concrete and settlement of the supporting soils. Once cracking in the slabs occurs, slab settlement is exacerbated by the repeated intrusion of water into the soils beneath the slab, which can cause soil weakening and erosion.
- The more significant areas of slab settlement in the east stands appears primarily due to inadequate drainage conditions which have resulted in soil erosion below the slabs and large gaps in the supporting soils.
- Significant settlement of up to 2" appear where the added elevated concrete stands of 1957 meet the original slab on grade stands. It is noted that the added slab has different structural support conditions: Please note the following: 1) the existing slabs have already settled at the time of construction for the new stands, but the new stands still undergo some settlement as they age, and 2) the nature of structural support in the original and 1957 stands addition, and therefore the extent of long term settlement, is substantially different, i.e. slab on grade vs. elevated slabs supported on columns and footings.

Recommendations

Recommendations for repair and maintenance are reflected in the attached evaluation matrices for structural, civil and ADA items. Our recommendations are preliminary in nature and are not considered repair design document; they are intended to identify the scope of work needed to make the stadium safer and more functional and minimize future damage. Additional engineering and design work is required in order to translate the general repair recommendations into actual construction documents to perform the repair work. Key recommendations are listed below.

1. Eliminate tripping hazards which can present safety concerns:
    a. Remove the concrete at the expansion joints and pour new concrete to provide a smooth transition between the adjacent surfaces.
    b. Remove and replace areas of broken and heavily cracked concrete slab.
2. Eliminate the risks of injury by replacing damaged and splintered wood seating.
3. Remove the siltation and clogging from V ditches and catch basins to control rain and storm water and thereby mitigate continued wash-out of soils and associated settlement.
4. Seal all concrete slab cracks with measurable width, and repair large cracks (1/8" width or larger) to limit water intrusion which can result in deterioration of reinforcement and concrete damage.
5. Fill in the gaps at corners in the slab on grade to prevent water penetration and soil wash-out under the stands.
6. Conduct annual (or more frequent) follow-up surveys to confirm repairs are holding and continued cracking and soil erosion damage has been mitigated.

Repair Costs

Our opinion of probable cost of the repair construction is presented in the attached tables. This preliminary cost estimate is based on the current condition of the stadium as of our last site visit of May 5, 2010. It is expected that a more thorough investigation during the preparation of the construction document could revise the construction cost shown in the tables.

Thank you for the opportunity to be of service on this project. If you have any questions or would like us to provide investigation services for other facilities, please do not hesitate to contact us.

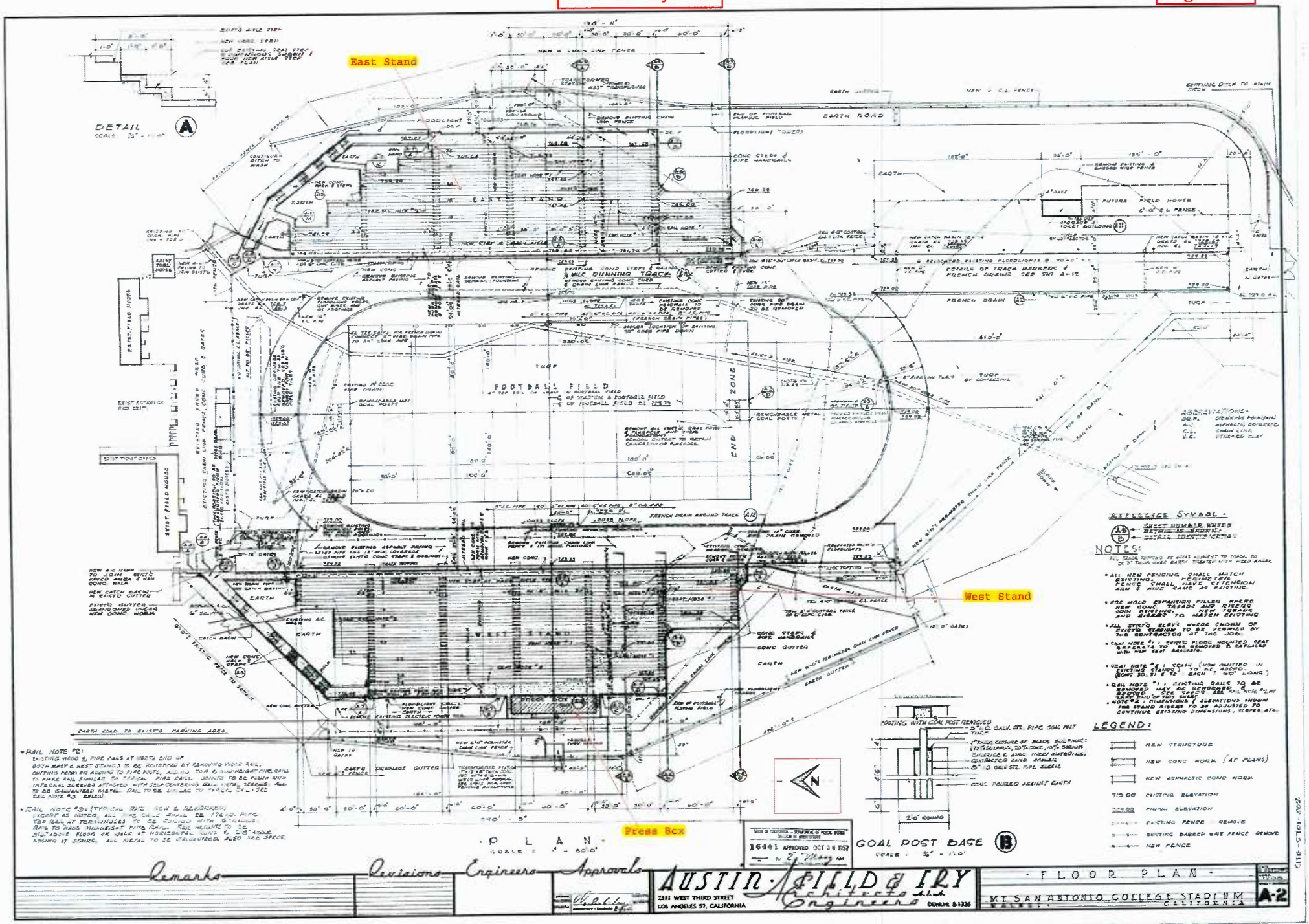
Sincerely,
IDS Group, Inc.

Matt Kani, SE
Project Manager

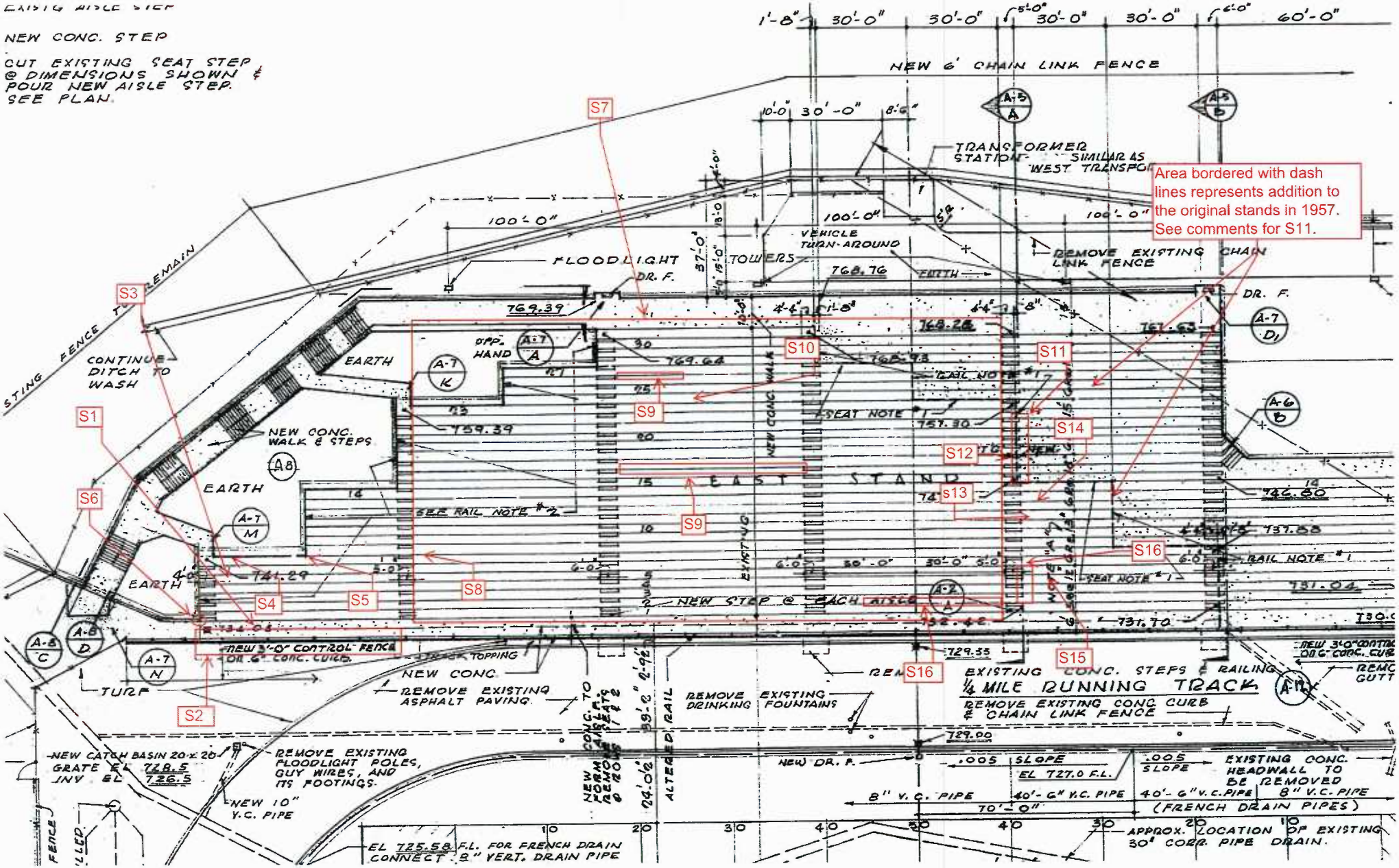
Said Hilmy, Ph.D., SE, LEED AP
Principal

General Key Plan

Page A1

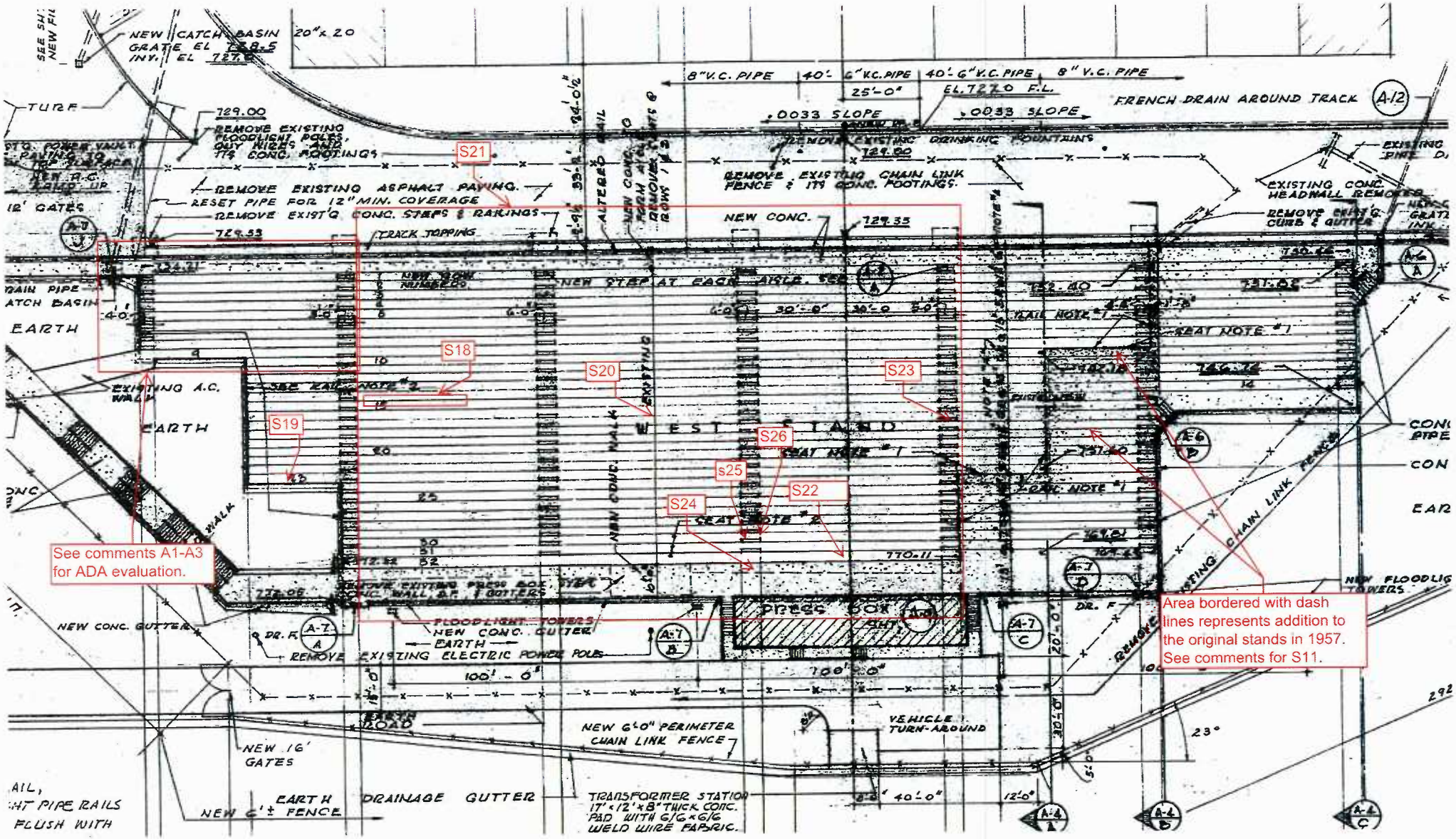


Structural Key Plan- East Stand

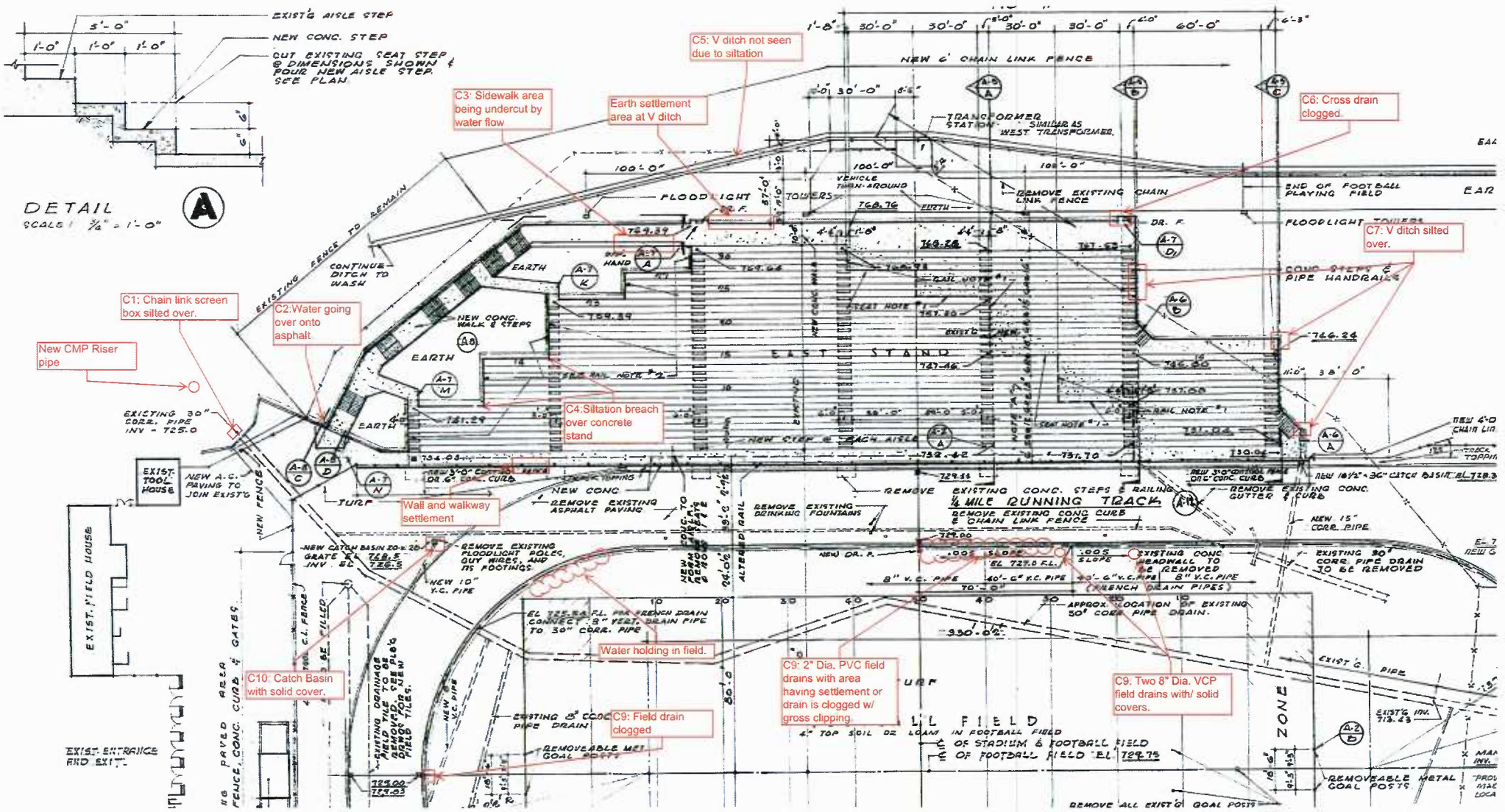


Area bordered with dash lines represents addition to the original stands in 1957. See comments for S11.

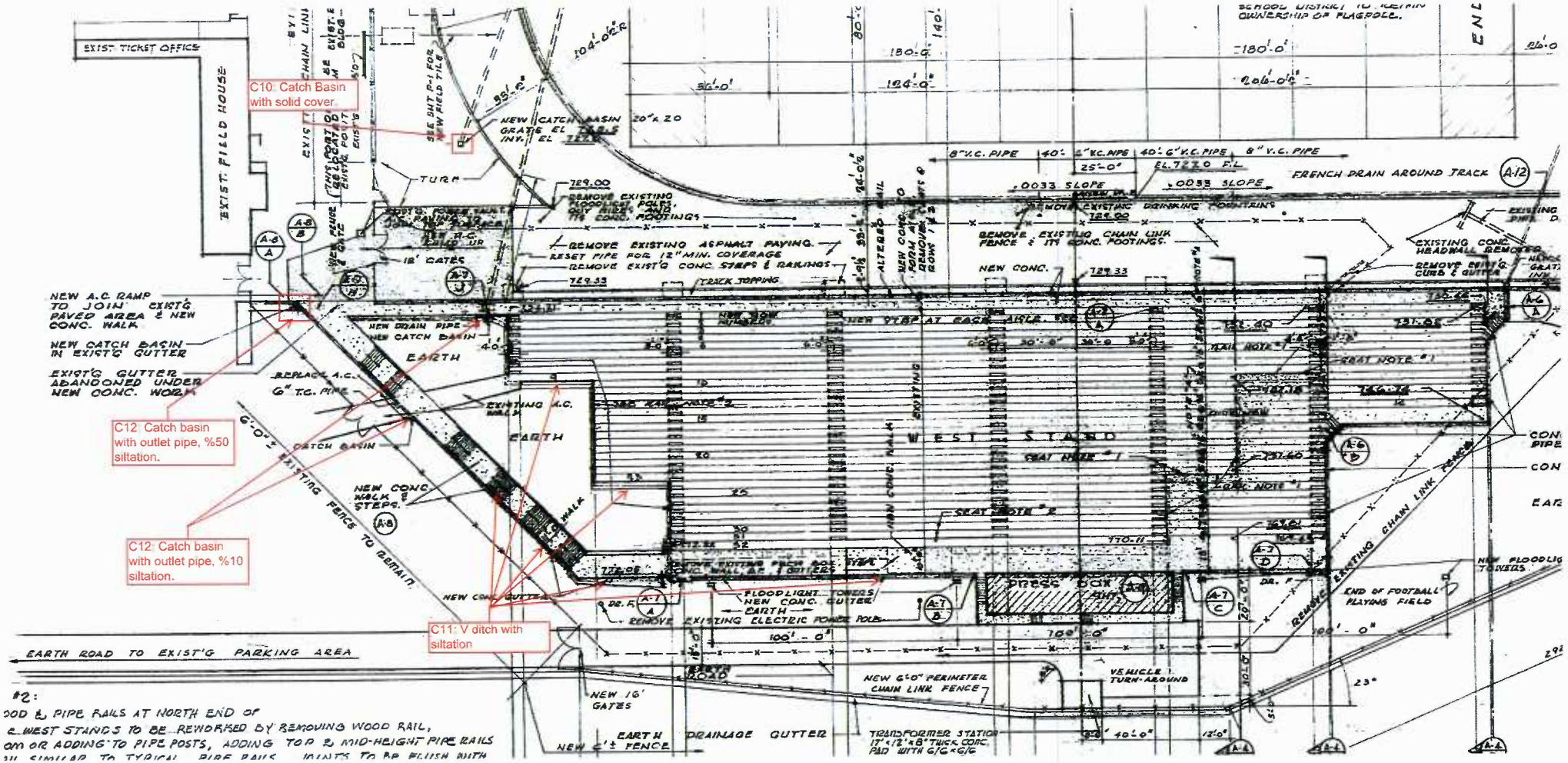
Structural Key Plan- West Stand



Civil Key Plan- East Stand



Civil Key Plan- West Stand



Project Assessment Tables

The following tables provide a concise summary of the distress conditions observed during our investigation. Description of each item is identified. Also included are photo references, approximate size of distressed area and recommendation of each repair. An estimate of repair cost of each item is also provided.

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A6		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Rough Constr. Cost
S1	Large cracking at slab on grade initiating from face of steps extending to the center of slab. Resulted in full-depth rupture of the slab with visible vertical offset.	S1a to S1d	75 ft	Damaged portion of the slab shall be demolished to pour new concrete and tied to existing slab using epoxy dowels.	$13,400
S2	Top of concrete retaining wall is tilted. This is possibly caused by rotation of the foundation due to the soil and water pressure and has created slab rupture indicated in item 1.	S2a & S2b	4ft tall & 36 ft long	Retaining wall to be periodically monitored for further rotation and future reconstruction.	A/R
S3	Cracking at slab with width ±1/8"	S3	10 ft	Infill with epoxy injection.	$1,000
S4	Separation of concrete at the bottom of the step	S4	16 ft	To be sealed with epoxy injection or other means.	$1,200
S5	Exposed bar at joint	S5		Cover bar with epoxy coating.	$150
S6	Concrete break down at railing support	S6a & S6b	4 plcs	Remove broken and cracked concrete around railing. Place new concrete repair mortar and connect to existing by epoxy dowels.	$1,700
S7	Approximately 2/3 of the wood seats are rotten and damaged. Connection screws are loose and separated in many locations.	S7a to S7i	Approx. 5,000 linear ft	Replace all the seats.	$205,000
S8	Slab reinforcing is exposed	S8a &S8b	8 plcs	Infill with epoxy to restore original shape and provide cover for exposed bar.	$1,350
S9	Separation of concrete at the bottom of the step	S9	60ft	To be sealed with epoxy injection or other means.	$4,500
S10	Concrete break down with tripping hazard. Possible nest for snakes	S10a & S10b	6ft	Remove broken and cracked concrete . Pour new concrete and connect to existing by epoxy dowels.	$1,200
S11	Vertical offset of ±2" between walkway and seat section. This is due to differential settlement between south and north portion of the stand. The south portion was added in 1957 and is supported by concrete columns, beams and footings while the north portion is older construction (probably) with slab on grade and shows more settlement.	S11a to S11d	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$10,500
S12	Separation of concrete at the bottom of the step ±2"	S12	6 ft	To be sealed with epoxy injection or other means.	$225
S13	Vertical offset of ±1" at separation joint with tripping hazard	S13	20 ft	Some portions of the concrete shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,500

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
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Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Structural Evaluation(continued)

S14	Large separation of concrete at the bottom of the step ±2"	S14	40ft	To be sealed with epoxy injection or other means.	$1,500
S15	Vertical offset of ±1/2" at separation joint with tripping hazard	S15	10 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$6,300
S16	Vertical offset of ±1/2" at separation joint with tripping hazard	S16	4 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth transition between two sides.	$3,900
S17	Separation of concrete at the bottom of the step ±2"	S17	50ft	To be sealed with epoxy injection or other means.	$3,000
S18	Separation of concrete at the bottom of the step ±1"	S18	40ft	To be sealed with epoxy injection or other means.	$2,400
S19	Separation of concrete at the bottom of the step ±1"	S19	30 ft	To be sealed with epoxy injection or other means.	$2,000
S20	Vegetation inside construction joints	S20		Clean all the vegetation and trash.	$2,600
S21	Approximately 2/3 of the Wood seats are rotten and damaged. Connection screws are loose and separated in many locations. Some of the seats are totally broken.	S21	Approx. 6,500 linear ft	Replace all the seats.	$265,000
S22	Separation of concrete at the bottom of the step ±1"	S22	60 ft	To be sealed with epoxy injection or other means.	$3,600
S23	Vertical offset of ±1/2" at separation joint with tripping hazard	S23	6 plcs	Some portion of the concrete slab shall be demolished and new concrete to be poured for smooth leveling between two sides.	$4,000
S24	Cracking at slab with width ±1/8"	S24a & S24b	60 ft	Infill with epoxy injection. Concrete around seat support shall be demolished and new concrete to be poured with epoxy dowel connection.	$6,800
S25	Damaged concrete with exposed bar and slab cracking	S25	6 ft	Remove damaged portions of concrete and infill with epoxy injection.	$400
S25	Exposed bar at joint	S26a & S26b	8plcs	Cover bar with epoxy coating.	$2,000
S26	Cracking at slab with width less tahn 1/8"		1,000 linear ft (assumed)	Cover bar Sealant.	$12,000

Total Estimated Costs= $585,725

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A8		
Job No.:	29.157.03		
Calc. By.:	KL	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Storm water investigation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Estimated Constr. Costs
C1	At the proposed, 9-3-1957 Headwall location, a hole was cut at the top of the 30" CMP and a protective chain link screen box constructed over top of the hole. This new drainage point for the surface water coming from the East Stand area was observed to be silted over reducing the effect of the drain.	C1		Remove siltation, remove solid plate cover. Repair chain link fence guard. Install perforated cover over existing hole and secure to CMP	$1,800
C2	The north East Stand entry point at the lower left corner of the entry steps; water is draining over the constructed concrete "V" ditch and flowing onto the asphalt drive area. This is due to excessive siltation build at the "V" ditch turning point.	C2		Remove siltation	$250
C3	At the upper most elevation, the water from the high side of the sidewalk was being redirected to a lower point of the sidewalk, causing water flow over the concrete sidewalk to the earthen area. this new water direction created an undercutting of the sidewalk and exposing the underside of the walk by 1'-0" to 2'-0". This redirection is due to ground settlement, of 1 to 2 inches of the upper "V" ditch section.			At settlement area re-grade the area for positive drainage into the "V" ditch. Slurry mix the area of side walk that has been under cut and re-grade the landscape area for positive water flow.	$7,700
C4	This excessive water flow breached and silted over the upper concrete "V" ditch for the lower Stands, causing water to flow ever the stands into existing cracks and butt joints. Several weep holes have visible siltation coming from them.	C4a to C4e		Remove siltation. At all points at both East and West Stands where the concrete "V" ditches make a 90 degree down turn, a concrete based material should be constructed at the upper most corner to direct the water away from going into the stand.	$1,700
C5	At the top of the East Stand behind the light towers, the first "V" ditch, on the east side of the chain link fence, was non-existent. No exploratory measures were taken at this time			Remove siltation	$7,500
C6	At the South side of the East Stand area; several under sidewalk drains were clogged with siltation making the drains inoperable.			Remove siltation	$400
C7	The south side of the East Stand "V" ditches were also silted to the point they were inoperable.	C7		Remove siltation	$700
C8	Several 8" VAC drains were protected with solid covers that contained one ¾" hole. Reducing the effectiveness of the drain.			Remove solid cover and install perforated cover and secure.	$750

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A9		
Job No.:	29.157.03		
Calc. By.:	MK	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - Storm water investigation(continued)

C9	Several 2" PVC drains were covered with grass clippings and/or the area around the drains were settled 1" below the grade. Reducing the effectiveness of the drain.			Remove grass clippings and re-grade area for positive water flow.	$2,400
C10	Two turf catch basin drains located at the northeast and west corner of the track had solid plates bolted down over the catch basin grates. Reducing the effectiveness of the drain.			Remove the solid covers and install perforated covers and secure	$2,700
C11	Several concrete "V" ditches have been silted over causing a redirection of storm water flow over the stand area and walk way.			Remove siltation	$3,200
C12	Several catch basins at the north base of the stands are silted closed from 10% - 50% of the pipe diameter.			Remove siltation	$1,600
C13	Upper earth drainage gutter has siltation.			Remove siltation	$7,200
C14	Upper most "V" ditch area behind chain link fence.			Future recommendation if top "V" ditch does not control water runoff a French Drain could be installed at the upper elevation adjacent to the "V" ditch draining to the designed catch basins.	Future

Total Estimated Costs= $37,900

IDS INTEGRATED DESIGN SERVICES, INC.
Structural Engineers
1 Peters Canyon Rd., Suite 140
Irvine, CA 92606

Sheet:	A10		
Job No.:	29.157.03		
Calc. By.:	CC	Date:	6/15/2010
Chck'd By.:	SH	Date:	6/16/2010

MTSAC Stadium Distress - ADA Evaluation

Item #	Description	Ref. Photo	Measurements	Recommended Action	Estimated Constr. Costs
A1	ADA seating area is not accessible from parking lot		Approx. 2400 s.f.	Demo concrete sidewalk, regrade, compact soils and pour new sidewalk so that POT does not exceed 5% and cross-slope does not exceed 2%	$27,000
A2	ADA seating area is not code-compliant. Wheelchair can slip off edge.		Approx. 30 linear feet	Provide 6" concrete curb on sides where drop exceeds 18".	$1,600
A3	Replace handrails on POT.		Approx. 400 linear feet.	Provide ADA compliant handrails with wheelchair guard to keep wheelchair from slipping off sidewalk.	$60,000

Total Estimated Costs= $118,600

IDS GROUP
Integrated Design Services

PHOTOS

Site Plan

Photo S1a:

Photo S1b:

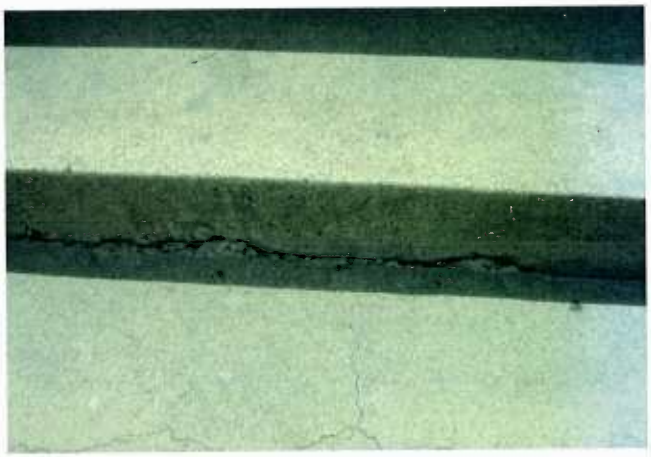

Photo S1c:

Photo S1d:

Photo S2a:

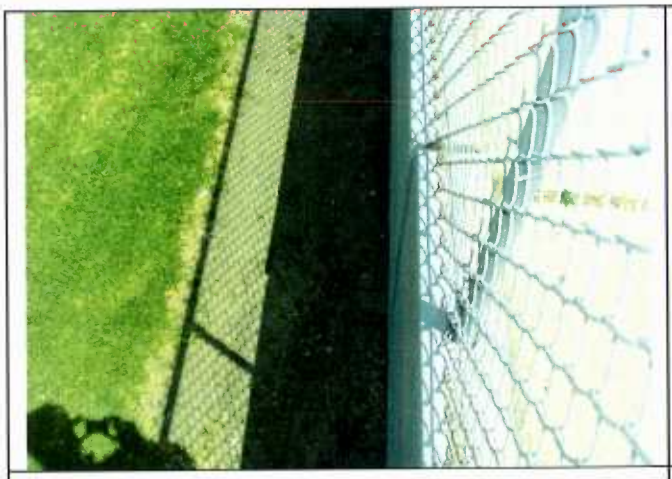

Photo S2b:

Photo S3:

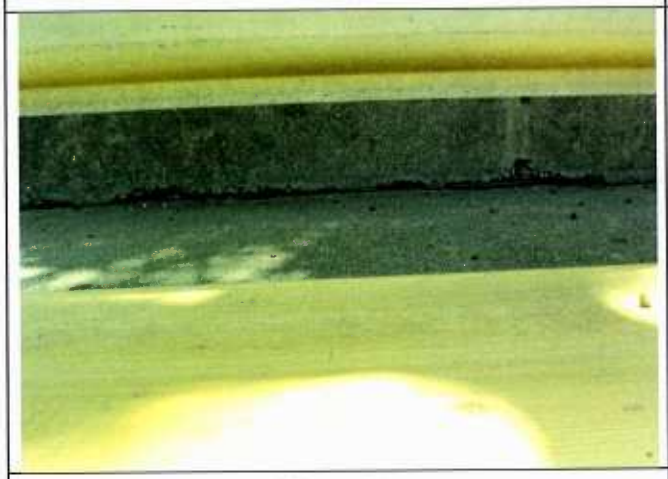

Photo S4:

Photo S5:

Photo S6a:

Photo S6b:

Photo S7a:

Photo S7b:

Photo S7c:

Photo S7d:

Photo S7e:

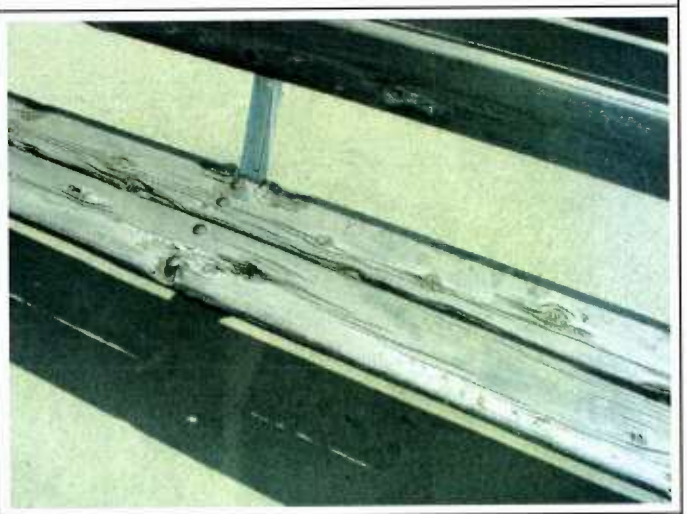

Photo S7f:

Photo S7g:

Photo S7i:

Photo S8a:

Photo S8b:

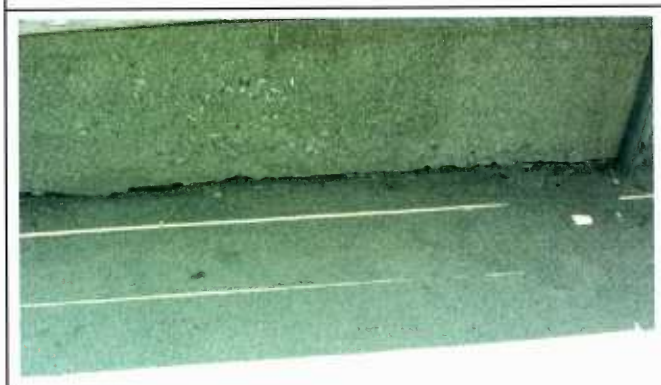

Photo S9:

Photo S10a:

Photo S10b:

Photo S11a:

Photo S11b:

Photo S11c:

Photo S11d:

Photo S12:

Photo S13:

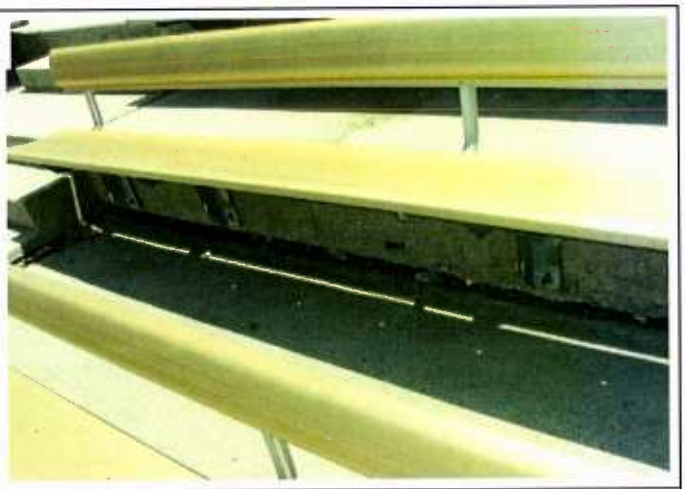

Photo S14:

Photo S15:

Photo S16:

Photo S17:

Photo S18:

Photo S19:

Photo S20:

Photo S21a:

Photo S21b:

Photo S21c:

Photo S22:

Photo S23:

Photo S24a:

Photo S24b:

Photo S25:

Photo S26a:

Photo S26b:

Photo C1:

Photo C4a:

Photo C4b:

Photo C4c:

Photo C4d:

Photo C7:

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Facility : 0050 50F- STADIUM PRESS BOX

General Info:

		Estimate Cost:	$195,243.37
Type:	Building	Additional Cost:	$111,953.63
Gross Area:	1845 S. F.	Repair Cost:	$307,197.00
Year Built:	1948	Replacement Value:	$448,242.75
Last Renovation:	1959	FCI%:	68.53%

Facility Description:

0049; Building, No.50 D, is located at the Mt. San Antonio College in Walnut, California. The 1 - story, 1845 square foot building contains press box. Originally constructed in 1948 with a minor remodel in 1959 with no major renovations to date, 2013.

STRUCTURAL/EXTERIOR CLOSURE:
The building rests on slab-on-grade that are original to construction. The main structure is cast in place, CMU that is metal framed with metal skinned exterior walls. Roof framing is metal. The roof is rolled asphalt of unknown vintage. Exterior entrance doors are typically hollow metal in hollow metal frames using lever handles. The windows in this building are a combination of metal and or aluminum fixed and operational window walls.

INTERIORS:
Partition wall types include painted CMUs. The interiors of exterior walls are typically painted brick. Most ceilings 12"x12" are acoustical tiles. Flooring in high traffic areas is carpet. Interior doors are generally solid wood in wood frames. There are no restrooms in this building.

MECHANICAL/PLUMBING
Heating/cooling is provided by a roof top heat pump with roof top exposed duct for ceiling supply and returns. The plumbing is of original type. The plumbing is a porclin sink and a electric in line water heater with a wall mounted water fountain.

ELECTRICAL:
The electrical system is fed from the sub station behind press box to the local panel to the press box 60 amp sub panel. The lighting is by T-12 fixtures using typical switches and outlets.

FIRE PROTECTION/LIFE SAFETY SYSTEMS:
The fire protection is by fire extinguishers.

Hazmat.
None noted.

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March 25, 2015

John Tommy Rosas, Tribal Admin.
Tongva Ancestral Territorial Tribal Nation
Transmitted via email to tattnlaw@gmail.com

Re: Draft Subsequent Project and Program Environmental Impact Report for Mount San Antonio College, City of Walnut, Los Angeles County, California

Dear Mr. Rosas,

ASM Affiliates, Inc. (ASM) is conducting a cultural resources study for the proposed Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects (Project) at Mount San Antonio College in the city of Walnut, in Los Angeles County, California. The Project area is located on the San Dimas, Calif. 7.5-minute USGS quadrangle map within the NW ¼ of Section 32 in T1S/R9W (see attached map).

The Mt. San Antonio Community College District is the Lead Agency and will prepare a Draft Subsequent Project and Program Environmental Impact Report (Draft SEIR) for the Mt. San Antonio College 2015 Facilities Master Plan Update and Physical Education Projects. The projects and program descriptions, locations and probable environmental effects are included in the complete NOP document which is posted on the college's website (http://www.mtsac.edu/construction/reports-and-publications/environmental-impact-reports.html). The prior 2002, 2005, 2008, and 2012 Facility Master Plans were evaluated in the Final Program EIRs (SCH 2002041161) that were certified in December 2002, January 2006, September 2008, and December 2013. The major change from the 2012 FMP is re-design of the athletic facilities south of Temple Avenue and East of Bonita Avenue. The existing stadium (11,940 seats) will be demolished, rather than renovated, and a new stadium (10,912 seats) built onsite. Other changes include relocation of the Public Transportation Center to Lot D3, an expanded Wildlife Sanctuary and Open Space area, and a pedestrian bridge across Temple Avenue connecting the Physical Education Complex to Lot F.

A cultural resources literature and records search conducted at the South Central Coastal Information Center (SCCIC) housed at the California State University, Fullerton, indicated that nine cultural resources studies have been conducted within a 1/2-mi. radius of the Project area; none of these studies intersect the Project area. The records search also indicated that only one cultural resource, Mount San Antonio College itself, has been recorded within or immediately adjacent to the Project boundaries.

ASM requested a search of the Native American Heritage Commission's (NAHC's) Sacred Lands File on February 4, 2016. The NAHC responded on February 10, 2016 that the search yielded negative results. ASM performed an intensive-level archaeological survey of the Project area on January 21, 2016. As the majority of the Project area is within a developed built environment, during the pedestrian survey, close attention was paid to any visible soils, vegetation, and natural and human-modified landforms. Naturally occurring rocks were inspected for any indication of prehistoric or historic human modification. No cultural resources were identified during the survey.

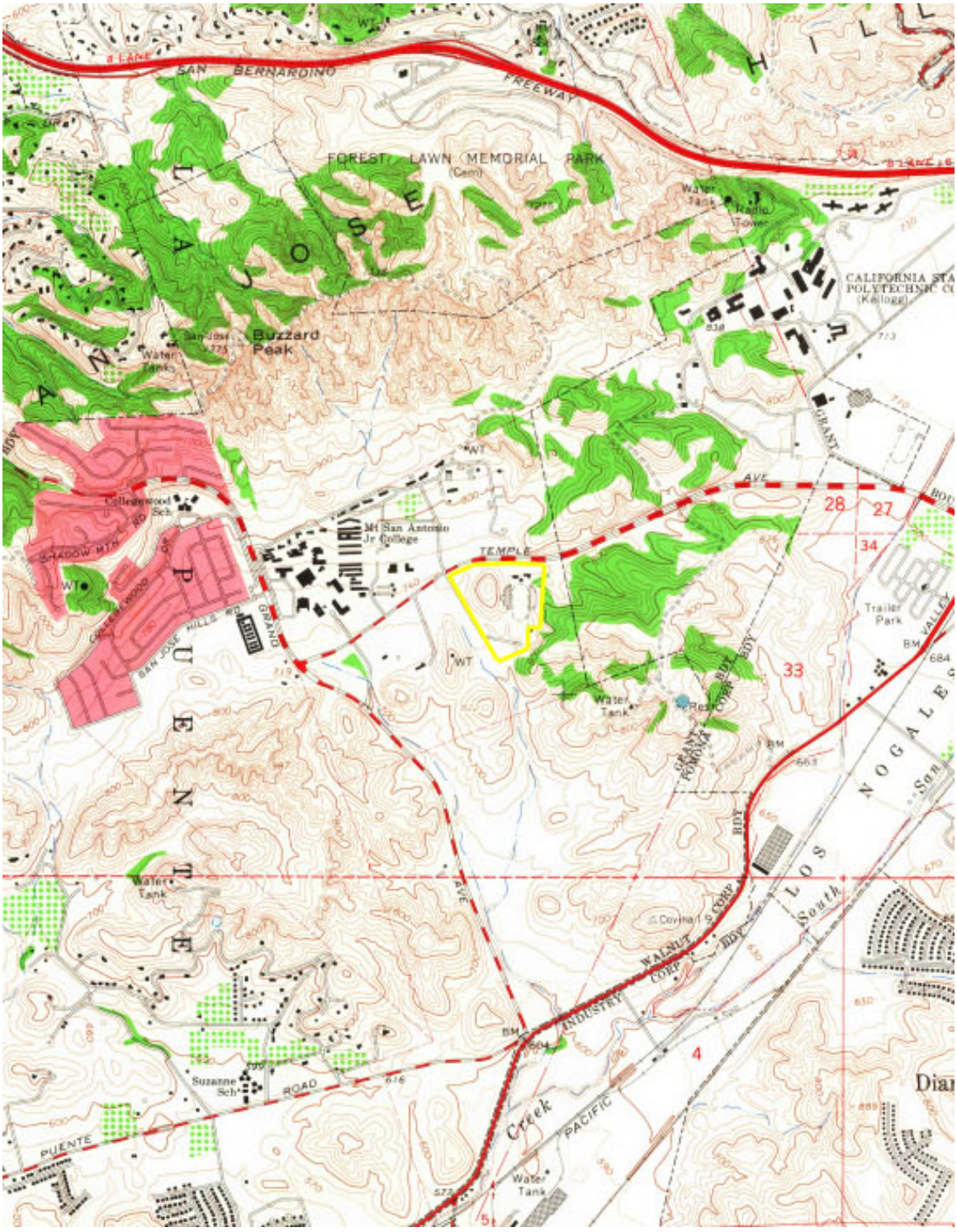
Please let me know of any concerns you may have regarding cultural resources related to the proposed Project at your earliest convenience. Please feel free to contact me at sandrews@asmaffiliates.com or (626) 793-7395. Your comments and concerns are very important to us, and to the successful completion of this Project. I look forward to hearing from you in the near future. Thank you in advance for taking the time to review this request.

Respectfully yours,

Sherri Andrews

Sherri Andrews, M.A., RPA
Senior Archaeologist

2034 Corte Del Nogal, Carlsbad, California 92011 • (760) 804-5757 • Fax: (760) 804-5755
20 N. Raymond Ave., Suite 220, Pasadena, California 91103 • (626) 793-7395
www.asmaffiliates.com



Attachment 1: Project area depicted on San Dimas USGS 7.5-minute topographic quadrangle.

ASM affiliates
Archaeology • History • Ethnography • Architectural History

March 25, 2015

Gabrieleno Band of Mission Indians - Kizh Nation
Andrew Salas, Chairperson
P.O. Box 393
Covina, California 91723
Transmitted via email to gabrielenoindians@yahoo.com

Re: Draft Subsequent Project and Program Environmental Impact Report for Mount San Antonio College, City of Walnut, Los Angeles County, California

Dear Mr. Salas,

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Respectfully yours,

Sherri Andrews

Sherri Andrews, M.A., RPA
Senior Archaeologist

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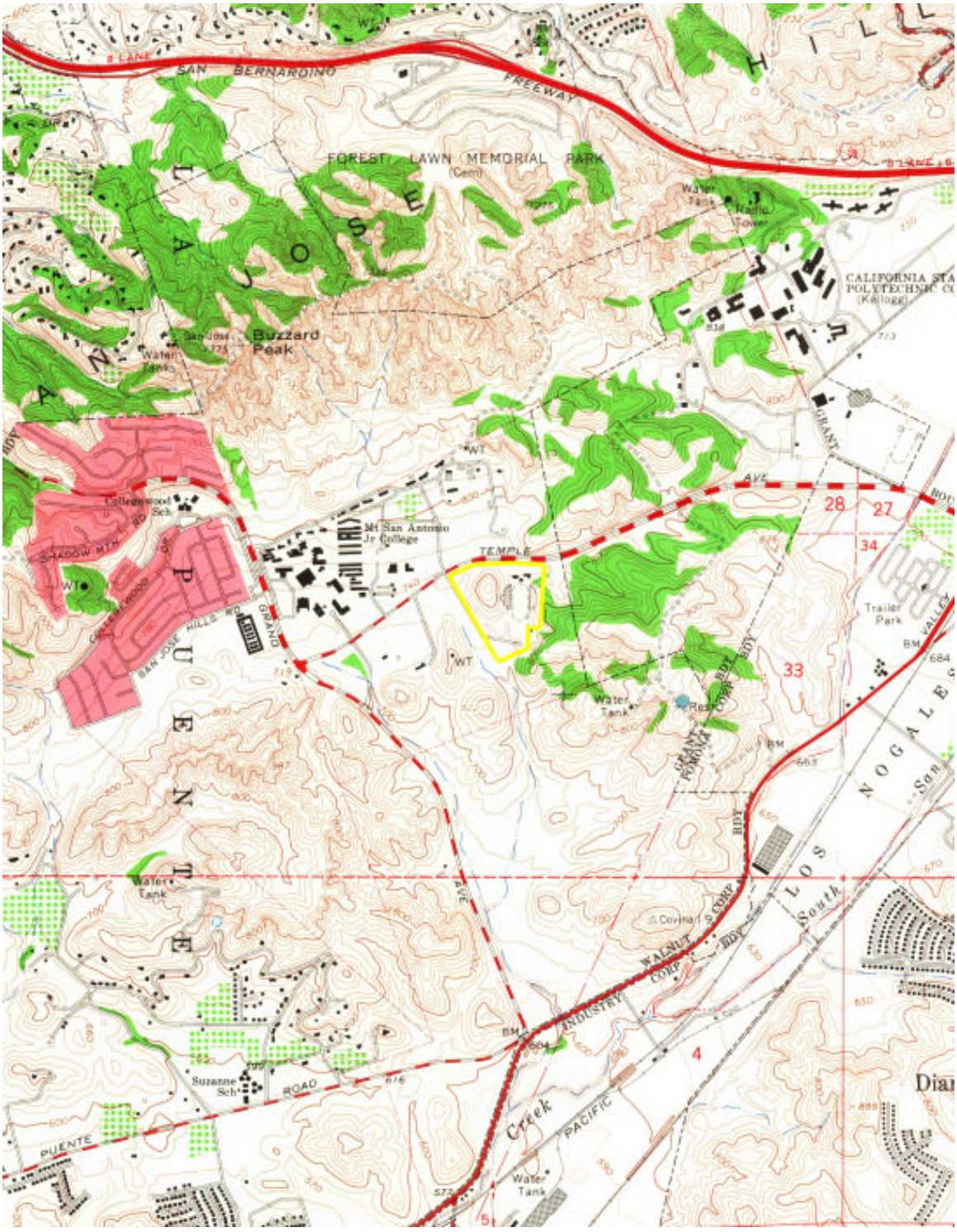

Attachment 1: Project area depicted on San Dimas USGS 7.5-minute topographic quadrangle.

Sherri Andrews

From: Johntommy Rosas <tattnlaw@gmail.com>
Sent: Monday, March 28, 2016 11:44 AM
To: Sherri Andrews
Subject: Re: Draft SEIR for Mount San Antonio College, Walnut, California
Attachments: TATTN BIZ CARD (1) (1) (1).png

thanks Sherri-I confirm receipt of your letter-
we request more details and info on-

1. demo and depths -there should be some demo plans showing excavations
2. new construction foundation and utilities trenches etc with elevations-
3. and other ground disturbing has to be disclosed asap so we can review the excavation impacts for the projects -send by email is fine -we are also officially requesting we be involved in na monitoring for all geo- tech testing and arch testing which we are requiring and we can discuss in more detail -

thanks jt

On Mon, Mar 28, 2016 at 10:56 AM, Sherri Andrews <sandrews@asmaffiliates.com> wrote:

> Dear Mr. Rosas,
>
> Attached please find our letter requesting your comments, if any, on the Draft Subsequent Project and Program Environmental Impact Report for Mount San Antonio College project in Walnut, California. Thank you for taking time to review this letter and letting us know if there are any issues or concerns.
>
> Best regards,
>
> Sherri Andrews

Sherri Andrews, M.A., J.D., RPA
Senior Archaeologist
ASM Affiliates • Pasadena, CA
(626) 793-7395
E-mail: sandrews@asmaffiliates.com
Website: www.asmaffiliates.com

--

JOHN TOMMY ROSAS
TRIBAL ADMINISTRATOR
TRIBAL LITIGATOR
TONGVA ANCESTRAL TERRITORIAL TRIBAL NATION
A TRIBAL SOVEREIGN NATION UNDER UNDRIP
AND AS A CALIFORNIA NATIVE AMERICAN TRIBE / SB18-AJ52-AJR 42
25 U.S. Code § 1679 - Public Law 85-671
August 18, 1958 | [H. R. 2824] 72 Stat. 619
Tribal sovereignty in the United States is the inherent authority of indigenous tribes to govern themselves within and outside the borders and waters of the United States of America .

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tongvanation.org

GABRIELENO BAND OF MISSION INDIANS - KIZH NATION
Historically known as The San Gabriel Band of Mission Indians
Recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Dear Sherri Andrews
Senior Archeologist

"The project locale for the Mount San Antonio Project, lies in an area where the Ancestral & traditional territories of the Kizh(Kitc) Gabrieleño villages such as that of ***Tooypinga*** *, adjoined and overlapped with each other, at least during the Late Prehistoric and Protohistoric Periods. The homeland of the Kizh (Kitc) Gabrieleños , probably the most influential Native American group in aboriginal southern California (Bean and Smith 1978a:538), was centered in the Los Angeles Basin, and reached as far east as the San Bernardino-Riverside area. The homeland of the Serranos was primarily the San Bernardino Mountains, including the slopes and lowlands on the north and south flanks.Whatever the linguistic affiliation, Native Americans in and around the project area echibited similar orgainization and resource procurement strategies. Villages were based on clan or lineage groups. Their home/ base sites are marked by midden deposits, often with bedrock mortars. During their seasonal rounds to exploit plant resources, small groups would migrate within their traditional territory in search of specific plants and animals. Their gathering strategies often left behind signs of special use sites, usually grinding slicks on bedrock boulders, at the locations of the resources. Therefore in order to protect our resources we're requesting one of our experienced & certified Native American monitors to be on site during any & all ground disturbances (this includes but is not limited to pavement removal, pot-holing or auguring, boring, grading, excavation and trenching).*

In all cases, when the NAHC states there are "No" records of sacred sites" in the subject area; they always refer the contractors back to the Native American Tribes whose tribal territory the project area is in. This is due to the fact, that the NAHC is only aware of general information on each California NA Tribe they are "NOT " the "experts" on our Tribe. Our Elder Committee & Tribal Historians are the experts and is the reason why the NAHC will always refer contractors to the local tribes.

In addition, we are also often told that an area has been previously developed or disturbed and thus there are no concerns for cultural resources and thus minimal impacts would be expected. I have two major recent examples of how similar statements on other projects were proven very inadequate. An archaeological study claimed there would be no impacts to an area adjacent to the Plaza Church at Olvera Street, the original Spanish settlement of Los Angeles, now in downtown Los Angeles. In fact, this site was the Gabrieleno village of Yangna long before it became what it is now today. The new development wrongfully began their construction and they, in the process, dug up and desecrated 118 burials. The area that was dismissed as culturally sensitive was in fact the First Cemetery of Los Angeles where it had been well documented at the Huntington Library that 400 of our Tribe's ancestors were buried there along with the founding families of Los Angeles (Picos, Sepulvedas, and Alvardos to name a few). In addition, there was another inappropriate study for the development of a new sports complex at Fedde Middle School in the City of Hawaiian Gardens could commence. Again, a village and burial site were desecrated despite their mitigation measures. Thankfully, we were able to work alongside the school district to quickly and respectfully mitigate a mutually beneficial resolution.

Given all the above, the proper thing to do for your project would be for our Tribe to monitor ground disturbing construction work. Because we are the lineal descendants of the vast area of Los Angeles and Orange Counties, we hold sacred the ability to protect what little of our culture remains. We thank you for taking seriously your role and responsibility in assisting us in preserving our culture.

With respect,

Please contact our office regarding this project to coordinate a Native American Monitor to be present. Thank You

Andrew Salas, Chairman
Cell (626) 926-4131

Addendum: clarification regarding some confusions regarding consultation under AB52:

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary
Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the council of Elders

PO Box 393 Covina, CA 91723 www.gabrielenoindians@yahoo.com gabrielenoindians@yahoo.com

AB52 clearly states that consultation must occur with tribes that claim traditional and cultural affiliation with a project site. Unfortunately, this statement has been left open to interpretation so much that neighboring tribes are claiming affiliation with projects well outside their traditional tribal territory. The territories of our surrounding Native American tribes such as the Luiseno, Chumash, and Cahuilla tribal entities. Each of our tribal territories has been well defined by historians, ethnographers, archaeologists, and ethnographers – a list of resources we can provide upon request. Often, each Tribe as well educates the public on their very own website as to the definition of their tribal boundaries. You may have received a consultation request from another Tribe. However we are responding because your project site lies within our Ancestral tribal territory, which, again, has been well documented. What does Ancestrally or Ancestral mean? The people who were in your family in past times, Of, belonging to, inherited from, or denoting an ancestor or ancestors http://www.thefreedictionary.com/ancestral. . If you have questions regarding the validity of the "traditional and cultural affiliation" of another Tribe, we urge you to contact the Native American Heritage Commission directly. Section 5 section 21080.3.1 (c) states "…the Native American Heritage Commission shall assist the lead agency in identifying the California Native American tribes that are traditionally and culturally affiliated with the project area." In addition, ***please see the map below.***

APPENDIX 1: Map 1-2; Bean and Smith 1978 map.

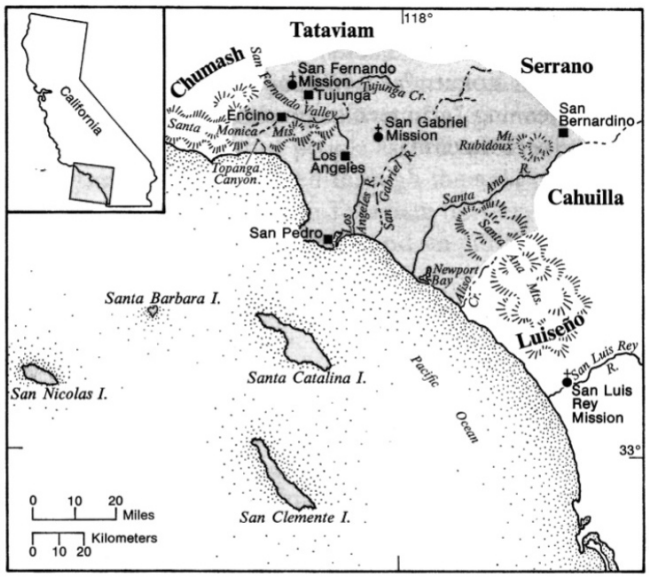

Fig. 1. Tribal territory.

The United States National Museum's Map of Gabrielino Territory:

Bean, Lowell John and Charles R. Smith
1978 Gabrielino IN *Handbook of North American Indians, California*, Vol. 8, edited by R.F. Heizer, Smithsonian Institution Press, Washington, D.C., pp. 538-549

Andrew Salas, Chairman | Nadine Salas, Vice-Chairman | Christina Swindall Martinez, secretary

Albert Perez, treasurer I | Martha Gonzalez Lemos, treasurer II | Richard Gradias, Chairman of the council of Elders

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vingna, could have been any one of the several ranch-erias which existed on the vast Rancho San José. These seem to have been occupied to a much later date than is usual. A survey map of 1874 shows one at the intersection of Towne and San Bernardino Avenues in Pomona. Ganesha Park, south of the Los Angeles County Fair Grounds, was also the site of a flourishing settlement. Another candidate for this traditional name seems to be the village at Mud Springs, near the intersection of Cienega Avenue and San Dimas Canyon Road near La Verne, where a marker commemorates one of the camps of the Anza party of 1774. Another possible contender for this particular title is Indian Hill, north

was something quite different from *nisun*, the "heart," or soul. The latter never lingered on earth but ascended to the sky to become a planet.

On Reid's list was "Toybipet," located on the Rancho San José, a domain which includes the modern cities of Pomona, La Verne and part of Claremont. The root of this, *tojts*, refers to the "devil woman who was there," living nearby, a *Sisuvit* of the village at "San Antonio." This woman had a child who was not her own. Gopher told the child to run away, and although the woman tried hard to recapture him, he made good his escape. She had very long fingernails and toenails. This woman also was trapped by the white men, but freed by an American government which did not know what to do with her. All this happened "a long time ago."

of spiritual existence is in accordance with their creed."

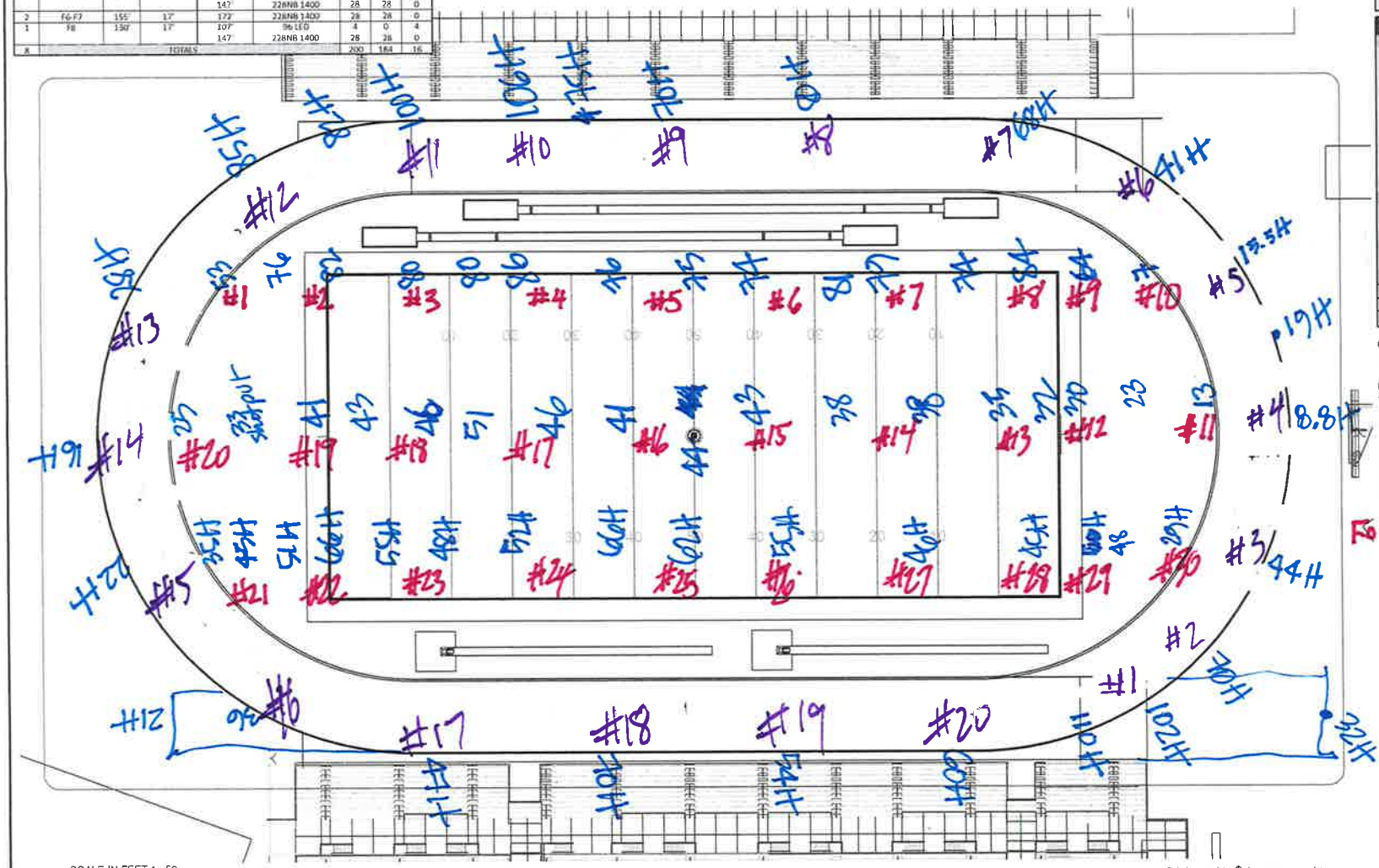
Sisu, as John Peabody Harrington transcribed the word, was the root-name of a place two miles from Azusa, at "San Antonio." His old informant remembered tales about the devil which illustrate the keen irony with which the Gabrielinos lampooned the white man's regard for this figure. Although it had been the Spanish priests who first brought it to their attention these Indians reserved their most satirical barbs for the later North American settlers, whose general contempt, contrasting as it did with the more paternalistic attitude of the Spaniards and Mexicans, must have been hard to bear.

ALL LIGHT LEVELS TAKEN @ 36" HORIZONTAL PER SIDNEY.

←Z

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98' 118'	96 LED 228NB 1400	2 18	0 18	2 0
2	F2 F3	100'	29'	109' 129'	96 LED 228NB 1400	2 18	0 18	2 0
1	F5	147'	-	107' 147'	96 LED 228NB 1400	4 28	0 28	4 0
2	F6 F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107' 147'	96 LED 228NB 1400	4 28	0 28	4 0
8	TOTALS					200	184	16



FOOTBALL / D ZONE VALUES (30)

TRACK VALUES (20)

SCALE IN FEET 1 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM • 29-Feb-16

Mt. SAC Athletics Complex East

Walnut, CA

GRID SUMMARY

Name:	Track
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES Camera 1

Entire Grid

Guaranteed Average:	**100**
Scan Average:	101.6
Maximum:	125
Minimum:	78
Avg / Min:	1.30
Guaranteed Max / Min:	**1.7**
Max / Min:	1.60
UG (adjacent pts):	0.00
CU:	0.16
No. of Points:	44

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per IM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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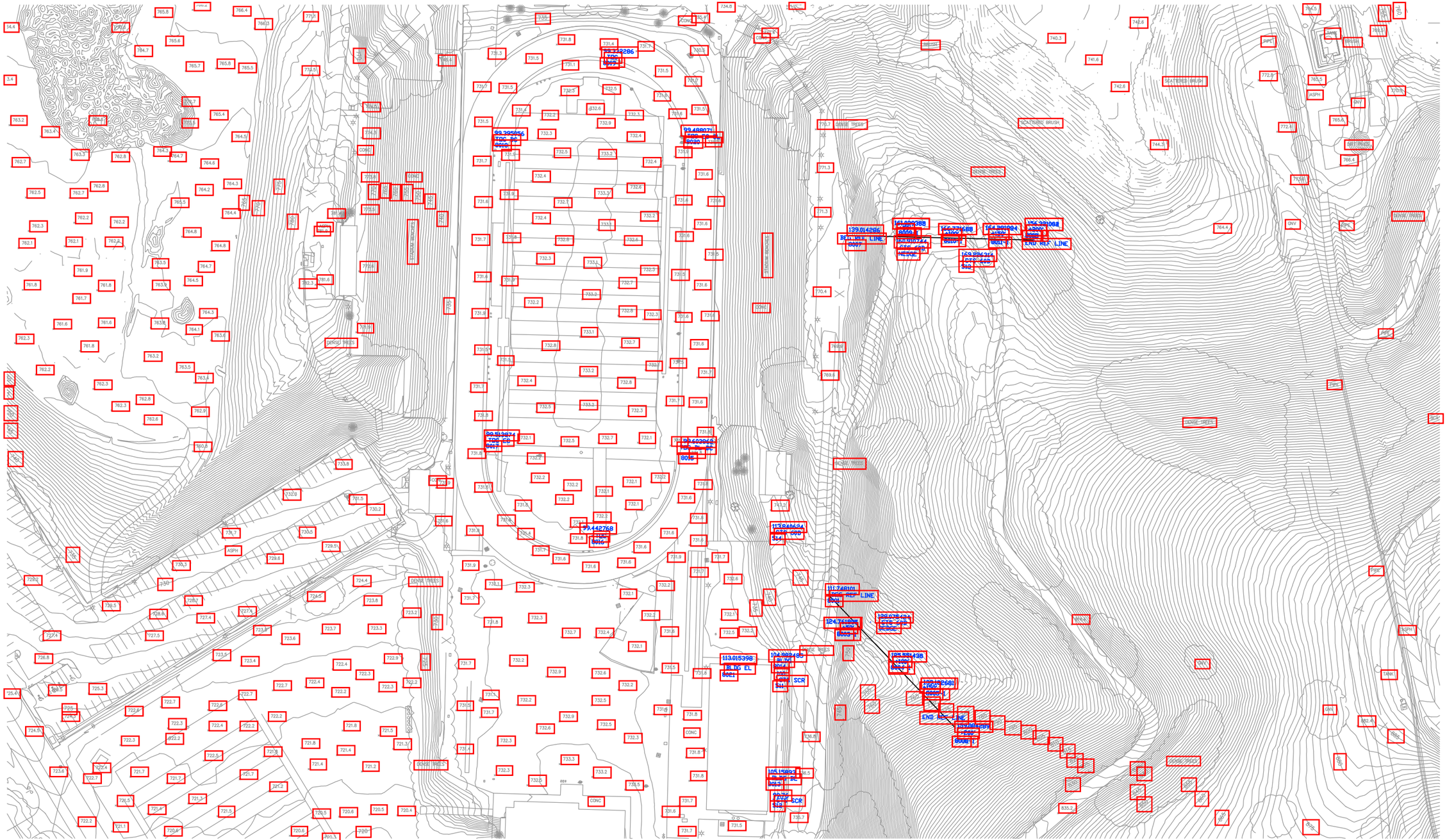
ILLUMINATION SUMMARY



Mt. San Antonio College

Stadium Lighting Exhibit

PSOMAS

DATE: 03-29-2016 REVISED ON:

JOB No: MTS012600

SHEET 1 OF 1

Plotted:

Musco Lighting, LLC, West Regional Office: 4 Jenner, Suite 100, Irvine, CA 92618
Phone: 800/659-0117 or 949/754-0503 Fax: 949/754-0637

DATE: **March 29, 2016**
TO: Mikaela Klein

FROM: Mike Higgins – Musco Sports Lighting, LLC
SUBJECT: Mt SAC Light Test
PROJECT: Mt SAC Stadium- Walnut, California

TEST DATE: March 17, 2016
WEATHER: Clear
TIME: 7:30 PM
EQUIPMENT: Gossen Mavolux 5032C
PRESENT: Mike Higgins – Musco Lighting
Mikaela Klein – Mt SAC

TEST RESULTS: The following are the light reading test for the subject project.

Mt SAC Stadium	Football Field	D Track Area	Track Oval
Target Points:	32	15	26
Average Footcandles:	56.75	39.46	56.24
Maximum Footcandles:	86	76	110
Minimum Footcandles:	32	7	8.8
Max/Min (Uniformity) Ratio:	2.68	39.46	12.5

Spill Data- Five Points at 50' Intervals. H-Horizontal Measurement. V-Vertical Measurement

# of Measurements	~50YD Line East- H	~50YD Line East- V	Ref Stake Id	45° SE Corner- H	45° SE Corner- V	Ref Stake Id
1	1.30	2.6	0+00BEG 8007	1.7	3.4	0+00BEG 45°-8001
2	.40	.75	0+50 8009	.25	.85	0+50 45° 8003
3	.30	.70	1+00 8010	.60	2.25	1+50 45° 8005
4	.28	.90	x	.60	2.0	2+00 45° 8006
5	.23	.82	2+00 8012	.40	1.2	1+00 45° 8004

Musco Lighting, LLC, West Regional Office: 4 Jenner, Suite 100, Irvine, CA 92618
Phone: 800/659-0117 or 949/754-0503 Fax: 949/754-0637

Mt. SAC Athletics Complex East

Walnut,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Group
F1-F4	100'	100'	18	228NB 1400	25.20 kW	B
		80'	2	96 LED	0.79 kW	D
F5	147'	147'	28	228NB 1400	39.20 kW	A
		107'	4	96 LED	1.58 kW	C
F6-F7	155'	155'	28	228NB 1400	39.20 kW	A
F8	130'	130'	28	228NB 1400	39.20 kW	A
		90'	4	96 LED	1.58 kW	C
8			***200***		***263.90 kW***	

Group Summary

Group	Description	Load	Fixture Qty
A	Home Side	156.8 kW	112
B	Visitor Side	100.8 kW	72
C	Bleacher-Home	3.15 kW	8
D	Bleacher-Visitor	3.15 kW	8

Fixture Type Summary

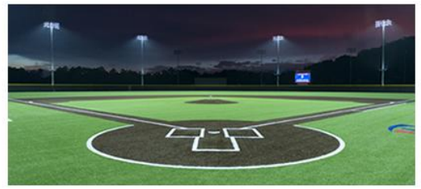
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
228NB 1400	LED 5700K - 75 CRI	1400W	133,000	>36,000	>36,000	>36,000	184
96 LED	LED 5700K - 75 CRI	394W	38,600	61,000	>72,000	>72,000	16

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination				Groups	Fixture Qty
		Ave	Min	Max	Max/Min		
Dispersal Area	Horizontal	1.60	0	5	84.31	C,D	16
Football	Camera 1	106	92	132	1.43	A,B	184
Football	Camera 2	108	95	133	1.40	A,B	184
Football	Horizontal Illuminance	123	110	144	1.31	A,B	184
Home Bleacher Area	Horizontal	2.90	2	6	3.40	C	8
Home Bleacher	Horizontal	3.80	0	12	0.00	C	8
Track and Field Area	Camera 1	111	91	142	1.57	A,B	184
Track and Field Area	Camera 2	113	94	155	1.66	A,B	184
Track and Field Area	Horizontal	124	108	146	1.35	A,B	184
Track	Camera 1	102	78	125	1.60	A,B	184
Track	Camera 2	105	79	129	1.63	A,B	184
Track	Horizontal Illuminance	101	92	109	1.18	A,B	184
Visitor Bleacher Area	Horizontal	2.60	1	7	10.87	D	8
Visitor Bleacher	Horizontal	5	1	9	6.04	D	8

From Hometown to Professional



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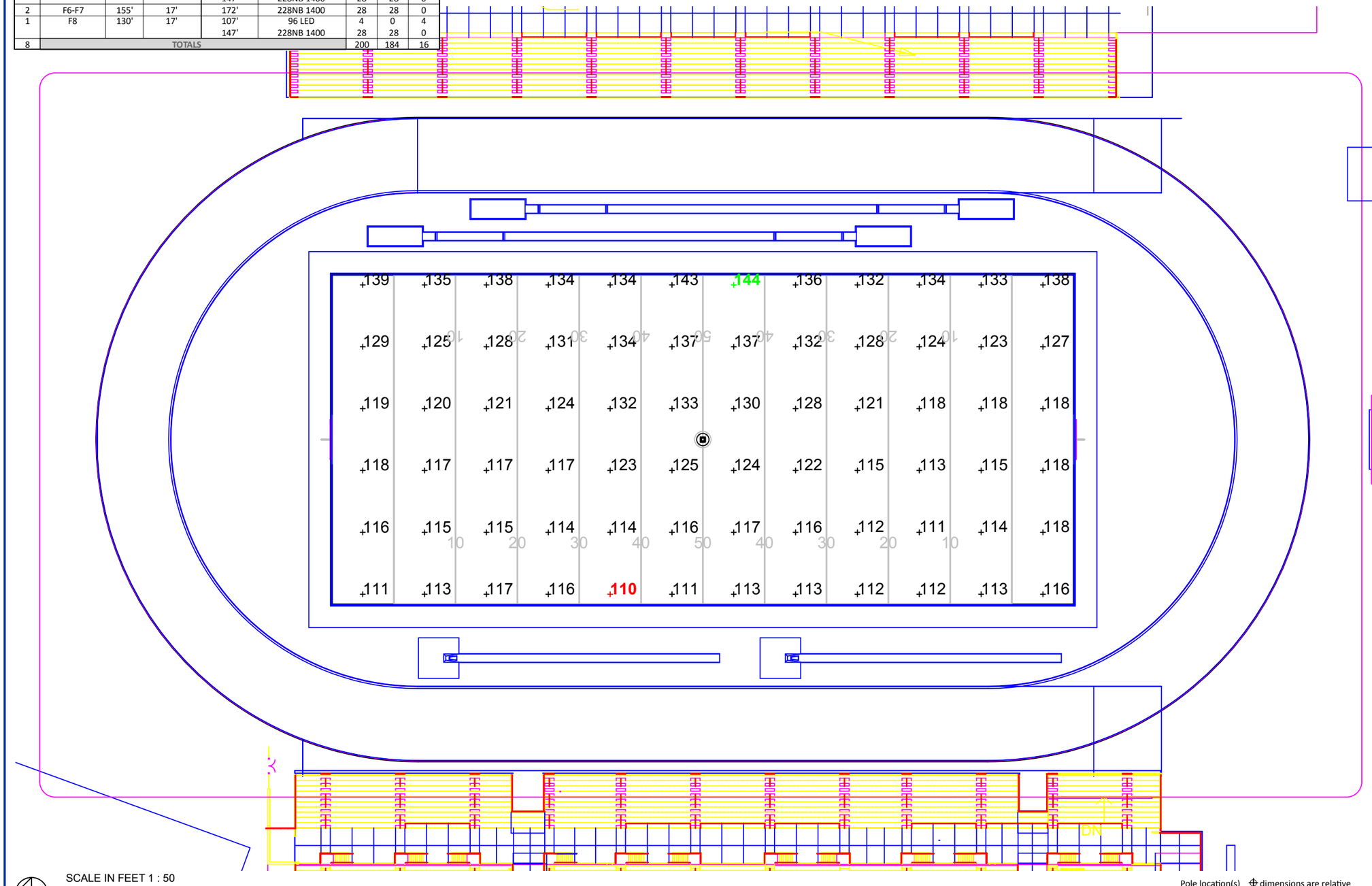
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	122.7
Maximum:	144
Minimum:	110
Avg / Min:	1.12
Guaranteed Max / Min:	**1.7**
Max / Min:	1.31
UG (adjacent pts):	1.09
CU:	0.31
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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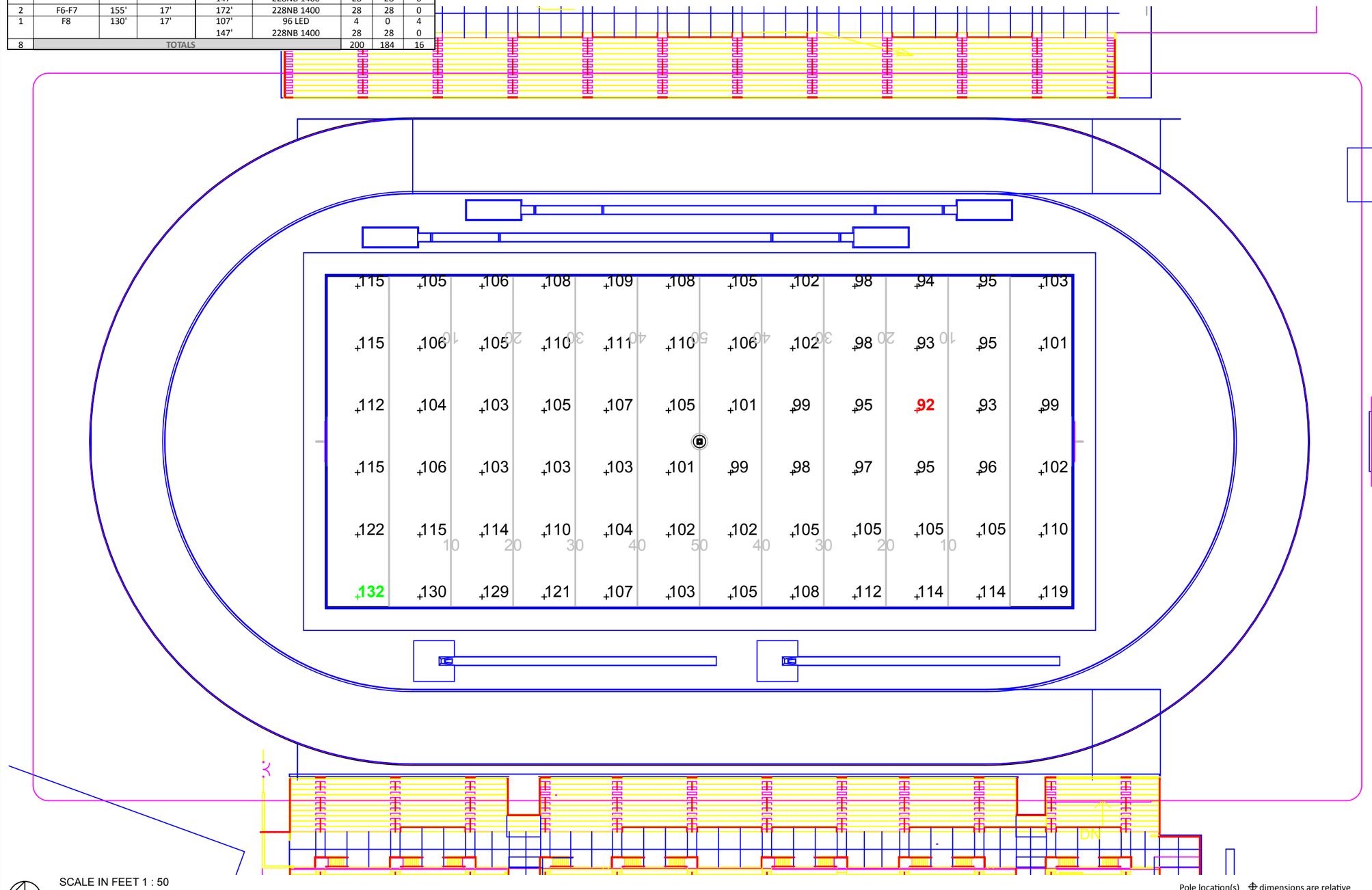
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 1

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	105.9
Maximum:	132
Minimum:	92
Avg / Min:	1.15
Guaranteed Max / Min:	**1.7**
Max / Min:	1.43
UG (adjacent pts):	1.13
CU:	0.31
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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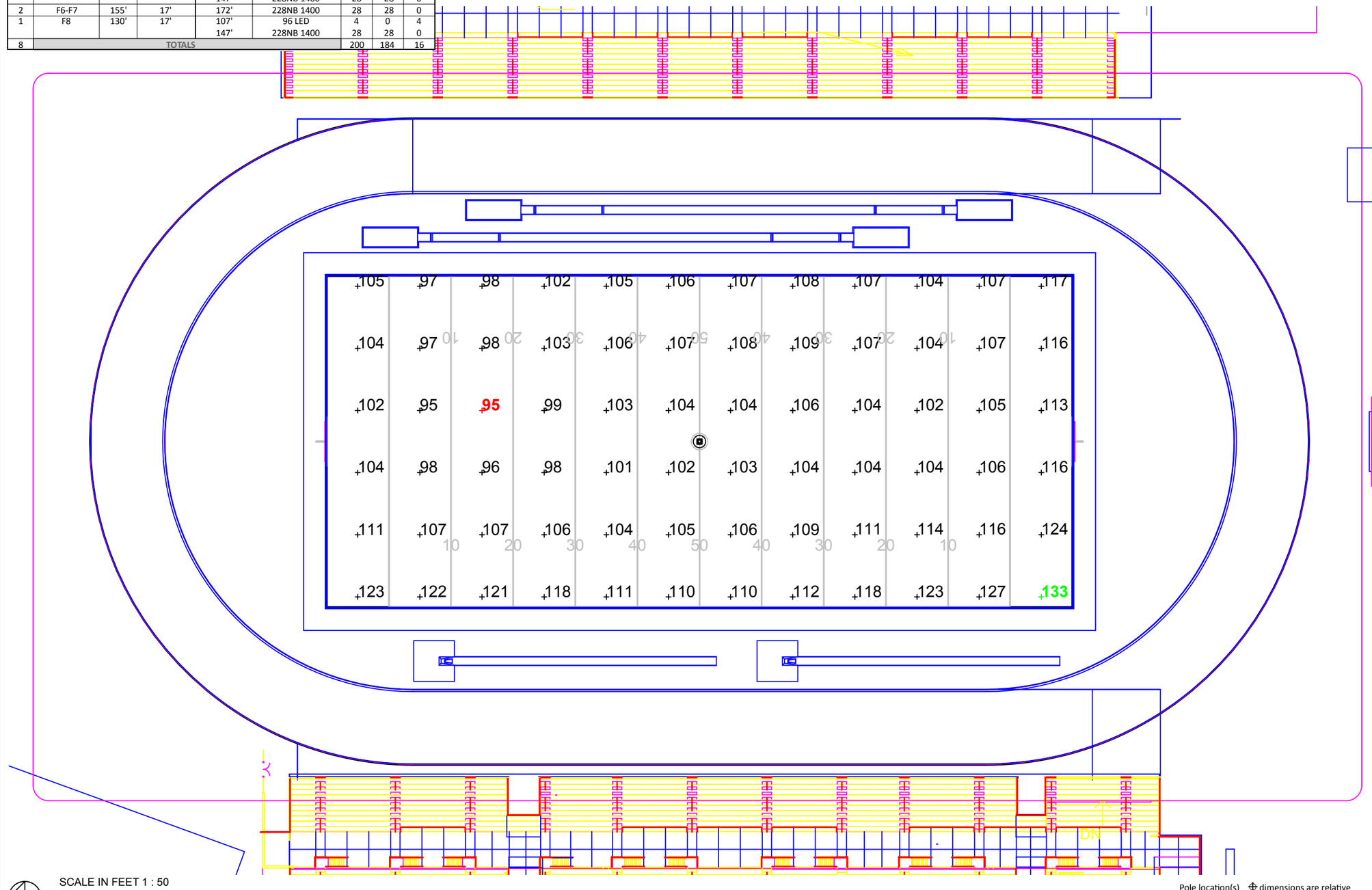
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Football**
Size:	360' x 160'
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 2

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	107.6
Maximum:	133
Minimum:	95
Avg / Min:	1.13
Guaranteed Max / Min:	**1.7**
Max / Min:	1.40
UG (adjacent pts):	1.14
CU:	0.31
No. of Points:	72

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

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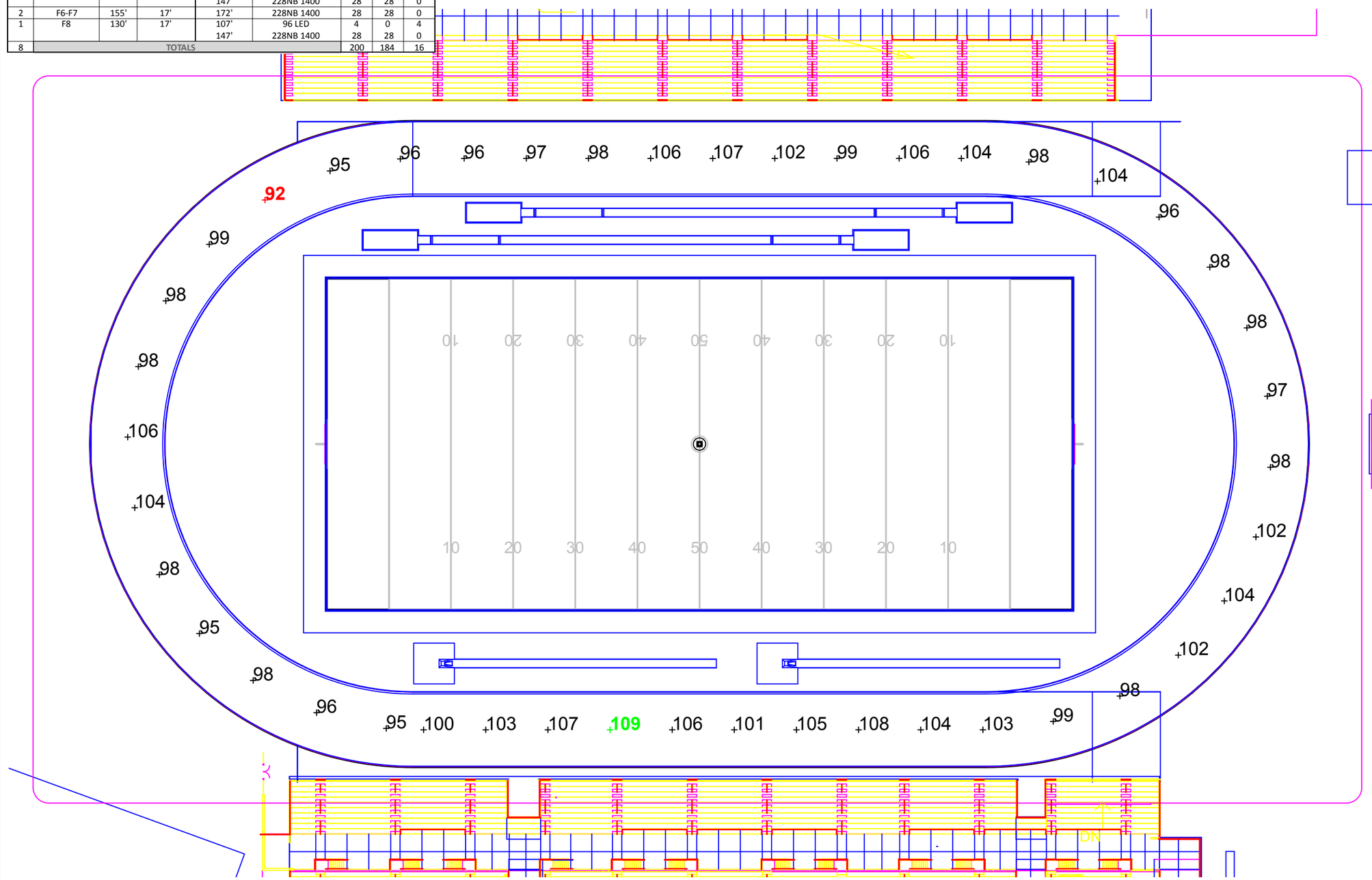
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM • 29-Feb-16

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track**
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	100.6
Maximum:	109
Minimum:	92
Avg / Min:	1.09
Guaranteed Max / Min:	**1.7**
Max / Min:	1.18
UG (adjacent pts):	0.00
CU:	0.16
No. of Points:	44

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

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Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
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1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
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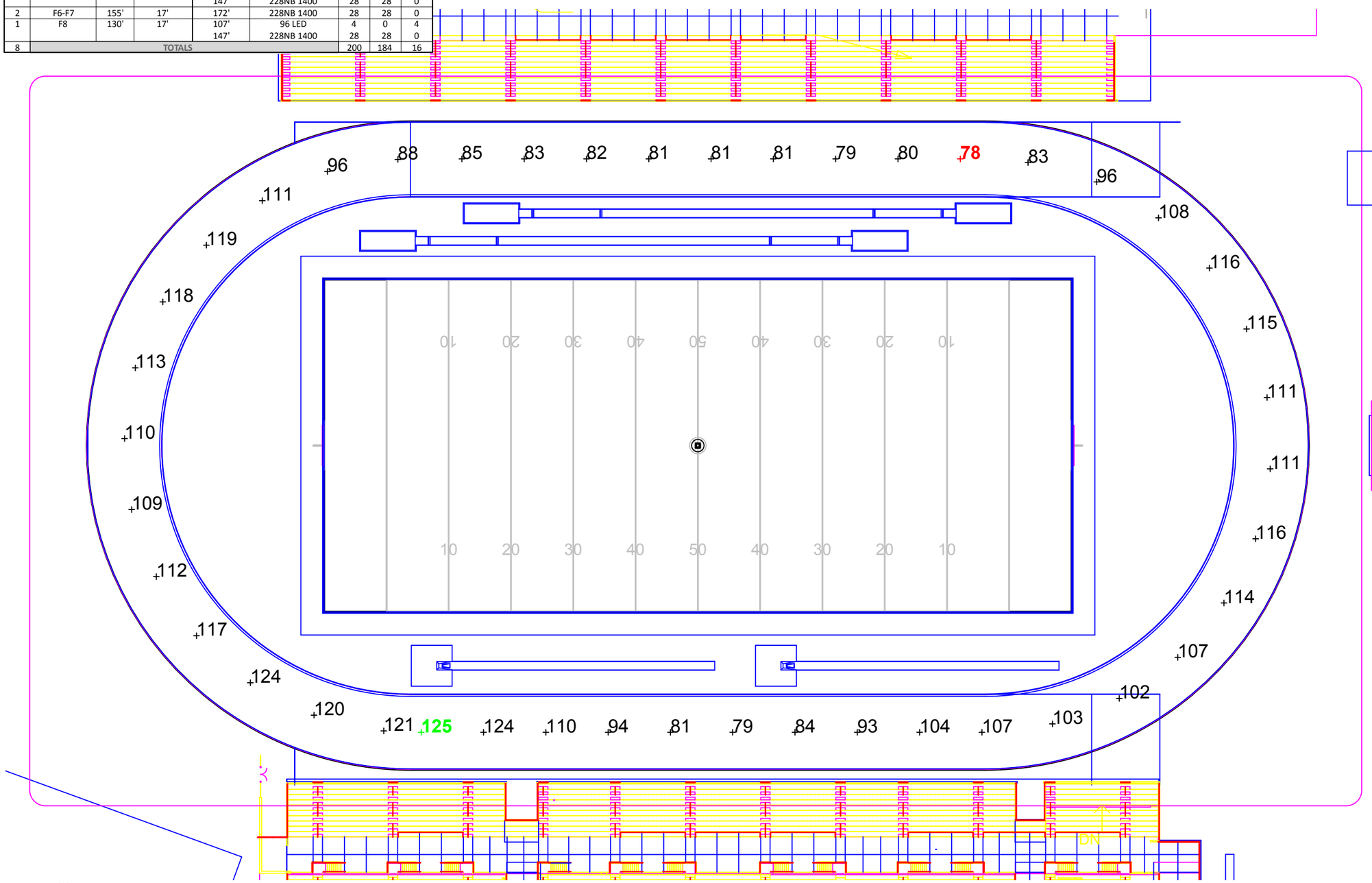

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track**
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 1

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	101.6
Maximum:	125
Minimum:	78
Avg / Min:	1.30
Guaranteed Max / Min:	**1.7**
Max / Min:	1.60
UG (adjacent pts):	0.00
CU:	0.16
No. of Points:	44

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
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228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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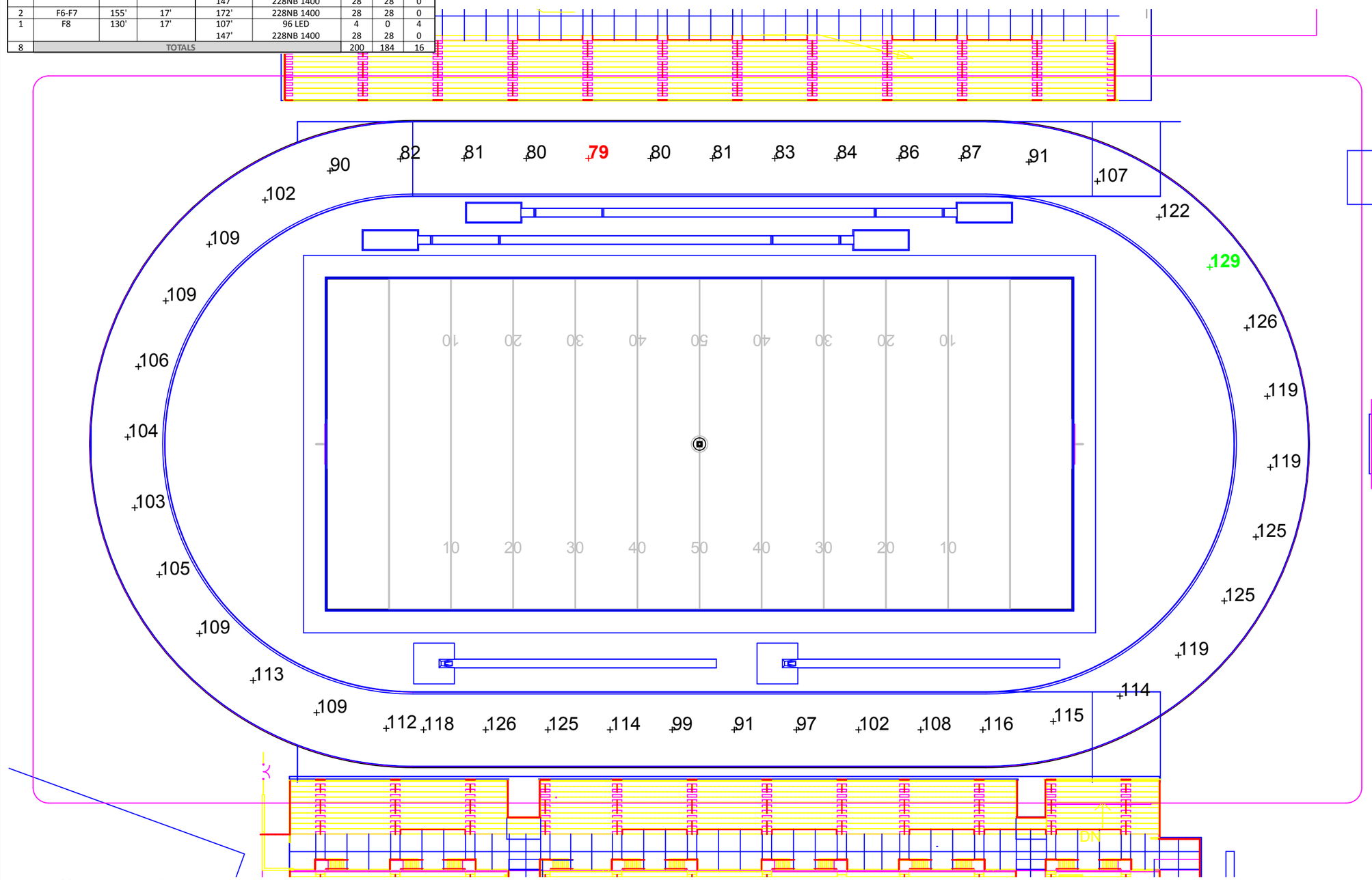
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM • 29-Feb-16

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track**
Size:	Irregular
Spacing:	30.0' x 30.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 2

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	104.5
Maximum:	129
Minimum:	79
Avg / Min:	1.32
Guaranteed Max / Min:	**1.7**
Max / Min:	1.63
UG (adjacent pts):	0.00
CU:	0.16
No. of Points:	44

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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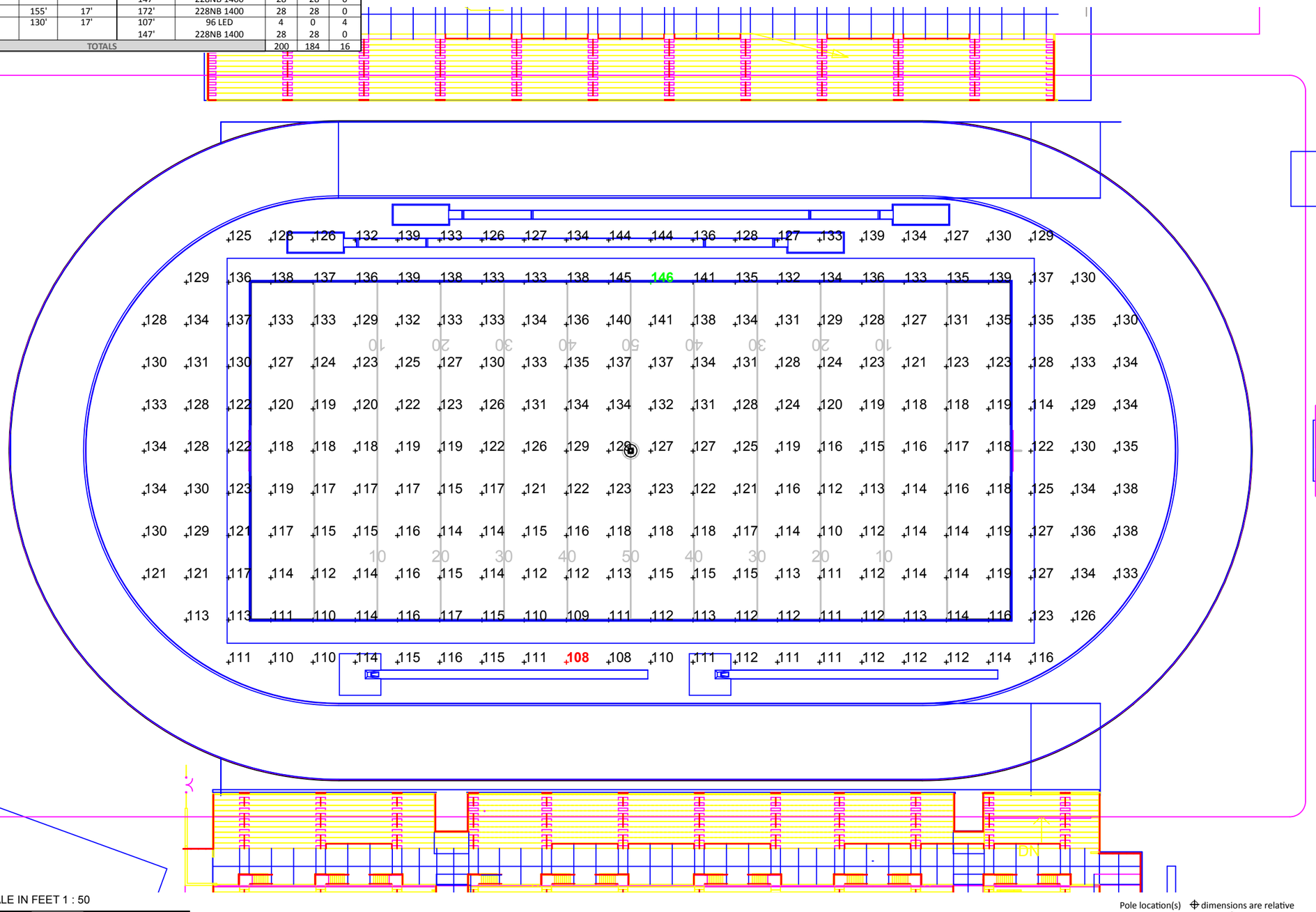
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM • 29-Feb-16

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track and Field Area**
Size:	Irregular
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	123.8
Maximum:	146
Minimum:	108
Avg / Min:	1.15
Guaranteed Max / Min:	**1.7**
Max / Min:	1.35
UG (adjacent pts):	1.14
CU:	0.49
Application Efficacy:	48.4
No. of Points:	252

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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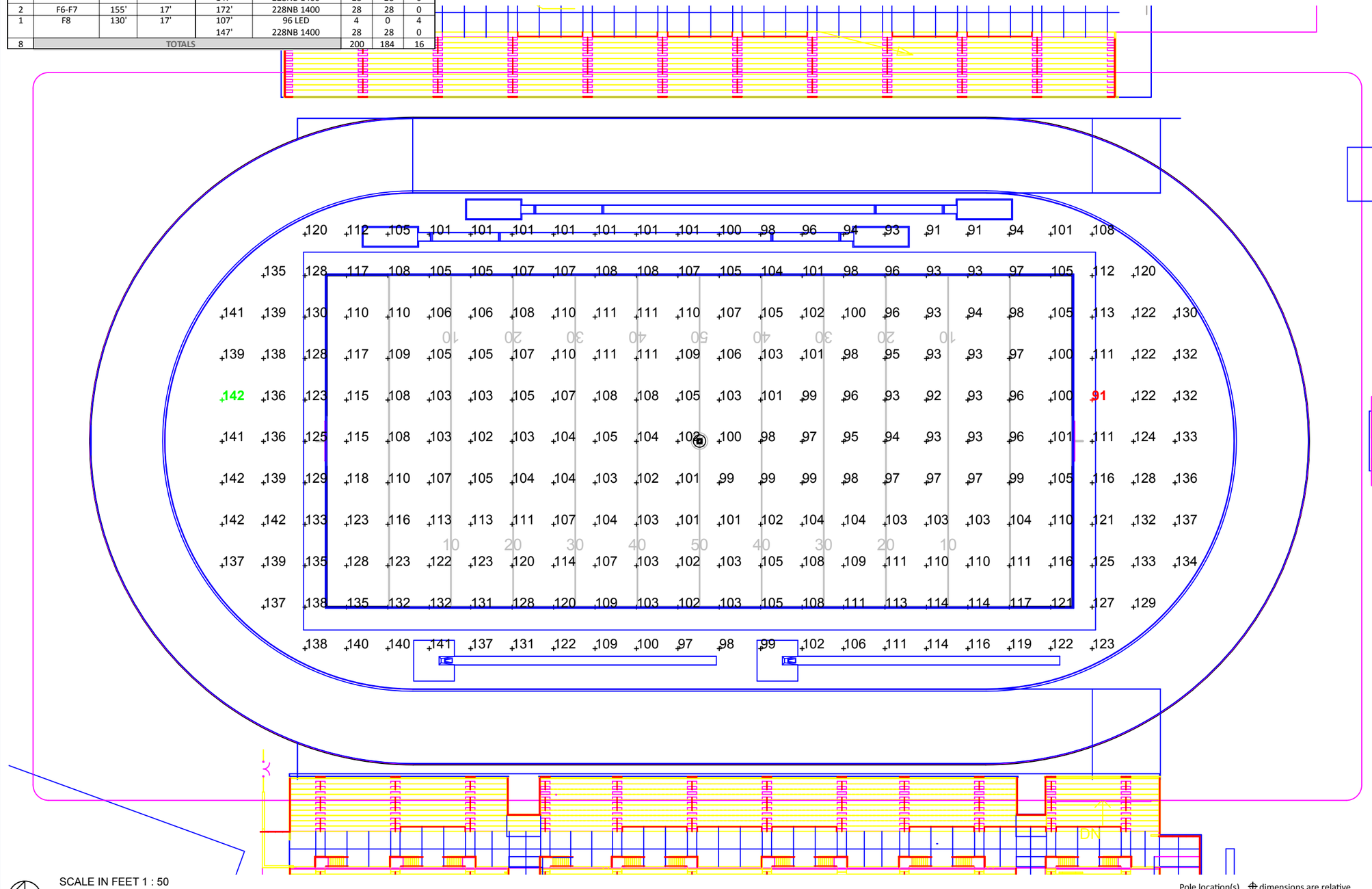
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track and Field Area**
Size:	Irregular
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 1

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	111.2
Maximum:	142
Minimum:	91
Avg / Min:	1.23
Guaranteed Max / Min:	**1.7**
Max / Min:	1.57
UG (adjacent pts):	1.34
CU:	0.49
Application Efficacy:	48.4
No. of Points:	252

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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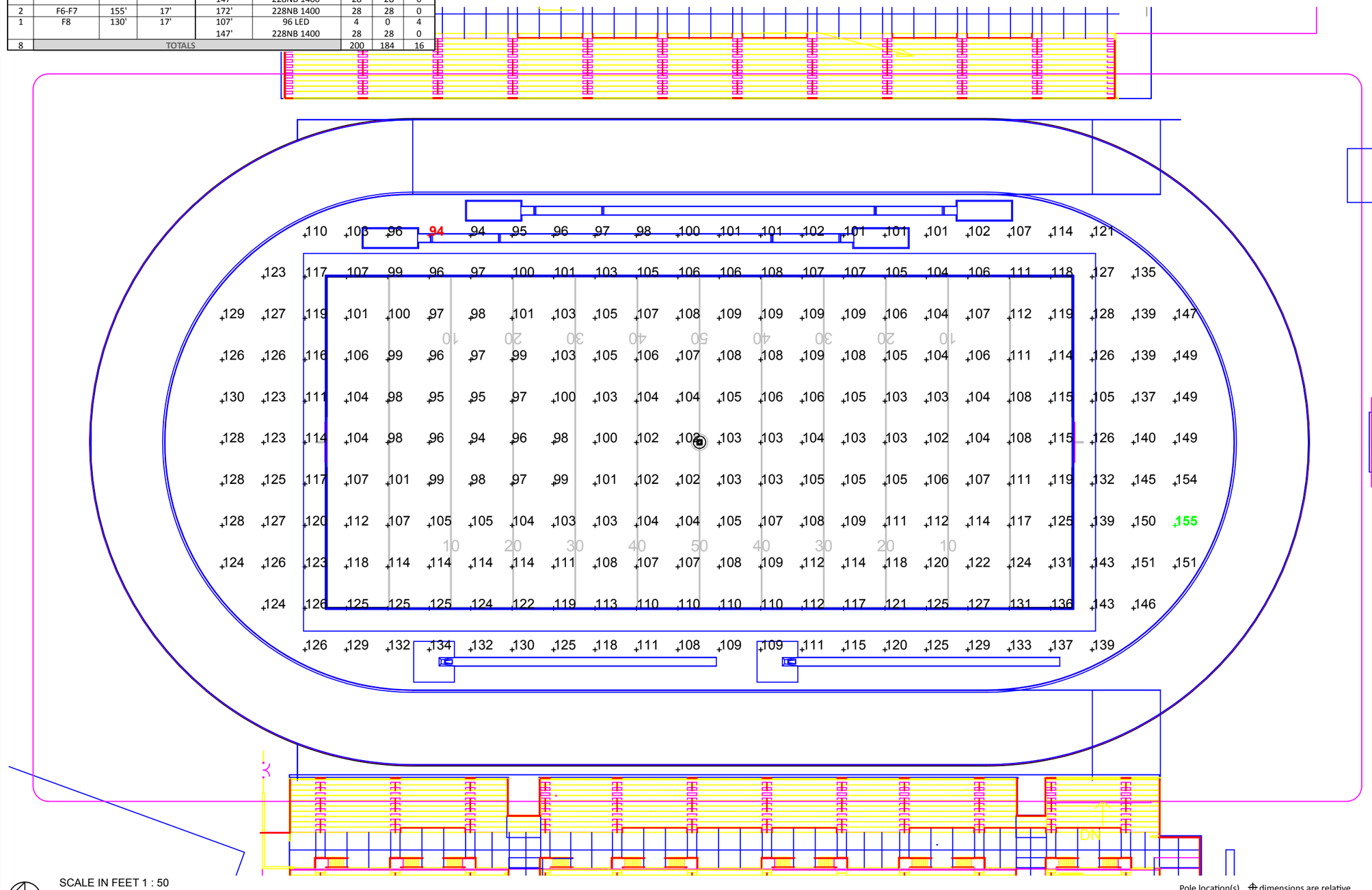
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Track and Field Area**
Size:	Irregular
Spacing:	20.0' x 20.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED TV FOOTCANDLES: Camera 2

	Entire Grid
Guaranteed Average:	**100**
Scan Average:	113.2
Maximum:	155
Minimum:	94
Avg / Min:	1.21
Guaranteed Max / Min:	**1.7**
Max / Min:	1.66
UG (adjacent pts):	1.31
CU:	0.49
Application Efficacy:	48.4
No. of Points:	252

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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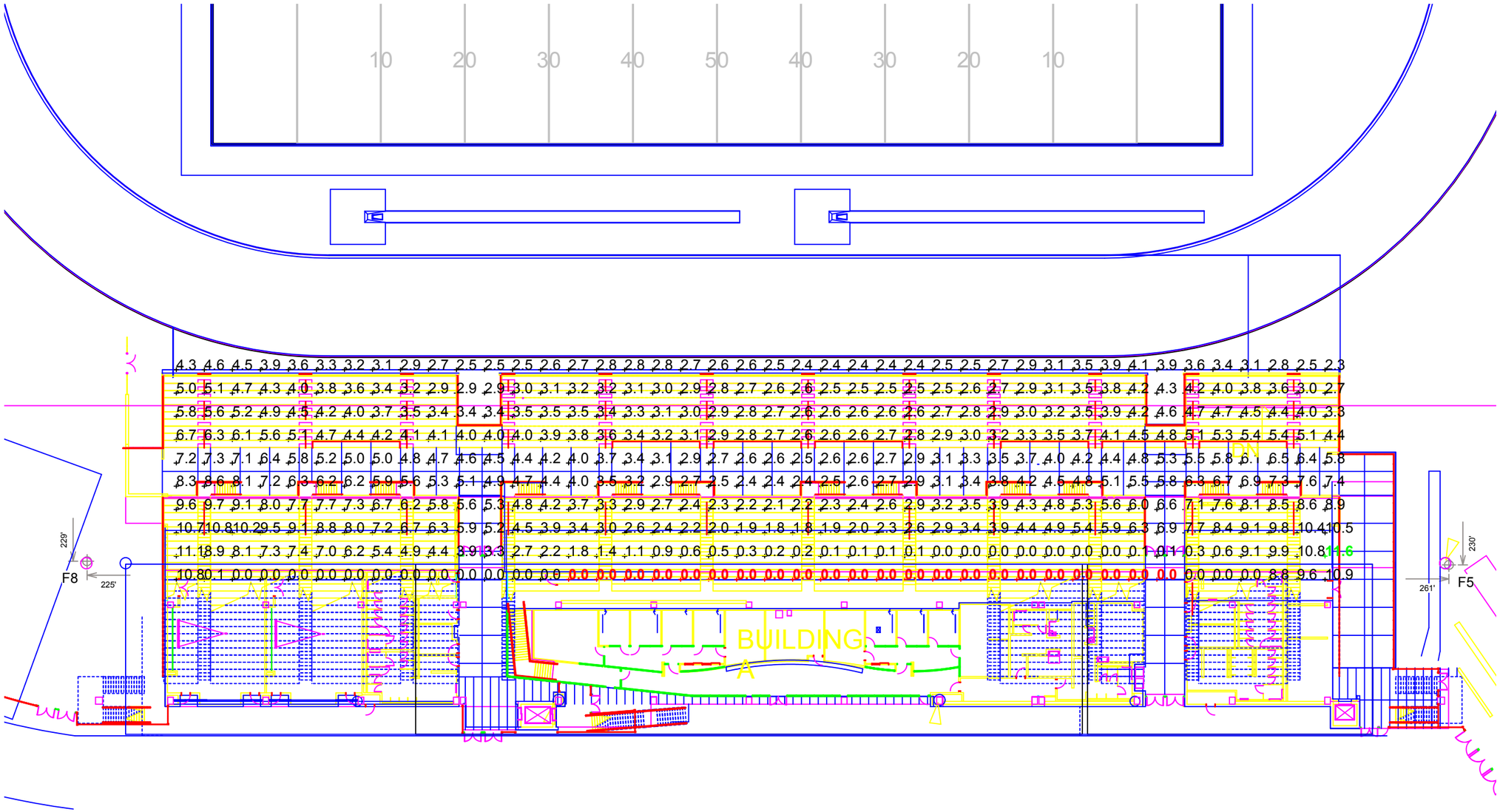
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F5	147'	-	107'	96 LED	4	4	0
				147'	228NB 1400	28	0	28
1	F8	130'	17'	107'	96 LED	4	4	0
				147'	228NB 1400	28	0	28
2	TOTALS					64	8	56



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM • 01-Mar-16

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Home Bleacher**
Size:	2' x 2'
Spacing:	10.0' x 10.0'

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**3.8**
Maximum:	12
Minimum:	0
Avg / Min:	-
Max / Min:	**-**
UG (adjacent pts):	56137.23
No. of Points:	420

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	38,600 lumens
Total LLF:	1.000
No. of Luminaires:	**8**
Total Load:	3.15 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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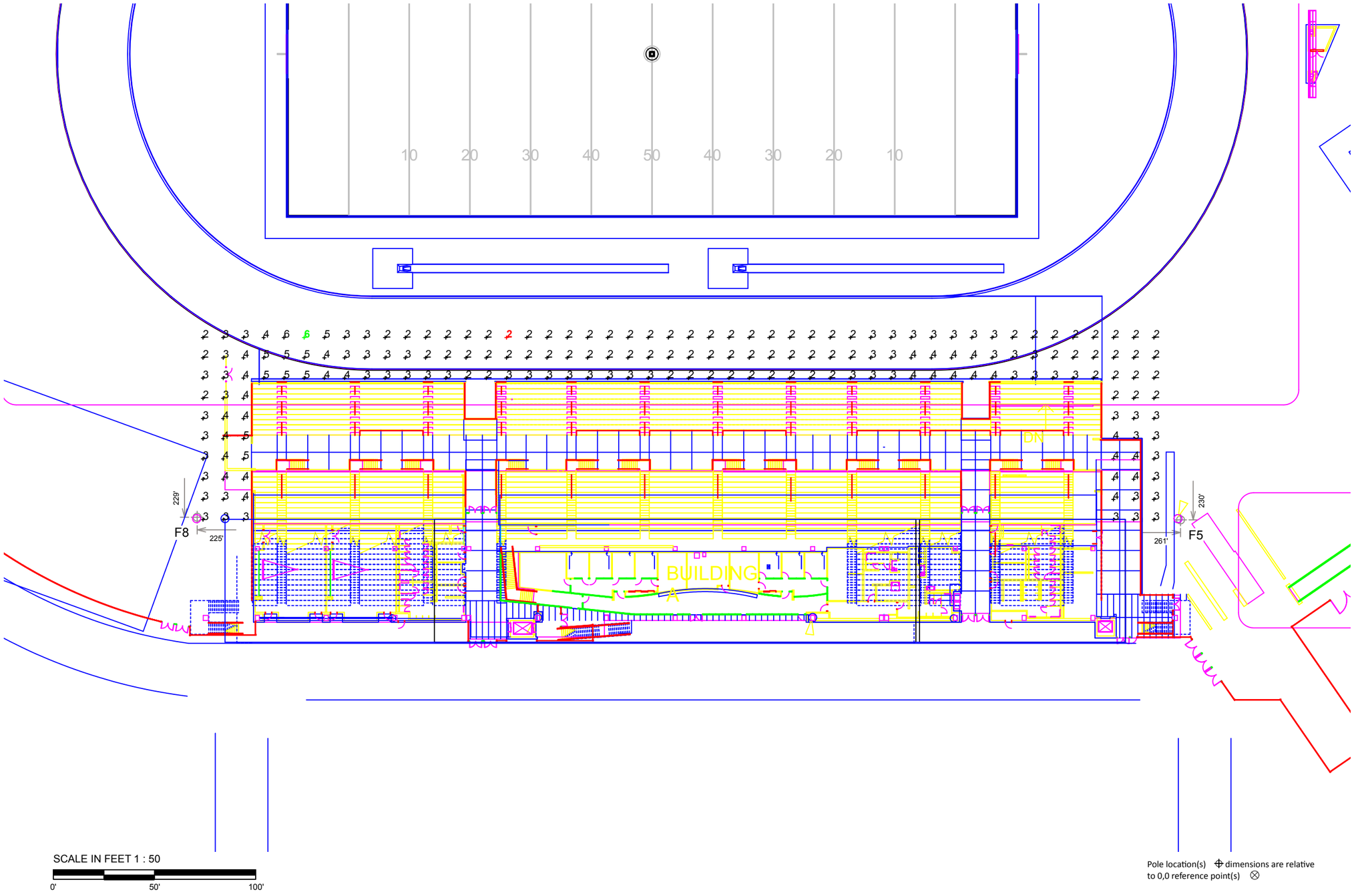
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
1	F5	147'	-	107'	96 LED	4	4	0
				147'	228NB 1400	28	0	28
1	F8	130'	17'	107'	96 LED	4	4	0
				147'	228NB 1400	28	0	28
2	TOTALS					64	8	56



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Home Bleacher Area**
Size:	2' x 2'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**2.9**
Maximum:	6
Minimum:	2
Avg / Min:	1.72
Max / Min:	**3.40**
UG (adjacent pts):	1.42
No. of Points:	186

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	38,600 lumens
Total LLF:	1.000
No. of Luminaires:	**8**
Total Load:	3.15 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See cutsheets for details.

