MALIBU MEMORIAL PARK

INITIAL STUDY
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APPENDIX I

Photometric Plan Set

GENERAL NOTES

1. ALL MATERIALS SHALL BE NEW AND U.L. LISTED.
2. ALL WORK AND INSTALLATION OF ELECTRICAL EQUIPMENT SHALL BE PER CITY OF MALIBU ELECTRICAL BUILDING CODES.

MALIBU LIP-SECTION 6.5 CODE COMPLIANCE

MALIBU LIP – Section 6.5

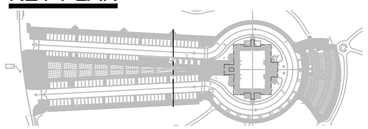
Development Standards

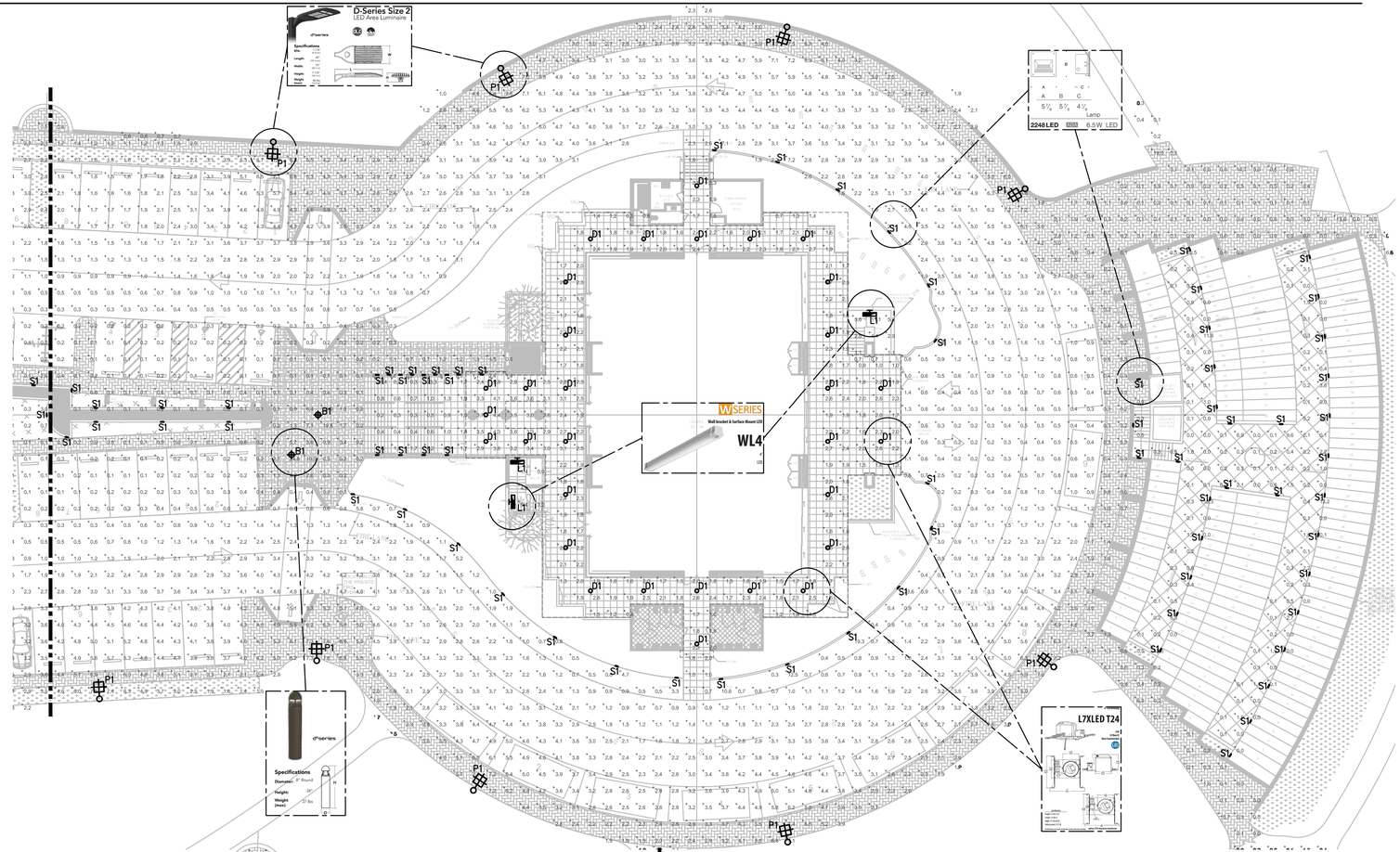
G. Lighting

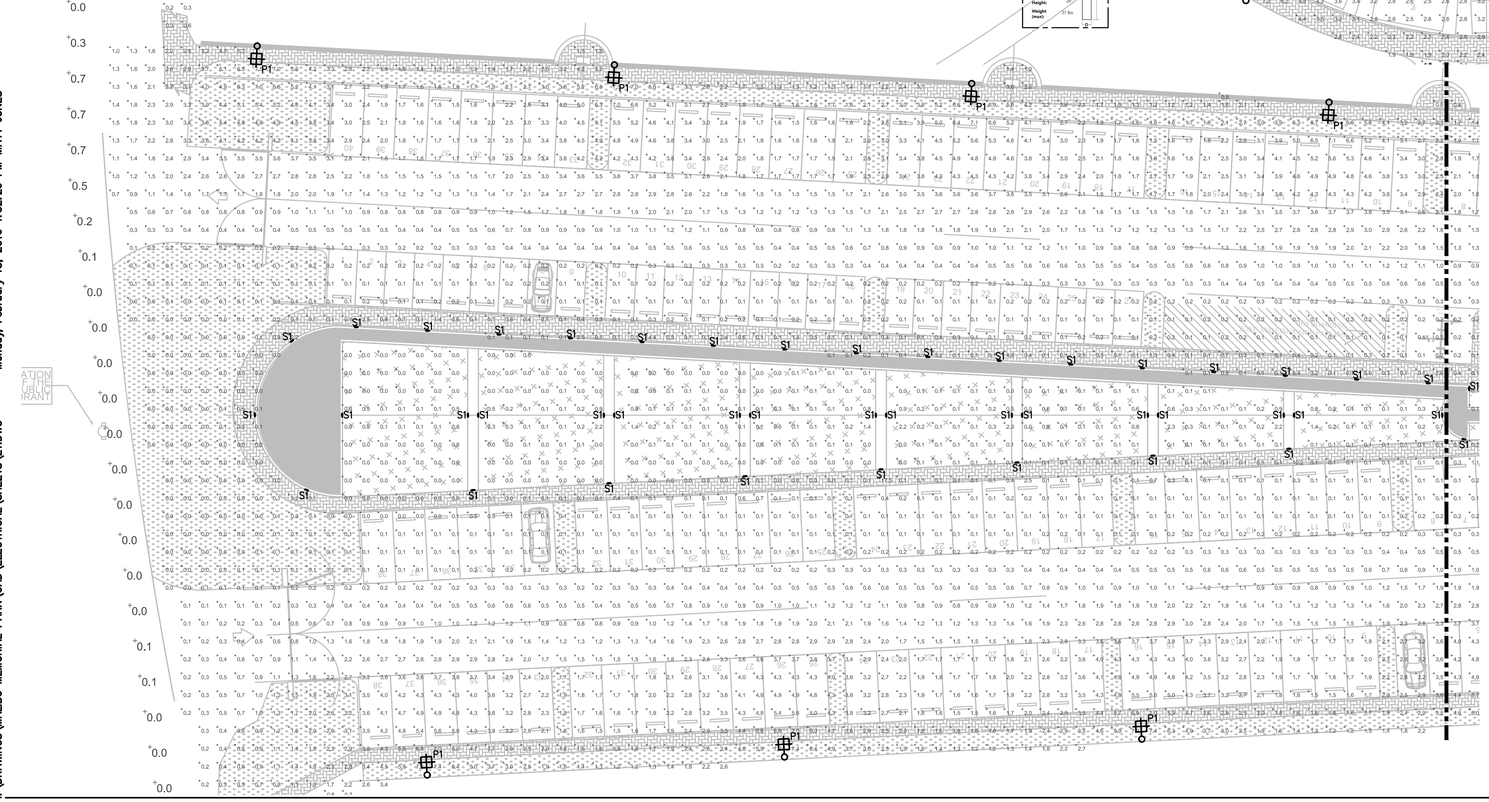
Exterior lighting (except traffic lights, navigational lights, and other similar safety lighting) shall be minimized, restricted to low intensity features, shielded, and concealed to the maximum feasible extent so that no light source is directly visible from public viewing areas. Night lighting for sports courts or other private recreational facilities in scenic areas designated for residential use shall be prohibited. Permitted lighting shall conform to the following standards:

1. The minimum necessary to light walkways used for entry and exit to the structures, including parking areas, on the site. This lighting shall be limited to fixtures that do not exceed two feet in height, that are directed downward, and use bulbs that do not exceed 60 watts, or the equivalent, unless a higher wattage is authorized by the Planning Director.
2. Security lighting attached to the residence that is controlled by motion detectors and is limited to 60 watts, or the equivalent.
3. The minimum lighting necessary for safe vehicular use of the driveway. The lighting shall be limited to 60 watts, or the equivalent.
4. A light, not to exceed 60 watts or the equivalent, at the entrance to the (identify non-residential accessory structures).
5. No lighting around the perimeter of the site, no lighting for sports courts or other private recreational facilities, and no lighting for aesthetic purposes is allowed.
6. Prior to issuance of Coastal Development Permit, the applicant shall be required to execute and record a deed restriction reflecting the above restrictions. Public agencies shall not be required to record a deed restriction but may be required to submit a written statement agreeing to any applicable restrictions above.

KEY PLAN







1 E1 SITE LIGHTING PLAN - EAST

SCALE: 1" = 20'-0"

2 E1 SITE LIGHTING PLAN - WEST

SCALE: 1" = 20'-0"

LUMINAIRE SCHEDULE								
Symbol	Label	Qty	Catalog Number	Description	Lamp	Lumens	LLF	Watts
	P1	16	DSX2 LED 80C 1000 30K T4M MVOLT HS - POLE 18FT MOUNTING HEIGHT MAX	DSX2 LED WITH 80 LEDs @1000mA, 3000K, TYPE 4 MEDIUM OPTICS, WITH HOUSE SIDE SHIELD	LED	Absolute	0.65	282
	B1	2	DSXB LED 16C 700 50K SYM 2FT TALL MAX	D-SERIES BOLLARD WITH 16 5000K LEDS OPERATED AT 700mA AND SYMMETRIC DISTRIBUTION	LED	Absolute	0.65	39
	D1	31	REAL6 D6MW ESL 1000L 30K .90SC	6" REALITY LED RECESSED DOWNLIGHT, 1000 LUMENS, 3000K CCT, 0.90 SPACING CRITERIA	LED	Absolute	0,65	11
	L1	3	WL4 40L LP840	WL4 4' 4000 NOMINAL LUMENS 4000K	LED	Absolute	0,65	39.48
	S1	121	2248LED	5-7/8"SQ. X 4-1/8"H. LED FIXTURE CLEAR LENS	LED	Absolute	0.65	11.53

STATISTICS						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
BUILDING	+	2.2 fc	23.3 fc	0.2 fc	116.5:1	11.0:1
DRIVE	+	1.8 fc	24.8 fc	0,0 fc	N / A	N / A
STAIRWELL	+	4,4 fc	11,1 fc	1,1 fc	10,1:1	4,0:1
STAIRWELL	+	4,0 fc	9,4 fc	0,9 fc	10,4:1	4,4:1

Calculated values include direct and interreflected components.

MALIBU MEMORIAL PARK

4000 Malibu Canyon Road
MALIBU,
CA 90265

SASCO
P.O. BOX 6004 ARTESIA, CA 90702-6004
2750 MOORE AVE. FULLERTON, CA. 92833
(714) 870-0217 FAX (714) 738-3571
LICENSE #125897

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NO	DATE	ISSUE

DESCRIPTION:

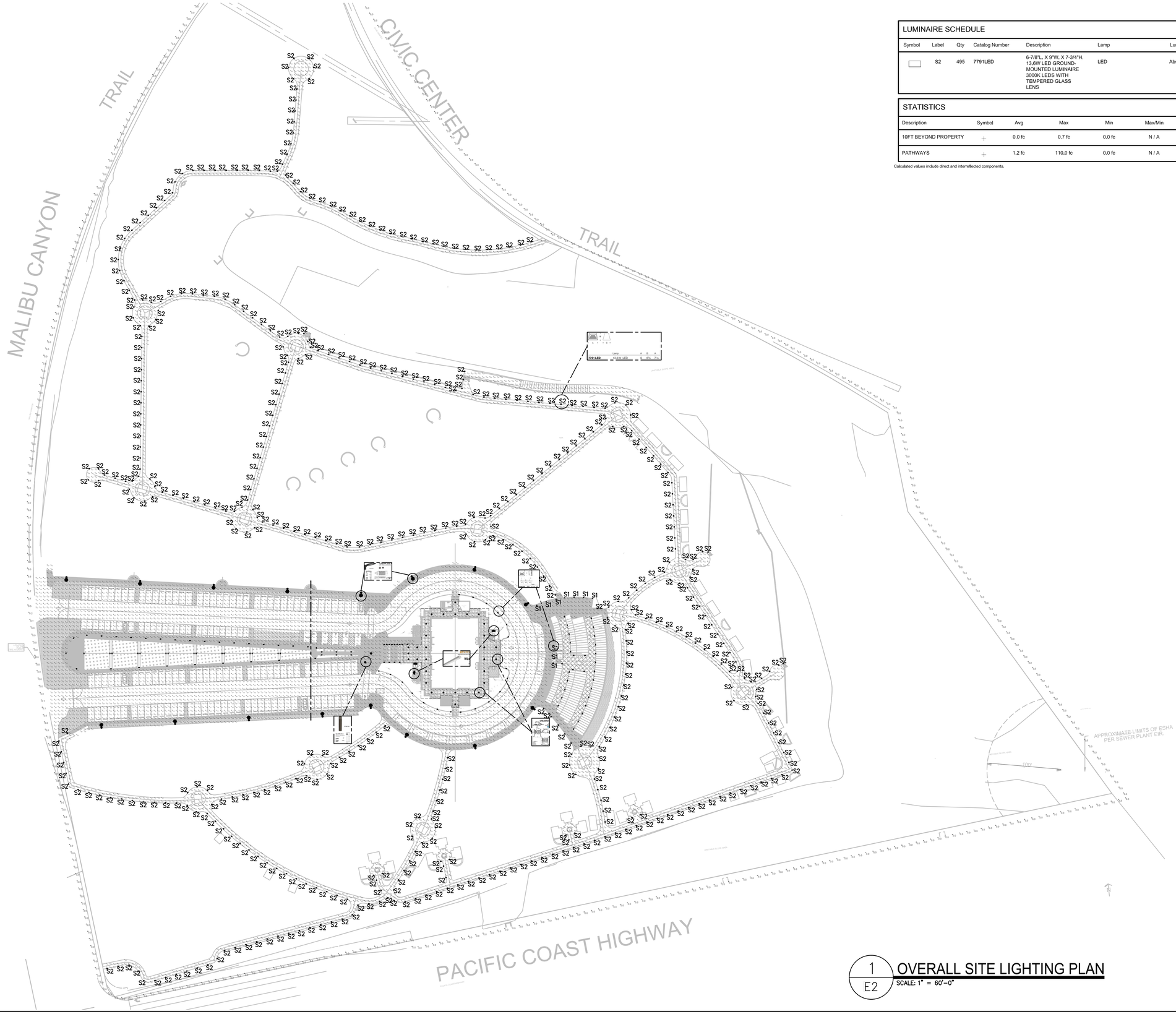
EXTERIOR LIGHTING PHOTOMETRIC PLAN

DRAWING NO.

E1

PROJECT	2530 - Malibu Memorial Park
DATE	01-13-2016
SCALE	AS NOTED
DRAWN BY	MJ

I:\DRAWINGS\MALIBU MEMORIAL PARK\CAD\ELECTRICAL\SHEETS\E1.DWG Monday, February 15, 2016 1:32:29 PM MATT JONES



LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	Lumens	LLF	Watts
▭	S2	495	7791LED	6-7/8"L, X 9"W, X 7-3/4"H, 13.6W LED GROUND-MOUNTED LUMINAIRE 3000K LEDS WITH TEMPERED GLASS LENS	LED	Absolute	0.65	15.98

STATISTICS

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
10FT BEYOND PROPERTY	+	0.0 fc	0.7 fc	0.0 fc	N / A	N / A
PATHWAYS	+	1.2 fc	110.0 fc	0.0 fc	N / A	N / A

Calculated values include direct and interreflected components.

1 E2 OVERALL SITE LIGHTING PLAN
SCALE: 1" = 60'-0"

MALIBU MEMORIAL PARK

4000 Malibu Canyon Road
MALIBU,
CA 90265

SASCO
P.O. BOX 6004 ARTESIA, CA 90702-6004
2750 MOORE AVE. FULLERTON, CA. 92833
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NO	DATE	ISSUE

DESCRIPTION:

EXTERIOR LIGHTING
PHOTOMETRIC PLAN

DRAWING NO.

E2

PROJECT	2550 - Malibu Memorial Park
DATE	01-13-2016
SCALE	AS NOTED
DRAWN BY	MJ

I:\DRAWINGS\MALIBU MEMORIAL PARK\CAD\ELECTRICAL\SHEETS\E2.DWG Monday, February 15, 2016 2:05:32 PM MATT JONES

APPENDIX III

Air Quality Study Update

City of Malibu

Malibu Memorial Cemetery Project

Air Quality Study

March 2016

rincon

Environmental Scientists Planners Engineers

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

805 644 4455
FAX 644 4240

info@rinconconsultants.com
www.rinconconsultants.com

March 3, 2016
Project No. 15-02065

Jake Jesson
Assistant Project Manager
Green Acres, LLC
22837 Pacific Coast Highway #775
Malibu, California 90265
jjesson@weintraubre.com

RE: AIR QUALITY STUDY
Malibu Memorial Cemetery Project, Malibu, California

Dear Mr. Jesson:

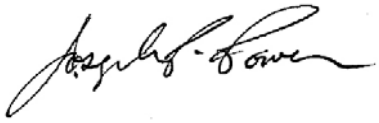
Rincon Consultants, Inc. is pleased to submit the attached Air Quality Study for the proposed Malibu Memorial Cemetery project in Malibu, California. Emissions that result from the construction of the proposed project would not exceed the recommended South Coast Air Quality Management District (SCAQMD) construction thresholds. The proposed project would not result in emissions would exceed the recommended SCAQMD operational thresholds for any criteria pollutant, or cumulative SCAQMD thresholds. As such, impacts related to air quality as a result of the proposed project would not be significant. If you have any questions regarding this study or if we can provide you with other environmental consulting services, please feel free to contact us.

Sincerely,

RINCON CONSULTANTS, INC.



Chris Bersbach
Technical Services Program Supervisor



Joe Power, AICP
Principal

Malibu Memorial Cemetery Project

Air Quality Study

Prepared for:

Green Acres, LLC
22837 Pacific Coast Highway, #775
Malibu, California 90265

Prepared with the assistance of:

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

March 2016

This report is printed on 50% recycled paper.

Malibu Memorial Cemetery Project
Air Quality Study

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MALIBU MEMORIAL CEMETERY PROJECT
MALIBU, LOS ANGELES COUNTY
AIR QUALITY STUDY

This report is an analysis of the potential air quality impacts of the proposed Malibu Memorial Cemetery project located in Malibu, California in Los Angeles County. The report has been prepared by Rincon Consultants, Inc. under contract to Green Acres, LLC for use by the City of Malibu, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's air quality emissions and the associated impacts. This analysis considers both temporary the air quality impacts that would result from project construction and potential long-term air quality impacts associated with operation of the proposed project.

PROJECT DESCRIPTION

Green Acres, LLC, is developing the Malibu Memorial Cemetery Park and Chapel Project, comprised of approximately 21.0 acres of a 28.7-acre property located east of Malibu Canyon Road, west of Civic Center Way, and north of Pacific Coast Highway in the City of Malibu, California (the "Project"). The unstable slope areas along the perimeter of the site comprise the remaining 7 acres of the parcel that Green Acres has elected not to develop. The proposed Memorial Park project contains approximately 17,500 GSF of FAR development and would include the construction of a 8,500 SF Main Chapel facility, 8,500 SF subterranean parking basement, 48 free-standing Mausoleum structures totaling approximately 9,000 SF (approximately 186 SF/each), approximately 30,600 plot spaces for various crypt configurations, cremation and fractional burial options, as well as surface unenclosed parking for guest vehicles along the entry drive and Chapel ring.

The original Project EIR was approved by the City of Malibu in 1998. To satisfy Mitigation Measure 8.1 of the Rancho Malibu Hotel Environmental Impact Report (City of Malibu 1997), a Cultural Resources Management Plan (CRMP) was developed to reduce potential impacts to an archaeological site located on the property (Wlodarski 1995). The revised CRMP was developed in response to three basic factors: 1) the need to incorporate burial crypts within areas of the site previously slated to be grubbed and capped; 2) changes in the condition of the site over the past 15 years since the plan was developed; and, 3) new grading of unstable slopes and required retaining walls on the site. The project was revised in October 2015 to exclude work in unstable slope areas, remove mounding within sensitive areas, and contain grading within the City-stipulated thresholds of 1,000 cubic yards per acre, reducing the overall project footprint to 21 acres.

SETTING

Current Air Quality

California's weather is heavily influenced by a semi-permanent high-pressure system west of the Pacific. The Mediterranean climate of the region and the coastal influence produce moderate temperatures year round, with rainfall concentrated in the winter months. The sea breeze,

which is the predominant wind, is a primary factor in creating this climate and typically flows from the west-southwest in a day-night cycle with speeds generally ranging from 5 to 15 miles per hour. The sea breeze maintains the cool temperatures and clean air circulation and generally prevents warmer inland temperatures and air pollution from permeating into the peninsula, except under certain seasonal conditions such as the offshore Santa Ana winds.

The City of Malibu is located within the South Coast Air Basin. The South Coast Air Basin's air quality is affected not only by the emission sources located in the region, but also to a large extent by three natural factors: terrain; a dominant on-shore flow; and atmospheric inversion. The first of these factors is a natural barrier to emission dispersion north and east of the metropolitan Los Angeles area. The dominant on-shore flow provides the driving mechanism for both air pollution transport and dispersion. Air pollution originating in the industrial areas along the coast and immediately inland is driven toward the natural terrain barrier, limiting horizontal dispersion. The effect of this second factor can be seen as a gradual degradation of air quality from coastal to inland areas. Malibu is typical of some of the South Coast Air Basin's best air quality areas because of its location along the coast upwind from most mobile and stationary sources. The greatest impacts can be seen in the San Gabriel Valley and near Riverside at the foot of the San Gabriel Mountains. The third factor affecting the regional air quality is atmospheric inversions, which limit dispersion of air pollution on a vertical scale. Inversions can be classified into one of two general categories: (1) inversion aloft or (2) surface based inversions. These two categories are the result of different meteorological conditions and tend to affect different sources. Inversions aloft are a critical factor in the degradation of regional air quality. The condition is defined by a vertical temperature profile, which initially conforms to standard conditions. For example, temperature typically decreases with height. However, under inversion conditions temperature begins to increase at some height above the ground. This height is called the base of the inversion. The temperature increase continues through an unspecified layer after which the temperature change with height returns to standard conditions. The inversion layer is typically very stable and acts as a cap to the vertical dispersions of pollutants.

Air Pollution Regulation

Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb). California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 1 lists the current federal and state standards for criteria pollutants.

Malibu is located within the South Coast Air Basin (Basin), which is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment." The Basin, in which the project area is located, is a non-attainment area for both the federal and state standards for ozone and PM_{10}. The Basin is in attainment for the state and federal standards for nitrogen dioxide, and for carbon monoxide. Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Table 1
Current Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	California Standard
Ozone	0.075 ppm (8-hr avg)	0.09 ppm (1-hr avg) 0.07 ppm (8-hr avg)
Carbon Monoxide	9.0 ppm (8-hr avg) 35.0 ppm (1-hr avg)	9.0 ppm (8-hr avg) 20.0 ppm (1-hr avg)
Nitrogen Dioxide	0.053 ppm (annual avg) 0.100 ppm (1-hr avg)	0.18 ppm (1-hr avg) 0.030 ppm (annual avg)
Sulfur Dioxide	0.5 ppm (3-hr avg) 0.075 ppm (1-hr avg)	0.04 ppm (24-hr avg) 0.25 ppm (1-hr avg)
Lead	1.5 $\mu g/m^3$ (calendar quarter)	1.5 $\mu g/m^3$ (30-day avg)
Particulate Matter (PM_{10})	150 $\mu g/m^3$ (24-hr avg)	20 $\mu g/m^3$ (annual avg) 50 $\mu g/m^3$ (24-hr avg)
Particulate Matter ($PM_{2.5}$)	15 $\mu g/m^3$ (annual avg) 35 $\mu g/m^3$ (24-hr avg)	12 $\mu g/m^3$ (annual avg)

ppm= parts per million
$\mu g/m^3$ = micrograms per cubic meter
Source: California Air Resources Board, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, last updated October 1 7, 2015.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG). NO_X is formed during the combustion of fuels, while reactive organic gases are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in substantial concentrations between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide. CO is a local pollutant that is found in high concentrations only near a source of carbon monoxide. The major source of CO, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. CO's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, CO reduces the amount of oxygen in the blood, causing heart difficulty in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide. NO_2 is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. NO_2 absorbs blue light and causes a reddish brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. Atmospheric particulate matter is comprised of finely divided solids and liquids such as dust, soot, aerosols, fumes, and mists. The particulates that are of particular concern are PM_{10} (which measures no more than 10 microns in diameter) and $PM_{2.5}$, (a fine particulate measuring no more than 2.5 microns in diameter). The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and $PM_{2.5}$ can be different. Major man-made sources of PM_{10} are agricultural operations, industrial processes, combustion of fossil fuels, construction, demolition operations, and entrainment of road dust into the atmosphere. Natural sources include windblown dust, wildfire smoke, and sea spray salt. The finer, $PM_{2.5}$ particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. $PM_{2.5}$ is more likely to penetrate deeply into the lungs and poses a serious health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there, which can cause permanent lung damage. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Local Air Quality

The air quality monitoring station located nearest to the project site is the Veteran's Administration (VA) Hospital in West Los Angeles, approximately 14 miles east of the project site. However, this station does not monitor PM_{10} or $PM_{2.5}$ emissions. Therefore, the West Palm Avenue monitoring station was also used, as shown in Table 2. Ambient air quality data obtained from these stations characterize the air quality representative of the ambient air quality in the project area.

Table 2 indicates the number of days that each of the standards has been exceeded at the closest monitoring station. As shown, the ozone concentration did not exceed state standards in 2012 or 2013 but did exceed the standard once in 2014. The PM_{10} concentration exceeded the state standards once in 2012 and once in 2013 but did not exceed the federal standards in 2012 or 2013. The $PM_{2.5}$ concentration exceeded federal standards two days in 2012, four days in 2013, and two days in 2014. $PM_{2.5}$ and CO levels for 2014 were not available. No exceedances of either the state or federal standards for NO_2 or CO are known to have occurred at either monitoring station in the last three years. Table 2 indicates that background CO levels are well within standards.

Air Quality Management Plan

Under state law, the SCAQMD is required to prepare a plan for air quality improvement for pollutants for which the District is in non-compliance. The SCAQMD updates the plan every three years. Each iteration of the SCAQMD's Air Quality Management Plan (AQMP) is an update of the previous plan and has a 20-year horizon. SCAQMD staff is currently developing the 2016 AQMP. The 2012 AQMP incorporates new scientific data and notable regulatory actions that have occurred since adoption of the 2007 AQMP. The SCAQMD adopted the 2012 AQMP in February 2013.

Table 2
Ambient Air Quality Data

Pollutant	2012	2013	2014
Ozone, ppm - Worst Hour	0.09	0.08	0.12
Number of days of State exceedances (>0.09 ppm)	0	0	1
Number of days of Federal exceedances (>0.12 ppm)	0	0	0
Carbon Monoxide, ppm - Worst 8 Hours	1.15	ND	ND
Number of days of State/Federal exceedances (>9.0 ppm)	0	ND	ND
Nitrogen Dioxide, ppm - Worst Hour	61.0	51.0	63.0
Number of days of State exceedances (>0.25 ppm)	0	0	0
Particulate Matter <10 microns, $\mu g/m^3$ Worst 24 Hours[1]	54.0	51.0	58.0
Number of samples of State exceedances (>50 $\mu g/m^3$)	1	1	ND
Number of samples of Federal exceedances (>150 $\mu g/m^3$)	0	0	ND
Particulate Matter <2.5 microns, $\mu g/m^3$ Worst 24 Hours[1]	62.2	49.7	74.7
Number of samples of Federal exceedances (>35 $\mu g/m^3$)	2	4	2

West Los Angeles-VA Hospital Monitoring Station
ND – No Data
[1] Burbank-West Palm Avenue Monitoring Station
Source: ARB 2012, 2013, 2014 Annual Air Quality Data Summaries available at http://www.arb.ca.gov/adam/topfour/topfour1.php

The Final 2012 AQMP also addresses several state and federal planning requirements, incorporating new scientific information, primarily in the form of updated emissions inventories, ambient measurements, and new meteorological air quality models. This Plan builds upon the approaches taken in the 2007 AQMP for the South Coast Air Basin for the attainment of federal PM and ozone standards, and highlights the significant amount of reductions needed and the urgent need to engage in interagency coordinated planning to identify additional strategies, especially in the area of mobile sources, to meet all federal criteria pollutant standards within the timeframes allowed under the federal Clean Air Act. The Final 2012 AQMP also includes a discussion of the emerging issues of ultrafine particle and near-roadway exposures, an analysis of the energy supply and demand issues that face the Basin and their relationship to air quality. The Plan also includes new demonstrations of 1-hour ozone attainment and vehicle miles travelled (VMT) emissions offsets, as per recent U.S. EPA requirements. The 2012 AQMP is incorporated by reference and available to download at http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan.

Sensitive Receptors

Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare. They are designed to protect that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. The majority of sensitive receptor locations are therefore schools and hospitals. Sensitive receptors likely to be affected by air quality impacts associated with project construction include residents to the northeast of the project site, as well as Webster Elementary School. Based on the project plans, construction activities may occur within approximately 350 feet of Our Lady of Malibu Church, 400 feet of the nearest condominiums to the east of the project site, 550 feet of Webster Elementary School, and 1,600 feet of Pepperdine University. Therefore, the sensitive receptor closest to the project site, where construction activities may occur, would be Our Lady of Malibu Church, which is located across Civic Center Way approximately 350 feet north of the project site boundary. Air pollutant emissions associated with long-term use of the site are not location specific, but rather are a contribution to the airshed as a whole.

IMPACT ANALYSIS

Methodology and Significance Thresholds

This air quality analysis conforms to the methodologies recommended in the SCAQMD's *CEQA Air Quality Handbook* (1993). The handbook includes thresholds for emissions associated with both construction and operation of proposed projects.

The construction activities associated with development would generate diesel emissions and dust. Construction equipment that would generate criteria air pollutants includes excavators, graders, dump trucks, and loaders. Some of this equipment would be used during grading activities as well as when structures are constructed. It is assumed that all construction equipment used would be diesel-powered. The regional construction emissions associated with development of the proposed project were calculated using the California Emissions Estimator Model (CalEEMod) software developed for the SCAQMD by estimating the types and number of pieces of equipment that would be used on-site during each of the construction phases. These construction emissions are analyzed using the regional thresholds established by the SCAQMD and published in the *CEQA Air Quality Handbook*.

Operational emissions associated with on-site development were estimated using CalEEMod. Operational emissions include mobile source emissions, energy emissions, and area source emissions. Mobile source emissions are generated by the increase in motor vehicle trips to and from the project site associated with operation of on-site development. Emissions attributed to energy use include natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coating. In addition to emissions estimated using CalEEMod, emission factors from the OFFROAD2007 tool were used to estimate the emissions associated with operation of a backhoe on a daily basis for excavation activities related to the project's cemetery use. To determine

whether a regional air quality impact would occur, the increase in emissions would be compared with the SCAQMD's recommended regional thresholds for operational emissions.

Regional Thresholds. To determine whether a proposed project would have a significant impact to air quality, Appendix G of the *CEQA Guidelines* questions whether a project would:

a) Conflict with or obstruct implementation of the applicable air quality plan;
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors);
d) Expose sensitive receptors to substantial pollutant concentrations; or
e) Create objectionable odors affecting a substantial number of people.

The SCAQMD has developed specific numeric thresholds that apply to projects within the South Coast Air Basin. The SCAQMD has established the following significance thresholds for construction activities within the South Coast Air Basin:

- *75 pounds per day of ROG*
- *100 pounds per day of NO_X*
- *550 pounds per day of CO*
- *150 pounds per day of PM_{10}*
- *55 pounds per day of $PM_{2.5}$*

The SCAQMD has also established the following significance thresholds for project operations within the South Coast Air Basin:

- *55 pounds per day of ROG*
- *55 pounds per day of NO_X*
- *550 pounds per day of CO*
- *150 pounds per day of SO_X*
- *150 pounds per day of PM_{10}*
- *55 pounds per day of $PM_{2.5}$*

Localized Significance Thresholds. In addition to the above thresholds, the SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4), which was prepared to update the *CEQA Air Quality Handbook*. LSTs were devised in response to concern regarding exposure of individuals to criteria pollutants in local communities. LSTs represent the maximum emissions from a project that will not cause or contribute to an air quality exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest sensitive receptor, taking into consideration ambient concentrations in each source receptor area (SRA), project size, distance to the sensitive receptor, etc. However, LSTs only apply to emissions within a fixed stationary location, including idling emissions during both project construction and operation.

LSTs have been developed for NO_X, CO, PM_{10} and $PM_{2.5}$. LSTs are not applicable to mobile (off-site) sources such as cars on a roadway (SCAQMD, June 2003). LSTs have been developed for emissions within construction areas up to five acres in size. The SCAQMD provides lookup tables for project sites that measure one, two, or five acres. The project site is located in Source Receptor Area 2 (SRA-2) and this analysis assumes that there would be no more than five acres of the site under active construction at one time. Therefore, the five-acre LSTs are used for significance determinations herein. According to the SCAQMD's publication *Final Localized Significant (LST) Thresholds Methodology*, the use of LSTs is voluntary, to be implemented at the discretion of local agencies. LSTs for construction are shown in Table 3.

Table 3
SCAQMD LSTs for SRA-2

Pollutant	Allowable emissions as a function of receptor distance in feet from a five-acre site (lbs/day)				
	82 Feet	164 Feet	328 Feet	656 Feet	1,640 Feet
Construction LSTs					
Gradual conversion of NO_x to NO_2	221	212	226	250	312
CO	1,531	1,985	2,762	4,383	10,467
PM_{10}	13	40	55	84	174
$PM_{2.5}$	6	8	14	29	95
Operational LSTs					
Gradual conversion of NO_x to NO_2	221	212	226	250	312
CO	1,531	1,985	2,762	4,383	10,467
PM_{10}	3	10	13	21	42
$PM_{2.5}$	2	2	4	7	23

Source: SCAQMD, October 2009, http://www.aqmd.gov/docs/default-source/ceqa/handbook/localized-significance-thresholds/appendix-c-mass-rate-lst-look-up-tables.pdf?sfvrsn=2, accessed online October 2015.

Construction Impacts

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles and soil hauling trucks, in addition to ROG that would be released during the drying phase upon application of architectural coatings. Construction would generally consist of site preparation, grading, erection of the proposed buildings, paving and architectural coating.

The site preparation phase would involve the greatest amount of heavy equipment and the greatest generation of fugitive dust. For the purposes of construction emissions modeling, it was assumed that the project would comply with the SCAQMD Rule 403, which identifies measures to reduce fugitive dust and is required to be implemented at all construction sites located within the South Coast Air Basin. Therefore, the following conditions, which would be required to reduce fugitive dust in compliance with SCAQMD Rule 403, were included in CalEEMod for the site preparation and grading phases of construction.

1. **Minimization of Disturbance.** Construction contractors should minimize the area disturbed by clearing, grading, earth moving, or excavation operations to prevent excessive amounts of dust.
2. **Soil Treatment.** Construction contractors should treat all graded and excavated material, exposed soil areas, and active portions of the construction site, including unpaved on-site roadways to minimize fugitive dust. Treatment shall include, but not necessarily be limited to, periodic watering, application of environmentally safe soil stabilization materials, and/or roll compaction as appropriate. Watering shall be done as often as necessary, and at least twice daily, preferably in the late morning and after work is done for the day.
3. **Soil Stabilization.** Construction contractors should monitor all graded and/or excavated inactive areas of the construction site at least weekly for dust stabilization. Soil stabilization methods, such as water and roll compaction, and environmentally safe dust control materials, shall be applied to portions of the construction site that are inactive for over four days. If no further grading or excavation operations are planned for the area, the area shall be seeded and watered until landscape growth is evident, or periodically treated with environmentally safe dust suppressants, to prevent excessive fugitive dust.
4. **No Grading During High Winds.** Construction contractors should stop all clearing, grading, earth moving, and excavation operations during periods of high winds (20 miles per hour or greater, as measured continuously over a one-hour period).
5. **Street Sweeping.** Construction contractors should sweep all on-site driveways and adjacent streets and roads at least once per day, preferably at the end of the day, if visible soil material is carried over to adjacent streets and roads.

Table 4 summarizes the estimated maximum daily emissions of pollutants during each of the major phases of construction.

With adherence to the conditions listed above, as required by SCAQMD Rule 403, maximum daily emissions of fugitive dust (PM_{10} and $PM_{2.5}$) would not exceed SCAQMD regional or LST thresholds for any pollutant. Therefore, temporary construction impacts would be less than significant.

Table 4
Estimated Construction Maximum Daily Air Pollutant Emissions (lbs/day)

Construction Phase	Maximum Emissions (lbs/day)				
	ROG	**NO_x**	**CO**	**PM_{10}**	**$PM_{2.5}$**
Maximum lbs/day	73.2	96.7	69.4	21.2	12.7
SCAQMD Thresholds	*75*	*100*	*550*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**
Maximum On-site lbs/day	n/a	28.5	18.5	2.0	1.8
Local Significance Thresholds [f] (LSTs) (On-site only)	*n/a*	*226*	*2,762*	*55*	*14*
Threshold Exceeded?	**n/a**	**No**	**No**	**No**	**No**

Notes: All calculations were made using CalEEMod. Note that Winter emissions are shown above. Winter emissions were greater than Summer emissions and therefore provide a more conservative estimate of construction impacts. See the Appendix for calculations. Site Preparation, Grading, Paving, Building Construction and Architectural Coating totals include worker trips, soil export hauling trips, construction vehicle emissions and fugitive dust.
[f] LSTs are for a five-acre project in SRA-2 within a distance of 328 feet from the site boundary.

Long-Term Regional Impacts

Operational Air Pollutant Emissions. Table 5 summarizes projected emissions associated with operation of the proposed project. The majority of project-related operational emissions would be due to vehicle trips to and from the site. The Institute of Transportation Engineers traffic generation rates for cemetery uses were used for the traffic analysis in order to provide a conservative estimate of the potential traffic generation impacts.

As shown in Table 5, project generated emissions would not exceed the SCAQMD thresholds for ROG, NO_X, CO, SO_X, PM_{10}, or $PM_{2.5}$. Air quality impacts associated with operation of the proposed project would therefore be less than significant.

Table 5
Project Operational Emissions

Emissions Source	Estimated Emissions (lbs/day)					
	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Mobile (off-site)	0.6	1.2	5.0	<0.1	0.7	0.2
Energy (on-site)	<0.1	0.1	0.1	<0.1	<0.1	<0.1
Area (on-site)	24.2	<0.1	<0.1	0.0	<0.1	<0.1
Daily Backhoe Activity (on-site) [1]	0.2	1.4	1.4	<0.1	0.1	0.1
Maximum lbs/day	**24.9**	**2.7**	**6.5**	**<0.1**	**0.8**	**0.3**
SCAQMD Thresholds	*55*	*55*	*550*	*150*	*150*	*55*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**
Local Significance Thresholds [2] (LSTs) (On-site only)	*n/a*	*226*	*2,762*	*n/a*	*13*	*4*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix for CalEEMod computer model output. Note that Winter emissions are shown above. Winter emissions were greater than Summer emissions and therefore provide a more conservative estimate of Operational impacts.
[1] OFFROAD2007, based on estimated average daily backhoe operation of up to 4 hours per day. Refer to Appendix for calculations.
[2] LSTs are for a five-acre project in SRA-2 within a distance of 328 feet from the site boundary.

Carbon Monoxide Hotspot Analysis. Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO, known as CO hotspots. A project's localized air quality impact is considered significant if CO emissions create a hotspot where either the California one-hour standard of 20 ppm or the federal and state eight-hour standard of 9.0 ppm is exceeded. This typically occurs at severely congested intersections (level of service [LOS] E or worse). Pursuant to SCAQMD guidance, a CO hotspot analysis should be conducted for intersections where the proposed project would have a significant impact at a signalized intersection, causing the LOS to change to E or F, or when the volume to capacity ratio (V/C) increases by 2% or more as a result of a proposed project for intersections rated D or worse (SCAQMD, 2003). The proposed project would result in approximately 100 daily weekday trips, 125 Saturday trips and 160 Sunday trips. Based on the high volume of traffic that is already carried by the local roadways (see Table 6 from most recent available traffic data for area roadways), this incremental increase in trips would not substantially affect LOS or result in a CO hotspot.

Toxic Air Contaminants. The California Air Resources Board's (ARB's) *Air Quality and Land Use Handbook: A Community Health Perspective* (April 2005) recommends against siting sensitive receptors within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day. Sensitive receptors within 500 feet of Malibu Canyon Road include Webster Elementary School (approximately 200 feet from Malibu Canyon Road), Our

Lady of Malibu Church (approximately 300 feet from Malibu Canyon Road), and single-family residences north of the project site (approximately 75 feet from Malibu Canyon Road). Recent daily traffic counts for Malibu Canyon Road are not available; however, the project traffic study, conducted by Overland Traffic Consultants, shows that traffic volumes are higher on Pacific Coast Highway than on Malibu Canyon Road (see Table 6 above). According to California Department of Transportation (Caltrans) traffic data for 2014, average daily traffic on Pacific Coast Highway at Malibu Canyon Road is between 32,500 and 36,500. Because traffic levels on Malibu Canyon Road are lower than Pacific Coast Highway, the addition of truck trips on Malibu Canyon Road during project construction and operation would not cause traffic levels exceeding 50,000 vehicles per day. As such, traffic on Malibu Canyon Road would not create significant health risks to sensitive receptors even with temporary haul truck traffic.

Table 6
Existing Traffic

Roadway Segment	Existing Traffic Volumes PM Peak hour
Malibu Canyon Road between Pacific Coast Highway and Civic Center Way	1,111
Pacific Coast Highway between Malibu Canyon Road and Webb Way	3,310
Civic Center Way between Malibu Canyon Road and Pacific Coast Highway	1,246

Source: Overland Traffic Consultants, Inc. Traffic Impact Analysis Resort Hotel Development, April 2012.

Odors. The proposed project would involve development of a religious memorial site. This use would not involve cremations on-site, and would not create or emits odors. Therefore, this impact would be less than significant.

AQMP Consistency. A project may be inconsistent with the AQMP if it would generate population, housing or employment growth exceeding the forecasts used in the development of the AQMP. The 2012 AQMP, the most recent AQMP adopted by the SCAQMD, incorporates in part local city general plans and the Southern California Association of Government's (SCAG) Regional Transportation Plan socioeconomic forecast projections of regional population, housing and employment growth.

The proposed project involves the development of a religious memorial site and would not involve the development of residential uses that would cause a direct increase in the City's population. However, the proposed project could cause an indirect increase in the City's population through an increase in employment as a result of development of the religious memorial facility. The employees of the project would most likely be maintenance staff, site managers and possibly funereal staff. The project would not generate a substantial number of new employees and would likely employ individuals from the existing labor market in the region. SCAG forecasts that the region will add 1 million new jobs, between 2012 and 2040, for a total of 5.2 million jobs in 2040 (SCAG, 2014). Therefore, the proposed project would not generate growth beyond AQMP forecasts. The project would be consistent with the AQMP and this impact would be less than significant.

REFERENCES

California Air Resources Board. *Air Quality and Land Use Handbook: A Community Health Perspective*. April 2005.

California Air Resources Board. *Ambient Air Quality Standards*. Updated October 1, 2015. http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

California Air Resources Board. 20122013, & 2014 Annual Air Quality Data Summaries. http://www.arb.ca.gov/adam/topfour/topfour1.php

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Overland Traffic Consultants. *Traffic Impact Analysis, Resort Hotel Development*. 2012.

South Coast Air Quality Management District. *California Emissions Estimator Model User Guide*. Prepared by ENVIRON International Corporation. February 2011.

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SCAQMD. *Final Localized Significance Threshold Methodology*. June 2003. Revised July 2008.

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SCAG. *2008 RTP Forecast by City*. Adopted May 2008. http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting#

Appendix

CalEEMod Air Quality Model Worksheets – Summer and Winter

Malibu Memorial Cemetery Project

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	17.50	1000sqft	0.40	17,500.00	0
Enclosed Parking Structure	2.00	Acre	2.00	87,120.00	0
City Park	18.80	Acre	18.80	818,928.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2017
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 - The place of worship is the square footage for the chapel and mausoleum combined. The parking includes all paved areas. The park accounts for all remaining space.

Construction Phase - Architectural coating phase lenghened to more accurately predict the actual constructing phasing for the project.

Grading -

Vehicle Trips - The trip rates were taking from the ITE Trip Generation manual 9th edition for a Cemetery (566).

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	325.00
tblConstructionPhase	PhaseEndDate	11/29/2018	9/28/2017
tblConstructionPhase	PhaseEndDate	10/26/2017	9/28/2017
tblConstructionPhase	PhaseStartDate	9/1/2017	7/1/2016
tblConstructionPhase	PhaseStartDate	9/29/2017	9/1/2017
tblGrading	MaterialExported	0.00	21,000.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	10.37	7.13
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	36.63	9.14
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	9.11	5.68

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	72.9785	95.9499	68.0686	0.1307	18.2675	3.8976	21.2080	9.9840	3.5858	12.6894	0.0000	12,305.9180	12,305.9180	1.9901	0.0000	12,347.7103
2017	72.3193	42.9992	63.6995	0.1307	6.1509	2.1858	8.3366	1.6495	2.0591	3.7086	0.0000	11,706.3910	11,706.3910	0.9912	0.0000	11,727.2059
Total	**145.2978**	**138.9491**	**131.7682**	**0.2614**	**24.4183**	**6.0834**	**29.5447**	**11.6335**	**5.6449**	**16.3979**	**0.0000**	**24,012.3091**	**24,012.3091**	**2.9813**	**0.0000**	**24,074.9162**

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	72.9785	95.9499	68.0686	0.1307	8.3310	3.8976	11.2716	4.5222	3.5858	7.2275	0.0000	12,305.9180	12,305.9180	1.9901	0.0000	12,347.7103
2017	72.3193	42.9992	63.6995	0.1307	6.1509	2.1858	8.3366	1.6495	2.0591	3.7086	0.0000	11,706.3910	11,706.3910	0.9912	0.0000	11,727.2059
Total	**145.2978**	**138.9491**	**131.7682**	**0.2614**	**14.4819**	**6.0834**	**19.6082**	**6.1717**	**5.6449**	**10.9361**	**0.0000**	**24,012.3091**	**24,012.3091**	**2.9813**	**0.0000**	**24,074.9162**

	ROG	NOx	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**	**40.69**	**0.00**	**33.63**	**46.95**	**0.00**	**33.31**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Energy	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
Mobile	0.4994	1.1572	4.8622	0.0112	0.7244	0.0164	0.7408	0.1937	0.0151	0.2088		957.0986	957.0986	0.0390		957.9170
Total	**24.6611**	**1.2590**	**4.9516**	**0.0118**	**0.7244**	**0.0241**	**0.7485**	**0.1937**	**0.0228**	**0.2165**		**1,079.1698**	**1,079.1698**	**0.0413**	**2.2400e-003**	**1,080.7316**

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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Energy	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
Mobile	0.4994	1.1572	4.8622	0.0112	0.7244	0.0164	0.7408	0.1937	0.0151	0.2088		957.0986	957.0986	0.0390		957.9170
Total	**24.6611**	**1.2590**	**4.9516**	**0.0118**	**0.7244**	**0.0241**	**0.7485**	**0.1937**	**0.0228**	**0.2165**		**1,079.1698**	**1,079.1698**	**0.0413**	**2.2400e-003**	**1,080.7316**

	ROG	NOx	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	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/11/2016	5	10	
3	Grading	Grading	2/12/2016	3/31/2016	5	35	
4	Building Construction	Building Construction	4/1/2016	8/31/2017	5	370	
5	Architectural Coating	Architectural Coating	7/1/2016	9/28/2017	5	325	
6	Paving	Paving	9/1/2017	9/28/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,385,322; Non-Residential Outdoor: 461,774 (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
Architectural Coating	Air Compressors	1	6.00	78	0.48
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

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	0.00	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	2,625.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	388.00	151.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	78.00	0.00	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

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					
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**		**2.2921**	**2.2921**		**2.1365**	**2.1365**		**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

3.2 Demolition - 2016

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	0.0668	0.0841	1.0406	2.1800e-003	0.1677	1.5900e-003	0.1693	0.0445	1.4600e-003	0.0459		184.3532	184.3532	0.0100		184.5639
Total	**0.0668**	**0.0841**	**1.0406**	**2.1800e-003**	**0.1677**	**1.5900e-003**	**0.1693**	**0.0445**	**1.4600e-003**	**0.0459**		**184.3532**	**184.3532**	**0.0100**		**184.5639**

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	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**		**2.2921**	**2.2921**		**2.1365**	**2.1365**	**0.0000**	**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

3.2 Demolition - 2016

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	0.0668	0.0841	1.0406	2.1800e-003	0.1677	1.5900e-003	0.1693	0.0445	1.4600e-003	0.0459		184.3532	184.3532	0.0100		184.5639
Total	**0.0668**	**0.0841**	**1.0406**	**2.1800e-003**	**0.1677**	**1.5900e-003**	**0.1693**	**0.0445**	**1.4600e-003**	**0.0459**		**184.3532**	**184.3532**	**0.0100**		**184.5639**

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**

3.3 Site Preparation - 2016

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	0.0802	0.1009	1.2487	2.6200e-003	0.2012	1.9000e-003	0.2031	0.0534	1.7500e-003	0.0551		221.2238	221.2238	0.0120		221.4767
Total	**0.0802**	**0.1009**	**1.2487**	**2.6200e-003**	**0.2012**	**1.9000e-003**	**0.2031**	**0.0534**	**1.7500e-003**	**0.0551**		**221.2238**	**221.2238**	**0.0120**		**221.4767**

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**

3.3 Site Preparation - 2016

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	0.0802	0.1009	1.2487	2.6200e-003	0.2012	1.9000e-003	0.2031	0.0534	1.7500e-003	0.0551		221.2238	221.2238	0.0120		221.4767
Total	**0.0802**	**0.1009**	**1.2487**	**2.6200e-003**	**0.2012**	**1.9000e-003**	**0.2031**	**0.0534**	**1.7500e-003**	**0.0551**		**221.2238**	**221.2238**	**0.0120**		**221.4767**

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					8.7412	0.0000	8.7412	3.6068	0.0000	3.6068			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**	**8.7412**	**3.5842**	**12.3254**	**3.6068**	**3.2975**	**6.9043**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

3.4 Grading - 2016

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	1.3210	21.0240	14.9196	0.0560	1.3061	0.3113	1.6174	0.3576	0.2863	0.6439		5,645.1331	5,645.1331	0.0417		5,646.0097
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	0.0891	0.1121	1.3874	2.9100e-003	0.2236	2.1100e-003	0.2257	0.0593	1.9400e-003	0.0612		245.8043	245.8043	0.0134		246.0853
Total	**1.4101**	**21.1362**	**16.3070**	**0.0589**	**1.5296**	**0.3134**	**1.8430**	**0.4169**	**0.2883**	**0.7052**		**5,890.9373**	**5,890.9373**	**0.0551**		**5,892.0949**

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					3.9335	0.0000	3.9335	1.6231	0.0000	1.6231			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**	**3.9335**	**3.5842**	**7.5178**	**1.6231**	**3.2975**	**4.9206**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

3.4 Grading - 2016

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	1.3210	21.0240	14.9196	0.0560	1.3061	0.3113	1.6174	0.3576	0.2863	0.6439		5,645.1331	5,645.1331	0.0417		5,646.0097
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	0.0891	0.1121	1.3874	2.9100e-003	0.2236	2.1100e-003	0.2257	0.0593	1.9400e-003	0.0612		245.8043	245.8043	0.0134		246.0853
Total	**1.4101**	**21.1362**	**16.3070**	**0.0589**	**1.5296**	**0.3134**	**1.8430**	**0.4169**	**0.2883**	**0.7052**		**5,890.9373**	**5,890.9373**	**0.0551**		**5,892.0949**

3.5 Building Construction - 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					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.5 Building Construction - 2016

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	1.2722	13.2138	15.3518	0.0332	0.9417	0.2066	1.1483	0.2679	0.1900	0.4579		3,325.3313	3,325.3313	0.0244		3,325.8439
Worker	1.7281	2.1750	26.9154	0.0564	4.3369	0.0410	4.3779	1.1502	0.0377	1.1879		4,768.6026	4,768.6026	0.2596		4,774.0539
Total	**3.0003**	**15.3888**	**42.2672**	**0.0896**	**5.2786**	**0.2476**	**5.5262**	**1.4181**	**0.2276**	**1.6458**		**8,093.9338**	**8,093.9338**	**0.2840**		**8,099.8978**

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	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485	0.0000	2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**	**0.0000**	**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.5 Building Construction - 2016

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	1.2722	13.2138	15.3518	0.0332	0.9417	0.2066	1.1483	0.2679	0.1900	0.4579		3,325.3313	3,325.3313	0.0244		3,325.8439
Worker	1.7281	2.1750	26.9154	0.0564	4.3369	0.0410	4.3779	1.1502	0.0377	1.1879		4,768.6026	4,768.6026	0.2596		4,774.0539
Total	**3.0003**	**15.3888**	**42.2672**	**0.0896**	**5.2786**	**0.2476**	**5.5262**	**1.4181**	**0.2276**	**1.6458**		**8,093.9338**	**8,093.9338**	**0.2840**		**8,099.8978**

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**

3.5 Building Construction - 2017

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	1.1634	12.0460	14.4135	0.0332	0.9421	0.1840	1.1261	0.2681	0.1693	0.4373		3,272.2294	3,272.2294	0.0236		3,272.7254
Worker	1.5530	1.9671	24.3864	0.0564	4.3369	0.0393	4.3762	1.1502	0.0362	1.1864		4,590.1468	4,590.1468	0.2399		4,595.1851
Total	**2.7163**	**14.0131**	**38.7999**	**0.0895**	**5.2790**	**0.2233**	**5.5023**	**1.4183**	**0.2055**	**1.6237**		**7,862.3762**	**7,862.3762**	**0.2635**		**7,867.9105**

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**

3.5 Building Construction - 2017

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	1.1634	12.0460	14.4135	0.0332	0.9421	0.1840	1.1261	0.2681	0.1693	0.4373		3,272.2294	3,272.2294	0.0236		3,272.7254
Worker	1.5530	1.9671	24.3864	0.0564	4.3369	0.0393	4.3762	1.1502	0.0362	1.1864		4,590.1468	4,590.1468	0.2399		4,595.1851
Total	**2.7163**	**14.0131**	**38.7999**	**0.0895**	**5.2790**	**0.2233**	**5.5023**	**1.4183**	**0.2055**	**1.6237**		**7,862.3762**	**7,862.3762**	**0.2635**		**7,867.9105**

3.6 Architectural Coating - 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					
Archit. Coating	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**66.2245**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

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	0.3474	0.4372	5.4108	0.0113	0.8719	8.2500e-003	0.8801	0.2312	7.5800e-003	0.2388		958.6366	958.6366	0.0522		959.7325
Total	**0.3474**	**0.4372**	**5.4108**	**0.0113**	**0.8719**	**8.2500e-003**	**0.8801**	**0.2312**	**7.5800e-003**	**0.2388**		**958.6366**	**958.6366**	**0.0522**		**959.7325**

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	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**66.2245**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

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	0.3474	0.4372	5.4108	0.0113	0.8719	8.2500e-003	0.8801	0.2312	7.5800e-003	0.2388		958.6366	958.6366	0.0522		959.7325
Total	**0.3474**	**0.4372**	**5.4108**	**0.0113**	**0.8719**	**8.2500e-003**	**0.8801**	**0.2312**	**7.5800e-003**	**0.2388**		**958.6366**	**958.6366**	**0.0522**		**959.7325**

3.6 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	lb/day										lb/day					
Archit. Coating	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**66.1884**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.6 Architectural Coating - 2017

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	0.3122	0.3954	4.9024	0.0113	0.8719	7.9000e-003	0.8798	0.2312	7.2800e-003	0.2385		922.7615	922.7615	0.0482		923.7743
Total	**0.3122**	**0.3954**	**4.9024**	**0.0113**	**0.8719**	**7.9000e-003**	**0.8798**	**0.2312**	**7.2800e-003**	**0.2385**		**922.7615**	**922.7615**	**0.0482**		**923.7743**

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	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**66.1884**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.6 Architectural Coating - 2017

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	0.3122	0.3954	4.9024	0.0113	0.8719	7.9000e-003	0.8798	0.2312	7.2800e-003	0.2385		922.7615	922.7615	0.0482		923.7743
Total	**0.3122**	**0.3954**	**4.9024**	**0.0113**	**0.8719**	**7.9000e-003**	**0.8798**	**0.2312**	**7.2800e-003**	**0.2385**		**922.7615**	**922.7615**	**0.0482**		**923.7743**

3.7 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	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473		2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**		**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

3.7 Paving - 2017

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	0.0600	0.0761	0.9428	2.1800e-003	0.1677	1.5200e-003	0.1692	0.0445	1.4000e-003	0.0459		177.4541	177.4541	9.2800e-003		177.6489
Total	**0.0600**	**0.0761**	**0.9428**	**2.1800e-003**	**0.1677**	**1.5200e-003**	**0.1692**	**0.0445**	**1.4000e-003**	**0.0459**		**177.4541**	**177.4541**	**9.2800e-003**		**177.6489**

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	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473	0.0000	2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**	**0.0000**	**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

3.7 Paving - 2017

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	0.0600	0.0761	0.9428	2.1800e-003	0.1677	1.5200e-003	0.1692	0.0445	1.4000e-003	0.0459		177.4541	177.4541	9.2800e-003		177.6489
Total	**0.0600**	**0.0761**	**0.9428**	**2.1800e-003**	**0.1677**	**1.5200e-003**	**0.1692**	**0.0445**	**1.4000e-003**	**0.0459**		**177.4541**	**177.4541**	**9.2800e-003**		**177.6489**

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	0.4994	1.1572	4.8622	0.0112	0.7244	0.0164	0.7408	0.1937	0.0151	0.2088		957.0986	957.0986	0.0390		957.9170
Unmitigated	0.4994	1.1572	4.8622	0.0112	0.7244	0.0164	0.7408	0.1937	0.0151	0.2088		957.0986	957.0986	0.0390		957.9170

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking Structure	0.00	0.00	0.00		
Place of Worship	99.40	124.78	159.95	238,179	238,179
Total	99.40	124.78	159.95	238,179	238,179

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
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Place of Worship	16.60	8.40	6.90	0.00	95.00	5.00	64	25	11

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.532559	0.058242	0.178229	0.125155	0.038934	0.006273	0.016761	0.032323	0.002478	0.003154	0.003685	0.000544	0.001663

4.4 Fleet Mix

5.0 Energy Detail

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	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
NaturalGas Unmitigated	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057

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					
Place of Worship	1037.53	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0112**	**0.1017**	**0.0854**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**		**122.0629**	**122.0629**	**2.3400e-003**	**2.2400e-003**	**122.8057**

5.2 Energy by Land Use - NaturalGas

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					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Place of Worship	1.03753	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
Total		**0.0112**	**0.1017**	**0.0854**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**		**122.0629**	**122.0629**	**2.3400e-003**	**2.2400e-003**	**122.8057**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive 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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Unmitigated	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003

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	5.8639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	18.2863					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.8000e-004	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Total	**24.1505**	**4.0000e-005**	**3.9800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.3800e-003**	**8.3800e-003**	**2.0000e-005**		**8.8700e-003**

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	5.8639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	18.2863					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.8000e-004	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Total	**24.1505**	**4.0000e-005**	**3.9800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.3800e-003**	**8.3800e-003**	**2.0000e-005**		**8.8700e-003**

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

Malibu Memorial Cemetery Project

Los Angeles-South Coast County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	17.50	1000sqft	0.40	17,500.00	0
Enclosed Parking Structure	2.00	Acre	2.00	87,120.00	0
City Park	18.80	Acre	18.80	818,928.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2017
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 - The place of worship is the square footage for the chapel and mausoleum combined. The parking includes all paved areas. The park accounts for all remaining space.

Construction Phase - Architectural coating phase lenghened to more accurately predict the actual constructing phasing for the project.

Grading -

Vehicle Trips - The trip rates were taking from the ITE Trip Generation manual 9th edition for a Cemetery (566).

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	325.00
tblConstructionPhase	PhaseEndDate	11/29/2018	9/28/2017
tblConstructionPhase	PhaseEndDate	10/26/2017	9/28/2017
tblConstructionPhase	PhaseStartDate	9/1/2017	7/1/2016
tblConstructionPhase	PhaseStartDate	9/29/2017	9/1/2017
tblGrading	MaterialExported	0.00	21,000.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	10.37	7.13
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	36.63	9.14
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	9.11	5.68

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	73.1935	96.7013	69.4356	0.1267	18.2675	3.8984	21.2080	9.9840	3.5865	12.6894	0.0000	12,278.8674	12,278.8674	1.9906	0.0000	12,320.6708
2017	72.5047	43.5523	65.1158	0.1266	6.1509	2.1876	8.3385	1.6495	2.0608	3.7103	0.0000	11,369.3081	11,369.3081	0.9919	0.0000	11,390.1379
Total	**145.6982**	**140.2537**	**134.5514**	**0.2532**	**24.4183**	**6.0860**	**29.5465**	**11.6335**	**5.6473**	**16.3996**	**0.0000**	**23,648.1755**	**23,648.1755**	**2.9825**	**0.0000**	**23,710.8087**

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	73.1935	96.7013	69.4356	0.1267	8.3310	3.8984	11.2716	4.5222	3.5865	7.2275	0.0000	12,278.8674	12,278.8674	1.9906	0.0000	12,320.6708
2017	72.5047	43.5523	65.1158	0.1266	6.1509	2.1876	8.3385	1.6495	2.0608	3.7103	0.0000	11,369.3081	11,369.3081	0.9919	0.0000	11,390.1379
Total	**145.6982**	**140.2537**	**134.5514**	**0.2532**	**14.4819**	**6.0860**	**19.6101**	**6.1717**	**5.6473**	**10.9378**	**0.0000**	**23,648.1755**	**23,648.1755**	**2.9825**	**0.0000**	**23,710.8087**

	ROG	NOx	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**	**40.69**	**0.00**	**33.63**	**46.95**	**0.00**	**33.30**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Energy	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
Mobile	0.5287	1.2161	5.0144	0.0107	0.7244	0.0165	0.7409	0.1937	0.0151	0.2089		915.4680	915.4680	0.0390		916.2874
Total	**24.6904**	**1.3178**	**5.1038**	**0.0113**	**0.7244**	**0.0242**	**0.7486**	**0.1937**	**0.0229**	**0.2166**		**1,037.5393**	**1,037.5393**	**0.0414**	**2.2400e-003**	**1,039.1020**

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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Energy	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
Mobile	0.5287	1.2161	5.0144	0.0107	0.7244	0.0165	0.7409	0.1937	0.0151	0.2089		915.4680	915.4680	0.0390		916.2874
Total	**24.6904**	**1.3178**	**5.1038**	**0.0113**	**0.7244**	**0.0242**	**0.7486**	**0.1937**	**0.0229**	**0.2166**		**1,037.5393**	**1,037.5393**	**0.0414**	**2.2400e-003**	**1,039.1020**

	ROG	NOx	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	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/11/2016	5	10	
3	Grading	Grading	2/12/2016	3/31/2016	5	35	
4	Building Construction	Building Construction	4/1/2016	8/31/2017	5	370	
5	Architectural Coating	Architectural Coating	7/1/2016	9/28/2017	5	325	
6	Paving	Paving	9/1/2017	9/28/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,385,322; Non-Residential Outdoor: 461,774 (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
Architectural Coating	Air Compressors	1	6.00	78	0.48
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

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	0.00	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	2,625.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	388.00	151.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	78.00	0.00	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

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					
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**		**2.2921**	**2.2921**		**2.1365**	**2.1365**		**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

3.2 Demolition - 2016

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	0.0695	0.0932	0.9771	2.0600e-003	0.1677	1.5900e-003	0.1693	0.0445	1.4600e-003	0.0459		174.0047	174.0047	0.0100		174.2154
Total	**0.0695**	**0.0932**	**0.9771**	**2.0600e-003**	**0.1677**	**1.5900e-003**	**0.1693**	**0.0445**	**1.4600e-003**	**0.0459**		**174.0047**	**174.0047**	**0.0100**		**174.2154**

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	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**		**2.2921**	**2.2921**		**2.1365**	**2.1365**	**0.0000**	**4,089.2841**	**4,089.2841**	**1.1121**		**4,112.6374**

3.2 Demolition - 2016

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	0.0695	0.0932	0.9771	2.0600e-003	0.1677	1.5900e-003	0.1693	0.0445	1.4600e-003	0.0459		174.0047	174.0047	0.0100		174.2154
Total	**0.0695**	**0.0932**	**0.9771**	**2.0600e-003**	**0.1677**	**1.5900e-003**	**0.1693**	**0.0445**	**1.4600e-003**	**0.0459**		**174.0047**	**174.0047**	**0.0100**		**174.2154**

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**

3.3 Site Preparation - 2016

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	0.0834	0.1119	1.1725	2.4700e-003	0.2012	1.9000e-003	0.2031	0.0534	1.7500e-003	0.0551		208.8056	208.8056	0.0120		209.0585
Total	**0.0834**	**0.1119**	**1.1725**	**2.4700e-003**	**0.2012**	**1.9000e-003**	**0.2031**	**0.0534**	**1.7500e-003**	**0.0551**		**208.8056**	**208.8056**	**0.0120**		**209.0585**

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**

3.3 Site Preparation - 2016

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	0.0834	0.1119	1.1725	2.4700e-003	0.2012	1.9000e-003	0.2031	0.0534	1.7500e-003	0.0551		208.8056	208.8056	0.0120		209.0585
Total	**0.0834**	**0.1119**	**1.1725**	**2.4700e-003**	**0.2012**	**1.9000e-003**	**0.2031**	**0.0534**	**1.7500e-003**	**0.0551**		**208.8056**	**208.8056**	**0.0120**		**209.0585**

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					8.7412	0.0000	8.7412	3.6068	0.0000	3.6068			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**	**8.7412**	**3.5842**	**12.3254**	**3.6068**	**3.2975**	**6.9043**		**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

3.4 Grading - 2016

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	1.3989	21.7633	17.2926	0.0559	1.3061	0.3121	1.6181	0.3576	0.2870	0.6446		5,631.8805	5,631.8805	0.0423		5,632.7682
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	0.0927	0.1243	1.3028	2.7400e-003	0.2236	2.1100e-003	0.2257	0.0593	1.9400e-003	0.0612		232.0062	232.0062	0.0134		232.2872
Total	**1.4916**	**21.8876**	**18.5954**	**0.0587**	**1.5296**	**0.3142**	**1.8438**	**0.4169**	**0.2890**	**0.7059**		**5,863.8867**	**5,863.8867**	**0.0557**		**5,865.0554**

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					3.9335	0.0000	3.9335	1.6231	0.0000	1.6231			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**	**3.9335**	**3.5842**	**7.5178**	**1.6231**	**3.2975**	**4.9206**	**0.0000**	**6,414.9807**	**6,414.9807**	**1.9350**		**6,455.6154**

3.4 Grading - 2016

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	1.3989	21.7633	17.2926	0.0559	1.3061	0.3121	1.6181	0.3576	0.2870	0.6446		5,631.8805	5,631.8805	0.0423		5,632.7682
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	0.0927	0.1243	1.3028	2.7400e-003	0.2236	2.1100e-003	0.2257	0.0593	1.9400e-003	0.0612		232.0062	232.0062	0.0134		232.2872
Total	**1.4916**	**21.8876**	**18.5954**	**0.0587**	**1.5296**	**0.3142**	**1.8438**	**0.4169**	**0.2890**	**0.7059**		**5,863.8867**	**5,863.8867**	**0.0557**		**5,865.0554**

3.5 Building Construction - 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					
Off-Road	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485		2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**		**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.5 Building Construction - 2016

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	1.4035	13.5456	18.6911	0.0330	0.9417	0.2088	1.1505	0.2679	0.1920	0.4599		3,297.7208	3,297.7208	0.0251		3,298.2482
Worker	1.7978	2.4118	25.2733	0.0532	4.3369	0.0410	4.3779	1.1502	0.0377	1.1879		4,500.9207	4,500.9207	0.2596		4,506.3721
Total	**3.2013**	**15.9573**	**43.9644**	**0.0862**	**5.2786**	**0.2498**	**5.5284**	**1.4181**	**0.2297**	**1.6478**		**7,798.6415**	**7,798.6415**	**0.2847**		**7,804.6202**

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	3.4062	28.5063	18.5066	0.0268		1.9674	1.9674		1.8485	1.8485	0.0000	2,669.2864	2,669.2864	0.6620		2,683.1890
Total	**3.4062**	**28.5063**	**18.5066**	**0.0268**		**1.9674**	**1.9674**		**1.8485**	**1.8485**	**0.0000**	**2,669.2864**	**2,669.2864**	**0.6620**		**2,683.1890**

3.5 Building Construction - 2016

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	1.4035	13.5456	18.6911	0.0330	0.9417	0.2088	1.1505	0.2679	0.1920	0.4599		3,297.7208	3,297.7208	0.0251		3,298.2482
Worker	1.7978	2.4118	25.2733	0.0532	4.3369	0.0410	4.3779	1.1502	0.0377	1.1879		4,500.9207	4,500.9207	0.2596		4,506.3721
Total	**3.2013**	**15.9573**	**43.9644**	**0.0862**	**5.2786**	**0.2498**	**5.5284**	**1.4181**	**0.2297**	**1.6478**		**7,798.6415**	**7,798.6415**	**0.2847**		**7,804.6202**

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**

3.5 Building Construction - 2017

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	1.2777	12.3419	17.7285	0.0329	0.9421	0.1859	1.1280	0.2681	0.1710	0.4391		3,244.9997	3,244.9997	0.0243		3,245.5107
Worker	1.6121	2.1812	22.8054	0.0532	4.3369	0.0393	4.3762	1.1502	0.0362	1.1864		4,332.1574	4,332.1574	0.2399		4,337.1957
Total	**2.8898**	**14.5231**	**40.5340**	**0.0861**	**5.2790**	**0.2252**	**5.5042**	**1.4183**	**0.2072**	**1.6255**		**7,577.1571**	**7,577.1571**	**0.2643**		**7,582.7063**

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**

3.5 Building Construction - 2017

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	1.2777	12.3419	17.7285	0.0329	0.9421	0.1859	1.1280	0.2681	0.1710	0.4391		3,244.9997	3,244.9997	0.0243		3,245.5107
Worker	1.6121	2.1812	22.8054	0.0532	4.3369	0.0393	4.3762	1.1502	0.0362	1.1864		4,332.1574	4,332.1574	0.2399		4,337.1957
Total	**2.8898**	**14.5231**	**40.5340**	**0.0861**	**5.2790**	**0.2252**	**5.5042**	**1.4183**	**0.2072**	**1.6255**		**7,577.1571**	**7,577.1571**	**0.2643**		**7,582.7063**

3.6 Architectural Coating - 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					
Archit. Coating	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966		281.4481	281.4481	0.0332		282.1449
Total	**66.2245**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

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	0.3614	0.4848	5.0807	0.0107	0.8719	8.2500e-003	0.8801	0.2312	7.5800e-003	0.2388		904.8243	904.8243	0.0522		905.9202
Total	**0.3614**	**0.4848**	**5.0807**	**0.0107**	**0.8719**	**8.2500e-003**	**0.8801**	**0.2312**	**7.5800e-003**	**0.2388**		**904.8243**	**904.8243**	**0.0522**		**905.9202**

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	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3685	2.3722	1.8839	2.9700e-003		0.1966	0.1966		0.1966	0.1966	0.0000	281.4481	281.4481	0.0332		282.1449
Total	**66.2245**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**	**0.0000**	**281.4481**	**281.4481**	**0.0332**		**282.1449**

3.6 Architectural Coating - 2016

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	0.3614	0.4848	5.0807	0.0107	0.8719	8.2500e-003	0.8801	0.2312	7.5800e-003	0.2388		904.8243	904.8243	0.0522		905.9202
Total	**0.3614**	**0.4848**	**5.0807**	**0.0107**	**0.8719**	**8.2500e-003**	**0.8801**	**0.2312**	**7.5800e-003**	**0.2388**		**904.8243**	**904.8243**	**0.0522**		**905.9202**

3.6 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	lb/day										lb/day					
Archit. Coating	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733		281.4481	281.4481	0.0297		282.0721
Total	**66.1884**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.6 Architectural Coating - 2017

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	0.3241	0.4385	4.5846	0.0107	0.8719	7.9000e-003	0.8798	0.2312	7.2800e-003	0.2385		870.8976	870.8976	0.0482		871.9105
Total	**0.3241**	**0.4385**	**4.5846**	**0.0107**	**0.8719**	**7.9000e-003**	**0.8798**	**0.2312**	**7.2800e-003**	**0.2385**		**870.8976**	**870.8976**	**0.0482**		**871.9105**

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	65.8561					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.3323	2.1850	1.8681	2.9700e-003		0.1733	0.1733		0.1733	0.1733	0.0000	281.4481	281.4481	0.0297		282.0721
Total	**66.1884**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**	**0.0000**	**281.4481**	**281.4481**	**0.0297**		**282.0721**

3.6 Architectural Coating - 2017

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	0.3241	0.4385	4.5846	0.0107	0.8719	7.9000e-003	0.8798	0.2312	7.2800e-003	0.2385		870.8976	870.8976	0.0482		871.9105
Total	**0.3241**	**0.4385**	**4.5846**	**0.0107**	**0.8719**	**7.9000e-003**	**0.8798**	**0.2312**	**7.2800e-003**	**0.2385**		**870.8976**	**870.8976**	**0.0482**		**871.9105**

3.7 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	lb/day										lb/day					
Off-Road	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473		2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**		**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

3.7 Paving - 2017

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	0.0623	0.0843	0.8817	2.0600e-003	0.1677	1.5200e-003	0.1692	0.0445	1.4000e-003	0.0459		167.4803	167.4803	9.2800e-003		167.6751
Total	**0.0623**	**0.0843**	**0.8817**	**2.0600e-003**	**0.1677**	**1.5200e-003**	**0.1692**	**0.0445**	**1.4000e-003**	**0.0459**		**167.4803**	**167.4803**	**9.2800e-003**		**167.6751**

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	1.9074	20.2964	14.7270	0.0223		1.1384	1.1384		1.0473	1.0473	0.0000	2,281.0588	2,281.0588	0.6989		2,295.7360
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.9074**	**20.2964**	**14.7270**	**0.0223**		**1.1384**	**1.1384**		**1.0473**	**1.0473**	**0.0000**	**2,281.0588**	**2,281.0588**	**0.6989**		**2,295.7360**

3.7 Paving - 2017

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	0.0623	0.0843	0.8817	2.0600e-003	0.1677	1.5200e-003	0.1692	0.0445	1.4000e-003	0.0459		167.4803	167.4803	9.2800e-003		167.6751
Total	**0.0623**	**0.0843**	**0.8817**	**2.0600e-003**	**0.1677**	**1.5200e-003**	**0.1692**	**0.0445**	**1.4000e-003**	**0.0459**		**167.4803**	**167.4803**	**9.2800e-003**		**167.6751**

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	0.5287	1.2161	5.0144	0.0107	0.7244	0.0165	0.7409	0.1937	0.0151	0.2089		915.4680	915.4680	0.0390		916.2874
Unmitigated	0.5287	1.2161	5.0144	0.0107	0.7244	0.0165	0.7409	0.1937	0.0151	0.2089		915.4680	915.4680	0.0390		916.2874

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking Structure	0.00	0.00	0.00		
Place of Worship	99.40	124.78	159.95	238,179	238,179
Total	99.40	124.78	159.95	238,179	238,179

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
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Place of Worship	16.60	8.40	6.90	0.00	95.00	5.00	64	25	11

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.532559	0.058242	0.178229	0.125155	0.038934	0.006273	0.016761	0.032323	0.002478	0.003154	0.003685	0.000544	0.001663

4.4 Fleet Mix

5.0 Energy Detail

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	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
NaturalGas Unmitigated	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057

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					
Place of Worship	1037.53	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0112**	**0.1017**	**0.0854**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**		**122.0629**	**122.0629**	**2.3400e-003**	**2.2400e-003**	**122.8057**

5.2 Energy by Land Use - NaturalGas

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					
Place of Worship	1.03753	0.0112	0.1017	0.0854	6.1000e-004		7.7300e-003	7.7300e-003		7.7300e-003	7.7300e-003		122.0629	122.0629	2.3400e-003	2.2400e-003	122.8057
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0112**	**0.1017**	**0.0854**	**6.1000e-004**		**7.7300e-003**	**7.7300e-003**		**7.7300e-003**	**7.7300e-003**		**122.0629**	**122.0629**	**2.3400e-003**	**2.2400e-003**	**122.8057**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive 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	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Unmitigated	24.1505	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003

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	5.8639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	18.2863					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.8000e-004	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Total	**24.1505**	**4.0000e-005**	**3.9800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.3800e-003**	**8.3800e-003**	**2.0000e-005**		**8.8700e-003**

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	5.8639					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	18.2863					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.8000e-004	4.0000e-005	3.9800e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		8.3800e-003	8.3800e-003	2.0000e-005		8.8700e-003
Total	**24.1505**	**4.0000e-005**	**3.9800e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**8.3800e-003**	**8.3800e-003**	**2.0000e-005**		**8.8700e-003**

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

APPENDIX VI

Geotechnical Report—GeoSoils

GEOLOGIC AND GEOTECHNICAL ENGINEERING REPORT,
PROPOSED MALIBU MEMORIAL CEMETERY,
Tentative Tract Map 69653,
4000 Malibu Canyon Road,
Malibu, California

for

Green Acres, LLC

January 23, 2015 W.O. 6489

MDN 15710

GeoSoils Consultants Inc.

GeoSoils Consultants Inc.
GEOTECHNICAL GEOLOGIC ENVIRONMENTAL

January 23, 2015
W.O. 6489

GREEN ACRES, LLC
22837 Pacific Coast Highway, Suite 775
Malibu, California 90265

Attention: Mr. Bruce McBride

Subject: Geologic and Geotechnical Engineering Report, Proposed Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

Dear Mr. McBride:

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this report for the proposed development for the subject site. The proposed development is shown on Plate 1, Geologic Map. The purpose of this report is to provide geotechnical engineering conclusions and recommendations relative to the newly proposed cemetery design.

GSC has prepared previous reports for the subject site, which addressed a different development concept. The previous development concept addressed in the referenced reports consisted of a hotel and associated structures. All geologic and geotechnical data from the previous studies are included in this report. The referenced geologic and geotechnical reports for the previous development concept were submitted to and approved by the City of Malibu. A copy of the approval letter is attached.

SCOPE OF SERVICES

Our scope of services consisted of reviewing the referenced reports, transferring available geologic data from the referenced reports, and updating previous/drafting new cross sections for the current development plan.

MDN 15710

Our scope of services during the previous study included excavating, logging, and sampling of numerous borings and test pits across the site. In addition, laboratory testing and engineering analyses were included in the previous reports and have been revised accordingly herein. All previous boring and test pit logs, was well laboratory test results are included in this report.

PROPOSED DEVELOPMENT

Proposed development of the site will consist of grading to create cemetery property. Access to the site is via Malibu Canyon Road along the west side of the site. One structure is proposed in the center of the site, along with retaining walls, street and parking areas, and hardscape and landscape areas. The plans were prepared by Psomas Engineering and are included herein as Plate 1, Geologic Map. Site grading will include cut/fill operations to create level internment areas, street grades, and other site improvements. Retaining walls to a maximum height of approximately 11 feet are proposed within the development. Grading of the site will consist of flattening the steeper slope areas along the northern and eastern parts of the site to a gradient of 3.2:1. This grading eliminates the slope stability issues previously addressed along the subject slopes.

A series of buried crypts are proposed at the northern slope area on the site, as shown on Section A-A' of the civil drawing (Plate 1). Temporary excavations up to approximately 25 feet high are proposed to provide access to the buried crypts. Slope gradients of 2:1 are proposed between retaining walls in this area.

PREVIOUS STUDIES

Previous studies have been performed on the subject property by GeoSoils Consultants, Inc. (GSC), Leighton and Associates, Inc. (LA) and by Van Beveren and Butelo, Inc. (VBB) (references). GSC excavated, sampled and logged four hollow stem auger borings. Logs of the borings are included in Appendix A, and laboratory data is included in Appendix B. The work by LA included excavating, sampling, and logging of 21 bucket auger borings.

The locations of the borings are shown on Plate 1 and copies of the boring logs are included in Appendix C. In addition, LA excavated numerous fault trenches across the site. Based on the trenching, Leighton and Associates established a fault setback zone in the southern end of the property for a portion of the Malibu Coast Fault.

Van Beveren and Butelo, Inc. was the last consultant to work on the subject project prior to GSC. VBB excavated, sampled, and logged 8 bucket auger borings across the site. The locations of the borings are shown on Plate 1 and copies of the boring logs and laboratory test results are included in Appendix D.

VBB also excavated trenches across the previously established setback zone by Leighton and Associates. The trench exposed non-marine terrace deposits, which were determined to be continuous and unbroken by faults. The soils within the trenches were observed and dated by Dr. Ron Shlemon. Dr. Shlemon determined that the age of the unbroken sediments were at least 100K years old, and may be as old as 200K. Since these sediments are not affected by fault offset, the previously setback zone was eliminated by VBB. The report by VBB ws ultimately approved by the City of Malibu.

Following geotechnical approval from the City of Malibu, GSC performed additional studies on the site in conjunction with In-Situ Engineering, Inc. for the purposes of onsite waste water disposal (References 10 through 17). These reports were also submitted to the City of Malibu for review; however, since the intended use of the site has now changed, these reports are no longer applicable to the project. Subsurface data compiled during OWTS testing can be found in the referenced reports.

As stated above, GeoSoils Consultants, Inc. has reviewed the referenced reports by the previous consultants that have worked on the site. We accept their results and accept geotechnical responsibility for the subject property.

SUMMARY OF GEOLOGIC CONDITIONS

The geologic conditions on the site are discussed in detail in the referenced reports. In summary, the site is underlain by both marine and non-marine terrace deposits, which overlie bedrock of the Monterey, Trancus, Conejo Vocanics, Vasqueros, and Sespe Formations. The terrace deposits underlie the majority of the site and consist of interbedded silts, clays and sands, with occasional gravel and cobbles. Based on review of Appendix D of the VBB report, the terrace deposits on the site are at least 100K years old, and may be as old at 200K years.

Although the reports by LA indicate many different bedrock types on the site, only the Sespe, Vaqueros and a small area of Conejo Vocanics are exposed at the surface. Other bedrock types were encountered in the borings by LA. Geologic structure in the rock, where observed in the borings by the previous consultants, generally dips to the north at steep angles and is favorable relative to the existing slopes and proposed development. However, the bedding is highly variable and dips steeply to the south at the southeastern part of the site. Due to the thickness of the overlying terrace deposits, the structure within the bedrock has little, if any, affect on the proposed development.

A landslide is located along the eastern part of the site. Borings drilled by Leighton and Associates indicates that the base of the landslide extends well below the existing ground surface to the east of the site and is covered with older alluvium. A smaller landslide is mapped at the bottom of the slope along the eastern side of the site, and is well outside the limits of grading.

SEISMICITY

Seismic Design Parameters

Although there are no active faults on or in close proximity to the property, the property, as with all of Southern California, is located in a region subject to periodic earthquake-induced ground shaking. Planned improvements should incorporate earthquake-resistant design. Seismic design criteria are presented in the following section.

Seismic Design Parameters

The following are the seismic design parameters for the subject site based on the 2013 California Building Code (CBC), Section 1613.

2013 CBC Section 1613, Earthquake Loads	
Site Class Definition (Table 1613.5.2)	D
Mapped Spectral Response Acceleration Parameter, S_s (Figure 1613.5(3) for 0.2 second)	2.341
Mapped Spectral Response Acceleration Parameter, S_1 (Figure 1613.5(4) for 1.0 second)	0.834
Site Coefficient F_a (Table 1613.5.3(1) short period)	1.0
Site Coefficient F_v (Table 1613.5.3(2) 1-second period)	1.5
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{MS} (Eq. 16-37)	2.341
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{M1} (Eq. 16-38)	1.252
Design Spectral Response Acceleration Parameter, S_{DS} (Eq. 16-39)	1.561
Design Spectral Response Acceleration Parameter, S_{D1} (Eq. 16-40)	0.834
Notes: 1. Site Class Designation: Class D is recommended based on subsurface condition. 2. Ss, SMs, and SDs are spectral response accelerations for the period of 0.2 second. 3. S1, SM1, and SD1 are spectral response accelerations for the period of 1.0 second.	

Conformance to the above criteria for seismic design does not constitute any guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid all damage, since such design may be economically prohibitive.

Seismic Hazards

Liquefaction

There are no state-designated liquefaction hazard zones on the site. Underlying material consists of terrace deposits and bedrock and is therefore not subject to liquefaction.

Earthquake-Induced Landslide Zones

Based on review of the Seismic Hazard Zone map for the Malibu Beach Quadrangle, the slope areas on the site are located within zones of potential seismic slope instability. As a result, previous slope stability analyses were performed for the slope along Pacific Coast Highway and the results are included in GSC report dated January 27, 2012 (Section J-J').

SLOPE STABILITY

Slope stability analyses have been performed as part of previous studies. The analyses were based on laboratory test results obtained from previous geologic exploration. The site is generally surrounded by descending natural slopes. Proposed grading, as discussed above, will result in final slopes at gradients of 3.2:1. The existing cut slope along the north side of Pacific Coast Highway will remain as is. Stability analyses were previously performed for the slope along the north side of Pacific Coast Highway and the results indicated factors of safety above minimum code values. The results of the analyses were presented in Appendix A of the GSC report dated January 27, 2012.

A series of buried crypts are proposed at the northern slope area on the site, as shown on Section A-A' of the civil drawing (Plate 1). Temporary excavations up to approximately 25 feet high are proposed to provide access to the buried crypts. Slope gradients of 2:1 are proposed between retaining walls in this area.

CONCLUSIONS

It is our professional opinion that proposed development is feasible from a geologic and soil engineering viewpoint. Safe and stable development of this land can be accomplished as long as the recommendations included within this report are incorporated into final tract design and implemented during final grading and construction. Final design and construction should be performed according to City Code and Permits. Most earth materials on the parcel will excavate with moderate to heavy duty ripping using heavy duty grading equipment. Excavated material will produce good quality fill.

"111" STATEMENT

It is GSC's opinion that the building site will be safe from the hazards of landslide, settlement or slippage. Furthermore, the finished development will not adversely affect the stability of the adjacent properties nor be adversely affected by adjacent properties.

RECOMMENDATIONS

1. Removals/Reprocessing

The on site soils are suitable for structural support, provided that the following recommendations are followed. The upper 5 feet of the terrace deposits on the site are generally loose and should be removed down to competent terrace deposits in areas of proposed structures located within the central part of the site. In addition, all previously placed fault trench backfill shall be removed and recompacted. The removals should extend a minimum distance of five feet beyond the building footprints, or a distance equal to the depth of fill placement, whichever is greater. In areas of proposed hardscape, a minimum removal depth of two to three feet is recommended. Removals are not considered necessary in areas of the site to be used as cemetery sites. The proposed grading operation will result in removal of surficial soil along the northern part of the site. As a result, proposed retaining walls in this area may be founded in dense terrace deposits.

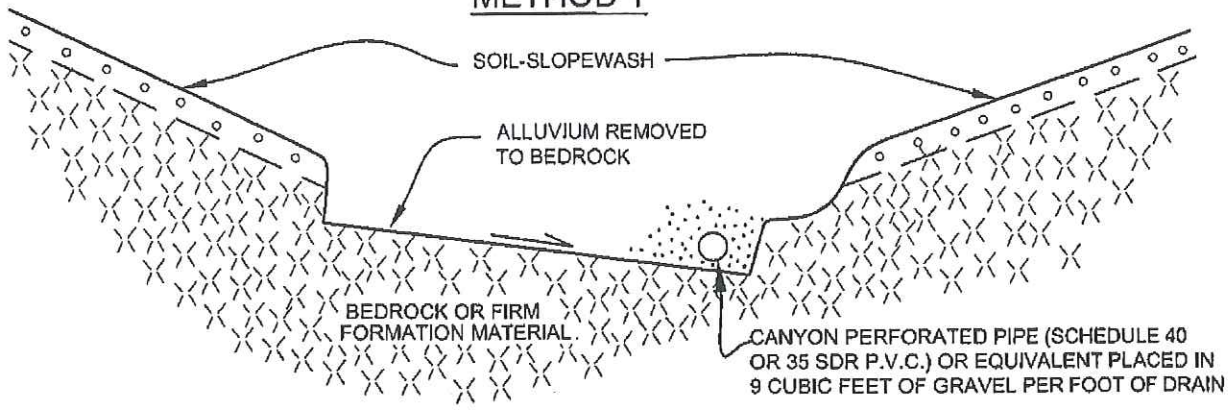
Two landslides are located along the eastern part of the site. Both landslides should be removed during grading. Since the slides extend off-site to the east, removals of the slides should start at the property line and follow a 1:1 project toward the development, as shown on Section 5-5'.

An erosion gully is located on the existing cut slope above Pacific Coast Highway. Their gully should be repaired in accordance with Cross-Section 6-6'.

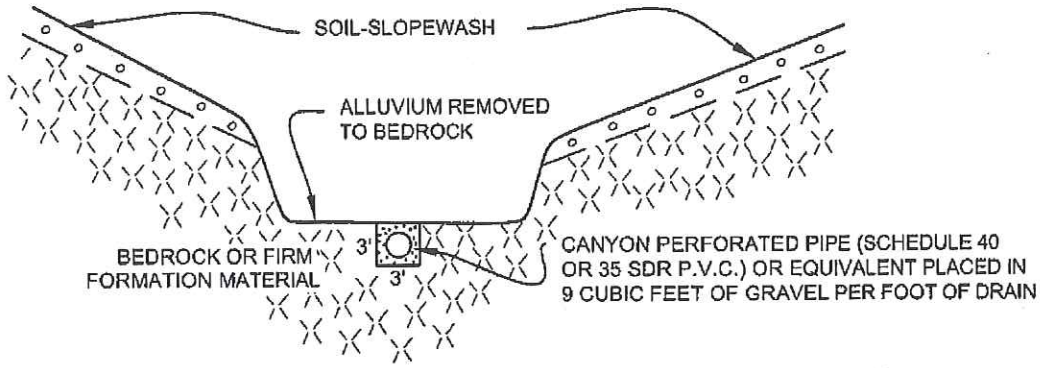
Subdrains

1. Subdrain systems should be provided in the fill areas at the northern portion of the site and stabilization fills prior to fill placement (see Figure 1).

METHOD 1

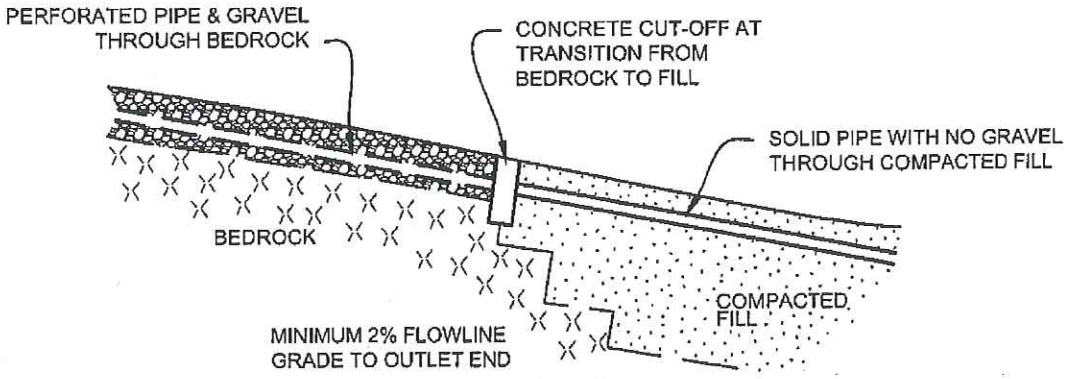


METHOD 2



GRAVEL TO CONFORM TO STATE OF CALIFORNIA DEPT. OF PUBLIC WORKS STANDARD SPECIFICATIONS FOR CLASS 2 PERMEABLE MATERIAL AS ALTERNATE 3/4" GRAVEL MAY BE USED SURROUNDED WITH GEOTEXTILE FILTER FABRIC APPROVED BY THE GEOTECHNICAL ENGINEER.
(NOTE: CITY OF LOS ANGELES DOES NOT ALLOW GEOTEXTILE FABRIS WRAP AROUND SUBDRAIN SYSTEMS.)

LONGITUDINAL SECTION



GSC GeoSoils Consultants Inc.
GEOTECHNICAL•GEOLOGIC•ENVIRONMENTAL

CANYON SUBDRAIN DESIGN & CONSTRUCTION METHODS

DATE 12/2014 | W.O. NO. 6489

Geotechnical• Geologic •Environmental FIGURE 1

FORM 87/7-1

2. Filter material should be Class 2 permeable filter, or No. 2 and No. 3 concrete aggregate gradations per standard specifications for Public Works construction, or approved equivalent, inspected and tested to verify its suitability. The filter should be clean with a wide range of sizes.

3. Subdrain pipe material should consist of PVC Schedule 40 or D-2729 or an equivalent recommended by the Geotechnical Engineer. "Accordion" type pipe and similar products are not acceptable for use as subdrains or backdrains on this project.

4. Subdrains should be placed in all canyon bottoms. During grading, the Engineering Geologist should evaluate the necessity of additional drain placement.

5. All subdrainage system should be inspected by the Engineering Geologist.

Slopes

Fill Slopes

A. Fill slopes are proposed at a maximum slope ratio of 3.2:1 (horizontal:vertical) between benches, to a maximum anticipated height of approximately 90 feet.

B. Fill slopes should be built in accordance with recommendations included in the Grading Guidelines section of this report.

Cut Slopes

The following recommendations apply to proposed cut slopes.

A. All permanent major cut slopes are planned at a gradient of 3.2:1 or flatter.

B. Cut slopes exposing terrace deposits should not be affected by rock structure. The terrace units are rather massive and bedding is only

represented by lineation of sand to gravel-sized particles. No true bedding planes exist in the terrace deposits (Qt).

FOUNDATION RECOMMENDATIONS

Foundation recommendations in this report are considered preliminary. Final foundation design recommendations should be determined at the completion of grading, based on expansion and chemical testing determined on final grade samples. For convenience, the following preliminary foundation recommendations may be used. These recommendations should be finalized at the end of future final pad and street grading.

Conventional and post-tensioned foundations may be used on the site. All foundations should meet current City of Malibu setback requirements.

Foundation Criteria

1. An allowable soil bearing pressure of 1,500 pounds per square foot, including dead and real live loads, can be utilized for design of conventional foundations into compacted fill or terrace deposits. The above bearing value may be increased by one-third when considering short duration seismic or wind loads. Footings are recommended to be continuous and should have a minimum width of 18 inches and a minimum embedment depth of 18 inches for one and two story structures.

   The allowable bearing value may be increased by 20 percent for each additional foot below the minimum 18 inches depth recommended, plus 7 percent for each additional foot wider than the minimum 18 inches width recommended up to a maximum value of 3,000 pounds per square foot.

2. A friction coefficient for concrete on compacted soil/terrace deposits of 0.3 and a lateral (passive) bearing value of 200 pounds per square foot, per foot of depth, may be employed to resist lateral loads. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third. For design of isolated piles, the allowable passive pressure may be increased by 100 percent (see Table A for other conventional foundation recommendations).

3. In order to minimize the potential effects of seismic activity, expansive soils, secondary settlement and hydroconsolidation or hydrocompression, we recommend the following alternative foundation systems, i.e., post-tensioned slab foundations, be used.

Post-Tensioned Slab Foundation

Anticipated surficial differential movement across the building pad areas included in this report in the form of settlement or heave could be in the order of 1 to 2 inches. These post-tensioned slabs should be designed in accordance with the recommendations of either the California Foundation Slab Method or Post-Tensioning Institute. The slabs should be designed for at least one inch of surficial differential movement (i.e., at least 1 inch in a 30-foot span) for low expansion index (EI) soil, and at least two inches of surficial differential movement for medium EI soil. Based on review of laboratory data for the on-site materials, the average soil modulus of subgrade reaction, K, to be used for design is 100 pounds per cubic inch. Specific recommendations for the design of *California Foundation Slab* and *Post Tension Institute* methods are presented below.

A surface bearing value of 1,000 pounds per square foot can also be used in design.

1. **California Foundation Slab (Spanability) Method**

It is recommended that slabs be designed for a free span of 15 feet regardless of the expansion index of the soil. From a soil expansion/shrinkage standpoint, a common contributing factor to distress of structures using post-tensioned slabs is fluctuation of moisture in soils underlying the perimeter of the slab, compared to the center, causing a "dishing" or "arching" of the slabs. To mitigate this possibility, a combination of soil presaturation and construction of a perimeter "cut off" wall should be employed.

All slab foundation areas should be moisture conditioned to at least optimum moisture, but no more than 5 percent above optimum moisture for a depth of at least 12 inches below subgrade low EI soil, and 18 inches for medium EI soil. A continuous perimeter curtain wall should extend to a depth of at least 12 inches below exterior grade for low EI soil, and 18 inches for medium EI soil to preserve this moisture. The cut-off walls may be integrated into the slab design or independent of the slab and should be a minimum of 6 (six) inches wide.

2. **Post-Tensioning Institute Method**

Post-tensioned slabs should have sufficient stiffness to resist excessive bending due to non-uniform swell and shrinkage of subgrade soils. The differential movement can occur at the corner, edge, or center of slab. The potential for differential uplift can be evaluated using design specifications of the Post-Tensioning Institute. The following table presents suggested minimum coefficients to be used in the Post-Tensioning Institute design method.

Suggested Coefficients	
Thornthwaite Moisture Index	-20 in/yr
Depth to Constant Soil Suction	9 (feet)
Constant Soil Suction: (pf)	3.8

The coefficients are considered minimums and may not be adequate to represent worst case conditions such as adverse drainage, excess watering, and/or improper landscaping and maintenance. The above parameters are applicable provided structures have gutters and downspouts, yard drains, and positive drainage is maintained away from structure perimeters. Also, the values may not be adequate if the soils below the foundation become saturated or dry such that shrinkage occurs. The parameters are provided with the expectation that subgrade soils below the foundations are maintained in a relatively uniform moisture condition. Responsible irrigation of landscaping adjacent to the foundation must be practiced since over-irrigation of landscaping can cause problems. Therefore, it is important that information regarding drainage, site maintenance, settlements and affects of expansive soils be considered.

Based on the above parameters, the following values were obtained from the Post Tensioning Institute Design manual. If a stiffer slab is desired, higher values of y_m may be warranted.

Expansion Index of Soil Subgrade	Low EI	Medium EI
e_m center lift	9.0 feet	8.5 feet
e_m edge lift	4.7 feet	4.5 feet
Y_m center lift	0.34 inch	0.56 inch
Y_m edge lift	0.48 inch	0.77 inch

Deepened footings/edges around the slab perimeter must be used as indicated above to minimize non-uniform surface moisture migration (from an outside source) beneath the slab. An edge depth of at least 12 inches should be considered for low EI soil and 18 inches for medium EI soil. The bottom of the deepened footing/edge should be designed to resist tension, using cable or reinforcement per the Structural Engineer.

Retaining Walls

The following recommendations should be followed for retaining wall design and construction:

The equivalent fluid pressures recommended are based on the assumption of a uniform backfill and no build-up of hydrostatic pressure behind the wall. To prevent the build-up of lateral soil pressures in excess of the recommended design pressures, overcompaction of the fill behind the wall should be avoided. This can be accomplished by placement of the backfill above a 45-degree plane projected upward from the base of the wall, in lifts not exceeding eight inches in loose depth and compacting with hand-operated or small, self-propelled vibrating plates. (Note: Placement of free-draining material in this zone could also prevent the build-up of lateral soils pressures). All walls must conform to City of Malibu Building Code setback requirements.

1. **Conventional (Yielding) Retaining Walls**

   All recommendations for active lateral earth pressures contained herein assume that the anticipated retaining structures are in tight contact with the competent materials that they are supposed to support. The earth support system must be sufficiently stiff to hold horizontal movements in the soil to less that one percent of the height of the vertical face, but should be free-standing to the point that they yield at the top at least 0.1 percent of the height of the wall.

2. **Earth Pressure on Conventional Retaining Walls**

   The earth pressures of walls retaining self-draining, granular materials, compacted fill or undisturbed bedrock material shall be assumed equal to that exerted by an equivalent fluid having a density not less than shown in the following table:

Backfill Slope (Horizontal to Vertical)	Equivalent Fluid Density (pcf)
Level	45
5:1	46
4:1	47
3:1	48
2:1	50

3. **Restrained (Non-Yielding) Walls**

Earth pressures will be greater on walls where yielding at the top of the wall is limited to less than 1/1000 the height of the wall either by stiffness (i.e., return walls, etc.) or structural floor network prior to backfilling. Utilizing the recommended backfill compaction of 90 percent Modified Proctor Density per ASTM D-1557-12, we recommend the following equivalent fluid density for non-yielding walls:

Backfill Slope (Horizontal to Vertical	Equivalent Fluid Density (pcf)
Level	65
3.2:1	70

4. **Wall Seismicity**

The current seismic design criteria for this project is as follows:

From NavFac: $P_{ae} = 3/8\gamma H^2 k_n$

$K_n = 0.2$ H = Height of wall

$\gamma = 120$ pcf

$P_e = 3/8(120 \text{ pcf})(0.2)H^2 = 9H^2$

P_e acts at 0.6H above the wall base.

5. **General**

a. Any anticipated, superimposed loading (i.e., upper retaining walls, other structures, etc.) shall be considered in the wall design per Figures 11 and 12 of the NavFac manual.

b. If water is allowed to saturate the backfill, the lateral pressure could exceed the active pressure recommended. Clayey or expansive soils should not be used for backfilling behind retaining walls.

c. A vertical component equal to one-third of the horizontal force so obtained may be assumed at the plane of application of force.

The depth of the retained earth shall be the vertical distance below the ground surface, measured at the wall face for stem design or measured at the heel of the footing for overturning and sliding.

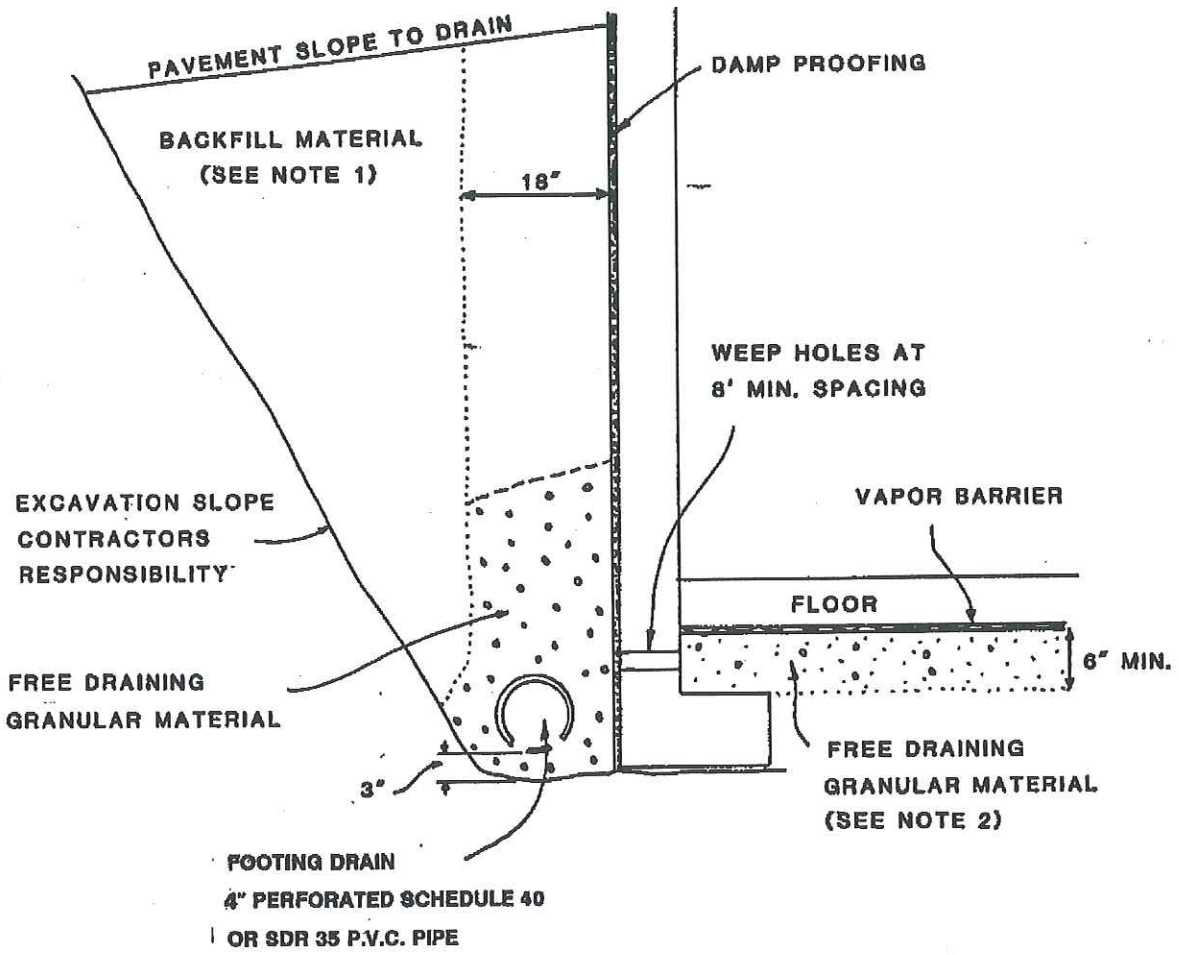
d. The walls should be constructed with a minimum 4-inch perforated drainpipe in a gravel envelope at the bottom and behind the wall. A one-foot thick zone of crushed gravel should be placed behind the wall to within two feet of the surface. On-site soil may be used for the remainder of the backfill and should be compacted to 90 percent relative compaction as determined by ASTM Test Designation D-1557-12. All proposed subterranean walls should be waterproofed and back drained (see Figure 2).

e. A concrete-lined swale is recommended to be placed behind retaining walls that can intercept surface runoff from upslope areas. This surface runoff shall be transferred to an approved drainage channel via non-erosive drainage devices.

Deepened Foundation

Deepened foundations may be to meet slope setback requirements for structures located along the top of slopes. The piles should be designed by the Project Structural Engineer.

Setback Requirements: Structures adjacent to slopes shall meet the City of Malibu setback requirements.



BACKFILLED WALL

NOTE NO.1 - IF WET CONDITIONS RENDER ON-SITE SOIL UNSUITABLE FOR REQUIRED DEGREE OF COMPACTION , BACKFILL THE ZONE SHOWN ABOVE WITH FREE DRAINING GRANULAR SOIL WITH NOT MORE THAN 5% (BY WEIGHT BASED ON MINUS 3/4" PORTION PASSING NO.200 SIEVE (BY WET SIEVING) WITH NO PLASTIC FINES.

NOTE NO.2 - FREE DRAINING GRANULAR MATERIAL BENEATH FLOOR SLAB SHOULD BE HYDRAULICALLY CONNECTED TO THE FOOTING DRAIN.

GSC GeoSoils Consultants Inc.
GEOTECHNICAL · GEOLOGIC · ENVIRONMENTAL

BACKFILLED WALL DETAIL

DATE 12/2014 | W.O. NO. 6489

Geotechnical • Geologic • Environmental

FIGURE 2

FORM 88/13

Pile Type: In our opinion, support for the proposed structure may be derived from drilled cast-in-place, reinforced concrete piles (i.e., caissons) designed for frictional resistance.

Bearing Soils and Tip Depths: We recommend that all piles extend a sufficient depth to develop adequate compressive, uplift, and lateral capacity. We recommend that all piles extend a minimum depth of 5 feet below the required setback requirement plane into the underlying terrace deposits. The pile loading for the proposed structures was not available at the time of report submittal; therefore, anticipated pile depths cannot be estimated and should be reviewed by GSC prior to construction.

Pile Capacity - Compressive Frictional Resistance: An allowable frictional resistance of 600 pounds per square foot, per foot of depth into competent terrace deposits should be used for pile design.

Pile Capacity - Lateral (Preliminary): Lateral loads, which may be imposed on the piles by wind or seismic forces, are resisted primarily by the horizontal bearing support of soils adjacent to the pile shafts. The lateral capacity of a pile depends on its length, stiffness in the direction of loading, and degree of fixity at the head, as well as on the adjacent soil properties.

For preliminary design purposes, the passive earth pressures for terrace material may be computed as an equivalent fluid having a density of 200 pounds per cubic foot (pcf), with a maximum earth pressure of 2,000 pounds per square foot (psf). The lateral capacity of each individual pile is a function of the length and diameter; therefore, once the structural engineer has determined the required pile loading for the proposed structures, the lateral pile capacities should be reevaluated by GSC.

Pile Strength: The allowable pile capacities are derived from the supporting strength of the soil, which could exceed the structural strength of the pile itself, therefore, the structural strength of the pile should be considered to pre-empt the allowable soil bearing capacity. The project structural engineer should verify that the compressive and tensile strength of the concrete pile could accommodate the recommended capacities.

Estimated Settlements: We estimate that total post-construction settlements of pile-supported structural elements will not exceed ½ inch. Differential settlements between adjacent piles could approach ¼ inch.

Additional Lateral Resistance: Besides the aforementioned lateral resistance provided by the pile shafts, additional resistance is provided by passive earth pressure acting against other embedded structural elements. We recommend using the values shown in Table I for allowable passive pressure (equivalent fluid weight) and coefficient of friction, which is in addition to the passive lateral pressure. The above values may be increased by one-third for short duration wind and seismic forces.

When combining passive pressure and frictional resistance the passive component should be reduced by one-third. For design of isolated piles, the allowable passive pressure may be increased by 100 percent.

TABLE I
LATERAL RESISTANCE

Soil Type	Allowable Passive Pressure (pcf)	Maximum Allowable Passive Pressure (psf/ft)	Coefficient of Friction (Concrete/soil)
Terrace Deposits	200	2000	0.30

Surface Water Control: All surface water should be collected and conducted to the street or approved watercourse via non-erosive devices.

Inspection - General: We recommend that the Geotechnical Engineer or Geologist be present in the field during construction to confirm the soil conditions prior to steel and concrete placement. The City Inspector should also observe the excavation.

Concrete Placement: In lieu of removing standing water in the pile excavation prior to placing concrete (i.e., pumping water), the concrete may be placed by the tremmie method to displace collected water. The solid tremmie tube shall be long enough to reach to bottom of the excavation. When concrete is being placed, the solid tremmie tube must be kept full of concrete at all times, with the lower end emersed in the concrete just deposited. The concrete shall at no time be placed through the water.

When water is present at the bottom of the drilled pile holes to a depth of 3 inches or more, a concrete mix with strength of 1,000 pounds per square inch over the design strength, shall be tremmied up from the bottom. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included.

Drilling Safety: The following drilling safety guidelines should be followed during pile installation:

- It is the Contractor's responsibility to provide a safe working area during drilling operations;
- The Geotechnical Engineer should observe all excavations to verify that the caissons are founded at the required depth and recommended bearing material;

- All drilled piles should be adequately covered if the excavation is not poured immediately after excavation.

GRADING GUIDELINES

These specifications present the usual and minimum requirements for grading operations performed under the control of GeoSoils Consultants, Inc.

No deviation from these specifications would be allowed, except where specifically superseded in the preliminary geology and geotechnical report, or in other written communication signed by the Geotechnical Engineer or Engineering Geologist.

1. **General**

   A. The Geotechnical Engineer and Engineering Geologist is the Owner's or Builder's representative on the project. For the purpose of these specifications, supervision by the Geotechnical Engineer or Engineering Geologist includes that inspection performed by any person or persons employed by, and responsible to, the licensed Geotechnical Engineer or Engineering Geologist signing the Geotechnical report.

   B. All clearing, site preparation or earthwork performed on the project should be conducted by the Contractor under the observation of the Geotechnical Engineer or Engineering Geologist.

   C. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Geotechnical Engineer or Engineering Geologist and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Geotechnical Engineer or Engineering Geologist. The Contractor should also remove all material considered unsatisfactory by the Geotechnical Engineer or Engineering Geologist.