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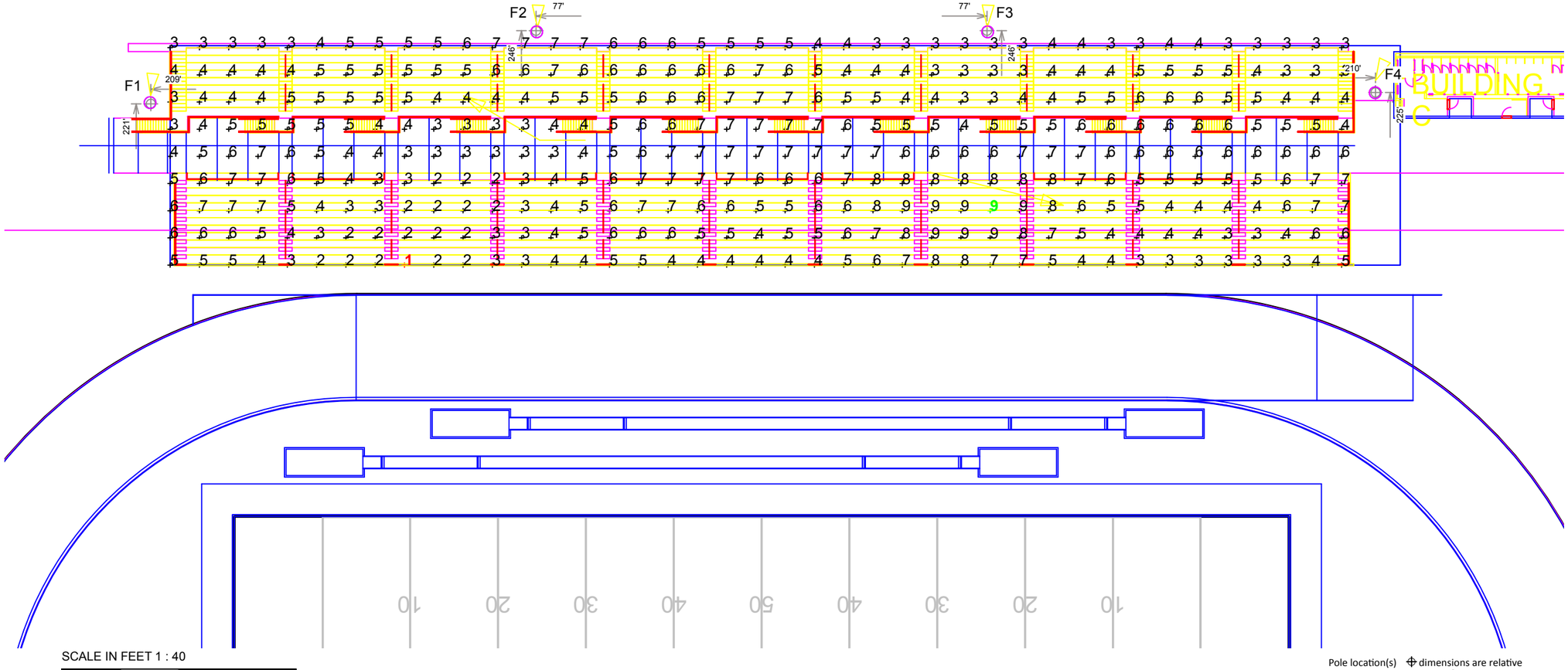
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98' 118'	96 LED 228NB 1400	2 18	2 0	0 18
2	F2-F3	100'	29'	109' 129'	96 LED 228NB 1400	2 18	2 0	0 18
4	TOTALS					80	8	72



SCALE IN FEET 1 : 40

0' 40' 80'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Visitor Bleacher**
Size:	2' x 2'
Spacing:	10.0' x 10.0'

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**5.0**
Maximum:	9
Minimum:	1
Avg / Min:	3.36
Max / Min:	**6.04**
UG (adjacent pts):	1.43
No. of Points:	369

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	38,600 lumens
Total LLF:	1.000
No. of Luminaires:	**8**
Total Load:	3.15 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

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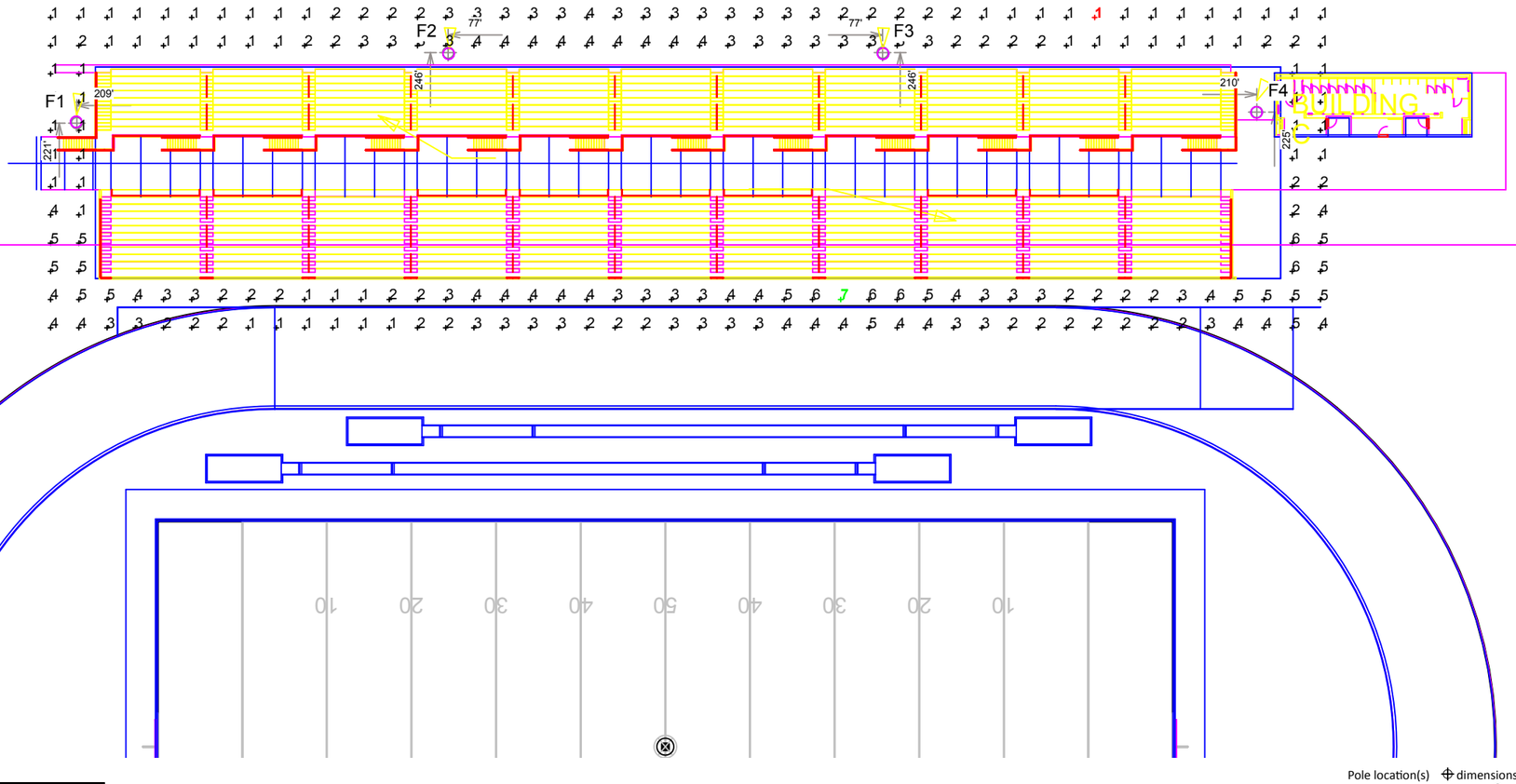
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	2	0
				118'	228NB 1400	18	0	18
2	F2-F3	100'	29'	109'	96 LED	2	2	0
				129'	228NB 1400	18	0	18
4	TOTALS					80	8	72



SCALE IN FEET 1 : 50

0' 50' 100'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Visitor Bleacher Area**
Size:	2' x 2'
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**2.6**
Maximum:	7
Minimum:	1
Avg / Min:	4.27
Max / Min:	**10.87**
UG (adjacent pts):	6.79
No. of Points:	216

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	38,600 lumens
Total LLF:	1.000
No. of Luminaires:	**8**
Total Load:	3.15 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

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Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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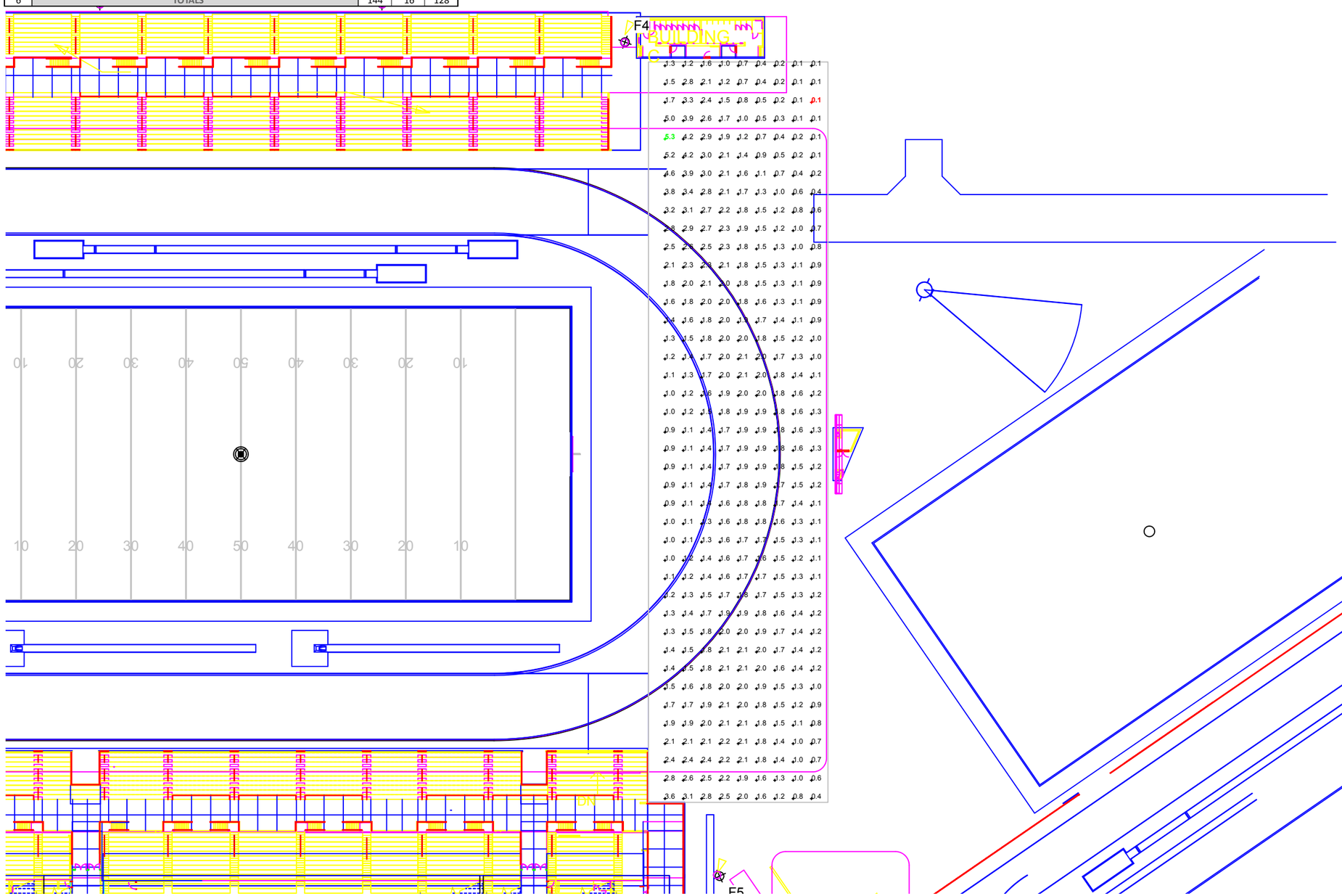
EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98' 118'	96 LED 228NB 1400	2 18	2 0	0 18
2	F2-F3	100'	29'	109' 129'	96 LED 228NB 1400	2 18	2 0	0 18
1	F5	147'	-	107' 147'	96 LED 228NB 1400	4 28	4 0	0 28
1	F8	130'	17'	107' 147'	96 LED 228NB 1400	4 28	4 0	0 28
6	TOTALS					144	16	128



Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**Dispersal Area**
Spacing:	10.0' x 10.0'
Height:	3.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.6**
Maximum:	5
Minimum:	0
Avg / Min:	25.56
Max / Min:	**84.31**
UG (adjacent pts):	2.87
No. of Points:	369

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	38,600 lumens
Total LLF:	1.000
No. of Luminaires:	**16**
Total Load:	6.3 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
96 LED	61,000	>72,000	>72,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA LM-5-04.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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Mt. SAC Athletics Complex East

Walnut,CA

Lighting System

Pole / Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Group
F1-F4	100'	100'	18	228NB 1400	25.20 kW	B
		80'	2	96 LED	0.80 kW	D
F5	147'	147'	28	228NB 1400	39.20 kW	A
		107'	4	96 LED	1.60 kW	C
F6-F7	155'	155'	28	228NB 1400	39.20 kW	A
F8	130'	130'	28	228NB 1400	39.20 kW	A
		90'	4	96 LED	1.60 kW	C
8			***200***		***264.00 kW***	

Group Summary

Group	Description	Load	Fixture Qty
A	Home Side	156.8 kW	112
B	Visitor Side	100.8 kW	72
C	Bleacher-Home	3.2 kW	8
D	Bleacher-Visitor	3.2 kW	8

Fixture Type Summary

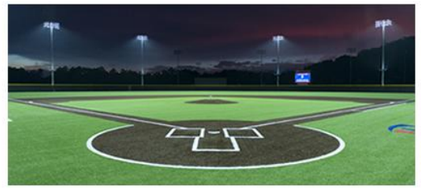
Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
96 LED	LED 5700K - 75 CRI	400W	38,600	61,000	>72,000	>72,000	16
228NB 1400	LED 5700K - 75 CRI	1400W	133,000	>36,000	>36,000	>36,000	184

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination				Groups	Fixture Qty
		Ave	Min	Max	Max/Min		
HORIZONTAL SP - POINT 8001	Horizontal	1.70	1.70	1.70	1.00	A,B	184
HORIZONTAL SP - POINT 8003	Horizontal	0.62	0.62	0.62	1.00	A,B	184
HORIZONTAL SP - POINT 8004	Horizontal	0.36	0.36	0.36	1.00	A,B	184
HORIZONTAL SP - POINT 8005	Horizontal	0.16	0.16	0.16	1.00	A,B	184
HORIZONTAL SP - POINT 8006	Horizontal	0.07	0.07	0.07	1.00	A,B	184
HORIZONTAL SP - POINT 8007	Horizontal	1.10	1.10	1.10	1.00	A,B	184
HORIZONTAL SP - POINT 8009	Horizontal	0.20	0.20	0.20	1.00	A,B	184
HORIZONTAL SP - POINT 8010	Horizontal	0.11	0.11	0.11	1.00	A,B	184
HORIZONTAL SP - POINT 8011	Horizontal	0.09	0.09	0.09	1.00	A,B	184
HORIZONTAL SP - POINT 8012	Horizontal	0.08	0.08	0.08	1.00	A,B	184
VERTICAL SP - POINT 8001	Max Vert Illuminance (by Light Bank)	6.86	6.86	6.86	1.00	A,B	184
VERTICAL SP - POINT 8003	Max Vert Illuminance (by Light Bank)	2.95	2.95	2.95	1.00	A,B	184
VERTICAL SP - POINT 8004	Max Vert Illuminance (by Light Bank)	1.88	1.88	1.88	1.00	A,B	184
VERTICAL SP - POINT 8005	Max Vert Illuminance (by Light Bank)	1	1	1	1.00	A,B	184
VERTICAL SP - POINT 8006	Max Vert Illuminance (by Light Bank)	0.55	0.55	0.55	1.00	A,B	184
VERTICAL SP - POINT 8007	Max Vert Illuminance (by Light Bank)	4.66	4.66	4.66	1.00	A,B	184
VERTICAL SP - POINT 8009	Max Vert Illuminance (by Light Bank)	1.19	1.19	1.19	1.00	A,B	184
VERTICAL SP - POINT 8010	Max Vert Illuminance (by Light Bank)	0.80	0.80	0.80	1.00	A,B	184
VERTICAL SP - POINT 8011	Max Vert Illuminance (by Light Bank)	0.67	0.67	0.67	1.00	A,B	184
VERTICAL SP - POINT 8012	Max Vert Illuminance (by Light Bank)	0.61	0.61	0.61	1.00	A,B	184

From Hometown to Professional



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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8001**
Spacing:	30.0' x 30.0'
Height:	16.8' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**6.86**
Maximum:	6.86
Minimum:	6.86
No. of Points:	1

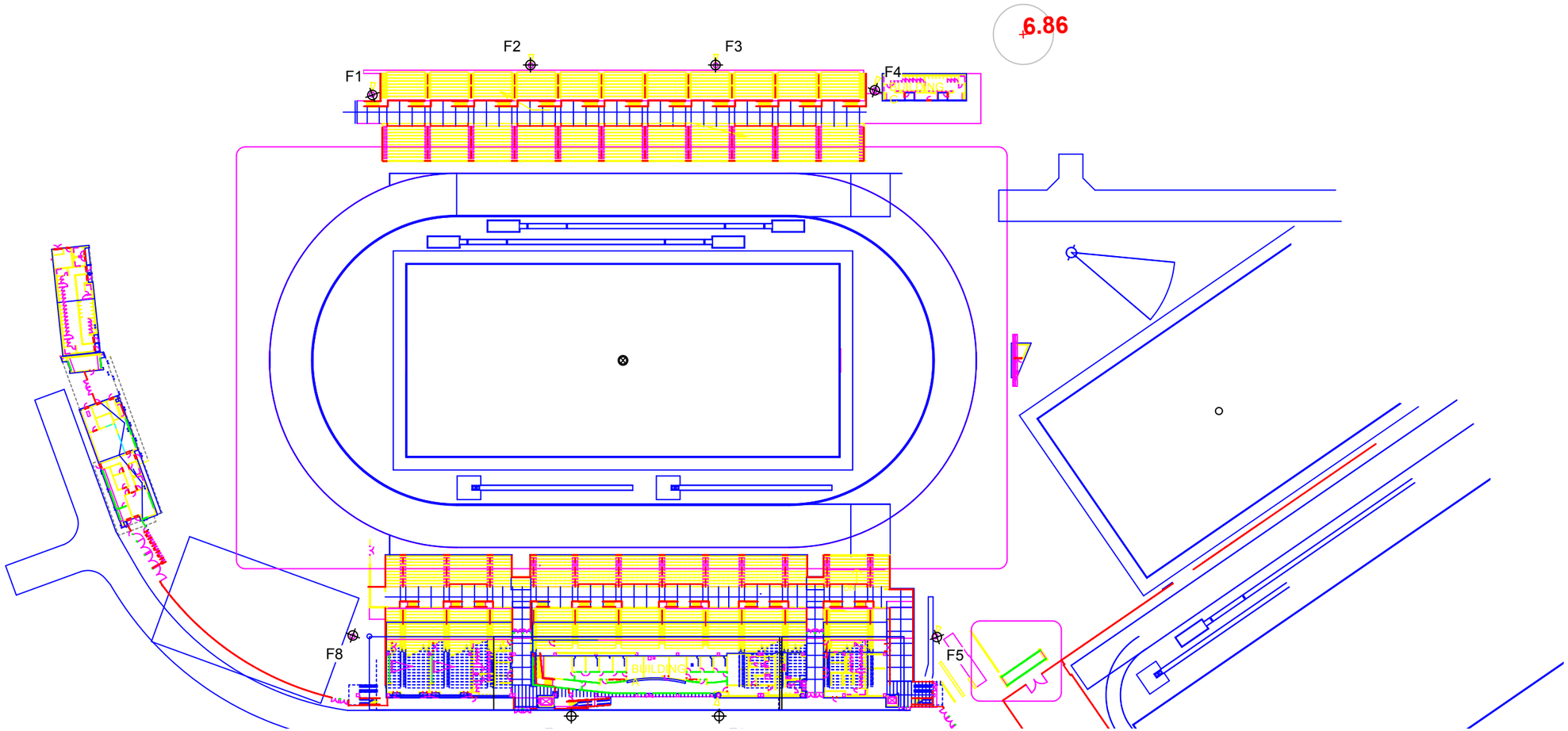
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8001**
Spacing:	30.0' x 30.0'
Height:	14.8' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.70**
Maximum:	1.70
Minimum:	1.70
No. of Points:	1

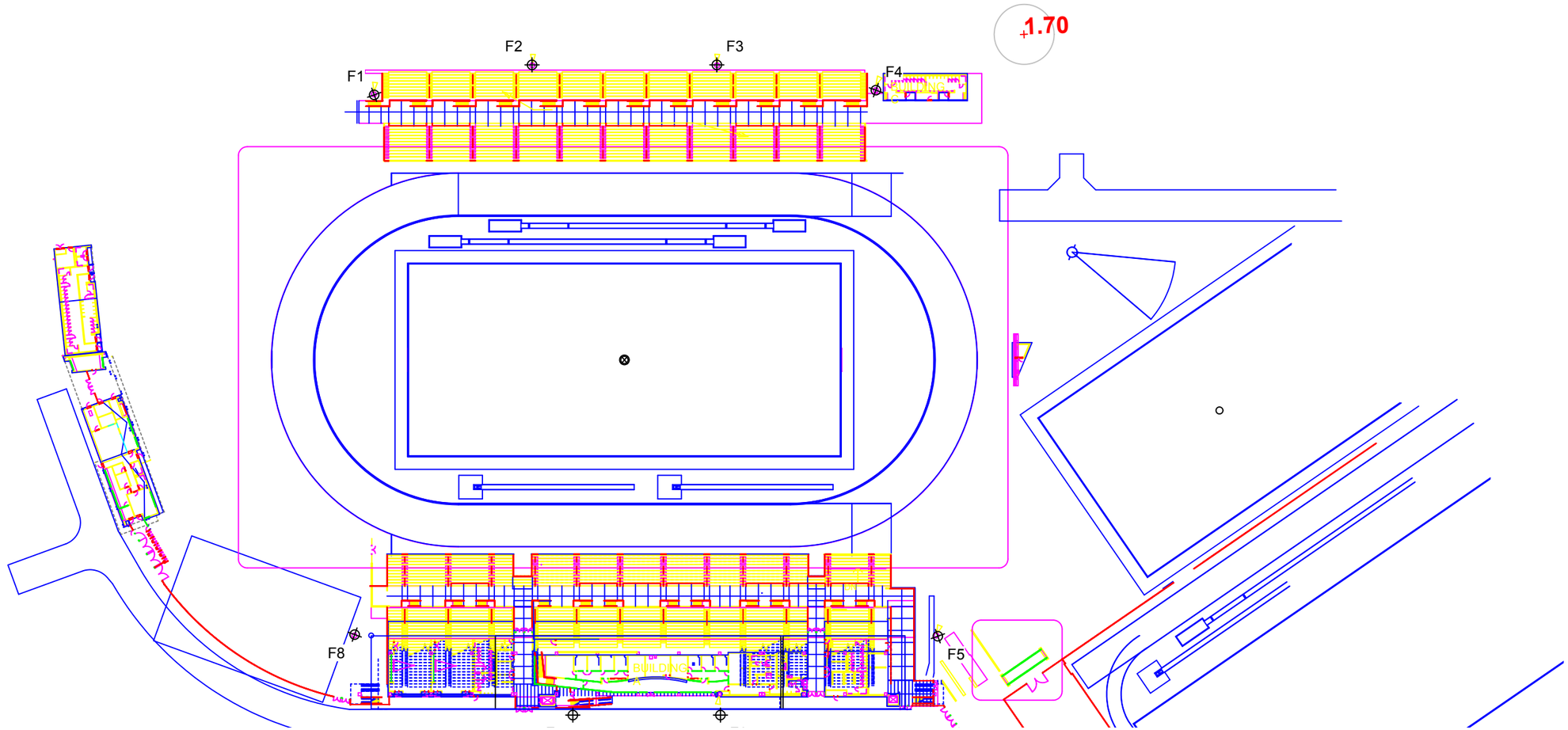
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8003**
Spacing:	30.0' x 30.0'
Height:	29.8' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**2.95**
Maximum:	2.95
Minimum:	2.95
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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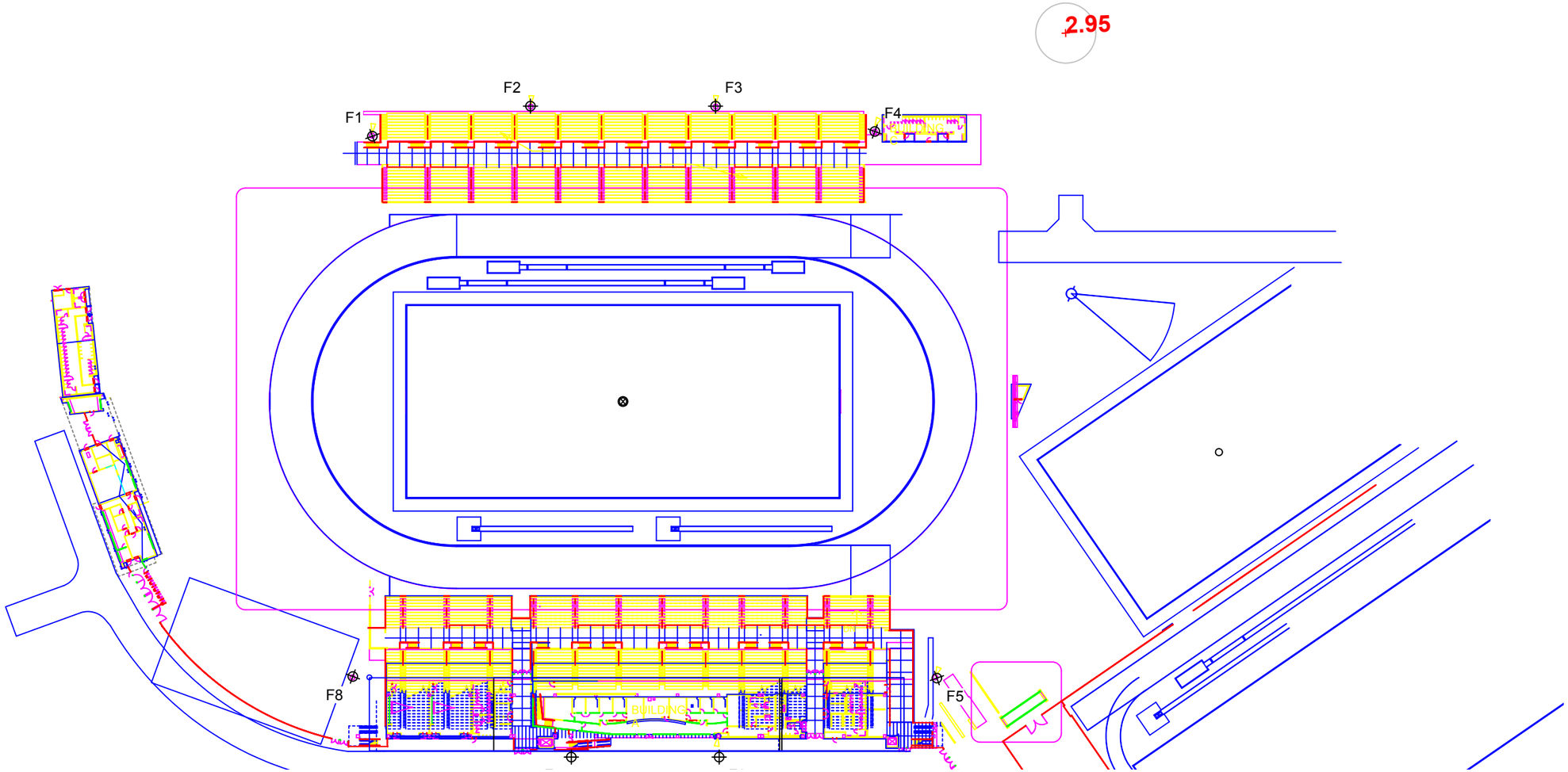

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8003**
Spacing:	30.0' x 30.0'
Height:	27.8' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.62**
Maximum:	0.62
Minimum:	0.62
No. of Points:	1

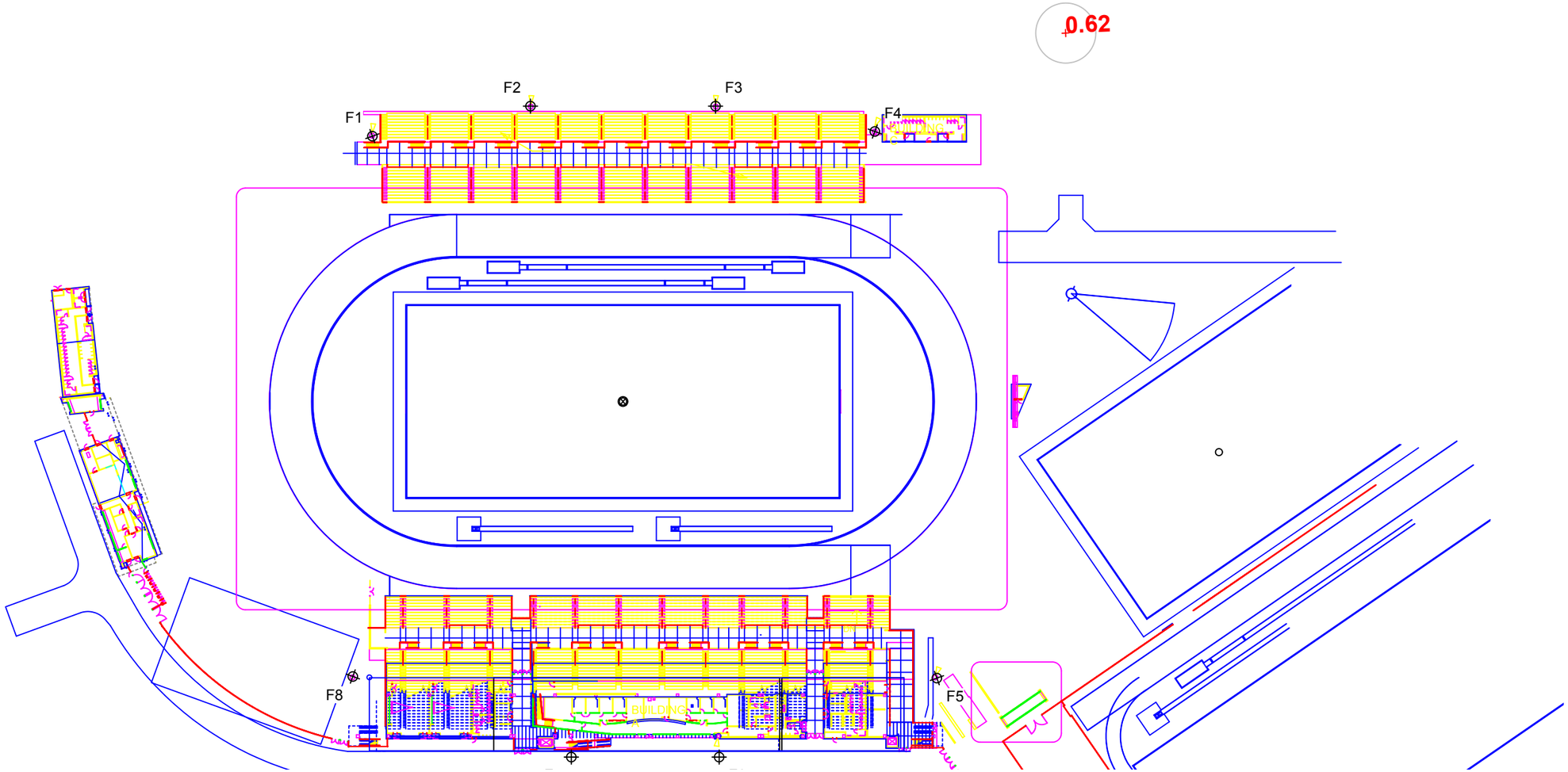
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8004**
Spacing:	30.0' x 30.0'
Height:	30.6' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.88**
Maximum:	1.88
Minimum:	1.88
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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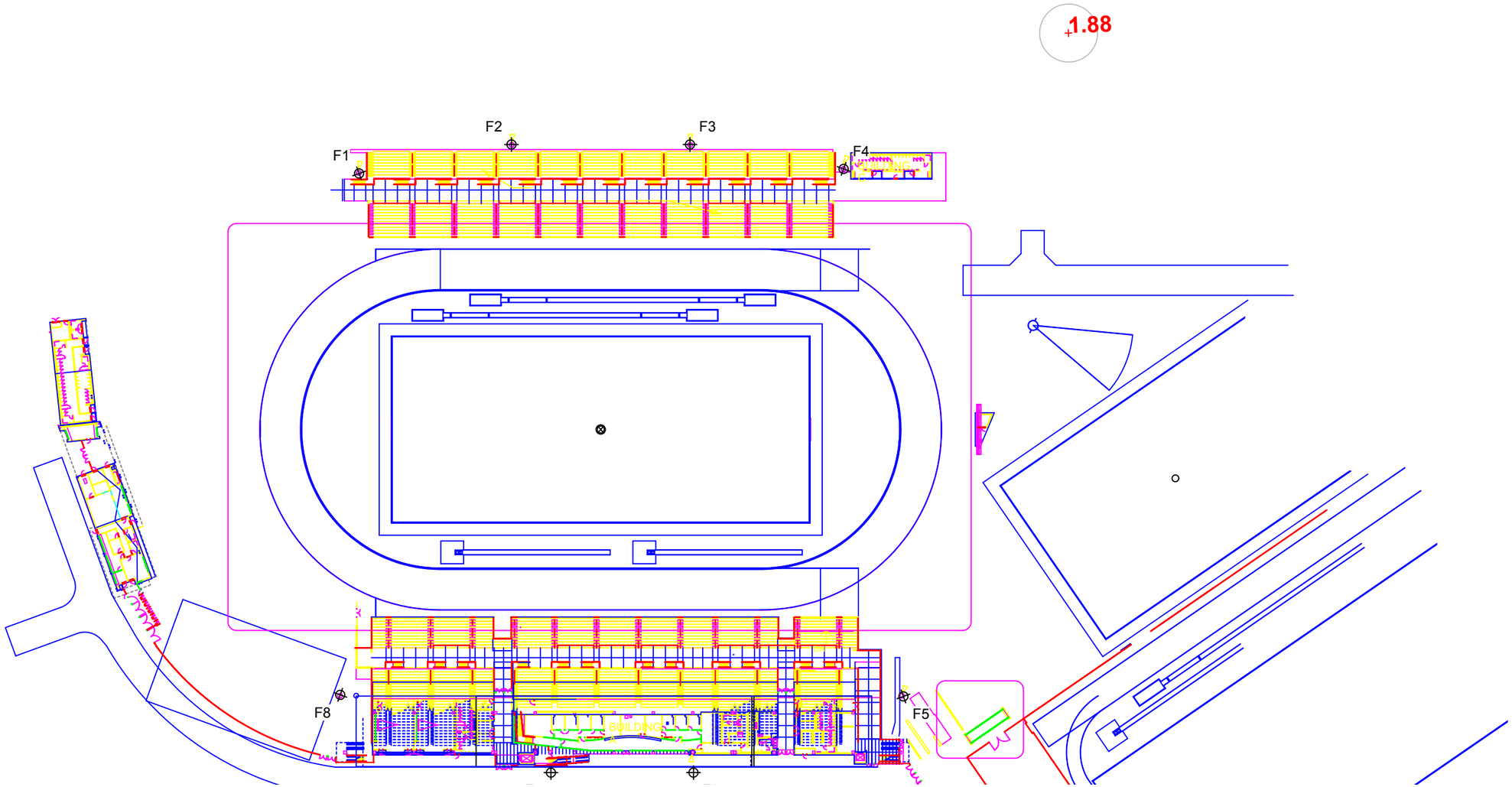

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8004**
Spacing:	30.0' x 30.0'
Height:	28.6' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.36**
Maximum:	0.36
Minimum:	0.36
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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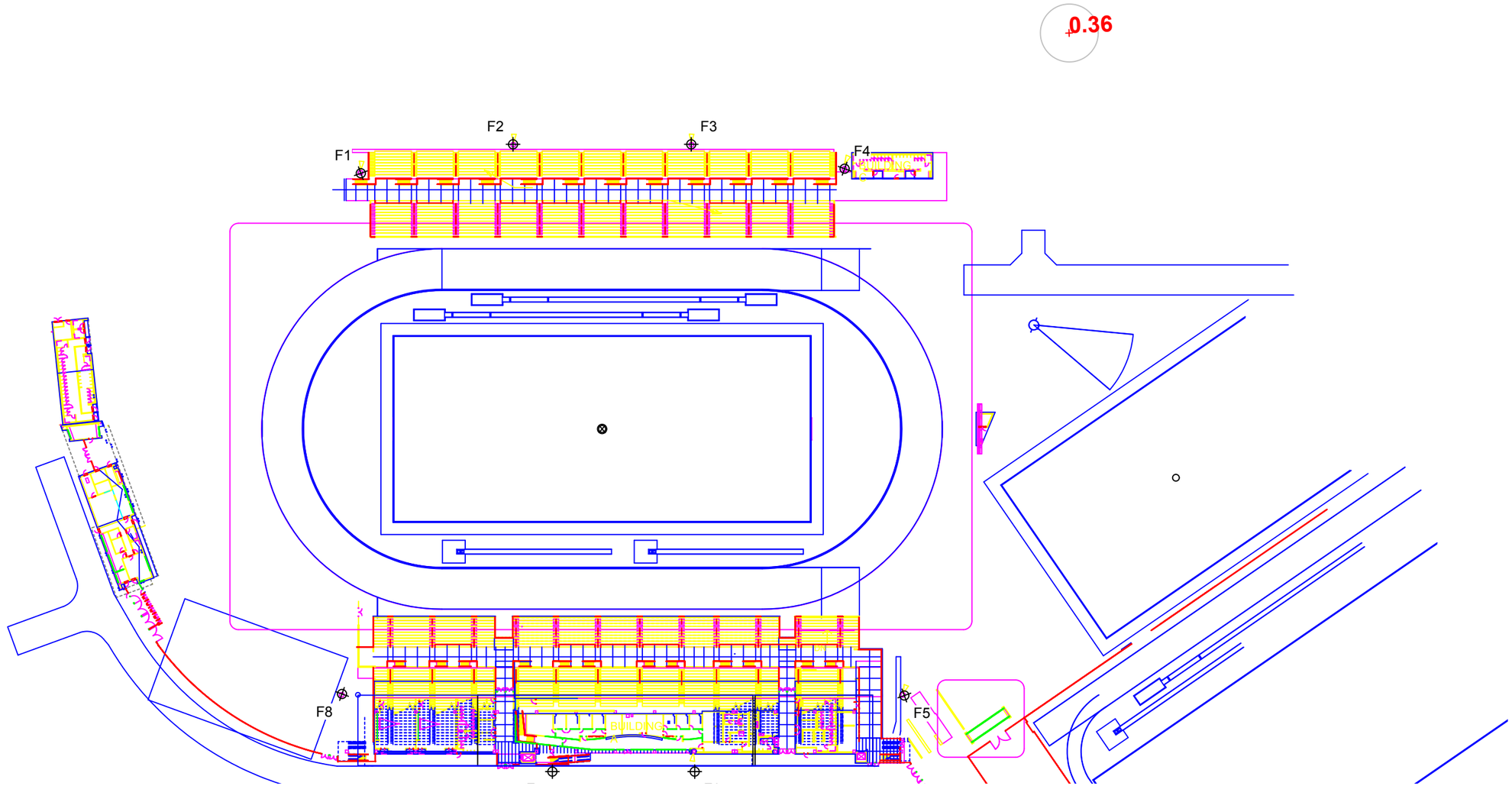

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8005**
Spacing:	30.0' x 30.0'
Height:	44.2' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.00**
Maximum:	1.00
Minimum:	1.00
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

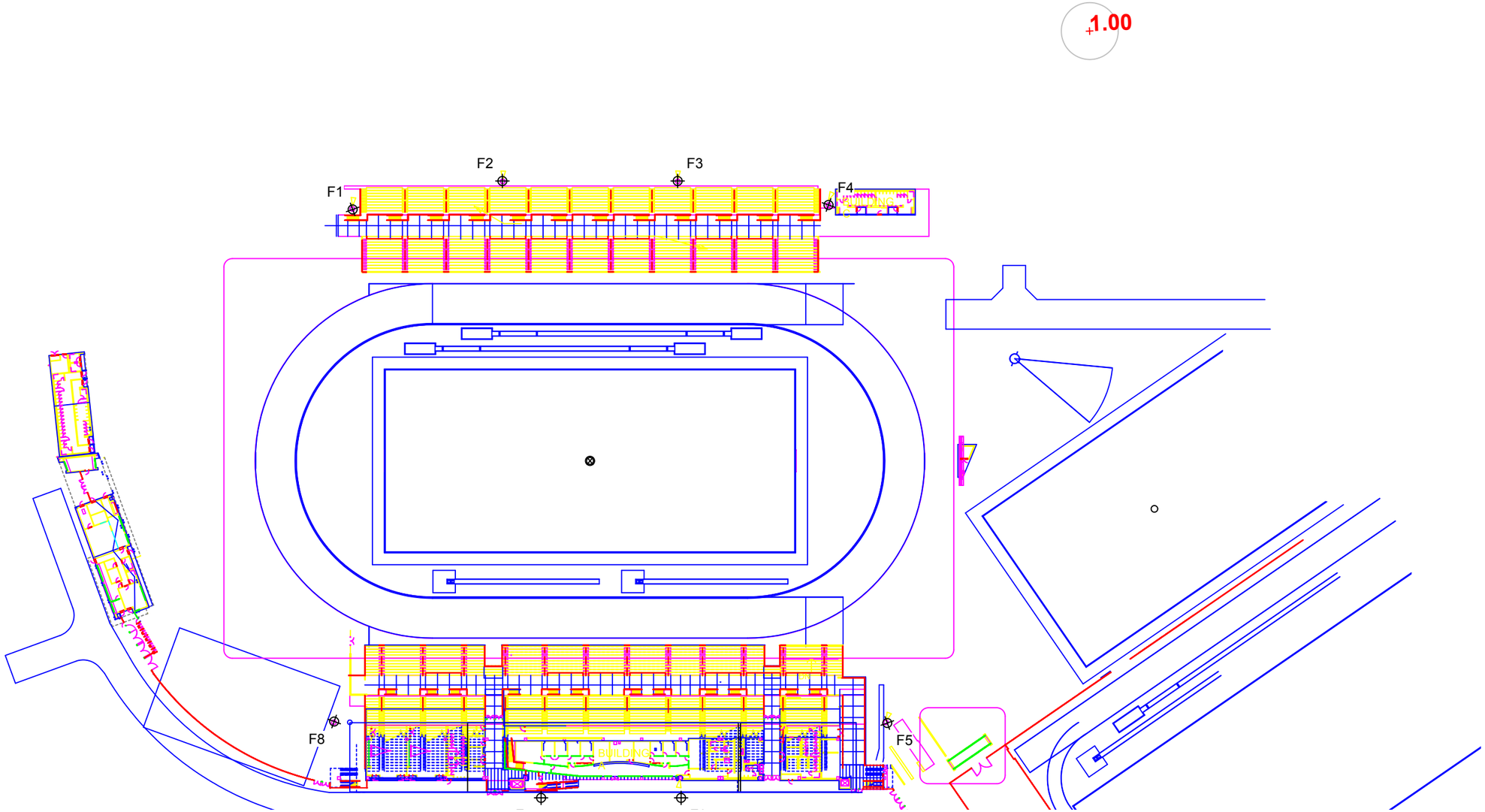
Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8005**
Spacing:	30.0' x 30.0'
Height:	42.2' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.16**
Maximum:	0.16
Minimum:	0.16
No. of Points:	1

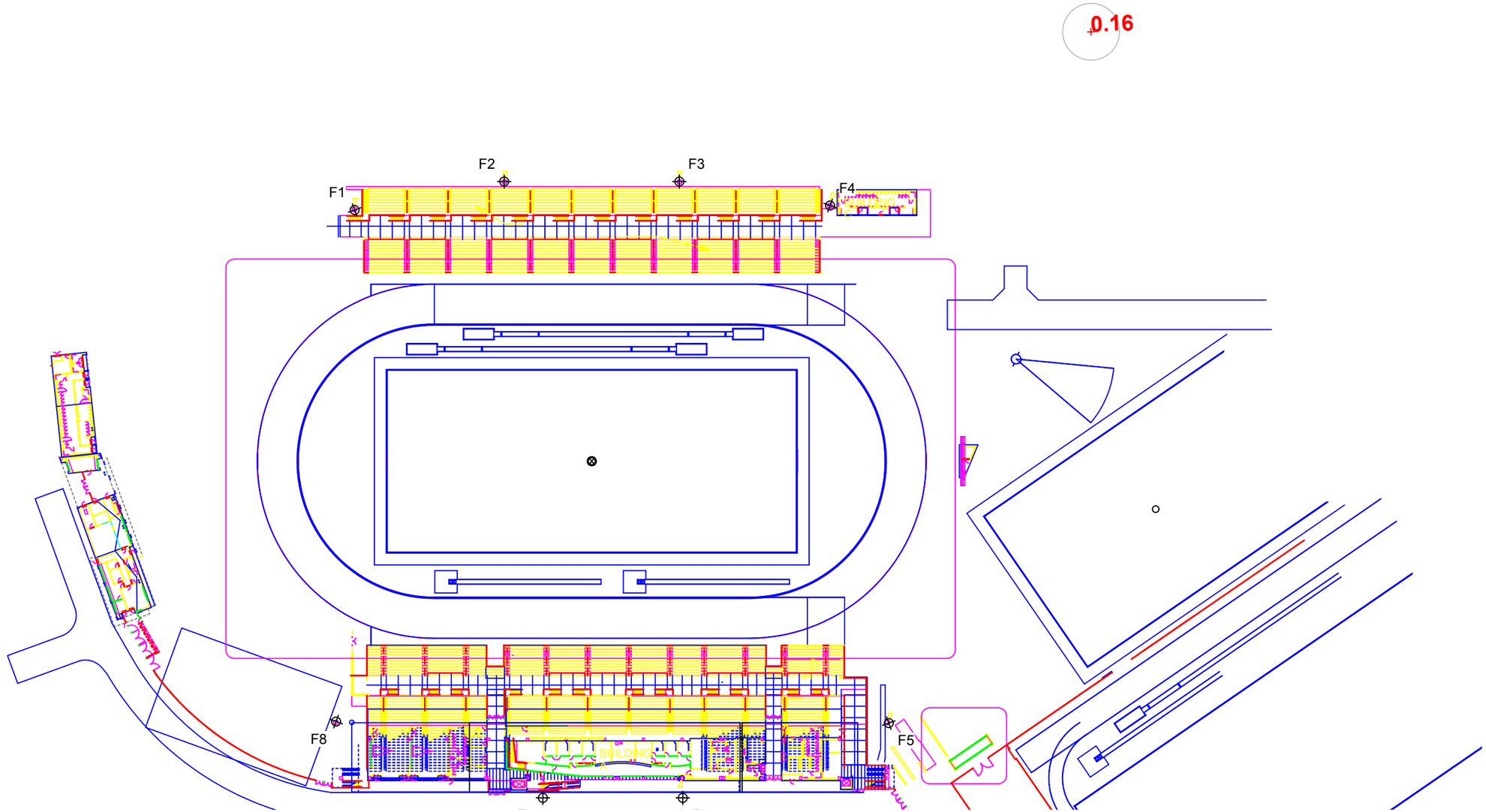
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8006**
Spacing:	30.0' x 30.0'
Height:	64.1' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.55**
Maximum:	0.55
Minimum:	0.55
No. of Points:	1

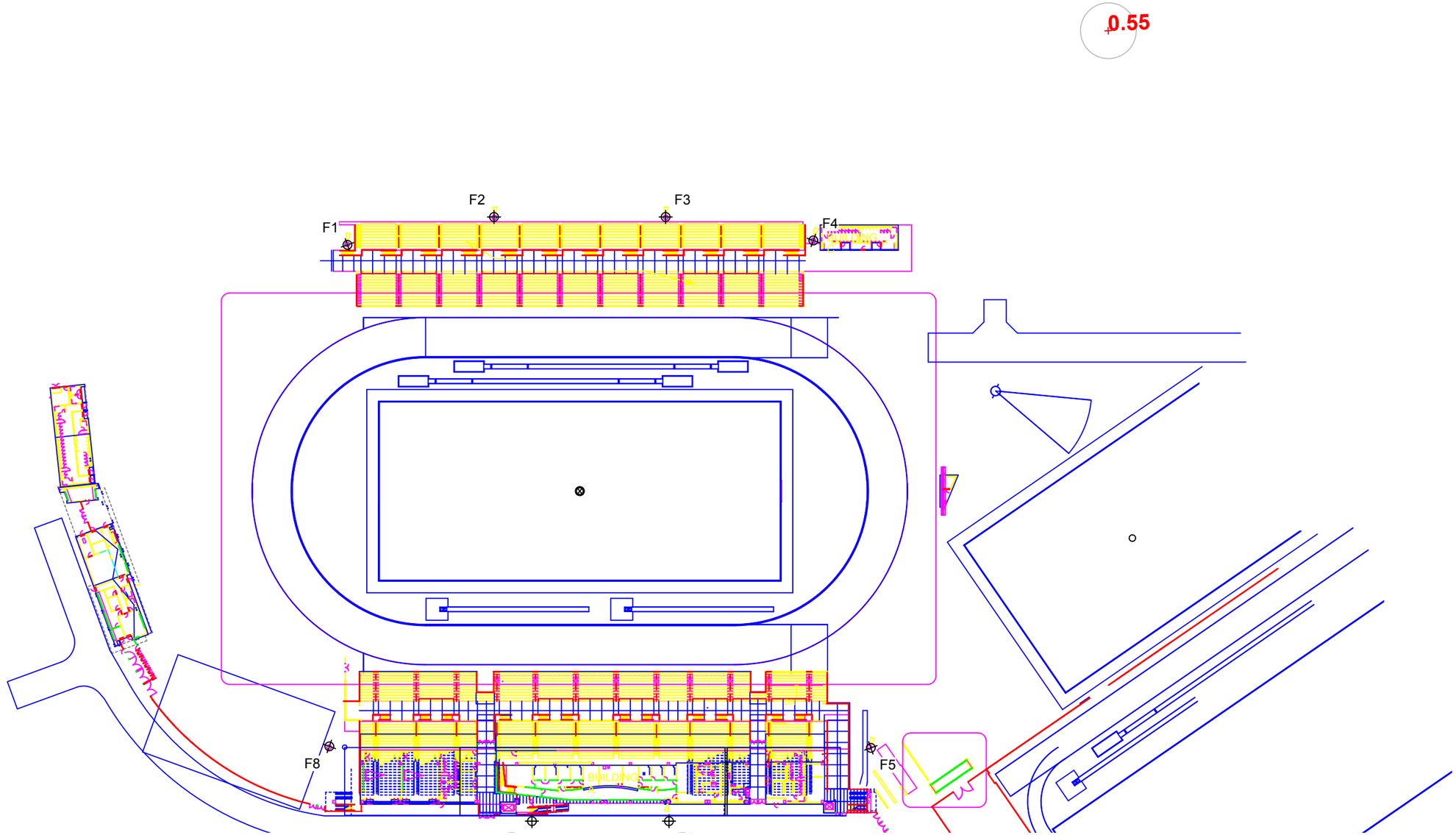
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8006**
Spacing:	30.0' x 30.0'
Height:	62.1' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.07**
Maximum:	0.07
Minimum:	0.07
No. of Points:	1

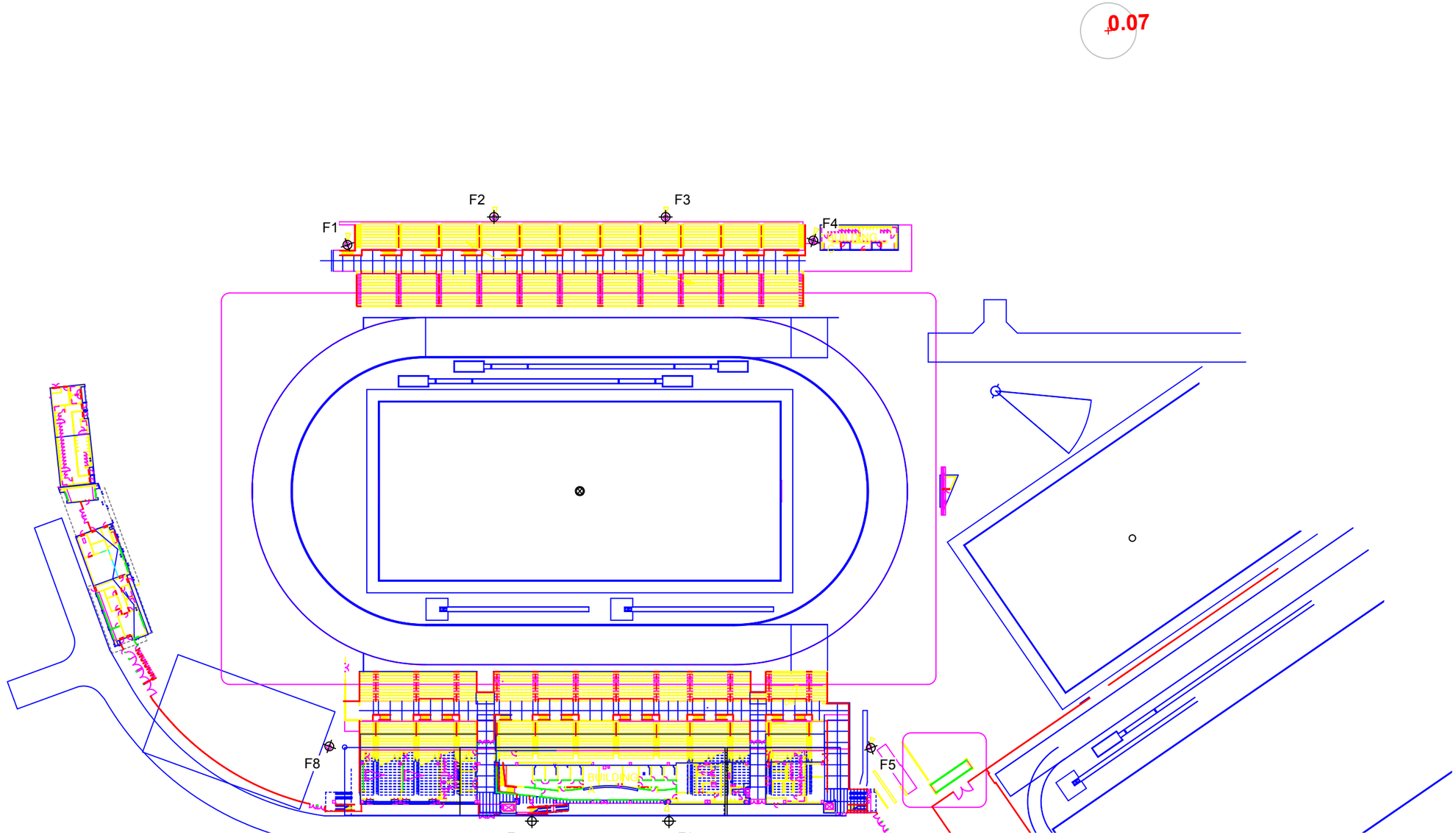
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8007**
Spacing:	30.0' x 30.0'
Height:	44.0' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**4.66**
Maximum:	4.66
Minimum:	4.66
No. of Points:	1

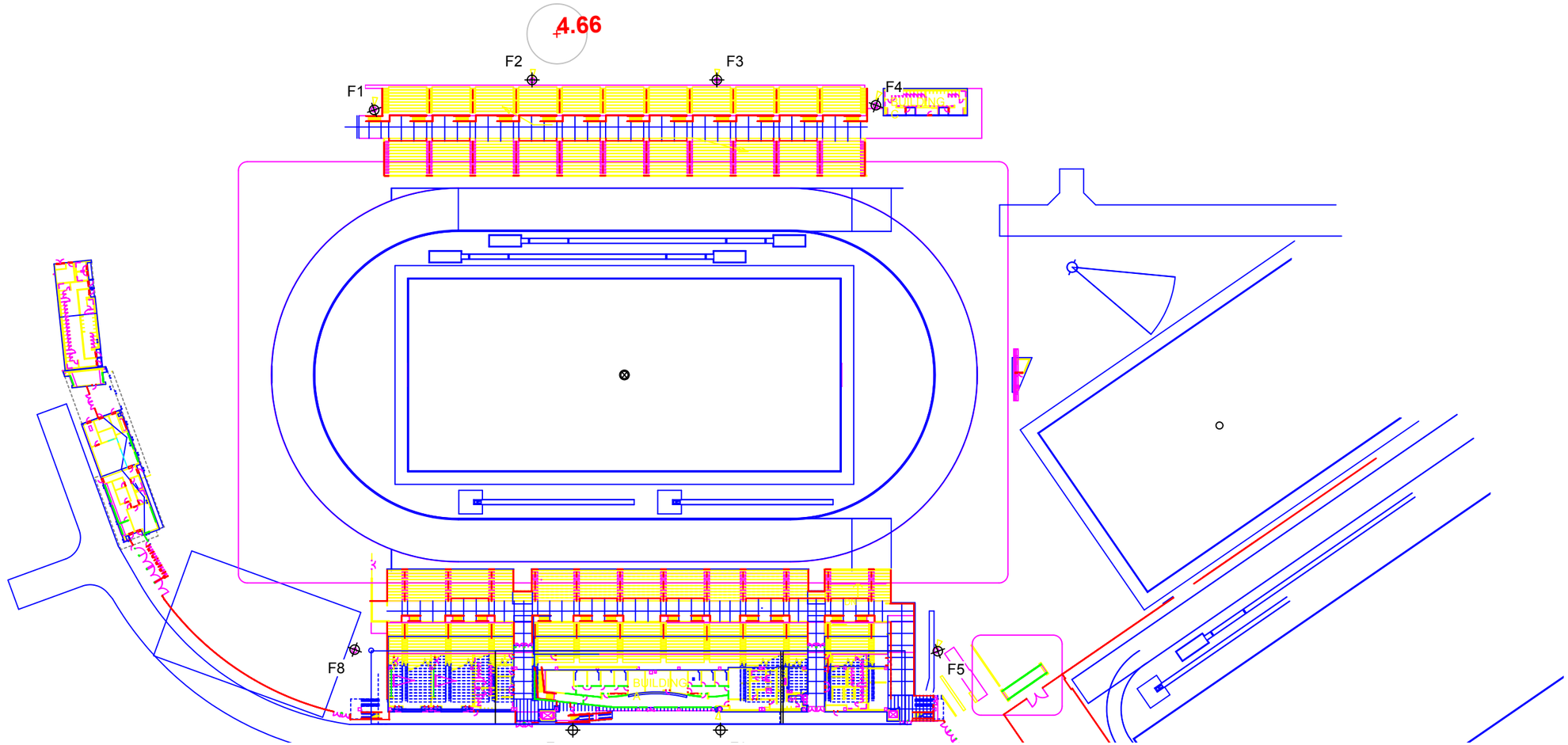
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8007**
Spacing:	30.0' x 30.0'
Height:	42.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.10**
Maximum:	1.10
Minimum:	1.10
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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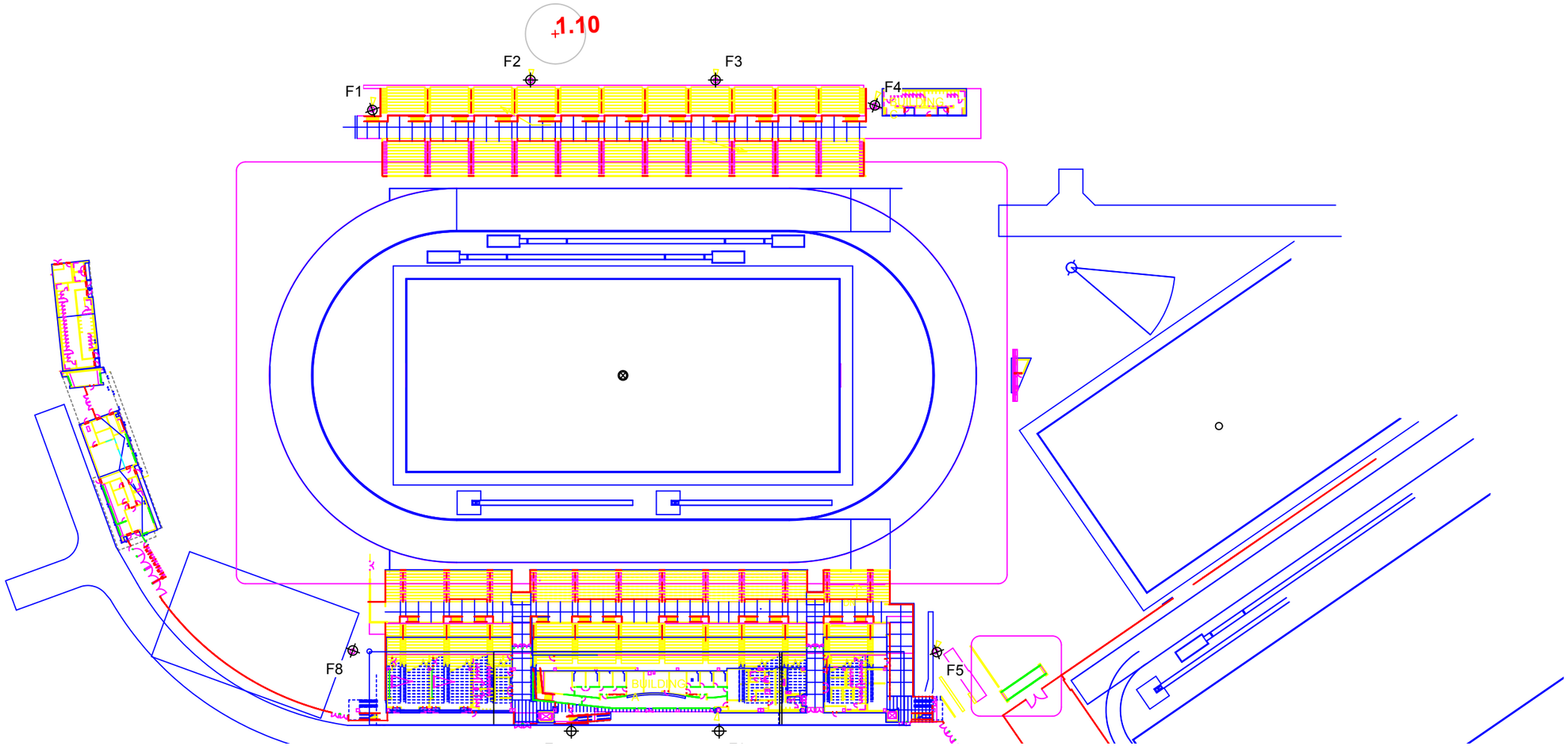

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8009**
Spacing:	30.0' x 30.0'
Height:	66.0' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**1.19**
Maximum:	1.19
Minimum:	1.19
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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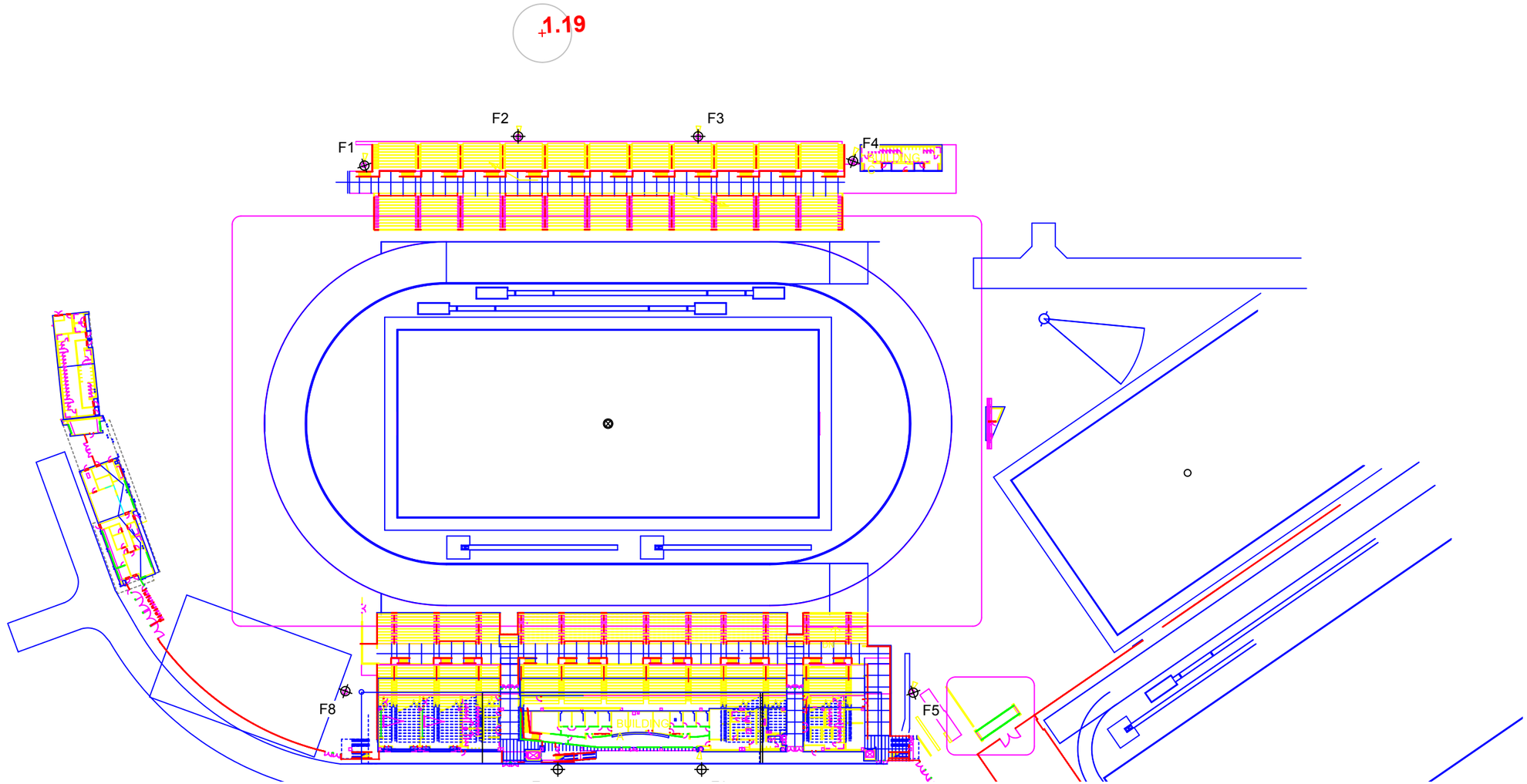

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8009**
Spacing:	30.0' x 30.0'
Height:	64.0' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.20**
Maximum:	0.20
Minimum:	0.20
No. of Points:	1

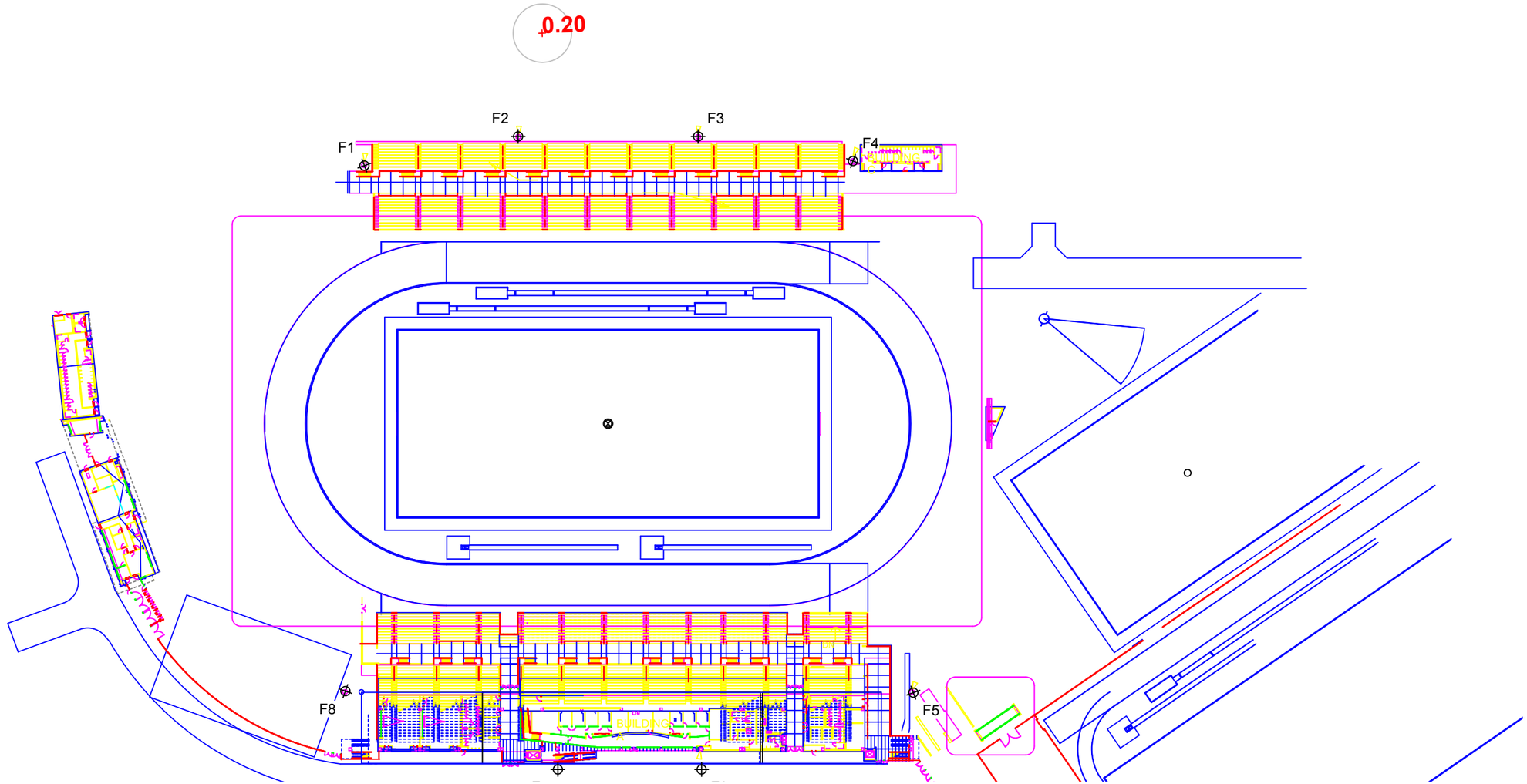
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8010**
Spacing:	30.0' x 30.0'
Height:	71.8' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.80**
Maximum:	0.80
Minimum:	0.80
No. of Points:	1

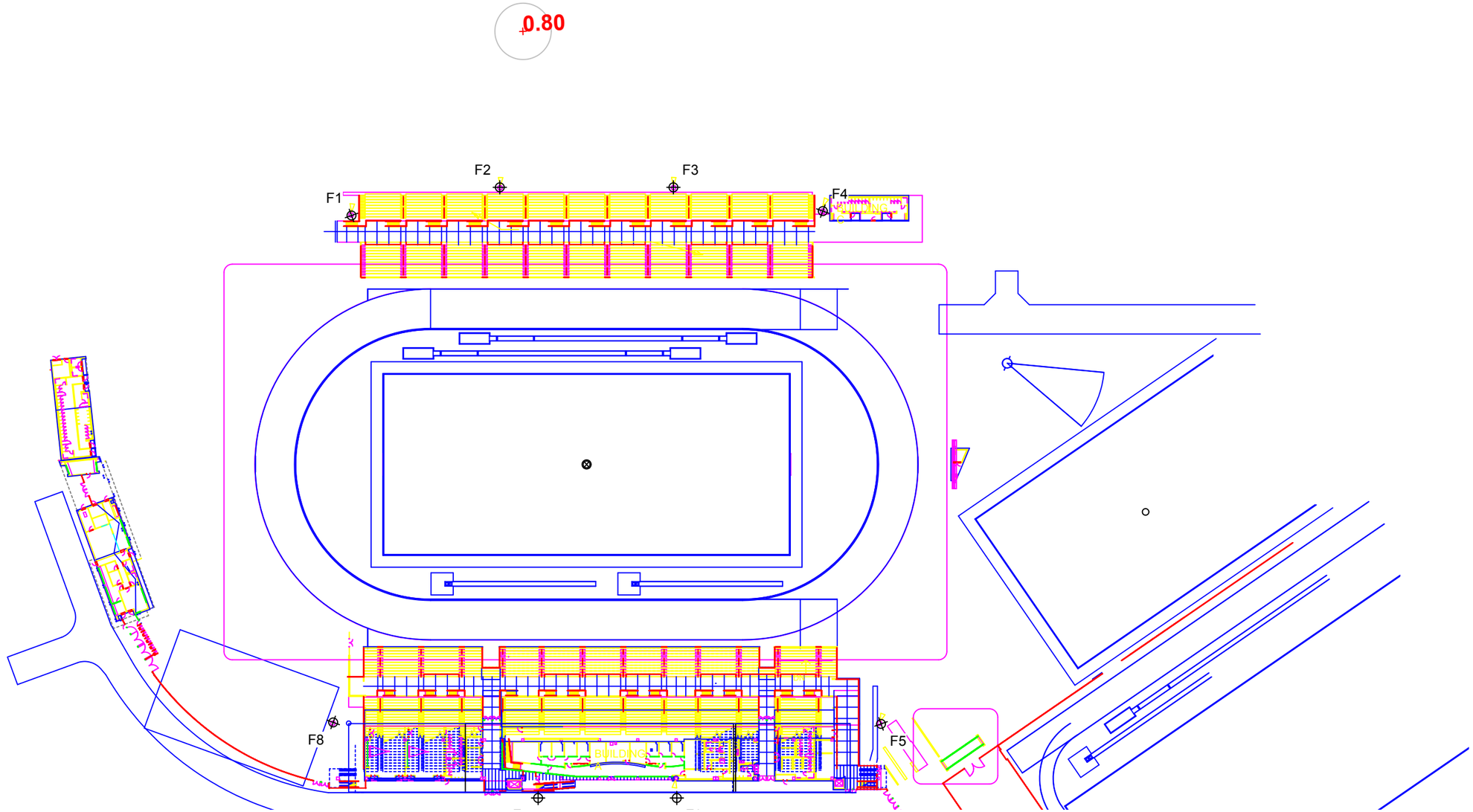
LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.



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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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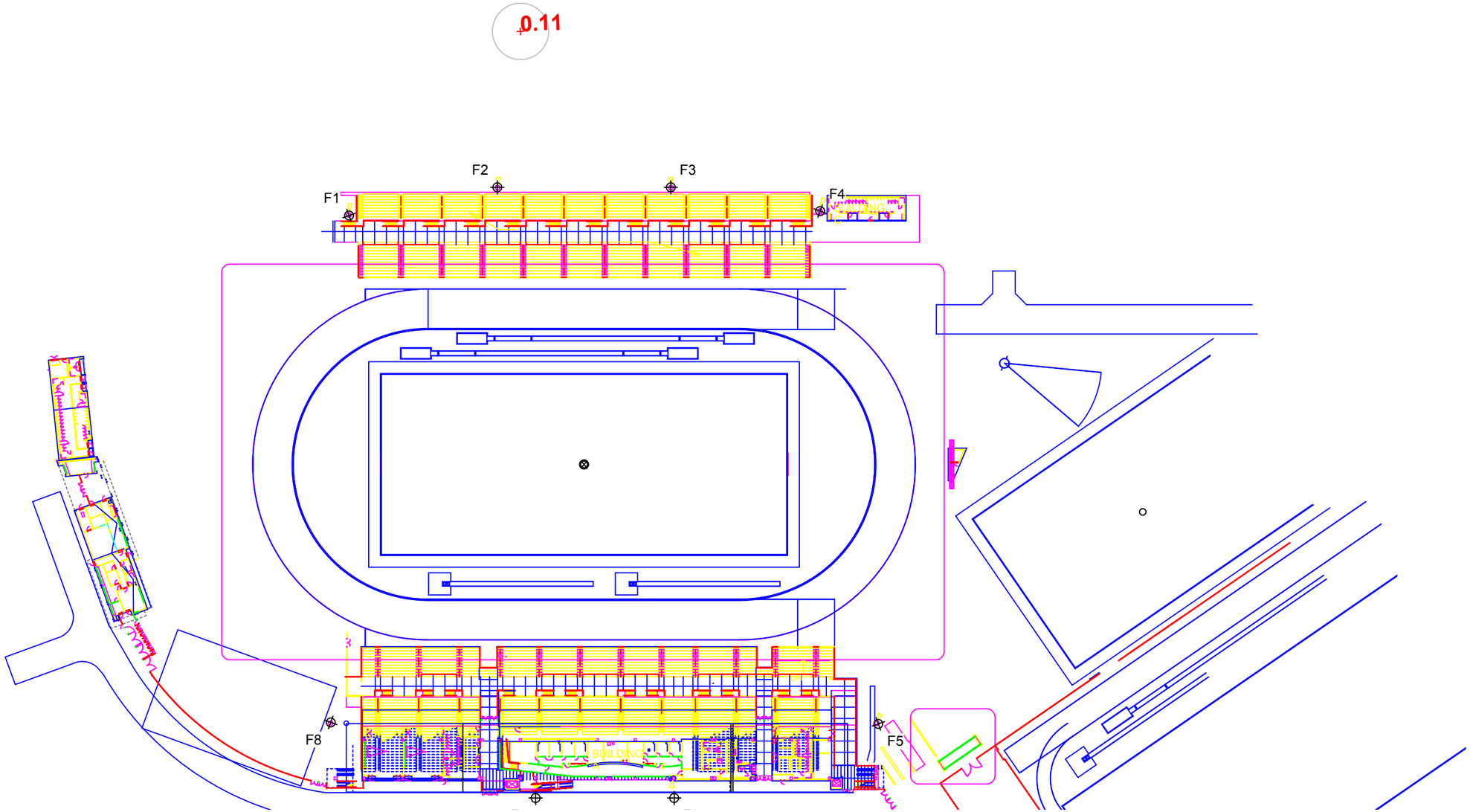

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8010**
Spacing:	30.0' x 30.0'
Height:	69.8' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.11**
Maximum:	0.11
Minimum:	0.11
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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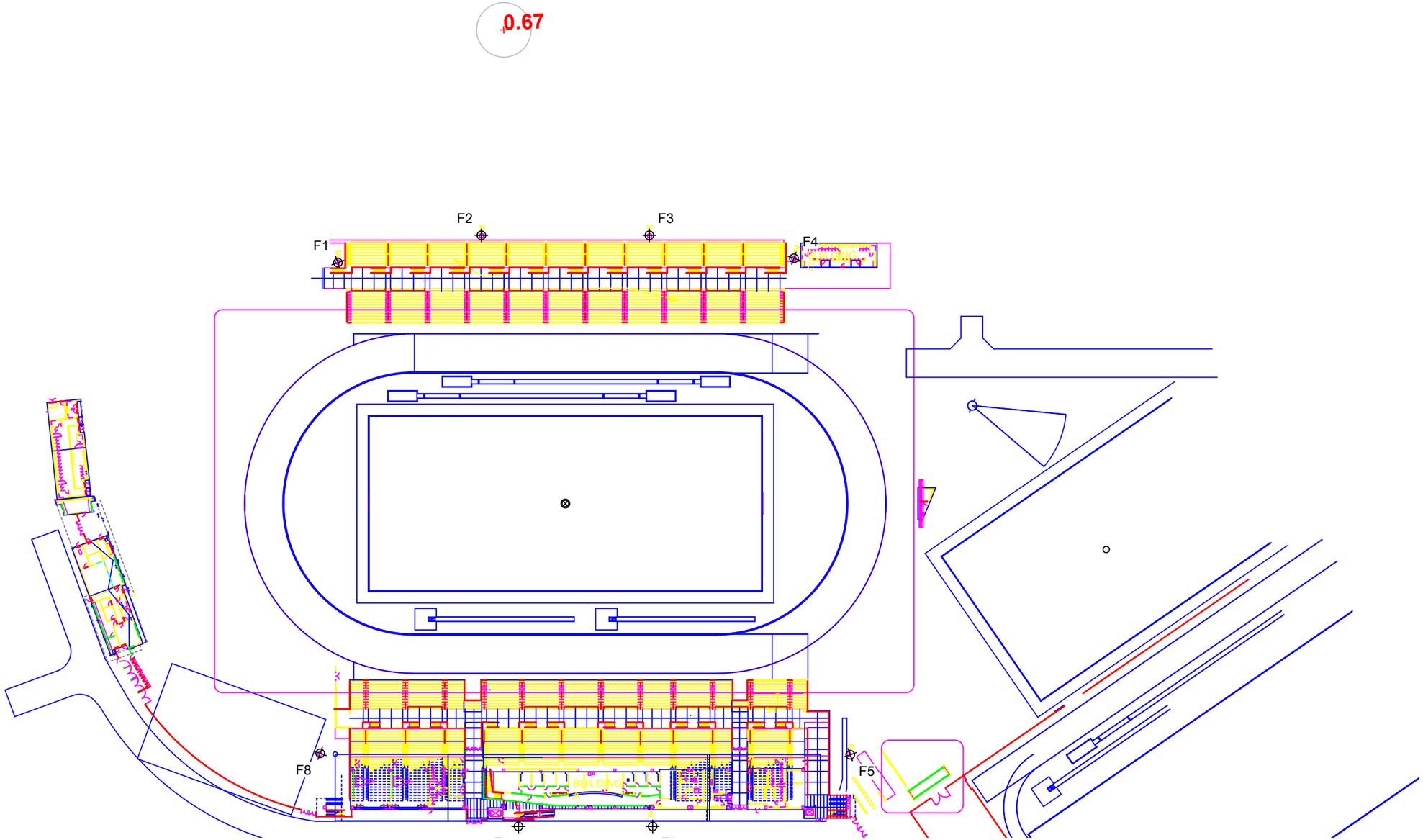

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8011**
Spacing:	30.0' x 30.0'
Height:	69.3' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.67**
Maximum:	0.67
Minimum:	0.67
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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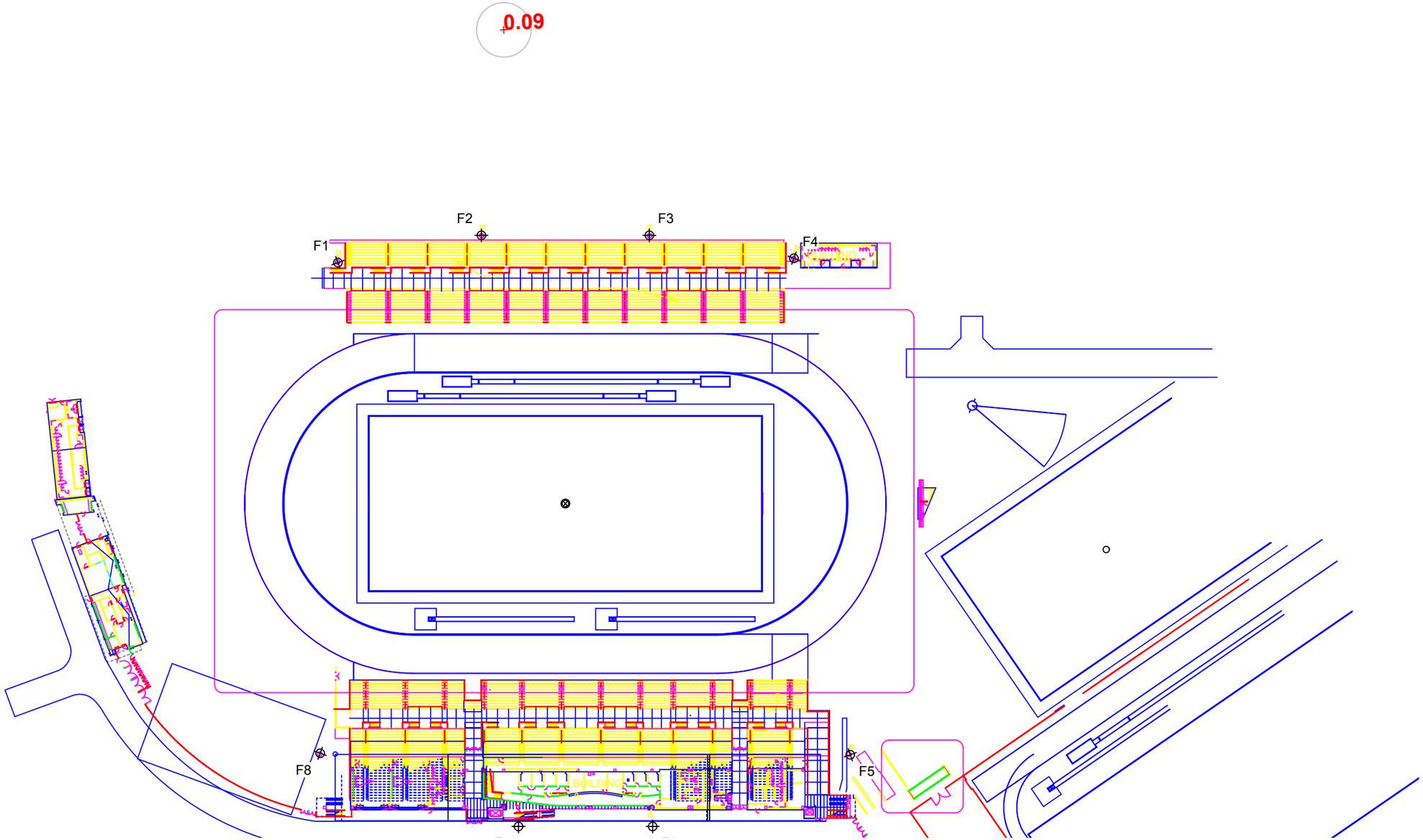

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8011**
Spacing:	30.0' x 30.0'
Height:	67.3' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.09**
Maximum:	0.09
Minimum:	0.09
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

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0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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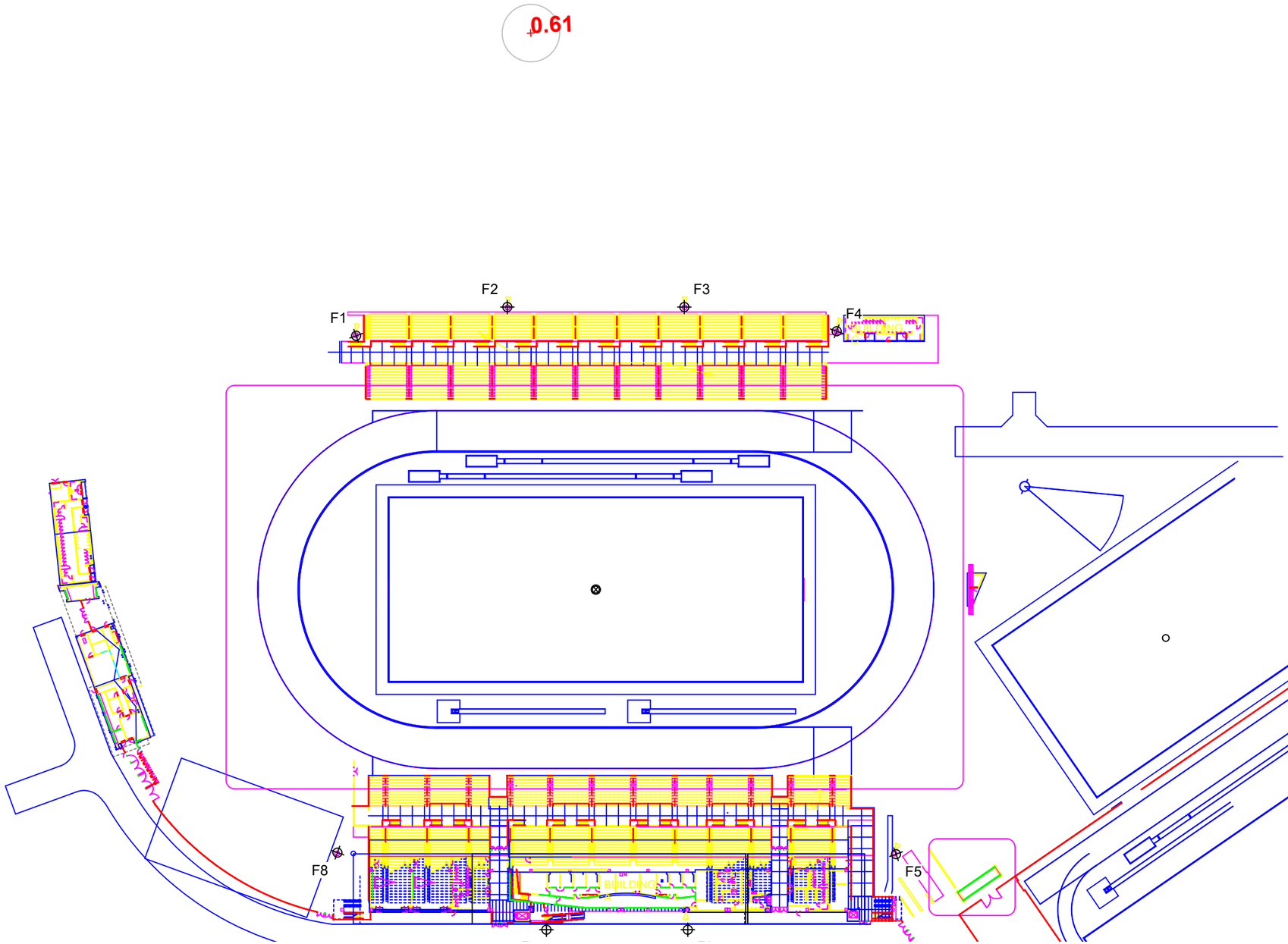

GRID SUMMARY

Name:	**VERTICAL SP - POINT 8012**
Spacing:	30.0' x 30.0'
Height:	61.3' above grade

ILLUMINATION SUMMARY

MAINTAINED MAX VERTICAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.61**
Maximum:	0.61
Minimum:	0.61
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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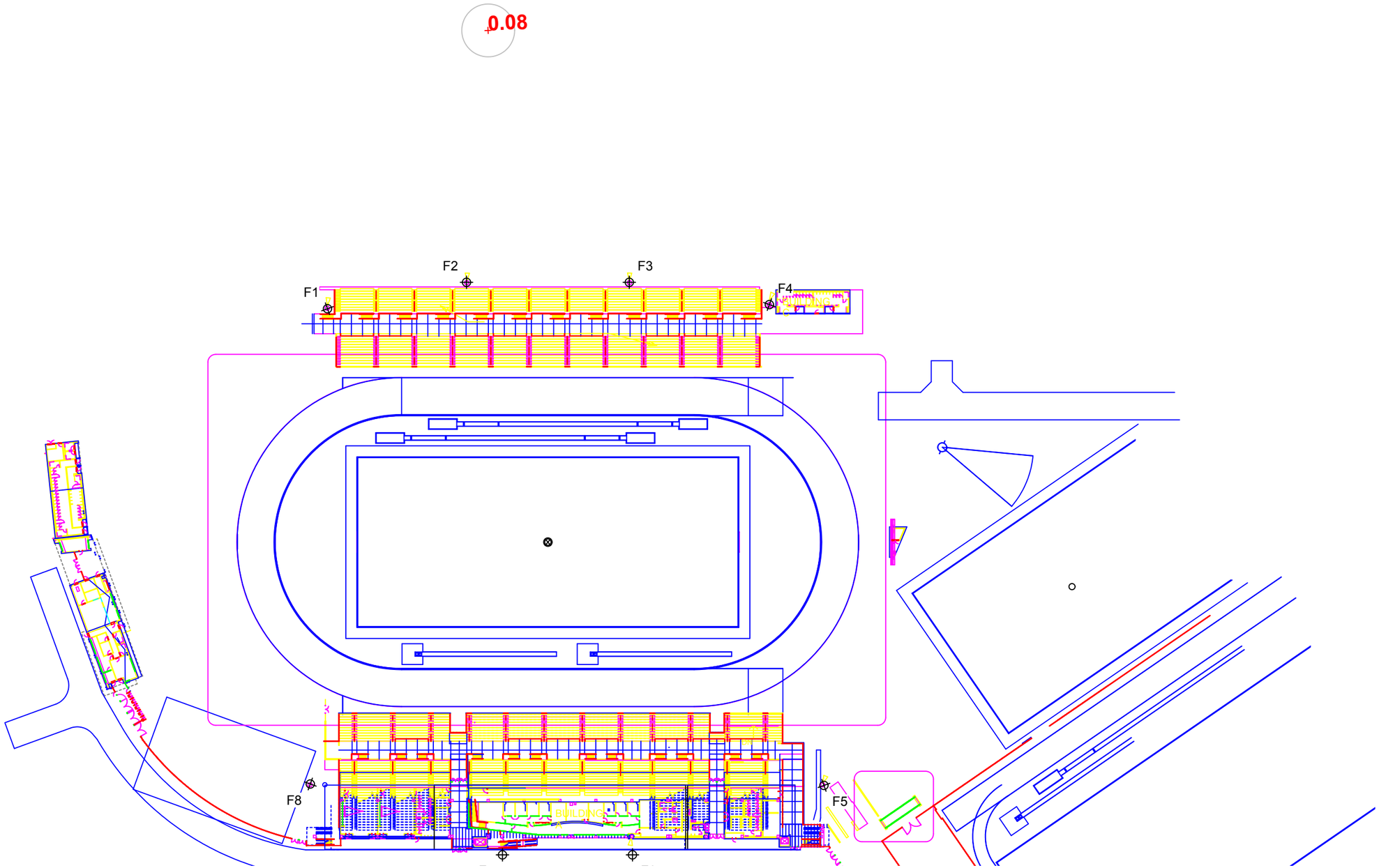
Walnut,CA



GRID SUMMARY

Name:	**HORIZONTAL SP - POINT 8012**
Spacing:	30.0' x 30.0'
Height:	59.3' above grade

ILLUMINATION SUMMARY

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average:	**0.08**
Maximum:	0.08
Minimum:	0.08
No. of Points:	1

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

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SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

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NCAA Best Lighting Practices

Goals: **1. Quality TV Broadcasts:** To establish best practices for lighting televised NCAA events, providing quality broadcasts within a reasonable budget. The light level expectations are applicable for both SD and HD broadcast.
2. Value-based Lighting System: To provide recommended best practices for lighting college level sporting events with considerations for quality lighting for player safety; reduced energy, maintenance and life-cycle costs; and environmental sensitivity.

Considerations: 1. Size of facility, 2. Level of TV broadcast, 3. Validation of light levels, and 4. Cost consciousness.

		Baseball Infield / Outfield	Basketball*	Football	Ice Hockey	Lacrosse	Soccer	Softball Infield / Outfield	Swimming / Water Polo	Tennis	Track & Field		Volleyball	Wrestling / Boxing**
											Track	Field		
Intercollegiate Play (no broadcast)	**Horizontal Footcandles:**	70 / 50	80	50	100	50	50	70 / 50	50	75	30	50	80	80*
	Horizontal Uniformity:	2:1 / 2.5:1	2:1	2:1	2.5:1	2:1	2:1	2:1 / 2.5:1	2.5:1	1.7:1	3:1	3:1	2:1	2:1
	Typical Seating:	N/A	N/A	Under 5K	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Pole position:	6+ poles	N/A	4+ poles	N/A	4+ poles	4+ poles	4+ poles	N/A	4+ poles	4+ poles	4+ poles	N/A	N/A
Regional Broadcast	**Horizontal Footcandles:**	100 / 70	80	75	100	75	75	100/70	75	75	75	75	80	80*
	Horizontal Uniformity:	1.5:1 / 2:1	2:1	2:1	2:1	2:1	2:1	1.5:1 / 2:1	2:1	1.7:1	2:1	2:1	2:1	2:1
	Camera #1	1st & 3rd Bases	Center main side	50 yd line	Center main side	Center main side	Center main side	1st & 3rd Bases	Center main side	High End	Center main side	Center main side	Center main side	Center main side
	Vertical Footcandles:	70 / 40	75	75	75	75	75	70 / 40	75	75	75	75	75	75
	Vertical Uniformity:	N/A	2:1	2:1	2:1	2:1	2:1	N/A	2:1	2:1	2:1	2:1	2:1	2:1
	Camera #2	High Home Plate	End	End Zone	End	End	End	High Home Plate	End	Net	N/A	N/A	End	End
	Vertical:	70 / 40	45	45	45	45	45	70 / 40	45	45	N/A	N/A	45	45
	Typical Seating:	N/A	N/A	5 - 25K	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Pole position:	6+ poles	N/A	6+ poles	N/A	6+ poles	6+ poles	6+ poles	N/A	4+ poles	6+ poles	6+ poles	N/A	N/A
National Broadcast	**Horizontal Footcandles:**	Same as Regional Broadcast	100	100	100	100	100	Same as Regional Broadcast	100	100	100	100	100	100
	Horizontal Uniformity:		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1
	Camera #1		Center main side	50 yd line	Center main side	Center main side	Center main side		Center main side	High End	Center main side	Center main side	Center main side	Center main side
	Vertical Footcandles:		100	100	100	100	100		100	100	100	100	100	100
	Vertical Uniformity:		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1		1.7:1	1.7:1	1.7:1	1.7:1	1.7:1	1.7:1
	Camera #2		End	End Zone	End	End	End		End	Net	N/A	N/A	End	End
	Vertical Footcandles:		60	60	60	60	60		60	60	N/A	N/A	60	60
	Typical Seating:		N/A	25 - 45K	N/A	N/A	N/A		N/A	N/A	N/A	N/A	N/A	N/A
	Pole position:		N/A	6+ poles	N/A	6+ poles	6+ poles		N/A	4+ poles	6+ poles	6+ poles	N/A	N/A
National Championship Final Site	**Horizontal Footcandles:**	125 / 100	125	125	125	125	125	125 / 100	125	125	125	125	125	125
	Horizontal Uniformity:	1.3:1 / 1.7:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.3:1 / 1.7:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1
	Camera #1	1st & 3rd Bases	Center main side	50 yd line	Center main side	Center main side	Center main side	1st & 3rd Bases	Center main side	High End	Center main side	Center main side	Center main side	Center main side
	Vertical Footcandles:	90 / 50	125	125	125	125	125	90 / 50	125	125	125	125	125	125
	Vertical Uniformity:	N/A	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	N/A	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1	1.5:1
	Camera #2	High Home Plate	End	End Zone	End	End	End	High Home Plate	End	Net	N/A	N/A	End	End
	Vertical Footcandles:	90 / 50	75	75	75	75	75	90 / 50	75	75	N/A	N/A	75	75
	Vertical Uniformity:	N/A	2.5:1	2.5:1	2.5:1	2.5:1	2.5:1	N/A	2.5:1	1.7:1	N/A	N/A	2.5:1	2.5:1
	Typical Seating:	N/A	N/A	45K+	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Pole position:	6+ poles	N/A	6+ poles	N/A	6+ poles	6+ poles	6+ poles	N/A	4+ poles	8+ poles	6+ poles	N/A	N/A

*Refer to NCAA Basketball Championships Best Lighting Practices for television broadcast located under the Basketball link

**Competition is typically held at the same venue as basketball or volleyball

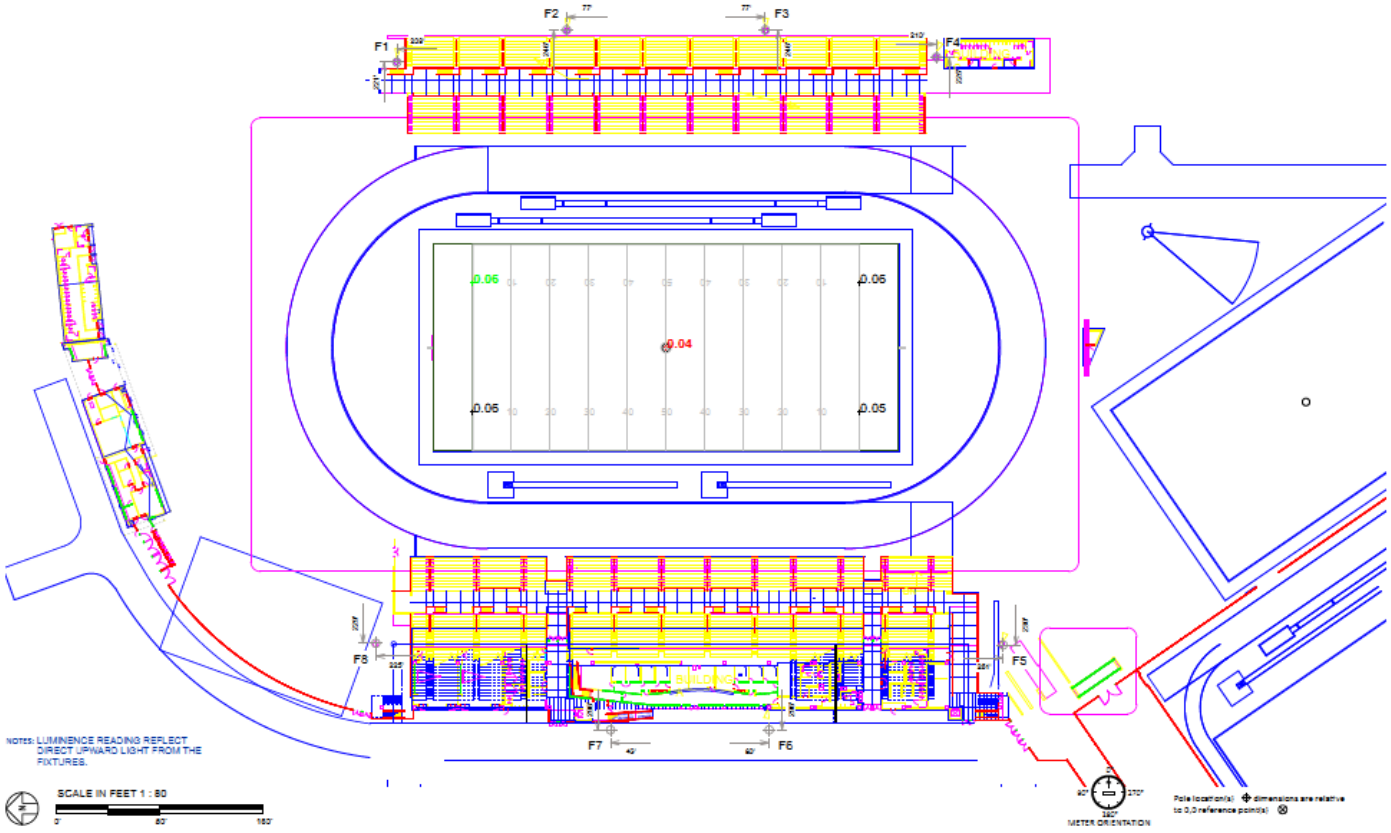
Notes:
1. All footcandle levels are target minimum averages
2. New lighting system designs are recommended to use 0.7 Recoverable Light Loss Factor or Constant Illumination
3. Lamp Characteristics
   a. Minimum color temperature must be 3600 degrees Kelvin
   b. Minimum Color Rendering Index (CRI) must be 65
4. Refer to the NCAA Broadcast Lighting Requirements for additional information
5. Refer to sport and broadcast specific documents for design examples and verification forms

Contact NCAA at 317/917-6222 or www.NCAA.com with questions.

© 2006, 2010 National Collegiate Athletic Association - Approved by NCAA and ESPN 5-3-10

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F2, F4	100'	18'	98' 118'	96 LED 228NB 1400	2 16	0 16	2 0
2	F2-F3	100'	29'	109' 129'	96 LED 228NB 1400	2 16	0 16	2 0
1	F5	147'	-	107' 147'	96 LED 228NB 1400	4 28	0 28	4 0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	150'	17'	107' 147'	96 LED 228NB 1400	4 28	0 28	4 0
8	TOTALS					200	184	16



NOTES: LUMINENCE READING REFLECT DIRECT UPWARD LIGHT FROM THE FIXTURES.

SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

METER ORIENTATION

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM-R-SPILL • 26-Apr-16

Mt. SAC Athletics Complex East

Walnut,CA

GRID SUMMARY

Name:	Sky Glow Grid
Size:	360' x 160'
Spacing:	150.0' x 50.0'
Height:	172.0' above grade

ILLUMINATION SUMMARY

MAINTAINED VERTICAL FOOTCANDLES[-90° TILT]

	Entire Grid
Scan Average:	0.05
Maximum:	0.06
Minimum:	0.04
No. of Points:	5

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	184
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the "Musco Control System Summary" for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

musco Lighting

We Make It Happen.

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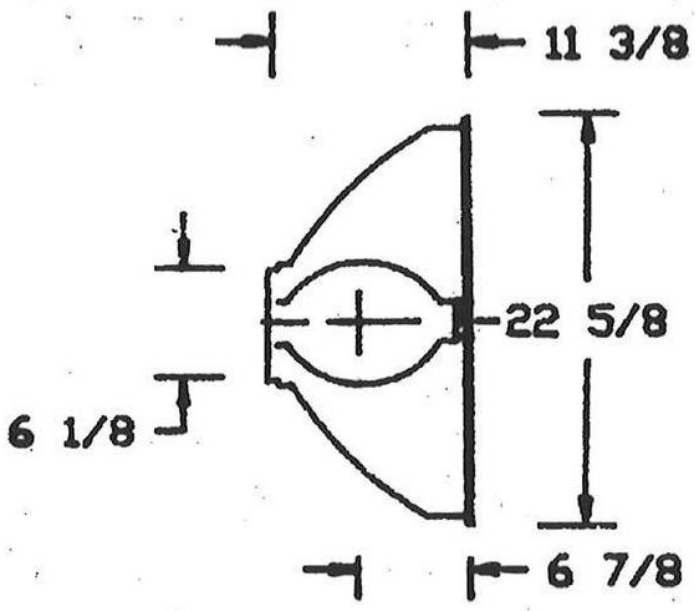
ILLUMINATION SUMMARY

itl boulder
THE LIGHT CENTER OF THE INDUSTRY SINCE 1955
INDEPENDENT TESTING LABORATORIES, INC.
3386 LONGHORN ROAD, BOULDER, CO 80302 USA
PHONE: (303)442-1255 • FAX: (303)449-5274 • E-MAIL: itl@itlboulder.com • WEBSITE: www.itlboulder.com

REPORT NUMBER: ITL34024 DATE: 12-22-87
PREPARED FOR: MUSCO LIGHTING INC. REVISED: 02-12-03
CATALOG NUMBER: SPORTS CLUSTER 1
LUMINAIRE: FORMED SEMI-SPECULAR REFLECTOR. CLEAR FLAT GLASS ENCLOSURE. REFLECTOR TILTED 27 DEGREES.
LAMP: CLEAR 1500-WATT METAL HALIDE, RATED 155000 LUMENS.
NOTE: THE CANDLEPOWER DATA USED TO PRODUCE THIS REVISED REPORT IN THE NEW IES LM-35-2002 FORMAT WAS INTERPOLATED FROM THE ORIGINAL REPORT. THE ORIGINAL REPORT CONTAINED CANDLEPOWER DATA AT THE OLDER LM-35-1970 TEST INCREMENTS; ACTUAL PERFORMANCE MAY VARY.
REPORT IS BASED ON 155000 LUMENS PER LAMP.

FLOODLIGHT CHARACTERISTICS

IES TYPE	2H X 3V		
MAXIMUM CANDLEPOWER	1360496. AT	0.0 H,	-1.4 V
HORIZONTAL BEAM ANGLE (50%)	6.1 deg		
VERTICAL BEAM ANGLE (50%)	6.9 deg		
HORIZONTAL FIELD ANGLE (10%)	26.2 deg		
VERTICAL FIELD ANGLE (10%)	29.2 deg		
BEAM LUMENS (EFFICIENCY)	9095. (5.9 %)		
FIELD LUMENS (EFFICIENCY)	48692. (31.4 %)		
TOTAL LUMENS (EFFICIENCY)	107909. (69.6 %)		



AXIAL CANDLEPOWER

DEG	HORIZ.	DEG	VERT.
90.0	0.	90.0	0.
85.0	0.	85.0	0.
75.0	98.	75.0	0.
65.0	4597.	65.0	3619.
55.0	11149.	55.0	12225.
47.5	10465.	47.5	12323.
42.5	10171.	42.5	12421.
37.5	10465.	37.5	13007.
33.0	11051.	33.0	13985.
29.0	10465.	29.0	15648.
25.5	15452.	25.5	19071.
22.5	33056.	22.5	25428.
19.5	60440.	19.5	58876.
17.0	78729.	17.0	82934.
15.0	98582.	15.0	113252.
13.0	129683.	13.0	148265.
11.0	163815.	11.0	181321.
9.0	196480.	9.0	217996.
7.0	274427.	7.0	281371.
5.0	400002.	5.0	393058.
3.0	675211.	3.0	614575.
1.0	1134871.	1.0	971839.
0.0	1235899.	0.0	1235899.
-1.0	1134871.	-1.0	1360203.
-3.0	675211.	-3.0	974479.
-5.0	400002.	-5.0	510614.
-7.0	274427.	-7.0	360882.
-9.0	196480.	-9.0	272764.
-11.0	163815.	-11.0	223277.
-13.0	129683.	-13.0	186016.
-15.0	98582.	-15.0	145722.
-17.0	78729.	-17.0	106993.
-19.5	60440.	-19.5	66797.
-22.5	33056.	-22.5	36577.
-25.5	15452.	-25.5	19071.
-29.0	10465.	-29.0	15550.
-33.0	11051.	-33.0	13203.
-37.5	10465.	-37.5	11834.
-42.5	10171.	-42.5	11247.
-47.5	10465.	-47.5	11443.
-55.0	11149.	-55.0	12127.
-65.0	4597.	-65.0	6161.
-75.0	98.	-75.0	0.
-85.0	0.	-85.0	0.
-90.0	0.	-90.0	0.

Checked RDB
Approved R. Berger

ALL CANDELA AND LUMEN VALUES IN THIS REPORT ARE BASED ON RELATIVE PHOTOMETRY WHICH ASSUMES A BALLAST FACTOR= 1.000. ANY CALCULATIONS PREPARED FROM THESE DATA SHOULD INCLUDE AN APPROPRIATE BALLAST FACTOR.

THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.

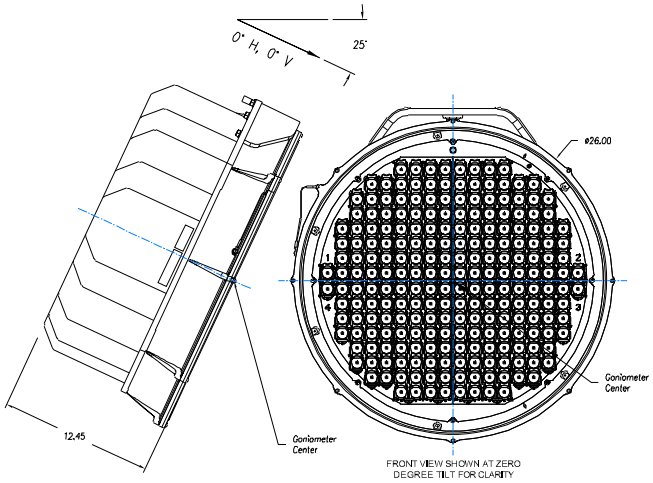
Musco Lighting Photometry Laboratory
Oskaloosa, Iowa

NVLAP Lab Code 200702-0

REPORT NUMBER: MPL01633 PAGE: 1 OF 15
ISSUE DATE: 10/27/15
CATALOG NUMBER: L228L_2MXF_AFECA_25
LUMINAIRE: 228NB welded fin fixture assembly consisting of: (228) LEDs arranged in (4) quadrants of (57) LEDs (1.1" smooth acrylic lens and 1.75" molded visor metalized on the inside surfaces) in a 8-12-14-14-16-16-16-18 18-16-16-16-14-14-12-8 array, wired in series, enclosed with AR coated clear flat glass.
LAMP: Cree XM-L2 Light Emitting Diode (LED); Flux bin: EZWIB (ave. 315 lms); Color kit: EZWIB (ave. 5700K); 65 Typical CRI
(SEE PAGE 2 FOR MORE INFORMATION)

FLOODLIGHT CHARACTERISTICS

IES TYPE	2H X 3V	
MAXIMUM CANDLEPOWER	2069930.	AT 0.0 H, 0.0 V
HORIZONTAL BEAM ANGLE (50%)	11.2	deg
VERTICAL BEAM ANGLE (50%)	10.3	deg
HORIZONTAL FIELD ANGLE (10%)	25.4	deg
VERTICAL FIELD ANGLE (10%)	29.6	deg
BEAM LUMENS (% FIXTURE)	38978.	(29.4 %)
FIELD LUMENS (% FIXTURE)	104278.	(78.7 %)
TOTAL LUMENS (% FIXTURE)	132519.	(100.0 %)



Tested By Rian Leedom

Approved Kurt Dunkin

AXIAL CANDLEPOWER

DEG	HORIZ.	DEG	VERT.	DEG	VERT.
90.0	0.	90.0	0.	-13.0	551300.
85.0	0.	85.0	0.	-14.0	514010.
75.0	0.	75.0	1.	-15.0	456980.
65.0	0.	65.0	12.	-16.0	391040.
55.0	0.	55.0	41.	-17.0	327850.
47.5	0.	47.5	126.	-18.0	275820.
42.5	240.	42.5	218.	-19.0	235280.
37.5	2380.	37.5	377.	-20.0	213324.
33.0	5710.	33.0	585.	-22.5	162100.
29.0	6640.	29.0	794.	-25.5	105740.
25.5	9230.	25.5	1107.	-29.0	47943.
22.5	14820.	22.5	1664.	-33.0	20349.
19.5	29240.	20.0	2950.	-37.5	9864.
17.0	52580.	19.0	4710.	-42.5	3084.
15.0	86620.	18.0	7490.	-47.5	777.
13.0	161630.	17.0	10300.	-55.0	223.
11.0	286660.	16.0	11760.	-65.0	65.
9.0	467860.	15.0	12570.	-75.0	18.
7.0	751790.	14.0	14570.	-85.0	0.
5.0	1159470.	13.0	20610.	-90.0	0.
3.0	1647260.	12.0	37830.		
1.0	2011360.	11.0	72940.		
0.0	2069930.	10.0	137150.		
-1.0	2011360.	9.0	235120.		
-3.0	1647260.	8.0	368640.		
-5.0	1159470.	7.0	535950.		
-7.0	751790.	6.0	739940.		
-9.0	467860.	5.0	984880.		
-11.0	286660.	4.0	1284660.		
-13.0	161630.	3.0	1604180.		
-15.0	86620.	2.0	1881290.		
-17.0	52580.	1.0	2020210.		
-19.5	29240.	0.0	2069930.		
-22.5	14820.	-1.0	1972690.		
-25.5	9230.	-2.0	1777470.		
-29.0	6640.	-3.0	1546420.		
-33.0	5710.	-4.0	1322680.		
-37.5	2380.	-5.0	1126000.		
-42.5	240.	-6.0	949050.		
-47.5	0.	-7.0	805750.		
-55.0	0.	-8.0	710690.		
-65.0	0.	-9.0	654390.		
-75.0	0.	-10.0	620030.		
-85.0	0.	-11.0	597360.		
-90.0	0.	-12.0	576890.		

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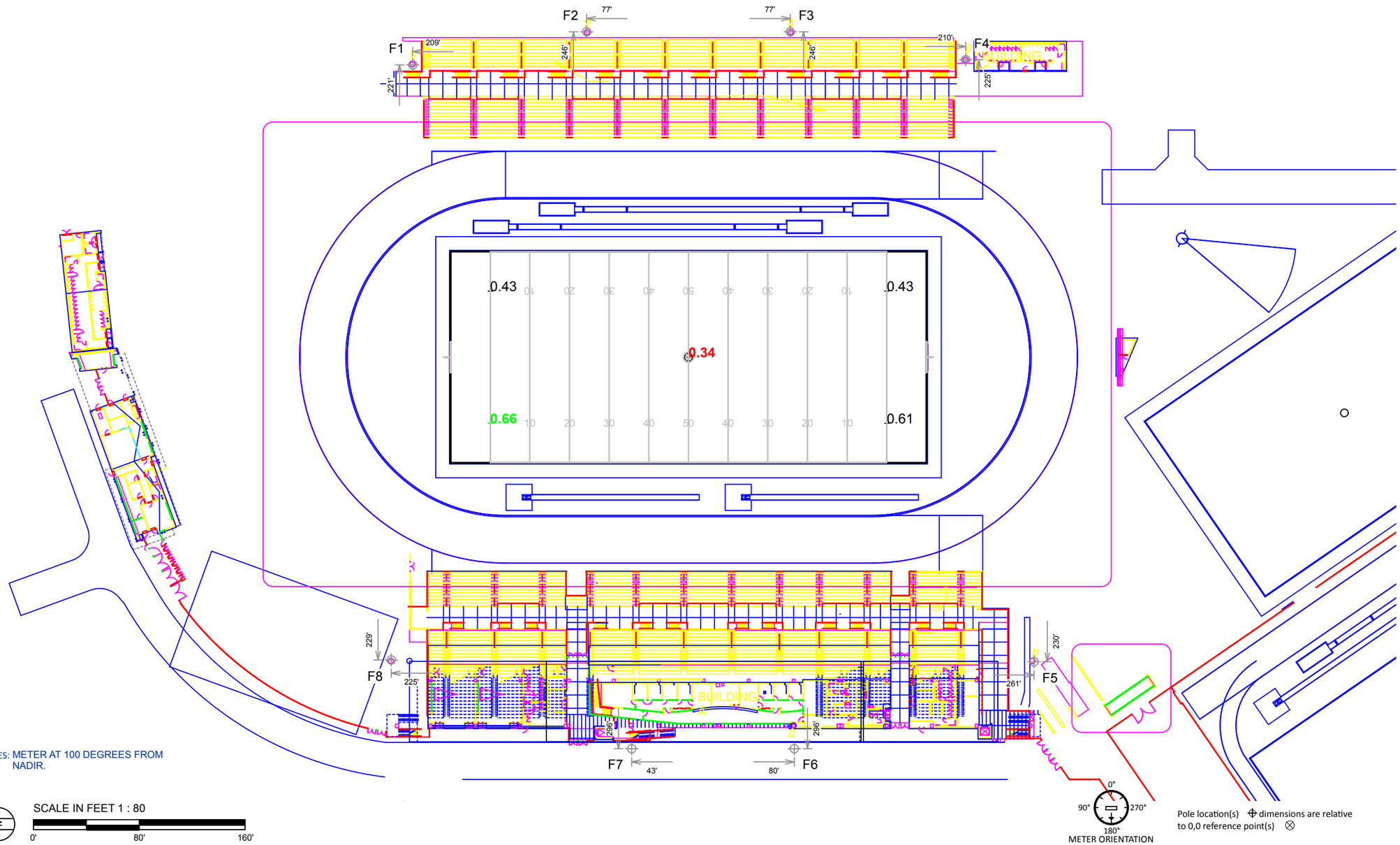
ALL CANDELA AND LUMEN VALUES IN THIS REPORT ARE BASED ON ABSOLUTE PHOTOMETRY.

Mt. SAC Athletics Complex East

Walnut,CA

EQUIPMENT LIST FOR AREAS SHOWN

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY / POLE	THIS GRID	OTHER GRIDS
2	F1, F4	100'	18'	98'	96 LED	2	0	2
				118'	228NB 1400	18	18	0
2	F2-F3	100'	29'	109'	96 LED	2	0	2
				129'	228NB 1400	18	18	0
1	F5	147'	-	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
2	F6-F7	155'	17'	172'	228NB 1400	28	28	0
1	F8	130'	17'	107'	96 LED	4	0	4
				147'	228NB 1400	28	28	0
8	TOTALS					200	184	16



GRID SUMMARY

Name:	**Sky Glow Grid**
Size:	360' x 160'
Spacing:	150.0' x 50.0'
Height:	172.0' above grade

ILLUMINATION SUMMARY

MAINTAINED VERTICAL FOOTCANDLES: 10° Tilt

	Entire Grid
Scan Average:	**0.49**
Maximum:	0.66
Minimum:	0.34
No. of Points:	5

LUMINAIRE INFORMATION

Color / CRI:	5700K - 75 CRI
Luminaire Output:	133,000 lumens
Total LLF:	1.000
No. of Luminaires:	**184**
Total Load:	257.6 kW

Lumen Maintenance

Luminaire Type	L90 hrs	L80 hrs	L70 hrs
228NB 1400	>36,000	>36,000	>36,000

Reported per TM-21-11. See cutsheets for details.

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume +/- 5% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

NOTES: METER AT 100 DEGREES FROM NADIR.

SCALE IN FEET 1 : 80

0' 80' 160'

0° 90° 270° 180° METER ORIENTATION

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊗

ENGINEERED DESIGN By: Shawn Moyer • File #167173-I-STADIUM-R-SPILL • 02-May-16

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A fundamental component of the Model Lighting Ordinance (MLO), currently under public review, divides lighting requirements into lighting zones according to environmental impact. ***See Appendix A***. The joint IDA/IES task force in charge of drafting the MLO reviewed TM-15 and realized that it could be modified to serve as a key measure of all forms of light pollution related to shielding and the direction of light, becoming an important tool to determine which luminaires are appropriate for each zone. Modifications were made, including subdividing the TM-15 uplight zone to better address artificial sky glow, and subdividing the upper downlight zone to better address glare. The IES accepted these adjustments and released TM-15-07 (revised). ***See Figure 1***.

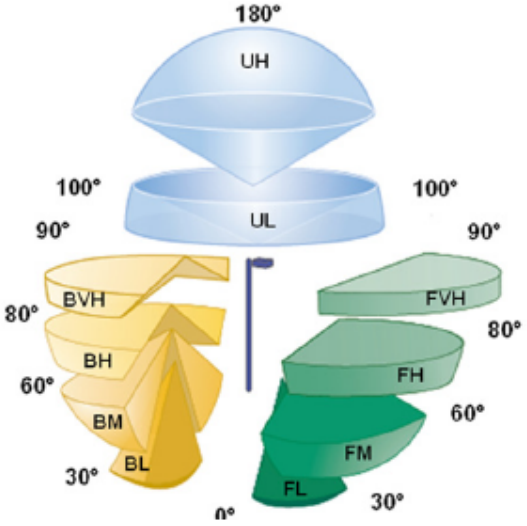


Figure 1: the revised outdoor luminaire distribution measuring system from TM-15-07 (revised)

After reviewing hundreds of candidate luminaires, the MLO task force established the three composite (BUG) ratings based on TM-15-07 (revised):

Backlight, which creates light trespass onto adjacent sites. The B rating takes into account the amount of ligwht in the BL, BM, BH and BVH zones, which are direction of the luminaire OPPOSITE from the area intended to be lighted.

Uplight, which causes artificial sky glow. Lower uplight (zone UL) causes the most sky glow and negatively affects professional and academic astronomy. Upper uplight (UH) is mostly energy waste. The U rating accounts the amount of light into the upper hemisphere with greater concern for the lower uplight angles in UL.

Glare, which can be annoying or visually disabling. The G rating takes into account the amount of frontlight in the FH and FVH zones as well as BH and BVH zones.

BUG STANDS FOR "**Backlight**", "**Uplight**" and "**Glare**." The acronym describes the types of stray light escaping from an outdoor lighting luminaire. "B" stands for backlight, or the light directed in back of the mounting pole. "U" stands for uplight, or the light directed above the horizontal plane of the luminaire, and "G" stands for glare, or the amount of light emitted from the luminaire at angles known to cause glare.

It is expected that BUG values will be published by luminaire manufacturers so lighting specifiers, designers or purchasers can tell at a glance how well a certain luminaire controls stray light or compares with other luminaires under consideration for an installation.

The BUG system was developed by the Illuminating Engineering Society (IES) to make comparing and evaluating outdoor luminaires fast, easy and more complete than older systems.

Phone: 641/673-0411
Toll-free: 800/825-6020
Fax: 641/673-5752
100 1st Ave W
PO Box 808
Oskaloosa, IA 52577

Lighting Performance: Track and Field

Horizontal

Light Levels Taken In: ☒ Footcandles ☐ Lux

Date of Readings : **3/17/2016** By: **Mike Higgins**

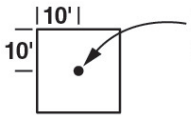
Organization Name: **Mt Sac Athletics Complex East**

Organization Contact: _____

Telephone: _____ Email: _____

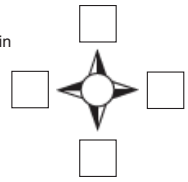
Facility Address: **1100 N Grand Ave** City, State, Zip: **Walnut, CA 91789**

30' x 30' grid



Readings taken in center of grid area.

Field Orientation:
(Please indicate field orientation in cells around diagram below.)



Pole locations, if applicable, are denoted with an "X".

		85		82	100		106	75		70			0		68			
	28	53	76	82	80	80	86	76	75	74	81	79	74	84	64	11		41
																		15.5
16	25	33	41	43	46	51	46	41	44	43	38	38	35	32	30	23	13	16
22	39	45	75	66	54	48	52	66	62	55		46		44		48	29	8.8
																		44
		36															70	
		36			41			70			54		60		110	102		

Horizontal Light Level and Field Survey Results:			
Track average light levels:	**57.6**	Date lighting system installed:	
Track uniformity:	**6.9:1**	Lighting manufacturer:	
Field average light levels:	**51.2**	Date of last group relamp:	
Field uniformity:	**7.8:1**	Annual hours of operation:	
(If outdoor) Quantity of poles:		Light meter brand:	**Gossen**
Total number luminaires:		Model number:	**Mavolux 5032C**
Number luminaires operational:		Calibration date:	**8/2015**
Lamp wattage:			
System voltage (if available):			

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TABLE 2.6 A: PROJECTED 2015 FACILITIES MASTER PLAN SEIR BUILDOUT ON 12/31/2020 2/3/2016

BASELINE IS NOP LAND USE PLAN & AUGUST 5, 2015 BUILDING LIST	Modular	Historic	ASF	GSF	Notes
BUILDING LIST TOTAL			1,087,184	1,556,421	5-Aug-15
Campus Inn (8)		h	-10,503	-14,534	
Student Life Center (9C)		h	-9,879	-16,366	
Bldg 12A	m	h	-2,153	-2,511	12B - garage (not on Building List)
Bldg (16A)	m		-2,028	-2,144	
Bldg (16B)	m		-1,212	-1,400	
Bldg (16C)	m	h	-917	-1,400	
Bldg (16D)	m	h	-1,217	-1,400	Modular Total -37,755
Bldg 17		h	-7,992	-12,025	
Bldg 18		h	-8,827	-11,814	Parking Lot Demo Quanitiies: NA
Bldg (18A)	m		-1,610	-2,400	
Bldg (18B)	m		-1,030	-1,400	
Bldg (18C)	m		2,000	2,400	
Bldg (18D)	m		2,000	2,400	
Bldg (19A)	m	h	-1,686	-2,223	
Bldg (19B)	m	h	-6,672	-9,579	
Bldg (19C)	m		-867	-946	
Modular (21A - 21J)	m		-13,032	-15,460	
Bldg 38A, 38B	m		-2,790	-3,092	
ACE Demolitions (50A - 50H)		h	-18,843	-29,082	Excluded Storage 7,210/14,158 (Bldg 51)
Stadium Bleachers			0	0	
Subtotal - Demolitions			-87,258	-122,976	

	Stories		Acres (0.60 FAR)			Acres derived from gsf/0.6 FAR if known
Student Success Center (SSC)	3	2016	0.44	23,020	32,886	
Food Service (FS)	1	2016	0.51	9,421	13,459	
Business Computer Tech (BCT)	3	2018	1.35	76,370	106,096	
Language Lab Lobby	2	2018	0.05	1,005	1,435	
Equity Center (EC)	2	2017	0.00	7,000	8,000	
Fire Training Academy (H)	1	2025	0.77	14,100	20,142	
Heritage Hall (HH)	1	2019	0.00	14,000	20,000	

Campus Center (A2)	4		2020	1.30	35,374	50,000	
PEP/Stadium/Auxiliary (D1-D6)	3		2019	32.20	79,957	195,467	HMC/Excluded Storage
Public Transit Center (I)	1		2020	0.00	2,000	7,000	
Building 43 Modular (TCC)	1	m	2016	0.00	0	0	Tilden-Coil Constructors Temorary Offices
Building 44 Modular	1	m	2016	0.00	0	0	PEP (Phase 1) Swing Space
Retail	0		2020	0.00	0	0	
Emergency Comm Tower (ECT)	0		2017	0.00	0	0	100 ft ht.
TES/CCT	0		2016	0.00	0	0	Subsurface/Under Construction
Water Tanks (WW/WT)	2			0.00	0	0	Water/Irrigation Water
New Construction					262,247	454,485	
Building 40					0	0	No GSF Increase for Renovations
Career & Tech Ed (E)					0	0	
Humanities/SS No. & E (26A/B)					0	0	
Art Center (1A)					0	0	
Library/LTC (6)					0	0	
Bookstore/DHH (9A)					0	0	
Building 12 (12)					0	0	
Tech A (28A)					0	0	
Tech B (28B)					0	0	
Bldg F2 - Classroom					0	0	
Renovations					0	0	
2015 Facilities Master Plan Update Buildout in 2020					1,262,173	1,887,930	
2015 Facilities Master Plan Update 2020 Net Increase with 5.0 Contingency					1,325,282	1,982,327	
Net Increase from Baseline					238,098	425,906	
Gym (3)	2	h			-29,155	-43,904	
Bldg 27A	1	h			-18,119	-20,116	
Bldg 27B	1	h			-1,071	-3,000	
Bldg 25C	1	h			-13,904	-17,337	
Demolition of Parking Lot F					0	0	

Demolitons by 2022			-62,249	-84,357		
Future Construction (Not Funded)					Parking Spaces Lost	
Future Instruction Zone	3	0.67	24,500	35,000	Lot D2	-148
Adult Education Zone	3	0.47	17,280	24,688		
Auditorium Zone (1,200 seats)	3	0.66	40,000	57,100		
Future Instructional Building	3	0.67	24,500	35,000	Lot G	-252
Future Continuing Education	3	0.50	18,295	26,136	Lot F	-538
Library (2A)	4	4.20	118,291	167,200	Lot F-1	-300
Campus Center (G)	2	1.30	35,374	50,000		
Temple Ave Pedestrian Bridge	0	0.00	0	0	N/A	
					Subtotal	-1,238.0
New Consruction by 2025			278,240	395,124		
2015 Facilities Master Plan Update Buildout in 2025			1,478,164	2,198,697		
2015 Facilities Master Plan Update 2025 Net Increase with 5.0 Contingency			1,552,072	2,308,632		
Net Increase from Baseline			464,888	752,211		

MEMORANDUM

TO: Gary Nellesen, Director of Facilities Planning & Management,
Mt. San Antonio Community College District

FROM: Sid Lindmark, AICP

RE: *DRAFT* 2016 CEQA Thresholds of Significance

DATE: February 24, 2016

Adoption of CEQA Thresholds of Significance by the Mt. San Antonio College Community District (the District), when it acts as the Lead Agency, is permitted by Section 15064.7 of the California Environmental Quality Act CEQA Guidelines. The CEQA Thresholds of Significance define the standard by which environmental impacts of future projects are normally determined significant or not significant. As defined in Section 15064.7 of the CEQA Guidelines, a CEQA Threshold of Significance is an identifiable quantitative, qualitative or performance level of a particular environmental effect. The exceedance of the adopted effect will normally be a significant environmental impact and within the adopted effect will normally be a less than significant effect.

The CEQA Thresholds of Significance do not exempt projects from CEQA environmental evaluation. Only Categorical or Statutory Exemptions set forth in the CEQA Guidelines can exempt projects from CEQA review.

The *DRAFT* recommended Mt. SAC 2016 CEQA Thresholds of Significance are listed in Table 10.1 and the written evidence prepared to support the recommended Thresholds of Significance is included in the Appendix. CEQA Thresholds of Significance do not provide a "safe harbor," and are subject to the "fair argument" standard. The CEQA Procedures identified in Table 10.1 also provide specific procedures for evaluations in District CEQA documents. These procedures are not Thresholds of Significance, but guidance for completing future District CEQA documents. Also included in Table 10.1 is a list of each potentially interested public agency and/or relevant regulations.

As required under CEQA, the *DRAFT* Thresholds of Significance will be circulated for public review, and public comments will be incorporated, as applicable. The Board of Trustees will be requested to independently review the final material presented, approve the 2016 CEQA Thresholds of Significance, and approve the findings by adoption of a resolution.

APPENDICES:

1. CEQA Thresholds and Procedures for Noise (Report# 15-116), Greve & Associates, LLC, December 6, 2015

2. CEQA Thresholds and Procedures for Air Quality (Report# 15-116A), Greve & Associates, LLC, December 7, 2015

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

ABBREVIATIONS					
ASF	Assignable Square Feet	fc	Foot-candles	NAHC	California Native American Heritage Commission
CalEEMod	California Emissions Estimator Model	FMP	Facility or Facilities Master Plan	NPDES	National Pollutant Discharge Elimination System
CalEPA	California Environmental Protection Agency	GHG	Greenhouse Gas Emissions	OHP	California Office of Historic Preservation
Caltrans	California Department of Transportation	GSF	Gross Square Fee	OPR	California Office of Planning & Research
CARB	California Air Resources Board	IESNA	Illuminating Engineering Society of North America	OSHA	U.S. Occupational Safety & Health Administration
CDFW	California Department of Fish & Wildlife	KSF	1,000 Square Feet	PPV	Peak Particle Velocity
CEC	California Energy Commission	LACoFD	County of Los Angeles Fire Department	SCAQMD	South Coast Air Quality Management District
CEQA	California Environmental Quality Act	LACSD	Los Angeles County Sanitation Districts	SWPPP	Stormwater Pollution Prevention Plan
CGS	California Geological Survey	LASD	Los Angeles County Sheriff's Department	SWRCB	State Water Resource Control Board
CNEL	Community Noise Equivalent	Leq	Equivalent Sound Level	TVMWD	Three Valley Municipal Water District
Cy	Cubic Yards	Lmax	Maximum Sound Level	USACE	U. S. Army Corps of Engineers
dBA	Decibel	LST	Localized Significance Thresholds	USFWS	U. S. Fish & Wildlife Services
DPW	Los Angeles County Department of Public Works	MMP	Mitigation Monitoring Plan	VOC	Volatile Organic Compound
DSA	Division of the State Architect	MTA	Los Angeles County Metropolitan Transportation Authority	WQMP	Water Quality Management Plan
ESA	Environmental Site Assessment	MT/Year CO2EQ	Metric Tonne Per Year of Carbon Dioxide (CO^2) Equivalent		

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
1. Aesthetics **CEQA Checklist Item I (a – c);**	New substantial light or glare impacts that adversely affect day or nighttime views; Light and glare impacts in sensitive biological resource areas or off-site residential areas;	New exterior building lighting for site-specific projects[2] shall not exceed 2.0 foot candles as measured at the nearest off-campus residential property line, unless such lighting is essential for safety or security at doors and building entries. Compliance with IESNA's *Sports and Recreational Area Lighting* (*IESNA RP-6-15)* standards for site-specific athletics facilities; New site-specific parking lot lighting near off-site sensitive receptors (i.e. residential uses) shall not exceed 2.0 foot-candles as measured at the nearest residential property line. New 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. The same standard applies to any development near the Reservoir Hill Cross Country (XC) Course;	California Department of Fish &Wildlife (CDFW);	If needed, case-by-case light and glare or massing studies, elevations or perspectives for potential aesthetic impacts; Special lighting plans for select major projects; Limit direct significant glare (fc) and prolonged exposure off-site;

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
2. Air Quality **CEQA Checklist Item II (a – e);**	Localized and regional air quality;	Written evidence supporting the District's air quality thresholds is identified in Footnote 4. A FMP air quality impact for multiple projects in a Master Plan occurs if SCAQMD daily construction and daily operational thresholds, due to the net trip increase from baseline to buildout (based on fall student enrollment headcount increases), are exceeded; Site-specific project thresholds for single projects are stated below); A significant <u>construction</u> or <u>operational</u> air quality impact occurs if the SCAQMD construction & operation thresholds (See Table 1 of *Report 15-116A*) are exceeded; Localized Significant Thresholds (LST) analysis is required for <u>construction</u> emissions for all site-specific projects of 56,000 ASF (80,000 gsf); when a new building is located less than 427 feet (130 meters) from a sensitive receptor off-site (See Table 3 of *Report 15-116A*); See *Report 15-116A* for evaluating Scenario 1A in support of the air quality thresholds[4]; Watering twice per day, painting with 80 g/l or less to lower VOCs for the site-specific Scenario 1A; The stated thresholds apply to project air quality impacts only (existing plus project); not to air quality cumulative impacts (existing + project + cumulative);	California Air Resources Board (CARB); California EPA (CalEPA); South Coast Air Quality Management District (SCAQMD); SCAQMD Localized Significance Thresholds (LST) standards;	All CalEEMod analyses shall include watering the project site at least twice per day during grading (Mitigation Measure (MM) - 3h)[3] If project air quality impacts are not significant, each site-specific project[2] remains subject to the applicable air quality Mitigation Measures included in the latest approved FMP MMP[3] Renovation projects are usually excluded from further CalEEMod analyses because the construction activities do not result in significant net emissions;

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
3. Biological Resources **CEQA Checklist Item III (a – f);**	Rare and endangered species;	Non-compliance with a Conservation Plan in the latest FMP for a site-specific project is a significant impact; Non-compliance with Responsible Agencies biological resources regulations, permits or environmental standards for the latest FMP or for a site-specific project is a significant impact; (See Section 1 for light and glare thresholds for biological resource areas);	U. S. Army Corps of Engineers (USACE); U. S. Fish & Wildlife Services (USFWS); State Water Resource Control Board (SWRCB); California Department of Fish and Wildlife (CDFW);	Approved Permits from Responsible Agencies; Case studies if needed; Unless there are unusual circumstances, no additional mitigation for biological resources beyond that included in the latest approved FMP MMP;
4. Cultural Resources **CEQA Checklist Item IV (a – c);**	Historic, archaeological and paleontological resources;	Non-compliance with California state law and/or an approved final cultural resource study's mitigation measures is a significant impact for a FMP or a site-specific project;	California Office of Historic Preservation (OHP); California Native American Heritage Commission (NAHC); California Assembly Bill No. 52 (AB 52); California Senate Bill No. 18 (SB 18);	Case studies; Unless there are special circumstances, no additional mitigation for cultural resources beyond that included in a case study or the latest approved FMP MMP;
5. Energy **CEQA Checklist Item V (a – c);**	Wasteful, inefficient or unnecessary consumption of energy; Renewable energy or energy efficiency measures;	Non-compliance with the District Energy Conservation Plan for site-specific projects is a significant impact;	California Energy Commission (CEC);	

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
6. Greenhouse Gas Emissions **CEQA Checklist Item VI (a - b);**	CO^2 EQ annual operational emissions and annualized construction emissions;	Written evidence supporting the District's greenhouse gas emissions (GHG) thresholds is identified in Footnote 4. Site-specific projects of less than 3.0 acres with import or export of 10,000 cy and buildings of 56,000 ASF (80,000 gsf) do not exceed the GHG standard of 3,000 MT/Year CO^2EQ for annual operational and 30-year amortized construction GHG emissions. *See Report 15-116A*; See Report 15-116A for information regarding the GHG thresholds[4]; all assumptions for Scenario 1A for air quality (i.e. watering twice per day, and painting with 80 g/l or less) are required in a GHG analysis. The stated GHG thresholds apply to GHG impacts only (existing plus project); not to GHG cumulative impacts (existing + project + cumulative) or global GHG emission impacts;	California Environmental Protection Agency (CalEPA); California Air Resources Board (CARB); CEQA Guidelines §15064.4: Determining the Significance of Impacts from Greenhouse Gas Emissions;	Same criteria as stated for air quality in Item 3: Air Quality; If GHG projects are not significant, each project remains subject to the applicable greenhouse gas Mitigation Measures in the latest approved FMP MMP (i.e. as Conditions of Approval) to reduce GHG regional emissions;
7. Hazards/Hazardous Materials **CEQA Checklist Item VII (a – g);**	Public exposure to hazardous materials	Non-compliance with an approved Phase 1 and /or Phase 2 Environmental Site Assessment (ESA) Report's recommendations is a significant impact;	Occupational Safety and Health Administration (OSHA); California Environmental Protection Agency (CalEPA); Division of the State Architect (DSA); County of Los Angeles Fire Department (LACoFD);	Case studies; Unless there are unusual circumstances no additional mitigation for hazards beyond that included in the latest approved FMP MMP;
8. Hydrology/Water Quality **CEQA Checklist Item VIII (a – c);**	Adequate facilities; Water Quality; Erosion or exceed the capacity of the Master Stormwater Drainage Plan;	Non-compliance with an applicable Stormwater Pollution Prevention Plan (SWPPP); Non-compliance with an applicable Water Quality Management Plan (WQMP);	Los Angeles County Hydrology Manual; National Pollution Discharge Elimination System (NPDES) – SWPPP – WQMP Regulations;	Case studies; Unless there are unusual circumstances, no additional mitigation for hydrology and water quality beyond that included in the latest approved FMP MMP;

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
9. Land Use/Planning **CEQA Checklist Item IX (a – b);**	Facility Master Plans; Campus Zoning Districts;	Inconsistency with the Land Use Plan (location, gsf) in the latest FMP or for a site-specific project is a significant impact; Inconsistency with a Campus Zoning District in the latest FMP is a significant impact;	Southern California Association of Government's Regional Comprehensive Plan – Housing and Land Use; Certain District facilities are exempt from local agencies land use and planning controls;	Note Categorical Exemptions for in-fill projects (Section 15332) of less than five (5) acres when Compatible with campus zoning, Section 15301 (2) for 10,000 sf increase to existing building; Section 15304 (a) for grading or trenching, Section 15323 for auditoriums; Section (b) (3) for common sense exception; Section 21061.3 for infill definition and 21071 for urban area; 21080.09 for long-range plan for higher education;

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
10. Noise **CEQA Checklist: Item X (a -b) for construction and operation;**	Traffic and construction-related noise;	Written evidence supporting the District's noise thresholds is identified in Footnote 5. Traffic generated net noise increases on public roadways equal or less than 3 dBA at 100 feet from centerline that result in noise levels at or below 65 Community Noise Equivalent Level (CNEL) in off-campus sensitive- noise- receptor areas (residential or hospitals), or at or below 70 CNEL for off-campus commercial areas, due to baseline versus buildout project net FMP trip increases are not a significant impact; Cumulative projects traffic generated noise impacts (existing plus project baseline versus existing plus project plus cumulative) are not significant if the same noise criteria stated above is applied to sensitive receptors or commercial areas off-campus; Site-specific construct-ion projects lasting one year or less for site preparation, demolition, grading and shell building construction located within 1,500 feet or more from a sensitive off-site land use have a significant construction noise impact if construction occurs outside of permitted construction hours. (Construction hours are defined in MM-5 (a) in the MMP, as 7 am to 7 pm, Monday through Saturday, excluding federal holidays); A significant construct-ion equipment vibration impact occurs for a site-specific project if a peak particle velocity (PPV) of 0.04 inches/ second or more occurs off-site in a sensitive receptor area for more than fifteen (15) minutes in any one hour. *See Report 15-116*;	Office of Planning & Research (OPR): State Noise Compatibility Guidelines;	Case-by-case studies for unusually high noise issues (i.e. on-campus for permanent new equipment, or new special events with attendance above 8,000 weekdays except for Summer Inter-sessions; Whenever feasible, classrooms, campus housing, laboratories, auditoriums and libraries shall be located in areas where the existing noise environment is 65 CNEL or less. If not, special sound attenuation measures are required; Unless there are special circumstances (i.e. biological, special projects, etc), no additional mitigation for <u>construction</u> noise beyond that included in the latest approved FMP MMP (e.g. MM-5 (a)) for new construction or renovation; If applicable, prepare a site-specific ground borne vibration study to ascertain potential building damage if rough grading occurs within 50 feet of off-site buildings in sensitive receptor areas; MM 5a: All construction and general maintenance activities, except in emergencies or unusual circumstances, shall be limited to the hours of 7 am to 7 pm Monday-Saturday excluding federal holidays. 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 (2012 FMP).

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
10. Noise (continued) **CEQA Checklist: Item X (a -b) for construction and operation;**		Site-specific projects that generate operational noise as measured at a residential property line greater than 55 dBA (L_{eq}) from 7 am to 10 pm and 50 dBA (L_{eq}) from 10 pm to 7 am have a significant noise impact. The maximum operational noise level shall not exceed 75 dBA (Lmax) during the day or 70 dBA (Lmax) during the night, nor should they exceed 55 dBA (L_{eq}) from 7 am to 10 pm and 50 dBA (L_{eq}) from 10 pm to 7 am. If the ambient noise levels are higher than the stated L_{eq} or Lmax criteria, the L_{eq} and Lmax criteria levels are increased to the ambient noise level. Noise levels below the stated criteria are not significant; Site-specific construct-ion projects lasting more than one year, with site preparation, demolition, grading and shell building construction, located within 1,500 feet or more from a sensitive off-site land use have a significant construction noise impact if: (1) Construction occurs outside of permitted construction hours. (Construction hours are defined in MM 5a in the MMP) and (2) Lmax noise levels from 7 am to 7 pm are less than 90 dBA and less than 65 dBA Leq at any off-site sensitive receptor property line and (3) From 7 pm to 7 am, the Lmax is less than 75 dBA and less than 55 dBA Leq off-site at any off-site sensitive property line; See Report 15-113;		

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
10. Noise (continued) **CEQA Checklist: Item X (a -b) for construction and operation;**		On-campus generated site-specific operational noise shall not exceed 55 dBA Leq from 7 am to 10 pm and 50 dBA Leq from 10 pm to 7 am. (The noise level criterion is applied to the closest property line of the off-campus noise sensitive receptor). A site-specific project shall also not exceed 75 dBA Lmax during the day or 70 dBA Lmax from 10 pm to 7 am at any noise sensitive land use. (If the ambient noise levels are higher than the noise criteria, the standard should be increased to the ambient noise level. *See Report 15-116*[5]);		
11. Open Space, Managed Resources and Working Landscapes **CEQA Checklist Item XI (a – d);**	Open spaces containing natural resources and working landscapes; Conversion of oak woodlands; Groundwater recharge; Soil erosion or the loss of topsoil; Special management due to hazards including unstable soil areas, liquefaction zones, areas subject to landslides and expansive soil areas;	Construction of a new building on campus located in a California Seismic Hazard Zone is a significant impact; Exposure of buildings or persons to liquefaction or subsidence safety hazards identified in an approved site-specific or FMP geology/soils report is a significant impact; Safety risks for buildings or persons due to expansive soil identified in an approved site-specific or FMP geology/soils report is a significant impact;	California Geological Survey (CGS); Division of the State Architect (DSA);	Case studies; State law and civil engineer's recommendations; Unless there are unusual circumstances, no additional mitigation for geology/soils beyond that included in the latest approved FMP MMP; Obtain assessment and recommendations from civil engineers if damage from ground-borne vibration may occur during construction;
13. Public Services **CEQA Checklist Item XIII (a);**	Fire & Police Protection;	Substantial adverse physical impacts from new construction associated with required new or physically altered facilities required for the latest FMP or for a site-specific campus project to maintain acceptable performance objectives for fire or police protection is a significant impact.	Los Angeles County Sheriff's Department (LASD); County of Los Angeles Fire Department (LACoFD);	Impacts of new facilities on physical environment only; Unless there are special circumstances, no additional mitigation measures for public services beyond those included in the latest approved FMP MMP;

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
14. Transportation **CEQA Checklist Item XIV (a – e)**[6]	Intersection, freeway ramp and main line capacity;	Non-compliance with campus parking demand projections based on parking demand and supply studies completed for the latest FMP (or every five years if no FMP has occurred beginning in 2020), based on fall student headcount enrollment and projected faculty and staff levels, is a significant impact;	2012-2035 Regional Transportation Plan/Sustainable Communities Strategy California Department of Transportation (Caltrans); Los Angeles County Metropolitan Transportation Authority (MTA); Los Angeles County Department of Public Works (DWP);	Unless there are unusual circumstances, no additional mitigation measures for traffic and parking beyond those included in the latest approved FMP MMP; Haul Routes – Specific traffic congestion analysis is required when truck hauling exceeds fifteen (15) trucks per hour and 100,000 cubic yards of earth movement for a single project. Both criteria must be met to require a Truck Haul Plan (MM 2c in 2012 MMP); Beginning in 2015, whenever there is not a traffic/parking study for a FMP, a new traffic/parking study shall be completed every five (5) years. Complete a site-specific traffic study for 56,000 ASF (80,000 gsf) or more of new construction for a site-specific project (excludes renovation) that generates more than 1,925 daily trips (waived when included in FMP in last five (5) years). Based on ITE trip rate of 27.49/ksf: Site-specific traffic and parking studies for new special events are required with projected maximum daily attendance above 15,000 weekdays (excludes Summer Intersession and campus holidays);

***DRAFT* Table 10.1**
MT. SAC 2016 CEQA THRESHOLDS OF SIGNIFICANCE – EFFECTIVE APRIL 15, 2016

Environmental Topic in the CEQA Checklist[1, 6]	Impact	Mt. San Antonio College District (District) Threshold of Significance	Agencies and Regulations	CEQA Procedures
15. Utilities/Service Systems **CEQA Checklist Item XV (a – e);**	Demand and supply availability; Water and sewer facilities and infrastructure; Landfill capacity; Compliance with solid waste regulations;	Significant physical impacts of construction of new water, wastewater treatment or storm water drainage facilities required for the latest FMP or for a site-specific project is a significant impact; Inadequate capacity of a water provider to have sufficient supplies to serve the latest FMP's or for a site-specific project's projected demand during normal, dry and multiple dry years in addition to their existing commitments is a significant impact; Inadequate capacity of a wastewater treatment provider to serve the latest FMP or site-specific project's projected demand in addition to their existing commitments is a significant impact; Non-compliance with federal, state statutes and regulations related to solid waste and lack of sufficient permitted landfill capacity to accommodate the latest FMP or a site-specific project's needs is a significant impact;	Los Angeles County Sanitation Districts (LACSD); Three Valleys Municipal Water District (TVMWD); Solid waste regulations;	Permits required from LACSD for occupied buildings (net increase in gsf) when the Utility Master Plan is updated for a FMP or every five (5) years, beginning in 2020; Consultation with County of Los Angeles Department of Public Works (DPW) for regional landfill capacity; Consultation for special circumstances; Unless there are special circumstances, no additional mitigation measures for utilities/service systems beyond those included in the latest approved FMP MMP; Request "will serve" letters from TVMWD and LACSD for projects above 80,000 gsf (56,000 ASF) when FMP or Utility Master Plan are not updated in 5 years;

District Thresholds of Significance shall be reviewed at least every five (5) years by Mt. SAC Facilities Planning & Management, beginning in 2020, and may be updated periodically by the Board of Trustees. Changes in the CEQA Guidelines, CEQA Checklist, Responsible Agency Thresholds of Significance, State Legislation, or Case Law may require changes in the District's Thresholds of Significance.

1 CEQA Guidelines outline based on the *Proposed Updates to the CEQA Guidelines: Preliminary Discussion Draft*, Office of Planning & Research, August 11, 2015.
2 Site-specific projects are individual projects previously evaluated in a certified Facilities Master Plan EIR with DSA submittal or approval (i.e. submittals may include site plans, building elevations, architectural plans and/or other technical/engineering studies).
3 Unless specified, MM refers to a mitigation measure in the latest adopted FMP Mitigation Monitoring Program (MMP).
4 *CEQA Thresholds and Procedures for Air Quality (Report #15-116A)*, Greve & Associates, LLC, December 7, 2015
5 *CEQA Thresholds and Procedures for Noise (Report #15-116)*, Greve & Associates, LLC, December 6, 2015
6 Updating Transportation Impacts Analysis in the CEQA Guidelines: Preliminary Draft of Updates to the CEQA Guidelines Implementing Senate Bill 743 (Steinberg, 2013), Governor's Office of Planning and Research, August 6, 2014.

FCI REPORT

Mt. San Antonio Community College District

Facility Name	Bldg #	Gross Area (Sq.Ft.)	Year Built	Last Renovation	Cost Model	Cost Per Sq. Ft.	Total Current Repair Cost	Replacement Value	FCI %
California Community Colleges									
Mt. San Antonio Community College District							$234,587,913	$636,882,895	36.83%
Mt. San Antonio College							$234,587,913	$636,882,895	36.83%
01A- ART CENTER	74	27,668	1973		CC Lab 1SwCP CF	$483.15	$7,846,759	$13,367,518	58.70%
01B/C- ART CNTR/GALLERY	1	17,502	1931		CC Class 1SnCP WF	$472.82	$5,169,146	$8,275,296	62.46%
02- PERFORMING ARTS CENT	2	67,401	1996		CC Aud MSwCP C-I-P	$491.58	$940,077	$33,132,310	2.84%
03- PE CENTER/GYM	3	43,904	1950	1963	CC Gym MSwCP C-I-P	$585.31	$13,476,459	$25,697,011	52.44%
04- ADMINISTRATION	4	43,251	1965		CC Admin MSwCP C-I-P	$398.60	$9,832,129	$17,239,416	57.03%
06- LIBRARY	6	101,652	1963	1999	CC Lib MSwCP C-I-P	$504.32	$26,866,639	$51,264,120	52.41%
07- SCIENCE SOUTH	7	41,661	1960	2008	CC Class MSwCP P&B	$420.66	$10,396,652	$17,525,949	59.32%
08- CAMPUS INN	8	14,534	1941		CC SC 1SnCP WF	$537.71	$4,546,407	$7,814,641	58.18%
09A- BOOKSTORE/AUX. SERV	115	21,311	1969		CC SC 1SwCP CF	$536.06	$6,495,465	$11,423,975	56.86%
09B- STUDENT SERVICE CEN	105	56,730	1994		CC Admin MSnCP CF	$447.23	$413,994	$25,370,791	1.63%
09D- STUDENT SERVICES-9D	116	3,599	1977		CC Modular WF	$322.60	$1,365,834	$1,161,073	117.64%
10- FOUNDERS HALL	10	8,452	1932	2007	CC Admin 1SnCP WF	$472.40	$2,490,965	$3,992,894	62.38%
104- BRACKETT FIELD	104	7,680	1991		CC Trade Shop	$257.28	$313,056	$1,975,834	15.84%
11- SCIENCE NORTH	11	27,786	1960	2008	CC Lab 1SnCP CF	$523.64	$8,664,384	$14,549,305	59.55%
11A- ADMIN SERV TEMP	159	2,000	2002		CC Modular WF	$322.60	$0	$645,220	0.00%
12- COUNSELING SUPPORT	12	15,670	1963		CC Class 1SwCP CF	$469.30	$0	$7,353,931	0.00%
12A- FOUNDATION OFFICE	77	2,511	1949		CC House 1SnCP WF	$384.18	$592,281	$964,676	61.40%
13- DESIGN TECH CNTR	13	62,837	2012		CC Class MSwCP P&B	$420.66	$0	$26,434,269	0.00%
16A- EXPRESS STOP	117	2,144	1997		CC Modular MF	$344.95	$28,625	$739,594	3.87%
16B-ADMIN TEMP	156	1,400	2002		CC Modular WF	$322.60	$10,893	$451,654	2.41%
16C-VETERANS RESOURCE CT	157	1,400	2002		CC Modular WF	$322.60	$0	$451,654	0.00%
16D- COMP LAB STU SVC	158	1,400	2002		CC Modular WF	$322.60	$15,593	$451,654	3.45%
17- BUSINESS EDUCATION	17	12,025	1949	1993	CC Class 1SnCP CF	$513.84	$3,634,358	$6,178,926	58.82%
18- BUSINESS EDUCATION	18	11,814	1953	1993	CC Class 1SnCP CF	$513.84	$3,568,095	$6,070,506	58.78%
18A-TEMP. BUSINESS	168	2,400	2006		CC Modular WF	$322.60	$0	$774,264	0.00%
18B-TEMP. BUSINESS	169	1,440	2006		CC Modular WF	$322.60	$0	$464,558	0.00%
19B- FAMILY/CONSUMER SCI	19	9,579	1952		CC Lab 1SnCP CF	$523.64	$3,027,751	$5,015,756	60.36%

FCI REPORT

Mt. San Antonio Community College District

Facility Name	Bldg #	Gross Area (Sq.Ft.)	Year Built	Last Renovation	Cost Model	Cost Per Sq. Ft.	Total Current Repair Cost	Replacement Value	FCI %
19C- MOUNTIE GRILL	60	946	1959		CC SC 1SnCP CF	$555.31	$299,755	$525,333	57.06%
20- BUSINESS/DSPS	20	9,742	1948		CC Lab 1SnCP CF	$523.64	$3,068,203	$5,101,106	60.15%
21A- TEMPORARY BLDG	174	2,160	2006		CC Modular WF	$322.60	$0	$696,838	0.00%
21B - TEMPORARY BLDG	175	2,160	2006		CC Modular WF	$322.60	$0	$696,838	0.00%
21C - TEMPORARY BLDG	176	2,160	2006		CC Modular WF	$322.60	$0	$696,838	0.00%
21E - REST ROOMS	197	1,500	2013						
21F - CLASSROOM	192	1,480	2013						
21G - CLASSROOM	193	1,500	2013						
21H - CLASSROOM	194	1,500	2013						
21I - CLASSROOM	195	1,500	2013						
21J - CLASSROOM	196	1,500	2013						
23- COLLEGE SERVICES	23	17,500	2003		CC Trade Shop	$257.28	$0	$4,502,225	0.00%
23A- DATA CENTER	177	7,154	2008		CC Admin 1SnCP CF	$470.86	$0	$3,368,532	0.00%
26A- HUMANITIES NORTH	45	50,687	1967	2008	CC Class MSwCP C-I-P	$438.04	$14,641,950	$22,203,440	65.94%
26B- HUMANITIES EAST	47	23,935	1967	2008	CC Class MSwCP C-I-P	$438.04	$6,096,570	$10,484,727	58.15%
26C- PLANETARIUM	118	3,704	1967		CC Lab 1SnCP CF	$523.64	$1,155,002	$1,939,488	59.55%
26D- HUMANITIES SOUTH	46	66,175	1967	2008	CC Class MSwCP C-I-P	$438.04	$19,116,637	$28,987,959	65.95%
27A- PE/WELLNESS CTR	27	20,116	1962	1990	CC SC 1SwCP CF	$536.06	$5,980,101	$10,783,383	55.46%
27B- POOL BUILDING	119	3,000	1970		CC Pool House CF	$700.60	$845,257	$2,101,800	40.22%
27C- PE CENTER	28	17,337	1960		CC lockrm Bld C-I-P	$599.44	$5,927,675	$10,392,665	57.04%
28A- TECHNOLOGY CENTER	65	47,400	1971	1991	CC Trade Shop	$257.28	$12,768,467	$12,194,598	104.71%
28B- TECHNOLOGY CENTER	66	80,743	1971	1973	CC Class MSwCP C-I-P	$438.04	$21,692,817	$35,369,471	61.33%
29- CENTRAL PLANT	24	8,953	2014						
29A- BUNGALOW	145	1,550	2002		CC Modular WF	$322.60	$12,060	$500,046	2.41%
29B- CENTRAL PLANT SERV	25	534	2014						
30- COMMUNITY EDUCATION	30	8,101	1993		CC Modular WF	$322.60	$800,195	$2,613,464	30.62%
31A- COMM. ED. ESL	172	2,880	2007		CC Modular WF	$322.60	$0	$929,117	0.00%
31B- COMM. ED. ESL	173	2,880	2007		CC Modular WF	$322.60	$0	$929,117	0.00%
32- COMM. ED. CENTER/ESL	32	2,847	1997		CC Modular WF	$322.60	$38,011	$918,471	4.14%
35- COMM. ED. CENTER/ESL	35	2,880	1997	2001	CC Modular WF	$322.60	$38,451	$929,117	4.14%

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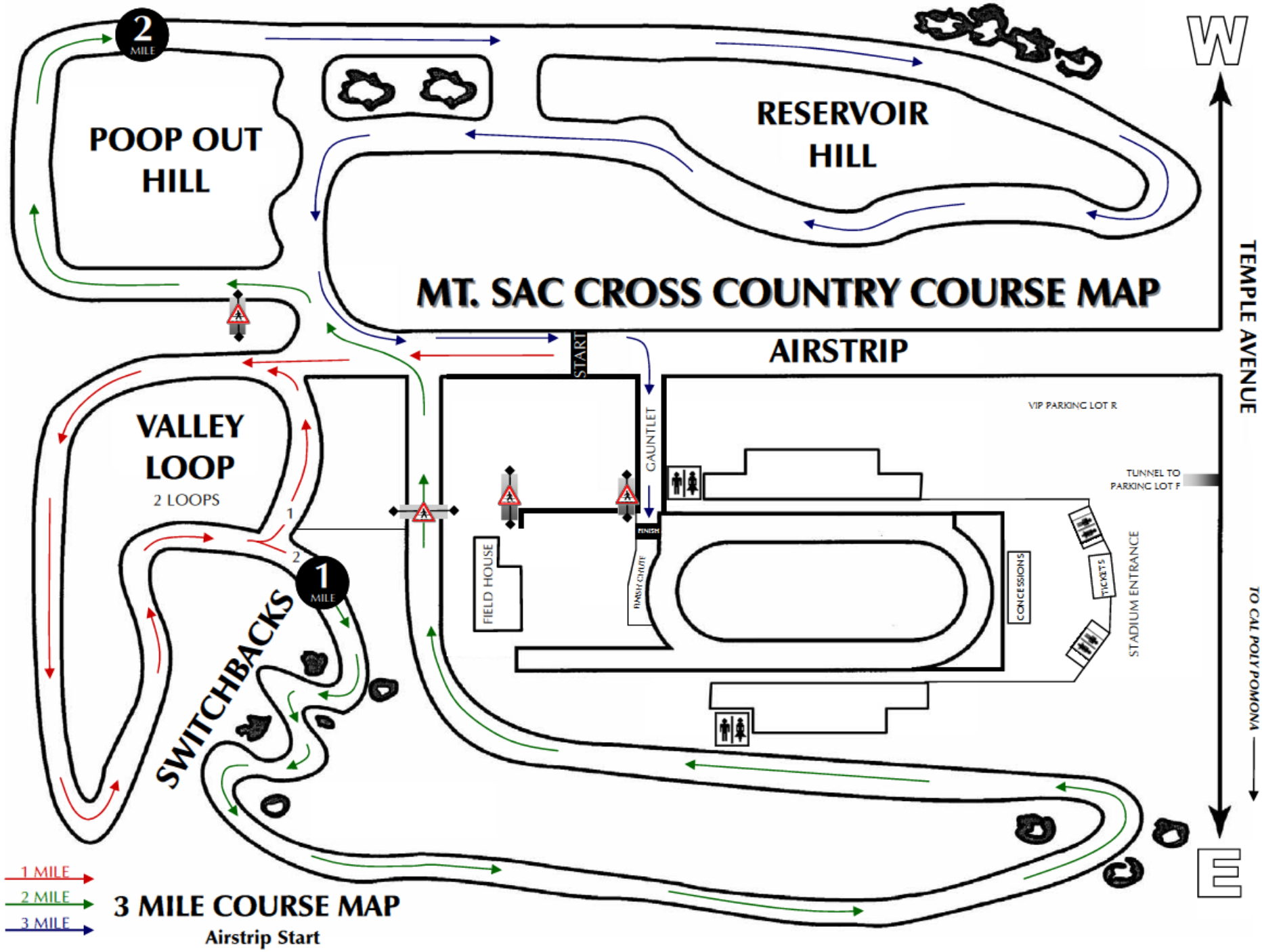
Facility Name	Bldg #	Gross Area (Sq.Ft.)	Year Built	Last Renovation	Cost Model	Cost Per Sq. Ft.	Total Current Repair Cost	Replacement Value	FCI %
36- COMM. ED. CENTER/ESL	36	1,414	1997		CC Modular WF	$322.60	$18,878	$456,171	4.14%
38A- COMM. ED.	142	1,546	2000		CC Modular WF	$322.60	$12,029	$498,755	2.41%
38B- COMM. ED.	143	1,546	2000		CC Modular WF	$322.60	$12,029	$498,755	2.41%
40- ADMIN TEMPORARY	40	24,667	1997	1999	CC Trade Shop	$257.28	$5,108	$6,346,079	0.08%
44- TILDEN COIL CONSTRUC	140	2,833	1999		CC Modular WF	$322.60	$22,043	$913,954	2.41%
45- KINESIOLOGY/ATHLETIC	141	20,467	2000	2011	CC Class 1SwCP P&B	$428.28	$0	$8,765,607	0.00%
46- EMERGENCY OPERATIONS	64	4,052	2014						
47- MAINTENANCE/FACILITI	62	21,061	1968		CC Trade Shop	$257.28	$5,678,938	$5,418,363	104.81%
48- RECEIVING/TRANSPORT	63	34,450	1968		CC Trade Shop	$257.28	$9,280,035	$8,862,952	104.71%
50F- STADIUM PRESS BOX	50	1,845	1948	1959	CC Press Box as part	$242.96	$307,197	$448,243	68.53%
50G- STADIUM FIELD HOUSE	75	22,707	1973		CC lockeroom Bldg.	$591.18	$6,675,307	$13,423,924	49.73%
50H- STADIUM CONCESSIONS	61	643	1948		CC SC 1SnCP CF	$555.31	$203,744	$357,071	57.06%
51- ATHLETIC STORAGE	179	14,158	2010		CC SHED SF	$75.99	$0	$1,075,866	0.00%
60- SCIENCE LABORATORY	164	63,761	2006		CC Lab MSwCP SF	$483.62	$0	$30,835,457	0.00%
61- MATH AND SCIENCE	178	65,825	2009		CC Class MSwCP P&B	$420.66	$0	$27,691,261	0.00%
66- LANGUAGE CENTER	160	44,457	2004		CC Class MSwCP P&B	$420.66	$0	$18,702,171	0.00%
67A- HEALTH CAREERS CNTR	161	31,990	2004		CC Class MSwCP P&B	$420.66	$0	$13,457,553	0.00%
67B- HEALTH CAREERS CNTR	162	10,650	2002		CC Class MSwCP P&B	$420.66	$0	$4,480,242	0.00%
69- WELDING/AIR CONDITIO	165	18,922	2005		CC Lab 1SwCP SF	$495.80	$0	$9,381,149	0.00%
70- CDC ADMINISTRATION	70	6,039	2014						
71- CDC INFANTS & TOD	71	8,122	2014						
72- CDC PRESCHOOLERS	72	10,232	2014						
73- CDC ADULT INSTRUCT	73	10,278	2014						
80- AGRICULTURAL SCI COM	80	41,875	2011		CC Lab MSwCP SF	$483.62	$0	$20,251,169	0.00%
9C- STUDENT CENTER	9	16,366	1962		CC SC 1SwCP CF	$536.06	$4,229,149	$8,773,158	48.21%
F1- HORTICULTURE UNIT/G3	81	2,389	1959		CC Shed WF-El	$96.54	$329,645	$230,634	142.93%
F2A- FARM OFFICES	82	2,113	1971		CC Trade Shop	$257.28	$582,621	$543,612	107.18%
F2B- HORTICULTURE STORAG	83	3,000	1960		CC Trade Shop	$257.28	$808,131	$771,810	104.71%
F3- EQUIPMENT BARN	84	6,820	2003		CC Shed WF-El	$96.54	$0	$658,403	0.00%
F3A- OLD DAIRY UNIT	85	2,666	1971		CC House 1SnCP WF	$384.18	$628,842	$1,024,224	61.40%

FCI REPORT

Mt. San Antonio Community College District

Facility Name	Bldg #	Gross Area (Sq.Ft.)	Year Built	Last Renovation	Cost Model	Cost Per Sq. Ft.	Total Current Repair Cost	Replacement Value	FCI %
F4A- SWINE MARKET PENS	86	2,767	1971		CC Trade Shop	$257.28	$745,366	$711,866	104.71%
F4B- SWINE FARROWING	87	3,667	2010		CC Trade Shop	$257.28	$0	$943,409	0.00%
F5- VIVARIUM	88	3,193	1971		CC Trade Shop	$257.28	$860,120	$821,463	104.71%
F5B- SMALL ANIMAL CARE	89	1,384	2010		CC Class 1SnCP CF	$513.84	$0	$711,155	0.00%
F6A- BREEDING BARN	90	1,800	1971		CC Trade Shop	$257.28	$484,878	$463,086	104.71%
F6C-HAY BARN	91	2,060	2010		CC Class 1SnCP CF	$513.84	$0	$1,058,510	0.00%
F7- EQUIPMENT TECH UNIT	92	4,427	1971		CC Trade Shop	$257.28	$1,195,410	$1,138,934	104.96%
F9- LIVESTOCK PAVILLION	93	12,300	2003		CC SHED SF	$75.99	$176,430	$934,677	18.88%
G2- GREENHOUSE	188	1,824	1963		CC Greenhouse	$50.06	$102,799	$91,309	112.58%
G4- GREENHOUSE	189	4,087	1998		CC Greenhouse	$50.06	$0	$204,595	0.00%
G5- GREENHOUSE	183	4,512	2010		CC Greenhouse	$50.06	$52,501	$225,871	23.24%
G7- GREENHOUSE	190	1,200	1999		CC Greenhouse	$50.06	$0	$60,072	0.00%


2 MILE
POOP OUT HILL
RESERVOIR HILL
W
MT. SAC CROSS COUNTRY COURSE MAP
TEMPLE AVENUE
AIRSTRIP
START
GAUNTLET
VIP PARKING LOT R
TUNNEL TO PARKING LOT F
VALLEY LOOP
2 LOOPS
1
2
1 MILE
FIELD HOUSE
FINISH
CONCESSIONS
TICKETS
STADIUM ENTRANCE
SWITCHBACKS
TO CAL POLY POMONA
E
1 MILE
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3 MILE COURSE MAP
Airstrip Start

Appendix G

ENVIRONMENTAL CHECKLIST FORM
Proposed Amendments – October 14, 2009

1. Project Title: 2015 Mt. San Antonio College Facilities Master Plan Update

2. Lead Agency Name and Address:

3. Contact Person and Phone Number:

4. Project Location:

5. Project Sponsor's Name and Address:

6. General Plan Designation:

7. Zoning:

8. Description of the Project: (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)

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

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

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below(■) 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.

X	Aesthetics		Hazards & Hazardous Materials		Recreation
	Agricultural and Forest Resources	X	Hydrology/Water Quality	X	Transportation/Traffic
X	Air Quality	X	Land Use/Planning		Utilities/Service Systems
X	Biological Resources		Mineral Resources	X	Mandatory Findings of Significance
X	Cultural Resources	X	Noise		
X	Geology/Soils		Population/Housing		
X	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.	
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.	
I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.	
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.	X
I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed in an earlier EIR or NEGATIVE DEDCLARATION 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 project, nothing further is required.	

Signature Date

Printed Name 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
b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?		X		
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
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zonIng for, or cause rezoning of, forest land (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
d) Result in loss of forest land or conversion of forest land to non-forest use?				X
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 forest land to non-forest use?				X
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
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation.		X		
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	
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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		
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		
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		
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
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
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
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		
b) Cause a substantial adverse change in the significance of an archaeological resources pursuant to Section 15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
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
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

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
(ii) Strong seismic ground shaking?		X		
(iii) Seismic-related ground failure, including liquefaction?		X		
(iv) Landslides?				X
(b) Result in substantial soil erosion or the loss of topsoil?				X
(c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
(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
(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
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
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				X
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
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
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
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
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
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
g) Impair implementation of, or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death				

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
involving wildland fires, including where wildlands are adjacent to urbanized areas Xor where residences are intermixed with wildlands?				
9. **HYDROLOGY AND WATER QUALITY**. Would the project:				
a) Violate any water quality standards or waste discharge requirements?		X		
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
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		
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
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	
f) Otherwise substantially degrade water quality?		X		
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
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
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
j) Inundation by seiche, tsunami, or mudflow?				X
10. **LAND USE AND PLANNING**. Would the project:				
a) Physically divide an established community?				X
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
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?				X
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

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
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
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	
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
d) A substantially temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			X	
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
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
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
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
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
b) Police protection?			X	
c) Schools?				X
d) Parks?				X
e) Other public facilities?				X
15. **RECREATION.**				
a) Would the project increase the use of existing neighborhood or regional parks				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				
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
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		
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 roads or highways?		X		
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?				X
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)?				X
e) Result in inadequate emergency access?				
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
17. **UTILITIES AND SERVICE SYSTEMS**. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?			X	
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
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
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
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
f)) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X

Issues and Supporting Information	Potentially Significant Impact	Less than Significant With Mitigation Incorporated	Less Than Significant Impact	No Impact
g) Comply with federal, state, and local statues and regulations related to solid waste?				X
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		
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	
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X
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 Francisians Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.				

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*
18B	Modular Building 18B*
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
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 / Transporataion
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
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	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

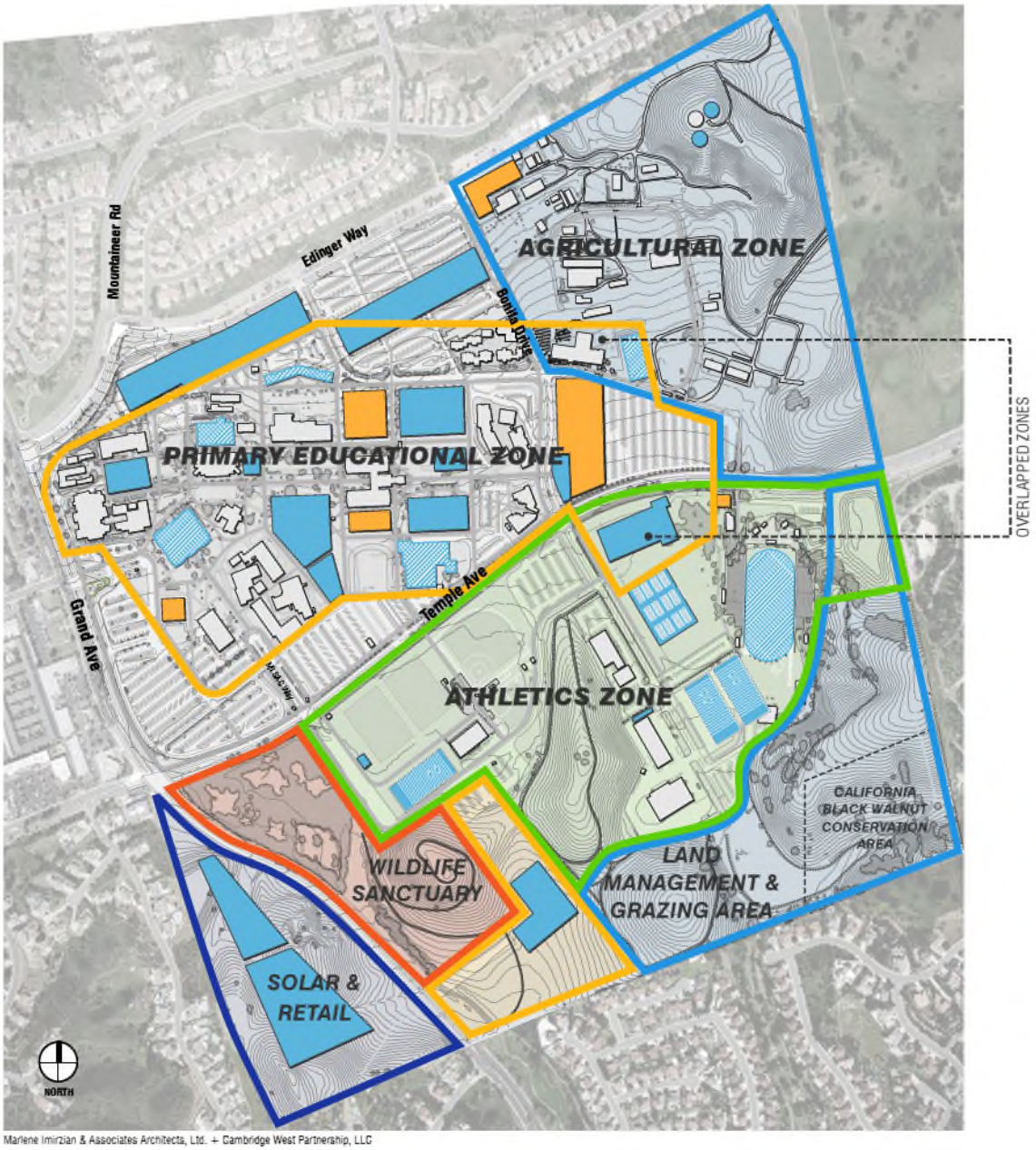
** No official building name exists*

LEGEND

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

0 FEET 600

Exhibit 7
Campus Zoning Plans



Marlene Imirzian & Associates Architects, Ltd. + Cambridge West Partnership, LLC

Table 1.0
2016 MITIGATION MONITORING PROGRAM
2015 Facility Master Plan and Physical Education Projects Final SEIR SCH 2002041161 – Appendix L1
CEQA Guidelines Section 15097
May 6, 2016

Notes: Includes all mitigation measures in 2012 FMP w/revisions and additions for 2015 FMPU
Titles revised to conform to revised CEQA Checklist, OPR, August 2016
All prior indices for mitigation measures have been changed

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 ensure that facilities are not illuminated unless desired. Lighting levels and design shall comply with the recommendations of the Illuminating Engineers Society Standards of North America (IESN) *Recommended* Practice *for Sports and Recreational Area Lighting* (IESNA RP-6-01), Facilities Planning & Management shall monitor 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 Facility Master Plan Landscape 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 (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	Assure light and glare is minimized outside of the athletic fields.	Facilities Planning & Management

facilitate spectators leaving the facility, cleanup, nighttime maintenance and other closing activities. Facilities Planning & Management shall ensure compliance.		
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, Wednesday nights for student research activities. Facilities Planning & Management shall ensure compliance.	Minimizing conflicts with observatory activities and soccer field lighting.	Facilities Planning & Management
AES-05. All new construction contracts shall implement those provisions of the *Landscape Plan* applicable to their projects. Facilities Planning & Management shall monitor compliance.	Ongoing provision for consistency between projects and the campus Landscape Plan.	Facilities Planning & Management
AES-06. 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.	Ongoing provision for consistency between projects and the local built environment.	Facilities Planning & Management
AES-07. 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 xxx 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.	Project compliance to reduce light or glare impacts off-campus.	Facilities Planning & Management
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	Ongoing compliance with Rule 403 to reduce air quality emissions.	Purchasing

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 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	Ongoing compliance with CARB and EPA regulations to reduce air quality emissions.	Purchasing

& 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.	Ongoing compliance with recommendations to reduce air quality emissions.	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 monitor compliance.	Ongoing compliance with recommendations to reduce vehicle trips during peak hours.	Facilities Planning & Management
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.	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 shall ensure compliance.	Ongoing compliance with recommendations to reduce diesel engine air quality emissions.	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	Ongoing compliance with SCAQMD regulations to reduce particulate emissions.	Facilities Planning & Management

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.	Ongoing compliance with SCAQMD regulations to reduce VOC/ROG particulate emissions.	Purchasing
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.	Ongoing compliance with SCAQMD regulations for construction NOx emissions.	Purchasing
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.	Compliance with SCAQMD permits for operation of fire suppression activities at the Training Academy.	Fire Technology
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.	Minimize light intrusion in open space areas.	Facilities Planning & Management
	Project compliance with CDFG regulations for rare	Facilities Planning & Management

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 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, 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.	and sensitive biological resources.	
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 CDFG 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 CDFG regulations for rare and sensitive biological resources.	Project compliance with CDFG regulations for rare and sensitive biological resources.
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	Project compliance with CDFG regulations for rare and sensitive biological resources. Mitigation Measure 1b. above provides the Conservation Area for replacement of California black walnut trees removed elsewhere on campus.	Facilities Planning & Management

Planning, September 2012). Replacement habitat shall be completed prior to project completion. The required mitigation acreage for replacement walnut trees is 2.018 acres. The replacement specimens shall be preserved, maintained and monitored for a period of five years to ensure vitality. Facilities Planning & 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. All recommendations of the final biological report shall be completed. Facilities Planning & Management shall monitor compliance.	Project compliance with CDFG 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 monitor compliance.	Project compliance with CDFG 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 25-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 conform that no species on the California Invasive Plan Council (Cal-IPC) list are present in the plan. Facilities Planning & Management shall monitor compliance.	Project compliance to reduce impacts on wetland habitat areas.	Facilities Planning & Management
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.	Project compliance to reduce intrusion of construction equipment into sensitive adjacent habitats.	Facilities Planning & Management
BIO-03. 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. These trees should be	Compliance with impacts on California Balck Walnut trees.	Facilities Planning & Management

planted in the approved California Black Walnut Management Plan area and preserved, maintained and monitored for 2 years. Planning & Management shall ensure compliance.		
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 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 monitor compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	Facilities Planning & Management
BIO-13. Construction noise adjacent to existing 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 monitor compliance.	Compliance with efforts to reduce impacts on a threatened or special status bird species.	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 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	Actions if cultural resources are discovered during grading.	Facilities Planning & Management

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.	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 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.	Assuring future projects have been assessed for cultural resource impacts	Facilities Planning & Management

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		Facilities Planning & Management
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		Facilities Planning & Management

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.	Project compliance with CEQA regulations and SHPO 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 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.	Project compliance with CEQA regulations and SHPO guidelines for historic resources.	Facilities Planning & Management
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.	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 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	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning & Management

(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.	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 2010 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 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	Ongoing compliance with CalGreen regulations to reduce cumulative GHG emissions in the SCAB.	Facilities Planning & Management

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.	Ongoing compliance with OSHA and SCAQMD regulations for ACBM materials or lead-based paint hazards.	Facilities Planning & Management
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.	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 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.	Ongoing compliance with County of Los Angeles Fire Department 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 LACHA. Fire Technology shall ensure compliance.	Compliance with OSHA, CALEPA and LACHA requirements for operation of fire suppression activities at the Fire Training Academy.	Fire Technology
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 April	Providing adequate drainage facilities for all future development on campus.	Facilities Planning & Management

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.	Ongoing provisions for compliance with Water Quality Management Plans.	Facilities Planning & Management
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.	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 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.	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 Los Angeles Regional Water Quality Control Board. Fire Technology shall ensure compliance.	Compliance with RWQCB permits for wastewater disposal for Fire Training Academy fire suppression activities.	Fire Technology

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.	Ongoing review of consistency between individual projects and 2015 Facility Master Plan Update	Facilities Planning & Management
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.	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 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.	Resolving inconsistencies between General Plan designations and campus land uses.	City of Walnut
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.	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. The following Master Plan elements shall be revised to conform to the 2015 Facility Master Plan Update: (1) Land Use Plan, (2) Conservation Plan, and the (3) Circulation/Parking Plan. Planning Facilities & Management shall ensure compliance.	Creating conformity between 2015 Facility Master Plan Update and prior planning documents.	Facilities Planning & Management
LU-06. Prior to building construction for the Fire Training Academy, the 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-07. 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.		
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 monitor 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 offsite residences. Facilities Planning & Management shall monitor 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 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.	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 the parking structure is limited to the hours of 7 am to 7 pm Monday-Saturday. Planning & Management shall monitor compliance.	Ongoing limitations on location of concrete pouring to minimize noise impacts on adjacent offsite residential areas.	Facilities Planning & Management
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.	Ongoing restriction on vehicle alarms to minimize noise impacts on adjacent areas.	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 offsite in a sensitive receptor area shall not exceed 15 minutes in any one hour. Facilities Planning & Management shall monitor compliance.	Minimization of vibration offsite for sensitive receptors from construction equipment operations.	Facilities Planning & Management
11. Open Space, Managed Resources 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.	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	Ongoing during construction	Facilities Planning & Management

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.	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 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.	Ongoing communication of campus circulation and parking conditions for sheriff vehicular response.	Public Safety
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	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs at buildout.	Facilities Planning & Management
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	Ongoing provision for maintaining safety for personnel and equipment to serve campus needs during construction.	Facilities Planning & Management

(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.	Ongoing provision for maintaining safety for personnel and equipment for any future new special events. None are currently planned. -	Facilities Planning & Management
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.	Provision for maintaining safety for guests, athletes, students, faculty , staff and volunteers during the event.	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		
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 required traffic improvements by 2020	Facilities Planning & Management
TP-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 1/1/2020. 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	Complete required traffic improvements by 2020	Facilities Planning & Management

an EB right-turn overlap phase (i.e. a right-turn protected arrow). The City of Walnut shall ensure compliance.		
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 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 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.	Complete required traffic improvements by 2020	Facilities Planning & Management
TR-08. A third NB through-lane is required att he Grand Avenue and Mountaineer Road intersection. However, insufficient 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.	Complete required traffic improvements by 2025	Facilities Planning & Management
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 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/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	Complete required traffic improvements by 2025	Facilities Planning & Management

City of Walnut is the Lead Agency.		
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 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 (#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 required traffic improvements by 2025	Facilities Planning & Management
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 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 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 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	Implement a traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management

event websites. Facilities Planning & Management shall ensure compliance.		
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.	Distributing information to all registrants, media and the public on parking availability.	Facilities Planning & Management
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.		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, 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 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. 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 traffic and parking plan that provides adequate parking, minimizes congestion and provides opportunities for shuttle use.	Facilities Planning & Management

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.	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 Olympics Track & Field is Plan B in Section 3.11.2. The plan shall be refined when the Shuttle Route system is finalized (i.e. SE-04). 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 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.	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 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 will result in	If feasible, revising the preliminary schedule to reduce traffic congestion weekdays during the pm peak period.	Facilities Planning & Management

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.	Consideration of lower posted travel speeds on Temple Avenue when a signal is warranted at Lot F and Temple Avenue.	City of Walnut
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 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.	Studies for new Special Events other than the 2020 Olympics Track & Field Trials	Facilities Planning & Management
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.		Facilities Planning & Management

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 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	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 monitor 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 Public Safety Department and approved by Facilities Planning & Management. Facilities Planning & Management shall monitor 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 monitor 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, short-cut attractions, and reduce hazards during demolition and construction. Facilities Planning & Management shall monitor compliance.	Ongoing provisions for construction security for individual projects and assurance of public safety.	Facilities Planning & Management
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	Ongoing provision for public safety from truck hauling activities near pedestrian paths.	Facilities Planning & Management

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.	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 at each project access on campus shall be reviewed with respect to Caltrans standards. Facilities Planning & Management shall monitor 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 construction plans for the project. Facilities Planning & Management shall monitor compliance.	Provision for required onsite traffic signs and striping.	Facilities Planning & Management
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.	Provision for adequate transportation facilities and services for buildout of the 2015 Facility Master Plan Update.	Facilities Planning & Management
TR-41 to TR-51 are requirements for public transit impacts		
TR-41. The Bursar 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 monitor compliance.	Ongoing provision for bus passes for campus students.	Auxiliary Services
TR-42. Schedule/fee information for Foothill Transit (including the Go Pass), Metrolink and the County of Los Angeles Metropolitan Transit Authority shall be made available for students for each semester. Auxiliary Services shall monitor compliance.	Ongoing provision for up to date information on area transportation services.	Auxiliary Services
TR-43. The Campus Master Plan Coordination Team (CMPCT) shall review the preliminary site plan for the Public Transportation Center and recommend any	Ongoing provision for adequate pedestrian paths and vehicular circulation near the Public Transit Center.	Facilities Planning & Management

changes needed in the Pedestrian Circulation and Vehicular Circulation exhibits in the 2015 Facility Master Plan Update to provide safe pedestrian paths, including Americans with Disability Act requirements for students to access the Public Transportation Center. Facilities Planning & Management shall ensure compliance.		
TR-44. The Student Senate shall be given an opportunity to review and comment on all campus public transit center projects prior to CMPCT final review. Facilities Planning & Management shall ensure compliance.	Provision for student comment on the Public Transit Center facilities and services.	Facilities Planning & Management
TR-45. The Mt. San Antonio College District shall complete a Memorandum of Understanding (MOU) with participating transit agencies for campus public transit center projects. 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 Transit Center.	Facilities Planning & Management
TR-46. 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-47. The Executive Board of Associated Students shall be given an opportunity to review and comment on campus public transit center issues prior to CMPCT final review. Facilities Planning & Management shall ensure compliance.	Provide opportunities for student feedback on preliminary plans for the public transit center.	Facilities Planning & Management
TR-48. The College shall meet with Cal Poly to discuss a joint Cal Poly campus shuttle service by July 1, 2017. Facilities Planning & Management shall monitor compliance.	Explore opportunities for shuttle use between Mt. SAC and Cal Poly.	Facilities Planning & Management
TR-49 to TR-55 are requirements for other transportation issues		
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.	Provision for required traffic controls along Temple Avenue at the Lot F intersection during special events when the Lot F intersection is not signalized.	Athletic Department 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 monitor 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, driver, 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, which signalization may cause delays. Facilities Planning & Management shall monitor compliance.	Assure pedestrian and vehicular safety during truck hauling activities for the West Parcel Solar project.	Facilities Planning & Management

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 advance 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 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 Public Works Department of the City of Walnut shall monitor compliance.	Provision for required vehicle turning movement restrictions for vehicular safety.	City of Walnut
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.	Truck hauling for PEP (Phase 1, 2)	Facilities Planning & Management
TR-54. 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.		
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.	Update emergency evacuation plans for immediate campus evacuation of all parked vehicles.	Facilities Planning & Management
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,	Minimizing traffic impacts from truck hauling.	Facilities Planning & Management

truck load capacity, and pieces of construction equipment on-site 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.		
TR-57. Beginning in 2015, whenever a traffic/parking study for a Facilities Master Plan 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
TR-58. The Public Safety Department shall update their evacuation plans for an extreme emergency by Janury 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.	Having a current plan for minimizing the time required to evacuate vehicles and personnel away from campus in an emergency evacuation.	Facilities Planning & Management
15. Utilities/Service Systems		
SS-01: Within six months of certification of the 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.	Resolution of phasing issues related to infrastructure, new facilitates and student enrollment increases.	Facilities Planning & Management
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	Ongoing provision for ample water supplies on campus.	Facilities Planning & Management

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.	Ongoing provision for ample water supplies on campus.	Facilities Planning & Management
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.	Ongoing provision for adequate sewer line capacity on campus.	Facilities Planning & Management
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	Provision for adequate electrical system for buildout of the 2015 Facility Master Plan Update.	Facilities Planning & Management
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.	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 for natural gas service. These requirements shall be included in construction contracts and implemented. Facilities Planning & Management shall monitor compliance.	Ongoing provision for natural gas service for new projects from SCG.	Facilities Planning & Management
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	Provision for adequate solid waste facilities on campus for buildout of the 2015 Facility Master Plan Update.	Facilities Planning & Management

independent trash haulers are not included in these requirements). Facilities Planning & Management shall monitor compliance.		
Source: SID LINDMARK, AICP, May 4, 2016		
19. Emergency Communication Tower		
23. Water Tower/Irrigation Water		
Renovations		
Library/Learning Technology Center		
Bookstore/DHH		
Humanities Social Science North		
Humanities Social Science East		
Future Projects		
Library/Campus Center (a)		
Laboratory Building Expansion (G)		
Temple Avenue Pedestrian Bridge		
Instructional Building Zone 1		
Future Program Zones		
Adult Education Zone 2		
Auditorium Zone 3		
Instructional Building Zone 4		
Instructional Building Zone 5		

Source: SID LINDMARK, AICP, May 4, 2016

TECHNICAL MEMORANDUM

To: Gary Nellesen, Mt. San Antonio College

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

Date: April 15, 2016

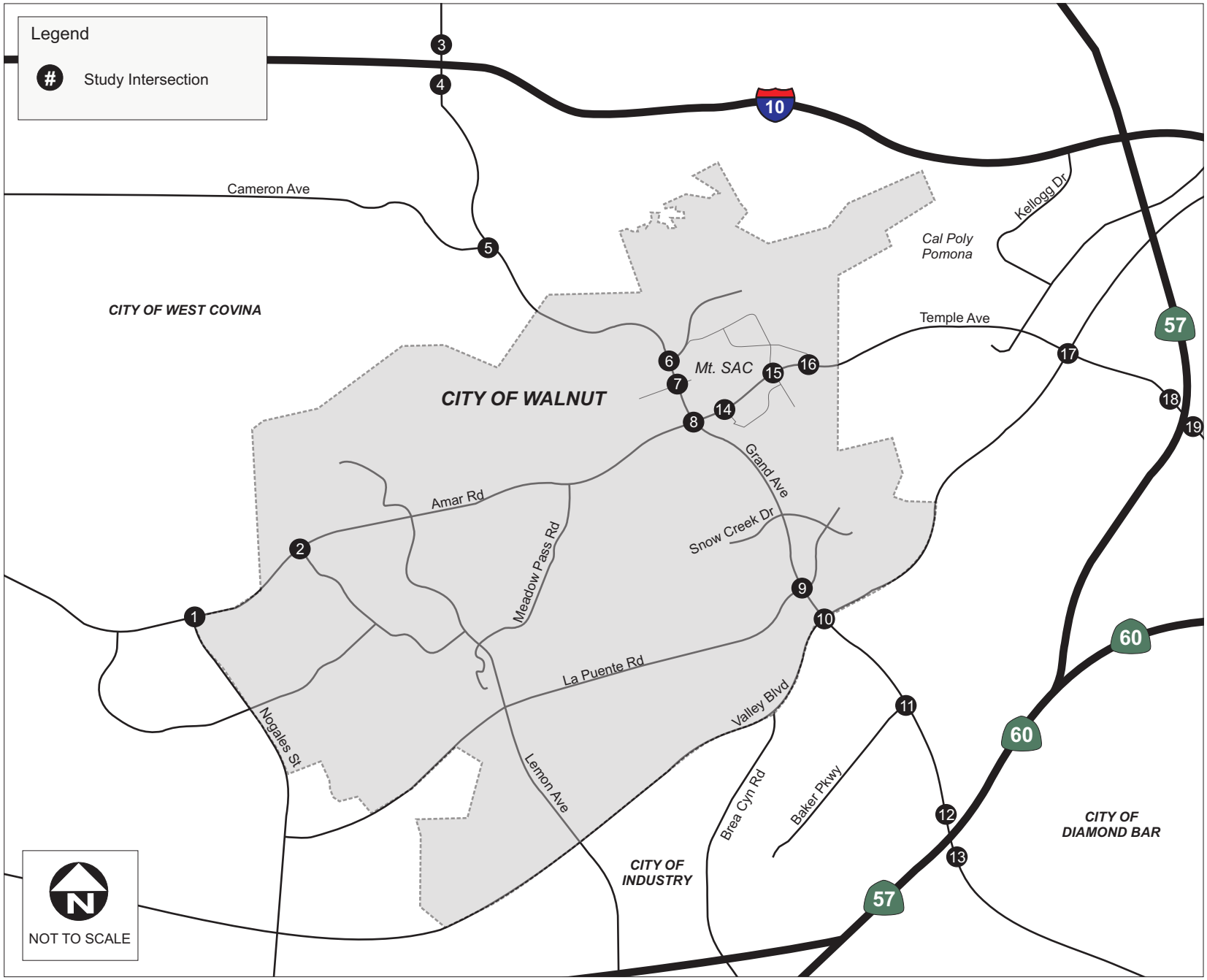
Subject: 2020 Olympic Track and Field Trials Focused Traffic Study

1. INTRODUCTION

This memorandum presents Iteris' assessment of the potential traffic impacts related to the 2020 Olympic Track and Field Trials (OTFT) to be held at the new stadium on the campus of Mt. SAC, located in the City of Walnut. This report contains the evaluation of intersection traffic operations in the existing conditions and operations with a fully attended event (20,000 guests). The OTFT event is planned to occur during the month of June, coinciding with Mt. SAC's summer intersession. The weekday p.m. peak hour is analyzed as part of this report, representing the worst-case time period when the last OTFT event of the day would conclude.

The following nineteen (19) intersections are analyzed as part of this report, consistent with the locations analyzed for the 2015 Facilities Master Plan Update (FMPU), and illustrated in **Figure 1**:

1. Nogales Street/Amar Road;
2. Lemon Avenue/Amar Road;
3. Grand Avenue/I-10 Westbound Ramp;
4. Grand Avenue/I-10 Eastbound Ramp;
5. Grand Avenue/Cameron Avenue;
6. Grand Avenue/Mountaineer Road;
7. Grand Avenue/San Jose Hills Road;
8. Grand Avenue/Temple Avenue;
9. Grand Avenue/La Puente Road;
10. Grand Avenue/Valley Boulevard;
11. Grand Avenue/Baker Parkway;
12. Grand Avenue/SR-60 Westbound Ramps;
13. Grand Avenue/SR-60 Eastbound Ramps;
14. Mt. SAC Way/Temple Avenue;
15. Bonita Avenue/Temple Avenue;
16. Lot F/Temple Avenue;
17. Valley Boulevard/Temple Avenue;
18. SR-57 Southbound Ramps/Temple Avenue; and
19. SR-57 Northbound Ramps/Temple Avenue.



ITERIS Innovation for better mobility

Mt San Antonio College
2020 Olympic Track and Field Trials
Traffic/Parking Impact Analysis

FIGURE 1
Study Area

Two OTFT traffic/parking scenarios are assessed in this report. 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 shuttles would also provide service to Ontario International Airport. 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.

Traffic operations were evaluated for each of the following scenarios during a typical weekday p.m. peak hour during summer intersession:

- Existing Conditions (2015);
- Existing Plus 2020 OTFT Conditions with Plan A Parking; and
- Existing Plus 2020 OTFT Conditions with Plan B Parking.

2. 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 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.

TABLE 1: INTERSECTION LEVEL OF SERVICE DEFINITIONS – ICU METHODOLOGY

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, analysis of traffic operations were 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 signalized 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.	≤ 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 ≤ 20
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.	>20 and ≤ 35
D	Fair operation. Cars are sometimes required to wait more than 60 seconds during short peaks. There are no long-standing traffic queues.	>35 and ≤ 55
E	Poor operation. Some long-standing vehicular queues develop on critical approaches to intersections. Delays may be up to several minutes.	>55 and ≤ 80
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.	> 80

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

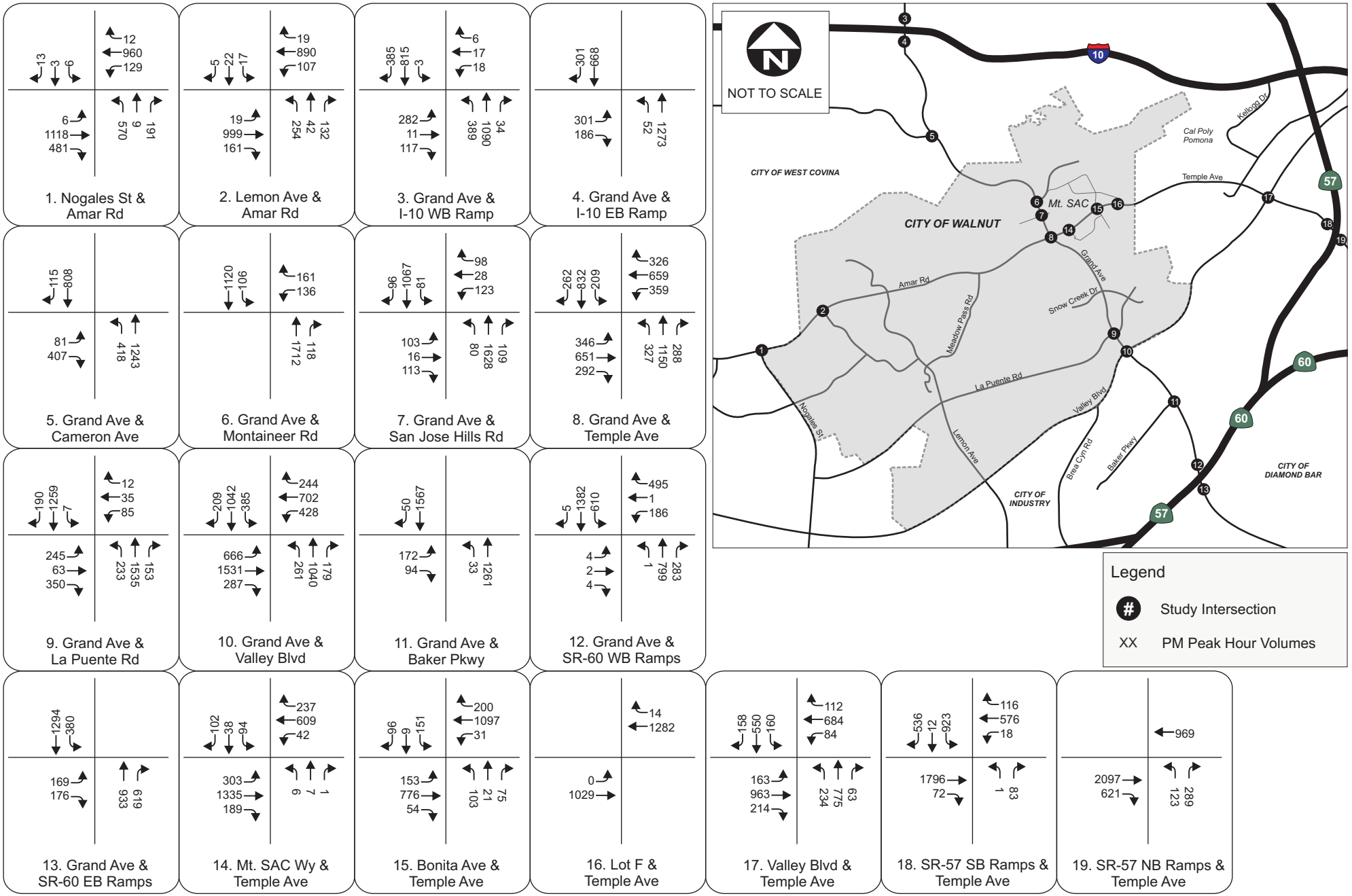
Intersection LOS in Pre-Project Conditions	V/C	Project V/C Increase
C	0.71 to 0.80	0.04 or more
D	0.81 to 0.90	0.02 or more
E / F	0.91 or more	0.01 or more

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.

3. EXISTING CONDITIONS

This section presents the existing conditions of the study area. Existing intersection traffic counts were collected on October 1, 2015 during the p.m. peak period (4:00 – 6:00 p.m.) on a typical weekday. Thus, this analysis is considered conservative since existing traffic counts were collected during the fall session, whereas the OTFT is anticipated to occur during the summer intersession where less students are on campus. **Figure 2** shows the existing traffic volumes at the study intersections. Existing traffic count data is provided in **Appendix A**.

A level of service analysis was conducted to evaluate existing intersection operations during the p.m. peak hour at the nineteen study intersections. **Table 4** summarizes the existing LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.



Mt San Antonio College
2020 Olympic Track and Field Trials
Traffic/Parking Impact Analysis

FIGURE 2
Existing PM Peak Hour Intersection Volumes

TABLE 4: EXISTING INTERSECTION PEAK HOUR LEVEL OF SERVICE

Intersection		Control Type	PM Peak Hour		
			Delay (s)	V/C or ICU	LOS
1	Nogales St/Amar Rd	Signalized	-	0.725	C
2	Lemon Ave/Amar Rd	Signalized	-	0.636	B
3	Grand Ave/I-10 WB Ramp*	Signalized	24.8	-	C
4	Grand Ave/I-10 EB Ramp*	Signalized	16.7	-	B
5	Grand Ave/Cameron Ave	Signalized	-	0.659	B
6	Grand Ave/Mountaineer Rd	Signalized	-	0.721	C
7	Grand Ave/San Jose Hills Rd	Signalized	-	0.844	D
8	Grand Ave/Temple Ave	Signalized	-	0.764	C
9	Grand Ave/La Puente Rd	Signalized	-	0.950	E
10	Grand Ave/Valley Blvd	Signalized	-	0.928	E
11	Grand Ave/Baker Pkwy	Signalized	-	0.543	A
12	Grand Ave/SR-60 WB Ramps*	Signalized	22.8	-	C
13	Grand Ave/SR-60 EB Ramps*	Signalized	21.4	-	C
14	Mt. SAC Wy/Temple Ave	Signalized	-	0.700	B
15	Bonita Ave/Temple Ave	Signalized	-	0.601	B
16	Lot F/Temple Ave	Stop-control	0.0	-	A
17	Valley Blvd/Temple Ave	Signalized	-	0.763	C
18	SR-57 SB Ramps/Temple Ave*	Signalized	24.5	-	C
19	SR-57 NB Ramps/Temple Ave*	Signalized	8.8	-	A

* 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 4**, the following study intersections are currently operating at LOS E or worse during the p.m. peak hour:

- Grand Avenue/La Puente Road; and
- Grand Avenue/Valley Boulevard.

4. Olympic Track and Field Trials Traffic

The OTFT event is planned to occur during the month of June, coinciding with Mt. SAC's summer intersession. This section summarizes the methodology used to derive the p.m. peak hour traffic related to the OTFT full capacity event during a weekday, with an anticipated 20,000 attendees. Two OTFT traffic/parking scenarios are assessed in this report. 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 shuttles would also provide service to Ontario International Airport. 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.