D. It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the jobsite to handle the amount of fill being placed. If necessary, excavation equipment would be shut down to permit completion of compaction. Sufficient watering apparatus would also be provided by the Contractor, with due consideration for the fill material, rate of placement and time of year.

E. A final report should be issued by the Geotechnical Engineer and Engineering Geologist attesting to the Contractor's conformance with these specifications.

F. At all times, safety will have precedence over production work. All municipal, State, and Osha Safety guidelines should be allowed beneath unshored vertical cuts, within unshored trenches with vertical walls in excess of four feet high, or in any unsafe working environment. If an unsafe job condition is noted by a GeoSoils Consultants, Inc. representative, it would be brought to the attention of the Grading Contractor's foreman, the on-site developer's representative, or both. Once this condition is noted, it should be corrected as soon as possible, or work related to the unsafe condition may be terminated.

2. **Site Preparation**

A. All vegetation and deleterious material, such as rubbish, should be disposed of off-site. This removal must be conducted prior to placing fill.

B. The Contractor should locate all subsurface features (i.e. sewage disposal systems, basements, pipelines, wells, etc.) on the site, or on the grading plan, to the best of his knowledge prior to preparing the ground surface.

C. Soil or rock materials determined by the Geotechnical Engineer as being unsuitable for placement in compacted fills should be removed and wasted from the site. Any material incorporated as a part of a compacted fill must be approved by the Geotechnical Engineer.

D. After the ground surface to receive fill has been cleared, it should be scarified, disced, or bladed by the Contractor until it is uniform and free from ruts, hollows, hummocks or other uneven features which may prevent uniform compaction.

The scarified ground surface should then be brought to at least optimum moisture, but not more than 120 percent of optimum moisture, mixed as required, and compacted as specified. If the scarified zone is greater than 12 inches in depth, the excess should be removed and placed in lifts restricted to 6 to 8 inches.

Prior to placing fill, the ground surface to receive fill should be inspected and approved by the Geotechnical Engineer.

E. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines or other not located prior to grading are to be removed or treated in a manner prescribed by the Geotechnical Engineer.

3. **Compacted Fills**

A. Material imported or excavated on the property may be utilized in the fill, provided such material has been determined to be suitable by the Geotechnical Engineer. Roots, tree branches and other deleterious matter missed during clearing should be removed from the fill as directed by the Geotechnical Engineer.

B. Unless otherwise prohibited by the governing code, rock, brick, concrete, or asphalt fragments less than six inches in diameter may be utilized in the fill, provided:

1. they are not placed in concentrated pockets;
2. there is a sufficient percentage of fine-grained material to surround the rocks;
3. the distribution of the rocks is supervised by the Geotechnical Engineer.

C. Rocks greater than six inches in diameter should be taken off-site, or placed in accordance with the recommendations of the Geotechnical Engineer in fill areas designated as suitable for rock disposal.

D. Material that is spongy, subject to decay, or otherwise considered unsuitable should not be used in the compacted fill.

E. Representative samples of materials to be utilized as compacted fill should be analyzed in the laboratory by the Geotechnical Engineer to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material should be conducted by the Geotechnical Engineer as soon as possible.

F. Material used in the compacting process should be evenly spread in thin lifts not to exceed 6 to 8 inches in thickness, watered, processed and compacted to obtain a uniformly dense layer. The fill should be placed and compacted on a horizontal plane, unless otherwise approved by the Geotechnical Engineer. This includes material placed for slope repairs, and utility trench backfills on slope areas.

G. Each layer should be compacted to at least a minimum of 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency (in general, ASTM D-1557-12 would be used). For all fills greater than 40 feet in vertical thickness, the portion of the fill below a depth of 40 feet should be placed at a relative compaction of at least 95 percent.

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or geotechnical condition, the area to receive fill compacted to less than 90 percent should either be delineated on the grading plan or appropriate reference made to the area in the geotechnical report.

H. All fill must be brought to a moisture content of at least optimum moisture, but should not exceed 120 percent of optimum moisture. If excessive moisture in the fill results in failing tests or an unacceptable "pumping" condition, then the fill should be allowed to dry until the moisture content is within the necessary range to meet above compaction requirements, or should be removed or reworked until acceptable conditions are obtained.

I. If the moisture content or relative compaction varies from that required by the Geotechnical Engineer, the Contractor should rework the fill until it is in accordance with the requirements of the Geotechnical Engineer. If a compaction test indicates that the fill meets or exceeds the minimum required relative compaction but is below optimum moisture content, then the fill should be reworked until it meets the moisture content requirements.

J. All fills should be keyed and benched through all topsoils, slopewash, alluvium or creep affected or other unsuitable materials, into sound bedrock or firm material where the slope receiving fill is steeper than a ratio of five horizontal to vertical (i.e., in accordance with the recommendations of the Geotechnical Engineer). The standard acceptable bench height is four feet into suitable material.

K. The key for sidehill fills should be a minimum of 20 feet within bedrock or firm materials, unless otherwise specified by the Geotechnical Engineer.

L. Drainage terraces and subdrainage devices should be constructed in compliance with the ordinances of the controlling governmental agency, or with the recommendations of the Geotechnical Engineer and Engineering Geologist.

M. The Contractor will be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of all fill slopes. This may be achieved by either overbuilding the slope a minimum of five feet, and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction.

If a method other than overbuilding and cutting back to the compacted core is to be employed, slope tests would be made by the Geotechnical Engineer during construction of the slopes to determine if the required compaction is being achieved. Each day the Contractor will receive a copy of the Geotechnical Engineer's "Daily Field Engineering Report" which will indicate the results of field density tests for that day. Where failing tests occur or

other field problems arise, the Contractor may be notified of such conditions by written communication from the Geotechnical Engineer in the form of a conference memorandum, to avoid any misunderstanding arising from oral communication.

If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor should rework or rebuild such slopes until the required degree of compaction is obtained, at no additional cost to the Owner or Geotechnical Engineer.

N. All fill slopes should be planted or protected from erosion by methods specified in the geotechnical report, or required by the controlling governmental agency.

O. Fill-over-cut slopes should be properly keyed through topsoil, colluvium or creep material into firm materials, and the transition should be stripped of all soil prior to placing fill. The fill portion of the slope should be founded on a key to be determined by the Geotechnical Engineer.

4. **Cut Slopes**

A. The Engineering Geologist should observe all cut slopes excavated in rock, lithified, or formation material at vertical intervals not exceeding ten feet.

B. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or faults planes, or areas of unstable material are encountered during grading, these conditions should be analyzed by the Engineering Geologist and Geotechnical Engineer, and recommendations should be made to treat these problems.

C. Cut slopes that face in the same direction as the prevailing drainage should be protected by a non-erosive interceptor swale placed at the top of the slope.

D. Unless otherwise specified in the geotechnical and geological report, no cut slopes should be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

E. Drainage terraces should be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Geotechnical Engineer or Engineering Geologist.

5. **Grading Control**

A. Inspection of the fill placement should be provided by the Geotechnical Engineer during the progress of grading.

B. In general, density tests should be made at intervals not exceeding two vertical feet of fill height or every 500 to 1000 cubic yards of fill placed. These criteria will vary depending on soil conditions and the size of the job. In any event, an adequate number of field density tests should be made to verify that the required compaction is being achieved.

C. Density tests should also be made on the surface material to receive fill as required by the Geotechnical Engineer.

D. All cleanout, processed ground to receive fill, key excavations, subdrains and rock disposal should be inspected by the Geotechnical Engineer prior to placing any fill. It should be the Contractor's responsibility to notify the Geotechnical Engineer when such areas are ready for inspection.

In most jurisdictions, these items must also be inspected by a representative of the controlling governmental agency prior to fill placement.

6. **Construction Considerations**

A. Erosion control measures, when necessary, should be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

B. Upon completion of grading and termination of inspections by the Geotechnical Engineer, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features should be performed without observation of the Geotechnical Engineer or Engineering Geologist.

C. Care should be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

Temporary Excavation

Where the necessary space is available, temporary unsurcharged embankments may be sloped back without shoring. The slope should not be cut steeper than the following gradient:

Height	Temporary Gradient (Horizontal:Vertical)
0 - 5'	Near-Vertical
>5'	1:1

In areas where soils with little or no binder are encountered, shoring or flatter excavation slopes shall be made.

These recommended temporary excavations do not preclude local raveling or sloughing.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met.

Where sloped embankments are used, the top of the slope should be barricaded to prevent equipment and heavy storage loads within five feet of the top of the slope. If the temporary construction embankments are to be maintained for long periods, berms should be constructed along the top of the slope to prevent runoff water from eroding the slope faces.

Our personnel should observe the soils exposed in the temporary backcut slopes during excavation so that modifications of the slopes can be made if variations in the soil conditions occur.

Drainage/Landscape Maintenance

Water should not be allowed to pond or seep into the ground, or flow over slopes in a concentrated manner. Roof gutters and yard drains should be provided. Pad drainage should be directed toward the street or any approved watercourse area swale via non-erosive channel, pipe and/or dispersion devices.

Surface water should not be allowed to drain towards a descending slope, as it may locally have an adverse affect on surficial slope stability. Likewise, over watering should also be avoided near slope areas, as it too may have a deleterious effect of surficial slope stability.

LIMITATIONS

The findings and recommendations of this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice for the City of Malibu at this time. We make no other warranty, either express or implied. The conclusions and recommendations contained in this report are based on site conditions disclosed in our subsurface investigation and the referenced reports. However, soil/rock conditions can vary significantly between borings, test pits, and natural outcrops, therefore, further refinements of our recommendations contained herein may be necessary due to changes in the building plans or what is encountered during site grading.

The recommendations provided in this report are applicable for preliminary development planning for the subject project provided that surface water will be kept from infiltrating into the subgrade adjacent to the house foundation systems. This may include, but not be limited to rain water, roof water, landscape water and/or leaky plumbing. The site is to be fine graded at the completion of construction to include positive drainage away from the structures and roof water will be collected via gutters, downspouts, and transported to the street in buried drainpipes.

Since our investigation was based on the site conditions observed, selective laboratory testing, and engineering analysis, the conclusions and recommendations contained herein are professional opinions. Further, these opinions have been derived in accordance with standard engineering practices, and no warranty is expressed or implied.

If the conditions encountered during grading are not consistent with the findings presented in this report, or if proposed construction is moved from the location investigated, this office shall be notified immediately so that the condition or change can be evaluated and appropriate action taken.

CLOSURE

We appreciate this opportunity to be of continued service to you. If you have any questions regarding the content of this report or any other aspects of the project, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.

KAREN L. MILLER
GE 2257

RUDY F. RUBERTI
CEG 1708

GEORGE C. EDWARDS
Staff Geologist

KLM.RFR.GCE.W:G&G Eng Rpt, Prop Malibu Memorial Cemetery

Encl: References
City of Malibu Approval Letter dated June 7, 2012
Plate 1, Geologic Map
Plate 2, Geologic Cross-Sections
Table A, Foundation and Slab Recommendations
Appendix A, Field Exploration Procedures
Plates A-1 through A-10, Boring Logs
Appendix B, Laboratory Test Procedures and Results
Plates SH-1 through SH-13, Shear Test Diagrams
Plates C-1 through C-6, Consolidation Diagrams
Appendix C, Boring Logs and Laboratory Test Results by Leighton and Associates
Appendix D, Boring Logs and Laboratory Test Results by Van Beveren and Butelo
Appendix E, Temporary Slope Stability Analyses

cc: (5) Addressee

MDN 15710

REFERENCES

1. Association of Engineering Geologist dated 1982, "*Geologic Maps, Santa Monica Mountains, Los Angeles, California*", compiled by the City of Los Angeles.

2. California Code of Regulations, Title 14, Article 10, Section 3721, Seismic Hazards Mapping, Division of Mines and Geology.

3. Campbell, K.W. and Bozorgnia Y. (1994), Near-Source Attenuation of Peak Horizontal Acceleration from Worldwide Accelerograms Recorded from 1957 to 1993, Proceedings, 5th U.S. National Conference on Earthquake Engineering, Volume 3, Earthquake Engineering Research Institute, pp. 283-292.

4. R.F. Yerkes and R.H. Campbell, Department of the Interior, United States Geological Survey. "*Geologic Map of East-Central Santa Monica Mountains, Los Angeles County, California,*" Map I-1146, Prepared in Cooperation with Los Angeles County, California

5. Jerome A. Treiman dated February 9, 2007, "*Splays Associated with the Malibu Coast Fault Zone at Winter Mesa,*" Malibu, Los Angeles County, California, California Geological Survey, Supplement #1 to Fault Evaluation Report FER-229

6. California Division of Mines and Geology, "*Fault Evaluation Report FER-46,*" June 16, 1977

7. Dibblee, T.W., 1993, "Geologic Map of the Malibu Beach Quadrangle, Los Angeles County, California"

8. GeoSoils Consultants, Inc. dated September 15, 2011, "Response to Comments of the City of Malibu Geotechnical Review Sheet Dated October 31, 2007, and Updated Geologic and Geotechnical Engineering Report, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

9. GeoSoils Consultants, Inc., dated January 27, 2012, "Response to City of Malibu Geotechnical Review Sheet dated October 18, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

10. GeoSoils Consultants, Inc., dated April 2, 2012, "Geologic and Geotechnical Engineering Review of Proposed On-Site Waste Water Treatment System, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

REFERENCES (cont'd)

11. GeoSoils Consultants, Inc., dated May 21, 2012, "Response to City of Malibu Geotechnical Review Sheet dated May 7, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

12. GeoSoils Consultants, Inc. dated September 5, 2012, "Groundwater and Geologic Observations for On-Site Sewage Disposal, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

13. GeoSoils Consultants, Inc., dated November 16, 2012, "Update Geologic and Geotechnical Engineering Report Review of Proposed On-Site Waste Water Treatment System, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

14. GeoSoils Consultants, Inc., dated February 13, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated December 14, 2012, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

15. GeoSoils Consultants, Inc., dated May 6, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated April 26, 2013, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

16. GeoSoils Consultants, Inc., dated June 20, 2013, "Summary of Geologic and Geotechnical information for RWQCB Review Letter dated April 19, 2013, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

17. GeoSoils Consultants, Inc., dated July 25, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet Geotechnical Review comments, dated July 9, 2013, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

18. Leighton and Associates, Inc., dated August 4, 1989, "Report of Geotechnical Investigation, Rancho Malibu Mesa Project, Pacific Coast Highway at Malibu Canyon Road, Malibu, California"

REFERENCES (cont'd)

19. Leighton and Associates, Inc., dated February 6, 1990, "Response to Geologic and Geotechnical Engineering Review Sheets (Grading Plan Check No. 1811), By the Department of Public Works, Land Development Division, For Rancho Malibu Hotel, 3930 Malibu Canyon Road, Malibu, California"

20. Petersen, M.D., Bryant, W.A., Cramer, C.H., Cao, T., Reichle, M.S., Frankel, A.D., Lienkaemper, J.J., McCrory, P.A., and Schwartz, D.P., 1996, "Probabilistic Seismic Hazard Assessment for the State of California," California Division Mines and Geology, Open File Report 96-08.

21. Southern California Earthquake Center dated March 1999, "*Recommended Procedures for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction in California*", pages 28 - 32.

22. Van Beveren and Butelo, Inc. dated September 27, 2007, "Report of Geologic and Geotechnical Investigation, Proposed Rancho Malibu Resort, Pacific Coast Highway and Malibu Canyon Road, Malibu, California"

City of Malibu

23825 Stuart Ranch Road • Malibu, California 90265-4861
(310) 456-2489 • Fax (310) 317-1950 • www.malibucity.org

PLANNING REVIEW

GEOTECHNICAL REVIEW SHEET

Project Information

Date:	June 7, 2012	**Review Log #:**	3276
Site Address:	4000 Malibu Canyon Road		
Lot/Tract/PM #:	n/a	**Planning #:**	CDP 11-028
Applicant/Contact:	Bruce McBride, bmcbride@pda-11c.net Fred Gaines, fgaines@gaineslaw.com	**BPC/GPC #:**	
Contact Phone #:	**Fax #:**	**Planner:**	Stefanie Edmondson
Project Type:	Rancho Malibu Resort Development		

Submittal Information

Consultant(s) / Report Date(s): *(Current submittal(s) in **Bold**.)*	GeoSoils Consultants, Inc. (Miller,GE 2257; Ruberti, CEG 1708): **5-21-12**, 1-27-12, 9-15-11 Van Beveren & Butelo, Inc.(Butelo, CEG 1315; Langhaar, RGE 2647): 9-27-07 Roy J. Shlemon & Associates, Inc.:September 2007 (Included as Appendix D in the referenced Van Beveren & Butelo report) Hotel plans prepared by Hill Glazier Studio dated May 19, 2011. References reviewed by the Consultant: Leighton and Associates, Inc.: 3-28-90, 2-6-90, 8-4-89
Previous Reviews:	5-7-12, 10-18-11, Geotechnical Review Referral Sheet dated 6-21-11, 10-21-07; Ref: Los Angeles County reviews dated 3-6-90, 3-1-90, 12-8-89, 11-29-89

Review Findings

Coastal Development Permit Review

☒ **APPROVED** from a geotechnical perspective.

☐ **NOT APPROVED** from a geotechnical perspective. The listed 'Review Comments' shall be addressed prior to approval.

Building/Grading Plan-Check Stage Review

☒ Awaiting Building plan check submittal. Please respond to the listed 'Building Plan-Check Stage Review Comments' AND review and incorporate the attached 'Geotechnical Notes for Building Plan Check' into the plans.

☐ **APPROVED** from a geotechnical perspective. Please review the attached 'Geotechnical Notes for Building Plan Check' and incorporate into Building Plan-Check submittals.

Guidelines for geotechnical reports (dated February 2002) are available on the City of Malibu web site: http://www.ci.malibu.ca.us/index.cfm?fuseaction=nav&navid=30.

☐ **NOT APPROVED** from a geotechnical perspective. The listed 'Building Plan-Check Stage Review Comments' shall be addressed prior to Building Plan Check Stage approval.

Remarks

The referenced response report was reviewed by the City from a geotechnical perspective. The project comprises a new hotel resort, consisting of a 167,062 square foot 3-story main hotel building with a basement (includes a spa and fitness center), a 165,259 square foot parking structure, swimming pool/spa, 21 individual casitas totaling 177,736 square feet, retail and surface parking, access roads, drives, and fire lanes, storm drains and utilities, retaining walls, and landscaping/flatwork. Grading will consist of 54,000 yards of R & R; 156,700 yards of exempt understructure grading; 5,120 yards of exempt safety grading for the fire department; and 50,380 yards of non-exempt grading. 189,760 yards will be exported. Shoring will be required for the basement and parking structure excavations.

The applicants have submitted an application for a new OWTS to City geotechnical/hydrogeologic staffs for review. Comments will be provided by City staff in a separate review letter.

NOTICE: Applicants shall be required to submit all Geotechnical reports reviewed by City Geotechnical Staff for this specific proposed project as a searchable PDF file on a CD at the time of Building Plan Check application.

Building Plan-Check Stage Review Comments:

1. Please show the Stream Terrace Deposits on Cross-Sections C, D, and G. Are the stream terrace deposits displaced across the landslide?
2. Please depict limits and depths of over-excavation and structural fill to be placed on the grading plan, and cross sectional view of the proposed building area. Cut and fill yardages are to be indicated on the cover sheet of the plans.
3. Two sets of final grading, OWTS, swimming pool, and foundation plans for the proposed hotel, parking structure, and casitas (**APPROVED BY BUILDING AND SAFETY**) incorporating the Project Geotechnical Consultant's recommendations and items in this review sheet must be **reviewed and wet stamped and manually signed by the Project Engineering Geologist and Project Geotechnical Engineer**. City geotechnical staff will review the plans for conformance with the Project Geotechnical Consultants' recommendations and items in this review sheet over the counter at City Hall on Mondays through Thursdays between 8 AM and 10 AM.

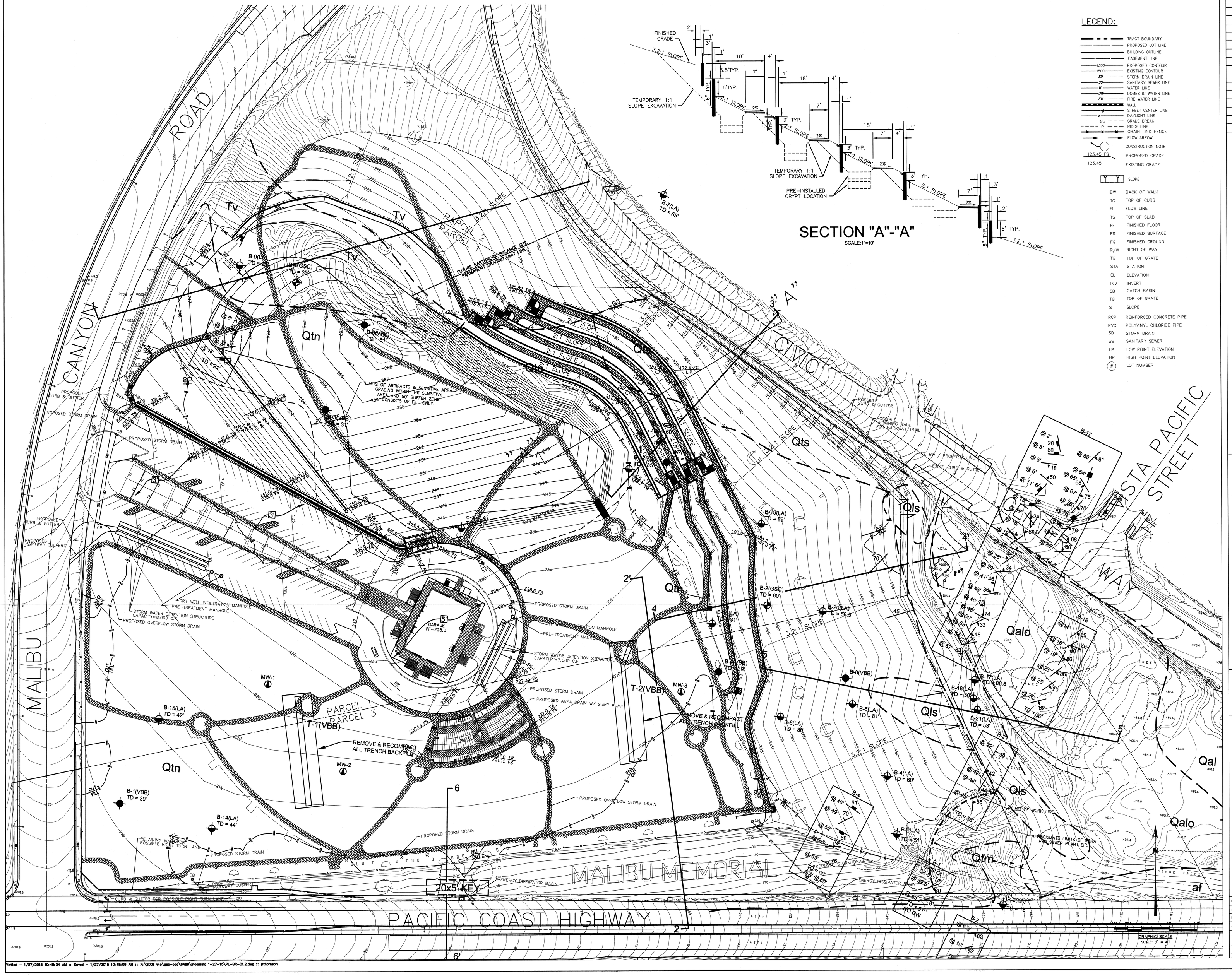
Please direct questions regarding this review sheet to City Geotechnical staff listed below.

Engineering Geology Review by: Christopher Dean, C.E.G. #1751, Exp. 9-30-12 — Date 6/11/12
Engineering Geology Reviewer (310-456-2489, x306)

Geotechnical Engineering Review by: Kenneth Clements, G.E. # 2010, Exp. 6-30-14 — *June 7, 2012* Date
Geotechnical Engineering Reviewer (805-563-8909)
Email: kclements@fugro.com

This review sheet was prepared by City Geotechnical Staff contracted with Fugro as an agent of the City of Malibu.

FUGRO CONSULTANTS, INC.
4820 McGrath Street, Suite 100
Ventura, California 93003-7778
(805) 650-7000 (*Ventura office*)
(310) 456-2489, x306 (*City of Malibu*)



SECTION "A"-"A"

SCALE:1"=10'

LEGEND:

- TRACT BOUNDARY
- PROPOSED LOT LINE
- BUILDING OUTLINE
- EASEMENT LINE
- 1500 PROPOSED CONTOUR
- 1500 EXISTING CONTOUR
- SD STORM DRAIN LINE
- SS SANITARY SEWER LINE
- W WATER LINE
- DW DOMESTIC WATER LINE
- FW FIRE WATER LINE
- WALL
- STREET CENTER LINE
- DAYLIGHT LINE
- CB GRADE BREAK
- R RIDGE LINE
- CHAIN LINK FENCE
- FLOW ARROW
- 1 CONSTRUCTION NOTE
- 123.45 FS PROPOSED GRADE
- 123.45 EXISTING GRADE
- SLOPE

BW	BACK OF WALK
TC	TOP OF CURB
FL	FLOW LINE
TS	TOP OF SLAB
FF	FINISHED FLOOR
FS	FINISHED SURFACE
FG	FINISHED GROUND
R/W	RIGHT OF WAY
TG	TOP OF GRATE
STA	STATION
EL	ELEVATION
INV	INVERT
CB	CATCH BASIN
TG	TOP OF GRATE
S	SLOPE
RCP	REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE PIPE
SD	STORM DRAIN
SS	SANITARY SEWER
LP	LOW POINT ELEVATION
HP	HIGH POINT ELEVATION
#	LOT NUMBER

EXPLANATION

af	ARTIFICIAL FILL
Qal	ALLUVIUM
Qts	STREAM DEPOSITS
Qalo	OLDER ALLUVIUM
Qls	LANDSLIDE
Qtn	NON-MARINE TERRACE DEPOSITS
Qtm	MARINE TERRACE DEPOSITS
Tv	VAQUEROS FORMATION
Tcv	CONEJO VOLCANICS FORMATION
Ts	SESPE FORMATION

- BEDDING ATTITUDE
- JOINT ATTITUDE
- SHEAR ATTITUDE
- "RUPTURE SURFACE" ATTITUDE
- APPROXIMATE GEOLOGIC CONTACT
- APPROXIMATE CONCEALED GEOLOGIC CONTACT
- LINE OF GEOLOGIC SECTION
- TP-21 APPROXIMATE LOCATION OF TEST PIT
- B-1 APPROXIMATE LOCATION OF BORING BY GEOSOILS CONSULTANTS, INC.
- B-1(LA) APPROXIMATE LOCATION OF BORING BY LEIGHTON AND ASSOCIATES
- B-1(VBB) APPROXIMATE LOCATION OF BORING BY VAN BEVEREN & RUTELO
- MW-3 APPROXIMATE LOCATION OF GROUND WATER WELL
- T-1 APPROXIMATE LOCATION OF FAULT TRENCH BY VAN BEVEREN & RUTELO
- T-8 APPROXIMATE LOCATION OF SEISMIC TRENCH BY LEIGHTON & ASSOCIATES
- APPROXIMATE LOCATION OF SUBDRAIN
- 5' APPROXIMATE DEPTH OF REMOVALS

REVISIONS

MALIBU MEMORIAL CEMETARY
4000 Malibu Canyon Road
Malibu CA, 90265

GRADING AND DRAINAGE PLAN

PSOMAS
580 South Flower Street, Suite 4400
Los Angeles, CA 90071
(213) 223-1400 (213) 223-1444 fax
www.psomas.com

REGISTERED CERTIFIED ENGINEERING GEOLOGIST — DAVID A. NICKSON — No. CE05808 — CIVIL — STATE OF CALIFORNIA

DATE :	1/5/2015
SCALE:	As Noted
DRAWN BY:	D.R.Z.
JOB No.:	1GRE220100
SHEET	C1.2
OF 2	SHEETS

MALIBU MEMORIAL CEMETARY

GSC GeoSoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
MALIBU MEMORIAL
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

WORK ORDER	DATE	SCALE
6489	9/2011	1" = 40'
REVISED 2/12 6/12 8/13 1/15	PLATE 1	

Plotted = 1/27/2015 10:48:24 AM :: Saved = 1/27/2015 10:48:09 AM :: X:\2001 w.s\gsc-ooi\6489\incoming 1-27-15\PL-GR-C1.2.dwg :: pthomson

X:\2001 w.s\gsc-ooi\6489\incoming 1-27-15\PL-GR-C1.2.dwg, 1/27/2015 10:46:23 AM, Custom 1: 36 x 36 in.

X:\2001 w orig\pc-cad\6490\Current\Plate 2 geo sections REV 12-14.dwg, 12/27/2015 1:51:06 PM, Custom 1: 50 / 36 in.

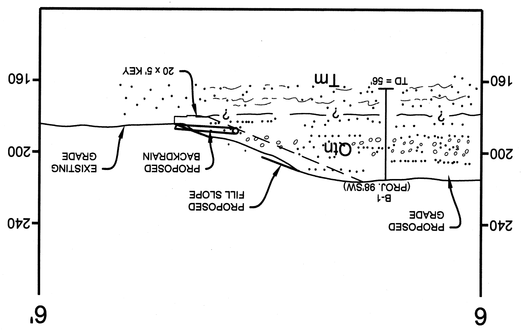
GSC Geosoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

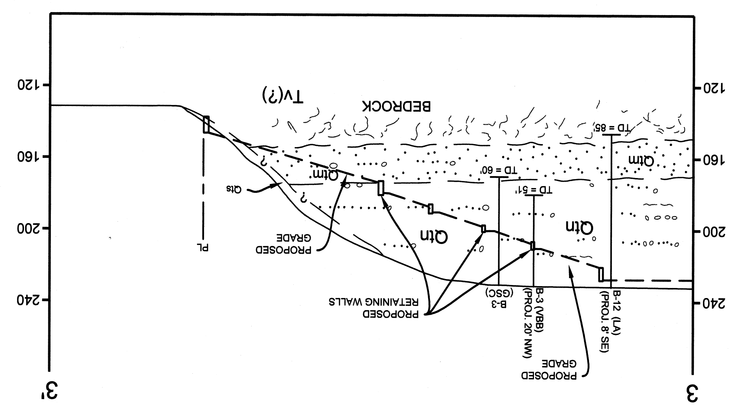
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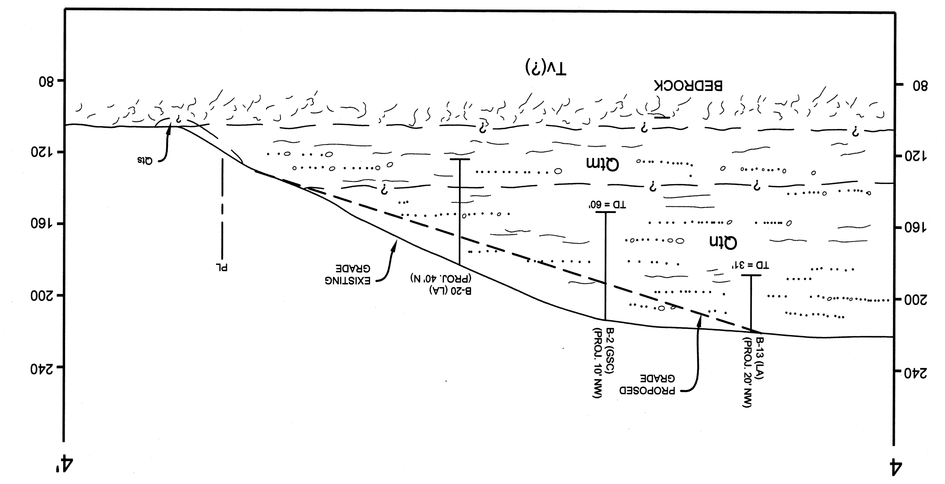
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

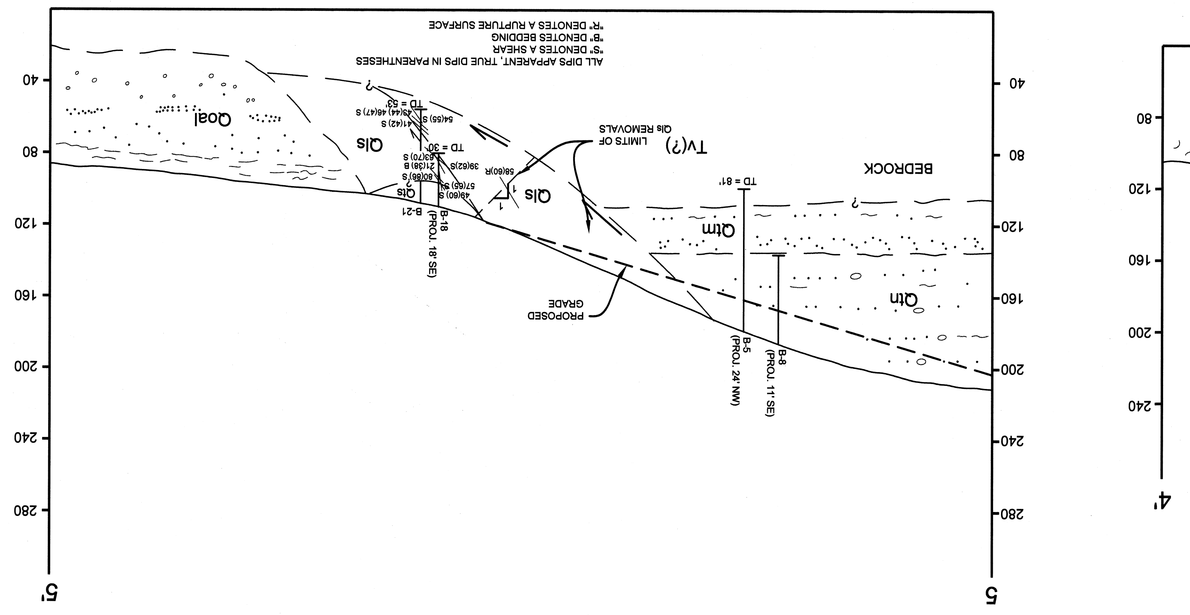
WORK ORDER	DATE	SCALE
6490	9/2011	1" = 40'

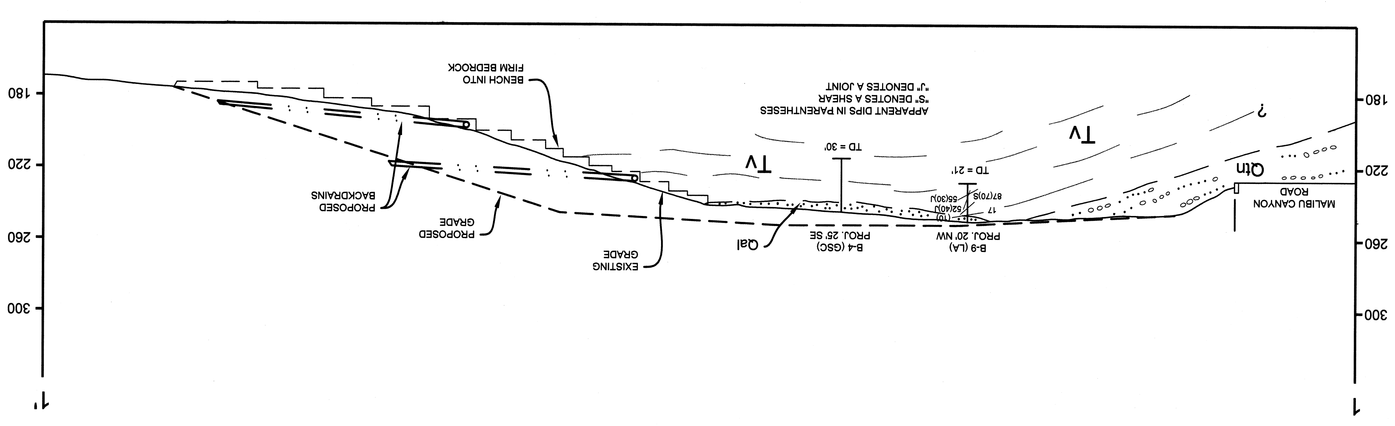
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2/13 5/13	12/14	











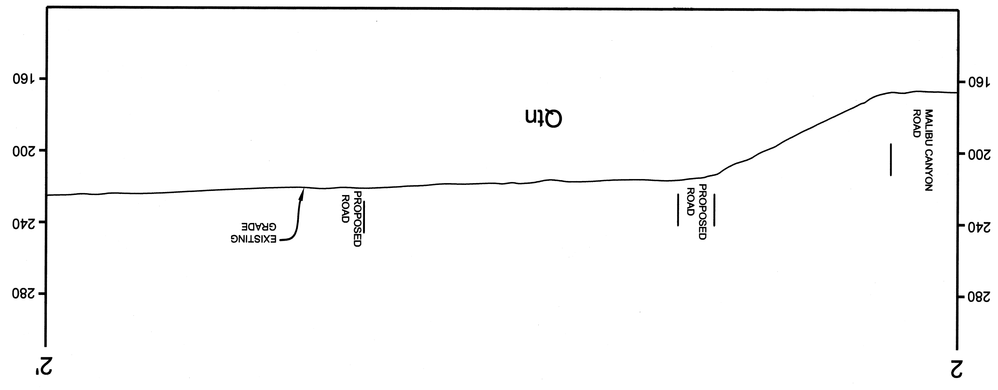


TABLE A

FOUNDATION AND SLAB RECOMMENDATIONS

ONE AND TWO-STORY RESIDENTIAL BUILDINGS

	Expansion Index 0-50 Low Expansion	Expansion Index 51-90 Medium Expansion	Expansion Index 91-130 High Expansion
1-Story Footings	All footings 12" deep. Four No. 4 bars, two top and two bottom; footings continuous.	Exterior footings 18" deep. Interior footings 15" deep. Four No. 4 bars, two top and two bottom; footings continuous.	Exterior footings 24" deep. Interior footings 18" deep. Four No. 4 bars: two top and two bottom. Footings continuous.
2-Story Footings	All footings 18" deep; continuous. Four No. 4 bars, two top and two bottom.	All footings 18" deep; continuous. Four No. 4 bars, two top and two bottom.	All footings 24" deep; continuous. Four No. 4 bars: two top and two bottom.
Garage Door Grade Beam	12" deep. Four No. 4 bars, two top and two bottom.	18" deep. Four No. 4 bars, two top and two bottom.	24" deep. Four No. 4 bars: two top and two bottom.
Living Area Floor Slabs	4" thick. No. 4 bars at 16" both ways at mid-height. Six mil Visqueen vapor barrier sandwiched between, 1" sand layers.	4" thick. No. 4 bars at 16" both ways at mid-height. Slab steel should be doweled into exterior footings. Six mil Visqueen vapor barrier sandwiched between two, 2" sand layers.	4" thick. No. 4 bars at 16" both ways at mid-height. Six mil Visqueen vapor barrier sandwiched between two, 2" sand layers. Slab steel should be doweled into exterior footings.
Garage Floor Slabs	4" thick. No. 4 bars at 16" both ways at mid-height and ¼ slabs. Isolate from stem wall footings. No moisture barrier required. 2" sand base required.	4" thick. No. 4 bars at 16" both ways at mid-height and ¼ slabs. Isolate from stem wall footings. No moisture barrier required. 4" sand base required.	4" thick. No. 4 bars at 16" both ways at mid-height and ¼ slabs. Isolate from stem wall footings. No moisture barrier required. 4" sand base required.
Pre-soaking of Living Area and Garage Slab Soils	No pre-soaking required. Pre-moisten soil prior to pouring concrete.	Soak 18" depth to 5% above optimum moisture content.	Soak to 24" depth to 5% above optimum moisture content.

Note: An allowable soil bearing value of 1500 pounds per square foot, including dead and live loads, may be used for design of footings and foundation founded at the recommended depths. All footings should have a minimum width of 15 inches and should be continuous. A friction coefficient for concrete on natural and compacted soil of 0.4, and a lateral soils bearing value of 250 pounds per square foot, per foot of depth, may be employed to resist lateral loads. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one third.

If wire mesh is provided for slabs under Medium and High expansion soils, then No. 3 bars at 24" on center dowels should be provided in exterior footings and bent 3' into slabs. The bent bars are not allowed between floating slabs and footings.

January 23, 2015
W.O. 6489

APPENDIX A

FIELD EXPLORATION PROCEDURES

January 23, 2015
W.O. 6489

APPENDIX A

FIELD EXPLORATION PROCEDURES

Our exploratory borings were drilled with a truck-mounted drill rig operated by an independent drilling company working under subcontract to GSC. Four borings were drilled (designated B-1-11 through B-4-11) utilizing an 8-inch diameter hollow stem auger drill rig. Samples were obtained via the California ring sampler.

A geologist from our firm continuously observed the borings and classified the soils encountered by visual examination in accordance with the Unified Soil Classification System, and collected representative soil samples. Ring samples were obtained by driving a ring sampler with the Kelly bar. Soil samples were retained in a series of brass rings, each having an inside diameter of 2.36 (6.0 centimeter) and a height of 1.00 inch (2.54 centimeter). The ring samples were stored in close-fitting, moisture-tight containers and later transported to our laboratory for further visual examination and testing, as deemed necessary. After the boring was completed, the borehole was backfilled with soil cuttings.

The enclosed *Boring Logs* describes the vertical sequence of soils and materials encountered in each boring, based primarily on our field classifications and supported by our subsequent laboratory examination and testing. Where a soil contact was observed to be gradational, our log indicates the average contact depth. Where a soil type changed between sample intervals, we inferred the contact depth. Our log also graphically indicates the blow count, sample type, sample number, and approximate depth of each soil sample obtained from the borings, as well as any laboratory tests performed on these soil samples. If any groundwater was encountered in a borehole, the approximate groundwater depth is depicted on the boring log.

BORING LOGS

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-1-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 1 OF 2
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-2', ALLUVIUM (Qal) Gray-brown, silty SAND, scattered gravel			
			2-36', TERRACE (Qt)			
10		50	@ 10', Orange-brown, very fine to medium SAND, slightly moist, dense @ 10-20', Occasional pebble-cobbles	5.3	106.6	Cons
20		34/50	@ 20', Orange-brown, very fine to medium SAND, slightly moist, dense	3.3	117.2	DS

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-1

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-1-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 2 OF 2
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
35		23/37/49	@ 30', Orange-brown, slightly silty, very fine to medium SAND, scattered, very coarse grains, slightly moist to moist, dense	5.9	122.7	Cons
			36-50', BEDROCK: Monterey Formation			
40		39/50 for 3"	@ 40', LIght brown, fine to medium SANDSTONE, slightly moist, dense	1.0	107.4	DS
45						
50		50 for 4"	@ 50', No recovery	-----	-----	
			T.D. @ 50' No groundwater			
55						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-2

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-2-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 1 OF 3
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-2', ALLUVIUM (Qal) Light brown, very fine to medium, sandy SILT, dry, loose			
			2-60', TERRACE (Qt)			Max Expan
5		23/24/25	@ 5', Orange-brown, very fine to medium SAND with gravel, slightly moist to dry (rock in sampler tip)	3.1	-----	
10		30/32/45	@ 10', Red-brown, fine to very coarse SAND, scattered pebbles, moist, dense	5.0	122.3	DS
15		50 for 5"	@ 15', Red-brown, fine to very coarse SAND, scattered pebbles, moist, dense @ 16-27', Scattered pebbles-cobbles	6.0	-----	
20		50 for 3"	@ 20', No recovery	-----	-----	
25						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-3

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-2-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 2 OF 3
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		18/15/20	@ 30', Red-brown, slightly silty, very fine to coarse SAND, moist, dense	10.9	120.6	DS
35						
40		18/33/45	@ 40', Red-brown, slightly silty, very fine to coarse SAND, moist, dense	7.0	130.0	
45						
50		33/50	@ 50', Red-brown, silty, very fine to medium SAND, minor clay, moist, dense	8.2	120.8	
55						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-4

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres — W.O. NO. 6489
DRILLING COMPANY Choice — DATE STARTED: 9-8-11 — BORING NO. B-2-11
TYPE OF DRILL RIG LAR — LOGGED BY RLC — SHEET 3 OF 3
DRILLING METHOD Hollow Stem — HAMMER WEIGHT (LBS) 140 — GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 — DROP (IN) 30 — GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		21/37/ 50 for 5"	@ 60', Orange-brown, very fine to very coarse SAND, moist, slightly cemented, dense	7.8	123.7	
			T.D. @ 60' No groundwater			
65						
70						
75						
80						
85						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-5

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-3-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 1 OF 3
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-2', ALLUVIUM (Qal) Gray-brown, sandy SILT, dry, loose			
			2-60', TERRACE (Qt)			
5		28/30/43	@ 5', Red-brown, silty, fine to medium SAND, scattered, very small gravel, slightly moist to moist, dense	6.6	124.4	Cons
10						Max Expan
15		50 for 5"	@ 15', No recovery	-----	-----	
20		16/18/27	@ 20', Orange-brown, silty, very fine to medium SAND, moist, dense	7.3	123.7	Cons DS
25		35/50	@ 25', Orange-brown, silty, very fine to medium SAND, moist, dense	6.8	120.5	

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-6

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-3-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 2 OF 3
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
35		29/32/44	@ 35', Orange-brown, very fine to coarse occasional small gravel and very coarse grains, slightly moist to moist, dense	4.1	123.3	Cons DS
40						
45		26/50 for 5"	@ 45', Light brown, very fine to medium SAND, moist, dense	3.3	106.2	
50						
55		36/37/ 50 for 2"	@ 55', Light to medium brown, very fine to medium SAND, caliche veins, moist, dense	7.8	118.6	DS

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-7

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres | W.O. NO. 6489
DRILLING COMPANY Choice | DATE STARTED: 9-8-11 | BORING NO. B-3-11
TYPE OF DRILL RIG LAR | LOGGED BY RLC | SHEET 3 OF 3
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		50 for 3"	@ 60', No recovery	-----	-----	
			T.D. @ 60' No groundwater			
65						
70						
75						
80						
85						

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-8

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres — W.O. NO. 6489
DRILLING COMPANY Choice — DATE STARTED: 9-8-11 — BORING NO. B-4-11
TYPE OF DRILL RIG LAR — LOGGED BY RLC — SHEET 1 OF 2
DRILLING METHOD Hollow Stem — HAMMER WEIGHT (LBS) 140 — GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 — DROP (IN) 30 — GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-5', ALLUVIUM (Qal) Medium brown-gray, silty SAND, dry to slightly moist, slightly dense			Max Expan
5		15/17/18	**5-30', BEDROCK: Vaqueros Formation** @ 5', Orange-gray, silty, fine SANDSTONE, moist, dense	6.7	118.0	
10		13/18/25	@ 10', Orange-gray, sandy SILTSTONE to silty SANDSTONE, moist, dense	17.5	104.6	DS
15		33/36/49	@ 15', Brown-gray, silty SANDSTONE, carbonate veins, slightly cemented, moist, dense	10.3	115.0	Cons
20		31/50 for 5"	@ 20', Gray-black, silty, fine SANDSTONE, carbonate veins, moderate cement, moist, dense	9.5	113.6	DS
25		50	@ 25', Gray-green, very fine to medium SANDSTONE, small gravel, carbonate deposits, moderate cement, moist, very dense	9.1	111.0	

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-9

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Green Acres — W.O. NO. 6489
DRILLING COMPANY Choice — DATE STARTED: 9-8-11 — BORING NO. B-4-11
TYPE OF DRILL RIG LAR — LOGGED BY RLC — SHEET 2 OF 2
DRILLING METHOD Hollow Stem — HAMMER WEIGHT (LBS) 140 — GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 — DROP (IN) 30 — GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
		50 for 4"	@ 30', Gray-green, very fine to medium SANDSTONE, small gravel, carbonate deposits, moderate cement, moist, very dense	10.3	105.8	DS
			T.D. @ 30' No groundwater			

35
40
45
50
55

LEGEND

- Standard Penetration Test
- California Ring
- Rock Core
- Bulk Sample
- Shelby Tube
- Water Seepage
- Groundwater

SIEVE: GRAIN SIZE ANALYSIS
MAX: MAXIMUM DRY DENSITY
DS: DIRECT SHEAR
CONS: CONSOLIDATION
HYDR: HYDROMETER ANALYSIS
EXPAN: EXPANSION INDEX
CHEM: CHEMICAL TESTS

PLATE A-10

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

January 23, 2015
W.O. 6489

APPENDIX B

LABORATORY TEST PROCEDURES AND RESULTS

January 23, 2015
W.O. 6489

APPENDIX B

LABORATORY TEST PROCEDURES AND RESULTS

Moisture-Density

The field moisture content and dry unit weights were determined for each undisturbed ring sample obtained from our subsurface exploration. Once the dry unit weights had been determined, in-place densities of underlying soil profile were estimated. In those cases where ring samples were obtained, the moisture content and dry unit weights are presented on the Boring Logs B-1 through B-4.

Compaction Tests

Compaction tests were performed to determine to moisture density relationships of the typical surficial soils encountered on the site. The laboratory standard used was in accordance with ASTM Test Designation D-1557-02. A summary of the compaction test results is shown in Table B-1.

TABLE B-1
COMPACTION TEST RESULTS

Boring No. And Sample Depth	Description	Maximum Dry Density (psf)	Optimum Moisture (%)	Expansion Index
B-2 @ 5'	Reddish Brown, clayey, sandy SILT with gravel	125.5	11.0	Medium
B-3 @ 8-10"	Reddish brown, clayey, sandy SILT with gravel	124.0	11.0	Medium
B-4 @ 5-10'	Brown, slightly sandy, clayey SILT with gravel	117.0	15.5	Medium

Direct Shear Tests

Shear tests were performed in a strain-control type Direct Shear Machine. The samples were sheared under varying confining loads in order to determine the Coulomb shear strength parameters: cohesion (c), and angle of internal friction (ϕ) for peak and residual strength conditions. The samples were tested in an artificially saturated condition. The

Appendix B

results are plotted and a linear approximation is drawn of the failure curve. Results are shown on the Shear Test Diagrams included with these appendices, as Plates SH-1 through SH-13. Shear tests performed on undisturbed ring samples are presented on Plates SH-1 to SH-10. Shear tests were performed on samples remolded to 90 percent relative compaction and the results are shown in Plates SH-11 through SH-13.

Consolidation Test

Consolidation tests were performed on selected ring samples to develop data for settlement studies. The tests were performed primarily on materials which would be considered to be most susceptible to consolidation under increased loading. Loads were applied to the sample in several increments in geometric progression, and the resulting deformation was recorded at selected time intervals. Porous stones were placed in contact with the top and bottom of each specimen to permit the release and addition of pore fluid. Inundation of the sample was performed at an approximate load one ton per square foot. Results of the consolidation test are shown on Plates C-1 through C-6.

Expansion Index Tests

To determine the expansion potential of the on-site soils, expansion index tests were performed. The results are included in the above table.

LABORATORY RESULTS

MDN 15710

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-1 @ 20.0'**

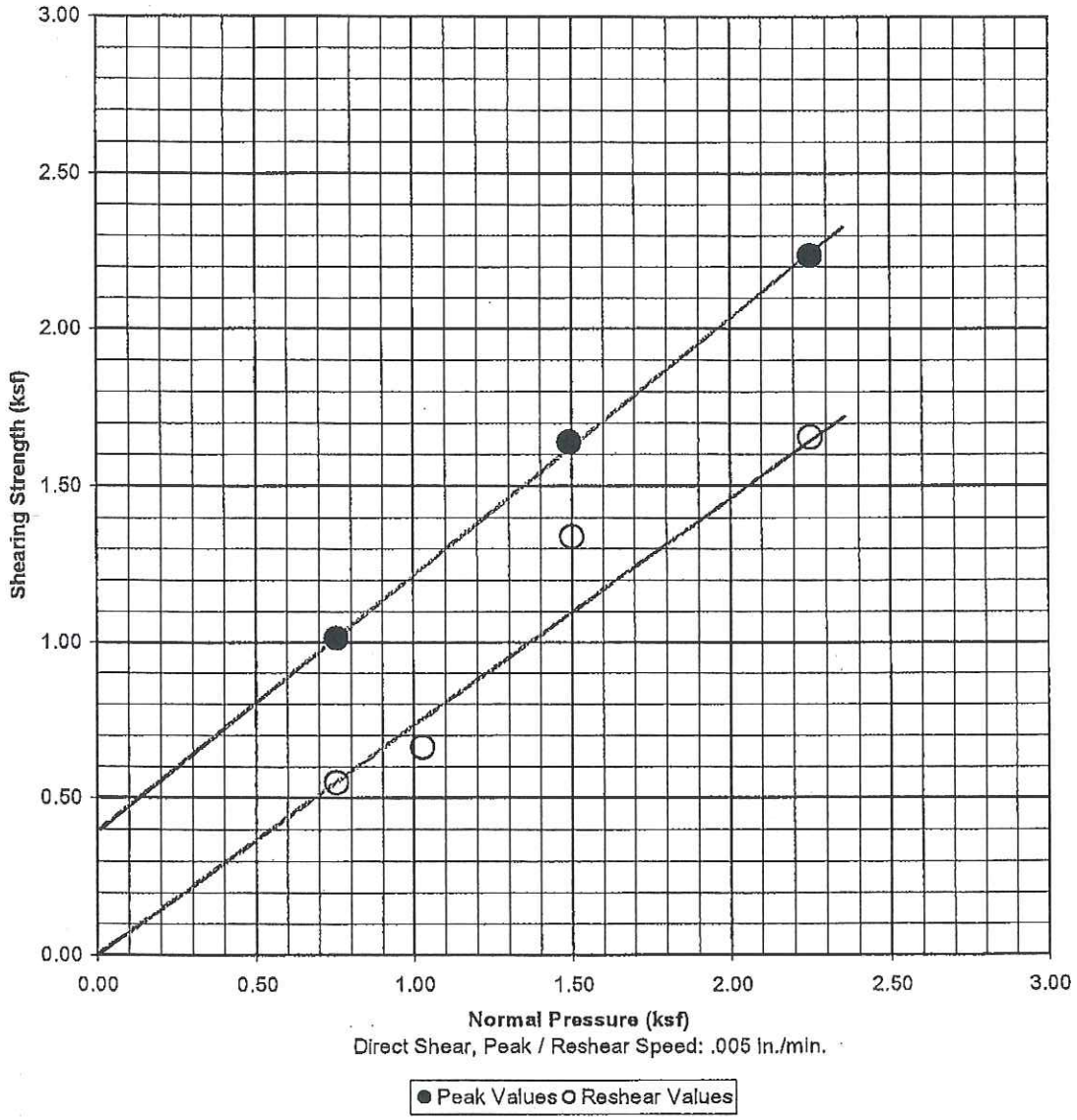
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-1

Shear Test Diagram
Peak
C(psf): 400 Phi (degrees): 39.0

Reshear
C(psf): 0 Phi (degrees): 36.0



Undisturbed **Natural** Shear-Saturated

Orange-brown, silty, very fine to fine SAND, w/ some coarse sand.

18.9% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: B-1 @ 40.0'

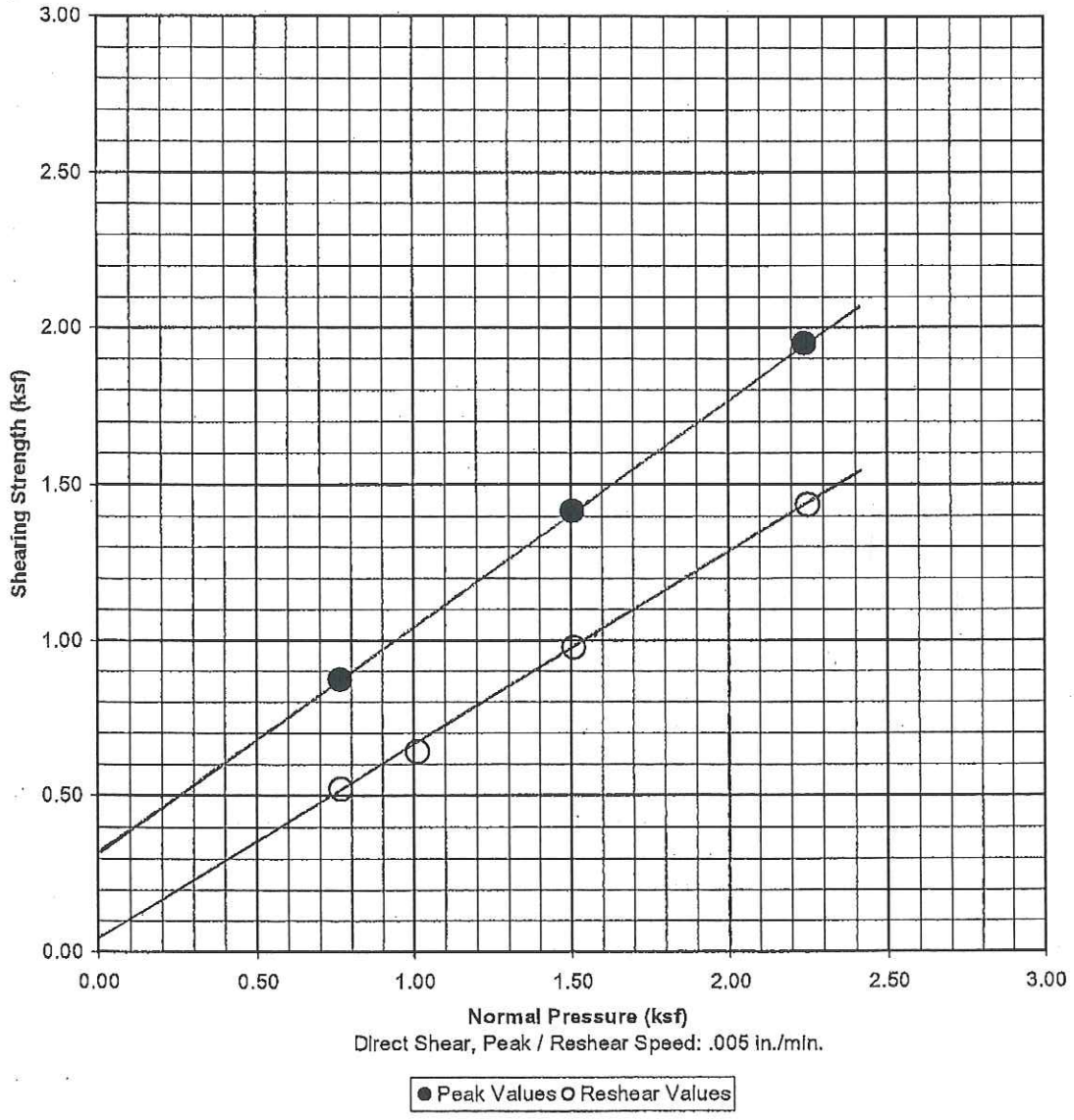
PLATE SH-2

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Shear Test Diagram
Peak
C(psf): 320 Phi (degrees): 35.5

Reshear
C(psf): 50 Phi (degrees): 31.5



Undisturbed **Natural** Shear-Saturated

Light orange-brown, very fine to fine SAND.

21.9% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-2 @ 10.0'**

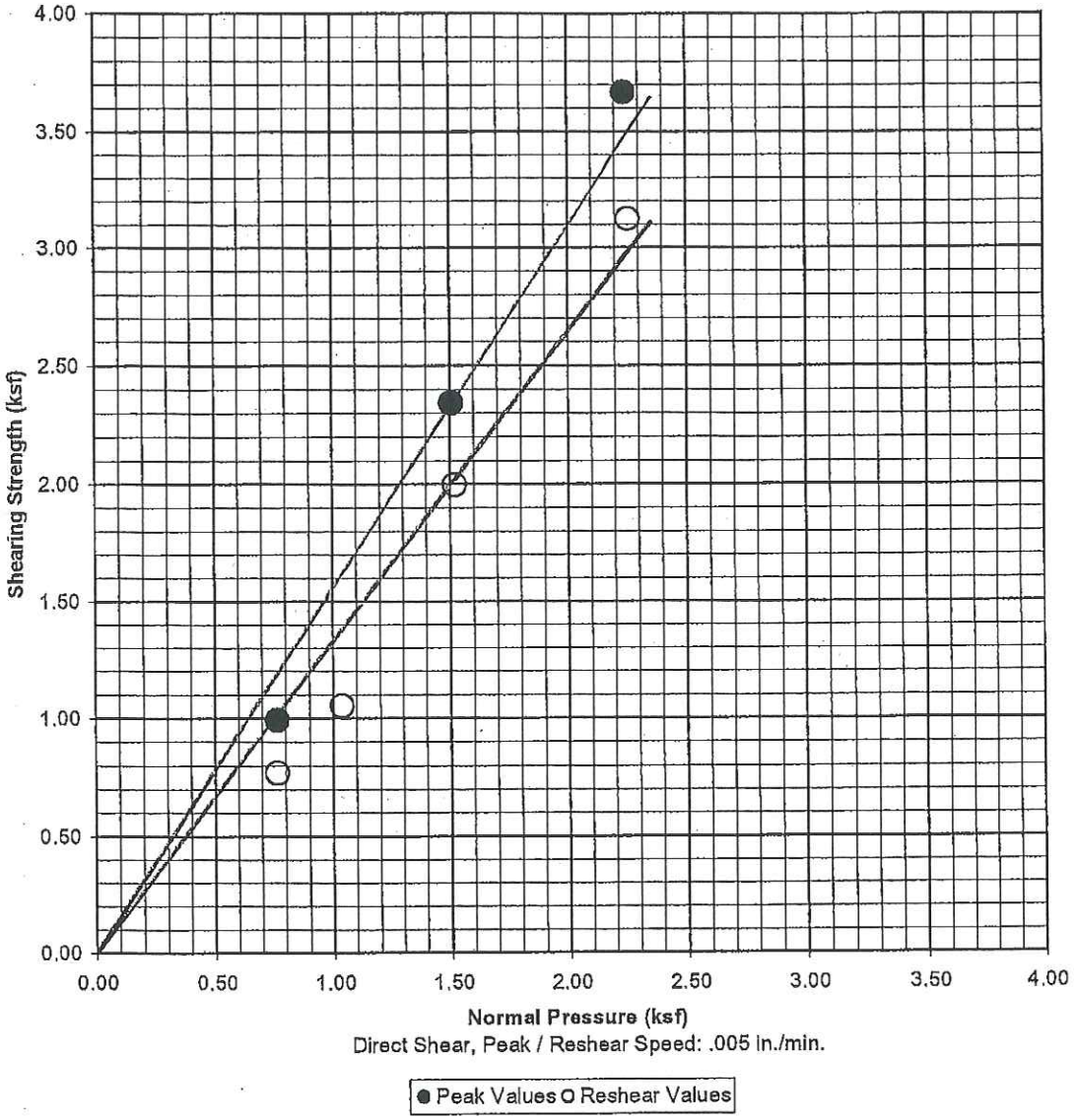
PLATE SH-3

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Shear Test Diagram
Peak
C(psf): 0 Phi (degrees): 57.0

Reshear
C(psf): 0 Phi (degrees): 52.5



Undisturbed **Natural** Shear-Saturated

Red-brown, silty, very fine to coarse SAND, w/ rock fragments.

16.7% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: B-2 @ 30.0'

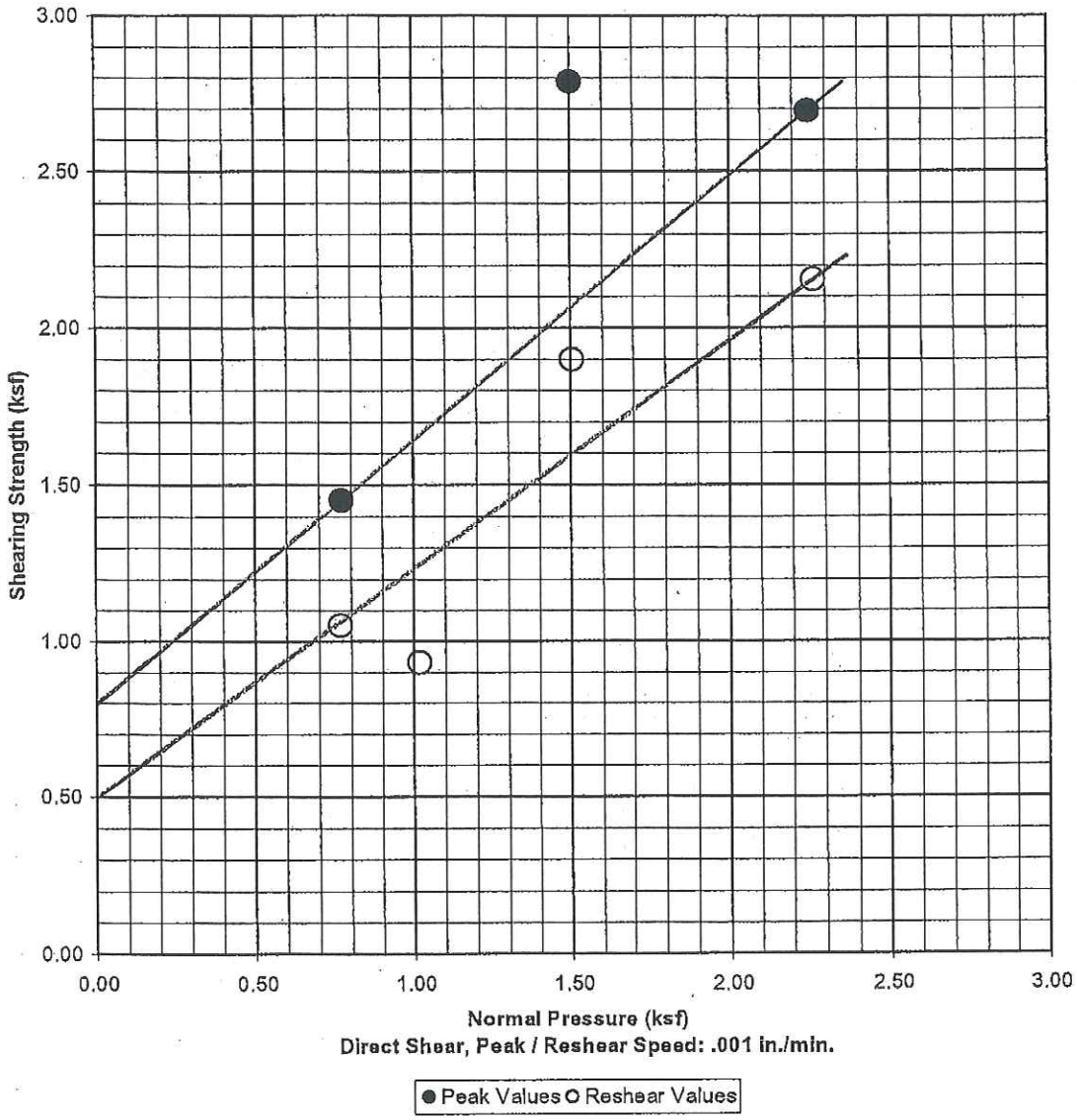
PLATE SH-4

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Shear Test Diagram
Peak
C(psf): 800 Phi (degrees): 40.0

Reshear
C(psf): 500 Phi (degrees): 36.0



Undisturbed **Natural** Shear-Saturated

Orange-brown, silty, sandy CLAY.

19.9% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-3 @ 20.0'**

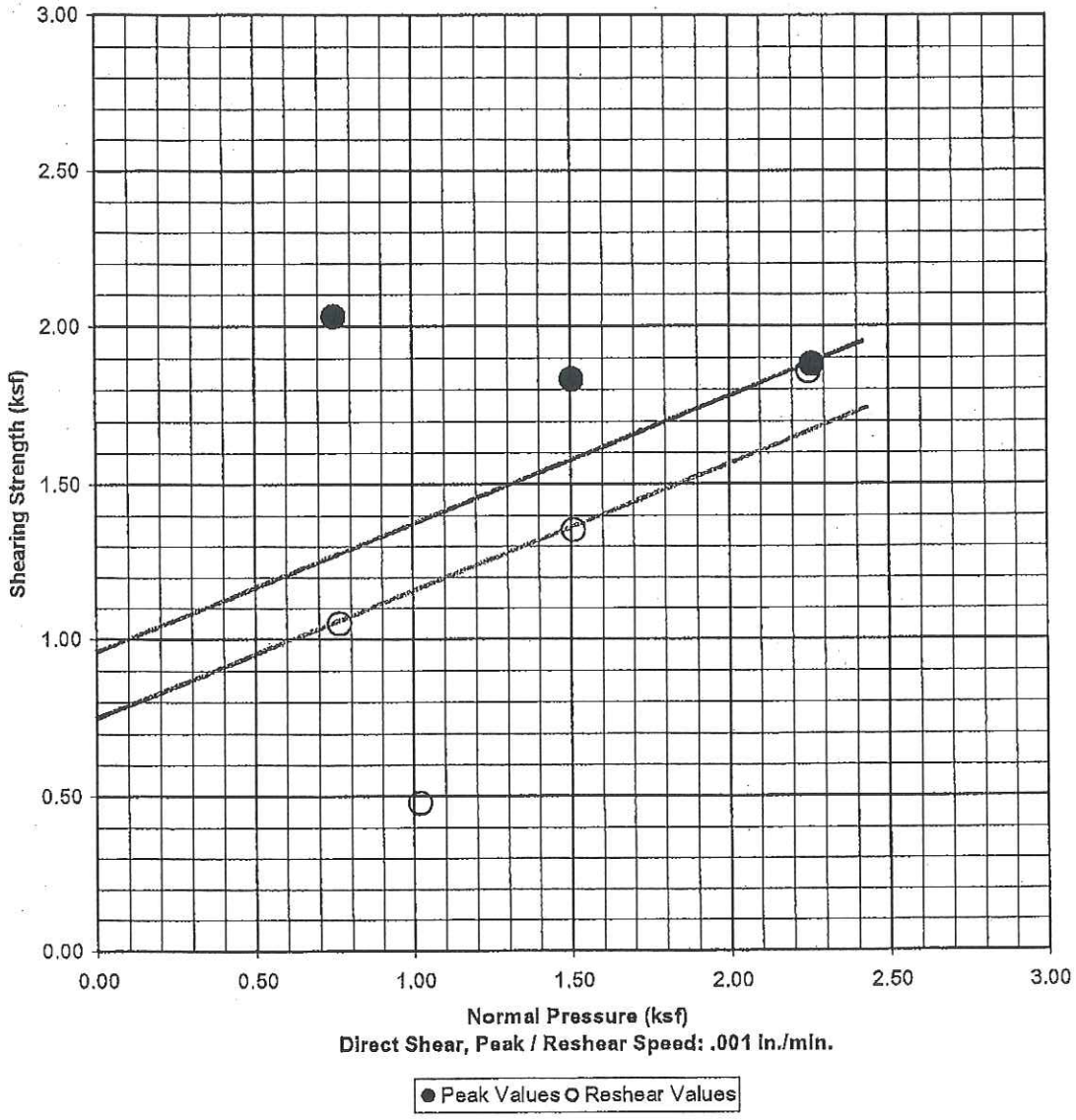
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-5

Shear Test Diagram
Peak
C(psf): 960 Phi (degrees): 22.0

Reshear
C(psf): 750 Phi (degrees): 22.0



Undisturbed **Natural** Shear-Saturated

Orange-brown, sandy, slightly clayey SILT.

19.8% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-3 @ 35.0'**

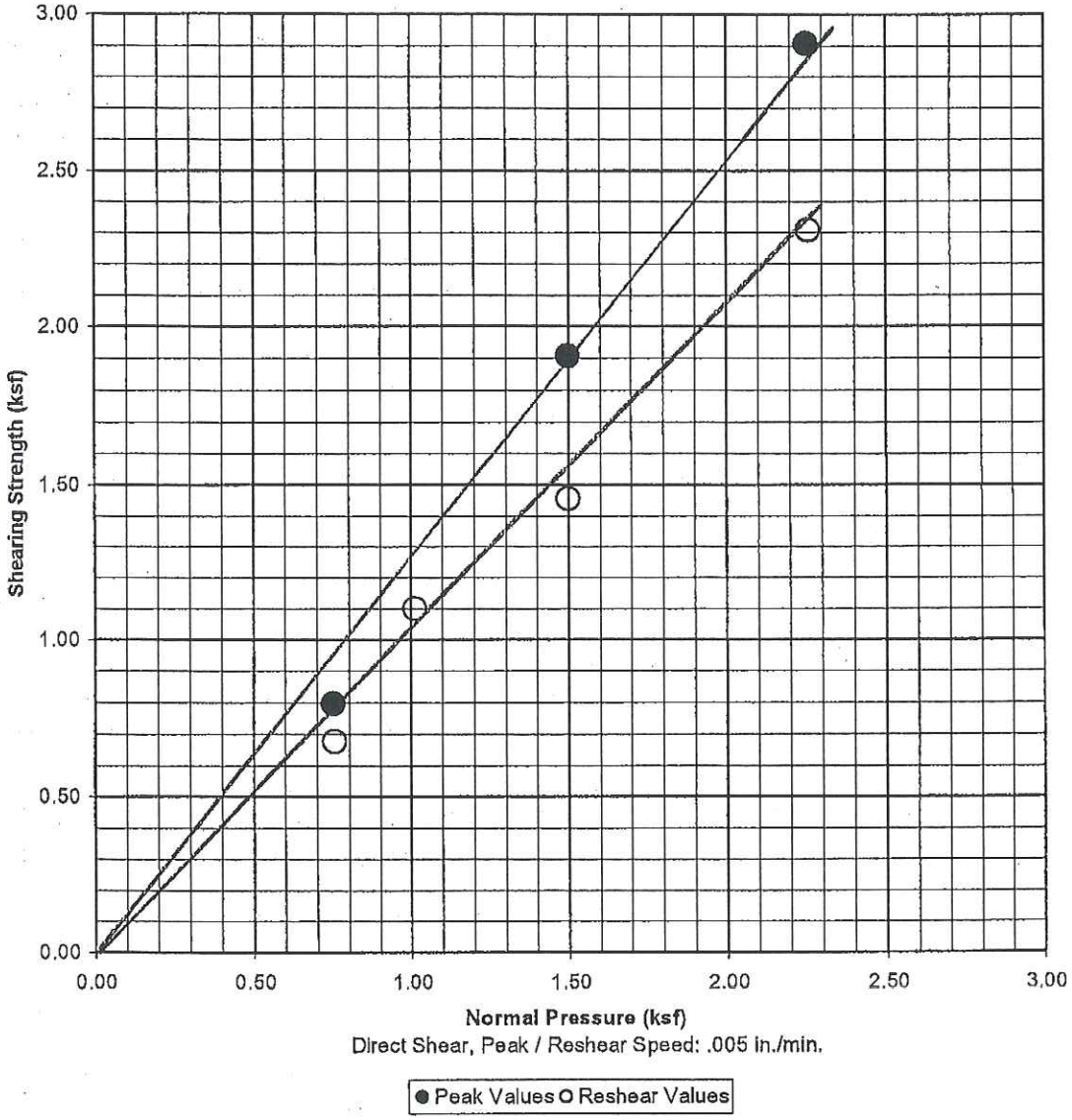
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-6

Shear Test Diagram
Peak
C(psf): 0 Phi (degrees): 51.5

Reshear
C(psf): 0 Phi (degrees): 46.0



Undisturbed **Natural** Shear-Saturated

Orange-brown, silty, very fine to coarse SAND.

17.3% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-3 @ 55.0'**

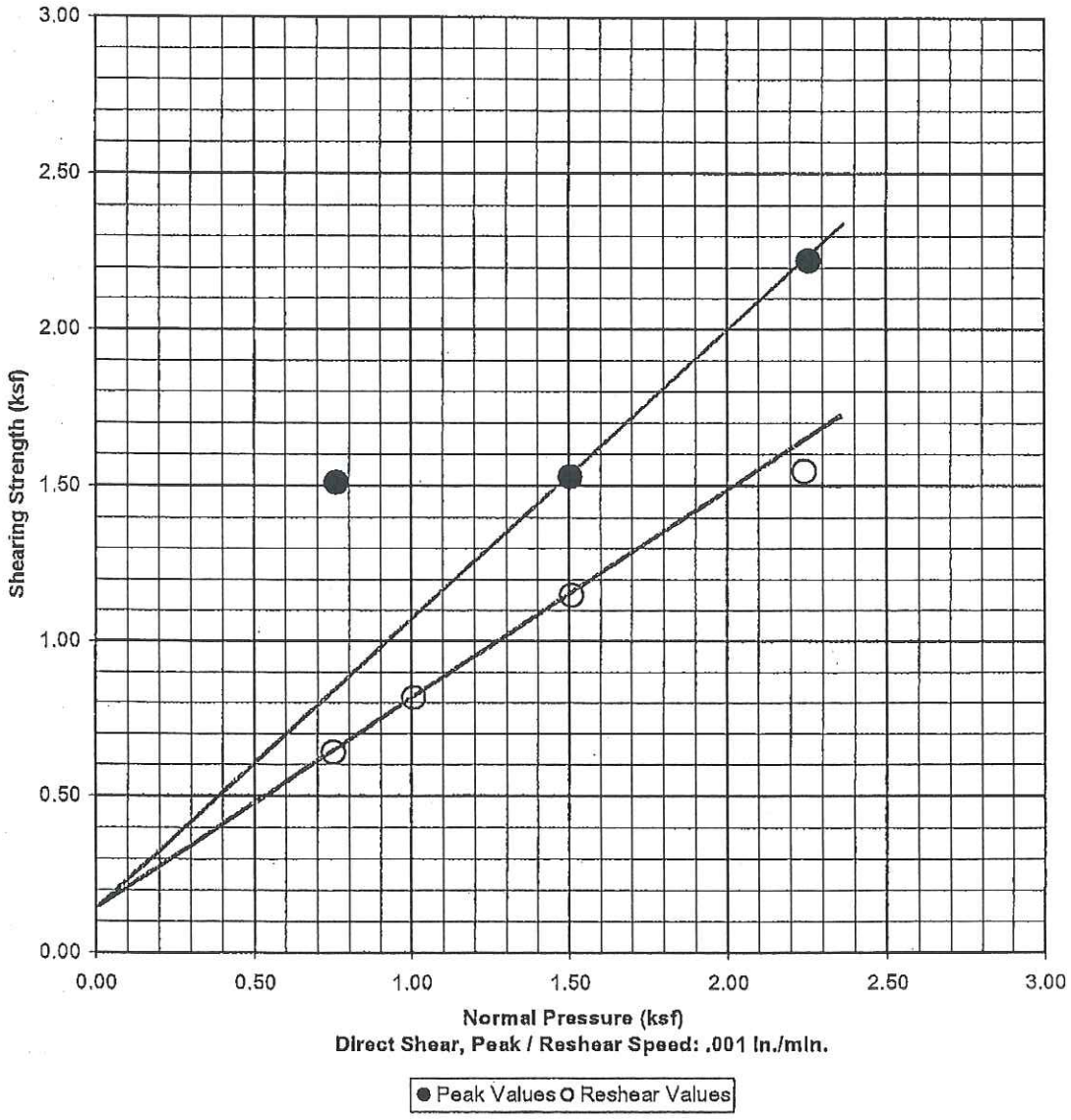
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-7

Shear Test Diagram
Peak
C(psf): 150 Phi (degrees): 42.5

Reshear
C(psf): 150 Phi (degrees): 33.5



Undisturbed **Natural** Shear-Saturated

Orange-brown, sandy SILT.

17.1% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-4 @ 10.0'**

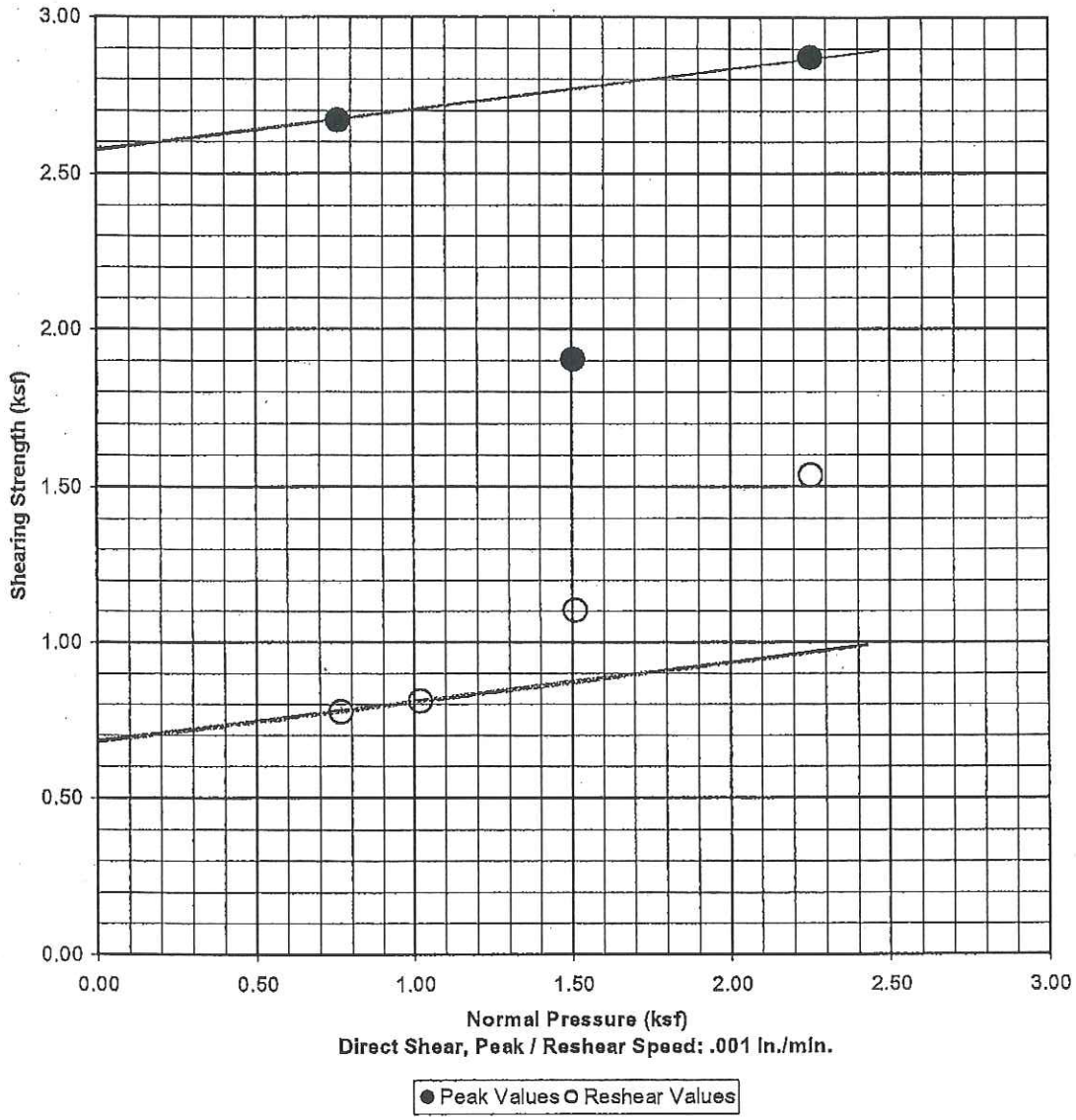
PLATE SH-8

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Shear Test Diagram
Peak
C(psf): 2580 Phi (degrees): 7.5

Reshear
C(psf): 690 Phi (degrees): 7.0



Undisturbed **Natural** Shear-Saturated

Orange-brown / green-brown, silty CLAY.

27.2% Saturated Moisture Content

6489.8

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-4 @ 20.0'**

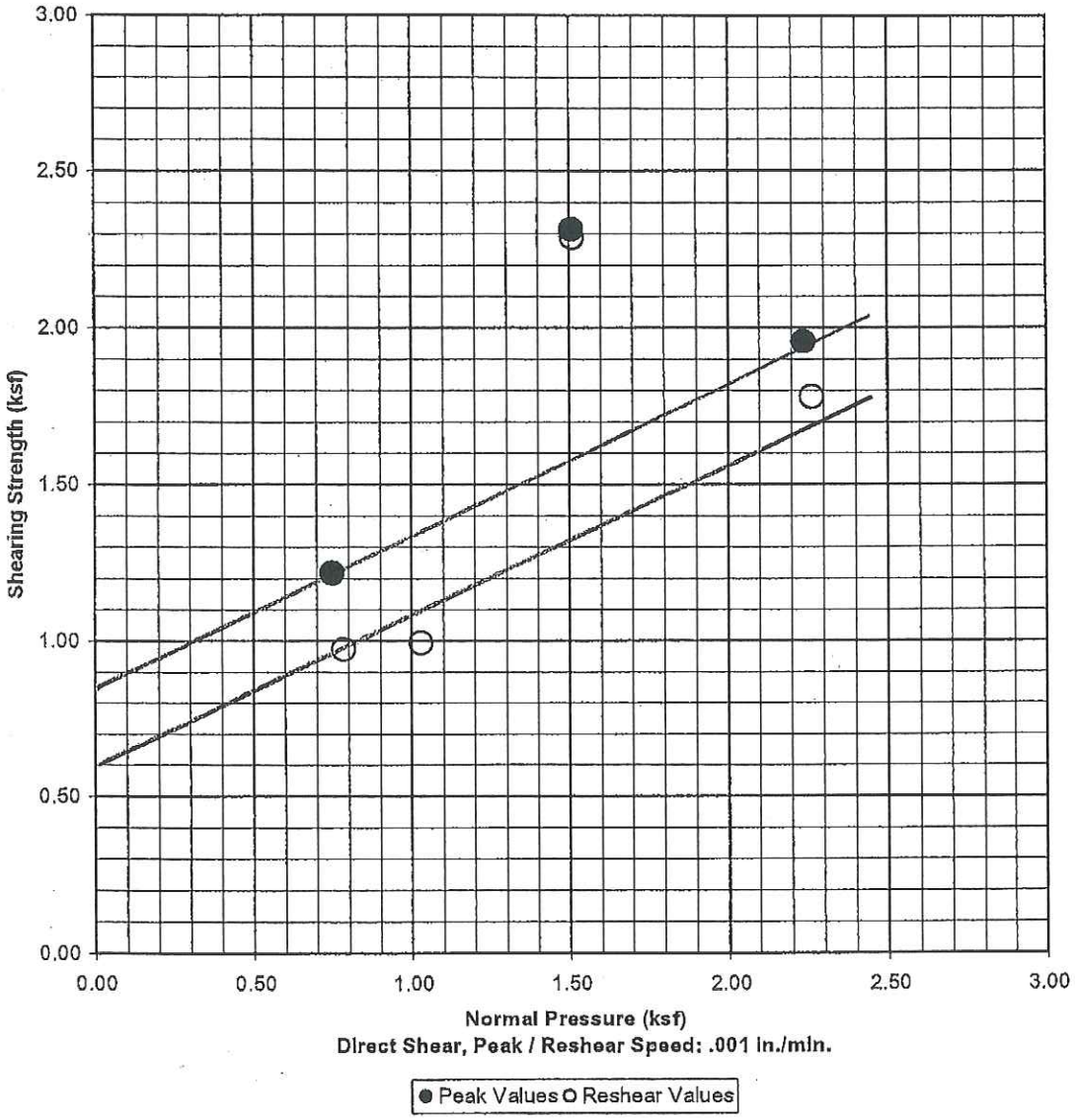
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-9

Shear Test Diagram
Peak
C(psf): 850 Phi (degrees): 26.0

Reshear
C(psf): 600 Phi (degrees): 25.5



Undisturbed **Natural** Shear-Saturated

Brown, sandy SILT, w/ rock fragments.

25.0% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-4 @ 30.0'**

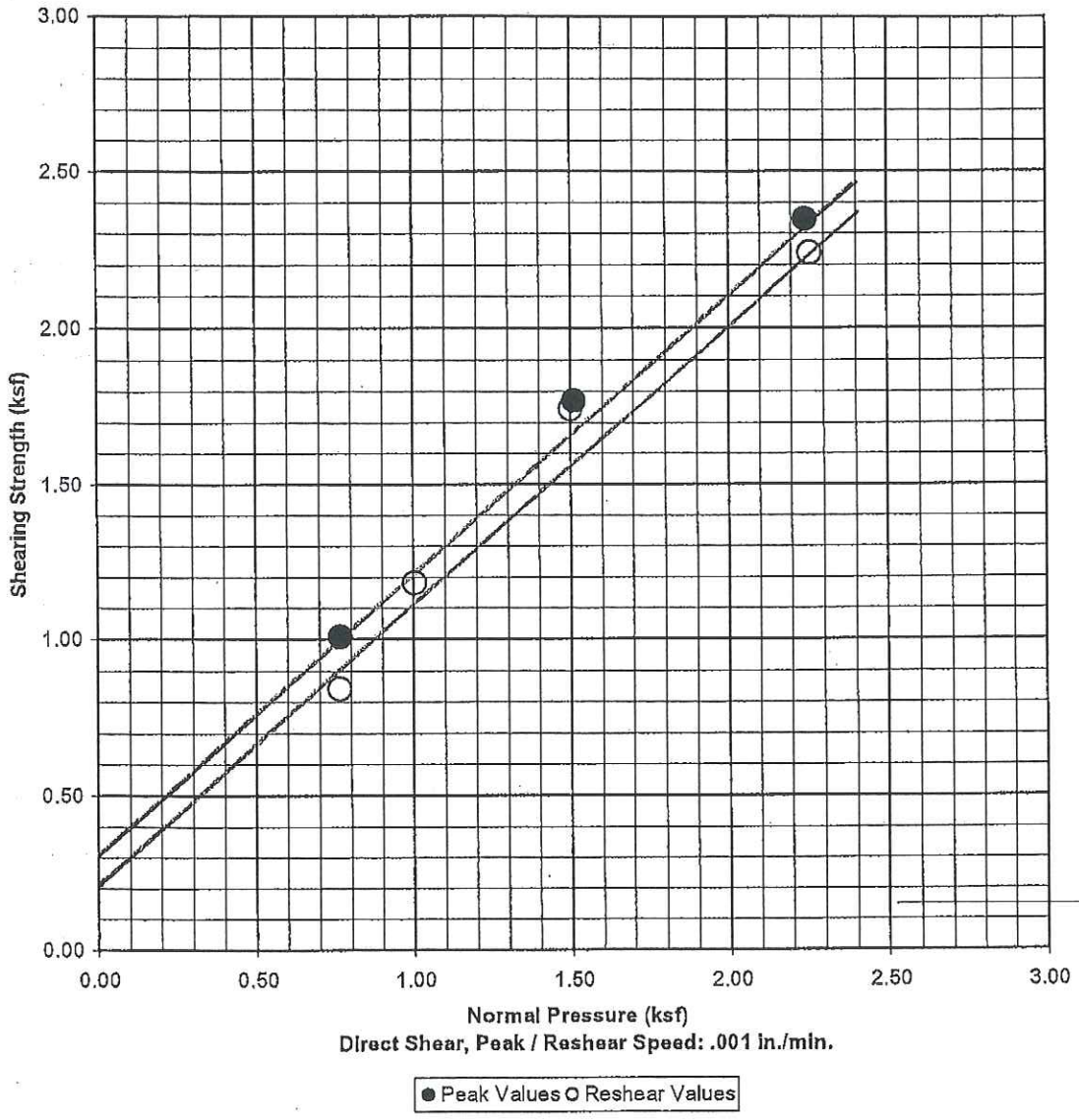
GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-10

Shear Test Diagram
Peak
C(psf): 310 Phi (degrees): 41.5

Reshear
C(psf): 210 Phi (degrees): 41.5



Undisturbed **Natural** Shear-Saturated

Brown, sandy SILT, w/ rock fragments.

23.2% Saturated Moisture Content

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: B-2 @ 0 - 5.0'

PLATE SH-11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

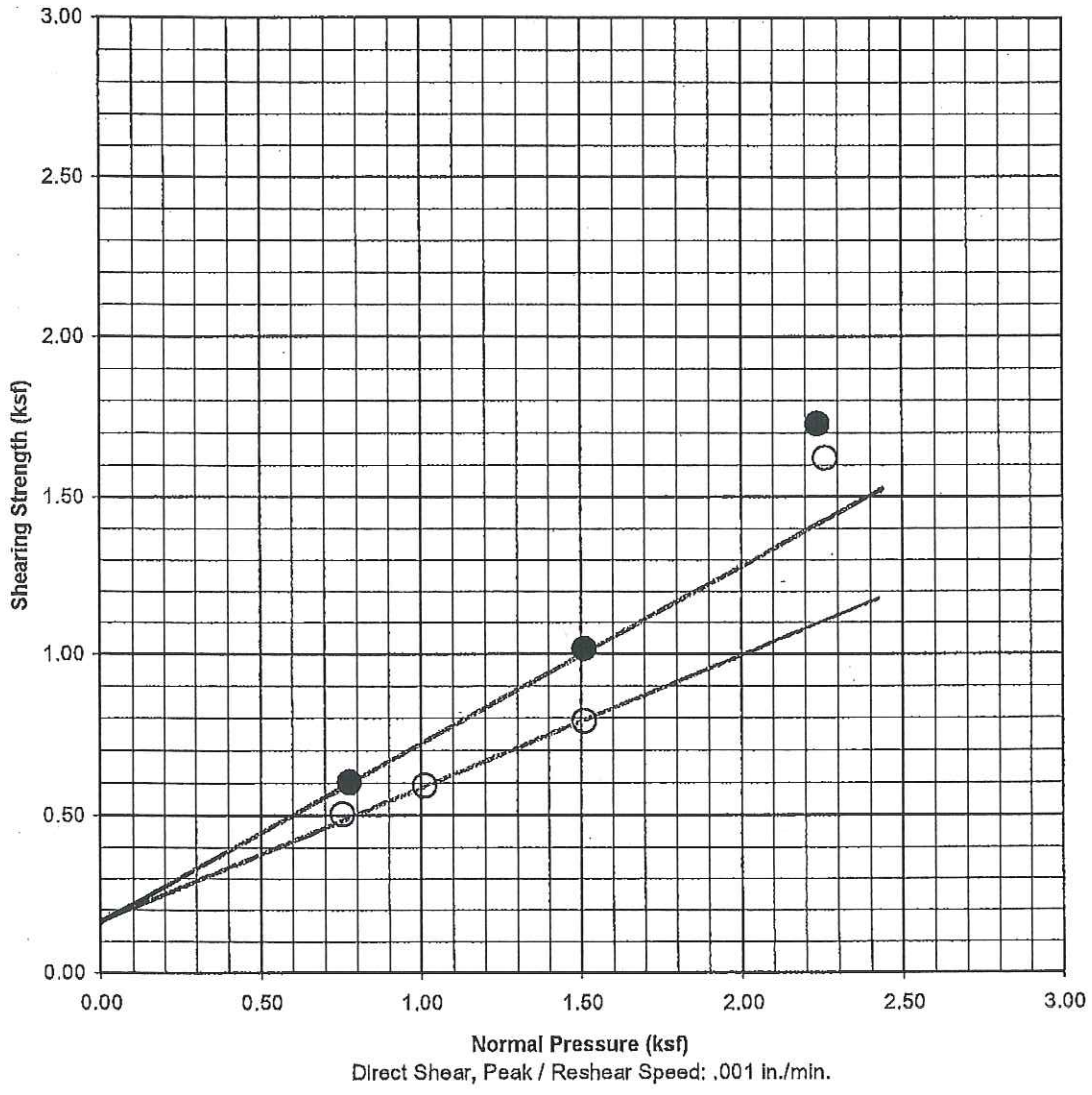
Shear Test Diagram

Peak

C(psf): **170** Phi (degrees): **29.0**

Reshear

C(psf): **170** Phi (degrees): **22.5**



Sample **Remolded** to 90% Relative Density, Saturated.
Rem. Dry Density = 113.0 PCF

Red-brown, clayey, sandy SILT.

MAX: 125.5 PCF: 11.0%

17.7% Saturated Moisture Content

6489.11

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-3 @ 8.0 - 10.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-12

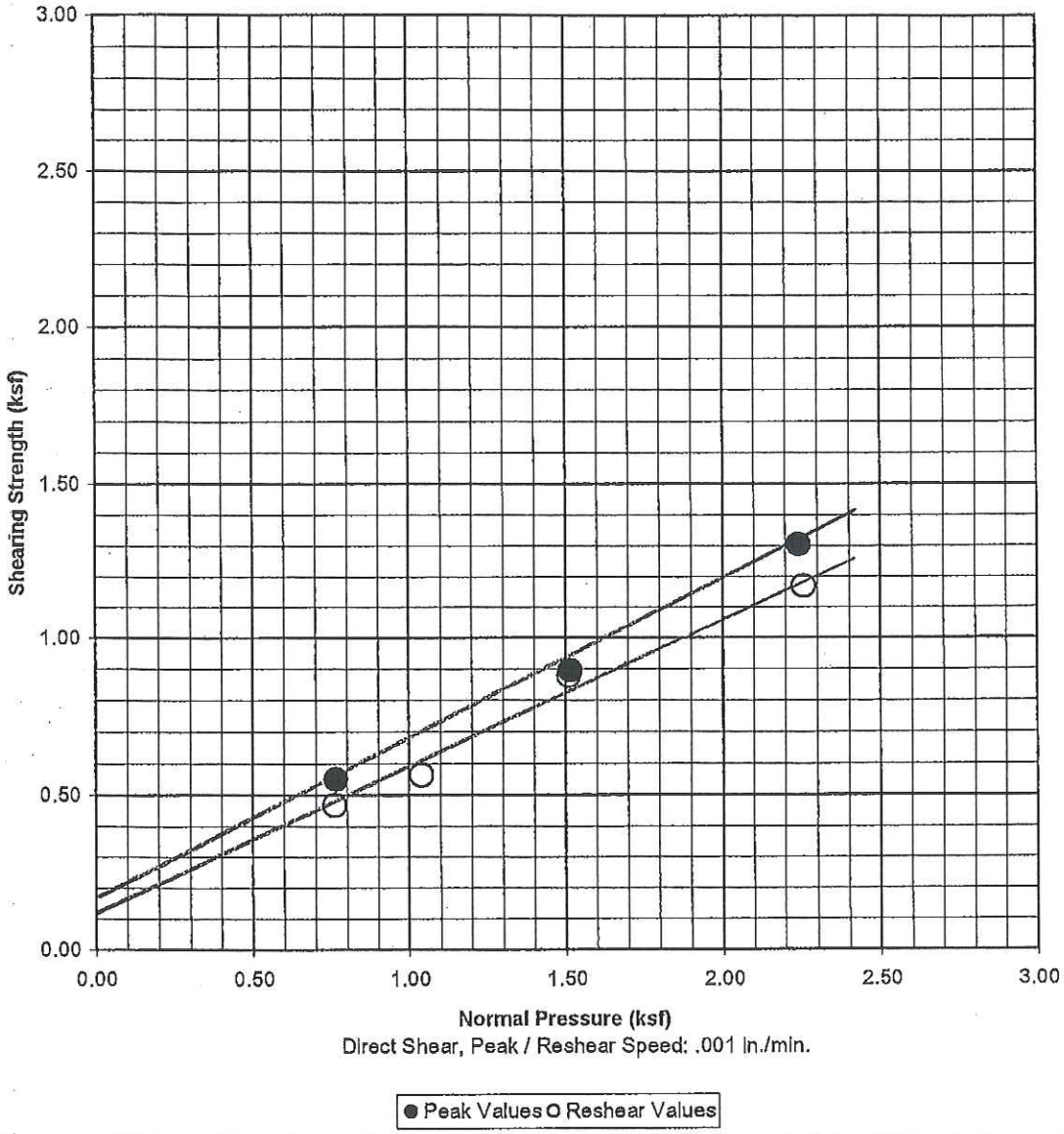
Shear Test Diagram

Peak

C(psf): **170** Phi (degrees): **27.0**

Reshear

C(psf): **120** Phi (degrees): **25.0**



Direct Shear, Peak / Reshear Speed: .001 in./min.

● Peak Values O Reshear Values

Sample **Remolded** to 90% Relative Density, Saturated.
Remolded Dry Density = 111.6 PCF

Orange-brown, clayey, sandy SILT.

MAX: 124.0 PCF: 11.0%

18.6% Saturated Moisture Content

6489.12

Green Acres, LLC
W.O.: 6489

Date of Test: 9/11

Sample: **B-4 @ 5.0 - 10.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-13

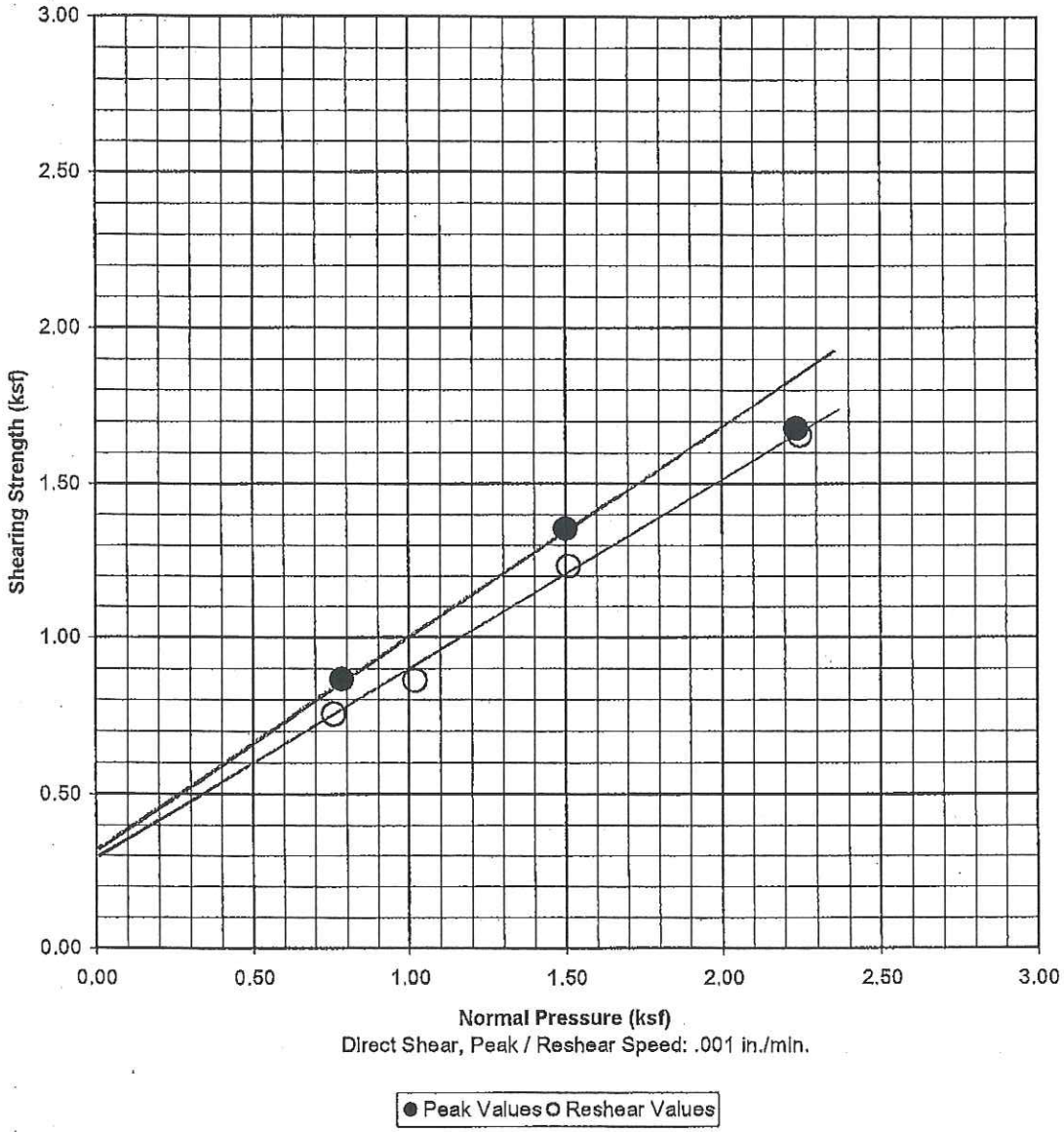
Shear Test Diagram

Peak

C(psf): **320** Phi (degrees): **34.0**

Reshear

C(psf): **300** Phi (degrees): **31.0**



Sample **Remolded** to 90% Relative Density, Saturated.
Rem. Dry Density = 105.3 PCF

Brown, slightly sandy, clayey, sandy SILT.

MAX: 117 PCF: 15.5%

23.9% Saturated Moisture Content

6489.13

Green Acres, LLC
W.O.: 6489

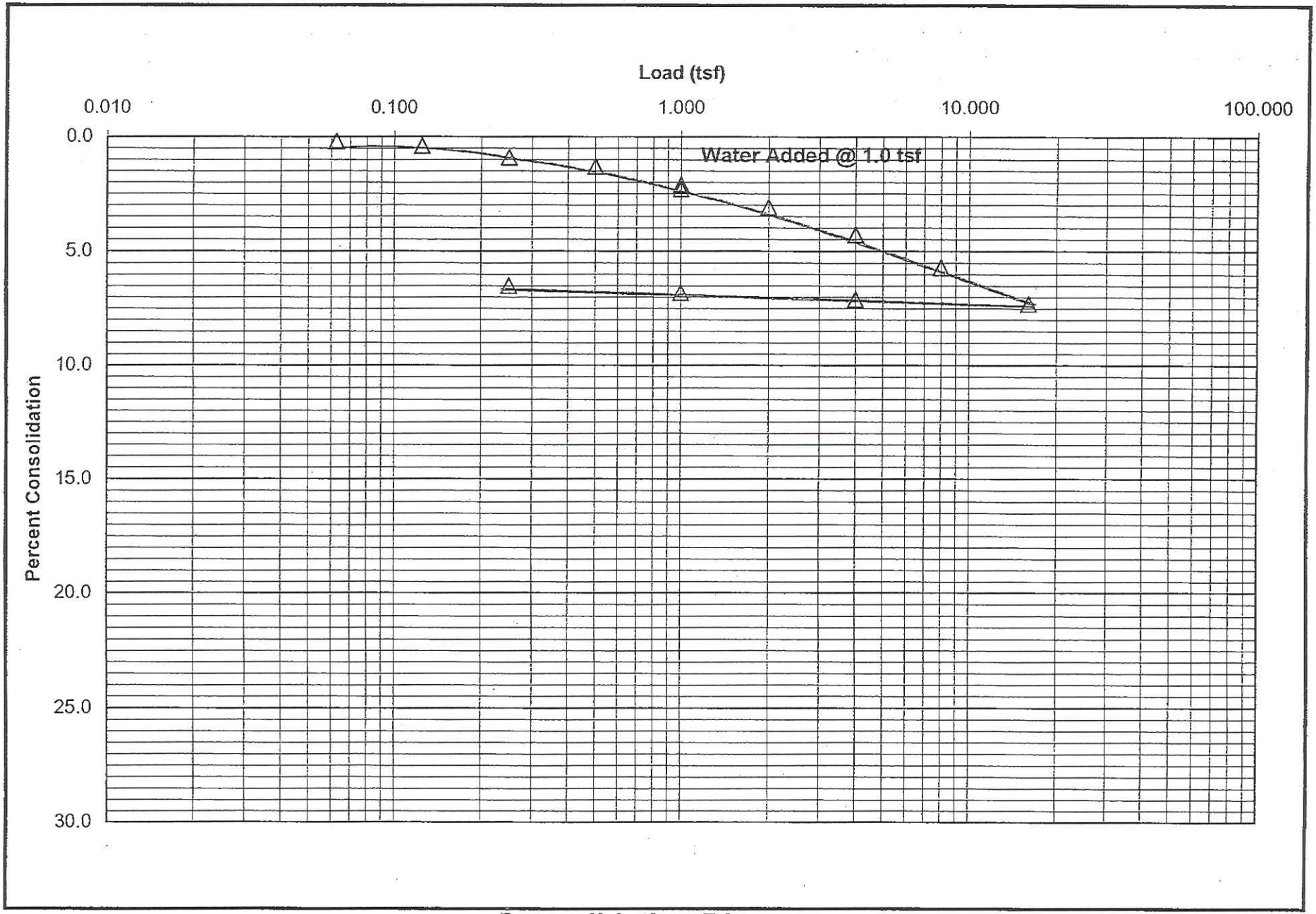
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 5.3 After: 13.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 @ 10.0'
Orange-brown, sandy SILT.

Consolidation Diagram

C6489.1

Plate C-1

Green Acres, LLC
W.O.: 6489

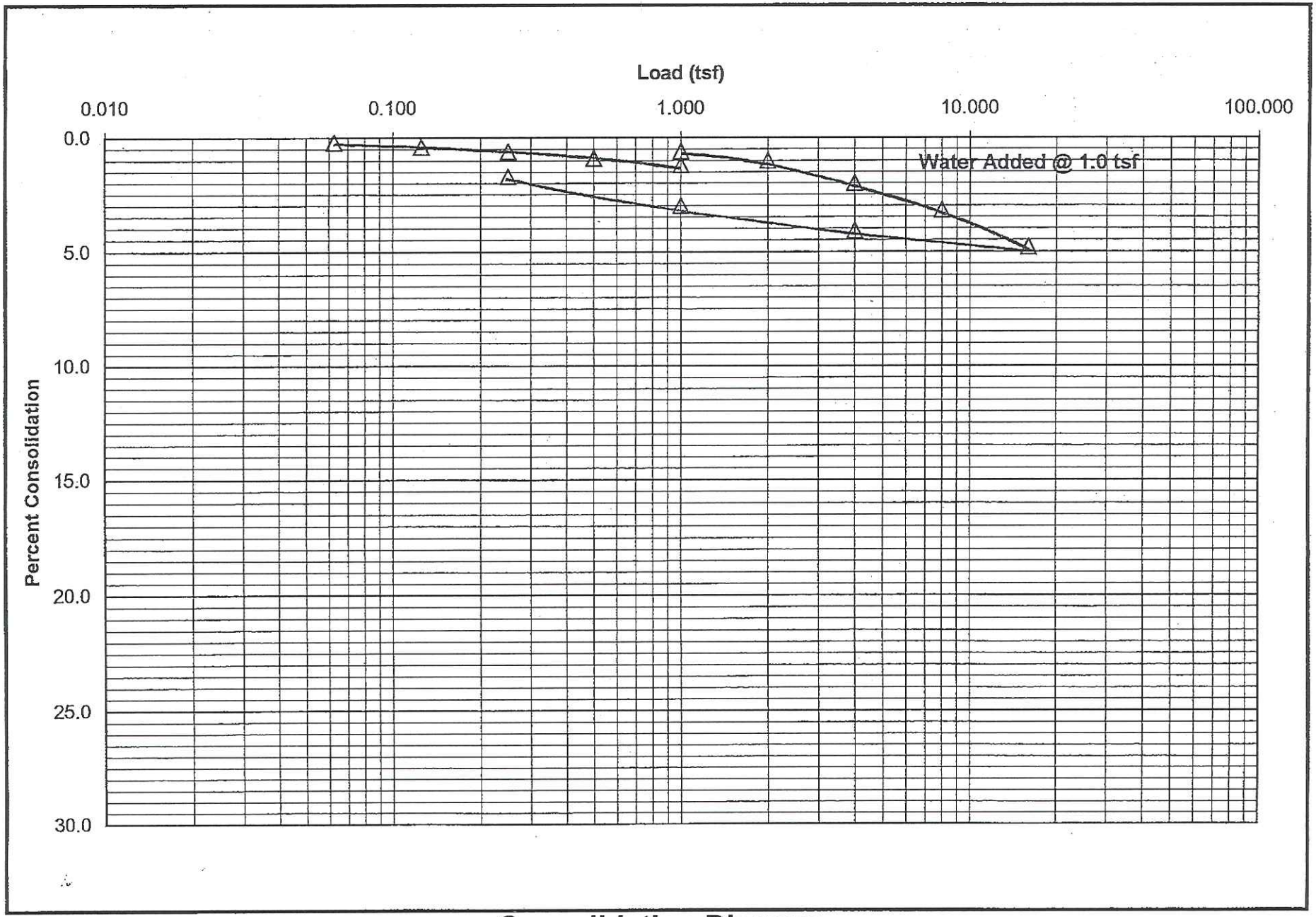
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 5.9 After: 12.4

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 @ 30.0'
Orange-brown, sandy SILT.

Consolidation Diagram

C6489.2

Plate C-2

Green Acres, LLC
W.O.: 6489

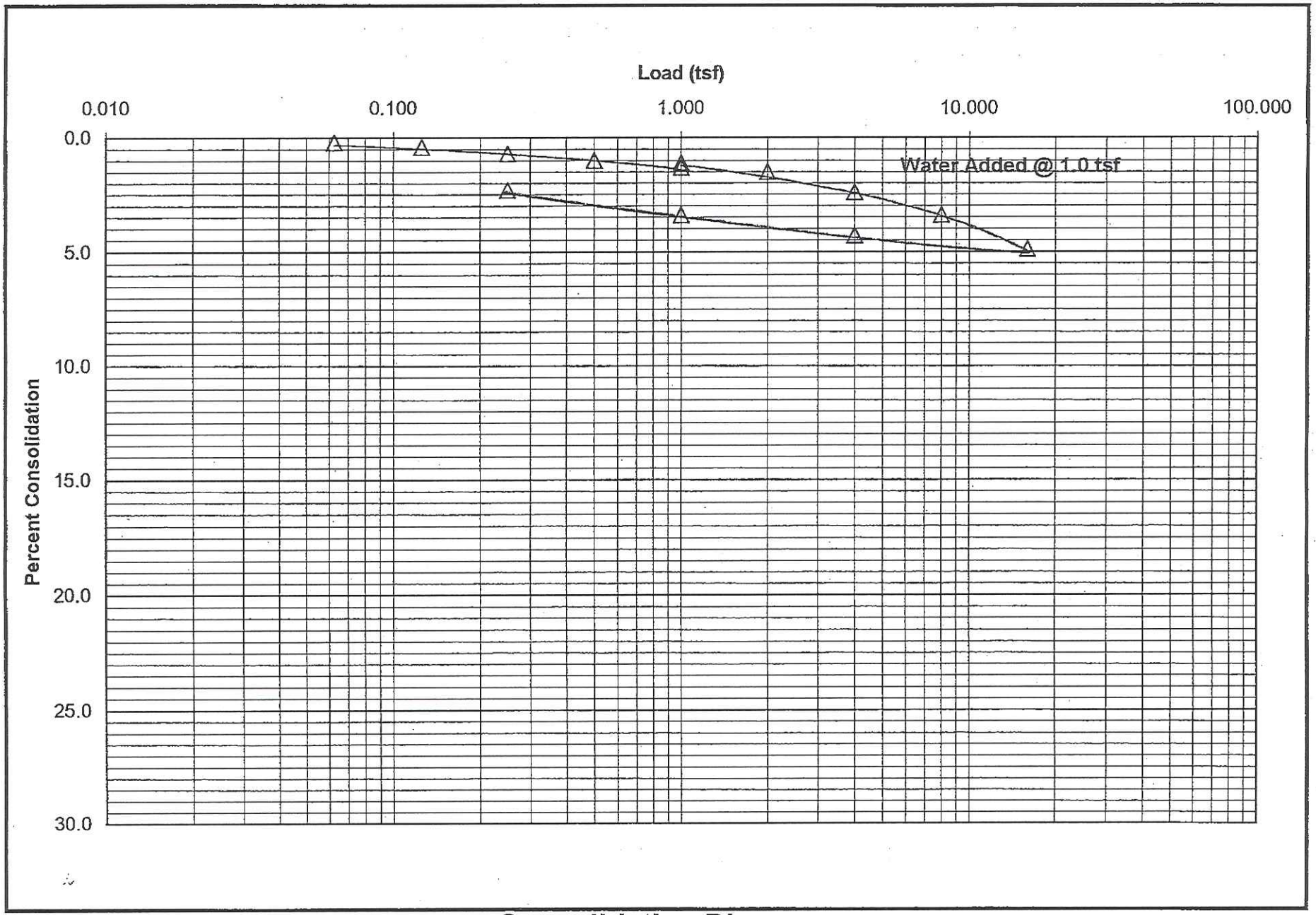
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 6.6 After: 12.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 5.0'
Orange-brown, sandy SILT.

Consolidation Diagram

C6489.3

Plate C-3

Green Acres, LLC
W.O.: 6489

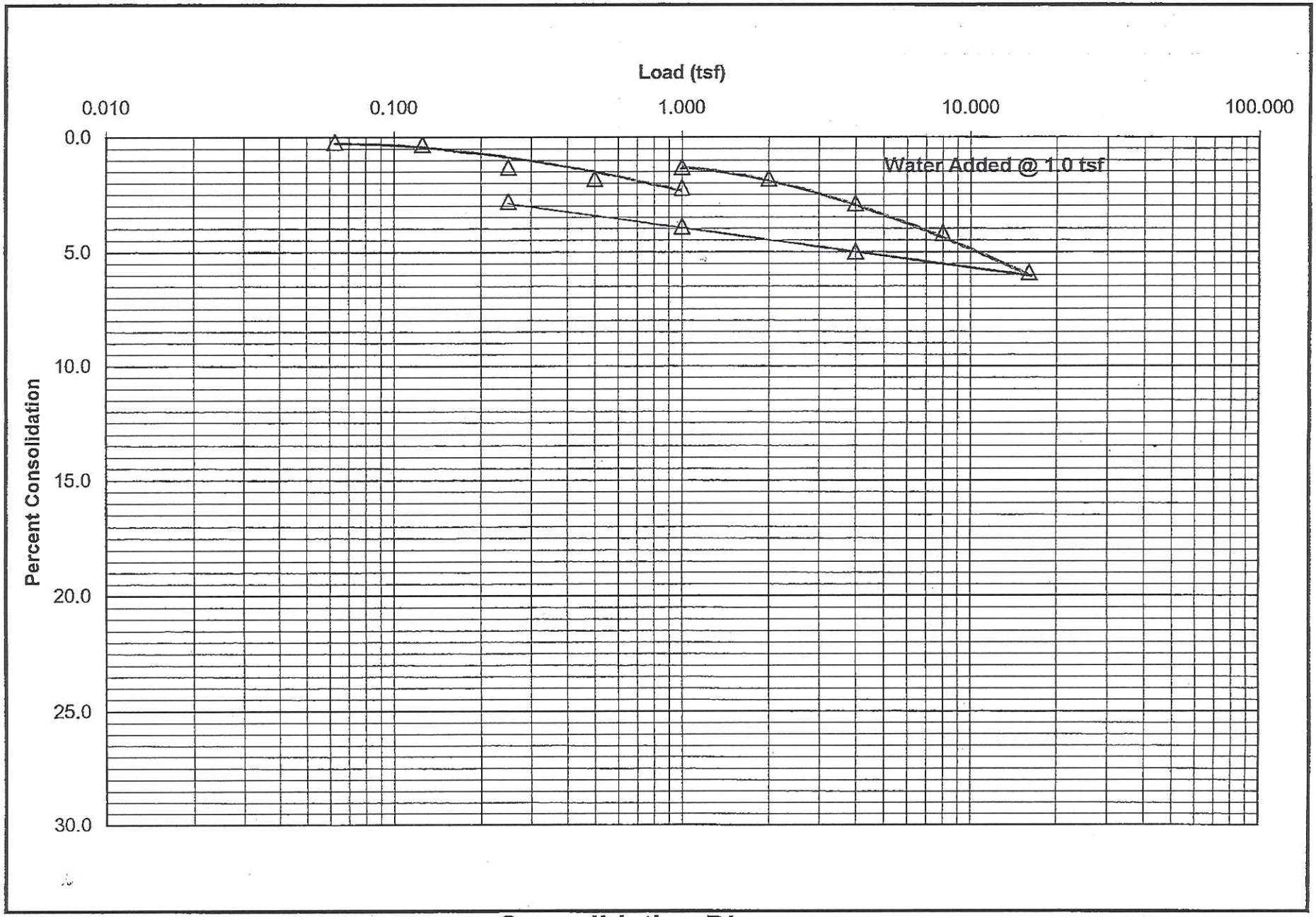
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 7.3 After: 13.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 20.0'
Orange-brown, sandy, slightly clayey SILT.

Consolidation Diagram

C6489.4

Plate C-4

Green Acres, LLC
W.O.: 6489

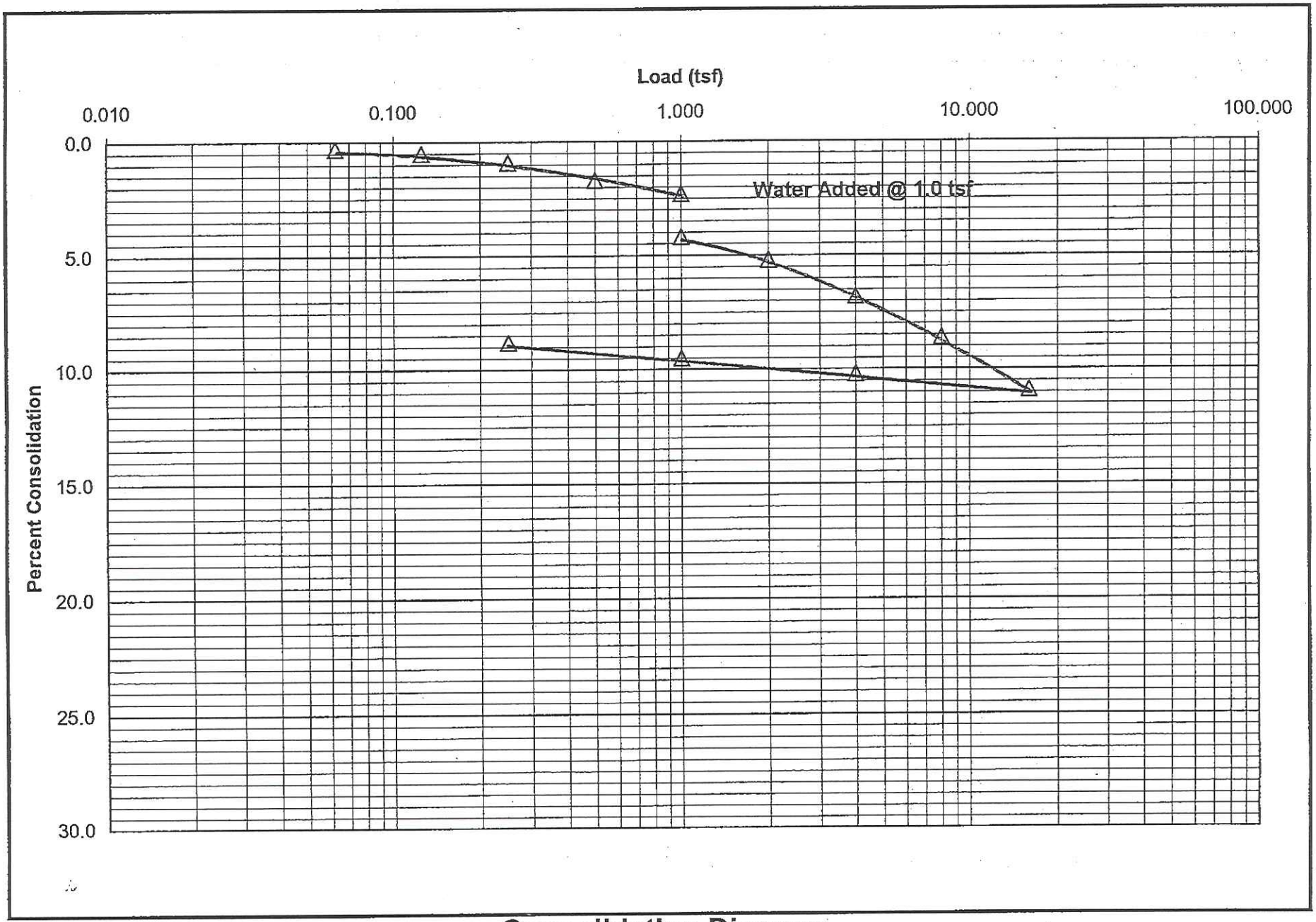
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 4.1 After: 14.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 35.0'
Orange-brown, silty, fine SAND.

Consolidation Diagram

C6489.5

Plate C-5

Green Acres, LLC
W.O.: 6489

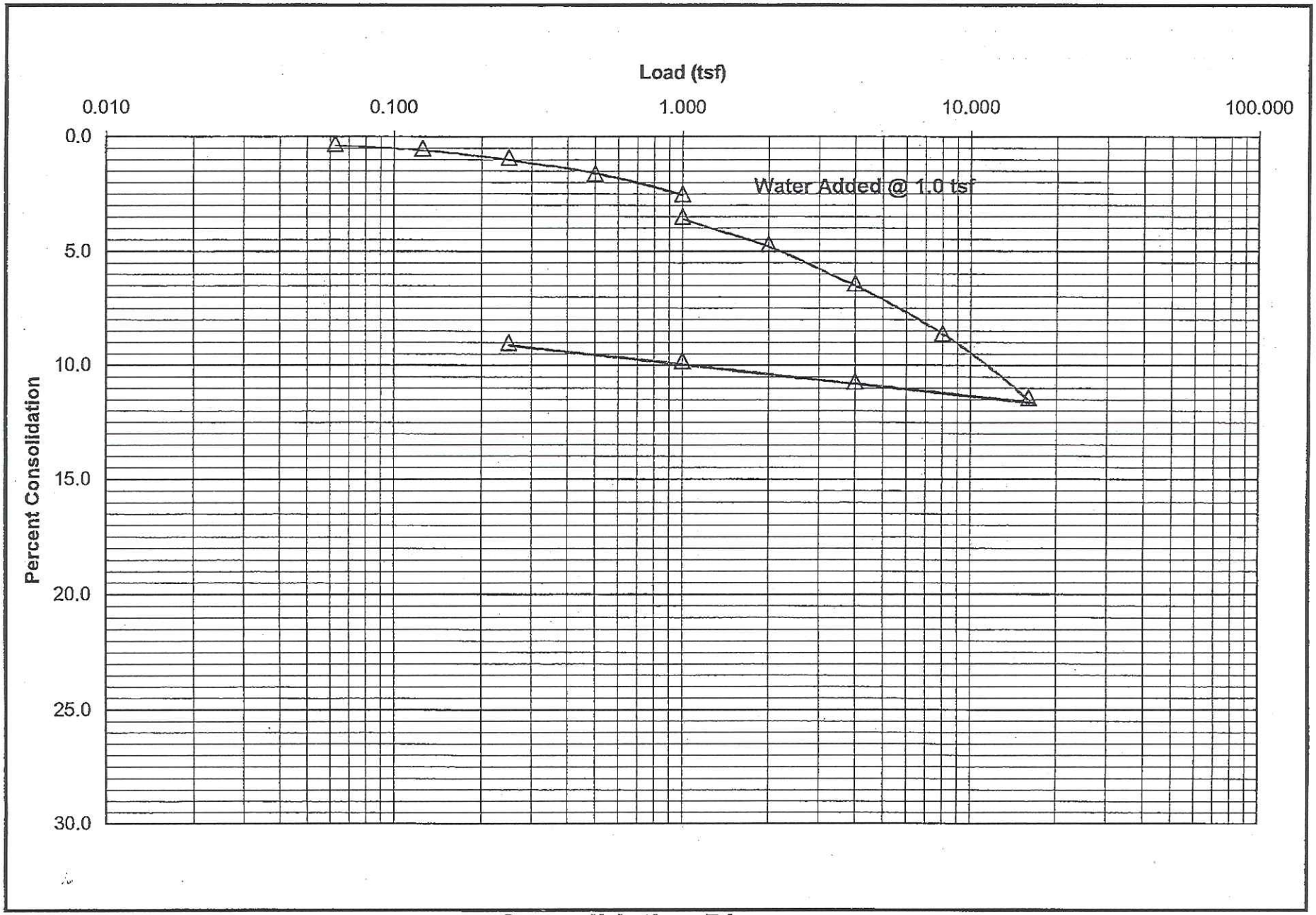
Date of Test: 9/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 10.3 After: 17.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-4 @ 15.0'
Green-brown, sandy SILT, w/ rock fragments.

Consolidation Diagram

C6489.6

Plate C-6

January 23, 2015
W.O. 6489

APPENDIX C

BORING LOGS AND LABORATORY TEST RESULTS

BY LEIGHTON AND ASSOCIATES

APPENDIX B

SUMMARY LOGS OF EXPLORATORY EXCAVATIONS

Boreholes B-1 through B-6, Inclusive

Type: 24" diameter bucket-auger
Contractor: Roy Brothers Drilling
Location: Refer to Revised Geologic Map

B-1 Drilled: 12/12/84. Elevation top of hole: 169'± (3' below natural grade).

0-28' Nonmarine terrace deposits: clayey to silty, fine- to medium-grained sand; rusty brown, damp to moist, some caliche stringers.

28'-38' Probable marine terrace deposits: pebbly medium- to coarse-grained sand; light brown, dry to damp, loose and caving. Hole cased from 8' to 38.5'.

38'-51' Monterey Formation: siliceous siltstone and silty claystone; gray, brown, iron-stained fracture surfaces, moist, some caliche and sheared clay surfaces. Bedding attitudes: N45E, 60SE @ 39.5'; N45E, 81SE @ 45'. Bulk sample obtained from 50' depth.

Total depth: 51'; no ground water encountered.

B-2 Drilled: 12/14/84. Elevation top of hole: 133'

0-2' Soil zone: fine- to medium-grained sandy clay, clayey sand; medium brown, moist.

2'-5' Probable marine terrace deposits: gravelly clayey sand; orange-brown, with some rounded cobbles.

5'-15' Monterey Formation: interbedded silty fine sandstone and cherty siliceous siltstone, light to dark brown, very fractured, locally weathered. Bedding attitudes: N57E, 62SE @ 6.5'; N52E 68SE @ 10'. Bulk sample obtained from 13' depth.

Total depth: 15'; no ground water or caving.

B-3 Drilled: 12/17/84. Elevation top of hole: 223'

0-19' Nonmarine terrace deposits: clayey fine sand, sandy clay, with some gravel and sandstone fragments @ 14'±; light brown to red-brown, moist to very moist.

19'-30.5' Volcanic bedrock: clayey sandy silt with less weathered fragments of basaltic rock fragments; dark brown, olive-greenish brown, moist to very moist. Probable mixture of volcanic rock and sandstone. Boring not downhole logged due to seepage @ 23' and caving. Bulk sample obtained from 28' depth.

Total depth: 30.5'

B-4 Drilled: 1/28/85. Elevation top of hole: 176'

0-2' Soil zone: Clayey sand, with some gravel and cobbles, dark brown, loose, porous, moist, abundant roots.

2'-44'± Terrace deposits (nonmarine, grading to marine near base): sandy clay, reddish brown, mottled with dark brown; medium-grained sand with cobbles, loose, very friable @ depth; caving (hole cased from 4.5' to 45').

44'-60' Monterey Formation: interbedded clayey and siliceous siltstone; dark gray, black, highly fractured, broken, crudely bedded, with orange-brown iron staining and calcite veins along fractures. Some slickensides along bedding. Bedding/joint attitudes: JN83W, 81N @ 46'; BN36E, 70N @ 49'; JN86W, 68S; BN64E, 73N @ 52'; BN88E, 76N @ 55'.

Total depth: 60'. Water ponding at bottom of hole.

B-5 Drilled: 2/6/85. Elevation top of hole: 183.5'

0'-45' Nonmarine terrace deposits: clayey sand, with horizontal layers or lenses of gravel and cobbles; brown to orange-brown, slightly porous, damp. Fine-grained sand, loose and friable below 15'±.

45'-55.5' Probable marine terrace deposits: clayey sand; brown to orange-brown, with iron-stain mottling, loose and caving below 45' (hole cased from 14' to 54.5').

55.5'-81' Bedrock (probable Conejo* volcanics): sandy siltstone, siliceous siltstone, clayey siltstone; gray, brown, firm, damp, locally very hard (brecciated siliceous shale). Extensively sheared from 73'-79' on east side of hole; in massive clayey siltstone, with gypsum and calcite veins. Petroliferous odor below 73'. Minor seepage at 55.5'. Bulk samples obtained from 66' to 71' depth.

Total depth: 81'

B-6 Drilled: 2/23/85. Elevation top of hole: 206'±

0-58'± Nonmarine terrace deposits: clayey to silty sand, with some gravel-size rock fragments; tan to rusty brown, slightly moist to moist, moderately dense.

58'-70' Probable marine terrace deposits: relatively cleaner, less moist sand than above, contains some gravel and cobbles; hole cased from 29.5' to 70' due to caving in marine terrace section.

70'-80' Bedrock (probable Conejo* volcanics): clayey siltstone, silty claystone and minor silty sandstone; dark gray, black, light gray (sandy stringers), slightly moist, massive, generally sheared. Boring not downhole logged; bulk sample of bedrock obtained. No apparent ground water encountered.

Total depth: 80'

* Reclassified as Monterey Formation (current report)

DATE 1/4/89 DRILL HOLE NO. B-7 SHEET 1 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 198' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	SILTY SAND: Yellow-brown, slightly moist, dense, fine- to medium-grained, subangular sandstone fragments (ARTIFICIAL FILL)
			1	BAG				
5			2	8	117	10.5		@ 5.0' - clayey, yellow-brown mottled with dark brown, dense
								@ 9.0' - medium brown, siltier
10			3	4	110	8.5		@10.0' - few reddish brown siltstone fragments, dense
								@12.0' - moist
15			4	4	113	9.9		@15.0' - Silty Sand, as above, dense
								@19.0' - thin bed of dark brown clayey sand
20			5	3	123	11.5		@20.0' - Silty Sand, yellow-brown, mottled with dark brown clayey sand, dense
								@22.0' - few volcanic fragments
25			6	6	121	6.2	CL	SANDY SILTY CLAY: Medium-brown with some dark brown mottling, moist, firm, small sandstone, siltstone and volcanic fragments (ARTIFICIAL FILL)
30								

GEOTECHNICAL BORING LOG

DATE 1/4/89 DRILL HOLE NO. B-7 SHEET 2 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 198' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
			7	3 for 6"	106	17.6	CL	SANDY SILTY CLAY: Mottled medium and dark brownish-gray, moist, firm, plastic, few sandstone, siltstone and fewer volcanic fragments
								@32.0' - increasing dark brownish-gray
			9	BAG				@33.0' - medium-brown, sandstone fragments
								@35.0' - Sandy Silty Clay, medium-brown, firm
			8	6	120	14.6		
								@40.0' - increased amount of sandstone fragments, some green volcanic fragments, very firm
			10	6	114	14.6		
			11	BAG				
							SM	CLAYEY SILTY SAND: Medium yellow-brown, moist.dense, medium- to coarse-grained (probable soil zone)
			12	27	122	11.3		SANDSTONE: Yellow-gray, mottled greenish-gray and orange, moist, firm, coarse-grained, few pebbles, clayey matrix, few roots (SESPE FORMATION)
								@48.5' - maroon siltstone bed, thin
								@49.0' - hard, light yellow-brown, massive
			13	40 for 7"	108	9.2		
			14	BAG				
			15	40 for 8" No Recovery				

NOTES: Total Depth - 55.0'
No caving
No seepage

DATE 1/4/89 DRILL HOLE NO. B-8 SHEET 1 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 216' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	SILTY SAND: Orange-brown, top 2' medium reddish-brown, slightly moist, top 2' moist, dense, slightly cemented, porous, friable, few rounded pebbles, sand, medium-grained, poorly sorted (TERRACE DEPOSITS, NON-MARINE)
			1	BAG				
5			2	6	108	5.7		
10			3	5	109	8.1		@10.0' - Silty Sand, as above
15			4	5	107	9.9		@15.0' - Silty Sand, as above
								@18.0' - moist, irregular, discontinuous, small iron stained joints
20			5	4	120	9.2		@20.0' - Silty Sand, as above
								@22.0' - coarse sand, less silty
25			6	8	111	9.0		@25.0' - Silty Sand, as above
30								

DATE 1/4/89 DRILL HOLE NO. B-8 SHEET 2 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 216' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0			7	7	111	11.7	SM	SILTY SAND: Orange-brown, moist, dense, slightly cemented, few rounded pebbles, porous, friable, sand medium-grained, poorly sorted (TERRACE DEPOSITS, NON-MARINE)
								@33.0' - pebble lens, abundant rounded pebbles, mostly sandstone, few quartzite
15			8	7	113	6.0		@35.0' - Silty Sand, as above
								@39.0' - carbonate stringers
0			9	14	106	12.4		
5			10	24	101	1.3	SP	SAND: Light yellow-tan, slightly moist, loose, fine- to medium-grained, well sorted, unconsolidated small shell fragments (TERRACE DEPOSITS, MARINE)
			11	BAG				
0								(continued 1/25/89 with drilling mud, due to caving)
								@51.0' - rounded pebbles and cobbles
			12	62 for 5"	66.7	50.3		SILTSTONE: Light tan to light purple-gray, moist, hard, silicified, fractured, limonite stains on fractures and bedding planes (MONTEREY FORMATION)
5		B:dipping 60°	13	62 for 11"	68.8	48.2		@56.0' - diatomaceous
			14	60 for 10"	70.6	48.3		
			15	60 for 7"	73.8	49.9		NOTE: Total depth - 58.0' No seepage Caving 45-50' Dip in Monterey Formation from unoriented core
0								

GEOTECHNICAL BORING LOG

DATE 1/10/89 DRILL HOLE NO. B-9 SHEET 1 OF 1

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 244' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							ML	SANDY CLAYEY SILT: Dark medium-brown, moist to slightly moist, firm, porous, rootlets (SOIL) @ 2.0' - yellowish orange-brown, very firm, few gypsum crystals approx. ¼" thick Contact approximately 5', very gradational
			1	BAG				
5			2	7	94.6	18.8		SILTSTONE: Yellowish-orange-brown, slightly moist, very firm, very sheared, highly weathered, random small polished surfaces, gypsum (VAQUEROS FORMATION)
		B:N37W, 17SW						
		J:NO2E, 52NW						@ 8.0' - volcanic bedding (hard to distinguish), irregular, discontinuous, light brown, clayey, crumbly, 2" to 3" thick limonite staining
10			3	6 4 rings dist.	74.6	23.2		@11.0' - very sheared, striations on random surfaces @12.0' - increasing gypsum @13-17'- mineralized zone, 4" to 5" thick dark limonite staining, abundant gypsum, jarosite
15		MZ:N45E, 87NW	4	8	104	18.0		@13.5' - striations more regular, plunging 20°, N80W @16.0' - surrounding siltstone gray mottled with orange limonite stain, regular pattern of elongated blotches oriented approximately vertical
		J:N70E, 55SE						@16.5' - bedding not detected, striations on joints
			5	BAG				
20			6	6	99.0	22.3		
								NOTES: Total Depth - 21.0' No caving No seepage Downhole logged to total depth
25								

GEOTECHNICAL BORING LOG

DATE 1/10/89 DRILL HOLE NO. B-10 SHEET 1 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 224' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
							SM	SILTY SAND: First 4' dark brown, below 4' orange-brown, slightly moist, very dense, porous, slightly cemented, few rounded pebbles and cobbles, friable, sand poorly sorted (TERRACE DEPOSITS, NON-MARINE)
			1	BAG				
			2	9	113	8.0		
								@ 9.0' - abundant rounded cobbles and pebbles
10								@10.0' - sandier, light orange-brown
			3	10	113	0.9		
								@13.0' - less pebbles
15								@15.0' - Silty Sand, orange-brown (as above)
			4	8	111	5.6		
20			5	6	110	5.8		@20.0' - Silty Sand, as above
25			6	13	107	6.0		@25.0' - Silty Sand, more pebbles
30								

DATE 1/10/89 DRILL HOLE NO. B-10 SHEET 2 OF 2

PROJECT EAI/ Malibu PROJECT NO. 3831025-04

DRILLING CO Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 224' REF. OR DATUM See Geotechnical Map, Plate 1

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
30			7	15	116	5.7	SM	SILTY SAND: Orange-brown, slightly moist, dense, fine- to medium-grained, slightly cemented, porous, scattered rounded pebbles, friable @33.0' - moist
35			8	7	107	11.0		
40								@39.0' - sandier
			9	21	103	2.0	SP	SAND: Yellow-brown, moist, loose, fine- to medium-grained, well sorted, sparse shell fragments (TERRACE DEPOSITS, MARINE)
			10	BAG				@41.0' - gravelly
45			11	42	99	3.8		
								NOTES: Total Depth - 46.0' Caving at bottom No seepage
50								

GEOTECHNICAL BORING LOG

DATE 1/10/89 DRILL HOLE NO. B-11 SHEET 1 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 236' REF. OR DATUM See Geotechnical Map, Plate 1

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
0			1	BAG			SP	GRAVELLY CLAYEY SAND: Medium-brown, top 2' dark brown, slightly moist, very dense, abundant rounded pebbles, carbonate stringers (TERRACE DEPOSITS, NON-MARINE)
5			2	14	120	9.5	SM	SILTY SAND: Orange-brown, slightly moist, dense, slightly cemented, porous, few scattered rounded cobbles and pebbles @7-9' - abundant cobbles, few subangular
10			3	7	105	9.8		@10.0'- siltier @12.5' - sand bed, 5" thick, fine-grained
15			4	8	110	8.2		@15.5'-17.0' - sandier, few angular cobbles at top of bed
20			5	13	118	5.7		@20.0' - Silty Sand
25			6	31	119	5.9		@26.0' - sandstone boulder @26.0'-30.0' - sand and gravel, moderately loose, caving
30								

DATE 1/10/89 DRILL HOLE NO. B-11 SHEET 2 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 236' REF. OR DATUM See Geotechnical Map, Plate 1

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
0			7	24	118	4.9	SM	SILTY SAND: Orange-brown, slightly moist, dense, slightly cemented, porous, friable, rounded pebbles and cobbles, fine- to coarse-grained, poorly sorted
								@33.0' - siltier
5			8	40	112	8.8		@35.0' - Silty Sand, as above
40			9	33	108	4.3		@40.0' - sand and pebble bed
								@43.0' - moist
45			10	50 for 10"	102	9.3		@45.0' - Silty Sand, moist
50			11	43	105	6.8		
								NOTE: Total Depth - 51.0' Caving from 26.0' to approx. 30.0' Downhole logged to 26.0' No seepage
55								

DATE 1/11/89 DRILL HOLE NO. B-12 SHEET 1 OF 3

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 233' REF. OR DATUM See Geotechnical Map, Plate 1

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
0							SM	SILTY SAND: Medium brown to 4.0' then orange-brown, slightly moist, dense, slightly cemented, porous, rounded pebbles, friable (TERRACE DEPOSITS, NON-MARINE)
5			1	8	115	10.9		
10			2	6	112	11.0		@10.0' - Silty Sand, as above
15			3	8	112	8.9		@15.0' - Sandy Gravel bed, moist, sand coarser
20			4	7	117	6.8		@19.0' - cobbles @20.0' - Silty Sand with pebbles
25			5	9	112	6.6		@25.0' - Silty Sand, few pebbles
30								

DATE 1/11/89 DRILL HOLE NO. B-12 SHEET 2 OF 3

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 233' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			6	17	118	8.6	SM	SILTY SAND: Orange-brown, moist, dense, porous, slightly cemented, friable
35			7	14	113	8.7		@36.0' - Sandstone cobbles @39.0' - Sandstone boulder, more silt, darker @40.0' - Silty Sand, siltier, darker
40			8	21	115	7.5		
45			9	50 for 11"	105	11.0		@45.0' - Silty Sand, orangish-brown @47.0' - sandier, light orange-brown, more pebbles, sand, poorly sorted
50			10	50 for 11"	108	8.0		@50.0' - Silty Sand, orange-brown @52.0' - caliche stringers
55			11	45	112	7.2		@55.0' - Silty Sand, few pebbles
60								@58.0' - Sandstone boulder

DATE 1/11/89 DRILL HOLE NO. B-12 SHEET 3 OF 3

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 233' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60							SM	SILTY SAND: Orange-brown, slightly moist, dense, porous, slightly cemented, rounded pebbles, few cobbles, friable
								@63.0' - Sandstone boulder
65			12	31	118	11.4		@65.0' - Silty Sand, as above
70							SP	SAND: Light yellow-brown, slightly moist, loose, unconsolidated, fine-medium-grained, well sorted, shell fragments (TERRACE DEPOSITS, MARINE)
								(1/25/89 - continue with drilling mud)
								@74.0' - abundant magnetite
75								
								@78.0' - rounded pebbles, few cobbles
80								@80.0' - abundant cobbles
			13	47	104.2	23.5		SILTSTONE: Dark greenish-gray, slightly moist, very firm, fissile, small striated surfaces (VAQUEROS FORMATION)
			14	30	105.7	22.4		
			15	36	105.4	23.4		@82.0' - reddish-brown translucent mineral coatings on surfaces, possible pyrite mineralization
85			16	32	107.8	21.9		@83.0' - Siltstone/Claystone - very sheared
								NOTE: Total Depth - 85.0' Caving from 72.0' to 80.0' No seepage

GEOTECHNICAL BORING LOG

DATE 1/11/89 DRILL HOLE NO. B-13 SHEET 1 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 218' REF. OR DATUM See Geotechnical Map, Plate 1

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
0							SM	SILTY SAND: Orange-brown, (top 6" medium-brown), slightly moist, dense, porous, slightly cemented, fine- to coarse-grained, poorly sorted, friable, rounded pebbles, few cobbles (TERRACE DEPOSITS, NON-MARINE)
5			1	9	116	7.7		
			2	BAG				
10			3		114	7.0		@10.0' - Silty Sand, as above
15			4	6	107	6.8		@15.0' - coarse-grained Sand, some silt @15.0'-18.0' - gravelly sand
			5	BAG				
20			6	4	114	12.2		@19.0' - moist @20.0' - Silty Sand, fine- to medium-grained, moist
25			7	11	106	6.3		@25.0' - Silty Sand, as above
30								@30.0' - sandier, coarser

GEOTECHNICAL BORING LOG

DATE 1/11/89 DRILL HOLE NO. B-13 SHEET 2 OF 2

PROJECT EAI./Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 218' REF. OR DATUM See Geotechnical Map, Plate 1

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS SAMPLED BY DGS
30			8	9	106	4.4	SM	SILTY SAND: Orange-brown, moist, dense, porous, slightly cemented, fine- to medium-grained, poorly sorted, friable, rounded pebbles, few cobbles
35								NOTE: Total Depth - 31.0' No caving No seepage

DATE 1/20/89 DRILL HOLE NO. B-14 SHEET 1 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 212' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	SILTY SAND: Orange-brown, slightly moist, dense, slightly cemented, porous, friable (TERRACE DEPOSITS, NON-MARINE)
								@ 3.0' - few small pebbles
			1	15	118.3	8.6		@ 6.0' - very dense
10			2	12	110.8	14.2		@11.0' - very porous, small root casts
15			3	9	113.5	8.3		@15.0' - streaks of black MnO mineralization, old root casts mineralized
20			4	12	110.7	13.7		
25			5	15	111.4	8.2		@25.0' - sandstone pebbles
30								

DATE 1/26/89 DRILL HOLE NO. B-14 SHEET 2 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 212' REF. OR DATUM See Geotechnical Map, Plate 1

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS, TJ SAMPLED BY DGS
30			6	15	108.1	3.8	SP	SAND: Light orange-brown, slightly moist, slightly firm, loose with depth, fine-grained, well sorted (TERRACE DEPOSITS, MARINE) @33.0' - light yellow-brown, very loose, few small shell fragments
35			7	14	101.3	1.2		@37.0' - caving, continue with mud @38.0' - rounded pebbles, few cobbles
40		B:dipping 62° B:dipping 60°	8	50 for 10"	94.2	17.2		SILTSTONE: Very light tan, light greenish-gray, light purple gray, slightly moist, hard, thin-bedded, limonite stains along bedding and fractures, silicified, cherty (MONTEREY FORMATION) @42.0' - diatomaceous, small striated surfaces
			9	50 for 10"	94.6	14.6		
			10	18	75.2	44.7		
			11	27	74.6	44.9		
45								NOTE: Total Depth - 44.0' Caving at 37.0' No seepage Dips in Monterey Formation from unoriented core samples
50								

GEOTECHNICAL BORING LOG

DATE 1/26/89 DRILL HOLE NO. B-15 SHEET 1 OF 2

PROJECT EAI/ Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 216' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
0							SM	SILTY SAND: Orange-brown, slightly moist, very dense, slightly cemented, friable, porous, few small pebbles (TERRACE DEPOSITS, NON-MARINE)
5			1	11				@ 8.0' - sandier, more pebbles
10			2	10	113.9	7.0		@10.0' - less pebbles
15			3	8	111.4	7.6		@18.0' - more moisture
20			4	5	111.5	13.5		@21.0' - siltier
25			5	11	117.3	9.0		@26.0' - sandier
30							SP	SAND: Light orange-brown to light yellow-brown, moist, loose, few shell fragments, fine-grained, well-sorted (TERRACE DEPOSITS, MARINE)

GEOTECHNICAL BORING LOG

DATE 1/26/89 DRILL HOLE NO. B-15 SHEET 2 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN

ELEVATION TOP OF HOLE ____ REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			6	11			SP	SAND: Light yellow-brown, moist, loose, medium-grained, well-sorted
								@34.0' - rounded pebbles and cobbles
35								@36.0' - wet, many cobbles, seepage on south side
			7	47	74.8	28.8		SILTSTONE: Greenish-gray, purple-brown, orange, moist, very firm, very sheared, limonite stains, undulating polished surfaces (VAQUEROS FORMATION)
			8	32	71.6	42.3		
40			9	27	78.8	38.6		@39.0' - consistently dark brown
			10	21	78.8	34.4		
								NOTE: Total Depth - 42.0' No caving Seepage at 36.0'

DATE 1/26/89 DRILL HOLE NO. B-16 SHEET 1 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 222' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
							SM	SILTY SAND: Orange-brown, top 2.5' dark orange-brown, slightly moist, dense, slightly cemented, friable, porous, few pebbles (TERRACE DEPOSITS, NON-MARINE)
								@ 4.0' - sandstone pebbles
			1	7	109.1	9.5		
								@ 9.0' - few cobbles, light orange-brown, sandier
10			2	8	110.7	8.4		
								@14.0' - pebbles, few cobbles
15								
								@19.0' - siltier, root clasts with carbonate
20			3	9	118.5	6.7		
								@24.0' - more moisture
25								
30								

GEOTECHNICAL BORING LOG

DATE 1/26/89 DRILL HOLE NO. B-16 SHEET 2 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2600 lbs.-25'; 1600 lbs.-45'; 800 lbs.-69' DROP 12 IN.

ELEVATION TOP OF HOLE 222' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30			4	13	107.8	6.0	SM	SILTY SAND: Orange-brown, moist, dense, slightly cemented, friable, porous
35								
40							SP	SAND: Light yellow-brown, moist, loose, fine-grained, well sorted (TERRACE DEPOSITS, MARINE) @39.0' - continue with mud
45								@44.0' - few pebbles, abundant shell fragments @44.5' - cobbles
50		B:dipping 50°	5	16	73.9	47.0		CLAYSTONE: Greenish-gray, orange, moist, plastic, stiff, undulating polished surfaces, minor black mineralization. very sheared, polished surfaces, Laboratory Classified as MH (MONTEREY FORMATION)
			6	26	74.7	46.6		SILTSTONE: light purplish-gray, moist, hard, silicified, sheared, fractured
			7	50 for 9"	75.1	47.5		
			8	50 for 5"	124.4	12.7		
55								NOTE: Total Depth - 51.0' Caving from 39.0' to 44.0' No seepage Dip in Monterey Formation from unoriented cores
60								

DATE 4/19/89 DRILL HOLE NO. B-17 SHEET 1 OF 3

PROJECT EAI/ Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67';1050#-86.5' DROP 12 IN.

ELEVATION TOP OF HOLE 110' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
							SM	SILTY SAND: Reddish-brown, moist, dense, cobbles (ARTIFICIAL FILL)
		J:N35W, 26SW J:N07E, 66NW	1	BAG				TUFF: Light yellow to white, mottled orange, slightly moist, very firm to hard, sheared, limonite stained of fractures, hydrothermally altered, gypsum crystals up to 2" diameter, random polished surfaces (CONEJO VOLCANICS) @ 3.0' - joints polished
		GS:N71E, 18SE GS:N75W, 50NE	2	4				@ 5.5' - discontinuous gypsum seam @ 6.5' - gypsum seam with limonite and polished surface @ 8.5' - large gypsum crystals with limonite
10		J:N02E, 64NW	3	10				@10.0' - hard, little limonite @11.0' - abundant limonite, joint with polished surface
		J:N07E, 25NW						
5			4	3				@15.0' - abundant limonite, random gypsum seams, 1/8" thick inclusions of moist claystone, firm, hard cemented fragments @16.0' - probable fault contact (Fault B)
		F:N64W, 24NE F:N35W, 68NE MS:N30E, 54NW	5	4				CLAYSTONE: Bluish-gray, moist, firm, extremely sheared irregular sharp fault contact, undulating polished surfaces (East side approximately horizontal, West side approximately 45 degrees to the west) (TRANCAS FORMATION) @16.5' - striations
0			6	BAG				@18.0' - discontinuous, siliceous zone, ½' thick, 1' long
			7	4				@20.0' - hard, some gypsum @21.5' - plastic clay
		S:N88E, 70NW						@24.0' - white mineralized zones 1/8" thick
-5		S:N30E, 44NW	8	7				@25.0' - dark bluish-gray, moist, very firm, plastic
		S:N66E, 34NW						@29.0' - hard, brittle, siliceous fragments

DATE 4/19/89 DRILL HOLE NO. B-17 SHEET 2 OF 3

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67';1050#-86.5' DROP 12 IN.

ELEVATION TOP OF HOLE 110' REF. OR DATUM See Geotechnical Map, Plate 1

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY DGS, TJ SAMPLED BY DGS
0			9	9				CLAYSTONE: Dark bluish-gray, moist, very firm, plastic, very sheared
								@33.0' - harder pieces in clayey matrix have polished surfaces
								@34.0' - fragments 1/8" to 3"
5								@35.0' - light gray mineralization
			10	6				
			11	BAG				@37.0' - matrix contains pods of subrounded to subangular sandstone fragments ¼" to 1"
40		S:N13W, 46SW	12	8				
45		S:N54E, 36NW J:N18W, 78SW	45 13 46	7				@45.0' - hard silicified bed, minor seepage on top, brittle, jointed
		S:N82W, 74NE	48					@48.0' - polished shear
50		S:N38E, 33SE	50 14	20				@50.0' - thin siliceous zone
								@51.0' - harder, mottled with light gray, mineralization
		S:N10E, 48SE S:N53E, 33NW	53 54					@53.0' - thin siliecous zone @54.0' - polished surfaces, hard, less plastic
55			15	24				@56.5' - thin siliceous zone, discontinuous
		S:N20W, 53SW	57					
60								

DATE 4/19/89 DRILL HOLE NO. B-17 SHEET 3 OF 3

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67';1050#-86.5' DROP 12 IN.

ELEVATION TOP OF HOLE 110' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
60		S:N20E, 81SE	16	23				CLAYSTONE: Dark bluish-gray, moist, very firm to hard, very sheared, slightly plastic to plastic, undulating polished surfaces
		S:N8W, 90						
		S:N58W, 68SW						@64.0' - some striations
65			17	25				
		S:N-S, 75E						
								@68.5'-70.0' - silica mineralization, discontinuous zone
70								
								@72.5' - rounded pebbles with polished surfaces, 3/4" diameter
75			18	35				@75.0' - slightly plastic, prominent shear, near vertical, undulating
		S:N15E, 70SW						@77.0' - siliceous zone
		S:N30E, 90						
		S:N15E, 78SE						
80								
		S:N75W, 68NE						@82.0' - moist, hard fragments in clay matrix
85		S:N62E, 60NW	19	20				
								NOTE: Total Depth 86.5' No caving Minor seepage at 45.0' Downhole logged to Total Depth
90								

GEOTECHNICAL BORING LOG

DATE 4/20/89 DRILL HOLE NO. B-18 SHEET 1 OF 1

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67';1050#-86.5' DROP 12

ELEVATION TOP OF HOLE 110' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY DGS, TJ

SAMPLED BY DGS

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density PCF	Moisture Content, %	Soil Class. (U.S.C.S.)	Geotechnical Description
0	W E						SM	SILTY SAND: Orange-brown, slightly moist, very dense, scattered rounded pebbles and cobbles (LANDSLIDE DEBRIS)
5								
10								
14		S:N30E, 65SE						@14.0' on west side and 19.0' on east side - shear
15		S: N38E, 60SE Striations Plunge 40° trending N89E	16					@15.0' - east side of hole very sharp contact, roots growing along contact, striations
19		J:N3E, 86SE						@16.0' - MnO stain along shear approximately ¼" thick
20			1	BAG				TUFF: Yellowish-white, mottled-orange, slightly moist, very firm, sheared, altered, limonite, gypsum, spars MnO stain (CONEJO VOLCANICS/LANDSLIDE DEBRIS)
23		S: Gen. N25E, 45SE						
24								@24.0' on west side of boring and 26.0'on east side - scattered gypsum crystals, polished surfaces, 6" zone of inclusions of claystone above, 6" zone of inclusions of tuff below
25		Shear: N28E, 70SE						
		Shear: N50E, 62SE	2	BAG				CLAYSTONE: Bluish-gray, slightly moist, firm, slightly plastic, very sheared, pulverized (TRANCAS FORMATION/LANDSLIDE DEBRIS)
30								NOTE: Total Depth - 30.0' No caving No seepage Downhole logged to Total Depth

GEOTECHNICAL BORING LOG

DATE 4/20/89 DRILL HOLE NO. B-19 SHEET 1 OF 3

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67';1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 215' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SC	CLAYEY SAND: Medium-brown, moist, dense, root hairs, slightly porous, slightly plastic, fine- to medium grained, rounded pebbles (COLLUVIAL SOIL)
							SM	SILTY SAND: Orangish-brown, moist, loose to moderately dense, fine-grained, slightly plastic, black organic blebs (TERRACE DEPOSITS, NON-MARINE)
10			1	BAG				
			2	4				@10.0' - dense, cemented, friable, occasional subangular to subrounded gravel to 1"
								@12.0' - few subrounded cobbles
								@14.0' - gravel and cobbly fine- to coarse grained sand, well sorted
15								@15.0' - medium brown, mottled with olive brown, few reddish-brown soft siltstone fragments
								@18.0' - very moist, angular cobbles
								@19.0' - orangish-brown
20			3	6			SP	SAND: Orangish-brown, moist, dense, very fine-grained, few angular cobbles
							SM	SILTY SAND: Orangish-brown, moist, medium- to coarse-grained, slightly cemented, friable
								@21.0'-23.0' - numerous rounded gravels and cobbles
25								@25.0' - medium-brown, moist to very moist, fine- to medium-grained, slightly plastic
								@29.0' - few angular sandstone cobbles
30								

GEOTECHNICAL BORING LOG

DATE 4/20/89 DRILL HOLE NO. B-19 SHEET 2 OF 3

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 215' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0			4	15			SP	SAND: Yellowish to orangish-brown, moist, dense, fine- to medium grained with some coarse sand and few gravel, slightly cemented, friable
							SM	SILTY SAND: Orangish-brown, moist, fine- to medium-grained
								@34.0' - Yellowish-brown, fine-grained, slightly plastic
35								@36.0' - medium- to coarse-grained sand
								@38.0' - well rounded gravel and cobbles
								@39.0' - medium-brown
40			5	7				@40.0' - orangish-brown, moist, dense, fine- to medium grained, slightly cemented, friable
								@40.5' - dark orange-brown, fine-grained
								@44.0' - orange-brown, moist, fine- to medium-grained
45								@45.0'- dark orange-brown, boulders and cobbles
								@49.0' - medium-brown, fine- to medium-grained
50			6	30				@50.0' - light to medium orange-brown, moist, dense, fine- to coarse-grained, poorly sorted
								@53.0' - few cobbles
								@54.0' - dark orange-brown, fine- to medium-grained
55								@57.0' - orange-brown, fine-grained
60								

DATE 4/20/89 DRILL HOLE NO. B-19 SHEET 3 OF 3

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 215' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
			7	33			SM	SILTY SAND: Orange-brown to medium-brown, moist, dense, fine- to medium-grained, carbonate stringers @61.0' - medium-brown, slightly plastic @62.0' - few cobbles @63.0' - medium-grained sand, some gravel @64.0' - medium-brown @65.0' - medium-brown, moist, fine-grained, slightly plastic @66.0' - some gravel and cobbles @68.0' - orange-brown, fine- to medium grained moist
70			8	11			SP	SAND: Medium-brown, moist, loose, fine- to medium-grained (TERRACE DEPOSITS, MARINE) @75.0' - tan to yellow-brown, fine- to medium-grained, well sorted, unconsolidated @80.0' - abundant cobbles
85			9	11				SANDSTONE: Light yellow-brown, moist, very firm, clayey matrix, fine- to medium grained, poorly sorted, weathered, 1" thick sheared greenish-gray, clayey siltstone bed (probable VAQUEROS FORMATION) @86.0' - hard, well-cemented @87.0' - few pebbles and gravels @88.0' - 2" thick sheared dark gray to green-gray clayey siltstone bed @89.0' - green-gray
			10	17				
			11	25				
			12	50				
90								NOTE: Total Depth - 89.0' Caving @ 70.0' Drilling mud used below 75.0'

DATE 4/21/89 DRILL HOLE NO. B-20 SHEET 1 OF 2

PROJECT EAI /Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 186' REF. OR DATUM See Geotechnical Map, Plate 1

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								LOGGED BY CH, TJ SAMPLED BY CH
0							SM	SILTY SAND: Orange-brown, moist, fine-grained, well sorted (TERRACE DEPOSITS, NON-MARINE)
10			1	5				@10.0' - dense, fine- to medium-grained, slightly cemented, friable
								@13.0' - some angular to rounded gravel and cobbles
15								@17.0' - fine-grained
20			2	7				@20.0' - fine-grained sand, few cobbles, slightly porous, slightly plastic, few roots
25								@27.0' - carbonate stringers
30								

DATE 4-21-89 DRILL HOLE NO. B-20 SHEET 2 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 186' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SM	SILTY SAND: Orange-brown to medium-brown, moist, dense, slightly cemented, friable, fine- to coarse-grained sand, few pebbles to 1" diameter
35								@35.0' - medium-brown, slightly mottled, organic fragments, carbonate blebs
40			4	14				@40.0' - orange-brown, moist, dense, slight calcium carbonate cementation, friable, fine-grained, slightly plastic @40.5' - orange to red-brown, medium-grained
							SP	SAND: Tan to yellow-brown, dry to slightly moist, unconsolidated, fine- to medium-grained, well-sorted (TERRACE DEPOSITS, MARINE)
45								
50								@52.0' - few cobbles
								TUFF: Rust-orange, moist, hard, abundant limonite and manganese oxide staining, sheared (CONEJO VOLCANICS)
55			5	41				SILTSTONE: Blue-gray, very moist, sheared and plastic
			6	No Recovery				
			7	50				
			8	Bag				NOTE: Total Depth - 58.5' Caving at 42.0' No seepage Drilling mud used below 42.0'
				Bag				
60								

DATE 4/21/89 DRILL HOLE NO. B-21 SHEET 1 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

ELEVATION TOP OF HOLE 112' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG W E	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
10							ML	SANDY CLAYEY SILT: Dark-brown, moist, moderately firm:, organics, roots and root hairs, occasional pebbles, carbonate stringers (COLLUVIAL SOIL) @3.5' - Irregular contact dipping 18 degrees east
5							ML	SANDY SILT: Dark red-brown, slightly moist, dense, yellow, red and white mottling, roots, slightly porous, pebbles, cobbles (LANDSLIDE DEBRIS) @ 8.0' - 2' thick subhorizontal cobble zone @ 9.5' - 4" subhorizontal pebble bed
10							SM	SILTY SAND: Dark red-brown, slightly moist, dense, pebbles and cobbles, slightly porous, roots @15.0' - dark red-brown, yellow, and white mottling, dense, roots, 1' cobble bed @16.0' - orange to medium-brown, slightly plastic
15								
20		B:N2E, 38SE						@20.0' - 6" medium- to coarse-grained, subhorizontal sand bed @21.0' - orange-brown, fine-grained @21.5' - 4" thick erosional channel bed, medium- to coarse sand with pebbles
25								@25.0' - yellow-brown, coarse grained, cemented, slightly friable, subhorizontal gradational contact @27.0' - dark orange-brown, occasional pebbles @28.0' - red-brown, moist, fine-grained, few gravel and cobbles, slightly plastic
30								

GEOTECHNICAL BORING LOG

DATE 4/21/89 DRILL HOLE NO. B-21 SHEET 2 OF 2

PROJECT EAI/Malibu PROJECT NO. 3831025-04

DRILLING CO. Tri-Valley Drilling TYPE OF RIG Bucket Auger

HOLE DIAMETER 24" DRIVE WEIGHT 2550#-22.5'; 1550#-45.5'; 750#-67'; 1050#-87'; 1350#-89' DROP 12 IN.

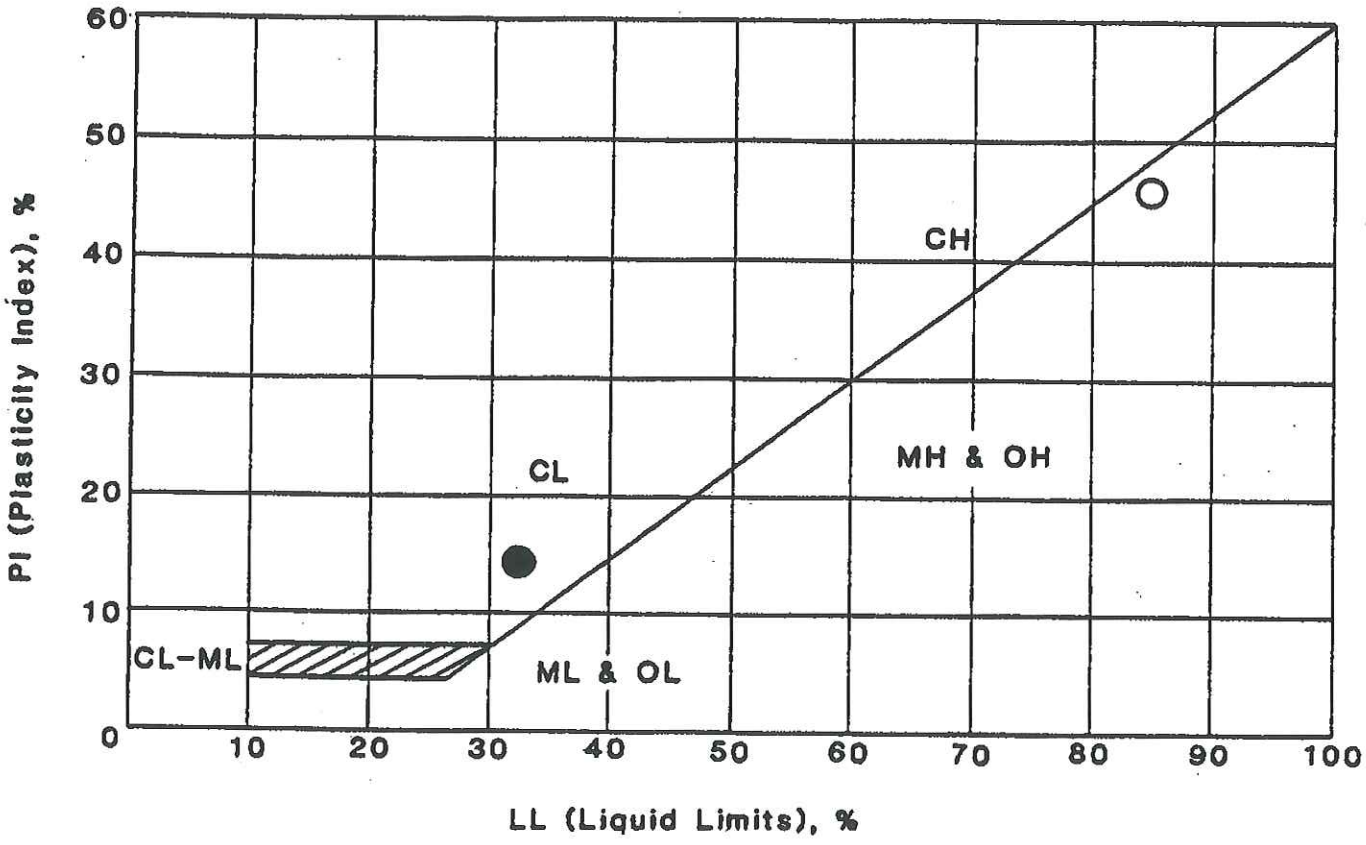
ELEVATION TOP OF HOLE 112' REF. OR DATUM See Geotechnical Map, Plate 1

LOGGED BY CH, TJ

SAMPLED BY CH

DEPTH FEET	GRAPHIC LOG (W E)	ATTITUDES	TUBE SAMPLE NO.	BLOWS PER FOOT	DRY DENSITY PCF	MOISTURE CONTENT, %	SOIL CLASS. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
30							SM	SILTY SAND: Red-brown, moist, moderately dense, fine-grained, slightly plastic, occasional rounded gravel and cobbles
35								@34.0' - numerous volcanic and quartzite pebbles in a coarse-grained sandy matrix, loose and friable to 37'
40								@40.0-41.0' - irregular contact clipping, east
		S:N3E, 42SE					SP SM	SAND: Light gray, moist, unconsolidated, fine- to medium-grained, friable, intermixed with silty sand - as above
		S:N3E, 44-47SE						41.5' TO 42.0' - irregular contact
45		S:N32W, 55NE	1	7				SILTY SAND: Yellow-brown to orange-brown, cobbles 6" to 1' thick @42.5' - 1" to 2" thick zone of sheared, yellow-brown volcanic tuff underlain by friable marine terrace sand, 6" thick @45.0' - contact with polished striated surface striations oriented 45°S 88E
50			2					SILTSTONE: Mottled with discontinuous light gray sandstone lenses, numerous undulations polished surfaces (TRANCAS FORMATION/LANDSLIDE DEBRIS) @48.0' - pyrite, mineralization @51.0' - light blue @52.0' - plastic, polished surfaces, slightly mottled with sand
			3	25				
55								NOTE: Total Depth - 53.0' No seepage Caving from 43.0' to 45.0' Downhole logged to 48.0'

SYMBOL	SAMPLE NO.	SAMPLE LOCATION	MOISTURE (%)	LL (%)	PL (%)	PI (%)	U.S.C.S.
●	11	B-7 @ 43' (Artificial fill)	--	31.7	17.3	14.4	CL
○	5	B-16 @ 47' (Claystone, Monterey Formation	47.0	85.1	39.2	45.9	MH



ATTERBERG LIMITS TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/78 Figure No. D-1

3005 688

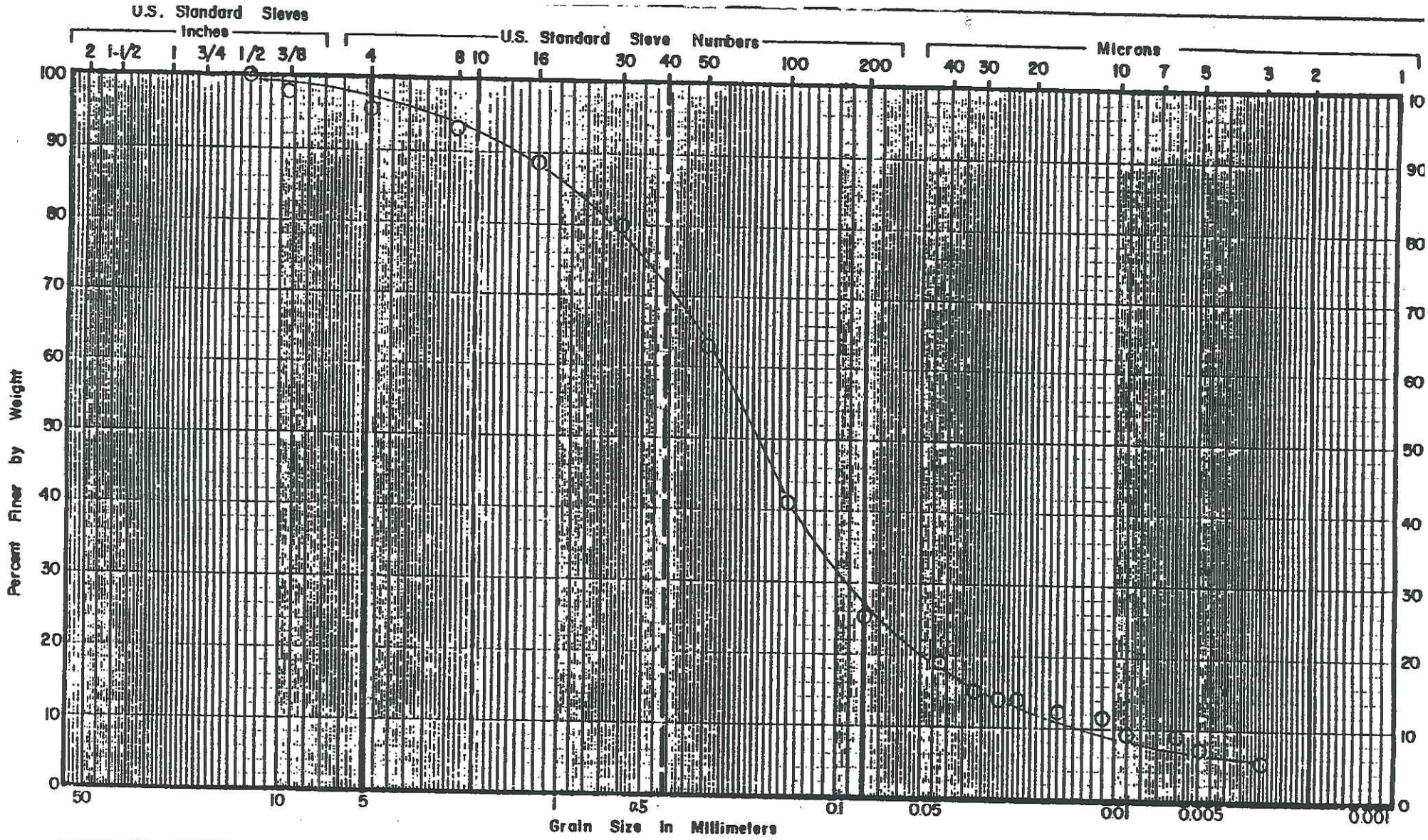
SAMPLE LOCATION	SULFATE (PPM)	COMPACTED MOISTURE (%)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (%)	VOLUMETRIC SWELL (%)	EXPANSION INDEX	EXPANSIVE CLASSIFICATION
B-9 @ 18' (Vagueros Formation)	6000	14.7	94.7	32.6	11.7	117	High
B-10 @ 4'-6' (Non-marine Terrace)	180	8.5	115	16.3	1.1	11	Very Low

TEST METHOD: UBC Test Method 29-2

EXPANSION INDEX AND SOLUBLE SULFATE TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-2

3020688



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine		

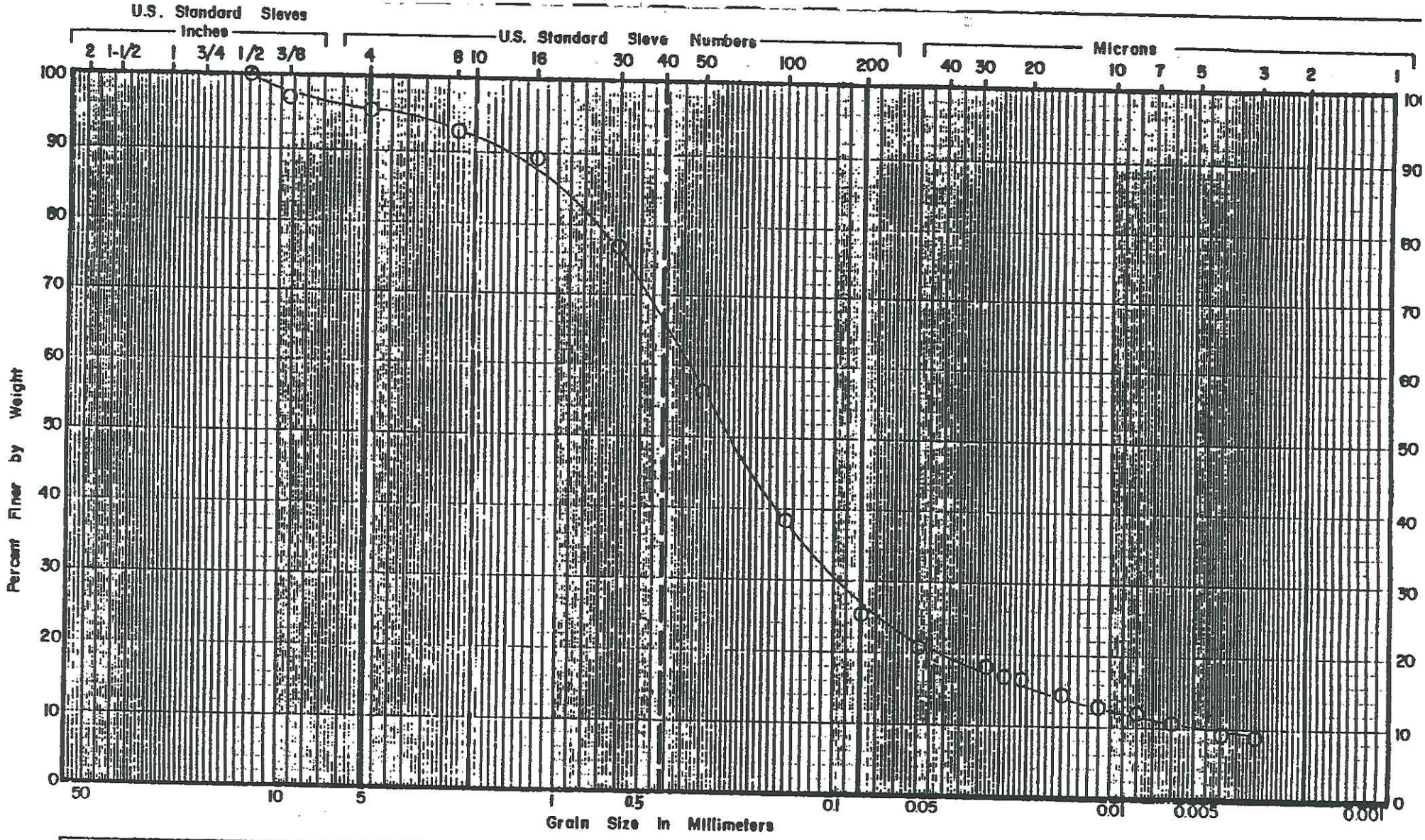
Symbol	Sample Location	Sample No.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Finer than 2μ	U.S.C.S.
O	10 @ 25' (Qtn)	6	6.0	--	--	---	19.3	2.4	27	---	SM

GRADATION TEST RESULTS

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-3



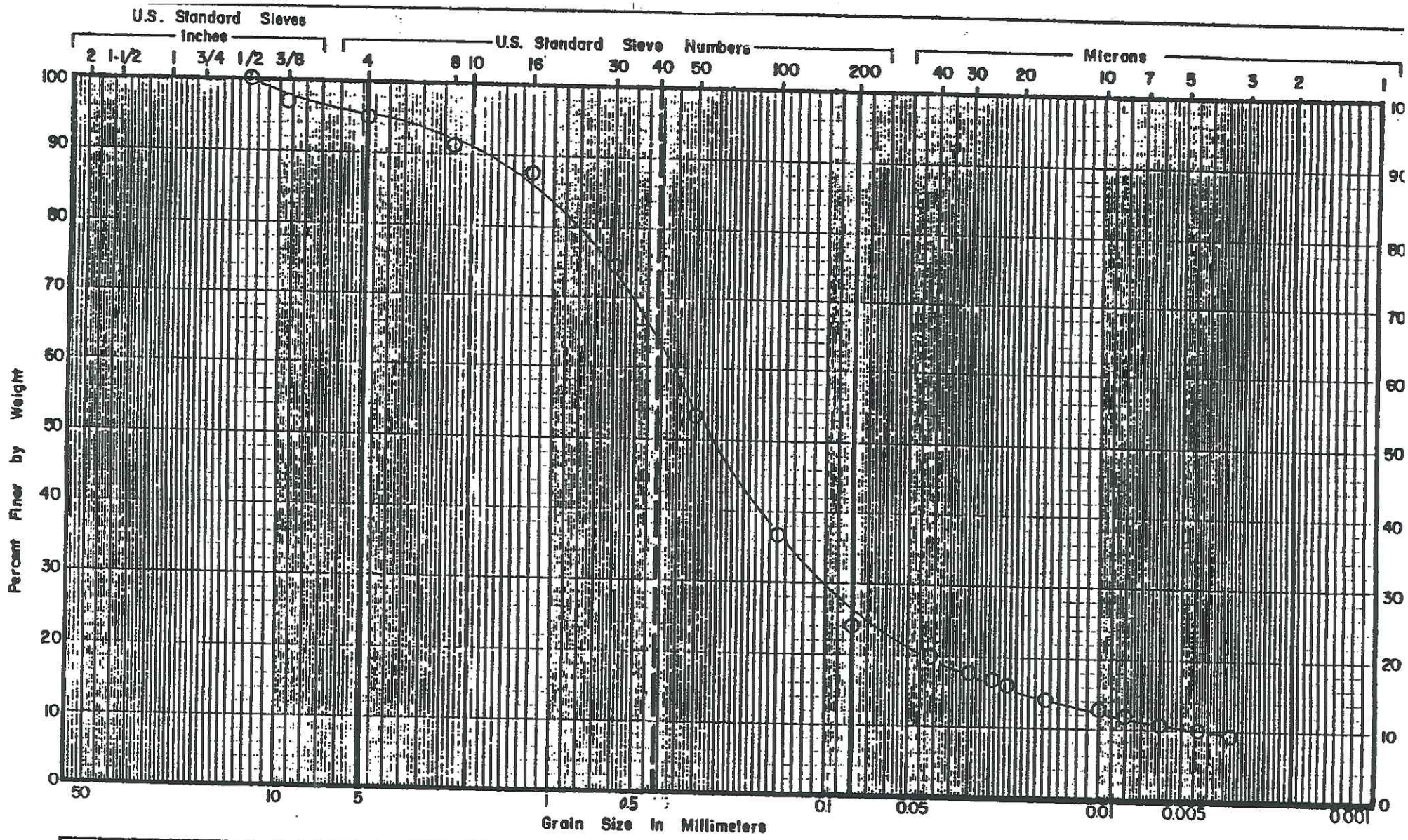
Gravel				Sand							Silt	Clay	
Coarse		Fine		Coarse		Medium		Fine					
Symbol	Sample Location	Sample No.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Finer than 2μ	U.S.C.S.		
O	B-11 @ 35' (Qtn.)	8	8.8	--	--	---	73.3	6.5	27	--	SM		

GRADATION TEST RESULTS

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89

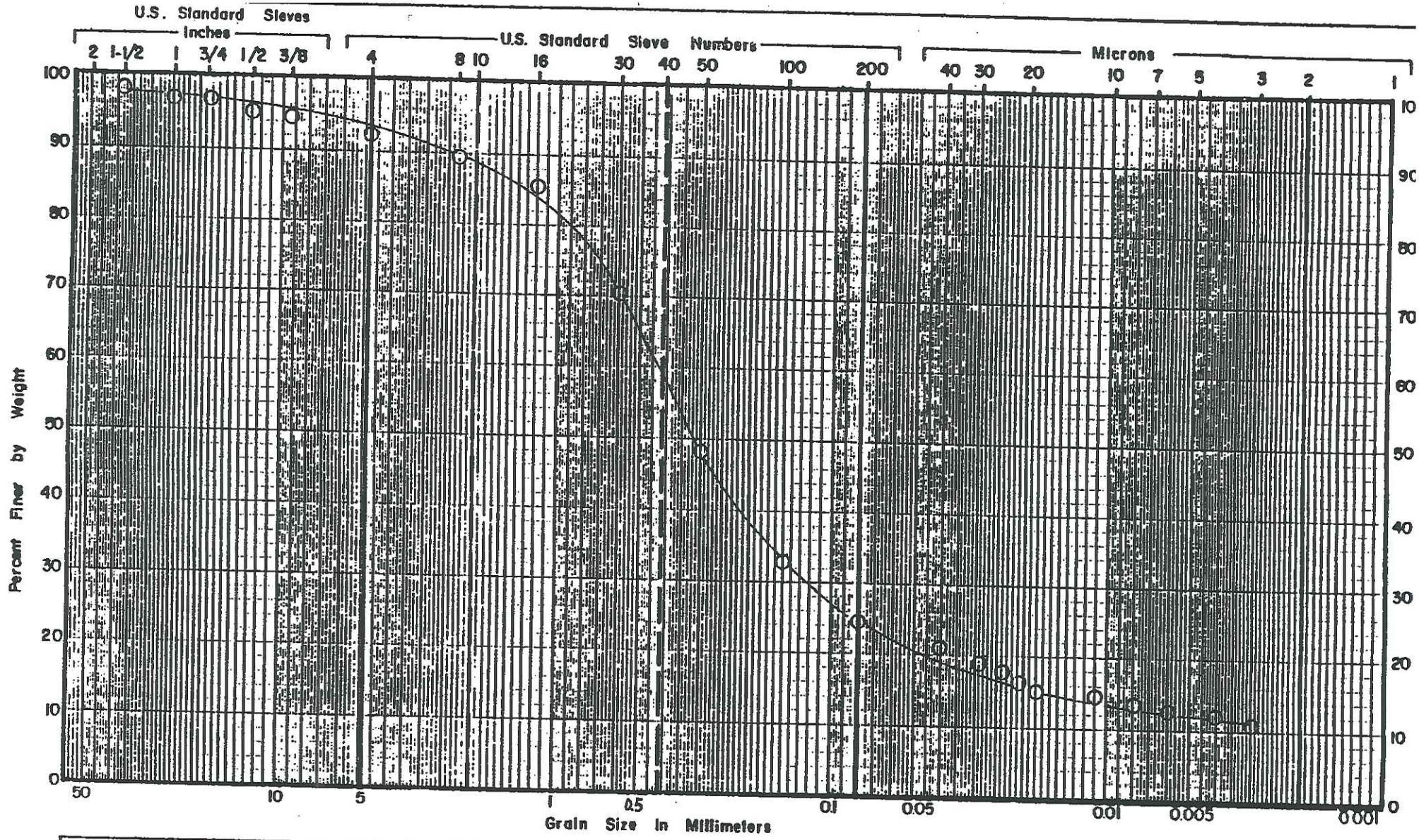


Gravel				Sand							Silt	Clay
Coarse		Fine		Coarse		Medium		Fine				
Symbol	Sample Location	Sample No.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Finer than 2μ	U.S.C.S.	
O	B-12 @ 45' (Qtn.)	9	11.0	--	--	---	83.7	6.5	26	--	SM	

GRADATION TEST RESULTS

Project No. 3831025-06

Project Name EAI/RANCHO MALIBU MES

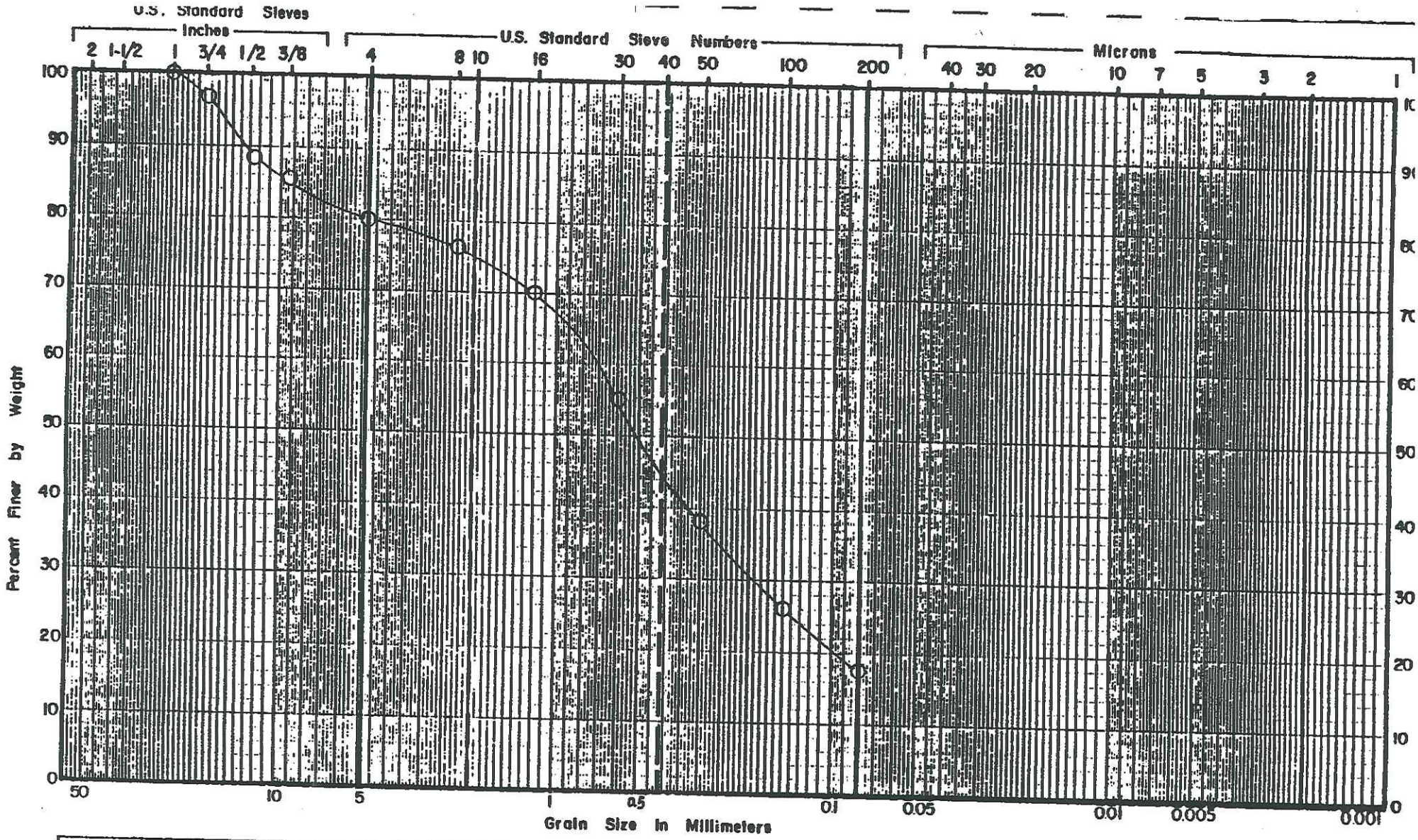


Gravel				Sand							Silt	Clay	
Coarse		Fine		Coarse		Medium		Fine					
Symbol	Sample Location	Sample No.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Finer than 2μ	U.S.C.S.		
O	B-13 @ 7'	2	---	--	--	---	307	25.2	25	---	SM		
	(Qtn.)												

GRADATION TEST RESULTS

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA



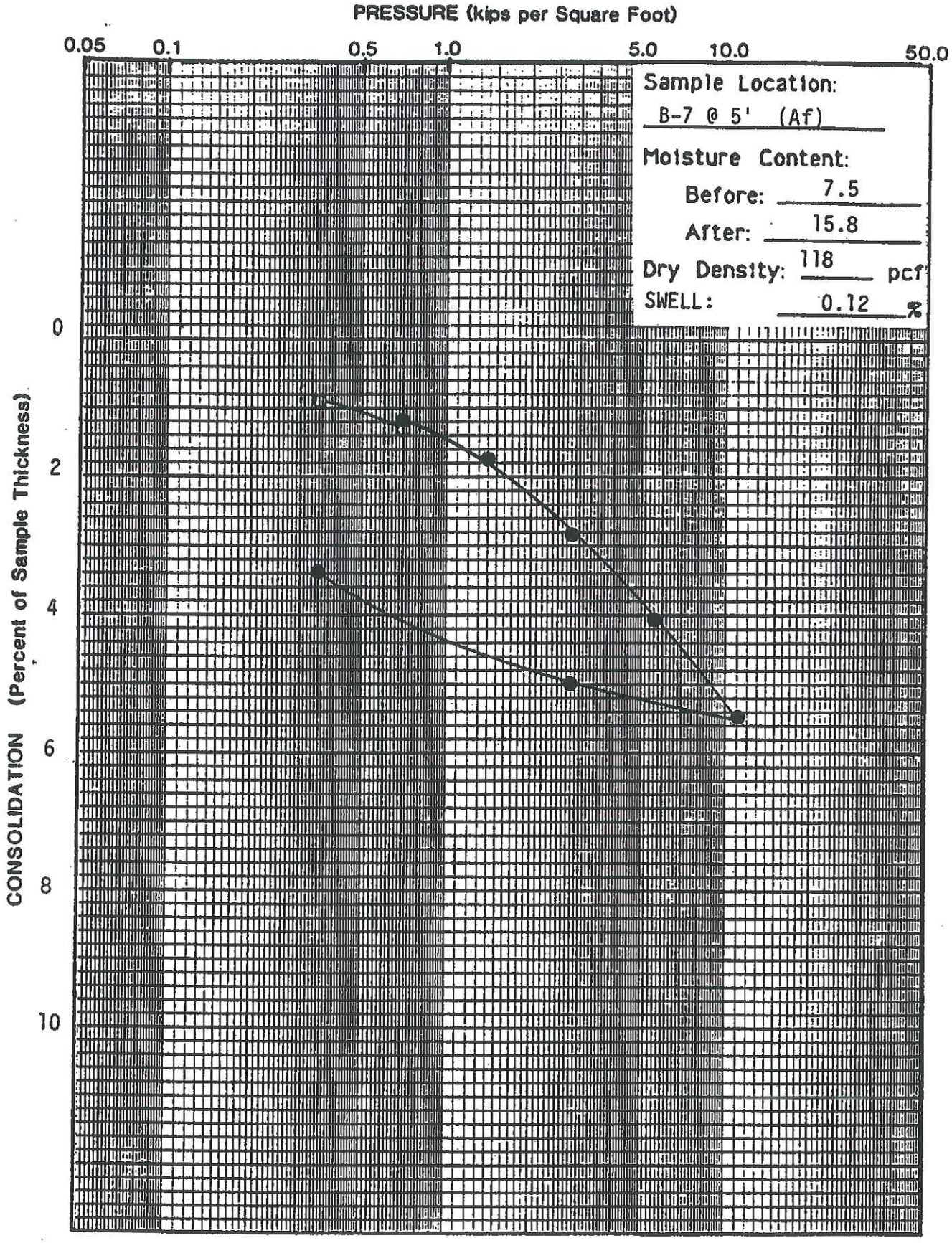
Gravel				Sand							Silt	Clay
Coarse	Fine			Coarse	Medium			Fine				
Symbol	Sample Location	Sample No.	Field Moisture (%)	LL (%)	PI (%)	Activity PI/-2u	Cu D_{60}/D_{10}	Cc $\frac{(D_{30})^2}{D_{10} \times D_{60}}$	Percent Passing No. 200	Percent Finer than 2μ	U.S.C.S.	
O	B-13 @ 17' (Qtn.)	5	--	--	--	---	---	---	17.5	--	SM	

GRADATION TEST RESULTS

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89



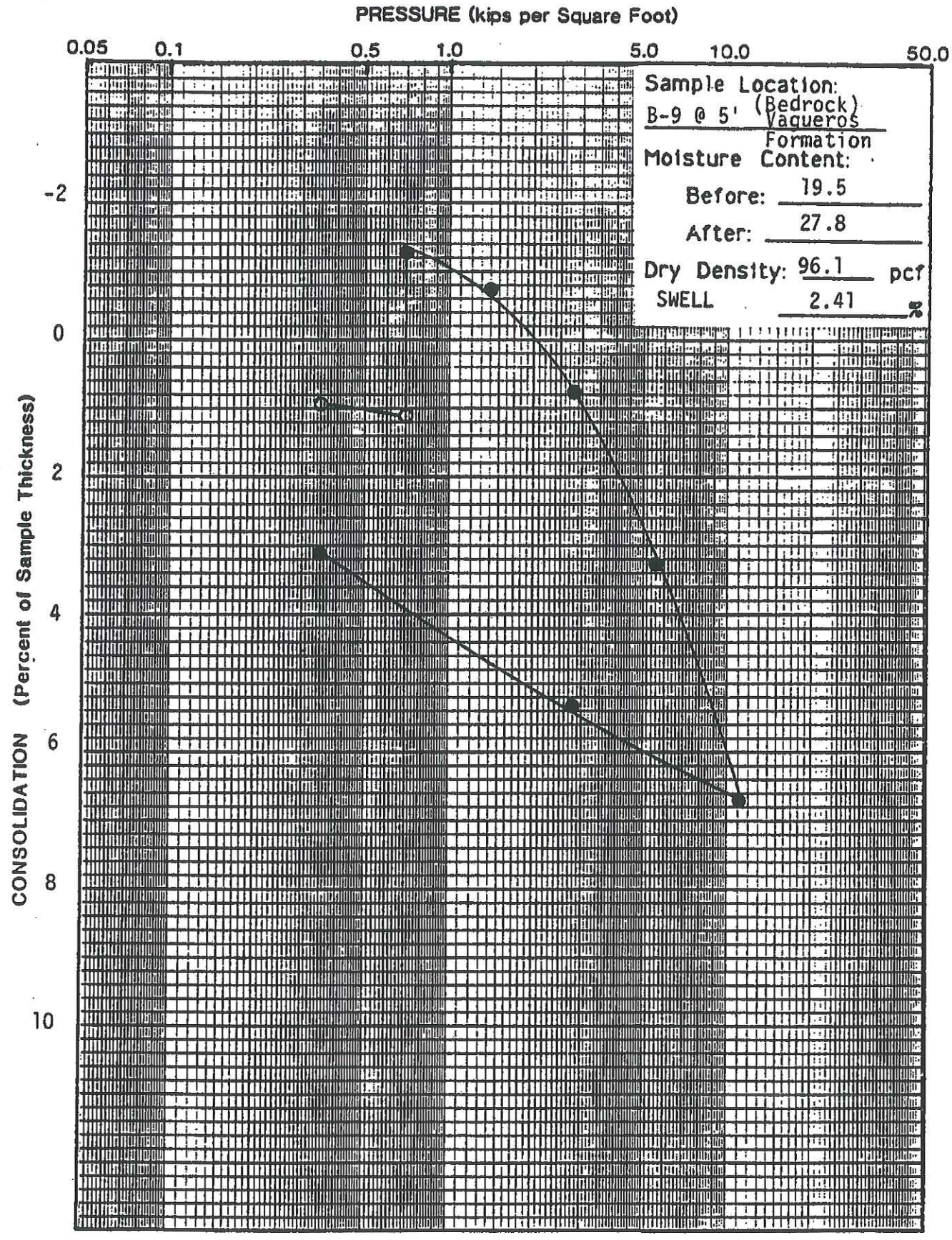
CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-8

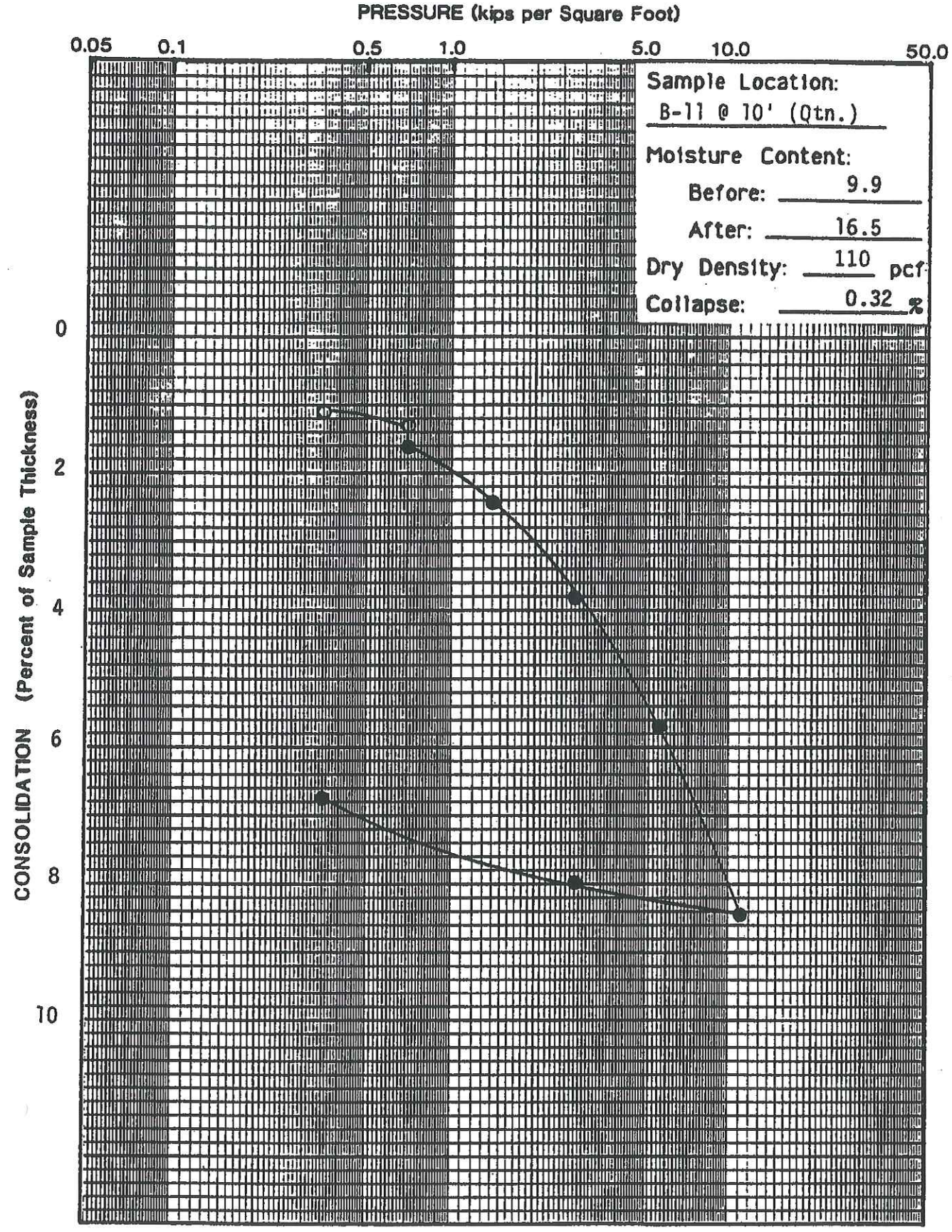
3010 188



CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-9

3010 188



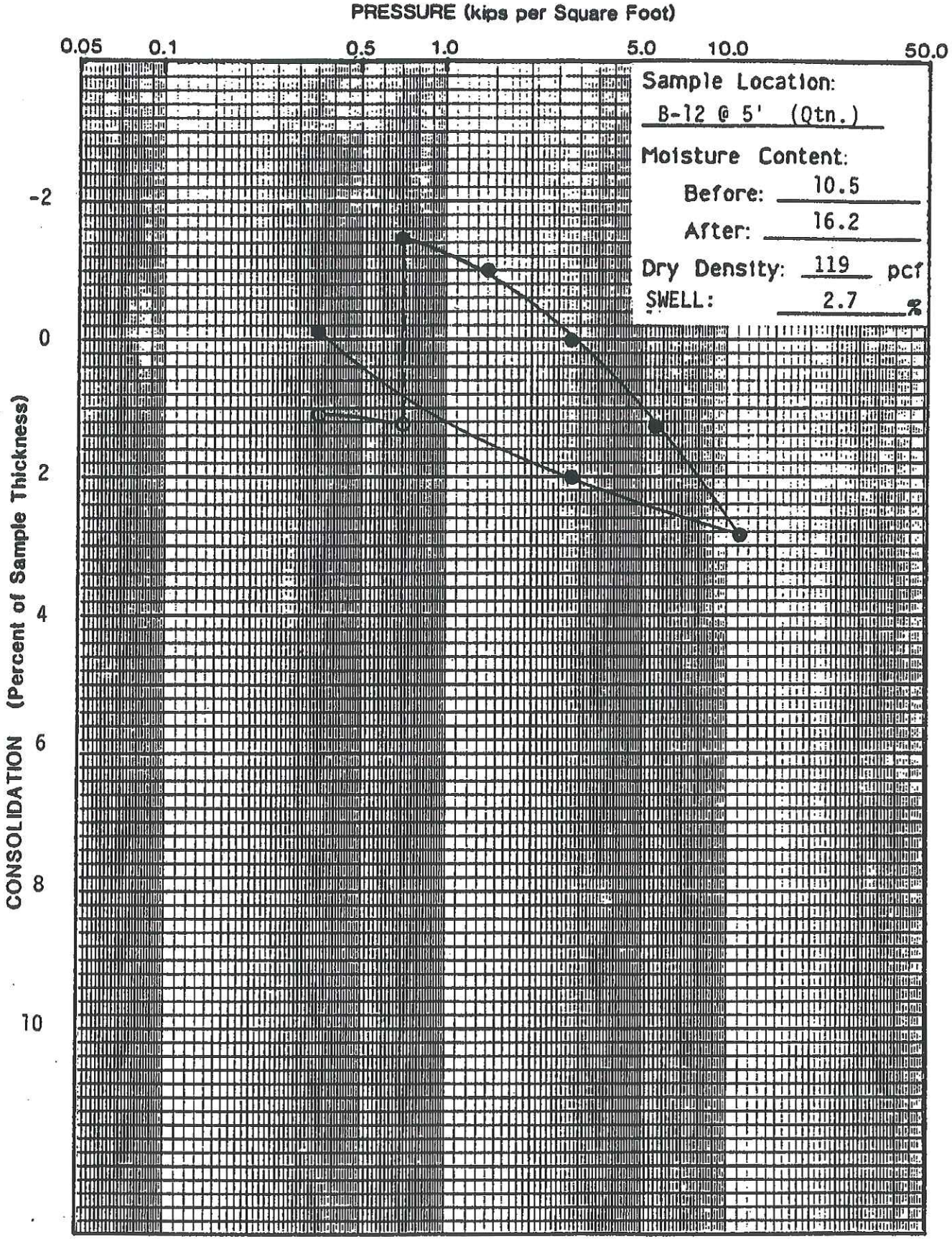
CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-10

3010 188



○ Indicates Sample at Field Moisture

● Indicates Sample After Saturation

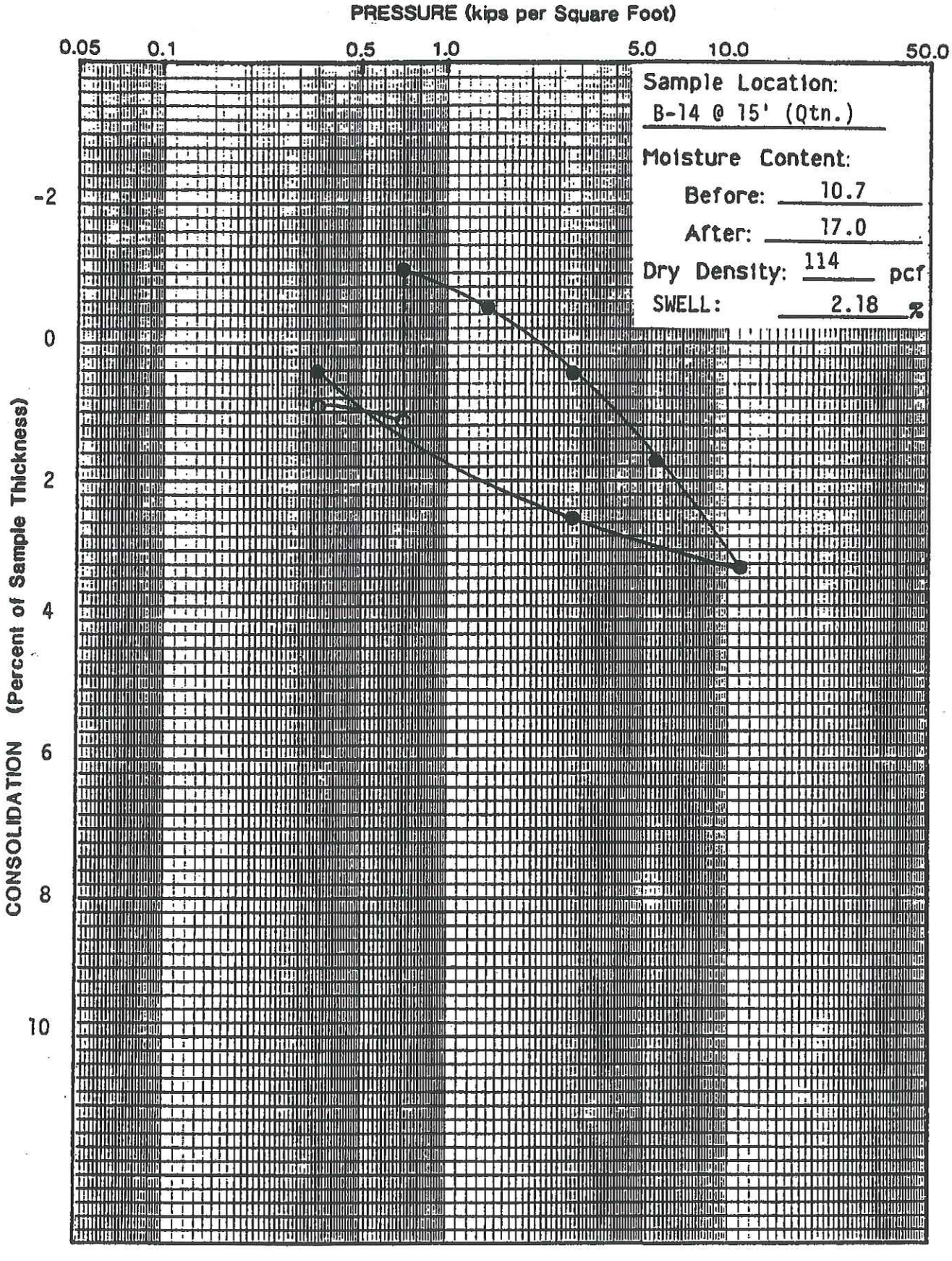
CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-11

3010 188



○ Indicates Sample at Field Moisture

● Indicates Sample After Saturation

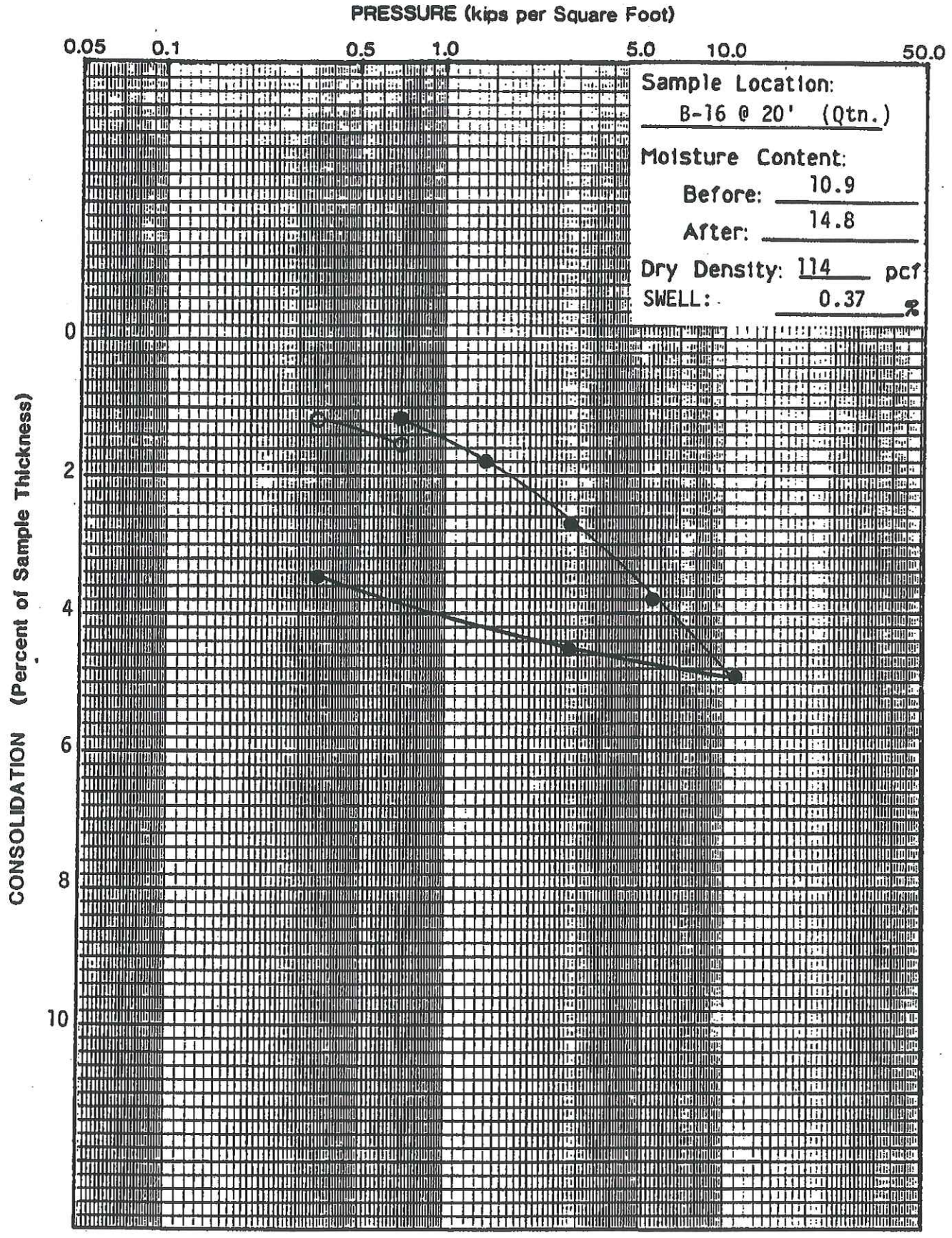
CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-12

3010 188



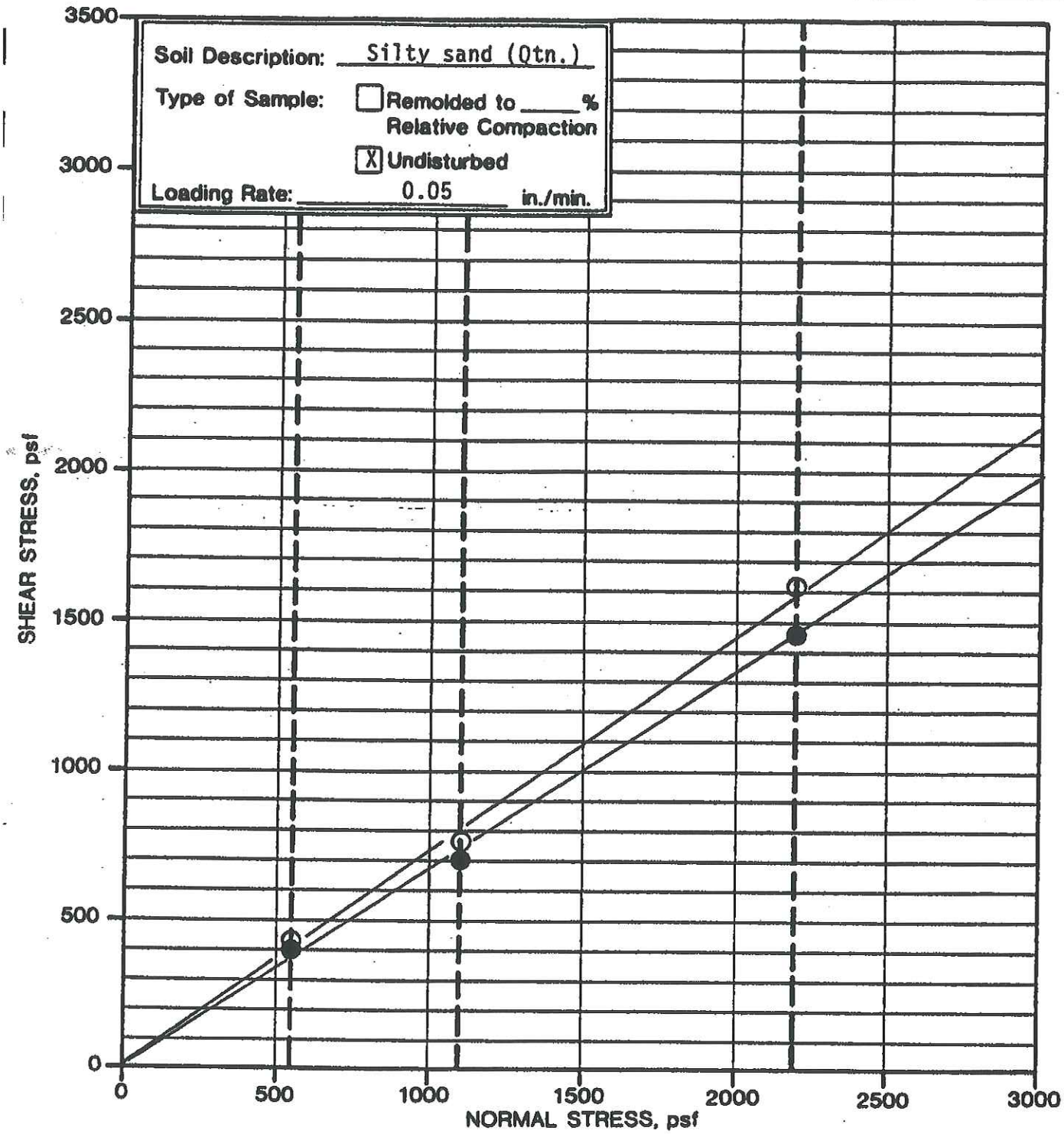
CONSOLIDATION - PRESSURE CURVE

Project No. 3831025-04

Project Name EAI/RANCHO MALIBU MESA

Date 8/89 Figure No. D-13

3010 188

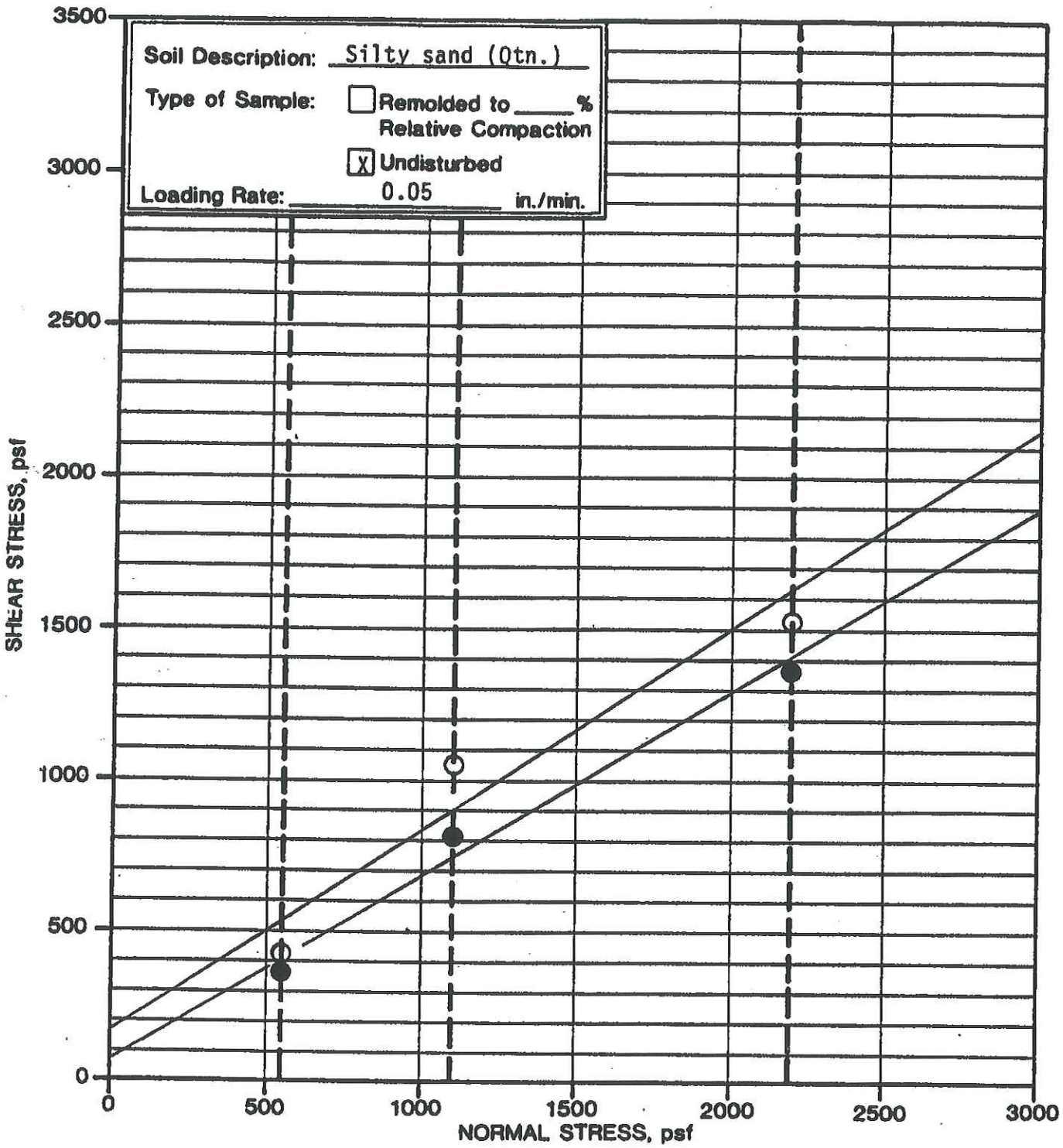


Sample Location	Symbol	Average Moisture Contents Before	After	Friction Angle	Cohesion	Remarks
B-8 @ 15'	○	6.7	15.8	36°	10 (psf)	PEAK
B-8 @ 15'	●	6.7	15.8	33.5°	10	ULTIMATE

DIRECT SHEAR TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-14

3015 1088

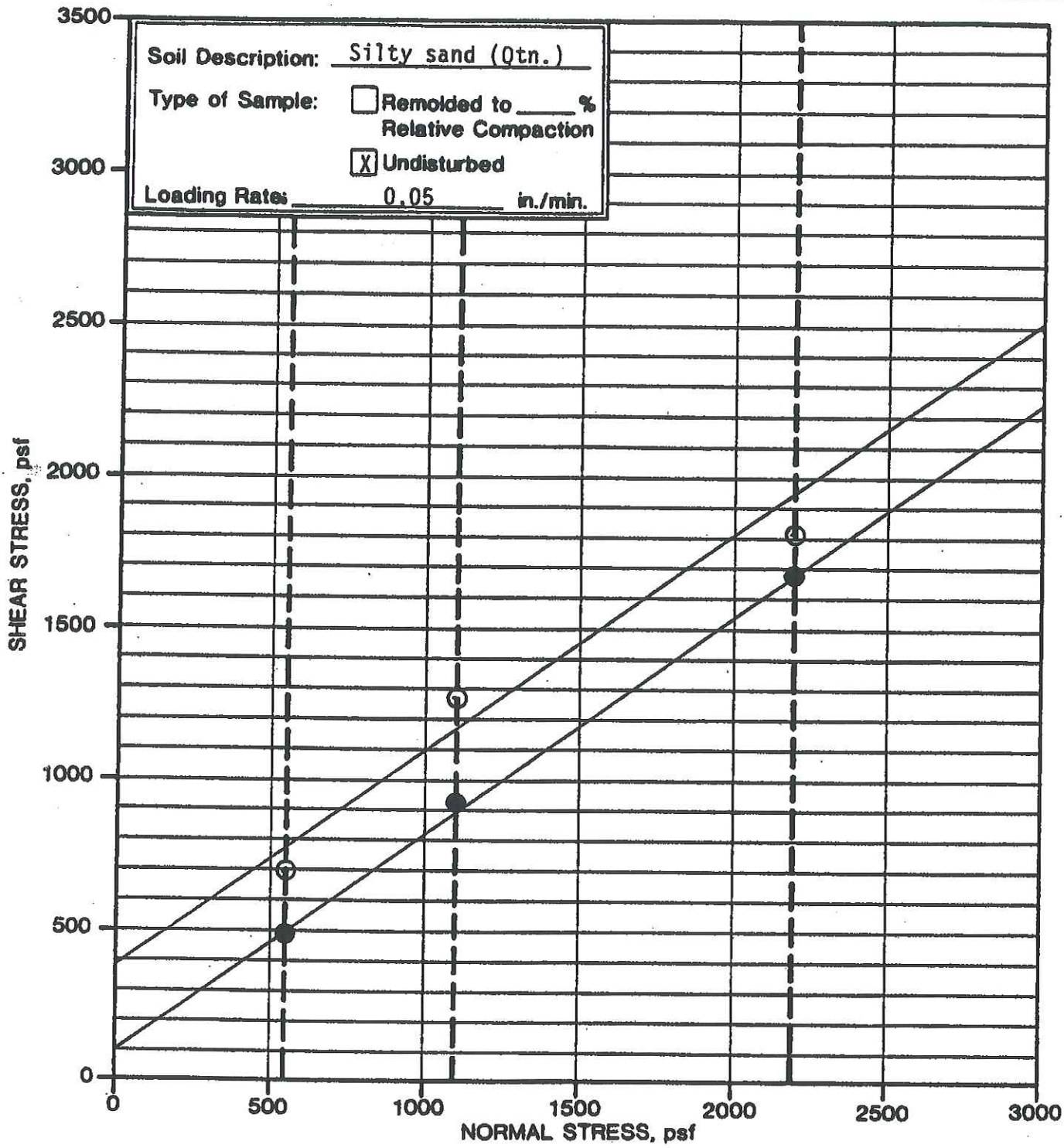


Sample Location	Symbol	Average Moisture Contents Before	After	Friction Angle	Cohesion	Remarks
B-12 @ 10'	○	9.7	16.5	33°	165 (psf)	PEAK
B-12 @ 10'	●	9.7	16.5	31°	70	ULTIMATE

DIRECT SHEAR TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-15

3015 1088

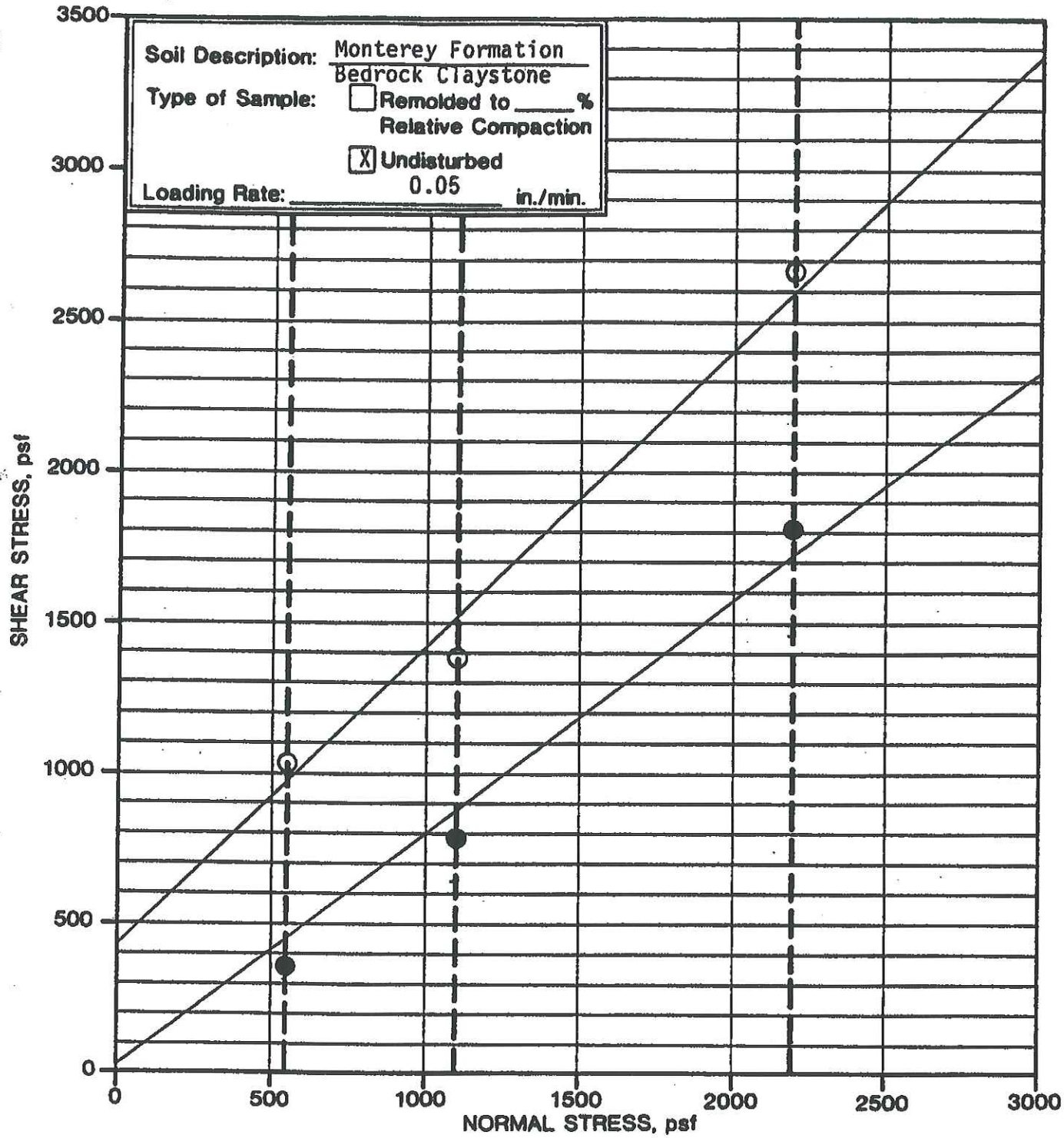


Sample Location	Symbol	Average Moisture Contents Before	After	Friction Angle	Cohesion	Remarks
B-13 @ 20'	○	15.9	18.8	35°	390 (psf)	PEAK
B-13 @ 20'	●	15.9	18.8	35°	100	ULTIMATE

DIRECT SHEAR TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-16

3015 1088



Sample Location	Symbol	Average Moisture Contents Before	After	Friction Angle	Cohesion	Remarks
B-16 @ 47'	○	51.3	52.9	44°	440 (psf)	PEAK
B-16 @ 47'	●	51.3	52.9	37°	30	ULTIMATE

DIRECT SHEAR TEST RESULTS

Project No. 3831025-04
Project Name EAI/RANCHO MALIBU MESA
Date 8/89 Figure No. D-17

3015 1088

January 23, 2015
W.O. 6489

APPENDIX D

BORING LOGS AND LABORATORY TEST RESULTS

BY VAN BEVEREN AND BUTELO

BORING 1

Date Drilled: June 27, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 210 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
							TERRACE DEPOSITS SM - SILTY SAND - fine, porous, brown
	3.6	105		5			
	9.6	108		8			trace clay, not porous, reddish brown [40% Passing No. 200 Sieve]
205	5						
	9.6	117		6			trace fine gravel
	11.8	122		6			
200	10						
	10.5	107		5			
195	15						
	10.1	121		6			
190	20						
	7.7	119		7			trace cobble (up to 6" in size)
							yellowish brown
185	25						
	12.8	117		5			reddish brown
							SP - SAND - fine, light yellowish brown
180	30						
	1.9	101		9			[3 % Passing No. 200 Sieve]
175	35						
	3.7	112		23			some gravel and cobbles (up to 10" in size)
							END OF BORING AT 39 FEET.
170	40						

(Continued on next page)

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: _____ Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

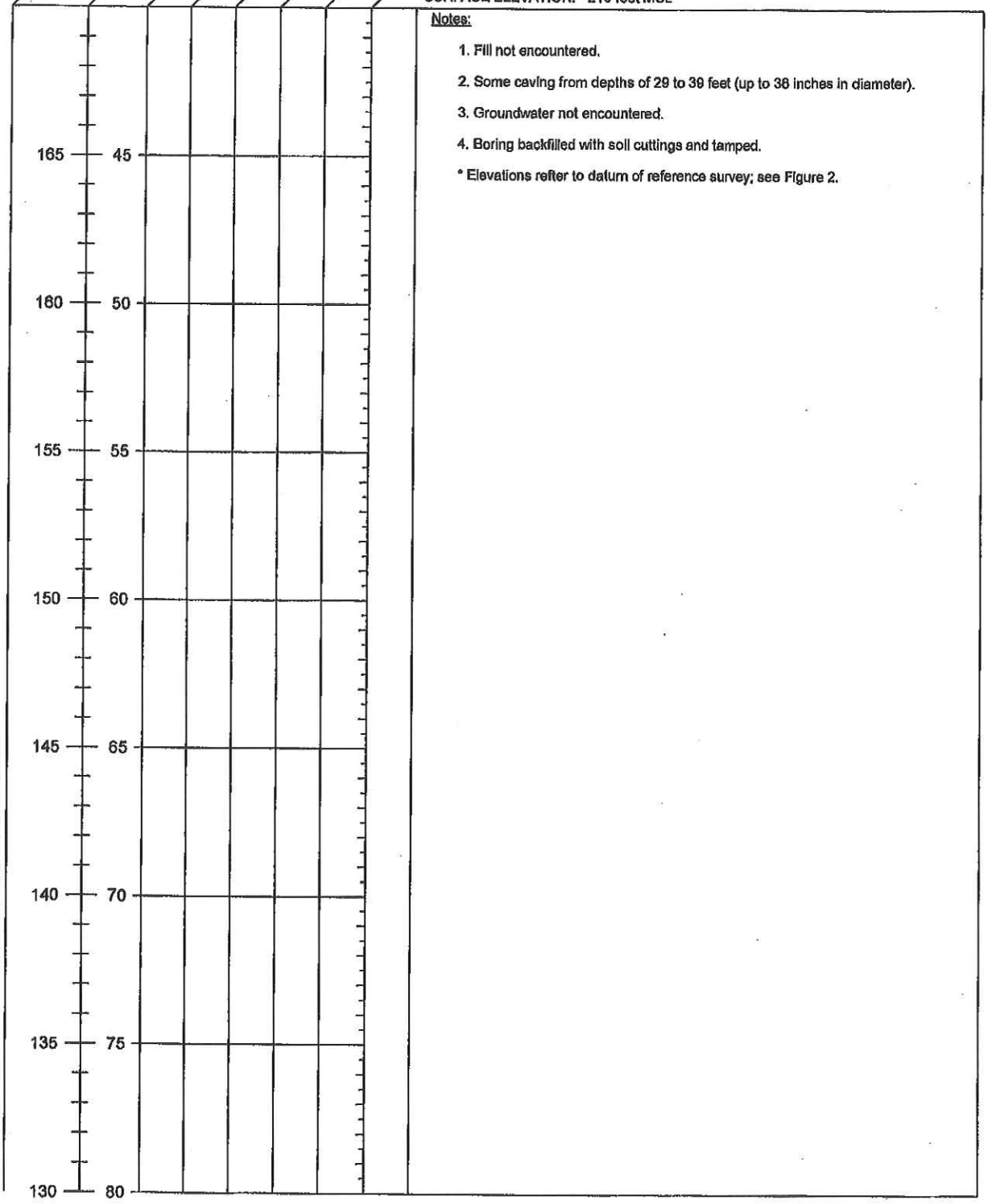
FIGURE A-2.1a

BORING 1
(Continued)

Date Drilled: June 27, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 210 feet MSL*



Notes:

1. Fill not encountered.
2. Some caving from depths of 29 to 39 feet (up to 36 inches in diameter).
3. Groundwater not encountered.
4. Boring backfilled with soil cuttings and tamped.