Table 5 presents the Preliminary Event Schedule.

Table 5: Preliminary Event Schedule

Day	First Event Begins	Last Event Begins	AM Peak Conflicts 7:00 – 10:00 am	PM Peak Conflicts 16:00 – 19:00 pm
Session 1				
1. Friday	11:00	18:15	No	Yes
2. Saturday	9:45	14:55	No	No
3. Sunday	11:00	17:53	No	No
4. Monday	15:30	17:51	No	Yes
5. Tuesday	Rest Day	Rest Day	-	-
6. Wednesday	Rest Day	Rest Day	-	-
Session 2				
7. Thursday	11:00	19:48	No	Yes
8. Friday	15:00	17:54	No	Yes
9. Saturday	12:30	17:52	No	No
10. Sunday	13:45	17:20	No	No

Source: 2016 Olympic Track & Field Trials, University of Oregon

As shown in **Table 5**, traffic related to the OTFT event would result in p.m. peak period conflicts within the area for only four weekdays.

As part of the OTFT event, shuttle service would be provided to several off-site locations. **Table 6** summarizes the estimated schedule for the shuttle service.

TABLE 6: SHUTTLE SERVICE SCHEDULE

Shuttle		Day 1 – Day 10	Weekdays	Weekend
	Hours of Service	Morning and Evening Service	3 Hours before 1st Event starts & 3 Hours after Last Event ends	
1	North	Day 1 - 4, 7 – 10	Every 20 minutes	Every 20 minutes
2	South	Day 1 - 4, 7 – 10	Every 20 minutes	Every 20 minutes
3	East	Day 1 - 4, 7 – 10	Every 20 minutes	Every 20 minutes
4	Cal Poly	Day 1 - 4, 7 – 10	Every 15 minutes	Every 15 minutes
5	Campus	Day 1 - 4, 7 – 10	Every 10 minutes	Every 10 minutes
1 -5		Rest Days 5, 6	7:00, 8:00, 9:00, 17:00, 18:00, 19:00	Six trips per day
6	Ontario Airport	Wed, before Day 1,	9:00, 16:00	Morning/Evening
		Thurs before Day 1	8:00, 9:00, 10:00, 16:00, 17:00, 18:00	Six trips per day
		Day 1	8:00, 9:00, 10:00, 16:00, 17:00, 18:00	Six trips per day
		Day 4	8:00, 9:00, 10:00, 16:00, 17:00, 18:00	Six trips per day
		Tuesday and Wednesday (Day 5-6 are Rest Days)	8:00, 9:00, 10:00, 16:00, 17:00, 18:00	Six trips per day
		Day 7 – 9	9:00, 16:00	Morning/Evening
7	Covina Hotels Near Azusa Avenue	See North Schedule		
8	Diamond Bar Hotels Near SR-57	See South Schedule		
9	Ontario Airport Hotels East and West	Limited Service – See		

Source: Facilities Planning & Management, February 2016

Figure 3 shows the approximate shuttle routes for each shuttle service described in **Table 6**. The potential hotel locations in the vicinity of the campus, shown in **Figure 3**, correspond to the list provided in **Table 7**.

TABLE 7: LIST OF POTENTIAL HOTELS

Map Index	Hotel	Distance to Stadium (miles)
1	Park Inn by Radisson - West Covina	3.2
2	Holiday Inn - Diamond Bar	3.5
3	Pacific Palms Conference Center - Industry	5.0
4	Courtyard by Marriott - Baldwin Park	8.2
5	Best Western Plus - West Covina	3.0
6	Ayres Suites - Diamond Bar	4.0
7	Best Western Hotel - Diamond Bar	5.0
8	Best Western Plus - Rowland Heights	5.0
9	Best Western Hotel - Ontario Airport	13.0
10	Motel 6 - Rowland Heights	2.4
11	Holiday Inn & Suites - West Covina	3.2
12	La Quinta Inn & Suites - Cal Poly	3.8
13	Park Inn by Radisson - Covina	4.0
14	Quality Inn & Suites - Walnut	4.5
15	Fairfield Inn & Suites - West Covina	5.0
16	Country Inn & Suites by Carlson - Ontario Mills	22.0
17	Courtyard By Marriott - Rancho Cucamonga	23.0
18	Hampton Inn - West Covina	4.3
19	Five Star Inn - West Covina	4.4
20	Days Inn - West Covina	4.4
21	Comfort Suites - La Puente	5.5
22	Embassy Suites by Hilton - Brea	6.8
23	Chase Inn & Suite Hotel - Brea	7.0
24	Sheraton Fairplex Hotel - Pomona	7.0
25	Sheraton Suites Fairplex - Pomona	7.0
26	Comfort Inn - Fairplex	6.8
27	Hampton Inn & Suties - Chino Hills	8.5

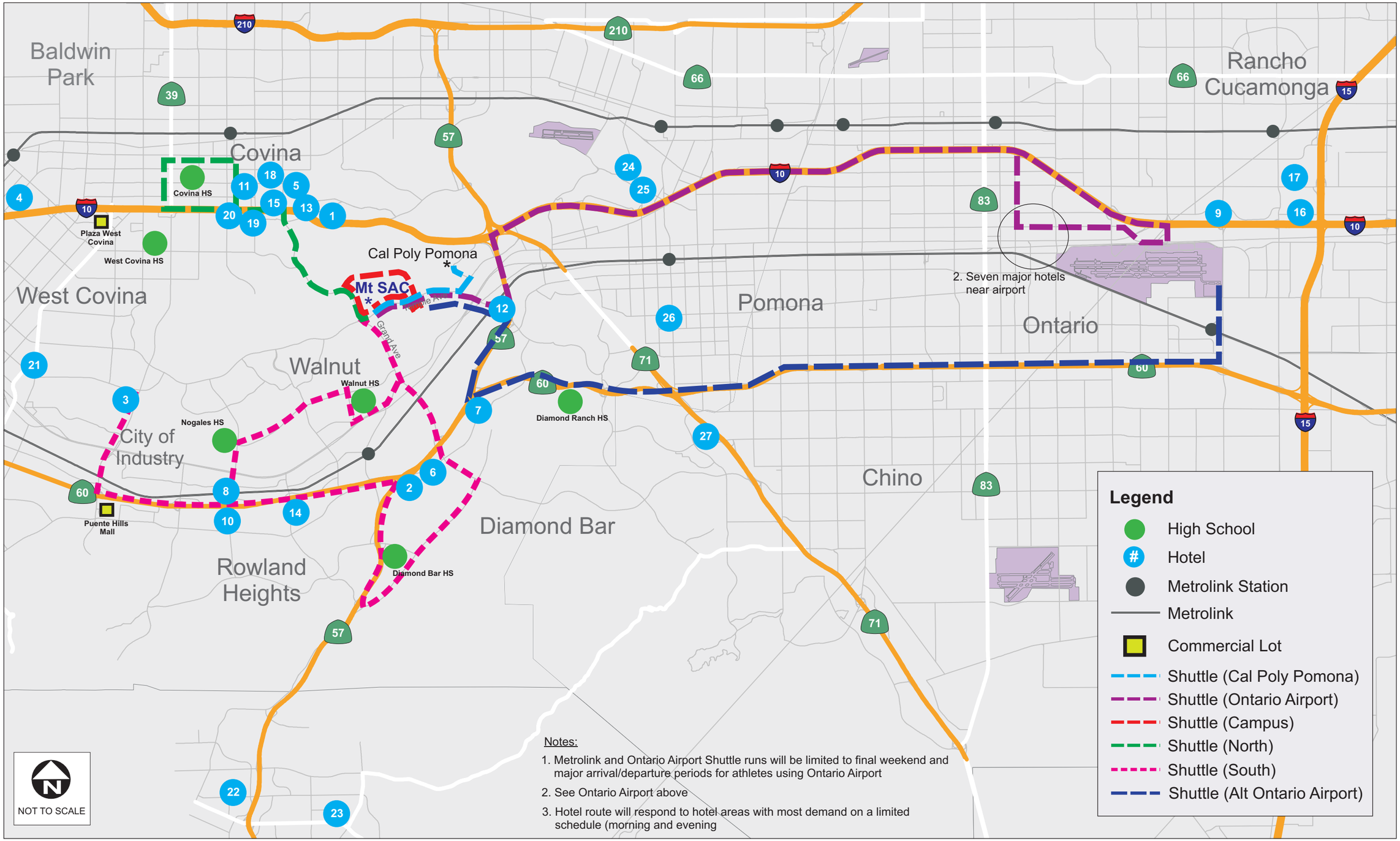


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FIGURE 3
Shuttle Routes

Off-campus Parking Plan A Traffic

Parking per Plan A assumes the use of up to six on-campus lots and utilizes an average vehicle occupancy of 3.0 persons/vehicle in order to estimate the number of guests per lot. **Figure 4** shows the estimated parking demand at campus lots during the OTFT event with Plan A condition. In addition to on-campus lots, off-campus parking facilities at Cal Poly Pomona and Lanterman Development Center are anticipated to be utilized. **Table 8** summarizes the parking demand and total guests at each of the on-campus and off-campus parking facilities in Plan A.

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FIGURE 4
On Campus Parking Plan A

TABLE 8: PLAN A PARKING DEMAND

Parking Facility	Total Vehicles	Minimum Vehicle Occupancy	Total Guests
On-Campus			
Parking Lot D	623	3.0	1,869
Parking Lot F	1,286	3.0	3,858
Parking Lot G	268	3.0	804
Parking Lot H	1,557	3.0	4,671
Parking Lot M	971	3.0	2,913
Parking Lot S	268	3.0	804
Other Buildings Parking	490	1.0	490
On-Campus totals	*5,463*	-	*15,409*
Off-Campus			
Cal Poly Pomona – Structure 1	700	4.0	2,800
Cal Poly Pomona – Structure 2	400	4.0	1,600
Cal Poly Pomona – Surface 1	200	4.0	800
Lanterman Development Ctr	500	2.0	1,000
Off-Campus totals	*1,800*	-	*6,200*
TOTAL	**7,263**		**21,609**

Figure 5 shows the approximate trip distribution of attendees to the regional freeway network with the Plan A condition. Based on the assumptions presented in **Table 8**, **Figure 6** shows the p.m. peak hour trip assignment of OTFT guest trips with the Plan A condition.

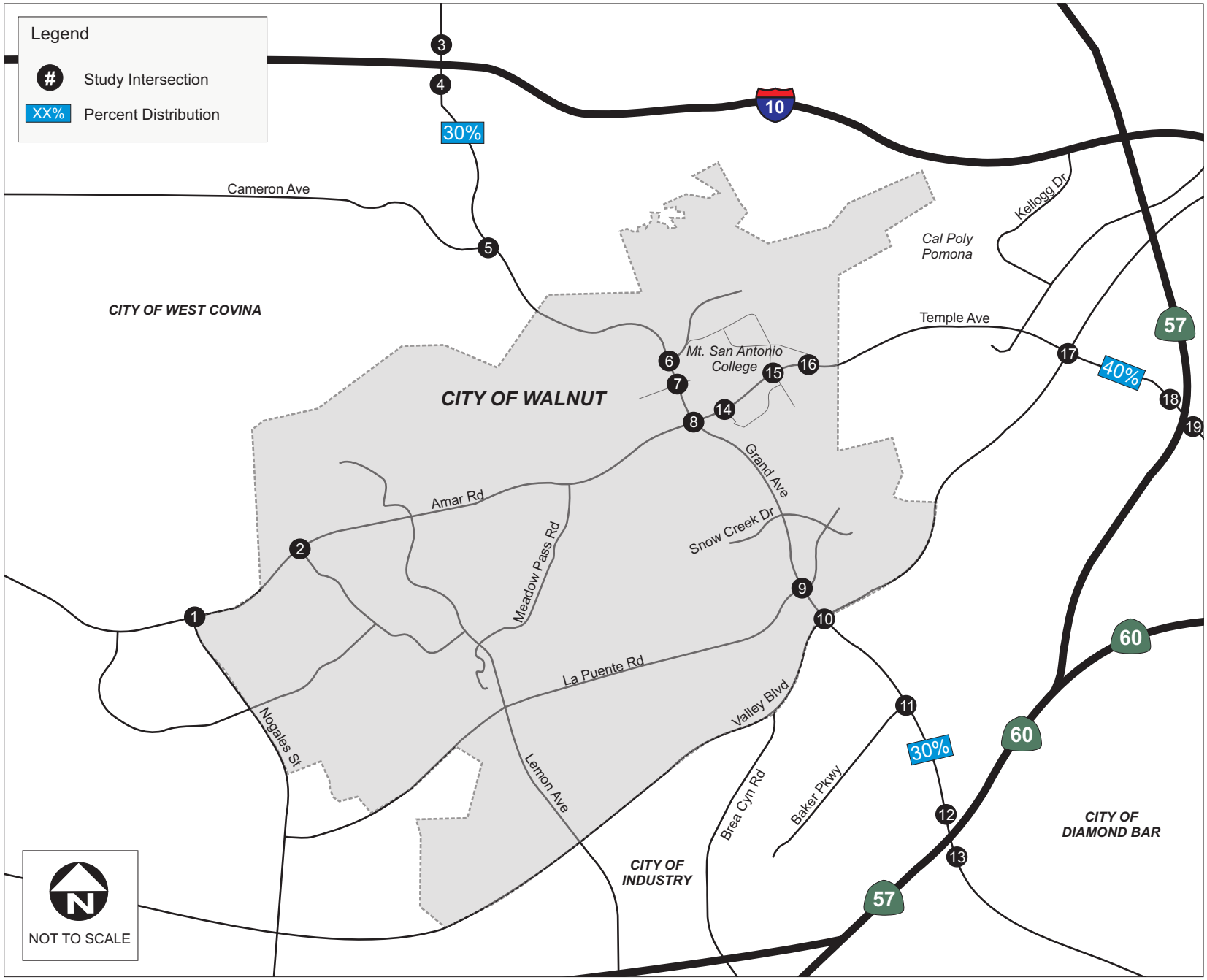

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FIGURE 5
OTFT Parking Plan A
Trip Distribution

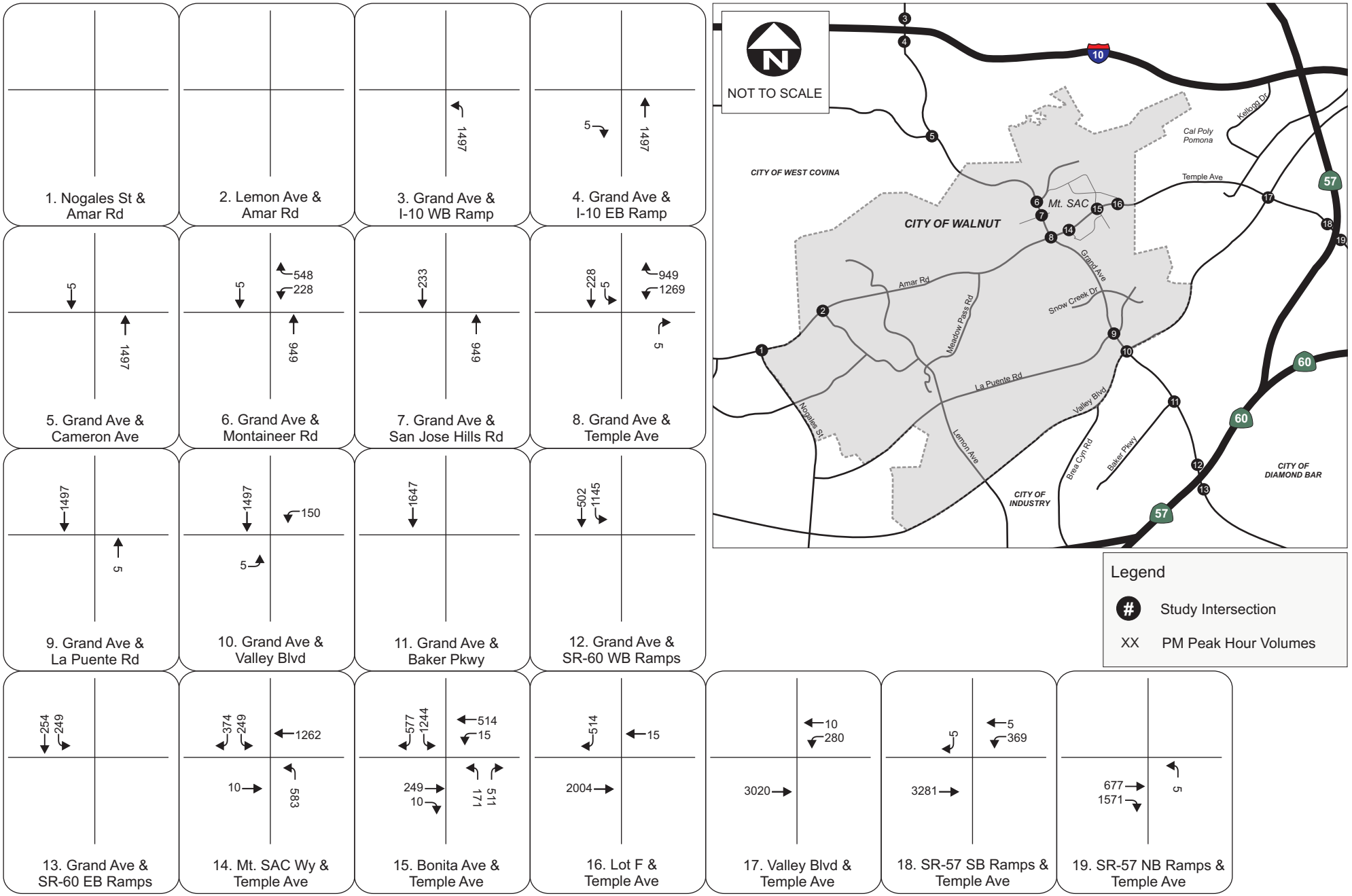

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FIGURE 6
OTFT Parking Plan A
Trip Assignment

Off-campus Parking Plan B Traffic

Parking per Plan B assumes the use of up to two on-campus lots and utilizes an average vehicle occupancy of 3.0 persons/vehicle in order to estimate the number of guests per lot. **Figure 7** shows the estimated parking demand at campus lots during the OTFT event with Plan B condition. In addition to on-campus lots, off-campus parking facilities at Cal Poly Pomona and local high schools are anticipated to be utilized. **Table 9** summarizes the parking demand and total guests at each of the on-campus and off-campus parking facilities in Plan B.

TABLE 9: PLAN B PARKING DEMAND

Parking Facility	Total Vehicles	Minimum Vehicle Occupancy	Total Guests
On-Campus			
Parking Lot F	1,286	3.0	3,858
Parking Lot H	1,557	3.0	4,671
Other Buildings Parking	490	1.0	490
On-Campus totals	*3,333*	-	*9,019*
Off-Campus			
Cal Poly Pomona – Structure 1	700	4.0	2,800
Cal Poly Pomona – Structure 2	300	4.0	1,200
Covina High School	330	4.0	1,320
Diamond Bar High School	380	4.0	1,520
Nogales High School	250	4.0	1,000
Walnut High School	550	4.0	2,200
West Covina High School	300	4.0	1,200
Off-Campus totals	*2,810*	-	*11,240*
TOTAL	**6,143**		**20,259**

Figure 8 shows the approximate trip distribution of attendees to the regional freeway network with the Plan B condition. Based on the assumptions presented in **Table 9**, **Figure 9** shows the p.m. peak hour trip assignment of OTFT guest trips with the Plan B condition.

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FIGURE 7
On Campus Parking Plan B

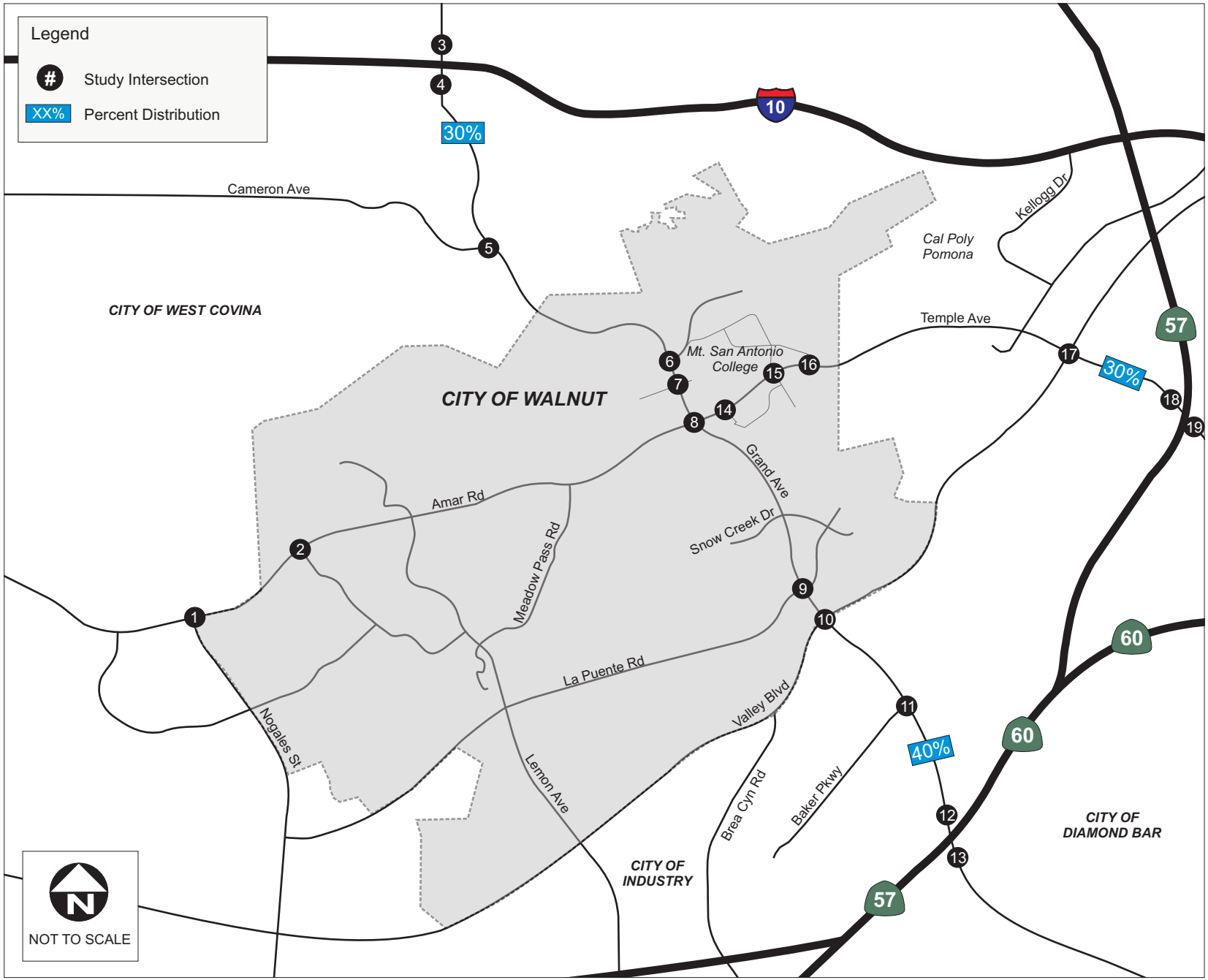

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FIGURE 8
OTFT Parking Plan B
Trip Distribution

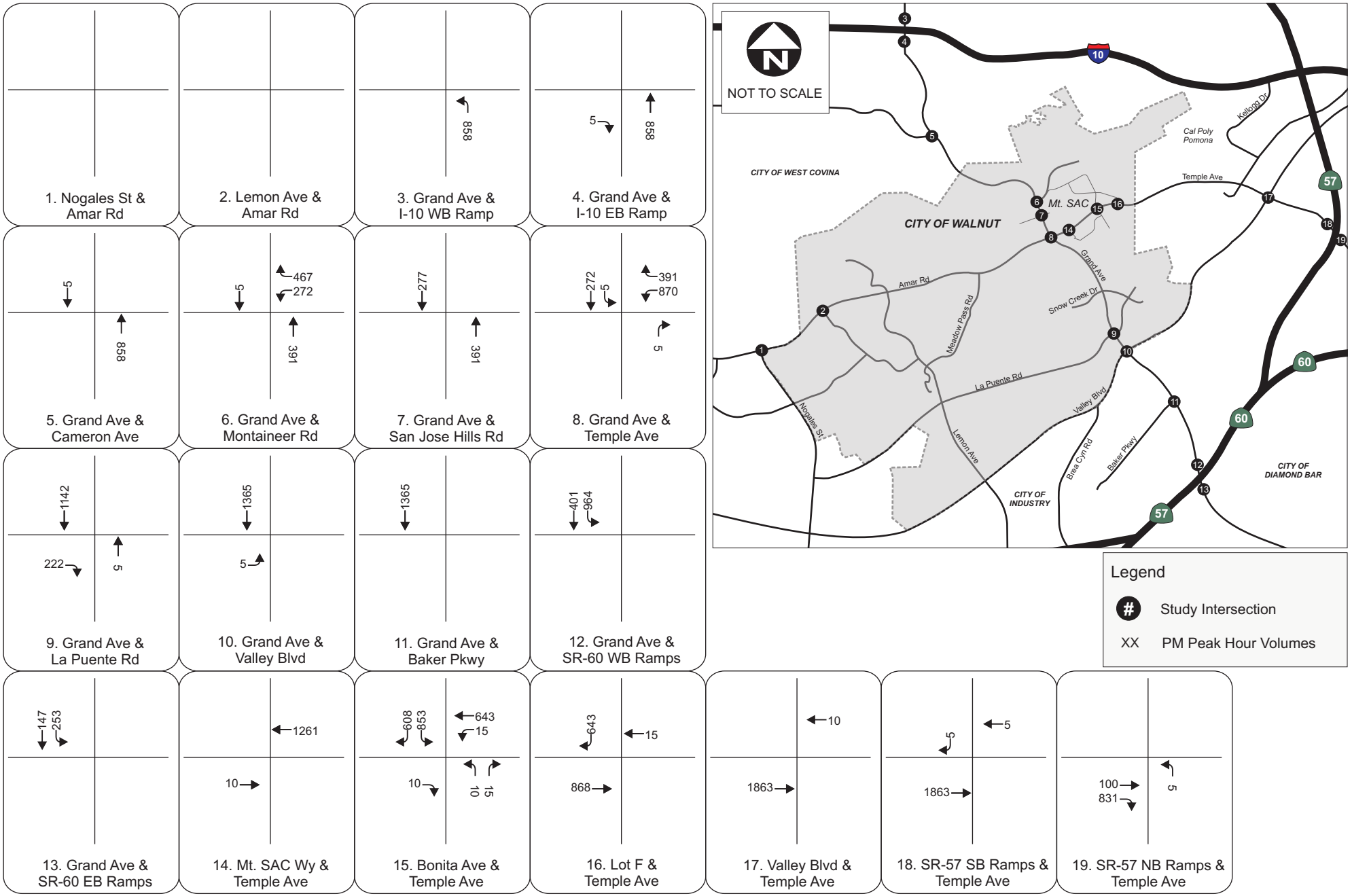

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FIGURE 9
OTFT Parking Plan B
Trip Assignment

5. Existing Plus OTFT Plan A Parking Conditions

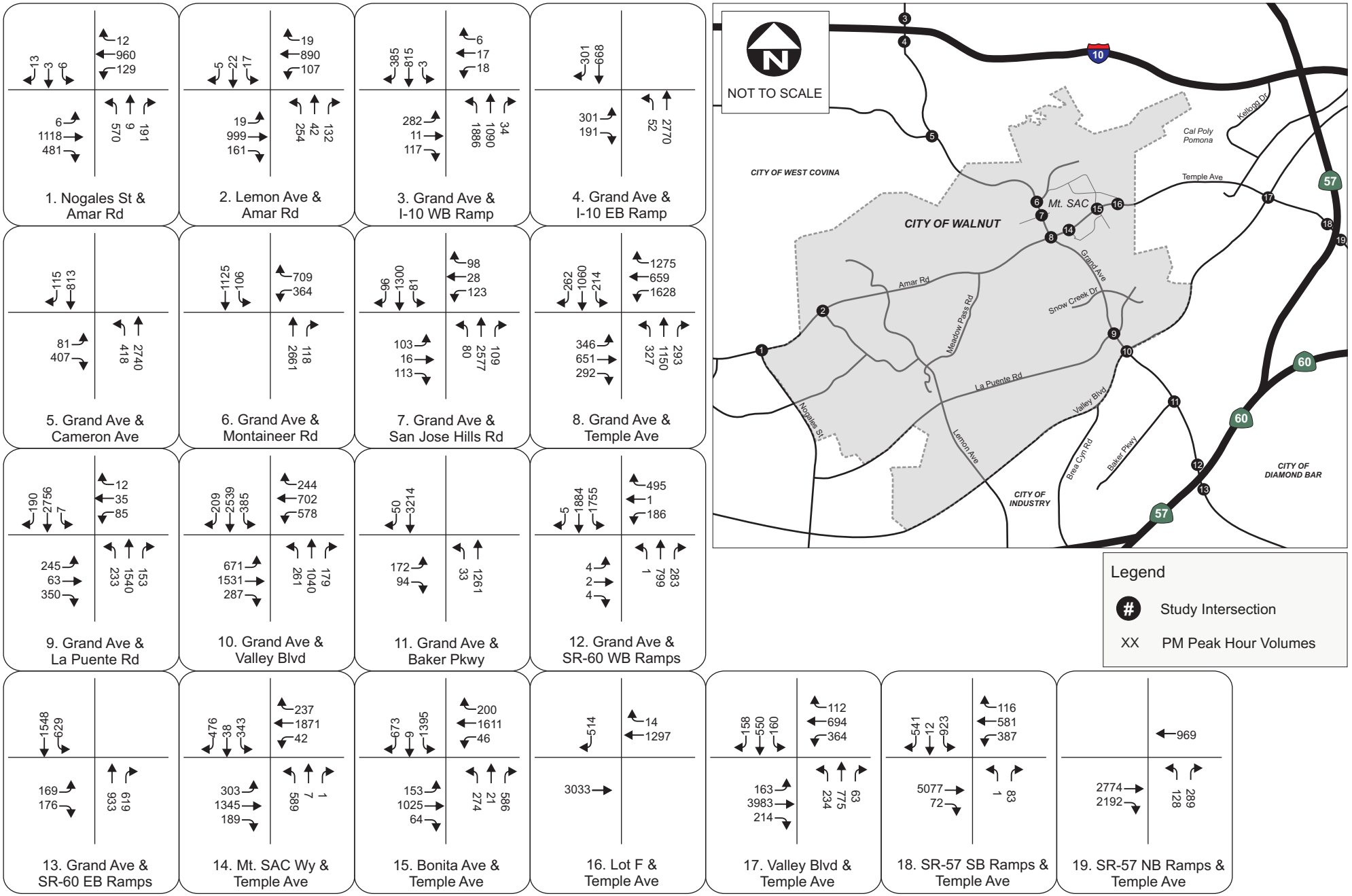
This section summarizes the traffic operations of the study intersections for existing plus OTFT Plan A parking conditions. **Figure 10** shows the existing plus OTFT Plan A (approximately 30% off-campus parking) traffic volumes at the study intersections. **Table 10** summarizes the existing plus OTFT Plan A parking LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.

Table 10: Existing Plus OTFT Plan A Parking
Intersection Peak Hour Level of Service

Intersection		Existing Conditions			Existing Plus OTFT Plan A Parking			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	Nogales St/Amar Rd	-	0.725	C	-	0.725	C	0.000	No
2	Lemon Ave/Amar Rd	-	0.636	B	-	0.636	B	0.000	No
3	Grand Ave/I-10 WB Ramp*	24.8	-	C	238.8	-	F	214.0	**Yes**
4	Grand Ave/I-10 EB Ramp*	16.7	-	B	48.0	-	D	31.3	No
5	Grand Ave/Cameron Ave	-	0.659	B	-	1.126	F	0.467	**Yes**
6	Grand Ave/Mountaineer Rd	-	0.721	C	-	1.185	F	0.464	**Yes**
7	Grand Ave/San Jose Hills Rd	-	0.844	D	-	1.152	F	0.308	**Yes**
8	Grand Ave/Temple Ave	-	0.764	C	-	1.349	F	0.585	**Yes**
9	Grand Ave/La Puente Rd	-	0.950	E	-	1.456	F	0.506	**Yes**
10	Grand Ave/Valley Blvd	-	0.928	E	-	1.264	F	0.336	**Yes**
11	Grand Ave/Baker Pkwy	-	0.543	A	-	0.851	D	0.308	**Yes**
12	Grand Ave/SR-60 WB Ramps*	22.8	-	C	59.0	-	E	36.2	**Yes**
13	Grand Ave/SR-60 EB Ramps*	21.4	-	C	32.9	-	C	11.5	No
14	Mt. SAC Wy/Temple Ave	-	0.700	B	-	1.500	F	0.800	**Yes**
15	Bonita Ave/Temple Ave	-	0.601	B	-	1.498	F	0.897	**Yes**
16	Lot F/Temple Ave	0.0	-	A	227.3	-	F	227.3	**Yes**
17	Valley Blvd/Temple Ave	-	0.763	C	-	1.475	F	0.712	**Yes**
18	SR-57 SB Ramps/Temple Ave*	24.5	-	C	250.9	-	F	226.4	**Yes**
19	SR-57 NB Ramps/Temple Ave*	8.8	-	A	8.6	-	A	-0.2	No

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

As shown in **Table 10**, based on the thresholds of significance described in Section 2, all but five intersections are forecast to be significantly impacted by the proposed OTFT project Plan A traffic during the weekday p.m. peak hour. Since these impacts would only occur during the p.m. peak hour on four weekdays, it is not recommended that physical mitigation measures be implemented to mitigate these temporary impacts.



Mt San Antonio College
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FIGURE 10
Existing Plus OTFT Plan A
Intersection Volumes

6. Existing Plus OTFT Plan B Parking Conditions

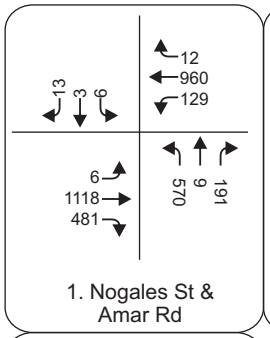
This section summarizes the traffic operations of the study intersections for existing plus OTFT Plan B parking conditions. **Figure 11** shows the existing plus OTFT Plan A (approximately 50% off-campus parking) traffic volumes at the study intersections. **Table 11** summarizes the existing plus OTFT Plan B parking LOS at the study intersections. LOS calculations sheets are provided in **Appendix B**.

Table 11: Existing Plus OTFT Plan B Parking
Intersection Peak Hour Level of Service

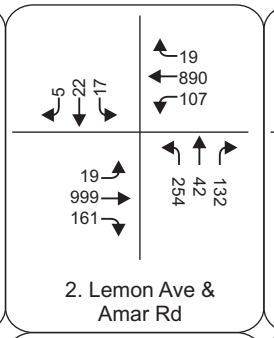
Intersection		Existing Conditions			Existing Plus OTFT Plan B Parking			Change in PM V/C or Delay (s)	Significant Impact?
		PM Peak Hour			PM Peak Hour				
		Delay (s)	V/C or ICU	LOS	Delay (s)	V/C or ICU	LOS		
1	Nogales St/Amar Rd	-	0.725	C	-	0.725	C	0.000	No
2	Lemon Ave/Amar Rd	-	0.636	B	-	0.636	B	0.000	No
3	Grand Ave/I-10 WB Ramp*	24.8	-	C	108.2	-	F	83.400	**Yes**
4	Grand Ave/I-10 EB Ramp*	16.7	-	B	18.0	-	B	1.300	No
5	Grand Ave/Cameron Ave	-	0.659	B	-	0.913	E	0.254	**Yes**
6	Grand Ave/Mountaineer Rd	-	0.721	C	-	0.976	E	0.255	**Yes**
7	Grand Ave/San Jose Hills Rd	-	0.844	D	-	0.971	E	0.127	**Yes**
8	Grand Ave/Temple Ave	-	0.764	C	-	1.101	F	0.337	**Yes**
9	Grand Ave/La Puente Rd	-	0.950	E	-	1.486	F	0.536	**Yes**
10	Grand Ave/Valley Blvd	-	0.928	E	-	1.186	F	0.258	**Yes**
11	Grand Ave/Baker Pkwy	-	0.543	A	-	0.787	C	0.244	**Yes**
12	Grand Ave/SR-60 WB Ramps*	22.8	-	C	46.7	-	D	23.900	No
13	Grand Ave/SR-60 EB Ramps*	21.4	-	C	33.9	-	C	12.500	No
14	Mt. SAC Wy/Temple Ave	-	0.700	B	-	0.974	E	0.274	**Yes**
15	Bonita Ave/Temple Ave	-	0.601	B	-	1.189	F	0.588	**Yes**
16	Lot F/Temple Ave	0.0	-	A	379.3	-	F	379.300	**Yes**
17	Valley Blvd/Temple Ave	-	0.763	C	-	1.165	F	0.402	**Yes**
18	SR-57 SB Ramps/Temple Ave*	24.5	-	C	107.2	-	F	82.700	**Yes**
19	SR-57 NB Ramps/Temple Ave*	8.8	-	A	8.7	-	A	-0.100	No

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

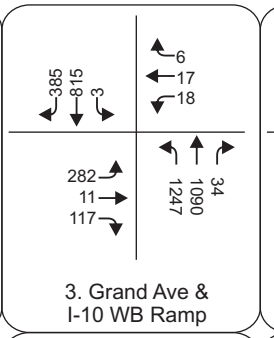
As shown in **Table 11**, based on the thresholds of significance described in Section 2, all but six intersections are forecast to be significantly impacted by the proposed OTFT project Plan B traffic during the weekday p.m. peak hour. Since these impacts would only occur during the p.m. peak hour on four weekdays, it is not recommended that physical mitigation measures be implemented to mitigate these temporary impacts.



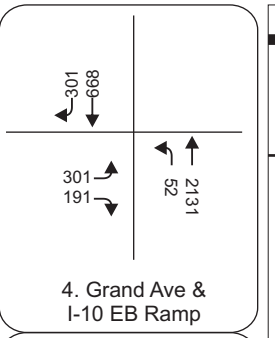
1. Nogales St & Amar Rd



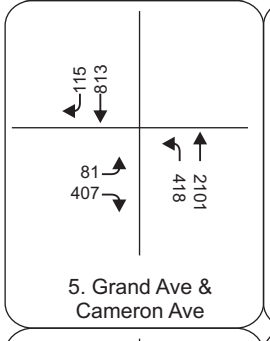
2. Lemon Ave & Amar Rd



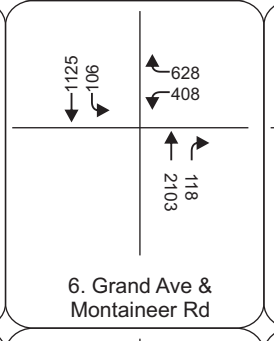
3. Grand Ave & I-10 WB Ramp



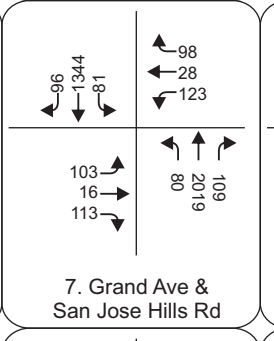
4. Grand Ave & I-10 EB Ramp



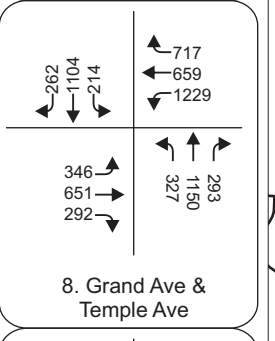
5. Grand Ave & Cameron Ave



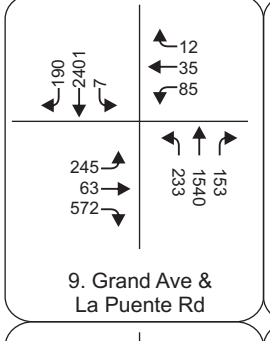
6. Grand Ave & Montaineer Rd



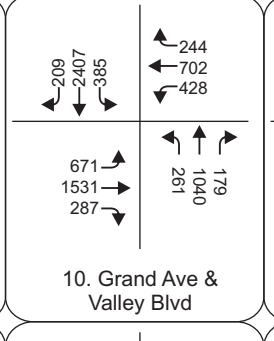
7. Grand Ave & San Jose Hills Rd



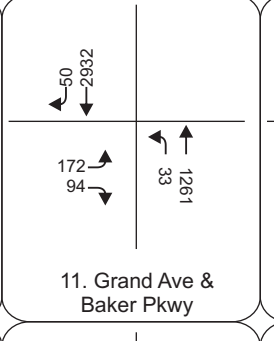
8. Grand Ave & Temple Ave



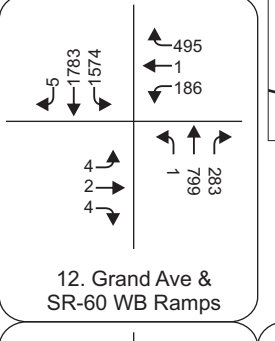
9. Grand Ave & La Puente Rd



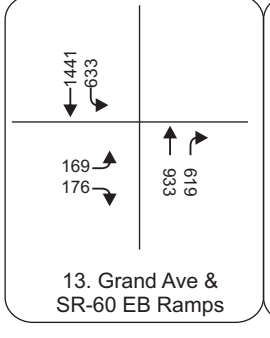
10. Grand Ave & Valley Blvd



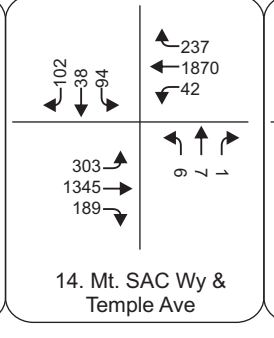
11. Grand Ave & Baker Pkwy



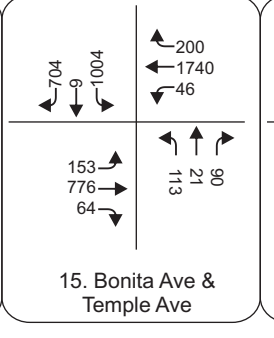
12. Grand Ave & SR-60 WB Ramps



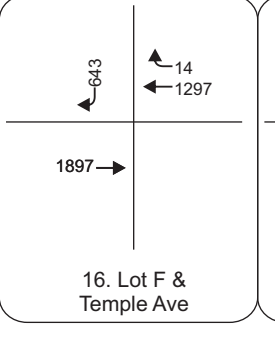
13. Grand Ave & SR-60 EB Ramps



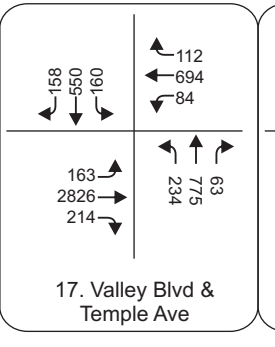
14. Mt. SAC Wy & Temple Ave



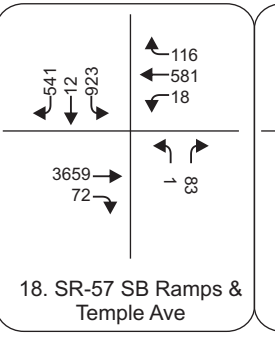
15. Bonita Ave & Temple Ave



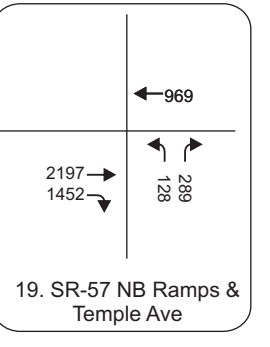
16. Lot F & Temple Ave



17. Valley Blvd & Temple Ave



18. SR-57 SB Ramps & Temple Ave



19. SR-57 NB Ramps & Temple Ave

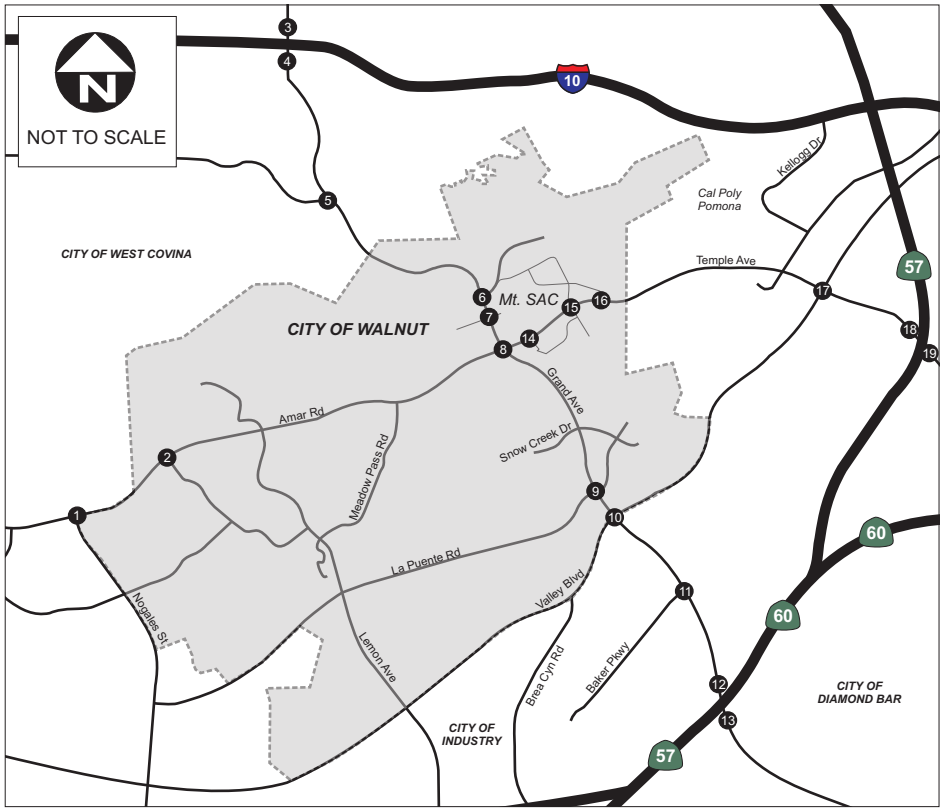


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FIGURE 11
Existing Plus OTFT Plan B
Intersection Volumes

Though physical mitigation is not recommended, in order to reduce the p.m. peak period conflicts between area commuter traffic and 2020 OTFT traffic leaving the final event on Friday or Monday during Session 1, the event schedule shall be revised so guest traffic leaves before the p.m. peak commute period begins or after the p.m. peak commute period ends. Either event schedule revision will result in reducing the number of p.m. peak period conflicts by two days, and only two of the ten event days during Session 2 have p.m. peak conflicts. Facilities Planning and Management shall ensure compliance.

7. Congestion Management Program (CMP) Analysis

The Congestion Management Program (CMP) was created statewide as a result of Proposition 111 and has been implemented locally by the Los Angeles County Metropolitan Transportation Authority (Metro). The CMP for Los Angeles County requires that the traffic impact of individual development projects of potential regional significance be analyzed. A specific system of arterial roadways plus all freeways comprise the CMP system. A total of 164 intersections are identified for monitoring on the system in Los Angeles County. This section describes the analysis of project-related impacts on the CMP system. The analysis has been conducted according to the guidelines set forth in the 2004 Congestion Management Program for Los Angeles County.

According to the CMP Traffic Impact Analysis (TIA) Guidelines developed by Metro, a CMP traffic impact analysis is required given the following conditions:

- CMP arterial monitoring intersections, including freeway on- or off-ramps, where the proposed project would add 50 or more trips during either the a.m. or p.m. weekday peak hours.
- CMP freeway monitoring locations where the proposed project would add 150 or more trips, in either direction, during either the a.m. or p.m. weekday peak hours.

The nearest freeway segments are the I-10, SR-60, and SR-57. Based on the project trip generation estimates, the proposed project has the potential to add more than 150 new peak hour trips in either direction at the freeway segments.

The freeway segments are analyzed based on the volume-to-capacity ratio (V/C) methodology. For purposes of the CMP, substantial changes for freeway segments are defined as an increase of 0.10 in V/C ratio and a corresponding change in LOS.

Table 12 summarizes the CMP freeway segment analysis for the Plan A parking condition.

TABLE 12: CMP FREEWAY SEGMENT ANALYSIS – OTFT PLAN A

Freeway Segment	# of Lanes	Peak Hour Capacity*	Existing PM Peak Hour Volume+	Existing PM V/C	OTFT PM Trip Assignment (Plan A)	Existing Plus OTFT Plan A PM Peak Volumes	Existing Plus OTFT Plan A PM Peak V/C	Change In V/C
I-10 WB West of Grand Ave	4	8,000	6,158	0.770	1,497	7,655	0.957	0.187
SR-60 WB West of Grand Ave	6	12,000	9,655	0.805	1,145	10,800	0.900	0.095
SR-60 EB East of Grand Ave	6	12,000	7,978	0.665	249	8,227	0.686	0.021
SR-57 NB North of Temple Ave	5	10,000	6,558	0.656	1,571	8,129	0.813	0.157
SR-57 SB South of Temple Ave	4	8,000	5,072	0.634	1,401	6,473	0.809	0.175

* Peak hour capacity of mainline lanes is assumed to be 2,000 passenger cars/hour/lane for the purposes of this planning-level analysis.
Source: PeMS Caltrans mainline data
Notes:
V/C = Volume to Capacity Ratio.

As shown in **Table 12**, the OTFT traffic with Plan A is forecast to result in significant CMP impacts at three of the affected freeway segments during the p.m. peak hour. However, it should be noted that these impacts would only occur during the p.m. peak hour on four weekdays.

Table 13 summarizes the CMP freeway segment analysis for the Plan B parking condition.

TABLE 13: CMP FREEWAY SEGMENT ANALYSIS – OTFT PLAN B

Freeway Segment	# of Lanes	Peak Hour Capacity*	Existing PM Peak Hour Volume+	Existing PM V/C	OTFT PM Trip Assignment (Plan B)	Existing Plus OTFT Plan B PM Peak Volumes	Existing Plus OTFT Plan B PM Peak V/C	Change In V/C
I-10 WB West of Grand Ave	4	8,000	6,158	0.770	858	7,016	0.877	0.107
SR-60 WB West of Grand Ave	6	12,000	9,655	0.805	964	10,619	0.885	0.080
SR-60 EB East of Grand Ave	6	12,000	7,978	0.665	253	8,231	0.686	0.021
SR-57 NB North of Temple Ave	5	10,000	6,558	0.656	831	7,389	0.739	0.083
SR-57 SB South of Temple Ave	4	8,000	5,072	0.634	931	6,003	0.750	0.116

* Peak hour capacity of mainline lanes is assumed to be 2,000 passenger cars/hour/lane for the purposes of this planning-level analysis.
Source: PeMS Caltrans mainline data
Notes:
V/C = Volume to Capacity Ratio.

As shown in **Table 13**, the OTFT traffic with Plan B is forecast to result in significant CMP impacts at two of the affected freeway segments during the p.m. peak hour. However, it should be noted that these impacts would only occur during the p.m. peak hour on four weekdays.

8. CONCLUSIONS

The OTFT event is planned to occur during the month of June, coinciding with Mt. SAC's summer intersession. The weekday p.m. peak hour is analyzed as part of this report, representing the worst-case time period when the last OTFT event of the day would conclude.

All study intersections, with the exception of the Grand Avenue/Valley Boulevard and Grand Avenue/La Puente Road intersections, are currently operating at LOS D or better during the p.m. peak period.

Parking per Plan A assumes the use of up to six on-campus lots and is anticipated to utilize off-campus parking facilities at Cal Poly Pomona and Lanterman Development Center. Parking per Plan B assumes the use of up to two on-campus lots and is anticipated to utilize off-campus parking facilities at Cal Poly Pomona and local high schools.

Based on the thresholds of significance described in Section 2, all but five intersections are forecast to be significantly impacted by the proposed OTFT project Plan A traffic during the weekday p.m. peak hour. All but six intersections are forecast to be significantly impacted by the proposed OTFT project Plan B traffic during the weekday p.m. peak hour.

The OTFT traffic with Plan A is forecast to result in significant CMP freeway impacts at three of the affected freeway segments during the p.m. peak hour. The OTFT traffic with Plan B is forecast to result in significant CMP freeway impacts at two of the affected freeway segments during the p.m. peak hour. However, it should be noted that these impacts would only occur during the p.m. peak hour on four weekdays. Since these impacts would only occur during the p.m. peak hour on four weekdays, it is not recommended that physical mitigation measures be implemented to mitigate these temporary impacts.

Though physical mitigation is not recommended, in order to reduce the p.m. peak period conflicts between area commuter traffic and 2020 OTFT traffic leaving the final event on Friday or Monday during Session 1, the event schedule shall be revised so guest traffic leaves before the p.m. peak commute period begins or after the p.m. peak commute period ends. Either event schedule revision will result in reducing the number of p.m. peak period conflicts by two days, and only two of the ten event days during Session 2 have p.m. peak conflicts. Facilities Planning and Management shall ensure compliance.

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TECHNICAL APPENDIX

APPENDIX A

TRAFFIC COUNT DATA

Counts Unlimited
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City of Walnut
N/S: Nogales Street
E/W: Amar Road
Weather: Clear

File Name : WNTNOAMAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Nogales Street Southbound					Amar Road Westbound					Nogales Street Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	1	0	4	0	5	16	304	1	0	321	91	1	35	0	127	2	188	48	0	238	691
07:15 AM	5	4	3	0	12	10	280	0	0	290	111	1	31	0	143	2	303	111	1	417	862
07:30 AM	4	1	6	0	11	31	257	0	0	288	151	1	32	0	184	1	317	146	2	466	949
07:45 AM	3	2	1	0	6	14	249	2	0	265	184	1	41	0	226	0	293	80	3	376	873
Total	13	7	14	0	34	71	1090	3	0	1164	537	4	139	0	680	5	1101	385	6	1497	3375
08:00 AM	6	3	2	0	11	23	232	1	1	257	148	1	36	1	186	1	257	99	3	360	814
08:15 AM	3	2	5	0	10	23	253	0	0	276	133	2	47	0	182	0	226	88	1	315	783
08:30 AM	3	0	6	0	9	39	242	1	0	282	110	2	27	0	139	2	168	88	1	259	689
08:45 AM	0	2	2	0	4	32	215	1	1	249	92	0	26	0	118	1	178	97	0	276	647
Total	12	7	15	0	34	117	942	3	2	1064	483	5	136	1	625	4	829	372	5	1210	2933
Grand Total	25	14	29	0	68	188	2032	6	2	2228	1020	9	275	1	1305	9	1930	757	11	2707	6308
Apprch %	36.8	20.6	42.6	0		8.4	91.2	0.3	0.1		78.2	0.7	21.1	0.1		0.3	71.3	28	0.4		
Total %	0.4	0.2	0.5	0	1.1	3	32.2	0.1	0	35.3	16.2	0.1	4.4	0	20.7	0.1	30.6	12	0.2	42.9	

	Nogales Street Southbound				Amar Road Westbound				Nogales Street Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	5	**4**	3	**12**	10	**280**	0	**290**	111	**1**	31	143	**2**	303	111	416	861
07:30 AM	4	1	**6**	11	**31**	257	0	288	151	1	32	184	1	**317**	**146**	**464**	**947**
07:45 AM	3	2	1	6	14	249	**2**	265	**184**	1	**41**	**226**	0	293	80	373	870
08:00 AM	**6**	3	2	11	23	232	1	256	148	1	36	185	1	257	99	357	809
Total Volume	18	10	12	40	78	1018	3	1099	594	4	140	738	4	1170	436	1610	3487
% App. Total	45	25	30		7.1	92.6	0.3		80.5	0.5	19		0.2	72.7	27.1		
PHF	.750	.625	.500	.833	.629	.909	.375	.947	.807	1.00	.854	.816	.500	.923	.747	.867	.921

Counts Unlimited
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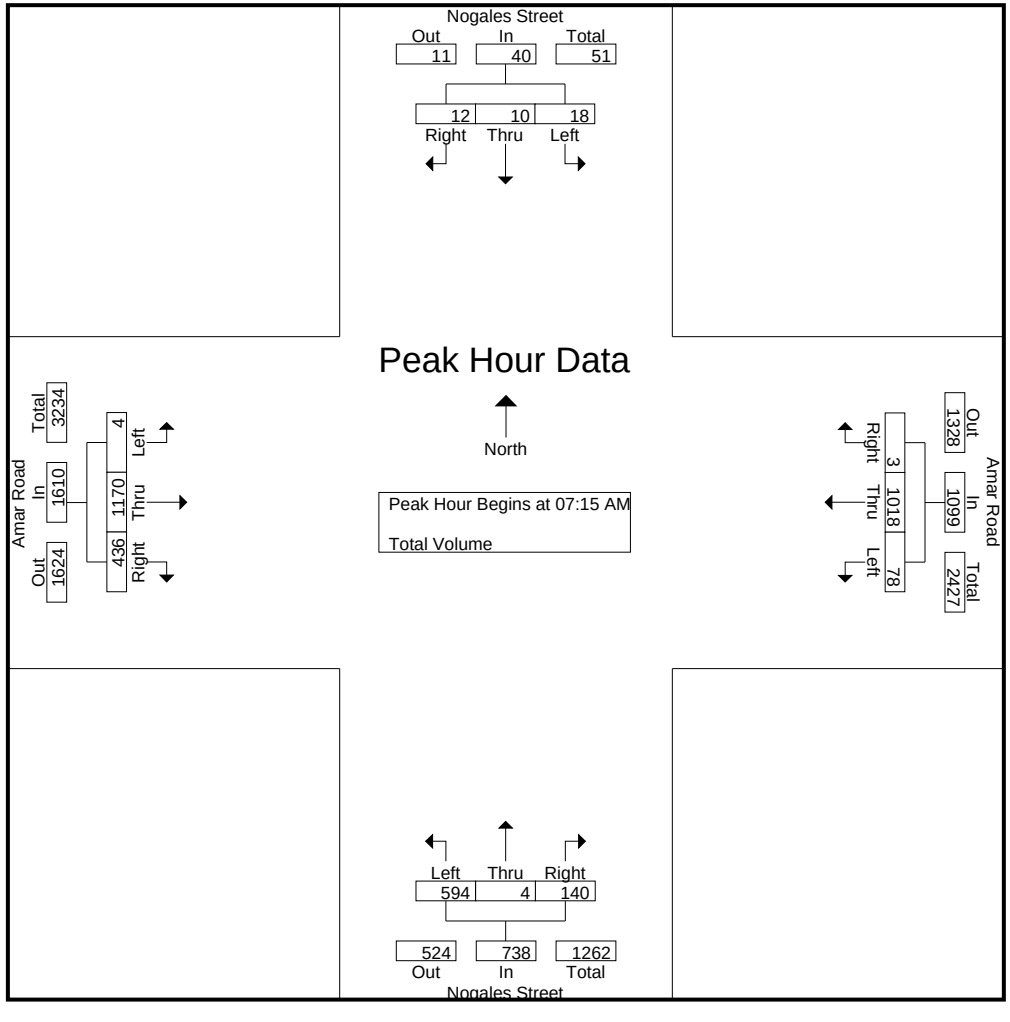
City of Walnut
N/S: Nogales Street
E/W: Amar Road
Weather: Clear

File Name : WNTNOAMAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Nogales Street
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File Name : WNTNOAMAM
Site Code : 04215551
Start Date : 10/1/2015

	Nogales Street Southbound				Amar Road Westbound				Nogales Street Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:30 AM				07:15 AM				
+0 mins.	5	**4**	3	**12**	16	**304**	1	**321**	151	1	32	184	**2**	303	111	416	
+15 mins.	4	1	**6**	11	10	280	0	290	**184**	1	41	**226**	1	**317**	**146**	**464**	
+30 mins.	3	2	1	6	**31**	257	0	288	148	1	36	185	0	293	80	373	
+45 mins.	**6**	3	2	11	14	249	**2**	265	133	**2**	**47**	182	1	257	99	357	
Total Volume	18	10	12	40	71	1090	3	1164	616	5	156	777	4	1170	436	1610	
% App. Total	45	25	30		6.1	93.6	0.3		79.3	0.6	20.1		0.2	72.7	27.1		
PHF	.750	.625	.500	.833	.573	.896	.375	.907	.837	.625	.830	.860	.500	.923	.747	.867	

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City of Walnut
N/S: Nogales Street
E/W: Amar Road
Weather: Clear

File Name : WNTNOAMPM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Nogales Street Southbound					Amar Road Westbound					Nogales Street Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	1	0	4	0	5	25	145	0	0	170	108	2	43	1	154	3	277	83	5	368	697
04:15 PM	3	0	4	0	7	33	172	3	0	208	121	2	40	0	163	1	276	111	4	392	770
04:30 PM	2	2	4	0	8	36	167	3	1	207	114	3	47	0	164	2	279	111	2	394	773
04:45 PM	7	1	3	0	11	43	200	2	0	245	128	5	38	0	171	2	254	96	0	352	779
Total	13	3	15	0	31	137	684	8	1	830	471	12	168	1	652	8	1086	401	11	1506	3019
05:00 PM	0	0	5	0	5	29	213	2	1	245	119	1	42	0	162	0	306	129	3	438	850
05:15 PM	1	1	3	0	5	32	265	5	0	302	154	2	46	0	202	2	259	115	1	377	886
05:30 PM	1	2	2	0	5	32	205	3	2	242	168	5	61	0	234	2	268	115	3	388	869
05:45 PM	4	0	3	0	7	36	277	2	0	315	129	1	42	0	172	2	285	122	4	413	907
Total	6	3	13	0	22	129	960	12	3	1104	570	9	191	0	770	6	1118	481	11	1616	3512
Grand Total	19	6	28	0	53	266	1644	20	4	1934	1041	21	359	1	1422	14	2204	882	22	3122	6531
Apprch %	35.8	11.3	52.8	0		13.8	85	1	0.2		73.2	1.5	25.2	0.1		0.4	70.6	28.3	0.7		
Total %	0.3	0.1	0.4	0	0.8	4.1	25.2	0.3	0.1	29.6	15.9	0.3	5.5	0	21.8	0.2	33.7	13.5	0.3	47.8	

	Nogales Street Southbound				Amar Road Westbound				Nogales Street Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	**5**	5	29	213	2	244	119	1	42	162	0	**306**	**129**	**435**	846
05:15 PM	1	1	3	5	32	265	**5**	302	154	2	46	202	**2**	259	115	376	885
05:30 PM	1	**2**	2	5	32	205	3	240	**168**	**5**	**61**	**234**	2	268	115	385	864
05:45 PM	**4**	0	3	**7**	**36**	**277**	2	**315**	129	1	42	172	2	285	122	409	**903**
Total Volume	6	3	13	22	129	960	12	1101	570	9	191	770	6	1118	481	1605	3498
% App. Total	27.3	13.6	59.1		11.7	87.2	1.1		74	1.2	24.8		0.4	69.7	30		
PHF	.375	.375	.650	.786	.896	.866	.600	.874	.848	.450	.783	.823	.750	.913	.932	.922	.968

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N/S: Nogales Street
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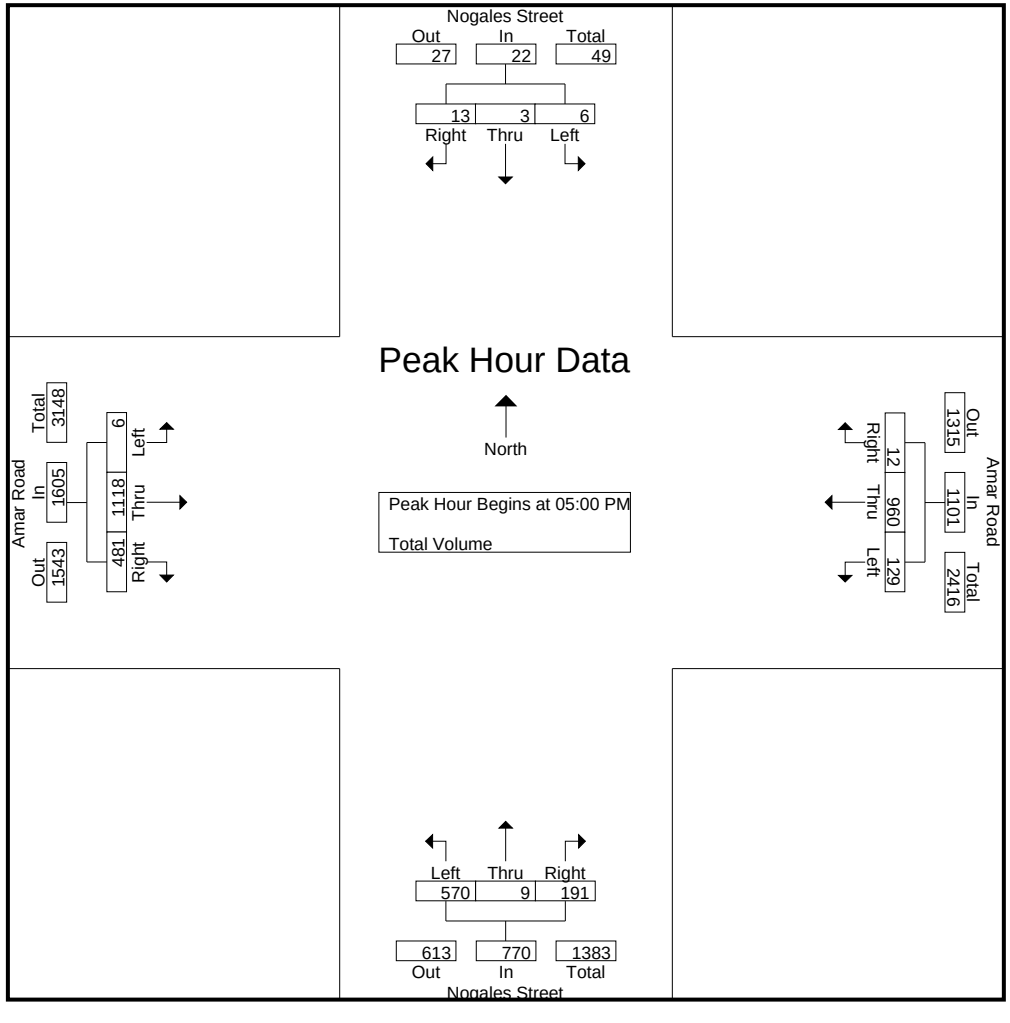
File Name : WNTNOAMPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Nogales Street
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File Name : WNTNOAMPM
Site Code : 04215551
Start Date : 10/1/2015

	Nogales Street Southbound				Amar Road Westbound				Nogales Street Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	1	0	**4**	5	29	213	2	244	119	1	42	162	0	**306**	**129**	**435**	
+15 mins.	3	0	4	7	32	265	**5**	302	154	2	46	202	**2**	259	115	376	
+30 mins.	2	**2**	4	8	32	205	3	240	**168**	**5**	**61**	**234**	2	268	115	385	
+45 mins.	**7**	1	3	**11**	**36**	**277**	2	**315**	129	1	42	172	2	285	122	409	
Total Volume	13	3	15	31	129	960	12	1101	570	9	191	770	6	1118	481	1605	
% App. Total	41.9	9.7	48.4		11.7	87.2	1.1		74	1.2	24.8		0.4	69.7	30		
PHF	.464	.375	.938	.705	.896	.866	.600	.874	.848	.450	.783	.823	.750	.913	.932	.922	

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City of Walnut
N/S: Lemon Avenue
E/W: Amar Road
Weather: Clear

File Name : WNTLEAMAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Lemon Avenue Southbound					Amar Road Westbound					Lemon Avenue Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	3	7	6	0	16	7	248	5	0	260	24	5	16	1	46	2	199	58	0	259	581
07:15 AM	6	17	6	0	29	15	220	2	0	237	62	6	20	1	89	1	281	82	0	364	719
07:30 AM	9	13	4	0	26	10	180	4	0	194	93	11	30	4	138	2	274	69	0	345	703
07:45 AM	4	8	3	0	15	21	142	3	0	166	89	5	36	2	132	2	291	83	0	376	689
Total	22	45	19	0	86	53	790	14	0	857	268	27	102	8	405	7	1045	292	0	1344	2692
08:00 AM	6	6	11	0	23	26	178	3	0	207	53	9	32	1	95	3	186	59	0	248	573
08:15 AM	14	9	13	0	36	29	177	2	1	209	50	5	41	1	97	9	229	55	0	293	635
08:30 AM	17	11	8	0	36	36	239	9	2	286	30	7	25	0	62	1	176	42	0	219	603
08:45 AM	3	9	6	0	18	20	167	5	1	193	42	4	17	3	66	3	161	45	0	209	486
Total	40	35	38	0	113	111	761	19	4	895	175	25	115	5	320	16	752	201	0	969	2297
Grand Total	62	80	57	0	199	164	1551	33	4	1752	443	52	217	13	725	23	1797	493	0	2313	4989
Apprch %	31.2	40.2	28.6	0		9.4	88.5	1.9	0.2		61.1	7.2	29.9	1.8		1	77.7	21.3	0		
Total %	1.2	1.6	1.1	0	4	3.3	31.1	0.7	0.1	35.1	8.9	1	4.3	0.3	14.5	0.5	36	9.9	0	46.4	

	Lemon Avenue Southbound				Amar Road Westbound				Lemon Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	3	7	**6**	16	7	**248**	**5**	**260**	24	5	16	45	**2**	199	58	259	580
07:15 AM	6	**17**	6	**29**	15	220	2	237	62	6	20	88	1	281	82	364	**718**
07:30 AM	**9**	13	4	26	10	180	4	194	**93**	**11**	30	**134**	2	274	69	345	699
07:45 AM	4	8	3	15	**21**	142	3	166	89	5	**36**	130	2	**291**	**83**	**376**	687
Total Volume	22	45	19	86	53	790	14	857	268	27	102	397	7	1045	292	1344	2684
% App. Total	25.6	52.3	22.1		6.2	92.2	1.6		67.5	6.8	25.7		0.5	77.8	21.7		
PHF	.611	.662	.792	.741	.631	.796	.700	.824	.720	.614	.708	.741	.875	.898	.880	.894	.935

Counts Unlimited
PO Box 1178
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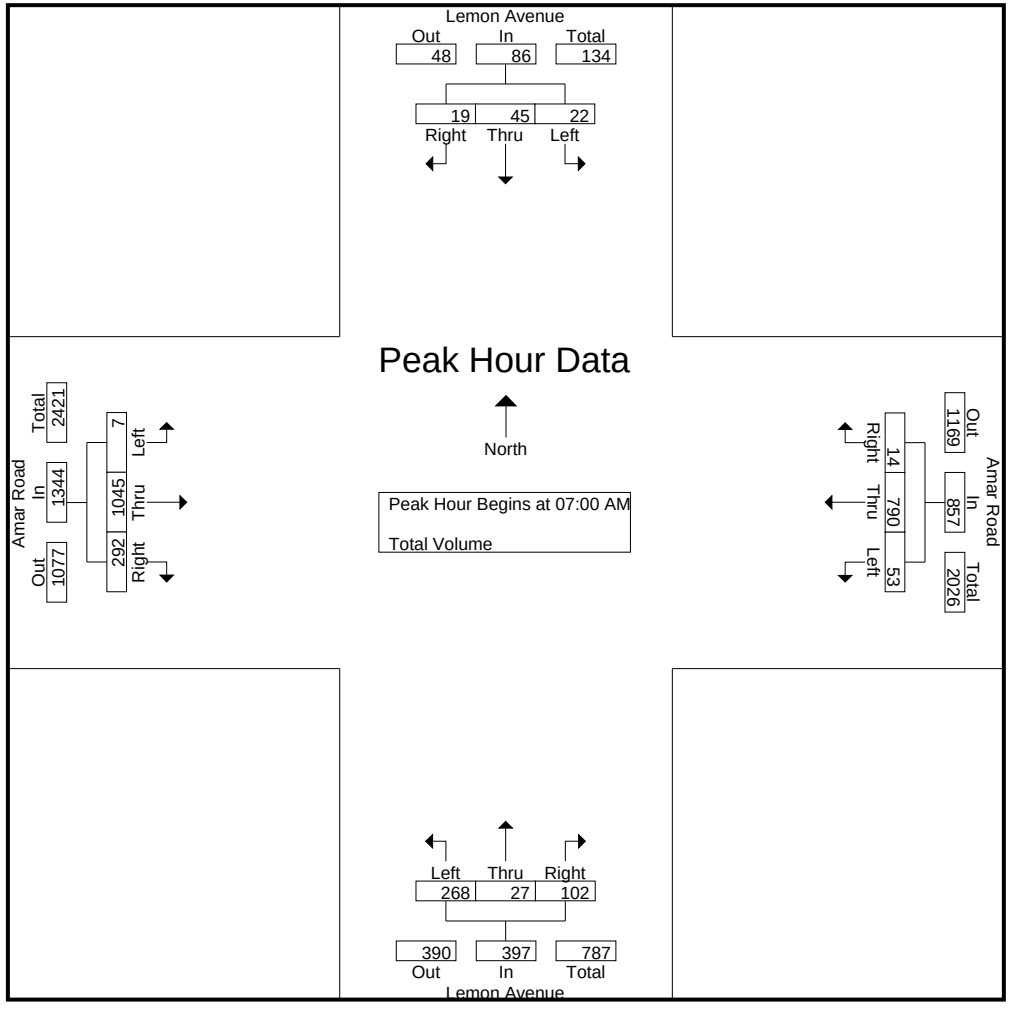
City of Walnut
N/S: Lemon Avenue
E/W: Amar Road
Weather: Clear

File Name : WNTLEAMAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Lemon Avenue
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File Name : WNTLEAMAM
Site Code : 04215551
Start Date : 10/1/2015

	Lemon Avenue Southbound				Amar Road Westbound				Lemon Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				08:00 AM				07:30 AM				07:00 AM				
+0 mins.	6	6	11	23	26	178	3	207	**93**	**11**	30	**134**	**2**	199	58	259	
+15 mins.	14	9	**13**	**36**	29	177	2	208	89	5	36	130	1	281	82	364	
+30 mins.	**17**	**11**	8	36	**36**	**239**	**9**	**284**	53	9	32	94	2	274	69	345	
+45 mins.	3	9	6	18	20	167	5	192	50	5	**41**	96	2	**291**	**83**	**376**	
Total Volume	40	35	38	113	111	761	19	891	285	30	139	454	7	1045	292	1344	
% App. Total	35.4	31	33.6		12.5	85.4	2.1		62.8	6.6	30.6		0.5	77.8	21.7		
PHF	.588	.795	.731	.785	.771	.796	.528	.784	.766	.682	.848	.847	.875	.898	.880	.894	

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City of Walnut
N/S: Lemon Avenue
E/W: Amar Road
Weather: Clear

File Name : WNTLEAMPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Lemon Avenue Southbound					Amar Road Westbound					Lemon Avenue Northbound					Amar Road Eastbound							
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Exclu. Total	Inclu. Total	Int. Total
04:00 PM	1	2	6	0	9	22	154	5	0	181	42	3	21	0	66	6	258	38	0	302	0	558	558
04:15 PM	1	5	3	0	9	24	165	2	0	191	43	5	21	1	70	6	254	48	0	308	0	578	578
04:30 PM	3	6	4	0	13	24	187	2	0	213	57	5	23	0	85	6	282	47	2	335	2	646	648
04:45 PM	4	6	4	0	14	23	182	2	0	207	57	5	20	0	82	8	242	39	0	289	0	592	592
Total	9	19	17	0	45	93	688	11	0	792	199	18	85	1	303	26	1036	172	2	1234	2	2374	2376
05:00 PM	6	2	1	0	9	28	214	5	0	247	71	10	29	0	110	6	247	46	1	299	1	665	666
05:15 PM	5	9	1	0	15	26	234	2	0	262	48	11	31	0	90	1	261	43	1	305	1	672	673
05:30 PM	5	3	1	0	9	28	213	9	1	251	67	13	35	1	116	6	263	35	0	304	0	680	680
05:45 PM	1	8	2	0	11	25	229	3	0	257	68	8	37	3	116	6	228	37	1	271	1	655	656
Total	17	22	5	0	44	107	890	19	1	1017	254	42	132	4	432	19	999	161	3	1179	3	2672	2675
Grand Total	26	41	22	0	89	200	1578	30	1	1809	453	60	217	5	735	45	2035	333	5	2413	5	5046	5051
Apprch %	29.2	46.1	24.7	0		11.1	87.2	1.7	0.1		61.6	8.2	29.5	0.7		1.9	84.3	13.8					
Total %	0.5	0.8	0.4	0	1.8	4	31.3	0.6	0	35.9	9	1.2	4.3	0.1	14.6	0.9	40.3	6.6		47.8	0.1	99.9	

	Lemon Avenue Southbound				Amar Road Westbound				Lemon Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**6**	2	1	9	**28**	214	5	247	**71**	10	29	110	**6**	247	**46**	299	665
05:15 PM	5	**9**	1	**15**	26	**234**	2	**262**	48	11	31	90	1	261	43	**305**	672
05:30 PM	5	3	1	9	28	213	**9**	250	67	**13**	35	**115**	6	**263**	35	304	**678**
05:45 PM	1	8	**2**	11	25	229	3	257	68	8	**37**	113	6	228	37	271	652
Total Volume	17	22	5	44	107	890	19	1016	254	42	132	428	19	999	161	1179	2667
% App. Total	38.6	50	11.4		10.5	87.6	1.9		59.3	9.8	30.8		1.6	84.7	13.7		
PHF	.708	.611	.625	.733	.955	.951	.528	.969	.894	.808	.892	.930	.792	.950	.875	.966	.983

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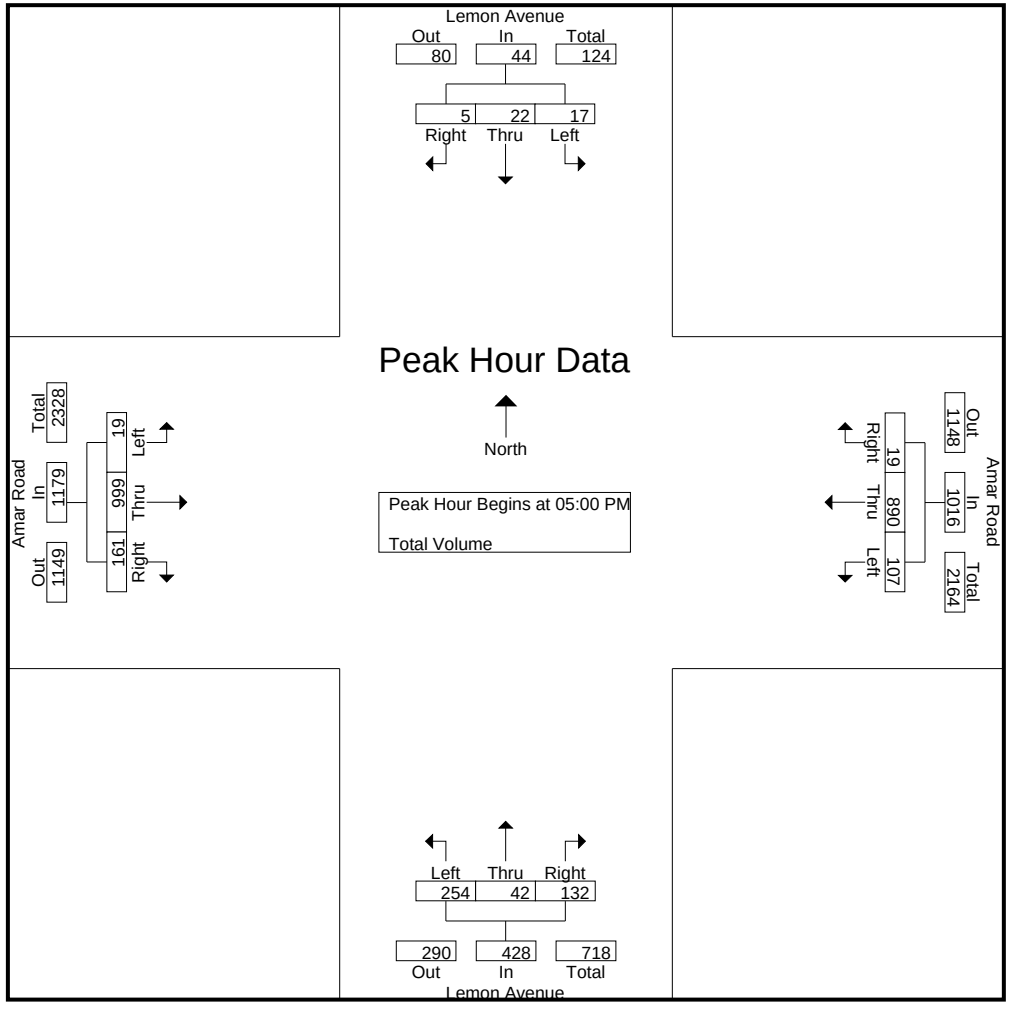
City of Walnut
N/S: Lemon Avenue
E/W: Amar Road
Weather: Clear

File Name : WNTLEAMPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Lemon Avenue
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File Name : WNTLEAMPM
Site Code : 04215551
Start Date : 10/1/2015

	Lemon Avenue Southbound				Amar Road Westbound				Lemon Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				04:00 PM				
+0 mins.	3	6	**4**	13	**28**	214	5	247	**71**	10	29	110	6	258	38	302	
+15 mins.	4	6	4	14	26	**234**	2	**262**	48	11	31	90	6	254	**48**	308	
+30 mins.	**6**	2	1	9	28	213	**9**	250	67	**13**	35	**115**	6	**282**	47	**335**	
+45 mins.	5	**9**	1	**15**	25	229	3	257	68	8	**37**	113	**8**	242	39	289	
Total Volume	18	23	10	51	107	890	19	1016	254	42	132	428	26	1036	172	1234	
% App. Total	35.3	45.1	19.6		10.5	87.6	1.9		59.3	9.8	30.8		2.1	84	13.9		
PHF	.750	.639	.625	.850	.955	.951	.528	.969	.894	.808	.892	.930	.813	.918	.896	.921	

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City of Walnut
N/S: Grand Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : WNTGR10WAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Driveway Westbound					Grand Avenue Northbound					I-10 Westbound Ramps Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	220	38	0	258	2	0	2	0	4	32	164	2	0	198	110	1	44	0	155	615
07:15 AM	0	233	17	0	250	4	2	2	0	8	27	217	5	0	249	116	0	60	0	176	683
07:30 AM	0	209	22	0	231	4	2	1	0	7	25	282	2	1	310	100	0	99	0	199	747
07:45 AM	0	202	31	0	233	3	0	1	0	4	41	258	0	0	299	113	3	73	0	189	725
Total	0	864	108	0	972	13	4	6	0	23	125	921	9	1	1056	439	4	276	0	719	2770
08:00 AM	0	202	45	0	247	1	0	2	0	3	38	229	10	0	277	126	2	77	0	205	732
08:15 AM	0	199	42	0	241	4	1	4	0	9	40	282	5	1	328	98	1	61	0	160	738
08:30 AM	1	214	50	0	265	3	2	1	0	6	48	250	4	0	302	104	3	40	0	147	720
08:45 AM	1	175	50	0	226	4	1	1	0	6	55	272	6	0	333	108	2	32	0	142	707
Total	2	790	187	0	979	12	4	8	0	24	181	1033	25	1	1240	436	8	210	0	654	2897
Grand Total	2	1654	295	0	1951	25	8	14	0	47	306	1954	34	2	2296	875	12	486	0	1373	5667
Apprch %	0.1	84.8	15.1	0		53.2	17	29.8	0		13.3	85.1	1.5	0.1		63.7	0.9	35.4	0		
Total %	0	29.2	5.2	0	34.4	0.4	0.1	0.2	0	0.8	5.4	34.5	0.6	0	40.5	15.4	0.2	8.6	0	24.2	

	Grand Avenue Southbound				Driveway Westbound				Grand Avenue Northbound				I-10 Westbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	**209**	22	231	**4**	**2**	1	7	25	**282**	2	309	100	0	**99**	199	**746**
07:45 AM	0	202	31	233	3	0	1	4	**41**	258	0	299	113	**3**	73	189	725
08:00 AM	0	202	**45**	**247**	1	0	2	3	38	229	**10**	277	**126**	2	77	**205**	732
08:15 AM	0	199	42	241	4	1	**4**	**9**	40	282	5	**327**	98	1	61	160	737
Total Volume	0	812	140	952	12	3	8	23	144	1051	17	1212	437	6	310	753	2940
% App. Total	0	85.3	14.7		52.2	13	34.8		11.9	86.7	1.4		58	0.8	41.2		
PHF	.000	.971	.778	.964	.750	.375	.500	.639	.878	.932	.425	.927	.867	.500	.783	.918	.985

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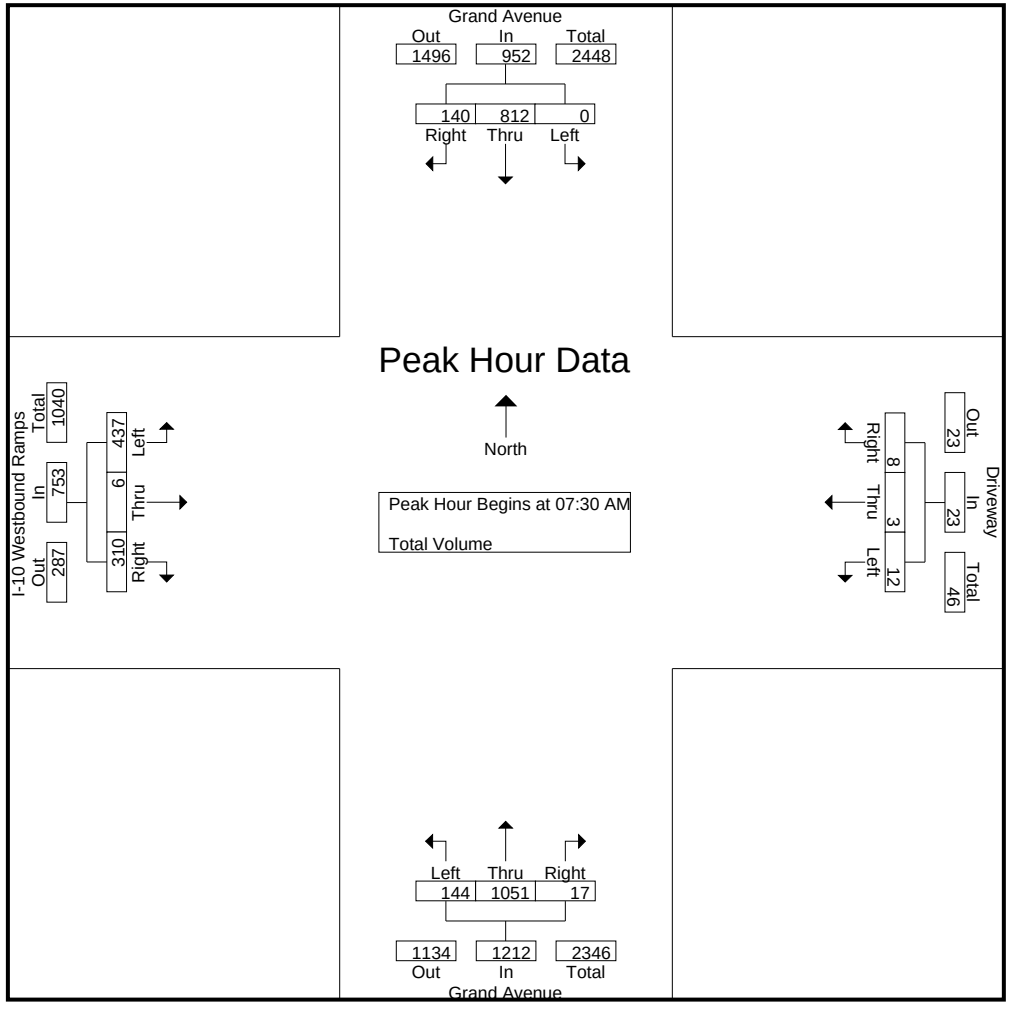
City of Walnut
N/S: Grand Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : WNTGR10WAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
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File Name : WNTGR10WAM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				Driveway Westbound				Grand Avenue Northbound				I-10 Westbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:45 AM				08:00 AM				08:00 AM				07:15 AM				
+0 mins.	0	202	31	233	1	0	2	3	38	229	**10**	277	116	0	60	176	
+15 mins.	0	202	45	247	**4**	1	**4**	**9**	40	**282**	5	327	100	0	**99**	199	
+30 mins.	0	199	42	241	3	**2**	1	6	48	250	4	302	113	**3**	73	189	
+45 mins.	**1**	**214**	**50**	**265**	4	1	1	6	**55**	272	6	**333**	**126**	2	77	**205**	
Total Volume	1	817	168	986	12	4	8	24	181	1033	25	1239	455	5	309	769	
% App. Total	0.1	82.9	17		50	16.7	33.3		14.6	83.4	2		59.2	0.7	40.2		
PHF	.250	.954	.840	.930	.750	.500	.500	.667	.823	.916	.625	.930	.903	.417	.780	.938	

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City of Walnut
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File Name : WNTGR10WPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Driveway Westbound					Grand Avenue Northbound					I-10 Westbound Ramps Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	1	219	111	0	331	10	2	0	0	12	72	193	2	0	267	47	6	14	0	67	677
04:15 PM	0	245	87	0	332	4	2	6	0	12	99	241	7	0	347	47	4	13	0	64	755
04:30 PM	1	235	113	0	349	3	1	3	0	7	94	257	10	0	361	55	2	16	0	73	790
04:45 PM	1	215	111	0	327	10	0	5	0	15	85	274	1	1	361	46	3	20	0	69	772
Total	3	914	422	0	1339	27	5	14	0	46	350	965	20	1	1336	195	15	63	0	273	2994
05:00 PM	2	191	98	0	291	2	5	0	0	7	89	270	10	0	369	53	3	25	0	81	748
05:15 PM	0	197	116	0	313	6	1	0	0	7	101	252	6	0	359	81	2	27	0	110	789
05:30 PM	0	207	83	1	291	2	6	1	0	9	102	270	11	0	383	77	2	30	0	109	792
05:45 PM	1	220	88	1	310	8	5	5	0	18	97	298	7	0	402	71	4	35	0	110	840
Total	3	815	385	2	1205	18	17	6	0	41	389	1090	34	0	1513	282	11	117	0	410	3169
Grand Total	6	1729	807	2	2544	45	22	20	0	87	739	2055	54	1	2849	477	26	180	0	683	6163
Apprch %	0.2	68	31.7	0.1		51.7	25.3	23	0		25.9	72.1	1.9	0		69.8	3.8	26.4	0		
Total %	0.1	28.1	13.1	0	41.3	0.7	0.4	0.3	0	1.4	12	33.3	0.9	0	46.2	7.7	0.4	2.9	0	11.1	

	Grand Avenue Southbound				Driveway Westbound				Grand Avenue Northbound				I-10 Westbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**2**	191	98	291	2	5	0	7	89	270	10	369	53	3	25	81	748
05:15 PM	0	197	**116**	**313**	6	1	0	7	101	252	6	359	**81**	2	27	**110**	789
05:30 PM	0	207	83	290	2	**6**	1	9	**102**	270	**11**	383	77	2	30	109	791
05:45 PM	1	**220**	88	309	**8**	5	**5**	**18**	97	**298**	7	**402**	71	**4**	**35**	110	**839**
Total Volume	3	815	385	1203	18	17	6	41	389	1090	34	1513	282	11	117	410	3167
% App. Total	0.2	67.7	32		43.9	41.5	14.6		25.7	72	2.2		68.8	2.7	28.5		
PHF	.375	.926	.830	.961	.563	.708	.300	.569	.953	.914	.773	.941	.870	.688	.836	.932	.944

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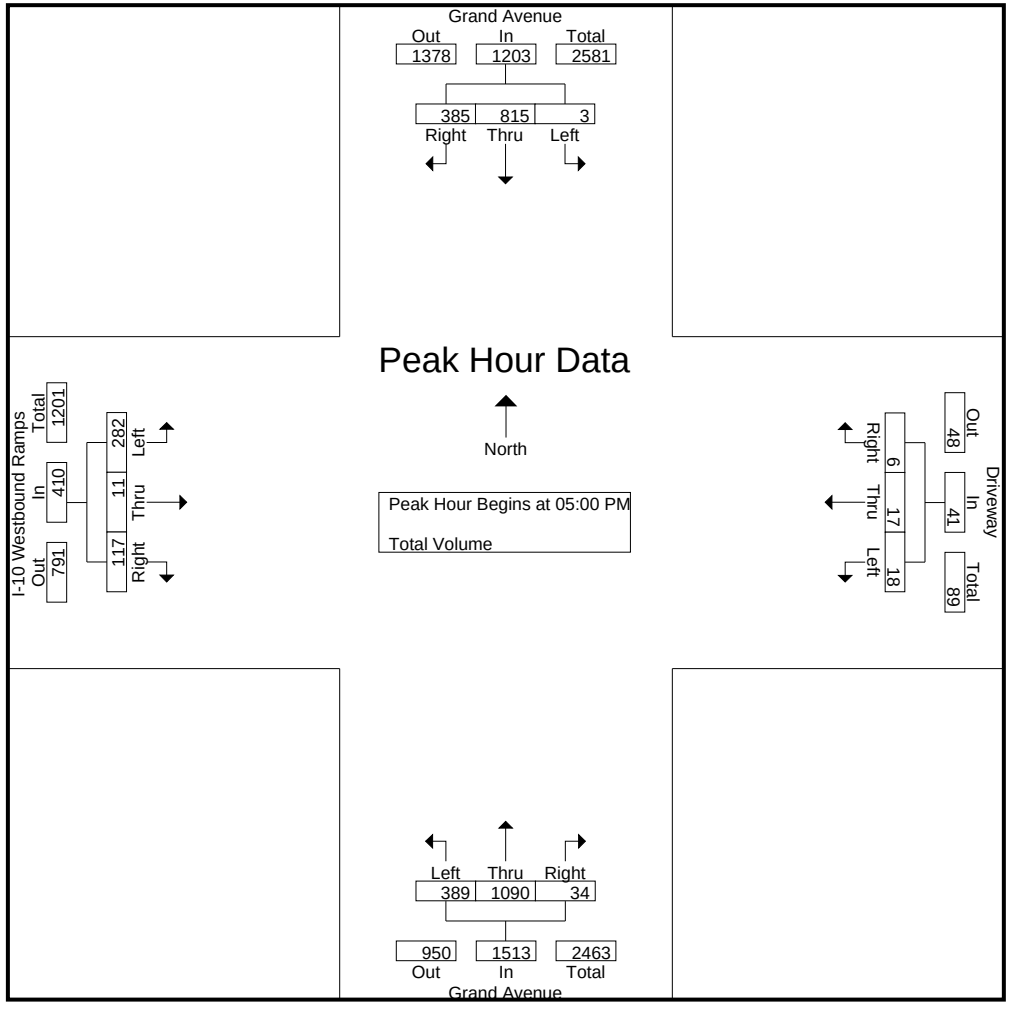
City of Walnut
N/S: Grand Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : WNTGR10WPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
E/W: I-10 Westbound Ramps
Weather: Clear

File Name : WNTGR10WPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				Driveway Westbound				Grand Avenue Northbound				I-10 Westbound Ramps Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				04:00 PM				05:00 PM				05:00 PM				
+0 mins.	**1**	219	111	331	**10**	**2**	0	12	89	270	10	369	53	3	25	81	
+15 mins.	0	**245**	87	332	4	2	**6**	12	101	252	6	359	**81**	2	27	**110**	
+30 mins.	1	235	**113**	**349**	3	1	3	7	**102**	270	**11**	383	77	2	30	109	
+45 mins.	1	215	111	327	10	0	5	**15**	97	**298**	7	**402**	71	**4**	**35**	110	
Total Volume	3	914	422	1339	27	5	14	46	389	1090	34	1513	282	11	117	410	
% App. Total	0.2	68.3	31.5		58.7	10.9	30.4		25.7	72	2.2		68.8	2.7	28.5		
PHF	.750	.933	.934	.959	.675	.625	.583	.767	.953	.914	.773	.941	.870	.688	.836	.932	

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City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound				Grand Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
07:00 AM	218	43	0	261	9	141	0	150	55	166	0	221	632
07:15 AM	224	59	0	283	8	165	0	173	83	152	0	235	691
07:30 AM	237	56	0	293	5	209	0	214	102	142	0	244	751
07:45 AM	241	48	0	289	11	228	0	239	91	161	0	252	780
Total	920	206	0	1126	33	743	0	776	331	621	0	952	2854
08:00 AM	249	52	0	301	10	199	0	209	87	123	0	210	720
08:15 AM	200	67	1	268	15	237	0	252	69	107	0	176	696
08:30 AM	190	48	0	238	8	220	0	228	83	120	0	203	669
08:45 AM	163	58	0	221	7	240	0	247	100	130	0	230	698
Total	802	225	1	1028	40	896	0	936	339	480	0	819	2783
Grand Total	1722	431	1	2154	73	1639	0	1712	670	1101	0	1771	5637
Apprch %	79.9	20	0		4.3	95.7	0		37.8	62.2	0		
Total %	30.5	7.6	0	38.2	1.3	29.1	0	30.4	11.9	19.5	0	31.4	

	Grand Avenue Southbound			Grand Avenue Northbound			I-10 Eastbound Ramps Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	237	56	293	5	209	214	**102**	142	244	751
07:45 AM	241	48	289	11	228	239	91	**161**	**252**	**780**
08:00 AM	**249**	52	**301**	10	199	209	87	123	210	720
08:15 AM	200	**67**	267	**15**	**237**	**252**	69	107	176	695
Total Volume	927	223	1150	41	873	914	349	533	882	2946
% App. Total	80.6	19.4		4.5	95.5		39.6	60.4		
PHF	.931	.832	.955	.683	.921	.907	.855	.828	.875	.944

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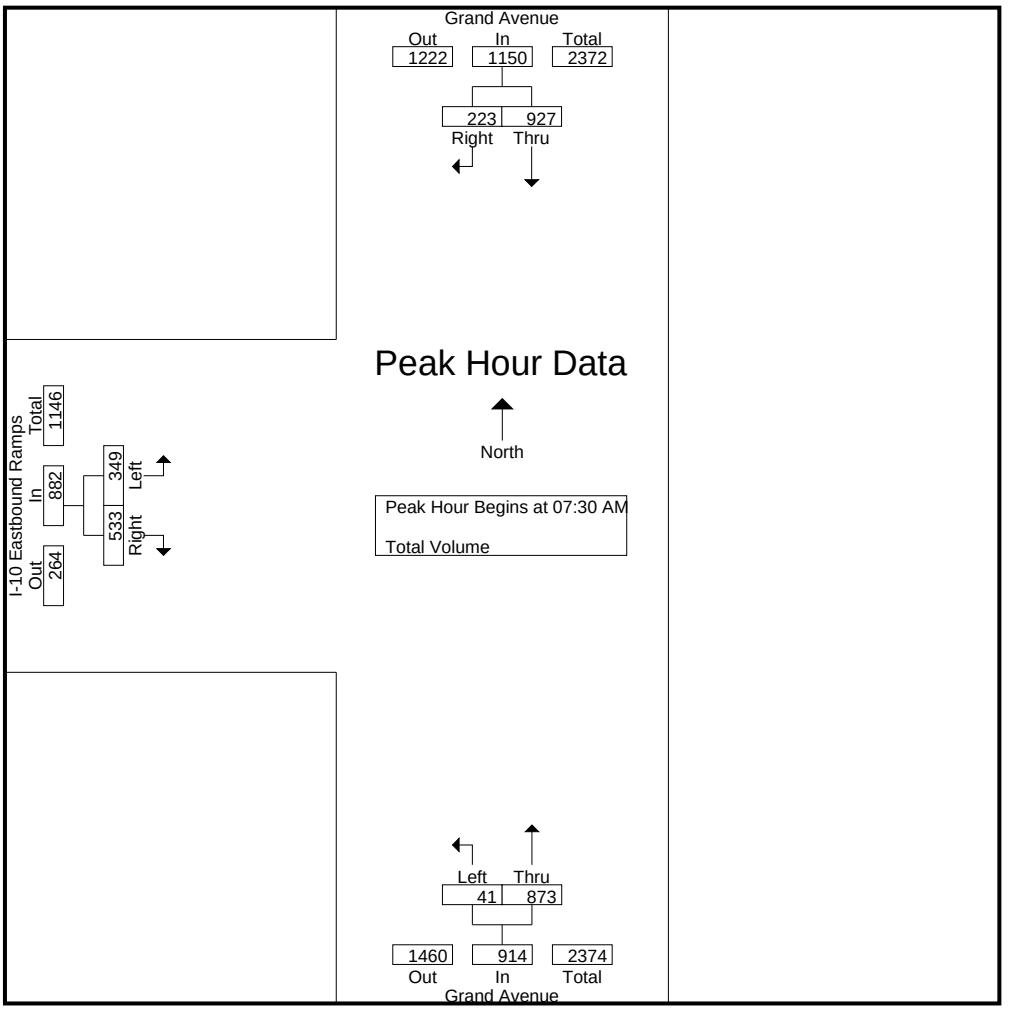
City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EAM
Site Code : 04215551
Start Date : 10/1/2015
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:

	07:15 AM			08:00 AM			07:00 AM		
+0 mins.	224	**59**	283	10	199	209	55	**166**	221
+15 mins.	237	56	293	**15**	237	**252**	83	152	235
+30 mins.	241	48	289	8	220	228	**102**	142	244
+45 mins.	**249**	52	**301**	7	**240**	247	91	161	**252**
Total Volume	951	215	1166	40	896	936	331	621	952
% App. Total	81.6	18.4		4.3	95.7		34.8	65.2	
PHF	.955	.911	.968	.667	.933	.929	.811	.935	.944

Counts Unlimited
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City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound				Grand Avenue Northbound				I-10 Eastbound Ramps Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
04:00 PM	168	78	0	246	13	231	0	244	59	57	0	116	606
04:15 PM	181	95	0	276	14	265	0	279	75	41	0	116	671
04:30 PM	164	85	0	249	14	279	0	293	82	37	0	119	661
04:45 PM	167	81	0	248	16	287	0	303	64	53	0	117	668
Total	680	339	0	1019	57	1062	0	1119	280	188	0	468	2606
05:00 PM	135	70	0	205	19	315	0	334	65	46	0	111	650
05:15 PM	163	77	0	240	7	310	0	317	79	60	0	139	696
05:30 PM	182	70	0	252	11	328	0	339	75	32	0	107	698
05:45 PM	188	84	0	272	15	320	0	335	82	48	0	130	737
Total	668	301	0	969	52	1273	0	1325	301	186	0	487	2781
Grand Total	1348	640	0	1988	109	2335	0	2444	581	374	0	955	5387
Apprch %	67.8	32.2	0		4.5	95.5	0		60.8	39.2	0		
Total %	25	11.9	0	36.9	2	43.3	0	45.4	10.8	6.9	0	17.7	

	Grand Avenue Southbound			Grand Avenue Northbound			I-10 Eastbound Ramps Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	135	70	205	**19**	315	334	65	46	111	650
05:15 PM	163	77	240	7	310	317	79	**60**	**139**	696
05:30 PM	182	70	252	11	**328**	**339**	75	32	107	698
05:45 PM	**188**	**84**	**272**	15	320	335	**82**	48	130	**737**
Total Volume	668	301	969	52	1273	1325	301	186	487	2781
% App. Total	68.9	31.1		3.9	96.1		61.8	38.2		
PHF	.888	.896	.891	.684	.970	.977	.918	.775	.876	.943

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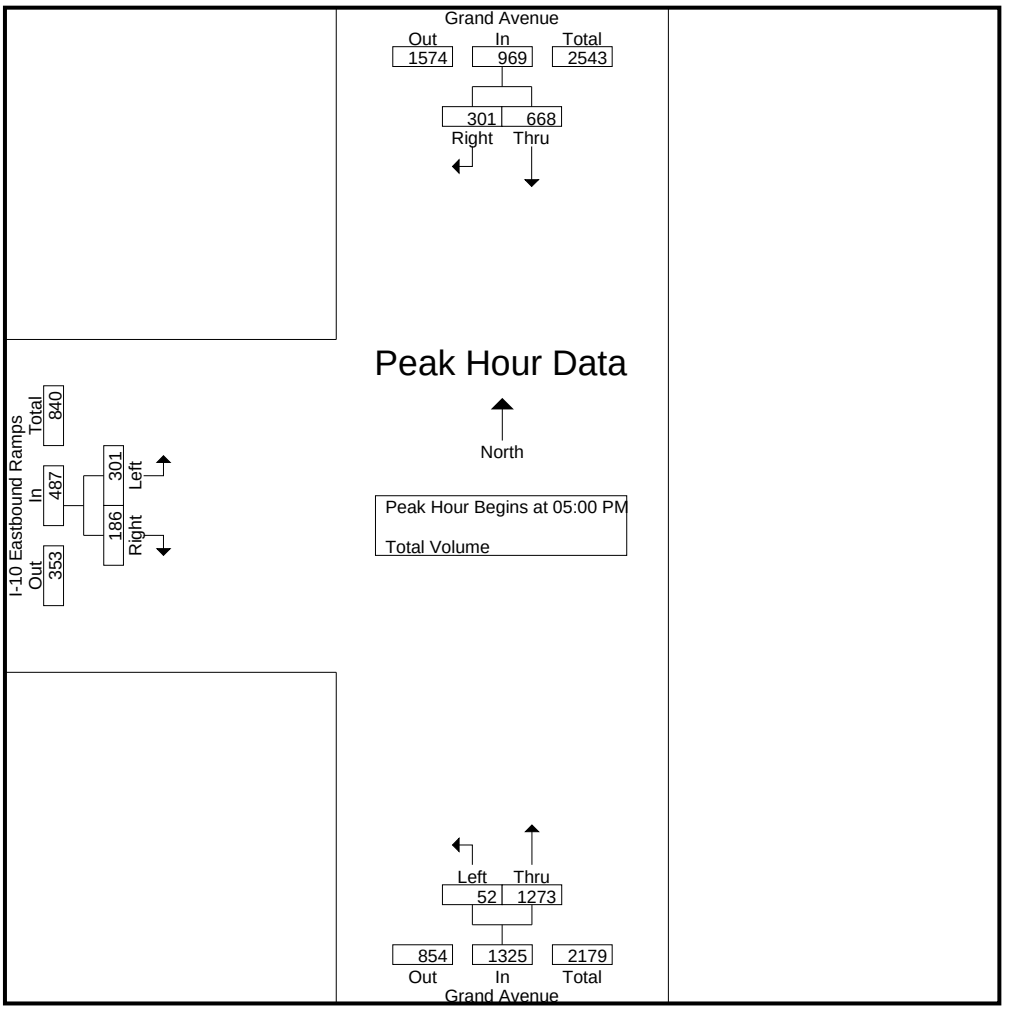
City of Walnut
N/S: Grand Avenue
E/W: I-10 Eastbound Ramps
Weather: Clear

File Name : WNTGR10EPM
Site Code : 04215551
Start Date : 10/1/2015
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			05:00 PM			05:00 PM		
+0 mins.	168	78	246	**19**	315	334	65	46	111
+15 mins.	**181**	**95**	**276**	7	310	317	79	**60**	**139**
+30 mins.	164	85	249	11	**328**	**339**	75	32	107
+45 mins.	167	81	248	15	320	335	**82**	48	130
Total Volume	680	339	1019	52	1273	1325	301	186	487
% App. Total	66.7	33.3		3.9	96.1		61.8	38.2	
PHF	.939	.892	.923	.684	.970	.977	.918	.775	.876

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City of Walnut
N/S: North Grand Avenue
E/W: Cameron Avenue
Weather: Clear

File Name : WNTGRCAAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	North Grand Avenue Southbound				North Grand Avenue Northbound				Cameron Avenue Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
07:00 AM	386	50	0	436	105	152	0	257	16	132	0	148	841
07:15 AM	450	47	0	497	115	195	0	310	8	168	0	176	983
07:30 AM	387	49	0	436	95	183	0	278	29	130	0	159	873
07:45 AM	430	35	0	465	82	209	0	291	33	131	0	164	920
Total	1653	181	0	1834	397	739	0	1136	86	561	0	647	3617
08:00 AM	358	47	0	405	82	177	0	259	22	115	0	137	801
08:15 AM	293	46	0	339	67	232	0	299	17	77	0	94	732
08:30 AM	268	52	0	320	98	222	0	320	12	84	0	96	736
08:45 AM	273	43	0	316	64	218	0	282	17	76	0	93	691
Total	1192	188	0	1380	311	849	0	1160	68	352	0	420	2960
Grand Total	2845	369	0	3214	708	1588	0	2296	154	913	0	1067	6577
Apprch %	88.5	11.5	0		30.8	69.2	0		14.4	85.6	0		
Total %	43.3	5.6	0	48.9	10.8	24.1	0	34.9	2.3	13.9	0	16.2	