* Elevations refer to datum of reference survey; see Figure 2.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.1b

BORING 2

Date Drilled: June 27, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 216 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
215	0	7.4	113	9			**TERRACE DEPOSITS** SM - SILTY SAND - fine, few rootlets, slightly porous, reddish brown
		6.6	117	10			trace clay
210	5	4.6	97	9			not porous
		7.2	106	8			
205	10	3.2	122	16			few gravel
200	15	7.5	101	7			some mottling
195	20	12.3	117	5			
190	25	7.2	114	5			porous (up to 1/4 inch)
185	30	5.2	101	11			not porous
180	35	7.9	117	8			
	40						

(Continued on next page)

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: [signature] Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.2a

BORING 2
(Continued)

Date Drilled: June 27, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 216 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION
175	0.9	101		13		
170	45					
165	50					
160	55					
155	60					
150	65					
145	70					
140	75					
	80					

END OF BORING AT 41 FEET.

Notes:

1. Fill not encountered.
2. Some caving from depths of 39 to 41 feet (up to 36 inches in diameter).
3. Groundwater not encountered.
4. Boring backfilled with soil cuttings and tamped.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: [illegible] Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.2b

BORING 3

Date Drilled: June 28, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 234 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT) BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
						FILL SM - SILTY SAND
						TERRACE DEPOSITS SM - SILTY SAND - fine, reddish brown
230		7.6	110	12		
	5	4.8	111	8		trace clay
		4.7	109	8		
225						
	10	6.6	106	10		
		8.4	119	8		
220						
	15	11.1	102	8		porous
		7.4	109	8		not porous
215						
	20	8.9	112	9		slightly porous
210						
	25	9.4	104	6		[28% Passing No. 200 Sieve]
205						
	30	10.5	111	6		not porous, few gravel [36% Passing No 200 Sieve]
200						
	35	9.8	104	8		
195						
	40					

(Continued on next page)

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: _____ Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.3a

BORING 3
(Continued)

Date Drilled: June 28, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 234 feet MSL[4]

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT) BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION
190	45	12.7	119	6	
				6	
185	50			23	
180	55				
175	60				
170	65				
165	70				
160	75				
155	80				

SP-SM - SAND - fine, some silt, light yellowish brown

END OF BORING AT 51 FEET.

Notes:

1. Fill encountered to depth of 8".
2. No caving.
3. Groundwater not encountered.
4. Boring backfilled with soil cutting and tamped.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: _____ Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.3b

BORING 4

Date Drilled: June 26, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 215 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT) BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
						TERRACE DEPOSITS SM - SILTY SAND - fine, light greyish brown
		7.5	111	7		reddish brown
210	5	3.5	89	6		
		5.6	119	8		some subrounded cobbles to 4" in diameter; increased gravel up to 3/4" in diameter, slightly darker reddish brown
205	10	4.4	122	15		Clayey sand layer 4" thick horizontal
200	15	10.3	115	9		Wet and clayey in 2 foot thick zone; yellowish to reddish brown
195	20					layer of sandy gravel from 20 to 22 feet
190	25	10.7	109	9		8" diameter cobbles
185	30	13.1	122	9		trace clay, color orange to dark yellow brown [core bucket used from 32 to 39 feet]
180	35	17.4	111	5		
175	40					END OF BORING AT 39 FEET.

(Continued on next page)

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.4a

Job No: 07-023 By: BL Date: 7-13-2007 Checked: [signature] Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

BORING 4
(Continued)

Date Drilled: June 28, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 215 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION
170	45					
165	50					
160	55					
155	60					
150	65					
145	70					
140	75					
135	80					

Notes:

1. Fill not encountered.
2. No caving.
3. Groundwater not encountered.
4. Boring backfilled with soil cuttings and tamped.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: ✓ Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.4b

BORING 5

Date Drilled: June 29, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (> 25 feet)

SURFACE ELEVATION: 246 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION
245	0	7.1	99	5		
240	5	7.4	116	7		
		8.7	111	6		
235	10	9.3	107	8		
		11.2	124	7		
230	15	10.0	124	7		
225	20	7.5	109	4		
220	25	6.4	106	5		
215	30	7.2	104	6		
210	35					
	40					

TERRACE DEPOSITS
SM - SILTY SAND - fine, some gravel (up to ½" in size), reddish brown

few gravel, trace clay, porous

not porous

some gravel

END OF BORING AT 31 FEET.

Notes:

1. Fill not encountered.
2. No caving.
3. Groundwater not encountered.
4. Boring backfilled with soil cutting and tamped.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: MC Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.5

BORING 6

Date Drilled: July 2, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 252 feet MSL[a]

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT) BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
250						**TERRACE DEPOSITS** SM - SILTY SAND - fine, some gravel (up to ½" in size), reddish brown, 14" topsoil, porous in upper 14", rootlets
		6.2	121	7		
						gravel to 3/4"
	5	7.2	113	11		
245						
		9.0	116	9		some gravel (up to 1" diameter) [27% Passing No. 200 Sieve]
	10					
		8.8	112	6		porous, some clay
240						
	15					
		11.4	108	8		CL - SANDY CLAY - reddish brown, manganese stained
235						cobbles to 4½" diameter, subangular to subrounded, rootlets
	20					
		5.6	117	5		SM - SILTY SAND - some clay, yellow brown to red brown
230						
	25					
		4.8	119	9		
225						
	30					SC - CLAYEY SAND - fine, reddish brown
		13.9	107	12		
220						
	35					SM - SILTY SAND - fine, some gravel (up to 3" in size), reddish brown
		2.1	106	21		
215						
	40					

(Continued on next page)

Job No: 07-023 By: BL Date: 7-13-2007 Checked: [signature] Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.6a

BORING 6
(Continued)

Date Drilled: July 2, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 252 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT) BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
210	19.1	109		8		some clay, some gravel (up to ½" in size), mottled brown and dark brown
45						
205	10.4	96		12		
50						
200	18.6	102		23		CL - SANDY CLAY - some gravel (up to ½" in size), mottled brown and dark brown
55						
195	16.7	91		22		**BEDROCK** Conejo volcanics, weathered basalt, gray, friable
60						
190	21.7	101		19		Increasing sand [LL=43, PI=30]
65						**END OF BORING AT 61 FEET.**
185						
70						
180						
75						
175						
80						

Notes:

1. Fill not encountered.
2. No caving.
3. Groundwater not encountered.
4. Boring backfilled with soil cuttings and tamped.

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.6b

BORING 7

Date Drilled: July 2, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 231 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry Wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
230							**FILL** SM - SILTY SAND - fine, abundant gravel and cobbles, greyish brown
		7.3	121	10			**TERRACE DEPOSITS** SM - SILTY SAND - fine, reddish brown
	5	8.6	109	5			some gravel (up to 1½ " in size), slightly porous
225		3.8	104	6			not porous
	10	5.2	101	7			some gravel (up to ½" in size)
220	15	5.0	103	5			porous
215	20	5.7	112	7			
210	25	4.8	103	7			
205	30	5.2	113	13			not porous
200	35	10.1	103	10			
195	40						

(Continued on next page)

Job No: 07-023 By: BL Date: 7-13-2007 Checked: [illegible] Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.7a

BORING 7
(Continued)

Date Drilled: July 2, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 231 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
190	4.2	116		11			some gravel (up to 1" in size)
185	6.4	104		13			trace clay
180	2.8	103		21			
175	7.0	96		26			porous
170	5.6	102		16			

END OF BORING AT 61 FEET.

Notes:

1. Fill soils encountered to a depth of 1 foot.
2. No caving.
3. Groundwater not encountered.
4. Boring backfilled with soil cutting and tamped.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.7b

BORING 8

Date Drilled: July 6, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 184 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION	
180	5	8.8	114	5			TERRACE DEPOSITS SM - SILTY SAND - fine, some cobbles (up to 6" in size), reddish brown
		7.6	108	5			no cobbles, some gravel (up to 1/4" in size)
175	10	13.0	122	7			slightly porous
		3.9	115	8			not porous
170	15	5.2	108	6			some gravel (up to 1 " in size)
165	20	6.9	109	9			slightly porous
160	25	4.2	114	11			not porous
155	30	3.6	118	15			
150	35	4.3	105	11			some gravel (up to ½" in size)
145	40						

(Continued on next page)

Job No: 07-023 By: BL Date: 7-13-2007 Checked: VBC Printed: 9-27-07 [LOG FOR FIELD: 07-023.GPJ]

The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.8a

BORING 8
(Continued)

Date Drilled: July 6, 2007
Equipment Used: 24" Diameter Bucket

Depth to Water: Not Encountered
Driving Weight & Drop: 2,500 pounds (0 to 25 feet)
1,000 pounds (26 to 45 feet)
750 pounds (>45 feet)

SURFACE ELEVATION: 184 feet MSL*

ELEVATION (feet)	DEPTH (feet)	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	N VALUE (SPT)	BLOW COUNT (blows / 12-inches)	SAMPLE LOCATION
140	45	3.2	107		10	
135	50					
130	55					
125	60					
120	65					
115	70					
110	75					
105	80					

END OF BORING AT 42 FEET.

Notes:

1. Fill not encountered.
2. Some caving at 41 to 42 feet.
3. Groundwater not encountered.
4. Boring backfilled with soil cutting and tamped.

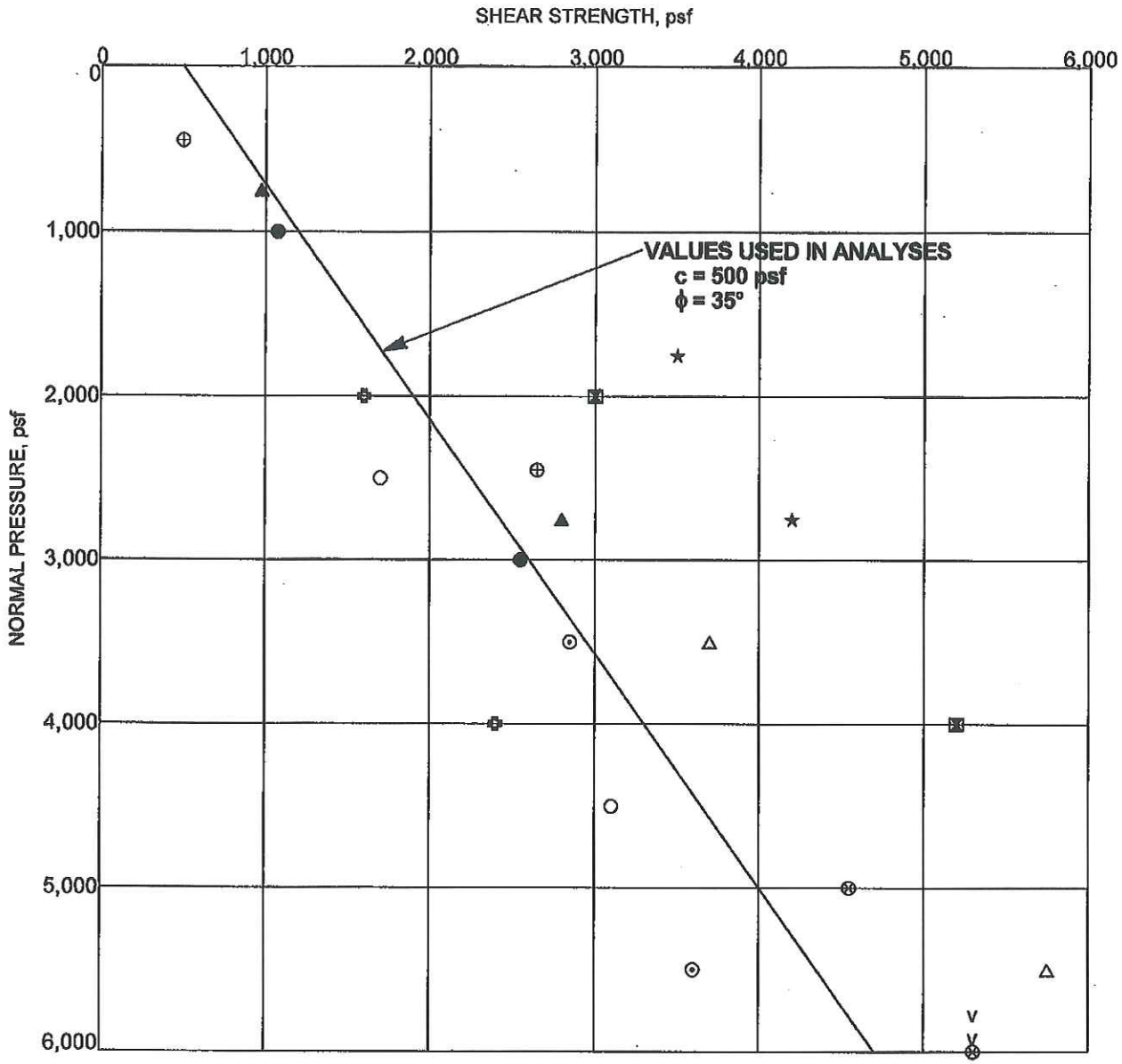
The log of subsurface conditions shown hereon applies only at the specific boring location and at the date indicated. It is not warranted to be representative of subsurface conditions at other locations and times.

Job No: 07-023 By: BL Date: 7-13-2007 Checked: Printed: 9-27-07 [LOG FOR FIELD; 07-023.GPJ]

LOG OF BORING

VAN BEVEREN & BUTELO, INC.

FIGURE A-2.8b



NOTE: "*" indicates sample was soaked to near saturation prior to testing.

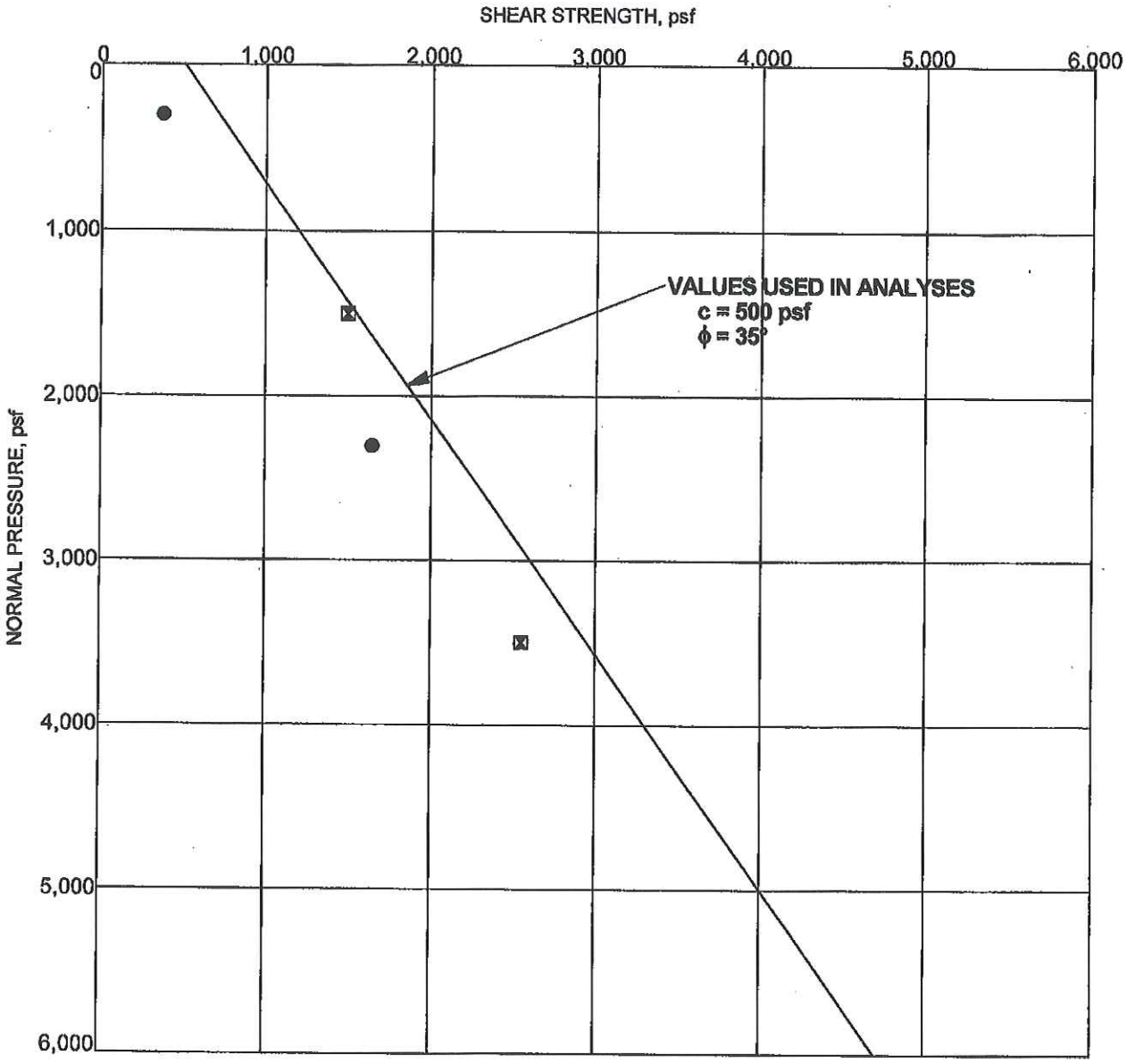
Specimen Identification		Classification	c	ϕ	
●	Boring 1 at 10.5 feet	SILTY SAND	338	36	*
⊠	Boring 1 at 20.5 feet	SILTY SAND	800	48	
▲	Boring 3 at 7.5 feet	SILTY SAND	291	42	*
★	Boring 3 at 17.5 feet	SILTY SAND	2275	35	
⊙	Boring 4 at 35.5 feet	SILTY SAND	1538	21	*
✠	Boring 5 at 20.5 feet	SILTY SAND	800	22	*
○	Boring 5 at 30.5 feet	SILTY SAND	-50	35	*
△	Boring 6 at 40.5 feet	SANDY SILT	113	46	*
⊗	Boring 6 at 60.5 feet	WEATHERED BASALT	2675	21	*
⊕	Boring 7 at 4.5 feet	SILTY SAND	16	47	*

DIRECT SHEAR TEST DATA
UNDISTURBED SAMPLES, PEAK STRENGTH

VAN BEVEREN & BUTELO, INC.

FIGURE A-4.1a

DIRECT_SHEAR_6_10_07-023.GPJ VB_B.GDT 9/28/07



NOTE: "*" indicates sample was soaked to near saturation prior to testing.

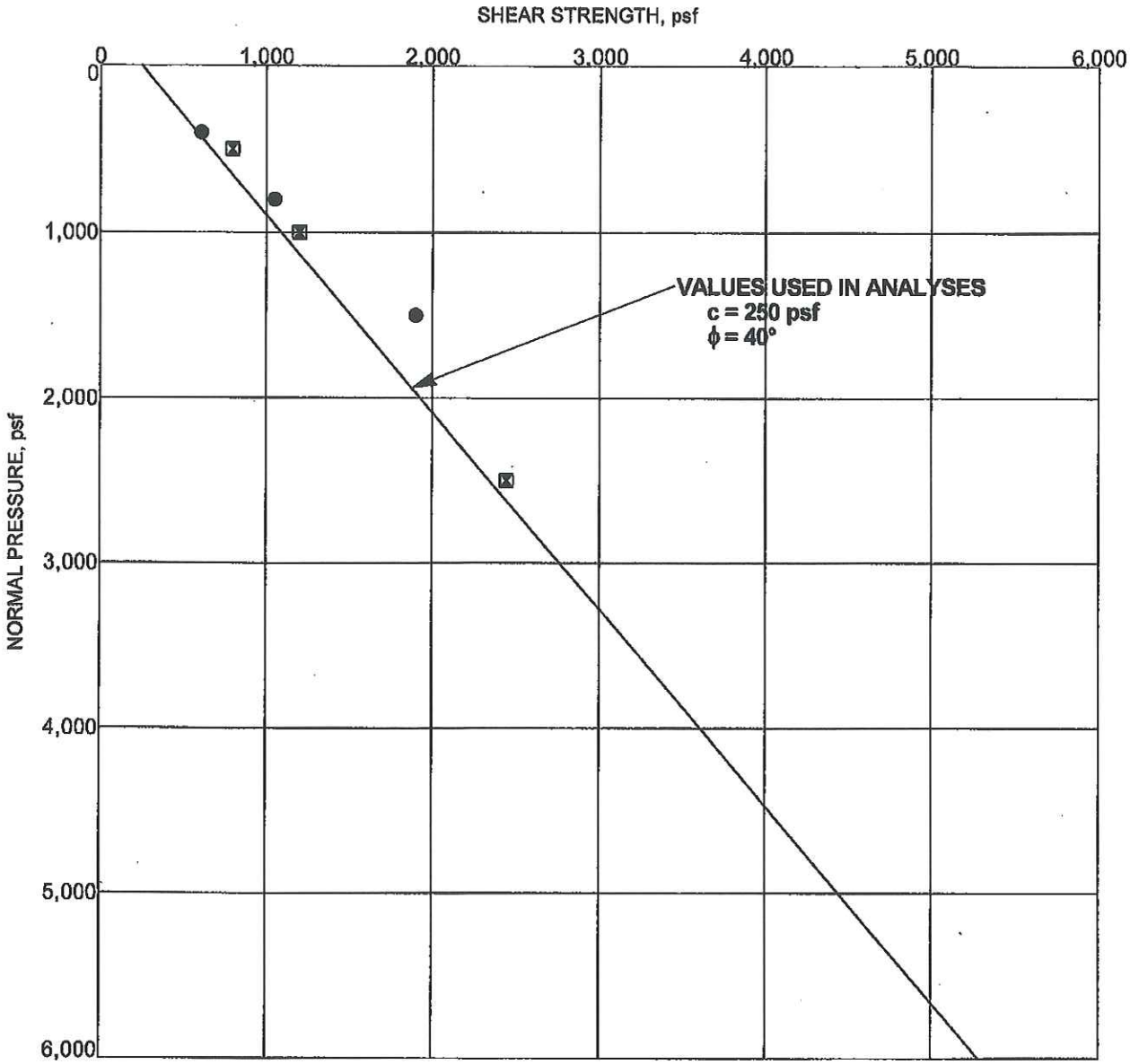
	Specimen Identification	Classification	c	ϕ	
●	Boring 8 at 2.5 feet	SILTY SAND	178	33	*
⊠	Boring 8 at 15.5 feet	SILTY SAND	713	28	*

DIRECT SHEAR TEST DATA
UNDISTURBED SAMPLES, PEAK STRENGTH

VAN BEVEREN & BUTELO, INC.

FIGURE A-4.1b

DIRECT SHEAR 6_10 07-023.GPJ VB_B.GDT 9/28/07



NOTE: "*" indicates sample was soaked to near saturation prior to testing.

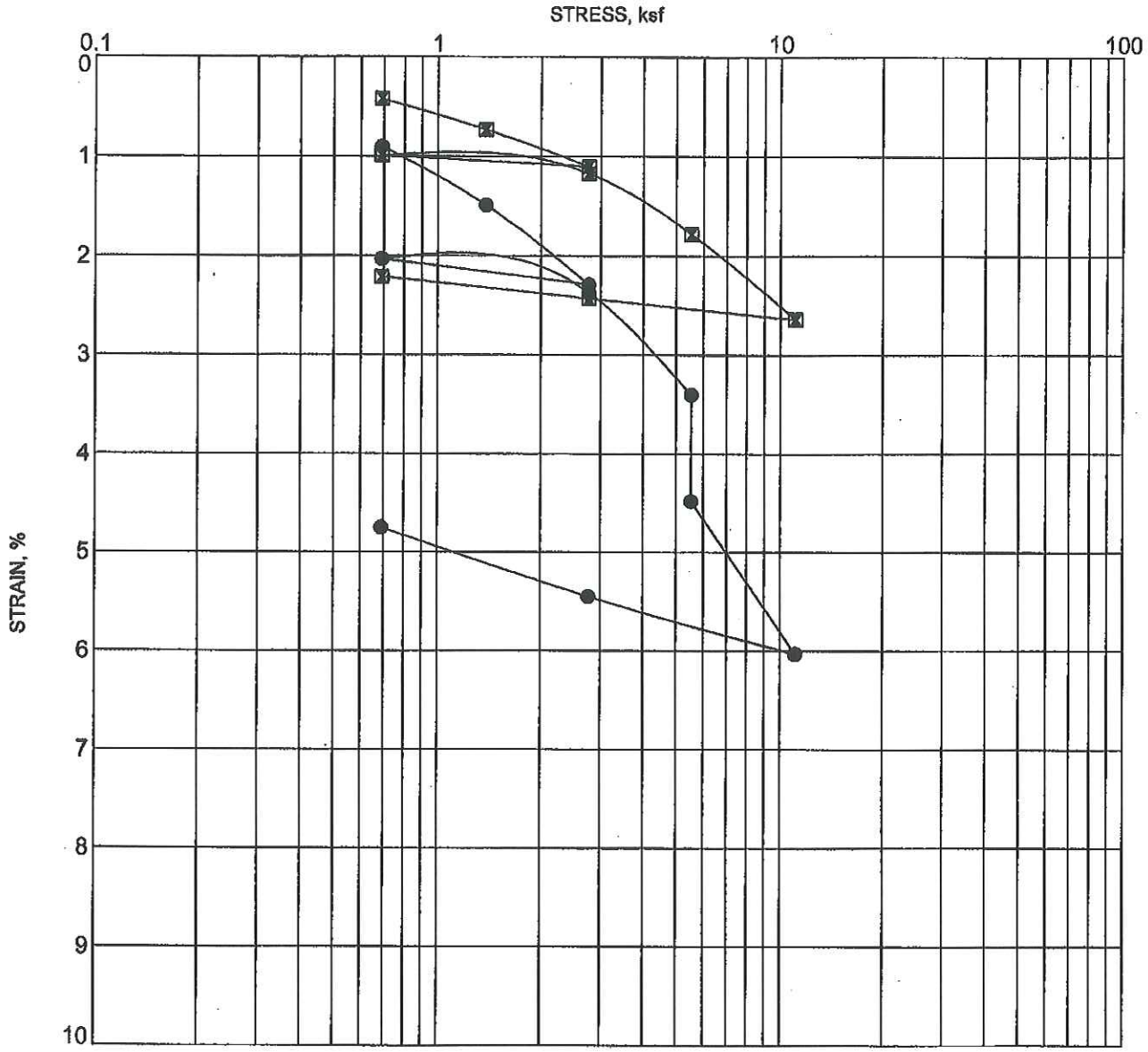
	Specimen Identification	Classification	c	ϕ	
●	Boring 1 at 4 to 7 feet	SILTY SAND	127	50	*
⊠	Boring 5 at 13 to 15 feet	SILTY SAND	381	40	*

DIRECT SHEAR TEST DATA
REMOLDED SAMPLES (90%), PEAK STRENGTH

VAN BEVEREN & BUTELO, INC.

FIGURE A-4.2

DIRECT SHEAR 6_10 07-023.GPJ VB_B.GDT 9/27/07



NOTE: Samples tested at field moisture content

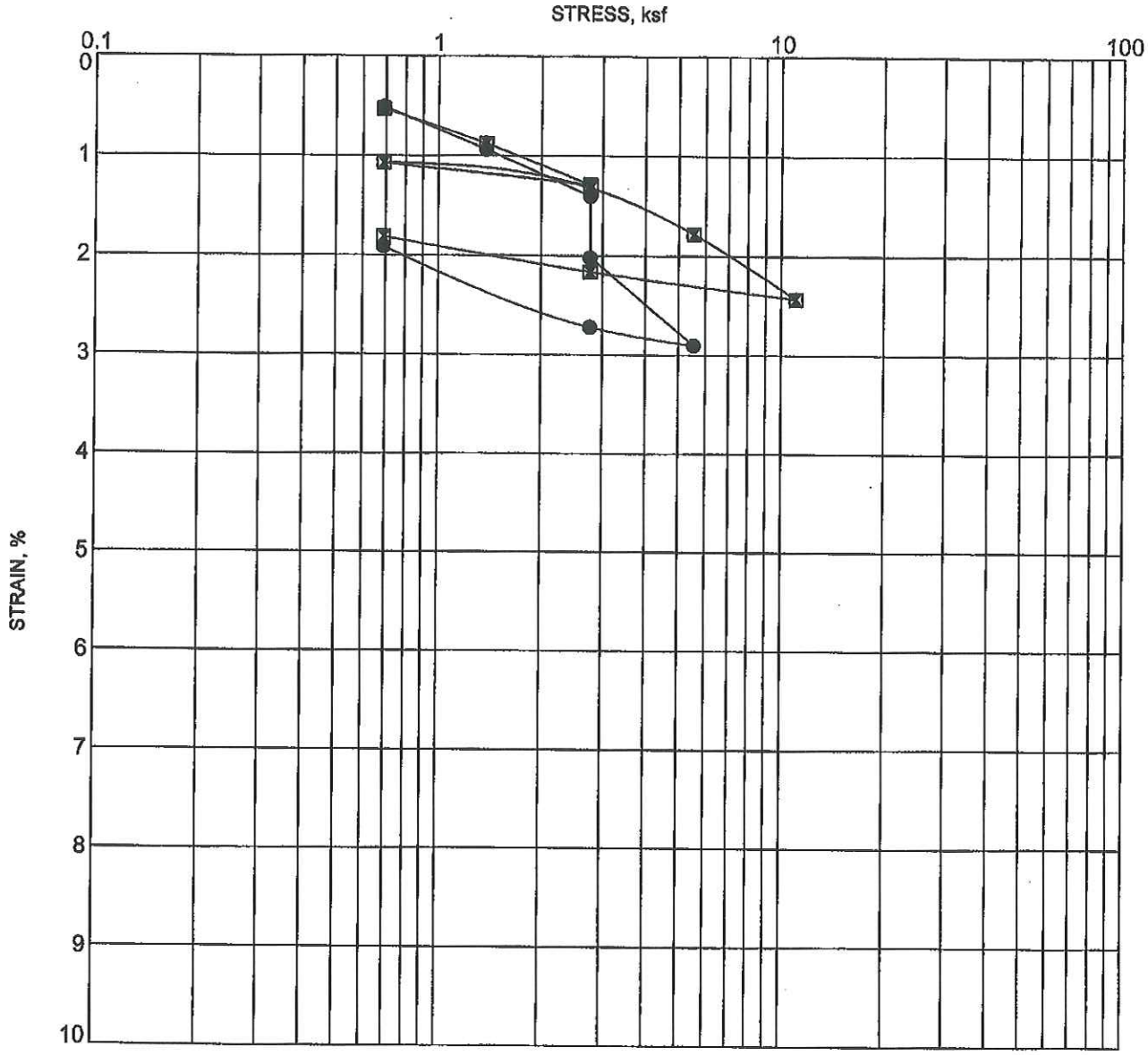
	Specimen Identification	Classification	
●	Boring 1 at 10.5 feet	SILTY SAND	* 5.54 ksf
⊠	Boring 1 at 25.5 feet	SILTY SAND	

CONSOL10 07-023.GPJ VB_B.GDT 9/27/07

CONSOLIDATION TEST DATA

VAN BEVEREN & BUTELO, INC.

FIGURE A-5.1



NOTE: Samples tested at field moisture content

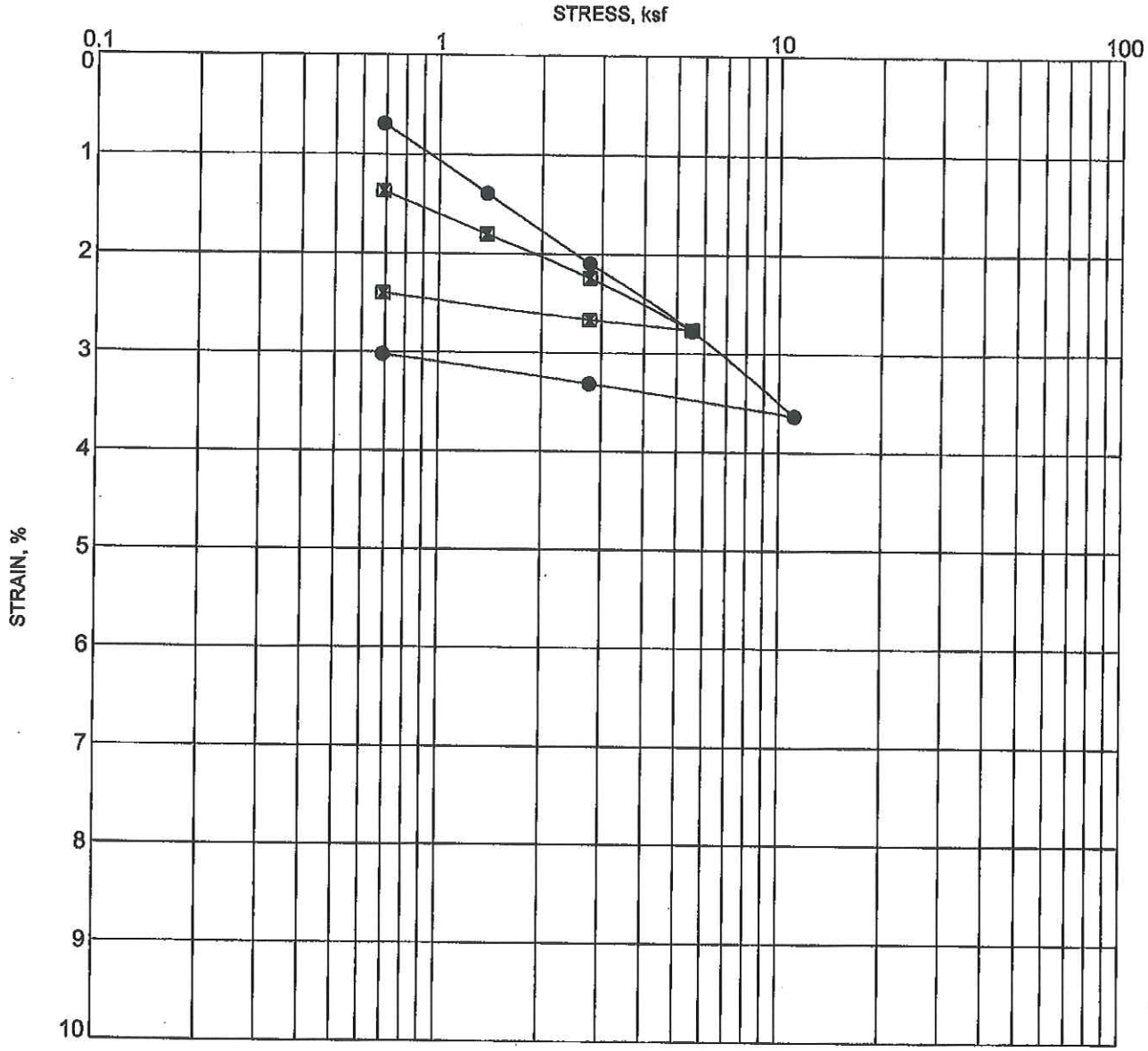
	Specimen Identification	Classification	
●	Boring 2 at 3.5 feet	SILTY SAND	* 2.77 ksf
⊠	Boring 3 at 17.5 feet	SILTY SAND	

CONSOL10 07-023.GPJ VB_8.GDT 9/27/07

CONSOLIDATION TEST DATA

VAN BEVEREN & BUTELO, INC.

FIGURE A-5.2



NOTE: Samples tested at field moisture content

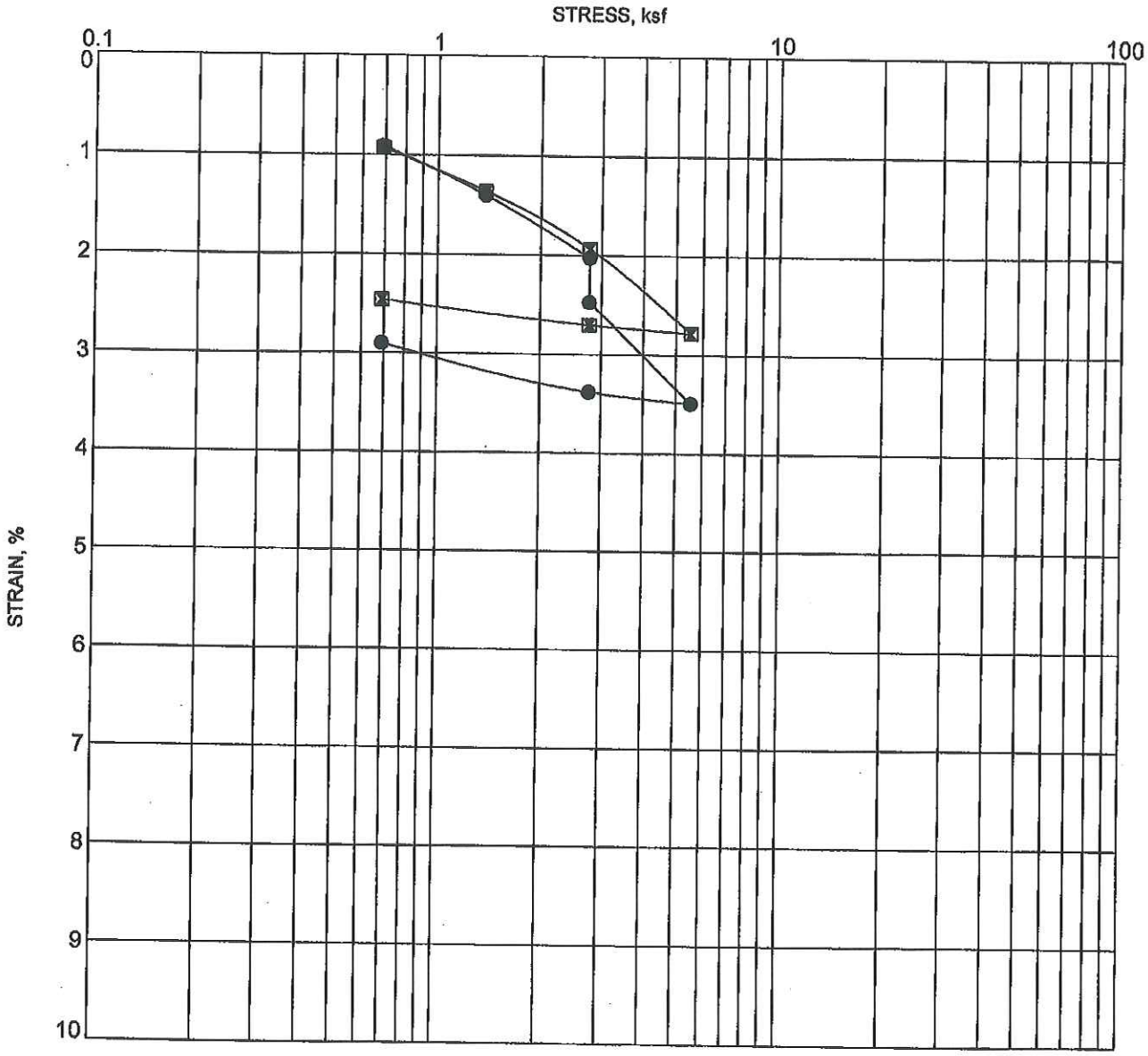
	Specimen Identification	Classification
●	Boring 3 at 30,5 feet	SILTY SAND
⊠	Boring 4 at 2.5 feet	SILTY SAND

CONSOL10 07-023.GPJ VB_B.GDT 9/27/07

CONSOLIDATION TEST DATA

VB&B VAN BEVEREN & BUTELO, INC.

FIGURE A-5.3



NOTE: Samples tested at field moisture content

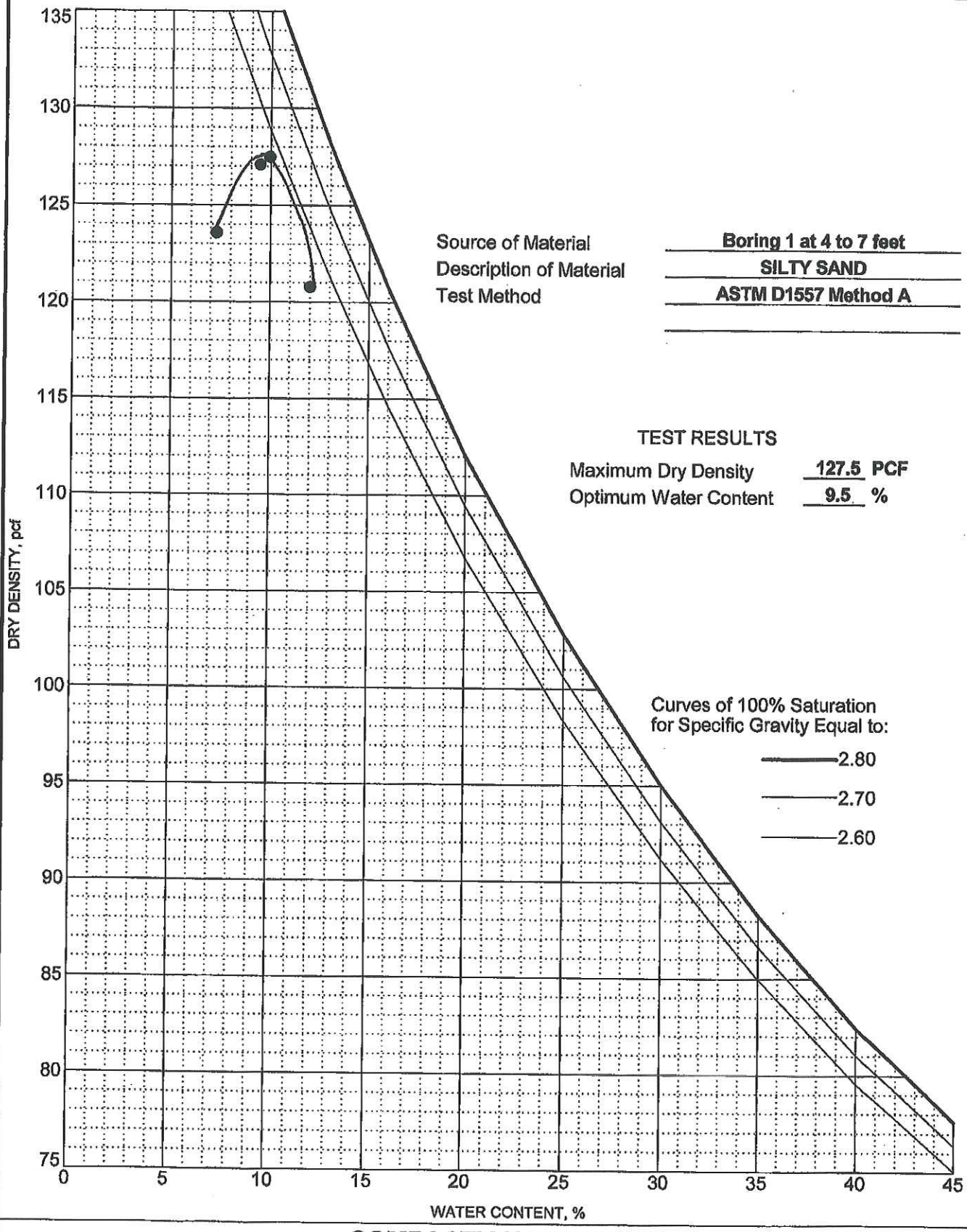
	Specimen Identification	Classification	
●	Boring 1 at 4 to 7 feet	SILTY SAND	* 2.77 ksf
⊠	Boring 3 at 2 to 4 feet	SILTY SAND	

CONSOLIDATION TEST DATA

CONSOL10 07-023.GPJ VB_B.GDT 9/27/07

VAN BEVEREN & BUTELO, INC.

FIGURE A-5.4

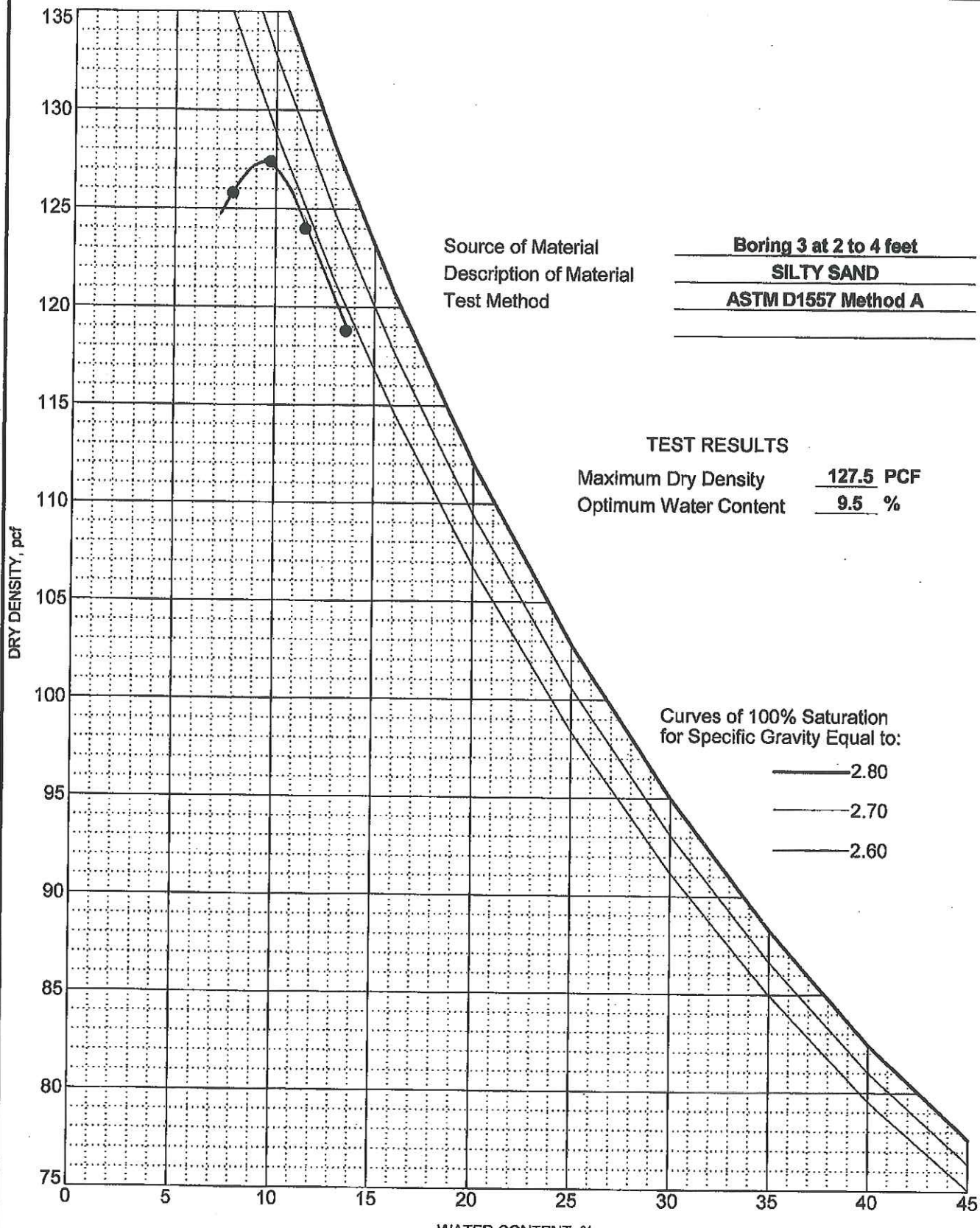


COMPACTION TEST DATA

COMPACTION PARA 07-023.GPJ VB_B.GDT 9/27/07

VAN BEVEREN & BUTELO, INC.

FIGURE A-6.1

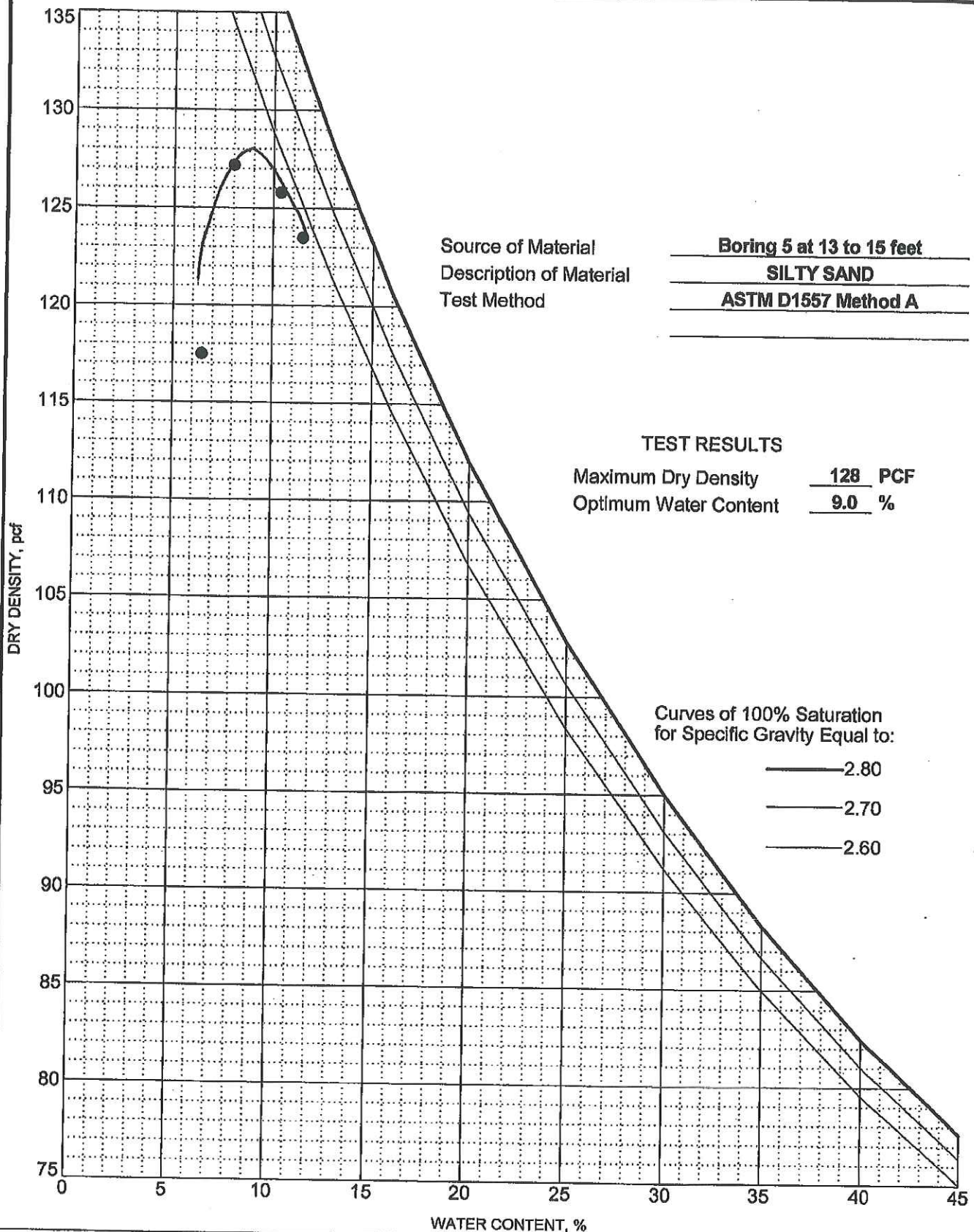


COMPACTION TEST DATA

VAN BEVEREN & BUTELO, INC.

FIGURE A-6.2

COMPACTION_PARA 07-023.GPJ VB_B.GDT 9/27/07



COMPACTION_PARA 07-023.GPJ VB_B.GDT 9/27/07

COMPACTION TEST DATA

VAN BEVEREN & BUTELO, INC.

FIGURE A-6.3

R - VALUE DATA SHEET

P.N. 07-023
Rancho Malibu

PROJECT NUMBER 34767 BORING NUMBER: B-1 @ 4'-7'

SAMPLE DESCRIPTION: Brown Sandy Clay

Item	SPECIMEN		
	a	b	c
Mold Number	4	5	6
Water added, grams	50	72	122
Initial Test Water, %	11.2	13.2	17.6
Compact Gage Pressure,psi	120	50	30
Exudation Pressure, psi	562	390	141
Height Sample, Inches	2.38	2.59	2.64
Gross Weight Mold, grams	3059	3105	3118
Tare Weight Mold, grams	1977	1975	1976
Sample Wet Weight, grams	1082	1130	1142
Expansion, Inches x 10exp-4	44	4	0
Stability 2,000 lbs (160psi)	22 / 52	52 / 117	70 / 155
Turns Displacement	3.72	3.78	4.47
R-Value Uncorrected	58	20	2
R-Value Corrected	55	21	2
Dry Density, pcf	123.9	116.8	111.4
DESIGN CALCULATION DATA			
Traffic Index Assumed:	4.0	4.0	4.0
G.E. by Stability	0.46	0.81	1.00
G. E. by Expansion	1.47	0.13	0.00

Equilibrium R-Value 12 by EXUDATION

Examined & Checked: 7 /17/ 07

REMARKS:
Gf = 1.25
0.0% Retained on the 3/4" Sieve.

Steven R. Marvin RCE 30659

The data above is based upon processing and testing samples as received from the field. Test procedures in accordance with latest revisions to Department of Transportation, State of California, Materials & Research Test Method No. 301.

LaBelle • Marvin

FIGURE A-7.1

R-VALUE GRAPHICAL PRESENTATION

PROJECT NO. 34767 P.D. 07.023

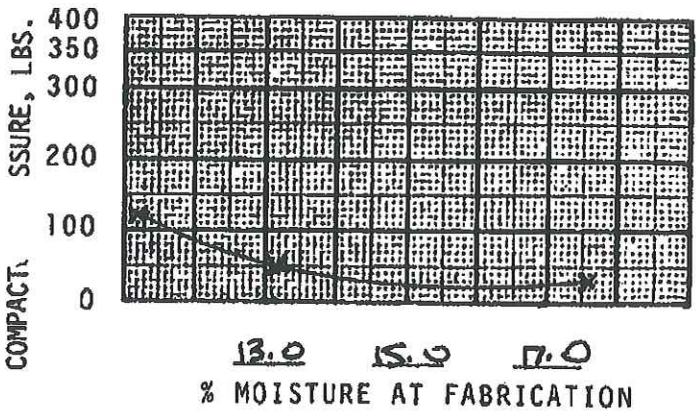
BORING NO. B-1 @ 4'-7' Rancho Malibu

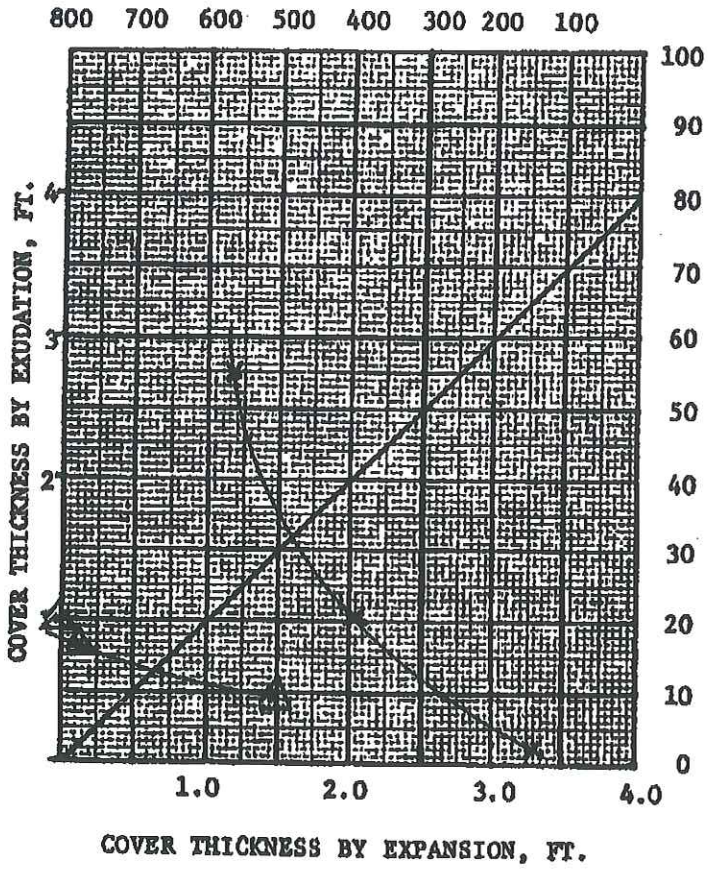
DATE 7-17-07

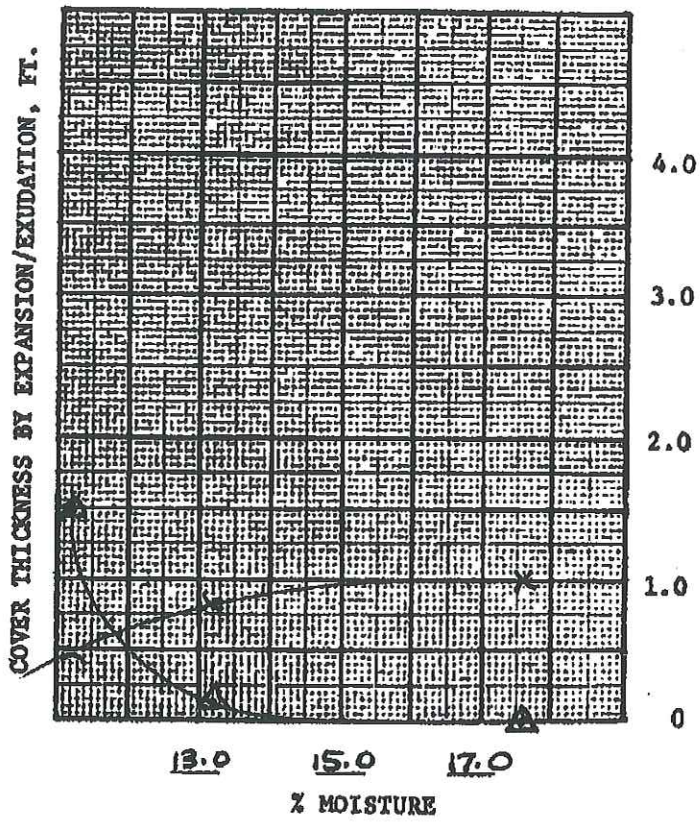
TRAFFIC INDEX Assume 4.0

R-VALUE BY EXUDATION 12

R-VALUE BY EXPANSION ~







R-VALUE vs. EXUD. PRES.

T by EXUDATION

EXUD. T vs. EXPAN. T

T by EXPANSION

REMARKS

GF=1.25

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PROFESSIONAL PAVEMENT ENGINEERING

FIGURE A-7.2

R - VALUE DATA SHEET

P.N. 07-023
Rancho Malibu

PROJECT NUMBER 34767 BORING NUMBER: B-5 @ 13'-15'

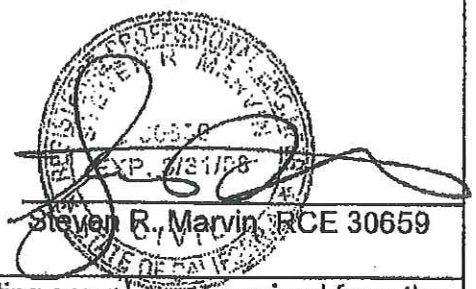
SAMPLE DESCRIPTION: Brown Sandy Clay

Item	SPECIMEN		
	a	b	c
Mold Number	7	8	9
Water added, grams	70	120	41
Initial Test Water, %	14.7	19.2	12.1
Compact Gage Pressure,psi	75	30	160
Exudation Pressure, psi	456	146	631
Height Sample, Inches	2.43	2.67	2.41
Gross Weight Mold, grams	3061	3094	2883
Tare Weight Mold, grams	1968	1964	1789
Sample Wet Weight, grams	1093	1130	1094
Expansion, Inches x 10exp-4	40	0	80
Stability 2,000 lbs (160psi)	45 / 117	65 / 154	29 / 78
Turns Displacement	2.99	4.68	2.94
R-Value Uncorrected	24	2	47
R-Value Corrected	23	2	45
Dry Density, pcf	118.8	107.5	122.7
	DESIGN	CALCULATION	DATA
Traffic Index Assumed:	4.0	4.0	4.0
G.E. by Stability	0.79	1.00	0.56
G. E. by Expansion	1.33	0.00	2.67

Equilibrium R-Value 12 by EXUDATION

Examined & Checked: 7 /17/ 07

REMARKS:
Gf = 1.25
0.0% Retained on the 3/4" Sieve.



The data above is based upon processing and testing samples as received from the field. Test procedures in accordance with latest revisions to Department of Transportation, State of California, Materials & Research Test Method No. 301.

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FIGURE A-7.3

R-VALUE GRAPHICAL PRESENTATION

PROJECT NO. 34767 T.O. 07-023

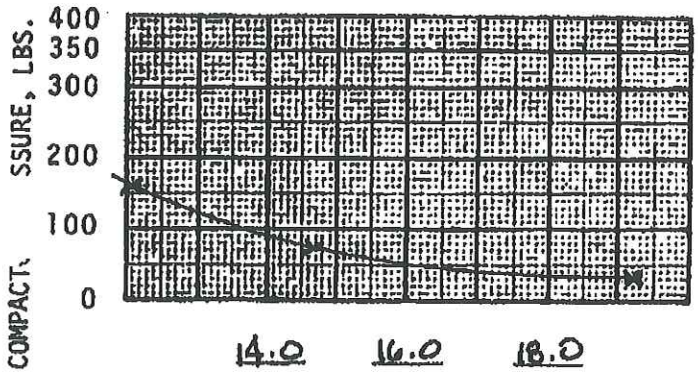
BORING NO. B-5 @ 13'-15' Rancho Malibu

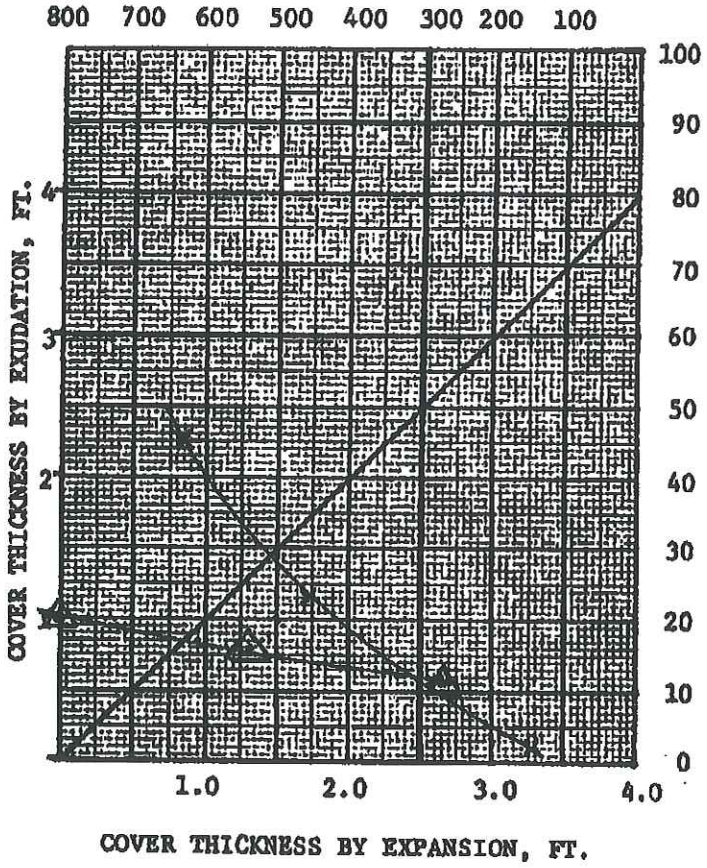
DATE 7-17-07

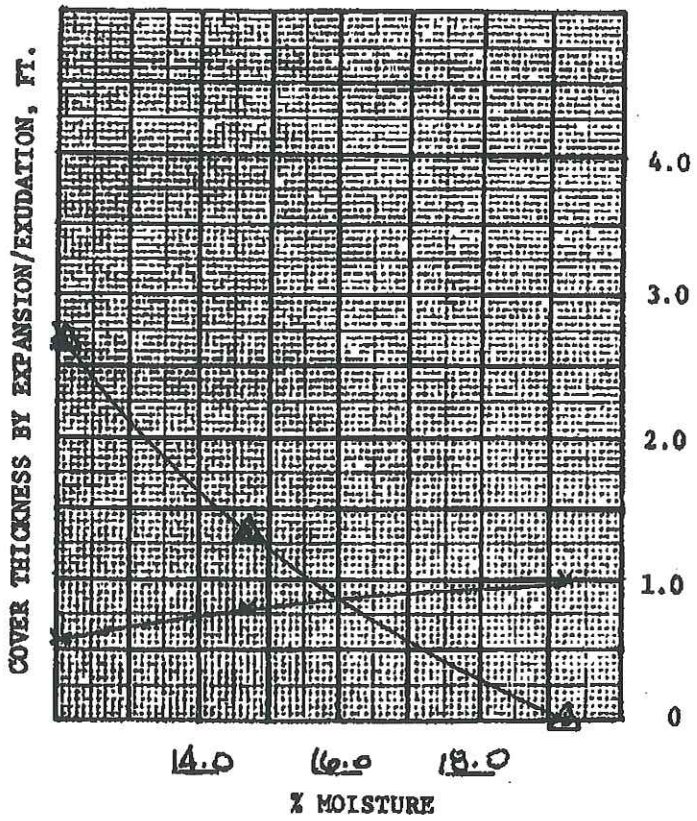
TRAFFIC INDEX Assume 4.0

R-VALUE BY EXUDATION 12

R-VALUE BY EXPANSION 12







R-VALUE vs. EXUD. PRES.

T by EXUDATION

EXUD. T vs. EXPAN. T

T by EXPANSION

REMARKS GF=1.25

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FIGURE A-7.4

Atlantic Consultants

112 Bunker Court
Folsom, CA 95630
(ph) 916.649.8420 (fax) 916.983.1036
Kent@AtlanticCorrosionEngineers.com
corrpricess@ardennet.com
www.AtlanticCorrosionEngineers.com

July 23, 2007

Van Beveren & Butelo, Inc.
Attention: Victor Langharr
706 W. Broadway, Suite 201
Glendale, CA 91204

Atlantic Job No.: 2007-066

Subject: Soil Chemistry Analysis for Van Beveren & Butelo, Inc. Job # 07-023
4 Samples: B-1@ 1-3', B-3@ 2-4', B-7@ 2.5' and B-5@ 2.5' (Rancho Malibu)

Sample Number	As Rec'd Resistivity (ohm-cm)	[1]Minimum Resistivity (ohm-cm)	[2]pH	[3]Sulfate %	[3]Chloride %	(As Rec'd) Description
B-1	33,600	4,800	6.87	0.0044	0.0193	Medium Brown, moist
B-3	2,200	1,000	7.73	0.0130	0.0195	Medium Brown, moist
B-7	72,000	1,600	6.78	0.0062	0.0180	Light Brown Gravely, dry
B-5	4,400	1,400	7.04	0.0033	0.0213	Medium Brown, moist

NOTE: SAMPLES WERE ANALYZED IN ACCORDANCE WITH THE FOLLOWING METHODS.
1. MINIMUM RESISTIVITY DETERMINED BY SOIL BOX METHOD. (PER ASTM G-57)
2. PH MEASURED BY POTENTIOMETRIC METHOD USING STANDARD ELECTRODES. (PER CAL TRANS. #643)
3. CHLORIDE AND SULFATE WERE ANALYZED IN ACCORDANCE WITH EPA METHODS FOR CHEMICAL ANALYSIS FOR WATER AND WASTE, NO. 300 EPA-600/4-79-020. CONCENTRATION BY WEIGHT OF DRY SOIL.

CONCLUSIONS:

Material	Corrosion Class	Recommendation
Concrete	Negligible for Sulfate exposure and Chloride exposure, pH is neutral to basic. (UBC Table 19-A-4)	-Type II Portland cement for concrete with a maximum water cement ratio of 0.50 and a minimum of 3 inches of cover over steel reinforcement. It is suggested that a 6 mil polyethylene barrier be placed between concrete slabs and soil to reduce intrusion of moisture, and chlorides into the concrete slabs.
Steel Cast/Ductile Iron Mortar Coated Steel	Moderately to Mildly Corrosive	- Install corrosion monitoring and cathodic protection for buried ferrous metal piping. - Provide electrical continuity along steel and ductile iron piping, to facilitate the installation of corrosion monitoring and cathodic protection, if required in the future. - Electrically isolate underground metal piping from above grade piping and other metallic structures. - Use separate ground rods for grounding interior piping.
Copper Piping	Corrosive Not tested for Ammonia NOTE: The soils were not tested for ammonium. Even trace amounts of ammonium can cause failure of copper piping.	- Overhead plumbing is the most effective method of corrosion control. - Copper pipes should not be installed in soils, which may contain ammonia without cathodic protection. - If Copper pipes are installed below ground, the soils should be tested for ammonia and Keldahl nitrogen. - Electrical isolation between hot and cold water lines and between buried copper and steel piping and structural steel should be maintained. - If ammonia is present, coat and cathodically protect any buried copper piping.

FIGURE A-8.1

Atlantic Consultants

112 Bunker Court
Folsom, CA 95630
(ofi) 916.849.6420 (fax) 916.983.1638
Kerri@AtlanticCorrosionEngineers.com
corprinboss@ardennet.com
www.AtlanticCorrosionEngineers.com

The test results and recommendations are based on the samples submitted, which may not be representative of overall site conditions. Additional sampling may be required to more fully characterize soil conditions.

Sincerely,
ATLANTIC CONSULTANTS, INC.

Kerri M. Howell, P.E.
President

FIGURE A-8.2

January 23, 2015
W.O. 6489

APPENDIX E

TEMPORARY STABILITY ANALYSES

January 23, 2015
W.O. 6489

APPENDIX E

TEMPORARY STABILITY ANALYSES

Soil Parameters: Soil properties used in our slope stability analyses, which include cohesion, friction angle, and unit weight, are shown on Table E-1 and were obtained from the referenced GSC reports. Shear test summaries for both peak and residual strength parameters were created for Certified Artificial Fill.

TABLE E-1
SHEAR TEST DATA SUMMARY

Soil Description	Peak Values		Resheared Values		Unit Weight (pcf)
	c (psf)	ϕ (degrees)	c (psf)	ϕ (degrees)	
Certified Artificial Fill (Caf)	200	27	150	22.5	130
Qalo	400	30	400	30	130
Qtn/Qtm	300	35	100	34.5	130
Bedrock	310	36.5	100	32.5	130
Slide Plane	395	16	395	16	130

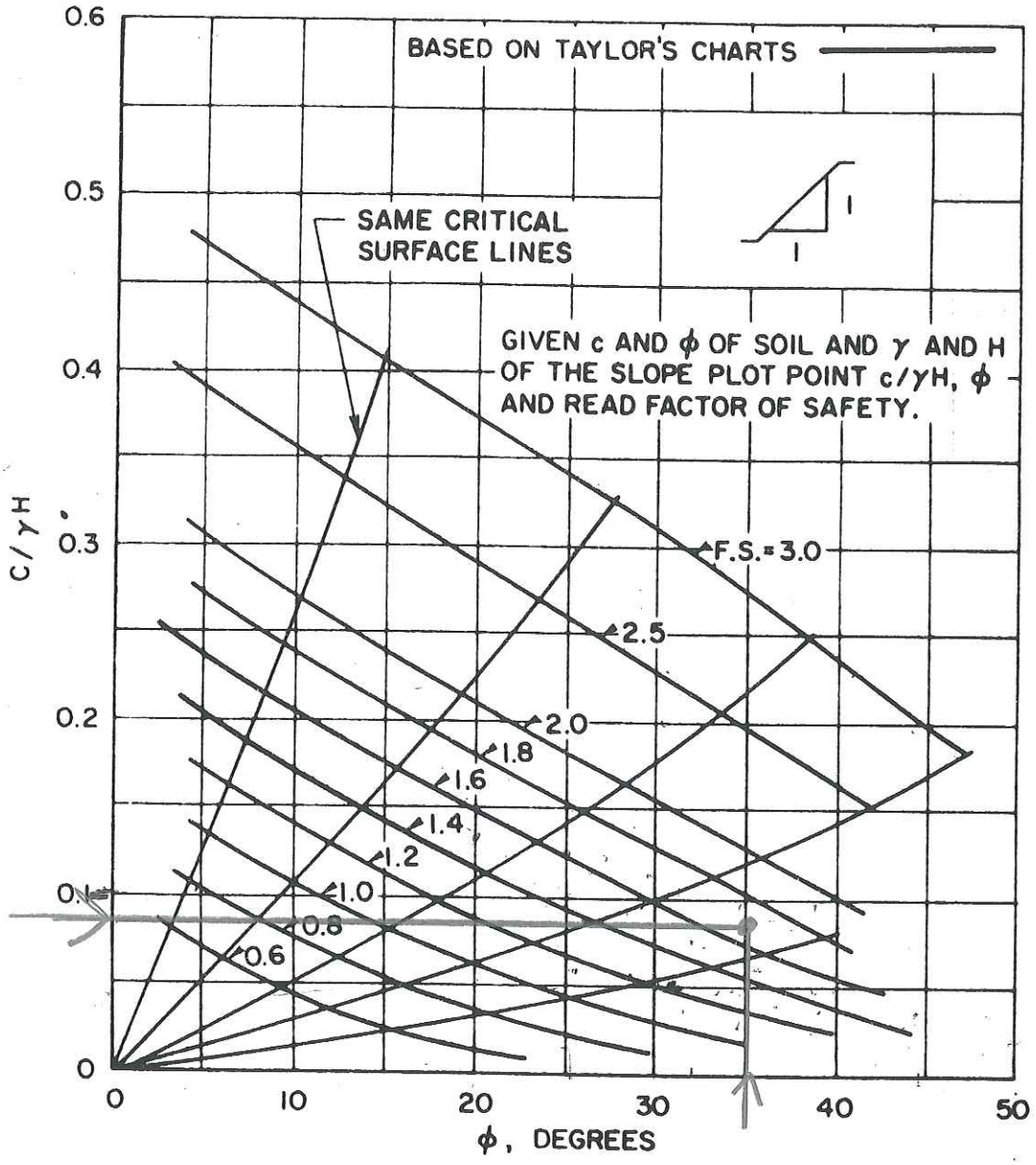


FIG. 10.—F-CONTOURS FOR SLOPE 1:1

$H = 25\ ft$

$\gamma = 130\ pcf$

$c = 300\ psf$

$\phi = 35^\circ$

$c/\gamma H = 0.9$

$FS = 1.65 > 1.25$

OK

APPENDIX VI

Geotechnical Report—GeoSoils Update

RESPONSE TO CITY OF MALIBU GEOTECHNICAL REVIEW SHEET
GEOTECHNICAL REVIEW COMMENTS, DATED JUNE 11, 2015,
Regarding Malibu Memorial Cemetery,
Tentative Tract Map 69653, 4000 Malibu Canyon Road,
Malibu, California

For

Green Acres, LLC

November 3, 2015 W.O. 6489

MDN 16329

GeoSoils Consultants Inc.
GEOTECHNICAL GEOLOGIC ENVIRONMENTAL

November 3, 2015
W.O. 6489

GREEN ACRES, LLC
22837 Pacific Coast Highway, Suite 775
Malibu, California 90265

Attention: Mr. Bruce McBride

Subject: Response to City of Malibu Geotechnical Review Sheet Geotechnical Review Comments, dated June 11, 2015, Regarding Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

Dear Mr. McBride:

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this response to the geotechnical portion of the City of Malibu Geotechnical Review Sheet dated June 11, 2015. A copy of the review sheet is attached.

New development plans provided by Psomas Engineering have undergone substantial changes that render some of the geotechnical review comments non applicable. The new development plan has eliminated the proposed grading along the north and east portions of the site and the associated retaining walls along the northern portion of the site. The grading to create the mound in the northern portion of the site has also been omitted. To achieve the required factor of safety for the steep slope in the northern portion of the site, a row of piles is recommended. The location of the piles is shown on the Geologic Map, Plate 1, and Cross-Sections, Plate 2. Below is an item-by-item response to the review sheet:

6634 Valjean Avenue Van Nuys, California 91406 Phone: (818) 785-2158 Fax: (818) 785-1548

GEOTECHNICAL REVIEW COMMENTS

Comment 1

Please construct cross-section(s) perpendicular to the proposed 3:1 fill slope in the northern portion of the site (in the vicinity of Cross-Section 1-1') and perform static, seismic, and surficial stability analyses. Submit the cross-section(s) and results of the slope stability analyses for review. The Consultant needs to demonstrate that the constructed slopes meet the minimum required factors of safety.

Response to Comment 1

The new development plan omits the proposed 3:1 fill slope in the northern portion of the site in the vicinity of Cross Section 1-1'; therefore, a slope stability analysis was not performed in this area.

Comment 2

The project Geotechnical Consultant needs to evaluate the mitigation of the archaeological site (mounding of fill) in the north-central portion of the site. Mounding of fill at the top of a fill slope needs to be evaluated for slope stability. Provide additional cross-sections across the highest part of the mound and fill slope and present the results of the slope stability analyses for review.

Response to Comment 2

The current development plan has undergone changes that eliminate the proposed mounding of fill atop the previously proposed fill slope. In addition, the proposed fill slope itself has also been omitted. Due to the removal of the mound and fill slope, stability analysis for this area has not been performed.

Comment 3

The Geologic Map needs to show both the existing and proposed grades to fully evaluate the proposed grading and cut/fill areas across the site.

Response to Comment 3

Acknowledged. Please see the revised grading plan/geologic map (see Plates 1 and 2). Both existing and proposed grades are shown with updated associated geologic cross sections. The revised development plan shows that minor cuts and fills are proposed to "smooth" out the site. Any fill placed in this manner will be considered as secondary structural fill.

Comment 4

The Project Geotechnical Consultant states that the grading of the site will consist of flattening the steeper slope areas along the northern and eastern parts of the site to a 3.2:1 gradient in order to *"...eliminate the slope stability issues previously addressed along the subject slopes."* Review of the slope stability analyses performed by the Consultant for the cross-sections presented for the Hotel Project indicated that all slopes were stable except in the vicinity of Cross-Section 3-3'. Justification of the 175,000 yards of remedial grading needs to be provided by the Project Geotechnical Consultant. It appears that the majority of the slopes do not need mitigation for slope stability.

Response to Comment 4

The grading of the northern and eastern parts of the site has been removed from the current development plan. The steepest portion of slope in the area of Cross-Section 3-3' will be stabilized with a row of piles (as previously proposed for the hotel project) to address the slope stability issues for this area. The stability analysis for the proposed piles is included herein as Appendices A and B.

Comment 5

The Irrigation Plan indicates that over 16,000,000 gallons of water will be used to irrigate the park per year. The applicant needs to evaluate the water balance on the property considering the proposed landscaping plan and plants to be utilized, the evapotranspiration rates of the plants, average annual rainfall 16" per year), and infiltration rates of the surficial soils. It must be shown that the irrigation on the property will not adversely affect the groundwater levels and gross and surficial slope stability.

Response to Comment 5

We have reviewed the irrigation plan, dated October 27, 2015 prepared by Atomic Irrigation, for the subject site. The current plan indicates that over 19,000,000 gallons of water will be used to irrigate the park per year. According to the landscape plan and conversations with the applicant and Atomic Irrigation, the landscape plan was designed so the water balance was achieved considering plant type, evapotranspiration, and infiltration rates of surficial soils. During and after rainfall periods, irrigation is not proposed to be applied. Irrigation on the property will not adversely affect the groundwater levels and gross and surficial stability provided the water balance is achieved as proposed on the landscape plan.

Comment 6

Please include all subsurface exploration on the Geotechnical Map. The Consultant may submit the Geotechnical Map from the Hotel project without the proposed improvements. Not all boring and trench data is shown on the current map for the Memorial Park.

Response to Comment 6

Acknowledged. The requested subsurface investigation information is included herein as Plate 3. The geotechnical map from the hotel project without the proposed improvements was utilized for this purpose. Plate 3 depicts all boring locations from previous subsurface investigations for the hotel project. Plate 1 includes all test pits, trench investigations, and boring locations (if absent from Plate 3).

Comment 7

Several cross sections do not show the cut/fill transitions shown on the Geologic Map, as well as proposed retaining walls and walkways. Please review the cross sections and grading plan and provide the details, as applicable.

Response to Comment 7

The cross-sections have been revised to include proposed walkways and retaining walls. The revised grading plan depicts minor "contour" grading to smooth out the existing topography. The minor contour grading is not depicted on the cross-sections.

Response to Comment 8

Labeling of geologic units was incorrect and has been corrected on the geologic map. The associated Geologic Cross Sections 3-3' and 4-4' have been revised to reflect these changes.

Comment 9

Temporary stability and foundation design for retaining walls need to be evaluated for the proposed buried crypts shown on Cross Section 3-3'.

Response to Comment 9

Retaining walls for this area have been omitted from the current development plan. Additional stability analyses were performed in the immediate unstable slope area of Cross-Sections 3-3' and 7-7'. The results of the analyses yield factors below the minimum code values. As a result, analyses were performed to determine the location of the failure surfaces with a factor of safety satisfying code requirements The failure surfaces have been drafted on the Geologic Cross-Sections, Plate 2. The slope stability analyses are included herein as Appendix A. GSC recommends this slope area be supported with piles. The corresponding equivalent fluid pressures for Cross-Sections 3-3' and 7-7' are given in Appendix B.

BUILDING PLAN-CHECK STAGE REVIEW COMMENTS

Comment 1

Applicants are required to submit all Geotechnical Reports as searchable PDF files on a CD. The report as received by the City is not in the proper format. Please re-submit the report as a searchable PDF file.

Response to Comment 1

Acknowledged.

Comment 2

Shoring will be required for the subterranean garage excavations. Provide shoring recommendations.

Response to Comment 2

Subterranean parking is no longer part of the proposed development; therefore, shoring recommendations are not provided in this response.

Comment 3

The Consultant used a seismic factor, Kh, of 0.20g for the retaining wall seismicity calculations. The Consultant should review the 2013 CBC and confirm that the value used meets the new code requirements.

Response to Comment 3

Acknowledged. The seismic design factor for the retaining walls has been updated to conform to the City of Malibu current code. The table below summarizes these values and the seismic factor has been recalculated to k_h = .62.

The 2013 CBC (California Building Code) criteria are provided herein for structural design consideration.

2013 CBC Section 1613, Earthquake Loads	
Site Class Definition (1613.3.2)	D
Mapped Spectral Response Acceleration Parameter, S_s (Figure 1613.3.1(1) for 0.2 second)	2.338
Mapped Spectral Response Acceleration Parameter, S_1 (Figure 1613.3.1(2) for 1.0 second)	0.835
Site Coefficient, F_a (Table 1613.3.3(1) short period)	1.0
Site Coefficient, F_v (Table 1613.3.3(2) 1-second period)	1.5
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{MS} (Eq. 16-37)	2.338
Adjusted Maximum Considered Earthquake Spectral Response Acceleration Parameter S_{M1} (Eq. 16-38)	1.253
Design Spectral Response Acceleration Parameter, S_{DS} (Eq. 16-39)	1.558
Design Spectral Response Acceleration Parameter, S_{D1} (Eq. 16-40)	0.835
Notes: Location: Latitude: 34.03796, Longitude: -118.69955 1. Site Class Designation: Class D is recommended based on subsurface condition. 2. Ss, SMs, and SDs are spectral response accelerations for the period of 0.2 second. 3. S1, SM1, and SD1 are spectral response accelerations for the period of 1.0 second.	

Conformance to the above criteria for seismic design does not constitute any guarantee or assurance that significant structural damage or ground failure will not occur if a maximum level earthquake occurs. The primary goal of seismic design is to protect life and not to avoid damage, since such design may be economically prohibitive.

Comment 4

The Project Geotechnical Consultant needs to provide a maximum height limit on un-shored slopes for temporary excavations per their calculations on Fig. 10. The Consultant suggests an unlimited (i.e. greater than 5 feet) height.

Response to Comment 4

Due to the revised development plan temporary excavations are no longer proposed to provide access to the buried crypts. All excavations on the subject site with the revised plan do not exceed 5 feet in vertical height and, therefore, temporary shoring will not be necessary.

Comment 5

The following note must be placed on the plans, *'Prior to the placement of concrete slabs, the slab subgrade soils shall be pre-moistened to at least 5% over the optimum moisture content to the depth specified by the geotechnical engineer. The pre-moistened soils should be tested and verified to be by the geotechnical engineer within one day prior to the placement of the moisture barrier and sand'.*

Response to Comment 5

Acknowledged. The note, *'Prior to the placement of concrete slabs, the slab subgrade soils shall be pre-moistened to at least 5% over the optimum moisture content to the depth specified by the geotechnical engineer. The pre-moistened soils should be tested and verified to be by the geotechnical engineer within one day prior to the placement of the moisture barrier and sand',* has been placed accordingly on the current development plans.

Comment 6

Please show the Stream Terrace Deposits on Cross-Sections C, D, and G. Are the stream terrace deposits displaced across the landslide?

Response to Comment 6

Stream channel deposits are shown on the geologic cross-sections and are not off-set by the ancient landslide.

Comment 7

Please depict limits and depths of over-excavation and structural fill to be placed on the grading plan, and cross sectional view of the proposed building area.

Response to Comment 7

The approximate limits of removals and over-excavations have been added to the Geologic Map and Cross-Sections.

Comment 8

Two sets of final grading, retaining wall, chapel, and shoring plans **(APPROVED BY BUILDING AND SAFETY)** incorporating the Project Geotechnical Consultant's recommendations and items in this review sheet must be **reviewed and wet stamped and manually signed by the Project Engineering Geologist and Project Geotechnical Engineer.** City Geotechnical staff will review the plans for conformance with the Project Geotechnical Consultants' recommendations and items in this review sheet over the counter at City Hall on Mondays through Thursdays between 8AM and 10AM.

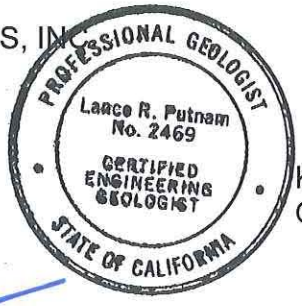
Response to Comment 8

Acknowledged.

We appreciate this opportunity to be of continued service to you. If you have any questions regarding the content of this report or any other aspects of the project, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.





LANCE R. PUTNAM
CEG 2469

KAREN L. MILLER
GE 2257

GEORGE C. EDWARDS
Staff Geologist

JONATHAN GURUNATHAN
Staff Engineer

LRP.KLM.GCE.JG.W:Rsp to City of Malibu Rev 6-11-15

Encl: References
City of Malibu Geotechnical Review Sheet dated June 11, 2015
Appendix A, Slope Stability Analyses
Appendix B, Equivalent Fluid Pressure Calculations
Plate 1, Geologic Map
Plate 2, Geologic Cross-Sections
Plate 3, Geologic Map (Hotel Project)

cc: (1) City of Malibu (via email)

MDN 16329

REFERENCES

1. Earth Forensics, Inc. dated July 22, 2013, "Updated Hydrogeologic Assessment of the Proposed Ranch Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

2. GeoSoils Consultants, Inc. dated May 6, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated April 26, 2013, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

3. GeoSoils Consultants, Inc. dated February 13, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated December 14, 2012, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

4. Ensitu Engineering, Inc. dated December 3, 2012, "Advanced Onsite Wastewater Treatment System, 4000 Malibu Canyon Road, Malibu, California"

5. Ensitu Engineering, Inc. dated October 1, 2012, "Advanced Onsite Wastewater Treatment System, 4000 Malibu Canyon Road, Malibu, California"

6. Earth Forensics, Inc. dated April 13, 2012, "Hydrogeologic Assessment of the Proposed Rancho Malibu Resort, Tentative Tract map 69653, 4000 Malibu Canyon Road, Malibu, California"

7. GeoSoils Consultants, Inc. dated May 21, 2012, "Response to City of Malibu Geotechnical Review Sheet dated May 7, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

8. GeoSoils Consultants, Inc. dated April 2, 2012, "Geologic and Geotechnical Engineering Review of Proposed Onsite Wastewater Treatment System, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

9. GeoSoils Consultants, Inc. dated January 27, 2012, "Response to City of Malibu Geotechnical Review Sheet dated October 18, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

REFERENCES (cont'd)

10. GeoSoils Consultants, Inc. dated September 15, 2011, "Response to Comments of the City of Malibu Geotechnical Review Sheet Dated October 31, 2007, and Updated Geologic and Geotechnical Engineering Report, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

11. Dibblee, T.W., 1993, "Geologic Map of the Malibu Beach Quadrangle, Los Angeles County, California"

12. Leighton and Associates, Inc. dated August 4, 1989, "Report of Geotechnical Investigation, Rancho Malibu Mesa Project, Pacific Coast Highway at Malibu Canyon Road, Malibu, California"

13. Leighton and Associates, Inc., dated February 6, 1990, "Response to Geologic and Geotechnical Engineering Review Sheets (Grading Plan Check No. 1811), By the Department of Public Works, Land Development Division, For Rancho Malibu Hotel, 3930 Malibu Canyon Road, Malibu, California"

14. Van Beveren and Butelo, Inc. dated September 27, 2007, "Report of Geologic and Geotechnical Investigation, Proposed Rancho Malibu Resort, Pacific Coast Highway and Malibu Canyon Road, Malibu, California"

15. GeoSoils Consultants, Inc. dated January 23, 2015, "Geologic and Geotechnical Engineering Report, Proposed Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

City of Malibu

23825 Stuart Ranch Road • Malibu, California 90265-4861
(310) 456-2489 • Fax (310) 317-1950 • www.malibucity.org

GEOTECHNICAL REVIEW SHEET

Project Information

Date: June 11, 2015		**Review Log #:**	**3745**
Site Address:	4000 Malibu Canyon Road		
Lot/Tract/PM #:	n/a	**Planning #:**	**CDP 15-028**
Applicant/Contact:	Bruce McBride, bmcbride@pda-11c.net	**BPC/GPC #:**	
Contact Phone #:	805-298-6570 **Fax #:**	**Planner:**	**Adrian Fernandez**
Project Type:	Church Memorial Park		

Submittal Information

Consultant(s) / Report Date(s): *(Current submittal(s) in **Bold.**)*

GeoSoils Consultants, Inc. (Miller, GE 2257; Ruberti, CEG 1708): **1-23-15**; Ref: 5-21-12, 1-27-12, 9-15-11
Ref: Van Beveren & Butelo, Inc.: 9-27-07
Ref: Roy J. Shlemon & Associates, Inc.: September 2007 (Included as Appendix D in the referenced Van Beveren & Butelo report)
References reviewed by the Consultant:
Leighton and Associates, Inc.: 3-28-90, 2-6-90, 8-4-89

Malibu Memorial Park plans prepared by Burdge & Associates Architects dated January 30, 2015.
Grading and Drainage Plan prepared by Psomas dated January 5, 2015.
Landscape plan prepared by Place Landscaping, undated.
Irrigation plan prepared by Atomic Irrigation dated January 9, 2015.

Previous Reviews: Geotechnical Review Referral Sheet dated 5-19-15

Review Findings

Coastal Development Permit Review

☐ The memorial park project is **APPROVED** from a geotechnical perspective.

☒ The memorial park project is **NOT APPROVED** from a geotechnical perspective. The listed 'Review Comments' shall be addressed prior to approval.

Building/Grading Plan-Check Stage Review

☒ Awaiting Building plan check submittal. Please respond to the listed 'Building Plan-Check Stage Review Comments' AND review and incorporate the attached 'Geotechnical Notes for Building Plan Check' into the plans.

☐ **APPROVED** from a geotechnical perspective. Please review the attached 'Geotechnical Notes for Building Plan Check' and incorporate into Building Plan-Check submittals.

☐ **NOT APPROVED** from a geotechnical perspective. The listed 'Building Plan-Check Stage Review Comments' shall be addressed prior to Building Plan-Check Stage approval.

Remarks

The report and plans were reviewed by the City from a geotechnical perspective. Based on the submitted information, the project comprises a new memorial park that includes an 8,500 square foot chapel with an 8,500 square foot subterranean garage, 45 free-standing mausoleums totaling 9,000 square feet, and 154 parking spaces. Grading will consist of 214,000 yards of R & R; 900 yards of fill under structure; 40 yards of cut and 230 yards of fill for safety; 30,960 yards of cut and 72,970 yards of fill non-exempt; and 109,000 yards of cut and 66,000 yards of fill remedial. Retaining walls, access roads, landscaping with irrigation, and hardscape are proposed.

The applicant is proposing to connect to the Civic Center Wastewater Treatment Facility for disposal of their wastewater.

NOTICE: Applicants shall be required to submit all Geotechnical reports for this project as searchable PDF files on a CD. At the time of Building Plan Check application, the Consultant must provide searchable PDF files on a CD to the Building Department for ALL previously submitted reports that have been reviewed by City Geotechnical Staff.

Review Comments:

GeoSoils 1. Please construct cross-section(s) perpendicular to the proposed 3:1 fill slope in the northern portion of the site (in the vicinity of Cross-Section 1-1') and perform static, seismic, and surficial stability analyses. Submit the cross-section(s) and results of the slope stability analyses for review. The Consultant needs to demonstrate that the constructed slopes meet the minimum required factors of safety.

GeoSoils 2. The Project Geotechnical Consultant needs to evaluate the mitigation of the archaeological site (mounding of fill) in the north-central portion of the site. Mounding of fill at the top of the proposed fill slope needs to be evaluated for slope stability. Provide additional cross-sections across the highest part of the mound and fill slope and present the results of the slope stability analyses for review.

GeoSoils 3. The Geologic Map needs to show both the existing and proposed grades to fully evaluate the proposed grading and cut/fill areas across the site.

GeoSoils 4. The Project Geotechnical Consultant states that grading of the site will consist of flattening the steeper slope areas along the northern and eastern parts of the site to a 3.2:1 gradient in order to "*...eliminate the slope stability issues previously addressed along the subject slopes.*" Review of the slope stability analyses performed by the Consultant for the cross-sections presented for the Hotel Project indicated that all slopes were stable except in the vicinity of Cross-Section 3-3'. Justification of the 175,000 yards of remedial grading needs to be provided by the Project Geotechnical Consultant. It appears that the majority of the slopes do not need mitigation for slope stability.

Atomic 5. The Irrigation Plan indicates that over 16,000,000 gallons of water will be used to irrigate the park per year. The applicant needs to evaluate the water balance on the property considering the proposed landscaping plan and plants to be utilized, the evapotranspiration rates of the plants, average annual rainfall (16" per year), and infiltration rates of the surficial soils. It must be shown that the irrigation on the property will not adversely affect the groundwater levels and gross and surficial slope stability.

GeoSoils 6. Please include all subsurface exploration on the Geotechnical Map. The Consultant may submit the Geotechnical Map from the Hotel project without the proposed improvements. Not all boring and trench data is shown on the current map for the Memorial Park.

Psomas 7. Several cross-sections do not show the cut/fill transitions shown on the Geologic Map, as well as proposed retaining walls and walkways. Please review the cross-sections and grading plan and provide the details,

as applicable.

GeoSoils 8. The east ends of Cross-Sections 3-3' and 4-4' depict bedrock at the toe of the slope. The Geotechnical Map shows stream terrace deposits or alluvium. Please clarify and correct.

Psomas 9. Temporary stability and foundation design for retaining walls need to be evaluated for the proposed buried crypts shown on Cross-Section 3-3'.

Building Plan-Check Stage Review Comments:

1. Applicants are required to submit all Geotechnical reports as searchable PDF files on a CD. The report as received by the City is not in the proper format. Please re-submit the report as a searchable PDF file.
2. Shoring will be required for the subterranean garage excavations. Provide shoring recommendations.
3. The Consultant used a seismic factor, Kh, of 0.20 g for the retaining wall seismicity calculations. The Consultant should review the 2013 CBC and confirm that the value used meets the new code requirements.
4. The Project Geotechnical Consultant needs to provide a maximum height limit on un-shored slopes for temporary excavations per their calculations on Fig. 10. The Consultant suggests an unlimited (i.e. greater than 5 feet) height.
5. The following note must be placed on the plans *'Prior to the placement of concrete slabs, the slab subgrade soils shall be pre-moistened to at least 5% over the optimum moisture content to the depth specified by the geotechnical engineer. The pre-moistened soils should be tested and verified to be by the geotechnical engineer within one day prior to the placement of the moisture barrier and sand.'*
6. Please show the Stream Terrace Deposits on Cross-Sections C, D, and G. Are the stream terrace deposits displaced across the landslide?
7. Please depict limits and depths of over-excavation and structural fill to be placed on the grading plan, and cross sectional view of the proposed building area.
8. Two sets of final grading, retaining wall, chapel, and shoring plans (**APPROVED BY BUILDING AND SAFETY**) incorporating the Project Geotechnical Consultant's recommendations and items in this review sheet must be **reviewed and wet stamped and manually signed by the Project Engineering Geologist and Project Geotechnical Engineer**. City geotechnical staff will review the plans for conformance with the Project Geotechnical Consultants' recommendations and items in this review sheet over the counter at City Hall on Mondays through Thursdays between 8 AM and 10 AM.

Please direct questions regarding this review sheet to City Geotechnical staff listed below.

Engineering Geology Review by: 6/11/15

Christopher Dean, C.E.G. #1751, Exp. 9-30-16 Date
Engineering Geology Reviewer (310-456-2489, x306)
Email: cdean@malibucity.org

Geotechnical Engineering Review by: *June 11, 2015*

Kenneth Clements, G.E. # 2010, Exp. 6-30-16 Date
Geotechnical Engineering Reviewer (805-563-8909)
Email: kclements@fugro.com

This review sheet was prepared by City Geotechnical Staff contracted with Fugro as an agent of the City of Malibu.

FUGRO CONSULTANTS, INC.
4820 McGrath Street, Suite 100
Ventura, California 93003-7778
(805) 650-7000 (*Ventura office*)
(310) 456-2489, x306 (*City of Malibu*)

City of Malibu

– GEOTECHNICAL –

NOTES FOR BUILDING PLAN-CHECK

The following standard items should be incorporated into Building Plan-Check submittals, as appropriate:

1. One set of grading, retaining wall, chapel, and shoring plans, incorporating the Project Geotechnical Consultant's recommendations and items in this review sheet, must be submitted to City geotechnical staff for review. **Additional review comments may be raised at that time that may require a response.**
2. Show the name, address, and phone number of the Project Geotechnical Consultant(s) on the cover sheet of the Building Plans.
3. Include the following note on Grading and Foundation Plans: "*Subgrade soils shall be tested for Expansion Index prior to pouring footings or slabs; Foundation Plans shall be reviewed and revised by the Project Geotechnical Consultant, as appropriate.*"
4. Include the following note on the Foundation Plans: "*All foundation excavations must be observed and approved by the Project Geotechnical Consultant prior to placement of reinforcing steel.*"
5. The Foundation Plans for the proposed project shall clearly depict the embedment material and minimum depth of embedment for the foundations in accordance with the Project Geotechnical Consultant's recommendations.
6. Foundation setback distances from descending slopes shall be in accordance with Section 1808 of the Malibu Building Code, or the requirements of the Project Geotechnical Consultant's recommendations, whichever are more stringent. Show minimum foundation setback distances on the foundation plans, as applicable.
7. Please contact the Building and Safety Department regarding the submittal requirements for a grading and drainage plan review.
8. A comprehensive Site Drainage Plan, incorporating the Geotechnical Consultant's recommendations, shall be included in the Plans. Show all area drains, outlets, and non-erosive drainage devices on the Plans. Water shall not be allowed to flow uncontrolled over descending slopes.

Grading Plans (as Applicable)

1. Grading Plans shall clearly depict the limits and depths of overexcavation, as applicable.
2. Prior to final approval of the project, an as-built compaction report prepared by the Project Geotechnical Consultant must be submitted to the City for review. The report must include the results of all density tests as well as a map depicting the limits of fill, locations of all density tests, locations and elevations of all removal bottoms, locations and elevations of all keyways and back drains, and locations and elevations of all retaining wall backdrains and outlets. Geologic conditions exposed during grading must be depicted on an as-built geologic map. This comment must be included as a note on the grading plans.

Retaining Walls (As Applicable)

1. Show retaining wall backdrain and backfill design, as recommended by the Geotechnical Consultant, on the Plans.
2. Retaining walls separate from a residence require separate permits. Contact the Building and Safety Department for permit information. One set of retaining wall plans shall be submitted to the City for review by City geotechnical staff. Additional concerns may be raised at that time which may require a response by the Project Geotechnical Consultant and applicant.

City of Malibu

23825 Stuart Ranch Road
Malibu, California 90265
(310) 456-2489 Fax (310) 317-1950

GEOTECHNICAL REVIEW FIXED FEE FORM

PROJECT OWNER/APPLICANT: Bruce McBride

PROJECT ADDRESS: 4000 Malibu Canyon Road

GEOTECHNICAL LOG NO: 3745

PLANNING NO: CDP 15-028

PLAN CHECK NO:

ITEM	STATUS	DATE	DEPOSIT	CHARGE	BALANCE	COMMENTS
FIXED FEE BY: Bruce McBride		4/28/2015	$3,000.00	$0.00	$0.00	Fixed Fee
Initial Review, CDP 15-028	Response Required	6/11/2015				
Second review						
Additional Reviews: Time & Material						
Third review						
Fourth review						
Applicant Paid Balance Due						
Fifth review						
Applicant Paid Balance Due						
					$0.00	
REFUND DUE APPLICANT						REFUND # _____
BALANCE DUE FUGRO						

NOTE:

The Fixed Fee incorporates the initial and one subsequent geotechnical review. Subsequent reviews will be performed in accordance with the City's time and materials rate of $201.50 per hour.

November 3, 2015
W.O. 6489

APPENDIX A

SLOPE STABILITY ANALYSES

November 3, 2015
W.O. 6489

APPENDIX A

SLOPE STABILITY ANALYSES

1.0 Introduction

SLIDE 6.0 is a fully integrated and comprehensive slope stability analysis program. Slide is a 2D slope stability program for evaluating the safety factor or probability of failure, of circular or non-circular failure surfaces in soil or rock slopes and can create complex models to be analyzed.

Slide 6.0 analyzes the stability of slip surfaces using vertical slice limit equilibrium methods (e.g. Bishop, Janbu, Spencer, etc). Individual slip surfaces can be analyzed, or search methods can be applied to locate the critical slip surface for a given slope. Deterministic (safety factor) or probabilistic (probability of failure) analyses can be examined.

2.0 General Information

If the reviewer wishes to obtain more information concerning slope stability analysis, the following publications may be consulted:

- The Stability of Slopes, by E.N. Bromhead, Surrey University Press, Chapman and Hall, NY, 374 pages, ISBN 0 412 01061 5 (1985).
- Rock Slope Engineering, by E. Hoek and J.W. Bray, Inst. of Mining and Metrallurgy, London, England, Third Edition, 358 pages, ISBN 0900488 573 (1981).
- Landslides: Analysis and Control, by R.L. Schuster and R.J. Krizek (editors), Special Report 176, Transportation Research Board, National Academy of Sciences, 234 pages, ISBN 0 309 02804 3 (1978).

Appendix A

3.0 Slide 6.0 Features

The present version of Slide contains the following features:

- Critical surface search methods for circular or non-circular slip surfaces
- Analysis methods include Bishop, Janbu, Spencer
- Multiple materials
- Anisotropic, non-linear Mohr-Coulomb materials
- Probabilistic analysis – calculate probability of failure, reliability index (see below)
- Sensitivity Analysis
- Groundwater – piezo surfaces, Ru factors, pore pressure grids, finite element seepage analysis (see below), excess pore pressure (B-bar method)
- Finite element groundwater seepage for steady state or transient conditions
- Rapid drawdown analysis
- Tension crack (dry or water filled)
- External loading – line, distributed or seismic
- Support – soil nails, tiebacks, geotextiles, piles. Infinite strength (slip surface exclusion) zones
- Back analysis of required support force for a given safety factor
- Back analysis of material strength using sensitivity or probabilistic analysis
- View any or all surfaces generated by search
- Detailed analysis results can be plotted for individual slip surfaces

Appendix A

4.0 Input Data

Input data includes the following items:

- Unit weight, cohesion, friction angle of bedrock material, alluvium and fill
- Slope geometry, surcharge boundary loads and water surface elevations
- Water level conditions for full basin and rapid draw down conditions
- Pseudo-static earthquake loading

5.0 Output Information

Output information includes:

- All input data
- Factors of safety for the global minimum slip surface
- High quality plots can be generated that include the slope geometry and slip surfaces

6.0 Stability Analysis

GeoSoils Consultants, Inc. has performed slope stability analyses for the proposed development as depicted on the following Geologic-Sections:

- Geologic Cross-Section 3-3'
- Geologic Cross-Section 7-7'

Appendix A

Soil Parameters

The parameters used in the slope stability calculations can be found in the table below.