	North Grand Avenue Southbound			North Grand Avenue Northbound			Cameron Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	386	**50**	436	105	152	257	16	132	148	841
07:15 AM	**450**	47	**497**	**115**	195	**310**	8	**168**	**176**	**983**
07:30 AM	387	49	436	95	183	278	29	130	159	873
07:45 AM	430	35	465	82	**209**	291	**33**	131	164	920
Total Volume	1653	181	1834	397	739	1136	86	561	647	3617
% App. Total	90.1	9.9		34.9	65.1		13.3	86.7		
PHF	.918	.905	.923	.863	.884	.916	.652	.835	.919	.920

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City of Walnut
N/S: North Grand Avenue
E/W: Cameron Avenue
Weather: Clear

File Name : WNTGRCAAM
Site Code : 04215551
Start Date : 10/1/2015
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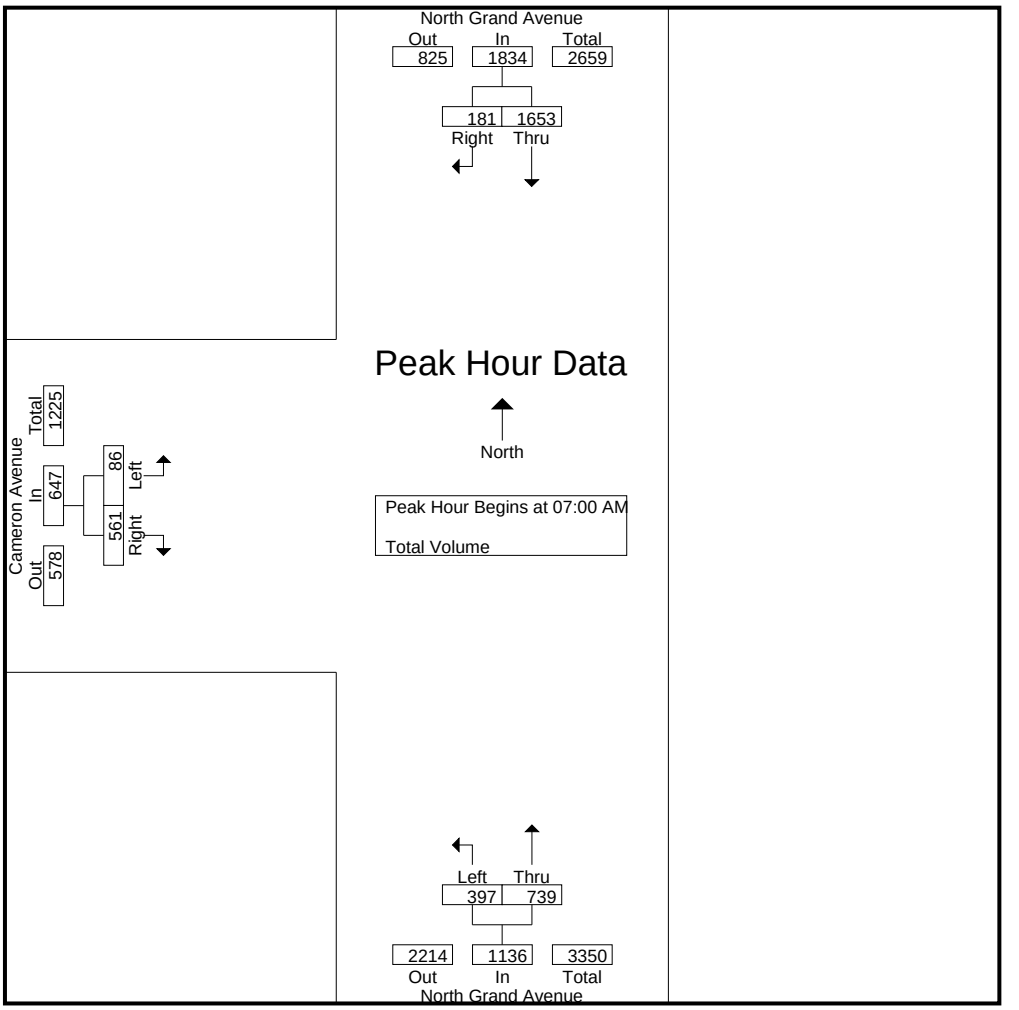

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:45 AM			07:00 AM		
+0 mins.	386	**50**	436	82	209	291	16	132	148
+15 mins.	**450**	47	**497**	82	177	259	8	**168**	**176**
+30 mins.	387	49	436	67	**232**	299	29	130	159
+45 mins.	430	35	465	**98**	222	**320**	**33**	131	164
Total Volume	1653	181	1834	329	840	1169	86	561	647
% App. Total	90.1	9.9		28.1	71.9		13.3	86.7	
PHF	.918	.905	.923	.839	.905	.913	.652	.835	.919

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City of Walnut
N/S: North Grand Avenue
E/W: Cameron Avenue
Weather: Clear

File Name : WNTGRCAPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	North Grand Avenue Southbound				North Grand Avenue Northbound				Cameron Avenue Eastbound				
Start Time	Thru	Right	U-Turns	App. Total	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Int. Total
04:00 PM	206	15	0	221	65	254	0	319	9	79	0	88	628
04:15 PM	198	13	0	211	76	282	0	358	18	103	0	121	690
04:30 PM	185	11	0	196	77	280	0	357	28	86	0	114	667
04:45 PM	213	18	0	231	86	328	0	414	20	101	0	121	766
Total	802	57	0	859	304	1144	0	1448	75	369	0	444	2751
05:00 PM	205	24	0	229	101	292	0	393	25	107	0	132	754
05:15 PM	174	29	0	203	97	282	0	379	24	98	0	122	704
05:30 PM	221	31	0	252	121	339	0	460	14	94	0	108	820
05:45 PM	208	31	0	239	99	330	0	429	18	108	0	126	794
Total	808	115	0	923	418	1243	0	1661	81	407	0	488	3072
Grand Total	1610	172	0	1782	722	2387	0	3109	156	776	0	932	5823
Apprch %	90.3	9.7	0		23.2	76.8	0		16.7	83.3	0		
Total %	27.6	3	0	30.6	12.4	41	0	53.4	2.7	13.3	0	16	

	North Grand Avenue Southbound			North Grand Avenue Northbound			Cameron Avenue Eastbound			
Start Time	Thru	Right	App. Total	Left	Thru	App. Total	Left	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	205	24	229	101	292	393	**25**	107	**132**	754
05:15 PM	174	29	203	97	282	379	24	98	122	704
05:30 PM	**221**	**31**	**252**	**121**	**339**	**460**	14	94	108	**820**
05:45 PM	208	31	239	99	330	429	18	**108**	126	794
Total Volume	808	115	923	418	1243	1661	81	407	488	3072
% App. Total	87.5	12.5		25.2	74.8		16.6	83.4		
PHF	.914	.927	.916	.864	.917	.903	.810	.942	.924	.937

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City of Walnut
N/S: North Grand Avenue
E/W: Cameron Avenue
Weather: Clear

File Name : WNTGRCAPM
Site Code : 04215551
Start Date : 10/1/2015
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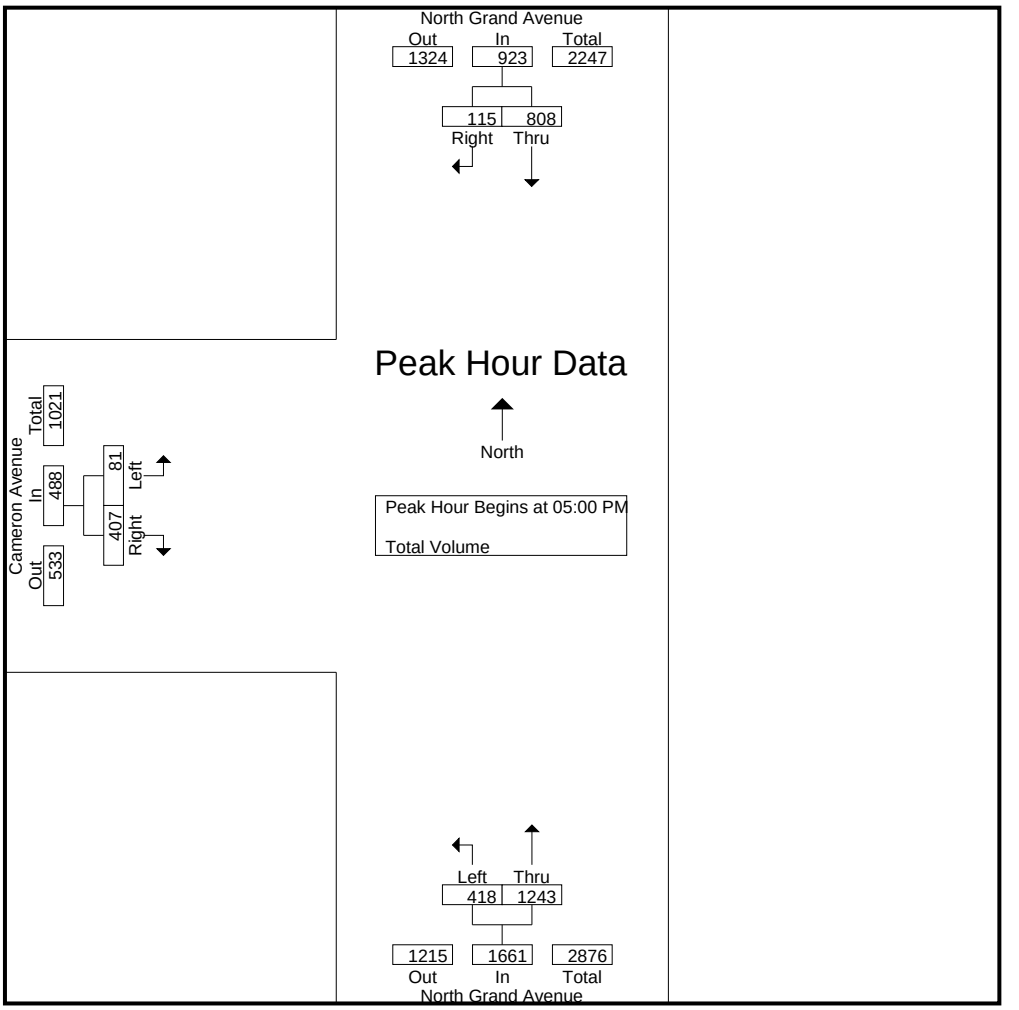

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			04:30 PM		
+0 mins.	205	24	229	101	292	393	**28**	86	114
+15 mins.	174	29	203	97	282	379	20	101	121
+30 mins.	**221**	**31**	**252**	**121**	**339**	**460**	25	**107**	**132**
+45 mins.	208	31	239	99	330	429	24	98	122
Total Volume	808	115	923	418	1243	1661	97	392	489
% App. Total	87.5	12.5		25.2	74.8		19.8	80.2	
PHF	.914	.927	.916	.864	.917	.903	.866	.916	.926

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City of Walnut
N/S: Grand Avenue
E/W: Mountaineer Road
Weather: Clear

File Name : WNTGRMOAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound				Mountaineer Road Westbound				Grand Avenue Northbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	80	433	0	513	23	11	0	34	239	47	0	286	833
07:15 AM	133	455	0	588	36	19	0	55	287	58	0	345	988
07:30 AM	165	446	0	611	28	11	1	40	281	103	0	384	1035
07:45 AM	186	411	0	597	20	24	0	44	246	151	0	397	1038
Total	564	1745	0	2309	107	65	1	173	1053	359	0	1412	3894
08:00 AM	159	388	0	547	50	21	0	71	233	125	0	358	976
08:15 AM	57	389	0	446	60	12	1	73	296	61	0	357	876
08:30 AM	68	311	0	379	26	14	0	40	314	50	0	364	783
08:45 AM	54	319	0	373	26	12	0	38	267	41	0	308	719
Total	338	1407	0	1745	162	59	1	222	1110	277	0	1387	3354
Grand Total	902	3152	0	4054	269	124	2	395	2163	636	0	2799	7248
Apprch %	22.2	77.8	0		68.1	31.4	0.5		77.3	22.7	0		
Total %	12.4	43.5	0	55.9	3.7	1.7	0	5.4	29.8	8.8	0	38.6	

	Grand Avenue Southbound			Mountaineer Road Westbound			Grand Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	133	**455**	588	36	19	55	**287**	58	345	988
07:30 AM	165	446	**611**	28	11	39	281	103	384	1034
07:45 AM	**186**	411	597	20	**24**	44	246	**151**	**397**	**1038**
08:00 AM	159	388	547	**50**	21	**71**	233	125	358	976
Total Volume	643	1700	2343	134	75	209	1047	437	1484	4036
% App. Total	27.4	72.6		64.1	35.9		70.6	29.4		
PHF	.864	.934	.959	.670	.781	.736	.912	.724	.935	.972

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City of Walnut
N/S: Grand Avenue
E/W: Mountaineer Road
Weather: Clear

File Name : WNTGRMOAM
Site Code : 04215551
Start Date : 10/1/2015
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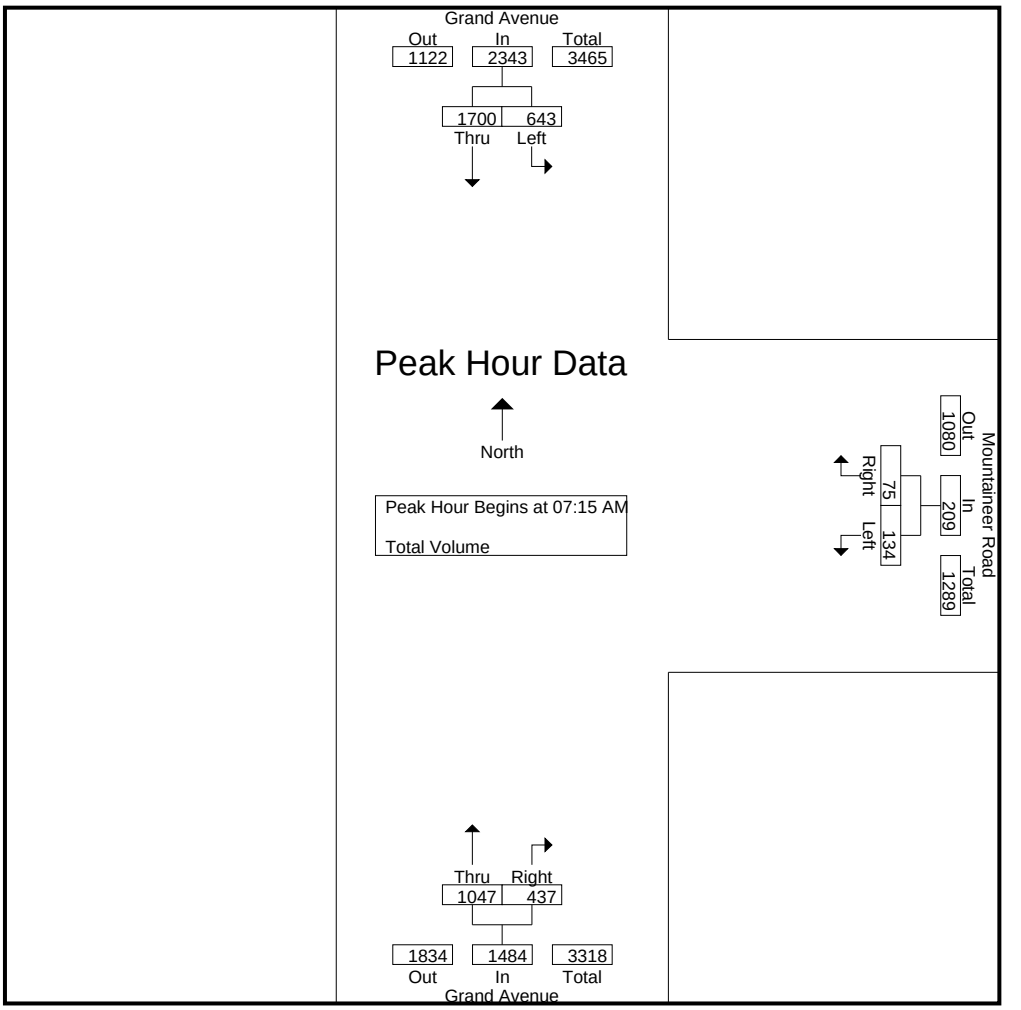

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:45 AM			07:30 AM		
+0 mins.	133	**455**	588	20	**24**	44	281	103	384
+15 mins.	165	446	**611**	50	21	71	246	**151**	**397**
+30 mins.	**186**	411	597	**60**	12	**72**	233	125	358
+45 mins.	159	388	547	26	14	40	**296**	61	357
Total Volume	643	1700	2343	156	71	227	1056	440	1496
% App. Total	27.4	72.6		68.7	31.3		70.6	29.4	
PHF	.864	.934	.959	.650	.740	.788	.892	.728	.942

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City of Walnut
N/S: Grand Avenue
E/W: Mountaineer Road
Weather: Clear

File Name : WNTGRMOPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound				Mountaineer Road Westbound				Grand Avenue Northbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	47	220	0	267	49	42	0	91	275	34	0	309	667
04:15 PM	42	263	0	305	71	73	0	144	317	46	0	363	812
04:30 PM	30	263	0	293	70	62	1	133	334	31	0	365	791
04:45 PM	25	293	0	318	31	35	0	66	370	42	0	412	796
Total	144	1039	0	1183	221	212	1	434	1296	153	0	1449	3066
05:00 PM	29	277	0	306	46	47	0	93	374	27	0	401	800
05:15 PM	17	269	0	286	22	44	0	66	460	31	0	491	843
05:30 PM	29	288	0	317	37	44	1	82	449	33	0	482	881
05:45 PM	31	286	0	317	31	26	0	57	429	27	0	456	830
Total	106	1120	0	1226	136	161	1	298	1712	118	0	1830	3354
Grand Total	250	2159	0	2409	357	373	2	732	3008	271	0	3279	6420
Apprch %	10.4	89.6	0		48.8	51	0.3		91.7	8.3	0		
Total %	3.9	33.6	0	37.5	5.6	5.8	0	11.4	46.9	4.2	0	51.1	

	Grand Avenue Southbound			Mountaineer Road Westbound			Grand Avenue Northbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	29	277	306	**46**	**47**	**93**	374	27	401	800
05:15 PM	17	269	286	22	44	66	**460**	31	**491**	843
05:30 PM	29	**288**	**317**	37	44	81	449	**33**	482	**880**
05:45 PM	**31**	286	317	31	26	57	429	27	456	830
Total Volume	106	1120	1226	136	161	297	1712	118	1830	3353
% App. Total	8.6	91.4		45.8	54.2		93.6	6.4		
PHF	.855	.972	.967	.739	.856	.798	.930	.894	.932	.953

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City of Walnut
N/S: Grand Avenue
E/W: Mountaineer Road
Weather: Clear

File Name : WNTGRMOPM
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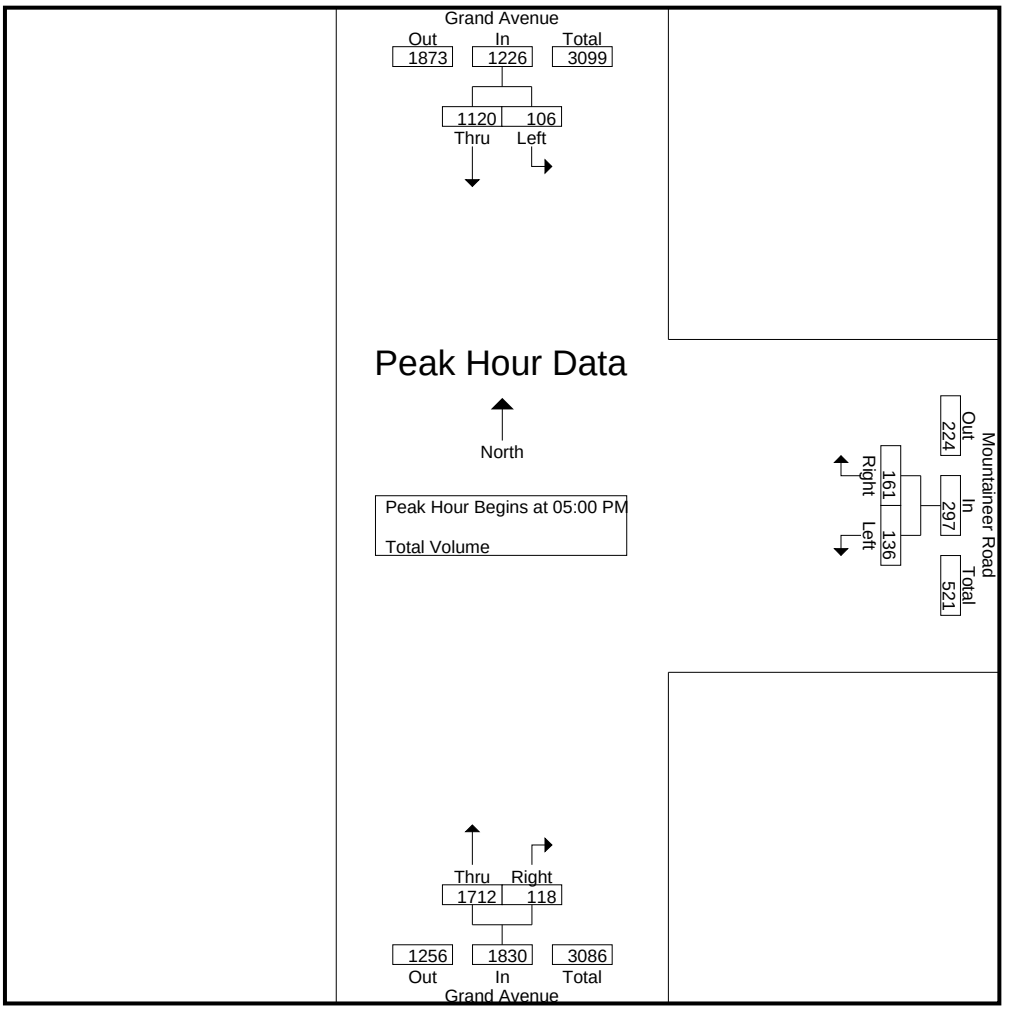

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM			04:15 PM			05:00 PM		
+0 mins.	25	**293**	**318**	**71**	**73**	**144**	374	27	401
+15 mins.	**29**	277	306	70	62	132	**460**	31	**491**
+30 mins.	17	269	286	31	35	66	449	**33**	482
+45 mins.	29	288	317	46	47	93	429	27	456
Total Volume	100	1127	1227	218	217	435	1712	118	1830
% App. Total	8.1	91.9		50.1	49.9		93.6	6.4	
PHF	.862	.962	.965	.768	.743	.755	.930	.894	.932

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City of Walnut
N/S: Grand Avenue
E/W: San Jose Hills Road
Weather: Clear

File Name : WNTGRSJAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Grand Avenue Southbound					San Jose Hills Road Westbound					Grand Avenue Northbound					San Jose Hills Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	60	341	26	0	427	14	3	16	0	33	18	246	48	1	313	43	10	32	0	85	858
07:15 AM	70	397	32	0	499	24	3	10	0	37	19	304	93	0	416	37	11	37	0	85	1037
07:30 AM	76	339	21	0	436	28	3	24	0	55	30	287	137	2	456	24	27	66	0	117	1064
07:45 AM	79	359	21	0	459	30	3	19	0	52	33	331	143	3	510	28	41	59	0	128	1149
Total	285	1436	100	0	1821	96	12	69	0	177	100	1168	421	6	1695	132	89	194	0	415	4108
08:00 AM	38	327	75	0	440	33	19	26	0	78	29	290	96	2	417	38	20	49	0	107	1042
08:15 AM	28	340	97	0	465	24	23	7	0	54	38	275	66	0	379	68	5	70	0	143	1041
08:30 AM	16	277	25	1	319	12	2	13	0	27	10	239	50	4	303	73	11	96	0	180	829
08:45 AM	24	325	11	1	361	9	4	12	0	25	13	254	36	5	308	20	5	35	0	60	754
Total	106	1269	208	2	1585	78	48	58	0	184	90	1058	248	11	1407	199	41	250	0	490	3666
Grand Total	391	2705	308	2	3406	174	60	127	0	361	190	2226	669	17	3102	331	130	444	0	905	7774
Apprch %	11.5	79.4	9	0.1		48.2	16.6	35.2	0		6.1	71.8	21.6	0.5		36.6	14.4	49.1	0		
Total %	5	34.8	4	0	43.8	2.2	0.8	1.6	0	4.6	2.4	28.6	8.6	0.2	39.9	4.3	1.7	5.7	0	11.6	

	Grand Avenue Southbound				San Jose Hills Road Westbound				Grand Avenue Northbound				San Jose Hills Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	76	339	21	436	28	3	24	55	30	287	137	454	24	27	66	117	1062
07:45 AM	**79**	**359**								**331**	**143**	**507**		**41**			**1146**
08:00 AM	38	327	75	440	**33**	19	**26**	**78**	29	290	96	415	38	20	49	107	1040
08:15 AM	28	340	**97**	**465**	24	**23**	7	54	**38**	275	66	379	**68**	5	**70**	**143**	1041
Total Volume	221	1365	214	1800	115	48	76	239	130	1183	442	1755	158	93	244	495	4289
% App. Total	12.3	75.8	11.9		48.1	20.1	31.8		7.4	67.4	25.2		31.9	18.8	49.3		
PHF	.699	.951	.552	.968	.871	.522	.731	.766	.855	.894	.773	.865	.581	.567	.871	.865	.936

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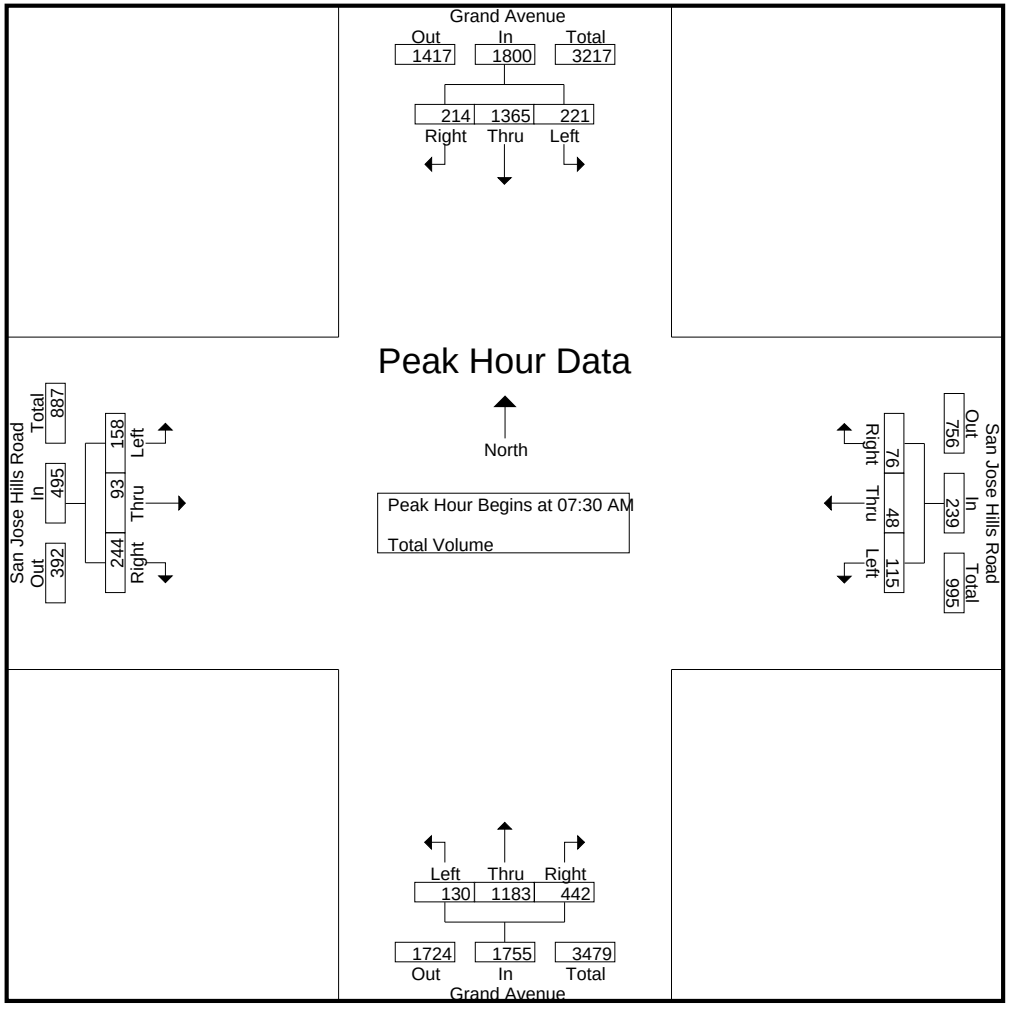
City of Walnut
N/S: Grand Avenue
E/W: San Jose Hills Road
Weather: Clear

File Name : WNTGRSJAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
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Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				San Jose Hills Road Westbound				Grand Avenue Northbound				San Jose Hills Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:30 AM				07:15 AM				07:45 AM				
+0 mins.	70	**397**	32	**499**	28	3	24	55	19	304	93	416	28	**41**	59	128	
+15 mins.	76	339	21	436	30	3	19	52	30	287	137	454	38	20	49	107	
+30 mins.	**79**	359	21	459	**33**	19	**26**	**78**	**33**	**331**	**143**	**507**	68	5	70	143	
+45 mins.	38	327	**75**	440	24	**23**	7	54	29	290	96	415	**73**	11	**96**	**180**	
Total Volume	263	1422	149	1834	115	48	76	239	111	1212	469	1792	207	77	274	558	
% App. Total	14.3	77.5	8.1		48.1	20.1	31.8		6.2	67.6	26.2		37.1	13.8	49.1		
PHF	.832	.895	.497	.919	.871	.522	.731	.766	.841	.915	.820	.884	.709	.470	.714	.775	

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Groups Printed- Total Volume

	Grand Avenue Southbound					San Jose Hills Road Westbound					Grand Avenue Northbound					San Jose Hills Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	25	216	22	1	264	34	7	28	0	69	15	285	33	0	333	14	3	16	0	33	699
04:15 PM	28	269	22	1	320	54	6	38	0	98	25	297	48	2	372	21	4	19	0	44	834
04:30 PM	26	264	24	0	314	81	11	61	0	153	18	285	28	2	333	25	1	21	0	47	847
04:45 PM	24	302	32	0	358	48	7	44	0	99	19	329	41	2	391	16	2	24	0	42	890
Total	103	1051	100	2	1256	217	31	171	0	419	77	1196	150	6	1429	76	10	80	0	166	3270
05:00 PM	29	262	15	0	306	32	6	30	0	68	15	346	30	1	392	28	4	23	0	55	821
05:15 PM	10	265	27	0	302	32	6	21	0	59	26	453	29	0	508	17	2	32	0	51	920
05:30 PM	14	252	33	0	299	36	10	26	0	72	16	407	25	1	449	27	8	33	0	68	888
05:45 PM	28	288	21	0	337	23	6	21	0	50	23	422	25	1	471	31	2	25	0	58	916
Total	81	1067	96	0	1244	123	28	98	0	249	80	1628	109	3	1820	103	16	113	0	232	3545
Grand Total	184	2118	196	2	2500	340	59	269	0	668	157	2824	259	9	3249	179	26	193	0	398	6815
Apprch %	7.4	84.7	7.8	0.1		50.9	8.8	40.3	0		4.8	86.9	8	0.3		45	6.5	48.5	0		
Total %	2.7	31.1	2.9	0	36.7	5	0.9	3.9	0	9.8	2.3	41.4	3.8	0.1	47.7	2.6	0.4	2.8	0	5.8	

	Grand Avenue Southbound				San Jose Hills Road Westbound				Grand Avenue Northbound				San Jose Hills Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**29**	262	15	306	32	6	**30**	68	15	346	**30**	391	28	4	23	55	820
05:15 PM	10	265	27	302	32	6	21	59	**26**	**453**	29	**508**	17	2	32	51	**920**
05:30 PM	14	252	**33**	299	**36**	**10**	26	**72**	16	407	25	448	27	**8**	**33**	**68**	887
05:45 PM	28	**288**	21	**337**	23	6	21	50	23	422	25	470	**31**	2	25	58	915
Total Volume	81	1067	96	1244	123	28	98	249	80	1628	109	1817	103	16	113	232	3542
% App. Total	6.5	85.8	7.7		49.4	11.2	39.4		4.4	89.6	6		44.4	6.9	48.7		
PHF	.698	.926	.727	.923	.854	.700	.817	.865	.769	.898	.908	.894	.831	.500	.856	.853	.963

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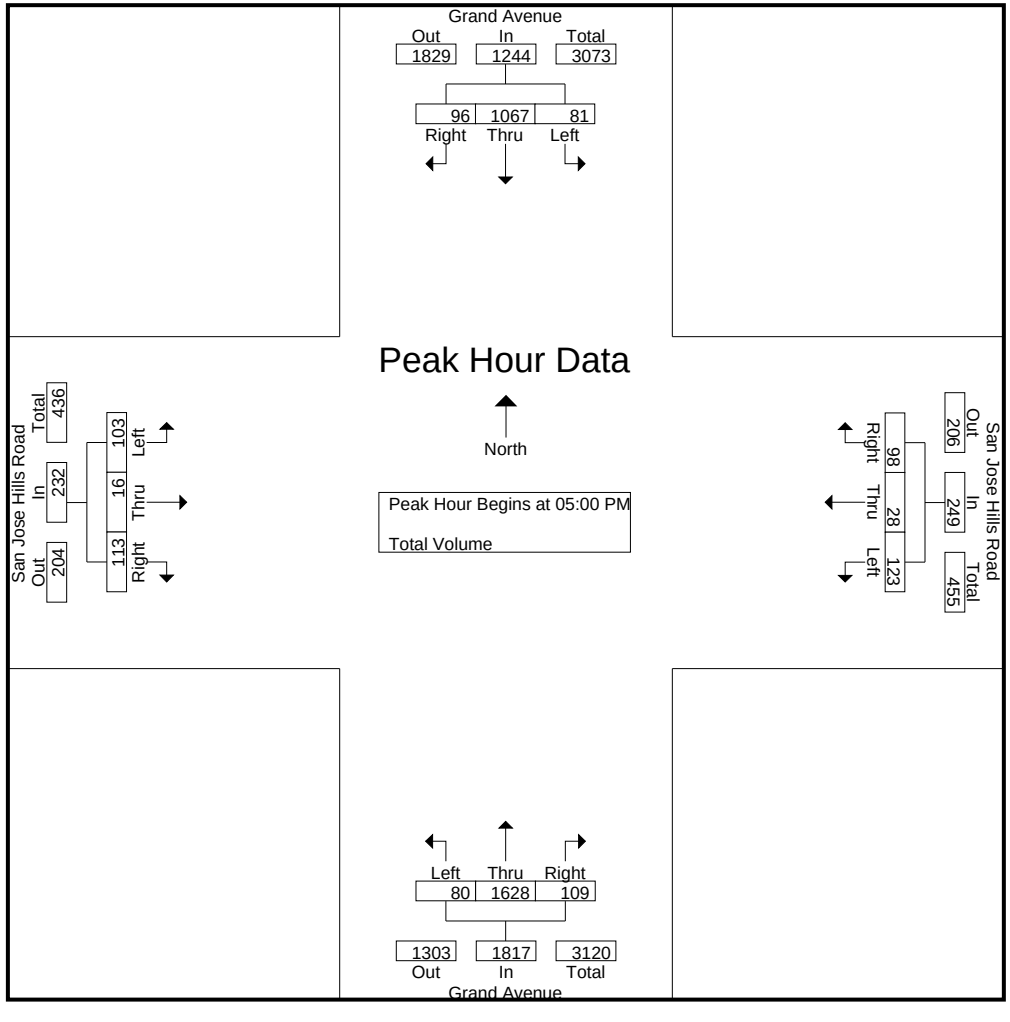
File Name : WNTGRSJPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
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File Name : WNTGRSJPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				San Jose Hills Road Westbound				Grand Avenue Northbound				San Jose Hills Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:15 PM				04:00 PM				05:00 PM				05:00 PM				
+0 mins.	28	269	22	319	34	7	28	69	15	346	**30**	391	28	4	23	55	
+15 mins.	26	264	24	314	54	6	38	98	**26**	**453**	29	**508**	17	2	32	51	
+30 mins.	24	**302**	**32**	**358**	**81**	**11**	**61**	**153**	16	407	25	448	27	**8**	**33**	**68**	
+45 mins.	**29**	262	15	306	48	7	44	99	23	422	25	470	**31**	2	25	58	
Total Volume	107	1097	93	1297	217	31	171	419	80	1628	109	1817	103	16	113	232	
% App. Total	8.2	84.6	7.2		51.8	7.4	40.8		4.4	89.6	6		44.4	6.9	48.7		
PHF	.922	.908	.727	.906	.670	.705	.701	.685	.769	.898	.908	.894	.831	.500	.856	.853	

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City of Walnut
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Weather: Clear

File Name : WNTGRTEAM
Site Code : 04215551
Start Date : 10/1/2015
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Groups Printed- Total Volume

	Grand Avenue Southbound					Temple Avenue Westbound					Grand Avenue Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	100	292	42	0	434	15	152	62	0	229	38	195	130	0	363	63	132	38	0	233	1259
07:15 AM	83	290	37	0	410	25	165	40	0	230	65	289	158	0	512	61	202	47	0	310	1462
07:30 AM	116	267	47	0	430	22	84	56	0	162	58	339	188	0	585	85	192	38	0	315	1492
07:45 AM	111	251	42	0	404	29	92	41	0	162	52	398	165	0	615	72	189	24	0	285	1466
Total	410	1100	168	0	1678	91	493	199	0	783	213	1221	641	0	2075	281	715	147	0	1143	5679
08:00 AM	102	262	61	0	425	34	105	48	0	187	61	265	117	0	443	66	174	44	0	284	1339
08:15 AM	75	238	65	0	378	27	110	42	0	179	113	266	115	0	494	67	134	62	1	264	1315
08:30 AM	72	284	57	0	413	30	78	48	0	156	47	189	89	0	325	79	130	68	0	277	1171
08:45 AM	50	243	35	0	328	18	56	28	0	102	44	190	78	0	312	72	111	47	0	230	972
Total	299	1027	218	0	1544	109	349	166	0	624	265	910	399	0	1574	284	549	221	1	1055	4797
Grand Total	709	2127	386	0	3222	200	842	365	0	1407	478	2131	1040	0	3649	565	1264	368	1	2198	10476
Apprch %	22	66	12	0		14.2	59.8	25.9	0		13.1	58.4	28.5	0		25.7	57.5	16.7	0		
Total %	6.8	20.3	3.7	0	30.8	1.9	8	3.5	0	13.4	4.6	20.3	9.9	0	34.8	5.4	12.1	3.5	0	21	

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	83	**290**	37	410	25	**165**	40	**230**	**65**	289	158	512	61	**202**	**47**	310	1462
07:30 AM	**116**	267	47	**430**	22	84	**56**	162	58	339	**188**	585	**85**	192	38	**315**	**1492**
07:45 AM	111	251	42	404	29	92	41	162	52	**398**	165	**615**	72	189	24	285	1466
08:00 AM	102	262	**61**	425	**34**	105	48	187	61	265	117	443	66	174	44	284	1339
Total Volume	412	1070	187	1669	110	446	185	741	236	1291	628	2155	284	757	153	1194	5759
% App. Total	24.7	64.1	11.2		14.8	60.2	25		11	59.9	29.1		23.8	63.4	12.8		
PHF	.888	.922	.766	.970	.809	.676	.826	.805	.908	.811	.835	.876	.835	.937	.814	.948	.965

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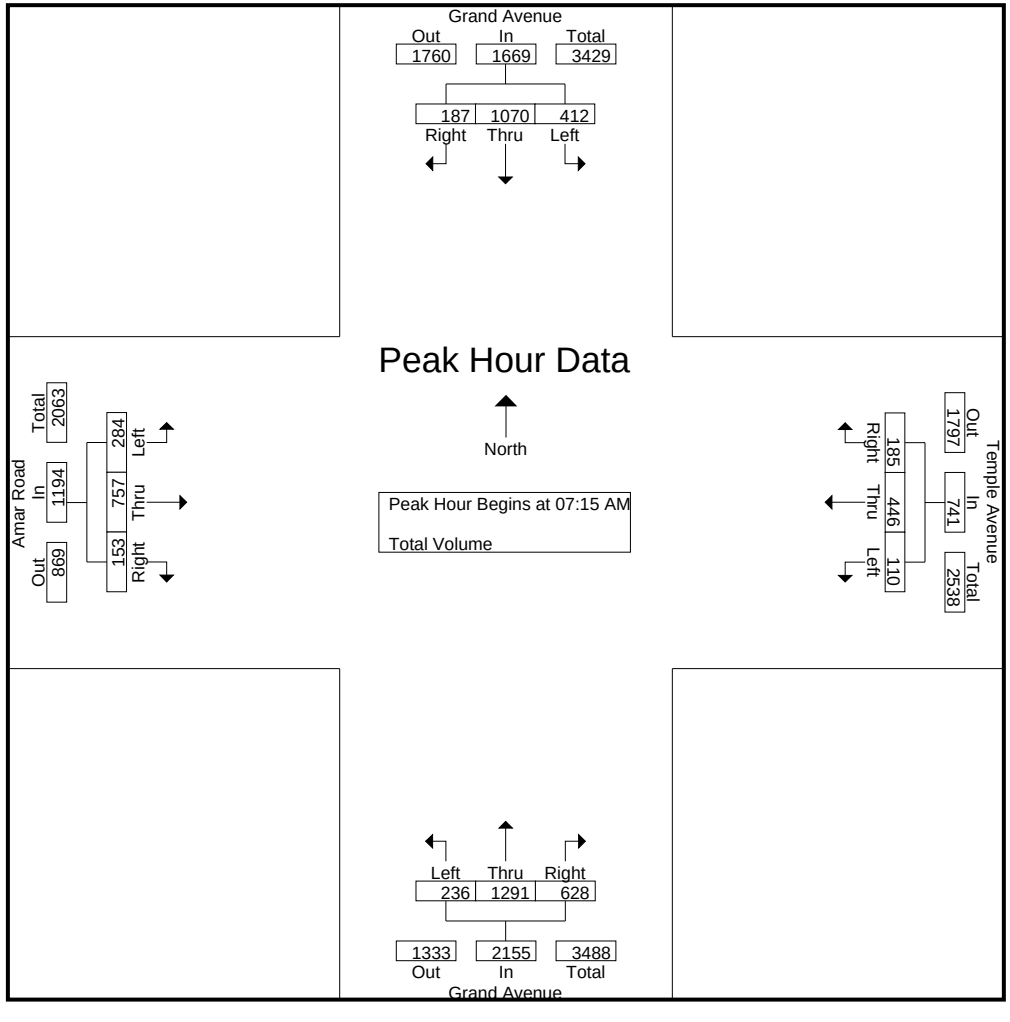

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Start Date : 10/1/2015

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	100	**292**	42	**434**	15	152	**62**	229	**65**	289	158	512	61	**202**	**47**	310	
+15 mins.	83	290	37	410	25	**165**	40	**230**	58	339	**188**	585	**85**	192	38	**315**	
+30 mins.	**116**	267	**47**	430	22	84	56	162	52	**398**	165	**615**	72	189	24	285	
+45 mins.	111	251	42	404	**29**	92	41	162	61	265	117	443	66	174	44	284	
Total Volume	410	1100	168	1678	91	493	199	783	236	1291	628	2155	284	757	153	1194	
% App. Total	24.4	65.6	10		11.6	63	25.4		11	59.9	29.1		23.8	63.4	12.8		
PHF	.884	.942	.894	.967	.784	.747	.802	.851	.908	.811	.835	.876	.835	.937	.814	.948	

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Groups Printed- Total Volume

	Grand Avenue Southbound					Temple Avenue Westbound					Grand Avenue Northbound					Amar Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	61	188	50	0	299	64	112	60	0	236	62	183	74	0	319	93	134	75	0	302	1156
04:15 PM	80	206	46	0	332	86	118	71	0	275	53	228	100	0	381	71	161	88	0	320	1308
04:30 PM	84	256	73	0	413	97	147	62	0	306	47	233	56	0	336	72	149	67	2	290	1345
04:45 PM	73	204	71	0	348	89	160	57	1	307	59	266	79	0	404	71	171	68	0	310	1369
Total	298	854	240	0	1392	336	537	250	1	1124	221	910	309	0	1440	307	615	298	2	1222	5178
05:00 PM	57	230	72	0	359	98	138	75	0	311	73	238	60	0	371	94	159	74	1	328	1369
05:15 PM	50	192	50	1	293	85	157	70	0	312	91	330	79	0	500	86	165	62	0	313	1418
05:30 PM	52	206	73	0	331	99	178	95	0	372	76	293	68	0	437	91	153	81	0	325	1465
05:45 PM	50	204	67	1	322	77	186	86	1	350	87	289	81	0	457	75	174	75	0	324	1453
Total	209	832	262	2	1305	359	659	326	1	1345	327	1150	288	0	1765	346	651	292	1	1290	5705
Grand Total	507	1686	502	2	2697	695	1196	576	2	2469	548	2060	597	0	3205	653	1266	590	3	2512	10883
Apprch %	18.8	62.5	18.6	0.1		28.1	48.4	23.3	0.1		17.1	64.3	18.6	0		26	50.4	23.5	0.1		
Total %	4.7	15.5	4.6	0	24.8	6.4	11	5.3	0	22.7	5	18.9	5.5	0	29.4	6	11.6	5.4	0	23.1	

	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**57**	**230**	72	**359**	98	138	75	311	73	238	60	371	**94**	159	74	**327**	1368
05:15 PM	50	192	50	292	85	157	70	312	**91**	**330**	79	**500**	86	165	62	313	1417
05:30 PM	52	206	**73**	331	**99**	178	**95**	**372**	76	293	68	437	91	153	**81**	325	**1465**
05:45 PM	50	204	67	321	77	**186**	86	349	87	289	**81**	457	75	**174**	75	324	1451
Total Volume	209	832	262	1303	359	659	326	1344	327	1150	288	1765	346	651	292	1289	5701
% App. Total	16	63.9	20.1		26.7	49	24.3		18.5	65.2	16.3		26.8	50.5	22.7		
PHF	.917	.904	.897	.907	.907	.886	.858	.903	.898	.871	.889	.883	.920	.935	.901	.985	.973

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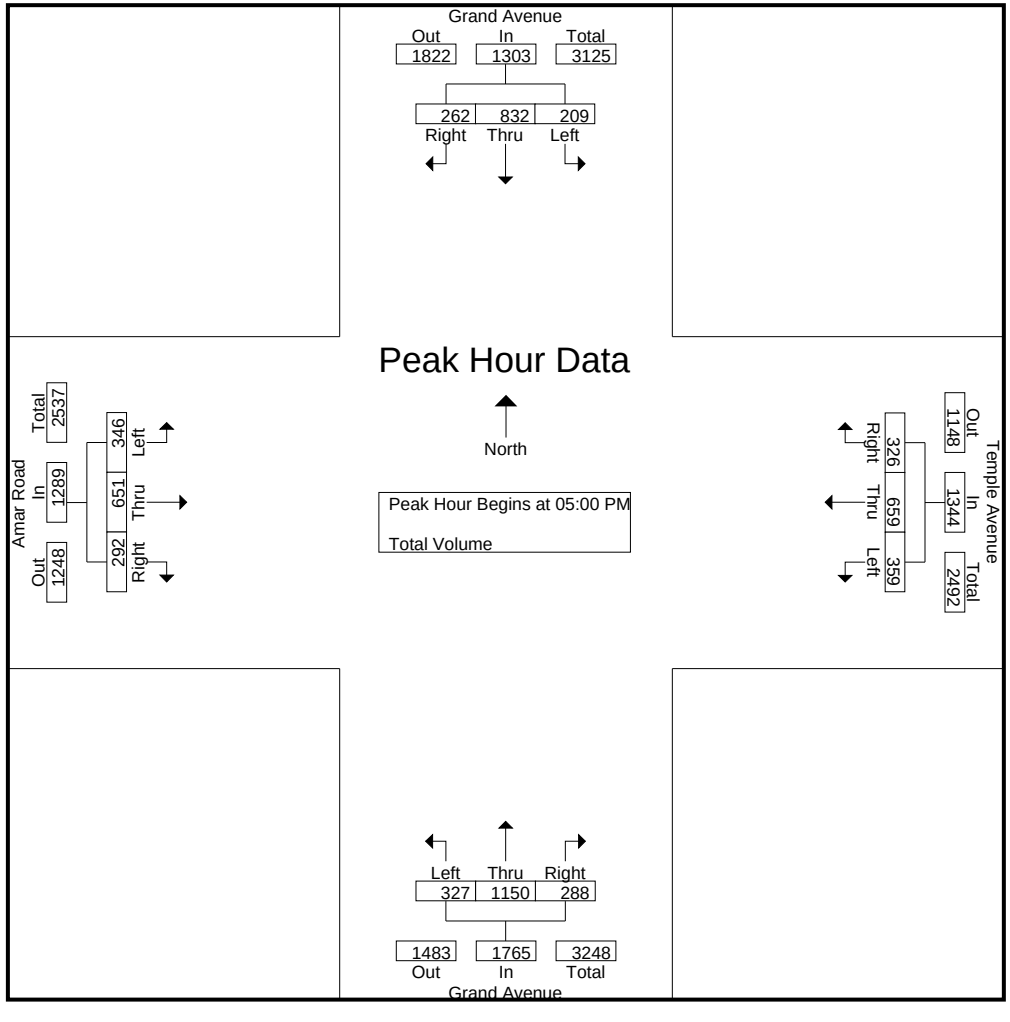

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	Grand Avenue Southbound				Temple Avenue Westbound				Grand Avenue Northbound				Amar Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:15 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	80	206	46	332	98	138	75	311	73	238	60	371	**94**	159	74	**327**	
+15 mins.	**84**	**256**	**73**	**413**	85	157	70	312	**91**	**330**	79	**500**	86	165	62	313	
+30 mins.	73	204	71	348	**99**	178	**95**	**372**	76	293	68	437	91	153	**81**	325	
+45 mins.	57	230	72	359	77	**186**	86	349	87	289	**81**	457	75	**174**	75	324	
Total Volume	294	896	262	1452	359	659	326	1344	327	1150	288	1765	346	651	292	1289	
% App. Total	20.2	61.7	18		26.7	49	24.3		18.5	65.2	16.3		26.8	50.5	22.7		
PHF	.875	.875	.897	.879	.907	.886	.858	.903	.898	.871	.889	.883	.920	.935	.901	.985	

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City of Walnut
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E/W: La Puente Road
Weather: Clear

File Name : WNTGRLPAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					La Puente Road Westbound					Grand Avenue Northbound					La Puente Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	280	69	0	349	20	18	1	0	39	51	344	15	0	410	50	3	46	0	99	897
07:15 AM	0	247	128	0	375	42	71	2	0	115	57	368	26	0	451	115	30	99	0	244	1185
07:30 AM	0	294	85	0	379	26	21	5	0	52	34	488	18	0	540	148	25	138	0	311	1282
07:45 AM	0	250	27	0	277	25	8	4	0	37	25	400	15	0	440	111	16	114	0	241	995
Total	0	1071	309	0	1380	113	118	12	0	243	167	1600	74	0	1841	424	74	397	0	895	4359
08:00 AM	1	329	37	0	367	20	8	1	0	29	43	428	11	0	482	33	5	65	0	103	981
08:15 AM	0	280	37	0	317	33	6	2	0	41	51	356	9	1	417	39	3	69	0	111	886
08:30 AM	0	331	27	0	358	32	10	2	0	44	42	286	7	1	336	35	1	72	0	108	846
08:45 AM	2	280	42	0	324	29	8	2	0	39	45	241	11	0	297	34	7	55	0	96	756
Total	3	1220	143	0	1366	114	32	7	0	153	181	1311	38	2	1532	141	16	261	0	418	3469
Grand Total	3	2291	452	0	2746	227	150	19	0	396	348	2911	112	2	3373	565	90	658	0	1313	7828
Apprch %	0.1	83.4	16.5	0		57.3	37.9	4.8	0		10.3	86.3	3.3	0.1		43	6.9	50.1	0		
Total %	0	29.3	5.8	0	35.1	2.9	1.9	0.2	0	5.1	4.4	37.2	1.4	0	43.1	7.2	1.1	8.4	0	16.8	

	Grand Avenue Southbound				La Puente Road Westbound				Grand Avenue Northbound				La Puente Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	247	**128**	375	**42**	**71**	2	**115**	**57**	368	**26**	451	115	**30**	99	244	1185
07:30 AM	0	294	85	**379**	26	21	**5**	52	34	**488**	18	**540**	**148**	25	**138**	**311**	**1282**
07:45 AM	0	250	27	277	25	8	4	37	25	400	15	440	111	16	114	241	995
08:00 AM	**1**	**329**	37	367	20	8	1	29	43	428	11	482	33	5	65	103	981
Total Volume	1	1120	277	1398	113	108	12	233	159	1684	70	1913	407	76	416	899	4443
% App. Total	0.1	80.1	19.8		48.5	46.4	5.2		8.3	88	3.7		45.3	8.5	46.3		
PHF	.250	.851	.541	.922	.673	.380	.600	.507	.697	.863	.673	.886	.688	.633	.754	.723	.866

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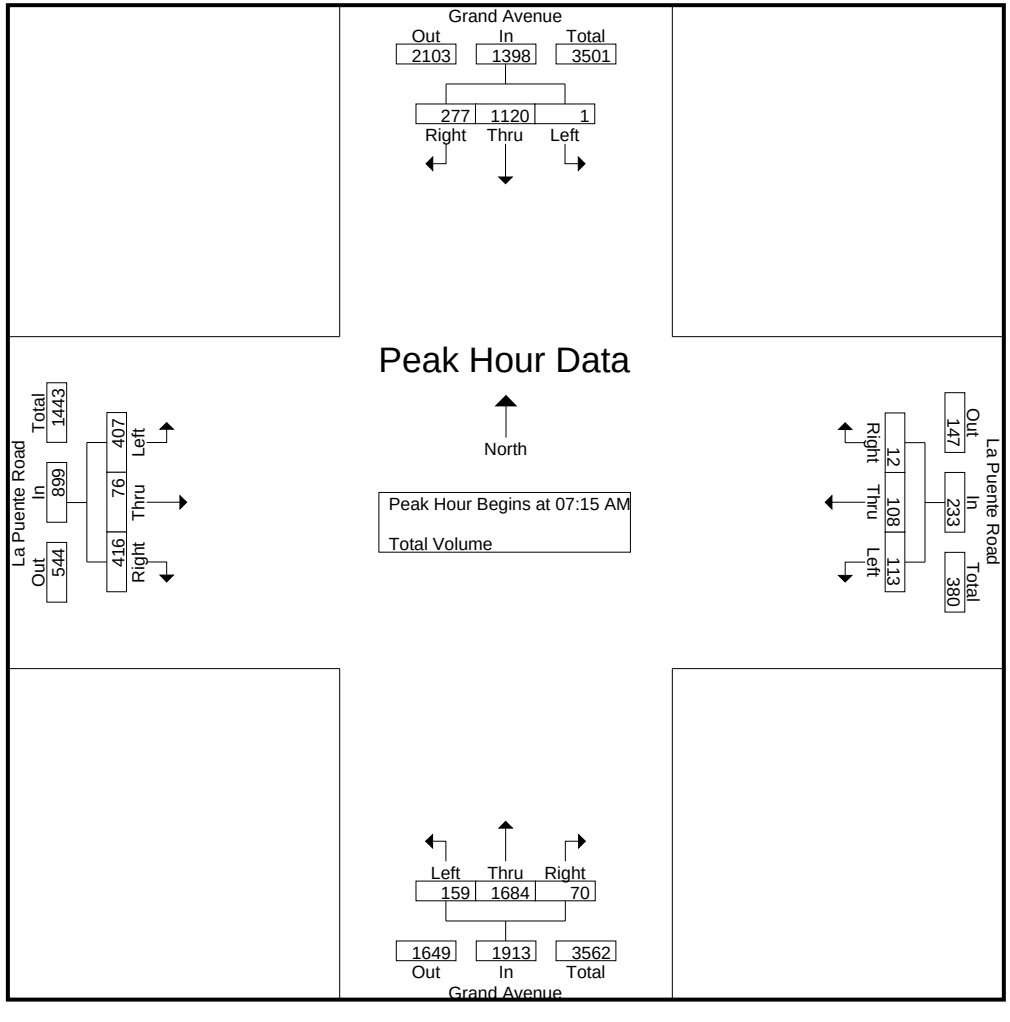
City of Walnut
N/S: Grand Avenue
E/W: La Puente Road
Weather: Clear

File Name : WNTGRLPAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
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Start Date : 10/1/2015

	Grand Avenue Southbound				La Puente Road Westbound				Grand Avenue Northbound				La Puente Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	0	247	**128**	375	20	18	1	39	**57**	368	**26**	451	115	**30**	99	244	
+15 mins.	0	294	85	**379**	**42**	**71**	2	**115**	34	**488**	18	**540**	**148**	25	**138**	**311**	
+30 mins.	0	250	27	277	26	21	**5**	52	25	400	15	440	111	16	114	241	
+45 mins.	**1**	**329**	37	367	25	8	4	37	43	428	11	482	33	5	65	103	
Total Volume	1	1120	277	1398	113	118	12	243	159	1684	70	1913	407	76	416	899	
% App. Total	0.1	80.1	19.8		46.5	48.6	4.9		8.3	88	3.7		45.3	8.5	46.3		
PHF	.250	.851	.541	.922	.673	.415	.600	.528	.697	.863	.673	.886	.688	.633	.754	.723	

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City of Walnut
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Groups Printed- Total Volume

	Grand Avenue Southbound					La Puente Road Westbound					Grand Avenue Northbound					La Puente Road Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	1	272	40	0	313	16	9	2	0	27	45	319	24	0	388	42	7	64	0	113	841
04:15 PM	0	331	39	0	370	14	5	3	0	22	36	282	27	0	345	63	13	81	0	157	894
04:30 PM	0	373	43	0	416	11	5	2	0	18	36	311	13	1	361	43	6	84	0	133	928
04:45 PM	2	319	43	1	365	21	4	2	0	27	43	319	20	0	382	59	12	97	0	168	942
Total	3	1295	165	1	1464	62	23	9	0	94	160	1231	84	1	1476	207	38	326	0	571	3605
05:00 PM	0	350	48	0	398	20	6	2	0	28	44	377	29	0	450	52	9	72	0	133	1009
05:15 PM	3	280	47	0	330	20	8	6	0	34	65	366	43	0	474	62	15	107	0	184	1022
05:30 PM	1	343	45	0	389	26	6	3	0	35	74	440	46	0	560	58	13	72	0	143	1127
05:45 PM	3	286	50	0	339	19	15	1	0	35	50	352	35	1	438	73	26	99	0	198	1010
Total	7	1259	190	0	1456	85	35	12	0	132	233	1535	153	1	1922	245	63	350	0	658	4168
Grand Total	10	2554	355	1	2920	147	58	21	0	226	393	2766	237	2	3398	452	101	676	0	1229	7773
Apprch %	0.3	87.5	12.2	0		65	25.7	9.3	0		11.6	81.4	7	0.1		36.8	8.2	55	0		
Total %	0.1	32.9	4.6	0	37.6	1.9	0.7	0.3	0	2.9	5.1	35.6	3	0	43.7	5.8	1.3	8.7	0	15.8	

	Grand Avenue Southbound				La Puente Road Westbound				Grand Avenue Northbound				La Puente Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	**350**	48	**398**	20	6	2	28	44	377	29	450	52	9	72	133	1009
05:15 PM	**3**	280	47	330	20	8	**6**	34	65	366	43	474	62	15	**107**	184	1022
05:30 PM	1	343	45	389	**26**	6	3	**35**	**74**	**440**	**46**	**560**	58	13	72	143	**1127**
05:45 PM	3	286	**50**	339	19	**15**	1	35	50	352	35	437	**73**	**26**	99	**198**	1009
Total Volume	7	1259	190	1456	85	35	12	132	233	1535	153	1921	245	63	350	658	4167
% App. Total	0.5	86.5	13		64.4	26.5	9.1		12.1	79.9	8		37.2	9.6	53.2		
PHF	.583	.899	.950	.915	.817	.583	.500	.943	.787	.872	.832	.858	.839	.606	.818	.831	.924

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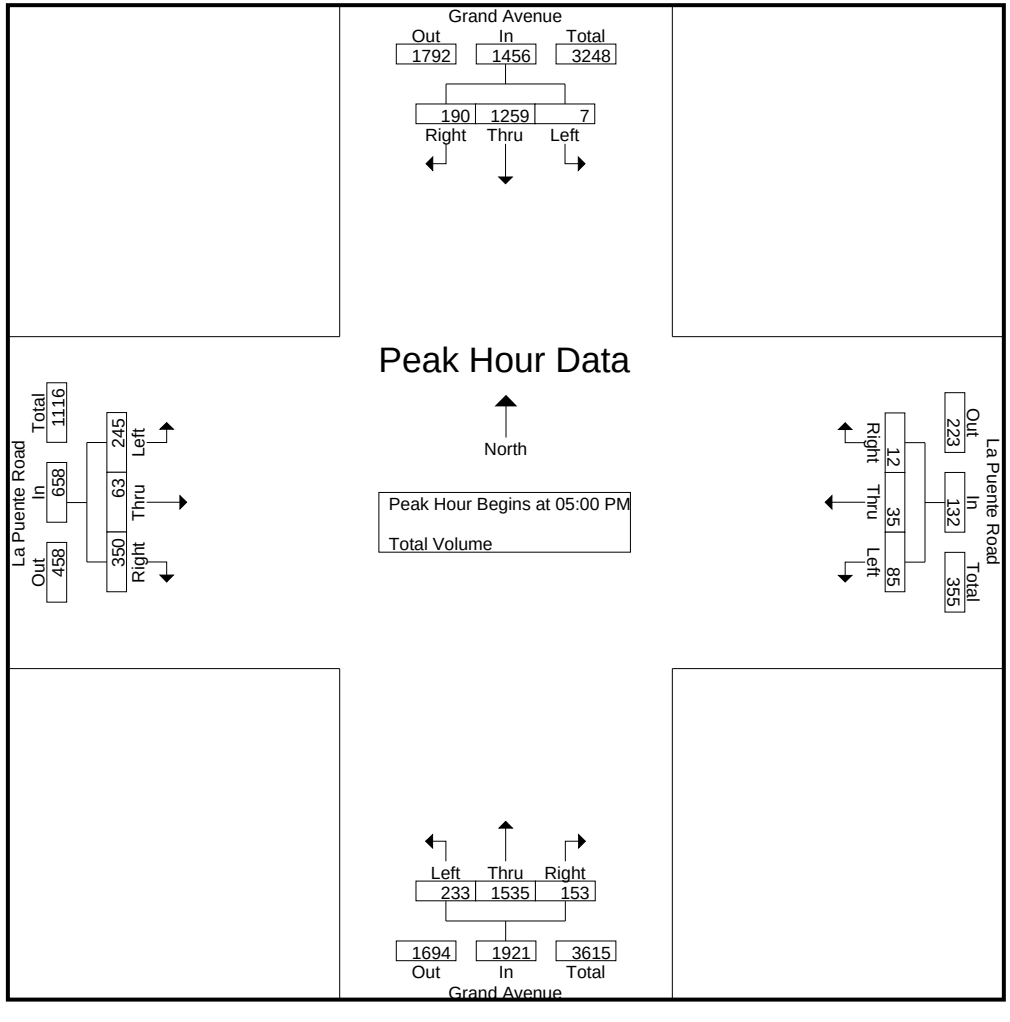
Start Date : 10/1/2015
Page No : 2



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City of Walnut
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File Name : WNTGRLPPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				La Puente Road Westbound				Grand Avenue Northbound				La Puente Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:15 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	0	331	39	370	20	6	2	28	44	377	29	450	52	9	72	133	
+15 mins.	0	**373**	43	**416**	20	8	**6**	34	65	366	43	474	62	15	**107**	184	
+30 mins.	**2**	319	43	364	**26**	6	3	**35**	**74**	**440**	**46**	**560**	58	13	72	143	
+45 mins.	0	350	**48**	398	19	**15**	1	35	50	352	35	437	**73**	**26**	99	**198**	
Total Volume	2	1373	173	1548	85	35	12	132	233	1535	153	1921	245	63	350	658	
% App. Total	0.1	88.7	11.2		64.4	26.5	9.1		12.1	79.9	8		37.2	9.6	53.2		
PHF	.250	.920	.901	.930	.817	.583	.500	.943	.787	.872	.832	.858	.839	.606	.818	.831	

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City of Walnut
N/S: Grand Avenue
E/W: Valley Boulevard
Weather: Clear

File Name : WNTGRVAAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	31	215	94	0	340	39	320	44	1	404	76	340	83	0	499	74	112	33	0	219	1462
07:15 AM	50	225	107	1	383	53	311	40	4	408	91	348	117	0	556	88	120	46	0	254	1601
07:30 AM	66	238	108	0	412	37	266	28	3	334	67	364	85	0	516	112	148	54	2	316	1578
07:45 AM	60	260	87	0	407	38	219	27	6	290	57	312	79	0	448	127	120	36	0	283	1428
Total	207	938	396	1	1542	167	1116	139	14	1436	291	1364	364	0	2019	401	500	169	2	1072	6069
08:00 AM	51	250	90	0	391	39	257	31	1	328	72	322	68	0	462	107	128	29	0	264	1445
08:15 AM	29	258	95	0	382	60	220	25	5	310	41	302	80	0	423	78	118	41	0	237	1352
08:30 AM	53	250	84	3	390	37	253	37	4	331	52	225	67	0	344	61	111	40	1	213	1278
08:45 AM	42	242	86	1	371	41	190	23	1	255	56	216	75	1	348	72	107	51	2	232	1206
Total	175	1000	355	4	1534	177	920	116	11	1224	221	1065	290	1	1577	318	464	161	3	946	5281
Grand Total	382	1938	751	5	3076	344	2036	255	25	2660	512	2429	654	1	3596	719	964	330	5	2018	11350
Apprch %	12.4	63	24.4	0.2		12.9	76.5	9.6	0.9		14.2	67.5	18.2	0		35.6	47.8	16.4	0.2		
Total %	3.4	17.1	6.6	0	27.1	3	17.9	2.2	0.2	23.4	4.5	21.4	5.8	0	31.7	6.3	8.5	2.9	0	17.8	

	Grand Avenue Southbound				Valley Boulevard Westbound				Grand Avenue Northbound				Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	31	215	94	340	39	**320**	**44**	403	76	340	83	499	74	112	33	219	1461
07:15 AM	50	225	107	382	**53**	311	40	**404**	**91**	348	**117**	**556**	88	120	46	254	**1596**
07:30 AM	**66**	238	**108**	**412**	37	266	28	331	67	**364**	85	516	112	**148**	**54**	**314**	1573
07:45 AM	60	**260**	87	407	38	219	27	284	57	312	79	448	**127**	120	36	283	1422
Total Volume	207	938	396	1541	167	1116	139	1422	291	1364	364	2019	401	500	169	1070	6052
% App. Total	13.4	60.9	25.7		11.7	78.5	9.8		14.4	67.6	18		37.5	46.7	15.8		
PHF	.784	.902	.917	.935	.788	.872	.790	.880	.799	.937	.778	.908	.789	.845	.782	.852	.948

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City of Walnut
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Site Code : 04215551
Start Date : 10/1/2015
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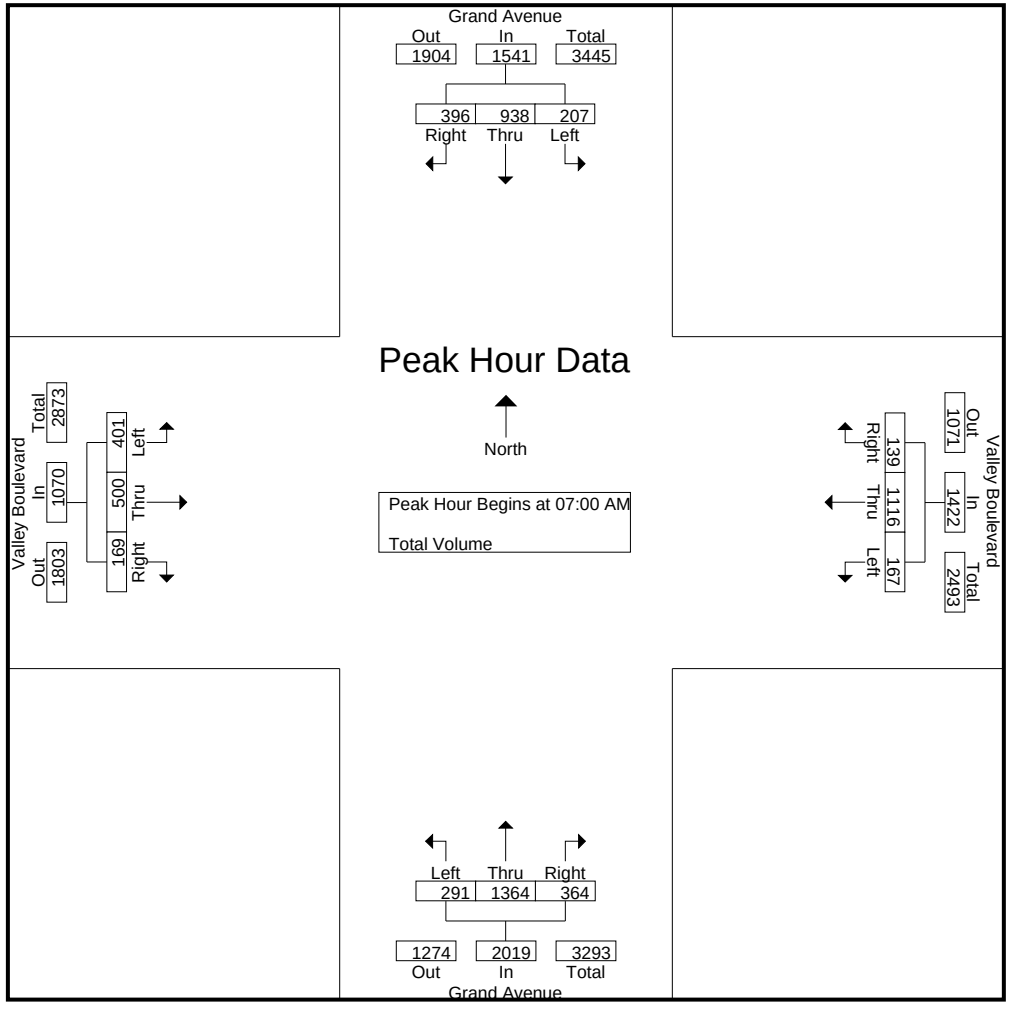

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	Grand Avenue Southbound				Valley Boulevard Westbound				Grand Avenue Northbound				Valley Boulevard Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:00 AM				07:15 AM				
+0 mins.	50	225	107	382	39	**320**	**44**	403	76	340	83	499	88	120	46	254	
+15 mins.	**66**	238	**108**	**412**	**53**	311	40	**404**	**91**	348	**117**	**556**	112	**148**	**54**	**314**	
+30 mins.	60	**260**	87	407	37	266	28	331	67	**364**	85	516	**127**	120	36	283	
+45 mins.	51	250	90	391	38	219	27	284	57	312	79	448	107	128	29	264	
Total Volume	227	973	392	1592	167	1116	139	1422	291	1364	364	2019	434	516	165	1115	
% App. Total	14.3	61.1	24.6		11.7	78.5	9.8		14.4	67.6	18		38.9	46.3	14.8		
PHF	.860	.936	.907	.966	.788	.872	.790	.880	.799	.937	.778	.908	.854	.872	.764	.888	

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Groups Printed- Total Volume

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	61	221	44	1	327	63	160	41	1	265	62	188	32	6	288	105	310	64	5	484	1364
04:15 PM	74	332	47	0	453	80	117	34	3	234	51	169	28	7	255	129	256	49	3	437	1379
04:30 PM	74	274	51	0	399	71	151	30	3	255	38	197	41	2	278	144	355	77	2	578	1510
04:45 PM	109	296	52	4	461	86	134	22	2	244	47	198	30	6	281	134	313	92	0	539	1525
Total	318	1123	194	5	1640	300	562	127	9	998	198	752	131	21	1102	512	1234	282	10	2038	5778
05:00 PM	81	250	52	1	384	101	176	50	2	329	61	253	37	6	357	158	396	90	1	645	1715
05:15 PM	109	280	48	2	439	110	180	64	4	358	63	268	48	8	387	167	357	63	4	591	1775
05:30 PM	84	263	45	2	394	101	212	72	5	390	54	273	54	10	391	180	397	76	0	653	1828
05:45 PM	103	249	64	3	419	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	1656
Total	377	1042	209	8	1636	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	6974
Grand Total	695	2165	403	13	3276	714	1264	371	23	2372	428	1792	310	52	2582	1171	2765	569	17	4522	12752
Apprch %	21.2	66.1	12.3	0.4		30.1	53.3	15.6	1		16.6	69.4	12	2		25.9	61.1	12.6	0.4		
Total %	5.5	17	3.2	0.1	25.7	5.6	9.9	2.9	0.2	18.6	3.4	14.1	2.4	0.4	20.2	9.2	21.7	4.5	0.1	35.5	

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	81	250	52	1	384	101	176	50	2	329	61	253	37	6	357	158	396	**90**			
05:15 PM	**109**	**280**	**48**	**2**	**439**	**110**	**180**	**64**	**4**	**358**	**63**	268	48	8	387	167	357	63	**4**	591	1775
05:30 PM	84	263	45	2	394	101	**212**	**72**	**5**	**390**	54	**273**	**54**	**10**	**391**	**180**	**397**			**653**	**1828**
05:45 PM	103	249	**64**	**3**	419	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	1656
Total Volume	377	1042	209	8	1636	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	6974
% App. Total	23	63.7	12.8	0.5		30.1	51.1	17.8	1		15.5	70.3	12.1	2.1		26.5	61.6	11.6	0.3		
PHF	.865	.930	.816	.667	.932	.941	.828	.847	.700	.881	.913	.952	.829	.775	.946	.915	.964	.797	.438	.951	.954

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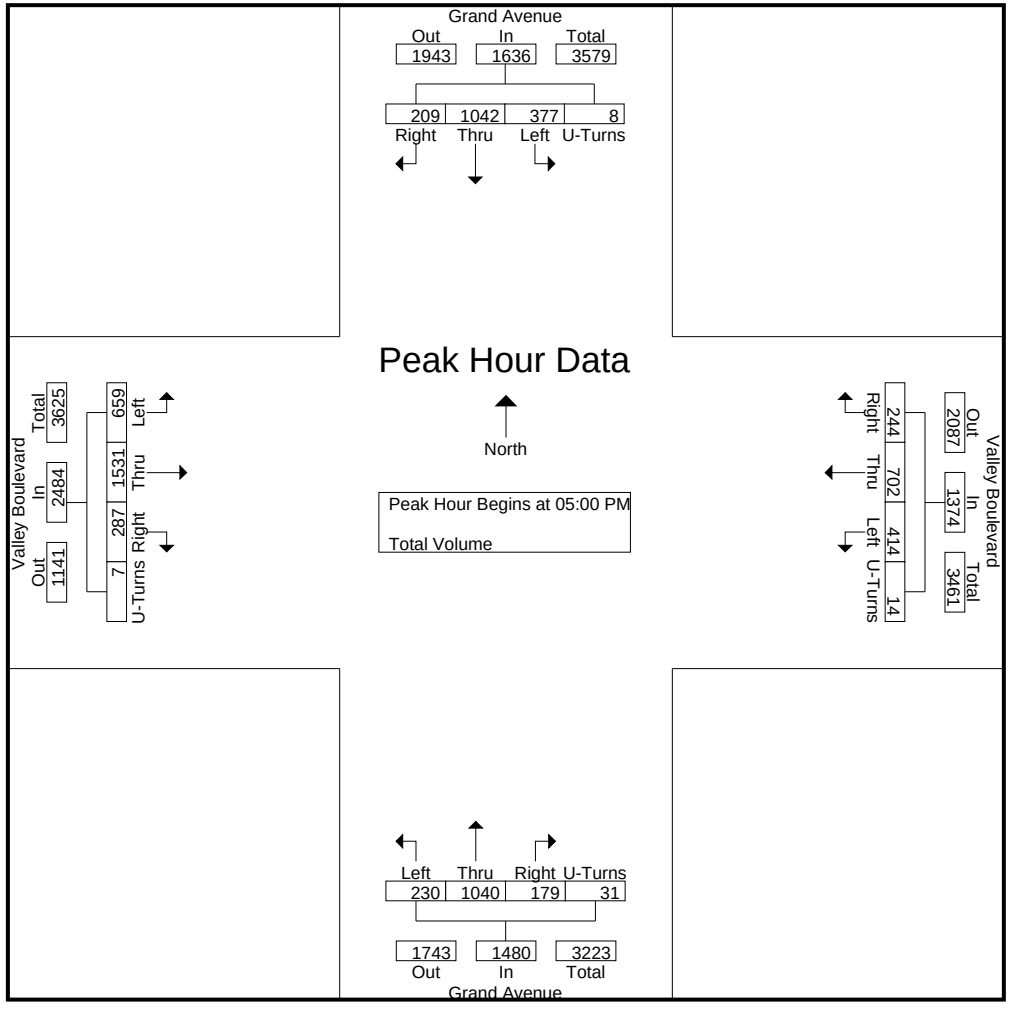

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Corona, CA 92878
(951) 268-6268

City of Walnut
N/S: Grand Avenue
E/W: Valley Boulevard
Weather: Clear

File Name : WNTGRVAPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound					Valley Boulevard Westbound					Grand Avenue Northbound					Valley Boulevard Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Each Approach Begins at:																					
	04:15 PM					05:00 PM					05:00 PM					05:00 PM					
+0 mins.	74	**332**																**90**			
+15 mins.	**74**	**274**	**51**	**0**	**399**	**110**	**180**	**64**	**4**	**358**	**63**	268	48	8	387	167	357	63	**4**	591	
+30 mins.	**109**	296	**52**	**4**	**461**	101	**212**	**72**	**5**	**390**	54	**273**	**54**	**10**	**391**	**180**	**397**			**653**	
+45 mins.	81	250	52	1	384	102	134	58	3	297	52	246	40	7	345	154	381	58	2	595	
Total Volume	338	1152	202	5	1697	414	702	244	14	1374	230	1040	179	31	1480	659	1531	287	7	2484	
% App. Total	19.9	67.9	11.9	0.3		30.1	51.1	17.8	1		15.5	70.3	12.1	2.1		26.5	61.6	11.6	0.3		
PHF	.775	.867	.971	.313	.920	.941	.828	.847	.700	.881	.913	.952	.829	.775	.946	.915	.964	.797	.438	.951	

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

City of Walnut
N/S: Grand Avenue
E/W: Baker Parkway
Weather: Clear

File Name : WNTGRBAAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Construction Driveway Westbound					Grand Avenue Northbound					Baker Parkway Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	235	33	0	268	0	0	0	0	0	29	535	0	0	564	8	0	4	0	12	844
07:15 AM	0	221	50	0	271	0	0	0	0	0	39	597	0	0	636	11	0	11	0	22	929
07:30 AM	0	300	17	0	317	0	0	0	0	0	31	568	0	0	599	10	0	13	0	23	939
07:45 AM	0	246	7	0	253	0	0	0	0	0	17	553	0	0	570	10	0	8	0	18	841
Total	0	1002	107	0	1109	0	0	0	0	0	116	2253	0	0	2369	39	0	36	0	75	3553
08:00 AM	0	251	11	0	262	0	0	0	0	0	22	541	0	0	563	8	0	6	0	14	839
08:15 AM	0	239	27	0	266	0	0	0	0	0	29	515	0	0	544	5	0	5	0	10	820
08:30 AM	0	271	13	0	284	0	0	0	0	0	32	425	0	0	457	4	0	12	0	16	757
08:45 AM	0	282	10	0	292	0	0	0	0	0	25	427	0	0	452	3	0	14	0	17	761
Total	0	1043	61	0	1104	0	0	0	0	0	108	1908	0	0	2016	20	0	37	0	57	3177
Grand Total	0	2045	168	0	2213	0	0	0	0	0	224	4161	0	0	4385	59	0	73	0	132	6730
Apprch %	0	92.4	7.6	0		0	0	0	0		5.1	94.9	0	0		44.7	0	55.3	0		
Total %	0	30.4	2.5	0	32.9	0	0	0	0	0	3.3	61.8	0	0	65.2	0.9	0	1.1	0	2	

	Grand Avenue Southbound				Construction Driveway Westbound				Grand Avenue Northbound				Baker Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	0	235	33	268	0	0	0	0	29	535	0	564	8	0	4	12	844
07:15 AM	0	221	**50**	271	0	0	0	0	**39**	**597**	0	**636**	**11**	0	11	22	929
07:30 AM	0	**300**	17	**317**	0	0	0	0	31	568	0	599	10	0	**13**	**23**	**939**
07:45 AM	0	246	7	253	0	0	0	0	17	553	0	570	10	0	8	18	841
Total Volume	0	1002	107	1109	0	0	0	0	116	2253	0	2369	39	0	36	75	3553
% App. Total	0	90.4	9.6		0	0	0		4.9	95.1	0		52	0	48		
PHF	.000	.835	.535	.875	.000	.000	.000	.000	.744	.943	.000	.931	.886	.000	.692	.815	.946

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PO Box 1178
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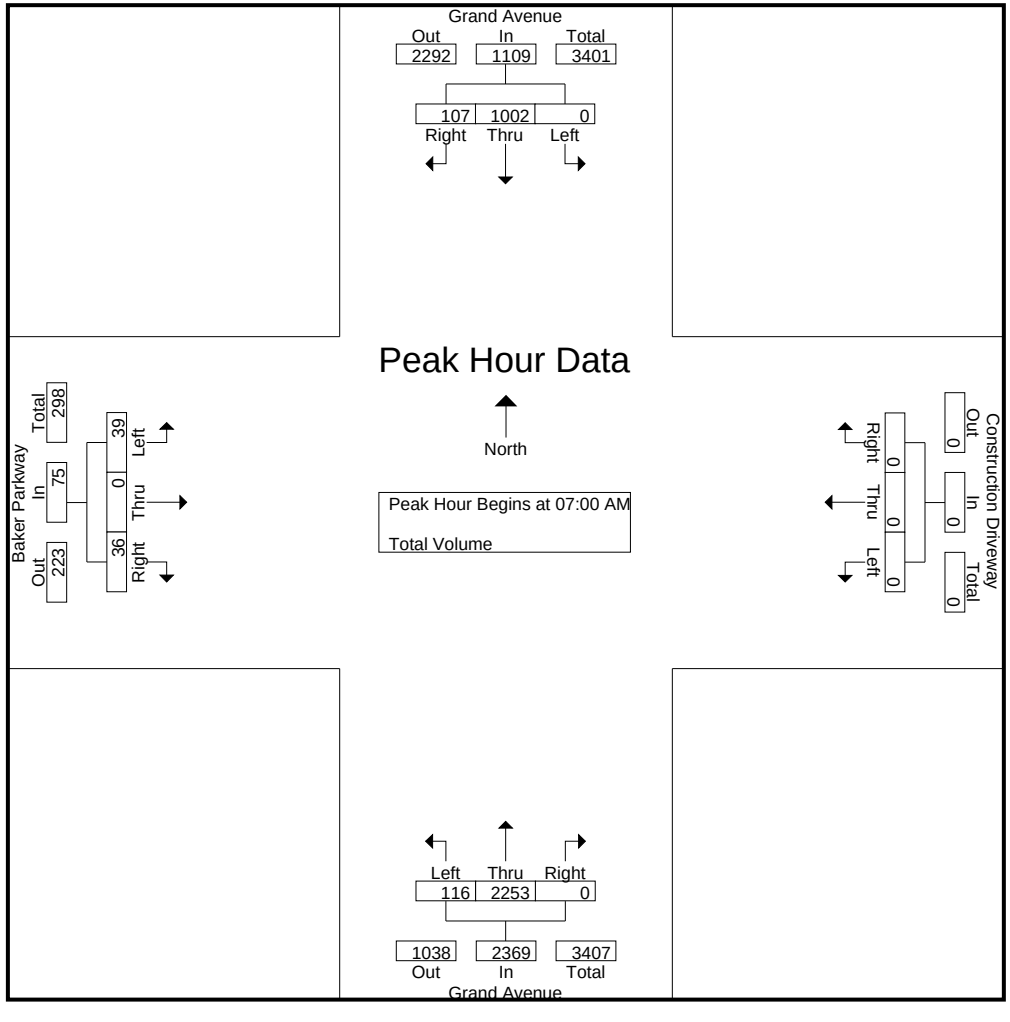
City of Walnut
N/S: Grand Avenue
E/W: Baker Parkway
Weather: Clear

File Name : WNTGRBAAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
E/W: Baker Parkway
Weather: Clear

File Name : WNTGRBAAM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				Construction Driveway Westbound				Grand Avenue Northbound				Baker Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				07:00 AM				07:00 AM				07:15 AM				
+0 mins.	0	235	33	268	0	0	0	0	29	535	0	564	**11**	0	11	22	
+15 mins.	0	221	**50**	271	0	0	0	0	**39**	**597**	0	**636**	10	0	**13**	**23**	
+30 mins.	0	**300**	17	**317**	0	0	0	0	31	568	0	599	10	0	8	18	
+45 mins.	0	246	7	253	0	0	0	0	17	553	0	570	8	0	6	14	
Total Volume	0	1002	107	1109	0	0	0	0	116	2253	0	2369	39	0	38	77	
% App. Total	0	90.4	9.6		0	0	0		4.9	95.1	0		50.6	0	49.4		
PHF	.000	.835	.535	.875	.000	.000	.000	.000	.744	.943	.000	.931	.886	.000	.731	.837	

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City of Walnut
N/S: Grand Avenue
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Weather: Clear

File Name : WNTGRBAPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					Construction Driveway Westbound					Grand Avenue Northbound					Baker Parkway Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	379	5	0	384	0	0	0	0	0	11	213	0	0	224	42	0	18	0	60	668
04:15 PM	0	375	13	0	388	0	0	0	0	0	20	244	0	0	264	23	0	13	0	36	688
04:30 PM	0	362	8	0	370	0	0	0	0	0	5	248	0	1	254	32	0	22	0	54	678
04:45 PM	0	375	8	0	383	0	0	0	0	0	6	280	0	0	286	35	0	9	0	44	713
Total	0	1491	34	0	1525	0	0	0	0	0	42	985	0	1	1028	132	0	62	0	194	2747
05:00 PM	0	402	8	0	410	0	0	0	0	0	10	283	0	0	293	33	0	22	0	55	758
05:15 PM	0	405	6	0	411	0	0	0	0	0	8	336	0	0	344	38	0	26	0	64	819
05:30 PM	0	410	13	1	424	2	0	0	0	2	6	330	0	0	336	74	0	22	0	96	858
05:45 PM	0	350	23	0	373	1	0	0	0	1	9	312	0	4	325	27	0	24	0	51	750
Total	0	1567	50	1	1618	3	0	0	0	3	33	1261	0	4	1298	172	0	94	0	266	3185
Grand Total	0	3058	84	1	3143	3	0	0	0	3	75	2246	0	5	2326	304	0	156	0	460	5932
Apprch %	0	97.3	2.7	0		100	0	0	0		3.2	96.6	0	0.2		66.1	0	33.9	0		
Total %	0	51.6	1.4	0	53	0.1	0	0	0	0.1	1.3	37.9	0	0.1	39.2	5.1	0	2.6	0	7.8	

	Grand Avenue Southbound				Construction Driveway Westbound				Grand Avenue Northbound				Baker Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	402	8	410	0	0	0	0	**10**	283	0	293	33	0	22	55	758
05:15 PM	0	405	6	411	0	0	0	0	8	**336**	0	**344**	38	0	**26**	64	819
05:30 PM	0	**410**	13	**423**	**2**	0	0	**2**	6	330	0	336	**74**	0	22	**96**	**857**
05:45 PM	0	350	**23**	373	1	0	0	1	9	312	0	321	27	0	24	51	746
Total Volume	0	1567	50	1617	3	0	0	3	33	1261	0	1294	172	0	94	266	3180
% App. Total	0	96.9	3.1		100	0	0		2.6	97.4	0		64.7	0	35.3		
PHF	.000	.955	.543	.956	.375	.000	.000	.375	.825	.938	.000	.940	.581	.000	.904	.693	.928

Counts Unlimited
PO Box 1178
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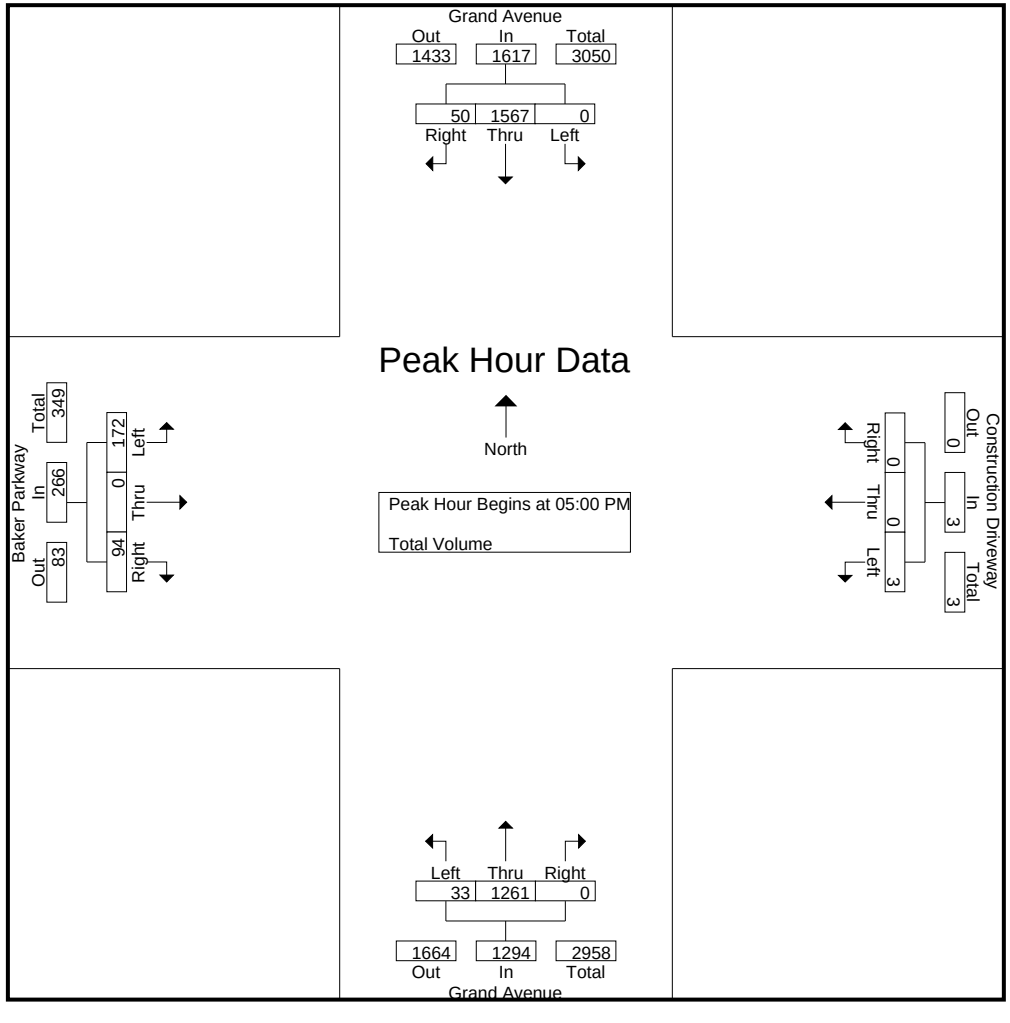
City of Walnut
N/S: Grand Avenue
E/W: Baker Parkway
Weather: Clear

File Name : WNTGRBAPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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

City of Walnut
N/S: Grand Avenue
E/W: Baker Parkway
Weather: Clear

File Name : WNTGRBAPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				Construction Driveway Westbound				Grand Avenue Northbound				Baker Parkway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:45 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	0	375	8	383	0	0	0	0	**10**	283	0	293	33	0	22	55	
+15 mins.	0	402	8	410	0	0	0	0	8	**336**	0	**344**	38	0	**26**	64	
+30 mins.	0	405	6	411	**2**	0	0	**2**	6	330	0	336	**74**	0	22	**96**	
+45 mins.	0	**410**	**13**	**423**	1	0	0	1	9	312	0	321	27	0	24	51	
Total Volume	0	1592	35	1627	3	0	0	3	33	1261	0	1294	172	0	94	266	
% App. Total	0	97.8	2.2		100	0	0		2.6	97.4	0		64.7	0	35.3		
PHF	.000	.971	.673	.962	.375	.000	.000	.375	.825	.938	.000	.940	.581	.000	.904	.693	

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

City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					SR-60 Westbound Ramps Westbound					Grand Avenue Northbound					Driveway Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	88	124	0	0	212	50	0	118	0	168	0	463	69	0	532	0	0	1	0	1	913
07:15 AM	97	161	1	0	259	42	0	150	0	192	0	480	82	0	562	0	0	0	0	0	1013
07:30 AM	92	198	1	0	291	86	0	151	0	237	0	430	98	0	528	0	1	0	0	1	1057
07:45 AM	72	196	0	0	268	84	0	153	0	237	0	423	71	0	494	0	0	0	0	0	999
Total	349	679	2	0	1030	262	0	572	0	834	0	1796	320	0	2116	0	1	1	0	2	3982
08:00 AM	85	168	0	0	253	54	0	128	0	182	0	329	75	0	404	0	0	0	0	0	839
08:15 AM	69	171	1	0	241	67	0	108	0	175	0	362	112	0	474	1	0	0	0	1	891
08:30 AM	81	193	0	0	274	66	0	118	0	184	0	417	119	0	536	0	0	0	0	0	994
08:45 AM	58	217	1	0	276	56	0	110	0	166	0	344	82	1	427	0	1	0	0	1	870
Total	293	749	2	0	1044	243	0	464	0	707	0	1452	388	1	1841	1	1	0	0	2	3594
Grand Total	642	1428	4	0	2074	505	0	1036	0	1541	0	3248	708	1	3957	1	2	1	0	4	7576
Apprch %	31	68.9	0.2	0		32.8	0	67.2	0		0	82.1	17.9	0		25	50	25	0		
Total %	8.5	18.8	0.1	0	27.4	6.7	0	13.7	0	20.3	0	42.9	9.3	0	52.2	0	0	0	0	0.1	

	Grand Avenue Southbound				SR-60 Westbound Ramps Westbound				Grand Avenue Northbound				Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	88	124	0	212	50	0	118	168	0	463	69	532	0	0	**1**	**1**	913
07:15 AM	**97**	161	**1**	259	42	0	150	192	0	**480**	82	**562**	0	0	0	0	1013
07:30 AM	92	**198**	1	**291**	**86**	0	151	**237**	0	430	**98**	528	0	**1**	0	1	**1057**
07:45 AM	72	196	0	268	84	0	**153**	237	0	423	71	494	0	0	0	0	999
Total Volume	349	679	2	1030	262	0	572	834	0	1796	320	2116	0	1	1	2	3982
% App. Total	33.9	65.9	0.2		31.4	0	68.6		0	84.9	15.1		0	50	50		
PHF	.899	.857	.500	.885	.762	.000	.935	.880	.000	.935	.816	.941	.000	.250	.250	.500	.942

Counts Unlimited
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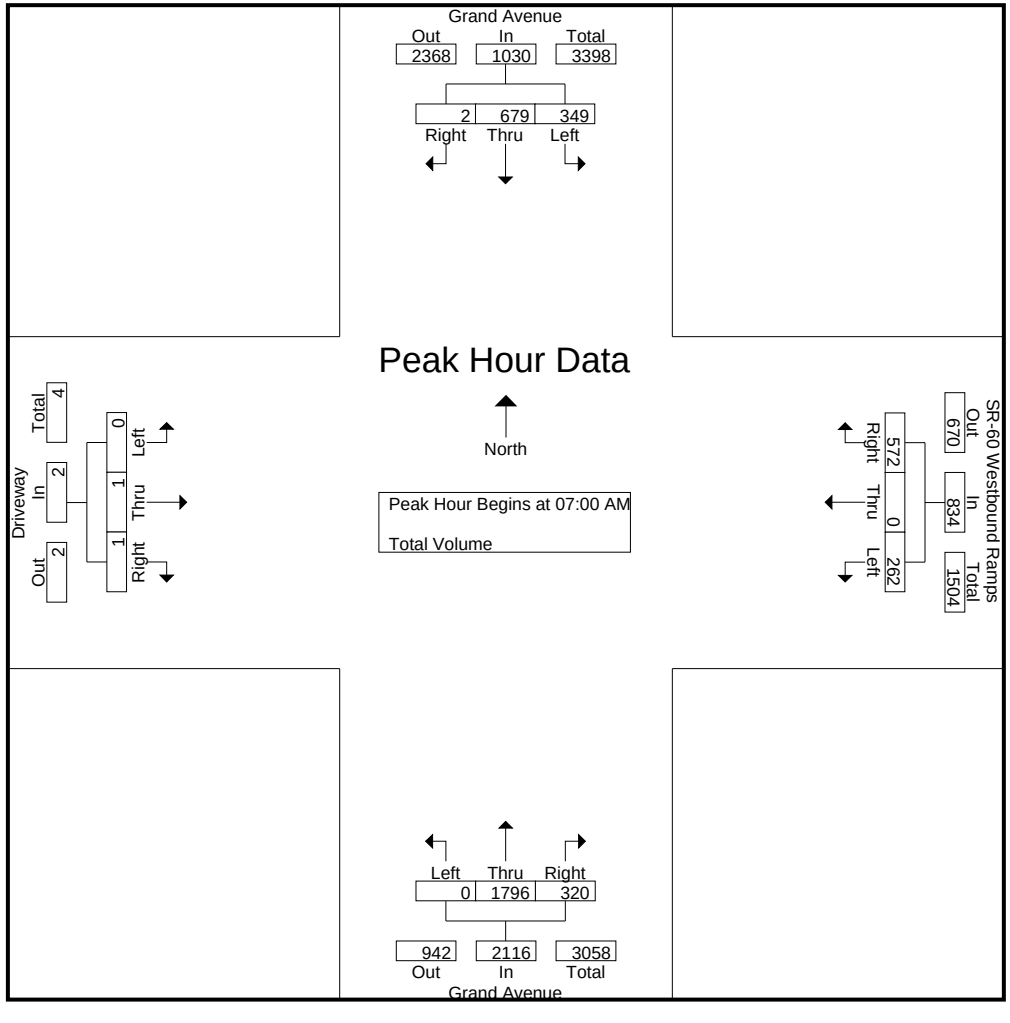
City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



Counts Unlimited
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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WAM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				SR-60 Westbound Ramps Westbound				Grand Avenue Northbound				Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:15 AM				07:00 AM				07:00 AM				
+0 mins.	**97**	161	**1**	259	42	0	150	192	0	463	69	532	0	0	**1**	**1**	
+15 mins.	92	**198**	1	**291**	**86**	0	151	**237**	0	**480**	82	**562**	0	0	0	0	
+30 mins.	72	196	0	268	84	0	**153**	237	0	430	**98**	528	0	**1**	0	1	
+45 mins.	85	168	0	253	54	0	128	182	0	423	71	494	0	0	0	0	
Total Volume	346	723	2	1071	266	0	582	848	0	1796	320	2116	0	1	1	2	
% App. Total	32.3	67.5	0.2		31.4	0	68.6		0	84.9	15.1		0	50	50		
PHF	.892	.913	.500	.920	.773	.000	.951	.895	.000	.935	.816	.941	.000	.250	.250	.500	

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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					SR-60 Westbound Ramps Westbound					Grand Avenue Northbound					Driveway Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	142	274	0	0	416	49	0	95	0	144	2	143	60	1	206	0	2	0	0	2	768
04:15 PM	122	307	1	0	430	47	1	105	0	153	0	160	61	1	222	1	0	0	0	1	806
04:30 PM	145	356	0	0	501	68	0	90	0	158	2	179	68	2	251	0	0	0	0	0	910
04:45 PM	133	241	1	0	375	59	0	88	0	147	0	179	66	1	246	0	0	0	0	0	768
Total	542	1178	2	0	1722	223	1	378	0	602	4	661	255	5	925	1	2	0	0	3	3252
05:00 PM	144	254	3	0	401	49	0	114	0	163	0	181	61	0	242	2	1	0	0	3	809
05:15 PM	140	339	0	0	479	50	1	131	0	182	0	216	68	0	284	0	0	0	0	0	945
05:30 PM	157	362	2	0	521	36	0	124	0	160	1	206	73	1	281	2	0	4	0	6	968
05:45 PM	169	427	0	0	596	51	0	126	0	177	0	196	81	2	279	0	1	0	0	1	1053
Total	610	1382	5	0	1997	186	1	495	0	682	1	799	283	3	1086	4	2	4	0	10	3775
Grand Total	1152	2560	7	0	3719	409	2	873	0	1284	5	1460	538	8	2011	5	4	4	0	13	7027
Apprch %	31	68.8	0.2	0		31.9	0.2	68	0		0.2	72.6	26.8	0.4		38.5	30.8	30.8	0		
Total %	16.4	36.4	0.1	0	52.9	5.8	0	12.4	0	18.3	0.1	20.8	7.7	0.1	28.6	0.1	0.1	0.1	0	0.2	

	Grand Avenue Southbound				SR-60 Westbound Ramps Westbound				Grand Avenue Northbound				Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	144	254	**3**	401	49	0	114	163	0	181	61	242	**2**	**1**	0	3	809
05:15 PM	140	339	0	479	50	**1**	**131**	**182**	0	**216**	68	**284**	0	0	0	0	945
05:30 PM	157	362	2	521	36	0	124	160	**1**	206	73	280	2	0	**4**	**6**	967
05:45 PM	**169**	**427**	0	**596**	**51**	0	126	177	0	196	**81**	277	0	1	0	1	**1051**
Total Volume	610	1382	5	1997	186	1	495	682	1	799	283	1083	4	2	4	10	3772
% App. Total	30.5	69.2	0.3		27.3	0.1	72.6		0.1	73.8	26.1		40	20	40		
PHF	.902	.809	.417	.838	.912	.250	.945	.937	.250	.925	.873	.953	.500	.500	.250	.417	.897

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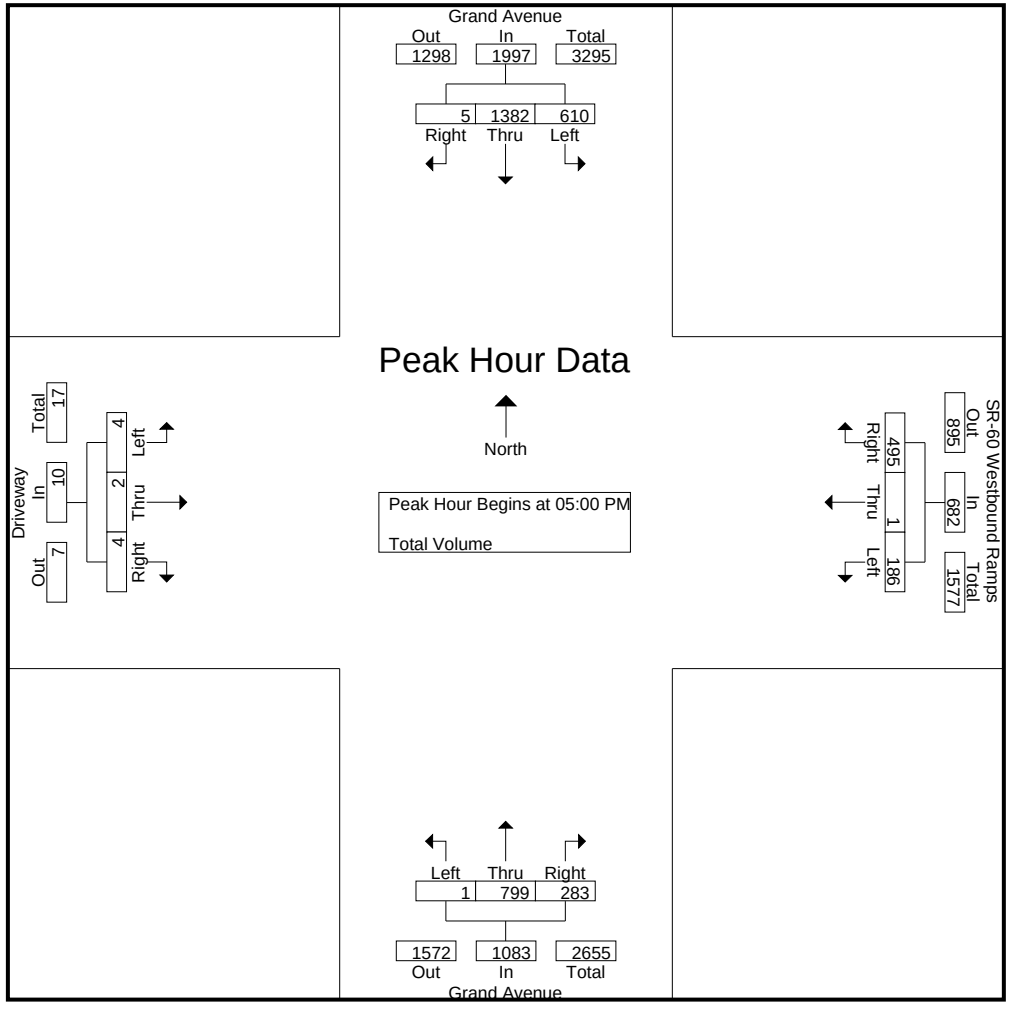
City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Westbound Ramps
Weather: Clear

File Name : WNTGR60WPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				SR-60 Westbound Ramps Westbound				Grand Avenue Northbound				Driveway Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				05:00 PM				05:00 PM				05:00 PM				
+0 mins.	144	254	**3**	401	49	0	114	163	0	181	61	242	**2**	**1**	0	3	
+15 mins.	140	339	0	479	50	**1**	**131**	**182**	0	**216**	68	**284**	0	0	0	0	
+30 mins.	157	362	2	521	36	0	124	160	**1**	206	73	280	2	0	**4**	**6**	
+45 mins.	**169**	**427**	0	**596**	**51**	0	126	177	0	196	**81**	277	0	1	0	1	
Total Volume	610	1382	5	1997	186	1	495	682	1	799	283	1083	4	2	4	10	
% App. Total	30.5	69.2	0.3		27.3	0.1	72.6		0.1	73.8	26.1		40	20	40		
PHF	.902	.809	.417	.838	.912	.250	.945	.937	.250	.925	.873	.953	.500	.500	.250	.417	

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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Eastbound Ramps
Weather: Clear

File Name : WNTGR60EAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Grand Avenue Southbound					SR-60 Eastbound On Ramp Westbound					Grand Avenue Northbound					SR-60 Eastbound Off Ramp Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	71	107	0	0	178	0	0	0	0	0	0	295	54	0	349	213	0	50	0	263	790
07:15 AM	65	136	0	1	202	0	0	0	0	0	0	295	64	0	359	262	0	70	0	332	893
07:30 AM	113	180	0	0	293	0	0	0	0	0	0	295	73	0	368	197	0	60	0	257	918
07:45 AM	67	208	0	0	275	0	0	0	0	0	0	258	60	0	318	249	0	84	0	333	926
Total	316	631	0	1	948	0	0	0	0	0	0	1143	251	0	1394	921	0	264	0	1185	3527
08:00 AM	67	152	0	0	219	0	0	0	0	0	0	329	70	0	399	197	0	67	0	264	882
08:15 AM	81	163	0	0	244	0	0	0	0	0	0	326	66	0	392	197	0	55	0	252	888
08:30 AM	72	171	0	0	243	0	0	0	0	0	0	260	67	0	327	185	1	65	0	251	821
08:45 AM	84	182	0	0	266	0	0	0	0	0	0	233	68	0	301	195	0	71	0	266	833
Total	304	668	0	0	972	0	0	0	0	0	0	1148	271	0	1419	774	1	258	0	1033	3424
Grand Total	620	1299	0	1	1920	0	0	0	0	0	0	2291	522	0	2813	1695	1	522	0	2218	6951
Apprch %	32.3	67.7	0	0.1		0	0	0	0		0	81.4	18.6	0		76.4	0	23.5	0		
Total %	8.9	18.7	0	0	27.6	0	0	0	0	0	0	33	7.5	0	40.5	24.4	0	7.5	0	31.9	

	Grand Avenue Southbound				SR-60 Eastbound On Ramp Westbound				Grand Avenue Northbound				SR-60 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	65	136	0	201	0	0	0	0	0	295	64	359	**262**	0	70	332	892
07:30 AM	**113**	180	0	**293**	0	0	0	0	0	295	**73**	368	197	0	60	257	918
07:45 AM	67	**208**	0	275	0	0	0	0	0	258	60	318	249	0	**84**	**333**	**926**
08:00 AM	67	152	0	219	0	0	0	0	0	**329**	70	**399**	197	0	67	264	882
Total Volume	312	676	0	988	0	0	0	0	0	1177	267	1444	905	0	281	1186	3618
% App. Total	31.6	68.4	0		0	0	0		0	81.5	18.5		76.3	0	23.7		
PHF	.690	.813	.000	.843	.000	.000	.000	.000	.000	.894	.914	.905	.864	.000	.836	.890	.977

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City of Walnut
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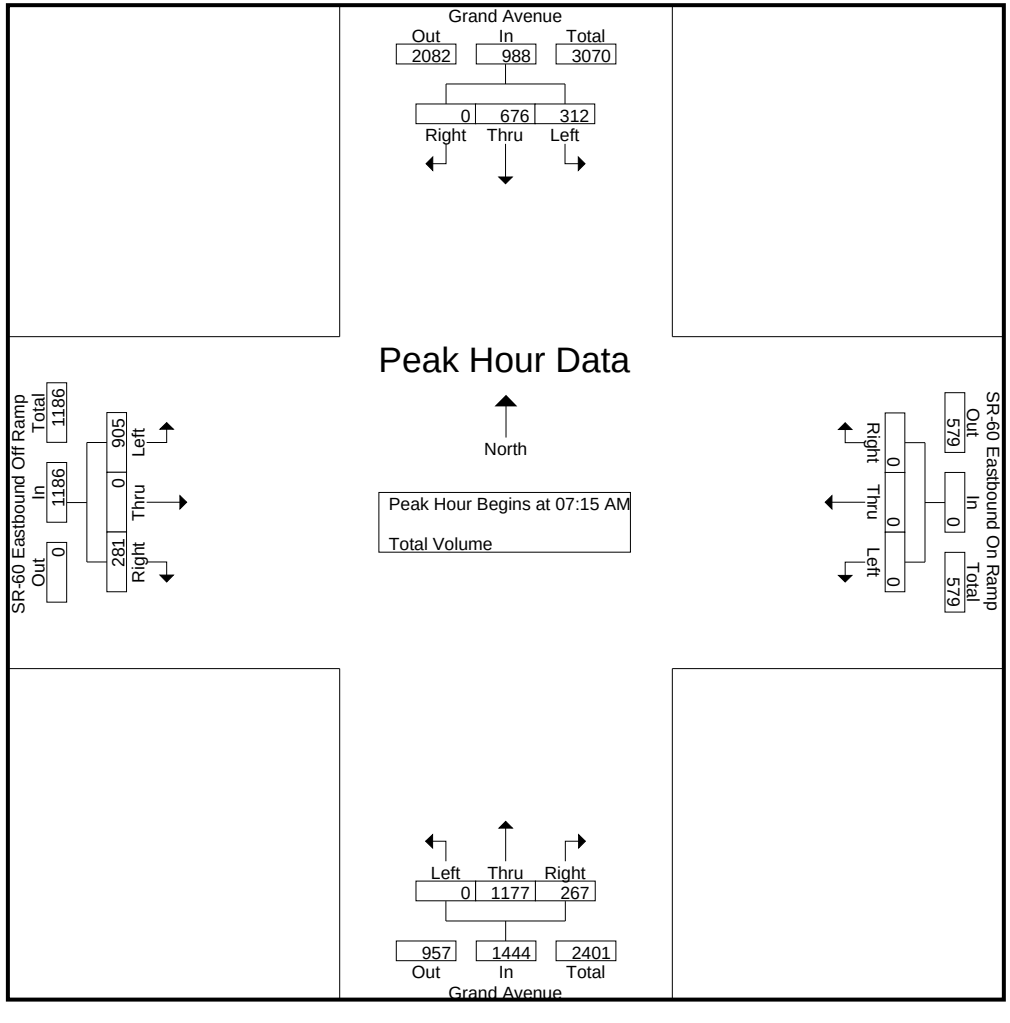
E/W: SR-60 Eastbound Ramps
Weather: Clear

File Name : WNTGR60EAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Eastbound Ramps
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Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				SR-60 Eastbound On Ramp Westbound				Grand Avenue Northbound				SR-60 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:00 AM				07:30 AM				07:15 AM				
+0 mins.	**113**	180	0	**293**	0	0	0	0	0	295	**73**	368	**262**	0	70	332	
+15 mins.	67	**208**	0	275	0	0	0	0	0	258	60	318	197	0	60	257	
+30 mins.	67	152	0	219	0	0	0	0	0	**329**	70	**399**	249	0	**84**	**333**	
+45 mins.	81	163	0	244	0	0	0	0	0	326	66	392	197	0	67	264	
Total Volume	328	703	0	1031	0	0	0	0	0	1208	269	1477	905	0	281	1186	
% App. Total	31.8	68.2	0		0	0	0		0	81.8	18.2		76.3	0	23.7		
PHF	.726	.845	.000	.880	.000	.000	.000	.000	.000	.918	.921	.925	.864	.000	.836	.890	

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Site Code : 04215551
Start Date : 10/1/2015
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Groups Printed- Total Volume

	Grand Avenue Southbound					SR-60 Eastbound On Ramp Westbound					Grand Avenue Northbound					SR-60 Eastbound Off Ramp Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	78	233	0	0	311	0	0	0	0	0	0	159	137	0	296	44	0	46	0	90	697
04:15 PM	100	257	0	0	357	0	0	0	0	0	0	198	118	0	316	42	0	42	0	84	757
04:30 PM	114	315	0	0	429	0	0	0	0	0	0	190	149	0	339	44	1	54	0	99	867
04:45 PM	83	303	0	1	387	0	0	0	0	0	0	200	154	0	354	50	0	47	0	97	838
Total	375	1108	0	1	1484	0	0	0	0	0	0	747	558	0	1305	180	1	189	0	370	3159
05:00 PM	88	311	0	0	399	0	0	0	0	0	0	228	179	0	407	39	0	44	0	83	889
05:15 PM	88	311	0	1	400	0	0	0	0	0	0	234	150	0	384	45	0	40	0	85	869
05:30 PM	92	302	0	0	394	0	0	0	0	0	0	227	154	0	381	37	0	56	0	93	868
05:45 PM	112	370	0	0	482	0	0	0	0	0	0	244	136	0	380	48	0	36	0	84	946
Total	380	1294	0	1	1675	0	0	0	0	0	0	933	619	0	1552	169	0	176	0	345	3572
Grand Total	755	2402	0	2	3159	0	0	0	0	0	0	1680	1177	0	2857	349	1	365	0	715	6731
Apprch %	23.9	76	0	0.1		0	0	0	0		0	58.8	41.2	0		48.8	0.1	51	0		
Total %	11.2	35.7	0	0	46.9	0	0	0	0	0	0	25	17.5	0	42.4	5.2	0	5.4	0	10.6	

	Grand Avenue Southbound				SR-60 Eastbound On Ramp Westbound				Grand Avenue Northbound				SR-60 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	88	311	0	399	0	0	0	0	0	228	**179**	**407**	39	0	44	83	889
05:15 PM	88	311	0	399	0	0	0	0	0	234	150	384	45	0	40	85	868
05:30 PM	92	302	0	394	0	0	0	0	0	227	154	381	37	0	**56**	**93**	868
05:45 PM	**112**	**370**	0	**482**	0	0	0	0	0	**244**	136	380	**48**	0	36	84	**946**
Total Volume	380	1294	0	1674	0	0	0	0	0	933	619	1552	169	0	176	345	3571
% App. Total	22.7	77.3	0		0	0	0		0	60.1	39.9		49	0	51		
PHF	.848	.874	.000	.868	.000	.000	.000	.000	.000	.956	.865	.953	.880	.000	.786	.927	.944

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City of Walnut
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Site Code : 04215551
Start Date : 10/1/2015
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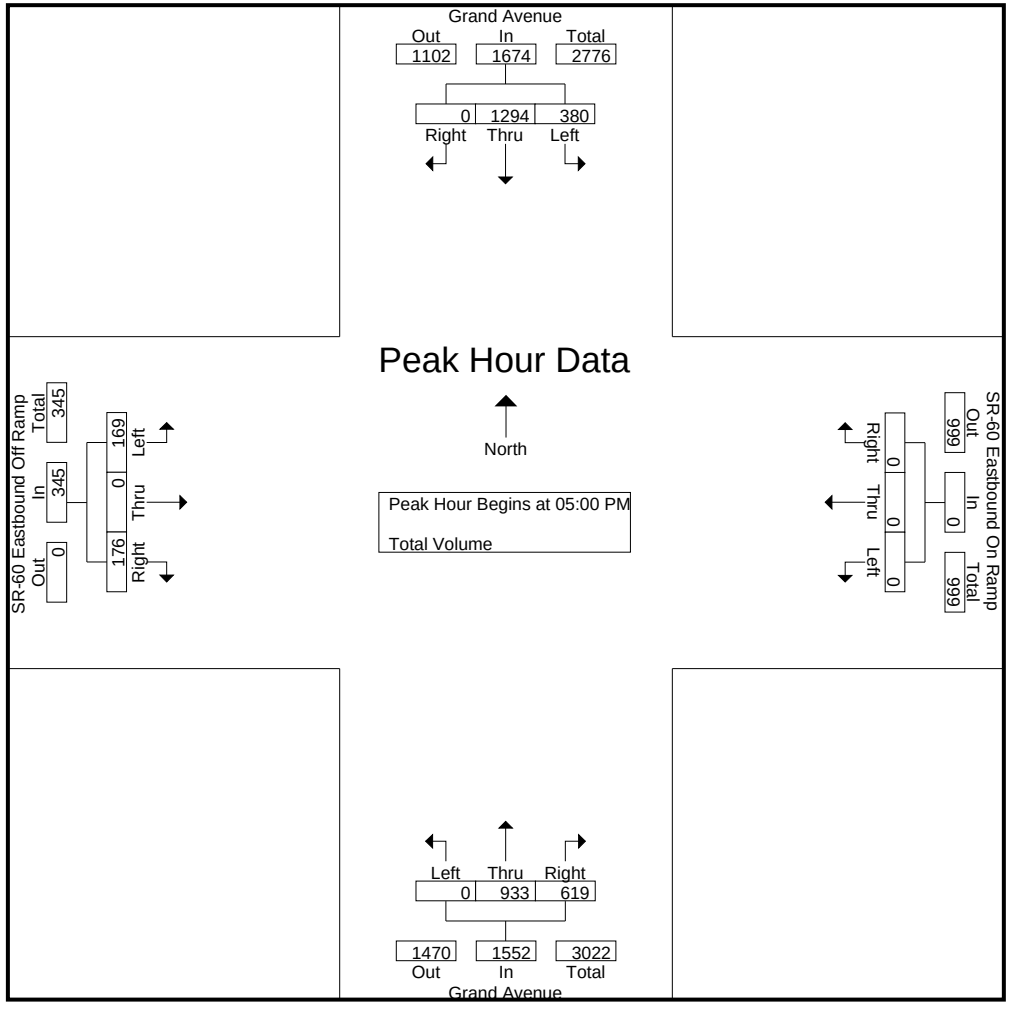

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City of Walnut
N/S: Grand Avenue
E/W: SR-60 Eastbound Ramps
Weather: Clear

File Name : WNTGR60EPM
Site Code : 04215551
Start Date : 10/1/2015

	Grand Avenue Southbound				SR-60 Eastbound On Ramp Westbound				Grand Avenue Northbound				SR-60 Eastbound Off Ramp Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:00 PM				05:00 PM				04:00 PM				
+0 mins.	88	311	0	399	0	0	0	0	0	228	**179**	**407**	44	0	46	90	
+15 mins.	88	311	0	399	0	0	0	0	0	234	150	384	42	0	42	84	
+30 mins.	92	302	0	394	0	0	0	0	0	227	154	381	44	**1**	**54**	**99**	
+45 mins.	**112**	**370**	0	**482**	0	0	0	0	0	**244**	136	380	**50**	0	47	97	
Total Volume	380	1294	0	1674	0	0	0	0	0	933	619	1552	180	1	189	370	
% App. Total	22.7	77.3	0		0	0	0		0	60.1	39.9		48.6	0.3	51.1		
PHF	.848	.874	.000	.868	.000	.000	.000	.000	.000	.956	.865	.953	.900	.250	.875	.934	

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City of Walnut
N/S: Mount SAC Way
E/W: Temple Avenue
Weather: Clear

File Name : WNTMTTEAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Mount SAC Way Southbound					Temple Avenue Westbound					Mount SAC Way Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	32	2	60	0	94	0	180	26	4	210	10	3	1	0	14	46	208	6	1	261	579
07:15 AM	41	4	56	0	101	1	196	28	4	229	39	4	6	0	49	9	271	62	1	343	722
07:30 AM	55	3	80	0	138	2	188	15	6	211	44	3	7	0	54	6	235	51	0	292	695
07:45 AM	45	2	59	0	106	3	214	13	1	231	22	6	4	0	32	8	259	54	0	321	690
Total	173	11	255	0	439	6	778	82	15	881	115	16	18	0	149	69	973	173	2	1217	2686
08:00 AM	32	2	51	0	85	0	232	24	1	257	21	1	11	0	33	12	215	51	0	278	653
08:15 AM	29	0	49	0	78	3	215	6	2	226	24	2	4	0	30	5	226	36	0	267	601
08:30 AM	21	1	38	0	60	0	308	20	4	332	40	2	6	0	48	8	229	31	0	268	708
08:45 AM	26	5	35	0	66	4	284	15	0	303	26	5	4	0	35	9	224	49	0	282	686
Total	108	8	173	0	289	7	1039	65	7	1118	111	10	25	0	146	34	894	167	0	1095	2648
Grand Total	281	19	428	0	728	13	1817	147	22	1999	226	26	43	0	295	103	1867	340	2	2312	5334
Apprch %	38.6	2.6	58.8	0		0.7	90.9	7.4	1.1		76.6	8.8	14.6	0		4.5	80.8	14.7	0.1		
Total %	5.3	0.4	8	0	13.6	0.2	34.1	2.8	0.4	37.5	4.2	0.5	0.8	0	5.5	1.9	35	6.4	0	43.3	

	Mount SAC Way Southbound				Temple Avenue Westbound				Mount SAC Way Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	41	**4**	56	101	1	196	**28**	225	39	4	6	49	9	**271**	**62**	**342**	**717**
07:30 AM	**55**	3	**80**	**138**	2	188	15	205	**44**	3	7	**54**	6	235	51	292	689
07:45 AM	45	2	59	106	**3**	214	13	230	22	**6**	4	32	8	259	54	321	689
08:00 AM	32	2	51	85	0	**232**	24	**256**	21	1	**11**	33	**12**	215	51	278	652
Total Volume	173	11	246	430	6	830	80	916	126	14	28	168	35	980	218	1233	2747
% App. Total	40.2	2.6	57.2		0.7	90.6	8.7		75	8.3	16.7		2.8	79.5	17.7		
PHF	.786	.688	.769	.779	.500	.894	.714	.895	.716	.583	.636	.778	.729	.904	.879	.901	.958

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City of Walnut
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File Name : WNTMTTEAM
Site Code : 04215551
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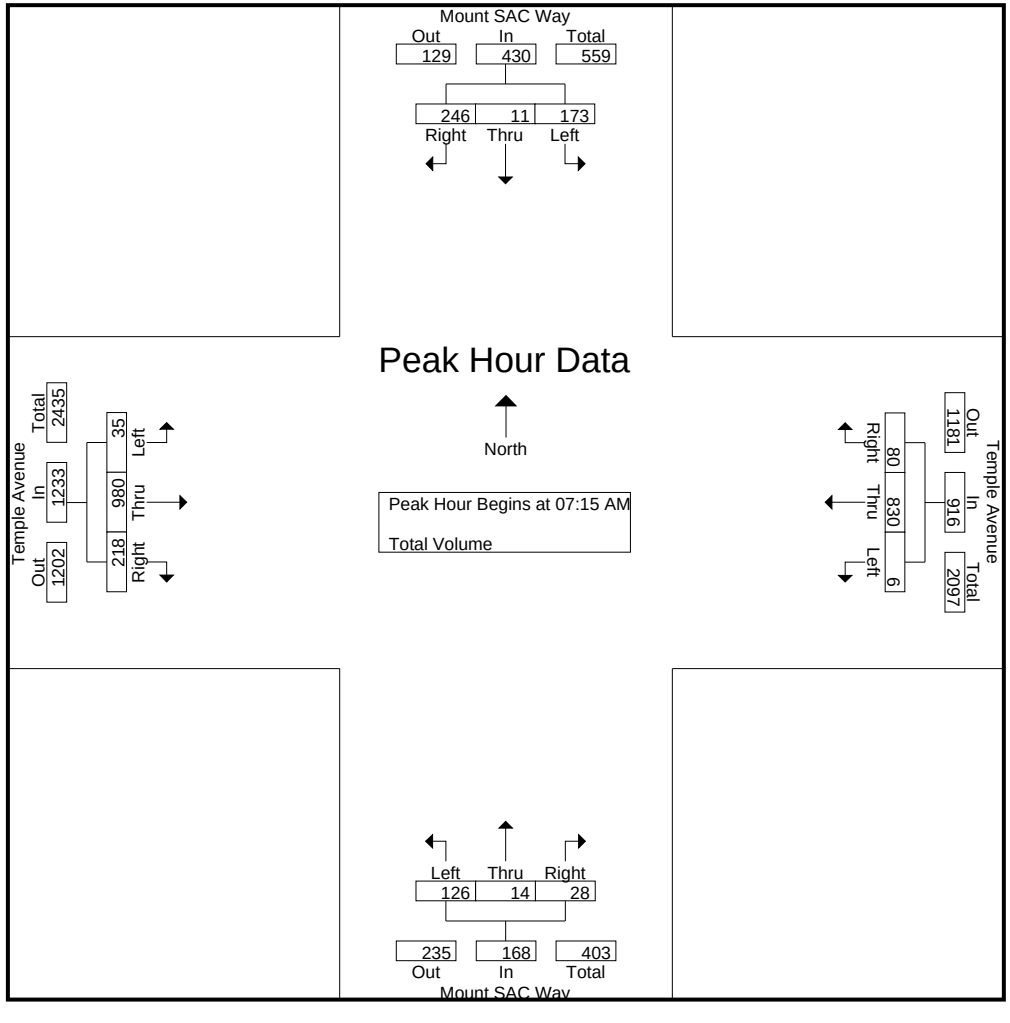

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City of Walnut
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File Name : WNTMTTEAM
Site Code : 04215551
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	Mount SAC Way Southbound				Temple Avenue Westbound				Mount SAC Way Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				08:00 AM				07:15 AM				07:15 AM				
+0 mins.	32	2	60	94	0	232	**24**	256	39	4	6	49	9	**271**	**62**	**342**	
+15 mins.	41	**4**	56	101	3	215	6	224	**44**	3	7	**54**	6	235	51	292	
+30 mins.	**55**	3	**80**	**138**	0	**308**	20	**328**	22	**6**	4	32	8	259	54	321	
+45 mins.	45	2	59	106	**4**	284	15	303	21	1	**11**	33	**12**	215	51	278	
Total Volume	173	11	255	439	7	1039	65	1111	126	14	28	168	35	980	218	1233	
% App. Total	39.4	2.5	58.1		0.6	93.5	5.9		75	8.3	16.7		2.8	79.5	17.7		
PHF	.786	.688	.797	.795	.438	.843	.677	.847	.716	.583	.636	.778	.729	.904	.879	.901	

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File Name : WNTMTTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Mount SAC Way Southbound					Temple Avenue Westbound					Mount SAC Way Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	7	0	12	0	19	2	250	55	0	307	2	4	1	0	7	78	228	19	0	325	658
04:15 PM	19	2	18	0	39	3	192	65	2	262	2	1	0	0	3	84	336	17	0	437	741
04:30 PM	21	1	18	0	40	10	141	74	3	228	1	3	1	0	5	98	324	40	0	462	735
04:45 PM	22	6	34	0	62	19	128	48	3	198	3	2	0	0	5	80	332	69	0	481	746
Total	69	9	82	0	160	34	711	242	8	995	8	10	2	0	20	340	1220	145	0	1705	2880
05:00 PM	32	29	32	0	93	10	148	50	1	209	0	1	0	0	1	41	343	63	0	447	750
05:15 PM	23	11	21	0	55	18	163	32	2	215	1	3	1	0	5	29	264	35	0	328	603
05:30 PM	9	8	9	0	26	10	141	11	1	163	0	7	0	0	7	27	233	25	0	285	481
05:45 PM	13	8	12	0	33	6	107	11	1	125	6	5	3	0	14	27	188	25	0	240	412
Total	77	56	74	0	207	44	559	104	5	712	7	16	4	0	27	124	1028	148	0	1300	2246
Grand Total	146	65	156	0	367	78	1270	346	13	1707	15	26	6	0	47	464	2248	293	0	3005	5126
Apprch %	39.8	17.7	42.5	0		4.6	74.4	20.3	0.8		31.9	55.3	12.8	0		15.4	74.8	9.8	0		
Total %	2.8	1.3	3	0	7.2	1.5	24.8	6.7	0.3	33.3	0.3	0.5	0.1	0	0.9	9.1	43.9	5.7	0	58.6	

	Mount SAC Way Southbound				Temple Avenue Westbound				Mount SAC Way Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	19	2	18	39	3	**192**	65	**260**	2	1	0	3	84	336	17	437	739
04:30 PM	21	1	18	40	10	141	**74**	225	1	**3**	**1**	**5**	**98**	324	40	462	732
04:45 PM	22	6	**34**	62	**19**	128	48	195	**3**	2	0	5	80	332	**69**	**481**	743
05:00 PM	**32**	**29**	32	**93**	10	148	50	208	0	1	0	1	41	**343**	63	447	**749**
Total Volume	94	38	102	234	42	609	237	888	6	7	1	14	303	1335	189	1827	2963
% App. Total	40.2	16.2	43.6		4.7	68.6	26.7		42.9	50	7.1		16.6	73.1	10.3		
PHF	.734	.328	.750	.629	.553	.793	.801	.854	.500	.583	.250	.700	.773	.973	.685	.950	.989

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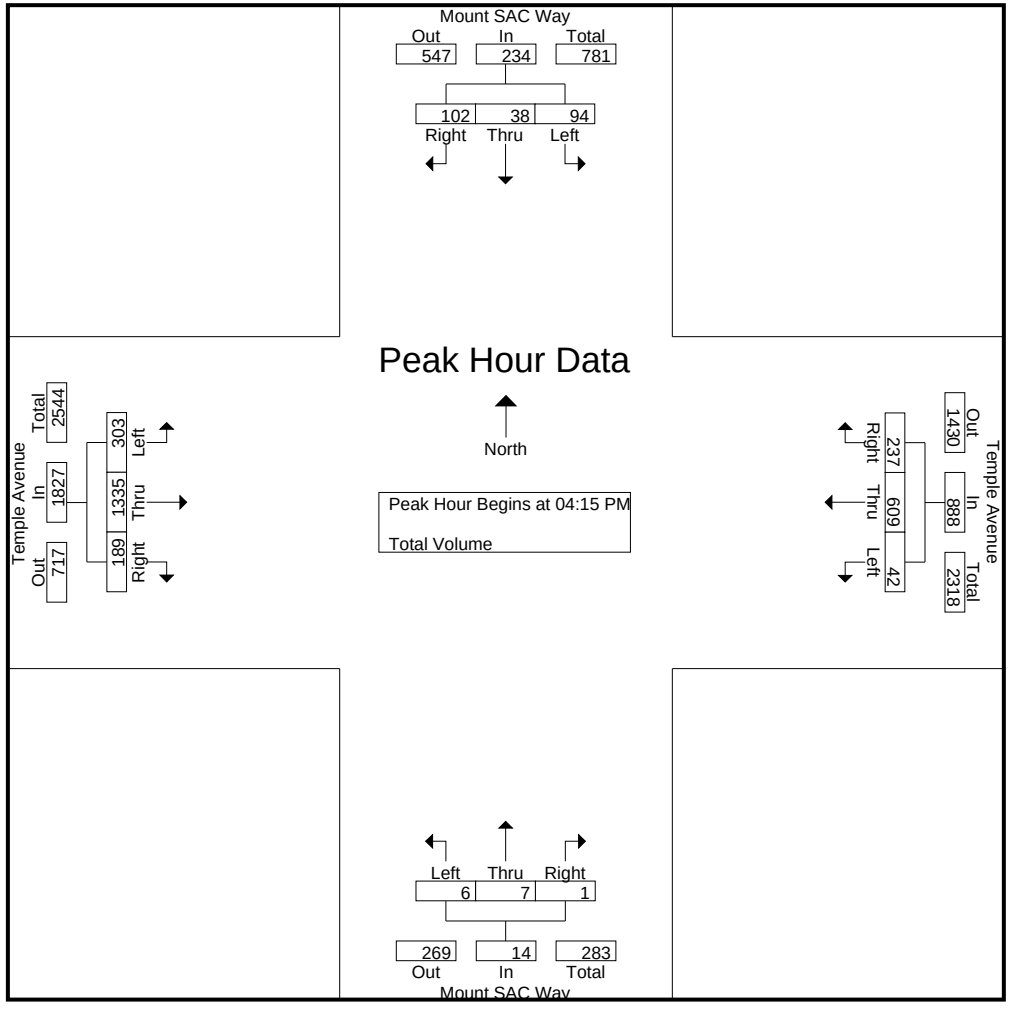
City of Walnut
N/S: Mount SAC Way
E/W: Temple Avenue
Weather: Clear

File Name : WNTMTTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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PO Box 1178
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City of Walnut
N/S: Mount SAC Way
E/W: Temple Avenue
Weather: Clear

File Name : WNTMTTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Mount SAC Way Southbound				Temple Avenue Westbound				Mount SAC Way Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				04:00 PM				05:00 PM				04:15 PM				
+0 mins.	21	1	18	40	2	**250**	55	**307**	0	1	0	1	84	336	17	437	
+15 mins.	22	6	**34**	62	3	192	65	260	1	3	1	5	**98**	324	40	462	
+30 mins.	**32**	**29**	32	**93**	10	141	**74**	225	0	**7**	0	7	80	332	**69**	**481**	
+45 mins.	23	11	21	55	**19**	128	48	195	**6**	5	**3**	**14**	41	**343**	63	447	
Total Volume	98	47	105	250	34	711	242	987	7	16	4	27	303	1335	189	1827	
% App. Total	39.2	18.8	42		3.4	72	24.5		25.9	59.3	14.8		16.6	73.1	10.3		
PHF	.766	.405	.772	.672	.447	.711	.818	.804	.292	.571	.333	.482	.773	.973	.685	.950	

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City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Bonita Avenue Southbound					Temple Avenue Westbound					Service Road Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	4	3	4	0	11	25	386	76	0	487	7	2	1	0	10	27	135	16	0	178	686
07:15 AM	9	3	13	0	25	24	291	82	0	397	3	5	17	0	25	60	207	30	0	297	744
07:30 AM	23	5	13	0	41	42	224	83	0	349	7	2	2	0	11	84	187	30	0	301	702
07:45 AM	33	8	28	0	69	22	208	124	0	354	4	3	0	0	7	104	158	31	0	293	723
Total	69	19	58	0	146	113	1109	365	0	1587	21	12	20	0	53	275	687	107	0	1069	2855
08:00 AM	15	2	20	0	37	31	229	135	0	395	7	3	2	0	12	133	173	39	0	345	789
08:15 AM	20	9	24	0	53	27	202	111	0	340	4	2	1	0	7	103	151	28	0	282	682
08:30 AM	13	7	21	0	41	15	160	58	0	233	4	5	6	0	15	68	146	16	0	230	519
08:45 AM	17	7	8	0	32	28	116	53	0	197	6	1	3	0	10	48	116	19	0	183	422
Total	65	25	73	0	163	101	707	357	0	1165	21	11	12	0	44	352	586	102	0	1040	2412
Grand Total	134	44	131	0	309	214	1816	722	0	2752	42	23	32	0	97	627	1273	209	0	2109	5267
Apprch %	43.4	14.2	42.4	0		7.8	66	26.2	0		43.3	23.7	33	0		29.7	60.4	9.9	0		
Total %	2.5	0.8	2.5	0	5.9	4.1	34.5	13.7	0	52.2	0.8	0.4	0.6	0	1.8	11.9	24.2	4	0	40	

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	9	3	13	25	24	**291**	82	**397**	3	**5**	**17**	**25**	60	**207**	30	297	744
07:30 AM	23	5	13	41	**42**	224	83	349	**7**	2	2	11	84	187	30	301	702
07:45 AM	**33**	**8**	**28**	**69**	22	208	124	354	4	3	0	7	104	158	31	293	723
08:00 AM	15	2	20	37	31	229	**135**	395	7	3	2	12	**133**	173	**39**	**345**	**789**
Total Volume	80	18	74	172	119	952	424	1495	21	13	21	55	381	725	130	1236	2958
% App. Total	46.5	10.5	43		8	63.7	28.4		38.2	23.6	38.2		30.8	58.7	10.5		
PHF	.606	.563	.661	.623	.708	.818	.785	.941	.750	.650	.309	.550	.716	.876	.833	.896	.937

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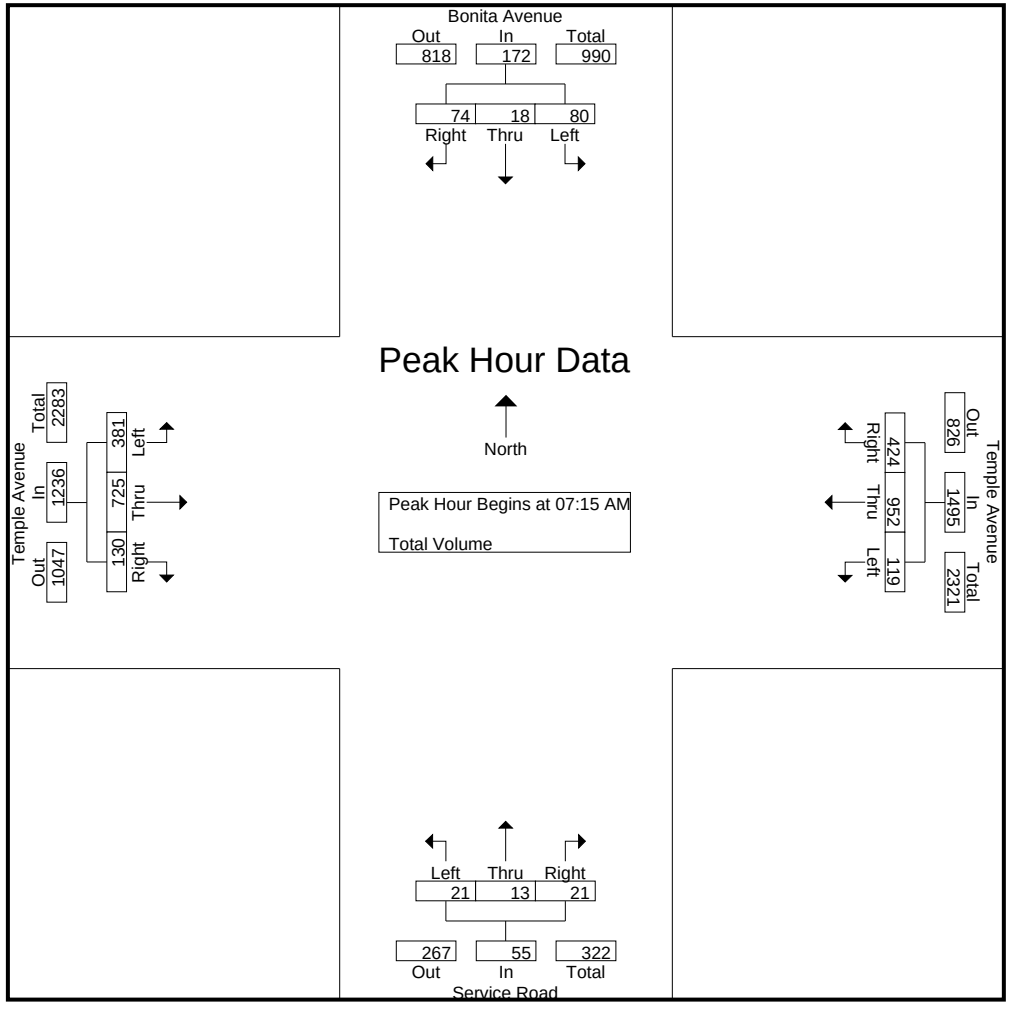
City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEAM
Site Code : 04215551
Start Date : 10/1/2015

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:30 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	23	5	13	41	25	**386**	76	**487**	3	**5**	**17**	**25**	60	**207**	30	297	
+15 mins.	**33**	8	**28**	**69**	24	291	82	397	**7**	2	2	11	84	187	30	301	
+30 mins.	15	2	20	37	**42**	224	83	349	4	3	0	7	104	158	31	293	
+45 mins.	20	**9**	24	53	22	208	**124**	354	7	3	2	12	**133**	173	**39**	**345**	
Total Volume	91	24	85	200	113	1109	365	1587	21	13	21	55	381	725	130	1236	
% App. Total	45.5	12	42.5		7.1	69.9	23		38.2	23.6	38.2		30.8	58.7	10.5		
PHF	.689	.667	.759	.725	.673	.718	.736	.815	.750	.650	.309	.550	.716	.876	.833	.896	

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City of Walnut
N/S: Bonita Avenue
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEPM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Bonita Avenue Southbound					Temple Avenue Westbound					Service Road Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	54	4	23	0	81	5	163	29	0	197	25	6	19	0	50	50	184	13	0	247	575
04:15 PM	82	7	56	0	145	8	147	53	0	208	18	5	29	0	52	48	210	14	0	272	677
04:30 PM	105	4	55	0	164	11	176	36	0	223	22	9	27	0	58	32	266	8	0	306	751
04:45 PM	51	2	24	0	77	3	148	36	0	187	27	6	15	0	48	44	264	11	0	319	631
Total	292	17	158	0	467	27	634	154	0	815	92	26	90	0	208	174	924	46	0	1144	2634
05:00 PM	49	4	24	0	77	5	228	40	0	273	35	6	21	0	62	34	213	16	0	263	675
05:15 PM	31	2	21	0	54	6	284	45	0	335	24	3	16	0	43	40	202	10	0	252	684
05:30 PM	38	2	18	0	58	5	285	55	0	345	31	9	26	0	66	40	176	8	0	224	693
05:45 PM	33	1	33	0	67	15	300	60	0	375	13	3	12	0	28	39	185	20	0	244	714
Total	151	9	96	0	256	31	1097	200	0	1328	103	21	75	0	199	153	776	54	0	983	2766
Grand Total	443	26	254	0	723	58	1731	354	0	2143	195	47	165	0	407	327	1700	100	0	2127	5400
Apprch %	61.3	3.6	35.1	0		2.7	80.8	16.5	0		47.9	11.5	40.5	0		15.4	79.9	4.7	0		
Total %	8.2	0.5	4.7	0	13.4	1.1	32.1	6.6	0	39.7	3.6	0.9	3.1	0	7.5	6.1	31.5	1.9	0	39.4	

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**49**	**4**	24	**77**	5	228	40	273	**35**	6	21	62	34	**213**	16	**263**	675
05:15 PM	31	2	21	54	6	284	45	335	24	3	16	43	**40**	202	10	252	684
05:30 PM	38	2	18	58	5	285	55	345	31	**9**	**26**	**66**	40	176	8	224	693
05:45 PM	33	1	**33**	67	**15**	**300**	**60**	**375**	13	3	12	28	39	185	**20**	244	**714**
Total Volume	151	9	96	256	31	1097	200	1328	103	21	75	199	153	776	54	983	2766
% App. Total	59	3.5	37.5		2.3	82.6	15.1		51.8	10.6	37.7		15.6	78.9	5.5		
PHF	.770	.563	.727	.831	.517	.914	.833	.885	.736	.583	.721	.754	.956	.911	.675	.934	.968

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City of Walnut
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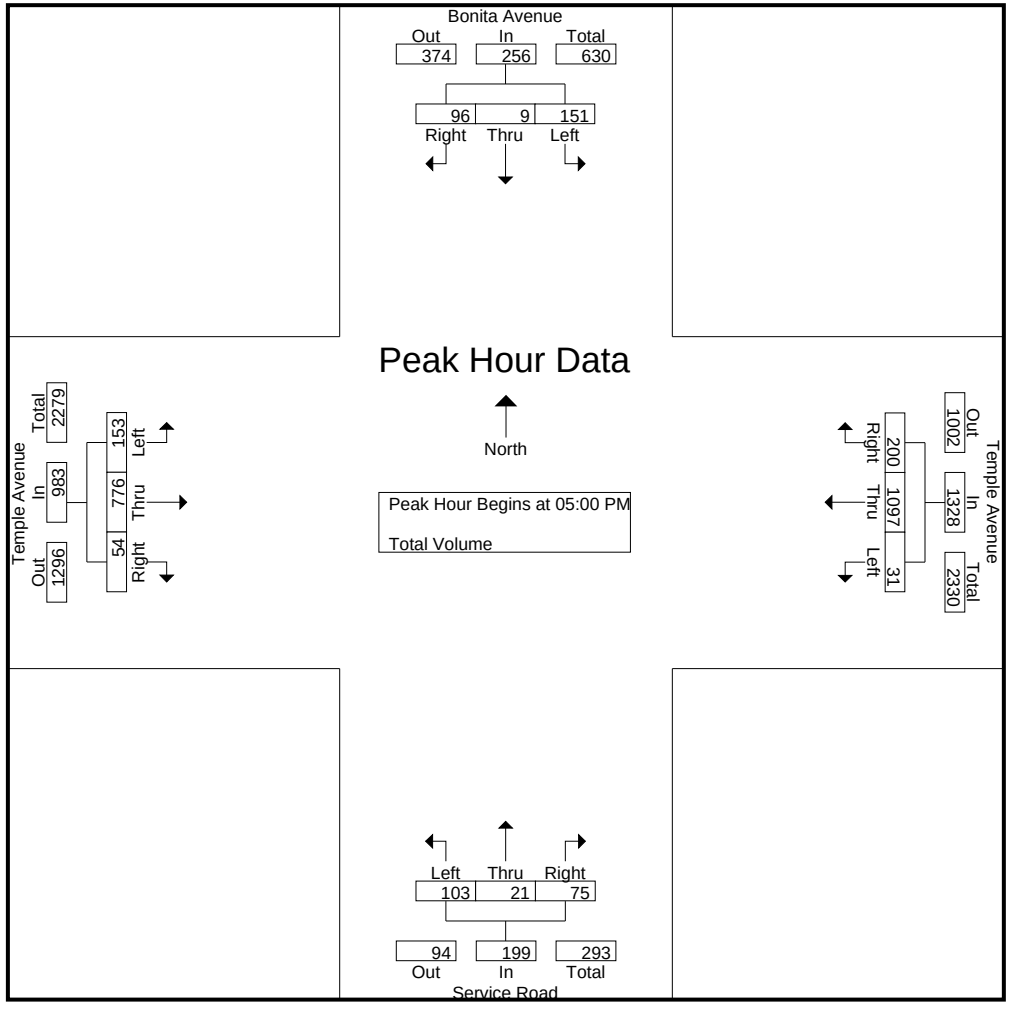
E/W: Temple Avenue
Weather: Clear

File Name : WNTBOTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Bonita Avenue
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Weather: Clear

File Name : WNTBOTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Bonita Avenue Southbound				Temple Avenue Westbound				Service Road Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				05:00 PM				04:15 PM				04:15 PM				
+0 mins.	54	4	23	81	5	228	40	273	18	5	**29**	52	**48**	210	14	272	
+15 mins.	82	**7**	**56**	145	6	284	45	335	22	**9**	27	58	32	**266**	8	306	
+30 mins.	**105**	4	55	**164**	5	285	55	345	27	6	15	48	44	264	11	**319**	
+45 mins.	51	2	24	77	**15**	**300**	**60**	**375**	**35**	6	21	**62**	34	213	**16**	263	
Total Volume	292	17	158	467	31	1097	200	1328	102	26	92	220	158	953	49	1160	
% App. Total	62.5	3.6	33.8		2.3	82.6	15.1		46.4	11.8	41.8		13.6	82.2	4.2		
PHF	.695	.607	.705	.712	.517	.914	.833	.885	.729	.722	.793	.887	.823	.896	.766	.909	

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City of Walnut
N/S: Lot F
E/W: Temple Avenue
Weather: Clear

File Name : WNTLFTEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Lot F Driveway Southbound					Temple Avenue Westbound					Lot V Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	439	19	0	458	0	0	0	0	0	0	132	0	1	133	591
07:15 AM	0	0	0	0	0	0	388	18	0	406	0	0	0	0	0	0	249	0	0	249	655
07:30 AM	0	0	0	0	0	0	360	28	0	388	0	0	0	0	0	0	220	0	1	221	609
07:45 AM	0	0	0	0	0	0	389	61	0	450	0	0	0	0	0	2	201	0	1	204	654
Total	0	0	0	0	0	0	1576	126	0	1702	0	0	0	0	0	2	802	0	3	807	2509
08:00 AM	0	0	0	0	0	0	393	92	0	485	0	0	0	0	0	2	177	0	0	179	664
08:15 AM	0	0	0	0	0	0	283	60	0	343	0	0	0	0	0	3	182	0	0	185	528
08:30 AM	0	0	0	0	0	0	206	20	0	226	0	0	0	0	0	1	159	0	0	160	386
08:45 AM	0	0	0	0	0	0	221	37	0	258	0	0	0	0	0	0	143	0	0	143	401
Total	0	0	0	0	0	0	1103	209	0	1312	0	0	0	0	0	6	661	0	0	667	1979
Grand Total	0	0	0	0	0	0	2679	335	0	3014	0	0	0	0	0	8	1463	0	3	1474	4488
Apprch %	0	0	0	0		0	88.9	11.1	0		0	0	0	0		0.5	99.3	0	0.2		
Total %	0	0	0	0	0	0	59.7	7.5	0	67.2	0	0	0	0	0	0.2	32.6	0	0.1	32.8	

	Lot F Driveway Southbound				Temple Avenue Westbound				Lot V Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	388	18	406	0	0	0	0	0	**249**	0	**249**	655
07:30 AM	0	0	0	0	0	360	28	388	0	0	0	0	0	220	0	220	608
07:45 AM	0	0	0	0	0	389	61	450	0	0	0	0	**2**	201	0	203	653
08:00 AM	0	0	0	0	0	**393**	**92**	**485**	0	0	0	0	2	177	0	179	**664**
Total Volume	0	0	0	0	0	1530	199	1729	0	0	0	0	4	847	0	851	2580
% App. Total	0	0	0		0	88.5	11.5		0	0	0		0.5	99.5	0		
PHF	.000	.000	.000	.000	.000	.973	.541	.891	.000	.000	.000	.000	.500	.850	.000	.854	.971

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City of Walnut
N/S: Lot F
E/W: Temple Avenue
Weather: Clear

File Name : WNTLFTEAM
Site Code : 04215551
Start Date : 10/1/2015
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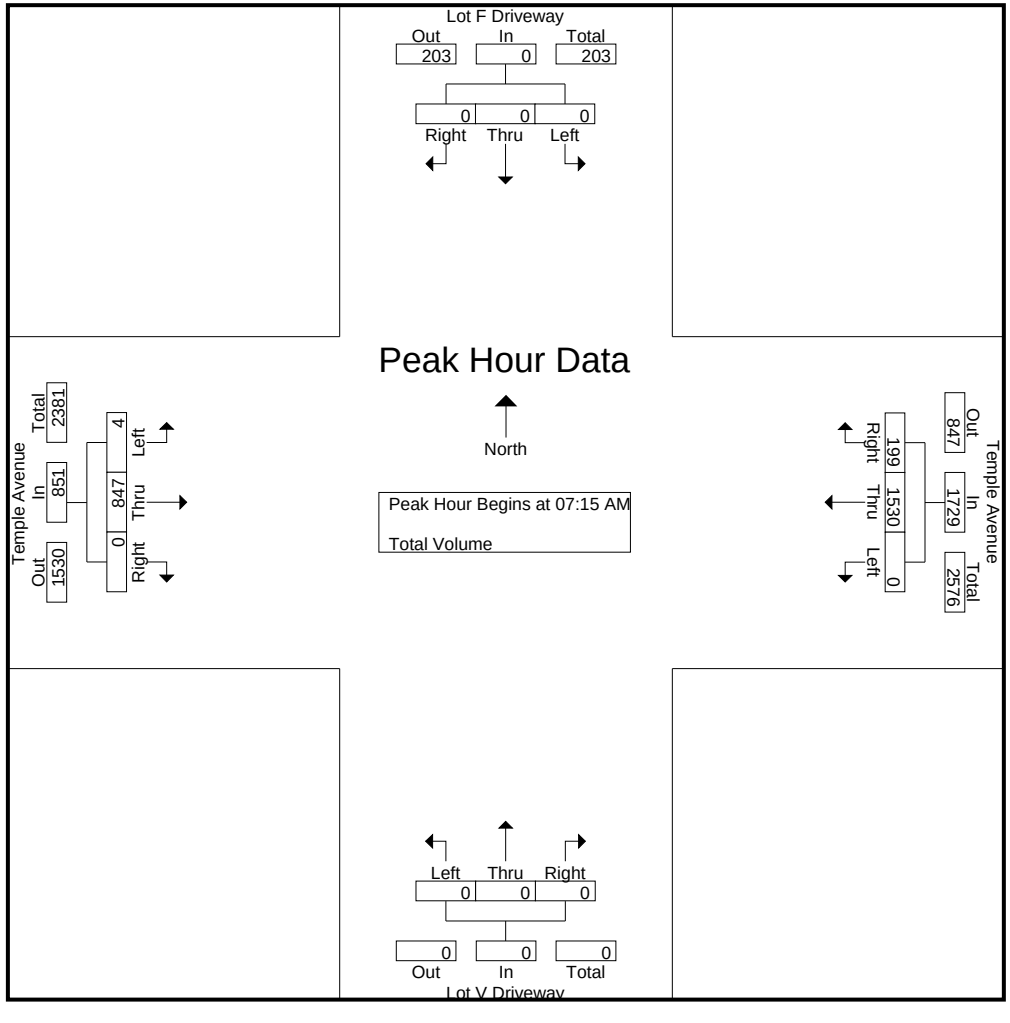

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City of Walnut
N/S: Lot F
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File Name : WNTLFTEAM
Site Code : 04215551
Start Date : 10/1/2015

	Lot F Driveway Southbound				Temple Avenue Westbound				Lot V Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				07:00 AM				07:15 AM				
+0 mins.	0	0	0	0	0	388	18	406	0	0	0	0	0	**249**	0	**249**	
+15 mins.	0	0	0	0	0	360	28	388	0	0	0	0	0	220	0	220	
+30 mins.	0	0	0	0	0	389	61	450	0	0	0	0	**2**	201	0	203	
+45 mins.	0	0	0	0	0	**393**	**92**	**485**	0	0	0	0	2	177	0	179	
Total Volume	0	0	0	0	0	1530	199	1729	0	0	0	0	4	847	0	851	
% App. Total	0	0	0		0	88.5	11.5		0	0	0		0.5	99.5	0		
PHF	.000	.000	.000	.000	.000	.973	.541	.891	.000	.000	.000	.000	.500	.850	.000	.854	

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City of Walnut
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Site Code : 04215551
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Groups Printed- Total Volume

	Lot F Driveway Southbound					Temple Avenue Westbound					Lot V Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	192	3	0	195	0	0	0	0	0	0	253	0	0	253	448
04:15 PM	0	0	0	0	0	0	226	5	2	233	0	0	0	0	0	3	358	0	0	361	594
04:30 PM	0	0	1	0	1	0	202	0	0	202	0	0	0	0	0	0	389	0	1	390	593
04:45 PM	0	0	0	0	0	0	220	2	0	222	0	0	0	0	0	0	315	0	0	315	537
Total	0	0	1	0	1	0	840	10	2	852	0	0	0	0	0	3	1315	0	1	1319	2172
05:00 PM	0	0	0	0	0	0	264	4	0	268	0	0	0	0	0	0	291	0	0	291	559
05:15 PM	0	0	0	0	0	0	328	1	0	329	0	0	0	0	0	0	245	0	1	246	575
05:30 PM	0	0	0	0	0	0	353	4	0	357	0	0	0	0	0	0	265	0	0	265	622
05:45 PM	0	0	0	0	0	0	337	5	0	342	0	0	0	0	0	0	228	0	0	228	570
Total	0	0	0	0	0	0	1282	14	0	1296	0	0	0	0	0	0	1029	0	1	1030	2326
Grand Total	0	0	1	0	1	0	2122	24	2	2148	0	0	0	0	0	3	2344	0	2	2349	4498
Apprch %	0	0	100	0		0	98.8	1.1	0.1		0	0	0	0		0.1	99.8	0	0.1		
Total %	0	0	0	0	0	0	47.2	0.5	0	47.8	0	0	0	0	0	0.1	52.1	0	0	52.2	

	Lot F Driveway Southbound				Temple Avenue Westbound				Lot V Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	264	4	268	0	0	0	0	0	**291**	0	**291**	559
05:15 PM	0	0	0	0	0	328	1	329	0	0	0	0	0	245	0	245	574
05:30 PM	0	0	0	0	0	**353**	4	**357**	0	0	0	0	0	265	0	265	**622**
05:45 PM	0	0	0	0	0	337	**5**	342	0	0	0	0	0	228	0	228	570
Total Volume	0	0	0	0	0	1282	14	1296	0	0	0	0	0	1029	0	1029	2325
% App. Total	0	0	0		0	98.9	1.1		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.908	.700	.908	.000	.000	.000	.000	.000	.884	.000	.884	.934

Counts Unlimited
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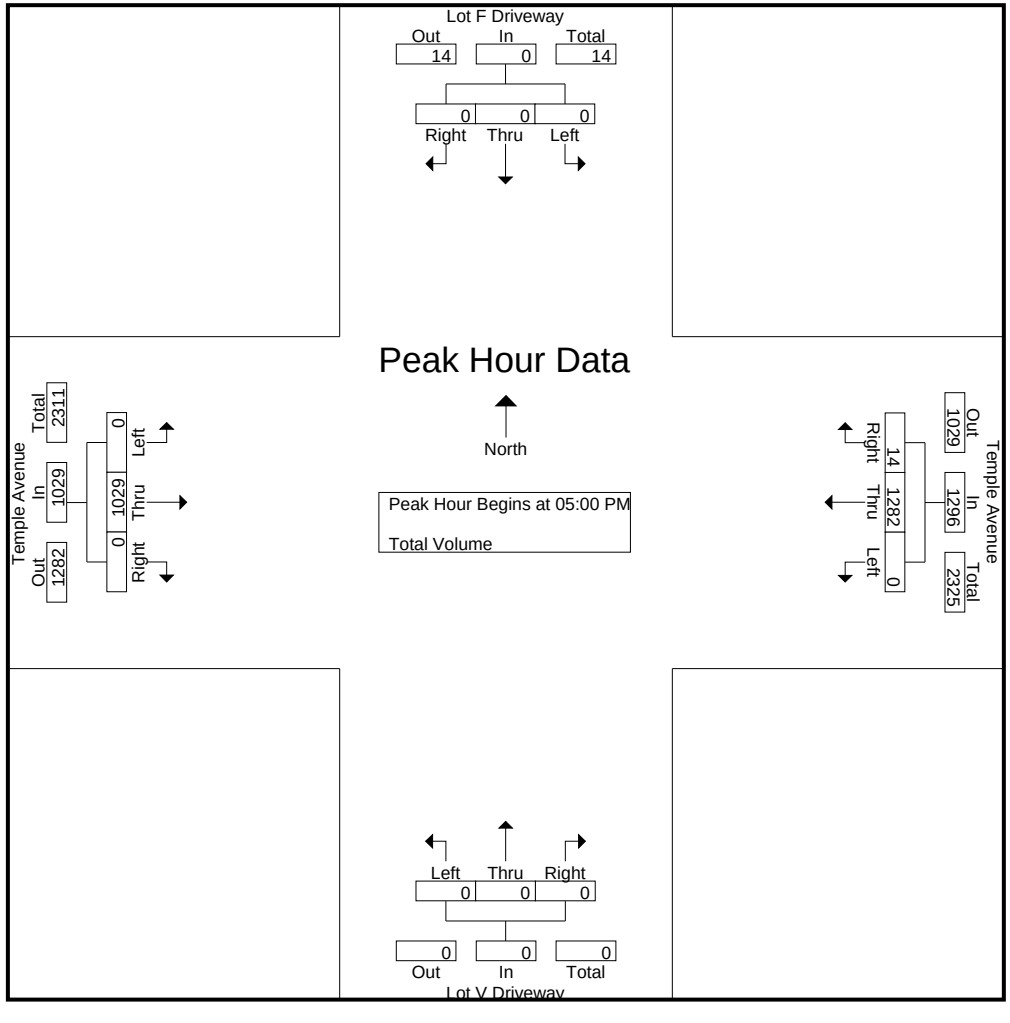
City of Walnut
N/S: Lot F
E/W: Temple Avenue
Weather: Clear

File Name : WNTLFTEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Lot F
E/W: Temple Avenue
Weather: Clear

File Name : WNTLFTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Lot F Driveway Southbound				Temple Avenue Westbound				Lot V Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				05:00 PM				04:00 PM				04:15 PM				
+0 mins.	0	0	0	0	0	264	4	268	0	0	0	0	**3**	358	0	361	
+15 mins.	0	0	0	0	0	328	1	329	0	0	0	0	0	**389**	0	**389**	
+30 mins.	0	0	**1**	**1**	0	**353**	4	**357**	0	0	0	0	0	315	0	315	
+45 mins.	0	0	0	0	0	337	**5**	342	0	0	0	0	0	291	0	291	
Total Volume	0	0	1	1	0	1282	14	1296	0	0	0	0	3	1353	0	1356	
% App. Total	0	0	100		0	98.9	1.1		0	0	0		0.2	99.8	0		
PHF	.000	.000	.250	.250	.000	.908	.700	.908	.000	.000	.000	.000	.250	.870	.000	.871	

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City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	15	148	98	1	262	10	394	22	0	426	64	86	10	0	160	13	36	37	1	87	935
07:15 AM	19	167	62	2	250	7	319	18	0	344	58	142	11	0	211	29	57	49	0	135	940
07:30 AM	22	125	80	2	229	8	241	21	0	270	37	186	20	0	243	28	89	41	0	158	900
07:45 AM	32	120	79	0	231	9	300	28	1	338	47	117	9	0	173	27	85	28	0	140	882
Total	88	560	319	5	972	34	1254	89	1	1378	206	531	50	0	787	97	267	155	1	520	3657
08:00 AM	26	174	67	0	267	13	319	31	0	363	30	127	5	0	162	27	96	39	0	162	954
08:15 AM	10	158	64	0	232	29	272	38	0	339	56	75	11	0	142	32	73	29	0	134	847
08:30 AM	8	120	59	0	187	15	183	28	2	228	68	92	8	0	168	20	70	20	1	111	694
08:45 AM	17	87	64	0	168	14	342	36	1	393	53	87	6	0	146	23	83	17	1	124	831
Total	61	539	254	0	854	71	1116	133	3	1323	207	381	30	0	618	102	322	105	2	531	3326
Grand Total	149	1099	573	5	1826	105	2370	222	4	2701	413	912	80	0	1405	199	589	260	3	1051	6983
Apprch %	8.2	60.2	31.4	0.3		3.9	87.7	8.2	0.1		29.4	64.9	5.7	0		18.9	56	24.7	0.3		
Total %	2.1	15.7	8.2	0.1	26.1	1.5	33.9	3.2	0.1	38.7	5.9	13.1	1.1	0	20.1	2.8	8.4	3.7	0	15.1	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	19	167	62	248	7	**319**	18	344	**58**	142	11	211	**29**	57	**49**	135	938
07:30 AM	22	125	**80**	227	8	241	21	270	37	**186**	**20**	**243**	28	89	41	158	898
07:45 AM	**32**	120	79	231	9	300	28	337	47	117	9	173	27	85	28	140	881
08:00 AM	26	**174**	67	**267**	**13**	319	**31**	**363**	30	127	5	162	27	**96**	39	**162**	**954**
Total Volume	99	586	288	973	37	1179	98	1314	172	572	45	789	111	327	157	595	3671
% App. Total	10.2	60.2	29.6		2.8	89.7	7.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.712	.924	.790	.905	.741	.769	.563	.812	.957	.852	.801	.918	.962

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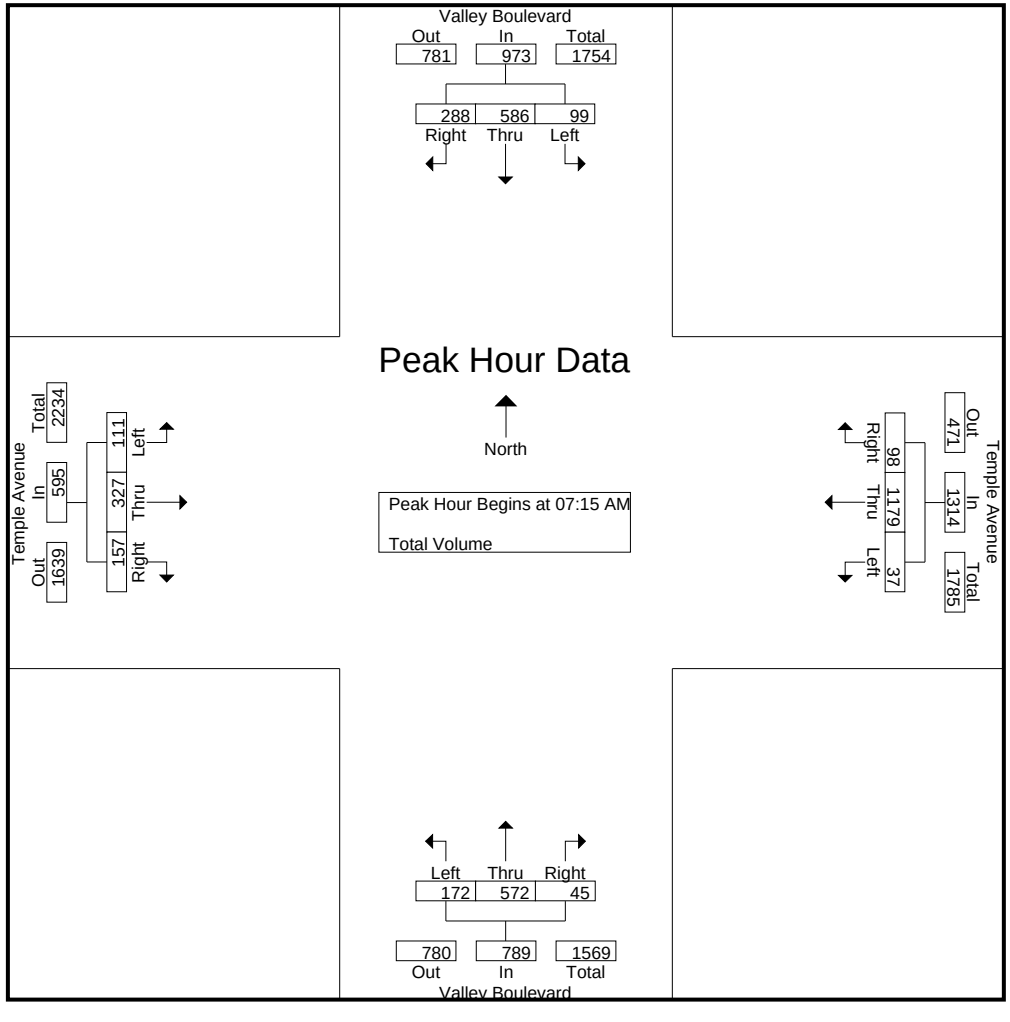
City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Valley Boulevard
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Weather: Clear

File Name : WNTVATEAM
Site Code : 04215551
Start Date : 10/1/2015

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	07:15 AM				07:00 AM				07:15 AM				07:15 AM				
+0 mins.	19	167	62	248	**10**	**394**	22	**426**	**58**	142	11	211	**29**	57	**49**	135	
+15 mins.	22	125	**80**	227	7	319	18	344	37	**186**	**20**	**243**	28	89	41	158	
+30 mins.	**32**	120	79	231	8	241	21	270	47	117	9	173	27	85	28	140	
+45 mins.	26	**174**	67	**267**	9	300	**28**	337	30	127	5	162	27	**96**	39	**162**	
Total Volume	99	586	288	973	34	1254	89	1377	172	572	45	789	111	327	157	595	
% App. Total	10.2	60.2	29.6		2.5	91.1	6.5		21.8	72.5	5.7		18.7	55	26.4		
PHF	.773	.842	.900	.911	.850	.796	.795	.808	.741	.769	.563	.812	.957	.852	.801	.918	

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City of Walnut
N/S: Valley Boulevard
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File Name : WNTVATEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Valley Boulevard Southbound					Temple Avenue Westbound					Valley Boulevard Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	49	90	29	0	168	18	163	17	0	198	35	144	8	0	187	51	194	42	0	287	840
04:15 PM	51	71	46	0	168	20	166	31	2	219	33	162	18	0	213	45	237	41	0	323	923
04:30 PM	54	96	31	4	185	19	146	27	0	192	53	203	11	0	267	51	286	39	5	381	1025
04:45 PM	54	97	28	0	179	21	182	33	0	236	40	155	15	0	210	66	328	59	1	454	1079
Total	208	354	134	4	700	78	657	108	2	845	161	664	52	0	877	213	1045	181	6	1445	3867
05:00 PM	36	113	32	0	181	16	139	26	0	181	57	234	17	1	309	37	184	46	0	267	938
05:15 PM	36	193	49	1	279	15	186	30	0	231	65	206	13	0	284	25	206	46	3	280	1074
05:30 PM	34	147	49	0	230	32	177	23	2	234	72	180	18	0	270	35	245	63	0	343	1077
05:45 PM	48	74	37	1	160	10	209	32	0	251	40	157	15	0	212	26	305	80	3	414	1037
Total	154	527	167	2	850	73	711	111	2	897	234	777	63	1	1075	123	940	235	6	1304	4126
Grand Total	362	881	301	6	1550	151	1368	219	4	1742	395	1441	115	1	1952	336	1985	416	12	2749	7993
Apprch %	23.4	56.8	19.4	0.4		8.7	78.5	12.6	0.2		20.2	73.8	5.9	0.1		12.2	72.2	15.1	0.4		
Total %	4.5	11	3.8	0.1	19.4	1.9	17.1	2.7	0.1	21.8	4.9	18	1.4	0	24.4	4.2	24.8	5.2	0.2	34.4	

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	**54**	97	28	179	21	182	**33**	**236**	40	155	15	210	**66**	**328**	59	**453**	**1078**
05:00 PM	36	113	32	181	16	139	26	181	57	**234**	17	**308**	37	184	46	267	937
05:15 PM	36	**193**	**49**	**278**	15	**186**	30	231	65	206	13	284	25	206	46	277	1070
05:30 PM	34	147	49	230	**32**	177	23	232	**72**	180	**18**	270	35	245	**63**	343	1075
Total Volume	160	550	158	868	84	684	112	880	234	775	63	1072	163	963	214	1340	4160
% App. Total	18.4	63.4	18.2		9.5	77.7	12.7		21.8	72.3	5.9		12.2	71.9	16		
PHF	.741	.712	.806	.781	.656	.919	.848	.932	.813	.828	.875	.870	.617	.734	.849	.740	.965

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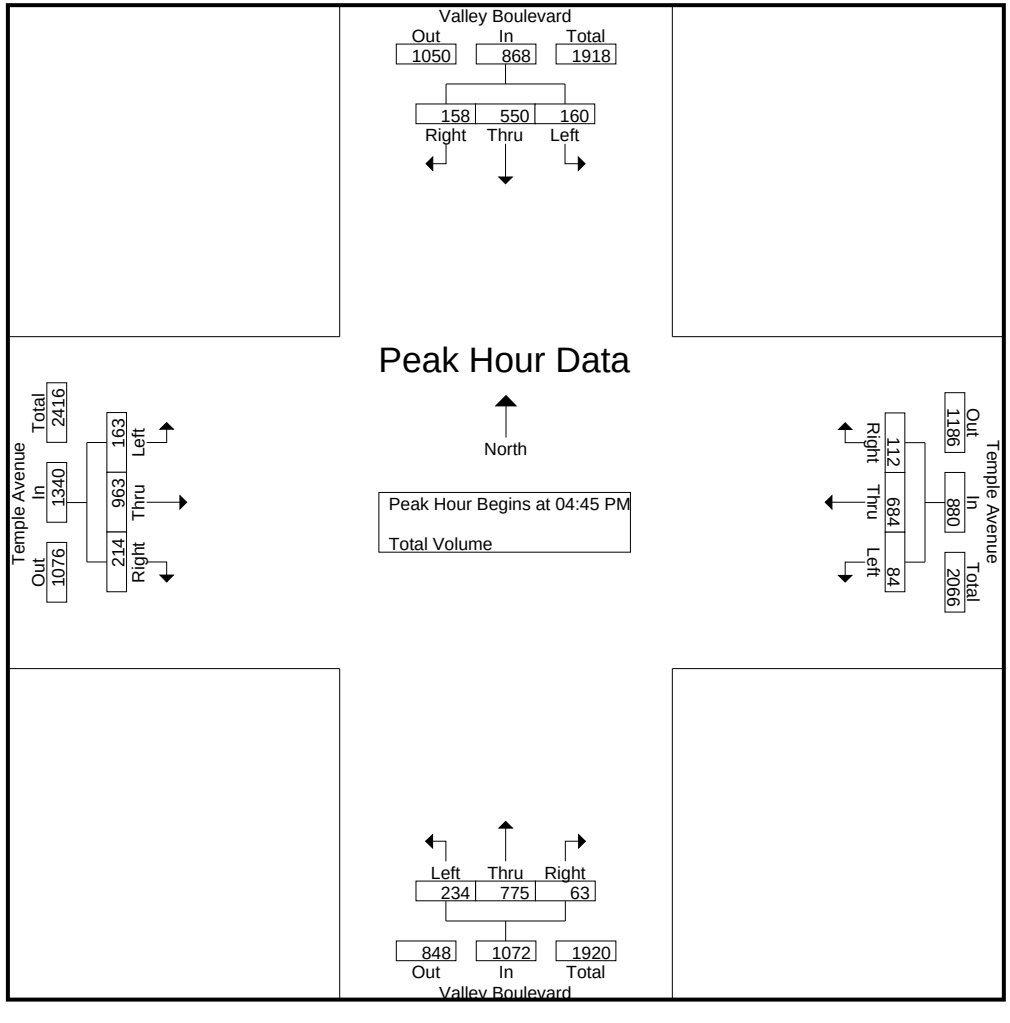
City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
N/S: Valley Boulevard
E/W: Temple Avenue
Weather: Clear

File Name : WNTVATEPM
Site Code : 04215551
Start Date : 10/1/2015

	Valley Boulevard Southbound				Temple Avenue Westbound				Valley Boulevard Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	04:45 PM				05:00 PM				05:00 PM				04:00 PM				
+0 mins.	**54**	97	28	179	16	139	26	181	57	**234**	17	**308**	51	194	42	287	
+15 mins.	36	113	32	181	15	186	30	231	65	206	13	284	45	237	41	323	
+30 mins.	36	**193**	**49**	**278**	**32**	177	23	232	**72**	180	**18**	270	51	286	39	376	
+45 mins.	34	147	49	230	10	**209**	**32**	**251**	40	157	15	212	**66**	**328**	**59**	**453**	
Total Volume	160	550	158	868	73	711	111	895	234	777	63	1074	213	1045	181	1439	
% App. Total	18.4	63.4	18.2		8.2	79.4	12.4		21.8	72.3	5.9		14.8	72.6	12.6		
PHF	.741	.712	.806	.781	.570	.850	.867	.891	.813	.830	.875	.872	.807	.796	.767	.794	

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City of Walnut
N/S: SR-57 Southbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57STEAM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	SR-57 Southbound Ramps Southbound					Temple Avenue Westbound					Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	141	0	246	0	387	1	452	12	8	473	0	0	1	0	1	0	120	0	0	120	981
07:15 AM	143	0	186	0	329	2	319	7	9	337	0	0	1	0	1	0	101	4	0	105	772
07:30 AM	159	0	145	0	304	1	209	8	16	234	0	0	0	0	0	0	160	4	0	164	702
07:45 AM	161	3	168	0	332	3	245	16	31	295	0	0	0	0	0	0	160	2	0	162	789
Total	604	3	745	0	1352	7	1225	43	64	1339	0	0	2	0	2	0	541	10	0	551	3244
08:00 AM	123	3	185	0	311	1	266	16	11	294	0	0	0	0	0	0	147	3	0	150	755
08:15 AM	151	3	186	0	340	2	270	7	7	286	0	0	0	0	0	0	142	8	0	150	776
08:30 AM	128	2	197	0	327	1	298	17	7	323	0	0	0	0	0	0	131	3	0	134	784
08:45 AM	113	3	200	0	316	1	308	23	7	339	0	0	1	0	1	0	122	3	0	125	781
Total	515	11	768	0	1294	5	1142	63	32	1242	0	0	1	0	1	0	542	17	0	559	3096
Grand Total	1119	14	1513	0	2646	12	2367	106	96	2581	0	0	3	0	3	0	1083	27	0	1110	6340
Apprch %	42.3	0.5	57.2	0		0.5	91.7	4.1	3.7		0	0	100	0		0	97.6	2.4	0		
Total %	17.6	0.2	23.9	0	41.7	0.2	37.3	1.7	1.5	40.7	0	0	0	0	0	0	17.1	0.4	0	17.5	

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	141	0	**246**	**387**	1	**452**	12	**465**	0	0	**1**	**1**	0	120	0	120	**973**
07:15 AM	143	0	186	329	2	319	7	328	0	0	1	1	0	101	**4**	105	763
07:30 AM	159	0	145	304	1	209	8	218	0	0	0	0	0	**160**	4	**164**	686
07:45 AM	**161**	**3**	168	332	**3**	245	**16**	264	0	0	0	0	0	160	2	162	758
Total Volume	604	3	745	1352	7	1225	43	1275	0	0	2	2	0	541	10	551	3180
% App. Total	44.7	0.2	55.1		0.5	96.1	3.4		0	0	100		0	98.2	1.8		
PHF	.938	.250	.757	.873	.583	.678	.672	.685	.000	.000	.500	.500	.000	.845	.625	.840	.817

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City of Walnut
N/S: SR-57 Southbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57STEAM
Site Code : 04215551
Start Date : 10/1/2015
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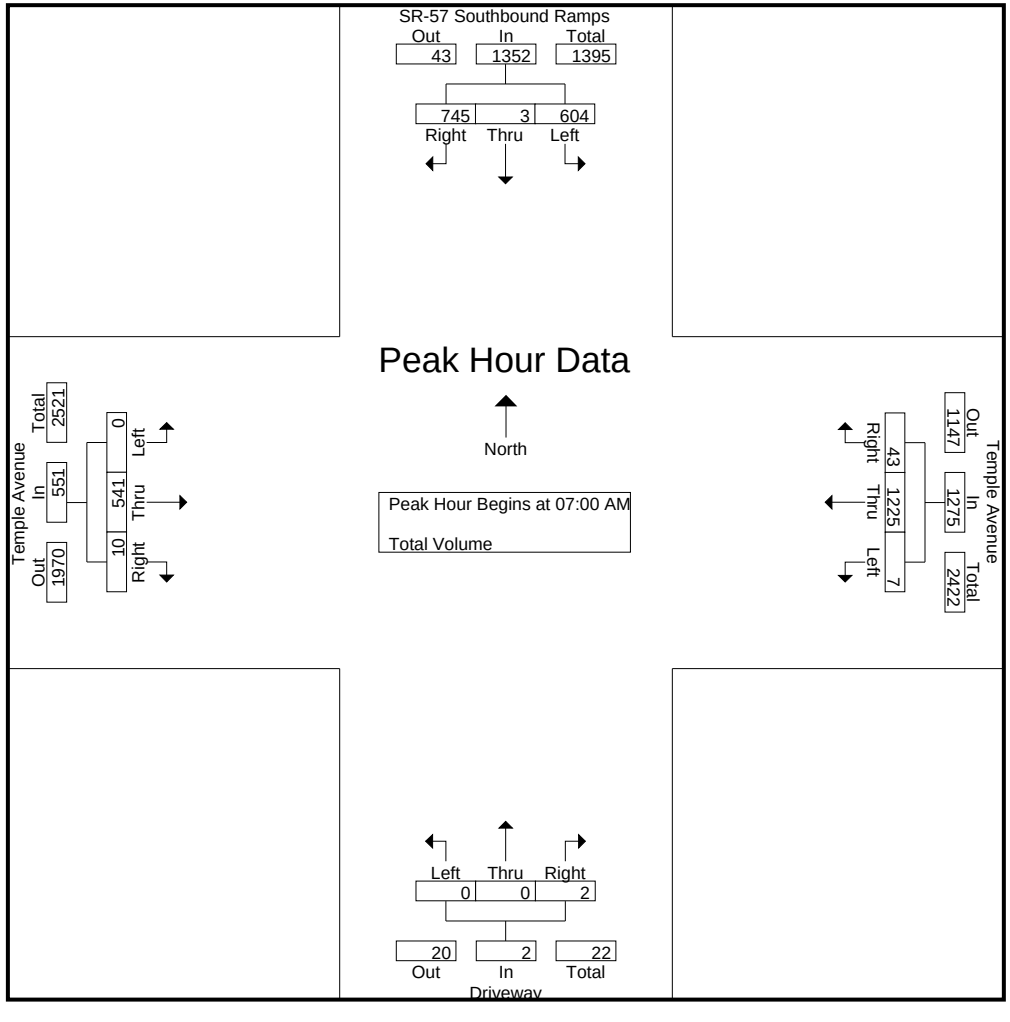

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City of Walnut
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Site Code : 04215551
Start Date : 10/1/2015

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
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				07:00 AM				07:00 AM				07:30 AM				
+0 mins.	141	0	**246**	**387**	1	**452**	12	**465**	0	0	**1**	**1**	0	**160**	4	**164**	
+15 mins.	143	0	186	329	2	319	7	328	0	0	1	1	0	160	2	162	
+30 mins.	159	0	145	304	1	209	8	218	0	0	0	0	0	147	3	150	
+45 mins.	**161**	**3**	168	332	**3**	245	**16**	264	0	0	0	0	0	142	**8**	150	
Total Volume	604	3	745	1352	7	1225	43	1275	0	0	2	2	0	609	17	626	
% App. Total	44.7	0.2	55.1		0.5	96.1	3.4		0	0	100		0	97.3	2.7		
PHF	.938	.250	.757	.873	.583	.678	.672	.685	.000	.000	.500	.500	.000	.952	.531	.954	

Counts Unlimited
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(951) 268-6268

City of Walnut
N/S: SR-57 Southbound Ramps
E/W: Temple Avenue
Weather: Clear

File Name : WNT57STEPM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	SR-57 Southbound Ramps Southbound					Temple Avenue Westbound					Driveway Northbound					Temple Avenue Eastbound					
Start Time	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Left	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	173	2	122	0	297	1	125	40	14	180	0	0	10	0	10	0	375	0	0	375	862
04:15 PM	167	3	137	0	307	2	126	27	6	161	0	0	8	0	8	0	437	4	0	441	917
04:30 PM	180	3	97	0	280	2	147	22	10	181	0	0	18	0	18	0	498	13	0	511	990
04:45 PM	191	2	128	0	321	0	143	26	8	177	0	0	13	0	13	0	514	10	0	524	1035
Total	711	10	484	0	1205	5	541	115	38	699	0	0	49	0	49	0	1824	27	0	1851	3804
05:00 PM	207	1	117	0	325	5	145	37	10	197	0	0	16	0	16	0	445	15	0	460	998
05:15 PM	244	5	137	0	386	5	130	32	12	179	0	0	19	0	19	0	441	16	0	457	1041
05:30 PM	246	4	145	0	395	2	162	31	13	208	1	0	20	0	21	0	437	24	0	461	1085
05:45 PM	226	2	137	0	365	6	139	16	6	167	0	0	28	0	28	0	473	17	0	490	1050
Total	923	12	536	0	1471	18	576	116	41	751	1	0	83	0	84	0	1796	72	0	1868	4174
Grand Total	1634	22	1020	0	2676	23	1117	231	79	1450	1	0	132	0	133	0	3620	99	0	3719	7978
Apprch %	61.1	0.8	38.1	0		1.6	77	15.9	5.4		0.8	0	99.2	0		0	97.3	2.7	0		
Total %	20.5	0.3	12.8	0	33.5	0.3	14	2.9	1	18.2	0	0	1.7	0	1.7	0	45.4	1.2	0	46.6	

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	207	1	117	325	5	145	**37**	187	0	0	16	16	0	445	15	460	988
05:15 PM	244	**5**	137	386	5	130	32	167	0	0	19	19	0	441	16	457	1029
05:30 PM	**246**	4	**145**	**395**	2	**162**	31	**195**	**1**	0	20	21	0	437	**24**	461	**1072**
05:45 PM	226	2	137	365	**6**	139	16	161	0	0	**28**	**28**	0	**473**	17	**490**	1044
Total Volume	923	12	536	1471	18	576	116	710	1	0	83	84	0	1796	72	1868	4133
% App. Total	62.7	0.8	36.4		2.5	81.1	16.3		1.2	0	98.8		0	96.1	3.9		
PHF	.938	.600	.924	.931	.750	.889	.784	.910	.250	.000	.741	.750	.000	.949	.750	.953	.964

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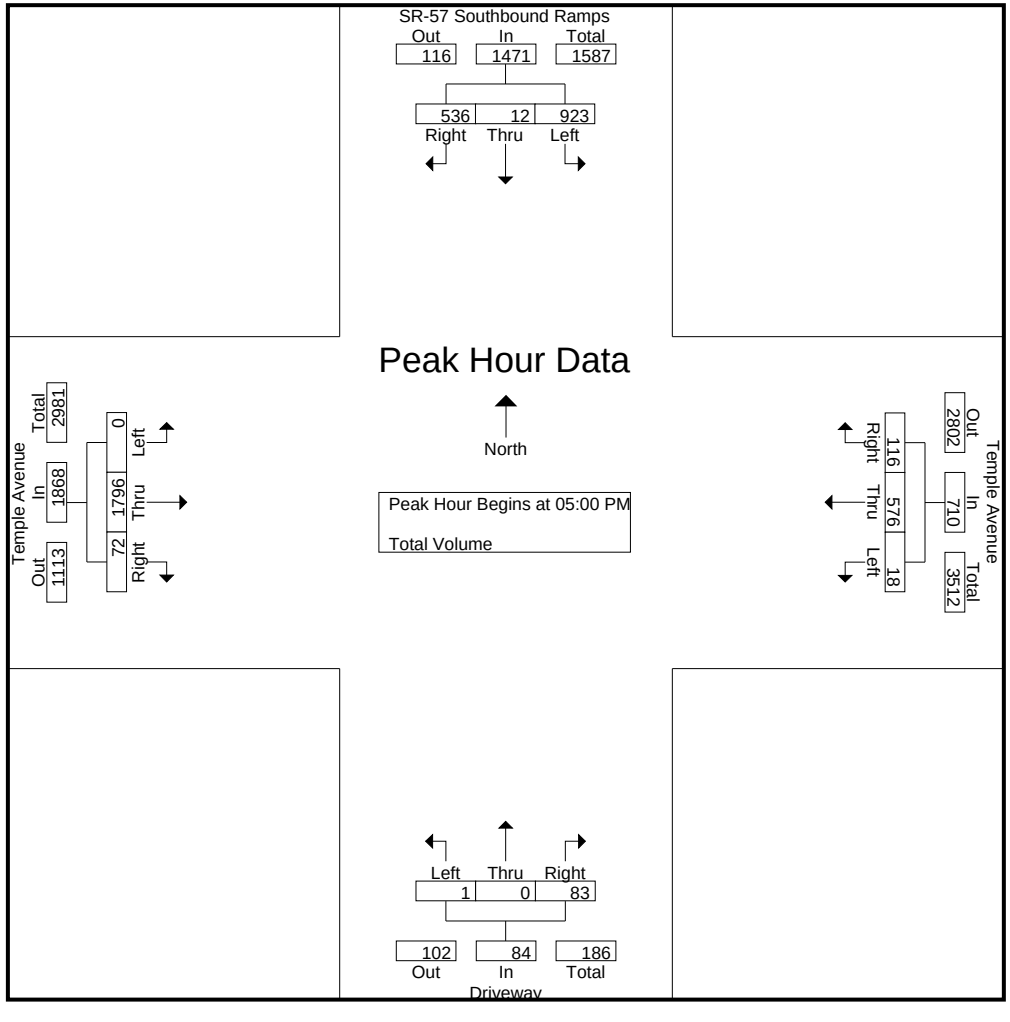
Weather: Clear

File Name : WNT57STEPM
Site Code : 04215551
Start Date : 10/1/2015
Page No : 2



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City of Walnut
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Site Code : 04215551
Start Date : 10/1/2015

	SR-57 Southbound Ramps Southbound				Temple Avenue Westbound				Driveway Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Each Approach Begins at:																	
	05:00 PM				04:45 PM				05:00 PM				04:30 PM				
+0 mins.	207	1	117	325	0	143	26	169	0	0	16	16	0	498	13	511	
+15 mins.	244	**5**	137	386	**5**	145	**37**	187	0	0	19	19	0	**514**	10	**524**	
+30 mins.	**246**	4	**145**	**395**	5	130	32	167	**1**	0	20	21	0	445	15	460	
+45 mins.	226	2	137	365	2	**162**	31	**195**	0	0	**28**	**28**	0	441	**16**	457	
Total Volume	923	12	536	1471	12	580	126	718	1	0	83	84	0	1898	54	1952	
% App. Total	62.7	0.8	36.4		1.7	80.8	17.5		1.2	0	98.8		0	97.2	2.8		
PHF	.938	.600	.924	.931	.600	.895	.851	.921	.250	.000	.741	.750	.000	.923	.844	.931	

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Weather: Clear

File Name : WNT57NTEAM
Site Code : 04215551
Start Date : 10/1/2015

Groups Printed- Total Volume

	Temple Avenue Westbound				SR-57 Northbound Ramps Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
07:00 AM	0	534	0	534	161	41	0	202	178	64	0	242	978
07:15 AM	0	396	0	396	101	70	0	171	199	44	1	244	811
07:30 AM	0	335	0	335	65	62	0	127	216	82	0	298	760
07:45 AM	0	334	0	334	58	101	0	159	213	86	0	299	792
Total	0	1599	0	1599	385	274	0	659	806	276	1	1083	3341
08:00 AM	0	350	0	350	74	91	0	165	200	70	0	270	785
08:15 AM	0	361	0	361	92	67	0	159	217	78	0	295	815
08:30 AM	0	335	0	335	94	74	0	168	202	59	0	261	764
08:45 AM	0	328	0	328	150	59	0	209	180	54	0	234	771
Total	0	1374	0	1374	410	291	0	701	799	261	0	1060	3135
Grand Total	0	2973	0	2973	795	565	0	1360	1605	537	1	2143	6476
Apprch %	0	100	0		58.5	41.5	0		74.9	25.1	0		
Total %	0	45.9	0	45.9	12.3	8.7	0	21	24.8	8.3	0	33.1	

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	0	**534**	**534**	**161**	41	**202**	178	64	242	**978**
07:15 AM	0	396	396	101	70	171	199	44	243	810
07:30 AM	0	335	335	65	62	127	**216**	82	298	760
07:45 AM	0	334	334	58	**101**	159	213	**86**	**299**	792
Total Volume	0	1599	1599	385	274	659	806	276	1082	3340
% App. Total	0	100		58.4	41.6		74.5	25.5		
PHF	.000	.749	.749	.598	.678	.816	.933	.802	.905	.854

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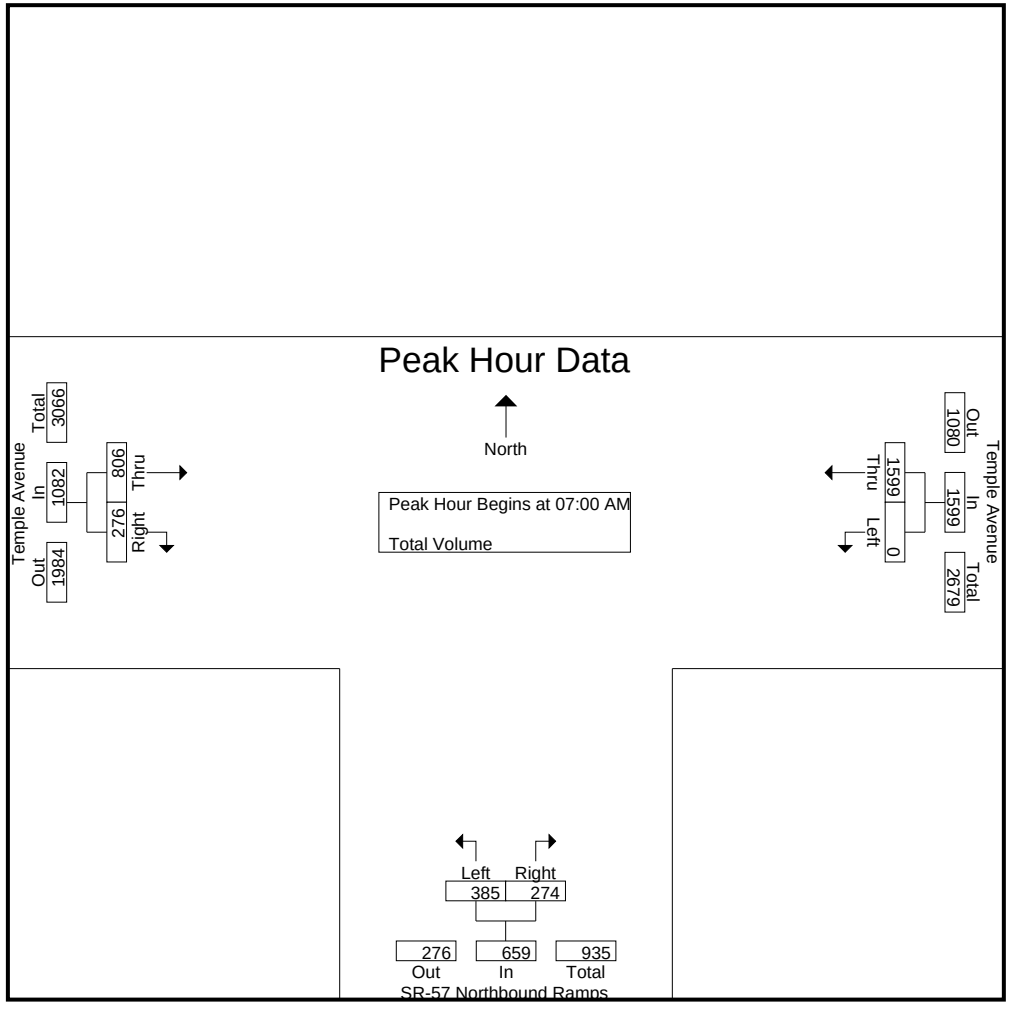
Page No : 2



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City of Walnut
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Weather: Clear

File Name : WNT57NTEAM
Site Code : 04215551
Start Date : 10/1/2015

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
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			08:00 AM			07:30 AM			
+0 mins.	0	**534**	**534**	74	**91**	165	216	82	298	
+15 mins.	0	396	396	92	67	159	213	**86**	**299**	
+30 mins.	0	335	335	94	74	168	200	70	270	
+45 mins.	0	334	334	**150**	59	**209**	**217**	78	295	
Total Volume	0	1599	1599	410	291	701	846	316	1162	
% App. Total	0	100		58.5	41.5		72.8	27.2		
PHF	.000	.749	.749	.683	.799	.839	.975	.919	.972	

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Site Code : 04215551
Start Date : 10/1/2015
Page No : 1

Groups Printed- Total Volume

	Temple Avenue Westbound				SR-57 Northbound Ramps Northbound				Temple Avenue Eastbound				
Start Time	Left	Thru	U-Turns	App. Total	Left	Right	U-Turns	App. Total	Thru	Right	U-Turns	App. Total	Int. Total
04:00 PM	0	222	0	222	32	58	0	90	407	145	0	552	864
04:15 PM	0	214	0	214	33	57	0	90	386	195	0	581	885
04:30 PM	0	185	0	185	42	76	0	118	428	205	0	633	936
04:45 PM	0	210	0	210	28	69	0	97	510	164	0	674	981
Total	0	831	0	831	135	260	0	395	1731	709	0	2440	3666
05:00 PM	0	246	0	246	24	61	0	85	485	156	0	641	972
05:15 PM	0	253	0	253	36	64	0	100	542	142	0	684	1037
05:30 PM	0	255	0	255	35	83	0	118	525	168	0	693	1066
05:45 PM	0	215	0	215	28	81	0	109	545	155	0	700	1024
Total	0	969	0	969	123	289	0	412	2097	621	0	2718	4099
Grand Total	0	1800	0	1800	258	549	0	807	3828	1330	0	5158	7765
Apprch %	0	100	0		32	68	0		74.2	25.8	0		
Total %	0	23.2	0	23.2	3.3	7.1	0	10.4	49.3	17.1	0	66.4	

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	246	246	24	61	85	485	156	641	972
05:15 PM	0	253	253	**36**	64	100	542	142	684	1037
05:30 PM	0	**255**	**255**	35	**83**	**118**	525	**168**	693	**1066**
05:45 PM	0	215	215	28	81	109	**545**	155	**700**	1024
Total Volume	0	969	969	123	289	412	2097	621	2718	4099
% App. Total	0	100		29.9	70.1		77.2	22.8		
PHF	.000	.950	.950	.854	.870	.873	.962	.924	.971	.961

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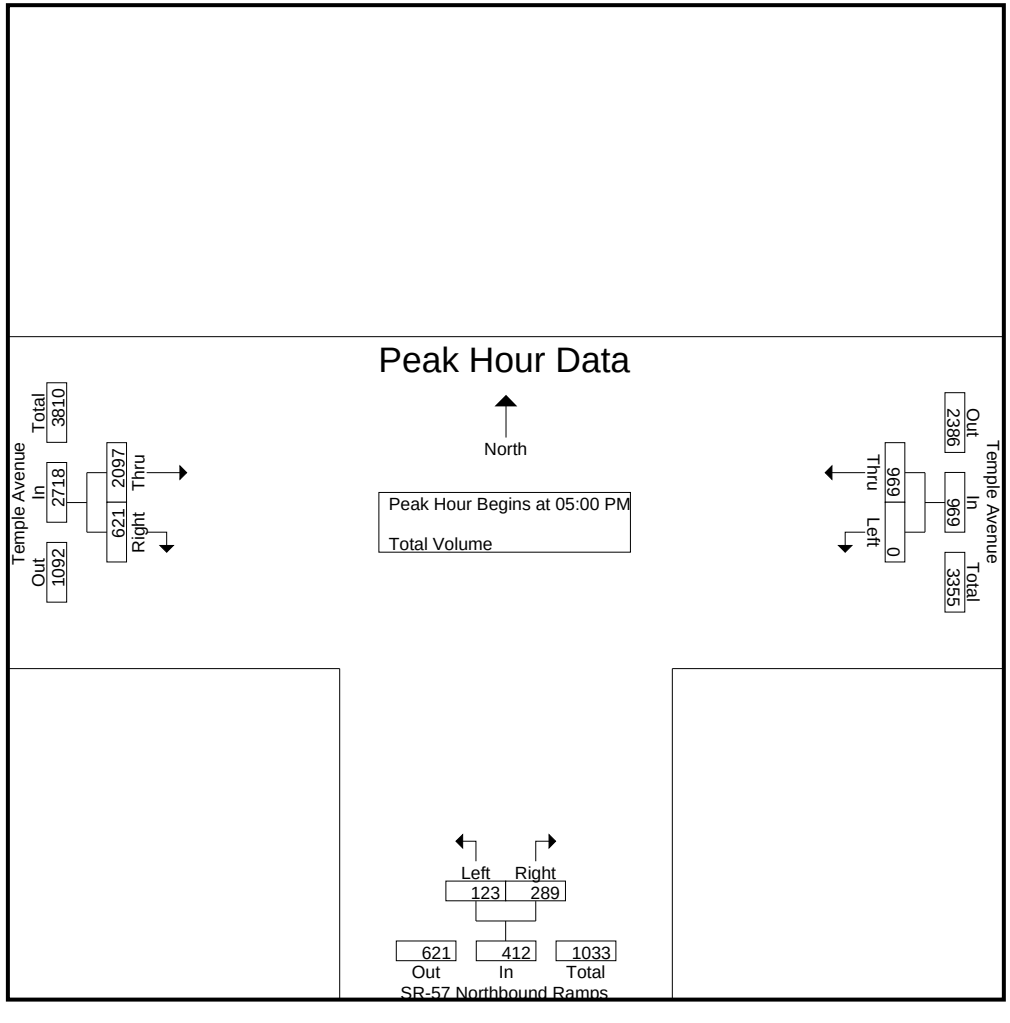
Page No : 2



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File Name : WNT57NTEPM
Site Code : 04215551
Start Date : 10/1/2015

	Temple Avenue Westbound			SR-57 Northbound Ramps Northbound			Temple Avenue Eastbound			
Start Time	Left	Thru	App. Total	Left	Right	App. Total	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Each Approach Begins at:										
	05:00 PM			05:00 PM			05:00 PM			
+0 mins.	0	246	246	24	61	85	485	156	641	
+15 mins.	0	253	253	**36**	64	100	542	142	684	
+30 mins.	0	**255**	**255**	35	**83**	**118**	525	**168**	693	
+45 mins.	0	215	215	28	81	109	**545**	155	**700**	
Total Volume	0	969	969	123	289	412	2097	621	2718	
% App. Total	0	100		29.9	70.1		77.2	22.8		
PHF	.000	.950	.950	.854	.870	.873	.962	.924	.971	

APPENDIX B

LOS CALCULATION SHEETS

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

Intersection #1

Cycle (sec):	100	Critical Vol./Cap.(X):	0.725
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	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			Include			Ovl			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	1 0	0 1	0	0 1!	0 0	1	0 2	0 1	1	0 2	1 0
Volume Module:												
Base Vol:	570	9	191	6	3	13	6	1118	481	129	960	12
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:	570	9	191	6	3	13	6	1118	481	129	960	12
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:	570	9	191	6	3	13	6	1118	481	129	960	12
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	589	9	197	6	3	13	6	1155	497	133	992	12
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	589	9	197	6	3	13	6	1155	497	133	992	12
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	9	197	6	3	13	6	1155	497	133	992	12
OvlAdjVol:									198			
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:	1.97	0.03	1.00	0.27	0.14	0.59	1.00	2.00	1.00	1.00	2.96	0.04
Final Sat.:	3150	50	1600	436	218	945	1600	3200	1600	1600	4741	59
Capacity Analysis Module:												
Vol/Sat:	0.19	0.19	0.12	0.01	0.01	0.01	0.00	0.36	0.31	0.08	0.21	0.21
OvlAdjV/S:									0.12			
Crit Moves:	****				****			****		****		

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

Intersection #2

Cycle (sec):	100	Critical Vol./Cap.(X):	0.636
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	39	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			Include			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	1 0	0 1	0	1 0	0 1	1	0 1	0 1	1	0 2	0 1
Volume Module:												
Base Vol:	254	42	132	17	22	5	19	999	161	107	890	19
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:	254	42	132	17	22	5	19	999	161	107	890	19
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:	254	42	132	17	22	5	19	999	161	107	890	19
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:	258	43	134	17	22	5	19	1016	164	109	905	19
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	258	43	134	17	22	5	19	1016	164	109	905	19
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:	258	43	134	17	22	5	19	1016	164	109	905	19
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:	1.72	0.28	1.00	0.44	0.56	1.00	1.00	1.72	0.28	1.00	2.00	1.00
Final Sat.:	2746	454	1600	697	903	1600	1600	2756	444	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.09	0.08	0.02	0.02	0.00	0.01	0.37	0.37	0.07	0.28	0.01
Crit Moves:	****				****			****		****		

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

Intersection #3

Cycle (sec):	100	Critical Vol./Cap.(X):	0.719
Loss Time (sec):	6	Average Delay (sec/veh):	24.8
Optimal Cycle:	44	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:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				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	2	0 1	1	0	2	0 1	0	1	0	0 1	0	0	1!	0 0
Volume Module:																
Base Vol:	389	1090	34		3	815	385		282	11	117		18	17	6	
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:	389	1090	34		3	815	385		282	11	117		18	17	6	
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:	389	1090	34		3	815	385		282	11	117		18	17	6	
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:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	412	1155	36		3	863	408		299	12	124		19	18	6	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	412	1155	36		3	863	408		299	12	124		19	18	6	
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:	412	1155	36		3	863	408		299	12	124		19	18	6	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	0.95	0.85		0.95	0.95	0.85		0.95	0.95	0.85		0.96	0.96	0.96	
Lanes:	1.00	2.00	1.00		1.00	2.00	1.00		0.96	0.04	1.00		0.44	0.41	0.15	
Final Sat.:	1805	3610	1615		1805	3610	1615		1745	68	1615		800	756	267	
Capacity Analysis Module:																
Vol/Sat:	0.23	0.32	0.02		0.00	0.24	0.25		0.17	0.17	0.08		0.02	0.02	0.02	
Crit Moves:	****						****		****						****	
Green/Cycle:	0.32	0.67	0.67		0.00	0.35	0.35		0.24	0.24	0.24		0.03	0.03	0.03	
Volume/Cap:	0.72	0.48	0.03		0.48	0.68	0.72		0.72	0.72	0.32		0.72	0.72	0.72	
Uniform Del:	30.2	8.2	5.7		49.7	27.7	28.2		35.0	35.0	31.4		47.9	47.9	47.9	
IncremntDel:	4.4	0.2	0.0		46.3	1.5	4.4		5.8	5.8	0.5		34.0	34.0	34.0	
InitQueuDel:	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0	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	
Delay/Veh:	34.6	8.4	5.8		96.1	29.2	32.6		40.8	40.8	31.9		81.9	81.9	81.9	
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:	34.6	8.4	5.8		96.1	29.2	32.6		40.8	40.8	31.9		81.9	81.9	81.9	
LOS by Move:	C		A	A	F		C	C	D		D	C	F		F	F
HCM2kAvgQ:	11		9	0	1		13	12	10		10	3	3		3	3

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

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

Intersection #4

Cycle (sec):	100	Critical Vol./Cap.(X):	0.616
Loss Time (sec):	6	Average Delay (sec/veh):	16.7
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	
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 2	0	0	0	0 1	1	0	1	0 1!	0	0	0	0	0	0
Volume Module:																
Base Vol:	52	1273	0		0	668	301		301	0	186		0	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:	52	1273	0		0	668	301		301	0	186		0	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:	52	1273	0		0	668	301		301	0	186		0	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:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	55	1350	0		0	708	319		319	0	197		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	55	1350	0		0	708	319		319	0	197		0	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:	55	1350	0		0	708	319		319	0	197		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	0.95	1.00		1.00	0.91	0.91		0.91	1.00	0.91		1.00	1.00	1.00	
Lanes:	1.00	2.00	0.00		0.00	1.38	0.62		1.45	0.00	0.55		0.00	0.00	0.00	
Final Sat.:	1805	3610	0		0	2372	1069		2515	0	961		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.03	0.37	0.00		0.00	0.30	0.30		0.13	0.00	0.21		0.00	0.00	0.00	
Crit Moves:		****				****					****					
Green/Cycle:	0.06	0.61	0.00		0.00	0.55	0.55		0.33	0.00	0.33		0.00	0.00	0.00	
Volume/Cap:	0.54	0.62	0.00		0.00	0.54	0.54		0.38	0.00	0.62		0.00	0.00	0.00	
Uniform Del:	45.9	12.3	0.0		0.0	14.4	14.4		25.5	0.0	28.0		0.0	0.0	0.0	
IncremntDel:	5.9	0.5	0.0		0.0	0.3	0.3		0.2	0.0	1.4		0.0	0.0	0.0	
InitQueuDel:	0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0		0.0	0.0	0.0	
Delay Adj:	1.00	1.00	0.00		0.00	1.00	1.00		1.00	0.00	1.00		0.00	0.00	0.00	
Delay/Veh:	51.8	12.9	0.0		0.0	14.7	14.7		25.6	0.0	29.4		0.0	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:	51.8	12.9	0.0		0.0	14.7	14.7		25.6	0.0	29.4		0.0	0.0	0.0	
LOS by Move:	D	B	A		A	B	B		C	A	C		A	A	A	
HCM2kAvgQ:	2	14	0		0	10	10		5	0	10		0	0	0	

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

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

Intersection #5

Cycle (sec):	100	Critical Vol./Cap.(X):	0.000
Loss Time (sec):	0	Average Delay (sec/veh):	0.0
Optimal Cycle:	0	Level Of Service:	

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
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:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green/Cycle:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncremntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Intersection #6

Cycle (sec):	100	Critical Vol./Cap.(X):	0.000
Loss Time (sec):	0	Average Delay (sec/veh):	0.0
Optimal Cycle:	0	Level Of Service:	

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
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:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green/Cycle:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncremntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Intersection #7

Cycle (sec):	100	Critical Vol./Cap.(X):	0.844
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	78	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:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			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 2.0	0 1	1	0 2.0	0 1	1	0 0.0	1 0	1	0 1.0	0 1
Volume Module:												
Base Vol:	80	1628	109	81	1067	96	103	16	113	123	28	98
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:	80	1628	109	81	1067	96	103	16	113	123	28	98
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:	80	1628	109	81	1067	96	103	16	113	123	28	98
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:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	83	1691	113	84	1108	100	107	17	117	128	29	102
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	83	1691	113	84	1108	100	107	17	117	128	29	102
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:	83	1691	113	84	1108	100	107	17	117	128	29	102
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	2.00	1.00	1.00	2.00	1.00	1.00	0.12	0.88	1.00	1.00	1.00
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	198	1402	1600	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.05	0.53	0.07	0.05	0.35	0.06	0.07	0.08	0.08	0.08	0.02	0.06
Crit Moves:		****			****			****			****	

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

Intersection #8

Cycle (sec):	100	Critical Vol./Cap.(X):	0.764
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	59	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:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
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:	2	0 3.0	0 1	2	0 2.0	1 0	2	0 2.0	0 1	2	0 2.0	0 1
Volume Module:												
Base Vol:	327	1150	288	209	832	262	346	651	292	359	659	326
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:	327	1150	288	209	832	262	346	651	292	359	659	326
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:	327	1150	288	209	832	262	346	651	292	359	659	326
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	336	1182	296	215	855	269	356	669	300	369	677	335
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	336	1182	296	215	855	269	356	669	300	369	677	335
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:	336	1182	296	215	855	269	356	669	300	369	677	335
OvlAdjVol:			112						132			228
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:	2.00	3.00	1.00	2.00	2.28	0.72	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3650	1150	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.11	0.25	0.18	0.07	0.23	0.23	0.11	0.21	0.19	0.12	0.21	0.21
OvlAdjV/S:			0.07						0.08			0.14
Crit Moves:	****				****			****			****	

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

Intersection #9

Cycle (sec):	100	Critical Vol./Cap.(X):	0.950
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	133	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:	Protected			Protected			Split Phase			Split Phase		
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	2 0 1	1	0	2 0 1	1	1	0 0 1	1	1	0 1 0
Volume Module:												
Base Vol:	233	1535	153	7	1259	190	245	63	350	85	35	12
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:	233	1535	153	7	1259	190	245	63	350	85	35	12
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:	233	1535	153	7	1259	190	245	63	350	85	35	12
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:	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
PHF Volume:	252	1661	166	8	1363	206	265	68	379	92	38	13
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	252	1661	166	8	1363	206	265	68	379	92	38	13
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:	252	1661	166	8	1363	206	265	68	379	92	38	13
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	2.00	1.00	1.00	2.00	1.00	1.59	0.41	1.00	1.94	0.79	0.27
Final Sat.:	1600	3200	1600	1600	3200	1600	2545	655	1600	3098	1268	434
Capacity Analysis Module:												
Vol/Sat:	0.16	0.52	0.10	0.00	0.43	0.13	0.10	0.10	0.24	0.03	0.03	0.03
OvlAdjV/S:						0.00						
Crit Moves:	****				****				****			****

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

Intersection #10

Cycle (sec):	100	Critical Vol./Cap.(X):	0.928
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	116	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:	Protected			Protected			Protected			Protected		
Rights:	Ignore			Ignore			Ignore			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:	2	0	3 0 1	2	0	3 0 1	2	0	3 0 1	2	0	3 0 1
Volume Module:												
Base Vol:	261	1040	179	385	1042	209	666	1531	287	428	702	244
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:	261	1040	179	385	1042	209	666	1531	287	428	702	244
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:	261	1040	179	385	1042	209	666	1531	287	428	702	244
User Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.95	0.95	0.00	0.95	0.95	0.00	0.95	0.95	0.00	0.95	0.95	0.95
PHF Volume:	274	1090	0	404	1092	0	698	1605	0	449	736	256
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	274	1090	0	404	1092	0	698	1605	0	449	736	256
PCE Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	274	1090	0	404	1092	0	698	1605	0	449	736	256
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:	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00	2.00	3.00	1.00
Final Sat.:	3200	4800	1600	3200	4800	1600	3200	4800	1600	3200	4800	1600
Capacity Analysis Module:												
Vol/Sat:	0.09	0.23	0.00	0.13	0.23	0.00	0.22	0.33	0.00	0.14	0.15	0.16
Crit Moves:		****			****				****		****	

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

Intersection #11

Cycle (sec):	100	Critical Vol./Cap.(X):	0.543
Loss Time (sec):	6	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	28	Level Of Service:	A

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				Ignore				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:	2	0 2.0	0	0.0	0	3.0	1	0.0	2	0	0	0.0	1	0	0	0.0
Volume Module:																
Base Vol:	33	1261	0	0	1567	50	172	0	94	0	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:	33	1261	0	0	1567	50	172	0	94	0	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:	33	1261	0	0	1567	50	172	0	94	0	0	0				
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.93				
PHF Volume:	36	1359	0	0	1689	54	185	0	0	0	0	0				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	36	1359	0	0	1689	54	185	0	0	0	0	0				
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00				
FinalVolume:	36	1359	0	0	1689	54	185	0	0	0	0	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:	2.00	2.00	0.00	0.00	3.00	1.00	2.00	0.00	1.00	0.00	0.00	0.00				
Final Sat.:	3200	3200	0	0	4800	1600	3200	0	1600	0	0	0				
Capacity Analysis Module:																
Vol/Sat:	0.01	0.42	0.00	0.00	0.35	0.03	0.06	0.00	0.00	0.00	0.00	0.00				
Crit Moves:		****			****			****								