TABLE A-1
SHEAR TEST DATA SUMMARY

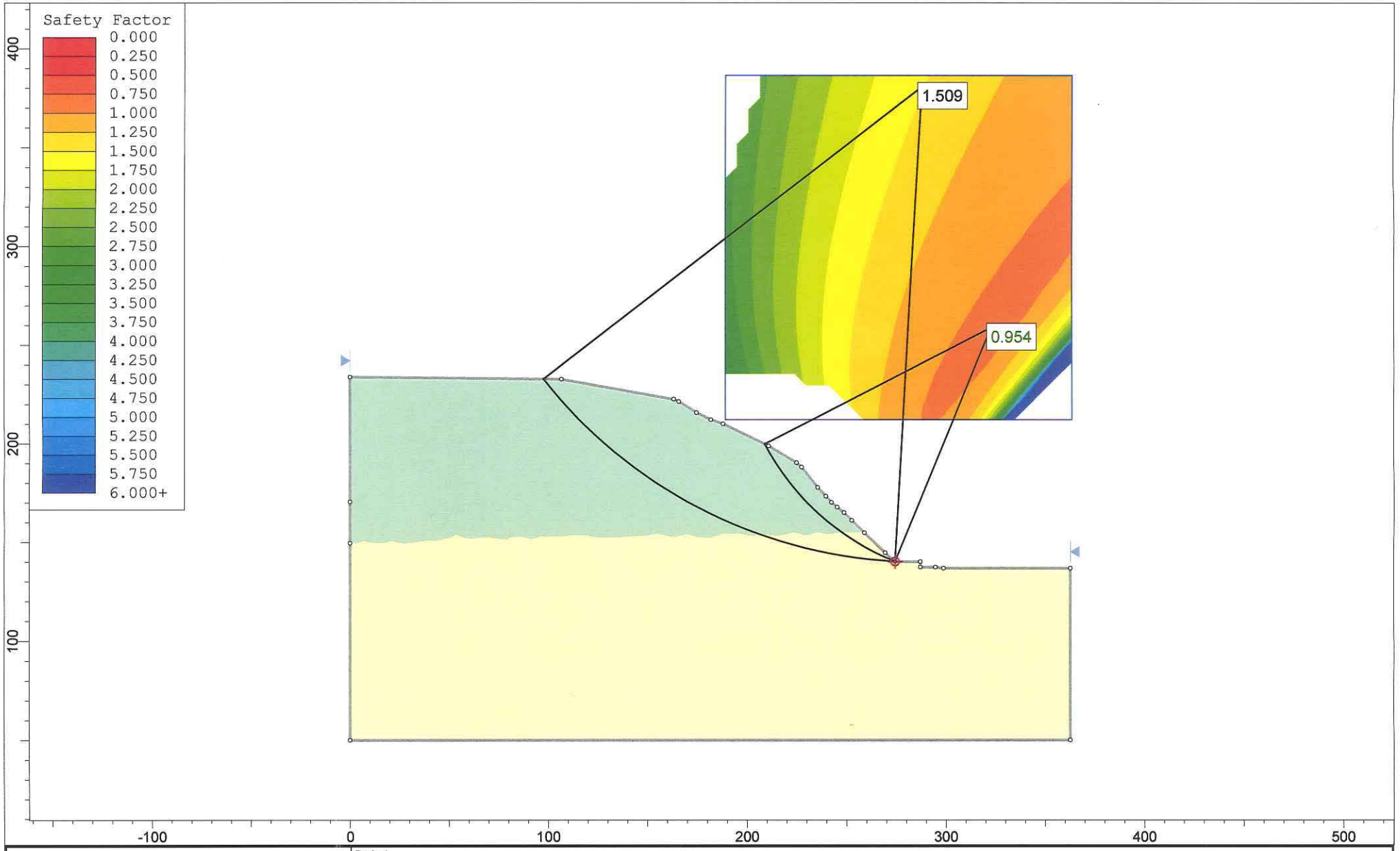
Soil Description	Reshear Values		Peak Values		Unit Weight (pcf)
	c (psf)	ϕ (degrees)	c (psf)	ϕ (degrees)	
Terrace (Qtn/Qtm)	100	34.5	300	35.0	130
Bedrock (TQs)	100	32.5	310	36.5	130

7.0 Results

The results of slope stability analyses are presented in Table A-2. Detailed outputs of the stability analysis results are included in this appendix. A seismic coefficient, k_h, value of 0.35 was used in the seismic analysis per City of Malibu guidelines.

TABLE A-2
SLIDE STABILITY ANALYSIS RESULTS

Cross-Section	Mode	Description	Lowest Factor of Safety	
			Static	Seismic
3-3'	1	Circular Failure, Minimum F.S.	0.954	0.760
	2	Circular Failure, F.S. Search	1.509	1.003
7-7'	1	Circular Failure, Minimum F.S.	0.778	0.841
	2	Circular Failure, F.S. Search	1.507	1.009



Project	#6489 - Green Acres, LLC		
Analysis Description	Section 3-3' Static Circular Failure		
Drawn By: Jonathan Gurunathan	Scale: 1:800	Company: GeoSoils Consultants, Inc	
Date: 11/5/2015, 10:06:26 AM		File Name: Section 3 Static.slim	

SLIDEINTERPRET 6.036

Slide Analysis Information

#6489 - Green Acres, LLC

Project Summary

File Name: Section 3 Static.slim
Slide Modeler Version: 6.036
Project Title: #6489 - Green Acres, LLC
Analysis: Section 3-3' Static Circular Failure
Author: Jonathan Gurunathan
Company: GeoSoils Consultants, Inc
Date Created: 11/5/2015, 10:06:26 AM

General Settings

Units of Measurement: Imperial Units
Time Units: days
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116

Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Property	Bedrock	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	130
Cohesion [psf]	100	100
Friction Angle [deg]	32.5	34.5
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: bishop simplified

FS: 0.954055
Center: 322.535, 258.859
Radius: 128.081
Left Slip Surface Endpoint: 208.794, 199.973
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Moment=6.16565e+006 lb-ft
Driving Moment=6.46258e+006 lb-ft
Total Slice Area=585.548 ft2

Method: janbu corrected

FS: 0.951396
Center: 305.122, 235.642
Radius: 100.284
Left Slip Surface Endpoint: 212.092, 198.195
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Horizontal Force=37494.1 lb
Driving Horizontal Force=39409.6 lb
Total Slice Area=615.284 ft2

Method: spencer

FS: 0.945948

Center: 322.535, 258.859
Radius: 128.081
Left Slip Surface Endpoint: 208.794, 199.973
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Moment=6.11326e+006 lb-ft
Driving Moment=6.46258e+006 lb-ft
Resisting Horizontal Force=35387.2 lb
Driving Horizontal Force=37409.2 lb
Total Slice Area=585.548 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 888
Number of Invalid Surfaces: 73

Error Codes:

Error Code -101 reported for 33 surfaces
Error Code -114 reported for 40 surfaces

Method: janbu corrected

Number of Valid Surfaces: 886
Number of Invalid Surfaces: 75

Error Codes:

Error Code -101 reported for 33 surfaces
Error Code -108 reported for 2 surfaces
Error Code -114 reported for 40 surfaces

Method: spencer

Number of Valid Surfaces: 885
Number of Invalid Surfaces: 76

Error Codes:

Error Code -101 reported for 33 surfaces
Error Code -108 reported for 2 surfaces
Error Code -111 reported for 1 surface
Error Code -114 reported for 40 surfaces

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero) surface / slope intersections.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.954055

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.59784	587.596	Qtn/Qtm	100	34.5	115.324	110.025	14.5869	0	14.5869
2	2.59784	1617.64	Qtn/Qtm	100	34.5	251.316	239.769	203.366	0	203.366
3	2.59784	2483.89	Qtn/Qtm	100	34.5	377.221	359.89	378.142	0	378.142
4	2.59784	3240.01	Qtn/Qtm	100	34.5	496.389	473.582	543.565	0	543.565
5	2.59784	3902.49	Qtn/Qtm	100	34.5	608.694	580.728	699.463	0	699.463
6	2.59784	4483.76	Qtn/Qtm	100	34.5	714.138	681.327	845.836	0	845.836
7	2.59784	4907.21	Qtn/Qtm	100	34.5	799.726	762.983	964.647	0	964.647
8	2.59784	4994.82	Qtn/Qtm	100	34.5	835.582	797.191	1014.42	0	1014.42
9	2.59784	4808.56	Qtn/Qtm	100	34.5	827.469	789.451	1003.16	0	1003.16
10	2.59784	4566.48	Qtn/Qtm	100	34.5	807.947	770.826	976.057	0	976.057
11	2.59784	4324.1	Qtn/Qtm	100	34.5	785.869	749.762	945.409	0	945.409
12	2.59784	4153.26	Qtn/Qtm	100	34.5	773.679	738.132	928.49	0	928.49
13	2.59784	3940.41	Qtn/Qtm	100	34.5	752.5	717.926	899.089	0	899.089
14	2.59784	3790.09	Qtn/Qtm	100	34.5	740.579	706.553	882.54	0	882.54
15	2.59784	3713.63	Qtn/Qtm	100	34.5	740.703	706.671	882.711	0	882.711
16	2.64953	3668.2	Bedrock	100	32.5	701.449	669.221	893.498	0	893.498
17	2.64953	3370.68	Bedrock	100	32.5	661.386	630.999	833.5	0	833.5
18	2.64953	3054.04	Bedrock	100	32.5	616.031	587.727	765.576	0	765.576
19	2.64953	2718.11	Bedrock	100	32.5	565.253	539.282	689.535	0	689.535
20	2.64953	2352.41	Bedrock	100	32.5	507.027	483.732	602.338	0	602.338
21	2.64953	1958.13	Bedrock	100	32.5	441.382	421.103	504.031	0	504.031
22	2.64953	1536.38	Bedrock	100	32.5	368.33	351.407	394.629	0	394.629
23	2.64953	1088.13	Bedrock	100	32.5	287.864	274.638	274.127	0	274.127
24	2.64953	643.018	Bedrock	100	32.5	205.549	196.105	150.854	0	150.854
25	2.64953	218.231	Bedrock	100	32.5	124.811	119.077	29.9442	0	29.9442

Query 1 (bishop simplified) - Safety Factor: 0.954055

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.59784	587.596	Qtn/Qtm	100	34.5	115.324	110.025	14.5869	0	14.5869
2	2.59784	1617.64	Qtn/Qtm	100	34.5	251.316	239.769	203.366	0	203.366
3	2.59784	2483.89	Qtn/Qtm	100	34.5	377.221	359.89	378.142	0	378.142
4	2.59784	3240.01	Qtn/Qtm	100	34.5	496.389	473.582	543.565	0	543.565
5	2.59784	3902.49	Qtn/Qtm	100	34.5	608.694	580.728	699.463	0	699.463
6	2.59784	4483.76	Qtn/Qtm	100	34.5	714.138	681.327	845.836	0	845.836
7	2.59784	4907.21	Qtn/Qtm	100	34.5	799.726	762.983	964.647	0	964.647
8	2.59784	4994.82	Qtn/Qtm	100	34.5	835.582	797.191	1014.42	0	1014.42
9	2.59784	4808.56	Qtn/Qtm	100	34.5	827.469	789.451	1003.16	0	1003.16
10	2.59784	4566.48	Qtn/Qtm	100	34.5	807.947	770.826	976.057	0	976.057
11	2.59784	4324.1	Qtn/Qtm	100	34.5	785.869	749.762	945.409	0	945.409
12	2.59784	4153.26	Qtn/Qtm	100	34.5	773.679	738.132	928.49	0	928.49

13	2.59784	3940.41	Qtn/Qtm	100	34.5	752.5	717.926	899.089	0	899.089
14	2.59784	3790.09	Qtn/Qtm	100	34.5	740.579	706.553	882.54	0	882.54
15	2.59784	3713.63	Qtn/Qtm	100	34.5	740.703	706.671	882.711	0	882.711
16	2.64953	3668.2	Bedrock	100	32.5	701.449	669.221	893.498	0	893.498
17	2.64953	3370.68	Bedrock	100	32.5	661.386	630.999	833.5	0	833.5
18	2.64953	3054.04	Bedrock	100	32.5	616.031	587.727	765.576	0	765.576
19	2.64953	2718.11	Bedrock	100	32.5	565.253	539.282	689.535	0	689.535
20	2.64953	2352.41	Bedrock	100	32.5	507.027	483.732	602.338	0	602.338
21	2.64953	1958.13	Bedrock	100	32.5	441.382	421.103	504.031	0	504.031
22	2.64953	1536.38	Bedrock	100	32.5	368.33	351.407	394.629	0	394.629
23	2.64953	1088.13	Bedrock	100	32.5	287.864	274.638	274.127	0	274.127
24	2.64953	643.018	Bedrock	100	32.5	205.549	196.105	150.854	0	150.854
25	2.64953	218.231	Bedrock	100	32.5	124.811	119.077	29.9442	0	29.9442

Global Minimum Query (janbu corrected) - Safety Factor: 0.951396

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.41857	635.074	Qtn/Qtm	100	34.5	108.109	102.854	4.15296	0	4.15296
2	2.41857	1786.44	Qtn/Qtm	100	34.5	256.44	243.976	209.486	0	209.486
3	2.41857	2733.02	Qtn/Qtm	100	34.5	397.243	377.935	404.397	0	404.397
4	2.41857	3527.11	Qtn/Qtm	100	34.5	529.683	503.938	587.732	0	587.732
5	2.41857	4201.08	Qtn/Qtm	100	34.5	653.606	621.838	759.279	0	759.279
6	2.41857	4716.91	Qtn/Qtm	100	34.5	760.166	723.219	906.789	0	906.789
7	2.41857	4940.74	Qtn/Qtm	100	34.5	825.232	785.122	996.858	0	996.858
8	2.41857	4874.84	Qtn/Qtm	100	34.5	844.127	803.099	1023.02	0	1023.02
9	2.41857	4732.17	Qtn/Qtm	100	34.5	847.928	806.715	1028.28	0	1028.28
10	2.41857	4542.96	Qtn/Qtm	100	34.5	841.005	800.129	1018.7	0	1018.7
11	2.41857	4410.35	Qtn/Qtm	100	34.5	841.21	800.324	1018.98	0	1018.98
12	2.41857	4260.62	Qtn/Qtm	100	34.5	836.237	795.593	1012.09	0	1012.09
13	2.41857	4080.99	Qtn/Qtm	100	34.5	823.679	783.645	994.709	0	994.709
14	2.41857	3983.75	Qtn/Qtm	100	34.5	824.664	784.582	996.074	0	996.074
15	2.57315	4160.3	Bedrock	100	32.5	794.198	755.597	1029.08	0	1029.08
16	2.57315	3974.59	Bedrock	100	32.5	778.539	740.699	1005.7	0	1005.7
17	2.57315	3649.77	Bedrock	100	32.5	735.916	700.148	942.042	0	942.042
18	2.57315	3315.78	Bedrock	100	32.5	688.96	655.474	871.92	0	871.92
19	2.57315	2953.03	Bedrock	100	32.5	633.968	603.155	789.797	0	789.797
20	2.57315	2557.85	Bedrock	100	32.5	570.002	542.298	694.271	0	694.271
21	2.57315	2131.68	Bedrock	100	32.5	497.061	472.902	585.338	0	585.338
22	2.57315	1675.79	Bedrock	100	32.5	415.11	394.934	462.951	0	462.951
23	2.57315	1191.28	Bedrock	100	32.5	324.088	308.336	327.022	0	327.022
24	2.57315	709.794	Bedrock	100	32.5	230.245	219.054	186.877	0	186.877
25	2.57315	240.942	Bedrock	100	32.5	135.628	129.036	45.5775	0	45.5775

Global Minimum Query (spencer) - Safety Factor: 0.945948

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.59784	587.596	Qtn/Qtm	100	34.5	128.424	121.483	31.2575	0	31.2575

2	2.59784	1617.64	Qtn/Qtm	100	34.5	237.233	224.41	181.017	0	181.017
3	2.59784	2483.89	Qtn/Qtm	100	34.5	341.704	323.234	324.807	0	324.807
4	2.59784	3240.01	Qtn/Qtm	100	34.5	444.399	420.378	466.154	0	466.154
5	2.59784	3902.49	Qtn/Qtm	100	34.5	545.091	515.628	604.742	0	604.742
6	2.59784	4483.76	Qtn/Qtm	100	34.5	643.587	608.8	740.309	0	740.309
7	2.59784	4907.21	Qtn/Qtm	100	34.5	728.468	689.093	857.135	0	857.135
8	2.59784	4994.82	Qtn/Qtm	100	34.5	772.641	730.878	917.934	0	917.934
9	2.59784	4808.56	Qtn/Qtm	100	34.5	778.862	736.763	926.496	0	926.496
10	2.59784	4566.48	Qtn/Qtm	100	34.5	774.595	732.727	920.624	0	920.624
11	2.59784	4324.1	Qtn/Qtm	100	34.5	767.469	725.986	910.814	0	910.814
12	2.59784	4153.26	Qtn/Qtm	100	34.5	769.098	727.527	913.056	0	913.056
13	2.59784	3940.41	Qtn/Qtm	100	34.5	761.825	720.647	903.046	0	903.046
14	2.59784	3790.09	Qtn/Qtm	100	34.5	763.059	721.814	904.744	0	904.744
15	2.59784	3713.63	Qtn/Qtm	100	34.5	776.078	734.129	922.665	0	922.665
16	2.64953	3668.2	Bedrock	100	32.5	731.216	691.692	928.77	0	928.77
17	2.64953	3370.68	Bedrock	100	32.5	702.909	664.915	886.74	0	886.74
18	2.64953	3054.04	Bedrock	100	32.5	667.877	631.777	834.721	0	834.721
19	2.64953	2718.11	Bedrock	100	32.5	625.654	591.836	772.028	0	772.028
20	2.64953	2352.41	Bedrock	100	32.5	573.726	542.715	694.923	0	694.923
21	2.64953	1958.13	Bedrock	100	32.5	511.631	483.976	602.724	0	602.724
22	2.64953	1536.38	Bedrock	100	32.5	438.869	415.147	494.681	0	494.681
23	2.64953	1088.13	Bedrock	100	32.5	354.896	335.713	369.995	0	369.995
24	2.64953	643.018	Bedrock	100	32.5	265.533	251.18	237.305	0	237.305
25	2.64953	218.231	Bedrock	100	32.5	194.467	183.956	131.784	0	131.784

Query 1 (spencer) - Safety Factor: 0.945948

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.59784	587.596	Qtn/Qtm	100	34.5	128.424	121.483	31.2575	0	31.2575
2	2.59784	1617.64	Qtn/Qtm	100	34.5	237.233	224.41	181.017	0	181.017
3	2.59784	2483.89	Qtn/Qtm	100	34.5	341.704	323.234	324.807	0	324.807
4	2.59784	3240.01	Qtn/Qtm	100	34.5	444.399	420.378	466.154	0	466.154
5	2.59784	3902.49	Qtn/Qtm	100	34.5	545.091	515.628	604.742	0	604.742
6	2.59784	4483.76	Qtn/Qtm	100	34.5	643.587	608.8	740.309	0	740.309
7	2.59784	4907.21	Qtn/Qtm	100	34.5	728.468	689.093	857.135	0	857.135
8	2.59784	4994.82	Qtn/Qtm	100	34.5	772.641	730.878	917.934	0	917.934
9	2.59784	4808.56	Qtn/Qtm	100	34.5	778.862	736.763	926.496	0	926.496
10	2.59784	4566.48	Qtn/Qtm	100	34.5	774.595	732.727	920.624	0	920.624
11	2.59784	4324.1	Qtn/Qtm	100	34.5	767.469	725.986	910.814	0	910.814
12	2.59784	4153.26	Qtn/Qtm	100	34.5	769.098	727.527	913.056	0	913.056
13	2.59784	3940.41	Qtn/Qtm	100	34.5	761.825	720.647	903.046	0	903.046
14	2.59784	3790.09	Qtn/Qtm	100	34.5	763.059	721.814	904.744	0	904.744
15	2.59784	3713.63	Qtn/Qtm	100	34.5	776.078	734.129	922.665	0	922.665
16	2.64953	3668.2	Bedrock	100	32.5	731.216	691.692	928.77	0	928.77
17	2.64953	3370.68	Bedrock	100	32.5	702.909	664.915	886.74	0	886.74
18	2.64953	3054.04	Bedrock	100	32.5	667.877	631.777	834.721	0	834.721
19	2.64953	2718.11	Bedrock	100	32.5	625.654	591.836	772.028	0	772.028

20	2.64953	2352.41	Bedrock	100	32.5	573.726	542.715	694.923	0	694.923
21	2.64953	1958.13	Bedrock	100	32.5	511.631	483.976	602.724	0	602.724
22	2.64953	1536.38	Bedrock	100	32.5	438.869	415.147	494.681	0	494.681
23	2.64953	1088.13	Bedrock	100	32.5	354.896	335.713	369.995	0	369.995
24	2.64953	643.018	Bedrock	100	32.5	265.533	251.18	237.305	0	237.305
25	2.64953	218.231	Bedrock	100	32.5	194.467	183.956	131.784	0	131.784

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.954055

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	208.794	199.973	0	0	0
2	211.392	195.205	-229.992	0	0
3	213.99	190.87	-1.09001	0	0
4	216.588	186.889	524.627	0	0
5	219.185	183.206	1237.36	0	0
6	221.783	179.779	2053.21	0	0
7	224.381	176.577	2906.94	0	0
8	226.979	173.574	3726.73	0	0
9	229.577	170.749	4421.51	0	0
10	232.175	168.087	4942.97	0	0
11	234.772	165.573	5298.33	0	0
12	237.37	163.195	5504.92	0	0
13	239.968	160.944	5585.41	0	0
14	242.566	158.811	5548.62	0	0
15	245.164	156.789	5409.85	0	0
16	247.762	154.871	5179.16	0	0
17	250.411	153.016	4978.33	0	0
18	253.061	151.258	4691.34	0	0
19	255.71	149.593	4334.32	0	0
20	258.36	148.016	3924.28	0	0
21	261.009	146.524	3480.02	0	0
22	263.659	145.113	3022	0	0
23	266.308	143.78	2572.23	0	0
24	268.958	142.523	2154.3	0	0
25	271.607	141.339	1788.41	0	0
26	274.257	140.226	0	0	0

Query 1 (bishop simplified) - Safety Factor: 0.954055

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	208.794	199.973	0	0	0
2	211.392	195.205	-229.992	0	0
3	213.99	190.87	-1.09001	0	0
4	216.588	186.889	524.627	0	0

5	219.185	183.206	1237.36	0	0
6	221.783	179.779	2053.21	0	0
7	224.381	176.577	2906.94	0	0
8	226.979	173.574	3726.73	0	0
9	229.577	170.749	4421.51	0	0
10	232.175	168.087	4942.97	0	0
11	234.772	165.573	5298.33	0	0
12	237.37	163.195	5504.92	0	0
13	239.968	160.944	5585.41	0	0
14	242.566	158.811	5548.62	0	0
15	245.164	156.789	5409.85	0	0
16	247.762	154.871	5179.16	0	0
17	250.411	153.016	4978.33	0	0
18	253.061	151.258	4691.34	0	0
19	255.71	149.593	4334.32	0	0
20	258.36	148.016	3924.28	0	0
21	261.009	146.524	3480.02	0	0
22	263.659	145.113	3022	0	0
23	266.308	143.78	2572.23	0	0
24	268.958	142.523	2154.3	0	0
25	271.607	141.339	1788.41	0	0
26	274.257	140.226	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 0.951396

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	212.092	198.195	0	0	0
2	214.511	192.672	-250.766	0	0
3	216.929	187.904	98.7237	0	0
4	219.348	183.684	799.714	0	0
5	221.767	179.886	1690.67	0	0
6	224.185	176.43	2660.15	0	0
7	226.604	173.258	3611.6	0	0
8	229.022	170.33	4441.62	0	0
9	231.441	167.613	5083.82	0	0
10	233.859	165.084	5538.12	0	0
11	236.278	162.722	5814.81	0	0
12	238.697	160.512	5936.81	0	0
13	241.115	158.441	5915.62	0	0
14	243.534	156.498	5762.9	0	0
15	245.952	154.674	5492.02	0	0
16	248.525	152.855	5224.8	0	0
17	251.099	151.153	4839.1	0	0
18	253.672	149.562	4355.81	0	0
19	256.245	148.076	3796.33	0	0
20	258.818	146.688	3184.52	0	0
21	261.391	145.395	2546.75	0	0

22	263.964	144.193	1911.57	0	0
23	266.538	143.078	1309.69	0	0
24	269.111	142.047	773.927	0	0
25	271.684	141.097	331.256	0	0
26	274.257	140.226	0	0	0

Global Minimum Query (spencer) - Safety Factor: 0.945948

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	208.794	199.973	0	0	0
2	211.392	195.205	-184.649	-133.164	35.7982
3	213.99	190.87	-16.256	-11.7234	35.7982
4	216.588	186.889	389.08	280.593	35.798
5	219.185	183.206	951.357	686.091	35.798
6	221.783	179.779	1607.36	1159.18	35.798
7	224.381	176.577	2305.86	1662.92	35.7981
8	226.979	173.574	2987.25	2154.32	35.7981
9	229.577	170.749	3572.35	2576.28	35.7981
10	232.175	168.087	4015.3	2895.72	35.7981
11	234.772	165.573	4317.27	3113.49	35.7981
12	237.37	163.195	4488.75	3237.15	35.798
13	239.968	160.944	4545.75	3278.26	35.798
14	242.566	158.811	4492.53	3239.88	35.798
15	245.164	156.789	4339.64	3129.62	35.798
16	247.762	154.871	4093.04	2951.78	35.798
17	250.411	153.016	3878.15	2796.81	35.7981
18	253.061	151.258	3574.14	2577.57	35.7981
19	255.71	149.593	3194.33	2303.66	35.7981
20	258.36	148.016	2753.83	1985.98	35.798
21	261.009	146.524	2270.56	1637.46	35.798
22	263.659	145.113	1765.26	1273.06	35.7982
23	266.308	143.78	1261.6	909.831	35.7981
24	268.958	142.523	786.319	567.07	35.798
25	271.607	141.339	363.661	262.262	35.7981
26	274.257	140.226	0	0	0

Query 1 (spencer) - Safety Factor: 0.945948

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	208.794	199.973	0	0	0
2	211.392	195.205	-184.649	-133.164	35.7982
3	213.99	190.87	-16.256	-11.7234	35.7982
4	216.588	186.889	389.08	280.593	35.798
5	219.185	183.206	951.357	686.091	35.798
6	221.783	179.779	1607.36	1159.18	35.798
7	224.381	176.577	2305.86	1662.92	35.7981
8	226.979	173.574	2987.25	2154.32	35.7981

9	229.577	170.749	3572.35	2576.28	35.7981
10	232.175	168.087	4015.3	2895.72	35.7981
11	234.772	165.573	4317.27	3113.49	35.7981
12	237.37	163.195	4488.75	3237.15	35.798
13	239.968	160.944	4545.75	3278.26	35.798
14	242.566	158.811	4492.53	3239.88	35.798
15	245.164	156.789	4339.64	3129.62	35.798
16	247.762	154.871	4093.04	2951.78	35.798
17	250.411	153.016	3878.15	2796.81	35.7981
18	253.061	151.258	3574.14	2577.57	35.7981
19	255.71	149.593	3194.33	2303.66	35.7981
20	258.36	148.016	2753.83	1985.98	35.798
21	261.009	146.524	2270.56	1637.46	35.798
22	263.659	145.113	1765.26	1273.06	35.7982
23	266.308	143.78	1261.6	909.831	35.7981
24	268.958	142.523	786.319	567.07	35.798
25	271.607	141.339	363.661	262.262	35.7981
26	274.257	140.226	0	0	0

List Of Coordinates

External Boundary

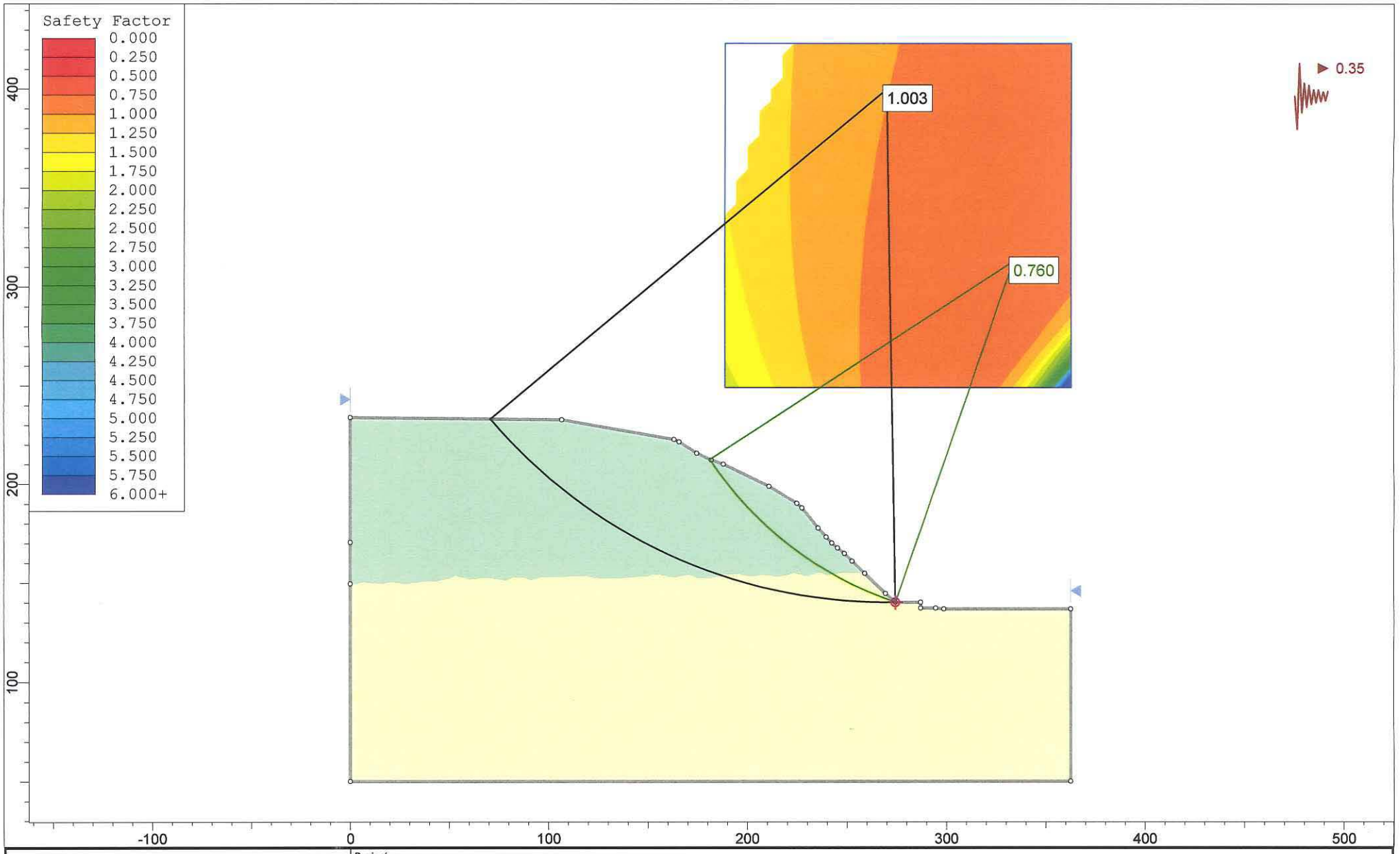
X	Y
362.5	50
362.5	136.88
298.67	136.88
294.554	137.386
286.992	137.386
286.992	140.226
274.257	140.226
269.279	144.698
258.898	154.871
252.489	161.151
248.692	165.032
245.233	167.816
242.364	170.347
239.58	173.385
235.417	177.879
227.346	188.147
224.746	190.434
210.745	199.021
187.827	210.203
181.738	212.362
174.512	215.841
165.627	221.582
163.098	222.744

106.671	232.801
0	233.897
0	170.541
0	149.556
0	50

Material Boundary

X	Y
0	149.556
4.008	149.556
7.606	150.51
10.68	149.866
15.175	149.655
18.365	149.655
20.335	150.5
22.007	150.5
26.812	149.296
38.582	150.891
44.277	150.891
50.048	152.106
53.693	153.701
57.642	152.562
60.755	151.726
66.742	152.345
71.585	152.345
78.001	151.498
79.535	151.498
82.754	152.856
86.931	152.856
91.197	151.591
92.08	151.591
96.993	152.973
100.405	152.973
112.625	153.376
119.904	153.376
124.909	152.484
137.298	152.484
150.111	153.302
152.759	154.217
155.832	154.217
162.435	152.877
164.625	152.877
169.397	153.857
171.326	153.857
174.758	152.713
181.721	152.288
185.741	153.367

188.258	154.446
196.234	154.446
201.007	153.465
204.014	153.465
207.414	153.988
210.78	153.988
215.422	153.203
219.312	153.726
223.594	155.001
226.994	154.282
228.465	153.726
231.439	153.726
234.937	154.903
237.421	154.903
239.709	154.151
242.651	154.151
247.195	154.871
250.562	154.871
258.898	154.871



	Project	#6489 - Green Acres, LLC		
	Analysis Description	Section 3-3' Seismic Circular Failure		
	Drawn By	Jonathan Gurunathan	Scale 1:800	Company GeoSoils Consultants, Inc
	Date	11/5/2015, 10:06:26 AM		File Name Section 3 Seismic.slim

SLIDEINTERPRET 6.036

Slide Analysis Information

#6489 - Green Acres, LLC

Project Summary

File Name: Section 3 Seismic.slim
Slide Modeler Version: 6.036
Project Title: #6489 - Green Acres, LLC
Analysis: Section 3-3' Seismic Circular Failure
Author: Jonathan Gurunathan
Company: GeoSoils Consultants, Inc
Date Created: 11/5/2015, 10:06:26 AM

General Settings

Units of Measurement: Imperial Units
Time Units: days
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116

Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.35

Material Properties

Property	Bedrock	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	130
Cohesion [psf]	310	300
Friction Angle [deg]	36.5	35
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: bishop simplified

FS: 0.760341
Center: 333.723, 312.970
Radius: 182.693
Left Slip Surface Endpoint: 180.991, 212.722
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Moment=2.03492e+007 lb-ft
Driving Moment=2.67633e+007 lb-ft
Total Slice Area=1313.14 ft2

Method: janbu corrected

FS: 0.737042
Center: 310.505, 278.143
Radius: 142.601
Left Slip Surface Endpoint: 184.496, 211.384
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Horizontal Force=93568.9 lb

Driving Horizontal Force=126952 lb
Total Slice Area=1396.14 ft2

Method: spencer

FS: 0.769591
Center: 362.745, 382.623
Radius: 258.044
Left Slip Surface Endpoint: 159.725, 223.345
Right Slip Surface Endpoint: 274.257, 140.226
Resisting Moment=3.82093e+007 lb-ft
Driving Moment=4.96488e+007 lb-ft
Resisting Horizontal Force=122152 lb
Driving Horizontal Force=158724 lb
Total Slice Area=1757.25 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 914
Number of Invalid Surfaces: 47

Error Codes:

Error Code -101 reported for 47 surfaces

Method: janbu corrected

Number of Valid Surfaces: 914
Number of Invalid Surfaces: 47

Error Codes:

Error Code -101 reported for 47 surfaces

Method: spencer

Number of Valid Surfaces: 913
Number of Invalid Surfaces: 48

Error Codes:

Error Code -101 reported for 47 surfaces
Error Code -108 reported for 1 surface

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero) surface / slope intersections.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.760341

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.66279	928.689	Qtn/Qtm	300	35	268.144	203.881	-137.273	0	-137.273
2	3.66279	2769.64	Qtn/Qtm	300	35	485.517	369.158	98.7681	0	98.7681
3	3.66279	4302.2	Qtn/Qtm	300	35	682.187	518.695	312.329	0	312.329
4	3.66279	5598.73	Qtn/Qtm	300	35	862.005	655.418	507.589	0	507.589
5	3.66279	6763.1	Qtn/Qtm	300	35	1034.44	786.525	694.83	0	694.83
6	3.66279	7808.72	Qtn/Qtm	300	35	1199.29	911.873	873.845	0	873.845
7	3.66279	8746.58	Qtn/Qtm	300	35	1356.46	1031.37	1044.51	0	1044.51
8	3.66279	9585.83	Qtn/Qtm	300	35	1505.85	1144.96	1206.73	0	1206.73
9	3.66279	10250.1	Qtn/Qtm	300	35	1635.8	1243.76	1347.84	0	1347.84
10	3.66279	10697.2	Qtn/Qtm	300	35	1738.5	1321.85	1459.35	0	1459.35
11	3.66279	11063.9	Qtn/Qtm	300	35	1831.68	1392.7	1560.53	0	1560.53
12	3.66279	11356.2	Qtn/Qtm	300	35	1915.5	1456.43	1651.55	0	1651.55
13	3.66279	11282.3	Qtn/Qtm	300	35	1945.15	1478.98	1683.76	0	1683.76
14	3.66279	10438.1	Qtn/Qtm	300	35	1854.87	1410.33	1585.71	0	1585.71
15	3.66279	9387.68	Qtn/Qtm	300	35	1726.46	1312.7	1446.29	0	1446.29
16	3.66279	8486.54	Qtn/Qtm	300	35	1615.32	1228.2	1325.6	0	1325.6
17	3.66279	7653.19	Qtn/Qtm	300	35	1509.59	1147.8	1210.79	0	1210.79
18	3.8748	7410.15	Bedrock	310	36.5	1477.09	1123.09	1098.83	0	1098.83
19	3.8748	6794.83	Bedrock	310	36.5	1403.96	1067.49	1023.69	0	1023.69
20	3.8748	5841.29	Bedrock	310	36.5	1269.34	965.132	885.36	0	885.36
21	3.8748	4856.65	Bedrock	310	36.5	1123.17	853.992	735.163	0	735.163
22	3.8748	3822.53	Bedrock	310	36.5	961.892	731.366	569.444	0	569.444
23	3.8748	2734.62	Bedrock	310	36.5	784.217	596.272	386.876	0	386.876
24	3.8748	1600.92	Bedrock	310	36.5	591.018	449.375	188.354	0	188.354
25	3.8748	528.426	Bedrock	310	36.5	401.716	305.441	-6.16078	0	-6.16078

Global Minimum Query (janbu corrected) - Safety Factor: 0.737042

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.70499	1264.01	Qtn/Qtm	300	35	265.065	195.364	-149.436	0	-149.436
2	3.70499	3480.53	Qtn/Qtm	300	35	506.239	373.119	104.425	0	104.425
3	3.70499	5292.37	Qtn/Qtm	300	35	730.352	538.3	340.327	0	340.327
4	3.70499	6855.76	Qtn/Qtm	300	35	945.09	696.571	566.363	0	566.363
5	3.70499	8212.25	Qtn/Qtm	300	35	1149.83	847.475	781.875	0	781.875
6	3.70499	9392.01	Qtn/Qtm	300	35	1344.29	990.795	986.557	0	986.557
7	3.70499	10417.8	Qtn/Qtm	300	35	1528.33	1126.44	1180.28	0	1180.28
8	3.70499	11213.6	Qtn/Qtm	300	35	1689.55	1245.27	1349.99	0	1349.99
9	3.70499	11758	Qtn/Qtm	300	35	1821.85	1342.78	1489.24	0	1489.24
10	3.70499	12190.7	Qtn/Qtm	300	35	1941.67	1431.09	1615.36	0	1615.36
11	3.70499	12517.5	Qtn/Qtm	300	35	2048.57	1509.88	1727.89	0	1727.89
12	3.70499	12391	Qtn/Qtm	300	35	2089.47	1540.03	1770.95	0	1770.95

13	3.70499	11477.7	Qtn/Qtm	300	35	2007.65	1479.72	1684.82	0	1684.82
14	3.70499	10382.1	Qtn/Qtm	300	35	1888.94	1392.23	1559.86	0	1559.86
15	3.70499	9447.19	Qtn/Qtm	300	35	1786.9	1317.02	1452.45	0	1452.45
16	3.41865	7916.27	Bedrock	310	36.5	1741.26	1283.38	1315.45	0	1315.45
17	3.41865	7327.85	Bedrock	310	36.5	1670.39	1231.15	1244.86	0	1244.86
18	3.41865	6809.38	Bedrock	310	36.5	1608.14	1185.27	1182.86	0	1182.86
19	3.41865	6013.25	Bedrock	310	36.5	1486.11	1095.33	1061.3	0	1061.3
20	3.41865	5171.06	Bedrock	310	36.5	1347.84	993.415	923.582	0	923.582
21	3.41865	4295.27	Bedrock	310	36.5	1195.26	880.957	771.604	0	771.604
22	3.41865	3374.48	Bedrock	310	36.5	1025.39	755.753	602.4	0	602.4
23	3.41865	2409.96	Bedrock	310	36.5	837.738	617.448	415.493	0	415.493
24	3.41865	1415.74	Bedrock	310	36.5	634.634	467.752	213.19	0	213.19
25	3.41865	472.655	Bedrock	310	36.5	433.815	319.74	13.1629	0	13.1629

Global Minimum Query (spencer) - Safety Factor: 0.769591

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.61332	1437.86	Qtn/Qtm	300	35	463.82	356.952	81.3355	0	81.3355
2	4.61332	3570.77	Qtn/Qtm	300	35	570.185	438.809	198.24	0	198.24
3	4.61332	4952.72	Qtn/Qtm	300	35	654.533	503.723	290.946	0	290.946
4	4.61332	6293.68	Qtn/Qtm	300	35	745.371	573.631	390.785	0	390.785
5	4.61332	7794.69	Qtn/Qtm	300	35	853.093	656.533	509.182	0	509.182
6	4.61332	9402.93	Qtn/Qtm	300	35	976.771	751.714	645.115	0	645.115
7	4.61332	10833.5	Qtn/Qtm	300	35	1101.69	847.854	782.417	0	782.417
8	4.61332	11927.6	Qtn/Qtm	300	35	1217.4	936.9	909.587	0	909.587
9	4.61332	12906.2	Qtn/Qtm	300	35	1335.69	1027.93	1039.6	0	1039.6
10	4.61332	13777.4	Qtn/Qtm	300	35	1456.84	1121.17	1172.76	0	1172.76
11	4.61332	14547	Qtn/Qtm	300	35	1581.07	1216.78	1309.3	0	1309.3
12	4.61332	15066.7	Qtn/Qtm	300	35	1696.93	1305.94	1436.63	0	1436.63
13	4.61332	15301.6	Qtn/Qtm	300	35	1799.41	1384.81	1549.27	0	1549.27
14	4.61332	15448.1	Qtn/Qtm	300	35	1902.22	1463.93	1662.26	0	1662.26
15	4.61332	15144.7	Qtn/Qtm	300	35	1972.15	1517.75	1739.13	0	1739.13
16	4.61332	13541.7	Qtn/Qtm	300	35	1921.29	1478.61	1683.23	0	1683.23
17	4.61332	11716.3	Qtn/Qtm	300	35	1836.37	1413.25	1589.88	0	1589.88
18	4.61332	10205.8	Qtn/Qtm	300	35	1769.52	1361.81	1516.43	0	1516.43
19	4.49888	8789.61	Bedrock	310	36.5	1884.33	1450.16	1540.84	0	1540.84
20	4.49888	7825.16	Bedrock	310	36.5	1852.41	1425.6	1507.64	0	1507.64
21	4.49888	6457.4	Bedrock	310	36.5	1750.33	1347.04	1401.48	0	1401.48
22	4.49888	5069.85	Bedrock	310	36.5	1625.11	1250.67	1271.24	0	1271.24
23	4.49888	3623.78	Bedrock	310	36.5	1466.78	1128.82	1106.57	0	1106.57
24	4.49888	2120.44	Bedrock	310	36.5	1270.31	977.617	902.232	0	902.232
25	4.49888	687.674	Bedrock	310	36.5	970.328	746.756	590.243	0	590.243

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.760341

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	180.991	212.722	0	0	0
2	184.654	207.352	-1388.52	0	0
3	188.317	202.364	-1694.5	0	0
4	191.98	197.707	-1218.59	0	0
5	195.642	193.344	-183.219	0	0
6	199.305	189.242	1266.71	0	0
7	202.968	185.377	3009.58	0	0
8	206.631	181.729	4942.48	0	0
9	210.294	178.278	6977.71	0	0
10	213.956	175.011	9011.91	0	0
11	217.619	171.915	10943.8	0	0
12	221.282	168.978	12728.9	0	0
13	224.945	166.191	14330.5	0	0
14	228.607	163.546	15649.4	0	0
15	232.27	161.036	16529.4	0	0
16	235.933	158.653	16974.5	0	0
17	239.596	156.392	17059.7	0	0
18	243.259	154.247	16837.5	0	0
19	247.133	152.101	16099.5	0	0
20	251.008	150.074	15143.4	0	0
21	254.883	148.164	13989.2	0	0
22	258.758	146.366	12684.2	0	0
23	262.633	144.676	11278.8	0	0
24	266.507	143.091	9827.97	0	0
25	270.382	141.609	8390.72	0	0
26	274.257	140.226	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 0.737042

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	184.496	211.384	0	0	0
2	188.201	204.817	-1564.44	0	0
3	191.906	198.964	-1693.55	0	0
4	195.611	193.678	-867.574	0	0
5	199.316	188.857	606.106	0	0
6	203.021	184.43	2493.66	0	0
7	206.726	180.343	4612.44	0	0
8	210.431	176.555	6816.98	0	0
9	214.136	173.034	8959.05	0	0
10	217.841	169.753	10911.6	0	0
11	221.546	166.692	12611.2	0	0
12	225.251	163.833	14007.3	0	0
13	228.956	161.161	14992.7	0	0
14	232.661	158.664	15450.8	0	0
15	236.366	156.33	15417.1	0	0

16	240.071	154.151	14975.9	0	0
17	243.489	152.27	14004.7	0	0
18	246.908	150.509	12799.5	0	0
19	250.326	148.862	11390.4	0	0
20	253.745	147.325	9821.43	0	0
21	257.164	145.894	8141.46	0	0
22	260.582	144.566	6402.87	0	0
23	264.001	143.338	4663.59	0	0
24	267.42	142.207	2986.68	0	0
25	270.838	141.17	1437.77	0	0
26	274.257	140.226	0	0	0

Global Minimum Query (spencer) - Safety Factor: 0.769591

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	159.725	223.345	0	0	0
2	164.338	217.634	-1182.33	-1587.75	53.3265
3	168.952	212.239	-1506.22	-2022.7	53.3265
4	173.565	207.131	-1320.75	-1773.63	53.3264
5	178.178	202.285	-679.636	-912.681	53.3265
6	182.792	197.682	438.017	588.212	53.3265
7	187.405	193.302	2026.37	2721.21	53.3265
8	192.018	189.132	3974.11	5336.82	53.3265
9	196.632	185.157	6120.71	8219.48	53.3265
10	201.245	181.366	8386.78	11262.6	53.3265
11	205.858	177.75	10696.9	14364.8	53.3264
12	210.472	174.298	12978.4	17428.7	53.3265
13	215.085	171.003	15119.1	20303.3	53.3263
14	219.698	167.858	17006.2	22837.5	53.3264
15	224.312	164.856	18585.5	24958.4	53.3265
16	228.925	161.991	19726.5	26490.7	53.3265
17	233.538	159.258	20159.9	27072.6	53.3264
18	238.152	156.652	19890.8	26711.2	53.3264
19	242.765	154.169	19025.1	25548.7	53.3264
20	247.264	151.862	17137.5	23013.8	53.3263
21	251.763	149.665	14814.6	19894.5	53.3265
22	256.261	147.575	12091.9	16238.1	53.3263
23	260.76	145.588	9045.31	12146.9	53.3264
24	265.259	143.703	5769.27	7747.53	53.3264
25	269.758	141.916	2380.77	3197.13	53.3265
26	274.257	140.226	0	0	0

List Of Coordinates

External Boundary

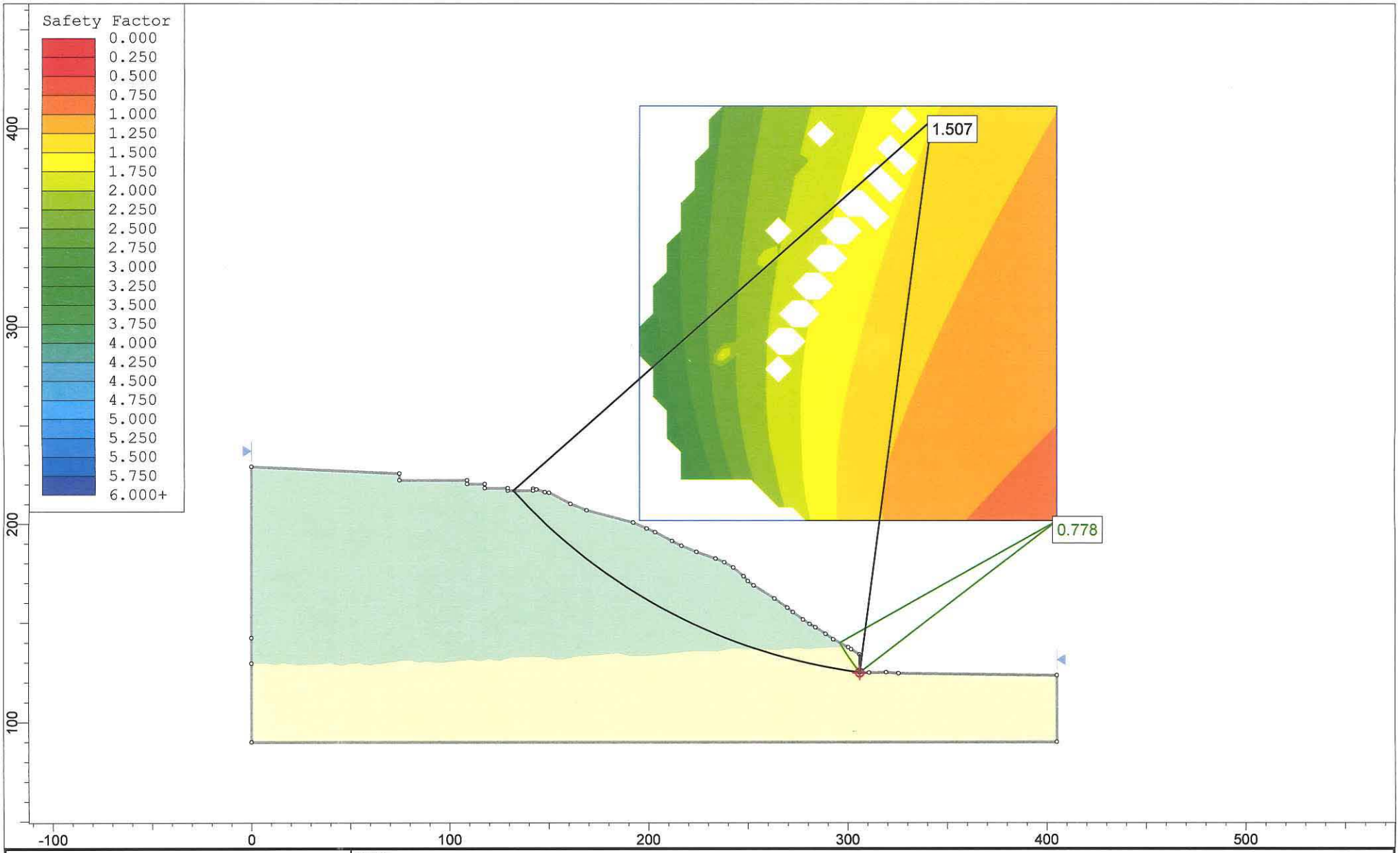
X	Y

362.5	50
362.5	136.88
298.67	136.88
294.554	137.386
286.992	137.386
286.992	140.226
274.257	140.226
269.279	144.698
258.898	154.871
252.489	161.151
248.692	165.032
245.233	167.816
242.364	170.347
239.58	173.385
235.417	177.879
227.346	188.147
224.746	190.434
210.745	199.021
187.827	210.203
181.738	212.362
174.512	215.841
165.627	221.582
163.098	222.744
106.671	232.801
0	233.897
0	170.541
0	149.556
0	50

Material Boundary

X	Y
0	149.556
4.008	149.556
7.606	150.51
10.68	149.866
15.175	149.655
18.365	149.655
20.335	150.5
22.007	150.5
26.812	149.296
38.582	150.891
44.277	150.891
50.048	152.106
53.693	153.701
57.642	152.562
60.755	151.726
66.742	152.345

71.585	152.345
78.001	151.498
79.535	151.498
82.754	152.856
86.931	152.856
91.197	151.591
92.08	151.591
96.993	152.973
100.405	152.973
112.625	153.376
119.904	153.376
124.909	152.484
137.298	152.484
150.111	153.302
152.759	154.217
155.832	154.217
162.435	152.877
164.625	152.877
169.397	153.857
171.326	153.857
174.758	152.713
181.721	152.288
185.741	153.367
188.258	154.446
196.234	154.446
201.007	153.465
204.014	153.465
207.414	153.988
210.78	153.988
215.422	153.203
219.312	153.726
223.594	155.001
226.994	154.282
228.465	153.726
231.439	153.726
234.937	154.903
237.421	154.903
239.709	154.151
242.651	154.151
247.195	154.871
250.562	154.871
258.898	154.871



Project	#6489 - Green Acres, LLC			
Analysis Description	Section 7-7' Static Circular Failure			
Drawn By	Jonathan Gurunathan	Scale	1:800	Company: GeoSoils Consultants, Inc
Date	11/5/2015, 11:18:19 AM			File Name: Section 7 Static.slim

SLIDEINTERPRET 6.036

Slide Analysis Information

#6489 - Green Acres, LLC

Project Summary

File Name: Section 7 Static.slim
Slide Modeler Version: 6.036
Project Title: #6489 - Green Acres, LLC
Analysis: Section 7-7' Static Circular Failure
Author: Jonathan Gurunathan
Company: GeoSoils Consultants, Inc
Date Created: 11/5/2015, 11:18:19 AM

General Settings

Units of Measurement: Imperial Units
Time Units: days
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116

Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Material Properties

Property	Bedrock	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	130
Cohesion [psf]	100	100
Friction Angle [deg]	32.5	34.5
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: bishop simplified

FS: 0.778197
Center: 405.059, 201.772
Radius: 125.345
Left Slip Surface Endpoint: 295.946, 140.079
Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 295.946 140.079
Right Slope Intercept: 305.907 134.118
Resisting Moment=519672 lb-ft
Driving Moment=667789 lb-ft
Total Slice Area=50.0378 ft2

Method: janbu corrected

FS: 0.792608
Center: 405.059, 201.772
Radius: 125.345
Left Slip Surface Endpoint: 295.946, 140.079
Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 295.946 140.079
Right Slope Intercept: 305.907 134.118
Resisting Horizontal Force=2381.33 lb
Driving Horizontal Force=3004.42 lb
Total Slice Area=50.0378 ft2

Method: spencer

FS: 0.782102
Center: 405.059, 201.772
Radius: 125.345
Left Slip Surface Endpoint: 295.946, 140.079
Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 295.946 140.079
Right Slope Intercept: 305.907 134.118
Resisting Moment=522280 lb-ft
Driving Moment=667789 lb-ft
Resisting Horizontal Force=2350.4 lb
Driving Horizontal Force=3005.23 lb
Total Slice Area=50.0378 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 840
Number of Invalid Surfaces: 121

Error Codes:

Error Code -101 reported for 51 surfaces
Error Code -103 reported for 31 surfaces
Error Code -106 reported for 21 surfaces
Error Code -114 reported for 18 surfaces

Method: janbu corrected

Number of Valid Surfaces: 838
Number of Invalid Surfaces: 123

Error Codes:

Error Code -101 reported for 51 surfaces
Error Code -103 reported for 31 surfaces
Error Code -106 reported for 21 surfaces
Error Code -108 reported for 2 surfaces
Error Code -114 reported for 18 surfaces

Method: spencer

Number of Valid Surfaces: 838
Number of Invalid Surfaces: 123

Error Codes:

Error Code -101 reported for 51 surfaces
Error Code -103 reported for 31 surfaces
Error Code -106 reported for 21 surfaces
Error Code -108 reported for 2 surfaces
Error Code -114 reported for 18 surfaces

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero) surface / slope intersections.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.778197

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	0.349125	9.65335	Qtn/Qtm	100	34.5	60.0636	46.7413	-77.4919	0	-77.4919
2	0.349125	28.7804	Qtn/Qtm	100	34.5	79.6925	62.0165	-55.2664	0	-55.2664
3	0.349125	47.5531	Qtn/Qtm	100	34.5	99.2539	77.2391	-33.1173	0	-33.1173
4	0.349125	65.9816	Qtn/Qtm	100	34.5	118.744	92.4064	-11.0487	0	-11.0487
5	0.407815	99.951	Bedrock	100	32.5	139.424	108.5	13.3417	0	13.3417
6	0.407815	124.122	Bedrock	100	32.5	161.292	125.517	40.0532	0	40.0532
7	0.407815	147.792	Bedrock	100	32.5	183.041	142.442	66.6207	0	66.6207
8	0.407815	170.975	Bedrock	100	32.5	204.669	159.273	93.0398	0	93.0398
9	0.407815	193.685	Bedrock	100	32.5	226.172	176.007	119.307	0	119.307
10	0.407815	215.936	Bedrock	100	32.5	247.548	192.641	145.418	0	145.418
11	0.407815	237.741	Bedrock	100	32.5	268.793	209.174	171.369	0	171.369
12	0.407815	257.731	Bedrock	100	32.5	288.667	224.64	195.645	0	195.645
13	0.407815	276.029	Bedrock	100	32.5	307.241	239.094	218.334	0	218.334
14	0.407815	293.915	Bedrock	100	32.5	325.645	253.416	240.815	0	240.815
15	0.407815	311.474	Bedrock	100	32.5	343.945	267.657	263.168	0	263.168
16	0.407815	329.04	Bedrock	100	32.5	362.44	282.05	285.76	0	285.76
17	0.407815	346.284	Bedrock	100	32.5	380.823	296.355	308.216	0	308.216
18	0.407815	363.158	Bedrock	100	32.5	399.039	310.531	330.468	0	330.468
19	0.407815	379.668	Bedrock	100	32.5	417.087	324.576	352.513	0	352.513
20	0.407815	395.825	Bedrock	100	32.5	434.966	338.489	374.353	0	374.353
21	0.407815	411.635	Bedrock	100	32.5	452.675	352.27	395.984	0	395.984
22	0.407815	427.106	Bedrock	100	32.5	470.213	365.918	417.408	0	417.408
23	0.407815	442.247	Bedrock	100	32.5	487.581	379.434	438.624	0	438.624
24	0.407815	457.063	Bedrock	100	32.5	504.778	392.817	459.63	0	459.63
25	0.407815	471.563	Bedrock	100	32.5	521.804	406.066	480.428	0	480.428

Global Minimum Query (janbu corrected) - Safety Factor: 0.792608

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]

1	0.349125	9.65335	Qtn/Qtm	100	34.5	59.0095	46.7714	-77.448	0	-77.448
2	0.349125	28.7804	Qtn/Qtm	100	34.5	78.2938	62.0563	-55.2085	0	-55.2085
3	0.349125	47.5531	Qtn/Qtm	100	34.5	97.5115	77.2884	-33.0456	0	-33.0456
4	0.349125	65.9816	Qtn/Qtm	100	34.5	116.659	92.4651	-10.9633	0	-10.9633
5	0.407815	99.951	Bedrock	100	32.5	136.973	108.566	13.4461	0	13.4461
6	0.407815	124.122	Bedrock	100	32.5	158.456	125.593	40.1732	0	40.1732
7	0.407815	147.792	Bedrock	100	32.5	179.822	142.528	66.7559	0	66.7559
8	0.407815	170.975	Bedrock	100	32.5	201.069	159.369	93.1902	0	93.1902
9	0.407815	193.685	Bedrock	100	32.5	222.193	176.112	119.472	0	119.472
10	0.407815	215.936	Bedrock	100	32.5	243.192	192.756	145.597	0	145.597
11	0.407815	237.741	Bedrock	100	32.5	264.062	209.298	171.563	0	171.563
12	0.407815	257.731	Bedrock	100	32.5	283.585	224.772	195.853	0	195.853
13	0.407815	276.029	Bedrock	100	32.5	301.831	239.234	218.553	0	218.553
14	0.407815	293.915	Bedrock	100	32.5	319.91	253.563	241.046	0	241.046
15	0.407815	311.474	Bedrock	100	32.5	337.887	267.812	263.411	0	263.411
16	0.407815	329.04	Bedrock	100	32.5	356.055	282.212	286.015	0	286.015
17	0.407815	346.284	Bedrock	100	32.5	374.113	296.525	308.483	0	308.483
18	0.407815	363.158	Bedrock	100	32.5	392.006	310.707	330.744	0	330.744
19	0.407815	379.668	Bedrock	100	32.5	409.735	324.759	352.801	0	352.801
20	0.407815	395.825	Bedrock	100	32.5	427.297	338.679	374.651	0	374.651
21	0.407815	411.635	Bedrock	100	32.5	444.693	352.467	396.293	0	396.293
22	0.407815	427.106	Bedrock	100	32.5	461.921	366.122	417.727	0	417.727
23	0.407815	442.247	Bedrock	100	32.5	478.981	379.644	438.953	0	438.953
24	0.407815	457.063	Bedrock	100	32.5	495.873	393.033	459.97	0	459.97
25	0.407815	471.563	Bedrock	100	32.5	512.596	406.288	480.777	0	480.777

Global Minimum Query (spencer) - Safety Factor: 0.782102

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	0.349125	9.65335	Qtn/Qtm	100	34.5	98.0234	76.6643	-33.9537	0	-33.9537
2	0.349125	28.7804	Qtn/Qtm	100	34.5	113.734	88.9518	-16.0752	0	-16.0752
3	0.349125	47.5531	Qtn/Qtm	100	34.5	129.528	101.304	1.89775	0	1.89775
4	0.349125	65.9816	Qtn/Qtm	100	34.5	145.399	113.717	19.9582	0	19.9582
5	0.407815	99.951	Bedrock	100	32.5	161.336	126.181	41.0962	0	41.0962
6	0.407815	124.122	Bedrock	100	32.5	178.942	139.951	62.7109	0	62.7109
7	0.407815	147.792	Bedrock	100	32.5	196.624	153.78	84.4179	0	84.4179
8	0.407815	170.975	Bedrock	100	32.5	214.373	167.662	106.208	0	106.208
9	0.407815	193.685	Bedrock	100	32.5	232.183	181.591	128.072	0	128.072
10	0.407815	215.936	Bedrock	100	32.5	250.046	195.561	150.001	0	150.001
11	0.407815	237.741	Bedrock	100	32.5	267.955	209.568	171.987	0	171.987
12	0.407815	257.731	Bedrock	100	32.5	284.893	222.815	192.78	0	192.78
13	0.407815	276.029	Bedrock	100	32.5	300.901	235.335	212.433	0	212.433
14	0.407815	293.915	Bedrock	100	32.5	316.892	247.842	232.066	0	232.066
15	0.407815	311.474	Bedrock	100	32.5	332.918	260.376	251.74	0	251.74
16	0.407815	329.04	Bedrock	100	32.5	349.226	273.13	271.76	0	271.76
17	0.407815	346.284	Bedrock	100	32.5	365.558	285.904	291.811	0	291.811
18	0.407815	363.158	Bedrock	100	32.5	381.865	298.657	311.83	0	311.83

19	0.407815	379.668	Bedrock	100	32.5	398.142	311.388	331.813	0	331.813
20	0.407815	395.825	Bedrock	100	32.5	414.388	324.094	351.757	0	351.757
21	0.407815	411.635	Bedrock	100	32.5	430.596	336.77	371.654	0	371.654
22	0.407815	427.106	Bedrock	100	32.5	446.764	349.415	391.502	0	391.502
23	0.407815	442.247	Bedrock	100	32.5	462.887	362.025	411.298	0	411.298
24	0.407815	457.063	Bedrock	100	32.5	478.964	374.599	431.034	0	431.034
25	0.407815	471.563	Bedrock	100	32.5	487.004	380.887	440.905	0	440.905

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.778197

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	295.946	140.079	0	0	0
2	296.296	139.466	-68.4279	0	0
3	296.645	138.86	-129.611	0	0
4	296.994	138.262	-183.933	0	0
5	297.343	137.672	-231.757	0	0
6	297.751	136.992	-279.326	0	0
7	298.159	136.321	-317.991	0	0
8	298.566	135.659	-348.292	0	0
9	298.974	135.007	-370.746	0	0
10	299.382	134.363	-385.848	0	0
11	299.79	133.728	-394.069	0	0
12	300.198	133.101	-395.861	0	0
13	300.605	132.483	-392.091	0	0
14	301.013	131.872	-383.543	0	0
15	301.421	131.269	-370.582	0	0
16	301.829	130.673	-353.534	0	0
17	302.237	130.084	-332.619	0	0
18	302.644	129.503	-308.143	0	0
19	303.052	128.928	-280.42	0	0
20	303.46	128.361	-249.747	0	0
21	303.868	127.8	-216.412	0	0
22	304.276	127.245	-180.691	0	0
23	304.684	126.697	-142.847	0	0
24	305.091	126.154	-103.135	0	0
25	305.499	125.618	-61.7981	0	0
26	305.907	125.088	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 0.792608

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	295.946	140.079	0	0	0
2	296.296	139.466	-68.3922	0	0
3	296.645	138.86	-129.529	0	0

4	296.994	138.262	-183.793	0	0
5	297.343	137.672	-231.549	0	0
6	297.751	136.992	-279.022	0	0
7	298.159	136.321	-317.576	0	0
8	298.566	135.659	-347.754	0	0
9	298.974	135.007	-370.071	0	0
10	299.382	134.363	-385.024	0	0
11	299.79	133.728	-393.084	0	0
12	300.198	133.101	-394.703	0	0
13	300.605	132.483	-390.748	0	0
14	301.013	131.872	-382.007	0	0
15	301.421	131.269	-368.843	0	0
16	301.829	130.673	-351.583	0	0
17	302.237	130.084	-330.446	0	0
18	302.644	129.503	-305.739	0	0
19	303.052	128.928	-277.776	0	0
20	303.46	128.361	-246.856	0	0
21	303.868	127.8	-213.265	0	0
22	304.276	127.245	-177.279	0	0
23	304.684	126.697	-139.164	0	0
24	305.091	126.154	-99.172	0	0
25	305.499	125.618	-57.5484	0	0
26	305.907	125.088	0	0	0

Global Minimum Query (spencer) - Safety Factor: 0.782102

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	295.946	140.079	0	0	0
2	296.296	139.466	-55.1658	-31.3172	29.5832
3	296.645	138.86	-104.74	-59.4604	29.5834
4	296.994	138.262	-148.979	-84.5745	29.5833
5	297.343	137.672	-188.13	-106.8	29.5833
6	297.751	136.992	-226.184	-128.403	29.5833
7	298.159	136.321	-257.339	-146.09	29.5834
8	298.566	135.659	-281.955	-160.064	29.5833
9	298.974	135.007	-300.381	-170.524	29.5832
10	299.382	134.363	-312.955	-177.662	29.5832
11	299.79	133.728	-320.003	-181.664	29.5833
12	300.198	133.101	-321.842	-182.708	29.5833
13	300.605	132.483	-319.134	-181.17	29.5833
14	301.013	131.872	-312.486	-177.396	29.5833
15	301.421	131.269	-302.163	-171.536	29.5833
16	301.829	130.673	-288.407	-163.727	29.5833
17	302.237	130.084	-271.372	-154.056	29.5833
18	302.644	129.503	-251.29	-142.656	29.5833
19	303.052	128.928	-228.4	-129.661	29.5833
20	303.46	128.361	-202.934	-115.204	29.5832

21	303.868	127.8	-175.117	-99.4125	29.5832
22	304.276	127.245	-145.165	-82.4093	29.5833
23	304.684	126.697	-113.292	-64.3149	29.5832
24	305.091	126.154	-79.7013	-45.2459	29.5833
25	305.499	125.618	-44.5936	-25.3155	29.5833
26	305.907	125.088	0	0	0

List Of Coordinates

External Boundary

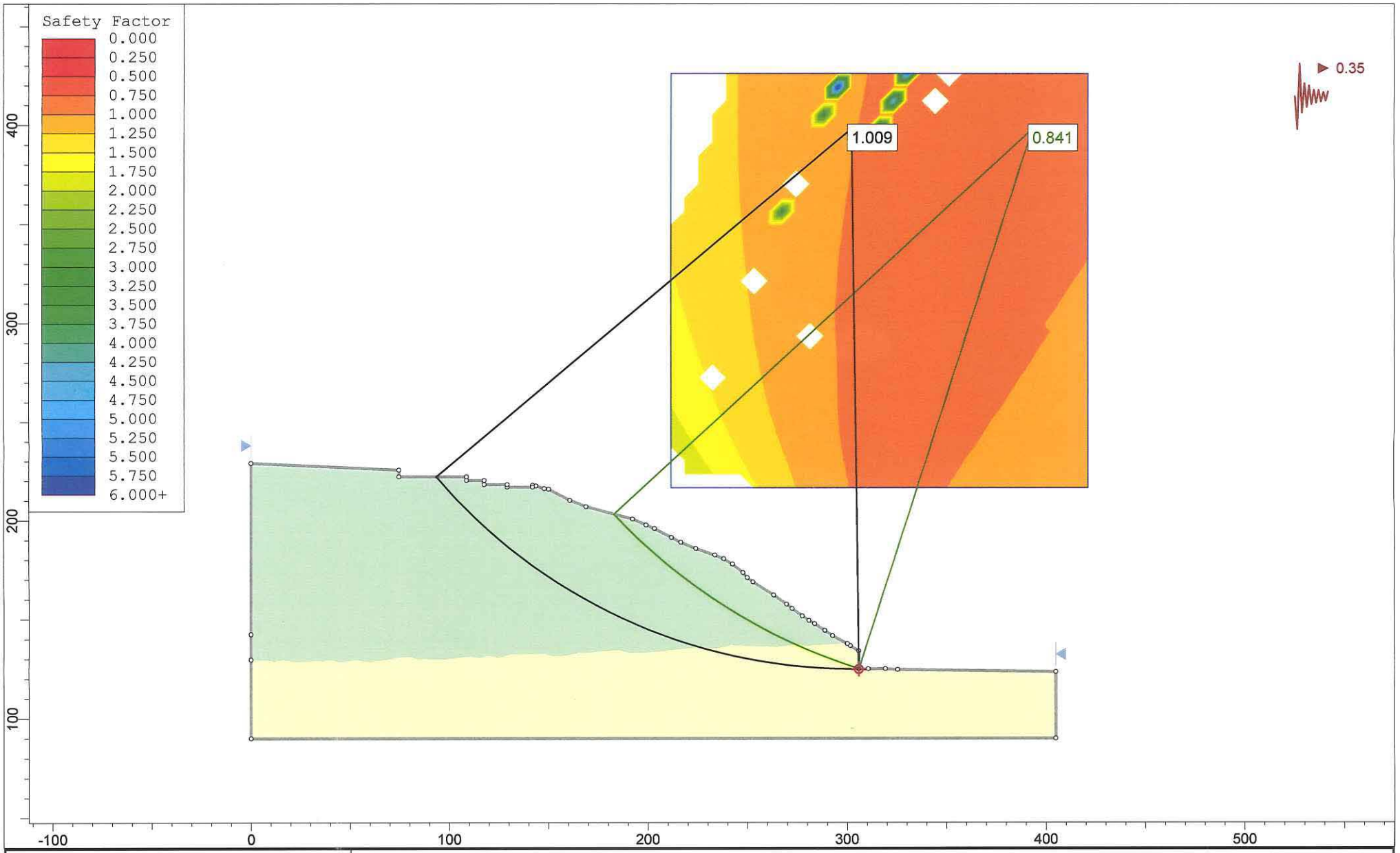
X	Y
405	90
405	123.673
325.408	124.748
319.195	125.218
310.665	125.088
305.907	125.088
305.907	134.118
301.615	136.851
300.189	137.794
292.696	141.83
288.861	144.505
283.74	147.835
280.914	149.45
277.534	151.72
272.472	155.458
269.632	157.726
263.165	162.263
252.721	168.923
249.87	171.118
247.776	173.641
242.503	178.005
238.063	180.654
233.673	182.572
224.138	185.887
216.577	189.02
211.832	191.473
203.294	195.968
199.049	197.808
192.305	200.805
168.895	207.026
160.789	210.296
150.04	215.955
147.892	216.235
143.653	217.623
141.988	217.926

141.988	217.017
129.19	217.017
129.19	218.237
117.637	218.237
117.637	220.321
108.716	220.321
108.716	222.209
74.658	222.209
74.658	225.66
0	229.112
0	142.448
0	129.644
0	90

Material Boundary

X	Y
0	129.644
7.938	129.644
12.282	128.742
16.747	129.751
21.868	128.716
24.089	128.716
37.485	129.423
41.749	129.423
45.684	128.313
49.191	129.044
51.285	129.524
54.842	129.524
58.929	128.767
61.578	128.767
76.816	130.911
81.66	130.911
84.536	130.054
86.983	130.054
87.993	130.407
92.357	130.104
93.366	130.104
99.068	130.104
111.657	131.416
114.836	130.735
116.274	130.735
119.68	131.744
120.992	131.744
124.902	130.836
125.76	130.836
131.815	132.602
136.255	132.602

148.566	132.602
153.41	131.643
158.078	131.643
165.924	133.283
170.969	133.283
173.518	133.661
185.905	134.469
190.698	133.384
197.838	133.384
210.553	134.368
222.991	135.68
236.009	135.68
242.997	137.219
246.302	136.865
247.336	136.865
260.455	136.536
263.018	136.298
266.191	136.298
274.638	137.132
277.11	137.132
278.13	136.708
282.398	136.708
286.508	137.208
300.189	137.794



	Project	#6489 - Green Acres, LLC		
	Analysis Description	Section 7-7' Seismic Circular Failure		
	Drawn By	Jonathan Gurunathan	Scale 1:800	Company GeoSoils Consultants, Inc
	Date	11/5/2015, 11:18:19 AM		File Name Section 7 Seismic.slim

SLIDEINTERPRET 6.036

Slide Analysis Information

#6489 - Green Acres, LLC

Project Summary

File Name: Section 7 Seismic.slim
Slide Modeler Version: 6.036
Project Title: #6489 - Green Acres, LLC
Analysis: Section 7-7' Seismic Circular Failure
Author: Jonathan Gurunathan
Company: GeoSoils Consultants, Inc
Date Created: 11/5/2015, 11:18:19 AM

General Settings

Units of Measurement: Imperial Units
Time Units: days
Permeability Units: feet/second
Failure Direction: Left to Right
Data Output: Standard
Maximum Material Properties: 20
Maximum Support Properties: 20

Analysis Options

Analysis Methods Used

Bishop simplified
Janbu corrected
Spencer

Number of slices: 25
Tolerance: 0.005
Maximum number of iterations: 50
Check malpha < 0.2: Yes
Initial trial value of FS: 1
Steffensen Iteration: Yes

Groundwater Analysis

Groundwater Method: Water Surfaces
Pore Fluid Unit Weight: 62.4 lbs/ft3
Advanced Groundwater Method: None

Random Numbers

Pseudo-random Seed: 10116

Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.35

Material Properties

Property	Bedrock	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	130
Cohesion [psf]	310	300
Friction Angle [deg]	36.5	35
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: bishop simplified

FS: 0.841237
Center: 393.236, 398.387
Radius: 286.912
Left Slip Surface Endpoint: 182.836, 203.321
Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 182.836 203.321
Right Slope Intercept: 305.907 134.118
Resisting Moment=4.8408e+007 lb-ft
Driving Moment=5.75438e+007 lb-ft
Total Slice Area=1936.63 ft2

Method: janbu corrected

FS: 0.836218
Center: 365.288, 349.478
Radius: 232.114
Left Slip Surface Endpoint: 185.557, 202.598

Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 185.557 202.598
Right Slope Intercept: 305.907 134.118
Resisting Horizontal Force=153357 lb
Driving Horizontal Force=183393 lb
Total Slice Area=2040.33 ft2

Method: spencer

FS: 0.853162
Center: 393.236, 398.387
Radius: 286.912
Left Slip Surface Endpoint: 182.836, 203.321
Right Slip Surface Endpoint: 305.907, 125.088
Left Slope Intercept: 182.836 203.321
Right Slope Intercept: 305.907 134.118
Resisting Moment=4.90942e+007 lb-ft
Driving Moment=5.75438e+007 lb-ft
Resisting Horizontal Force=146991 lb
Driving Horizontal Force=172290 lb
Total Slice Area=1936.63 ft2

Valid / Invalid Surfaces

Method: bishop simplified

Number of Valid Surfaces: 918
Number of Invalid Surfaces: 43

Error Codes:

Error Code -101 reported for 29 surfaces
Error Code -103 reported for 3 surfaces
Error Code -106 reported for 6 surfaces
Error Code -114 reported for 5 surfaces

Method: janbu corrected

Number of Valid Surfaces: 917
Number of Invalid Surfaces: 44

Error Codes:

Error Code -101 reported for 29 surfaces
Error Code -103 reported for 3 surfaces
Error Code -106 reported for 6 surfaces
Error Code -108 reported for 1 surface
Error Code -114 reported for 5 surfaces

Method: spencer

Number of Valid Surfaces: 885
Number of Invalid Surfaces: 76

Error Codes:

Error Code -101 reported for 29 surfaces
Error Code -103 reported for 3 surfaces
Error Code -106 reported for 6 surfaces
Error Code -108 reported for 3 surfaces
Error Code -111 reported for 30 surfaces
Error Code -114 reported for 5 surfaces

Error Codes

The following errors were encountered during the computation:

-101 = Only one (or zero) surface / slope intersections.
-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-114 = Surface with Reverse Curvature.

Slice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.841237

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.83188	1193.96	Qtn/Qtm	300	35	299.981	252.355	-68.044	0	-68.044
2	4.83188	3506.09	Qtn/Qtm	300	35	524.001	440.809	201.096	0	201.096
3	4.83188	5380.6	Qtn/Qtm	300	35	715.125	601.59	430.715	0	430.715
4	4.83188	6876.66	Qtn/Qtm	300	35	876.245	737.13	624.286	0	624.286
5	4.83188	8186.9	Qtn/Qtm	300	35	1024.21	861.6	802.048	0	802.048
6	4.83188	9187.79	Qtn/Qtm	300	35	1145.26	963.437	947.486	0	947.486
7	4.83188	10082.3	Qtn/Qtm	300	35	1258.64	1058.81	1083.7	0	1083.7
8	4.83188	11045	Qtn/Qtm	300	35	1382.1	1162.67	1232.03	0	1232.03
9	4.83188	12076.9	Qtn/Qtm	300	35	1516.1	1275.4	1393.01	0	1393.01
10	4.83188	13162.9	Qtn/Qtm	300	35	1659.33	1395.89	1565.1	0	1565.1
11	4.83188	14155.2	Qtn/Qtm	300	35	1795.71	1510.62	1728.94	0	1728.94
12	4.83188	14776.4	Qtn/Qtm	300	35	1893.56	1592.93	1846.5	0	1846.5
13	4.83188	14765.1	Qtn/Qtm	300	35	1921.15	1616.14	1879.63	0	1879.63
14	4.83188	13947.8	Qtn/Qtm	300	35	1855.15	1560.62	1800.36	0	1800.36
15	4.83188	13017.7	Qtn/Qtm	300	35	1772.98	1491.5	1701.64	0	1701.64
16	4.83188	12703.4	Qtn/Qtm	300	35	1760.99	1481.41	1687.23	0	1687.23
17	4.83188	12343.9	Qtn/Qtm	300	35	1742.4	1465.77	1664.9	0	1664.9
18	4.83188	11769.3	Qtn/Qtm	300	35	1696.22	1426.92	1609.41	0	1609.41
19	4.83188	10947.2	Qtn/Qtm	300	35	1617.34	1360.57	1514.65	0	1514.65
20	5.21082	10828.8	Bedrock	310	36.5	1582.37	1331.15	1380	0	1380
21	5.21082	10043.8	Bedrock	310	36.5	1509.28	1269.66	1296.91	0	1296.91
22	5.21082	9249.61	Bedrock	310	36.5	1432.26	1204.87	1209.35	0	1209.35
23	5.21082	8269.52	Bedrock	310	36.5	1328.82	1117.85	1091.75	0	1091.75

24	5.21082	7585.02	Bedrock	310	36.5	1260.01	1059.97	1013.52	0	1013.52
25	5.21082	6659.56	Bedrock	310	36.5	1157.26	973.532	896.711	0	896.711

Global Minimum Query (janbu corrected) - Safety Factor: 0.836218

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.80901	1380.85	Qtn/Qtm	300	35	295.714	247.281	-75.2901	0	-75.2901
2	4.80901	3937.04	Qtn/Qtm	300	35	532.001	444.869	206.895	0	206.895
3	4.80901	5887.13	Qtn/Qtm	300	35	726.105	607.182	438.701	0	438.701
4	4.80901	7612.38	Qtn/Qtm	300	35	908.498	759.702	656.522	0	656.522
5	4.80901	8975.64	Qtn/Qtm	300	35	1063.9	889.65	842.107	0	842.107
6	4.80901	10117.7	Qtn/Qtm	300	35	1203.33	1006.25	1008.63	0	1008.63
7	4.80901	11180.2	Qtn/Qtm	300	35	1339.45	1120.07	1171.19	0	1171.19
8	4.80901	12339	Qtn/Qtm	300	35	1489.81	1245.8	1350.75	0	1350.75
9	4.80901	13496.1	Qtn/Qtm	300	35	1644.65	1375.29	1535.68	0	1535.68
10	4.80901	14636.6	Qtn/Qtm	300	35	1802.38	1507.18	1724.03	0	1724.03
11	4.80901	15528.3	Qtn/Qtm	300	35	1937.23	1619.95	1885.09	0	1885.09
12	4.80901	15890.7	Qtn/Qtm	300	35	2016.15	1685.94	1979.32	0	1979.32
13	4.80901	15504.9	Qtn/Qtm	300	35	2010.66	1681.35	1972.77	0	1972.77
14	4.80901	14398.1	Qtn/Qtm	300	35	1919.2	1604.87	1863.55	0	1863.55
15	4.80901	13868.8	Qtn/Qtm	300	35	1891.46	1581.67	1830.41	0	1830.41
16	4.80901	13525	Qtn/Qtm	300	35	1883.79	1575.26	1821.26	0	1821.26
17	4.80901	13021.9	Qtn/Qtm	300	35	1855.07	1551.24	1786.95	0	1786.95
18	4.80901	12275.8	Qtn/Qtm	300	35	1793.84	1500.04	1713.84	0	1713.84
19	4.82685	11344.6	Bedrock	310	36.5	1764.15	1475.21	1574.7	0	1574.7
20	4.82685	10437.3	Bedrock	310	36.5	1673.43	1399.35	1472.17	0	1472.17
21	4.82685	9728.9	Bedrock	310	36.5	1605.86	1342.85	1395.82	0	1395.82
22	4.82685	8850.69	Bedrock	310	36.5	1511.63	1264.05	1289.33	0	1289.33
23	4.82685	7901.35	Bedrock	310	36.5	1403.44	1173.58	1167.06	0	1167.06
24	4.82685	7190.71	Bedrock	310	36.5	1325.31	1108.25	1078.77	0	1078.77
25	4.82685	6212.73	Bedrock	310	36.5	1204.91	1007.57	942.712	0	942.712

Global Minimum Query (spencer) - Safety Factor: 0.853162

Slice Number	Width [ft]	Weight [lbs]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.83188	1193.96	Qtn/Qtm	300	35	439.833	375.249	107.466	0	107.466
2	4.83188	3506.09	Qtn/Qtm	300	35	551.926	470.882	244.044	0	244.044
3	4.83188	5380.6	Qtn/Qtm	300	35	654.926	558.758	369.544	0	369.544
4	4.83188	6876.66	Qtn/Qtm	300	35	748.979	639	484.142	0	484.142
5	4.83188	8186.9	Qtn/Qtm	300	35	841.559	717.986	596.946	0	596.946
6	4.83188	9187.79	Qtn/Qtm	300	35	925.225	789.367	698.888	0	698.888
7	4.83188	10082.3	Qtn/Qtm	300	35	1009.42	861.199	801.476	0	801.476
8	4.83188	11045	Qtn/Qtm	300	35	1104	941.888	916.711	0	916.711
9	4.83188	12076.9	Qtn/Qtm	300	35	1210.16	1032.46	1046.06	0	1046.06
10	4.83188	13162.9	Qtn/Qtm	300	35	1328.22	1133.19	1189.92	0	1189.92
11	4.83188	14155.2	Qtn/Qtm	300	35	1449.55	1236.7	1337.74	0	1337.74
12	4.83188	14776.4	Qtn/Qtm	300	35	1554.46	1326.21	1465.57	0	1465.57

13	4.83188	14765.1	Qtn/Qtm	300	35	1620.49	1382.54	1546.02	0	1546.02
14	4.83188	13947.8	Qtn/Qtm	300	35	1627.56	1388.57	1554.64	0	1554.64
15	4.83188	13017.7	Qtn/Qtm	300	35	1623.16	1384.82	1549.28	0	1549.28
16	4.83188	12703.4	Qtn/Qtm	300	35	1668.65	1423.63	1604.7	0	1604.7
17	4.83188	12343.9	Qtn/Qtm	300	35	1711.82	1460.46	1657.32	0	1657.32
18	4.83188	11769.3	Qtn/Qtm	300	35	1735.74	1480.87	1686.45	0	1686.45
19	4.83188	10947.2	Qtn/Qtm	300	35	1733.61	1479.05	1683.86	0	1683.86
20	5.21082	10828.8	Bedrock	310	36.5	1888.05	1610.81	1757.94	0	1757.94
21	5.21082	10043.8	Bedrock	310	36.5	1898.57	1619.79	1770.08	0	1770.08
22	5.21082	9249.61	Bedrock	310	36.5	1903.52	1624.01	1775.78	0	1775.78
23	5.21082	8269.52	Bedrock	310	36.5	1877.98	1602.22	1746.34	0	1746.34
24	5.21082	7585.02	Bedrock	310	36.5	1885.21	1608.39	1754.67	0	1754.67
25	5.21082	6659.56	Bedrock	310	36.5	1783.15	1521.32	1637.01	0	1637.01

Interslice Data

Global Minimum Query (bishop simplified) - Safety Factor: 0.841237

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	182.836	203.321	0	0	0
2	187.668	198.236	-1374.93	0	0
3	192.5	193.39	-1700.56	0	0
4	197.332	188.768	-1275.39	0	0
5	202.164	184.354	-339.265	0	0
6	206.996	180.137	969.1	0	0
7	211.828	176.104	2482.05	0	0
8	216.66	172.247	4120.82	0	0
9	221.491	168.556	5868.41	0	0
10	226.323	165.023	7704.5	0	0
11	231.155	161.641	9601.03	0	0
12	235.987	158.405	11490.7	0	0
13	240.819	155.307	13249.4	0	0
14	245.651	152.344	14722.3	0	0
15	250.483	149.509	15760	0	0
16	255.315	146.799	16376.5	0	0
17	260.146	144.21	16698.1	0	0
18	264.978	141.738	16730.8	0	0
19	269.81	139.38	16465	0	0
20	274.642	137.132	15900.7	0	0
21	279.853	134.829	14639.2	0	0
22	285.064	132.648	13133.4	0	0
23	290.275	130.586	11415.1	0	0
24	295.485	128.64	9522.17	0	0
25	300.696	126.808	7479.95	0	0
26	305.907	125.088	0	0	0

Global Minimum Query (janbu corrected) - Safety Factor: 0.836218

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	185.557	202.598	0	0	0
2	190.366	196.903	-1417.16	0	0
3	195.175	191.559	-1581.12	0	0
4	199.984	186.532	-928.753	0	0
5	204.793	181.793	325.437	0	0
6	209.602	177.319	1940.05	0	0
7	214.411	173.089	3758.95	0	0
8	219.22	169.087	5693.79	0	0
9	224.029	165.296	7717.71	0	0
10	228.838	161.706	9770.41	0	0
11	233.647	158.304	11789	0	0
12	238.456	155.08	13660.2	0	0
13	243.265	152.026	15233.4	0	0
14	248.074	149.134	16359.5	0	0
15	252.883	146.397	16948.5	0	0
16	257.692	143.808	17127.3	0	0
17	262.501	141.363	16939.3	0	0
18	267.31	139.056	16387.2	0	0
19	272.119	136.883	15480.8	0	0
20	276.946	134.833	13868.5	0	0
21	281.773	132.909	11994.7	0	0
22	286.6	131.109	9891.05	0	0
23	291.426	129.429	7603.58	0	0
24	296.253	127.868	5181.4	0	0
25	301.08	126.421	2638.42	0	0
26	305.907	125.088	0	0	0

Global Minimum Query (spencer) - Safety Factor: 0.853162

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	182.836	203.321	0	0	0
2	187.668	198.236	-1169.25	-1565.84	53.2504
3	192.5	193.39	-1437	-1924.41	53.2505
4	197.332	188.768	-1022.7	-1369.59	53.2506
5	202.164	184.354	-112.427	-150.561	53.2505
6	206.996	180.137	1188.1	1591.09	53.2505
7	211.828	176.104	2733.73	3660.97	53.2505
8	216.66	172.247	4457.36	5969.24	53.2505
9	221.491	168.556	6351.23	8505.48	53.2505
10	226.323	165.023	8403.05	11253.2	53.2504
11	231.155	161.641	10590.4	14182.5	53.2505
12	235.987	158.405	12842.6	17198.6	53.2504
13	240.819	155.307	15013	20105.3	53.2506
14	245.651	152.344	16901.6	22634.3	53.2504

15	250.483	149.509	18294.6	24499.9	53.2505
16	255.315	146.799	19175	25678.9	53.2505
17	260.146	144.21	19681.3	26356.9	53.2505
18	264.978	141.738	19794.5	26508.5	53.2505
19	269.81	139.38	19470.8	26075	53.2505
20	274.642	137.132	18677.3	25012.4	53.2505
21	279.853	134.829	16639.1	22282.8	53.2504
22	285.064	132.648	14082.8	18859.5	53.2505
23	290.275	130.586	11023.6	14762.6	53.2504
24	295.485	128.64	7490.94	10031.8	53.2506
25	300.696	126.808	3497.27	4683.5	53.2505
26	305.907	125.088	0	0	0

List Of Coordinates

External Boundary

X	Y
405	90
405	123.673
325.408	124.748
319.195	125.218
310.665	125.088
305.907	125.088
305.907	134.118
301.615	136.851
300.189	137.794
292.696	141.83
288.861	144.505
283.74	147.835
280.914	149.45
277.534	151.72
272.472	155.458
269.632	157.726
263.165	162.263
252.721	168.923
249.87	171.118
247.776	173.641
242.503	178.005
238.063	180.654
233.673	182.572
224.138	185.887
216.577	189.02
211.832	191.473
203.294	195.968
199.049	197.808
192.305	200.805

168.895	207.026
160.789	210.296
150.04	215.955
147.892	216.235
143.653	217.623
141.988	217.926
141.988	217.017
129.19	217.017
129.19	218.237
117.637	218.237
117.637	220.321
108.716	220.321
108.716	222.209
74.658	222.209
74.658	225.66
0	229.112
0	142.448
0	129.644
0	90

Material Boundary

X	Y
0	129.644
7.938	129.644
12.282	128.742
16.747	129.751
21.868	128.716
24.089	128.716
37.485	129.423
41.749	129.423
45.684	128.313
49.191	129.044
51.285	129.524
54.842	129.524
58.929	128.767
61.578	128.767
76.816	130.911
81.66	130.911
84.536	130.054
86.983	130.054
87.993	130.407
92.357	130.104
93.366	130.104
99.068	130.104
111.657	131.416
114.836	130.735
116.274	130.735

119.68	131.744
120.992	131.744
124.902	130.836
125.76	130.836
131.815	132.602
136.255	132.602
148.566	132.602
153.41	131.643
158.078	131.643
165.924	133.283
170.969	133.283
173.518	133.661
185.905	134.469
190.698	133.384
197.838	133.384
210.553	134.368
222.991	135.68
236.009	135.68
242.997	137.219
246.302	136.865
247.336	136.865
260.455	136.536
263.018	136.298
266.191	136.298
274.638	137.132
277.11	137.132
278.13	136.708
282.398	136.708
286.508	137.208
300.189	137.794

November 3, 2015
W.O. 6489

APPENDIX B

EQUIVALENT FLUID PRESSURE CALCULATIONS

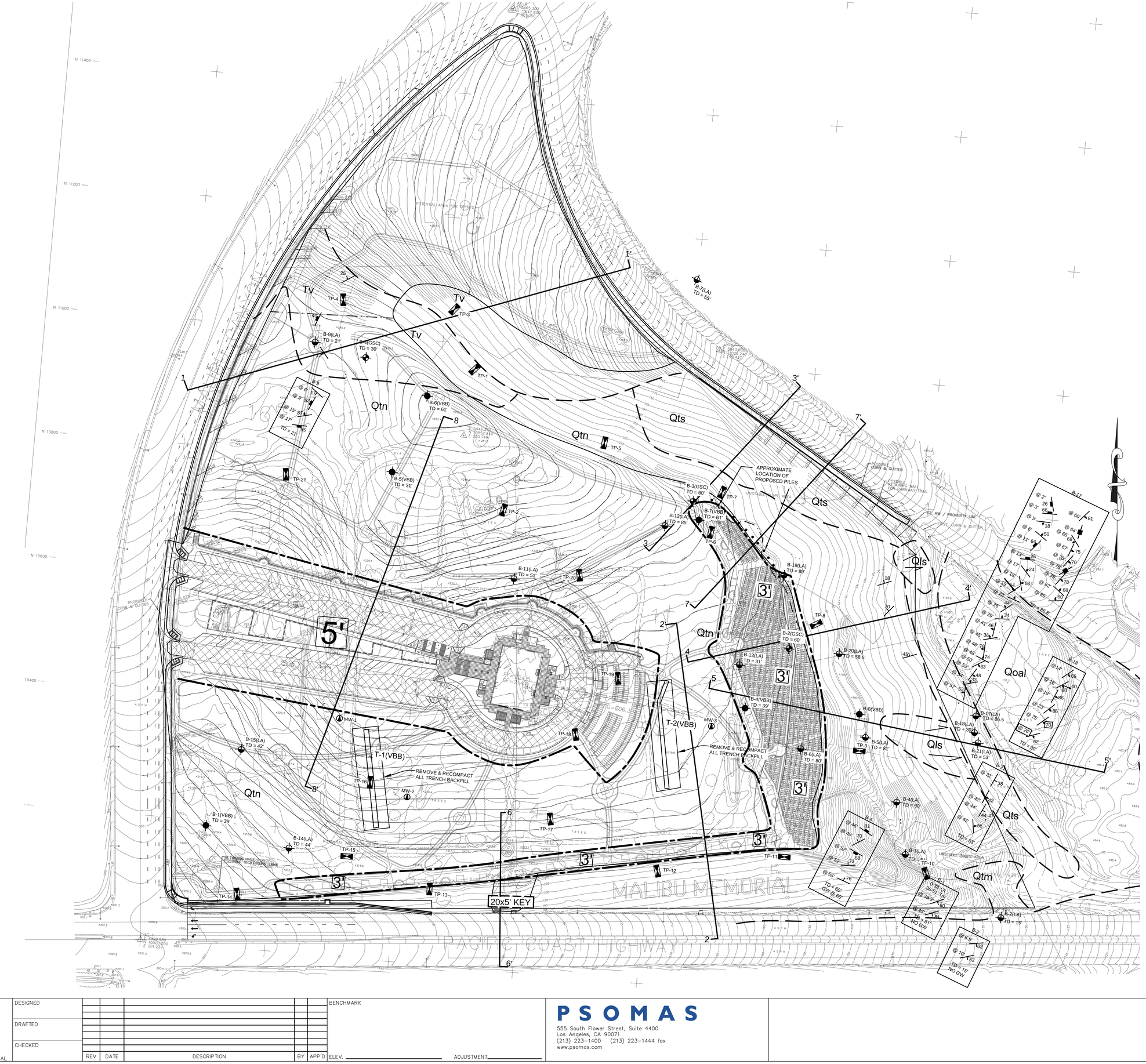
November 3, 2015
W.O. 6489

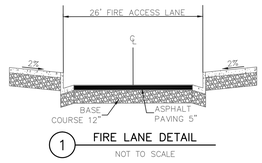
APPENDIX B

EQUIVALENT FLUID PRESSURE CALCULATIONS

The equivalent fluid pressure analyses considers a retained height based on proposed pile locations and slip surfaces determined from factor-of-safety searches included in Appendix A. Resisting forces are found using XStabl and utilized to calculate the equivalent fluid pressure on the piles. All output and calculations are included in this appendix. The table below summarizes the results of this analysis.

Summary of EFP Analysis	
Cross-Section	**EFP (pcf)**
3-3'	36.6
7-7'	38.3





1 FIRE LANE DETAIL

NOT TO SCALE

EXPLANATION

af	ARTIFICIAL FILL
Qal	ALLUVIUM
Qts	STREAM DEPOSITS
Qoal	OLDER ALLUVIUM
Qls	LANDSLIDE
Qtn	NON-MARINE TERRACE DEPOSITS
Qtm	MARINE TERRACE DEPOSITS
Tcv	VAQUEROS FORMATION
Tv	CONEJO VOLCANICS FORMATION
Ts	SESPE FORMATION
	BEDDING ATTITUDE
	JOINT ATTITUDE
	SHEAR ATTITUDE
	"RUPTURE SURFACE" ATTITUDE
	APPROXIMATE GEOLOGIC CONTACT
	APPROXIMATE LOCATION OF RECOMMENDED PILES
6 6'	LINE OF GEOLOGIC SECTION
TP-21	APPROXIMATE LOCATION OF TEST PIT
B-1	APPROXIMATE LOCATION OF BORING BY GEOSOILS CONSULTANTS, INC.
B-1(LA)	APPROXIMATE LOCATION OF BORING BY LEIGHTON AND ASSOCIATES
B-1(VBB)	APPROXIMATE LOCATION OF BORING BY VAN BEVEREN & RUTELO
MW-3	APPROXIMATE LOCATION OF GROUND WATER WELL
T-1	APPROXIMATE LOCATION OF FAULT TRENCH BY VAN BEVEREN & RUTELO
T-8	APPROXIMATE LOCATION OF SEISMIC TRENCH BY LEIGHTON & ASSOCIATES
	APPROXIMATE LOCATION OF SUBDRAIN
	APPROXIMATE LIMITS OF OVER-EXCAVATION
5'	APPROXIMATE DEPTH OF OVER-EXCAVATION
20x5' KEY	RECOMMENDED 20x5' KEY

NOTE:
PRIOR TO THE PLACEMENT OF CONCRETE SLABS, THE SLAB SUBGRADE SOILS SHALL BE PRE-MOISTENED TO AT LEAST 5% OVER THE OPTIMUM MOISTURE CONTENT TO THE DEPTH SPECIFIED BY THE GEOTECHNICAL ENGINEER. THE PRE-MOISTENED SOILS SHOULD BE TESTED AND VERIFIED TO BE BY THE GEOTECHNICAL ENGINEER WITHIN ONE DAY PRIOR TO THE PLACEMENT OF THE MOISTURE BARRIER AND SAND.

GSC GeoSoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP
MALIBU MEMORIAL
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

WORK ORDER	DATE	SCALE
6489	9/2011	1" = 50'

REVISED 11/15 — PLATE 1

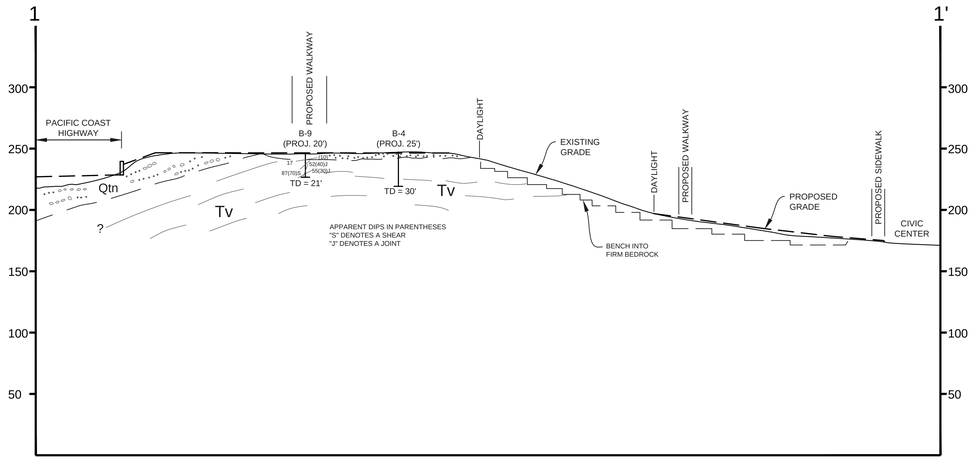
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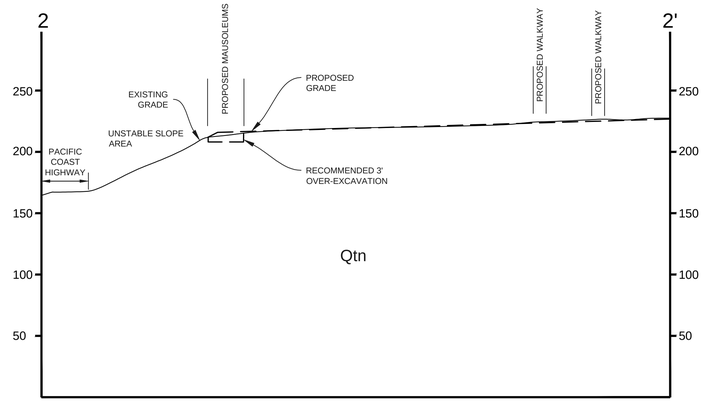
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CHECKED
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BENCHMARK
ELEV. _____ ADJUSTMENT _____

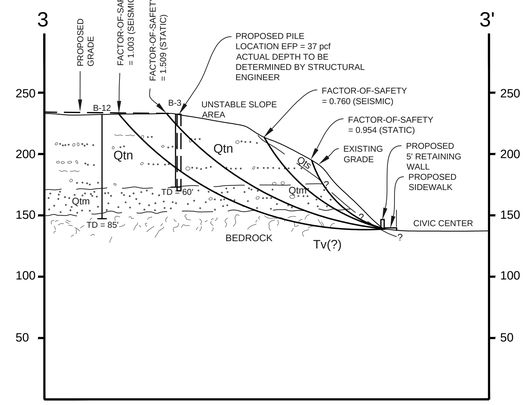
PSOMAS
555 South Flower Street, Suite 4400
Los Angeles, CA 90071
(213) 223-1400 (213) 223-1444 fax
www.psomas.com

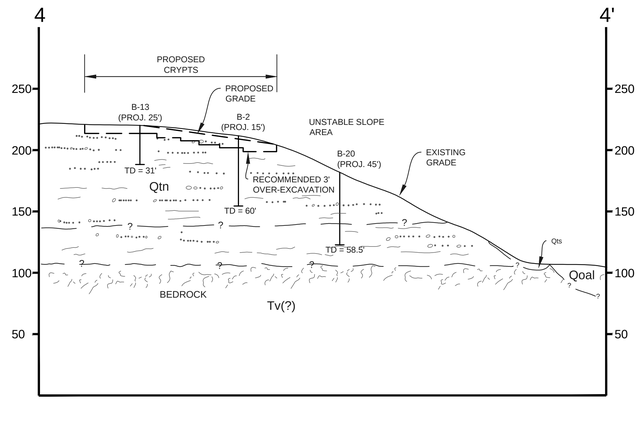
DATE:
SCALE:
PROJECT NUMBER:
SHEET
OF _____

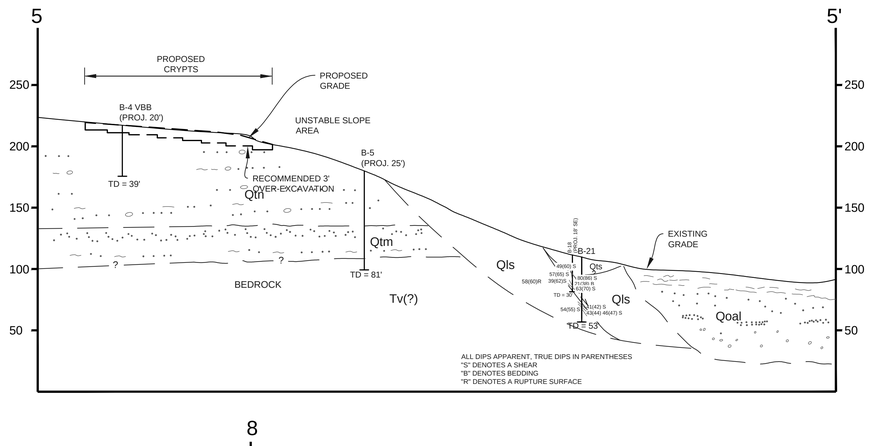
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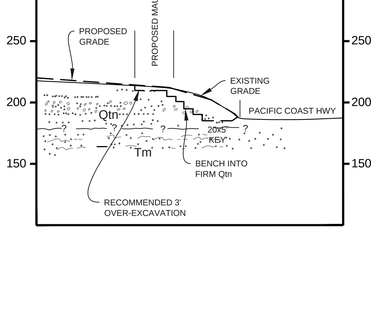


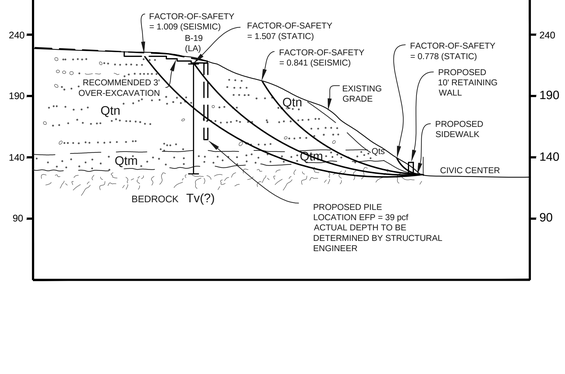


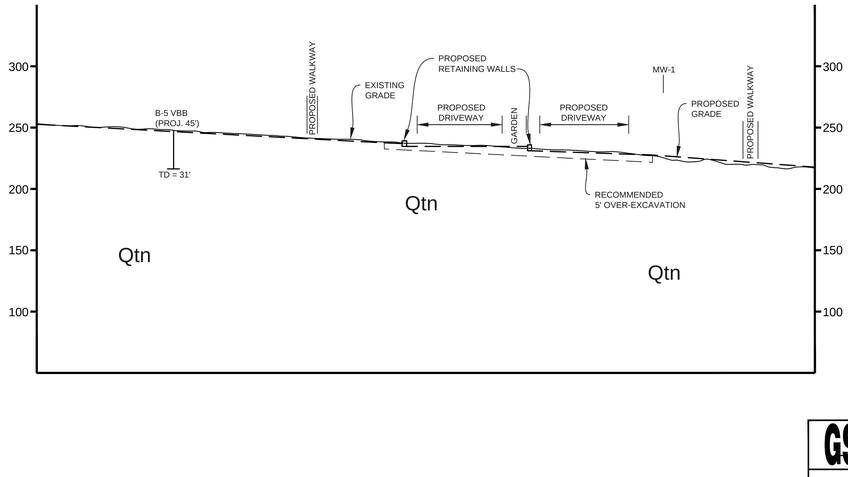












GSC GeoSoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

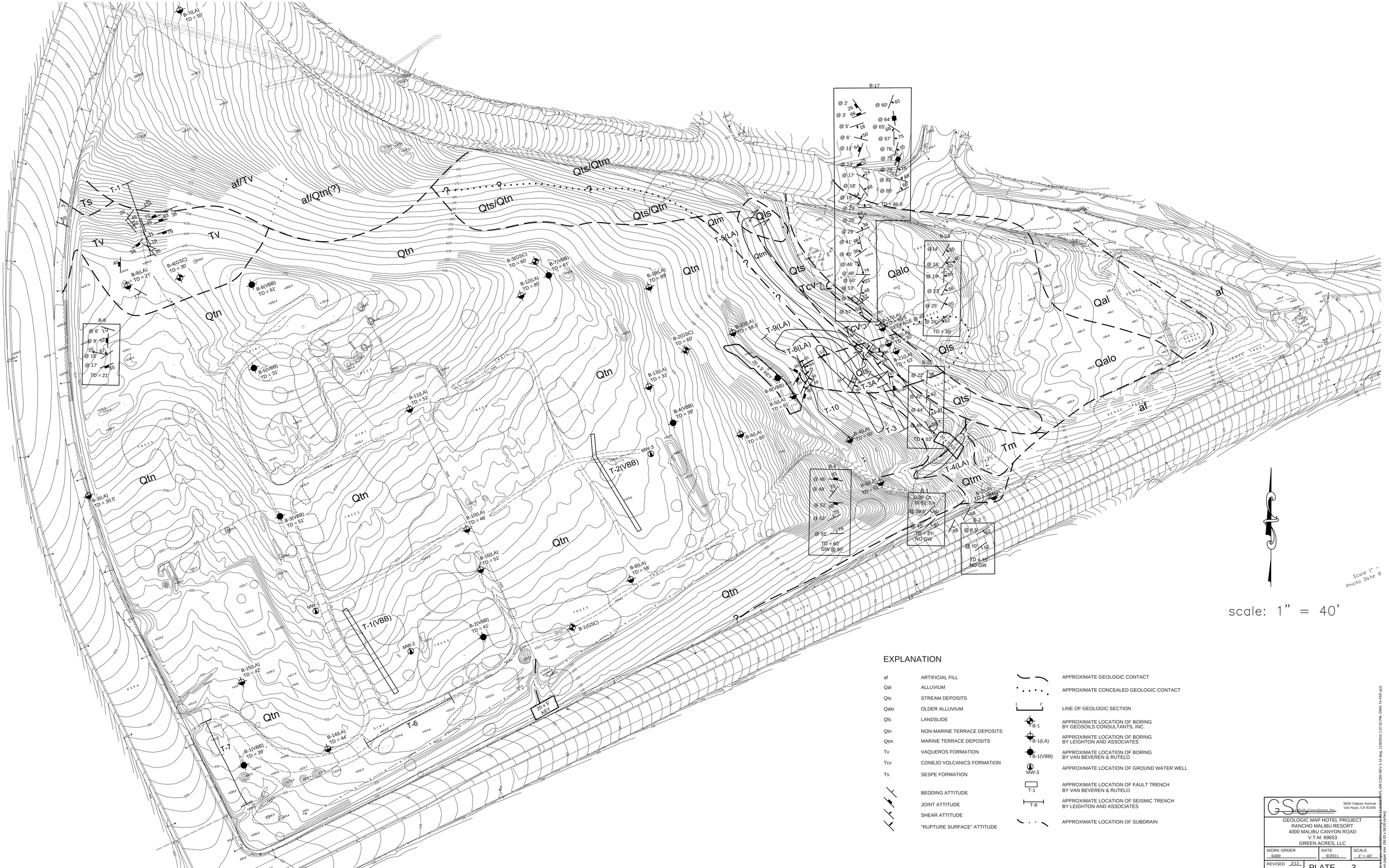
GEOLOGIC CROSS-SECTIONS
MALIBU MEMORIAL
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

WORK ORDER	DATE	SCALE
6489	11/2015	1" = 50'

REVISED

PLATE 2

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scale: 1” = 40’

EXPLANATION

af	ARTIFICIAL FILL
Qal	ALLUVIUM
Qts	STREAM DEPOSITS
Qalo	OLDER ALLUVIUM
Qls	LANDSLIDE
Qtn	NON-MARINE TERRACE DEPOSITS
Qtm	MARINE TERRACE DEPOSITS
Tv	VAQUEROS FORMATION
Tcv	CONEJO VOLCANICS FORMATION
Ts	SESPE FORMATION
	BEDDING ATTITUDE
	JOINT ATTITUDE
	SHEAR ATTITUDE
	“RUPTURE SURFACE” ATTITUDE

	APPROXIMATE GEOLOGIC CONTACT
	APPROXIMATE CONCEALED GEOLOGIC CONTACT
I’	LINE OF GEOLOGIC SECTION
B-1	APPROXIMATE LOCATION OF BORING BY GEOSOILS CONSULTANTS, INC.
B-1(LA)	APPROXIMATE LOCATION OF BORING BY LEIGHTON AND ASSOCIATES
B-1(VBB)	APPROXIMATE LOCATION OF BORING BY VAN BEVEREN & RUTELO
MW-3	APPROXIMATE LOCATION OF GROUND WATER WELL
T-1	APPROXIMATE LOCATION OF FAULT TRENCH BY VAN BEVEREN & RUTELO
T-8	APPROXIMATE LOCATION OF SEISMIC TRENCH BY LEIGHTON AND ASSOCIATES
	APPROXIMATE LOCATION OF SUBDRAIN

GSC Geotechnical Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

GEOLOGIC MAP HOTEL PROJECT
RANCHO MALIBU RESORT
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

WORK ORDER	DATE	SCALE
6489	9/2011	1” = 40’
REVISED 2/12	PLATE	3

Scale 1” = 40’
Photo Date 8

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APPENDIX VI

Geotechnical Report—GeoSoils Addendum

Addendum Report
Three Foot Fill Cap and Retaining Wall for
Archaeological Study Area Malibu Memorial Cemetery
Tentative Tract Map 69653,
4000 Malibu Canyon Road, Malibu, California

for

GREEN ACRES, LLC

September 7, 2016 W.O. 6489

MDN 16926

GeoSoils Consultants Inc.
GEOTECHNICAL GEOLOGIC ENVIRONMENTAL

September 7, 2016
W.O. 6489

GREEN ACRES, LLC
22837 Pacific Coast Highway, Suite 775
Malibu, California 90265

Attention: Mr. Bruce McBride

Subject: Addendum Report, Three Foot Fill Cap and Retaining Wall for Archaeological Study Area, Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

INTRODUCTION

As requested, GeoSoils Consultants, Inc. (GSC) has prepared this addendum report to address changes to the development plan for the proposed Malibu Memorial Cemetery. This report is intended to provide recommendations for a proposed three foot fill cap and associated retaining walls planned for the archaeological study area. All recommendations in the referenced reports shall remain applicable unless superseded herein. The revised grading plan is included herein as Plate 1, illustrating the proposed fill cap and retaining walls. Geologic cross-sections are included as, Plate 2. Slope stability analysis for the proposed three foot fill cap and associated retaining walls are included in Appendix A.

PROPOSED DEVELOPMENT

A proposed three foot Fill cap is intended to cover the archaeological study area. Retaining walls are proposed to facilitate the grade change along the northern portion of the Archaeological Study Area and are not to exceed approximately five feet in vertical height.

6634 Valjean Avenue Van Nuys, California 91406 Phone: (818) 785-2158 Fax: (818) 785-1548

RECOMMENDATIONS

Except were superseded herein, the recommendations in the City approved referenced reports still apply.

Removals

Due to the sensitive nature of this area, removals will not be performed, therefore within the archaeological study area, some settlement of the new fill should be anticipated.

Setback Requirements

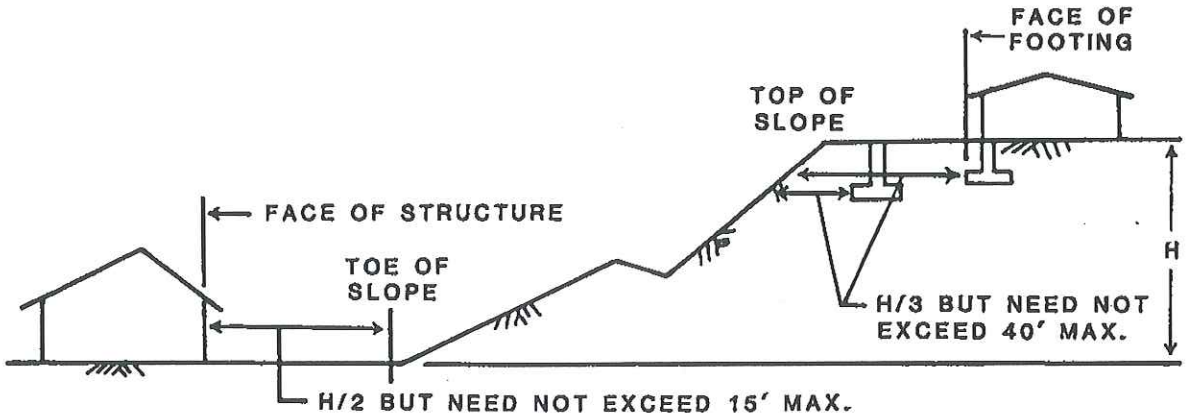
Setback requirements, as established by the 2012 International Building Code, Section 1808.7, require that structures (including conventional retaining walls) constructed near the top of descending slopes or the toe of ascending slopes steeper than 3H:1V (Horizontal:Vertical), meet structural setbacks. The setback for a building or structure foundations (retaining walls) located near the top of a slope shall be a distance of one-third (1/3) of the vertical height of the slope, with a minimum of 5 feet and a maximum of 40 feet, measured horizontally from the slope surface to the lower edge of the footing (see *Required Slope Setback Design* diagram, Figure 1).

Fill Placement

Laboratory Testing: Representative samples of materials to be utilized as compacted fill should be analyzed in a laboratory to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material should be conducted.

On-Site Fill Material: The on-site soils, in our opinion, are adequate for re-use in controlled fills provided the soils do not contain any organic matter, debris, or any individual particles greater than 6 inches in diameter.

Rock Fragments: Rock fragments less than 6 inches in diameter may be utilized in the fill, provided they are not placed in concentrated pockets, surrounded with fine



REQUIRED SLOPE SETBACK DESIGN

GSC GeoSoils Consultants Inc.
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FORM 87/7-9

FIGURE 1

grained material, and the distribution of the rocks is supervised by the Geotechnical Engineer.

Subgrade Verification and Compaction Testing: Due to the lack of removals allowed within the Archaeological Study Area, we recommend watering and compaction of the native soil in the area prior to fill placement. Earthwork monitoring and field density testing shall be performed during grading to provide a basis for opinions concerning the degree of soil compaction attained.

Fill Placement: Approved on-site material shall be evenly placed, watered, processed, and compacted in controlled horizontal layers not exceeding eight inches in loose thickness, and each layer should be thoroughly compacted with approved equipment. All fill material should be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent of optimum moisture content. The fill should be placed and compacted in horizontal layers, unless otherwise recommended by the Geotechnical Engineer.

Compaction Criteria - Shallow Fills: For fills less than 40 feet in vertical thickness, each layer shall be compacted to at least 90 percent of the maximum laboratory density for material used as determined by ASTM D-1557-12. The field density shall be determined by the ASTM D-1556-07 method or equivalent. Where moisture content of the fill or density testing yields compaction results less than 90 percent, additional compaction effort and/or moisture conditioning, as necessary, shall be performed, until the fill material is in accordance with the requirements of the Geotechnical Engineer.

Fill Material - Moisture Content: All fill material placed must be moisture conditioned, as required to obtain at least optimum moisture, but not greater than 120 percent. If excessive moisture in the fill results in failing results or an unacceptable "pumping" condition, then the fill should be allowed to dry until the moisture content is within the necessary range to meet the required compaction requirements or reworked until acceptable conditions are obtained.

Slope Face - Compaction Criteria: The Contractor should be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes. This may be achieved by either overbuilding the slope a minimum of five feet, and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction. If the method of achieving the required slope compaction selected by the Contractor fails to produce the necessary results, the Contractor should rework or rebuild such slopes until the required degree of compaction is obtained, at no additional cost to the Owner or Geotechnical Engineer. Slope testing will include testing the outer six inches to three feet of the slope face during and after placement of the fill. In addition, during grading, density tests will be taken periodically on the flat surface of the fill three to five feet horizontally from the face of the slope.

Grading Control

Grading Inspection: Earthwork monitoring and field density testing shall be performed by the Geotechnical Engineer during grading to provide a basis for opinions concerning the degree of soil compaction attained. The Contractor should receive a copy of the Geotechnical Engineer's *Daily Field Engineering Report* which will indicate the results of field density tests for that day. Where failing tests occur or other field problems arise, the Contractor shall be notified of such conditions by written communication from the Geotechnical Engineer in the form of a conference memorandum, to avoid any misunderstanding arising from oral communication.

Subgrade Inspection: All processed ground to receive fill and overexcavations should be inspected and approved by the Geotechnical Engineer prior to placing any fill. The Contractor should be responsible for notifying the Geotechnical Engineer when such areas are ready for inspection. Inspection of the subgrade may also be required by the controlling governmental agency within the respective jurisdictions.

Subgrade Testing: Density tests should also be made on the prepared subgrade to receive fill, as required by the Geotechnical Engineer.

Density Testing Intervals: In general, density tests should be conducted at minimum intervals of 2 feet of fill height or every 500 to 1,000 cubic yards. Due to the variability that can occur in fill placement and different fill material characteristics, a higher number of density tests may be warranted to verify that the required compaction is being achieved.

Construction Considerations

Erosion Control: Erosion control measures, when necessary, should be provided by the Contractor during grading and prior to the completion and construction of permanent drainage controls.

Compaction Equipment: It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the project site to handle the amount of fill being placed and the type of fill material to be compacted. If necessary, excavation equipment should be shut down to permit completion of compaction in accordance with the recommendations contained herein. Sufficient watering devices/equipment should also be provided by the Contractor to achieve optimum moisture content in the fill material.

Final Grading Considerations: Care should be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of a permanent nature on or adjacent to the property.

Deepened Foundation

Deepened foundations will be required to meet slope setback requirements for structures located along the top of slopes. The piles should be designed by the Project Structural Engineer.

Setback Requirements: Structures adjacent to slopes shall meet the City of Malibu setback requirements.

Pile Type: In our opinion, support for the proposed retaining walls may be derived from drilled cast-in-place, reinforced concrete piles (i.e., caissons) designed for frictional resistance.

Bearing Soils and Tip Depths: We recommend that all piles extend a sufficient depth to develop adequate compressive, uplift, and lateral capacity. We recommend that all piles extend a minimum depth of 5 feet into the underlying terrace deposits.

Pile Capacity - Compressive Frictional Resistance: An allowable frictional resistance of 600 pounds per square foot, per foot of depth into competent terrace deposits should be used for pile design.

Pile Capacity - Lateral (Preliminary): Lateral loads, which may be imposed on the piles by wind or seismic forces, are resisted primarily by the horizontal bearing support of soils adjacent to the pile shafts. The lateral capacity of a pile depends on its length, stiffness in the direction of loading, and degree of fixity at the head, as well as on the adjacent soil properties.

For preliminary design purposes, the passive earth pressures for terrace material may be computed as an equivalent fluid having a density of 200 pounds per cubic foot (pcf), with a maximum earth pressure of 2,000 pounds per square foot (psf). The lateral capacity of each individual pile is a function of the length and diameter; therefore, once the structural engineer has determined the required pile loading for the proposed structures, the lateral pile capacities should be reevaluated by GSC.

Pile Strength: The allowable pile capacities are derived from the supporting strength of the soil, which could exceed the structural strength of the pile itself, therefore, the structural strength of the pile should be considered to pre-empt the allowable soil bearing capacity. The project structural engineer should verify that the compressive and tensile strength of the concrete pile could accommodate the recommended capacities.

Estimated Settlements: We estimate that total post-construction settlements of pile-supported structural elements will not exceed ½ inch. Differential settlements between adjacent piles could approach ¼ inch.

Additional Lateral Resistance: Besides the aforementioned lateral resistance provided by the pile shafts, additional resistance is provided by passive earth pressure acting against other embedded structural elements. We recommend using the values shown in Table I for allowable passive pressure (equivalent fluid weight) and coefficient of friction, which is in addition to the passive lateral pressure. The above values may be increased by one-third for short duration wind and seismic forces.

When combining passive pressure and frictional resistance the passive component should be reduced by one-third. For design of isolated piles, the allowable passive pressure may be increased by 100 percent.

TABLE I
LATERAL RESISTANCE

Soil Type	Allowable Passive Pressure (pcf)	Maximum Allowable Passive Pressure (psf/ft)	Coefficient of Friction (Concrete/soil)
Terrace Deposits	200	2000	0.30

Surface Water Control: All surface water should be collected and conducted to the street or approved watercourse via non-erosive devices.

Inspection - General: We recommend that the Geotechnical Engineer or Geologist be present in the field during construction to confirm the soil conditions prior to steel and concrete placement. The City Inspector should also observe the excavation.

Concrete Placement: In lieu of removing standing water in the pile excavation prior to placing concrete (i.e., pumping water), the concrete may be placed by the tremmie method to displace collected water. The solid tremmie tube shall be long enough to reach to bottom of the excavation. When concrete is being placed, the solid tremmie

tube must be kept full of concrete at all times, with the lower end emersed in the concrete just deposited. The concrete shall at no time be placed through the water.

When water is present at the bottom of the drilled pile holes to a depth of 3 inches or more, a concrete mix with strength of 1,000 pounds per square inch over the design strength, shall be tremmied up from the bottom. An admixture that reduces the problem of segregation of paste/aggregates and dilution of paste shall be included.

Drilling Safety: The following drilling safety guidelines should be followed during pile installation:

- It is the Contractor's responsibility to provide a safe working area during drilling operations;
- The Geotechnical Engineer should observe all excavations to verify that the caissons are founded at the required depth and recommended bearing material;
- All drilled piles should be adequately covered if the excavation is not poured immediately after excavation.

Retaining Wall Foundation Design Recommendations

Retaining walls at the top of descending slopes shall meet the standard slope setback requirements (Figure 1) and deepened foundations will be required.

The equivalent fluid pressures recommended are based on the assumption of a uniform backfill and no build-up of hydrostatic pressure behind the wall. To prevent the build-up of lateral soil pressures in excess of the recommended design pressures, over-compaction of the fill behind the wall should be avoided. This can be accomplished by placement of the backfill above a 45-degree plane projected upward from the base of the wall in lifts not

exceeding 8 inches in loose depth and compacting with hand-operated or small, self-propelled vibrating plates. (Note: Placement of free-draining material in this zone could also prevent the build-up of lateral soil pressures).

1. **Conventional (Yielding) Retaining Walls**

All recommendations for active lateral earth pressures contained herein assume that the anticipated retaining structures are in tight contact with the fill material that they are supposed to support. The earth support system must be sufficiently stiff to hold horizontal movements in the soil to less than one percent of the height of the vertical face, but should be free-standing to the point that they yield at the top at least 0.1 percent of the height of the wall.

2. **Earth Pressures on Conventional (Yielding) Walls**

The earth pressures on walls retaining self-draining, granular materials, or compacted fill may be considered equal to that exerted by an equivalent fluid having a density not less than that shown in the following table:

Backfill Slope (Horizontal:Vertical)	Equivalent Fluid Density
Level	45 pcf
5:1	46 pcf
4:1	47 pcf
3:1	48 pcf
2:1	50 pcf

3. **Restrained (Non-Yielding) Walls**

Earth pressures will be greater on walls where yielding at the top of the wall is limited to less than one-thousandth the height of the wall either by stiffness (i.e., return walls, etc.) or structural floor network prior to backfilling. Utilizing the recommended backfill compaction of 90 percent Modified Proctor Density per ASTM D-1557-12, we recommend the following equivalent fluid density for non-yielding walls:

Slope of Backfill (Horizontal:Vertical)	Equivalent Fluid Density
Level	65 pcf
2:1	70 pcf

4. **Seismic Pressures for Retaining Walls**

The following seismic design criteria must be incorporated into the design of the retaining walls, where applicable:

From NavFac: $Pae = 3/8\gamma H^2 k_h$

H = Height of wall

Kh = 0.2

γ = 120 pcf

$P_e = 3/8(120\ pcf)(0.2)H^2 = 9H^2$

P_e acts at 0.6H above the wall base

5. **General**

i) Any anticipated, superimposed loading (i.e., upper retaining walls, other structures, etc.) within a 45-degree (1:1) projection upward from the wall bottom, except retained earth, shall be considered as surcharge and provided for in the design.

ii) If water is allowed to saturate the backfill, the lateral earth pressure would exceed the active pressure recommended. Clayey or expansive soils should not be used for backfilling behind retaining walls.

iii) A vertical component equal to one-third of the horizontal force so obtained may be assumed at the plane of application of force.

The depth of the retained earth shall be the vertical distance below the ground surface measured at the wall face for stem design or measured at the heel of the footing for overturning and sliding.

iv) The walls should be constructed with weepholes near the bottom on five-foot centers or with perforated drain pipe in a gravel envelope at the bottom and behind the wall. A one-foot thick zone of clean, granular, free-draining

material should be placed behind the wall to within two feet of the surface. On-site soil may be used for the remainder of the backfill and should be compacted to 90 percent relative compaction as determined by ASTM Test Designation D-1557-12. All proposed walls where moisture migration through the walls is undesirable should be waterproofed and backdrained.

Temporary Excavation

Where the necessary space is available, temporary unsurcharged embankments may be sloped back without shoring. The slope should not be cut steeper than the following gradient:

Height	Temporary Gradient (Horizontal:Vertical)
0 - 5'	Near Vertical
above 5'	1:1

In areas where soils with little or no binder are encountered, shoring or flatter excavation slopes shall be made. These recommended temporary excavation slopes do not preclude local ravelling or sloughing.

All applicable requirements of the California Construction and General Industry Safety Orders, the Occupational Safety and Health Act, and the Construction Safety Act should be met.

Where sloped embankments are used, the top of the slope should be barricaded to prevent equipment and heavy storage loads within five feet of the top of the slope. If the temporary construction embankments are to be maintained for long periods, berms should be constructed along the top of the slope to prevent runoff water from eroding the slope faces. The soils exposed in the temporary backcut slopes during excavation should be observed by our personnel so that modifications of the slopes can be made if variations in the soil conditions occur. The temporary excavation slopes should be supported within three weeks.

Excavation Observation

All wall footings and other excavations should be observed by an Engineering Geologist or

Geotechnical Engineering prior to placement of any steel to verify that the proper foundation material has been encountered. The City Inspector should also observe the excavation.

LIMITATIONS

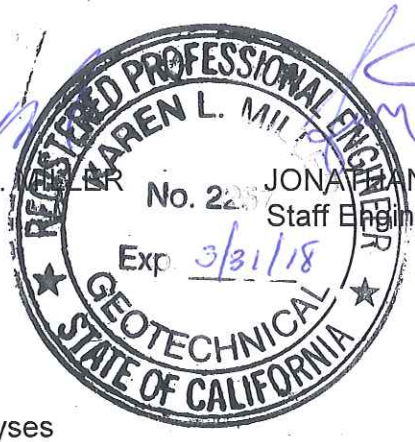
The conclusions and recommendations contained in this report are based on site conditions disclosed in our subsurface investigation. However, soil conditions can vary significantly between test pits; therefore, further refinements of our recommendations contained herein may be necessary due to changes in the building plans or what is encountered during site grading.

We appreciate the opportunity to be of service. If you have any questions regarding this report or if we may be of any further service to you, please do not hesitate to contact us.

Very truly yours,

GEOSOILS CONSULTANTS, INC.





LANCE R. PUTNAM
CEG 2469

KAREN L. MILLER
GE 2257

JONATHAN GURUNATHAN
Staff Engineer

LRP.KLM.JG.W:Green Acres, LLC

Encl: References
Appendix A, Slope Stability Analyses
Plate 1, Geologic Map
Plate 2, Geologic Cross-Sections

cc: (1) City of Malibu (via email)

REFERENCES

1. Earth Forensics, Inc. dated July 22, 2013, "Updated Hydrogeologic Assessment of the Proposed Ranch Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

2. GeoSoils Consultants, Inc. dated May 6, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated April 26, 2013, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

3. GeoSoils Consultants, Inc. dated February 13, 2013, "Response to City of Malibu Geotechnical and Hydrogeologic Review Sheet dated December 14, 2012, Regarding Onsite Wastewater Treatment System (OWTS), Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

4. Ensitu Engineering, Inc. dated December 3, 2012, "Advanced Onsite Wastewater Treatment System, 4000 Malibu Canyon Road, Malibu, California"

5. Ensitu Engineering, Inc. dated October 1, 2012, "Advanced Onsite Wastewater Treatment System, 4000 Malibu Canyon Road, Malibu, California"

6. Earth Forensics, Inc. dated April 13, 2012, "Hydrogeologic Assessment of the Proposed Rancho Malibu Resort, Tentative Tract map 69653, 4000 Malibu Canyon Road, Malibu, California"

7. GeoSoils Consultants, Inc. dated May 21, 2012, "Response to City of Malibu Geotechnical Review Sheet dated May 7, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

8. GeoSoils Consultants, Inc. dated April 2, 2012, "Geologic and Geotechnical Engineering Review of Proposed Onsite Wastewater Treatment System, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

9. GeoSoils Consultants, Inc. dated January 27, 2012, "Response to City of Malibu Geotechnical Review Sheet dated October 18, 2011, Regarding Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

REFERENCES (cont'd)

10. GeoSoils Consultants, Inc. dated September 15, 2011, "Response to Comments of the City of Malibu Geotechnical Review Sheet Dated October 31, 2007, and Updated Geologic and Geotechnical Engineering Report, Rancho Malibu Resort, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

11. Dibblee, T.W., 1993, "Geologic Map of the Malibu Beach Quadrangle, Los Angeles County, California"

12. Leighton and Associates, Inc. dated August 4, 1989, "Report of Geotechnical Investigation, Rancho Malibu Mesa Project, Pacific Coast Highway at Malibu Canyon Road, Malibu, California"

13. Leighton and Associates, Inc., dated February 6, 1990, "Response to Geologic and Geotechnical Engineering Review Sheets (Grading Plan Check No. 1811), By the Department of Public Works, Land Development Division, For Rancho Malibu Hotel, 3930 Malibu Canyon Road, Malibu, California"

14. Van Beveren and Butelo, Inc. dated September 27, 2007, "Report of Geologic and Geotechnical Investigation, Proposed Rancho Malibu Resort, Pacific Coast Highway and Malibu Canyon Road, Malibu, California"

15. GeoSoils Consultants, Inc. dated January 23, 2015, "Geologic and Geotechnical Engineering Report, Proposed Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

16. GeoSoils Consultants, Inc. dated November 3, 2015, "Response to City of Malibu Geotechnical Review Sheet Geotechnical Review Comments, dated June 11, 2015, Regarding Malibu Memorial Cemetery, Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California"

September 7, 2016
W.O. 6489

APPENDIX A

SLOPE STABILITY ANALYSES

September 7, 2016
W.O. 6489

APPENDIX A

SLOPE STABILITY ANALYSES

1.0 Introduction

SLIDE 6.0 is a fully integrated and comprehensive slope stability analysis program. Slide is a 2D slope stability program for evaluating the safety factor or probability of failure, of circular or non-circular failure surfaces in soil or rock slopes and can create complex models to be analyzed.

Slide 6.0 analyzes the stability of slip surfaces using vertical slice limit equilibrium methods (e.g. Bishop, Janbu, Spencer, etc). Individual slip surfaces can be analyzed, or search methods can be applied to locate the critical slip surface for a given slope. Deterministic (safety factor) or probabilistic (probability of failure) analyses can be examined.

2.0 General Information

If the reviewer wishes to obtain more information concerning slope stability analysis, the following publications may be consulted:

- The Stability of Slopes, by E.N. Bromhead, Surrey University Press, Chapman and Hall, NY, 374 pages, ISBN 0 412 01061 5 (1985).
- Rock Slope Engineering, by E. Hoek and J.W. Bray, Inst. of Mining and Metrallurgy, London, England, Third Edition, 358 pages, ISBN 0900488 573 (1981).
- Landslides: Analysis and Control, by R.L. Schuster and R.J. Krizek (editors), Special Report 176, Transportation Research Board, National Academy of Sciences, 234 pages, ISBN 0 309 02804 3 (1978).

3.0 Slide 7.0 Features

The present version of Slide contains the following features:

- Critical surface search methods for circular or non-circular slip surfaces
- Analysis methods include Bishop, Janbu, Spencer
- Multiple materials
- Anisotropic, non-linear Mohr-Coulomb materials
- Probabilistic analysis – calculate probability of failure, reliability index (see below)
- Sensitivity Analysis
- Groundwater – piezo surfaces, Ru factors, pore pressure grids, finite element seepage analysis (see below), excess pore pressure (B-bar method)
- Finite element groundwater seepage for steady state or transient conditions
- Rapid drawdown analysis
- Tension crack (dry or water filled)
- External loading – line, distributed or seismic
- Support – soil nails, tiebacks, geotextiles, piles. Infinite strength (slip surface exclusion) zones
- Back analysis of required support force for a given safety factor
- Back analysis of material strength using sensitivity or probabilistic analysis
- View any or all surfaces generated by search
- Detailed analysis results can be plotted for individual slip surfaces

4.0 Input Data

Input data includes the following items:

Unit weight, cohesion, friction angle of bedrock material, alluvium and fill

Slope geometry, surcharge boundary loads and water surface elevations

Water level conditions for full basin and rapid draw down conditions

Pseudo-static earthquake loading

5.0 Output Information

Output information includes:

All input data

Factors of safety for the global minimum slip surface

High quality plots can be generated that include the slope geometry and slip surfaces

6.0 Stability Analysis

GeoSoils Consultants, Inc. has performed slope stability analyses for the proposed development as depicted on the following Geologic-Sections:

Geologic Cross-Section 8-8'

Geologic Cross-Section 12-12'

Soil Parameters

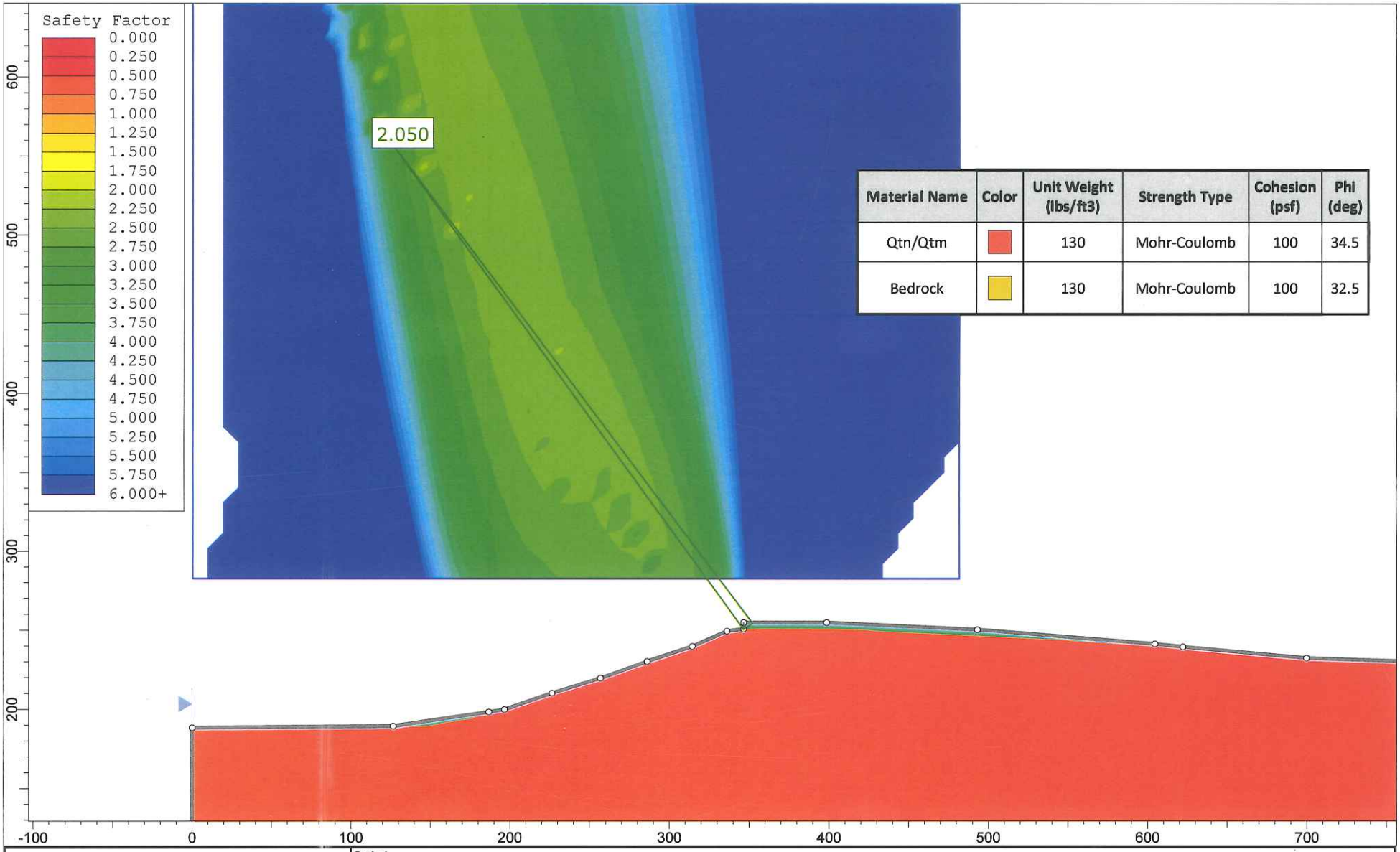
The parameters used in the slope stability calculations can be found in the table below.

TABLE A-1 SHEAR TEST DATA SUMMARY					
Soil Description	Reshear Values		Peak Values		Unit Weight (pcf)
	c (psf)	ϕ (degrees)	c (psf)	ϕ (degrees)	
Fill	170	22.5	170	29.0	120
Terrace (Qtn/Qtm)	100	34.5	300	35.0	130
Bedrock (TQs)	100	32.5	310	36.5	130

7.0 Results

The results of slope stability analyses are presented in Table A-2. Detailed outputs of the stability analysis results are included in this appendix. A seismic coefficient, k_h, value of 0.35 was used in the seismic analysis per Malibu City guidelines.

TABLE A-2 SLIDE STABILITY ANALYSIS RESULTS			
Cross-Section	Description	Lowest Factor of Safety	
		Static	Seismic
8-8'	Circular Surface	2.050	1.255
12-12'	Circular Surface	1.583	1.064

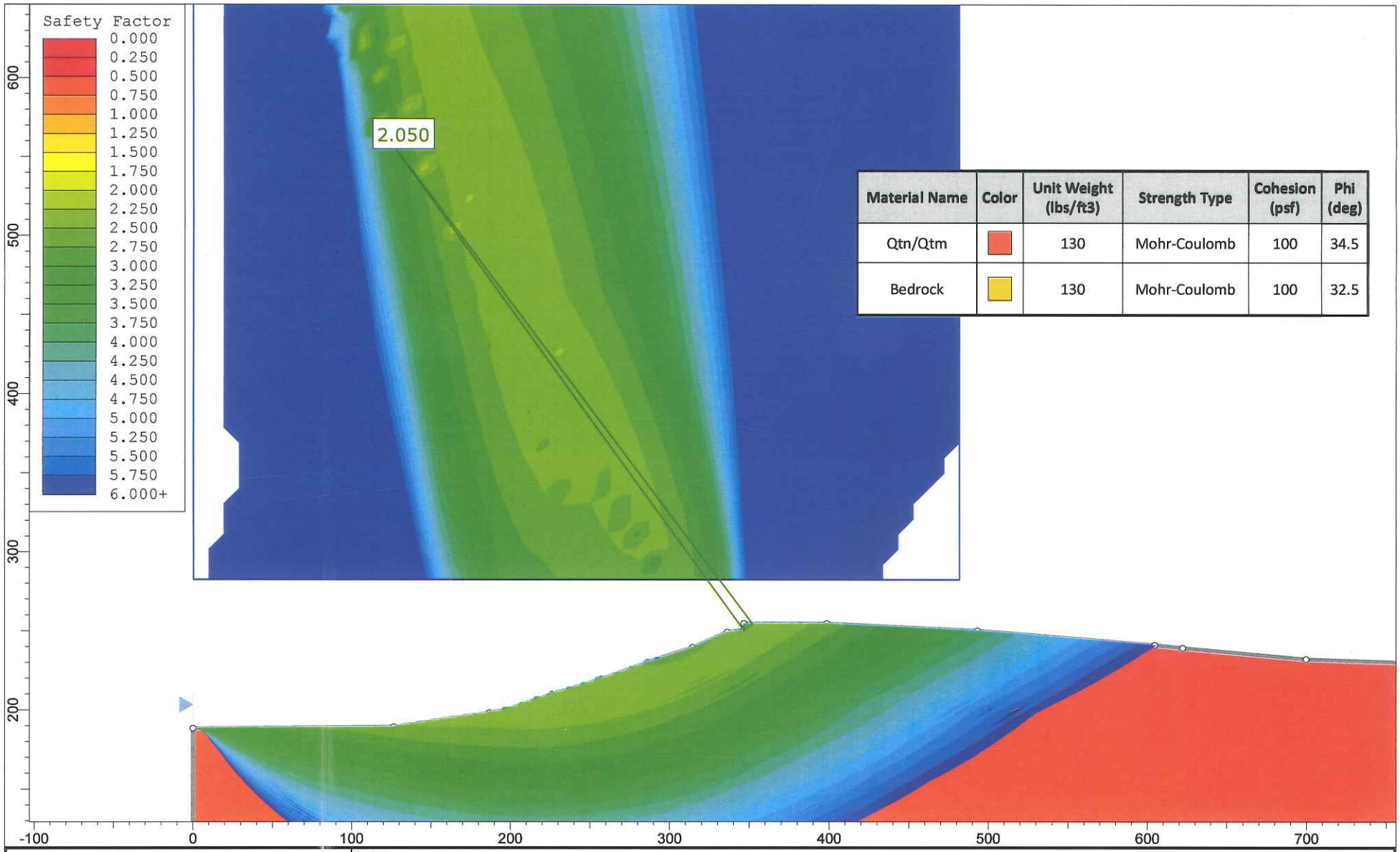


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	100	34.5
Bedrock		130	Mohr-Coulomb	100	32.5

rocscience

SLIDEINTERPRET 7.009

Project	#6489				
Analysis Description	Section 8-8' Static				
Drawn By	JG	*Scale*	1:1000	*Company*	GeoSoils Consultants, Inc.
Date	09/09/16			*File Name*	8-8 Static.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	100	34.5
Bedrock		130	Mohr-Coulomb	100	32.5

	Project	#6489		
	Analysis Description	Section 8-8' Static		
	Drawn By	JG	*Scale* 1:1000	*Company* GeoSoils Consultants, Inc.
	Date	09/09/16		*File Name* 8-8 Static.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

#6489

Project Summary

File Name:	8-8 Static.slim
Slide Modeler Version:	7.009
Project Title:	#6489
Analysis:	Section 8-8' Static
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	09/09/16

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Fill	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	130
Cohesion [psf]	170	100
Friction Angle [deg]	22.5	34.5
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: spencer

FS	2.049640
Center:	115.909, 571.635
Radius:	395.243
Left Slip Surface Endpoint:	346.637, 250.727
Right Slip Surface Endpoint:	352.114, 254.737
Left Slope Intercept:	346.637 254.737
Right Slope Intercept:	352.114 254.737
Resisting Moment:	31925 lb-ft
Driving Moment:	08310 lb-ft
Resisting Horizontal Force:	289.81 lb
Driving Horizontal Force:	29.287 lb
Total Slice Area:	1.0477 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 23051
Number of Invalid Surfaces: 5560

Error Codes:

Error Code -103 reported for 2203 surfaces
Error Code -105 reported for 1 surface
Error Code -106 reported for 746 surfaces
Error Code -107 reported for 1126 surfaces
Error Code -108 reported for 1481 surfaces
Error Code -112 reported for 3 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-105 = More than two surface / slope intersections with no valid slip surface.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 2.04964

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	0.109547	52.1948	35.7253	Fill	170	22.5	152.888	313.365	346.113	0	346.113
2	0.109547	51.1586	35.7449	Fill	170	22.5	151.345	310.203	338.481	0	338.481
3	0.109547	50.1218	35.7645	Fill	170	22.5	149.802	307.041	330.847	0	330.847
4	0.109547	49.0841	35.784	Fill	170	22.5	148.259	303.877	323.209	0	323.209
5	0.109547	48.0458	35.8036	Fill	170	22.5	146.715	300.713	315.569	0	315.569
6	0.109547	47.0067	35.8232	Fill	170	22.5	145.17	297.547	307.926	0	307.926
7	0.109547	45.9668	35.8428	Fill	170	22.5	143.625	294.38	300.28	0	300.28
8	0.109547	44.9262	35.8624	Fill	170	22.5	142.08	291.212	292.631	0	292.631
9	0.109547	43.8848	35.882	Fill	170	22.5	140.533	288.042	284.979	0	284.979
10	0.109547	42.8427	35.9016	Fill	170	22.5	138.986	284.872	277.325	0	277.325
11	0.109547	41.7999	35.9212	Fill	170	22.5	137.439	281.7	269.668	0	269.668
12	0.109547	40.7563	35.9408	Fill	170	22.5	135.891	278.527	262.009	0	262.009
13	0.109547	39.7119	35.9604	Fill	170	22.5	134.342	275.353	254.346	0	254.346
14	0.109547	38.6668	35.98	Fill	170	22.5	132.793	272.178	246.68	0	246.68
15	0.109547	37.6209	35.9997	Fill	170	22.5	131.244	269.002	239.012	0	239.012
16	0.109547	36.5743	36.0193	Fill	170	22.5	129.693	265.825	231.341	0	231.341
17	0.109547	35.5269	36.0389	Fill	170	22.5	128.143	262.646	223.668	0	223.668
18	0.109547	34.4788	36.0586	Fill	170	22.5	126.591	259.467	215.991	0	215.991
19	0.109547	33.4299	36.0782	Fill	170	22.5	125.039	256.286	208.313	0	208.313
20	0.109547	32.3802	36.0979	Fill	170	22.5	123.487	253.104	200.63	0	200.63
21	0.109547	31.3298	36.1175	Fill	170	22.5	121.934	249.921	192.945	0	192.945
22	0.109547	30.2787	36.1372	Fill	170	22.5	120.38	246.736	185.258	0	185.258
23	0.109547	29.2268	36.1569	Fill	170	22.5	118.826	243.551	177.568	0	177.568
24	0.109547	28.1741	36.1765	Fill	170	22.5	117.272	240.364	169.874	0	169.874
25	0.109547	27.1206	36.1962	Fill	170	22.5	115.716	237.177	162.179	0	162.179
26	0.109547	26.0665	36.2159	Fill	170	22.5	114.16	233.988	154.48	0	154.48
27	0.109547	25.0115	36.2356	Fill	170	22.5	112.604	230.798	146.779	0	146.779
28	0.109547	23.9558	36.2553	Fill	170	22.5	111.047	227.607	139.075	0	139.075
29	0.109547	22.8993	36.275	Fill	170	22.5	109.49	224.415	131.368	0	131.368
30	0.109547	21.8421	36.2947	Fill	170	22.5	107.932	221.221	123.658	0	123.658
31	0.109547	20.7841	36.3144	Fill	170	22.5	106.373	218.027	115.946	0	115.946
32	0.109547	19.7253	36.3341	Fill	170	22.5	104.814	214.831	108.231	0	108.231
33	0.109547	18.6658	36.3538	Fill	170	22.5	103.254	211.634	100.513	0	100.513
34	0.109547	17.6055	36.3735	Fill	170	22.5	101.694	208.436	92.7924	0	92.7924
35	0.109547	16.5445	36.3932	Fill	170	22.5	100.133	205.237	85.0687	0	85.0687
36	0.109547	15.4826	36.413	Fill	170	22.5	98.5717	202.036	77.3431	0	77.3431
37	0.109547	14.42	36.4327	Fill	170	22.5	97.0097	198.835	69.6139	0	69.6139
38	0.109547	13.3567	36.4524	Fill	170	22.5	95.4472	195.632	61.8823	0	61.8823
39	0.109547	12.2926	36.4722	Fill	170	22.5	93.8842	192.429	54.1478	0	54.1478
40	0.109547	11.2277	36.4919	Fill	170	22.5	92.3206	189.224	46.4107	0	46.4107
41	0.109547	10.162	36.5117	Fill	170	22.5	90.7564	186.018	38.6707	0	38.6707
42	0.109547	9.09562	36.5315	Fill	170	22.5	89.1917	182.811	30.928	0	30.928
43	0.109547	8.02842	36.5512	Fill	170	22.5	87.6264	179.603	23.1825	0	23.1825
44	0.109547	6.96046	36.571	Fill	170	22.5	86.0605	176.393	15.4343	0	15.4343
45	0.109547	5.89173	36.5908	Fill	170	22.5	84.4941	173.183	7.68337	0	7.68337
46	0.109547	4.82223	36.6105	Fill	170	22.5	82.9272	169.971	-0.0703123	0	-0.0703123
47	0.109547	3.75195	36.6303	Fill	170	22.5	81.3597	166.758	-7.82675	0	-7.82675
48	0.109547	2.6809	36.6501	Fill	170	22.5	79.7916	163.544	-15.586	0	-15.586
49	0.109547	1.60908	36.6699	Fill	170	22.5	78.223	160.329	-23.3479	0	-23.3479
50	0.109547	0.53649	36.6897	Fill	170	22.5	77.1125	158.053	-28.8428	0	-28.8428

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 2.04964

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	346.637	250.727	0	0	0
2	346.747	250.806	-10.5197	-2.0269	10.9059
3	346.856	250.885	-20.6262	-3.9742	10.9059
4	346.966	250.964	-30.3186	-5.8417	10.9059
5	347.075	251.043	-39.5958	-7.62921	10.9059
6	347.185	251.122	-48.4569	-9.33654	10.9059
7	347.294	251.201	-56.9008	-10.9635	10.906
8	347.404	251.28	-64.9265	-12.5098	10.9059
9	347.513	251.359	-72.5329	-13.9754	10.9059
10	347.623	251.438	-79.7192	-15.3601	10.906
11	347.732	251.518	-86.4842	-16.6635	10.9059
12	347.842	251.597	-92.8269	-17.8856	10.9059
13	347.952	251.676	-98.7463	-19.0262	10.906
14	348.061	251.756	-104.241	-20.0849	10.906
15	348.171	251.835	-109.311	-21.0618	10.906
16	348.28	251.915	-113.955	-21.9564	10.9059
17	348.39	251.995	-118.171	-22.7688	10.9059
18	348.499	252.074	-121.958	-23.4985	10.9059
19	348.609	252.154	-125.316	-24.1456	10.906
20	348.718	252.234	-128.244	-24.7096	10.9059
21	348.828	252.314	-130.74	-25.1906	10.9059
22	348.937	252.394	-132.803	-25.5882	10.906
23	349.047	252.474	-134.433	-25.9022	10.906
24	349.157	252.554	-135.628	-26.1325	10.906
25	349.266	252.634	-136.388	-26.2788	10.9059
26	349.376	252.714	-136.711	-26.3411	10.9059
27	349.485	252.794	-136.596	-26.3189	10.9059
28	349.595	252.874	-136.042	-26.2122	10.9059
29	349.704	252.955	-135.048	-26.0208	10.906
30	349.814	253.035	-133.614	-25.7444	10.906
31	349.923	253.116	-131.738	-25.3828	10.9059
32	350.033	253.196	-129.418	-24.9359	10.9059
33	350.142	253.277	-126.655	-24.4034	10.9059
34	350.252	253.357	-123.446	-23.7852	10.9059
35	350.362	253.438	-119.791	-23.081	10.9059
36	350.471	253.519	-115.689	-22.2907	10.906
37	350.581	253.6	-111.139	-21.4139	10.9059
38	350.69	253.68	-106.139	-20.4506	10.906
39	350.8	253.761	-100.689	-19.4005	10.906
40	350.909	253.842	-94.7878	-18.2635	10.906
41	351.019	253.923	-88.4339	-17.0392	10.9059
42	351.128	254.005	-81.6263	-15.7275	10.9059
43	351.238	254.086	-74.3641	-14.3283	10.906
44	351.348	254.167	-66.6462	-12.8412	10.9059
45	351.457	254.248	-58.4715	-11.2661	10.9059
46	351.567	254.329	-49.839	-9.60284	10.9059
47	351.676	254.411	-40.7475	-7.85112	10.9059
48	351.786	254.492	-31.1961	-6.01077	10.9059
49	351.895	254.574	-21.1835	-4.08158	10.9059
50	352.005	254.655	-10.7088	-2.06335	10.906
51	352.114	254.737	0	0	0

List Of Coordinates

External Boundary

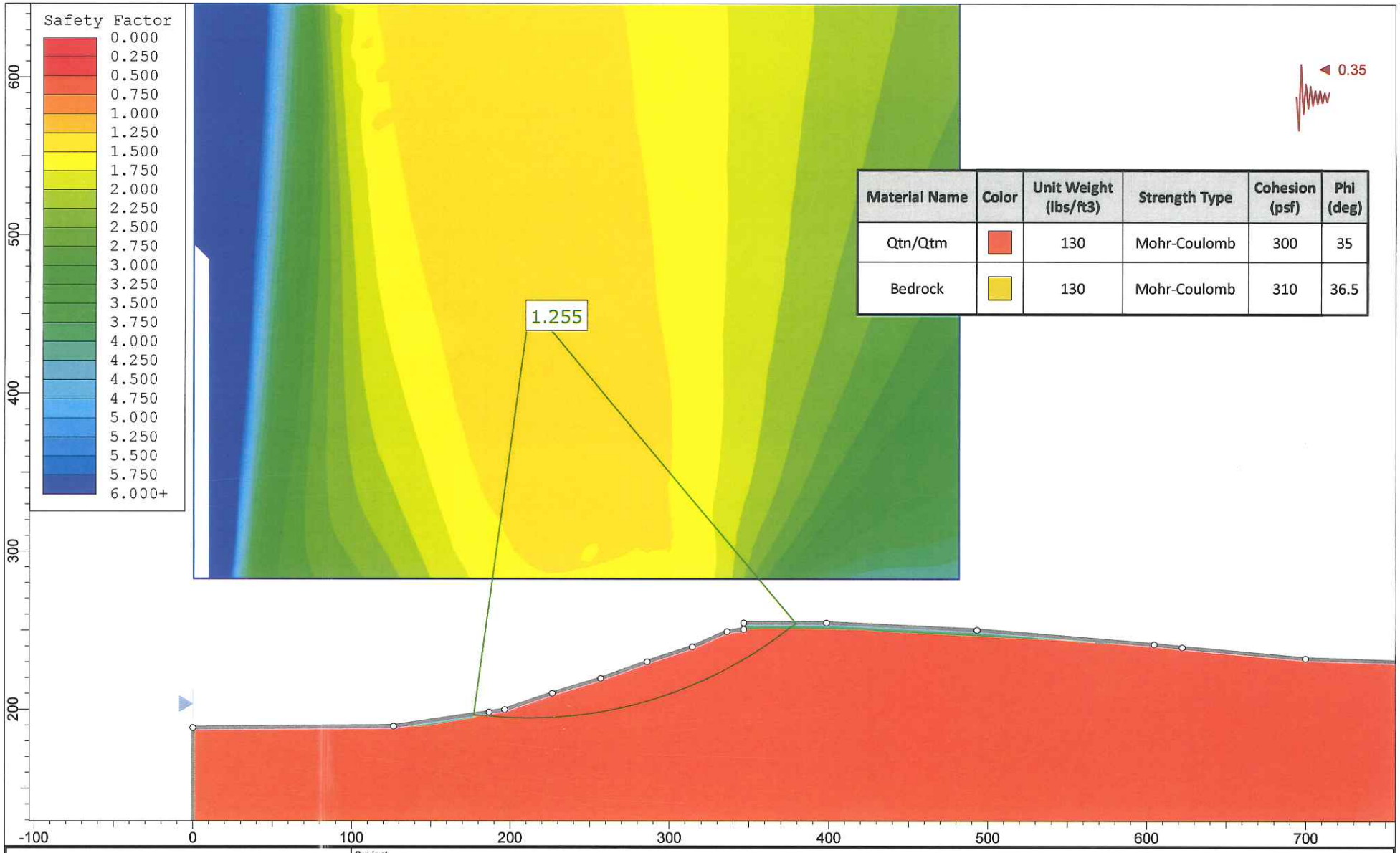
X	Y
1014	50
1014	218.227
909.774	224.523
862.856	226.869
699.765	232.312
622.261	239.377
604.586	241.277
493.109	250.303
398.575	254.737
346.637	254.737
346.637	250.62
336.186	249.353
314.413	239.694
286.053	230.145
256.98	219.599
226.482	210.193
196.697	199.79
186.795	198.311
126.61	189.321
0	188.378
0	50

Material Boundary

X	Y
346.637	250.62
358.5	251.287
399.953	250.975
422.082	250.56
431.848	249.521
534.182	244.846
549.142	244.222
559.116	242.872
622.261	239.377

Material Boundary

X	Y
126.61	189.321
148.234	189.768
159.141	191.889
177.393	194.767
186.795	198.311

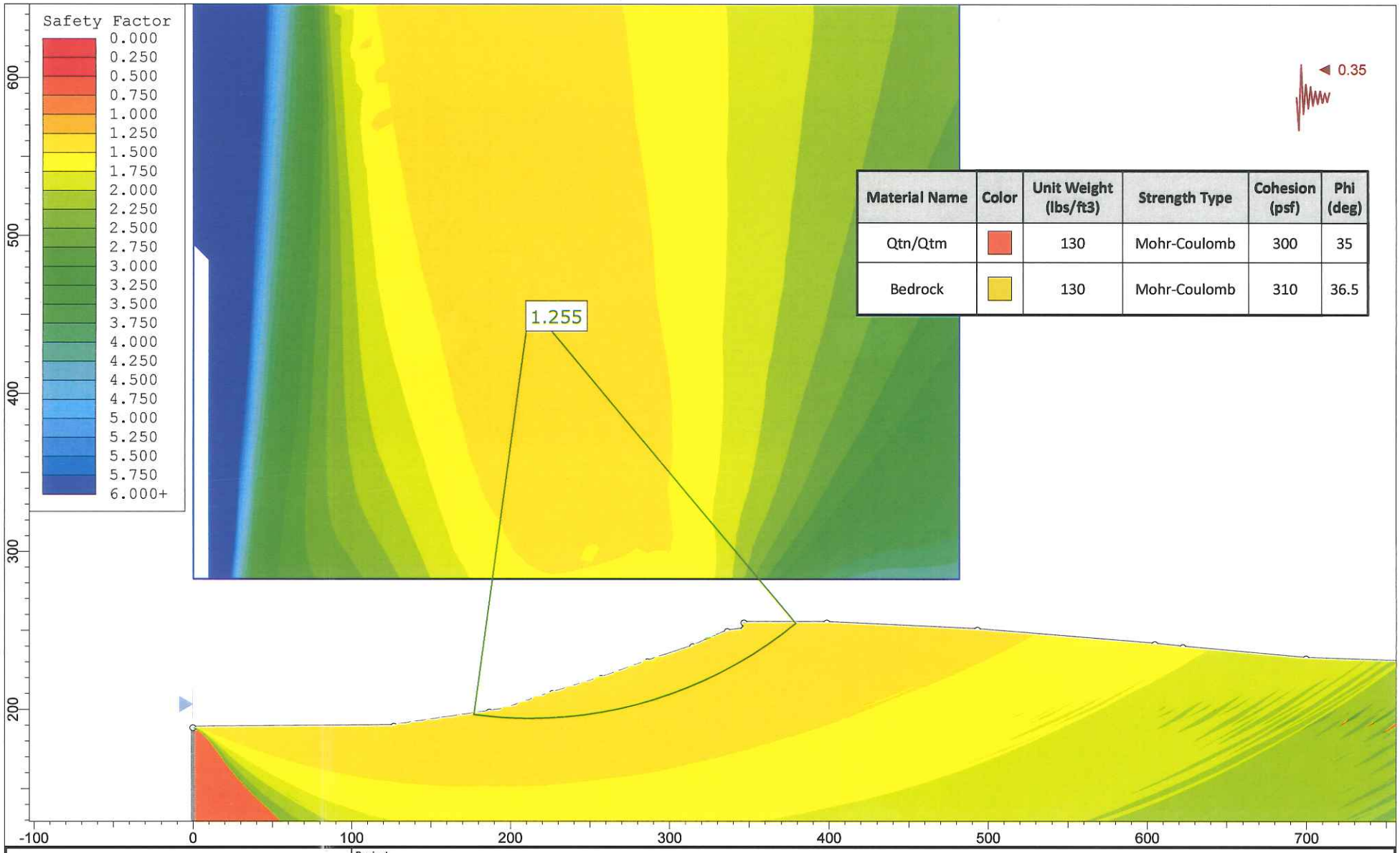


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	300	35
Bedrock		130	Mohr-Coulomb	310	36.5

Project	#6489			
Analysis Description	Section 8-8' Seismic			
Drawn By	JG	Scale	1:1000	Company: GeoSoils Consultants, Inc.
Date	09/09/16			File Name: 8-8 Seismic.slim

rocscience

SLIDEINTERPRET 7.009



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	300	35
Bedrock		130	Mohr-Coulomb	310	36.5

Project	#6489			
Analysis Description	Section 8-8' Seismic			
Drawn By	JG	Scale	1:1000	Company: GeoSoils Consultants, Inc.
Date	09/09/16			File Name: 8-8 Seismic.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

#6489

Project Summary

File Name:	8-8 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	#6489
Analysis:	Section 8-8' Seismic
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	09/09/16

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Right to Left
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Loading

Seismic Load Coefficient (Horizontal): 0.35

Material Properties

Property	Fill	Qtn/Qtm
Color		
Strength Type	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	130
Cohesion [psf]	170	300
Friction Angle [deg]	29	35
Water Surface	None	None
Ru Value	0	0

Global Minimums

Method: spencer

FS	**1.255410**
Center:	212.207, 456.078
Radius:	261.588
Left Slip Surface Endpoint:	177.079, 196.860
Right Slip Surface Endpoint:	379.209, 254.737
Resisting Moment:	.95242e+007 lb-ft
Driving Moment:	.13108e+007 lb-ft
Resisting Horizontal Force:	24399 lb
Driving Horizontal Force:	58401 lb
Total Slice Area:	460.58 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 25426
Number of Invalid Surfaces: 3185

Error Codes:

Error Code -103 reported for 2203 surfaces
Error Code -105 reported for 1 surface
Error Code -106 reported for 746 surfaces
Error Code -108 reported for 76 surfaces
Error Code -111 reported for 3 surfaces
Error Code -112 reported for 156 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-105 = More than two surface / slope intersections with no valid slip surface.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.25541

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	4.38806	319.192	-7.23284	Fill	170	29	236.104	296.407	228.044	0	228.044
2	4.02788	878.471	-6.30461	Qtn/ Qtm	300	35	548.219	688.24	554.466	0	554.466
3	4.02788	1438.48	-5.41771	Qtn/ Qtm	300	35	641.311	805.108	721.368	0	721.368

4	4.02788	1939.04	-4.53211	Qtn/ Qtm	300	35	718.737	902.31	860.188	0	860.188
5	4.02788	2415	-3.64759	Qtn/ Qtm	300	35	787.845	989.069	984.093	0	984.093
6	4.02788	3141.19	-2.76394	Qtn/ Qtm	300	35	896.661	1125.68	1179.19	0	1179.19
7	4.02788	3963.37	-1.88095	Qtn/ Qtm	300	35	1016.31	1275.88	1393.71	0	1393.71
8	4.02788	4753.02	-0.99841	Qtn/ Qtm	300	35	1124.87	1412.17	1588.34	0	1588.34
9	4.02788	5510.18	-0.116103	Qtn/ Qtm	300	35	1223.07	1535.46	1764.42	0	1764.42
10	4.02788	6234.86	0.766176	Qtn/ Qtm	300	35	1311.63	1646.63	1923.18	0	1923.18
11	4.02788	6927.05	1.64864	Qtn/ Qtm	300	35	1391.12	1746.42	2065.71	0	2065.71
12	4.02788	7586.71	2.53149	Qtn/ Qtm	300	35	1462.12	1835.56	2193	0	2193
13	4.02788	8184.53	3.41494	Qtn/ Qtm	300	35	1520.83	1909.27	2298.28	0	2298.28
14	4.02788	8694.13	4.29921	Qtn/ Qtm	300	35	1564.23	1963.75	2376.08	0	2376.08
15	4.02788	9169.65	5.18451	Qtn/ Qtm	300	35	1600.84	2009.71	2441.72	0	2441.72
16	4.02788	9612.28	6.07104	Qtn/ Qtm	300	35	1631.23	2047.86	2496.2	0	2496.2
17	4.02788	10021.9	6.95905	Qtn/ Qtm	300	35	1655.71	2078.59	2540.09	0	2540.09
18	4.02788	10398.3	7.84873	Qtn/ Qtm	300	35	1674.59	2102.3	2573.95	0	2573.95
19	4.02788	10741.2	8.74032	Qtn/ Qtm	300	35	1688.17	2119.34	2598.28	0	2598.28
20	4.02788	11054.2	9.63405	Qtn/ Qtm	300	35	1697.13	2130.59	2614.35	0	2614.35
21	4.02788	11412.2	10.5302	Qtn/ Qtm	300	35	1711.07	2148.1	2639.35	0	2639.35
22	4.02788	11768.1	11.4289	Qtn/ Qtm	300	35	1723.92	2164.23	2662.41	0	2662.41
23	4.02788	12089.4	12.3305	Qtn/ Qtm	300	35	1731.84	2174.17	2676.58	0	2676.58
24	4.02788	12376	13.2351	Qtn/ Qtm	300	35	1735.03	2178.17	2682.31	0	2682.31
25	4.02788	12627.3	14.1432	Qtn/ Qtm	300	35	1733.67	2176.47	2679.87	0	2679.87
26	4.02788	12842.9	15.0549	Qtn/ Qtm	300	35	1727.96	2169.3	2669.65	0	2669.65
27	4.02788	13022.5	15.9705	Qtn/ Qtm	300	35	1718.06	2156.87	2651.89	0	2651.89
28	4.02788	13136.3	16.8904	Qtn/ Qtm	300	35	1700.93	2135.36	2621.17	0	2621.17
29	4.02788	13187.3	17.8147	Qtn/ Qtm	300	35	1677.28	2105.67	2578.77	0	2578.77
30	4.02788	13200.7	18.7439	Qtn/ Qtm	300	35	1650.09	2071.54	2530.01	0	2530.01
31	4.02788	13175.9	19.6782	Qtn/ Qtm	300	35	1619.48	2033.11	2475.14	0	2475.14
32	4.02788	13112.2	20.618	Qtn/ Qtm	300	35	1585.56	1990.53	2414.32	0	2414.32
33	4.02788	13008.8	21.5636	Qtn/	300	35	1548.43	1943.92	2347.77	0	2347.77

				Qtm							
34	4.02788	12865.1	22.5154	Qtn/ Qtm	300	35	1508.21	1893.42	2275.64	0	2275.64
35	4.02788	12791.4	23.4739	Qtn/ Qtm	300	35	1475.64	1852.53	2217.24	0	2217.24
36	4.02788	12789.9	24.4393	Qtn/ Qtm	300	35	1450.5	1820.97	2172.17	0	2172.17
37	4.02788	12745.3	25.4122	Qtn/ Qtm	300	35	1421.73	1784.86	2120.61	0	2120.61
38	4.02788	12656.6	26.3931	Qtn/ Qtm	300	35	1389.47	1744.35	2062.74	0	2062.74
39	4.02788	12522.7	27.3823	Qtn/ Qtm	300	35	1353.76	1699.53	1998.74	0	1998.74
40	4.02788	12224.8	28.3805	Qtn/ Qtm	300	35	1304.47	1637.65	1910.37	0	1910.37
41	4.02788	11374.6	29.3881	Qtn/ Qtm	300	35	1209.13	1517.96	1739.43	0	1739.43
42	4.02788	10417.5	30.4058	Qtn/ Qtm	300	35	1107.82	1390.77	1557.78	0	1557.78
43	4.02788	11264.9	31.4343	Qtn/ Qtm	300	35	1158.3	1454.14	1648.28	0	1648.28
44	4.02788	9971.45	32.4742	Qtn/ Qtm	300	35	1033.43	1297.38	1424.4	0	1424.4
45	4.02788	8610.73	33.5262	Qtn/ Qtm	300	35	907.521	1139.31	1198.66	0	1198.66
46	4.02788	7188.26	34.5912	Qtn/ Qtm	300	35	781.273	980.818	972.308	0	972.308
47	4.02788	5702.86	35.6701	Qtn/ Qtm	300	35	654.851	822.106	745.645	0	745.645
48	4.02788	4156.85	36.7637	Qtn/ Qtm	300	35	528.701	663.736	519.469	0	519.469
49	4.02788	2547.62	37.8732	Qtn/ Qtm	300	35	402.909	505.816	293.936	0	293.936
50	4.40361	943.973	39.053	Fill	170	29	173.98	218.417	87.3461	0	87.3461

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.25541

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	177.079	196.86	0	0	0
2	181.467	196.303	1052.54	559.798	28.0065
3	185.495	195.858	3202.58	1703.31	28.0065
4	189.523	195.476	5560.84	2957.56	28.0065
5	193.551	195.157	8055.21	4284.2	28.0065
6	197.579	194.9	10639.7	5658.79	28.0066
7	201.607	194.705	13385.5	7119.15	28.0065
8	205.635	194.573	16281.1	8659.17	28.0065
9	209.663	194.503	19265.2	10246.3	28.0065
10	213.69	194.495	22283.2	11851.4	28.0064
11	217.718	194.549	25286.7	13448.9	28.0066
12	221.746	194.664	28232.6	15015.7	28.0066
13	225.774	194.843	31082.9	16531.6	28.0065
14	229.802	195.083	33798.9	17976.1	28.0065
15	233.83	195.386	36344.4	19330	28.0066
16	237.858	195.751	38698.3	20581.9	28.0065
17	241.886	196.18	40842.7	21722.4	28.0065
18	245.913	196.671	42763.1	22743.8	28.0065
19	249.941	197.226	44447.6	23639.7	28.0065
20	253.969	197.846	45886.9	24405.2	28.0065
21	257.997	198.529	47074.3	25036.7	28.0065
22	262.025	199.278	48004	25531.1	28.0064
23	266.053	200.092	48669.1	25884.9	28.0065
24	270.081	200.973	49065.1	26095.5	28.0065
25	274.109	201.92	49189.1	26161.5	28.0065
26	278.136	202.935	49040.9	26082.6	28.0065
27	282.164	204.019	48621.8	25859.7	28.0065
28	286.192	205.171	47935.2	25494.6	28.0065
29	290.22	206.394	46991	24992.4	28.0065
30	294.248	207.689	45801.4	24359.7	28.0065
31	298.276	209.055	44377.3	23602.3	28.0065
32	302.304	210.496	42731.2	22726.8	28.0065
33	306.332	212.011	40877.2	21740.7	28.0065
34	310.359	213.603	38831.2	20652.6	28.0065
35	314.387	215.273	36610.9	19471.7	28.0065
36	318.415	217.022	34206.2	18192.7	28.0065
37	322.443	218.852	31603	16808.2	28.0065
38	326.471	220.766	28817.4	15326.7	28.0065
39	330.499	222.765	25867.7	13757.9	28.0066
40	334.527	224.851	22774.1	12112.5	28.0065
41	338.555	227.027	19598.7	10423.7	28.0066
42	342.582	229.296	16547.7	8800.99	28.0065
43	346.61	231.659	13686.9	7279.46	28.0065
44	350.638	234.121	10357.2	5508.54	28.0066
45	354.666	236.685	7383.21	3926.79	28.0065
46	358.694	239.354	4830.34	2569.04	28.0065
47	362.722	242.131	2764.22	1470.16	28.0064
48	366.75	245.022	1253.22	666.533	28.0066
49	370.778	248.032	367.16	195.276	28.0065
50	374.806	251.164	179.494	95.465	28.0066
51	379.209	254.737	0	0	0

List Of Coordinates

External Boundary

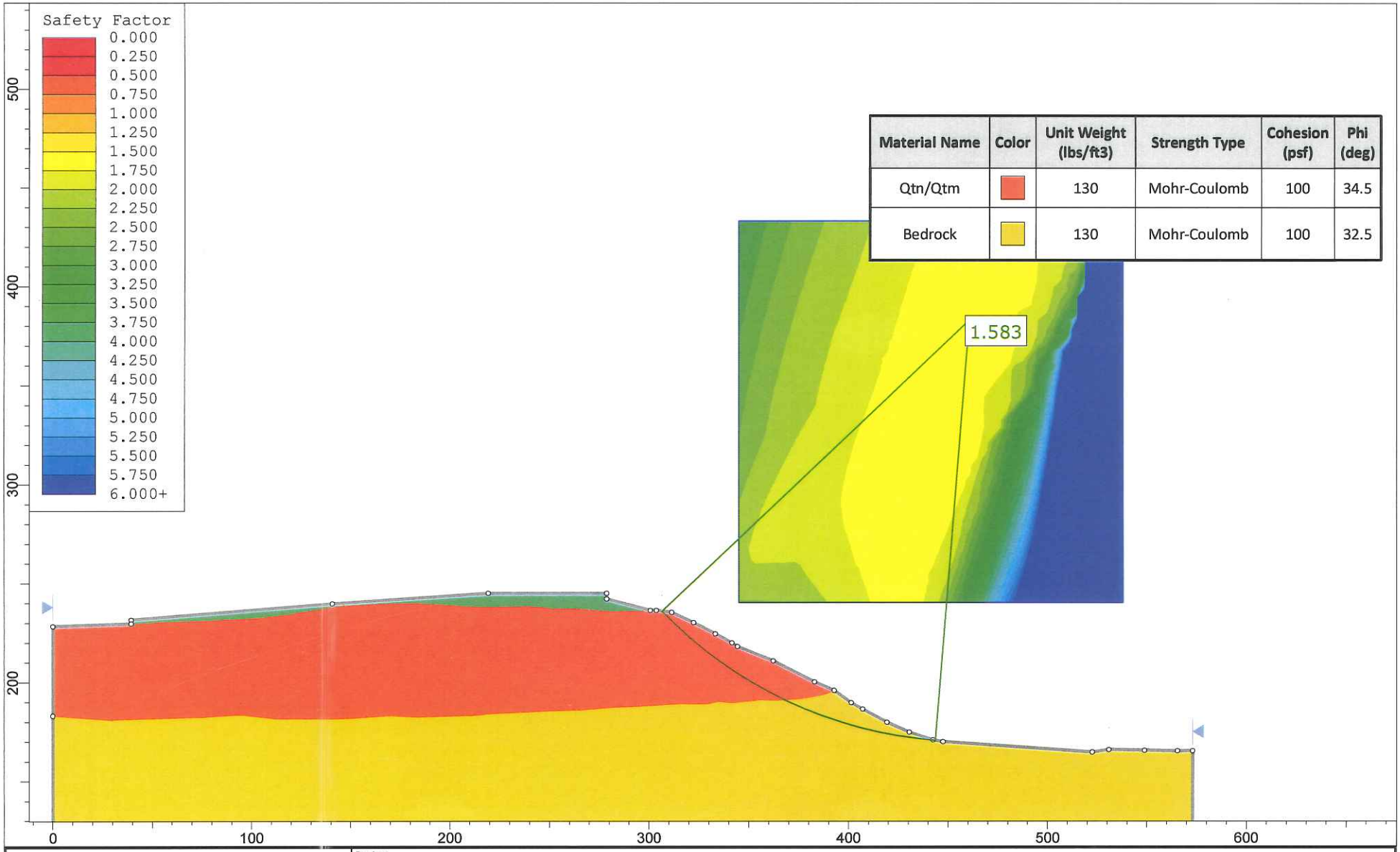
X	Y
1014	50
1014	218.227
909.774	224.523
862.856	226.869
699.765	232.312
622.261	239.377
604.586	241.277
493.109	250.303
398.575	254.737
346.637	254.737
346.637	250.62
336.186	249.353
314.413	239.694
286.053	230.145
256.98	219.599
226.482	210.193
196.697	199.79
186.795	198.311
126.61	189.321
0	188.378
0	50

Material Boundary

X	Y
346.637	250.62
358.5	251.287
399.953	250.975
422.082	250.56
431.848	249.521
534.182	244.846
549.142	244.222
559.116	242.872
622.261	239.377

Material Boundary

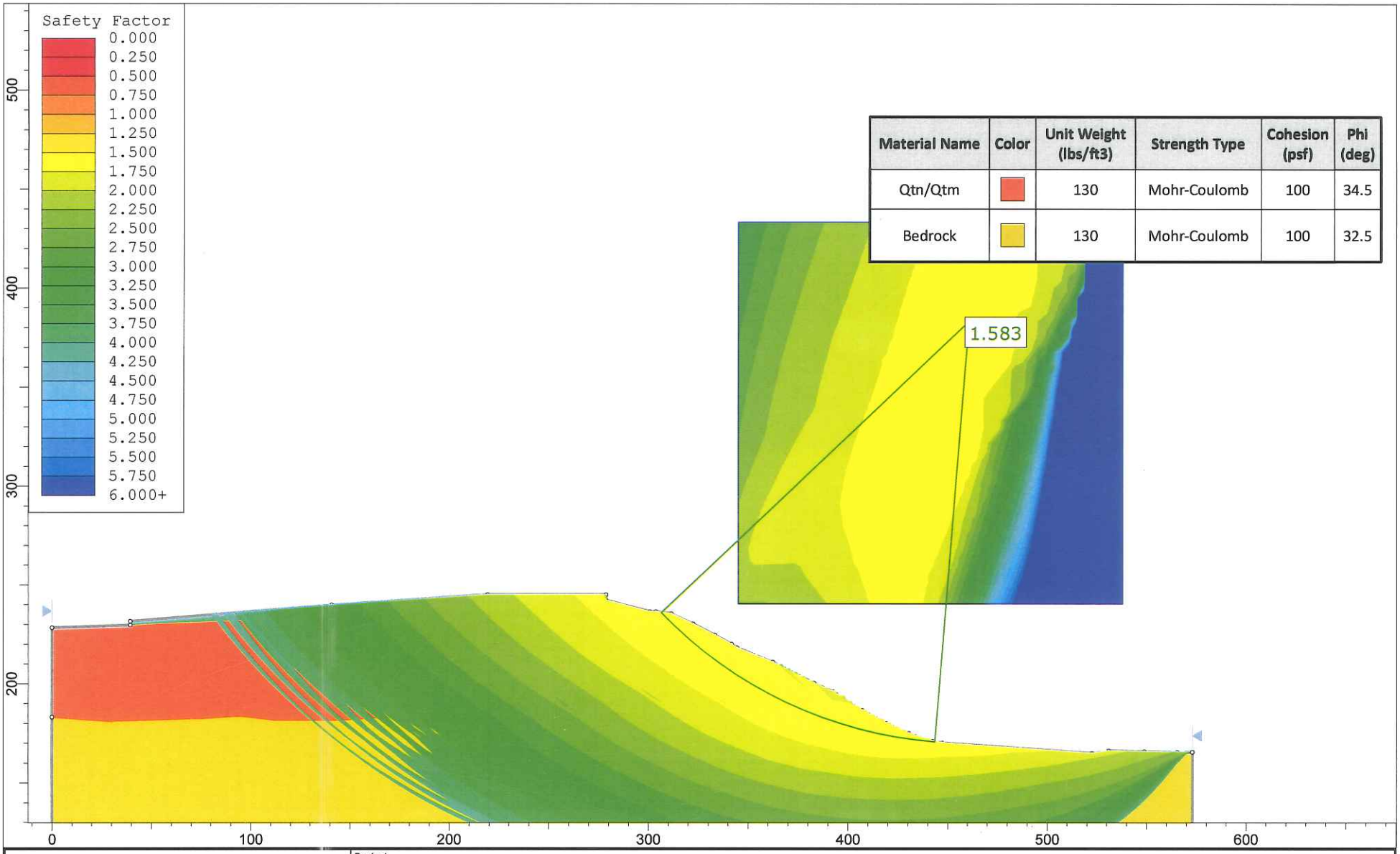
X	Y
126.61	189.321
148.234	189.768
159.141	191.889
177.393	194.767
186.795	198.311



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	100	34.5
Bedrock		130	Mohr-Coulomb	100	32.5

Project	#6489			
Analysis Description	Section 12-12' Static			
Drawn By	JG	Scale	1:800	Company: GeoSoils Consultants, Inc.
Date	09/09/16			File Name: 12-12 Static.slim

SLIDEINTERPRET 7.009



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)
Qtn/Qtm		130	Mohr-Coulomb	100	34.5
Bedrock		130	Mohr-Coulomb	100	32.5

Project	#6489			
Analysis Description	Section 12-12' Static			
Drawn By	JG	*Scale*	1:800	*Company* GeoSoils Consultants, Inc.
Date	09/09/16			*File Name* 12-12 Static.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

#6489

Project Summary

File Name:	12-12 Static.slim
Slide Modeler Version:	7.009
Project Title:	#6489
Analysis:	Section 12-12' Static
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	09/09/16

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Left to Right
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Circular
Search Method:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic

Advanced Seismic Analysis:	No
Staged pseudostatic analysis:	No

Material Properties

Property	Bedrock	Fill	Qtn/Qtm
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	120	130
Cohesion [psf]	100	170	100
Friction Angle [deg]	32.5	22.5	34.5
Water Surface	None	None	None
Ru Value	0	0	0

Global Minimums

Method: spencer

FS	1.582980
Center:	460.745, 383.300
Radius:	213.226
Left Slip Surface Endpoint:	306.468, 236.114
Right Slip Surface Endpoint:	443.558, 170.768
Resisting Moment:	.75816e+007 lb-ft
Driving Moment:	.74238e+007 lb-ft
Resisting Horizontal Force:	15167 lb
Driving Horizontal Force:	2752.9 lb
Total Slice Area:	451.68 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 24884
Number of Invalid Surfaces: 3727

Error Codes:

Error Code -103 reported for 1863 surfaces
Error Code -106 reported for 297 surfaces
Error Code -107 reported for 1104 surfaces
Error Code -108 reported for 249 surfaces
Error Code -111 reported for 19 surfaces
Error Code -112 reported for 91 surfaces
Error Code -114 reported for 104 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-107 = Total driving moment or total driving force is negative. This will occur if the wrong failure direction is specified, or if high external or anchor loads are applied against the failure direction.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-114 = Surface with Reverse Curvature.

Slice Data

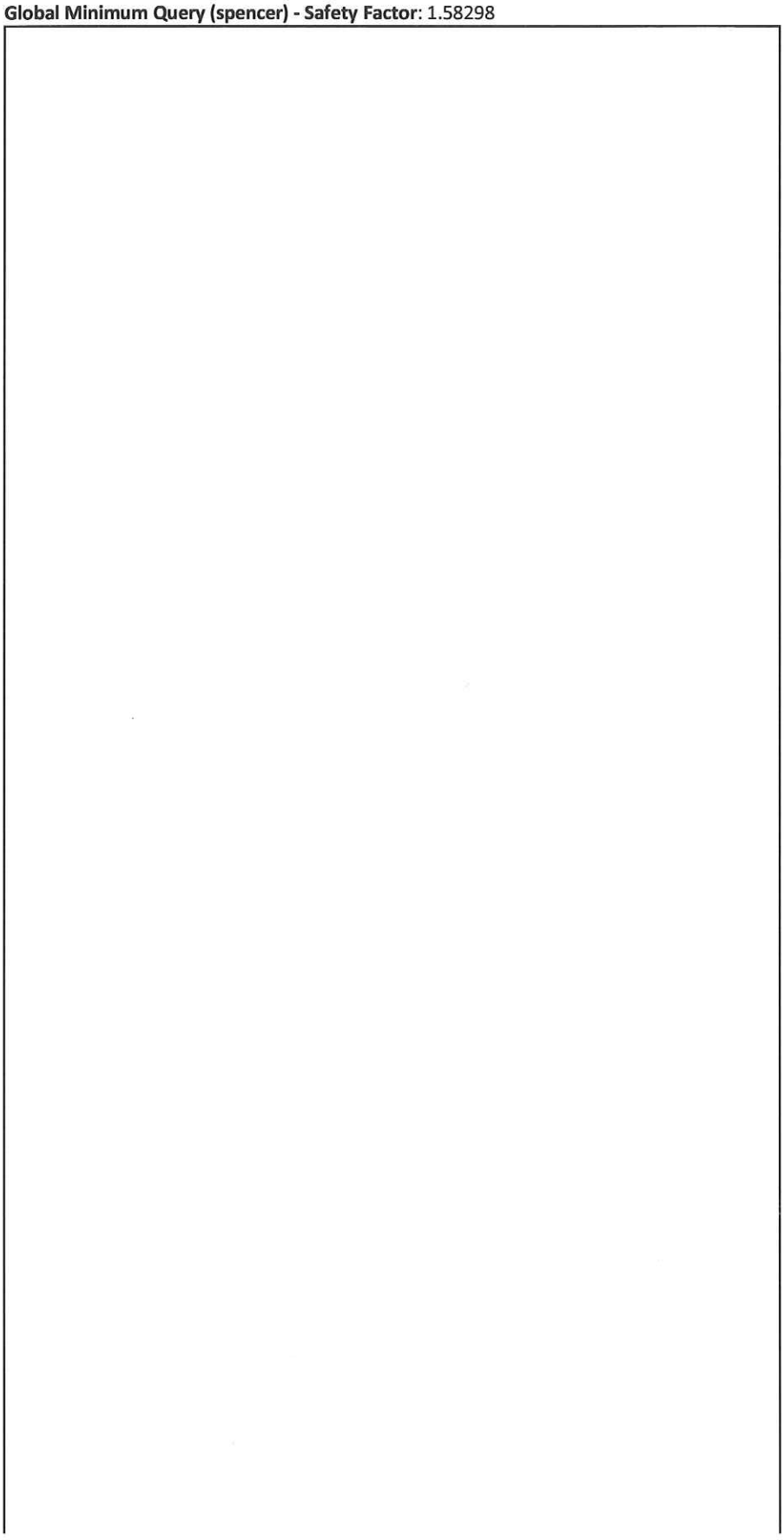
Global Minimum Query (spencer) - Safety Factor: 1.58298

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	2.69278	425.323	-45.8285	Qtn/ Qtm	100	34.5	93.6871	148.305	70.2838	0	70.2838
2	2.69278	1254.7	-44.7994	Qtn/ Qtm	100	34.5	174.755	276.633	257.002	0	257.002
3	2.69278	1844.44	-43.7883	Qtn/ Qtm	100	34.5	235.138	372.218	396.081	0	396.081
4	2.69278	2287.73	-42.7941	Qtn/ Qtm	100	34.5	282.872	447.781	506.025	0	506.025
5	2.69278	2700.87	-41.8157	Qtn/ Qtm	100	34.5	328.989	520.783	612.242	0	612.242
6	2.69278	3085.02	-40.8519	Qtn/ Qtm	100	34.5	373.446	591.157	714.638	0	714.638
7	2.69278	3416.73	-39.902	Qtn/ Qtm	100	34.5	413.633	654.773	807.201	0	807.201
8	2.69278	3704.82	-38.9651	Qtn/ Qtm	100	34.5	450.226	712.698	891.483	0	891.483
9	2.69278	3967.56	-38.0404	Qtn/	100	34.5	484.98	767.713	971.53	0	971.53

				Qtm							
10	2.69278	4205.91	-37.1273	Qtn/ Qtm	100	34.5	517.875	819.786	1047.29	0	1047.29
11	2.69278	4407.01	-36.225	Qtn/ Qtm	100	34.5	547.368	866.473	1115.22	0	1115.22
12	2.69278	4573.47	-35.333	Qtn/ Qtm	100	34.5	573.574	907.956	1175.58	0	1175.58
13	2.69278	4717.98	-34.4508	Qtn/ Qtm	100	34.5	597.783	946.279	1231.34	0	1231.34
14	2.69278	4785.04	-33.5778	Qtn/ Qtm	100	34.5	613.459	971.093	1267.45	0	1267.45
15	2.69278	4870.97	-32.7136	Qtn/ Qtm	100	34.5	631.556	999.74	1309.13	0	1309.13
16	2.69278	5084.96	-31.8576	Qtn/ Qtm	100	34.5	665.175	1052.96	1386.56	0	1386.56
17	2.69278	5280.21	-31.0095	Qtn/ Qtm	100	34.5	697.217	1103.68	1460.36	0	1460.36
18	2.69278	5456.55	-30.169	Qtn/ Qtm	100	34.5	727.571	1151.73	1530.28	0	1530.28
19	2.69278	5614.45	-29.3355	Qtn/ Qtm	100	34.5	756.219	1197.08	1596.26	0	1596.26
20	2.69278	5754.38	-28.5087	Qtn/ Qtm	100	34.5	783.137	1239.69	1658.26	0	1658.26
21	2.69278	5873.05	-27.6885	Qtn/ Qtm	100	34.5	807.824	1278.77	1715.13	0	1715.13
22	2.69278	5900.15	-26.8743	Qtn/ Qtm	100	34.5	821.147	1299.86	1745.81	0	1745.81
23	2.69278	5881.38	-26.0659	Qtn/ Qtm	100	34.5	828.614	1311.68	1763.01	0	1763.01
24	2.78357	6042.4	-25.2497	Bedrock	100	32.5	778.077	1231.68	1776.38	0	1776.38
25	2.78357	5987.02	-24.4254	Bedrock	100	32.5	780.616	1235.7	1782.7	0	1782.7
26	2.78357	5914.21	-23.6065	Bedrock	100	32.5	780.932	1236.2	1783.48	0	1783.48
27	2.78357	5824.31	-22.7927	Bedrock	100	32.5	778.986	1233.12	1778.64	0	1778.64
28	2.78357	5717.62	-21.9837	Bedrock	100	32.5	774.741	1226.4	1768.09	0	1768.09
29	2.78357	5618.54	-21.1794	Bedrock	100	32.5	771.191	1220.78	1759.28	0	1759.28
30	2.78357	5557.98	-20.3793	Bedrock	100	32.5	772.316	1222.56	1762.07	0	1762.07
31	2.78357	5483.56	-19.5834	Bedrock	100	32.5	771.545	1221.34	1760.15	0	1760.15
32	2.78357	5385.43	-18.7914	Bedrock	100	32.5	767.527	1214.98	1750.16	0	1750.16
33	2.78357	5081.73	-18.0031	Bedrock	100	32.5	736.175	1165.35	1672.26	0	1672.26
34	2.78357	4682.09	-17.2183	Bedrock	100	32.5	691.151	1094.08	1560.39	0	1560.39
35	2.78357	4268.89	-16.4369	Bedrock	100	32.5	643.125	1018.05	1441.06	0	1441.06
36	2.78357	3928.84	-15.6586	Bedrock	100	32.5	603.858	955.895	1343.49	0	1343.49
37	2.78357	3625.14	-14.8832	Bedrock	100	32.5	568.6	900.083	1255.88	0	1255.88
38	2.78357	3323.56	-14.1106	Bedrock	100	32.5	532.728	843.298	1166.75	0	1166.75
39	2.78357	3020.18	-13.3406	Bedrock	100	32.5	495.684	784.658	1074.7	0	1074.7
40	2.78357	2702.53	-12.5731	Bedrock	100	32.5	455.658	721.297	975.241	0	975.241
41	2.78357	2370.73	-11.8078	Bedrock	100	32.5	412.579	653.105	868.2	0	868.2
42	2.78357	2048.45	-11.0447	Bedrock	100	32.5	369.829	585.432	761.976	0	761.976
43	2.78357	1780.09	-10.2835	Bedrock	100	32.5	334.017	528.742	672.991	0	672.991
44	2.78357	1502.18	-9.52424	Bedrock	100	32.5	295.882	468.376	578.234	0	578.234
45	2.78357	1210.55	-8.76661	Bedrock	100	32.5	254.725	403.224	475.968	0	475.968
46	2.78357	933.691	-8.01053	Bedrock	100	32.5	214.824	340.062	376.82	0	376.82
47	2.78357	730.314	-7.25585	Bedrock	100	32.5	185.371	293.439	303.638	0	303.638
48	2.78357	519.547	-6.50243	Bedrock	100	32.5	154.027	243.821	225.753	0	225.753
49	2.78357	295.372	-5.75014	Bedrock	100	32.5	119.77	189.593	140.633	0	140.633
50	2.78357	70.7141	-4.99884	Bedrock	100	32.5	91.0384	144.112	69.2421	0	69.2421

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.58298



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	306.468	236.114	0	0	0
2	309.161	233.342	-57.4363	-25.6791	24.0889
3	311.853	230.668	159.264	71.205	24.0888
4	314.546	228.087	548.538	245.245	24.0889
5	317.239	225.594	1048.45	468.748	24.0888
6	319.932	223.185	1637.52	732.114	24.0888
7	322.624	220.856	2296.14	1026.58	24.0889
8	325.317	218.605	3000	1341.26	24.0888
9	328.01	216.427	3729.3	1667.32	24.0888
10	330.703	214.32	4470.41	1998.66	24.0888
11	333.396	212.281	5211.01	2329.78	24.0888
12	336.088	210.309	5937.16	2654.43	24.0888
13	338.781	208.4	6636.93	2967.29	24.0888
14	341.474	206.553	7302.08	3264.67	24.0888
15	344.167	204.765	7916.02	3539.15	24.0888
16	346.859	203.035	8479.9	3791.25	24.0888
17	349.552	201.362	9009.14	4027.87	24.0888
18	352.245	199.743	9495.64	4245.38	24.0888
19	354.938	198.178	9932	4440.47	24.0888
20	357.631	196.665	10311.5	4610.16	24.0889
21	360.323	195.202	10628.3	4751.79	24.0889
22	363.016	193.789	10876.8	4862.9	24.0889
23	365.709	192.425	11048.3	4939.54	24.0887
24	368.402	191.107	11139.5	4980.32	24.0888
25	371.185	189.795	11305.9	5054.74	24.0889
26	373.969	188.53	11386.9	5090.94	24.0888
27	376.752	187.314	11383	5089.18	24.0888
28	379.536	186.144	11295.3	5049.99	24.0888
29	382.32	185.021	11125.9	4974.23	24.0887
30	385.103	183.942	10876.9	4862.9	24.0887
31	387.887	182.908	10549.4	4716.5	24.0888
32	390.67	181.918	10145	4535.71	24.0889
33	393.454	180.971	9666.46	4321.75	24.0888
34	396.237	180.066	9130.25	4082.02	24.0888
35	399.021	179.203	8552.65	3823.78	24.0888
36	401.805	178.382	7946.07	3552.59	24.0888
37	404.588	177.602	7313.64	3269.84	24.0888
38	407.372	176.862	6660.16	2977.67	24.0888
39	410.155	176.162	5993.85	2679.77	24.0888
40	412.939	175.502	5323.64	2380.13	24.0888
41	415.722	174.881	4660.89	2083.82	24.0888
42	418.506	174.299	4017.8	1796.31	24.0888
43	421.29	173.756	3402.47	1521.2	24.0888
44	424.073	173.251	2812.7	1257.52	24.0888
45	426.857	172.784	2259.24	1010.08	24.0889
46	429.64	172.355	1754.59	784.455	24.0888
47	432.424	171.963	1304.29	583.133	24.0889
48	435.207	171.609	895.971	400.577	24.0888
49	437.991	171.291	538.902	240.936	24.0888
50	440.775	171.011	244.972	109.524	24.0888
51	443.558	170.768	0	0	0

List Of Coordinates

External Boundary

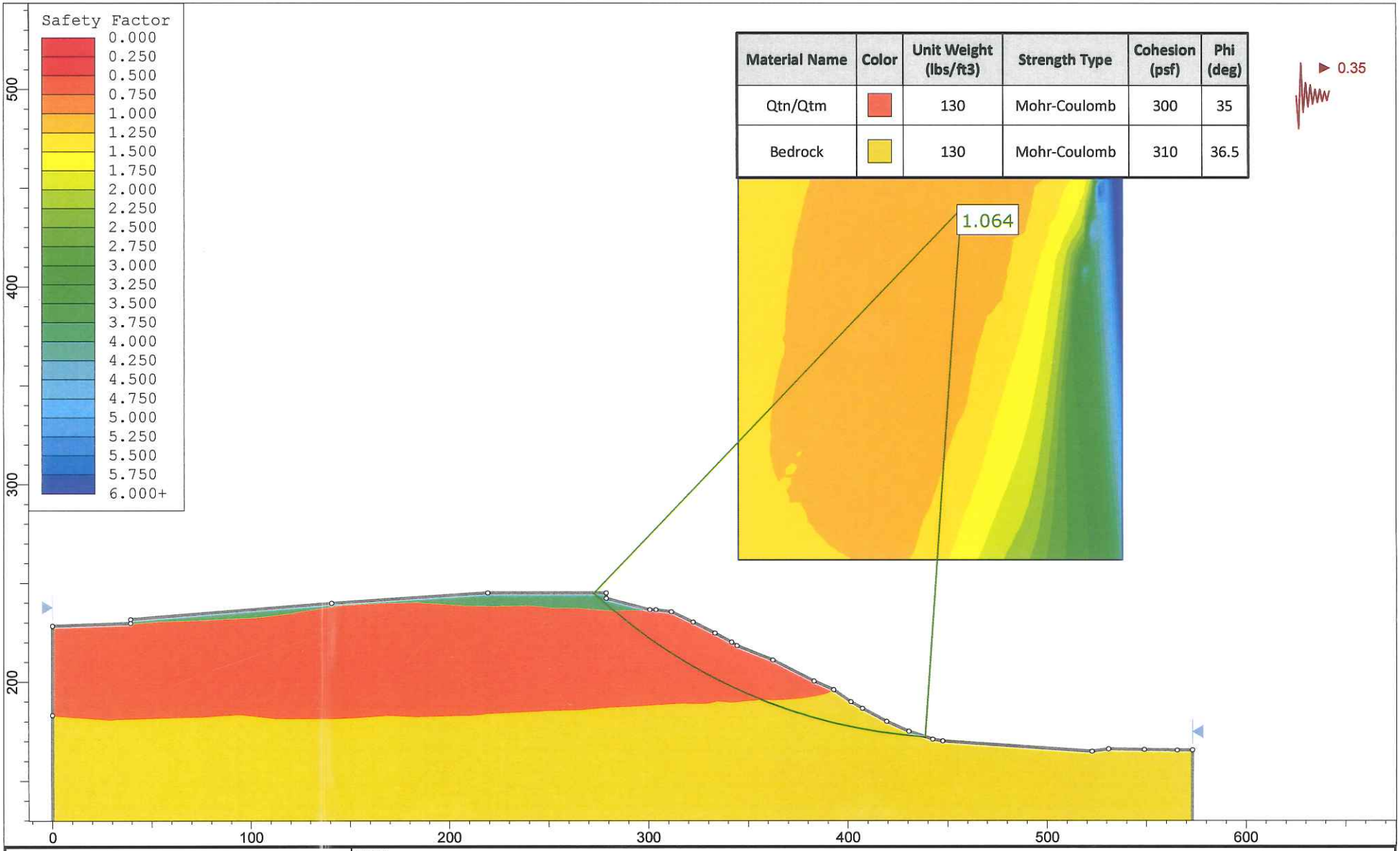
X	Y
573	100
573	165.463
565.351	165.427
548.882	165.673
530.937	166.042
522.579	164.812
447.482	170.098
442.443	170.958
430.521	174.891
419.336	179.93
407.168	186.567
401.392	189.886
392.788	196.031
382.955	200.333
362.307	211.026
344.362	218.278
341.658	220.121
333.3	224.669
322.361	230.323
311.423	235.485
303.679	236.468
300.607	236.468
278.729	242.245
278.729	245.072
219.241	245.072
140.703	239.787
39.361	231.665
39.361	229.706
0	228.37
0	183.213
0	100

Material Boundary

X	Y
0	183.213
30.041	181
76.377	182.475
94.498	183.616
111.428	181.658
122.063	181.658
143.491	181.658
167.67	183.245
183.413	182.496
211.37	183.215
217.248	183.999
251.149	185.566
266.499	186.089
281.587	187.33
315.553	189.355
329.139	189.159
333.973	190.465
335.736	190.4
342.856	189.747
352.066	190.661
355.267	191.314
367.024	190.988
376.822	191.837
379.565	192.294
384.007	192.947
389.102	194.123
392.788	196.031

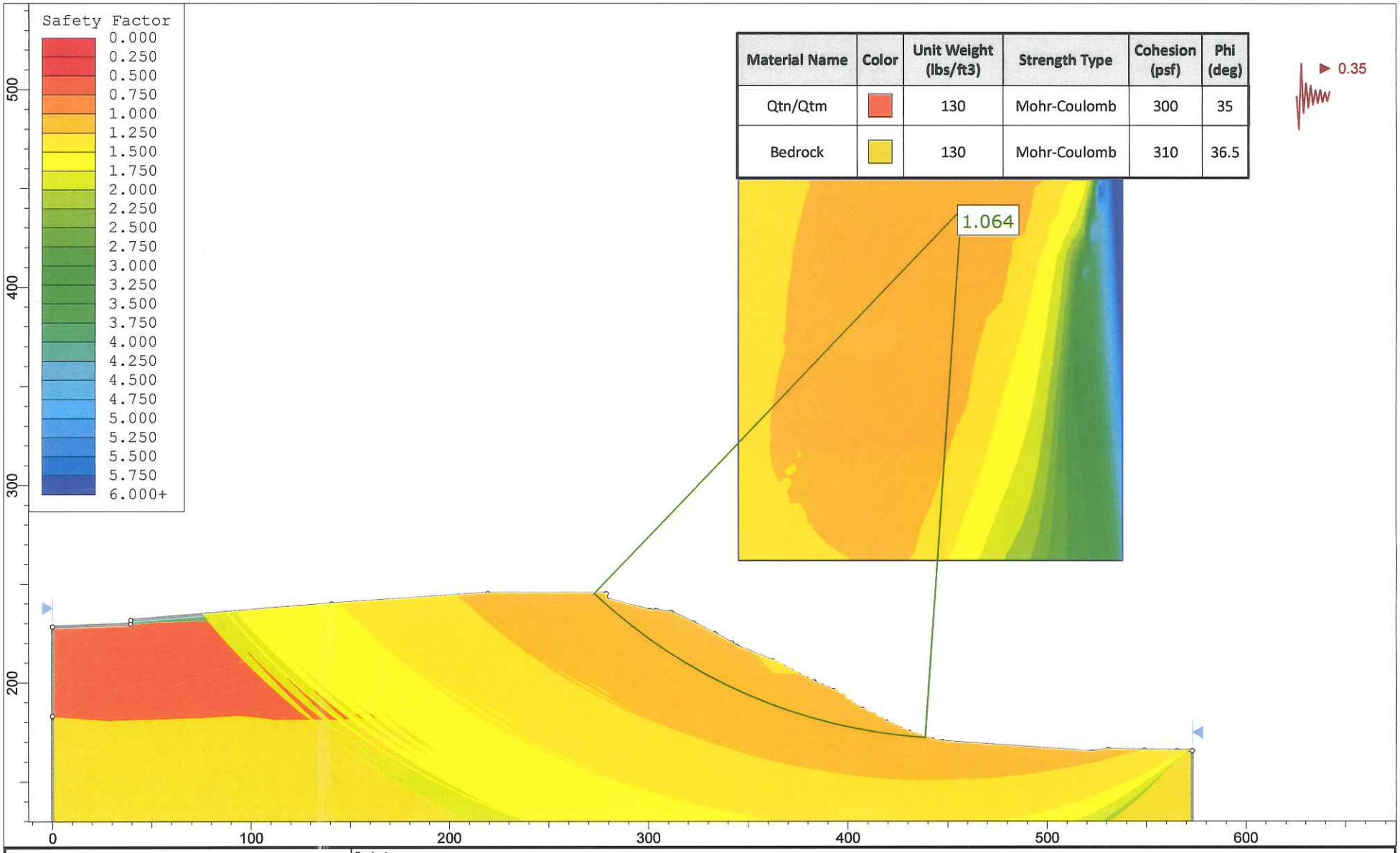
Material Boundary

X	Y
39.361	229.706
53.549	230.773
75.506	231.461
103.229	232.89
121.995	235.102
146.995	238.974
163.579	239.932
170.671	240.276
184.423	240.407
208.291	238.761
221.518	238.526
229.219	238.702
238.919	238.937
245.385	238.408
247.854	238.173
251.793	237.644
263.962	237.644
273.544	236.762
282.421	236.115
288.358	236.468
300.607	236.468



Project	#6489			
Analysis Description	Section 12-12' Seismic			
Drawn By	JG	Scale	1:800	Company: GeoSoils Consultants, Inc.
Date	09/09/16			File Name: 12-12 Seismic.slim

SLIDEINTERPRET 7.009



Project	#6489		
Analysis Description	Section 12-12' Seismic		
Drawn By	JG	Scale 1:800	Company GeoSoils Consultants, Inc.
Date	09/09/16		File Name 12-12 Seismic.slim

SLIDEINTERPRET 7.009

Slide Analysis Information

#6489

Project Summary

File Name:	12-12 Seismic.slim
Slide Modeler Version:	7.009
Project Title:	#6489
Analysis:	Section 12-12' Seismic
Author:	JG
Company:	GeoSoils Consultants, Inc.
Date Created:	09/09/16

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Failure Direction:	Left to Right
Data Output:	Standard
Maximum Material Properties:	20
Maximum Support Properties:	20

Analysis Options

Slices Type:	Vertical
Analysis Methods Used	
	Spencer
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed: 10116
Random Number Generation Method: Park and Miller v.3

Surface Options

Surface Type: Circular
Search Method: Grid Search
Radius Increment: 10
Composite Surfaces: Disabled
Reverse Curvature: Invalid Surfaces
Minimum Elevation: Not Defined
Minimum Depth: Not Defined
Minimum Area: Not Defined
Minimum Weight: Not Defined

Seismic

Advanced Seismic Analysis: No
Staged pseudostatic analysis: No

Loading

Seismic Load Coefficient (Horizontal): 0.35

Material Properties

Property	Bedrock	Fill	Qtn/Qtm
Color			
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	130	120	130
Cohesion [psf]	310	170	300
Friction Angle [deg]	36.5	29	35
Water Surface	None	None	None
Ru Value	0	0	0

Global Minimums

Method: spencer

FS	**1.063660**
Center:	456.888, 439.394
Radius:	267.820
Left Slip Surface Endpoint:	272.587, 245.072
Right Slip Surface Endpoint:	438.703, 172.192
Resisting Moment:	.44884e+007 lb-ft
Driving Moment:	.06288e+007 lb-ft
Resisting Horizontal Force:	21022 lb
Driving Horizontal Force:	07794 lb
Total Slice Area:	479.78 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 26508
Number of Invalid Surfaces: 2103

Error Codes:

Error Code -103 reported for 1401 surfaces
Error Code -106 reported for 349 surfaces
Error Code -108 reported for 35 surfaces
Error Code -111 reported for 318 surfaces

Error Codes

The following errors were encountered during the computation:

-103 = Two surface / slope intersections, but one or more surface / nonslope external polygon intersections lie between them. This usually occurs when the slip surface extends past the bottom of the soil region, but may also occur on a benched slope model with two sets of Slope Limits.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-111 = safety factor equation did not converge

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.06366

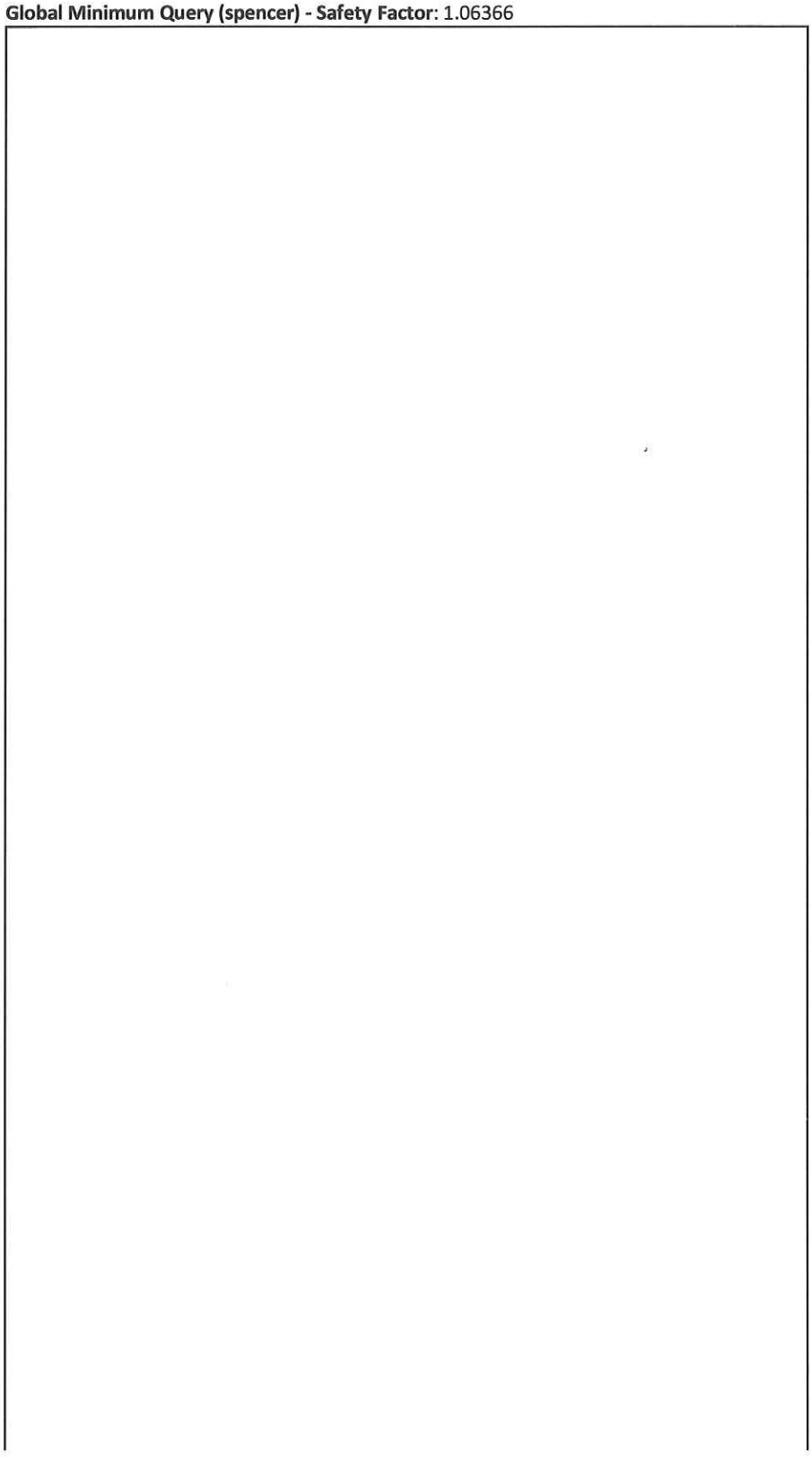
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]
1	3.30765	612.136	-43.0001	Fill	170	29	190.151	202.257	58.1922	0	58.1922
2	3.30765	1651.87	-42.0399	Fill	170	29	263.071	279.818	198.116	0	198.116
3	3.30765	1635.48	-41.094	Fill	170	29	265.593	282.501	202.957	0	202.957
4	3.34151	2494.3	-40.1569	Qtn/ Qtm	300	35	486.216	517.168	310.149	0	310.149
5	3.34151	3351.82	-39.2278	Qtn/ Qtm	300	35	571.133	607.491	439.142	0	439.142
6	3.34151	4165.79	-38.3108	Qtn/ Qtm	300	35	655.527	697.258	567.344	0	567.344
7	3.34151	4940.39	-37.4053	Qtn/ Qtm	300	35	739.566	786.647	695.004	0	695.004

8	3.34151	5678.84	-36.5106	Qtn/ Qtm	300	35	823.361	875.776	822.292	0	822.292
9	3.34151	6442.78	-35.6262	Qtn/ Qtm	300	35	912.788	970.896	958.138	0	958.138
10	3.34151	7395.09	-34.7514	Qtn/ Qtm	300	35	1024.38	1089.59	1127.65	0	1127.65
11	3.34151	8212.12	-33.8858	Qtn/ Qtm	300	35	1126.27	1197.97	1282.44	0	1282.44
12	3.34151	8956.92	-33.0289	Qtn/ Qtm	300	35	1224.27	1302.21	1431.31	0	1431.31
13	3.34151	9307.04	-32.1803	Qtn/ Qtm	300	35	1283.65	1365.37	1521.51	0	1521.51
14	3.34151	9520.67	-31.3395	Qtn/ Qtm	300	35	1329.99	1414.66	1591.9	0	1591.9
15	3.34151	9705.03	-30.5061	Qtn/ Qtm	300	35	1374.35	1461.84	1659.27	0	1659.27
16	3.34151	9823.99	-29.6799	Qtn/ Qtm	300	35	1412.47	1502.39	1717.18	0	1717.18
17	3.34151	9887.36	-28.8603	Qtn/ Qtm	300	35	1445.1	1537.09	1766.75	0	1766.75
18	3.34151	9923.77	-28.0472	Qtn/ Qtm	300	35	1475.26	1569.17	1812.57	0	1812.57
19	3.34151	9921.14	-27.2402	Qtn/ Qtm	300	35	1501.34	1596.92	1852.2	0	1852.2
20	3.34151	9866.6	-26.439	Qtn/ Qtm	300	35	1521.55	1618.41	1882.88	0	1882.88
21	3.34151	9777.12	-25.6433	Qtn/ Qtm	300	35	1537.62	1635.5	1907.3	0	1907.3
22	3.34151	9569.68	-24.8529	Qtn/ Qtm	300	35	1538.76	1636.72	1909.04	0	1909.04
23	3.34151	9591.01	-24.0676	Qtn/ Qtm	300	35	1569.12	1669.01	1955.16	0	1955.16
24	3.34151	9640.94	-23.287	Qtn/ Qtm	300	35	1603.96	1706.07	2008.07	0	2008.07
25	3.34151	9667.49	-22.5109	Qtn/ Qtm	300	35	1636.52	1740.7	2057.53	0	2057.53
26	3.30718	9571.81	-21.7431	Bedrock	310	36.5	1772.35	1885.18	2128.73	0	2128.73
27	3.30718	9552.59	-20.9834	Bedrock	310	36.5	1802.8	1917.57	2172.51	0	2172.51
28	3.30718	9416.37	-20.2275	Bedrock	310	36.5	1815.85	1931.45	2191.27	0	2191.27
29	3.30718	9193.39	-19.4752	Bedrock	310	36.5	1815.19	1930.74	2190.31	0	2190.31
30	3.30718	8949.46	-18.7265	Bedrock	310	36.5	1810.58	1925.84	2183.68	0	2183.68
31	3.30718	8684.86	-17.981	Bedrock	310	36.5	1801.84	1916.55	2171.13	0	2171.13
32	3.30718	8399.85	-17.2387	Bedrock	310	36.5	1788.8	1902.67	2152.37	0	2152.37
33	3.30718	8094.68	-16.4993	Bedrock	310	36.5	1771.23	1883.99	2127.12	0	2127.12
34	3.30718	7811.52	-15.7628	Bedrock	310	36.5	1756.29	1868.1	2105.65	0	2105.65
35	3.30718	7579.83	-15.0289	Bedrock	310	36.5	1749.47	1860.84	2095.83	0	2095.83
36	3.30718	7329.81	-14.2976	Bedrock	310	36.5	1738.53	1849.2	2080.11	0	2080.11
37	3.30718	6906.97	-13.5686	Bedrock	310	36.5	1694.26	1802.12	2016.48	0	2016.48
38	3.30718	6227.79	-12.8418	Bedrock	310	36.5	1598.47	1700.23	1878.79	0	1878.79
39	3.30718	5534.87	-12.1172	Bedrock	310	36.5	1495.23	1590.42	1730.39	0	1730.39
40	3.30718	4962.57	-11.3945	Bedrock	310	36.5	1411.06	1500.89	1609.39	0	1609.39
41	3.30718	4428.75	-10.6736	Bedrock	310	36.5	1330.51	1415.21	1493.61	0	1493.61
42	3.30718	3907.49	-9.95445	Bedrock	310	36.5	1248.48	1327.96	1375.7	0	1375.7
43	3.30718	3372.32	-9.23687	Bedrock	310	36.5	1159.27	1233.06	1247.45	0	1247.45
44	3.30718	2818.9	-8.52075	Bedrock	310	36.5	1061.45	1129.02	1106.84	0	1106.84
45	3.30718	2296.78	-7.80597	Bedrock	310	36.5	965.643	1027.12	969.126	0	969.126
46	3.30718	1840.73	-7.09241	Bedrock	310	36.5	880.111	936.139	846.178	0	846.178
47	3.30718	1368.11	-6.37996	Bedrock	310	36.5	786.145	836.191	711.106	0	711.106

48	3.30718	896.862	-5.66849	Bedrock	310	36.5	687.529	731.297	569.352	0	569.352
49	3.30718	536.311	-4.9579	Bedrock	310	36.5	611.189	650.097	459.616	0	459.616
50	3.30718	181.725	-4.24808	Bedrock	310	36.5	488.745	519.858	283.607	0	283.607

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.06366



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	272.587	245.072	0	0	0
2	275.895	241.988	-236.529	-166.556	35.152
3	279.203	239.005	60.526	42.6206	35.1521
4	282.51	236.12	338.121	238.094	35.152
5	285.852	233.301	457.501	322.158	35.152
6	289.193	230.573	916.179	645.145	35.152
7	292.535	227.933	1676.97	1180.87	35.152
8	295.876	225.378	2705.6	1905.2	35.152
9	299.218	222.904	3970.17	2795.67	35.152
10	302.559	220.509	5463.05	3846.91	35.152
11	305.901	218.191	7235.36	5094.91	35.152
12	309.242	215.947	9216.34	6489.86	35.152
13	312.584	213.775	11361.2	8000.19	35.152
14	315.926	211.672	13519.6	9520.06	35.152
15	319.267	209.637	15637.6	11011.5	35.152
16	322.609	207.668	17699.1	12463.2	35.1521
17	325.95	205.764	19678.1	13856.7	35.152
18	329.292	203.922	21553.5	15177.3	35.152
19	332.633	202.142	23313.7	16416.8	35.152
20	335.975	200.422	24945.2	17565.6	35.152
21	339.316	198.76	26432.2	18612.7	35.152
22	342.658	197.156	27765	19551.2	35.1519
23	345.999	195.608	28916.5	20362.1	35.152
24	349.341	194.116	29937.2	21080.8	35.152
25	352.682	192.678	30828.6	21708.6	35.1521
26	356.024	191.293	31581.8	22238.9	35.152
27	359.331	189.974	31865.9	22439	35.152
28	362.638	188.706	31990.3	22526.6	35.152
29	365.945	187.487	31938.5	22490.1	35.152
30	369.252	186.318	31702.1	22323.6	35.152
31	372.559	185.196	31282.2	22028	35.1521
32	375.867	184.123	30680.8	21604.5	35.1521
33	379.174	183.097	29901.3	21055.6	35.1521
34	382.481	182.117	28948.2	20384.4	35.152
35	385.788	181.184	27827.4	19595.2	35.152
36	389.095	180.296	26543.4	18691.1	35.1521
37	392.403	179.453	25100.5	17675	35.152
38	395.71	178.655	23512.5	16556.8	35.1521
39	399.017	177.901	21811.2	15358.8	35.1521
40	402.324	177.191	20021.7	14098.7	35.1521
41	405.631	176.524	18154.9	12784.1	35.152
42	408.938	175.901	16226.6	11426.2	35.1519
43	412.246	175.321	14255.1	10038	35.152
44	415.553	174.783	12264.4	8636.24	35.1521
45	418.86	174.287	10281.8	7240.1	35.1519
46	422.167	173.834	8324.79	5862.06	35.152
47	425.474	173.422	6400.48	4507.02	35.152
48	428.782	173.053	4536.93	3194.77	35.1521
49	432.089	172.724	2759.21	1942.95	35.152
50	435.396	172.437	1053.25	741.664	35.1519
51	438.703	172.192	0	0	0

List Of Coordinates

External Boundary

X	Y
573	100
573	165.463
565.351	165.427
548.882	165.673
530.937	166.042
522.579	164.812
447.482	170.098
442.443	170.958
430.521	174.891
419.336	179.93
407.168	186.567
401.392	189.886
392.788	196.031
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311.423	235.485
303.679	236.468
300.607	236.468
278.729	242.245
278.729	245.072
219.241	245.072
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39.361	231.665
39.361	229.706
0	228.37
0	183.213
0	100

Material Boundary

X	Y
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30.041	181
76.377	182.475
94.498	183.616
111.428	181.658
122.063	181.658
143.491	181.658
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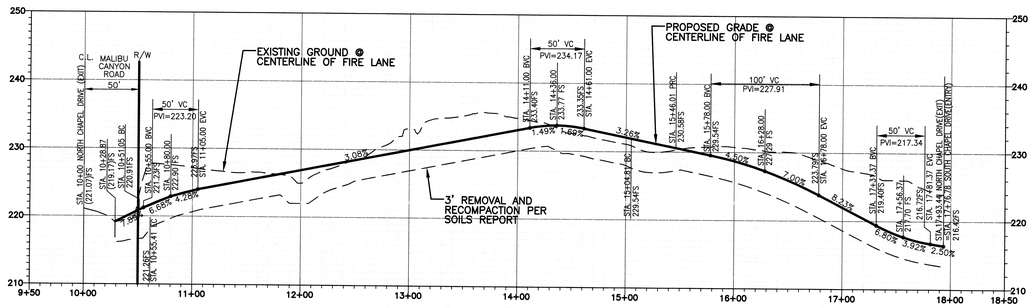
ABBREVIATIONS:

BW	BACK OF WALK
TC	TOP OF CURB
FL	FLOW LINE
TS	TOP OF SLAB
FF	FINISHED FLOOR
FS	FINISHED SURFACE
FG	FINISHED GROUND
R/W	RIGHT OF WAY
TG	TOP OF GRATE
STA	STATION
EL	ELEVATION
INV	INVERT
CB	CATCH BASIN
TG	TOP OF GRATE
S	SLOPE
RCP	REINFORCED CONCRETE PIPE
PVC	POLYVINYL CHLORIDE PIPE
SD	STORM DRAIN
SS	SANITARY SEWER
LP	LOW POINT ELEVATION
HP	HIGH POINT ELEVATION
(#)	LOT NUMBER

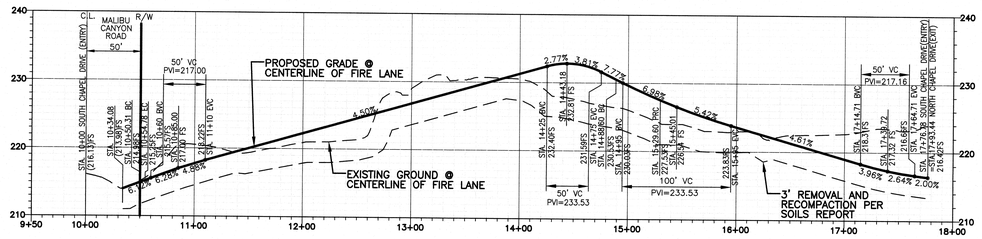
LEGEND:

- TRACT BOUNDARY
- PROPOSED LOT LINE
- BUILDING OUTLINE
- EASEMENT LINE
- 1500 PROPOSED CONTOUR
- 1500 EXISTING CONTOUR
- SD STORM DRAIN LINE
- SS SANITARY SEWER LINE
- W WATER LINE
- DW DOMESTIC WATER LINE
- FW FIRE WATER LINE
- WALL
- STREET CENTER LINE
- DAYLIGHT LINE
- GB GRADE BREAK
- R RIDGE LINE
- CHAIN LINK FENCE
- FLOW ARROW
- (1) CONSTRUCTION NOTE
- 123.45 FS PROPOSED GRADE
- 123.45 EXISTING GRADE
- SLOPE

GRAPHIC SCALE
SCALE: 1" = 50'



NORTH CHAPEL DRIVE (EXIT DRIVE)
PROFILE VIEW
SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=8'



SOUTH CHAPEL DRIVE (ENTRY DRIVE)
PROFILE VIEW
SCALE: HORIZONTAL: 1"=50'
VERTICAL: 1"=8'

CONSTRUCTION NOTES

1. CHAPEL BUILDING PER ARCHITECTURAL PLAN.
2. PUBLIC MAUSOLEUM PER ARCHITECTURAL PLAN.
3. PRIVATE MAUSOLEUM PER ARCHITECTURAL PLAN. BUILDING IS LESS THAN 200 SQ. FT.
4. ONSITE SIDEWALK CONCRETE SIDEWALK.
5. ASPHALT CONCRETE PAVEMENT. SEE TYPICAL ROAD SECTION ON SHEET C2.1.
6. CASE COURSE MATERIAL.
7. 6" CURB AND GUTTER PER APWA STANDARD PLAN 120-1, CASE A2.
8. CONCRETE CURB, T=6" PER APWA STANDARD PLAN 120-1, CASE A1.
9. INSTALL 4" PERFORATED DRAIN PIPE WITH 12" GRAVEL POCKET (TYPICAL).
10. RETAINING WALL PER SEPARATE PERMIT.
11. REMOVE EXISTING RETAINING WALL.
12. JOIN EXISTING RETAINING WALL.
13. 13' RIGHT OF WAY DEDICATION TO CALTRANS.
14. CURB RAMP PER APWA STD. PLAN 111-3.
15. 8" CONCRETE CURB AND GUTTER PER CALTRANS STANDARD A87B.
16. REMOVE AND RELOCATE EXISTING CATCH BASIN.
17. EXISTING FIRE HYDRANT.
18. PROPOSED FIRE HYDRANT.
19. CONSTRUCT 4" (520-C-2500) CONCRETE SIDEWALK WITH 4" OF FILL WITH SAND EQUIVALENT 20 OR HIGHER COMPACTED TO 90%
20. DRY WELL INFILTRATION MANHOLE PER DETAIL 1 ON SHEET C2.1.
21. PRE-TREATMENT MANHOLE.
22. STORM WATER DETENTION STRUCTURE.
23. PROPOSED AREA DRAIN WITH SUMP PUMP.
24. PROPOSED OVERFLOW STORM DRAIN.
25. PROPOSED STORM DRAIN.
26. PROPOSED STORM DRAIN OUTLET TO EXISTING STORM DRAIN SYSTEM.
27. PROPOSED PARKWAY CULVERT.
28. STREET RIGHT OF WAY/PROPERTY LINE.
29. EXISTING CURB AND GUTTER.
30. WATER METER.
31. AREA DRAIN.
32. BUS BOARDING ZONE AND LIMOUSINE PARKING
33. WHEEL STOP.
34. SAWCUT AC PAVEMENT AND JOIN.
35. CONSTRUCT AC PAVEMENT TO MATCH EXISTING SLOPES AND GRADES. AC PAVEMENT STRUCTURAL SECTION SHALL MATCH EXISTING PLUS ONE INCH.
36. DRIVE GATES PER ARCHITECTURAL PLANS.
37. EXISTING BUS STOP.
38. CURB RAMP PER CALTRANS REVISED STANDARD PLAN A88A.
39. RELOCATE EXISTING FIRE HYDRANT.
40. CONSTRUCT CURB AND GUTTER PER CALTRANS STANDARD, PLAN NO. A87B
41. CONSTRUCT SEWER MANHOLE PER STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION STANDARD 200-3.
42. CONSTRUCT STORM DRAIN MANHOLE PER STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION STANDARD 321-2.
43. CAP WITH BRICK AND MORTAR.
44. CONSTRUCT JUNCTION STRUCTURE PER PER STANDARD PLANS FOR PUBLIC WORKS CONSTRUCTION STANDARD 332-2.
45. CONSTRUCT 24" REINFORCED CONCRETE PIPE (RCP) STORM DRAIN.
46. EXISTING STORM DRAIN

REVISIONS		
1	12/16/2016	2ND INCOMPLETE LETTER RESPONSE
2	3/14/2016	3RD INCOMPLETE LETTER RESPONSE
3	9/02/2016	REVISION TO CAP ARCHAEOLOGICAL AREA

MALIBU MEMORIAL PARK
4000 Malibu Canyon Road
Malibu CA, 90265

PSOMAS
555 South Flower Street, Suite 4300
Los Angeles, CA 90071
(213) 223-1400 (213) 223-1444 fax
www.psomas.com

REGISTERED PROFESSIONAL ENGINEER
JASON A. NOONAN
No. C056808
CIVIL
STATE OF CALIFORNIA
4/30/2017

GSC GeoSoils Consultants Inc.
6634 Valjean Avenue
Van Nuys, CA 91406

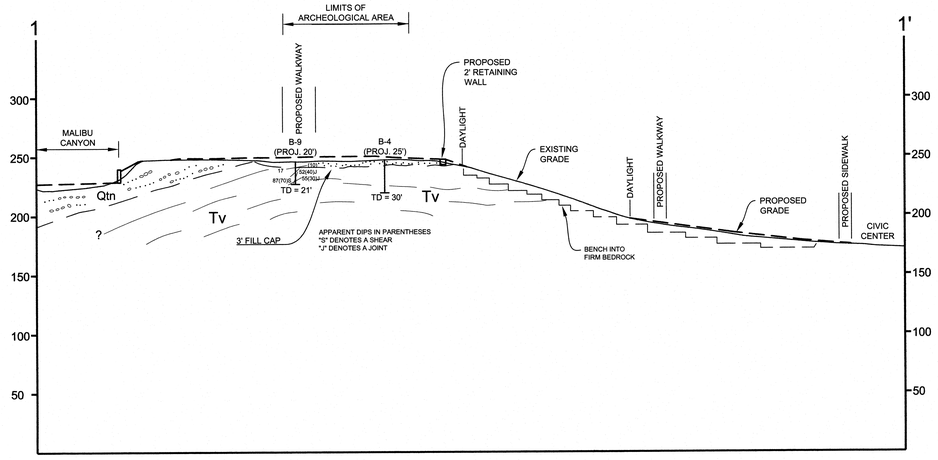
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MALIBU MEMORIAL
4000 MALIBU CANYON ROAD
V.T.M. 69653
GREEN ACRES, LLC

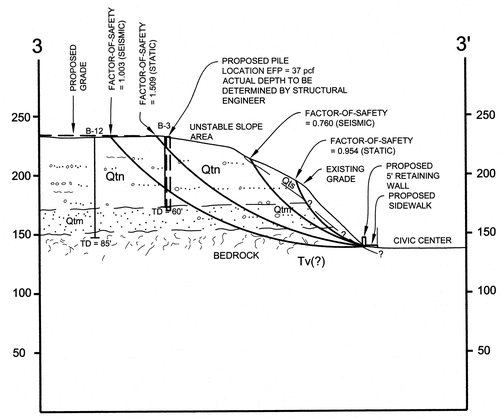
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6489	9/2016	1" = 50'
REVISED	PLATE 1	

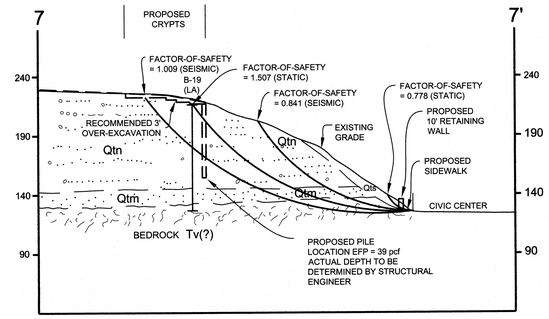
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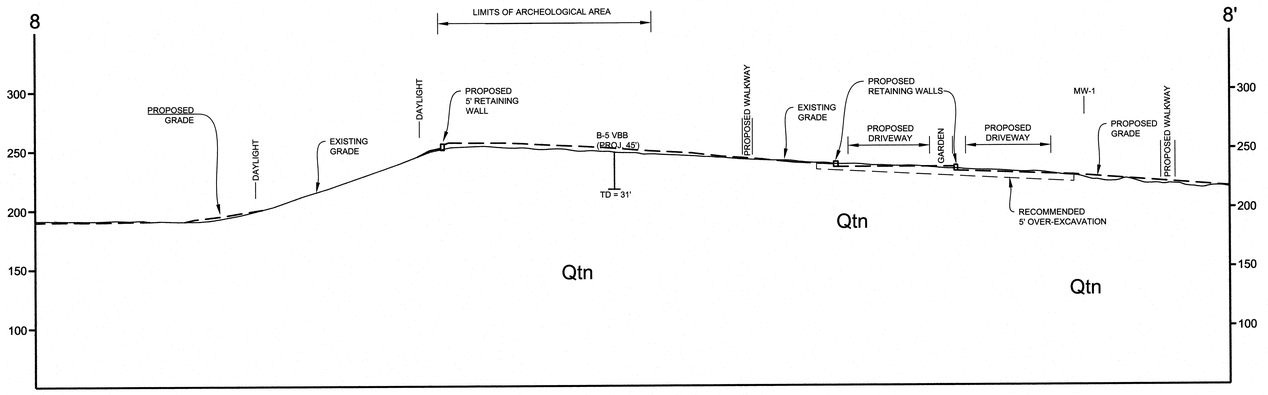
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DRAWN BY:	D.R.Z.
JOB No.:	1GRE220100
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OF 4	SHEETS

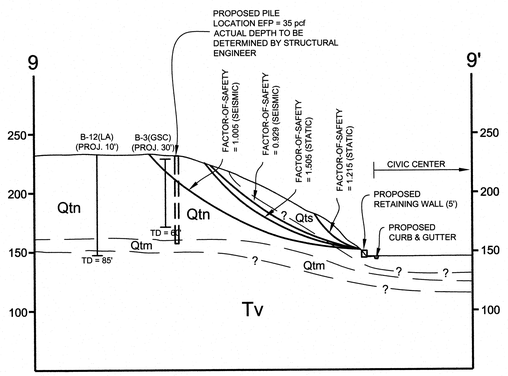
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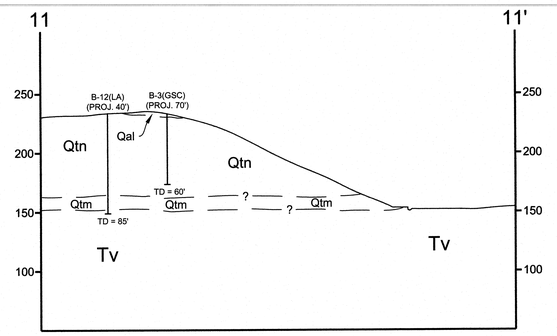


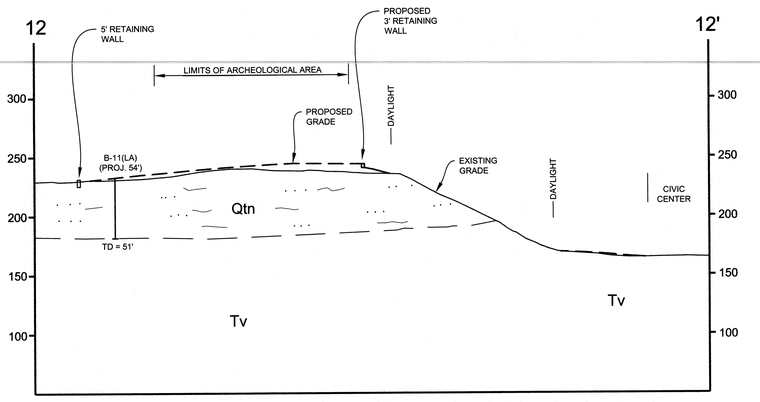












GSC GeoSoils Consultants Inc.	6634 Valjean Avenue Van Nuys, CA 91406	
GEOLOGIC CROSS-SECTIONS MALIBU MEMORIAL 4000 MALIBU CANYON ROAD V.T.M. 69653 GREEN ACRES, LLC		
WORK ORDER 6489	DATE 11/2015	SCALE 1" = 50'
REVISED 1/16 9/16	PLATE 2	

4DU 16926

X:\2001 w.o\gsc-cad\6489\Incoming 9-12-16\Plate 2, geo sections 50-scale 1-16.dwg, 9/14/2016 3:40:44 PM, Custom 1:44 x 34 in.