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

Intersection #12

Cycle (sec):	100	Critical Vol./Cap.(X):	0.746
Loss Time (sec):	10	Average Delay (sec/veh):	22.8
Optimal Cycle:	61	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:	Protected				Protected				Protected				Protected			
Rights:	Ovl				Include				Ovl				Ovl			
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 2.0	0	1.0	2	0	1	1.0	1	0	0	1.0	1	0	1!	0.0
Volume Module:																
Base Vol:	1	799	283	610	1382	5	4	2	4	186	1	495				
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:	1	799	283	610	1382	5	4	2	4	186	1	495				
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:	1	799	283	610	1382	5	4	2	4	186	1	495				
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:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90				
PHF Volume:	1	891	315	680	1541	6	4	2	4	207	1	552				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	1	891	315	680	1541	6	4	2	4	207	1	552				
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:	1	891	315	680	1541	6	4	2	4	207	1	552				
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900				
Adjustment:	0.95	0.95	0.85	0.92	0.95	0.95	0.95	0.90	0.90	0.88	0.88	0.88				
Lanes:	1.00	2.00	1.00	2.00	1.99	0.01	1.00	0.33	0.67	1.27	0.01	1.72				
Final Sat.:	1805	3610	1615	3502	3593	13	1805	570	1140	2126	5	2882				
Capacity Analysis Module:																
Vol/Sat:	0.00	0.25	0.20	0.19	0.43	0.43	0.00	0.00	0.00	0.10	0.23	0.19				
Crit Moves:		****		****			****				****					
Green/Cycle:	0.00	0.33	0.63	0.26	0.59	0.59	0.00	0.01	0.01	0.30	0.31	0.57				
Volume/Cap:	0.73	0.75	0.31	0.75	0.73	0.73	0.75	0.33	0.31	0.33	0.75	0.34				
Uniform Del:	49.9	29.7	8.6	33.9	14.7	14.7	49.8	49.0	48.9	27.4	31.2	11.7				
IncremntDel:	412.6	2.6	0.2	3.4	1.3	1.3	196.4	9.2	7.8	0.1	3.0	0.1				
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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				
Delay/Veh:	462.5	32.3	8.8	37.3	16.0	16.0	246.2	58.2	56.8	27.5	34.3	11.7				
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:	462.5	32.3	8.8	37.3	16.0	16.0	246.2	58.2	56.8	27.5	34.3	11.7				
LOS by Move:	F	C	A	D	B	B	F	E	E	C	C	B				
HCM2kAvgQ:	0	13	4	10	18	18	1	1	1	4	12	5				

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

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

Intersection #13

Cycle (sec):	100	Critical Vol./Cap.(X):	0.827
Loss Time (sec):	10	Average Delay (sec/veh):	21.4
Optimal Cycle:	78	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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:	0 0	2	0 1	1 0	2	0 0	2 0	0	0 1	0 0	0	0 0
Volume Module:												
Base Vol:	0	933	619	380	1294	0	169	0	176	0	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:	0	933	619	380	1294	0	169	0	176	0	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:	0	933	619	380	1294	0	169	0	176	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	988	656	403	1371	0	179	0	186	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	988	656	403	1371	0	179	0	186	0	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:	0	988	656	403	1371	0	179	0	186	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.85	0.95	0.95	1.00	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	0	3610	1615	1805	3610	0	3502	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.41	0.22	0.38	0.00	0.05	0.00	0.12	0.00	0.00	0.00
Crit Moves:			****	****					****			
Green/Cycle:	0.00	0.49	0.49	0.27	0.76	0.00	0.14	0.00	0.14	0.00	0.00	0.00
Volume/Cap:	0.00	0.56	0.83	0.83	0.50	0.00	0.37	0.00	0.83	0.00	0.00	0.00
Uniform Del:	0.0	17.8	21.8	34.3	4.6	0.0	39.0	0.0	41.8	0.0	0.0	0.0
IncremntDel:	0.0	0.4	7.2	11.2	0.1	0.0	0.5	0.0	21.6	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00
Delay/Veh:	0.0	18.2	29.0	45.5	4.8	0.0	39.5	0.0	63.5	0.0	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:	0.0	18.2	29.0	45.5	4.8	0.0	39.5	0.0	63.5	0.0	0.0	0.0
LOS by Move:	A	B	C	D	A	A	D	A	E	A	A	A
HCM2kAvgQ:	0	11	20	12	8	0	3	0	8	0	0	0

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

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

Intersection #14

Cycle (sec):	100	Critical Vol./Cap.(X):	0.700
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	50	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:	0 1	0	0 1	0 1	0	0 1	1 0	1	1 0	1 0	2	0 1
Volume Module:												
Base Vol:	6	7	1	94	38	102	303	1335	189	42	609	237
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:	6	7	1	94	38	102	303	1335	189	42	609	237
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:	6	7	1	94	38	102	303	1335	189	42	609	237
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:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
PHF Volume:	6	7	1	95	38	103	306	1350	191	42	616	240
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	7	1	95	38	103	306	1350	191	42	616	240
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:	6	7	1	95	38	103	306	1350	191	42	616	240
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:	0.46	0.54	1.00	0.71	0.29	1.00	1.00	1.75	0.25	1.00	2.00	1.00
Final Sat.:	738	862	1600	1139	461	1600	1600	2803	397	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.01	0.01	0.00	0.08	0.08	0.06	0.19	0.48	0.48	0.03	0.19	0.15
OvlAdjV/S:						0.00						
Crit Moves:	****			****				****		****		

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

Intersection #15

Cycle (sec):	100	Critical Vol./Cap.(X):	0.601
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
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			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	0 1	2	0 1	0 1	2	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	103	21	75	151	9	96	153	776	54	31	1097	200
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:	103	21	75	151	9	96	153	776	54	31	1097	200
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:	103	21	75	151	9	96	153	776	54	31	1097	200
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	106	22	77	156	9	99	158	802	56	32	1133	207
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	106	22	77	156	9	99	158	802	56	32	1133	207
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:	106	22	77	156	9	99	158	802	56	32	1133	207
OvlAdjVol:						20						
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	2.00	1.00	1.00	2.00	1.87	0.13	1.00	2.00	1.00
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	2992	208	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.07	0.01	0.05	0.05	0.01	0.06	0.05	0.27	0.27	0.02	0.35	0.13
OvlAdjV/S:						0.01						
Crit Moves:			****	****			****				****	

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

Intersection #16

Average Delay (sec/veh): 0.0 Worst Case Level Of Service: A[0.0]

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						Uncontrolled						Uncontrolled					
Rights:	Include						Include						Include						Include					
Lanes:	0	0	1!	0	0		0	0	1!	0	0		1	0	1	1	0		1	0	2	0	1	
Volume Module:																								
Base Vol:	0	0	0				0	0	0				0	1029	0				0	1282	14			
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:	0	0	0				0	0	0				0	1029	0				0	1282	14			
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:	0	0	0				0	0	0				0	1029	0				0	1282	14			
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:	0.93	0.93	0.93				0.93	0.93	0.93				0.93	0.93	0.93				0.93	0.93	0.93			
PHF Volume:	0	0	0				0	0	0				0	1102	0				0	1373	15			
Reduct Vol:	0	0	0				0	0	0				0	0	0				0	0	0			
FinalVolume:	0	0	0				0	0	0				0	1102	0				0	1373	15			
Critical Gap Module:																								
Critical Gp:	6.8	6.5	6.9				6.8	6.5	6.9				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
FollowUpTim:	3.5	4.0	3.3				3.5	4.0	3.3				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
Capacity Module:																								
Cnflict Vol:	1788	2489	551				1923	2474	686				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Potent Cap.:	74	30	483				60	30	394				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Move Cap.:	74	30	483				60	30	394				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Volume/Cap:	0.00	0.00	0.00				0.00	0.00	0.00				xxxx	xxxx	xxxx				xxxx	xxxx	xxxx			
Level Of Service Module:																								
2Way95thQ:	xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
Control Del:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
LOS by Move:	*	*	*				*	*	*				*	*	*				*	*	*			
Movement:	LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT		LT	-	LTR	-	RT	
Shared Cap.:	xxxx		0	xxxxx			xxxx		0	xxxxx			xxxx	xxxx	xxxxx				xxxx	xxxx	xxxxx			
SharedQueue:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
Shrd ConDel:	xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx				xxxxx	xxxx	xxxxx			
Shared LOS:	*	*	*				*	*	*				*	*	*				*	*	*			
ApproachDel:	xxxxxx						xxxxxx						xxxxxx						xxxxxx					
ApproachLOS:	*						*						*						*					

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

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

Intersection #17

Cycle (sec):	100	Critical Vol./Cap.(X):	0.763
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	59	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	234	775	63	160	550	158	163	963	214	84	684	112
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:	234	775	63	160	550	158	163	963	214	84	684	112
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:	234	775	63	160	550	158	163	963	214	84	684	112
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	242	803	65	166	570	164	169	998	222	87	709	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	242	803	65	166	570	164	169	998	222	87	709	116
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:	242	803	65	166	570	164	169	998	222	87	709	116
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	2.00	1.00	1.00	2.00	1.00	1.00	2.45	0.55	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	3927	873	1600	4125	675
Capacity Analysis Module:												
Vol/Sat:	0.15	0.25	0.04	0.10	0.18	0.10	0.11	0.25	0.25	0.05	0.17	0.17
Crit Moves:		****			****			****			****	

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

Intersection #18

Cycle (sec):	100	Critical Vol./Cap.(X):	0.881
Loss Time (sec):	6	Average Delay (sec/veh):	24.5
Optimal Cycle:	84	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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0 1! 0	0	1	0 1! 0	1	0	0 2	1 0	1	0 3	0 1
Volume Module:												
Base Vol:	1	0	83	923	12	536	0	1796	72	18	576	116
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:	1	0	83	923	12	536	0	1796	72	18	576	116
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:	1	0	83	923	12	536	0	1796	72	18	576	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00
PHF Volume:	1	0	86	957	12	556	0	1863	75	19	598	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	86	957	12	556	0	1863	75	19	598	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	1	0	86	957	12	556	0	1863	75	19	598	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.87	0.92	0.92	0.92	1.00	0.90	0.90	0.95	0.91	1.00
Lanes:	0.01	0.00	0.99	1.62	0.02	1.36	0.00	2.88	0.12	1.00	3.00	1.00
Final Sat.:	20	0	1628	2826	28	2371	0	4957	199	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.05	0.00	0.05	0.34	0.44	0.23	0.00	0.38	0.38	0.01	0.12	0.00
Crit Moves:					****			****		****		
Green/Cycle:	0.00	0.00	0.00	0.50	0.50	0.50	0.00	0.43	0.43	0.01	0.44	0.00
Volume/Cap:	xxxx	0.00	xxxx	0.68	0.88	0.47	0.00	0.88	0.88	0.88	0.26	0.00
Uniform Del:	0.0	0.0	0.0	18.8	22.3	16.2	0.0	26.3	26.3	49.3	17.8	0.0
IncremntDel:	0.0	0.0	0.0	0.8	5.6	0.1	0.0	4.5	4.5	142.2	0.1	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	0.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Delay/Veh:	0.0	0.0	0.0	19.6	27.9	16.3	0.0	30.8	30.8	191.5	17.9	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:	0.0	0.0	0.0	19.6	27.9	16.3	0.0	30.8	30.8	191.5	17.9	0.0
LOS by Move:	A	A	A	B	C	B	A	C	C	F	B	A
HCM2kAvgQ:	2	0	2	22	1	11	0	22	22	2	4	0

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

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

Intersection #19

Cycle (sec):	100	Critical Vol./Cap.(X):	0.000
Loss Time (sec):	0	Average Delay (sec/veh):	0.0
Optimal Cycle:	0	Level Of Service:	

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
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:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												
Green/Cycle:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Volume/Cap:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Del:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
IncremntDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	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
Delay/Veh:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
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:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
LOS by Move:												
HCM2kAvgQ:	0	0	0	0	0	0	0	0	0	0	0	0

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

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

Intersection #50

Cycle (sec):	100	Critical Vol./Cap.(X):	0.659
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	41	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			Ovl			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:	2 0	2 0	0	0 0	1 1	0	1 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	418	1243	0	0	808	115	81	0	407	0	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:	418	1243	0	0	808	115	81	0	407	0	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:	418	1243	0	0	808	115	81	0	407	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	446	1327	0	0	862	123	86	0	434	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	446	1327	0	0	862	123	86	0	434	0	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:	446	1327	0	0	862	123	86	0	434	0	0	0
OvlAdjVol:									211			
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:	2.00	2.00	0.00	0.00	1.75	0.25	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	3200	3200	0	0	2801	399	1600	0	1600	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.14	0.41	0.00	0.00	0.31	0.31	0.05	0.00	0.27	0.00	0.00	0.00
OvlAdjV/S:									0.13			
Crit Moves:	****				****				****			

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

Intersection #190

Cycle (sec):	100	Critical Vol./Cap.(X):	0.560
Loss Time (sec):	6	Average Delay (sec/veh):	8.8
Optimal Cycle:	30	Level Of Service:	A

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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0 1	0	0	0 0 0	1	0	2 1 1	0	0	3 0 0
Volume Module:												
Base Vol:	123	0	289	0	0	0	0	2097	621	0	969	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:	123	0	289	0	0	0	0	2097	621	0	969	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:	123	0	289	0	0	0	0	2097	621	0	969	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00	0.96	0.96	0.96
PHF Volume:	128	0	301	0	0	0	0	2182	0	0	1008	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	128	0	301	0	0	0	0	2182	0	0	1008	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	128	0	301	0	0	0	0	2182	0	0	1008	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.88	1.00	0.88	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.30	0.00	1.70	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2175	0	2850	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.11	0.00	0.00	0.00	0.00	0.42	0.00	0.00	0.19	0.00
Crit Moves:			****					****				
Green/Cycle:	0.19	0.00	0.19	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.75	0.00
Volume/Cap:	0.31	0.00	0.56	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.26	0.00
Uniform Del:	35.0	0.0	36.8	0.0	0.0	0.0	0.0	5.3	0.0	0.0	3.8	0.0
IncremntDel:	0.1	0.0	0.9	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
InitQueuDel:	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delay Adj:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Delay/Veh:	35.1	0.0	37.8	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.9	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:	35.1	0.0	37.8	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.9	0.0
LOS by Move:	D		A D	A		A	A		A	A		A
HCM2kAvgQ:	3	0	6	0	0	0	0	11	0	0	4	0

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

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

Intersection #600

Cycle (sec):	100	Critical Vol./Cap.(X):	0.721
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ovl		
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:	0	0 2.0	0 1	2	0 2.0	0 0	0	0 0	0 0	2	0 0	0 2
Volume Module:												
Base Vol:	0	1712	118	106	1120	0	0	0	0	136	0	161
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:	0	1712	118	106	1120	0	0	0	0	136	0	161
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:	0	1712	118	106	1120	0	0	0	0	136	0	161
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:	0	1796	124	111	1175	0	0	0	0	143	0	169
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	1796	124	111	1175	0	0	0	0	143	0	169
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:	0	1796	124	111	1175	0	0	0	0	143	0	169
OvlAdjVol:												58
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:	0.00	2.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
Final Sat.:	0	3200	1600	3200	3200	0	0	0	0	3200	0	3200
Capacity Analysis Module:												
Vol/Sat:	0.00	0.56	0.08	0.03	0.37	0.00	0.00	0.00	0.00	0.04	0.00	0.05
OvlAdjV/S:												0.02
Crit Moves:		****			****					****		

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #1 Nogales St / Amar Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.725
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	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				Include				Ovl				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	1 0	0	1	0	0 1!	0	0	1	0 2	0	1	1	0 2	1	0
Volume Module:																
Base Vol:	570	9	191		6	3	13		6	1118	481		129	960		12
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:	570	9	191		6	3	13		6	1118	481		129	960		12
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:	570	9	191		6	3	13		6	1118	481		129	960		12
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:	0.97	0.97	0.97		0.97	0.97	0.97		0.97	0.97	0.97		0.97	0.97		0.97
PHF Volume:	589	9	197		6	3	13		6	1155	497		133	992		12
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0		0
Reduced Vol:	589	9	197		6	3	13		6	1155	497		133	992		12
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	9	197		6	3	13		6	1155	497		133	992		12
OvlAdjVol:											198					
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:	1.97	0.03	1.00		0.27	0.14	0.59		1.00	2.00	1.00		1.00	2.96		0.04
Final Sat.:	3150	50	1600		436	218	945		1600	3200	1600		1600	4741		59
Capacity Analysis Module:																
Vol/Sat:	0.19	0.19	0.12		0.01	0.01	0.01		0.00	0.36	0.31		0.08	0.21		0.21
OvlAdjV/S:											0.12					
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #2 Lemon Ave / Amar Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.636
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	39	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				Include				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	1 0	0	1	0	1 0	0	1	1	0 1	1	0	1	0 2	0	1
Volume Module:																
Base Vol:	254	42	132		17	22	5		19	999	161		107	890		19
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:	254	42	132		17	22	5		19	999	161		107	890		19
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:	254	42	132		17	22	5		19	999	161		107	890		19
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:	258	43	134		17	22	5		19	1016	164		109	905		19
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0		0
Reduced Vol:	258	43	134		17	22	5		19	1016	164		109	905		19
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:	258	43	134		17	22	5		19	1016	164		109	905		19
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:	1.72	0.28	1.00		0.44	0.56	1.00		1.00	1.72	0.28		1.00	2.00		1.00
Final Sat.:	2746	454	1600		697	903	1600		1600	2756	444		1600	3200		1600
Capacity Analysis Module:																
Vol/Sat:	0.09	0.09	0.08		0.02	0.02	0.00		0.01	0.37	0.37		0.07	0.28		0.01
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #3 Grand Ave / I-10 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.654
Loss Time (sec):	6	Average Delay (sec/veh):	238.8
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:	Protected				Protected				Split Phase				Split Phase			
Rights:	Include				Include				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 2	0	1	1	0 2	0	1	0	1 0	0	1	0	0 1!	0	0
Volume Module:																
Base Vol:	389	1090	34		3	815	385		282	11	117		18	17	6	
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:	389	1090	34		3	815	385		282	11	117		18	17	6	
Added Vol:	1497	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:	1886	1090	34		3	815	385		282	11	117		18	17	6	
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:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	1998	1155	36		3	863	408		299	12	124		19	18	6	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	1998	1155	36		3	863	408		299	12	124		19	18	6	
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:	1998	1155	36		3	863	408		299	12	124		19	18	6	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	0.95	0.85		0.95	0.95	0.85		0.95	0.95	0.85		0.96	0.96	0.96	
Lanes:	1.00	2.00	1.00		1.00	2.00	1.00		0.96	0.04	1.00		0.44	0.41	0.15	
Final Sat.:	1805	3610	1615		1805	3610	1615		1745	68	1615		800	756	267	
Capacity Analysis Module:																
Vol/Sat:	1.11	0.32	0.02		0.00	0.24	0.25		0.17	0.17	0.08		0.02	0.02	0.02	
Crit Moves:	****						****		****					****		
Green/Cycle:	0.67	0.82	0.82		0.00	0.15	0.15		0.10	0.10	0.10		0.01	0.01	0.01	
Volume/Cap:	1.65	0.39	0.03		0.39	1.57	1.65		1.65	1.65	0.74		1.65	1.65	1.65	
Delay/Veh:	314.4	2.5	1.7		78.0	306	353.9		361.5	362	59.7		465.9	466	465.9	
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:	314.4	2.5	1.7		78.0	306	353.9		361.5	362	59.7		465.9	466	465.9	
LOS by Move:	F	A	A		E	F	F		F	F	E		F	F	F	
HCM2kAvgQ:	154	5	0		0	36	34		26	26	5		5	5	5	

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

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #4 Grand Ave / I-10 EB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.088
Loss Time (sec):	6	Average Delay (sec/veh):	48.0
Optimal Cycle:	180	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:	Protected				Protected				Protected				Protected			
Rights:	Include				Include				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 2	0	0	0	0 1	1	0	1	0 1!	0	0	0	0 0	0	0
Volume Module:																
Base Vol:	52	1273	0		0	668	301		301	0	186		0	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:	52	1273	0		0	668	301		301	0	186		0	0	0	
Added Vol:	0	1497	0		0	0	0		0	0	5		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	52	2770	0		0	668	301		301	0	191		0	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:	0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94		0.94	0.94	0.94	
PHF Volume:	55	2937	0		0	708	319		319	0	203		0	0	0	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	55	2937	0		0	708	319		319	0	203		0	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:	55	2937	0		0	708	319		319	0	203		0	0	0	
Saturation Flow Module:																
Sat/Lane:	1900	1900	1900		1900	1900	1900		1900	1900	1900		1900	1900	1900	
Adjustment:	0.95	0.95	1.00		1.00	0.91	0.91		0.91	1.00	0.91		1.00	1.00	1.00	
Lanes:	1.00	2.00	0.00		0.00	1.38	0.62		1.44	0.00	0.56		0.00	0.00	0.00	
Final Sat.:	1805	3610	0		0	2372	1069		2501	0	971		0	0	0	
Capacity Analysis Module:																
Vol/Sat:	0.03	0.81	0.00		0.00	0.30	0.30		0.13	0.00	0.21		0.00	0.00	0.00	
Crit Moves:		****			****						****					
Green/Cycle:	0.07	0.75	0.00		0.00	0.68	0.68		0.19	0.00	0.19		0.00	0.00	0.00	
Volume/Cap:	0.44	1.09	0.00		0.00	0.44	0.44		0.67	0.00	1.09		0.00	0.00	0.00	
Delay/Veh:	47.1	59.0	0.0		0.0	7.5	7.5		39.6	0.0	107.3		0.0	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:	47.1	59.0	0.0		0.0	7.5	7.5		39.6	0.0	107.3		0.0	0.0	0.0	
LOS by Move:	D	E	A		A	A	A		D	A	F		A	A	A	
HCM2kAvgQ:	1	59	0		0	7	7		7	0	19		0	0	0	

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

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to MMA, LONG BEACH, CA

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #5 Grand Ave / Cameron Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.126
Loss Time (sec):	8	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ovl			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:	2	0 2	0 0	0	0 1	1 0	1	0 0	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	418	1243	0	0	808	115	81	0	407	0	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:	418	1243	0	0	808	115	81	0	407	0	0	0
Added Vol:	0	1497	0	0	5	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	418	2740	0	0	813	115	81	0	407	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	446	2924	0	0	868	123	86	0	434	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	446	2924	0	0	868	123	86	0	434	0	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:	446	2924	0	0	868	123	86	0	434	0	0	0
OvlAdjVol:									211			
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:	2.00	2.00	0.00	0.00	1.75	0.25	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	3200	3200	0	0	2803	397	1600	0	1600	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.14	0.91	0.00	0.00	0.31	0.31	0.05	0.00	0.27	0.00	0.00	0.00
OvlAdjV/S:									0.13			
Crit Moves:		****			****				****			

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #6 Grand Ave / Mountaineer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.185
Loss Time (sec):	8	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ovl		
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:	0	0 2	0 1	2	0 2	0 0	0	0 0	0 0	2	0 0	0 2
Volume Module:												
Base Vol:	0	1712	118	106	1120	0	0	0	0	136	0	161
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:	0	1712	118	106	1120	0	0	0	0	136	0	161
Added Vol:	0	949	0	0	5	0	0	0	0	228	0	548
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	2661	118	106	1125	0	0	0	0	364	0	709
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:	0	2792	124	111	1180	0	0	0	0	382	0	744
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2792	124	111	1180	0	0	0	0	382	0	744
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:	0	2792	124	111	1180	0	0	0	0	382	0	744
OvlAdjVol:												633
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:	0.00	2.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
Final Sat.:	0	3200	1600	3200	3200	0	0	0	0	3200	0	3200
Capacity Analysis Module:												
Vol/Sat:	0.00	0.87	0.08	0.03	0.37	0.00	0.00	0.00	0.00	0.12	0.00	0.23
OvlAdjV/S:												0.20
Crit Moves:		****			****							****

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #7 Grand Ave / San Jose Hills Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.152
Loss Time (sec):	10	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:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			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 2.0	0 1	1	0 2.0	0 1	1	0 0	1 0	1	0 1.0	0 1
Volume Module:												
Base Vol:	80	1628	109	81	1067	96	103	16	113	123	28	98
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:	80	1628	109	81	1067	96	103	16	113	123	28	98
Added Vol:	0	949	0	0	233	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	2577	109	81	1300	96	103	16	113	123	28	98
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:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	83	2676	113	84	1350	100	107	17	117	128	29	102
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	83	2676	113	84	1350	100	107	17	117	128	29	102
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:	83	2676	113	84	1350	100	107	17	117	128	29	102
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	2.00	1.00	1.00	2.00	1.00	1.00	0.12	0.88	1.00	1.00	1.00
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	198	1402	1600	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.05	0.84	0.07	0.05	0.42	0.06	0.07	0.08	0.08	0.08	0.02	0.06
Crit Moves:		****		****				****		****		

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #8 Grand Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.349
Loss Time (sec):	10	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:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
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:	2	0 3.0	0 1	2	0 2.0	1 0	2	0 2.0	0 1	2	0 2.0	0 1
Volume Module:												
Base Vol:	327	1150	288	209	832	262	346	651	292	359	659	326
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:	327	1150	288	209	832	262	346	651	292	359	659	326
Added Vol:	0	0	5	5	228	0	0	0	0	1269	0	949
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	327	1150	293	214	1060	262	346	651	292	1628	659	1275
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	336	1182	301	220	1089	269	356	669	300	1673	677	1310
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	336	1182	301	220	1089	269	356	669	300	1673	677	1310
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:	336	1182	301	220	1089	269	356	669	300	1673	677	1310
OvlAdjVol:			0						132			1200
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:	2.00	3.00	1.00	2.00	2.41	0.59	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3849	951	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.11	0.25	0.19	0.07	0.28	0.28	0.11	0.21	0.19	0.52	0.21	0.82
OvlAdjV/S:			0.00						0.08			0.75
Crit Moves:	****				****		****					****

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #9 Grand Ave / La Puente Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.456
Loss Time (sec):	10	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:	Protected				Protected				Split Phase				Split Phase			
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 2	0	1	1	0 2	0	1	1	1 0	0	1	1	1 0	1	0
Volume Module:																
Base Vol:	233	1535	153		7	1259	190		245	63	350		85	35	12	
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:	233	1535	153		7	1259	190		245	63	350		85	35	12	
Added Vol:	0	5	0		0	1497	0		0	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	233	1540	153		7	2756	190		245	63	350		85	35	12	
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:	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92	
PHF Volume:	252	1667	166		8	2983	206		265	68	379		92	38	13	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	252	1667	166		8	2983	206		265	68	379		92	38	13	
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:	252	1667	166		8	2983	206		265	68	379		92	38	13	
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	2.00	1.00		1.00	2.00	1.00		1.59	0.41	1.00		1.94	0.79	0.27	
Final Sat.:	1600	3200	1600		1600	3200	1600		2545	655	1600		3098	1268	434	
Capacity Analysis Module:																
Vol/Sat:	0.16	0.52	0.10		0.00	0.93	0.13		0.10	0.10	0.24		0.03	0.03	0.03	
OvlAdjV/S:							0.00									
Crit Moves:	****					****					****				****	

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #10 Grand Ave / Valley Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.264
Loss Time (sec):	10	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:	Protected				Protected				Protected				Protected			
Rights:	Ignore				Ignore				Ignore				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:	2	0 3	0	1	2	0 3	0	1	2	0 3	0	1	2	0 3	0	1
Volume Module:																
Base Vol:	261	1040	179		385	1042	209		666	1531	287		428	702	244	
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:	261	1040	179		385	1042	209		666	1531	287		428	702	244	
Added Vol:	0	0	0		0	1497	0		5	0	0		150	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	261	1040	179		385	2539	209		671	1531	287		578	702	244	
User Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.00		0.95	0.95	0.00		0.95	0.95	0.00		0.95	0.95	0.95	
PHF Volume:	274	1090	0		404	2661	0		703	1605	0		606	736	256	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	274	1090	0		404	2661	0		703	1605	0		606	736	256	
PCE Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
FinalVolume:	274	1090	0		404	2661	0		703	1605	0		606	736	256	
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:	2.00	3.00	1.00		2.00	3.00	1.00		2.00	3.00	1.00		2.00	3.00	1.00	
Final Sat.:	3200	4800	1600		3200	4800	1600		3200	4800	1600		3200	4800	1600	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.23	0.00		0.13	0.55	0.00		0.22	0.33	0.00		0.19	0.15	0.16	
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #11 Grand Ave / Baker Pkwy

Cycle (sec):	100	Critical Vol./Cap.(X):	0.851
Loss Time (sec):	6	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	69	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			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:	2	0 2.0	0 0.0	0	0 3.0	0 1.0	2	0 0.0	0 1.0	0	0 0.0	0 0.0
Volume Module:												
Base Vol:	33	1261	0	0	1567	50	172	0	94	0	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:	33	1261	0	0	1567	50	172	0	94	0	0	0
Added Vol:	0	0	0	0	1647	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	33	1261	0	0	3214	50	172	0	94	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.93
PHF Volume:	36	1359	0	0	3463	54	185	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	1359	0	0	3463	54	185	0	0	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	36	1359	0	0	3463	54	185	0	0	0	0	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:	2.00	2.00	0.00	0.00	3.00	1.00	2.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	3200	3200	0	0	4800	1600	3200	0	1600	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.42	0.00	0.00	0.72	0.03	0.06	0.00	0.00	0.00	0.00	0.00
Crit Moves:	****				****		****					

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #12 Grand Ave / SR-60 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.151
Loss Time (sec):	10	Average Delay (sec/veh):	59.0
Optimal Cycle:	180	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:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
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 2.0	0 1.0	2	0 1.0	1 0.0	1	0 0.0	0 1.0	1	0 0.0	1 0 1.0
Volume Module:												
Base Vol:	1	799	283	610	1382	5	4	2	4	186	1	495
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:	1	799	283	610	1382	5	4	2	4	186	1	495
Added Vol:	0	0	0	1145	502	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	799	283	1755	1884	5	4	2	4	186	1	495
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:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	1	891	315	1957	2100	6	4	2	4	207	1	552
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	891	315	1957	2100	6	4	2	4	207	1	552
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:	1	891	315	1957	2100	6	4	2	4	207	1	552
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	0.95	0.95	0.95	0.90	0.90	0.88	0.88	0.88
Lanes:	1.00	2.00	1.00	2.00	1.99	0.01	1.00	0.33	0.67	1.27	0.01	1.72
Final Sat.:	1805	3610	1615	3502	3600	10	1805	570	1140	2126	5	2882
Capacity Analysis Module:												
Vol/Sat:	0.00	0.25	0.20	0.56	0.58	0.58	0.00	0.00	0.00	0.10	0.23	0.19
Crit Moves:		****		****			****				****	
Green/Cycle:	0.00	0.21	0.41	0.49	0.70	0.70	0.00	0.01	0.01	0.19	0.20	0.68
Volume/Cap:	0.83	1.15	0.48	1.15	0.83	0.83	1.15	0.51	0.46	0.51	1.15	0.28
Delay/Veh:	623.6	122	22.4	100.9	13.4	13.4	575.5	78.1	71.0	36.4	125	6.3
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:	623.6	122	22.4	100.9	13.4	13.4	575.5	78.1	71.0	36.4	125	6.3
LOS by Move:	F	F	C	F	B	B	F	E	E	D	F	A
HCM2kAvgQ:	0	23	7	47	24	24	1	1	1	5	21	4

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

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #13 Grand Ave / SR-60 EB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.990
Loss Time (sec):	10	Average Delay (sec/veh):	32.9
Optimal Cycle:	180	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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:	0	0 2	0 1	1	0 2	0 0	2	0 0	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	0	933	619	380	1294	0	169	0	176	0	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:	0	933	619	380	1294	0	169	0	176	0	0	0
Added Vol:	0	0	0	249	254	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	933	619	629	1548	0	169	0	176	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	988	656	666	1640	0	179	0	186	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	988	656	666	1640	0	179	0	186	0	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:	0	988	656	666	1640	0	179	0	186	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.85	0.95	0.95	1.00	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	0	3610	1615	1805	3610	0	3502	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.41	0.37	0.45	0.00	0.05	0.00	0.12	0.00	0.00	0.00
Crit Moves:			****	****					****			
Green/Cycle:	0.00	0.41	0.41	0.37	0.78	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Volume/Cap:	0.00	0.67	0.99	0.99	0.58	0.00	0.44	0.00	0.99	0.00	0.00	0.00
Delay/Veh:	0.0	25.1	61.5	63.1	4.6	0.0	41.9	0.0	106.5	0.0	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:	0.0	25.1	61.5	63.1	4.6	0.0	41.9	0.0	106.5	0.0	0.0	0.0
LOS by Move:	A	C	E	E	A	A	D	A	F	A	A	A
HCM2kAvgQ:	0	14	27	23	10	0	3	0	10	0	0	0

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

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #14 Mt SAC Wy / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.500
Loss Time (sec):	10	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
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:	0	1 0	0 1	0	1 0	0 1	1	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	6	7	1	94	38	102	303	1335	189	42	609	237
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:	6	7	1	94	38	102	303	1335	189	42	609	237
Added Vol:	583	0	0	249	0	374	0	10	0	0	1262	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	589	7	1	343	38	476	303	1345	189	42	1871	237
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:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
PHF Volume:	596	7	1	347	38	481	306	1360	191	42	1892	240
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	596	7	1	347	38	481	306	1360	191	42	1892	240
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:	596	7	1	347	38	481	306	1360	191	42	1892	240
OvlAdjVol:						175						
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:	0.99	0.01	1.00	0.90	0.10	1.00	1.00	1.75	0.25	1.00	2.00	1.00
Final Sat.:	1581	19	1600	1440	160	1600	1600	2806	394	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.38	0.38	0.00	0.24	0.24	0.30	0.19	0.48	0.48	0.03	0.59	0.15
OvlAdjV/S:						0.11						
Crit Moves:	****			****			****			****		

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #15 Bonita Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.498
Loss Time (sec):	10	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:	Protected				Protected				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	0	1	2	0 1	0	1	2	0 1	1	0	1	0 2	0	1
Volume Module:																
Base Vol:	103	21	75	151	9	96	153	776	54	31	1097	200				
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:	103	21	75	151	9	96	153	776	54	31	1097	200				
Added Vol:	171	0	511	1244	0	577	0	249	10	15	514	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	274	21	586	1395	9	673	153	1025	64	46	1611	200				
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97				
PHF Volume:	283	22	605	1441	9	695	158	1059	66	48	1664	207				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	283	22	605	1441	9	695	158	1059	66	48	1664	207				
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:	283	22	605	1441	9	695	158	1059	66	48	1664	207				
OvlAdjVol:						616										
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	2.00	1.00	1.00	2.00	1.88	0.12	1.00	2.00	1.00				
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	3012	188	1600	3200	1600				
Capacity Analysis Module:																
Vol/Sat:	0.18	0.01	0.38	0.45	0.01	0.43	0.05	0.35	0.35	0.03	0.52	0.13				
OvlAdjV/S:						0.39										
Crit Moves:			****		****			****				****				

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #16 Lot F / Temple Ave

Average Delay (sec/veh): 24.0 Worst Case Level Of Service: F[227.3]

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					Uncontrolled					Uncontrolled				
Rights:	Include					Include					Include					Include				
Lanes:	0	0 1!	0	0		0	0	0	0	1	1	0 1	1	1	0	1	0	2	0	1
Volume Module:																				
Base Vol:	0	0	0	0		0	0	0	0		0	1029	0	0		1282		14		
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		1.00		1.00		
Initial Bse:	0	0	0	0		0	0	0	0		0	1029	0	0		1282		14		
Added Vol:	0	0	0	0		0	0	514	0		0	2004	0	0		15		0		
PasserByVol:	0	0	0	0		0	0	0	0		0	0	0	0		0		0		
Initial Fut:	0	0	0	0		0	0	514	0		0	3033	0	0		1297		14		
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		1.00		1.00		
PHF Adj:	0.93	0.93	0.93	0.93		0.93	0.93	0.93	0.93		0.93	0.93	0.93	0.93		0.93		0.93		
PHF Volume:	0	0	0	0		0	0	550	0		0	3247	0	0		1389		15		
Reduct Vol:	0	0	0	0		0	0	0	0		0	0	0	0		0		0		
FinalVolume:	0	0	0	0		0	0	550	0		0	3247	0	0		1389		15		
Critical Gap Module:																				
Critical Gp:	7.5	6.5	6.9	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Capacity Module:																				
Cnflict Vol:	3942	4651	1624	xxxx	xxxx	694	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Potent Cap.:	1	1	93	xxxx	xxxx	390	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Move Cap.:	0	1	93	xxxx	xxxx	390	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Volume/Cap:	xxxx	0.00	0.00	xxxx	xxxx	1.41	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx								
Level Of Service Module:																				
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	27.6	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	227.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
LOS by Move:	*	*	*	*	*	F	*	*	*	*	*	*								
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT										
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx								
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx								
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*								
ApproachDel:	xxxxxx			227.3			xxxxxx			xxxxxx										
ApproachLOS:	*			F			*			*										

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

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #17 Valley Blvd / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.475
Loss Time (sec):	10	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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	2 0	1	1 0	2 0	1	1 0	2 1	0	1 0	2 1	0
Volume Module:												
Base Vol:	234	775	63	160	550	158	163	963	214	84	684	112
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:	234	775	63	160	550	158	163	963	214	84	684	112
Added Vol:	0	0	0	0	0	0	0	3299	0	0	10	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	234	775	63	160	550	158	163	4262	214	84	694	112
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	242	803	65	166	570	164	169	4417	222	87	719	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	242	803	65	166	570	164	169	4417	222	87	719	116
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:	242	803	65	166	570	164	169	4417	222	87	719	116
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	2.00	1.00	1.00	2.00	1.00	1.00	2.86	0.14	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4571	229	1600	4133	667
Capacity Analysis Module:												
Vol/Sat:	0.15	0.25	0.04	0.10	0.18	0.10	0.11	0.97	0.97	0.05	0.17	0.17
Crit Moves:		****		****				****		****		

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #18 SR-57 SB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.659
Loss Time (sec):	6	Average Delay (sec/veh):	250.9
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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0 0	1! 0	0	1 0	1! 0	1	0 0	2 1	0	1 0	3 0	1
Volume Module:												
Base Vol:	1	0	83	923	12	536	0	1796	72	18	576	116
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:	1	0	83	923	12	536	0	1796	72	18	576	116
Added Vol:	0	0	0	0	0	5	0	3649	0	0	5	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	0	83	923	12	541	0	5445	72	18	581	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00
PHF Volume:	1	0	86	957	12	561	0	5648	75	19	603	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	86	957	12	561	0	5648	75	19	603	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	1	0	86	957	12	561	0	5648	75	19	603	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.87	0.92	0.92	0.92	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.01	0.00	0.99	1.62	0.02	1.36	0.00	2.96	0.04	1.00	3.00	1.00
Final Sat.:	20	0	1628	2822	28	2375	0	5109	68	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.05	0.00	0.05	0.34	0.44	0.24	0.00	1.11	1.11	0.01	0.12	0.00
Crit Moves:					****			****		****		
Green/Cycle:	0.00	0.00	0.00	0.27	0.27	0.27	0.00	0.67	0.67	0.01	0.67	0.00
Volume/Cap:	xxxx	0.00	xxxx	1.27	1.66	0.88	0.00	1.66	1.66	1.67	0.17	0.00
Delay/Veh:	0.0	0.0	0.0	164.7	338	41.0	0.0	314	314.3	578.8	6.1	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:	0.0	0.0	0.0	164.7	338	41.0	0.0	314	314.3	578.8	6.1	0.0
LOS by Move:	A	A	A	F	F	D	A	F	F	F	A	A
HCM2kAvgQ:	2	0	2	56	2	20	0	162	162	3	2	0

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

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #19 SR-57 NB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.705
Loss Time (sec):	6	Average Delay (sec/veh):	8.6
Optimal Cycle:	43	Level Of Service:	A

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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0	1	0	0	1	0	2	1	1	0
Volume Module:												
Base Vol:	123	0	289	0	0	0	0	2097	621	0	969	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:	123	0	289	0	0	0	0	2097	621	0	969	0
Added Vol:	5	0	0	0	0	0	0	677	1571	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	0	289	0	0	0	0	2774	2192	0	969	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00	0.96	0.96	0.96
PHF Volume:	133	0	301	0	0	0	0	2887	0	0	1008	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	133	0	301	0	0	0	0	2887	0	0	1008	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	133	0	301	0	0	0	0	2887	0	0	1008	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.88	1.00	0.88	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.31	0.00	1.69	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2192	0	2839	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.11	0.00	0.00	0.00	0.00	0.56	0.00	0.00	0.19	0.00
Crit Moves:			****					****				
Green/Cycle:	0.15	0.00	0.15	0.00	0.00	0.00	0.00	0.79	0.00	0.00	0.79	0.00
Volume/Cap:	0.40	0.00	0.70	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.25	0.00
Delay/Veh:	38.7	0.0	44.1	0.0	0.0	0.0	0.0	5.6	0.0	0.0	2.8	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:	38.7	0.0	44.1	0.0	0.0	0.0	0.0	5.6	0.0	0.0	2.8	0.0
LOS by Move:	D		A	D		A	A		A	A		A
HCM2kAvgQ:	3	0	7	0	0	0	0	16	0	0	3	0

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

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #50

Cycle (sec):	100	Critical Vol./Cap.(X):	2.281
Loss Time (sec):	0	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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:	0	0	0 0	1	0	0	0	0	1	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
Added Vol:	0	0	350	0	0	0	0	3299	0	0	10	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	0	350	0	0	0	0	3299	0	0	10	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:	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 Volume:	0	0	350	0	0	0	0	3299	0	0	10	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	350	0	0	0	0	3299	0	0	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:	0	0	350	0	0	0	0	3299	0	0	10	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:	0.00	0.00	1.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Final Sat.:	0	0	1600	0	0	0	0	1600	0	0	1600	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.22	0.00	0.00	0.00	0.00	2.06	0.00	0.00	0.01	0.00
Crit Moves:			****					****		****		

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Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #190

Cycle (sec):	100	Critical Vol./Cap.(X):	0.000
Loss Time (sec):	0	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	0	Level Of Service:	

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
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:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												

Mt SAC
Olympics Trials 30%
PM Peak Hour

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

Intersection #600

Cycle (sec):	100	Critical Vol./Cap.(X):	0.000
Loss Time (sec):	0	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	0	Level Of Service:	

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
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:	0	0	0	0	0	0	0	0	0	0	0	0
Volume Module:												
Base Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Growth Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Initial Bse:	0	0	0	0	0	0	0	0	0	0	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:	0	0	0	0	0	0	0	0	0	0	0	0
User Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PHF Volume:	0	0	0	0	0	0	0	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	0	0	0	0	0	0	0	0	0	0	0
PCE Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MLF Adj:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FinalVolume:	0	0	0	0	0	0	0	0	0	0	0	0
Saturation Flow Module:												
Sat/Lane:	0	0	0	0	0	0	0	0	0	0	0	0
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:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Final Sat.:	0	0	0	0	0	0	0	0	0	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crit Moves:												

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #1 Nogales St / Amar Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.725
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	48	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				Include				Ovl				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	1 0	0	1	0	0	1! 0	0	1	0	2	0 1	1	0	2	1 0
Volume Module:																
Base Vol:	570	9	191		6	3	13		6	1118	481	129	960	12		
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:	570	9	191		6	3	13		6	1118	481	129	960	12		
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:	570	9	191		6	3	13		6	1118	481	129	960	12		
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:	0.97	0.97	0.97		0.97	0.97	0.97		0.97	0.97	0.97	0.97	0.97	0.97		
PHF Volume:	589	9	197		6	3	13		6	1155	497	133	992	12		
Reduct Vol:	0	0	0		0	0	0		0	0	0	0	0	0		
Reduced Vol:	589	9	197		6	3	13		6	1155	497	133	992	12		
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	9	197		6	3	13		6	1155	497	133	992	12		
OvlAdjVol:											198					
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:	1.97	0.03	1.00		0.27	0.14	0.59		1.00	2.00	1.00	1.00	2.96	0.04		
Final Sat.:	3150	50	1600		436	218	945		1600	3200	1600	1600	4741	59		
Capacity Analysis Module:																
Vol/Sat:	0.19	0.19	0.12		0.01	0.01	0.01		0.00	0.36	0.31	0.08	0.21	0.21		
OvlAdjV/S:											0.12					
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #2 Lemon Ave / Amar Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.636
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	39	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				Include				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	1 0	0	1	0	1	0	0	1	0	1	1 0	1	0	2	0 1
Volume Module:																
Base Vol:	254	42	132		17	22	5		19	999	161	107	890	19		
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:	254	42	132		17	22	5		19	999	161	107	890	19		
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:	254	42	132		17	22	5		19	999	161	107	890	19		
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:	258	43	134		17	22	5		19	1016	164	109	905	19		
Reduct Vol:	0	0	0		0	0	0		0	0	0	0	0	0		
Reduced Vol:	258	43	134		17	22	5		19	1016	164	109	905	19		
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:	258	43	134		17	22	5		19	1016	164	109	905	19		
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:	1.72	0.28	1.00		0.44	0.56	1.00		1.00	1.72	0.28	1.00	2.00	1.00		
Final Sat.:	2746	454	1600		697	903	1600		1600	2756	444	1600	3200	1600		
Capacity Analysis Module:																
Vol/Sat:	0.09	0.09	0.08		0.02	0.02	0.00		0.01	0.37	0.37	0.07	0.28	0.01		
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #3 Grand Ave / I-10 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.255
Loss Time (sec):	6	Average Delay (sec/veh):	108.2
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:	Protected			Protected			Split Phase			Split Phase		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	0	1 0	0 1	0	0 1!	0 0
Volume Module:												
Base Vol:	389	1090	34	3	815	385	282	11	117	18	17	6
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:	389	1090	34	3	815	385	282	11	117	18	17	6
Added Vol:	858	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:	1247	1090	34	3	815	385	282	11	117	18	17	6
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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	1321	1155	36	3	863	408	299	12	124	19	18	6
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1321	1155	36	3	863	408	299	12	124	19	18	6
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:	1321	1155	36	3	863	408	299	12	124	19	18	6
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.95	0.95	0.85	0.95	0.95	0.85	0.96	0.96	0.96
Lanes:	1.00	2.00	1.00	1.00	2.00	1.00	0.96	0.04	1.00	0.44	0.41	0.15
Final Sat.:	1805	3610	1615	1805	3610	1615	1745	68	1615	800	756	267
Capacity Analysis Module:												
Vol/Sat:	0.73	0.32	0.02	0.00	0.24	0.25	0.17	0.17	0.08	0.02	0.02	0.02
Crit Moves:	****					****	****				****	
Green/Cycle:	0.58	0.78	0.78	0.00	0.20	0.20	0.14	0.14	0.14	0.02	0.02	0.02
Volume/Cap:	1.25	0.41	0.03	0.41	1.19	1.25	1.25	1.25	0.56	1.25	1.25	1.25
Delay/Veh:	143.3	3.6	2.5	81.4	138	177.3	186.5	186	43.7	287.0	287	287.0
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:	143.3	3.6	2.5	81.4	138	177.3	186.5	186	43.7	287.0	287	287.0
LOS by Move:	F	A	A	F	F	F	F	F	D	F	F	F
HCM2kAvgQ:	71	6	0	0	26	25	20	20	4	4	4	4

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

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Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #4 Grand Ave / I-10 EB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.888
Loss Time (sec):	6	Average Delay (sec/veh):	18.0
Optimal Cycle:	87	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
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 2	0 0	0	0 1	1 0	1	0 1!	0 0	0	0 0	0 0
Volume Module:												
Base Vol:	52	1273	0	0	668	301	301	0	186	0	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:	52	1273	0	0	668	301	301	0	186	0	0	0
Added Vol:	0	858	0	0	0	0	0	0	5	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	52	2131	0	0	668	301	301	0	191	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	55	2260	0	0	708	319	319	0	203	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	55	2260	0	0	708	319	319	0	203	0	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:	55	2260	0	0	708	319	319	0	203	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	1.00	1.00	0.91	0.91	0.91	1.00	0.91	1.00	1.00	1.00
Lanes:	1.00	2.00	0.00	0.00	1.38	0.62	1.44	0.00	0.56	0.00	0.00	0.00
Final Sat.:	1805	3610	0	0	2372	1069	2501	0	971	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.03	0.63	0.00	0.00	0.30	0.30	0.13	0.00	0.21	0.00	0.00	0.00
Crit Moves:		****		****					****			
Green/Cycle:	0.07	0.71	0.00	0.00	0.64	0.64	0.23	0.00	0.23	0.00	0.00	0.00
Volume/Cap:	0.47	0.89	0.00	0.00	0.47	0.47	0.54	0.00	0.89	0.00	0.00	0.00
Delay/Veh:	48.0	15.9	0.0	0.0	9.4	9.4	34.2	0.0	52.3	0.0	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:	48.0	15.9	0.0	0.0	9.4	9.4	34.2	0.0	52.3	0.0	0.0	0.0
LOS by Move:	D	B	A	A	A	A	C	A	D	A	A	A
HCM2kAvgQ:	2	28	0	0	8	8	7	0	14	0	0	0

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

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Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #5 Grand Ave / Cameron Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.913
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	103	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ovl			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:	2 0	2 0	0	0 0	1 1	0	1 0	0 0	1	0 0	0 0	0
Volume Module:												
Base Vol:	418	1243	0	0	808	115	81	0	407	0	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:	418	1243	0	0	808	115	81	0	407	0	0	0
Added Vol:	0	858	0	0	5	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	418	2101	0	0	813	115	81	0	407	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	446	2242	0	0	868	123	86	0	434	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	446	2242	0	0	868	123	86	0	434	0	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:	446	2242	0	0	868	123	86	0	434	0	0	0
OvlAdjVol:									211			
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:	2.00	2.00	0.00	0.00	1.75	0.25	1.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	3200	3200	0	0	2803	397	1600	0	1600	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.14	0.70	0.00	0.00	0.31	0.31	0.05	0.00	0.27	0.00	0.00	0.00
OvlAdjV/S:									0.13			
Crit Moves:		****			****				****			

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #6 Grand Ave / Mountaineer Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.976
Loss Time (sec):	8	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	165	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ovl		
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:	0 0	2 0	1	2 0	2 0	0	0 0	0 0	0	2 0	0 0	2
Volume Module:												
Base Vol:	0	1712	118	106	1120	0	0	0	0	136	0	161
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:	0	1712	118	106	1120	0	0	0	0	136	0	161
Added Vol:	0	391	0	0	5	0	0	0	0	272	0	467
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	2103	118	106	1125	0	0	0	0	408	0	628
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:	0	2207	124	111	1180	0	0	0	0	428	0	659
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	2207	124	111	1180	0	0	0	0	428	0	659
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:	0	2207	124	111	1180	0	0	0	0	428	0	659
OvlAdjVol:												548
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:	0.00	2.00	1.00	2.00	2.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00
Final Sat.:	0	3200	1600	3200	3200	0	0	0	0	3200	0	3200
Capacity Analysis Module:												
Vol/Sat:	0.00	0.69	0.08	0.03	0.37	0.00	0.00	0.00	0.00	0.13	0.00	0.21
OvlAdjV/S:												0.17
Crit Moves:		****			****							****

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #7 Grand Ave / San Jose Hills Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	0.971
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	155	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:	Protected			Protected			Prot+Permit			Prot+Permit		
Rights:	Include			Include			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 2.0	0 1	1	0 2.0	0 1	1	0 0	1 0	1	0 1.0	0 1
Volume Module:												
Base Vol:	80	1628	109	81	1067	96	103	16	113	123	28	98
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:	80	1628	109	81	1067	96	103	16	113	123	28	98
Added Vol:	0	391	0	0	277	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	80	2019	109	81	1344	96	103	16	113	123	28	98
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:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
PHF Volume:	83	2097	113	84	1396	100	107	17	117	128	29	102
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	83	2097	113	84	1396	100	107	17	117	128	29	102
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:	83	2097	113	84	1396	100	107	17	117	128	29	102
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	2.00	1.00	1.00	2.00	1.00	1.00	0.12	0.88	1.00	1.00	1.00
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	198	1402	1600	1600	1600
Capacity Analysis Module:												
Vol/Sat:	0.05	0.66	0.07	0.05	0.44	0.06	0.07	0.08	0.08	0.08	0.02	0.06
Crit Moves:		****		****				****		****		

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #8 Grand Ave / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.101
Loss Time (sec):	10	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:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
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:	2	0 3.0	0 1	2	0 2.0	1 0	2	0 2.0	0 1	2	0 2.0	0 1
Volume Module:												
Base Vol:	327	1150	288	209	832	262	346	651	292	359	659	326
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:	327	1150	288	209	832	262	346	651	292	359	659	326
Added Vol:	0	0	5	5	272	0	0	0	0	870	0	391
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	327	1150	293	214	1104	262	346	651	292	1229	659	717
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	336	1182	301	220	1135	269	356	669	300	1263	677	737
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	336	1182	301	220	1135	269	356	669	300	1263	677	737
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:	336	1182	301	220	1135	269	356	669	300	1263	677	737
OvlAdjVol:			0						132			627
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:	2.00	3.00	1.00	2.00	2.42	0.58	2.00	2.00	1.00	2.00	2.00	1.00
Final Sat.:	3200	4800	1600	3200	3879	921	3200	3200	1600	3200	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.11	0.25	0.19	0.07	0.29	0.29	0.11	0.21	0.19	0.39	0.21	0.46
OvlAdjV/S:			0.00						0.08			0.39
Crit Moves:	****				****			****		****		

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #9 Grand Ave / La Puente Rd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.486
Loss Time (sec):	10	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:	Protected				Protected				Split Phase				Split Phase			
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 2	0	1	1	0 2	0	1	1	1 0	0	1	1	1 0	1	0
Volume Module:																
Base Vol:	233	1535	153		7	1259	190		245	63	350		85	35	12	
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:	233	1535	153		7	1259	190		245	63	350		85	35	12	
Added Vol:	0	5	0		0	1142	0		0	0	222		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	233	1540	153		7	2401	190		245	63	572		85	35	12	
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:	0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92		0.92	0.92	0.92	
PHF Volume:	252	1667	166		8	2598	206		265	68	619		92	38	13	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	252	1667	166		8	2598	206		265	68	619		92	38	13	
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:	252	1667	166		8	2598	206		265	68	619		92	38	13	
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	2.00	1.00		1.00	2.00	1.00		1.59	0.41	1.00		1.94	0.79	0.27	
Final Sat.:	1600	3200	1600		1600	3200	1600		2545	655	1600		3098	1268	434	
Capacity Analysis Module:																
Vol/Sat:	0.16	0.52	0.10		0.00	0.81	0.13		0.10	0.10	0.39		0.03	0.03	0.03	
OvlAdjV/S:							0.00									
Crit Moves:	****					****					****				****	

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #10 Grand Ave / Valley Blvd

Cycle (sec):	100	Critical Vol./Cap.(X):	1.186
Loss Time (sec):	10	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:	Protected				Protected				Protected				Protected			
Rights:	Ignore				Ignore				Ignore				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:	2	0 3	0	1	2	0 3	0	1	2	0 3	0	1	2	0 3	0	1
Volume Module:																
Base Vol:	261	1040	179		385	1042	209		666	1531	287		428	702	244	
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:	261	1040	179		385	1042	209		666	1531	287		428	702	244	
Added Vol:	0	0	0		0	1365	0		5	0	0		0	0	0	
PasserByVol:	0	0	0		0	0	0		0	0	0		0	0	0	
Initial Fut:	261	1040	179		385	2407	209		671	1531	287		428	702	244	
User Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
PHF Adj:	0.95	0.95	0.00		0.95	0.95	0.00		0.95	0.95	0.00		0.95	0.95	0.95	
PHF Volume:	274	1090	0		404	2523	0		703	1605	0		449	736	256	
Reduct Vol:	0	0	0		0	0	0		0	0	0		0	0	0	
Reduced Vol:	274	1090	0		404	2523	0		703	1605	0		449	736	256	
PCE Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
MLF Adj:	1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	0.00		1.00	1.00	1.00	
FinalVolume:	274	1090	0		404	2523	0		703	1605	0		449	736	256	
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:	2.00	3.00	1.00		2.00	3.00	1.00		2.00	3.00	1.00		2.00	3.00	1.00	
Final Sat.:	3200	4800	1600		3200	4800	1600		3200	4800	1600		3200	4800	1600	
Capacity Analysis Module:																
Vol/Sat:	0.09	0.23	0.00		0.13	0.53	0.00		0.22	0.33	0.00		0.14	0.15	0.16	
Crit Moves:	****					****				****			****			

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #11 Grand Ave / Baker Pkwy

Cycle (sec):	100	Critical Vol./Cap.(X):	0.787
Loss Time (sec):	6	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			Ignore			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:	2	0 2	0 0	0	0 3	0 1	2	0 0	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	33	1261	0	0	1567	50	172	0	94	0	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:	33	1261	0	0	1567	50	172	0	94	0	0	0
Added Vol:	0	0	0	0	1365	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	33	1261	0	0	2932	50	172	0	94	0	0	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.00	0.93	0.93	0.93
PHF Volume:	36	1359	0	0	3159	54	185	0	0	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	36	1359	0	0	3159	54	185	0	0	0	0	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	36	1359	0	0	3159	54	185	0	0	0	0	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:	2.00	2.00	0.00	0.00	3.00	1.00	2.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	3200	3200	0	0	4800	1600	3200	0	1600	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.01	0.42	0.00	0.00	0.66	0.03	0.06	0.00	0.00	0.00	0.00	0.00
Crit Moves:	****				****		****					

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #12 Grand Ave / SR-60 WB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	1.087
Loss Time (sec):	10	Average Delay (sec/veh):	46.7
Optimal Cycle:	180	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:	Protected			Protected			Protected			Protected		
Rights:	Ovl			Include			Ovl			Ovl		
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 2	0 1	2	0 1	1 0	1	0 0	1 0	1	0 1!	0 1
Volume Module:												
Base Vol:	1	799	283	610	1382	5	4	2	4	186	1	495
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:	1	799	283	610	1382	5	4	2	4	186	1	495
Added Vol:	0	0	0	964	401	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	799	283	1574	1783	5	4	2	4	186	1	495
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:	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
PHF Volume:	1	891	315	1755	1988	6	4	2	4	207	1	552
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	891	315	1755	1988	6	4	2	4	207	1	552
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:	1	891	315	1755	1988	6	4	2	4	207	1	552
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.95	0.95	0.85	0.92	0.95	0.95	0.95	0.90	0.90	0.88	0.88	0.88
Lanes:	1.00	2.00	1.00	2.00	1.99	0.01	1.00	0.33	0.67	1.27	0.01	1.72
Final Sat.:	1805	3610	1615	3502	3600	10	1805	570	1140	2126	5	2882
Capacity Analysis Module:												
Vol/Sat:	0.00	0.25	0.20	0.50	0.55	0.55	0.00	0.00	0.00	0.10	0.23	0.19
Crit Moves:		****		****			****				****	
Green/Cycle:	0.00	0.23	0.43	0.46	0.69	0.69	0.00	0.01	0.01	0.20	0.21	0.67
Volume/Cap:	0.80	1.09	0.45	1.09	0.80	0.80	1.09	0.48	0.44	0.48	1.09	0.29
Delay/Veh:	574.3	96.4	20.6	76.9	12.9	12.9	533.1	73.0	68.1	35.4	99.6	6.8
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:	574.3	96.4	20.6	76.9	12.9	12.9	533.1	73.0	68.1	35.4	99.6	6.8
LOS by Move:	F	F	C	E	B	B	F	E	E	D	F	A
HCM2kAvgQ:	0	20	7	37	22	22	1	1	1	5	20	4

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

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #13 Grand Ave / SR-60 EB Ramps

Cycle (sec):	100	Critical Vol./Cap.(X):	0.992
Loss Time (sec):	10	Average Delay (sec/veh):	33.9
Optimal Cycle:	180	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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:	0	0 2	0 1	1	0 2	0 0	2	0 0	0 1	0	0 0	0 0
Volume Module:												
Base Vol:	0	933	619	380	1294	0	169	0	176	0	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:	0	933	619	380	1294	0	169	0	176	0	0	0
Added Vol:	0	0	0	253	147	0	0	0	0	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	933	619	633	1441	0	169	0	176	0	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:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	988	656	671	1526	0	179	0	186	0	0	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	0	988	656	671	1526	0	179	0	186	0	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:	0	988	656	671	1526	0	179	0	186	0	0	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	1.00	0.95	0.85	0.95	0.95	1.00	0.92	1.00	0.85	1.00	1.00	1.00
Lanes:	0.00	2.00	1.00	1.00	2.00	0.00	2.00	0.00	1.00	0.00	0.00	0.00
Final Sat.:	0	3610	1615	1805	3610	0	3502	0	1615	0	0	0
Capacity Analysis Module:												
Vol/Sat:	0.00	0.27	0.41	0.37	0.42	0.00	0.05	0.00	0.12	0.00	0.00	0.00
Crit Moves:			****	****					****			
Green/Cycle:	0.00	0.41	0.41	0.37	0.78	0.00	0.12	0.00	0.12	0.00	0.00	0.00
Volume/Cap:	0.00	0.67	0.99	0.99	0.54	0.00	0.44	0.00	0.99	0.00	0.00	0.00
Delay/Veh:	0.0	25.2	62.3	63.7	4.3	0.0	41.9	0.0	107.4	0.0	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:	0.0	25.2	62.3	63.7	4.3	0.0	41.9	0.0	107.4	0.0	0.0	0.0
LOS by Move:	A	C	E	E	A	A	D	A	F	A	A	A
HCM2kAvgQ:	0	14	27	23	9	0	3	0	10	0	0	0

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

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Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #14 Mt SAC Wy / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.974
Loss Time (sec):	10	Average Delay (sec/veh):	xxxxxx
Optimal Cycle:	159	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:	0	1 0	0 1	0	1 0	0 1	1	0 1	1 0	1	0 2	0 1
Volume Module:												
Base Vol:	6	7	1	94	38	102	303	1335	189	42	609	237
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:	6	7	1	94	38	102	303	1335	189	42	609	237
Added Vol:	0	0	0	0	0	0	0	10	0	0	1261	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	6	7	1	94	38	102	303	1345	189	42	1870	237
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:	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
PHF Volume:	6	7	1	95	38	103	306	1360	191	42	1891	240
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	6	7	1	95	38	103	306	1360	191	42	1891	240
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:	6	7	1	95	38	103	306	1360	191	42	1891	240
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:	0.46	0.54	1.00	0.71	0.29	1.00	1.00	1.75	0.25	1.00	2.00	1.00
Final Sat.:	738	862	1600	1139	461	1600	1600	2806	394	1600	3200	1600
Capacity Analysis Module:												
Vol/Sat:	0.01	0.01	0.00	0.08	0.08	0.06	0.19	0.48	0.48	0.03	0.59	0.15
OvlAdjV/S:						0.00						
Crit Moves:	****			****			****			****		

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Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #15 Bonita Ave / Temple Ave

Cycle (sec): 100 Critical Vol./Cap.(X): 1.189
Loss Time (sec): 10 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:	Protected				Protected				Protected				Protected			
Rights:	Include				Ovl				Include				Include			
Min. Green:	0	0	0	0	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	4.0	4.0	4.0	4.0
Lanes:	1	0	1	0 1	2	0	1	0 1	2	0	1	1 0	1	0	2	0 1
Volume Module:																
Base Vol:	103	21	75	151	9	96	153	776	54	31	1097	200				
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:	103	21	75	151	9	96	153	776	54	31	1097	200				
Added Vol:	10	0	15	853	0	608	0	0	10	15	643	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	113	21	90	1004	9	704	153	776	64	46	1740	200				
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97				
PHF Volume:	117	22	93	1037	9	727	158	802	66	48	1798	207				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
Reduced Vol:	117	22	93	1037	9	727	158	802	66	48	1798	207				
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:	117	22	93	1037	9	727	158	802	66	48	1798	207				
OvlAdjVol:						648										
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	2.00	1.00	1.00	2.00	1.85	0.15	1.00	2.00	1.00				
Final Sat.:	1600	1600	1600	3200	1600	1600	3200	2956	244	1600	3200	1600				
Capacity Analysis Module:																
Vol/Sat:	0.07	0.01	0.06	0.32	0.01	0.45	0.05	0.27	0.27	0.03	0.56	0.13				
OvlAdjV/S:						0.41										
Crit Moves:	****					****	****				****					

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #16 Lot F / Temple Ave

Average Delay (sec/veh): 63.3 Worst Case Level Of Service: F[379.3]

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				Uncontrolled				Uncontrolled			
Rights:	Include				Include				Include				Include			
Lanes:	0	0	1! 0	0	0	0	0	0 1	1	0	1	1 0	1	0	2	0 1
Volume Module:																
Base Vol:	0	0	0	0	0	0	0	1029	0	0	1282	14				
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:	0	0	0	0	0	0	0	1029	0	0	1282	14				
Added Vol:	0	0	0	0	0	643	0	868	0	0	15	0				
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0				
Initial Fut:	0	0	0	0	0	643	0	1897	0	0	1297	14				
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:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93				
PHF Volume:	0	0	0	0	0	688	0	2031	0	0	1389	15				
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0				
FinalVolume:	0	0	0	0	0	688	0	2031	0	0	1389	15				
Critical Gap Module:																
Critical Gp:	7.5	6.5	6.9	xxxxx	xxxx	6.9	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
FollowUpTim:	3.5	4.0	3.3	xxxxx	xxxx	3.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Capacity Module:																
Cnflict Vol:	2725	3435	1016	xxxx	xxxx	694	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Potent Cap.:	10	7	239	xxxx	xxxx	390	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Move Cap.:	0	7	239	xxxx	xxxx	390	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Volume/Cap:	xxxx	0.00	0.00	xxxx	xxxx	1.77	xxxx	xxxx	xxxx	xxxx	xxxx	xxxx				
Level Of Service Module:																
2Way95thQ:	xxxx	xxxx	xxxxx	xxxx	xxxx	43.3	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
Control Del:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	379.3	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
LOS by Move:	*	*	*	*	*	F	*	*	*	*	*	*				
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT				
Shared Cap.:	xxxx	0	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx				
SharedQueue:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shrd ConDel:	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx				
Shared LOS:	*	*	*	*	*	*	*	*	*	*	*	*				
ApproachDel:	xxxxxx			379.3			xxxxxx			xxxxxx						
ApproachLOS:	*			F			*			*						

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

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #17 Valley Blvd / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.165
Loss Time (sec):	10	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:	Protected			Protected			Protected			Protected		
Rights:	Include			Include			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 2	0 1	1	0 2	0 1	1	0 2	1 0	1	0 2	1 0
Volume Module:												
Base Vol:	234	775	63	160	550	158	163	963	214	84	684	112
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:	234	775	63	160	550	158	163	963	214	84	684	112
Added Vol:	0	0	0	0	0	0	0	1863	0	0	10	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	234	775	63	160	550	158	163	2826	214	84	694	112
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:	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
PHF Volume:	242	803	65	166	570	164	169	2928	222	87	719	116
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	242	803	65	166	570	164	169	2928	222	87	719	116
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:	242	803	65	166	570	164	169	2928	222	87	719	116
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	2.00	1.00	1.00	2.00	1.00	1.00	2.79	0.21	1.00	2.58	0.42
Final Sat.:	1600	3200	1600	1600	3200	1600	1600	4462	338	1600	4133	667
Capacity Analysis Module:												
Vol/Sat:	0.15	0.25	0.04	0.10	0.18	0.10	0.11	0.66	0.66	0.05	0.17	0.17
Crit Moves:		****			****			****			****	

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #18 SR-57 SB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	1.279
Loss Time (sec):	6	Average Delay (sec/veh):	107.2
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:	Permitted			Protected			Protected			Protected		
Rights:	Include			Include			Include			Ignore		
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:	0	0 1!	0 0	1	0 1!	0 1	0	0 2	1 0	1	0 3	0 1
Volume Module:												
Base Vol:	1	0	83	923	12	536	0	1796	72	18	576	116
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:	1	0	83	923	12	536	0	1796	72	18	576	116
Added Vol:	0	0	0	0	0	5	0	1863	0	0	5	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	1	0	83	923	12	541	0	3659	72	18	581	116
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00
PHF Volume:	1	0	86	957	12	561	0	3796	75	19	603	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	1	0	86	957	12	561	0	3796	75	19	603	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	0.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
FinalVolume:	1	0	86	957	12	561	0	3796	75	19	603	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.87	1.00	0.87	0.92	0.92	0.92	1.00	0.91	0.91	0.95	0.91	1.00
Lanes:	0.01	0.00	0.99	1.62	0.02	1.36	0.00	2.94	0.06	1.00	3.00	1.00
Final Sat.:	20	0	1628	2822	28	2375	0	5072	100	1805	5187	1900
Capacity Analysis Module:												
Vol/Sat:	0.05	0.00	0.05	0.34	0.44	0.24	0.00	0.75	0.75	0.01	0.12	0.00
Crit Moves:					****			****		****		
Green/Cycle:	0.00	0.00	0.00	0.35	0.35	0.35	0.00	0.59	0.59	0.01	0.59	0.00
Volume/Cap:	xxxx	0.00	xxxx	0.98	1.28	0.68	0.00	1.28	1.28	1.28	0.20	0.00
Delay/Veh:	0.0	0.0	0.0	50.2	165	28.8	0.0	149	148.8	385.2	9.4	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:	0.0	0.0	0.0	50.2	165	28.8	0.0	149	148.8	385.2	9.4	0.0
LOS by Move:	A	A	A	D	F	C	A	F	F	F	A	A
HCM2kAvgQ:	2	0	2	36	2	15	0	78	78	2	3	0

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

Mt SAC
Olympics Trials Alt 3
PM Peak Hour

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

Intersection #19 SR-57 NB Ramps / Temple Ave

Cycle (sec):	100	Critical Vol./Cap.(X):	0.582
Loss Time (sec):	6	Average Delay (sec/veh):	8.7
Optimal Cycle:	32	Level Of Service:	A

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			Permitted			Permitted		
Rights:	Include			Include			Ignore			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! 0 1	0	0	0 0 0	1	0	2 1 1	0	0	3 0 0
Volume Module:												
Base Vol:	123	0	289	0	0	0	0	2097	621	0	969	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:	123	0	289	0	0	0	0	2097	621	0	969	0
Added Vol:	5	0	0	0	0	0	0	100	831	0	0	0
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	128	0	289	0	0	0	0	2197	1452	0	969	0
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
PHF Adj:	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.00	0.96	0.96	0.96
PHF Volume:	133	0	301	0	0	0	0	2286	0	0	1008	0
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
Reduced Vol:	133	0	301	0	0	0	0	2286	0	0	1008	0
PCE Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
MLF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00
FinalVolume:	133	0	301	0	0	0	0	2286	0	0	1008	0
Saturation Flow Module:												
Sat/Lane:	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Adjustment:	0.88	1.00	0.88	1.00	1.00	1.00	1.00	0.91	0.91	1.00	0.91	1.00
Lanes:	1.31	0.00	1.69	0.00	0.00	0.00	1.00	3.00	1.00	0.00	3.00	0.00
Final Sat.:	2192	0	2839	0	0	0	1900	5187	1729	0	5187	0
Capacity Analysis Module:												
Vol/Sat:	0.06	0.00	0.11	0.00	0.00	0.00	0.00	0.44	0.00	0.00	0.19	0.00
Crit Moves:			****					****				
Green/Cycle:	0.18	0.00	0.18	0.00	0.00	0.00	0.00	0.76	0.00	0.00	0.76	0.00
Volume/Cap:	0.33	0.00	0.58	0.00	0.00	0.00	0.00	0.58	0.00	0.00	0.26	0.00
Delay/Veh:	35.8	0.0	38.6	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.7	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:	35.8	0.0	38.6	0.0	0.0	0.0	0.0	5.5	0.0	0.0	3.7	0.0
LOS by Move:	D	A	D	A	A	A	A	A	A	A	A	A
HCM2kAvgQ:	3	0	6	0	0	0	0	11	0	0	3	0

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

Traffix 8.0.0715 (c) 2008 Dowling Assoc. Licensed to MMA, LONG BEACH, CA

timeanddate.com

Calendar for year 2020 (United States)

January

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

◐: 2 ○: 10 ◑: 17 ●: 24

February

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2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

◐: 1 ○: 9 ◑: 15 ●: 23

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
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April

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19	20	21	22	23	24	25
26	27	28	29	30		

◐: 1 ○: 7 ◑: 14 ●: 22 ◐: 30

May

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24	25	26	27	28	29	30
31						

○: 7 ◑: 14 ●: 22 ◐: 29

June

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7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

○: 5 ◑: 13 ●: 21 ◐: 28

July

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

○: 5 ◑: 12 ●: 20 ◐: 27

August

S	M	T	W	T	F	S
						1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

○: 3 ◑: 11 ●: 18 ◐: 25

September

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
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20	21	22	23	24	25	26
27	28	29	30			

○: 2 ◑: 10 ●: 17 ◐: 23

October

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				1	2	3
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11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

○: 1 ◑: 9 ●: 16 ◐: 23 ○: 31

November

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22	23	24	25	26	27	28
29	30					

◑: 8 ●: 15 ◐: 21 ○: 30

December

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20	21	22	23	24	25	26
27	28	29	30	31		

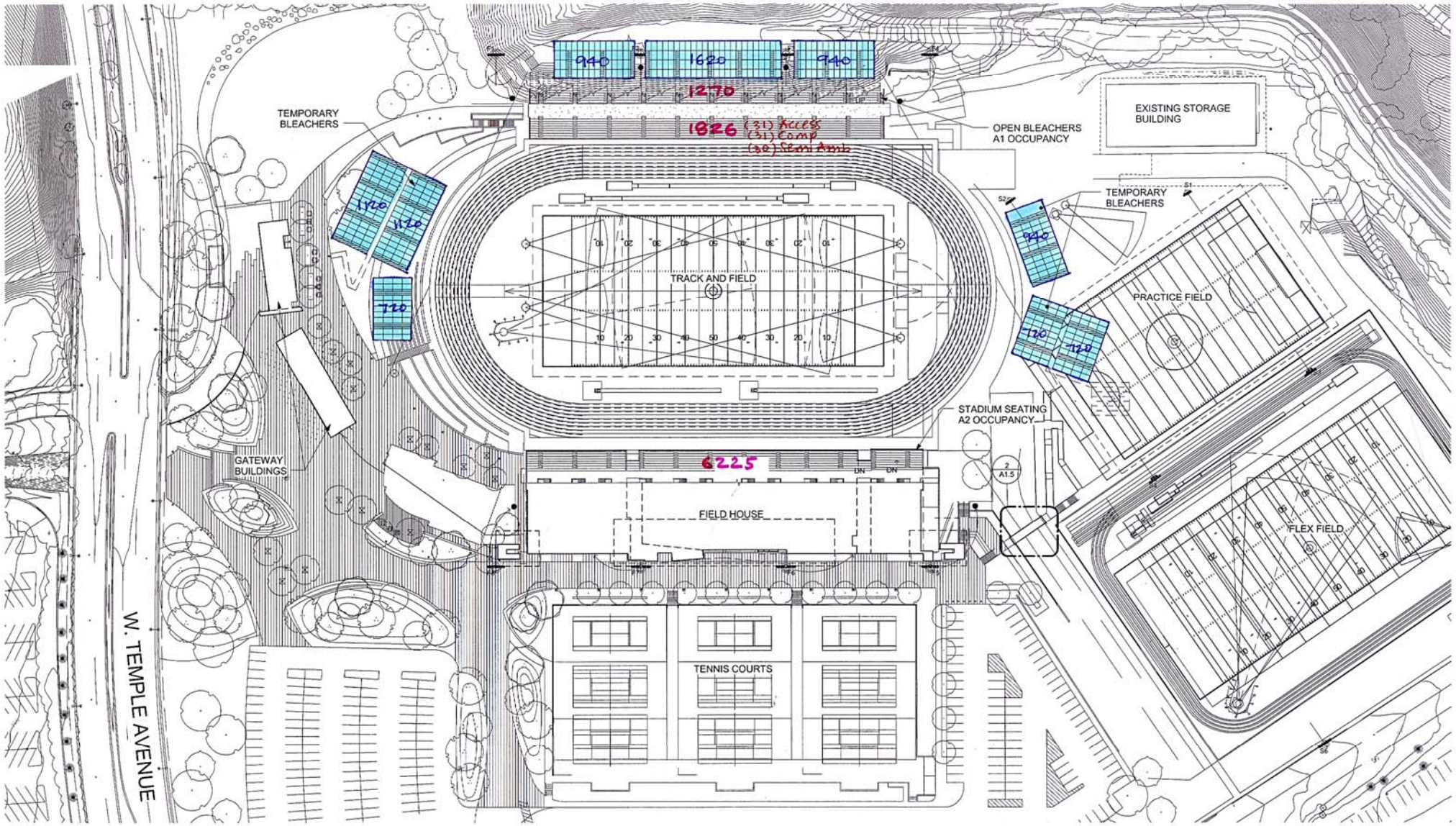
◑: 7 ●: 14 ◐: 21 ○: 29

Jan 1	New Year's Day	May 25	Memorial Day	Nov 3	Election Day
Jan 20	Martin Luther King Day	Jun 21	Father's Day	Nov 11	Veterans Day
Feb 14	Valentine's Day	Jul 3	'Independence Day' observed	Nov 26	Thanksgiving Day
Feb 17	Presidents' Day	Jul 4	Independence Day	Dec 24	Christmas Eve
Apr 12	Easter Sunday	Sep 7	Labor Day	Dec 25	Christmas Day
Apr 13	Thomas Jefferson's Birthday	Oct 12	Columbus Day	Dec 31	New Year's Eve
May 10	Mother's Day	Oct 31	Halloween		

Permanent 1270 + 1826 + 6225 = 9,321

Temporary 8,840

Total 18,161



ACADEMIC CALENDAR 2015–16

Board Approved 5.14.14

August 2015

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						1
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9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September 2015

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20	21	22	23	24	25	26
27	28	29	30			

October 2015

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18	19	20	21	22	23	24
25	26	27	28	29	30	31

November 2015

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15	16	17	18	19	20	21
22	23	24	25	26•	27	28
29	30					

*can be 11/9, 11/11, or 11/13

December 2015

S	M	T	W	T	F	S
		1	2	3	4	5
6	***7***	***8***	***9***	***10***	***11***	***12***
13	14	15	16	17	18	19
20	21	22	23	24	25•	26
27	28	29	30	31		

January 2016

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17	18•	19	20	21	22	23
24	25	26	27	28	29	30
31						

February 2016

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7	8	9	10	11	12•	13
14	15•	16	17	18	19	20
21	22	23	24	25	26	27
28	29					

March 2016

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6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31•		

April 2016

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					1	2
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10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

May 2016

S	M	T	W	T	F	S
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8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30•	31				

June 2016

S	M	T	W	T	F	S
			1	2	3	4
5	***6***	***7***	***8***	***9***	***10***	***11***
12	13	14	*15*	*16*	*17*	*18*
19	20	21	22	23	24	25
26	27	28	29	30		

July 2016

S	M	T	W	T	F	S
					1	2
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17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August 2016

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

LEGEND

	Fall Semester 2015 (16 weeks)
	Winter Intersession 2016 (6 weeks)
	Spring Semester 2016 (16 weeks)
	Summer Intersession 2016 (6 weeks)
•	Holiday for Classified and 12-month Contractual Employees^
	Classes not in session
#	Finals (italicized date, underlined)
	Commencement
	Flex Days (tentative)
	Start of Fall Semester 2016 (tentative)

(^Note: Classified holidays not yet negotiated)

To: Mike Klein – Mt. San Antonio College
Cc: Sidney Lindmark, AICP – Mt SAC Environmental Consultant

From: Alysen Weiland, PE - Psomas

Date: May 6, 2016

Subject: Mt. San Antonio College- Measure RR Updated Hydrology Study

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As part of the campuswide stormwater analysis, Psomas has prepared a concept level hydrology study to reflect the Mount San Antonio College (Mt. SAC) Measure RR built-out condition.

Mt. SAC's diverse uses include general college buildings, agricultural facilities and athletic facilities. Psomas has reviewed and incorporated the Measure RR project site and grading plans for the following projects either under construction or in design:

1. Food Services Building (complete)
2. Physical Education Project – Phase 1 (currently under DSA review)
3. Building 12 (complete)
4. Building 4 (complete)
5. Building 46 (complete)
6. Parking Lot M (currently under construction)
7. Major Grading (Athletic Complex Hill) (Complete)
8. Business and Computer Technology Center (currently under construction)
9. Student Success Center (complete)
10. Design Technology Center (complete)

The site conditions consist of approximately 60 buildings, parking lots, roads, a new athletic complex (Physical Education Project – Phase 1), and undeveloped hill terrain, all spread across 300 acres. The site varies in slope from 1% to 13%. Elevation ranges from approximately 850 to 660 feet above mean sea level. In the existing condition storm water runoff predominantly drains to the south west and is gathered by multiple storm drains catch basins/inlets and collected into 5 main public storm drain lines that ultimately discharge out into two creeks. The project site is located on Los Angeles County's San Dimas isohyet map. The 50-year, 24-hour isohyet is 6.9 in, (See Appendix A). The site's soil type is identified as Type 2, 16, 17 (see Appendix A).

METHODOLOGY

Drainage calculations follow the methodology outlined in the Los Angeles County Department of Public Works Hydrology Manual. The Rational Method was used in this study to determine on-site flows using the County provided HydroCalc program. As described in the Hydrology Manual for Los Angeles County, discharge was computed using the following steps.

1. On-site drainage areas were determined by a review of the topographic information.

2. Rainfall data was determined using the LACDPW Isohyetal Maps for a 50-Year 24-Hour storm (see Appendix A).
3. Soils data was found for the project site. (Appendix A)
4. The Los Angeles County Department of Public Works HydroCalc computer program was used for Modified Rational Method calculations to find values for Time of Concentration, Intensity (see Appendix B).
5. Flows were calculated for each drainage area using Q = CiA

   Where:

   Q is the design runoff (cfs)

   C is the runoff coefficient

   I is the intensity (in/hr)

   A is the drainage area (ac)

MEASURE RR CONCEPT HYDROLOGY ANALYSIS

The hydrologic analysis was performed by studying five major areas within the project site. Within Mt Sac, there are four existing public storm drain line and a creek that serve as 5 major discharge points. The areas were determined by dividing the project site into its own individual section according to which public storm drain line (A, B, C, D) the rainfall was discharging into. The 4 public storm drain lines and snow creek are identified in the Hydrology Map.

The 5 areas were then sub-divided to study flow paths lengths and flow path slopes. The average imperviousness (C-value) was determined for each sub-drainage area and from all of the values that were obtained we determined an accurate discharge values using HydroCalc.

The following table and attached Exhibit 2 summarize the results of the Measure RR 25-year hydrology analysis.

Table 1 – Measure RR 25-Year Overall Hydrology Summary

Sub-Area	Area (AC)	Length (ft)	Slope (ft/ft)	C	Tc (min)	Q (cfs)
1-A	12.8	2723	0.024	0.85	17	22.9
1-B	2.9	622	0.068	0.91	6	8.6
1-C	4.9	783	0.045	0.85	7	13.5
1-D	6.9	776	0.036	0.85	7	19.0
1-E	5.6	708	0.03	0.85	7	15.4
Subarea 1 Total	**33.1**	-	-	-	-	**79.4**
2-A	8.2	1013	0.007	0.91	11	18.4
2-B	3.3	639	0.033	0.91	6	9.9
2-C	3.4	708	0.011	0.91	8	8.9
Subarea 2 Total	**14.9**	-	-	-	-	**37.2**
3-A	27.3	2575	0.043	0.85	15	51.9
3-B	26.2	1875	0.059	0.85	12	55.5
3-C	5.8	1313	0.045	0.85	10	13.4
3-D	4.1	1741	0.013	0.85	15	7.8
Subarea 3 Total	**63.4**	-	-	-	-	**128.6**
4-A	8.1	861	0.037	0.91	8	21.1
4-B	6.2	1465	0.043	0.91	10	14.5
4-C	4.8	1035	0.044	0.85	8	12.5
4-D	14.5	1812	0.012	0.66	15	27.6
4-E	23.2	1540	0.014	0.42	13	46.7
4-F	20.9	1929	0.016	0.66	15	39.7
4-G	9.1	1138	0.13	0.25	7	24.9
4-H	16	1648	0.092	0.25	10	36.5
4-I	12.7	783	0.05	0.89	7	34.9
4-J	2.8	1716	0.012	0.85	15	5.4
Subarea 4 Total	**118.3**	-	-	-	-	**263.8**
5-A	32.1	2386	0.017	0.42	17	56.5
5-B	7.8	1074	0.022	0.25	10	18.0
5-C	4.6	1096	0.018	0.25	10	10.6
5-D	10.5	1448	0.039	0.25	11	22.8
5-E	6.3	975	0.010	0.58	11	13.9
5-F	11.5	1235	0.010	0.58	12	24.3
5-G	2.8	600	0.020	0.85	7	7.8
Subarea 5 Total	**75.6**	-	-	-	-	**153.9**

HYDROLOGY COMPARISON

A hydrology comparison between the 2012 Utility Infrastructure Master Plan and the Measure RR build out can be found in the following table.

Table 2 – Hydrology Comparison Between 2012 Utility Infrastructure Master Plan Conditions and Measure RR Build Out Conditions

	Utility Infrastructure Master Plan 2012		Measure RR		Difference		Percent Change	
Line	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)	Area (Ac)	Q25 (cfs)
LINE A	215	439.3	220.5	506.8	5.5	67.5	2.6%	15.4%
LINE B	88.1	169.5	89.7	171.7	1.6	2.2	1.8%	1.3%
LINE C	15.1	34.9	14.9	37.2	-0.2	2.3	-1.3%	6.6%
LINE D	32.6	54.6	33.1	79.4	0.5	24.8	1.5%	45.4%
Total	350.8	698.3	358.2	795.1	7.4	96.8	2.1%	13.9%

A detailed breakdown of the hydrology comparison can be found in Appendix C. Reference Exhibits 1, 2, and 3 for the corresponding Hydrology Maps.

The calculations show that the areas tributary to Line A and Line D have the greatest increase in the 25-year storm flows.

Line A

The subareas 1-A, 11-B, and 4-C from the Utility Infrastructure Master Plan showed the largest increase in the 25-Year design frequency flow rates (Q25) from tributary Measure RR and Farm Precinct subareas. However, no new development occurred in these areas between 2012 and Measure RR Conditions. The differences may be derived from varying hydrology methods, including different subareas sizes and boundaries between the two studies (e.g. Measure RR and Farm Precinct studies included additional subareas).

Line D

The Utility Infrastructure Master Plan subarea 1-A showed the greatest increase in Q25 the most when compared to the Measure RR analysis. The Food Services building is the only Measure RR new development in this area and should not have increased the runoff volume by the amount indicated in the calculations. The difference may have to do with varying hydrology methods, including increased subareas between the studies (e.g. Measure RR study included additional subareas.)

For the purpose of the Mt. SAC Supplemental Environmental Impact Report (SEIR), it may be helpful to analyze the difference in conditions within these subareas in order to provide site specific hydrology analysis for the 2012 conditions using the same subareas and methodology as was employed for the Measure RR conditions study.

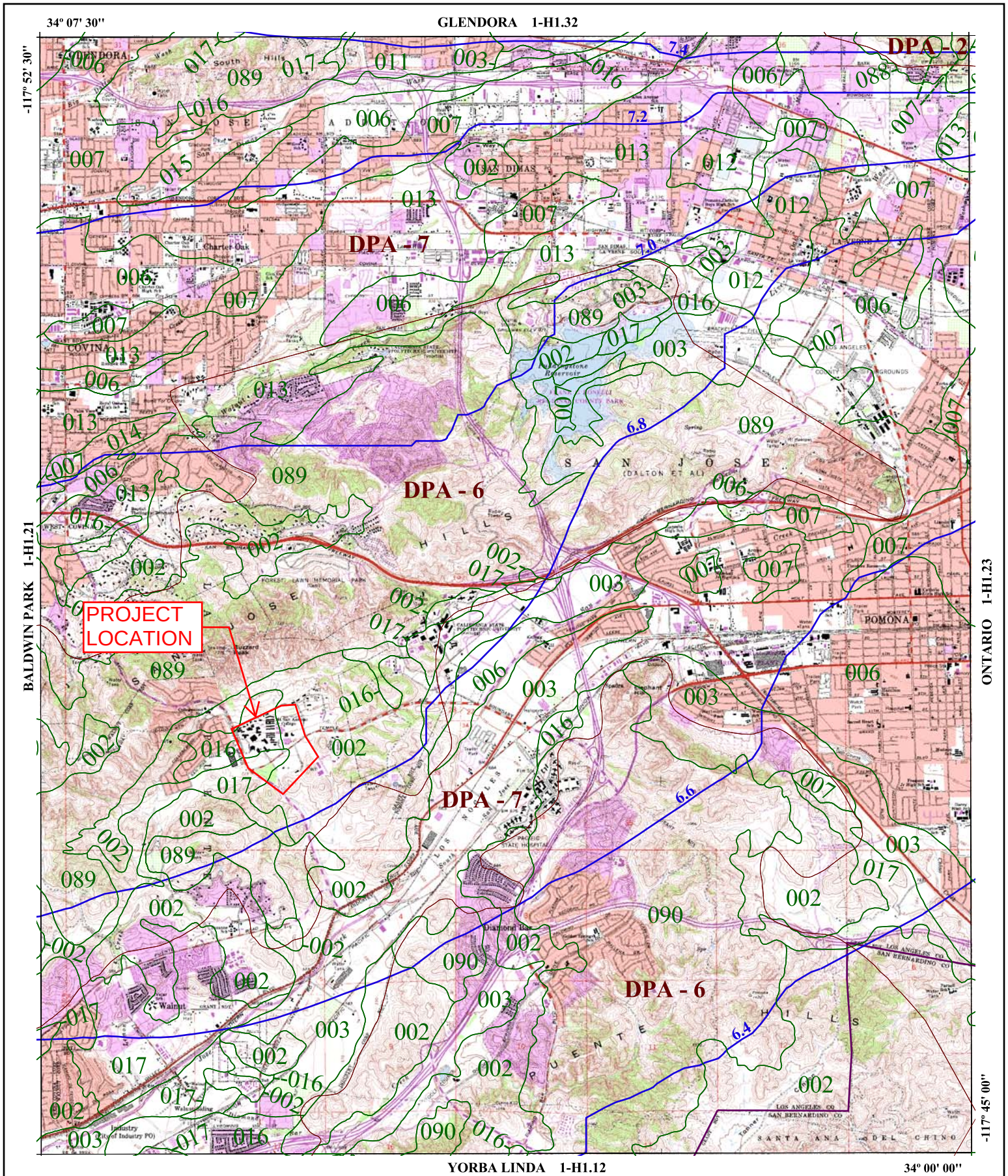
IMPERVIOUS AREA

At completion of the Measure RR implementation, the impervious area is expected to increase by approximately 20 acres, which is roughly 5% of the entire campus, including the Farm Precinct. A majority of the increase of impervious area is a result of Parking Lot M and the Physical Education Project – Phase 1, as shown in the following table.

	Building Name	Area (acres)	Difference in Impervious Area (Acres)
1.	Food Service	1.50	0.68
2.	Physical Education Project Phase 1	32.62	9.79
3.	Building 12	2.61	0.26
4.	Building 4	0.94	0.08
5.	Building 46	0.90	0.00
6.	Parking Lot M	9.43	8.68
7.	Major Grading (Athletic Complex Hill)	24.00	0.00
8.	Business and Computer Technology Center	5.76	0.58
9.	Student Success Center	0.92	-0.29
10.	Design Technology Center	1.70	0.00
	Total		**19.76**

APPENDIX A

Appendix A – LACDPW Isohyet/25-Year 24-hr Rainfall/Soils Information



016 SOIL CLASSIFICATION AREA

7.2 INCHES OF RAINFALL

DPA - 6 DEBRIS POTENTIAL AREA

N W E S

1 0 1 2 Miles

25-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.878
10-YEAR 24-HOUR ISOHYET REDUCTION FACTOR: 0.714

SAN DIMAS
50-YEAR 24-HOUR ISOHYET

1-H1.22

LOS ANGELES COUNTY PUBLIC WORKS Public Service That Works

APPENDIX B

Appendix B – Overall Existing Hydrology Results and Hydrographs

Peak Flow Hydrologic Analysis

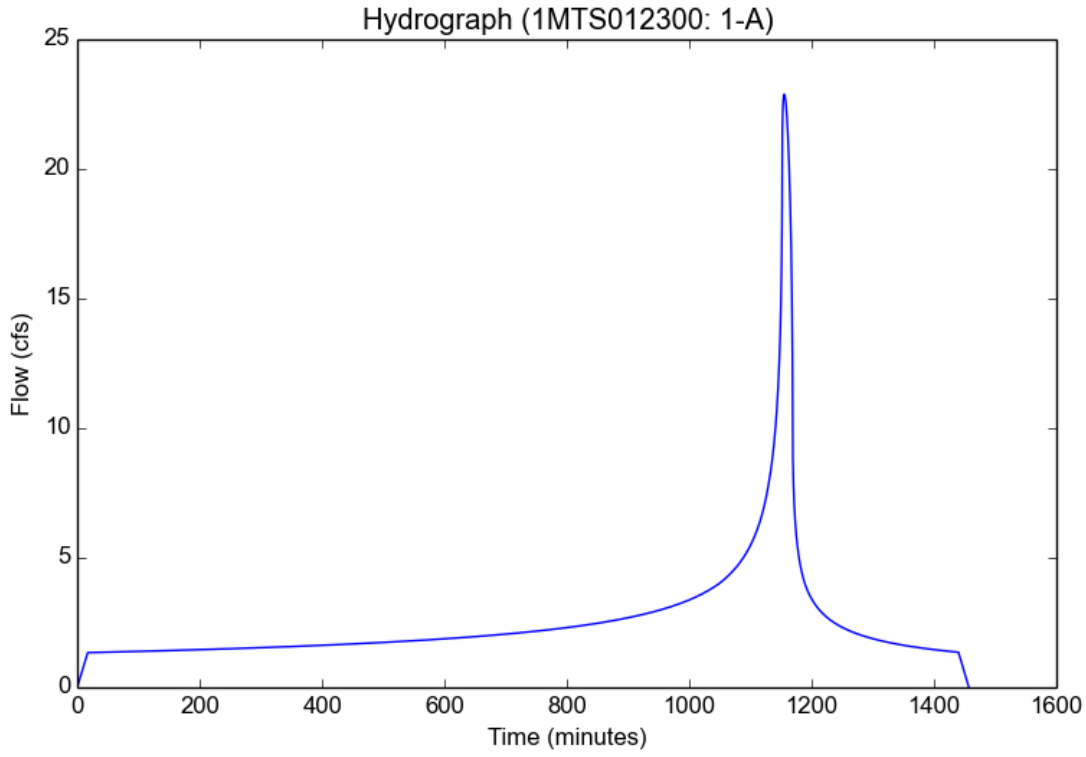
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-A
Area (ac)	12.8
Flow Path Length (ft)	2723.0
Flow Path Slope (vft/hft)	0.024
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.0335
Undeveloped Runoff Coefficient (Cu)	0.7609
Developed Runoff Coefficient (Cd)	0.8791
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	22.8833
Burned Peak Flow Rate (cfs)	22.8833
24-Hr Clear Runoff Volume (ac-ft)	5.0934
24-Hr Clear Runoff Volume (cu-ft)	221869.8211



Peak Flow Hydrologic Analysis

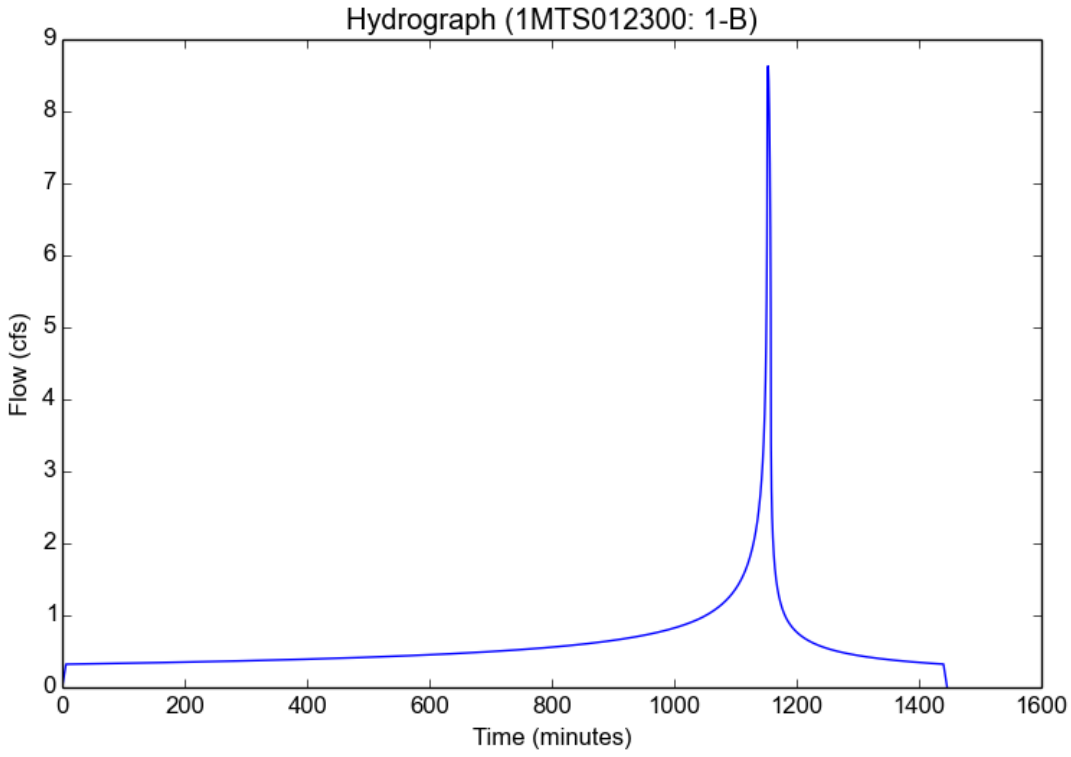
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-B
Area (ac)	2.9
Flow Path Length (ft)	622.0
Flow Path Slope (vft/hft)	0.068
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.3177
Undeveloped Runoff Coefficient (Cu)	0.8657
Developed Runoff Coefficient (Cd)	0.8969
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	8.6294
Burned Peak Flow Rate (cfs)	8.6294
24-Hr Clear Runoff Volume (ac-ft)	1.2153
24-Hr Clear Runoff Volume (cu-ft)	52938.7926



Peak Flow Hydrologic Analysis

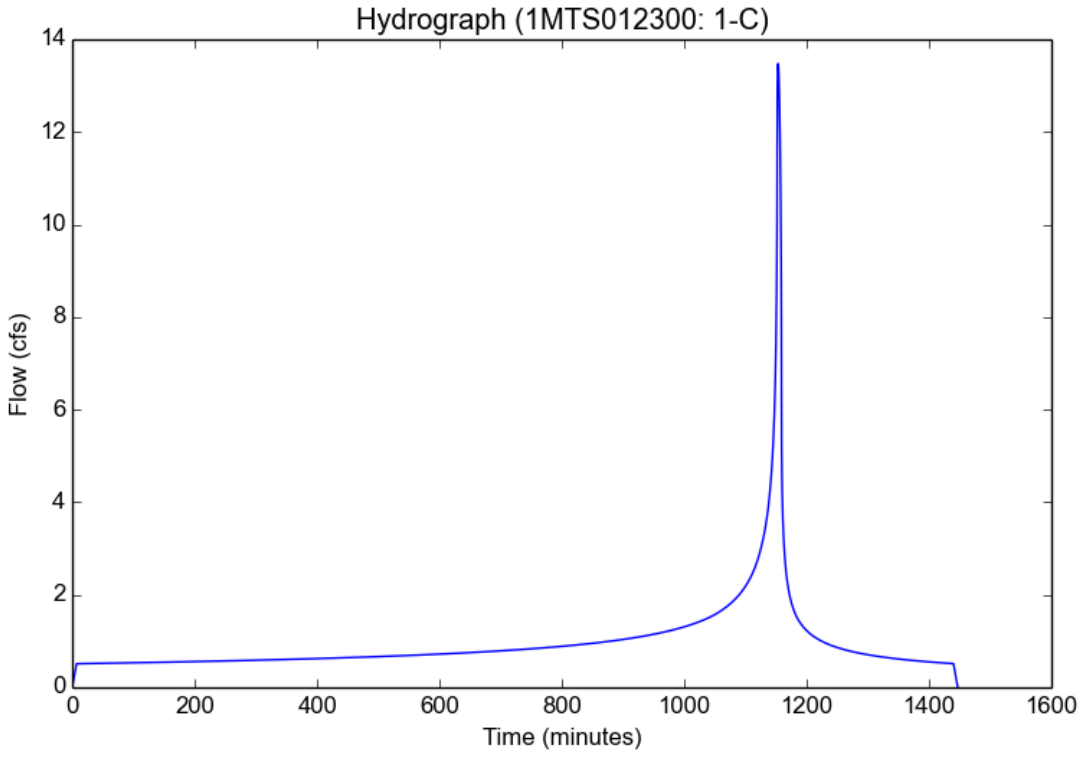
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-C
Area (ac)	4.89
Flow Path Length (ft)	783.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	13.476
Burned Peak Flow Rate (cfs)	13.476
24-Hr Clear Runoff Volume (ac-ft)	1.9464
24-Hr Clear Runoff Volume (cu-ft)	84785.4708



Peak Flow Hydrologic Analysis

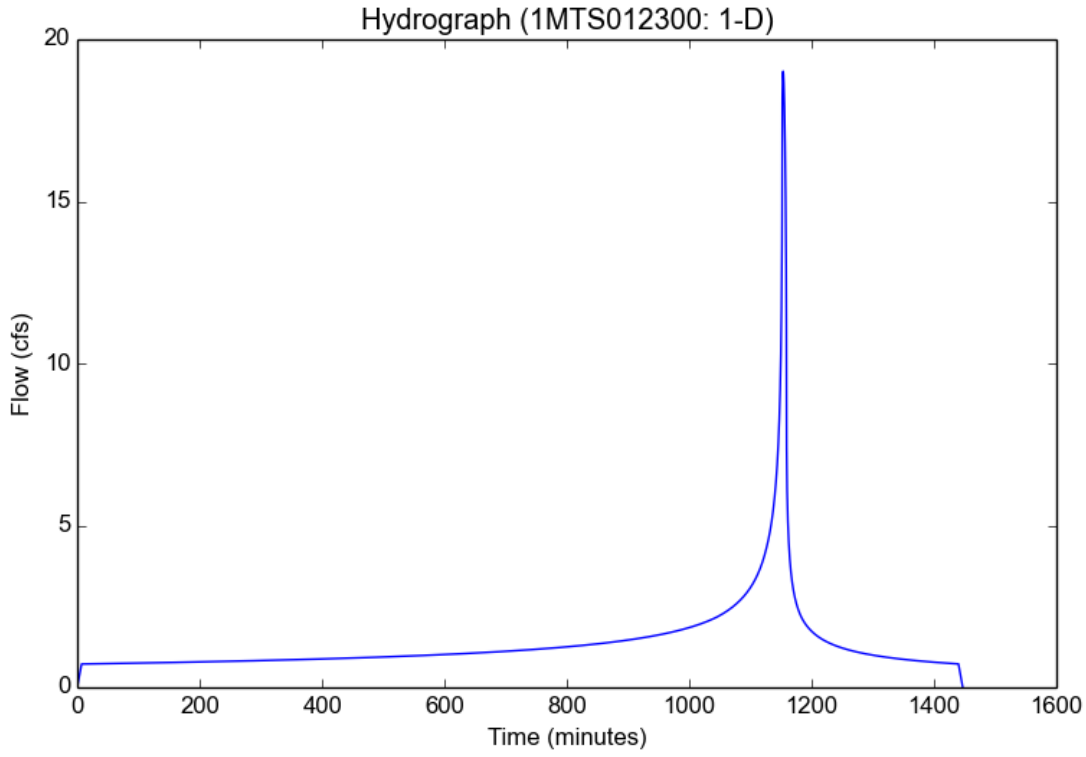
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-D
Area (ac)	6.9
Flow Path Length (ft)	776.0
Flow Path Slope (vft/hft)	0.036
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	19.0152
Burned Peak Flow Rate (cfs)	19.0152
24-Hr Clear Runoff Volume (ac-ft)	2.7465
24-Hr Clear Runoff Volume (cu-ft)	119635.9404



Peak Flow Hydrologic Analysis

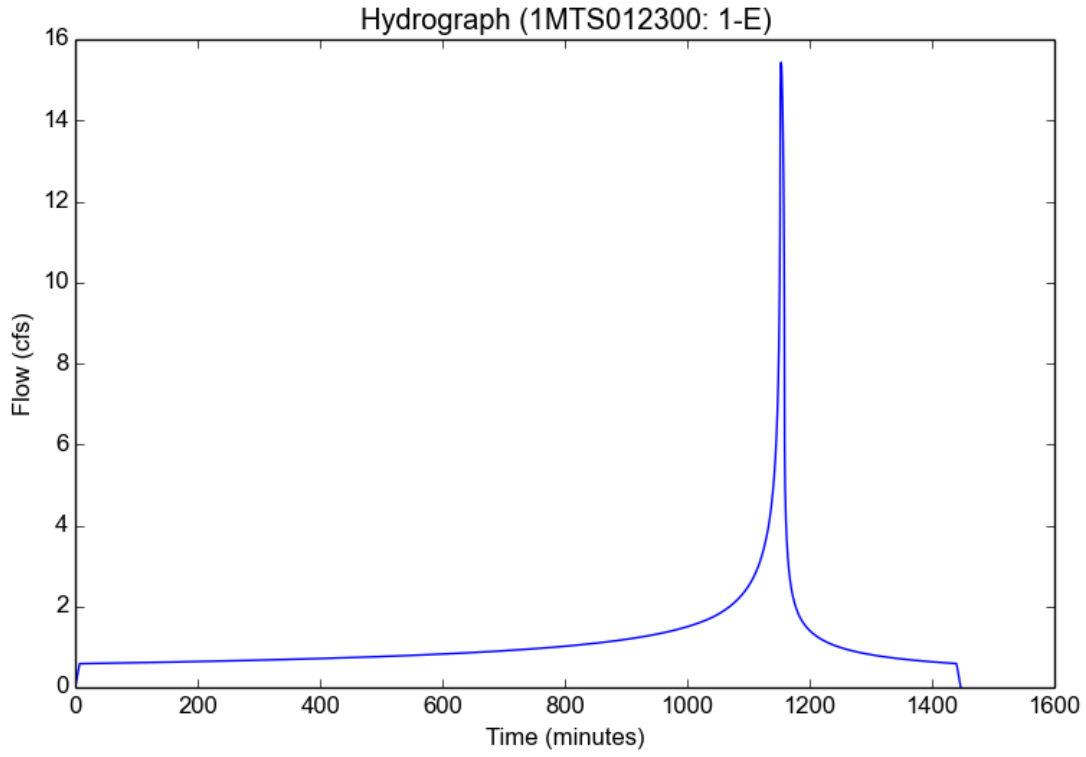
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 1-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	1-E
Area (ac)	5.6
Flow Path Length (ft)	708.0
Flow Path Slope (vft/hft)	0.03
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8538
Developed Runoff Coefficient (Cd)	0.8931
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	15.4326
Burned Peak Flow Rate (cfs)	15.4326
24-Hr Clear Runoff Volume (ac-ft)	2.229
24-Hr Clear Runoff Volume (cu-ft)	97095.8357