APPENDIX VII

Greenhouse Gas Study Update

City of Malibu

Malibu Memorial Cemetery Project

Greenhouse Gas Emissions Study

March 2016

rincon

Environmental Scientists Planners Engineers

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

805 644 4455
FAX 644 4240

info@rinconconsultants.com
www.rinconconsultants.com

March 3, 2016
Project No. 15-02065

Jake Jesson
Assistant Project Manager
Green Acres, LLC
22837 Pacific Coast Highway #775
Malibu, California 90265
jjesson@weintraubre.com

RE: GREENHOUSE GAS STUDY
Malibu Memorial Cemetery Project, Malibu, California

Dear Mr. Jesson:

Rincon Consultants, Inc. is pleased to submit the attached Greenhouse Gas Study for the proposed Malibu Memorial Cemetery project in Malibu, California. Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The proposed project would result in 551 metric tons CO_2E per year, and would not result in a significant impact. If you have any questions regarding this study or if we can provide you with other environmental consulting services, please feel free to contact us.

Sincerely,

RINCON CONSULTANTS, INC.

Chris Bersbach
Technical Services Program Supervisor

Joe Power, AICP
Principal

Malibu Memorial Cemetery Project

Greenhouse Gas Study

Prepared for:

Green Acres, LLC
22837 Pacific Coast Highway, #775
Malibu, California 90265

Prepared with the assistance of:

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

March 2016

This report is printed on 50% recycled paper.

Malibu Memorial Cemetery Project
Greenhouse Gas Study

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MALIBU MEMORIAL CEMETERY PROJECT
MALIBU, LOS ANGELES COUNTY
GREENHOUSE GAS STUDY

This report is an analysis of the potential greenhouse gas (GHG) emissions impacts of the proposed Malibu Memorial Cemetery project located in Malibu, California in Los Angeles County. The report has been prepared by Rincon Consultants, Inc. under contract to Green Acres, LLC for use by the City of Malibu, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's GHG emissions and the associated impact to climate change. This study describes climate change, GHGs, and the current regulatory framework, quantifies GHG emissions for the proposed project, compares forecast emissions to quantitative thresholds, and discusses the project's consistency with applicable mitigation strategies.

PROJECT DESCRIPTION

Green Acres, LLC, is developing the Malibu Memorial Cemetery Park and Chapel Project, comprised of approximately 21.0 acres of a 28.7-acre property located east of Malibu Canyon Road, west of Civic Center Way, and north of Pacific Coast Highway in the City of Malibu, California (the "Project"). The unstable slope areas along the perimeter of the site comprise the remaining 7 acres of the parcel that Green Acres has elected not to develop. The proposed Memorial Park project contains approximately 17,500 GSF of FAR development and would include the construction of a 8,500 SF Main Chapel facility, 8,500 SF subterranean parking basement, 48 free-standing Mausoleum structures totaling approximately 9,000 SF (approximately 186 SF/each), approximately 30,600 plot spaces for various crypt configurations, cremation and fractional burial options, as well as surface unenclosed parking for guest vehicles along the entry drive and Chapel ring.

The original Project EIR was approved by the City of Malibu in 1998. To satisfy Mitigation Measure 8.1 of the Rancho Malibu Hotel Environmental Impact Report (City of Malibu 1997), a Cultural Resources Management Plan (CRMP) was developed to reduce potential impacts to an archaeological site located on the property (Wlodarski 1995). The revised CRMP was developed in response to three basic factors: 1) the need to incorporate burial crypts within areas of the site previously slated to be grubbed and capped; 2) changes in the condition of the site over the past 15 years since the plan was developed; and, 3) new grading of unstable slopes and required retaining walls on the site. The project was revised in October 2015 to exclude work in unstable slope areas, remove mounding within sensitive areas, and contain grading within the City-stipulated thresholds of 1,000 cubic yards per acre, reducing the overall project footprint to 21 acres.

SETTING

Overview of Climate Change

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and

storms) over an extended period of time. The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been incremental, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of incremental warming, as glaciers have steadily retreated across the globe. However, scientists have observed acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC, 2013), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95% or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-20th century (IPCC, 2013).

Greenhouse Gases (GHGs)

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Observations of CO_2 concentrations, globally-averaged temperature, and sea level rise are generally well within the range of the extent of the earlier IPCC projections. The recently observed increases in CH_4 and N_2O concentrations are smaller than those assumed in the scenarios in the previous assessments. Each IPCC assessment has used new projections of future climate change that have become more detailed as the models have become more advanced.

Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2e), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a GWP of one. By contrast, methane (CH_4) has a GWP of 21, meaning its global warming effect is 21 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 1997).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHG, Earth's surface would be about 34° C cooler (CalEPA, 2006). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. The following discusses the primary GHGs of concern.

Carbon Dioxide. The global carbon cycle is made up of large carbon flows and reservoirs. Billions of tons of carbon in the form of CO_2 are absorbed by oceans and living biomass (i.e., sinks) and are emitted to the atmosphere annually through natural processes (i.e., sources). When in equilibrium, carbon fluxes among these various reservoirs are roughly balanced (United States Environmental Protection Agency [USEPA], April 2014). CO_2 was the first GHG demonstrated to be increasing in atmospheric concentration, with the first conclusive measurements being made in the last half of the 20th Century. Concentrations of CO_2 in the atmosphere have risen approximately 40% since the industrial revolution. The global atmospheric concentration of CO_2 has increased from a pre-industrial value of about 280 parts per million (ppm) to 391 ppm in 2011 (IPCC, 2007; Oceanic and Atmospheric Association [NOAA], 2010). The average annual CO_2 concentration growth rate was larger between 1995 and 2005 (average: 1.9 ppm per year) than it has been since the beginning of continuous direct atmospheric measurements (1960–2005 average: 1.4 ppm per year), although there is year-to-year variability in growth rates (NOAA, 2010). Currently, CO_2 represents an estimated 74% of total GHG emissions (IPCC, 2007). The largest source of CO_2, and of overall GHG emissions, is fossil fuel combustion.

Methane. Methane (CH_4) is an effective absorber of radiation, though its atmospheric concentration is less than that of CO_2 and its lifetime in the atmosphere is limited to 10 to 12 years. It has a global warming potential (GWP) approximately 21 times that of CO_2. Over the last 250 years, the concentration of CH_4 in the atmosphere has increased by 148% (IPCC, 2007), although emissions have declined from 1990 levels. Anthropogenic sources of CH_4 include enteric fermentation associated with domestic livestock, landfills, natural gas and petroleum systems, agricultural activities, coal mining, wastewater treatment, stationary and mobile combustion, and certain industrial processes (USEPA, April 2014).

Nitrous Oxide. Concentrations of nitrous oxide (N_2O) began to rise at the beginning of the industrial revolution and continue to increase at a relatively uniform growth rate (NOAA, 2010). N_2O is produced by microbial processes in soil and water, including those reactions that occur in fertilizers that contain nitrogen, fossil fuel combustion, and other chemical processes. Use of these fertilizers has increased over the last century. Agricultural soil management and mobile source fossil fuel combustion are the major sources of N_2O emissions. Nitrous oxide's GWP is approximately 298 times that of CO_2 (IPCC, 2007).

Fluorinated Gases (HFCS, PFCS and SF_6). Fluorinated gases, such as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfurhexafluoride (SF_6), are powerful GHGs that are emitted from a variety of industrial processes. Fluorinated gases are used as substitutes for ozone-depleting substances such as chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), and halons, which have been regulated since the mid-1980s because of their ozone-destroying potential and are phased out under the Montreal Protocol (1987) and Clean Air Act Amendments of 1990. Electrical transmission and distribution systems account for most SF_6 emissions, while PFC

emissions result from semiconductor manufacturing and as a by-product of primary aluminum production. Fluorinated gases are typically emitted in smaller quantities than CO_2, CH_4, and N_2O, but these compounds have much higher GWPs. SF_6 is the most potent GHG the IPCC has evaluated.

Greenhouse Gas Inventory

Worldwide anthropogenic emissions of GHG were approximately 46,000 million metric tons (MMT) CO_2e in 2010 (IPCC, 2014). CO_2 emissions from fossil fuel combustion and industrial processes contributed about 65% of total emissions in 2010. Of anthropogenic GHGs, carbon dioxide was the most abundant accounting for 76% of total 2010 emissions. Methane emissions accounted for 16% of the 2010 total, while nitrous oxide and fluorinated gases account for 6 and 2 percent respectively (IPCC, 2014).

Total U.S. GHG emissions were 6,525.6 MMT CO_2e in 2012 (USEPA, April 2014). Total U.S. emissions have increased by 4.7% since 1990, emissions decreased by 3.4% from 2011 to 2012 (USEPA, April 2014). This decrease from 2011 to 2012 was due to a decrease in the carbon intensity of fuels used to generate electricity due to a decrease in coal consumption, with increased natural gas consumption. Additionally, relatively mild winter conditions, especially in regions of the United States where electricity is important for heating, resulted in an overall decrease in electricity demand in most sectors. Since 1990, U.S. emissions have increased at an average annual rate of 0.2%. In 2012, the transportation and industrial end-use sectors accounted for 28.2% and 27.9% (with electricity-related emissions distributed), respectively. Meanwhile, the residential and commercial end-use sectors accounted for 16.3% and 16.4%, respectively, of CO_2, respectively (USEPA, 2014).

Based upon the California Air Resources Board (ARB) *California Greenhouse Gas Inventory for 2000-2012* (ARB, March 2014), California produced 459 MMT CO_2e in 2012. The major source of GHG in California is transportation, contributing 36% of the state's total GHG emissions. Electric power is the second largest source, contributing 21% of the state's GHG emissions (ARB, March 2014). The industrial sector accounted for approximately 19 percent of the total emissions. California emissions are due in part to its large size and large population compared to other states. Another factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. ARB has projected statewide unregulated GHG emissions for the year 2020 will be 507 MMT CO_2e (ARB, August 2013). These projections represent the emissions that would be expected to occur in the absence of any GHG reduction actions.

Effects of Climate Change

Globally, climate change has the potential to affect numerous environmental resources through potential impacts related to future air temperatures and precipitation patterns. Scientific modeling predicts that continued GHG emissions at or above current rates would induce more extreme climate changes during the 21st century than were observed during the 20th century. Long-term trends have found that each of the past three decades has been warmer than all the previous decades in the instrumental record, and the decade from 2000 through 2010 has been the warmest. The global combined land and ocean temperature data show an increase of about 0.89°C (0.69°C–1.08°C) over the period 1901–2012 and about 0.72°C (0.49°C–0.89°C) over the

period 1951–2012 when described by a linear trend. Several independently analyzed data records of global and regional Land-Surface Air Temperature (LSAT) obtained from station observations are in agreement that LSAT as well as sea surface temperatures have increased. In addition to these projections, there are identifiable signs that global warming is currently taking place, including substantial ice loss in the Arctic over the past two decades (IPCC, 2013). According to the CalEPA's *2010 Climate Action Team Biennial Report*, potential impacts of climate change in California may include loss in snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (CalEPA, April 2010). Below is a summary of some of the potential effects that could be experienced in California as a result of climate change.

Sea Level Rise. According to *The Impacts of Sea-Level Rise on the California Coast*, prepared by the California Climate Change Center (CCCC) (May 2009), climate change has the potential to induce substantial sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. Sea levels are rising faster now than in the previous two millennia, and the rise is expected to accelerate, even with robust GHG emission control measures. The most recent IPCC report (2013) predicts a mean sea–level rise of 11-38 inches by 2100. This prediction is more than 50 percent higher than earlier projections of 7-23 inches, when comparing the same emissions scenarios and time periods. The previous IPCC report (2007) identified a sea level rise on the California coast over the past century of approximately eight inches. Based on the results of various global climate change models, sea level rise is expected to continue. The California Climate Adaptation Strategy (December 2009) estimates a sea level rise of up to 55 inches by the end of this century.

Air Quality. Higher temperatures, which are conducive to air pollution formation, could worsen air quality in California. Climate change may increase the concentration of ground-level ozone, but the magnitude of the effect, and therefore its indirect effects, are uncertain. If higher temperatures are accompanied by drier conditions, the potential for large wildfires could increase, which, in turn, would further worsen air quality. However, if higher temperatures are accompanied by wetter, rather than drier conditions, the rains would tend to temporarily clear the air of particulate pollution and reduce the incidence of large wildfires, thereby ameliorating the pollution associated with wildfires. Additionally, severe heat accompanied by drier conditions and poor air quality could increase the number of heat-related deaths, illnesses, and asthma attacks throughout the state (CEC March 2009).

Water Supply. Analysis of paleoclimatic data (such as tree-ring reconstructions of stream flow and precipitation) indicates a history of naturally and widely varying hydrologic conditions in California and the west, including a pattern of recurring and extended droughts. Uncertainty remains with respect to the overall impact of climate change on future water supplies in California. However, the average early spring snowpack in the Sierra Nevada decreased by about 10 percent during the last century, a loss of 1.5 million acre-feet of snowpack storage. During the same period, sea level rose eight inches along California's coast. California's temperature has risen 1°F, mostly at night and during the winter, with higher elevations experiencing the highest increase. Many Southern California cities have experienced their lowest recorded annual precipitation twice within the past decade. In a span of only two years, Los Angeles experienced both its driest and wettest years on record (California Department of Water Resources [DWR], 2008; CCCC, May 2009).

This uncertainty complicates the analysis of future water demand, especially where the relationship between climate change and its potential effect on water demand is not well understood. The Sierra snowpack provides the majority of California's water supply by accumulating snow during our wet winters and releasing it slowly when we need it during our dry springs and summers. Based upon historical data and modeling DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050. Climate change is also anticipated to bring warmer storms that result in less snowfall at lower elevations, reducing the total snowpack (DWR, 2008).

Hydrology. As discussed above, climate change could potentially affect: the amount of snowfall, rainfall, and snow pack; the intensity and frequency of storms; flood hydrographs (flash floods, rain or snow events, coincidental high tide and high runoff events); sea level rise and coastal flooding; coastal erosion; and the potential for salt water intrusion. The rate of increase of global mean sea levels over the 2001-2010 decade, as observed by satellites, ocean buoys and land gauges, was approximately 3.2 mm per year, which is double the observed 20th century trend of 1.6 mm per year (World Meteorological Organization [WMO], 2013). As a result, sea levels averaged over the last decade were about 8 inches higher than those of 1880 (WMO, 2013). Sea level rise may be a product of climate change through two main processes: expansion of sea water as the oceans warm and melting of ice over land. A rise in sea levels could result in coastal flooding and erosion and could jeopardize California's water supply due to salt water intrusion. Increased storm intensity and frequency could affect the ability of flood-control facilities, including levees, to handle storm events.

Agriculture. California has a $30 billion agricultural industry that produces half of the country's fruits and vegetables. Higher CO_2 levels can stimulate plant production and increase plant water-use efficiency. However, if temperatures rise and drier conditions prevail, water demand could increase; crop-yield could be threatened by a less reliable water supply; and greater air pollution could render plants more susceptible to pest and disease outbreaks. In addition, temperature increases could change the time of year certain crops, such as wine grapes, bloom or ripen, and thereby affect their quality (CCCC, 2006).

Ecosystems and Wildlife. Climate change and the potential resulting changes in weather patterns could have ecological effects on a global and local scale. Increasing concentrations of GHGs are likely to accelerate the rate of climate change. Scientists project that the average global surface temperature could rise by 1.0-4.5°F (0.6-2.5°C) in the next 50 years, and 2.2-10°F (1.4-5.8°C) in the next century, with substantial regional variation. Soil moisture is likely to decline in many regions, and intense rainstorms are likely to become more frequent. Rising temperatures could have four major impacts on plants and animals: (1) timing of ecological events; (2) geographic range; (3) species' composition within communities; and (4) ecosystem processes, such as carbon cycling and storage (Parmesan, 2006).

While the above-mentioned potential impacts identify the possible effects of climate change at a global and potentially statewide level, in general scientific modeling tools are currently unable to predict what impacts would occur locally with a similar degree of accuracy. In general, regional and local predictions are made based on downscaling statewide models (CEC, March 2009).

Regulatory Setting

The following regulations address both climate change and GHG emissions.

International and Federal Regulations. The United States is, and has been, a participant in the United Nations Framework Convention on Climate Change (UNFCCC) since it was produced by the United Nations in 1992. The objective of the treaty is "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system." This is generally understood to be achieved by stabilizing global GHG concentrations between 350 and 400 ppm, in order to limit the global average temperature increases between 2 and 2.4°C above pre-industrial levels (IPCC 2007). The UNFCC itself does not set limits on GHG emissions for individual countries or enforcement mechanisms. Instead, the treaty provides for updates, called "protocols," that would identify mandatory emissions limits.

Five years later, the UNFCCC brought nations together again to draft the Kyoto Protocol (1997). The Kyoto Protocol established commitments for industrialized nations to reduce their collective emissions of six GHGs (CO_2, CH_4, N_2O, SF_6, HFCs, and PFCs) to 5.2 percent below 1990 levels by 2012. The United States is a signatory of the Kyoto Protocol, but Congress has not ratified it and the United States has not bound itself to the Protocol's commitments (UNFCCC, 2007). The first commitment period of the Kyoto Protocol ended in 2012. Governments, including 38 industrialized countries, agreed to a second commitment period of the Kyoto Protocol beginning January 1, 2013 and ending either on December 31, 2017 or December 31, 2020, to be decided by the Ad Hoc Working Group on Further Commitments for Annex I Parties under the Kyoto Protocol at its seventeenth session (UNFCCC, November 2011).

In Durban (17th session of the Conference of the Parties in Durban, South Africa, December 2011), governments decided to adopt a universal legal agreement on climate change as soon as possible, but not later than 2015. Work will begin on this immediately under a new group called the Ad Hoc Working Group on the Durban Platform for Enhanced Action. Progress was also made regarding the creation of a Green Climate Fund (GCF) for which a management framework was adopted (UNFCCC, December 2011; United Nations, November 2011).

In December 2015, the 21st session of the Conference of the Parties (COP21) adopted the Paris Agreement. The deal requires all countries that ratify it to commit to cutting greenhouse gas emissions, with the goal of peaking greenhouse gas emissions "as soon as possible" (Worland, 2015). The agreement includes commitments to (1) achieve a balance between sources and sinks of greenhouse gases in the second half of this century; (2) to keep global temperature increase "well below" 2 degrees Celsius (C) or 3.6 degrees Fahrenheit (F) and to pursue efforts to limit it to 1.5 C; (3) to review progress every five years; and (4) to spend $100 billion a year in climate finance for developing countries by 2020 (UNFCCC, 2015). The agreement includes both legally binding measures, like reporting requirements, as well as voluntary or non-binding measures while, such as the setting of emissions targets for any individual country (Worland, 2015).

The United States Supreme Court in Massachusetts et al. v. Environmental Protection Agency et al. ([2007] 549 U.S. 05-1120) held that the United States Environmental Protection Agency (EPA) has the authority to regulate motor-vehicle GHG emissions under the federal Clean Air Act.

The USEPA issued a Final Rule for mandatory reporting of GHG emissions in October 2009. This Final Rule applies to fossil fuel suppliers, industrial gas suppliers, direct GHG emitters, and manufacturers of heavy-duty and off-road vehicles and vehicle engines, and requires annual reporting of emissions. The first annual reports for these sources were due in March 2011.

On May 13, 2010, the U.S. EPA issued a Final Rule that took effect on January 2, 2011, setting a threshold of 75,000 tons CO_2e per year for GHG emissions. New and existing industrial facilities that meet or exceed that threshold will require a permit after that date. On November 10, 2010, the U.S. EPA published the "PSD and Title V Permitting Guidance for Greenhouse Gases." The U.S. EPA's guidance document is directed at state agencies responsible for air pollution permits under the Federal Clean Air Act to help them understand how to implement GHG reduction requirements while mitigating costs for industry. It is expected that most states will use the U.S. EPA's new guidelines when processing new air pollution permits for power plants, oil refineries, cement manufacturing, and other large pollution point sources.

On January 2, 2011, the U.S. EPA implemented the first phase of the Tailoring Rule for GHG emissions Title V Permitting. Under the first phase of the Tailoring Rule, all new sources of emissions are subject to GHG Title V permitting if they are otherwise subject to Title V for another air pollutant and they emit at least 75,000 tons CO_2e per year. Under Phase 1, no sources were required to obtain a Title V permit solely due to GHG emissions. Phase 2 of the Tailoring Rule went into effect July 1, 2011. At that time new sources were subject to GHG Title V permitting if the source emits 100,000 tons CO_2e per year, or they are otherwise subject to Title V permitting for another pollutant and emit at least 75,000 tons CO_2e per year.

On July 3, 2012 the U.S. EPA issued the final rule that retains the GHG permitting thresholds that were established in Phases 1 and 2 of the GHG Tailoring Rule. These emission thresholds determine when Clean Air Act 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.

California Regulations. ARB is responsible for the coordination and oversight of State and local air pollution control programs in California. California has a numerous regulations aimed at reducing the state's GHG emissions. These intitiatives are summarized below.

Assembly Bill (AB) 1493 (2002), California's Advanced Clean Cars program (referred to as "Pavley"), requires ARB to develop and adopt regulations to achieve "the maximum feasible and cost-effective reduction of GHG emissions from motor vehicles." On June 30, 2009, U.S. EPA granted the waiver of Clean Air Act preemption to California for its greenhouse gas emission standards for motor vehicles beginning with the 2009 model year. Pavley I took effect for model years starting in 2009 to 2016 and Pavley II, which is now referred to as "LEV (Low Emission Vehicle) III GHG" will cover 2017 to 2025. Fleet average emission standards would reach 22 percent reduction by 2012 and 30 percent by 2016. The Advanced Clean Cars program coordinates the goals of the Low Emissions Vehicles (LEV), Zero Emissions Vehicles (ZEV), and Clean Fuels Outlet programs and would provide major reductions in GHG emissions. By 2025,

when the rules will be fully implemented, new automobiles will emit 34 percent fewer GHGs and 75 percent fewer smog-forming emissions from their model year 2016 levels (ARB, 2011).

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 provides that by 2010, emissions shall be reduced to 2000 levels; by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent below 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. These are strategies that could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture, etc.

California's major initiative for reducing GHG emissions is outlined in Assembly Bill 32 (AB 32), the "California Global Warming Solutions Act of 2006," signed into law in 2006. AB 32 codifies the statewide goal of reducing GHG emissions to 1990 levels by 2020 (essentially a 15 percent reduction below 2005 emission levels; the same requirement as under S-3-05), and requires ARB to prepare a Scoping Plan that outlines the main State strategies for reducing GHGs to meet the 2020 deadline. In addition, AB 32 requires ARB to adopt regulations to require reporting and verification of statewide GHG emissions.

After completing a comprehensive review and update process, ARB approved a 1990 statewide GHG level and 2020 limit of 427 MMT CO_2e. The Scoping Plan approved by ARB on December 11, 2008 included measures to address GHG emission reduction strategies related to energy efficiency, water use, and recycling and solid waste, among other measures. Many of the GHG reduction measures including in the Scoping Plan (e.g., Low Carbon Fuel Standard, Advanced Clean Car standards, and Cap-and-Trade) have been adopted over the last five years. Implementation activities are ongoing and ARB is currently the process of updating the Scoping Plan.

In May 2014, ARB approved the first update to the AB 32 Scoping Plan. The 2013 Scoping Plan update defines ARB's climate change priorities for the next five years and sets the groundwork to reach post-2020 goals set forth in EO S-3-05. The update highlights California's progress toward meeting the "near-term" 2020 GHG emission reduction goals defined in the original Scoping Plan. It also evaluates how to align the State's longer-term GHG reduction strategies with other State policy priorities, such as for water, waste, natural resources, clean energy and transportation, and land use (ARB, June 2014).

Senate Bill (SB) 97, signed in August 2007, acknowledges that climate change is an environmental issue that requires analysis in California Environmental Quality Act (CEQA) documents. In March 2010, the California Resources Agency (Resources Agency) adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted guidelines give lead agencies the discretion to set

quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts.

ARB Resolution 07-54 establishes 25,000 MT of GHG emissions as the threshold for identifying the largest stationary emission sources in California for purposes of requiring the annual reporting of emissions. This threshold is just over 0.005 percent of California's total inventory of GHG emissions for 2004.

Senate Bill (SB) 375, signed in August 2008, enhances the state's ability to reach AB 32 goals by directing ARB to develop regional GHG emission reduction targets to be achieved from vehicles for 2020 and 2035. In addition, SB 375 directs each of the state's 18 major Metropolitan Planning Organizations (MPO) to prepare a "sustainable communities strategy" (SCS) that contains a growth strategy to meet these emission targets for inclusion in the Regional Transportation Plan (RTP). On September 23, 2010, ARB adopted final regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035.

The Southern California Association of Governments (SCAG) was assigned targets of an 8% reduction in GHGs from transportation sources by 2020 and a 13% reduction in GHGs from transportation sources by 2035. In the SCAG region, SB 375 also provides the option for the coordinated development of subregional plans by the subregional councils of governments and the county transportation commissions to meet SB 375 requirements.

In October 2015, Governor Brown signed SB 350 requiring California to generate 50 percent of its electricity from renewable energy by 2030.

For more information on the Senate and Assembly Bills, Executive Orders, and reports discussed above, and to view reports and research referenced above, please refer to the following websites: www.climatechange.ca.gov and www.arb.ca.gov/cc/cc.htm.

Local Regulations and CEQA Requirements. Pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, but contain no suggested thresholds of significance for GHG emissions. Instead, they give lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a Threshold of Significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move the state towards climate stabilization. If a project would generate GHG emissions above the threshold level, its contribution to cumulative impacts would be considered significant. To date, the BAAQMD, the SCAQMD, and the SJVAPCD have adopted quantitative significance thresholds for GHGs. The SCAQMD threshold, which was adopted in December 2008, considers emissions of over 10,000 metric tons CO_2e/year to be significant. However, the SCAQMD's threshold applies only to stationary sources and is expressly intended to apply only when the SCAQMD is the CEQA lead agency. Although not yet adopted, the SCAQMD recommends a quantitative threshold for all land use types of 3,000 metric tons CO_2e/year (SCAQMD, "Proposed Tier 3 Quantitative

Thresholds – Option 1", September 2010). No air district has the power to establish definitive thresholds that will completely relieve a lead agency of the obligation to determine significance on a case-by-case basis for a specific project.

CLIMATE CHANGE IMPACT ANALYSIS

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions in March 2010. These guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project. According to the adopted CEQA Guidelines, impacts related to GHG emissions from the proposed project would be significant if the project would:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan). However, because the SCAQMD has not yet adopted GHG emissions thresholds that apply to land use projects where the SCAQMD is not the lead agency and no GHG emissions reduction plan or GHG emissions thresholds have been adopted in the City of Malibu, the proposed project is evaluated based on the SCAQMD's recommended/preferred option threshold for all land use types – including retail – of 3,000 metric tons CO_2e per year (SCAQMD, "Proposed Tier 3 Quantitative Thresholds – Option 1", September 2010).

The proposed project would have a significant impact related to GHG emissions if the project would generate more than 3,000 metric tons of CO_2e per year. In addition, in order to determine whether or not the proposed project's GHG emissions are "cumulatively considerable," an inconsistency with applicable GHG emissions reductions strategies would be a significant impact under the second significance checklist item discussed above.

Methodology

Calculations of CO_2, CH_4, and N_2O emissions are provided to identify the magnitude of potential project effects. The analysis focuses on CO_2, CH_4, and N_2O because these make up 98.9% of all GHG emissions by volume (IPCC, 2007) and are the GHG emissions that the project would emit in the largest quantities. Fluorinated gases, such as HFCs, PFCs, and SF_6, were also considered for the analysis. However, emissions of fluorinated gases are primarily associated with

industrial processes; because the project involves the development of religious memorial site, the quantity of fluorinated gases would be minimal. Emissions of all GHGs are converted into their equivalent weight in CO_2 (CO_2e). Minimal amounts of other main GHGs (such as chlorofluorocarbons [CFCs]) would be emitted, and these other GHG emissions would not substantially add to the calculated CO_2e amounts. Calculations are based on the methodologies discussed in the California Air Pollution Control Officers Association (CAPCOA) *CEQA and Climate Change* white paper (January 2008) and included the use of the California Climate Action Registry (CCAR) General Reporting Protocol (January 2009).

This analysis calculates GHG emissions by quantifying the project's amenities and design features and also takes into account current state and federal measures that are intended to reduce GHG emissions. State and federal measures that are built into the emissions model calculation include Title 24 Energy Standards, Pavley (Clean Car Standards) and Low Carbon Fuel Standards.

Construction Emissions. Although construction activity is addressed in this analysis, CAPCOA does not discuss whether any of the suggested threshold approaches (as discussed below in *GHG Cumulative Significance*) adequately address impacts from temporary construction activity. As stated in the *CEQA and Climate Change* white paper, "more study is needed to make this assessment or to develop separate thresholds for construction activity" (CAPCOA, 2008). Nevertheless, the SCAQMD has recommended amortizing construction-related emissions over a 30-year period in conjunction with the proposed project's operational emissions.

Construction of the proposed project would generate GHG emissions, primarily due to the operation of construction equipment and truck trips. Project construction was estimated to be completed within 17 months. For this analysis, it was assumed that construction would commence in January 2016 and would be completed at the end of August of 2017. Emissions associated with the construction period were estimated using the California Emissions Estimator Model (CalEEMod) software, based on the projected maximum amount of equipment that would be used on-site at one time. Complete CalEEMod results and assumptions can be viewed in the Appendix.

On-site Operational Emissions. Operational emissions from energy use (electricity and natural gas use) for the proposed project were estimated using CalEEMod (see Appendix for CalEEMod output). The default values on which CalEEMod are based include the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of CO_2, N_2O and CH_4. This methodology is considered reasonable and reliable for use, as it has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC. It is also recommended by CAPCOA (January 2008).

Emissions associated with area sources, including consumer products, landscape maintenance, and architectural coating were calculated in CalEEMod and utilize standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2011).

Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2011). Waste disposal rates by land use and overall composition of

municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California.

In addition to emissions estimated using CalEEMod, emission factors from the OFFROAD2007 tool were used to estimate the emissions associated with operation of a backhoe on a daily basis for excavation activities related to the project's cemetery use.

Direct Emissions from Mobile Combustion. Emissions of CO_2 and CH_4 from transportation sources for the proposed project were quantified using CalEEMod. Because CalEEMod does not calculate N_2O emissions from mobile sources, N_2O emissions were quantified using the California Climate Action Registry General Reporting Protocol (January 2009) direct emissions factors for mobile combustion (see Appendix for calculations). The estimate of total daily trips, associated with development of the proposed project, was based on the Institute of Traffic Engineers, Trip Generation manual, 9th Edition. Total vehicle trips generated by the project were then calculated and extrapolated to derive total annual mileage in CalEEMod. Emission rates for N_2O emissions were based on the vehicle mix output generated by CalEEMod and the emission factors found in the California Climate Action Registry General Reporting Protocol.

Estimate of GHG Emissions

Construction Emissions. Construction activity is assumed to occur over a period of approximately 17 months. Based on CalEEMod results, construction activity for the project would generate an estimated 2,206 metric tons of CO_2e (as shown in Table 1). Amortized over a 30-year period (the assumed life of the project), construction of the proposed project would generate approximately 74 metric tons of CO_2e per year.

Table 1
Estimated Construction Emissions of Greenhouse Gases

	Annual Emissions (CO_2e)
Total	**2,205.7 metric tons**
Amortized over 30 years	**73.5 metric tons per year**

Sources: See Appendix for CalEEMod output and for GHG emission factor assumptions.

Operational Indirect and Stationary Direct Emissions.

Energy Use. Operation of on-site development would consume both electricity and natural gas (see Appendix for CalEEMod output). The generation of electricity through combustion of fossil fuels typically yields CO_2, and to a smaller extent, N_2O and CH_4. As

discussed above, annual electricity and natural gas emissions can be calculated using default values from the CEC sponsored CEUS and RASS studies which are built into CalEEMod.

Electricity consumption associated with the project would generate approximately 210 metric tons of CO_2e per year. As shown in Table 2, natural gas use would generate approximately 20 metric tons of CO_2e per year. Thus, overall energy use at the project site would generate approximately 231 metric tons of CO_2e per year.

Table 2
Estimated Annual Energy-Related Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2e)
Electricity	210.4 metric tons
Natural Gas	20.3 metric tons
Total	**230.7 metric tons**

Sources: See Appendix for CalEEMod output and for GHG emission factor assumptions.

Solid Waste Emissions. For solid waste generated on-site, it was assumed that the project would include a recycling program that would achieve the 50% diversion rate required by the California Integrated Waste Management Act of 1989 and reinforced by the objectives of the Conservation Element of the City's General Plan. The project is estimated to dispose of 51 metric tons of solid waste in landfills after diversion. As shown in Table 3, based on this estimate, the project would result in approximately 46 metric tons of CO_2e per year, which would be reduced to 23 metric tons of CO_2e with the 50% diversion rate as required by the California Integrated Waste Management Act.

Table 3
Estimated Annual Solid Waste Greenhouse Gas Emissions

	Annual Emissions (CO_2e)
Solid Waste	46.1 metric tons
Total Waste Diverted[1]	23.1 metric tons
Total Waste Disposed at Landfill	**23.1 metric tons**

Source: See Appendix for CalEEMod output and GHG emission factor assumptions.
[1]Based on a 50% diversion rate, as required by the California Integrated Waste Management Act.

Water Use Emissions. It is anticipated that the project would use approximately 23 million gallons of water per year. Based on the amount of electricity generated in order to supply this amount of water, as shown in Table 4, the project would generate approximately 77

metric tons of CO_2e per year. It should be noted that, if the project uses recycled water, actual water use and associated electricity would be reduced.

Table 4
Estimated Greenhouse Gas Emissions from Water Use

Emission Source	Annual Emissions (CO_2e)
Water Use	**77.0 metric tons**

Source: See Appendix for CalEEMod output and GHG emission factor assumptions.

Transportation Emissions. Mobile source GHG emissions were estimated using the average daily trips derived from the trip generation rates for a cemetery from the Institute of Traffic Engineers, Trip Generation manual 9th Edition, and by the total VMT estimated in CalEEMod. On-site development would generate approximately 238,179 annual VMT.

Table 5 shows the estimated mobile emissions of GHGs for the project based on the estimated annual VMT. As noted above, CalEEMod does not calculate N_2O emissions related to mobile sources. As such, N_2O emissions were calculated based on the project's VMT using calculation methods provided by the California Climate Action Registry General Reporting Protocol (January 2009). As shown in Table 5, the project would generate approximately 146.4 metric tons of CO_2e associated with mobile emissions.

Table 5
Estimated Annual Mobile Emissions of Greenhouse Gases

Emission Source	Annual Emissions (CO_2e)
Mobile Emissions (CO_2 & CH_4) [1]	106.8 metric tons
Mobile Emissions (N_2O)	5.3 metric tons
Daily Backhoe Activity (on-site) [2]	34.3 metric tons
Total	**146.4 metric tons**

Sources: See Appendix for CalEEMod output and GHG emission factor assumptions.
[1] California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1,January 2009, page 30-35.
[2] OFFROAD2007, based on estimated average daily backhoe operation of up to 4 hours per day. Refer to Appendix for calculations.

Combined Construction, Stationary and Mobile Source Emissions. Table 6 combines the construction, operational and mobile GHG emissions associated with on-site development for the proposed project. As discussed above, construction emissions associated with construction activity (approximately 2,205.7 metric tons CO_2e) are amortized over 30 years (the anticipated life of the project).

Table 6
Combined Annual Emissions of Greenhouse Gases

Emission Source	Annual Emissions
Construction	73.5 metric tons CO_2e
Operational	
Energy	230.7 metric tons CO_2e
Solid Waste	23.1 metric tons CO_2e
Water	77.0 metric tons CO_2e
Mobile	146.4 metric tons CO_2e
Total	**550.7 metric tons CO_2e**

Sources: See Appendix for CalEEMod output and for GHG emission factor assumptions.

For the proposed project, the combined annual emissions would total approximately 551 metric tons of CO_2e per year.

GHG Cumulative Significance. CalEPA's Climate Action Team (CAT) published the 2006 CAT Report which includes GHG emissions reduction strategies intended for projects emitting less than 10,000 tons CO_2e/year. In addition, the California Attorney General's Office has developed Global Warming Measures (2008) and OPR's CEQA and Climate Change (CAPCOA, 2008) document includes GHG reduction measures intended to reduce GHG emissions in order to achieve statewide emissions reduction goals. All of these measures aim to curb the GHG emissions through suggestions pertaining to land use, transportation, renewable energy, and energy efficiency. Several of these actions are already required by California regulations, such as:

- *AB 1493 (Pavley) requires the state to develop and adopt regulations that achieve the maximum feasible and cost-effective reduction of climate change emissions emitted by passenger vehicles and light duty trucks.*
- *In 2004, ARB adopted a measure to limit diesel-fueled commercial motor vehicle idling.*
- *The Integrated Waste Management Act of 1989, (AB 939, Sher, Chapter 1095, Statutes of 1989) established a 50% waste diversion mandate for California.*
- *Public Resources Code 25402 authorizes the CEC to adopt and periodically update its building energy efficiency standards (that apply to newly constructed buildings and additions to and alterations to existing buildings).*
- *California's Renewable Portfolio Standard (RPS), established in 2002, requires that all load serving entities achieve a goal of 33 percent of retail electricity sales from renewable energy sources by 2020, within certain cost constraints.*
- *Green Building Executive Order, S-20-04 (CA 2004), sets a goal of reducing energy use in public and private buildings by 20 percent by the year 2015, as compared with 2003 levels.*

The proposed project does not include any elements that would conflict with state or local regulations intended to reduce GHG emissions from new development. Consistency with these state regulations and goals illustrates that the project would not conflict with the state's GHG-related legislation and would not contribute to the inability to meet reduction goals The project

would not conflict with any of these statewide emissions reduction strategies. In addition, the proposed project not conflict with applicable City General Plan policies that support energy efficiency and sustainability, including policies related to outdoor lighting, electric landscaping equipment, and solid waste/wastewater. Therefore, the project would not conflict with any applicable state plan, policy or regulation intended to reduce GHG emissions, and impacts would be less than significant.

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Appendix

CalEEMod GHG Model Worksheets/N_2O from Mobile Emissions GHG Calculation Worksheet

Daily Backhoe Operation Emissions Calculation

Malibu Memorial Cemetery Project

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Place of Worship	17.50	1000sqft	0.40	17,500.00	0
Enclosed Parking Structure	2.00	Acre	2.00	87,120.00	0
City Park	18.80	Acre	18.80	818,928.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	8			**Operational Year**	2017
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 - The place of worship is the square footage for the chapel and mausoleum combined. The parking includes all paved areas. The park accounts for all remaining space.

Construction Phase - Architectural coating phase lenghened to more accurately predict the actual constructing phasing for the project.

Grading -

Vehicle Trips - The trip rates were taking from the ITE Trip Generation manual 9th edition for a Cemetery (566).

Construction Off-road Equipment Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	20.00	325.00
tblConstructionPhase	PhaseEndDate	11/29/2018	9/28/2017
tblConstructionPhase	PhaseEndDate	10/26/2017	9/28/2017
tblConstructionPhase	PhaseStartDate	9/1/2017	7/1/2016
tblConstructionPhase	PhaseStartDate	9/29/2017	9/1/2017
tblGrading	MaterialExported	0.00	21,000.00
tblProjectCharacteristics	OperationalYear	2014	2017
tblVehicleTrips	ST_TR	1.59	0.00
tblVehicleTrips	ST_TR	10.37	7.13
tblVehicleTrips	SU_TR	1.59	0.00
tblVehicleTrips	SU_TR	36.63	9.14
tblVehicleTrips	WD_TR	1.59	0.00
tblVehicleTrips	WD_TR	9.11	5.68

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	5.2012	7.0085	8.3133	0.0148	0.8356	0.3364	1.1721	0.2721	0.3146	0.5867	0.0000	1,263.0707	1,263.0707	0.1366	0.0000	1,265.9392
2017	6.9792	4.0466	5.8746	0.0115	0.5351	0.2034	0.7385	0.1437	0.1915	0.3352	0.0000	937.9983	937.9983	0.0854	0.0000	939.7914
Total	**12.1804**	**11.0551**	**14.1879**	**0.0263**	**1.3707**	**0.5399**	**1.9106**	**0.4158**	**0.5061**	**0.9218**	**0.0000**	**2,201.0690**	**2,201.0690**	**0.2220**	**0.0000**	**2,205.7307**

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	5.2012	7.0085	8.3133	0.0148	0.7018	0.3364	1.0383	0.2100	0.3146	0.5246	0.0000	1,263.0702	1,263.0702	0.1366	0.0000	1,265.9387
2017	6.9792	4.0466	5.8746	0.0115	0.5351	0.2034	0.7385	0.1437	0.1915	0.3352	0.0000	937.9980	937.9980	0.0854	0.0000	939.7911
Total	**12.1804**	**11.0551**	**14.1879**	**0.0263**	**1.2369**	**0.5399**	**1.7768**	**0.3537**	**0.5061**	**0.8598**	**0.0000**	**2,201.0682**	**2,201.0682**	**0.2220**	**0.0000**	**2,205.7299**

	ROG	NOx	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**	**9.76**	**0.00**	**7.00**	**14.92**	**0.00**	**6.73**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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	4.4075	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Energy	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	229.7792	229.7792	0.0100	2.3600e-003	230.7223
Mobile	0.0633	0.1574	0.6357	1.3800e-003	0.0903	2.0800e-003	0.0924	0.0242	1.9100e-003	0.0261	0.0000	106.7545	106.7545	4.4900e-003	0.0000	106.8488
Waste						0.0000	0.0000		0.0000	0.0000	20.5772	0.0000	20.5772	1.2161	0.0000	46.1148
Water						0.0000	0.0000		0.0000	0.0000	0.1737	75.9793	76.1530	0.0213	1.1400e-003	76.9557
Total	**4.4728**	**0.1759**	**0.6518**	**1.4900e-003**	**0.0903**	**3.4900e-003**	**0.0938**	**0.0242**	**3.3200e-003**	**0.0275**	**20.7509**	**412.5140**	**433.2649**	**1.2519**	**3.5000e-003**	**460.6426**

2.2 Overall Operational

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	4.4075	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Energy	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	229.7792	229.7792	0.0100	2.3600e-003	230.7223
Mobile	0.0633	0.1574	0.6357	1.3800e-003	0.0903	2.0800e-003	0.0924	0.0242	1.9100e-003	0.0261	0.0000	106.7545	106.7545	4.4900e-003	0.0000	106.8488
Waste						0.0000	0.0000		0.0000	0.0000	20.5772	0.0000	20.5772	1.2161	0.0000	46.1148
Water						0.0000	0.0000		0.0000	0.0000	0.1737	75.9793	76.1530	0.0213	1.1400e-003	76.9554
Total	**4.4728**	**0.1759**	**0.6518**	**1.4900e-003**	**0.0903**	**3.4900e-003**	**0.0938**	**0.0242**	**3.3200e-003**	**0.0275**	**20.7509**	**412.5140**	**433.2649**	**1.2519**	**3.5000e-003**	**460.6423**

	ROG	NOx	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	1/1/2016	1/28/2016	5	20	
2	Site Preparation	Site Preparation	1/29/2016	2/11/2016	5	10	
3	Grading	Grading	2/12/2016	3/31/2016	5	35	
4	Building Construction	Building Construction	4/1/2016	8/31/2017	5	370	
5	Architectural Coating	Architectural Coating	7/1/2016	9/28/2017	5	325	
6	Paving	Paving	9/1/2017	9/28/2017	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 1,385,322; Non-Residential Outdoor: 461,774 (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
Architectural Coating	Air Compressors	1	6.00	78	0.48
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

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	0.00	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	2,625.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	388.00	151.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	78.00	0.00	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

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	tons/yr										MT/yr					
Off-Road	0.0429	0.4566	0.3503	4.0000e-004		0.0229	0.0229		0.0214	0.0214	0.0000	37.0974	37.0974	0.0101	0.0000	37.3092
Total	**0.0429**	**0.4566**	**0.3503**	**4.0000e-004**		**0.0229**	**0.0229**		**0.0214**	**0.0214**	**0.0000**	**37.0974**	**37.0974**	**0.0101**	**0.0000**	**37.3092**

3.2 Demolition - 2016

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	6.6000e-004	9.6000e-004	9.9800e-003	2.0000e-005	1.6400e-003	2.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.6039	1.6039	9.0000e-005	0.0000	1.6058
Total	**6.6000e-004**	**9.6000e-004**	**9.9800e-003**	**2.0000e-005**	**1.6400e-003**	**2.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.6039**	**1.6039**	**9.0000e-005**	**0.0000**	**1.6058**

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	0.0429	0.4566	0.3503	4.0000e-004		0.0229	0.0229		0.0214	0.0214	0.0000	37.0973	37.0973	0.0101	0.0000	37.3092
Total	**0.0429**	**0.4566**	**0.3503**	**4.0000e-004**		**0.0229**	**0.0229**		**0.0214**	**0.0214**	**0.0000**	**37.0973**	**37.0973**	**0.0101**	**0.0000**	**37.3092**

3.2 Demolition - 2016

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	6.6000e-004	9.6000e-004	9.9800e-003	2.0000e-005	1.6400e-003	2.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.6039	1.6039	9.0000e-005	0.0000	1.6058
Total	**6.6000e-004**	**9.6000e-004**	**9.9800e-003**	**2.0000e-005**	**1.6400e-003**	**2.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.6039**	**1.6039**	**9.0000e-005**	**0.0000**	**1.6058**

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0254	0.2732	0.2055	2.0000e-004		0.0147	0.0147		0.0135	0.0135	0.0000	18.4386	18.4386	5.5600e-003	0.0000	18.5554
Total	**0.0254**	**0.2732**	**0.2055**	**2.0000e-004**	**0.0903**	**0.0147**	**0.1050**	**0.0497**	**0.0135**	**0.0632**	**0.0000**	**18.4386**	**18.4386**	**5.5600e-003**	**0.0000**	**18.5554**

3.3 Site Preparation - 2016

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	3.9000e-004	5.7000e-004	5.9900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9624	0.9624	5.0000e-005	0.0000	0.9635
Total	**3.9000e-004**	**5.7000e-004**	**5.9900e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9624**	**0.9624**	**5.0000e-005**	**0.0000**	**0.9635**

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0254	0.2732	0.2055	2.0000e-004		0.0147	0.0147		0.0135	0.0135	0.0000	18.4385	18.4385	5.5600e-003	0.0000	18.5553
Total	**0.0254**	**0.2732**	**0.2055**	**2.0000e-004**	**0.0407**	**0.0147**	**0.0553**	**0.0223**	**0.0135**	**0.0359**	**0.0000**	**18.4385**	**18.4385**	**5.5600e-003**	**0.0000**	**18.5553**

3.3 Site Preparation - 2016

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	3.9000e-004	5.7000e-004	5.9900e-003	1.0000e-005	9.9000e-004	1.0000e-005	1.0000e-003	2.6000e-004	1.0000e-005	2.7000e-004	0.0000	0.9624	0.9624	5.0000e-005	0.0000	0.9635
Total	**3.9000e-004**	**5.7000e-004**	**5.9900e-003**	**1.0000e-005**	**9.9000e-004**	**1.0000e-005**	**1.0000e-003**	**2.6000e-004**	**1.0000e-005**	**2.7000e-004**	**0.0000**	**0.9624**	**0.9624**	**5.0000e-005**	**0.0000**	**0.9635**

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					0.1530	0.0000	0.1530	0.0631	0.0000	0.0631	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1134	1.3092	0.8599	1.0800e-003		0.0627	0.0627		0.0577	0.0577	0.0000	101.8425	101.8425	0.0307	0.0000	102.4876
Total	**0.1134**	**1.3092**	**0.8599**	**1.0800e-003**	**0.1530**	**0.0627**	**0.2157**	**0.0631**	**0.0577**	**0.1208**	**0.0000**	**101.8425**	**101.8425**	**0.0307**	**0.0000**	**102.4876**

3.4 Grading - 2016

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	0.0240	0.3876	0.2938	9.8000e-004	0.0225	5.4500e-003	0.0279	6.1600e-003	5.0200e-003	0.0112	0.0000	89.5323	89.5323	6.7000e-004	0.0000	89.5463
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	1.5300e-003	2.2300e-003	0.0233	5.0000e-005	3.8400e-003	4.0000e-005	3.8700e-003	1.0200e-003	3.0000e-005	1.0500e-003	0.0000	3.7425	3.7425	2.1000e-004	0.0000	3.7469
Total	**0.0256**	**0.3899**	**0.3171**	**1.0300e-003**	**0.0263**	**5.4900e-003**	**0.0318**	**7.1800e-003**	**5.0500e-003**	**0.0122**	**0.0000**	**93.2747**	**93.2747**	**8.8000e-004**	**0.0000**	**93.2932**

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					0.0688	0.0000	0.0688	0.0284	0.0000	0.0284	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1134	1.3092	0.8599	1.0800e-003		0.0627	0.0627		0.0577	0.0577	0.0000	101.8424	101.8424	0.0307	0.0000	102.4875
Total	**0.1134**	**1.3092**	**0.8599**	**1.0800e-003**	**0.0688**	**0.0627**	**0.1316**	**0.0284**	**0.0577**	**0.0861**	**0.0000**	**101.8424**	**101.8424**	**0.0307**	**0.0000**	**102.4875**

3.4 Grading - 2016

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	0.0240	0.3876	0.2938	9.8000e-004	0.0225	5.4500e-003	0.0279	6.1600e-003	5.0200e-003	0.0112	0.0000	89.5323	89.5323	6.7000e-004	0.0000	89.5463
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	1.5300e-003	2.2300e-003	0.0233	5.0000e-005	3.8400e-003	4.0000e-005	3.8700e-003	1.0200e-003	3.0000e-005	1.0500e-003	0.0000	3.7425	3.7425	2.1000e-004	0.0000	3.7469
Total	**0.0256**	**0.3899**	**0.3171**	**1.0300e-003**	**0.0263**	**5.4900e-003**	**0.0318**	**7.1800e-003**	**5.0500e-003**	**0.0122**	**0.0000**	**93.2747**	**93.2747**	**8.8000e-004**	**0.0000**	**93.2932**

3.5 Building Construction - 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					
Off-Road	0.3338	2.7936	1.8137	2.6300e-003		0.1928	0.1928		0.1812	0.1812	0.0000	237.3105	237.3105	0.0589	0.0000	238.5465
Total	**0.3338**	**2.7936**	**1.8137**	**2.6300e-003**		**0.1928**	**0.1928**		**0.1812**	**0.1812**	**0.0000**	**237.3105**	**237.3105**	**0.0589**	**0.0000**	**238.5465**

3.5 Building Construction - 2016

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	0.1330	1.3539	1.7586	3.2400e-003	0.0908	0.0203	0.1111	0.0259	0.0187	0.0446	0.0000	294.6046	294.6046	2.2000e-003	0.0000	294.6508
Worker	0.1661	0.2426	2.5291	5.3000e-003	0.4167	4.0200e-003	0.4207	0.1107	3.6900e-003	0.1144	0.0000	406.5828	406.5828	0.0231	0.0000	407.0674
Total	**0.2991**	**1.5965**	**4.2877**	**8.5400e-003**	**0.5074**	**0.0244**	**0.5318**	**0.1366**	**0.0224**	**0.1589**	**0.0000**	**701.1874**	**701.1874**	**0.0253**	**0.0000**	**701.7182**

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	0.3338	2.7936	1.8137	2.6300e-003		0.1928	0.1928		0.1812	0.1812	0.0000	237.3102	237.3102	0.0589	0.0000	238.5462
Total	**0.3338**	**2.7936**	**1.8137**	**2.6300e-003**		**0.1928**	**0.1928**		**0.1812**	**0.1812**	**0.0000**	**237.3102**	**237.3102**	**0.0589**	**0.0000**	**238.5462**

3.5 Building Construction - 2016

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	0.1330	1.3539	1.7586	3.2400e-003	0.0908	0.0203	0.1111	0.0259	0.0187	0.0446	0.0000	294.6046	294.6046	2.2000e-003	0.0000	294.6508
Worker	0.1661	0.2426	2.5291	5.3000e-003	0.4167	4.0200e-003	0.4207	0.1107	3.6900e-003	0.1144	0.0000	406.5828	406.5828	0.0231	0.0000	407.0674
Total	**0.2991**	**1.5965**	**4.2877**	**8.5400e-003**	**0.5074**	**0.0244**	**0.5318**	**0.1366**	**0.0224**	**0.1589**	**0.0000**	**701.1874**	**701.1874**	**0.0253**	**0.0000**	**701.7182**

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	0.2699	2.2973	1.5772	2.3300e-003		0.1550	0.1550		0.1456	0.1456	0.0000	208.3468	208.3468	0.0513	0.0000	209.4237
Total	**0.2699**	**2.2973**	**1.5772**	**2.3300e-003**		**0.1550**	**0.1550**		**0.1456**	**0.1456**	**0.0000**	**208.3468**	**208.3468**	**0.0513**	**0.0000**	**209.4237**

3.5 Building Construction - 2017

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	0.1077	1.0951	1.4773	2.8800e-003	0.0806	0.0161	0.0967	0.0230	0.0148	0.0378	0.0000	257.3583	257.3583	1.8900e-003	0.0000	257.3980
Worker	0.1321	0.1948	2.0280	4.7000e-003	0.3699	3.4200e-003	0.3733	0.0983	3.1500e-003	0.1014	0.0000	347.4195	347.4195	0.0189	0.0000	347.8172
Total	**0.2397**	**1.2899**	**3.5053**	**7.5800e-003**	**0.4505**	**0.0195**	**0.4700**	**0.1212**	**0.0179**	**0.1392**	**0.0000**	**604.7778**	**604.7778**	**0.0208**	**0.0000**	**605.2151**

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	0.2699	2.2973	1.5772	2.3300e-003		0.1550	0.1550		0.1456	0.1456	0.0000	208.3466	208.3466	0.0513	0.0000	209.4234
Total	**0.2699**	**2.2973**	**1.5772**	**2.3300e-003**		**0.1550**	**0.1550**		**0.1456**	**0.1456**	**0.0000**	**208.3466**	**208.3466**	**0.0513**	**0.0000**	**209.4234**

3.5 Building Construction - 2017

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	0.1077	1.0951	1.4773	2.8800e-003	0.0806	0.0161	0.0967	0.0230	0.0148	0.0378	0.0000	257.3583	257.3583	1.8900e-003	0.0000	257.3980
Worker	0.1321	0.1948	2.0280	4.7000e-003	0.3699	3.4200e-003	0.3733	0.0983	3.1500e-003	0.1014	0.0000	347.4195	347.4195	0.0189	0.0000	347.8172
Total	**0.2397**	**1.2899**	**3.5053**	**7.5800e-003**	**0.4505**	**0.0195**	**0.4700**	**0.1212**	**0.0179**	**0.1392**	**0.0000**	**604.7778**	**604.7778**	**0.0208**	**0.0000**	**605.2151**

3.6 Architectural Coating - 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					
Archit. Coating	4.3136					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.1554	0.1234	1.9000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	16.7238	16.7238	1.9700e-003	0.0000	16.7652
Total	**4.3377**	**0.1554**	**0.1234**	**1.9000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**16.7238**	**16.7238**	**1.9700e-003**	**0.0000**	**16.7652**

3.6 Architectural Coating - 2016

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	0.0223	0.0326	0.3398	7.1000e-004	0.0560	5.4000e-004	0.0565	0.0149	5.0000e-004	0.0154	0.0000	54.6295	54.6295	3.1000e-003	0.0000	54.6946
Total	**0.0223**	**0.0326**	**0.3398**	**7.1000e-004**	**0.0560**	**5.4000e-004**	**0.0565**	**0.0149**	**5.0000e-004**	**0.0154**	**0.0000**	**54.6295**	**54.6295**	**3.1000e-003**	**0.0000**	**54.6946**

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	4.3136					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0241	0.1554	0.1234	1.9000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	16.7238	16.7238	1.9700e-003	0.0000	16.7652
Total	**4.3377**	**0.1554**	**0.1234**	**1.9000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**16.7238**	**16.7238**	**1.9700e-003**	**0.0000**	**16.7652**

3.6 Architectural Coating - 2016

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	0.0223	0.0326	0.3398	7.1000e-004	0.0560	5.4000e-004	0.0565	0.0149	5.0000e-004	0.0154	0.0000	54.6295	54.6295	3.1000e-003	0.0000	54.6946
Total	**0.0223**	**0.0326**	**0.3398**	**7.1000e-004**	**0.0560**	**5.4000e-004**	**0.0565**	**0.0149**	**5.0000e-004**	**0.0154**	**0.0000**	**54.6295**	**54.6295**	**3.1000e-003**	**0.0000**	**54.6946**

3.6 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	6.3880					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0322	0.2120	0.1812	2.9000e-004		0.0168	0.0168		0.0168	0.0168	0.0000	24.7666	24.7666	2.6100e-003	0.0000	24.8215
Total	**6.4203**	**0.2120**	**0.1812**	**2.9000e-004**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**24.7666**	**24.7666**	**2.6100e-003**	**0.0000**	**24.8215**

3.6 Architectural Coating - 2017

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	0.0296	0.0437	0.4546	1.0500e-003	0.0829	7.7000e-004	0.0837	0.0220	7.1000e-004	0.0227	0.0000	77.8699	77.8699	4.2400e-003	0.0000	77.9590
Total	**0.0296**	**0.0437**	**0.4546**	**1.0500e-003**	**0.0829**	**7.7000e-004**	**0.0837**	**0.0220**	**7.1000e-004**	**0.0227**	**0.0000**	**77.8699**	**77.8699**	**4.2400e-003**	**0.0000**	**77.9590**

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	6.3880					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0322	0.2120	0.1812	2.9000e-004		0.0168	0.0168		0.0168	0.0168	0.0000	24.7665	24.7665	2.6100e-003	0.0000	24.8214
Total	**6.4203**	**0.2120**	**0.1812**	**2.9000e-004**		**0.0168**	**0.0168**		**0.0168**	**0.0168**	**0.0000**	**24.7665**	**24.7665**	**2.6100e-003**	**0.0000**	**24.8214**

3.6 Architectural Coating - 2017

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	0.0296	0.0437	0.4546	1.0500e-003	0.0829	7.7000e-004	0.0837	0.0220	7.1000e-004	0.0227	0.0000	77.8699	77.8699	4.2400e-003	0.0000	77.9590
Total	**0.0296**	**0.0437**	**0.4546**	**1.0500e-003**	**0.0829**	**7.7000e-004**	**0.0837**	**0.0220**	**7.1000e-004**	**0.0227**	**0.0000**	**77.8699**	**77.8699**	**4.2400e-003**	**0.0000**	**77.9590**

3.7 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	0.0191	0.2030	0.1473	2.2000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8266
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0191**	**0.2030**	**0.1473**	**2.2000e-004**		**0.0114**	**0.0114**		**0.0105**	**0.0105**	**0.0000**	**20.6934**	**20.6934**	**6.3400e-003**	**0.0000**	**20.8266**

3.7 Paving - 2017

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	5.9000e-004	8.7000e-004	9.0100e-003	2.0000e-005	1.6400e-003	2.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5438	1.5438	8.0000e-005	0.0000	1.5456
Total	**5.9000e-004**	**8.7000e-004**	**9.0100e-003**	**2.0000e-005**	**1.6400e-003**	**2.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5438**	**1.5438**	**8.0000e-005**	**0.0000**	**1.5456**

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	0.0191	0.2030	0.1473	2.2000e-004		0.0114	0.0114		0.0105	0.0105	0.0000	20.6934	20.6934	6.3400e-003	0.0000	20.8265
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0191**	**0.2030**	**0.1473**	**2.2000e-004**		**0.0114**	**0.0114**		**0.0105**	**0.0105**	**0.0000**	**20.6934**	**20.6934**	**6.3400e-003**	**0.0000**	**20.8265**

3.7 Paving - 2017

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	5.9000e-004	8.7000e-004	9.0100e-003	2.0000e-005	1.6400e-003	2.0000e-005	1.6600e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	1.5438	1.5438	8.0000e-005	0.0000	1.5456
Total	**5.9000e-004**	**8.7000e-004**	**9.0100e-003**	**2.0000e-005**	**1.6400e-003**	**2.0000e-005**	**1.6600e-003**	**4.4000e-004**	**1.0000e-005**	**4.5000e-004**	**0.0000**	**1.5438**	**1.5438**	**8.0000e-005**	**0.0000**	**1.5456**

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	0.0633	0.1574	0.6357	1.3800e-003	0.0903	2.0800e-003	0.0924	0.0242	1.9100e-003	0.0261	0.0000	106.7545	106.7545	4.4900e-003	0.0000	106.8488
Unmitigated	0.0633	0.1574	0.6357	1.3800e-003	0.0903	2.0800e-003	0.0924	0.0242	1.9100e-003	0.0261	0.0000	106.7545	106.7545	4.4900e-003	0.0000	106.8488

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	0.00	0.00	0.00		
Enclosed Parking Structure	0.00	0.00	0.00		
Place of Worship	99.40	124.78	159.95	238,179	238,179
Total	99.40	124.78	159.95	238,179	238,179

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
City Park	16.60	8.40	6.90	33.00	48.00	19.00	66	28	6
Enclosed Parking Structure	16.60	8.40	6.90	0.00	0.00	0.00	0	0	0
Place of Worship	16.60	8.40	6.90	0.00	95.00	5.00	64	25	11

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.532559	0.058242	0.178229	0.125155	0.038934	0.006273	0.016761	0.032323	0.002478	0.003154	0.003685	0.000544	0.001663

4.4 Fleet Mix

5.0 Energy Detail

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	209.5703	209.5703	9.6300e-003	1.9900e-003	210.3905
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	209.5703	209.5703	9.6300e-003	1.9900e-003	210.3905
NaturalGas Mitigated	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	20.2089	20.2089	3.9000e-004	3.7000e-004	20.3319
NaturalGas Unmitigated	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	20.2089	20.2089	3.9000e-004	3.7000e-004	20.3319

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					
Place of Worship	378700	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	20.2089	20.2089	3.9000e-004	3.7000e-004	20.3319
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.0400e-003**	**0.0186**	**0.0156**	**1.1000e-004**		**1.4100e-003**	**1.4100e-003**		**1.4100e-003**	**1.4100e-003**	**0.0000**	**20.2089**	**20.2089**	**3.9000e-004**	**3.7000e-004**	**20.3319**

5.2 Energy by Land Use - NaturalGas

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					
Place of Worship	378700	2.0400e-003	0.0186	0.0156	1.1000e-004		1.4100e-003	1.4100e-003		1.4100e-003	1.4100e-003	0.0000	20.2089	20.2089	3.9000e-004	3.7000e-004	20.3319
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**2.0400e-003**	**0.0186**	**0.0156**	**1.1000e-004**		**1.4100e-003**	**1.4100e-003**		**1.4100e-003**	**1.4100e-003**	**0.0000**	**20.2089**	**20.2089**	**3.9000e-004**	**3.7000e-004**	**20.3319**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	570636	163.2971	7.5100e-003	1.5500e-003	163.9362
Place of Worship	161700	46.2732	2.1300e-003	4.4000e-004	46.4543
Total		**209.5703**	**9.6400e-003**	**1.9900e-003**	**210.3905**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Enclosed Parking Structure	570636	163.2971	7.5100e-003	1.5500e-003	163.9362
Place of Worship	161700	46.2732	2.1300e-003	4.4000e-004	46.4543
Total		**209.5703**	**9.6400e-003**	**1.9900e-003**	**210.3905**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive 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	4.4075	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Unmitigated	4.4075	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003

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	1.0702					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Total	**4.4075**	**0.0000**	**5.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

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	1.0702					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	3.3372					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	5.0000e-005	0.0000	5.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Total	**4.4075**	**0.0000**	**5.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	76.1530	0.0213	1.1400e-003	76.9554
Unmitigated	76.1530	0.0213	1.1400e-003	76.9557

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.3998	71.2162	3.2700e-003	6.8000e-004	71.4949
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	0.547556 / 0.856434	4.9369	0.0181	4.7000e-004	5.4608
Total		**76.1530**	**0.0213**	**1.1500e-003**	**76.9557**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 22.3998	71.2162	3.2700e-003	6.8000e-004	71.4949
Enclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Place of Worship	0.547556 / 0.856434	4.9369	0.0181	4.7000e-004	5.4605
Total		**76.1530**	**0.0213**	**1.1500e-003**	**76.9554**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.5772	1.2161	0.0000	46.1148
Unmitigated	20.5772	1.2161	0.0000	46.1148

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.62	0.3289	0.0194	0.0000	0.7370
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	99.75	20.2484	1.1966	0.0000	45.3779
Total		**20.5772**	**1.2161**	**0.0000**	**46.1148**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	1.62	0.3289	0.0194	0.0000	0.7370
Enclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Place of Worship	99.75	20.2484	1.1966	0.0000	45.3779
Total		**20.5772**	**1.2161**	**0.0000**	**46.1148**

9.0 Operational Offroad

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

10.0 Vegetation

Greenhouse Gas Emission Worksheet

N_2O Mobile Emissions

From CalEEMod Vehicle Fleet Mix for SCAQMD:

Annual VMT: 238,179

Vehicle Type	Percent Type	CH4 Emission Factor (g/mile)*	CH4 Emission (g/mile)**	N2O Emission Factor (g/mile)*	N2O Emission (g/mile)**
Light Auto	53.4%	0.04	0.02136	0.04	0.02136
Light Truck < 3750 lbs	5.8%	0.05	0.0029	0.06	0.00348
Light Truck 3751-5750 lbs	17.8%	0.05	0.0089	0.06	0.01068
Med Truck 5751-8500 lbs	12.5%	0.12	0.015	0.2	0.025
Lite-Heavy Truck 8501-10,000 lbs	3.9%	0.12	0.00468	0.2	0.0078
Lite-Heavy Truck 10,001-14,000 lbs	0.6%	0.09	0.00054	0.125	0.00075
Med-Heavy Truck 14,001-33,000 lbs	1.7%	0.06	0.00102	0.05	0.00085
Heavy-Heavy Truck 33,001-60,000 lbs	3.2%	0.06	0.00192	0.05	0.0016
Other Bus	0.2%	0.06	0.00012	0.05	0.0001
Urban Bus	0.3%	0.06	0.00018	0.05	0.00015
Motorcycle	0.4%	0.09	0.00036	0.01	0.00004
School Bus	0.1%	0.06	0.00006	0.05	0.00005
Motor Home	0.1%	0.09	0.00009	0.125	0.000125
Total	**100.0%**		**0.05713**		**0.071985**

Total Emissions (metric tons) =
Emission Factor by Vehicle Mix (g/mi) x Annual VMT(mi) x 0.000001 metric tons/g

Conversion to Carbon Dioxide Equivalency (CO2e) Units based on Global Warming Potential (GWP)

CH_4	21	GWP
N_2O	310	GWP
1 ton (short, US) =	0.90718474	metric ton

Annual Mobile Emissions:

	Total Emissions		Total CO2e units	
N2O Emissions:	0.0171	metric tons N2O	**5.32**	metric tons CO2e
		Project Total:	***5.32***	***metric tons CO2e***

References

* from Table C.4: Methane and Nitrous Oxide Emission Factors for Mobile Sources by Vehicle and Fuel Type (g/mile).
in California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.
Assume Model year 2000-present, gasoline fueled.

** Source: California Climate Action Registry General Reporting Protocol, Reporting Entity-Wide Greenhouse Gas Emissions, Version 3.1, January 2009.

Exhaust Emission Factors - OFFROAD2007

Equipment	Fuel Type	MaxHP	ROG (lbs/hr)	NOX (lbs/hr)	CO (lbs/hr)	SO2 (lbs/hr)	PM (lbs/hr)	CO2 (lbs/hr)	CH4 (lbs/hr)
Backhoe	Diesel	120	5.29E-02	3.54E-01	3.46E-01	6.06E-04	2.56E-02	5.17E+01	4.77E-03

For offroad diesel internal combustion, total particulate matter = PM10, while PM2.5 is 0.92 (92%) of PM10 (CARB, CEIDARS, 2007).

GHG Global Warming Potential

CO2	1
CH4	25
N2O	298

Based on 100 Yr GWP from IPCC Fourth Assessment, 2007

Note: 1 ton (short, US) = 0.90718474 metric ton

Equipment	# Units	Daily Hours	ROG (lbs/day)	NOX (lbs/day)	CO (lbs/day)	SO2 (lbs/day)	PM (lbs/day)	CO2 (lbs/day)	CH4 (lbs/day)	CO2e (mt/day)
Backhoe	1	4	**0.21**	**1.42**	**1.38**	**0.00**	**0.10**	206.73	0.02	0.09
			ROG (tons/year)	NOX (tons/year)	CO (tons/year)	SO2 (tons/year)	PM (tons/year)	CO2 (tons/year)	CH4 (tons/year)	CO2e (mt/year)
			0.04	0.26	0.25	0.00	0.02	37.73	0.00	**34.30**

APPENDIX IX.a

Contamination Memo from Richard Sells

Richard T Sells
Cemetery Consultant
2500 6th Avenue, #803
San Diego, CA 92103

To Whom It May Concern,

The Green Acres Memorial Park rules and regulations will require that each in-ground burial must be accompanied by a concrete outer burial container. The reasoning behind this is two-fold, as it not only helps with the below grade pressure to protect the casket but also denies any potential environmental impacts to the surrounding soil in the event that a body is embalmed.

In only the Muslim religion is it required that the body be placed into the ground open to the soil below, noting that Muslim burial practice does not allow for the body to be embalmed. Even with the concrete liner covering only three sides of the body, this type of burial hasn't had a negative impact on the environment or water table at any cemetery that I've personally been involved with which is well over 600.

While not every buried body is embalmed it is an option that the State of California has deemed acceptable for those who chose. This is a decision that came after much study which proved to show that the only potentially harmful part of the embalming process is to the embalmer while the body is being prepared for burial. No such body preparation or embalming will be done onsite by Green Acres.

When embalming, formaldehyde is used in extremely small quantities with just a matter of ounces per body and accounts for less than 2% of the total fluid used. Over a very short period of time the formaldehyde degrades with much of the degradation occurring in the body tissues and even within the casket by adsorption into casket materials. Again, once put into the ground the chemicals used during the embalmment process have a life span of less than 14 days and surrounding the embalmed body with a concrete vault sufficiently controls any threat of leaked chemicals during that time.

The only possible situation for leachates to transfer from the remains to the surrounding groundwater would be in a swamp like area with a water table of 6 feet or less as the casket would need to completely fill with water and flush out into the surrounding soil. When comparing this to the property owned by Green Acres, which has a water table in excess of 60 feet, it is more than safe to rule out any possibility of contamination into the surrounding soil or groundwater below.

Richard T Sells

Richard T. Sells

APPENDIX IX.b

Groundwater Report

earthforensics, inc.

August 15, 2016

To: **Green Acres, LLC.**
P.O. Box 6528
Malibu, CA 90264

Attention: **Mr. Bruce McBride**

From: **W. Richard Laton, PhD, CHg**

Subject: **Potential Groundwater Impacts from Embalming Agents, Proposed Malibu Memorial Park Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California**

Based on our previous work on the Project Site and adjacent properties, the depth to groundwater beneath the site is known to be greater than 60 feet (EFI, 2015 and EFI, 2016). It was determined that the potential for *irrigation water* to daylight around the Project Site appears to be negligible due to depth of the groundwater and overall permeability of the soils (GeoSoils Consultants, Inc., 2012). Additionally, all on-site generated wastewater will be sent off-site to the City of Malibu treatment plant for processing.

Based upon the above site information Earth Forensics reviewed multiple research papers and studies to evaluate the potential for groundwater impacts as a result of naturally decaying bodies, both embalmed and putrefied (Beebe, W., 1993; Burke, P. and Sheffner, A.L., 1976; LaKind, J.S. and Bouwer, E.J., 2003; and State of Ohio, Department of Public Health, 1993). As the onsite generated wastewater will be disposed of offsite at the City of Malibu wastewater treatment plant, therefore there is no potential source of contamination from wastewater. This leaves only one potential source of contact, vadose zone water intrusion into the cement vaults.

Embalming
Embalming is usually required only for bodies that will be viewed or kept for visitation. Embalming fluid is designed to inhibit autolysis, kill bacteria, harden tissues, and neutralize the malodorous products of putrefaction. Formaldehyde, the principal ingredient in embalming fluid, converts the enzymes of autolysis into hard solid products which are unable to remain in solution, destroying the enzyme's activity.

Putrefaction
Putrefaction is the decomposition of organic matter, especially protein, by microorganisms, resulting in production of foul-smelling matter. Putrefaction is a complex phenomenon involving a range of chemical reactions. Putrefaction is not possible under conditions that prohibit the development of living organisms. Many of the products of putrefaction are powerful poisons, and are called cadaveric poisons. The end products of putrefaction are *ammonia and ammonia compounds; hydrogen sulfide and hydrogen phosphide; mercaptans; methane; hydrogen; nitrogen; carbon dioxide; and water*. Although the rate of decomposition is influenced by many variables, unembalmed bodies exposed to air begin to decompose within one to three days and become well advanced in three to six months.

Also part of the putrefaction process, autolysis is a self-digestion of the body tissues by substances produced within those tissues. The agents that cause this form of post mortem tissue disintegration are called enzymes, which persist after death and eventually destroy all cells and tissues.

On-site impacts of burial
There is little harm caused by the natural decomposition of a human body. The composition of a typical human body is, by weight, 64% water, 20% protein, 1% carbohydrate, 5% mineral salts, and 10% fats. The elemental components of the human body are *carbon, nitrogen, calcium, magnesium, sodium, potassium, phosphorus, sulphur, chloride, iron, and trace heavy metals.*

The primary process governing the production, release and potential migration of pollutants from a buried corpse is microbial decay. The rate of decay depends on several factors. These include:

- availability of nutrients and moisture which encourages degradation
- pH levels
- climate - warm temperatures accelerate decomposition
- soil lithology where well drained soil will accelerate decay
- burial practice - the depth and coffin construction which determine the ease of access by vertebrates and invertebrates

Pathogens may also be present, but typically die off rapidly and reduce in concentration with increasing distance from the grave (Sponberg, A.L, and P.M. Becks, 2000).

In regards to embalmed cadavers, it appears that there is little potential for the formaldehyde in the embalming solution to be a source of pollution. This is based upon the following facts, (1) formaldehyde binds to proteins in tissue, (2) upon degradation, the bound protein breaks down to carbon dioxide, water, and amines, and (3) there should be no free formaldehyde in the embalmed bodies, therefore no formaldehyde should leach from cadavers, and there would be no contamination (Sponberg, A.L, and P.M. Becks, 2000).

Further, prior correspondence from Dodge Chemical Company states that embalmed tissue immersed in water would most certainly not release formaldehyde. "Formaldehyde combines with protein into a very stable new hydrocarbon chain. Simple contact with water is not sufficient to cause an additional reaction liberating the formaldehyde." (Mirza, S. and Dodge, D., 2016)

It is proposed that at Malibu Memorial that concrete vaults will be used exclusively, this will limit the potential transfer of leachates from the remains to the surrounding soil. In order for leachates to escape the vaults, water would have to move through the concrete vault, into the casket and back out. This scenario would require the water table to reach the top of the vault, find its way through the lid's seal and then also get into the casket (which would require the entire vault to fill up with water). As the depth of groundwater onsite is in excess of 60 feet this is highly unlikely. In order for this leachate to escape, the vault would again have to fill completely with water and then the water would have to find its way out. Therefore, the use of the concrete vault will greatly limit the potential of leachate contaminating the surrounding soils.

The above analysis of the Malibu Memorial Park, which is based on a literature review and various site visits, indicates little potential significant cumulative impact on groundwater from contaminated leachate emanating from the casket and through the cement vault.

Respectfully submitted
EARTH FORENSICS, Inc.



Dr. W. Richard Laton, PG (CA, AK, AZ, IL, IN, FL, MN, OR, PA, TX, WA), CHG, CPG
Principal Consultant
Earth Forensics, Inc.
12532 Vista Panorama
North Tustin, CA 92705

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APPENDIX IX.c

Updated HydroGeologic Report

Updated Hydrogeologic Assessment of the Proposed Malibu Memorial Park Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

February 12, 2016

Prepared for:

Green Acres, LLC
P.O. Box 6528
Malibu, California 90265

Prepared by:

Earth Forensics Inc.
12532 Vista Panorama
North Tustin, CA 92705

Submitted to:

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Updated Hydrogeologic Assessment of the Proposed Malibu Memorial Park Tentative Tract Map 69653, 4000 Malibu Canyon Road, Malibu, California

1.0 INTRODUCTION

A hydrogeologic assessment was conducted on the Malibu Memorial Park to evaluate the cumulative impacts to groundwater from on-site treated water dispersal at the development proposed for the parcel at 4000 Malibu Canyon Road (referred to herein as the "Project Site"), pursuant to the requirements of Chapter 18.5 of the City of Malibu LCP-LIP (2002). The project is located north of Pacific Coast Highway (PCH) on Winter Mesa (see Figure 1).

The objective of the assessment was to evaluate the potential effect of treated water dispersal on groundwater levels at the Project Site and adjacent properties down gradient. This work is based upon a literature review and site visit of the Project Site and surrounding properties. We also utilized geological and geotechnical data from the following sources:

- Regional geologic publications: Yerkes and Campbell (1980), and Dibblee (1993).
- Previous consulting reports specific to the Malibu Memorial Site: Van Beveren & Butelo (2007), Merrill (1975a,b), Leighton and Associates (1989), EnSitu Engineering (2008), and Young (2008a).
- Recent project-specific reports/plans for the Malibu Memorial Park: Young (2008), EnSitu Engineering (2012 and 2015), Rubicon Engineering (2013 and 2014), Earth Forensics (2012) and GeoSoils (2011 and 2012).
- Consulting reports for nearby properties: Aquifer Science and Technology (2008), Glen Lukos Associates (2008), Young (2008b), EnSitu Engineering (2009), Leighton and Associates, Inc. (2007b, 2009), and Psomas (2009).

Subsurface data from the reports listed above were obtained from more than 120 borings drilled on and adjacent to the Project Site. The borings included those made for geotechnical analyses, groundwater monitoring, and percolation testing. The data were used to evaluate where groundwater exists beneath the Project Site as well as the geologic conditions that exist at and near the Project Site. References for the reports and publications are listed Appendix A.

2.0 PROPOSED DEVELOPMENT

Green Acres, LLC, is developing the Malibu Memorial Park and Chapel, comprised of approximately 21.0 acres of a 27.8 acre property located east of Malibu Canyon Road, west of Civic Center Way, and north of Pacific Coast Highway in the City of Malibu, California (the "Project"). The unstable slope areas along the perimeter of the site comprise the remaining 7 acres of the parcel that Green Acres has elected not to develop. The proposed

Memorial Park project contains approximately 17,500 GSF of FAR development and will include the construction of a 8,500 SF Main Chapel facility, 8,500 SF subterranean parking basement (19 parking spaces), 48 free-standing Mausoleum structures totaling approximately 9,000 SF (aprox. 186 SF/each), approximately 30,600 plot spaces will allow for various crypt configurations, cremation and fractional burial options, as well as surface parking for 132 guest vehicles along the entry drive and Chapel ring.

3.0 PHYSIOGRAPHIC AND GEOLOGIC SETTING

The proposed Malibu Memorial occupies approximately 28.7 acres at the northeast corner of Pacific Coast Highway and Malibu Canyon Road. Civic Center Drive borders the site to the north and northeast, while a wastewater treatment and disposal field borders the site to the east. The majority of the site is located on one of several uplifted terraces in the Malibu area. The terrace surface slopes gently toward the east. A steep hillside, about 50 feet high, separates the proposed development area from Winter Canyon to the east. The steep slopes along the eastern edge of the Project Site are scarps related to landslides. Cut slopes have been constructed along Malibu Canyon Road, Civic Center Drive and Pacific Coast Highway.

The Project Site is currently vacant and covered with grass, brush and trees. The site was previously used as a commercial nursery and numerous metal planting cans and wooden crates were observed scattered throughout the site, on the surface. Remnant, unpaved, access roads have been graded throughout the site.

3.1 Geologic Materials

The Project Site is underlain by different bedrock types. Figure 2 is a generalized geology map of the site. The Monterey Formation, Trancus, Sespe, Vaqueros, and Conejo Volcanics are present at depths to 84 feet, with all but the Monterey exposed at the surface.

Unconsolidated marine and non-marine sediments, collectively referred to as terrace deposits, cap the bedrock. Marine deposits consist of gray to light brown well graded sand and gravelly sand, while non-marine deposits consist of reddish to yellowish brown, dense, silty sand and sand with varying amounts of gravel.

A landslide is located along the eastern part of the site.

3.2 Geologic Structure

Bedrock has been strongly deformed by tectonic processes and generally dips to the southeast with minor local folding and variations in dip orientation (Van Beveren & Butelo, 2007).

Many faults and shears (minor faults) were reported in Leighton's bucket auger borings and trenches in the easterly project limits. These features are exhibited by offset bedding and dragged (folded) bedding planes and are common in the Monterey Formation. The faults and shears

encountered appear to be randomly oriented and do not display a preferred orientation. Fractures and joints are also common within the Monterey Formation. These joints as encountered in our explorations were observed to be randomly oriented.

The Malibu Coast fault, a major structure in the region, trends east-west through the southern portion of the site. The fault has significantly offset the various bedrock units in the area, however it does not impact the upper part of the older terrace deposits (Leighton and Associates, 1989; Van Beveren & Butelo, 2007)

4.0 HYDROGEOLOGIC SETTING

At the Project Site, the top of the mesa slopes gently to the east and south, then becoming gradually steeper (up to about a 4:1 slope gradient) at the northern and eastern perimeter. There are no drainages, natural or manmade, contributing surface flow to the Project Site. Precipitation that falls on the site travels by sheet flow to the eastern and northern perimeter slopes.

To the east and north of the Project Site, the Winter Canyon watershed trends southeast, and encompasses approximately 150 acres. The overall relief of the watershed is 1,325 feet and is divided into two channel gradients of 0.22 feet per foot in the foothills and 0.07 feet per foot in the lower reaches of the channel, from the foothills to the ocean. The lower reaches of the Winter Canyon have experienced significant man-made alterations over the years by grading and by placement of various stormwater control measures.

Although they are adjacent, Winter Canyon and Malibu Creek are separate watersheds. A low ridge on the eastern side of Winter Canyon functions as a drainage divide for surface and subsurface waters, thereby separating the Project Site and Winter Canyon hydrologically from the Malibu Creek/Civic Center area groundwater basin. The lack of hydraulic conductivity between the two basins is further supported by their very different water levels and flow gradients as illustrated in Figures 3 and 4 of the Risk Assessment of Decentralized Wastewater Treatment Systems in High Priority Areas in the City of Malibu (Stone Environmental, 2004). In addition, the California Department of Water Resources excludes Winter Canyon from their map of the Malibu Valley Groundwater Basin (DWR Basin Number 4-22, dated October 2003).

Based on the monitoring wells on the Project Site and Pepperdine, groundwater flow direction is divided over the site. Along the eastern margin, the flow direction is easterly to southeasterly (Figure 4). Along the western margin, the flow direction is westerly to southwesterly. It is possible that the groundwater flow has been somewhat impeded by the Malibu Coast fault. If the fault were acting as a semi-permeable barrier to the subsurface flow, groundwater would potentially mound against the fault and flow parallel to it, ultimately draining through Winter Canyon to the east. Groundwater level data is plotted both as a groundwater contour map (see Figure 4) and as a hydrograph (see Figure 5).

5.0 WASTEWATER DISPOSAL

All on-site generated wastewater will be sent off-site to the City of Malibu treatment plant for processing.

6.0 EXISTING GROUNDWATER CONDITIONS

There are 8 existing on-site groundwater monitoring wells. On October 17, 2014 a groundwater survey was conducted and the results are shown in Figure 4. To confirm that groundwater levels have remained near October 2014 levels, a groundwater level survey was conducted on October 6, 2015 and is shown in Table 1. Since the water levels have not drastically changed, the groundwater elevation contour map in Figure 4 was not updated.

Table 1: Groundwater Level Monitoring Survey (October 6, 2015)

WELL ID	North (Y) (feet)	East (X) (Feet)	Elevation (Z) (feet)	Depth to Water (ft-bgs)	Groundwater Elevation (feet)
RM1	1836935.11	6348764.00	225.06	34.9	190.16
RM2	1835982.84	6348817.26	216.63	102.26	114.37
RM3	1836215.18	6349221.17	225.48	67.3	158.18
RM4	1836455.43	6349495.73	223.62	90.44	133.18
RM5	1836045.74	6349750.67	172.71	124.3	48.41
MW02	1836029.01	6348968.04	220.92	62.35	158.57
MW03	1836188.49	6349446.95	220.89	73.52	147.37
MW04	1836319.163	6348636.62	226	47.65	178.35
LAMW-5S	1836607.783	6349923.71	104.55	52.5	52.05

In addition to the on-site wells, two groundwater monitoring wells on the Pepperdine property to the west and northwest and 3 wells on the Crummer Property were evaluated to help determine historical groundwater levels in Winter Canyon.

Table 2: Groundwater Monitoring Results.

Well Name	Highest Elevation (ft amsl)	Lowest Elevation (ft amsl)	Comments
MW-1 (on-site)	NA	NA	Dry
MW-2 (on-site)	171.02	158.61	
MW-3 (on-site)	148.05	147.39	
LMW-1 (Crummer)	119.32	114.70	
RM1 (on-site)	190.16	189.78	
RM2 (on-site)	117.77	114.37	
RM3 (on-site)	159.05	158.18	
RM4 (on-site)	133.18	128.51	
RM5 (on-site)	49.41	48.41	
LMW-2 (Crummer)	104.38	99.21	
LMW-6 (Crummer)	140.96	138.36	
MW-5a (Pepperdine)	162.50	154.36	
MW-11 (Pepperdine)	142.53	128.65	
LAMW-5S	57.90	51.29	

Note: All water levels are based on “mean sea level” (NAVD88).

Based on the current groundwater conditions on-site and historical conditions off-site, there appears to be significant vadose zone on-site.

7.0 SUMMARY AND CONCLUSIONS

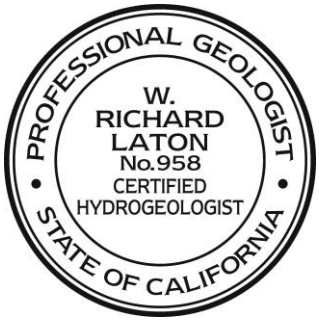
Based on our review of previous work on the Project Site and adjacent properties along with our site visit, the depth to groundwater beneath the site is greater than 60 feet. The potential for *irrigation water* to daylight in the eastern and southern perimeter slopes around the Project Site appears to be negligible due to depth of the groundwater and overall permeability of the soils (GeoSoils Consultants, Inc., 2012). The faults onsite may also act as semi-permeable barriers, at least locally. Additional monitoring would aid in further evaluating the impacts the faults may or may not have on the overall groundwater flow system.

Analysis of the Malibu Memorial Park, which is based on a literature review and site visit, indicates little potential significant cumulative impact on groundwater levels, both onsite and offsite, will occur as a result of operations.

Respectfully submitted,

EARTH FORENSICS, Inc.

(Signature)



Dr. W. Richard Laton CHg 958, PG 7098
Principal Consultant
Earth Forensics, Inc.
12532 Vista Panorama
North Tustin, CA 92705

APPENDIX A - REFERENCES

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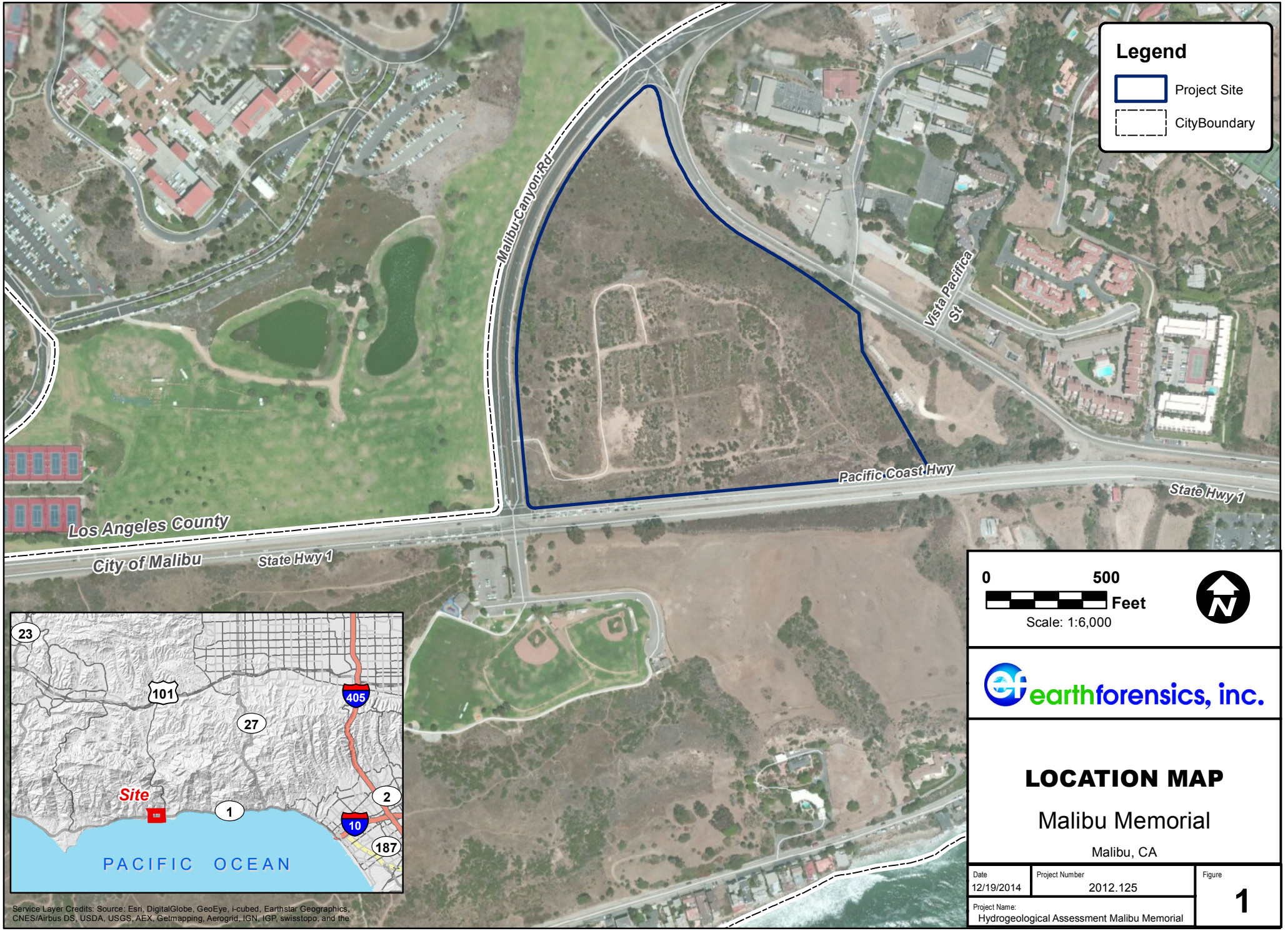
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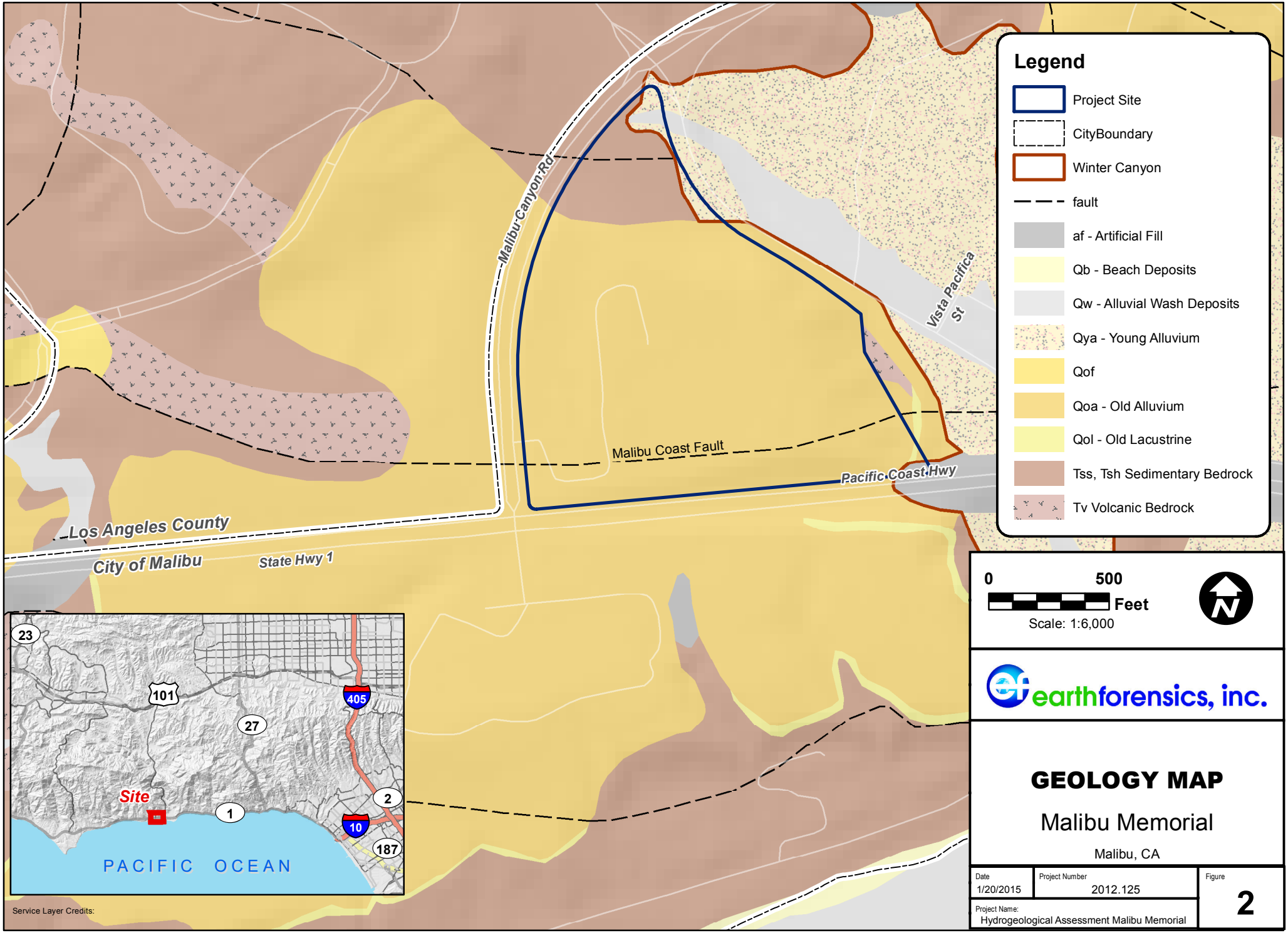
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APPENDIX B - FIGURES


Legend
Project Site
CityBoundary
Malibu Canyon Rd
Vista Pacifica St
Pacific Coast Hwy
State Hwy 1
Los Angeles County
City of Malibu
State Hwy 1
0
500
Feet
Scale: 1:6,000
23
101
405
27
Site
1
2
10
187
PACIFIC OCEAN
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the
earthforensics, inc.
LOCATION MAP
Malibu Memorial
Malibu, CA
Date
12/19/2014
Project Number
2012.125
Figure
1
Project Name:
Hydrogeological Assessment Malibu Memorial



earthforensics, inc.

GEOLOGY MAP

Malibu Memorial

Malibu, CA

Date	Project Number	Figure
1/20/2015	2012.125	2

Project Name: Hydrogeological Assessment Malibu Memorial

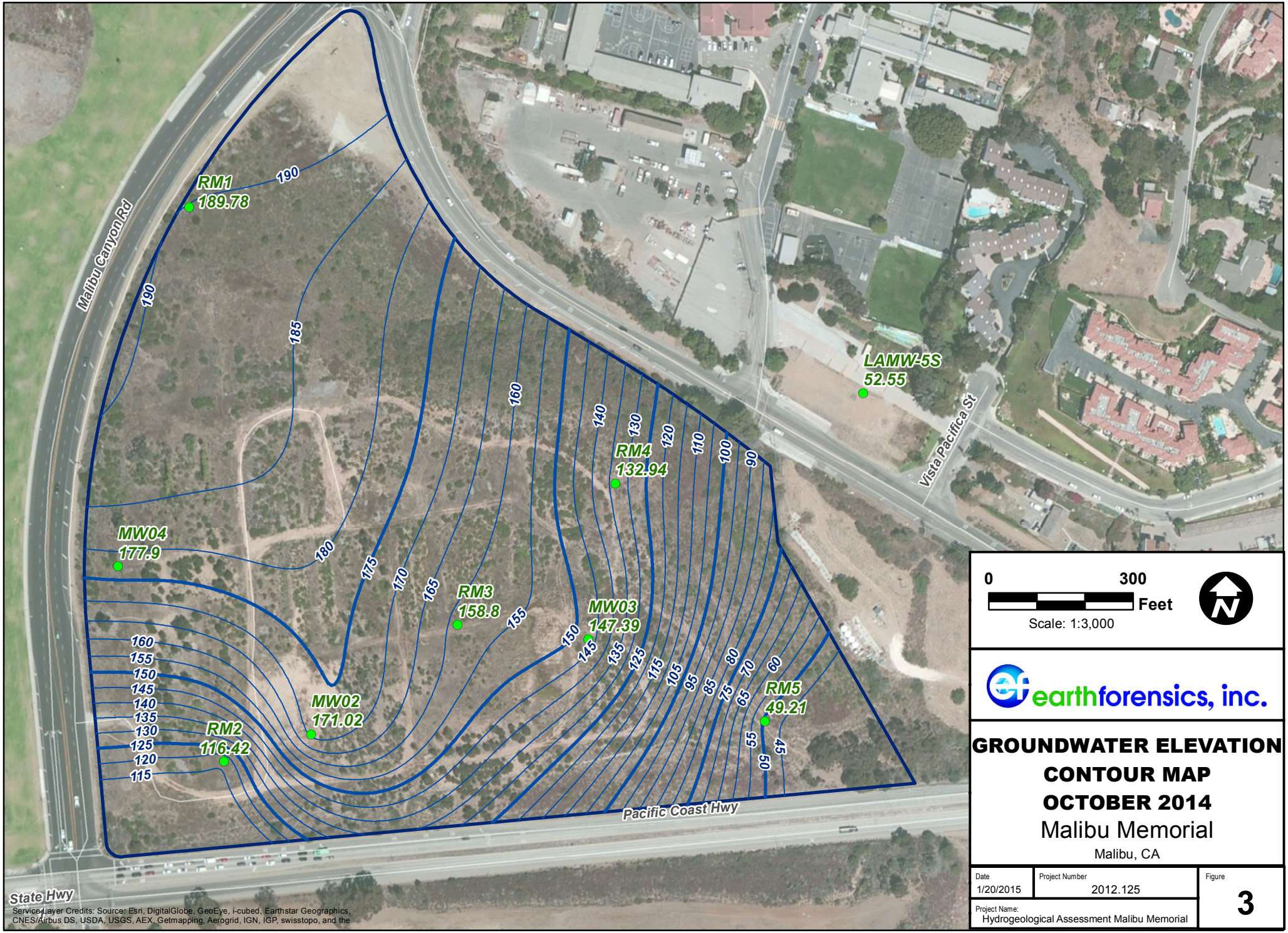
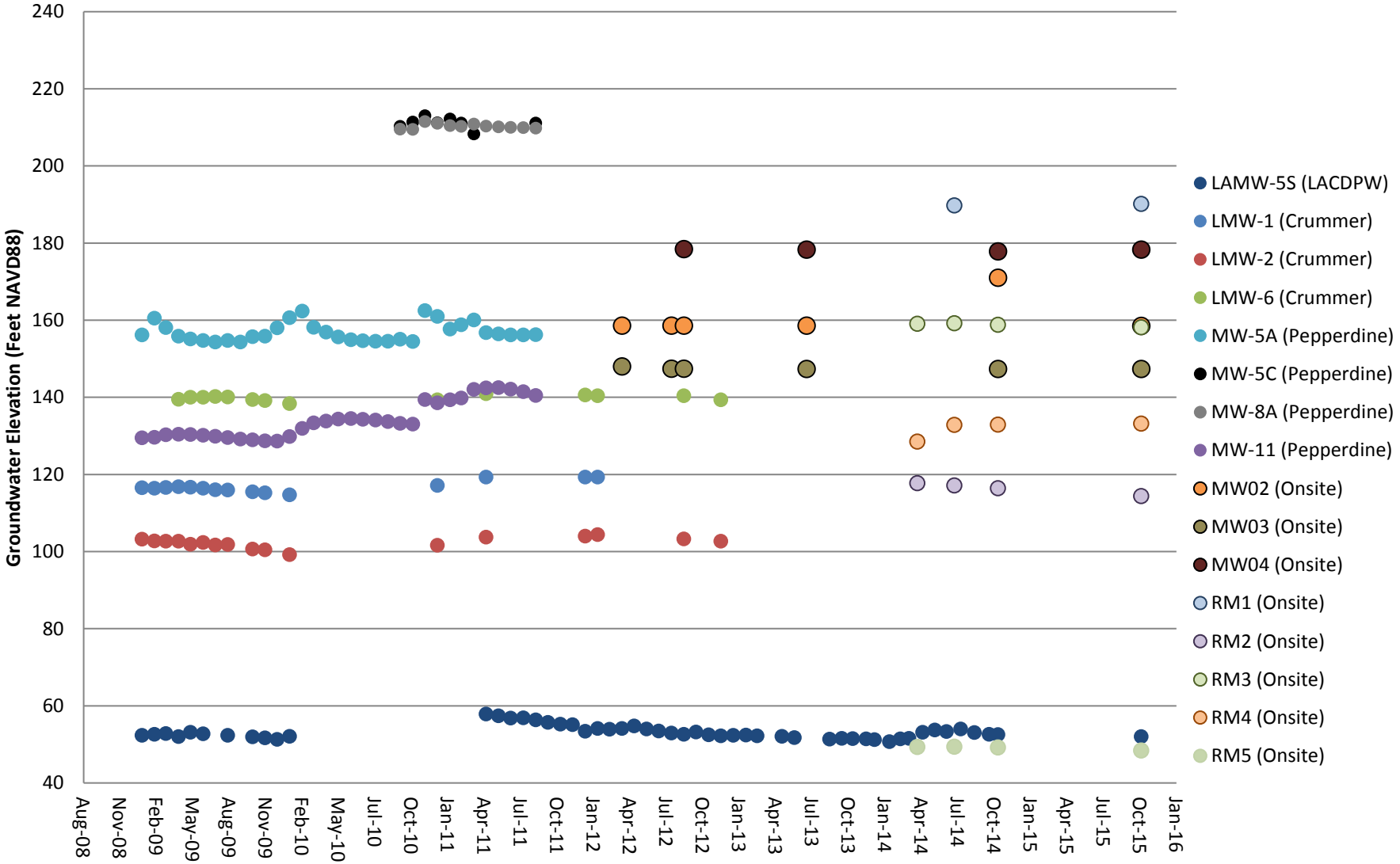

RM1
189.78
LAMW-5S
52.55
RM4
132.94
MW04
177.9
RM3
158.8
MW03
147.39
MW02
171.02
RM2
116.42
RM5
49.21
Malibu Canyon Rd
Vista Pacifica St
Pacific Coast Hwy
State Hwy
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
105
95
85
75
65
55
45
60
70
80
90
100
110
120
130
140
0
300
Feet
Scale: 1:3,000
N
earthforensics, inc.
GROUNDWATER ELEVATION
CONTOUR MAP
OCTOBER 2014
Malibu Memorial
Malibu, CA
Date
1/20/2015
Project Number
2012.125
Figure
3
Project Name:
Hydrogeological Assessment Malibu Memorial
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, i-cubed, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the

Figure 4
Groundwater Hydrographs
Malibu Memorial



earthforensics, inc.