Peak Flow Hydrologic Analysis

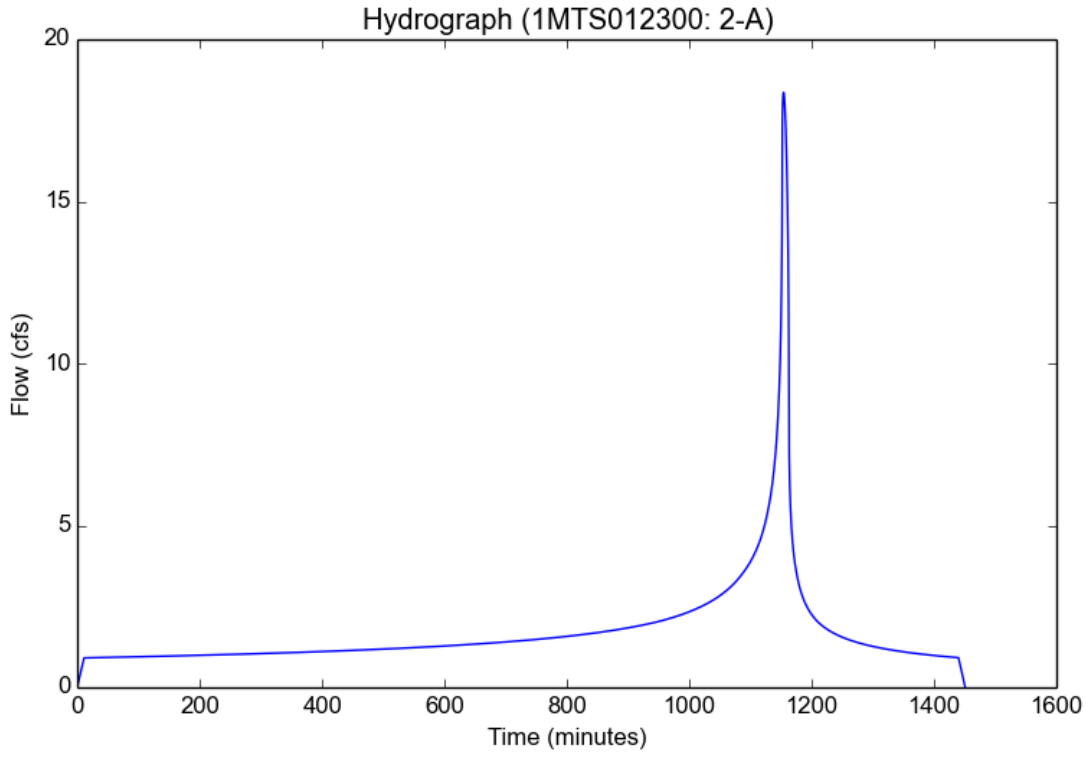
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 2-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-A
Area (ac)	8.2
Flow Path Length (ft)	1013.0
Flow Path Slope (vft/hft)	0.007
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8731
Developed Runoff Coefficient (Cd)	0.8976
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	18.3651
Burned Peak Flow Rate (cfs)	18.3651
24-Hr Clear Runoff Volume (ac-ft)	3.4584
24-Hr Clear Runoff Volume (cu-ft)	150646.0569



Peak Flow Hydrologic Analysis

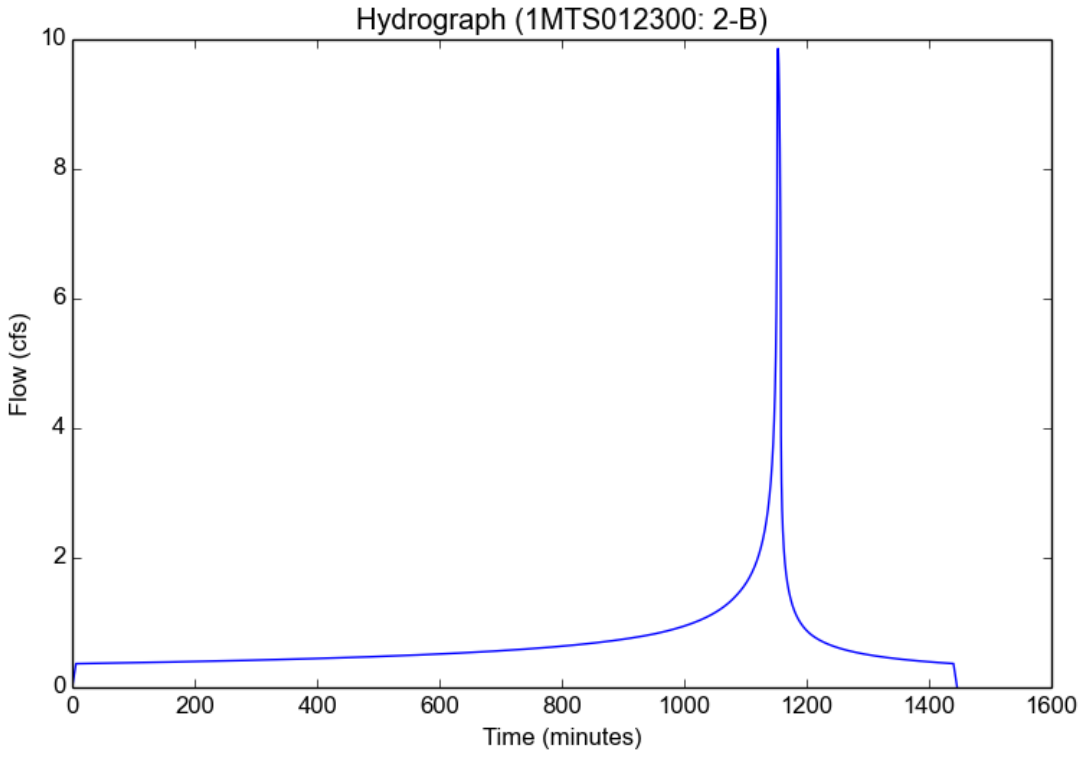
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 2-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-B
Area (ac)	3.3
Flow Path Length (ft)	639.0
Flow Path Slope (vft/hft)	0.033
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.3177
Undeveloped Runoff Coefficient (Cu)	0.9047
Developed Runoff Coefficient (Cd)	0.9004
Time of Concentration (min)	6.0
Clear Peak Flow Rate (cfs)	9.8581
Burned Peak Flow Rate (cfs)	9.8581
24-Hr Clear Runoff Volume (ac-ft)	1.3918
24-Hr Clear Runoff Volume (cu-ft)	60626.9239



Peak Flow Hydrologic Analysis

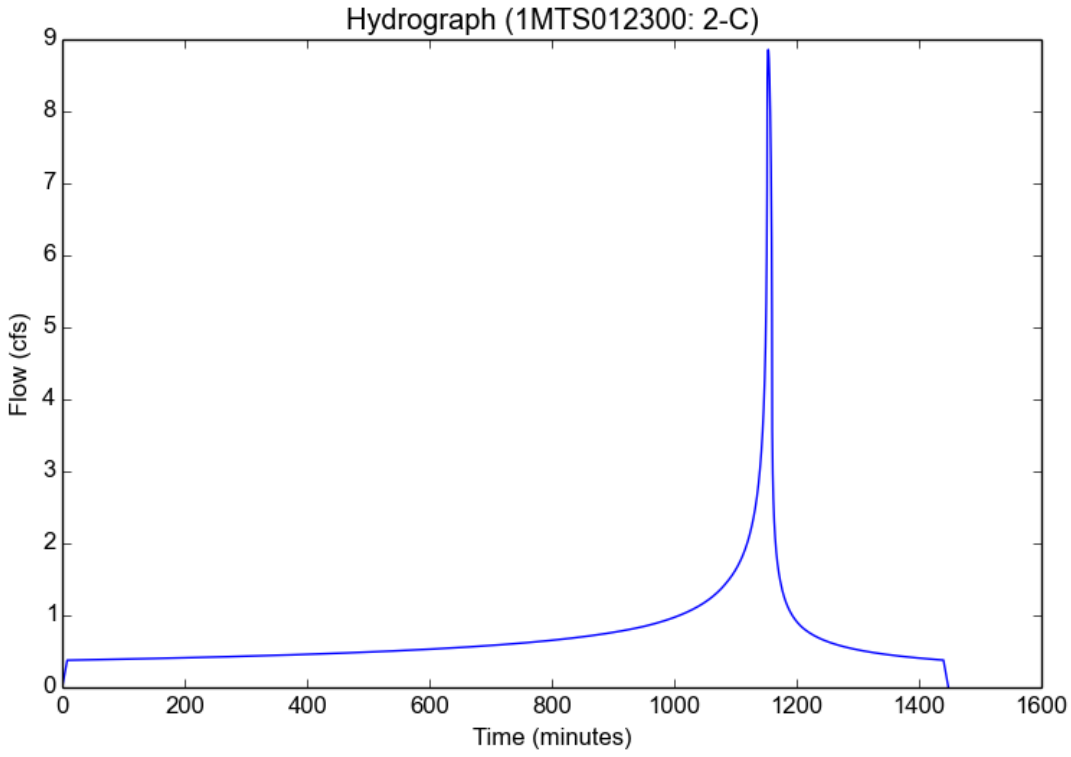
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 2-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	2-C
Area (ac)	3.4
Flow Path Length (ft)	708.0
Flow Path Slope (vft/hft)	0.011
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8886
Developed Runoff Coefficient (Cd)	0.899
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	8.858
Burned Peak Flow Rate (cfs)	8.858
24-Hr Clear Runoff Volume (ac-ft)	1.434
24-Hr Clear Runoff Volume (cu-ft)	62463.4363



Peak Flow Hydrologic Analysis

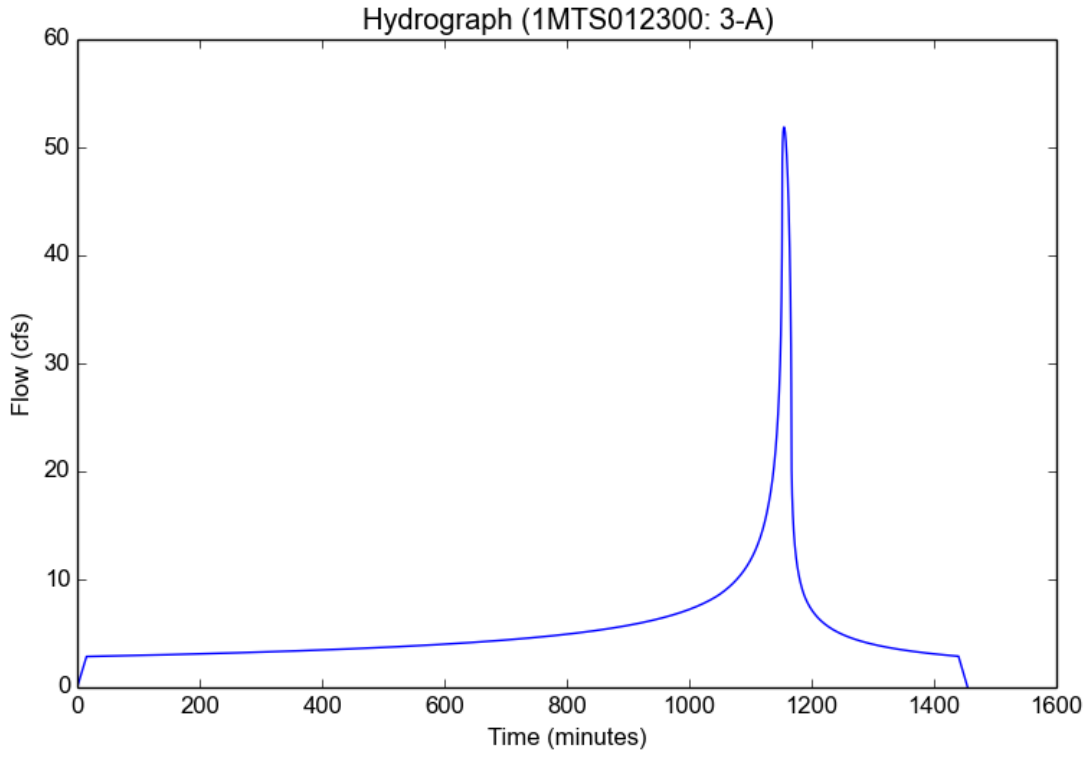
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-A
Area (ac)	27.3
Flow Path Length (ft)	2575.0
Flow Path Slope (vft/hft)	0.043
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.7741
Developed Runoff Coefficient (Cd)	0.8811
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	51.8793
Burned Peak Flow Rate (cfs)	51.8793
24-Hr Clear Runoff Volume (ac-ft)	10.8639
24-Hr Clear Runoff Volume (cu-ft)	473231.0065



Peak Flow Hydrologic Analysis

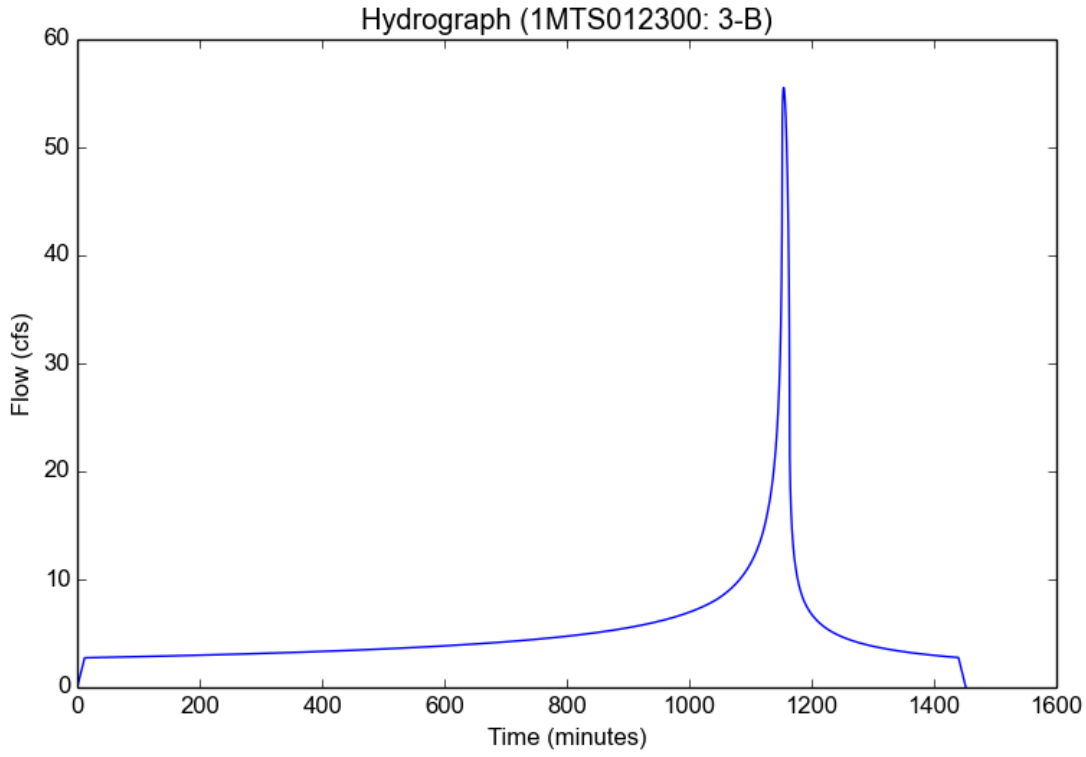
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-B
Area (ac)	26.2
Flow Path Length (ft)	1875.0
Flow Path Slope (vft/hft)	0.059
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3952
Undeveloped Runoff Coefficient (Cu)	0.7996
Developed Runoff Coefficient (Cd)	0.8849
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	55.5341
Burned Peak Flow Rate (cfs)	55.5341
24-Hr Clear Runoff Volume (ac-ft)	10.427
24-Hr Clear Runoff Volume (cu-ft)	454200.8583



Peak Flow Hydrologic Analysis

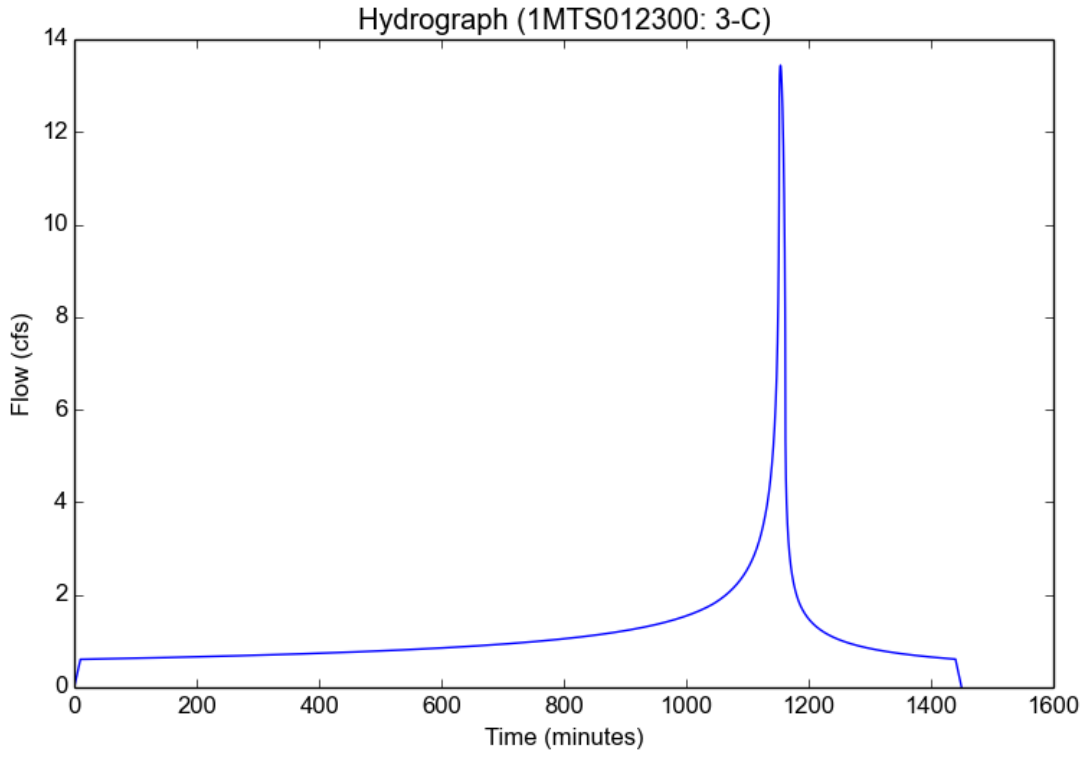
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-C
Area (ac)	5.8
Flow Path Length (ft)	1313.0
Flow Path Slope (vft/hft)	0.045
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8192
Developed Runoff Coefficient (Cd)	0.8879
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	13.4384
Burned Peak Flow Rate (cfs)	13.4384
24-Hr Clear Runoff Volume (ac-ft)	2.3084
24-Hr Clear Runoff Volume (cu-ft)	100554.857



Peak Flow Hydrologic Analysis

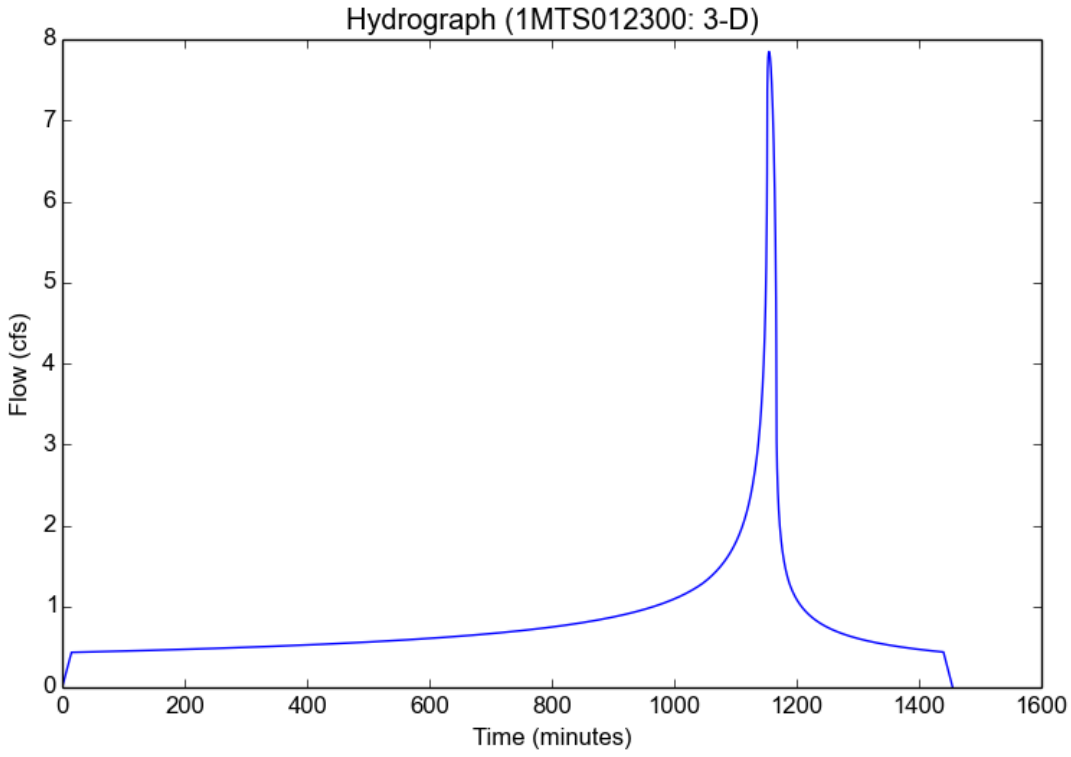
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 3-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	3-D
Area (ac)	4.13
Flow Path Length (ft)	1742.0
Flow Path Slope (vft/hft)	0.013
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	16
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.7741
Developed Runoff Coefficient (Cd)	0.8811
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	7.8484
Burned Peak Flow Rate (cfs)	7.8484
24-Hr Clear Runoff Volume (ac-ft)	1.6435
24-Hr Clear Runoff Volume (cu-ft)	71591.3574



Peak Flow Hydrologic Analysis

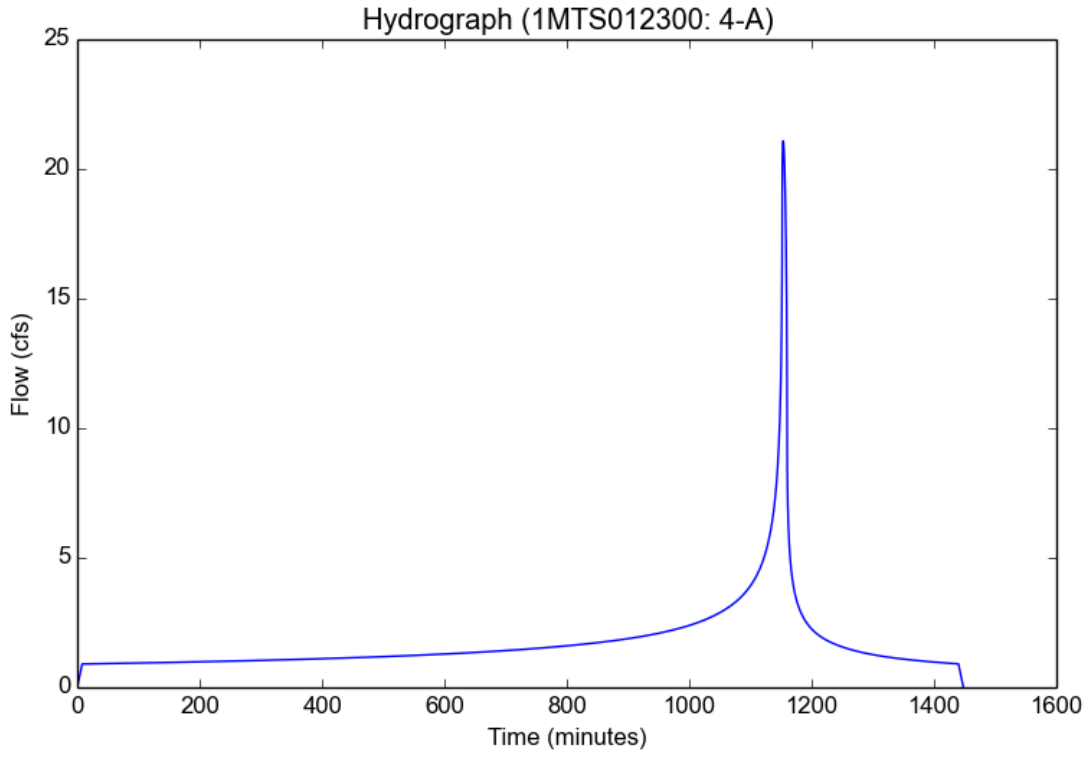
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-A
Area (ac)	8.1
Flow Path Length (ft)	861.0
Flow Path Slope (vft/hft)	0.037
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8792
Developed Runoff Coefficient (Cd)	0.8981
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	21.083
Burned Peak Flow Rate (cfs)	21.083
24-Hr Clear Runoff Volume (ac-ft)	3.4717
24-Hr Clear Runoff Volume (cu-ft)	151225.2453



Peak Flow Hydrologic Analysis

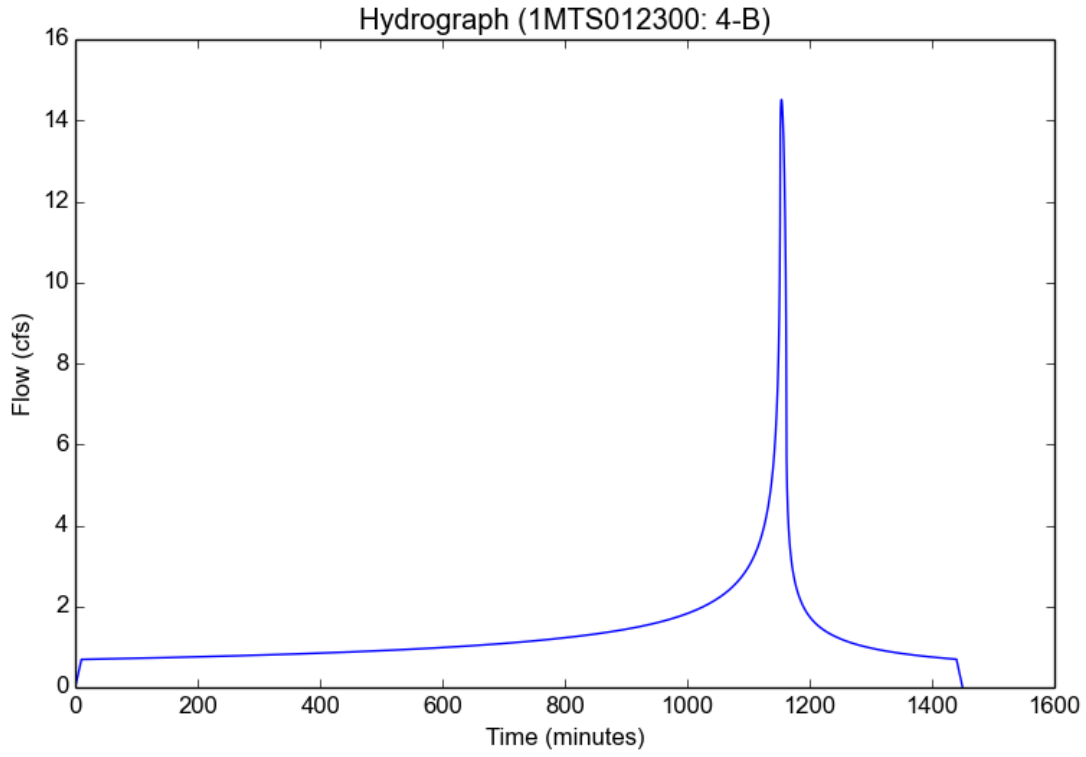
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-B
Area (ac)	6.2
Flow Path Length (ft)	1465.0
Flow Path Slope (vft/hft)	0.043
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.91
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.897
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	14.5123
Burned Peak Flow Rate (cfs)	14.5123
24-Hr Clear Runoff Volume (ac-ft)	2.6573
24-Hr Clear Runoff Volume (cu-ft)	115750.3007



Peak Flow Hydrologic Analysis

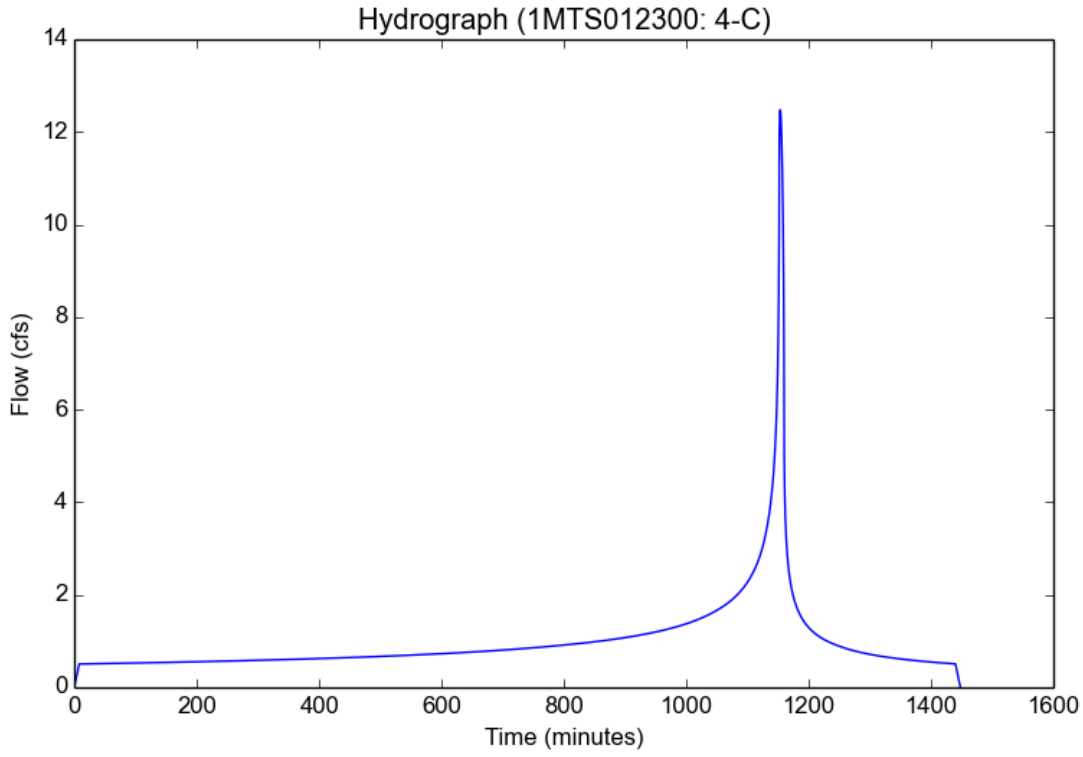
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-C
Area (ac)	4.8
Flow Path Length (ft)	1035.0
Flow Path Slope (vft/hft)	0.044
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.8981
Undeveloped Runoff Coefficient (Cu)	0.8792
Developed Runoff Coefficient (Cd)	0.8969
Time of Concentration (min)	8.0
Clear Peak Flow Rate (cfs)	12.4762
Burned Peak Flow Rate (cfs)	12.4762
24-Hr Clear Runoff Volume (ac-ft)	1.9868
24-Hr Clear Runoff Volume (cu-ft)	86546.7989



Peak Flow Hydrologic Analysis

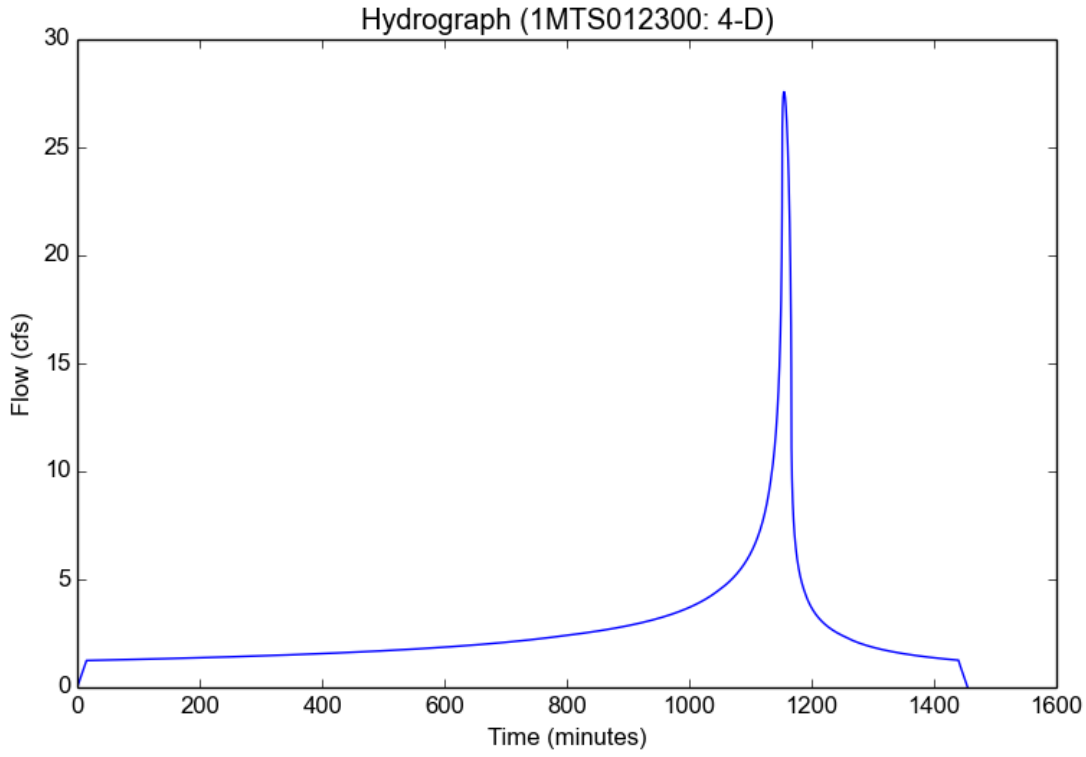
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-D
Area (ac)	14.5
Flow Path Length (ft)	1812.0
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.66
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.8818
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	27.5755
Burned Peak Flow Rate (cfs)	27.5755
24-Hr Clear Runoff Volume (ac-ft)	5.327
24-Hr Clear Runoff Volume (cu-ft)	232044.1867



Peak Flow Hydrologic Analysis

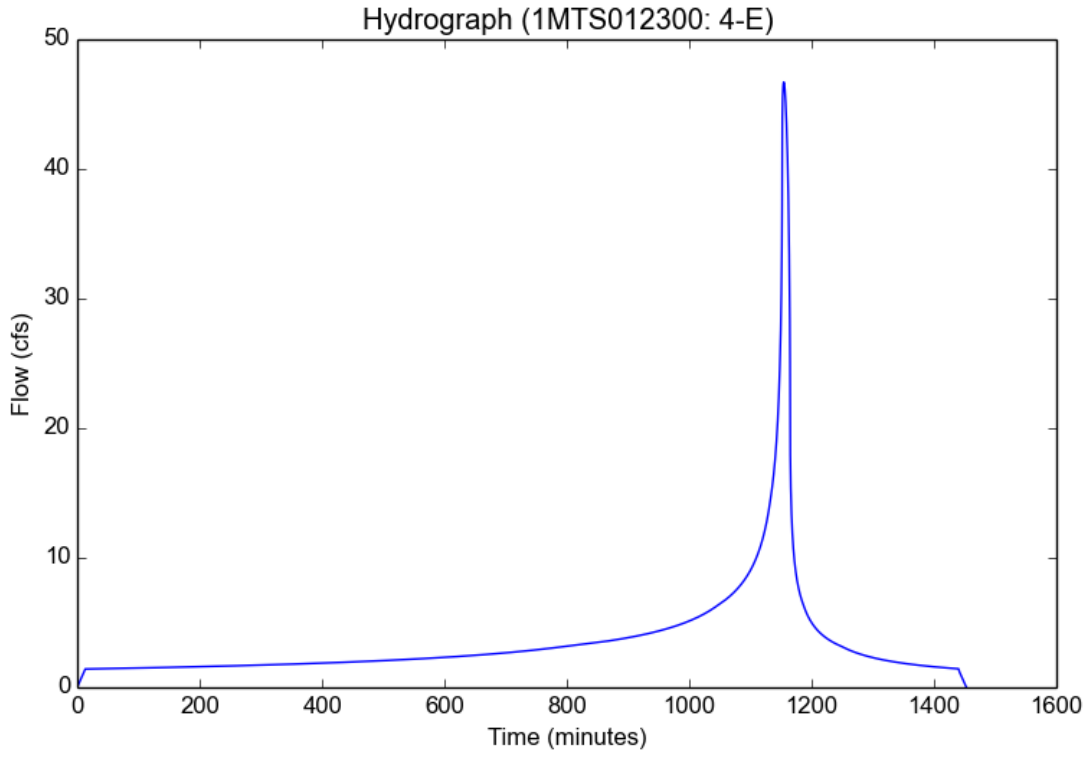
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-E
Area (ac)	23.2
Flow Path Length (ft)	1540.0
Flow Path Slope (vft/hft)	0.014
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3068
Undeveloped Runoff Coefficient (Cu)	0.853
Developed Runoff Coefficient (Cd)	0.8727
Time of Concentration (min)	13.0
Clear Peak Flow Rate (cfs)	46.7075
Burned Peak Flow Rate (cfs)	46.7075
24-Hr Clear Runoff Volume (ac-ft)	7.1608
24-Hr Clear Runoff Volume (cu-ft)	311922.5943



Peak Flow Hydrologic Analysis

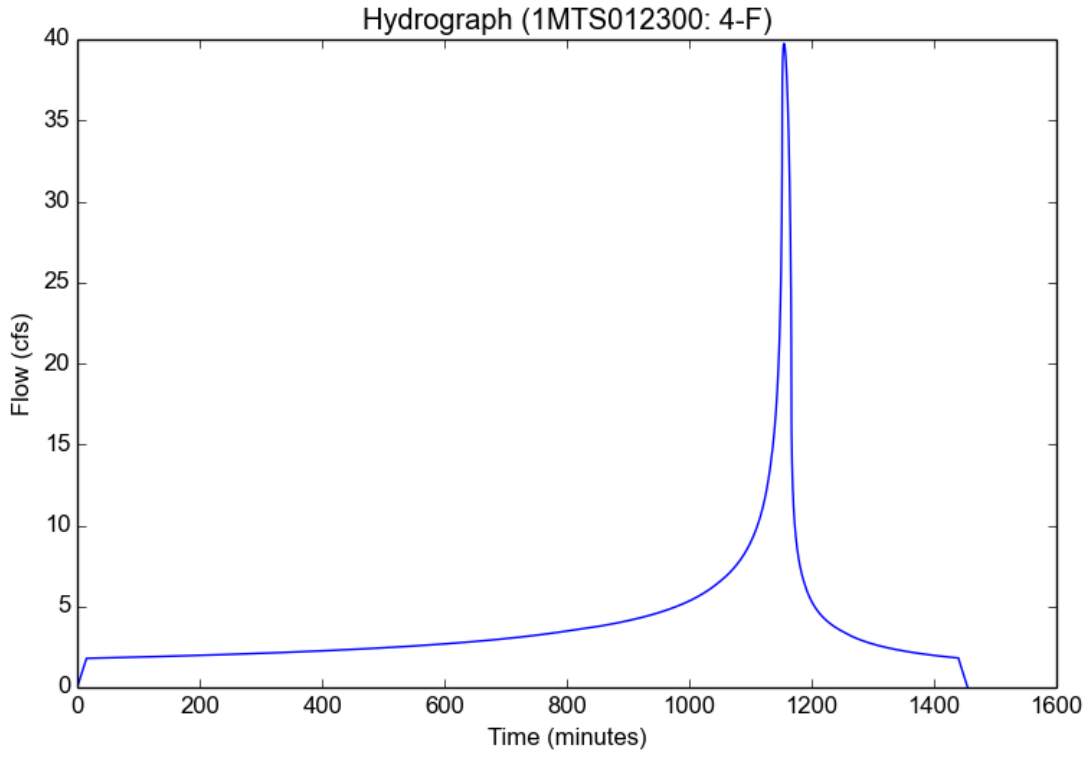
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-F.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-F
Area (ac)	20.9
Flow Path Length (ft)	1929.0
Flow Path Slope (vft/hft)	0.016
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.66
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.8818
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	39.7467
Burned Peak Flow Rate (cfs)	39.7467
24-Hr Clear Runoff Volume (ac-ft)	7.6782
24-Hr Clear Runoff Volume (cu-ft)	334463.6898



Peak Flow Hydrologic Analysis

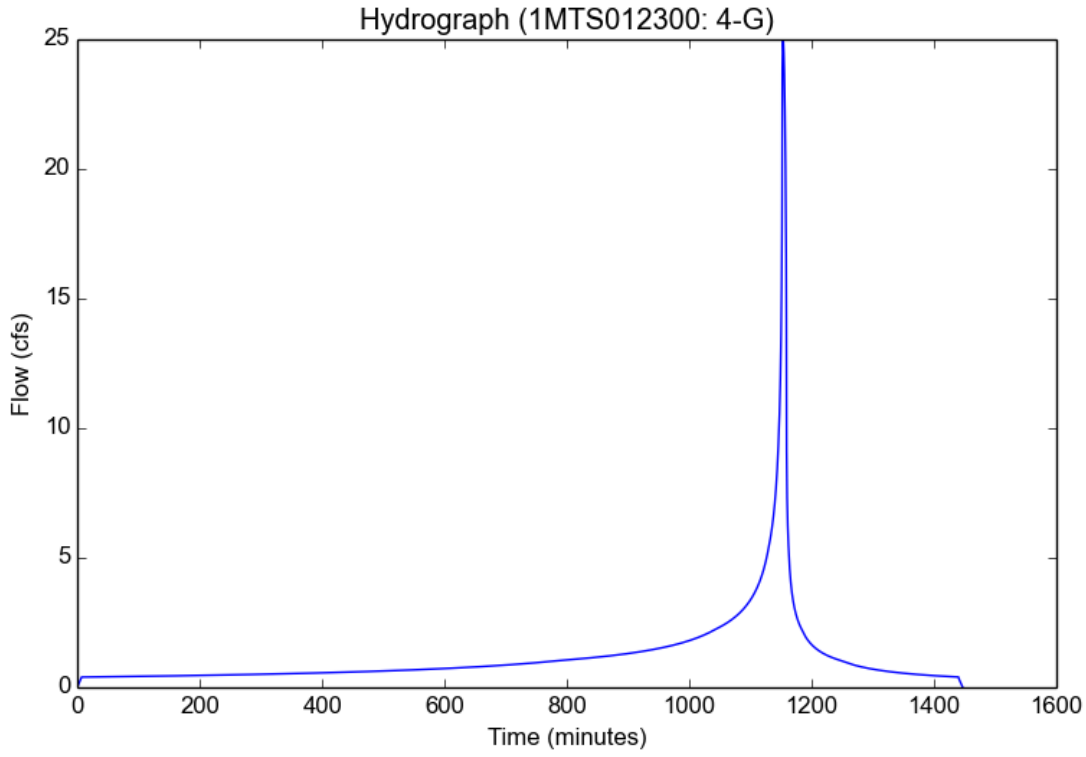
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-G.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-G
Area (ac)	9.1
Flow Path Length (ft)	1138.0
Flow Path Slope (vft/hft)	0.13
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8893
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	24.9723
Burned Peak Flow Rate (cfs)	24.9723
24-Hr Clear Runoff Volume (ac-ft)	2.4318
24-Hr Clear Runoff Volume (cu-ft)	105928.2608



Peak Flow Hydrologic Analysis

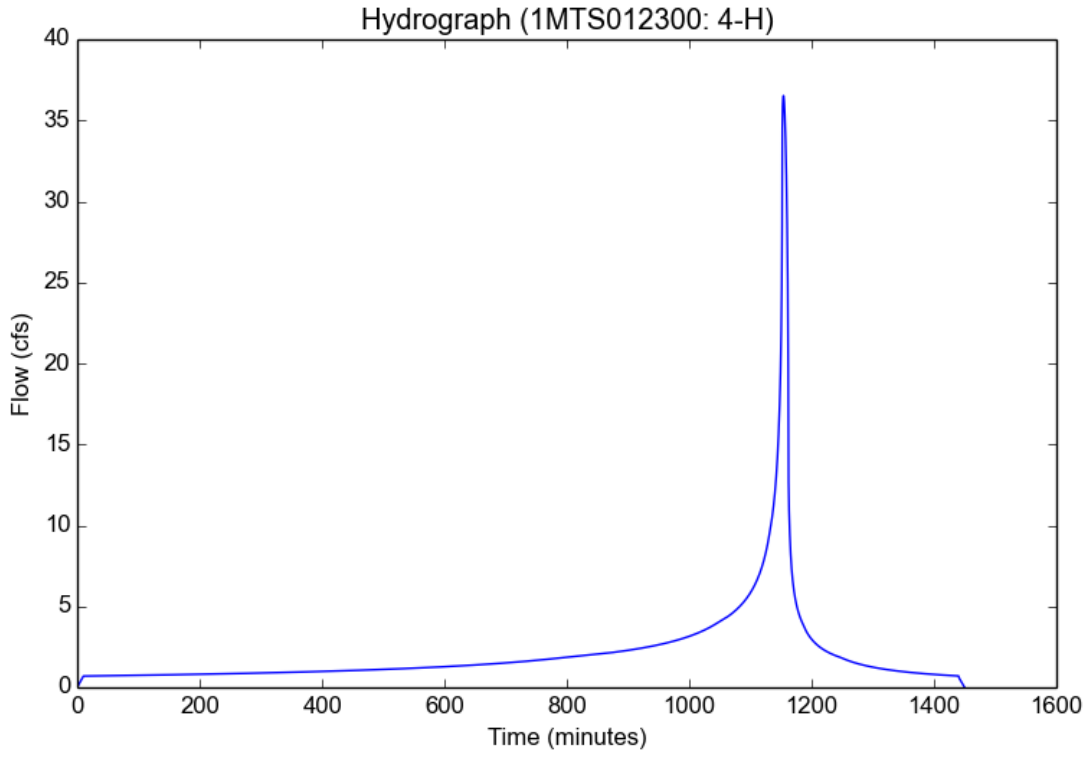
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-H.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-H
Area (ac)	16.0
Flow Path Length (ft)	1648.0
Flow Path Slope (vft/hft)	0.092
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.8748
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	36.5252
Burned Peak Flow Rate (cfs)	36.5252
24-Hr Clear Runoff Volume (ac-ft)	4.2738
24-Hr Clear Runoff Volume (cu-ft)	186165.5661



Peak Flow Hydrologic Analysis

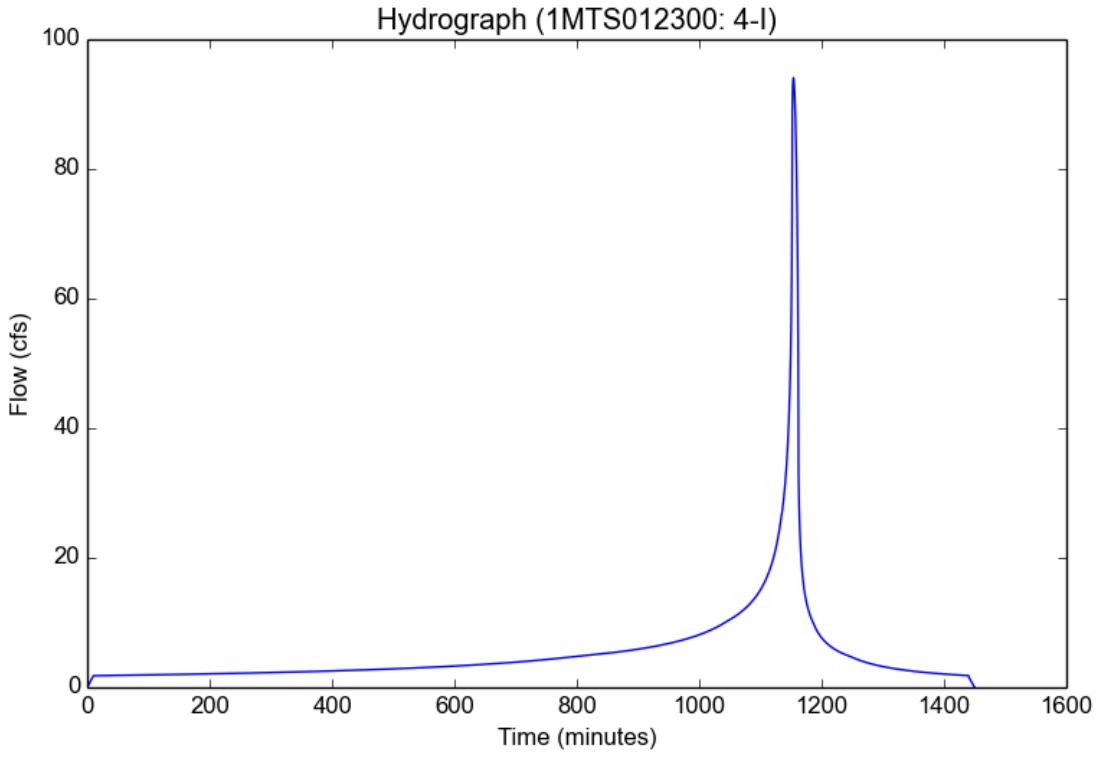
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-I.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-I
Area (ac)	41.2
Flow Path Length (ft)	1877.0
Flow Path Slope (vft/hft)	0.12
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8664
Developed Runoff Coefficient (Cd)	0.8748
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	94.0524
Burned Peak Flow Rate (cfs)	94.0524
24-Hr Clear Runoff Volume (ac-ft)	11.005
24-Hr Clear Runoff Volume (cu-ft)	479376.3328



Peak Flow Hydrologic Analysis

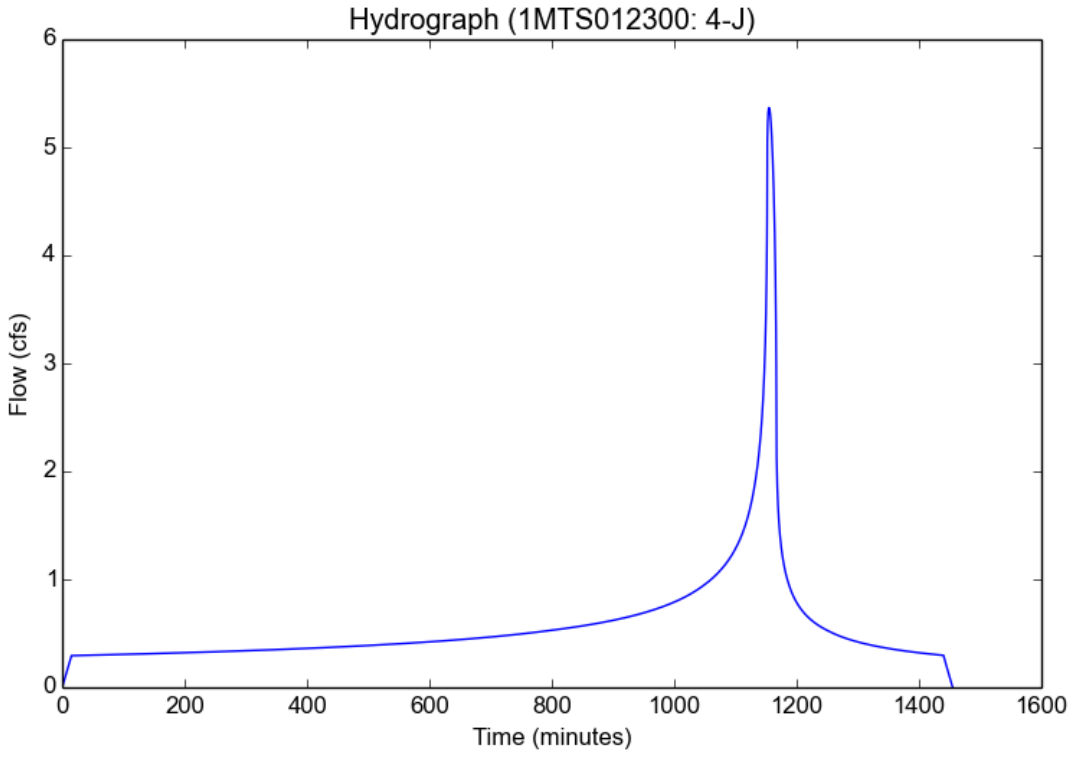
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 4-J.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	4-J
Area (ac)	2.79
Flow Path Length (ft)	1716.0
Flow Path Slope (vft/hft)	0.012
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.1568
Undeveloped Runoff Coefficient (Cu)	0.8464
Developed Runoff Coefficient (Cd)	0.892
Time of Concentration (min)	15.0
Clear Peak Flow Rate (cfs)	5.3672
Burned Peak Flow Rate (cfs)	5.3672
24-Hr Clear Runoff Volume (ac-ft)	1.1548
24-Hr Clear Runoff Volume (cu-ft)	50301.2023



Peak Flow Hydrologic Analysis

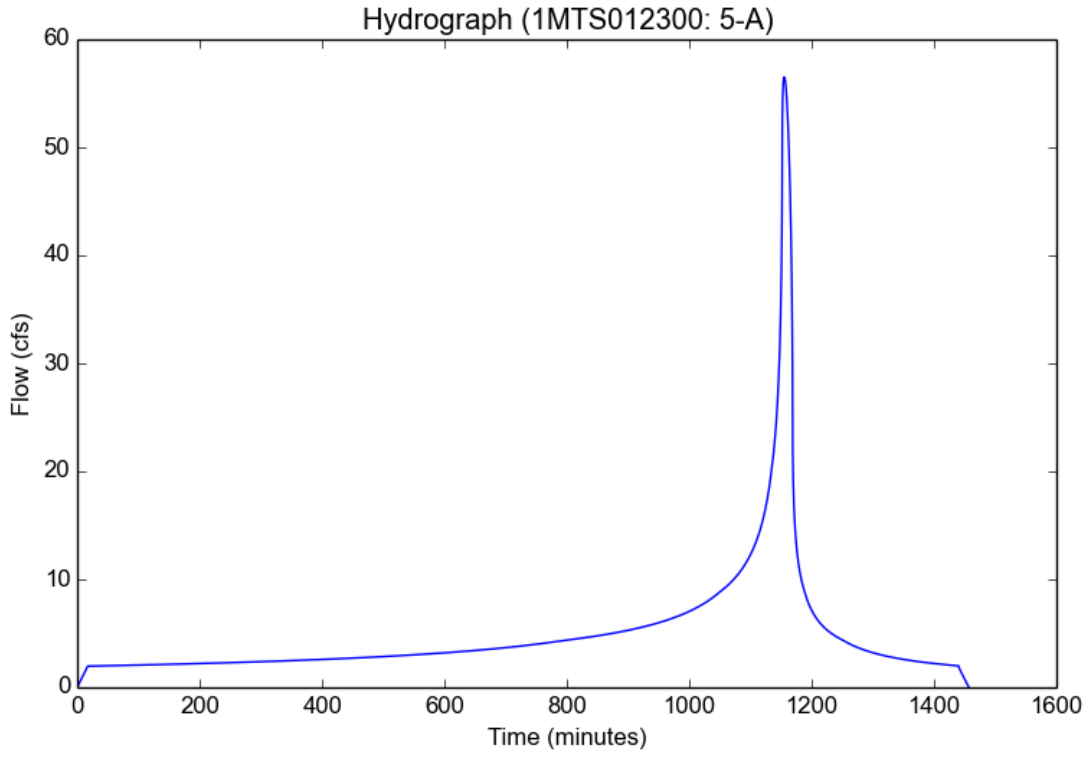
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-A.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-A
Area (ac)	32.1
Flow Path Length (ft)	2386.0
Flow Path Slope (vft/hft)	0.017
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.42
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.0335
Undeveloped Runoff Coefficient (Cu)	0.8409
Developed Runoff Coefficient (Cd)	0.8657
Time of Concentration (min)	17.0
Clear Peak Flow Rate (cfs)	56.5125
Burned Peak Flow Rate (cfs)	56.5125
24-Hr Clear Runoff Volume (ac-ft)	9.9059
24-Hr Clear Runoff Volume (cu-ft)	431498.8286



Peak Flow Hydrologic Analysis

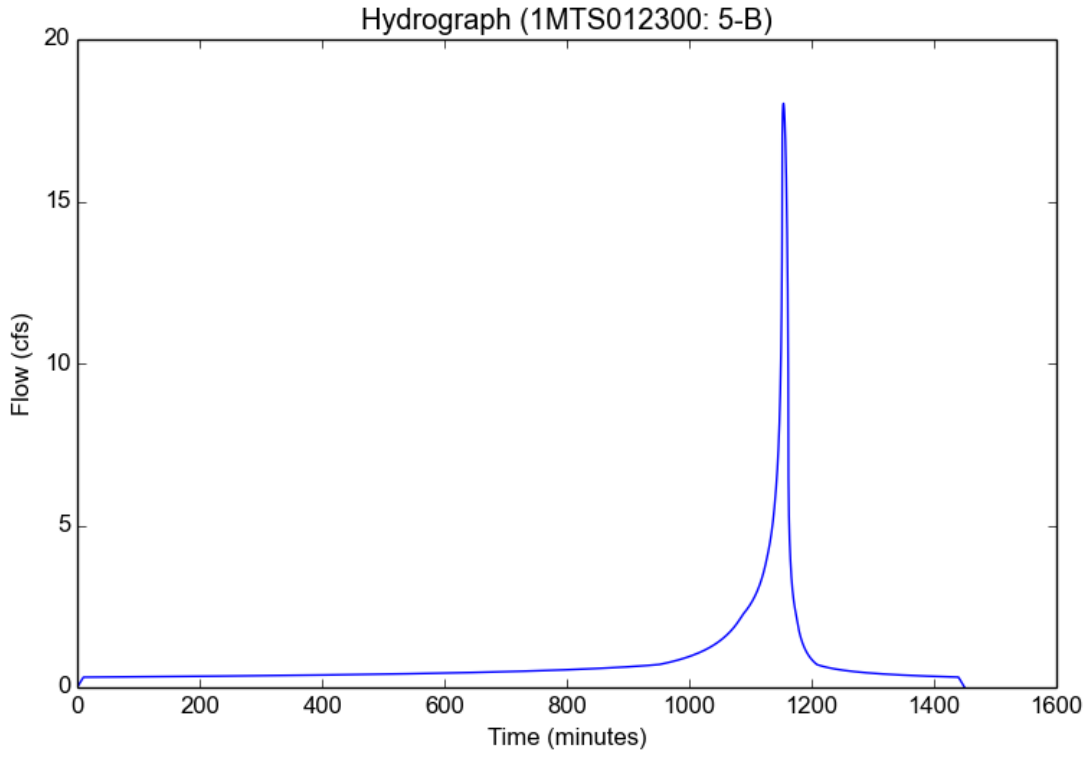
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-B.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-B
Area (ac)	7.82
Flow Path Length (ft)	1074.0
Flow Path Slope (vft/hft)	0.022
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8776
Developed Runoff Coefficient (Cd)	0.8832
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	18.0226
Burned Peak Flow Rate (cfs)	18.0226
24-Hr Clear Runoff Volume (ac-ft)	1.6432
24-Hr Clear Runoff Volume (cu-ft)	71578.0756



Peak Flow Hydrologic Analysis

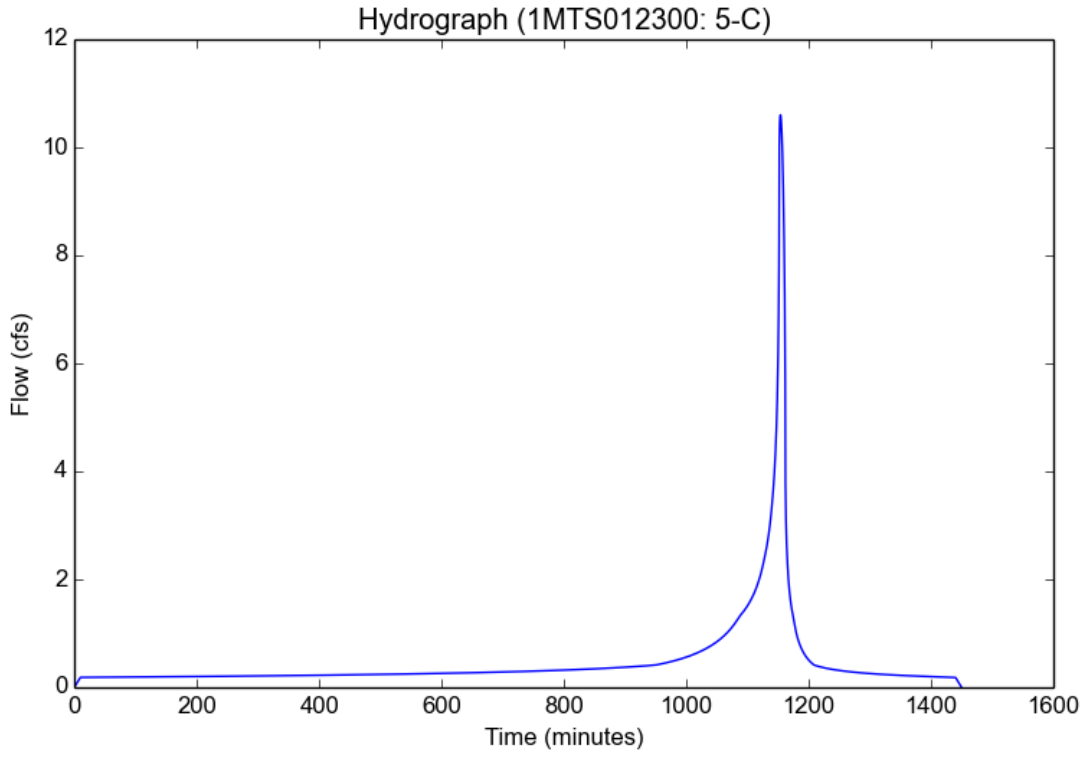
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-C.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-C
Area (ac)	4.6
Flow Path Length (ft)	1096.0
Flow Path Slope (vft/hft)	0.018
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	17
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.6095
Undeveloped Runoff Coefficient (Cu)	0.8776
Developed Runoff Coefficient (Cd)	0.8832
Time of Concentration (min)	10.0
Clear Peak Flow Rate (cfs)	10.6015
Burned Peak Flow Rate (cfs)	10.6015
24-Hr Clear Runoff Volume (ac-ft)	0.9666
24-Hr Clear Runoff Volume (cu-ft)	42104.7503



Peak Flow Hydrologic Analysis

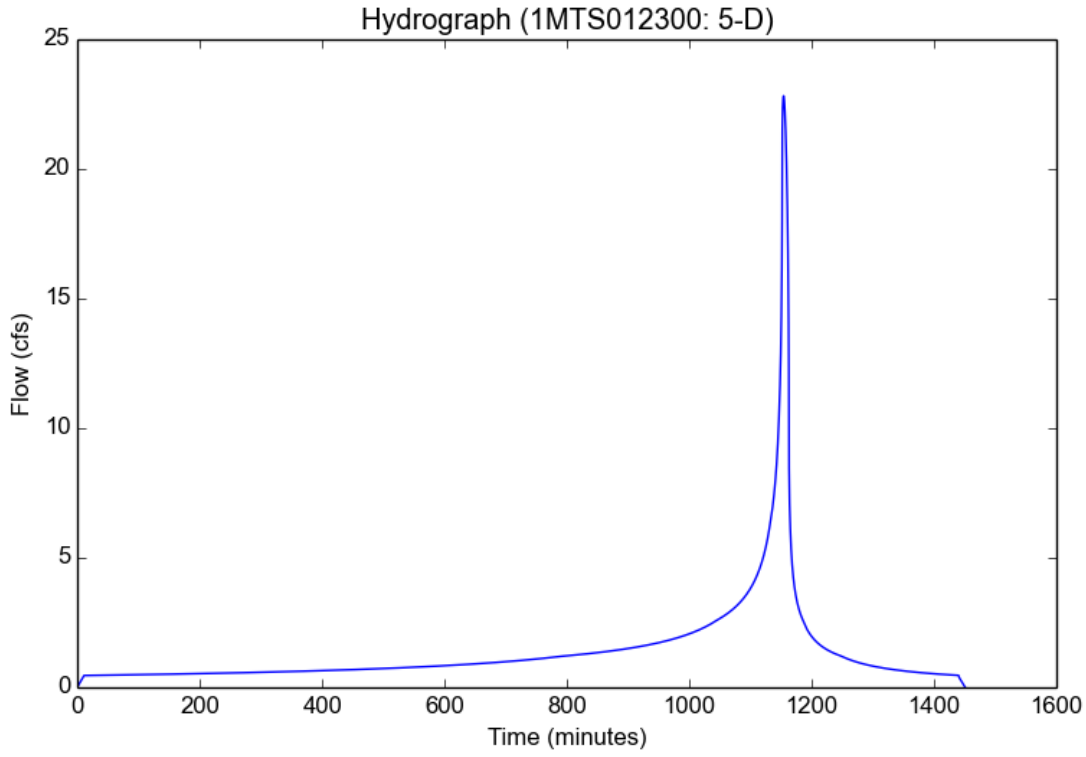
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-D.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-D
Area (ac)	10.5
Flow Path Length (ft)	1448.0
Flow Path Slope (vft/hft)	0.039
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8613
Developed Runoff Coefficient (Cd)	0.871
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	22.8203
Burned Peak Flow Rate (cfs)	22.8203
24-Hr Clear Runoff Volume (ac-ft)	2.8044
24-Hr Clear Runoff Volume (cu-ft)	122159.1376



Peak Flow Hydrologic Analysis

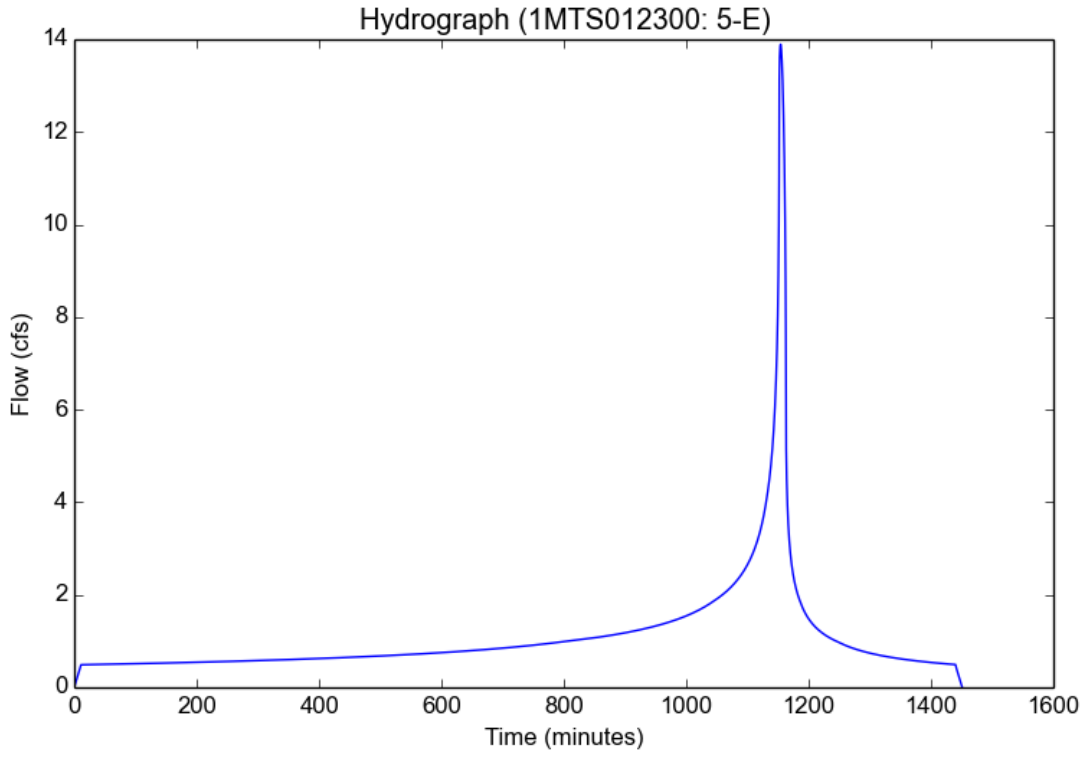
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-E.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-E
Area (ac)	6.3
Flow Path Length (ft)	975.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.58
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.4952
Undeveloped Runoff Coefficient (Cu)	0.8613
Developed Runoff Coefficient (Cd)	0.8838
Time of Concentration (min)	11.0
Clear Peak Flow Rate (cfs)	13.8927
Burned Peak Flow Rate (cfs)	13.8927
24-Hr Clear Runoff Volume (ac-ft)	2.1914
24-Hr Clear Runoff Volume (cu-ft)	95455.9437



Peak Flow Hydrologic Analysis

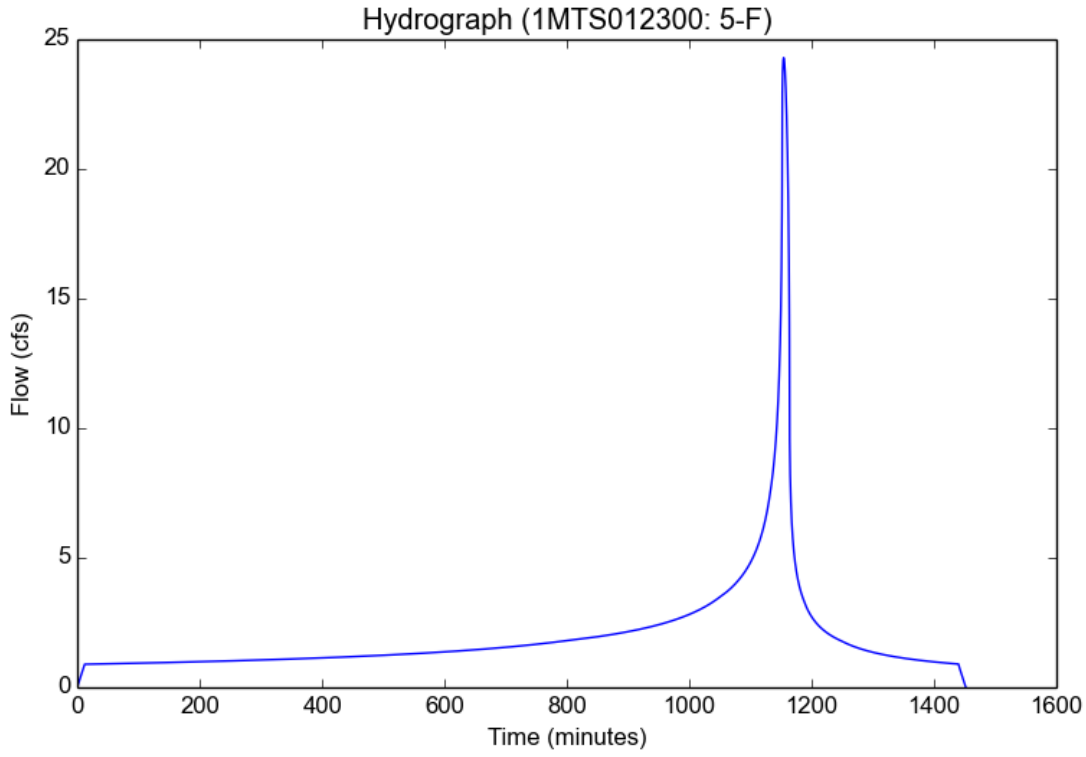
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-F.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-F
Area (ac)	11.5
Flow Path Length (ft)	1235.0
Flow Path Slope (vft/hft)	0.01
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.58
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	2.3952
Undeveloped Runoff Coefficient (Cu)	0.8569
Developed Runoff Coefficient (Cd)	0.8819
Time of Concentration (min)	12.0
Clear Peak Flow Rate (cfs)	24.2923
Burned Peak Flow Rate (cfs)	24.2923
24-Hr Clear Runoff Volume (ac-ft)	4.0
24-Hr Clear Runoff Volume (cu-ft)	174238.9184



Peak Flow Hydrologic Analysis

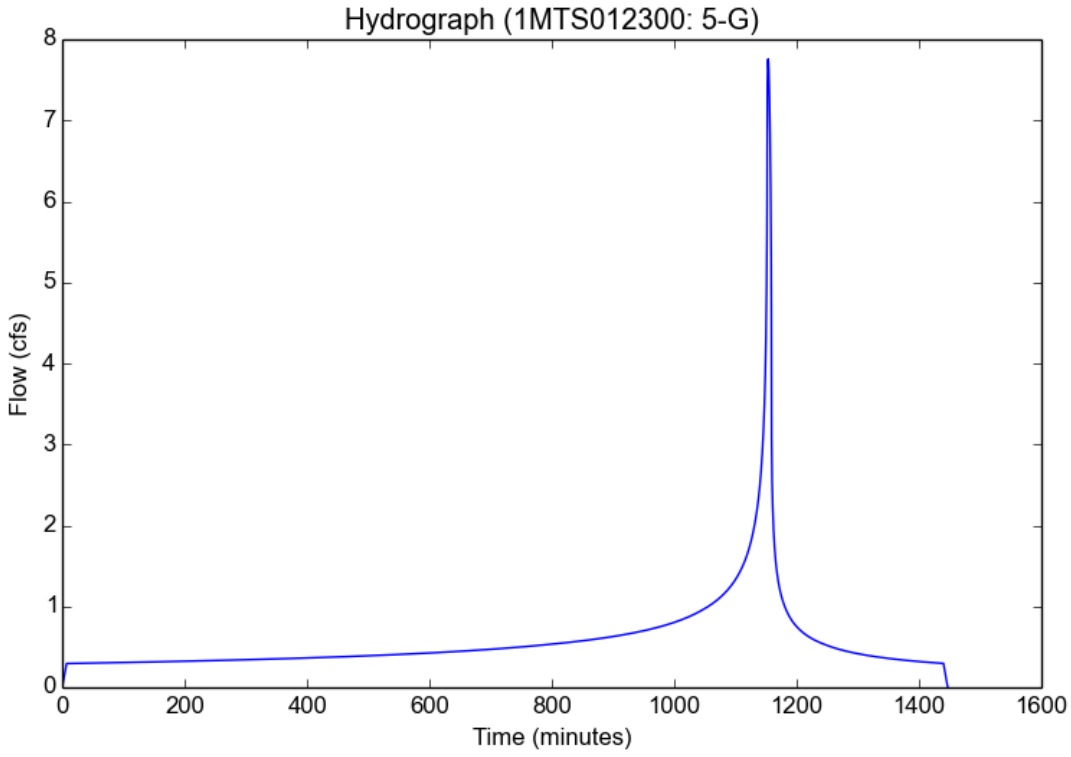
File location: W:/Mt_SAC/1MTS012300/ENGR/CALCS/HydroCalcs/25 year/1MTS012300 - 5-G.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS012300
Subarea ID	5-G
Area (ac)	2.8
Flow Path Length (ft)	600.0
Flow Path Slope (vft/hft)	0.02
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.85
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8979
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	7.7577
Burned Peak Flow Rate (cfs)	7.7577
24-Hr Clear Runoff Volume (ac-ft)	1.159
24-Hr Clear Runoff Volume (cu-ft)	50486.6816



APPENDIX C

Appendix C – Hydrology Comparison Breakdown and Exhibits

HYDROLOGY COMPARISON BETWEEN 2012 UTILITY INFRASTRUCTURE MASTER PLAN CONDITIONS AND MEASURE RR BUILD OUT CONDITIONS (25-YEAR DESIGN FREQUENCY)

	Exhibit 1 Utility Infrastructure Master Plan (UIMP) (2012)			MEASURE RR CONDITIONS						Total Measure RR Conditions		Difference Between Measure RR Conditions and UIMP	
				Exhibit 3 Farm Precinct (2015)			Exhibit 2 Hydrology Map - Overall 2016						
	Subarea	Area (ac)	Q25 (cfs)	Subarea	Area (ac)	Q25 (cfs)	Subarea	Area (ac)	Q25 (cfs)	Area (ac)	Q25 (cfs)	Area (ac)	Q25 (cfs)
LINE A	1-A	28.6	56.6	B-1	5.0	12.9	4-A	8.1	21.1				
							4-B	6.2	14.5				
							4-C	4.8	12.5				
							3-C	5.8	13.4				
	Total	**28.6**	**56.6**		***5.0***	***12.9***		***24.9***	***61.5***	**29.9**	**74.4**	**1.3**	**17.8**
	2-A	13.4	29.7	E-1	8.0	19.5							
				A-1	6.0	14.7							
	Total	**13.4**	**29.7**		***14.0***	***34.2***				**14.0**	**34.2**	**0.6**	**4.5**
	3-B	22.2	44.0	D-2	16.3	37.0							
				D-1	13.6	37.1							
	Total	**22.2**	**44.0**		***29.9***	***74.1***				**29.9**	**74.1**	**7.7**	**30.1**
	4-C	47.2	100.3	B-2	24.0	55.6							
				C-1	5.0	12.8							
				C-2	18.5	40.0							
	Total	**47.2**	**100.3**		***47.5***	***108.4***				**47.5**	**108.4**	**0.3**	**8.1**
	7-A	19.8	33.9				4-D	14.5	27.6				
							4-J	2.8	5.4				
	Total	**19.8**	**33.9**					***17.3***	***33.0***	**17.3**	**33.0**	**-2.5**	**-0.9**
	8-B	20.9	40.1				4-F	20.9	39.7				
	Total	**20.9**	**40.1**					***20.9***	***39.7***	**20.9**	**39.7**	**0.0**	**-0.4**
	9-B	35.9	77.3				4-E	23.2	46.7				
							4-G	9.1	24.9				
	Total	**35.9**	**77.3**					***32.3***	***71.6***	**32.3**	**71.6**	**-3.6**	**-5.7**
	11-B	27.0	57.4				4-H	16.0	36.5				
							4-I	12.7	34.9				
	Total	**27.0**	**57.4**					***28.7***	***71.4***	**28.7**	**71.4**	**1.7**	**14.0**
Total Area and Flow In Line A		**215.0**	**439.3**		***96.4***	***229.6***		***124.1***	***277.2***	**220.5**	**506.8**	**5.5**	**67.5**
LINE B	1-A	22.0	46.7				3-B	26.2	55.5				
	Total	**22.0**	**46.7**					***26.2***	***55.5***	**26.2**	**55.5**	**4.2**	**8.8**
	2-A	4.1	7.9				3-D	4.1	7.8				
	Total	**4.1**	**7.9**					***4.1***	***7.8***	**4.1**	**7.8**	**0.0**	**-0.1**
	3-A	28.6	54.8				3-A	27.3	51.9				
	Total	**28.6**	**54.8**					***27.3***	***51.9***	**27.3**	**51.9**	**-1.3**	**-2.9**
	4-A	33.4	60.1				5-A	32.1	56.5				
	Total	**33.4**	**60.1**					***32.1***	***56.5***	**32.1**	**56.5**	**-1.3**	**-3.6**
Total Area and Flow In Line B		**88.1**	**169.5**					***89.7***	***171.7***	**89.7**	**171.7**	**1.6**	**2.2**
LINE C	1-A	15.1	34.9				2-A	8.2	18.4				
							2-B	3.3	9.9				
							2-C	3.4	8.9				
	Total	**15.1**	**34.9**					***14.9***	***37.2***	**14.9**	**37.2**	**-0.2**	**2.3**
Total Area and Flow In Line C		**15.1**	**34.9**					***14.9***	***37.2***	**14.9**	**37.2**	**-0.2**	**2.3**
LINE D	1-A	32.6	54.6				1-A	12.8	22.9				
							1-B	2.9	8.6				
							1-C	4.9	13.5				
							1-D	6.9	19.0				
							1-E	5.6	15.4				
	Total	**32.6**	**54.6**					***33.1***	***79.4***	**33.1**	**79.4**	**0.5**	**24.8**
Total Area and Flow In Line D		**32.6**	**54.6**					***33.1***	***79.4***	**33.1**	**79.4**	**0.5**	**24.8**

Notes:

1. Measure RR subarea 4-I flow path and tributary area extends outside of study limit. For the purpose of this comparison, only onsite Q was taken into consideration. See attached calculation for comparable onsite Q only.
2. Measure RR area 3-C is tributary to Line B. However, 2012 UIMP shows it tributary to Line A. For the purpose of this comparison, 3-C is shown tributary to Line A.
3. Measure RR areas 5-B, 5-C, 5-D, 5-E, 5-F and 5-G omitted from Hydrology Comparison.
4. Farm Precinct area D-3 was omitted from Hydrology Comparison since it is outside the project study.

Peak Flow Hydrologic Analysis

File location: W:/Mt_SAC/1MTS013200/ENGR/CALCS/1MTS013200 - 4-I.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS013200
Subarea ID	4-I
Area (ac)	12.7
Flow Path Length (ft)	783.91
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8893
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	34.8515
Burned Peak Flow Rate (cfs)	34.8515
24-Hr Clear Runoff Volume (ac-ft)	3.3938
24-Hr Clear Runoff Volume (cu-ft)	147833.9464

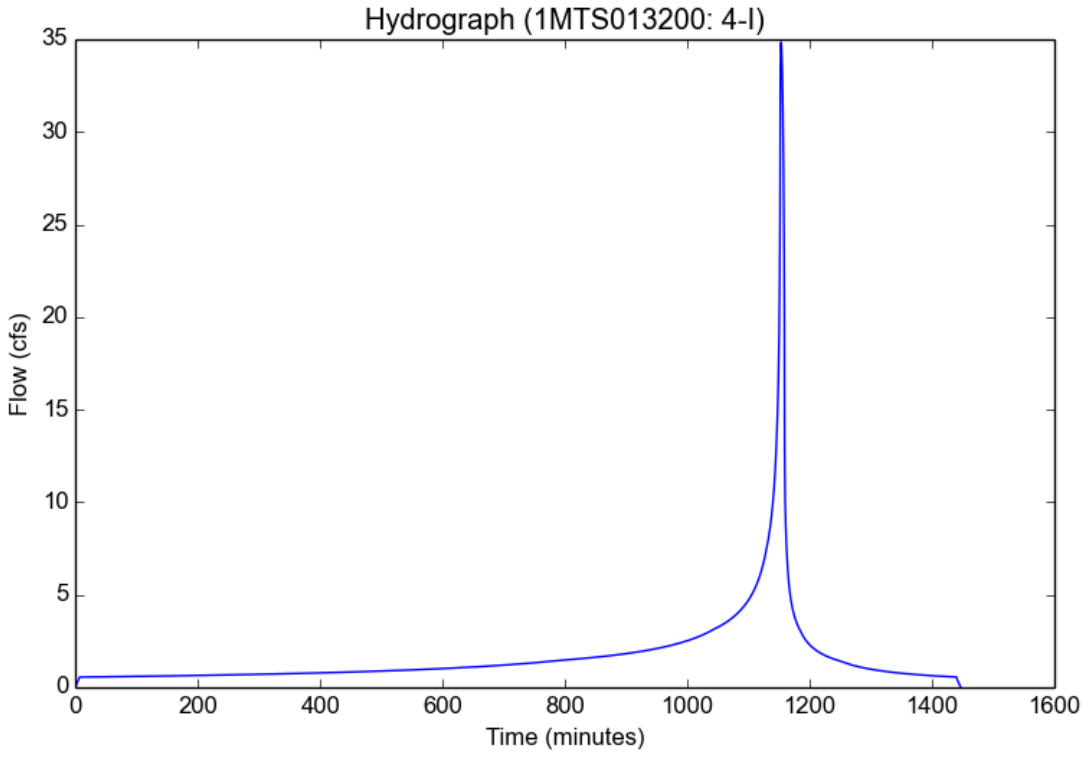
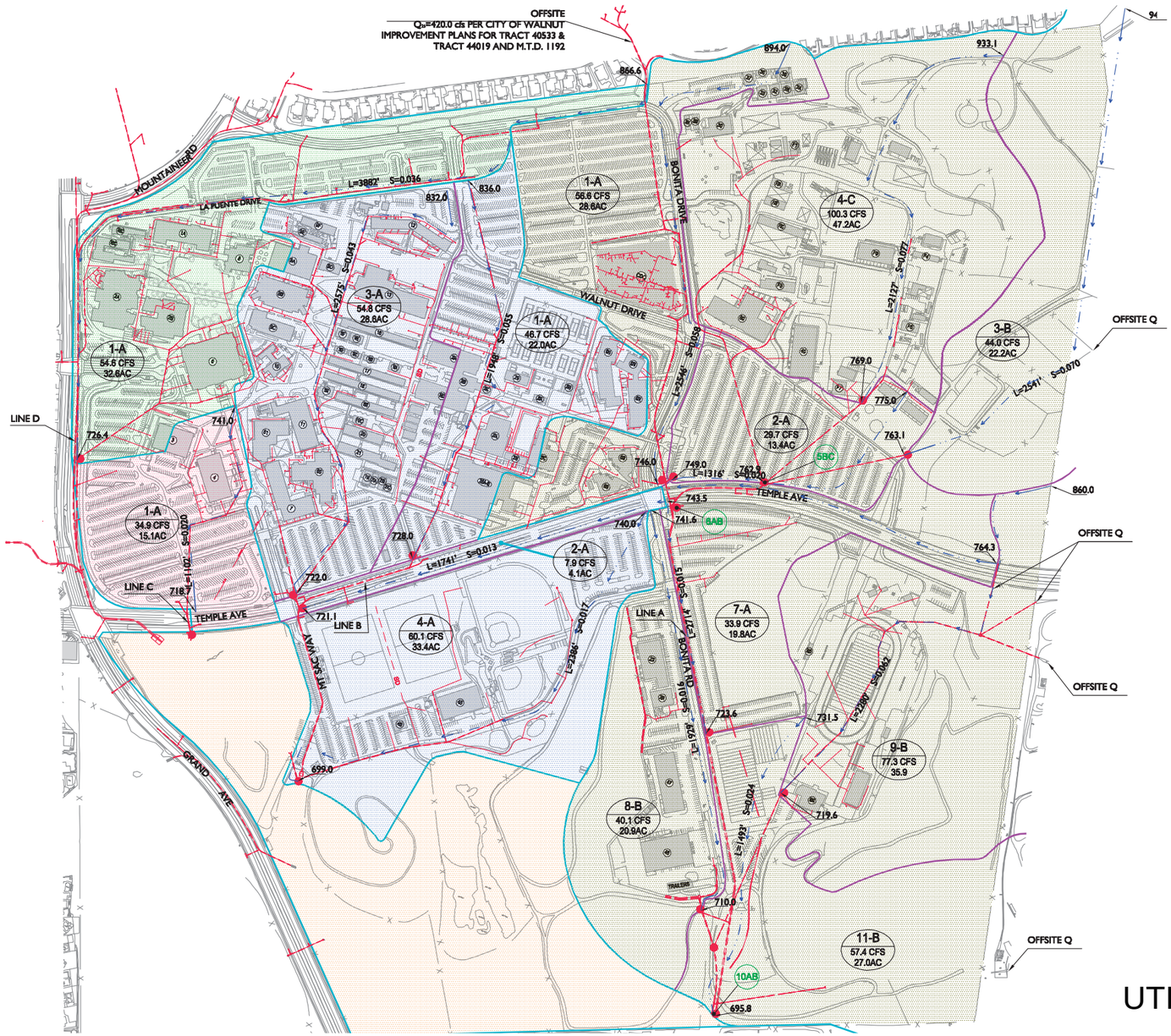


Figure 2b - Existing Utility Map - Hydrology Distribution



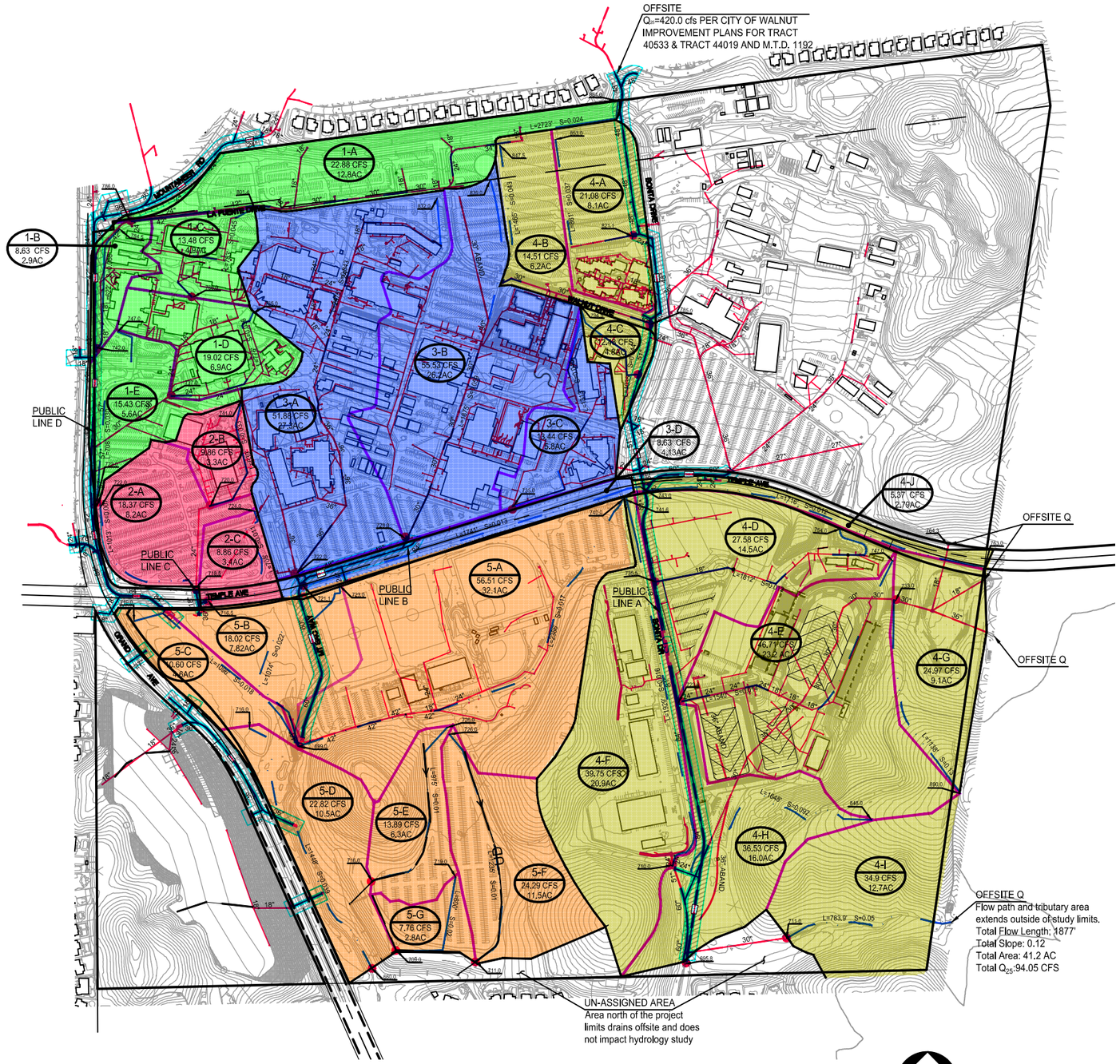
LEGEND

- AREA DISCHARGE TO GRAND AVENUE VIA LINE "D"
- AREA DISCHARGE TO TEMPLE AVENUE VIA LINE "C"
- AREA DISCHARGE TO MT SAC WAY VIA LINE "B"
- AREA DISCHARGE TO SERVICE ROAD VIA LINE "A"
- AREA DISCHARGE TO SNOW CREEK ADJACENT TO GRAND AVE.
- WATERSHED BOUNDARY
- SUBAREA-BOUNDARY
- SD — EXISTING STORM DRAIN
- FLOWPATH
- SUBAREA DISCHARGE POINT
- 10AB — CONFLUENCE POINT
- ΣQ_m=2.81 / ΣA=1.2 — CUMULATIVE PEAK FLOW RATE, Q / TOTAL TRIBUTARY AREA
- 5-2A / 22 CFS / 0.4 AC — AREA / PEAK FLOW RATE, Q / AREA (AC.)

HYDROLOGIC INFORMATION

SOIL TYPE: 000,016,017
50-YEAR 24-HR ISOHYET : 6.8 IN.

EXHIBIT 1
UTILITY INFRASTRUCTURE MASTER PLAN (2012)
(25 - YEAR RAINFALL FREQUENCY



HYDROLOGIC INFORMATION

SOIL TYPE: 002,016,017

50-YEAR 24-HR ISOHYET : 6.9 IN.

AREA 1 DISCHARGE TO GRAND AVENUE VIA LINE "D"

AREA 2 DISCHARGE TO TEMPLE AVENUE VIA LINE "C"

AREA 3 DISCHARGE TO MT SAC WAY VIA LINE "B"

AREA 4 DISCHARGE TO SERVICE ROAD VIA LINE "A"

AREA 5 DISCHARGE TO SNOW CREEK ADJACENT TO GRAND AVE.

PUBLIC STORM DRAIN LINE

WATERSHED BOUNDARY

SUBAREA-BOUNDARY

STORM DRAIN

FLOWPATH

SUBAREA DISCHARGE POINT

5-2A
22 CFS
0.4 AC

AREA

PEAK FLOW RATE, Q_{25}

AREA (AC.)

MT. SAN ANTONIO COLLEGE

EXHIBIT 2
HYDROLOGY MAP - OVERALL
MEASURE RR (2016)
(25-YEAR RAINFALL FREQUENCY)

5/6/2016

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LEGEND

DRAINAGE BASIN
"COLOR VARIES"

FLOW PATH

EXISTING STORM DRAIN LINE — SD —

PROPERTY LINE

EXISTING DIRT ROAD

BASIN SUMMARY		
BASIN	AREA (AC)	Q_{25} (CFS)
A-1	5.98	14.70
SUBAREA TOTAL	**5.98**	**14.70**
B-1	5.02	12.87
B-2	24.41	55.55
SUBAREA TOTAL	**29.43**	**68.42**
C-1	4.99	12.78
C-2	18.52	39.95
SUBAREA TOTAL	**23.51**	**52.73**
D-1	13.58	37.12
D-2	16.34	36.96
D-3	37.78	71.54
SUBAREA TOTAL	**67.70**	**145.62**
E-1	8.00	19.53
SUBAREA TOTAL	**8.00**	**19.53**
TOTAL	**134.62**	**301**

400' 200' 0' 400' 800'

GRAPHIC SCALE: 1"=400' @ 11X17

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EXHIBIT 3
HYDROLOGY MAP - OVERALL EXISTING FARM PRECINCT (2015) (25-YEAR RAINFALL FREQUENCY)

5/6/2016

Plotted - 5/6/2016 2:08:01 PM :: Saved - 5/4/2016 12:04:03 PM :: W:\MT SAC\1MTS013200\ENGR\SHEET'S\MSAC-01-Exist Hydro.dwg :: tina.tse

HYDROLOGY COMPARISON BETWEEN 2012 UTILITY INFRASTRUCTURE MASTER PLAN CONDITIONS AND MEASURE RR BUILD OUT CONDITIONS (25-YEAR DESIGN FREQUENCY)

	Utility Infrastructure Master Plan (UIMP) (2012)			MEASURE RR CONDITIONS								Difference Between Measure RR Conditions and UIMP	
				Farm Precinct (2015)			Hydrology Map - Overall 2016			Total Measure RR Conditions			
	Subarea	Area (ac)	Q25 (cfs)	Subarea	Area (ac)	Q25 (cfs)	Subarea	Area (ac)	Q25 (cfs)	Area (ac)	Q25 (cfs)	Area (ac)	Q25 (cfs)
LINE A	1-A	28.6	56.6	B-1	5.02	12.87	4-A	8.1	21.08				
							4-B	6.2	14.51				
							4-C	4.8	12.48				
							3-C**	5.8	13.44				
	Total	**28.6**	**56.6**		**5.02**	**12.87**		**24.9**	**61.51**	**29.92**	**74.38**	**1.32**	**17.78**
	2-A	13.4	29.7	E-1	8	19.53							
				A-1	5.98	14.7							
	Total	**13.4**	**29.7**		**13.98**	**34.23**				**13.98**	**34.23**	**0.58**	**4.53**
	3-B	22.2	44	D-2	16.34	36.96							
	Total	**22.2**	**44**		**16.34**	**36.96**				**16.34**	**36.96**	**-5.86**	**-7.04**
	4-C	47.2	100.3	B-2	24.41	55.55							
				C-1	4.99	12.78							
				C-2	18.52	39.95							
	Total	**47.2**	**100.3**		**47.92**	**108.28**				**47.92**	**108.28**	**0.72**	**7.98**
	7-A	19.8	33.9				4-D	14.5	27.58				
							4-J	2.79	5.37				
	Total	**19.8**	**33.9**					**17.29**	**32.95**	**17.29**	**32.95**	**-2.51**	**-0.95**
	8-B	20.9	40.1				4-F	20.9	39.75				
	Total	**20.9**	**40.1**					**20.9**	**39.75**	**20.9**	**39.75**	**0**	**-0.35**
	9-B	35.9	77.3				4-E	23.2	46.71				
							4-G	9.1	24.97				
	Total	**35.9**	**77.3**					**32.3**	**71.68**	**32.3**	**71.68**	**-3.6**	**-5.62**
	11-B	27	57.4				4-H	16	36.53				
							4-I*	12.7	34.85				
	Total	**27**	**57.4**					**28.7**	**71.38**	**28.7**	**71.38**	**1.7**	**13.98**
Total Area and Flow In Line A		**215**	**439.3**		**83.26**	**192.34**		**124.09**	**277.27**	**207.35**	**469.61**	**-7.65**	**30.31**
LINE B	1-A	22	46.7				3-B	26.2	55.53				
	Total	**22**	**46.7**					**26.2**	**55.53**	**26.2**	**55.53**	**4.2**	**8.83**
	2-A	4.1	7.9				3-D	4.13	8.63				
	Total	**4.1**	**7.9**					**4.13**	**8.63**	**4.13**	**8.63**	**0.03**	**0.73**
	3-A	28.6	54.8				3-A	27.3	51.88				
	Total	**28.6**	**54.8**					**27.3**	**51.88**	**27.3**	**51.88**	**-1.3**	**-2.92**
	4-A	33.4	60.1				5-A	32.1	56.51				
	Total	**33.4**	**60.1**					**32.1**	**56.51**	**32.1**	**56.51**	**-1.3**	**-3.59**
Total Area and Flow In Line B		**88.1**	**169.5**					**89.73**	**172.55**	**89.73**	**172.55**	**1.63**	**3.05**
LINE C	1-A	15.1	34.9				2-A	8.2	18.37				
							2-B	3.3	9.86				
							2-C	3.4	8.86				
	Total	**15.1**	**34.9**					**14.9**	**37.09**	**14.9**	**37.09**	**-0.2**	**2.19**
Total Area and Flow In Line C		**15.1**	**34.9**					**14.9**	**37.09**	**14.9**	**37.09**	**-0.2**	**2.19**
LINE D	1-A	32.6	54.6				1-A	12.8	22.88				
							1-B	2.9	8.63				
							1-C	4.9	13.48				
							1-D	6.9	19.02				
							1-E	5.6	15.43				
	Total	**32.6**	**54.6**					**33.1**	**79.44**	**33.1**	**79.44**	**0.5**	**24.84**
Total Area and Flow In Line D		**32.6**	**54.6**					**33.1**	**79.44**	**33.1**	**79.44**	**0.5**	**24.84**

*Measure RR hydrology included offsite Q. See attached calculation for comparable onsite Q only, included in table

**Measure RR area 3-C is tributary to Line B. However, 2012 UIMP shows it tributary to Line A.

	Utility Infrastructure Master Plan 2012		Measure RR		Difference		Percent Change	
Line	**Area (Ac)**	**Q25 (cfs)**	**Area (Ac)**	**Q25 (cfs)**	**Area (Ac)**	**Q25 (cfs)**	**Area (Ac)**	**Q25 (cfs)**
LINE A	215	439.3	207.35	469.61	-7.65	30.31	-3.6%	6.9%
LINE B	88.1	169.5	89.73	172.55	1.63	3.05	1.9%	1.8%
LINE C	15.1	34.9	14.9	37.09	-0.2	2.19	-1.3%	6.3%
LINE D	32.6	54.6	33.1	79.44	0.5	24.84	1.5%	45.5%
Total	350.8	698.3	345.08	758.69	-5.72	60.39	-1.6%	8.6%

Summary:

The calculations show that the areas tributary to Line A and Line D have the greatest increase in the 25-year storm flows.

Line A

The subareas 1-A, 11-B, and 4-C from the Utility Infrastructure Master Plan showed the largest increase in Q25 flow rates from tributary Measure RR and Farm Precint subareas. However, no new development occurred in these areas between 2012 and Measure RR Conditions. The differences may be derived from varying hydrology methods, including different subareas sizes and boundaries between the two studies (e.g. Measure RR and Farm Precint studies included additional subareas).

Line D

The Utility Infrastructure Master Plan subarea 1-A showed the greatest increase in Q25 the most when compared to the Measure RR analysis. The Food Services building is the only Measure RR new development in this area and should not have increased the runoff volume by the amount indicated in the calculations. The difference may have to do with varying hydrology methods, including increased subareas between the studies (e.g. Measure RR study included additional subareas).

For the purpose of the SEIR it may be helpful to analyze the difference in conditions within these subareas in in order to provide site specific hydrology analysis for the 2012 conditions using the same subareas and methodology as was employed for the Measure RR conditions study.

Peak Flow Hydrologic Analysis

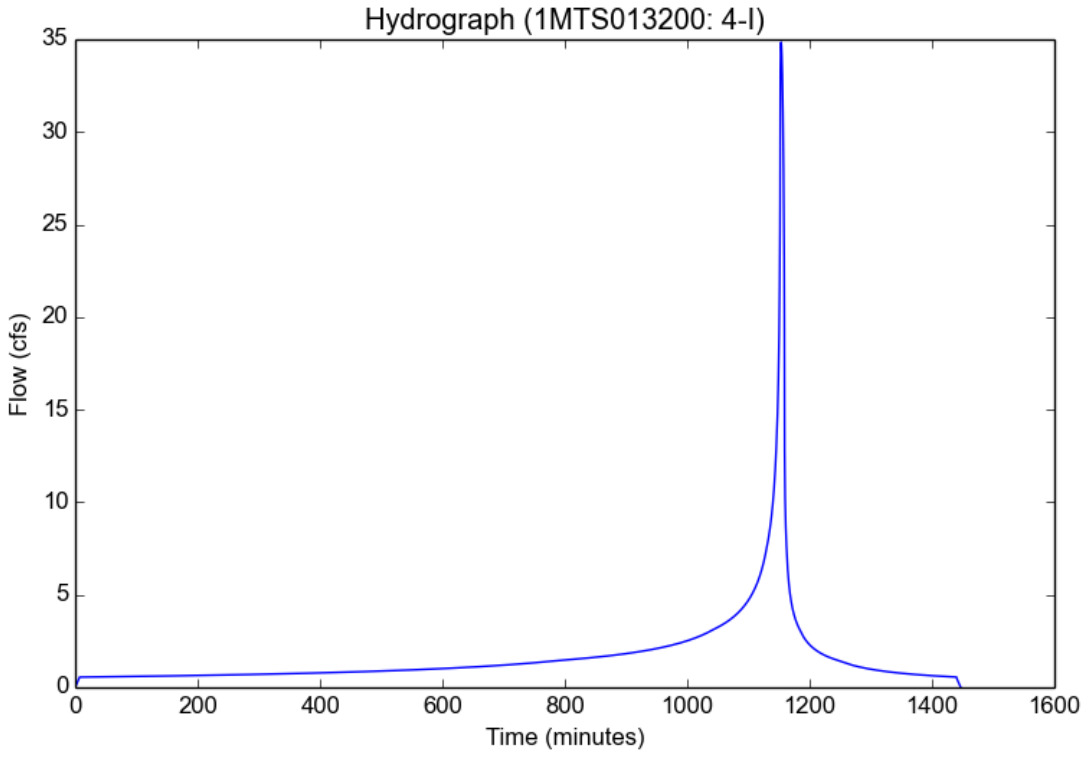
File location: W:/Mt_SAC/1MTS013200/ENGR/CALCS/1MTS013200 - 4-I.pdf
Version: HydroCalc 0.3.1

Input Parameters

Project Name	1MTS013200
Subarea ID	4-I
Area (ac)	12.7
Flow Path Length (ft)	783.91
Flow Path Slope (vft/hft)	0.05
50-yr Rainfall Depth (in)	6.9
Percent Impervious	0.25
Soil Type	2
Design Storm Frequency	25-yr
Fire Factor	0
LID	False

Output Results

Modeled (25-yr) Rainfall Depth (in)	6.0582
Peak Intensity (in/hr)	3.0858
Undeveloped Runoff Coefficient (Cu)	0.8857
Developed Runoff Coefficient (Cd)	0.8893
Time of Concentration (min)	7.0
Clear Peak Flow Rate (cfs)	34.8515
Burned Peak Flow Rate (cfs)	34.8515
24-Hr Clear Runoff Volume (ac-ft)	3.3938
24-Hr Clear Runoff Volume (cu-ft)	147833.9464

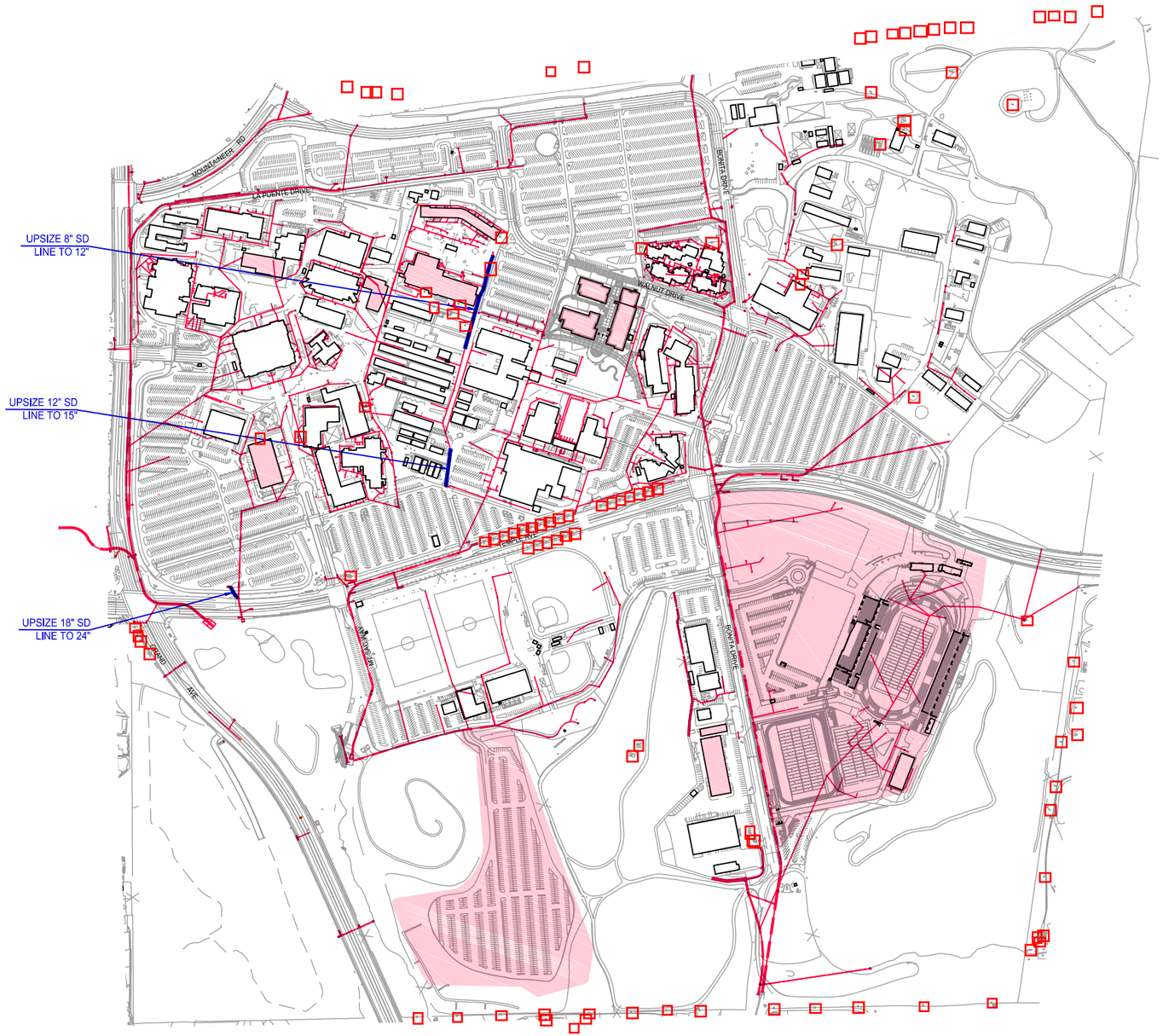


Mount San Antonio College

4/20/2016

Difference In Impervious Area Before and After Construction

Building Name	Area (acres)	Difference in Impervious Area (Acres)
Business and Computer Technology Center	5.76	0.58
Student Success	0.92	-0.29
Athletic Complex East	32.62	9.79
Food Service	1.50	0.68
South Campus East	9.43	8.68
16E	1.00	0.18
Building 4	0.94	0.08
Building 12 Renovation	2.34	0.26
Building 46	0.90	0.00
Design Technology Center	1.70	0.00
		20.20



LEGEND

MEASURE RR FACILITY

EXISTING STORM DRAIN

PROPOSED STORM DRAIN

600' 300' 0' 600' 1200'

GRAPHIC SCALE: 1"=600' @ 11X17

MT. SAN ANTONIO COLLEGE

PROPOSED FACILITIES
MEASURE RR (2016)

5/5/2016 REV 1

Plotted — 5/5/2016 3:29:09 PM :: Saved — 5/5/2016 3:27:12 PM :: W:\Mt_SAC\1M1501.3200\ENGR\EXHIB\Proposed Facilities.dwg :: tina.tse