APPENDIX XII

Noise Study Update

City of Malibu

Malibu Memorial Cemetery Project

Noise Study

March 2016

rincon

Environmental Scientists Planners Engineers

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

805 644 4455
FAX 644 4240

info@rinconconsultants.com
www.rinconconsultants.com

March 3, 2016
Project No. 15-02065

Jake Jesson
Assistant Project Manager
Green Acres, LLC
22837 Pacific Coast Highway #775
Malibu, California 90265
jjesson@weintraubre.com

RE: NOISE STUDY
Malibu Memorial Cemetery Project, Malibu, California

Dear Mr. Jesson:

Rincon Consultants, Inc. is pleased to submit the attached Noise Study for the proposed Malibu Memorial Cemetery project in Malibu, California. The proposed project could potentially result in noise levels that would exceed the maximum noise limits in the City of Malibu's General Plan Noise Element. Mitigation was provided, recommending timing restriction on heavy-duty truck deliveries to the project site, and timing limits on the use of heavy construction equipment on the project site in order to reduce noise levels produced by the proposed project to below the City's the maximum noise limits. As such, impacts related to noise as a result of the proposed project would not be significant, with the incorporation of recommended mitigation. If you have any questions regarding this study or if we can provide you with other environmental consulting services, please feel free to contact us.

Sincerely,

RINCON CONSULTANTS, INC.

Chris Bersbach
Technical Services Program Supervisor

Joe Power, AICP
Principal

Malibu Memorial Cemetery Project

Noise Study

Prepared for:

Green Acres, LLC
22837 Pacific Coast Highway, #775
Malibu, California 90265

Prepared with the assistance of:

Rincon Consultants, Inc.
180 North Ashwood Avenue
Ventura, California 93003

March 2016

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Malibu Memorial Cemetery Project
Noise Study

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MALIBU MEMORIAL CEMETERY PROJECT
MALIBU, LOS ANGELES COUNTY
NOISE STUDY

This report is an analysis of the potential noise impacts of the proposed Malibu Memorial Cemetery project located in Malibu, California in Los Angeles County. The report has been prepared by Rincon Consultants, Inc. under contract to Green Acres, LLC for use by the City of Malibu, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the proposed project's potential temporary noise impacts relating to construction activity and long-term noise impacts associated with operation of the proposed project, including roadway noise from vehicle trips generated by the proposed project.

PROJECT DESCRIPTION

Green Acres, LLC, is developing the Malibu Memorial Cemetery Park and Chapel Project, comprised of approximately 21.0 acres of a 28.7-acre property located east of Malibu Canyon Road, west of Civic Center Way, and north of Pacific Coast Highway in the City of Malibu, California (the "Project"). The unstable slope areas along the perimeter of the site comprise the remaining 7 acres of the parcel that Green Acres has elected not to develop. The proposed Memorial Park project contains approximately 17,500 GSF of FAR development and would include the construction of a 8,500 SF Main Chapel facility, 8,500 SF subterranean parking basement, 48 free-standing Mausoleum structures totaling approximately 9,000 SF (approximately 186 SF/each), approximately 30,600 plot spaces for various crypt configurations, cremation and fractional burial options, as well as surface unenclosed parking for guest vehicles along the entry drive and Chapel ring.

The original Project EIR was approved by the City of Malibu in 1998. To satisfy Mitigation Measure 8.1 of the Rancho Malibu Hotel Environmental Impact Report (City of Malibu 1997), a Cultural Resources Management Plan (CRMP) was developed to reduce potential impacts to an archaeological site located on the property (Wlodarski 1995). The revised CRMP was developed in response to three basic factors: 1) the need to incorporate burial crypts within areas of the site previously slated to be grubbed and capped; 2) changes in the condition of the site over the past 15 years since the plan was developed; and, 3) new grading of unstable slopes and required retaining walls on the site. The project was revised in October 2015 to exclude work in unstable slope areas, remove mounding within sensitive areas, and contain grading within the City-stipulated thresholds of 1,000 cubic yards per acre, reducing the overall project footprint to 21 acres.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies

around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).
Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dB, and a sound that is 10 dB less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dB greater than the reference sound to be judged as twice as loud. In general, a 3 dB change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dB per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dB per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dB per doubling of distance.

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Two commonly used noise metrics – the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) – recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dB to actual nighttime (10 p.m. to 7 a.m.) noise levels to account for the greater sensitivity to noise during that time period. The CNEL is identical to the Ldn, except it also adds a 5 dB penalty for noise occurring during the evening (7 p.m. to 10 a.m.).

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. The City of Malibu General Plan Noise Element includes a variety of land use and development types that are noise sensitive. Noise sensitive land uses include single and multiple family residences, schools, libraries, medical facilities, retirement/rest homes, and places of religious worship. The predominant land uses in the City are noise sensitive residential uses.

Noise-sensitive receptors near the project site include:

- *Condominiums located approximately 400 feet east of the project site boundary, across Civic Center Way;*
- *Single-family residences located in the Malibu Knolls neighborhood approximately 700 feet east of the project site boundary, across Civic Center Way;*
- *Our Lady of Malibu Church, located approximately 350 feet north of the project site boundary, across Civic Center Way;*
- *Webster Elementary School, located approximately 550 feet northeast of the project site boundary, across Civic Center Way; and*
- *Housing at Pepperdine University, the closest of which is the Brock House, located approximately 1,600 feet northwest of the project site boundary, across Malibu Canyon Road.*

In addition to these existing sensitive receptors, there are single-family residential units proposed on the Crummer Site Subdivision project site, located south of the project site, across Pacific Coast Highway. Based on the current proposal for the Crummer Site Subdivision, the nearest residential units would be approximately 350 feet south of the project site boundary.

It should be noted that the distances provided above are from the proposed project site boundary. Analysis of potential future noise levels at nearby sensitive receptors will be based on the distance between these receptors and anticipated noise sources.

Project Site Setting

The most common and primary existing sources of noise in the project site vicinity are motor vehicles (e.g., automobiles, buses, trucks, and motorcycles) along Pacific Coast Highway, Malibu Canyon Road, and Civic Center Way. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level, and because of its proximity to noise sensitive uses. Additional sources of noise in the project site vicinity include activities associated with nearby institutional, residential, and recreational uses. There are no existing sources of noise on the project site, as the site is currently undeveloped.

A community noise survey was conducted on July 16, 1992, to document the existing noise environment within Malibu. Noise measurements were conducted at 10 sites that were representative of residential, commercial and public use areas, including the intersection of Pacific Coast Highway and Malibu Canyon Road. Each site was measured for 15 minutes. The quantities measured are in Leq, Lmin, and Lmax. The noise measurement results for the intersection of Pacific Coast Highway and Malibu Canyon Road are summarized in Table 1.

The City of Malibu General Plan Noise Element provides noise contours, which represent lines of equal noise exposure. The contours provide a visualization of estimates of sound level. Land forms and man-made structures have very complex effects on sound transmission and on noise contours. Generally, barriers between a source and receiver absorb or reflect noise resulting in a quieter environment. Where barriers or land forms do not interrupt the noise transmission path from source to receiver, the contours prove to be good estimates of the average noise level. In areas where barriers or land forms interrupt the sound transmission, the noise contours

overestimate the extent to which a source intrudes into the community. The noise contour distances describe worst-case conditions because they do not account for any obstructions to the noise path, such as walls, berms, or buildings. The General Plan Noise Element included analysis of 16 roadway segments. Table 2 provides the results of the analysis along Pacific Coast Highway and Malibu Canyon Road near the project site. Table 3 provides the results of the analysis for similar roadway segments during the summer months, which are the peak traffic months.

Table 1
City of Malibu General Plan Noise Measurements

Location	Time	Noise Levels (in dBA)		
		Leq	Lmin	Lmax
PCH and Malibu Canyon Road	10:54 a.m.	68	51	75

Source: City of Malibu General Plan Noise Element

Table 2
Roadway Noise Contours

	Distance to CNEL from Roadway Centerline				
Roadway Segment	75′	70′	65′	60′	55′
PCH west of Cross Creek, east of Civic Center Way	-	87.0	172.3	351.7	708.2
PCH west of Civic Center Way, east of Ramirez Canyon Road	-	73.8	143.0	291.5	590.6
Malibu Canyon Road north of PCH, south of Civic Center Way	-	-	50.6	103.5	215.3
Malibu Canyon Road north of Civic Center Way	-	-	81.5	169.3	350.0

Source: City of Malibu General Plan Noise Element; Harland Bartholomew & Associates, 1992

Table 3
Roadway Noise Contours – Summer Months

	Distance to CNEL from Roadway Centerline				
Roadway Segment	75′	70′	65′	60′	55′
PCH west of Cross Creek, east of Civic Center Way	51.7	92.2	183.6	374.9	752.9
PCH west of Civic Center Way, east of Ramirez Canyon Road	-	78.0	152.4	310.8	628.5

Source: City of Malibu General Plan Noise Element; Harland Bartholomew & Associates, 1992

The data in Tables 1, 2, and 3 represent noise levels circa 1992. In order to determine existing noise levels on the project site, two weekday afternoon 20-minute noise measurements and two evening 20-minute noise measurements were taken on the project site using an ANSI Type II integrating sound level meter in March 2012. These on-site noise measurements provide existing sound levels, which are primarily due to roadway noise from Pacific Coast Highway

and Malibu Canyon Road. Table 4 identifies the on-site noise measurement locations and measured noise levels. Figure 1 shows noise measurement locations.

Table 4
On-Site Noise Monitoring Results

Measurement Location		Primary Noise Source	Sample Time	Leq (dBA)
1	North side of Pacific Coast Highway, approximately 750 feet east of Malibu Canyon Road, and 40 feet from roadway centerline	Traffic on Pacific Coast Highway	Weekday afternoon peak hour	76.0
			Weekday evening (off-peak)	70.8
2	East side of Malibu Canyon Road, approximately 200 feet north of Pacific Coast Highway, and 100 feet from roadway centerline	Traffic on Malibu Canyon Road	Weekday afternoon peak hour	66.9
			Weekday evening (off-peak)	56.0

Source: Field visit using ANSI Type II Integrating sound level meter.
See Appendix for noise monitoring data sheets

In addition, four noise measurements were taken at or near the existing sensitive receptors described above, in order to establish baseline noise levels at these locations. Table 5 identifies the off-site sensitive receptor noise measurement locations and measured noise levels. Figure 1 shows noise measurement locations. All of the measurements taken show noise levels that are less than the CNEL roadway contours. This is most likely due to the fact that the contours took into account higher traffic levels on these streets than were present when noise measurements were taken. The noise contours most likely anticipated traffic at full buildout, which has not been achieved.

Table 5
Sensitive Receptor Noise Monitoring Results

Measurement Location		Primary Noise Source	Sample Time	Leq (dBA)
3	Pepperdine University main lawn, approximately 350 feet east of Malibu Canyon Road	Traffic on Malibu Canyon Road	Weekday afternoon peak hour	57.6
4	Northeast of Civic Center Way, south of the nearest residences in the Malibu Knolls neighborhood	Traffic on Civic Center Way	Weekday afternoon peak hour	59.1
5	Northeast of Civic Center Way, near condominiums south of the Malibu Knolls neighborhood	Traffic on Civic Center Way	Weekday afternoon peak hour	58.6
6	Approximate location of future residential use on Crummer Site Subdivision	Traffic on Pacific Coast Highway	Weekday afternoon peak hour	61.2

Source: Field visit using ANSI Type II Integrating sound level meter.
See Appendix for noise monitoring data sheets.



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Legend

Site Boundary

Noise Measurement Location

N

0 190 380 Feet

Noise Measurement Locations

Figure 1

Regulatory Setting

In 1976, the California Department of Health, State Office of Noise Control published a recommended noise/land use compatibility matrix which many jurisdictions have adopted as a standard in their general plan noise elements. This matrix indicates that residential land uses and other noise sensitive receptors generally should locate in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or Ldn).

The City of Malibu has adopted noise standards policies in its General Plan Noise Element. These policies establish both interior and exterior noise limits for non-transportation noise sources and transportation noise sources, and are shown in Table 6 and Table 7. The noise level standard for outdoor activity areas is 70 dBA Ldn. A maximum noise exposure for indoor living areas in new residential units is not to exceed 45 dBA Ldn.

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported in the U.S. Environmental Protection Agency document *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. Reference noise levels from that document were then used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation). Construction noise level estimates do not account for the presence of intervening structures or topography, which could reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a reasonable worst-case estimate of actual construction noise.

For traffic-related noise, impacts are considered significant if project-generated traffic results in exposure of sensitive receptors to an unacceptable increase in noise levels. If sensitive receptors would be exposed to a substantial traffic noise increases as a result of project-generated vehicle trips, impacts would be considered significant. Impacts related to onsite activities are considered significant if project activities would potentially create noise levels exceeding City standards.

Temporary Construction Noise

Project construction could intermittently generate high noise levels on and adjacent to the project site during the construction period. Temporary noise impacts associated with construction may adversely affect adjacent residential and institutional noise sensitive uses. The main sources of noise during construction activities would be the heavy machinery used in grading and clearing the site. As shown in Table 8, average noise levels associated with the use of heavy equipment at construction sites can range from about 76 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (Hanson, Towers, and Meister, May 2006).

Table 6
Maximum Exterior Noise Limits – Non-Transportation Sources

Receiving Land Use Category	General Plan Land Use Districts	Time Period	Noise Level dBA	
			Leq	Lmax
Rural	All RR Zones and PRF, CR, AH, OS	7:00 a.m. to 7:00 p.m.	55	75
		7:00 p.m. to 10:00 p.m.	50	65
		10:00 p.m. to 7:00 a.m.	40	55
Other Residential	All SFR, MFR and MFBF Zones	7:00 a.m. to 7:00 p.m.	55	75
		7:00 p.m. to 10:00 p.m.	50	65
		10:00 p.m. to 7:00 a.m.	45	60
Commercial, Institutional	CN, CC, CV, CG, and I Zones	7:00 a.m. to 7:00 p.m.	65	85
		7:00 p.m. to 7:00 a.m.	60	70

Table 7
Maximum Allowable Noise Exposure – Transportation Noise Sources

Land Use	Outdoor Activity Areas[1] Ldn/CNEL, dB	Interior Spaces	
		Ldn/CNEL, dB	Leq/dB[2]
Residential	50 [3]	45	-
Transient housing	60 [3]	45	-
Hospitals, long term in-patient medical treatment and care facilities	60 [3]	45	-
Theaters, auditoria, music halls	60 [3]	-	35
Churches and meeting halls	60 [3]	-	40
Office buildings	60 [3]	-	45
Schools, libraries and museums, child care	60 [3]	-	45
Playgrounds and neighborhood parks	70	-	-

1: Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2: As determined for a typical worst-case hour during periods of use.
3: Where it is not possible to reduce noise in outdoor activity areas to 50 dB Ldn/CNEL or less using practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB Ldn/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.

Table 8
Typical Noise Levels at Construction Sites

Construction Phase	Typical Noise Level (dBA) 25 Feet from the Source
Air Compressor	87
Backhoe	86
Concrete Mixer	91
Paver	95
Saw	76
Scraper	95
Truck	94

Source: Hanson, Towers, and Meister, May 2006

At the time of this analysis, a grading plan has not yet been finalized for this project; therefore, it is assumed for the purpose of this study that construction activities would occur up to the edge of the project site. Consequently, construction activities may occur within approximately 350 feet of Our Lady of Malibu Church, 350 feet of the nearest condominiums to the east of the project site, 550 feet of Webster Elementary School, 700 feet of the nearest single-family residences to the east of the project site, and 950 feet of housing on the Pepperdine University campus. Construction noise levels were extrapolated using the line-of-sight method of sound attenuation described above and are shown in Table 9. Delivery truck trips to the proposed religious memorial center would be a sporadic source of noise, the maximum exterior noise limits (Lmax) shown in Table 6 are the appropriate threshold for these noise sources. The estimated noise level using this method results in a reasonable worst-case noise estimate, which does not account for potential attenuation resulting from noise barriers such as buildings or topography.

Table 9
Construction Noise at Sensitive Receptors

Receptor	Distance from Construction	Maximum Noise Level at Receptor	Maximum Exterior Noise Limit (Lmax)[1]	Limit Exceeded?
Our Lady of Malibu Church	350 feet	72 dBA	85 dBA	No
Condominiums Across Civic Center Way	350 feet	72 dBA	75 dBA	No
Webster Elementary School	550 feet	68 dBA	85 dBA	No
Single-Family Residences Across Civic Center Way	700 feet	65 dBA	75 dBA	No
Pepperdine University	950 feet	63 dBA	85 dBA	No

[1] *From Table 6, based on anticipated construction hours between 7:00 a.m. and 7:00 p.m.*

As shown in Table 9, the maximum on-site construction noise levels would not exceed the maximum exterior noise limits. Therefore, impacts associated with onsite construction activity would be less than significant.

Project construction would result in additional vehicle trips per day from workers commuting to the project site during the construction period, and soil hauling truck trips over the grading period. These added construction worker trips would be temporary, and would cease at the close of the construction period. Relative to existing traffic levels, the addition of worker trips to the project site would not substantially increase existing traffic levels in the immediate project vicinity. The project would require approximately 388 daily workers during building construction, resulting in approximately 151 daily vehicle trips to and from the site during the 18-month construction period. In addition, six large truck trips would be required to bring construction equipment to and from the site. Using a reasonable worst-case estimate of 21,000 cubic yards of soil export (based on the City-stipulated threshold of 1,000 cubic yards per acre), this analysis assume that up to ten soil hauling trips may be required per day during the construction phase for any required soil export. The worker trips would be split between the a.m. and p.m. peak hours and the heavy truck trips could occur anytime during the work day. A specific route for heavy trucks heading to and from the project site during construction has not yet been identified, but would be most likely utilize Malibu Canyon Road and Pacific Coast Highway. Both of these roadways carry a substantial volume of existing traffic (1,111 peak hour trips on Malibu Canyon Road and 3,310 peak hour trips on Pacific Coast Highway, based on the most recent traffic data available [Overland Traffic Consultants, 2012]), and would not experience a significant noise impact to nearby sensitive receptors due to the addition of the proposed temporary truck and worker trips.

Long-Term Operational Noise Exposure

The proposed project would introduce a new memorial religious use on the project site. Existing sensitive uses near the project site and proposed new uses on-site may periodically be subject to noise associated with operation of the proposed project, including stationary equipment, such as ventilation and heating systems, delivery trucks, excavation equipment, parking lot noise, and other general activities associated with the proposed uses.

HVAC Equipment. Noise levels from commercial HVAC equipment can reach 100 dBA at a distance of three feet (USEPA, 1971). These units usually have noise shielding cabinets, placed on the roof or mechanical equipment rooms and are not usually significant sources of noise impacts. Typically, the shielding and location of these units reduces noise levels to no greater than 55 dBA at 50 feet.

Based on the project plans, the proposed chapel would be the only structure expected to include HVAC equipment. The chapel would be located toward the center of the site, a minimum of 800 feet from Our Lady of Malibu Church, approximately 1,000 feet from the single-family residences and condominiums to the northeast of the project site, and approximately 2,200 feet from the nearest residential receptor on the Pepperdine University campus. Based on an attenuation rate of 6 dBA per doubling of distance, this would result in an external noise level at the nearest existing sensitive receptor (800 feet) of 31 dBA, which would not exceed any of the City's maximum exterior noise limits shown in Table 6; therefore, impacts due to noise from HVAC systems would be less than significant.

The proposed new uses would be located a minimum of 450 feet from proposed single-family residential units on the Crummer Site Subdivision south of the project site, across Pacific Coast

Highway. Based on an attenuation rate of 6 dBA per doubling of distance, this would result in an external noise level at the nearest proposed sensitive receptor of 36 dBA, which would not exceed any of the City's maximum exterior noise limits.

Delivery and Trash Trucks. On-site activities would involve occasional delivery truck trips (containing supplies for the chapel and site management) and trash hauling. Delivery trucks and trash hauling trucks would access the site from Malibu Canyon Road. The California Motor Vehicle Code establishes maximum sound levels for trucks operating at speeds less than 35 miles per hour (Section 23130). The maximum sound level established by the code is 86 dBA at 50 feet. However, The California Motor Vehicle Code Section 23130 established that average noise levels for single idling trucks generally range from 60 to 65 dBA Leq at a distance of 100 feet, and maximum noise levels associated with heavy truck passages range from 70 to 75 dB Lmax at a distance of 100 feet. Maximum noise levels generated by passages of medium duty delivery trucks generally range from 55 to 65 dB at a distance of 100 feet, depending on whether or not the driver is accelerating.

The proposed parking area is located a minimum of 800 feet from Our Lady of Malibu Church, approximately 1,000 feet from the single-family residences and condominiums to the northeast of the project site, and approximately 2,000 feet from the nearest residential receptor on the Pepperdine University campus. Based on an attenuation rate of 6 dBA per doubling of distance, the sound level at the nearest sensitive receptor (800 feet away) from idling delivery trucks would be approximately 47 dB Leq, and the maximum sound level at the nearest residential unit (1,000 feet away) would be 45 dB Leq. The maximum sound level at the nearest sensitive receptor (800 feet away) from delivery trucks (assuming heavy-duty trucks) would be approximately 57 dB Lmax, and the maximum sound level at the nearest residential unit (1,000 feet) would be 55 dB Lmax. Because delivery truck trips to the proposed project would be a sporadic source of noise, the maximum exterior noise limits (Lmax) shown in Table 6 are the appropriate threshold for these noise sources; noise from delivery truck trips would not exceed the maximum exterior noise limits (Lmax) for residential or institutional land uses shown in Table 6 at the nearest sensitive receptors. Operational noise impacts would be less than significant.

The proposed parking area would be located a minimum of 450 feet from proposed single-family residential units on the Crummer Site Subdivision south of the project site, across Pacific Coast Highway. Based on an attenuation rate of 6 dBA per doubling of distance, this would result in an external noise level from idling delivery trucks at the nearest proposed sensitive receptor of 52 dBA Leq, and a maximum external noise level from delivery trucks (assuming heavy-duty trucks) at the nearest proposed sensitive receptor of 62 dBA Lmax. Because delivery truck trips to the proposed religious memorial center would be a sporadic source of noise, the maximum exterior noise limits (Lmax) shown in Table 6 are the appropriate threshold for these noise sources; noise from delivery truck trips would not exceed the maximum exterior noise limits (Lmax) for residential land uses shown in Table 6 at the proposed sensitive receptors on the Crummer Site between the hours of 7:00 a.m. and 10:00 p.m. If nighttime deliveries may occur, delivery truck trips between 10:00 p.m. and 7:00 a.m. could generate noise exceeding the City's maximum exterior noise limits. However, with incorporation of Mitigation Measure N-1 below, operational noise impacts from delivery truck trips to and from the project site would be less than significant.

N-1 **Heavy-Duty Delivery Truck Trip Timing.** Deliveries from heavy-duty trucks, including refrigerator trucks, trash and recycling pick-ups, and parking lot sweeping, shall be restricted to daytime operating hours (7:00 a.m. to 10:00 p.m.).

Ground Maintenance and Excavation Activities. The proposed religious memorial facility would require ground maintenance and regular excavation activities. The ground maintenance would include lawn mowers and tree and shrub trimming equipment. These would be used regularly, but not continuously. Additionally, the facility would require the use of backhoes to prepare burial sites. Table 8 shows that during construction, the noise level associated with backhoe operation is 86 dBA at a distance of 25 feet. This may be reduced for the proposed project if smaller backhoes are used for project operation than would typically be used for construction activities. For purposes of this analysis, it is assumed that backhoes similar to those described in the temporary construction noise analysis would be used along the eastern edge of the property nearest the residences (approximately 350 feet from the residences to the east). This reasonable worst-case assumption represents the worst reasonable case scenario for noise generation. Based on a sound attenuation rate of 6 dBA per doubling of distance, noise from the backhoe would be 62 dBA at the residences. These residences are in the MFR (Multi-Family Residential) Zone. As shown in Table 6, short term noise levels would have to exceed 75 dBA from 7:00 a.m. to 7:00 p.m., 65 dBA from 7:00 p.m. to 10:00 p.m., and 60 dBA from 10:00 p.m. to 7:00 a.m. to be considered a significant impact. The noise from the backhoe would exceed 60 dBA, which would result in a potentially significant impact between 10:00 p.m. and 7:00 a.m. With incorporation of Mitigation Measure N-2 below, operational noise impacts from operation of backhoes on the site would be less than significant.

N-2 **Backhoe Operation Timing.** Operation of backhoes and other heavy construction equipment on site during the construction period shall be restricted to daytime and evening hours (7:00 a.m. to 10:00 p.m.) Such activity shall be prohibited during nighttime hours (10:00 p.m. to 7:00 a.m.).

Long-Term Regional Impacts

The proposed project would generate increased noise on area roadways due to increased traffic to and from the project site. The traffic noise analysis is based on the traffic generation rates from the ITE Trip Generation, 9th Edition. The ITE Trip Generation rates are the most appropriate traffic generation rates for this analysis, as the traffic study that was previously prepared for the project site by Overland Traffic Consultants did not include the proposed cemetery use, but instead analyzed traffic based on a proposed hotel for the site. The primary roadways affected by project-added vehicle traffic would be Pacific Coast Highway, Malibu Canyon Road, and Civic Center Way.

Table 10 shows the existing traffic levels on three main roadways near the project site. These traffic volumes are from the Traffic Study prepared for a previous proposal on the project site (2012), but accurately represent existing traffic on area roadways and are therefore appropriate for use in discussion of the currently proposed project.

Table 10
Existing Traffic

Roadway Segment	Existing Traffic Volumes PM Peak hour
Malibu Canyon Road between Pacific Coast Highway and Civic Center Way	1,111
Pacific Coast Highway between Malibu Canyon Road and Webb Way	3,310
Civic Center Way between Malibu Canyon Road and Pacific Coast Highway	1,246

Source: Overland Traffic Consultants, Inc. Traffic Impact Analysis Resort Hotel Development, April 2012

Based on the ITE Trip Generation manual, the highest trip rate for a cemetery occurs during the Sunday peak hour, with 9.14 trips per 1,000 square feet. Based on this rate, the proposed project would generate up to 160 trips on Sundays. In general, traffic volumes on a roadway must double for the associated noise level to increase by 3 dBA. Even if all trips associated with the project were allocated on any one of the street segments adjacent to the site, the traffic would not increase by more than 15% over the existing traffic volume. Therefore, the project's impact would not result in a substantial increase in regional noise and the impact would be less than significant.

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APPENDIX XVI

Traffic Impact Analysis

Overland Traffic Consultants, Inc.

TRAFFIC IMPACT ANALYSIS
MALIBU MEMORIAL PARK

Located at northeast corner of
Pacific Coast Highway and Malibu Canyon Road
(4000 Malibu Canyon Road)
in the City of Malibu



Prepared for:
Green Acres LLC

Prepared by:
Overland Traffic Consultants, Inc.
24325 Main Street #202
Santa Clarita, California 91321
(661) 799 - 8423

UPDATED JANUARY 2015

TRAFFIC IMPACT ANALYSIS FOR A PROPOSED MEMORIAL PARK CEMETRY

Pacific Coast Highway and Malibu Canyon Road
(4000 Malibu Canyon Road)
City of Malibu

Prepared for:
Green Acres, LLC

Prepared by:

Overland Traffic Consultants, Inc.
24325 Main Street #202
Santa Clarita, California 91321
(661) 799 – 8423

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February 2013

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EXCUTIVE SUMMARY

Introduction

This traffic impact study for the Malibu Memorial Park project has been prepared as an update to the Rancho Malibu Hotel and Resort traffic study which followed the scope of work and traffic study guidelines by the City of Malibu. Traffic generated by the new project follows the standard procedures and methodology using the latest edition of the Institute of Transportation Engineers' (ITE) Trip Generation as required and approved by the City of Malibu for use in traffic impact studies for development in the City of Malibu. Existing (baseline) traffic conditions utilize traffic data collected by the City of Malibu in the summer of 2012 with future conditions based on a list of cumulative project development projects provided by the City of Malibu.

Project Description

The proposed Memorial Park project contains approximately 17,500 GSF of FAR development and will include the construction of a 8,500 s.f. Main Chapel facility, 8,500 s.f. subterranean parking basement (19 parking spaces), 45 free-standing Mausoleum structures totaling approximately 9,000 SF (200 s.f./each), ability to accommodate approximately 45,000 crypts and 15,000 individual cremation burial sites, as well as surface parking for 135 vehicles. The Memorial Park is located on a 27.8 acre site at the northeast corner of Pacific Coast Highway and Malibu Canyon Road in the City of Malibu. The address of the site is 4000 Malibu Canyon Road. The project site is currently undeveloped property, as shown in the Figure 1 photo, Project Setting.

Project Parking and Access

The proposed Memorial Park project will provide a total of 154 parking spaces. All public vehicular access to the site is provided by a spilt driveway located on Malibu Canyon Road approximately 700 feet north of the Pacific Coast Highway centerline. This entrance and exit is near the curvature of Malibu Canyon Road which restricts the sight distance for vehicles exiting the site. For this reason, right turn egress only will be allowed i.e., no left turns exiting the site will be permitted. However, left-turn entering the site will be allowed at the entrance.



FIGURE 1

1/2015

PROJECT SETTING

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

Estimated Traffic Generation

Estimates of the traffic generated by the proposed project were calculated using the industry standard traffic generation rates developed by the Institute of Transportation Engineers (ITE).

The traffic estimates show the Memorial Park project would generate 213 weekday vehicle trips with 10 morning peak hour trips and 19 afternoon peak hour trips. In addition, the project will generate an estimated 258 Saturday trips with 119 Saturday mid-day peak hour trips.

Project's Potential Traffic Impacts

The focus of this traffic study is to evaluate the potential traffic impact created by the development of the Memorial Park project. In the interest of fullest disclosure, this traffic study provides three baseline scenarios to evaluate the project's traffic impacts: (1) existing traffic conditions plus the project traffic volume ("Existing + Project"), (2) future 2016 cumulative traffic conditions plus the project traffic volume ("Future 2016 Cumulative + Project") and (3) future 2030 cumulative traffic conditions plus the project traffic volume ("Future 2030 Cumulative + Project").

Project traffic impacts (Existing + Project and Future 2016)

Using criteria adopted by the City of Malibu and reviewed by the City's traffic consultant, Kimley -Horn and Associates, it has been determined that the change in traffic flow generated by the proposed project would not exceed the significant traffic impact thresholds under existing conditions and in the Future 2016 scenarios at any of the study intersections.

Project traffic impacts (Future 2030 Cumulative + Project) - Using the same criteria, it has been determined that the change in traffic flow generated by the proposed project would exceed significant traffic impacts in the future 2030 cumulative condition at one

intersection. The significant traffic impact occurs at the intersection of Pacific Coast Highway and Webb Way (# 6) during the Saturday mid-day peak hour.

It should be noted that increases to the regional growth by 2030 without any improvements at this intersection degrades the intersection congestion levels during the Saturday mid-day period from Level of Service D to E. At LOS E the additional project traffic becomes significant at the more congested LOS with the cumulative projects traffic and the extra regional growth.

Project's Traffic Mitigation Measures

Listed below are the recommended traffic mitigation measure for the impacted intersection. It should be noted that the proposed roadway improvements on Pacific Coast Highway will require an encroachment permit from Caltrans, the permitting agency.

Pacific Coast Highway and Webb Way - The impact of project traffic on the intersection of Pacific Coast Highway and Webb Way could be mitigated by installing eastbound dual left-turn lanes. This mitigation would improve the traffic movement for the eastbound approach to the Pacific Coast Highway and Webb Way intersection. Figure 28 illustrates the conceptual traffic mitigation measure.

Several land developments have been recently filed with the City of Malibu and are expected to occur within a similar time frame with similar traffic impacts. Therefore, the applicants may implement a mitigation funding mechanism through a fair share process to mitigate the cumulative traffic impacts created by a group of development projects enabling the installation of larger traffic improvements. The proposed project could participate in the funding program to implement the recommended traffic mitigation measures.

Furthermore, the City of Malibu requires a traffic signal warrant analysis when the level of service of an un-signalized intersection exceeds the City's acceptable limits. The current conditions with the project would be operating at an acceptable level and no traffic signal is necessary.

However, It has been determined that during the weekday afternoon peak hour in study year 2016, the intersection of Civic Center Way and Webb Way / Stuart Ranch Road will operate at LOS E without the project and a traffic signal will be necessary because of the traffic volume growth by other projects.

CHAPTER 1 INTRODUCTION

The focus of this traffic study is to evaluate the potential traffic impact created by the development of the Malibu Memorial Park project. This traffic study follows the City of Malibu traffic study guidelines and is consistent with other recent traffic studies prepared for the Malibu Rancho Hotel and Resort project previously proposed for this site and for other projects in the civic center area.

As part of the environmental review for the proposed project, the potential traffic impact of the development has been evaluated using the Intersection Capacity Utilization (ICU) method for signalized intersections and Highway Capacity Manual (HCM) delay methodologies for un-signalized intersections.

The ICU analysis method quantifies the operating conditions of an intersection using a ratio of peak hour traffic volume to intersection capacity. Two un-signalized intersections were evaluated using the Highway Capacity Manual (HCM) delay method for stop sign controlled intersections. Any change to the intersection's peak hour operating condition caused by an increase / decrease in traffic volume (i.e., traffic impact) can be quantified using these analysis methods.

Potential traffic impacts caused by a development project that exceed limits established by the City of Malibu are deemed significant traffic impacts. All significantly impacted intersections are then evaluated for possible traffic mitigation measures. Pursuant to the City of Malibu traffic impact guidelines, the following steps have been taken to evaluate the project's traffic impact.

Existing Conditions -

(a) Evaluate existing 2012 traffic conditions;

(b) Add proposed project traffic volume to existing traffic volume to evaluate potential "existing + project" impacts;

(c) Recommended traffic mitigation, if necessary.

Future 2016 Cumulative Conditions

(d) Existing 2012 traffic volumes were increased by an ambient growth factor of 1.5 % per year growth rate (6.1 % total growth at 1.5% per year growth rate) to the future 2016 study year (year anticipated for project occupancy);

(e) Future traffic generated by all other projects in the study area was added to traffic in (d). Future cumulative baseline traffic volume was derived from a related projects list provided by city staff ("future 2016 without project");

(f) Add proposed project traffic volume to future 2016 without project traffic to evaluate future "2016 cumulative + project" scenario;

(g) Recommended traffic mitigation, if necessary.

Future 2030 Cumulative Conditions

(h) Existing 2012 traffic volumes were increased by an ambient growth factor of 0.48 % per year growth rate (9 % total growth per Los Angels County Congestion Management Program growth rate for 2030) plus all cumulative project traffic;

(i) Add proposed project traffic volume to future 2030 without project traffic to evaluate future "2030 cumulative + project" scenario)

(j) Recommended traffic mitigation, if necessary.

An intersection capacity analysis of the existing baseline and future traffic conditions has been completed at those locations expected to have the highest potential for significant traffic impacts. Summer weekday morning and afternoon peak hour conditions along with summer Saturday mid-day peak hour conditions have been evaluated at ten key intersections selected for review. Low volume intersections or intersections with minimal project traffic are not included in this analysis. As required by the City of Malibu, the traffic analyses were conducted in accordance the Congestion Management Program for Los Angeles County and include all arterial monitoring intersections where the proposed project will add 50 or more trips during either the a.m. or p.m. peak hours of adjacent street traffic.

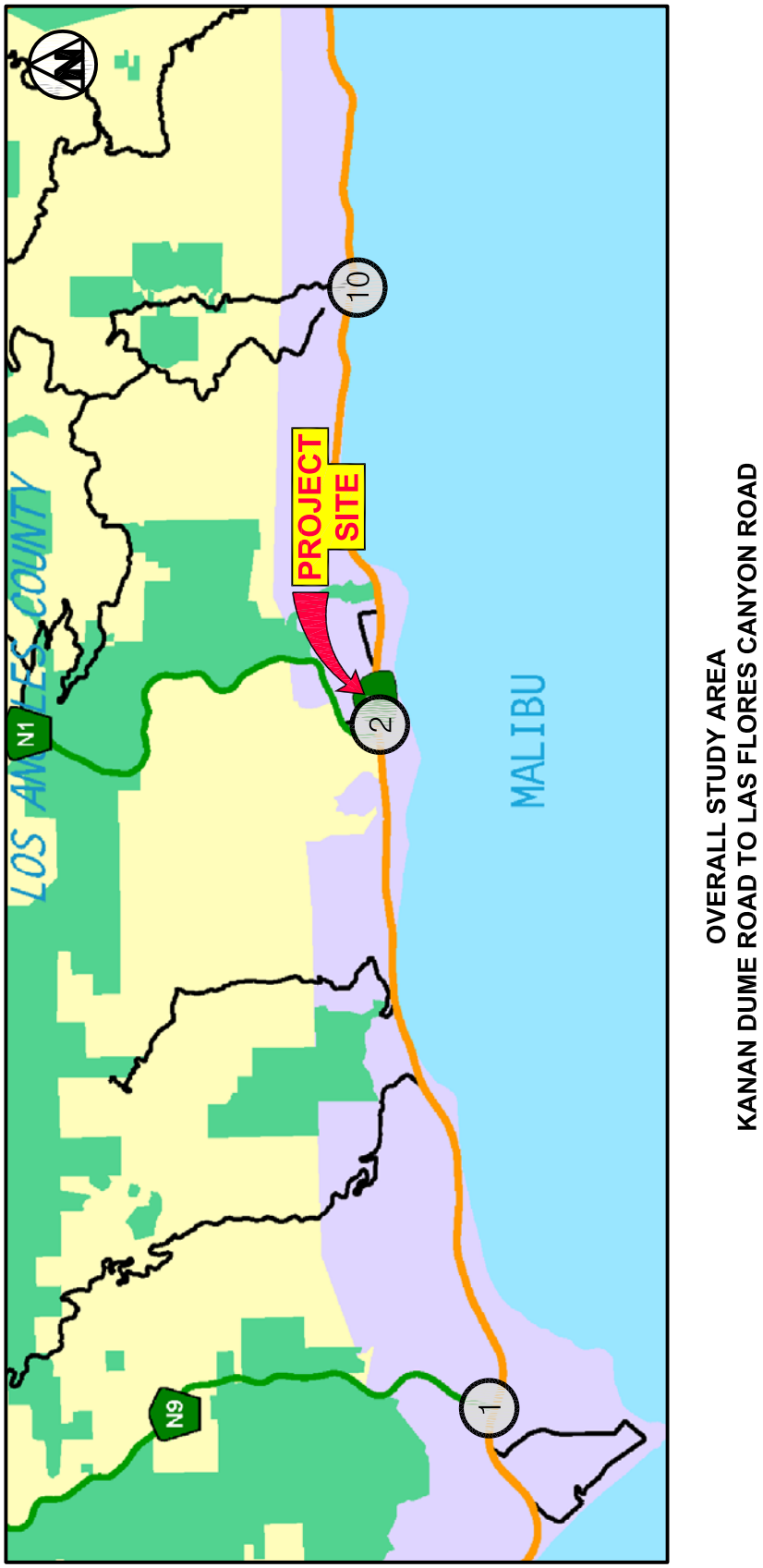
The intersections analyzed in this study and the controlling jurisdictions are:

1. Kanan Dume Road and Pacific Coast Highway (City of Malibu & Caltrans) *;
2. Malibu Canyon Road and Pacific Coast Highway (City of Malibu & Caltrans) *;
3. Malibu Canyon Road and new Malibu Memorial Park driveway (City of Malibu);
4. Malibu Canyon Road and Civic Center Way (City of Malibu);
5. Civic Center Way and Webb Way / Stuart Ranch Road City of Malibu);
6. Webb Way and Pacific Coast Highway (City of Malibu & Caltrans);
7. Cross Creek Road and Pacific Coast Highway (City of Malibu & Caltrans);
8. Malibu Pier Signal and Pacific Coast Highway (City of Malibu & Caltrans);
9. Caron Canyon Road and Pacific Coast Highway (City of Malibu & Caltrans); and
10. Las Flores Canyon Road and Pacific Coast Highway (City of Malibu & Caltrans).

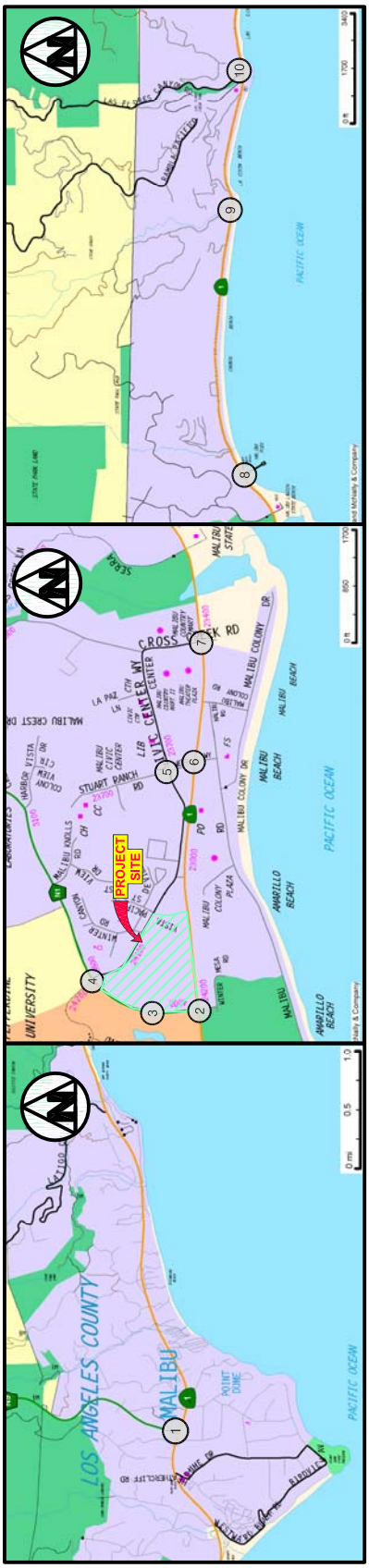
Asterisk (*) indentifies a CMP monitoring intersection.

The street segments analyzed in this study are: (using July 2012, City of Malibu counts)

1. Pacific Coast Highway east of Cross Creek Road;
2. Pacific Coast Highway west of Malibu Canyon Road; and
3. Malibu Canyon Road north of Civic Center Way.



OVERALL STUDY AREA
KANAN DUME ROAD TO LAS FLORES CANYON ROAD



EAST STUDY AREA
CIVIC CENTER STUDY AREA
WEST STUDY AREA

FIGURE 2

PROJECT STUDY AREA

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Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

CHAPTER 2 PROJECT DESCRIPTION

Green Acres, LLC, is developing the Malibu Memorial Park, a 27.8 acre property located east of Malibu Canyon Road, west of Civic Center Way, and north of Pacific Coast Highway in the City of Malibu, California (the "Project"). The proposed Memorial Park project contains approximately 17,500 GSF of FAR development and will include the construction of a 8,500 s.f. Main Chapel facility, 8,500 s.f. subterranean parking basement (19 parking spaces), 45 free-standing Mausoleum structures totaling approximately 9,000 SF (200 s.f./each), ability to accommodate approximately 45,000 crypts and 15,000 individual cremation burial sites, as well as surface parking for 135 vehicles.

This traffic study assumes a project occupancy year end of 2016. The project site is located at the northeast corner of Pacific Coast Highway and Malibu Canyon Road in the City of Malibu, as shown in Figure 3. The 27.8-acre triangular site is currently undeveloped property generally bounded by Pacific Coast Highway, Malibu Canyon Road and Civic Center Way

Vehicle Access and On-Site Circulation

All vehicular access to the Memorial Park parking is located on Malibu Canyon Road approximately 700 feet north of the Pacific Coast Highway centerline. The entrance and exit is near the curvature of Malibu Canyon Road which restricts the sight distance for vehicles exiting the site. For this reason, right turn egress only will be allowed i.e., no left turns exiting the site will be permitted. However, left-turn entering the site will be allowed at the main entrance.

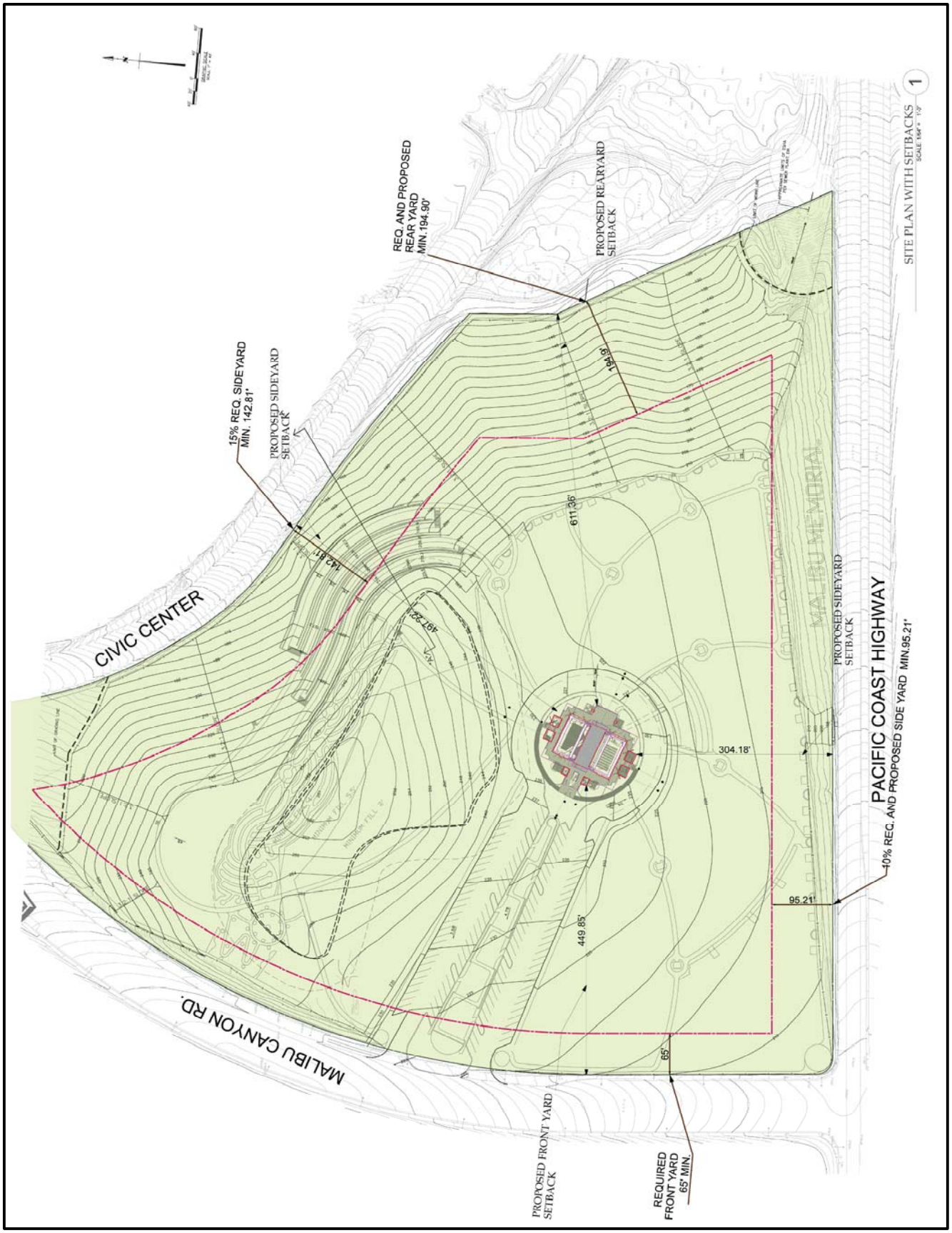


FIGURE 3

1/2015

MALIBU MEMORIAL PARK SITE PLAN

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

CHAPTER 3 ENVIRONMENTAL SETTING

The project site is located on the northeast corner of Malibu Canyon Road and Pacific Coast Highway in the City of Malibu. The project site is also located in the Malibu Civic Center Specific Plan area, although no specific plan has been adopted for the area, to date. Located to the west of the project site is Pepperdine University – Malibu Campus with Malibu Bluffs Park located to the west and south, located to the north east of the project site is the LA County maintenance yard, Our Lady of Malibu community school and the Webster Elementary School. The study area land use map is shown in Appendix A.

Freeway and Street Characteristics

A brief description of the nearby roadway facilities is provided below with photos of the study intersections provided in Appendix B.

Pacific Coast Highway (PCH, SR-1) is a state route that travels east and west through the study area. To the east in the City of Santa Monica, PCH turns into the Santa Monica Freeway (I-10) providing access to the greater Los Angeles basin. PCH provides 4 travel lanes (2 in each direction) with a third eastbound lane provided on its eastbound approach to Webb Way. Traffic volumes on PCH range from approximately 58,000 vehicles per day near Topanga Canyon Boulevard to approximately 30,000 vehicles per day at Kanan Dume Road. In the vicinity of the project site, PCH carries approximately 41,500 vehicles per day at its intersection with Cross Creek Road. PCH is designated as a route in the Los Angeles County Congestion Management Plan (CMP). PCH is posted with a speed limit of 50 mph west of Malibu Canyon Road and 45 mph east of Malibu Canyon Road.

Malibu Canyon Road (County Highway N1) is a north-south major arterial roadway that extends from PCH across the Santa Monica Mountains to the Ventura Freeway (Interstate 101). Malibu Canyon Road generally has one lane in each direction north of

Civic Center Way. Two lanes in each direction are provided between Civic Center Way and Pacific Coast Highway. Near Mulholland Highway, Malibu Canyon Road becomes Las Virgenes Road.

Civic Center Way is designated an east-west collector road in the City's General Plan. Civic Center Way is a two-lane roadway (one lane in each direction) that connects Malibu Canyon Road on the west to Cross Creek Road on the east. Civic Center Way east of Malibu Canyon Road borders the north side of the project site. East of Malibu Canyon Road, a short paved connecting road for eastbound Civic Center Way traffic links Civic Center Way to westbound Pacific Coast Highway.

Cross Creek Road is a north-south local street with one lane in each direction. South of Civic Center Way, Cross Creek Road is a public road that provides access to the abutting commercial development and connects to Pacific Coast Highway.

Webb Way is a north-south two-lane collector roadway connecting Civic Center Way and Pacific Coast Highway.

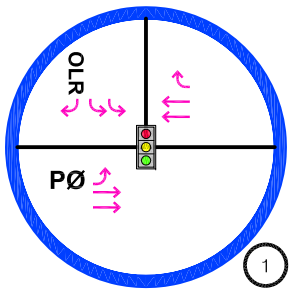
In addition to collecting traffic volume data, field surveys were conducted in the study area to determine the roadway and intersection geometry and traffic signal operations. Figure 4 illustrates the study locations, type of intersection traffic control and existing lane configurations for the project impact analysis.

Transit Service

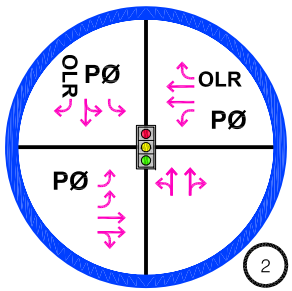
Public transportation in the study area is provided by the Metropolitan Transportation Authority (Metro). Metro route 534 operates along Civic Center Way near the project site with stops on Malibu Canyon road south of Civic Center Way / Seaver Drive. Metro weekday service on this route is provided by 3 eastbound and 7 westbound buses during the morning peak hours, 5 eastbound and 3 westbound buses during the afternoon peak hours, with 3 buses in each direction during the Saturday mid-day peak hours. The transit schedule and route information is provided in Appendix C.

MALIBU MEMORIAL PARK

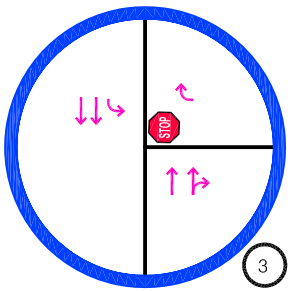
PROJECT STUDY INTERSECTION CHARACTERISTICS



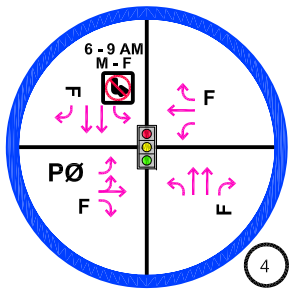
KANAN DUME ROAD &
PACIFIC COAST HIGHWAY (SR 1)



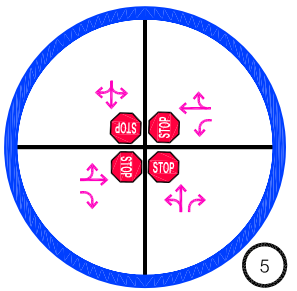
MALIBU CANYON ROAD &
PACIFIC COAST HIGHWAY (SR 1)



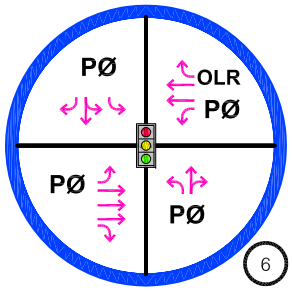
MALIBU CANYON ROAD &
MALIBU MEMORIAL PARK DRIVEWAY



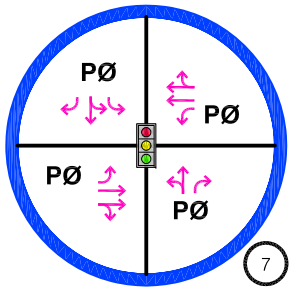
MALIBU CANYON ROAD &
CIVIC CENTER WAY



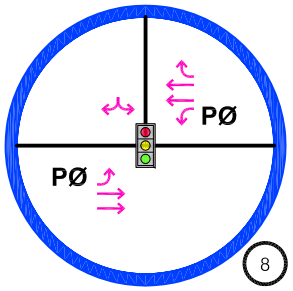
CIVIC CENTER WAY &
WEBB WAY / STUART RANCH ROAD



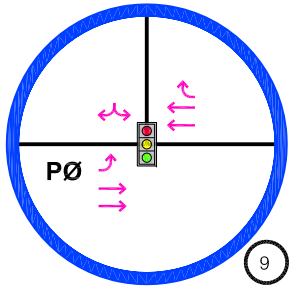
WEBB WAY &
PACIFIC COAST HIGHWAY (SR 1)



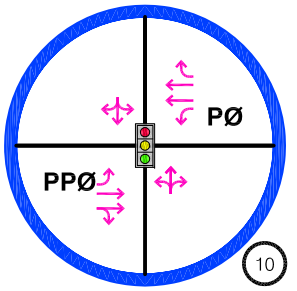
CROSS CREEK ROAD &
PACIFIC COAST HIGHWAY (SR 1)



MALIBU PIER SIGNAL &
PACIFIC COAST HIGHWAY (SR 1)

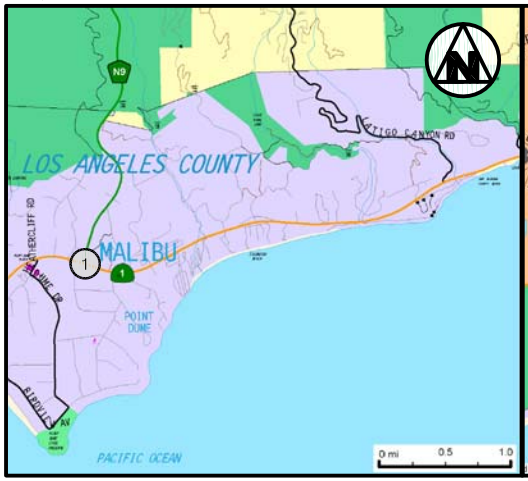


CARBON CANYON ROAD &
PACIFIC COAST HIGHWAY (SR 1)

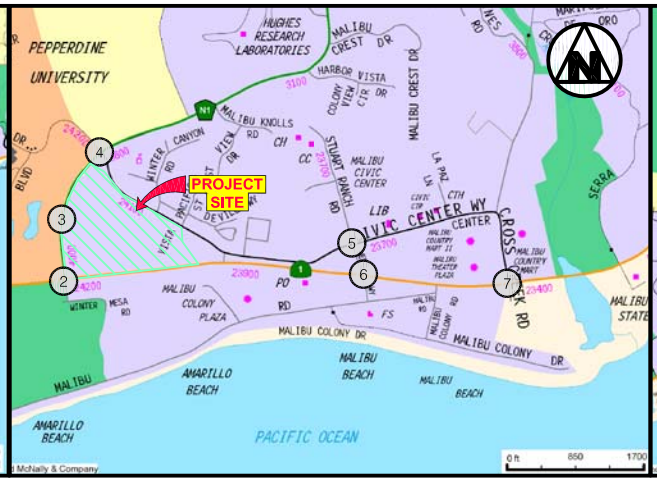


LAS FLORES CANYON ROAD &
PACIFIC COAST HIGHWAY (SR 1)

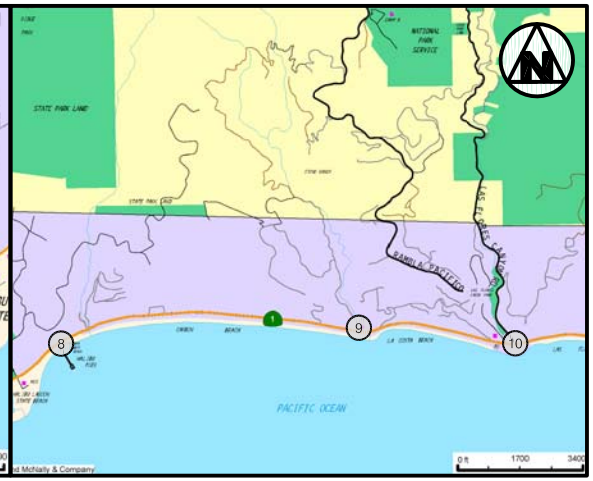
LEGEND:
OLR - OVERLAP RIGHT-TURN PHASE
F - FREE FLOW RIGHT-TURN
PØ - PROTECTED LEFT-TURN PHASE
PPØ - PROTECTED/PERMISSIVE LEFT-TURN PHASE



WEST STUDY AREA



CIVIC CENTER STUDY AREA



EAST STUDY AREA

FIGURE 4

1/2015

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

Traffic Generation

Traffic-generating characteristics of the project's land uses (a church and cemetery) have been studied by the Institute of Transportation Engineers (ITE). The results of the traffic generation studies have been published in Trip Generation, 9th Edition Handbook. This publication of traffic generation data is the most recent edition, its use is required by the City of Malibu, and is the industry standard for estimating traffic generation for different land uses.

The trip generation data base for church and cemetery uses surveyed by ITE (land use codes 560 and 566) are contained in Table 1 below. This table contains the ITE traffic generation rates used in this study. Table 2 shows the resulting peak hour trips by each land use.

Table 1
Project Trip Generation Rates
(Weekday and Saturday)

	ITE	Weekday	AM Peak Hour			PM Peak Hour		
Land Use	Code	Daily	Total	In	Out	Total	In	Out
Church per 1,000 square feet	560	9.11	0.56	0.35	0.21	0.55	0.26	0.29
Cemetery per Acre	566	4.73	0.17	0.12	0.05	0.84	0.28	0.56

	Saturday	Mid-day Peak Hour		
Land Use	Daily	Total	In	Out
Church per 1,000 square feet	10.37	3.54	2.51	1.03
Cemetery per Acre	5.94	3.09	1.58	1.51

Table 2
Estimated Project Traffic Generation
(Weekday AM, PM and Saturday Mid-day Peak Hours)

Proposed Land Use	Weekday Traffic	AM Peak Hour Total	In	Out	PM Peak Hour Total	In	Out
8,500 s.f. Church	77	5	3	2	5	2	3
28.7 Acres	136	5	3	2	24	8	16
	213	10	6	4	29	10	19

Proposed Land Use	Saturday Traffic	Saturday Mid-day Total	In	Out
8,500 s.f. Church	88	30	21	9
28.7 Acres	170	89	46	43
	258	119	67	52

Traffic Distribution and Trip Assignment

A primary factor affecting trip direction is the spatial distribution of population and employment centers which would generate project trip origins and destinations. The estimated project directional trip distribution is based on the study area roadway network, traffic flow patterns in and out of the project study area and other traffic studies recently prepared for the general area.

Figure 5 illustrates the estimated project traffic percentages at the selected study intersections serving the Malibu Memorial Park. Using the traffic assignment at each intersection and the estimated peak hour traffic volume as provided in Table 2, peak hour traffic volumes at each study location for each study period have been calculated and are shown in Figures 6, 7 and 8 for the weekday morning, afternoon and Saturday mid-day, respectively. This estimated assignment of the project traffic flow provides the information necessary to analyze the potential project traffic impacts at the study intersections.

MALIBU MEMORIAL PARK

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES

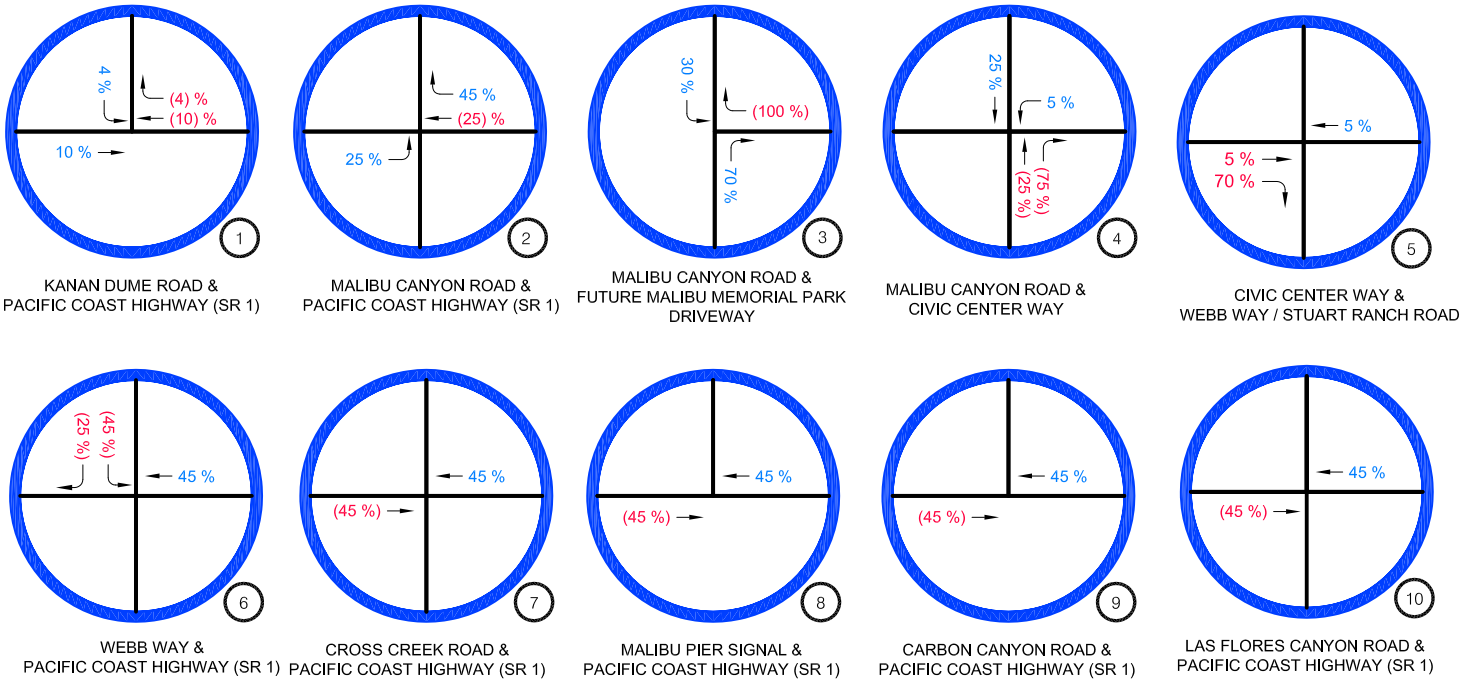
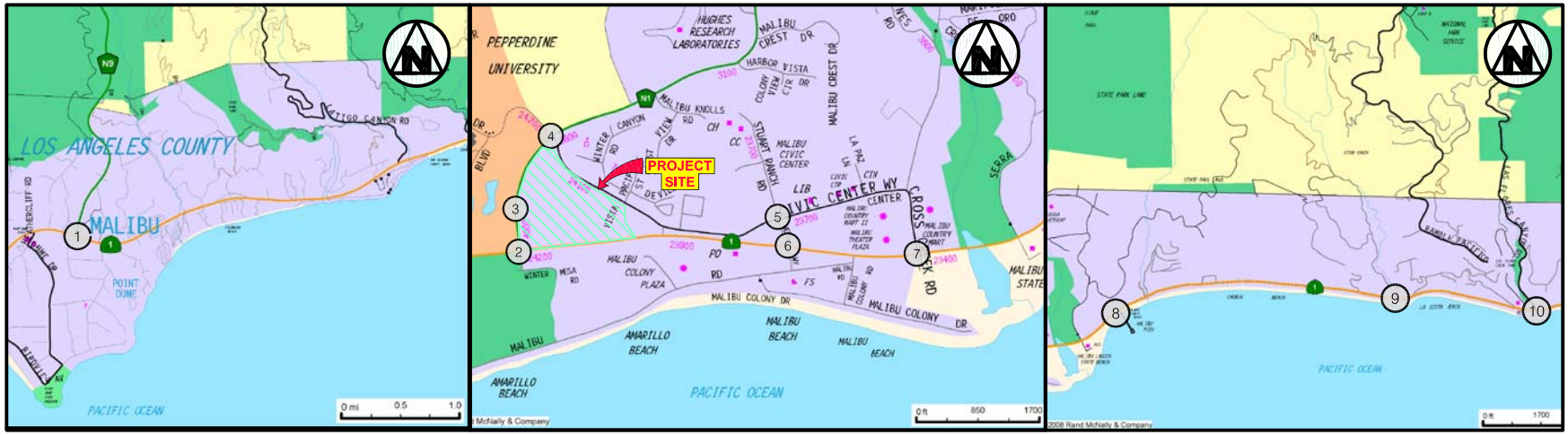


FIGURE 5

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES
NO LEFT-TURN EGRESS TO MALIBU CANYON ROAD

LEGEND
XX INBOUND
(XX) OUTBOUND



WEST STUDY AREA | CIVIC CENTER STUDY AREA | EAST STUDY AREA

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423 v, OTC@overlandtraffic.com

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MALIBU MEMORIAL PARK

PROJECT TRAFFIC VOLUME ASSIGNMENT
WEEKDAY AM PEAK HOUR

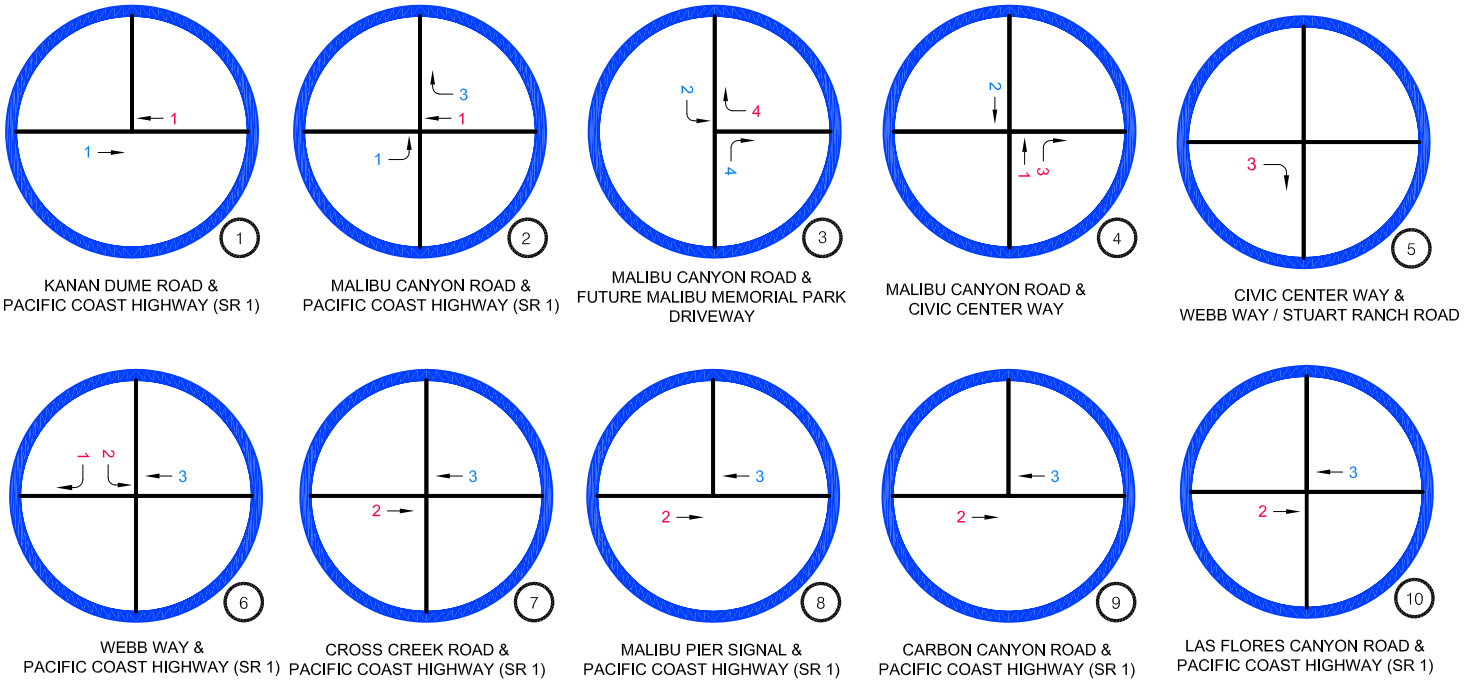
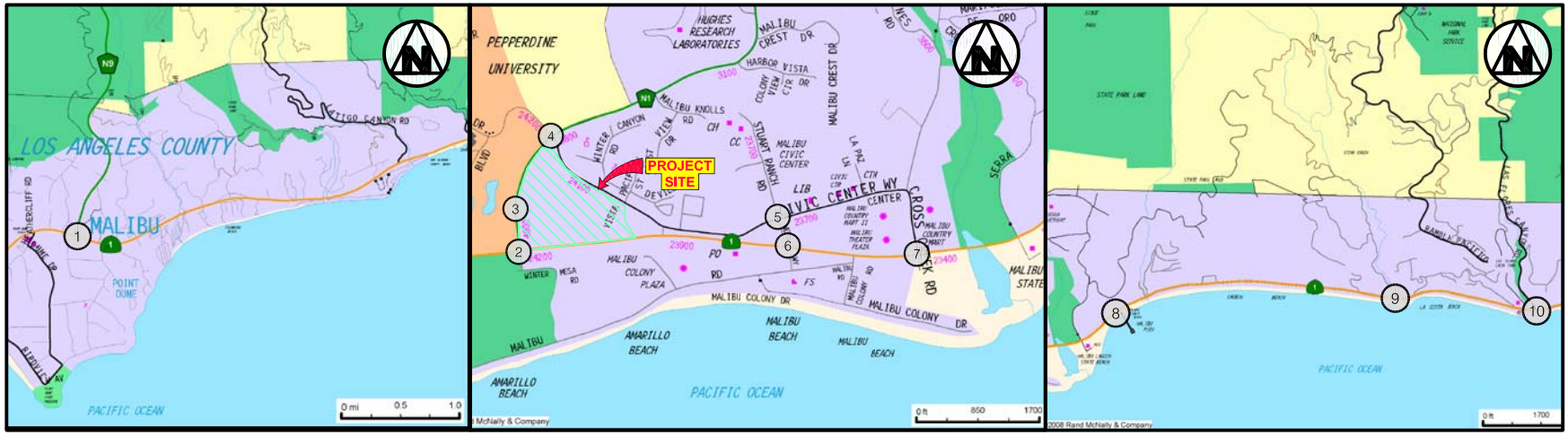


FIGURE 6

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES
NO LEFT-TURN EGRESS TO MALIBU CANYON ROAD

LEGEND
XX INBOUND
(XX) OUTBOUND



WEST STUDY AREA **CIVIC CENTER STUDY AREA** **EAST STUDY AREA**

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423 v, OTC@overlandtraffic.com

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MALIBU MEMORIAL PARK

PROJECT TRAFFIC VOLUME ASSIGNMENT
WEEKDAY PM PEAK HOUR

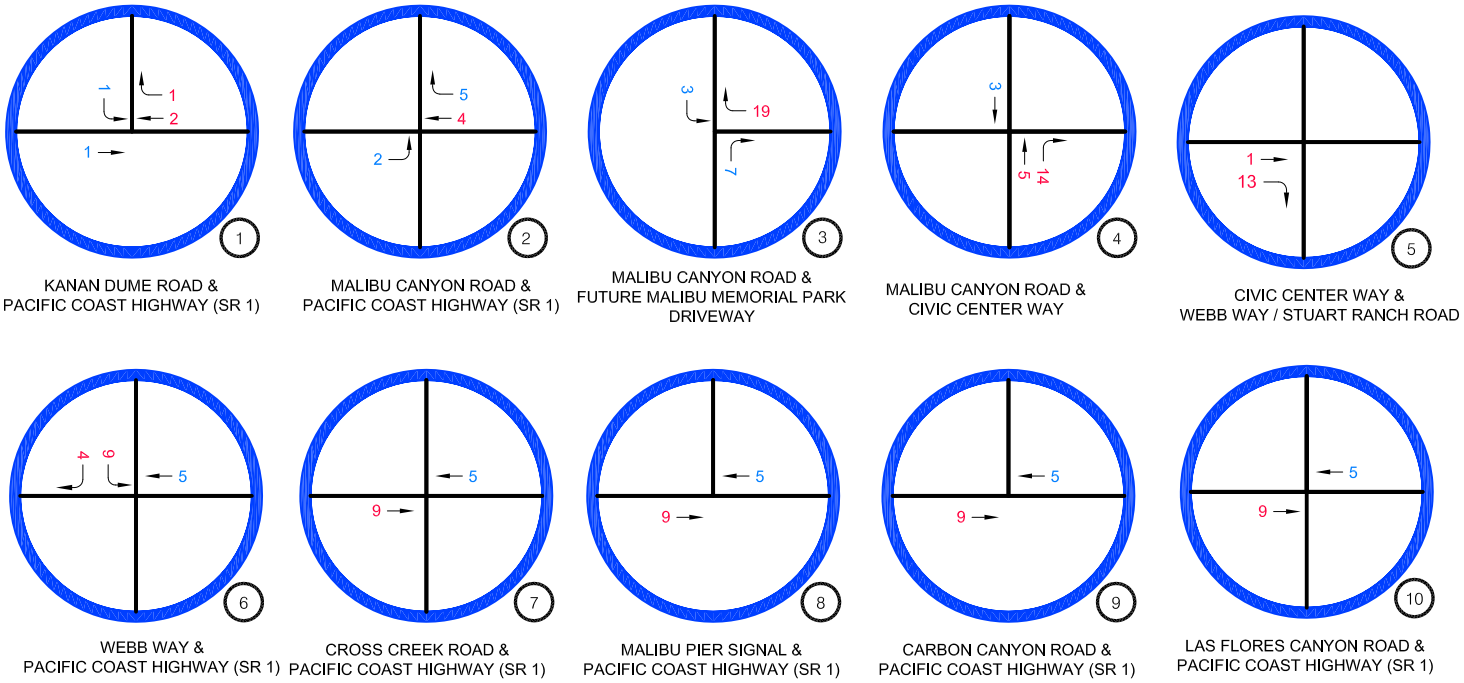
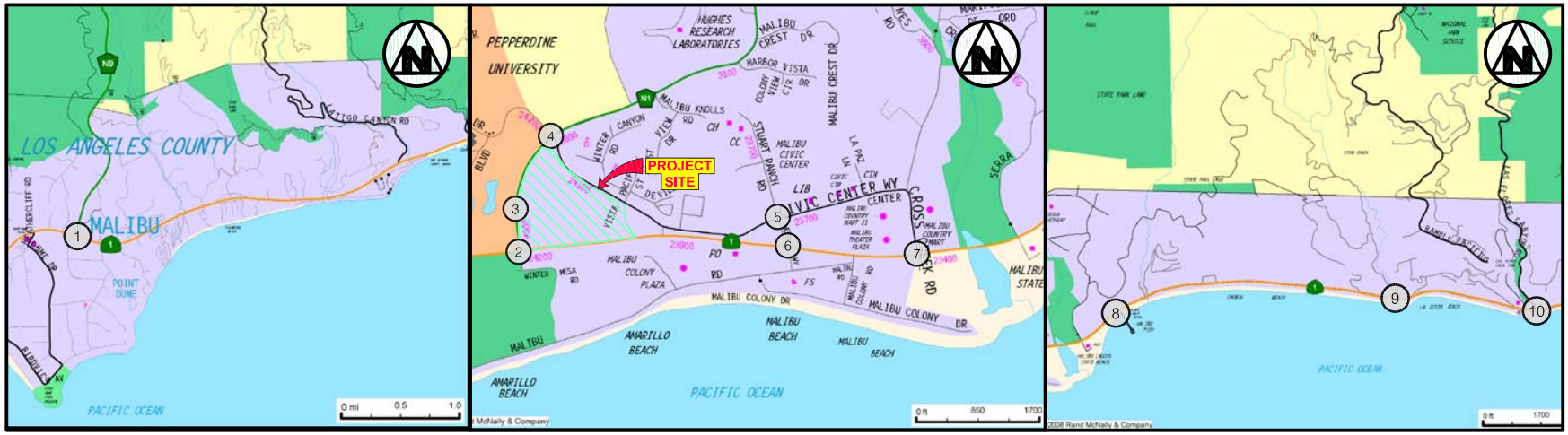


FIGURE 7

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES
NO LEFT-TURN EGRESS TO MALIBU CANYON ROAD

LEGEND
XX INBOUND
(XX) OUTBOUND



WEST STUDY AREA | CIVIC CENTER STUDY AREA | EAST STUDY AREA

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MALIBU MEMORIAL PARK

PROJECT TRAFFIC VOLUME ASSIGNMENT
SATURDAY MID-DAY PEAK HOUR

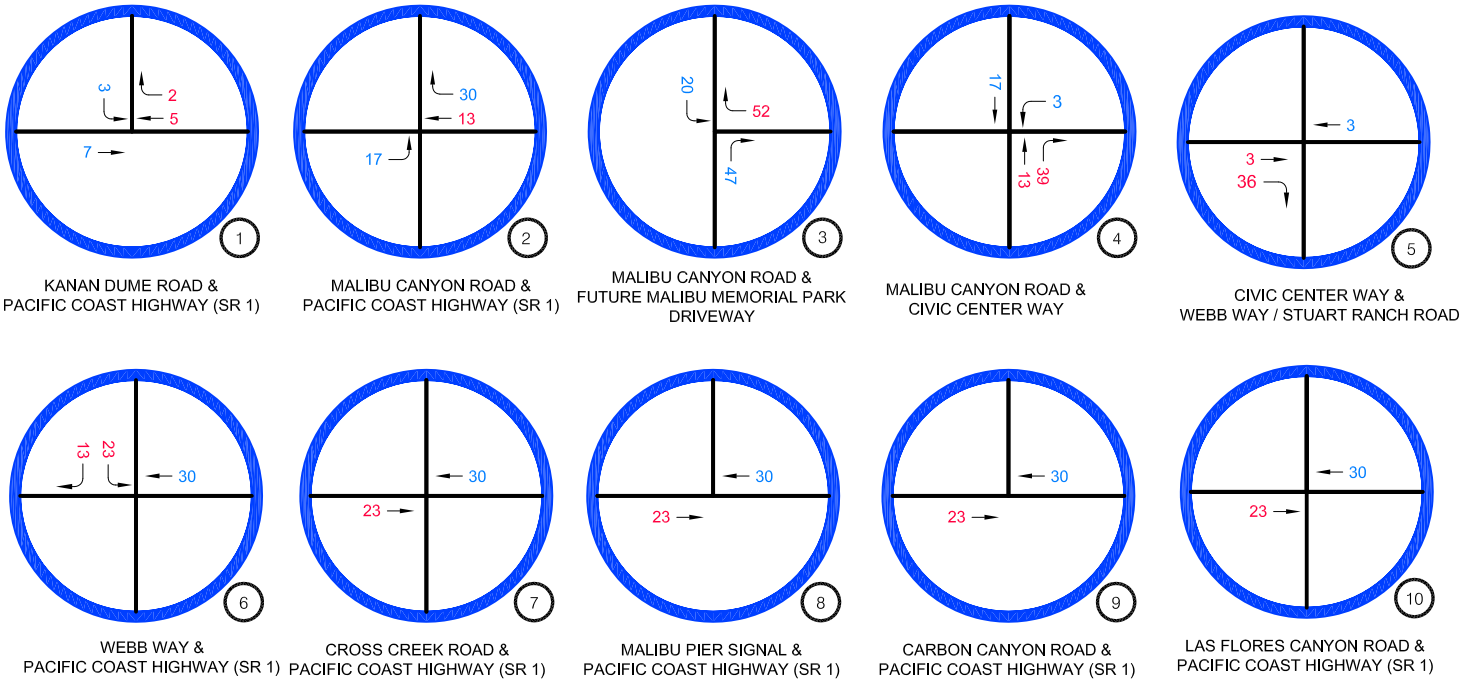
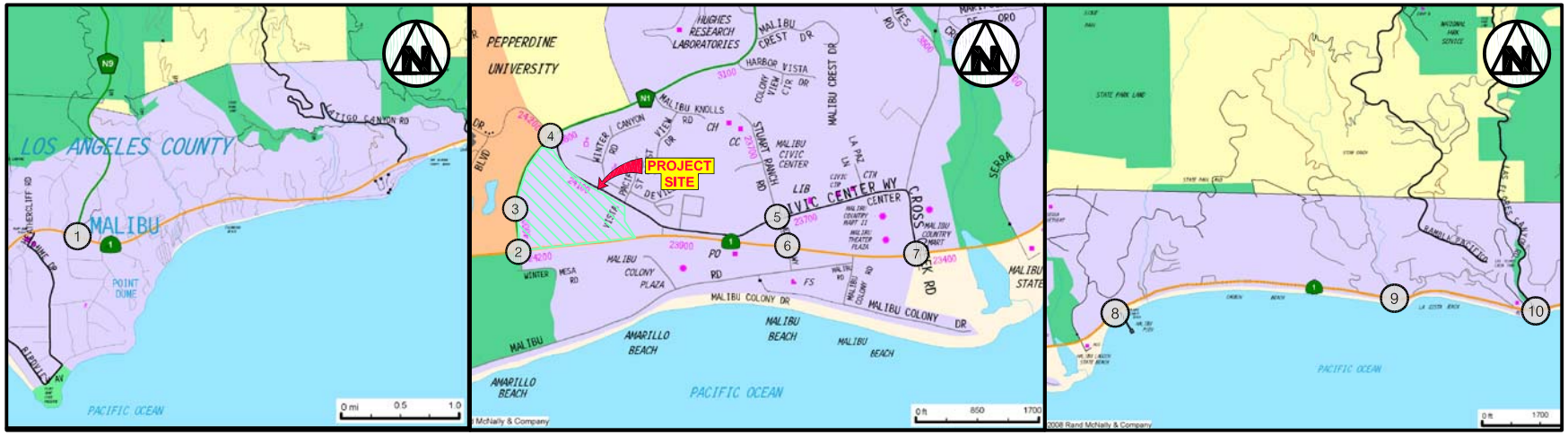


FIGURE 8

PROJECT TRAFFIC ASSIGNMENT PERCENTAGES
NO LEFT-TURN EGRESS TO MALIBU CANYON ROAD

LEGEND
XX INBOUND
(XX) OUTBOUND



WEST STUDY AREA | CIVIC CENTER STUDY AREA | EAST STUDY AREA

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Analysis of Existing Traffic Conditions

Traffic volume data was collected in the summer of 2012 by the City of Malibu for use in this updated study. Weekday traffic counts were conducted on Thursday, July 12th from 7:00 to 9:00 am and 4:00 to 6:00 pm. Weekend traffic counts were conducted on Saturday, July 14th from 11:00 am to 1:00 pm.

The existing (baseline) 2012 peak hour traffic volumes at each study intersection are illustrated in Figure 9 for the weekday morning peak hour, Figure 10 for the weekday afternoon peak hour and Figure 11 for the Saturday mid-day peak hour. Data collection worksheets for the peak hour counts are contained in Appendix D.

The traffic conditions analysis was conducted using the Intersection Capacity Utilization (ICU) method. The ICU procedure uses a ratio of the traffic volume over intersection capacity to establish the level of traffic congestion. This volume-to-capacity (V/C) ratio defines the proportion of an hour necessary to accommodate all the traffic moving through the intersection assuming all approaches were operating at full capacity. For example, if an intersection has a V/C value of 0.70, the intersection is operating at 70% capacity with 30% unused capacity. The V/C ratios provide an appropriate means for quantifying intersection operating characteristics for planning applications.

The calculation of the V/C ratio is obtained by dividing the highest combinations of conflicting traffic volume (V) at an intersection (i.e., critical intersection movements) by the intersection capacity value. Intersection capacity (C) represents the maximum volume of vehicles which has a reasonable expectation of passing through an intersection in one hour.

Once the intersection V/C ratio has been calculated for each time period, a level of service grade (A through F) is assigned to estimate the level of congestion and stability of the traffic flow. The term "Level of Service" (LOS) is used by traffic engineers to describe the quality of traffic flow. Level of Service standard D is generally considered the design capacity of arterial intersections and is thereby often set as the performance standard. Definitions of the LOS grades, from the City's General Plan Circulation Element, are shown in Table 3.

FIGURE 9

1/2015

EXISTING TRAFFIC VOLUME
WEEKDAY AM PEAK HOUR

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FIGURE 10

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EXISTING TRAFFIC VOLUME
WEEKDAY PM PEAK HOUR

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FIGURE 11

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EXISTING TRAFFIC VOLUME
SATURDAY MID-DAY PEAK HOUR

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Table 3
V/C Level of Service Definitions – Signalized Intersections

Level of Service	Definition	Equivalent ICU
A	Free flow conditions with low traffic density.	0.000 - 0.600
B	A stable flow of traffic.	0.601 - 0.700
C	Light congestion but stable, occasional backups behind left-turning vehicles.	0.701 - 0.800
D	Approaching instability, drivers are restricted, vehicles may be required to wait through more than one signal cycle.	0.801 - 0.900
E	At or near capacity with long queuing for left-turning vehicles. Blockage of intersection may occur if traffic signal does not provide for protected turning movements.	0.901 - 1.000
F	Jammed conditions with stoppages of long duration.	> 1.000

The LOS thresholds for stop sign controlled intersections differ from signalized intersections to reflect different driver expectations. The expectation is that a signalized intersection is designed to carry higher traffic volumes than a stop-controlled intersection. Therefore, an alternative methodology has been used for the stop-controlled intersections analyzed in this study: Webb Way / Stuart Ranch Road and Civic Center Way and at the future Malibu Canyon Road and Malibu Memorial Park driveway.

For the un-signalized intersections, a delay-based analysis has been conducted using procedures based on the Highway Capacity Manual, (HCM). The HCM procedures estimate the average number of seconds of delay experienced by motorists traveling through the intersection per movement. This procedure calculates the control delay as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the intersection.

The Level of Service for un-signalized intersections is reported for movements controlled by the stop signs. Definitions of the LOS grades for stop-controlled intersections as defined by the Transportation Research Board are shown in Table 4.

Table 4
Level of Service Definitions – Stop Sign Controlled Intersections

Level of Service	Average Control Delay (sec.)
A	Less than or equal to 10
B	> 10 – 15
C	> 15 – 25
D	> 25 – 35
E	> 35 – 50
F	> 50

By applying the ICU and HCM procedures, the V/C ratios, delay values and the corresponding LOS for existing traffic conditions were determined for each intersection. Using the 2012 traffic counts, all of the intersections are currently operating at LOS C or better. The existing 2012 V/C ratios, delay values and the corresponding LOS values are summarized in Table 5. Supporting capacity worksheets are contained in Appendix E.

Table 5
Baseline (2012) Traffic Conditions Summary

No.	Intersection	Weekday AM Peak Hour V/C (Delay)	AM Peak Hour LOS	PM Peak Hour V/C (Delay)	PM Peak Hour LOS
1.	Kanan Dume Rd. & Pacific Coast Hwy.	0.394	A	0.633	B
2.	Malibu Canyon Rd. & Pacific Coast Hwy.	0.674	B	0.669	B
3.	Malibu Canyon Rd. & Memorial Park Drwy.	-	-	-	-
4.	Malibu Canyon Rd. & Civic Center Way	0.503	A	0.472	A
5.	Webb Way & Civic Center Way	10.14 sec.	B	22.15 sec.	C
6.	Webb Way & Pacific Coast Hwy.	0.526	A	0.661	B
7.	Cross Creek Rd. & Pacific Coast Hwy.	0.594	A	0.781	C
8.	Malibu Pier Signal & Pacific Coast Hwy.	0.576	A	0.655	B
9.	Carbon Canyon Road & Pacific Coast Hwy.	0.538	A	0.644	B
10.	Las Flores Canyon Rd. & Pacific Coast Hwy.	0.580	A	0.691	B

No.	Intersection	Weekend Mid-day V/C (Delay)	Weekend Mid-day LOS
1.	Kanan Dume Rd. & Pacific Coast Hwy.	0.715	C
2.	Malibu Canyon Rd. & Pacific Coast Hwy.	0.716	C
3.	Malibu Canyon Rd. & Memorial Park Drwy.	-	-
4.	Malibu Canyon Rd. & Civic Center Way	0.347	A
5.	Webb Way & Civic Center Way	9.73 sec.	A
6.	Webb Way & Pacific Coast Hwy.	0.703	C
7.	Cross Creek Rd. & Pacific Coast Hwy.	0.800	C
8.	Malibu Pier Signal & Pacific Coast Hwy.	0.638	B
9.	Carbon Canyon Road & Pacific Coast Hwy.	0.648	B
10.	Las Flores Canyon Rd. & Pacific Coast Hwy.	0.678	B

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Memorial Park driveway does not currently exist.

Analysis of Existing + Project Traffic Conditions

The project's traffic impact has been calculated by adding the project traffic volumes to the existing traffic conditions. Peak hour traffic volumes for the "Existing + Project" scenario are shown in Figures 12 through 14 for the study periods.

According to the traffic impact standards provided by the City of Malibu for this environmental assessment, a traffic impact is considered significant if the related increase in the V/C ratio value equals or exceeds the thresholds shown in Table 6a and b for signalized and un-signalized intersections, respectively.

Table 6a
Significant Traffic Impact Criteria
(Signalized Intersections)

LOS	Final V/C Value	Increase in V/C Value
C	> 0.710 – 0.800	+ 0.040 or more
D	> 0.810 – 0.900	+ 0.020 or more
E, F	0.91 or more	+ 0.010 or more

Table 6b
Significant Traffic Impact Criteria
(Un-signalized Intersections)

1. Degrades the Level of Service (LOS) at an un-signalized intersection to an unacceptable level of LS D or worse; or
2. Increases delay at an un-signalized intersection operating at an unacceptable level by five or more seconds; or
3. Results in satisfying the most recent California Manual on Uniform Traffic Control Devices (CAMUTCD) peak hour volume warrant or other warrants for traffic signal installation at the intersection.

Comparing the changes in the traffic conditions (i.e., V/C ratio) between the without and with project traffic volume scenarios provides the data to determine if the project traffic volume creates a significant traffic impact which would require traffic mitigation at any of the study intersections.

Based on the "Existing + Project" conditions analysis, none of the study intersections would be significantly impacted. The existing level of service traffic conditions with the added project traffic volume are shown in Table 7.

Table 7
Existing + Project Traffic Conditions

No.	Intersection	Peak Hour	Existing V/C (Delay)	Existing LOS	With Project V/C (Delay)	With Project LOS	Impact
1.	Kanan Dume Rd. & Pacific Coast Hwy.	Weekday AM	0.394	A	0.394	A	+ 0.000
		Weekday PM	0.633	B	0.634	B	+ 0.001
		Saturday Mid	0.715	C	0.716	C	+ 0.001
2.	Malibu Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.674	B	0.674	B	+ 0.000
		Weekday PM	0.669	B	0.671	B	+ 0.002
		Saturday Mid	0.716	C	0.726	C	+ 0.010
3.	Malibu Canyon Rd. & Memorial Park Dwy.	Weekday AM	-	-	8.9 sec.	A	N/A
		Weekday PM	-	-	9.9 sec.	A	N/A
		Saturday Mid	-	-	9.5 sec.	A	N/A
4.	Malibu Canyon Rd. & Civic Center Way	Weekday AM	0.503	A	0.503	A	+ 0.000
		Weekday PM	0.472	A	0.474	A	+ 0.002
		Saturday Mid	0.347	A	0.351	A	+ 0.004
5.	Webb Way & Civic Center Way	Weekday AM	10.14	B	10.15	B	+ 0.01 sec.
		Weekday PM	22.15	C	22.49	C	+ 0.34 sec.
		Saturday Mid	9.73	A	9.89 sec.	A	+ 0.16 sec.

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Memorial Park Driveway currently does not exist.
* Denotes significant traffic impact per City of Malibu definition.

Table 7 cont'd)
Existing + Project Traffic Conditions

No.	Intersection	Peak Hour	Existing V/C	Existing LOS	With Project V/C	With Project LOS	Impact
6.	Webb Way & Pacific Coast Hwy.	Weekday AM	0.526	A	0.527	A	+ 0.001
		Weekday PM	0.661	B	0.666	B	+ 0.005
		Saturday Mid	0.703	C	0.721	C	+ 0.018
7.	Cross Creek Rd. & Pacific Coast Hwy.	Weekday AM	0.594	A	0.595	A	+ 0.001
		Weekday PM	0.781	C	0.783	C	+ 0.002
		Saturday Mid	0.800	C	0.810	D	+ 0.010
8.	Malibu Pier Signal & Pacific Coast Hwy.	Weekday AM	0.576	A	0.576	A	+ 0.000
		Weekday PM	0.655	B	0.657	B	+ 0.002
		Saturday Mid	0.638	B	0.645	B	+ 0.007
9.	Carbon Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.538	A	0.539	A	+ 0.001
		Weekday PM	0.644	B	0.646	B	+ 0.002
		Saturday Mid	0.648	B	0.657	B	+ 0.009
10.	Las Flores Cyn. Rd. & Pacific Coast Hwy.	Weekday AM	0.580	A	0.580	A	+ 0.000
		Weekday PM	0.691	B	0.694	C	+ 0.003
		Saturday Mid	0.678	B	0.687	B	+ 0.009

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Memorial Park Driveway currently does not exist.
* Denotes significant traffic impact per City of Malibu definition.

FIGURE 12

1/2015

EXISTING + PROJECT TRAFFIC VOLUME
WEEKDAY AM PEAK HOUR

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FIGURE 13

1/2015

EXISTING + PROJECT TRAFFIC VOLUME
WEEKDAY PM PEAK HOUR

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FIGURE 14

1/2015

EXISTING + PROJECT TRAFFIC VOLUME
SATURDAY MID-DAY PEAK HOUR

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Analysis of Future Traffic Conditions

Future traffic volume projections have been developed to analyze the traffic conditions after completion of other planned land developments including the proposed project for two future scenarios, 2016 and 2030. Descriptions of the related projects provided by the City of Malibu, their locations and estimated traffic volumes are provided in Appendix F. It should be noted that the list of related projects used in this analysis to assess cumulative impacts is an ever-changing list. From time to time, the list of related projects is increased or decreased as specific development proposals are applied for, modified, withdrawn, denied or approved by the City of Malibu or the County of Los Angeles.

In addition to the traffic generated by the related project list, other projects outside the study area or projects unknown at this time may contribute to the traffic volume in the area. To account for this outside influence, an ambient annual growth factor (1.5 %) has been applied to the existing 2012 traffic counts to establish the 2016 study year. This growth factor is based on the growth rates agreed to by the City of Malibu staff for the 2016 study year. The use of both the related project traffic volume growth and the ambient growth factor provides a conservative estimate of future traffic growth in the study area for 2016.

The adopted Los Angeles Congestion Management Program (CMP) traffic growth forecasts for 2030 have been applied to develop the future traffic volumes for 2030. In addition to the CMP growth, the same current cumulative projects list has been included. Therefore, the total growth for the 2030 project impact analysis consists of the CMP growth rate (9 %) plus the current related projects per the City of Malibu's cumulative projects list.

Future 2016 conditions - Adding the project traffic to the future 2016 "without project" conditions provides the information necessary to calculate the future 2016 cumulative project traffic impacts at the study intersections. Using the significant impact criteria, no significant traffic impacts by the project were identified. Table 8 shows the estimated project traffic impacts for the 2016 study year.

Table 8
Future (2016) + Project Traffic Conditions

No.	Intersection	Peak Hour	Without Project V/C (Delay)	LOS	With Project V/C (Delay)	LOS	Impact
1.	Kanan Dume Rd. & Pacific Coast Hwy.	Weekday AM	0.481	A	0.481	A	+ 0.000
		Weekday PM	0.772	C	0.774	C	+ 0.002
		Saturday Mid	0.846	D	0.847	D	+ 0.001
2.	Malibu Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.773	C	0.773	C	+ 0.000
		Weekday PM	0.659	B	0.659	B	+ 0.000
		Saturday Mid	0.853	D	0.863	D	+ 0.010
3.	Malibu Canyon Rd. & Memorial Park Dwy.	Weekday AM	-	-	8.9 sec.	A	N/A
		Weekday PM	-	-	10.1 sec.	B	N/A.
		Saturday Mid	-	-	9.6 sec.	B	N/A
4.	Malibu Canyon Rd. & Civic Center Way	Weekday AM	0.524	A	0.525	A	+ 0.001
		Weekday PM	0.357	A	0.358	A	+ 0.001
		Saturday Mid	0.359	A	0.364	A	+ 0.005
5.	Webb Way & Civic Center Way	Weekday AM	11.62 sec.	B	11.64 sec.	B	+ 0.02 sec.
		Weekday PM	49.76 sec.	E	50.52 sec.	F	+ 0.76 sec.
		Saturday Mid	13.82 sec.	B	14.33 sec.	B	+ 0.51 sec.

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Malibu Memorial Park Driveway currently does not exist.
* Denotes significant traffic impact per City of Malibu definition.

Table 8 (cont'd)
Future (2016) + Project Traffic Conditions

No.	Intersection	Peak Hour	Without Project V/C	Without Project LOS	With Project V/C	With Project LOS	Impact
6.	Webb Way & Pacific Coast Hwy.	Weekday AM	0.576	A	0.577	A	+ 0.001
		Weekday PM	0.688	B	0.691	B	+ 0.003
		Saturday Mid	0.872	D	0.888	D	+ 0.016
7.	Cross Creek Rd. & Pacific Coast Hwy.	Weekday AM	0.668	B	0.668	B	+ 0.000
		Weekday PM	0.979	E	0.981	E	+ 0.002
		Saturday Mid	1.021	F	1.029	F	+ 0.008
8.	Malibu Pier Signal & Pacific Coast Hwy.	Weekday AM	0.639	B	0.640	B	+ 0.001
		Weekday PM	0.764	C	0,766	C	+ 0.002
		Saturday Mid	0.764	C	0.784	C	+ 0.010
9.	Carbon Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.606	B	0.607	B	+ 0.001
		Weekday PM	0.757	C	0.758	C	+ 0.001
		Saturday Mid	0.779	C	0.788	C	+ 0.009
10.	Las Flores Cyn. Rd. & Pacific Coast Hwy.	Weekday AM	0.646	B	0.646	B	+ 0.000
		Weekday PM	0.802	D	0.803	D	+ 0.001
		Saturday Mid	0.802	D	0.812	D	+ 0.010

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Malibu Memorial Park Driveway currently does not exist.

* Denotes significant traffic impact per City of Malibu definition.

Furthermore, the City of Malibu requires a traffic signal warrant analysis when the level of service of an un-signalized intersection exceeds the City's acceptable limits. The current conditions with the project would be operating at an acceptable level and no traffic signal is necessary.

However, It has been determined that during the weekday afternoon peak hour in study year 2016, the intersection of Civic Center Way and Webb Way / Stuart Ranch Road will operate at LOS D without the project. Based on the afternoon peak hour traffic signal warrant, a traffic signal will be necessary in 2016 if traffic volume growth of other projects occurs. The traffic signal warrants without the project are provided in Appendix G.

Future cumulative 2016 peak hour traffic volumes are shown in Figures 15 through 20 for the study periods.

Future 2030 conditions - Adding the project traffic to the future 2030 "without project" conditions provides the information necessary to calculate the future 2030 cumulative project traffic impacts at the study intersections. Using the same criteria, it has been determined that the change in traffic flow generated by the proposed project would exceed significant traffic impacts in the future 2030 cumulative condition at one intersection, as shown in Table 9. The significant traffic impact occurs at the intersection of Pacific Coast Highway and Webb Way (# 6) is impacted during the Saturday mid-day peak hour.

It should be noted that increases to the regional growth by 2030 without any improvements at this intersection degrades the intersection congestion levels during the Saturday mid-day period from Level of Service D to E. At LOS E the additional project traffic becomes significant at the more congested LOS with the cumulative projects traffic and the extra regional growth. Future cumulative 2030 peak hour traffic volumes are shown in Figures 21 through 26 for the study periods.

Table 9
Future (2030) + Project Traffic Conditions

No.	Intersection	Peak Hour	Without Project V/C (Delay)	LOS	With Project V/C (Delay)	LOS	Impact
1.	Kanan Dume Rd. & Pacific Coast Hwy.	Weekday AM	0.491	A	0.491	A	+ 0.000
		Weekday PM	0.789	C	0.789	C	+ 0.000
		Saturday Mid	0.865	D	0.866	D	+ 0.001
2.	Malibu Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.790	C	0.790	C	+ 0.000
		Weekday PM	0.674	B	0.674	B	+ 0.000
		Saturday Mid	0.873	D	0.883	D	+ 0.010
3.	Malibu Canyon Rd. & Memorial Park Dwy.	Weekday AM	-	-	9.0 sec.	A	N/A
		Weekday PM	-	-	10.1 sec.	B	N/A
		Saturday Mid	-	-	9.6 sec.	A	N/A
4.	Malibu Canyon Rd. & Civic Center Way	Weekday AM	0.537	A	0.537	A	+ 0.000
		Weekday PM	0.365	A	0.366	A	+ 0.001
		Saturday Mid	0.367	A	0.372	A	+ 0.004
5.	Webb Way & Civic Center Way	Weekday AM	11.85 sec.	B	11.88 sec.	B	+ 0.03 sec.
		Weekday PM	54.57 sec.	F	55.48 sec.	F	+ 0.91 sec.
		Saturday Mid	14.10 sec.	B	14.18 sec.	B	+ 0.08 sec.

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Memorial Park Driveway currently does not exist.
* Denotes significant traffic impact per City of Malibu definition..

Table 9 (cont'd)
Future (2030) + Project Traffic Conditions

No.	Intersection	Peak Hour	Without Project V/C	Without Project LOS	With Project V/C	With Project LOS	Impact
6.	Webb Way & Pacific Coast Hwy.	Weekday AM	0.588	A	0.590	A	+ 0.002
		Weekday PM	0.704	C	0.707	C	+ 0.003
		Saturday Mid	0.890	D	0.908	E	**+ 0.018 ***
7.	Cross Creek Rd. & Pacific Coast Hwy.	Weekday AM	0.682	B	0.683	B	+ 0.001
		Weekday PM	1.000	E	1.001	F	+ 0.001
		Saturday Mid	1.043	F	1.052	F	+ 0.009
8.	Malibu Pier Signal & Pacific Coast Hwy.	Weekday AM	0.653	B	0.655	B	+ 0.002
		Weekday PM	0.786	C	0,787	C	+ 0.001
		Saturday Mid	0.782	C	0.790	C	+ 0.008
9.	Carbon Canyon Rd. & Pacific Coast Hwy.	Weekday AM	0.619	B	0.620	B	+ 0.001
		Weekday PM	0.773	C	0.775	C	+ 0.002
		Saturday Mid	0.796	C	0.806	D	+ 0.008
10.	Las Flores Cyn. Rd. & Pacific Coast Hwy.	Weekday AM	0.660	B	0.661	B	+ 0.001
		Weekday PM	0.820	D	0.822	D	+ 0.002
		Saturday Mid	0.819	D	0.829	D	+ 0.010

Note: Stop Control Delay in Seconds Per Vehicle
Malibu Canyon Road and Malibu Memorial Park Driveway currently does not exist.
* Denotes significant traffic impact per City of Malibu definition.

FIGURE 15

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITHOUT PROJECT
WEEKDAY AM PEAK HOUR

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FIGURE 16

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITHOUT PROJECT
WEEKDAY PM PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 17

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITHOUT PROJECT
SATURDAY MID-DAY PEAK HOUR

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FIGURE 18

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITH PROJECT
WEEKDAY AM PEAK HOUR

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FIGURE 19

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITH PROJECT
WEEKDAY PM PEAK HOUR

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FIGURE 20

1/2015

FUTURE (2016) TRAFFIC VOLUME
WITH PROJECT
SATURDAY MID-DAY PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 21

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITHOUT PROJECT
WEEKDAY AM PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 22

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITHOUT PROJECT
WEEKDAY PM PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 23

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITHOUT PROJECT
SATURDAY MID-DAY PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 24

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITH PROJECT
WEEKDAY AM PEAK HOUR

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FIGURE 25

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITH PROJECT
WEEKDAY PM PEAK HOUR

Overland Traffic Consultants, Inc.
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FIGURE 26

1/2015

FUTURE (2030) TRAFFIC VOLUME
WITH PROJECT
SATURDAY MID-DAY PEAK HOUR

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

Los Angeles County Congestion Management Program Review

The Los Angeles Congestion Management Program (CMP) was adopted to regulate and monitor regional traffic growth and transportation improvement programs. The CMP designates a transportation network which includes all state highways and some arterials within the County of Los Angeles. If the level of service standard deteriorates on the CMP network, then the local jurisdiction must prepare a deficiency plan to be in conformance with the LA County CMP. The intent of the CMP is to provide information to decision makers to assist in the allocation of transportation funds through the State Transportation Improvement Program (STIP) process.

A CMP traffic impact analysis is required if a project will add 150 or more trips to a freeway, in either direction during either the AM or PM weekday peak hour. An analysis is also required at all CMP monitoring intersections where a project would add 50 or more peak hour trips. All of the CMP intersections listed below are analyzed in this study.

1. Las Flores Canyon Road and Pacific Coast Highway
2. Malibu Canyon Road and Pacific Coast Highway
3. Kanan Dume Road and Pacific Coast Highway

For the purposes of the CMP, a significant traffic impact occurs when the proposed project increases the V/C ratio by 2% or more at LOS F or causes LOS F. There are no significant CMP traffic impacts using this CMP definition. Notwithstanding the CMP definition, the City of Malibu's criteria are more stringent and were applied to the CMP Intersections. Using the City of Malibu's criteria, no significant CMP traffic impacts were identified.

The project's transit trip generation has also been calculated pursuant to the CMP. As set forth in the CMP, the estimated transit trips generated by the project during the peak hours can be calculated by multiplying the total peak hour vehicle trips by 1.4 to convert vehicle trips to person trips. A second calculation converts the person trips to transit trips by multiplying the person trips by 3.5 %.

The transit trip calculations are as follows:

Weekday AM Peak Hour Transit Trips = 10 * 1.4 * 0.035 = 0 AM peak hour transit trips;
Weekday PM Peak Hour Transit Trips = 19 * 1.4 * 0.035 = 0 PM peak hour transit trips;
Saturday Mid-day Peak Hour Transit Trips = 119 * 1.4 * 0.035 = 6 Mid-day peak hour transit trips

As previously discussed, Metro transit service is provided by 3 eastbound and 7 westbound buses during the morning peak hours, 5 eastbound and 3 westbound buses during the afternoon peak hours, with 3 buses in each direction during the mid-day peak hours on Saturdays. Thus given the low number of project-generated transit trips per bus, no impacts on the existing or future transit services are expected to occur as a result of the proposed project.

Traffic Impacts on Arterial Streets

This study also analyzed the potential impacts of project traffic on the arterial streets serving the project site. The street segments analyzed include: Pacific Coast Highway east of Cross Creek Road, Pacific Coast Highway west of Malibu Canyon Road and Malibu Canyon Road north of Civic Center Way.

The methodology for determining arterial street impacts is based on a comparison of the future without and future with project conditions. The percent increase in peak hour traffic is used as the measurement for the impact evaluation. Pursuant to the City of Malibu thresholds, a significant traffic impact for an arterial street occurs if the volume-to-capacity (V/C) ratio on a roadway segment operating at an unacceptable level of Service (LOS D, E or F) increases by 0.05 or more.

Recent 24-hour traffic counts on the study street segments were conducted (Thursday, July 12, 2012 and on Saturday July 14, 2012) to determine the amount of existing traffic currently utilizing the roadways. The traffic volume growth on the street segments was calculated using the same procedures as the study intersections, i.e., ambient growth and related project traffic volume.

As shown in Table 10, the project added traffic generated by the proposed project would not exceed the arterial traffic impact significance thresholds of 0.05 at any study area street segments.

Table 10
Arterial Street Segment Traffic Impact Analysis

				Existing Condition					Future 2016 Condition				Future 2030 Condition			
No.	Street Segment	Capacity	Peak Hour	Volume	V/C	LOS	Project Volume	Percent Increase	Volume	V/C	LOS	Percent Increase	Volume	V/C	LOS	Percent Increase
1	Pacific Coast Highway	3,100	AM (7-9)	2,839	0.92	E	5	0.2%	3,298	1.06	F	0.2%	3,380	1.09	F	0.1%
	east of Cross Creek Road		PM (4-6)	3,640	1.17	F	14	0.4%	4,360	1.41	F	0.3%	4,465	1.44	F	0.3%
	4 Lane Divided		Sat. (11-1)	3,541	1.14	F	53	1.5%	4,332	1.40	F	1.2%	4,434	1.43	F	1.2%
2	Pacific Coast Highway	3,100	AM (7-9)	1,909	0.62	B	2	0.1%	2,192	0.71	C	0.1%	2,247	0.72	C	0.1%
	West of Malibu Canyon Road		PM (4-6)	2,834	0.91	E	6	0.2%	3,243	1.05	F	0.2%	3,324	1.07	F	0.2%
	4 Lane Divided		Sat. (11-1)	3,212	1.04	F	30	0.9%	3,707	1.20	F	0.8%	3,799	1.23	F	0.8%
3	Malibu Canyon Road	2,800	AM (7-9)	1,861	0.66	B	3	0.2%	2,056	0.73	C	0.1%	2,110	0.75	C	0.1%
	north of Civic Center Way	2,500	PM (4-6)	2,073	0.83	D	8	0.4%	2,346	0.94	E	0.3%	2,406	0.96	E	0.3%
	2 Lane Undivided (1,400 vpvpl)	2,650	Sat. (11-1)	1,557	0.59	A	30	1.9%	1,829	0.69	B	1.6%	1,873	0.71	C	1.6%

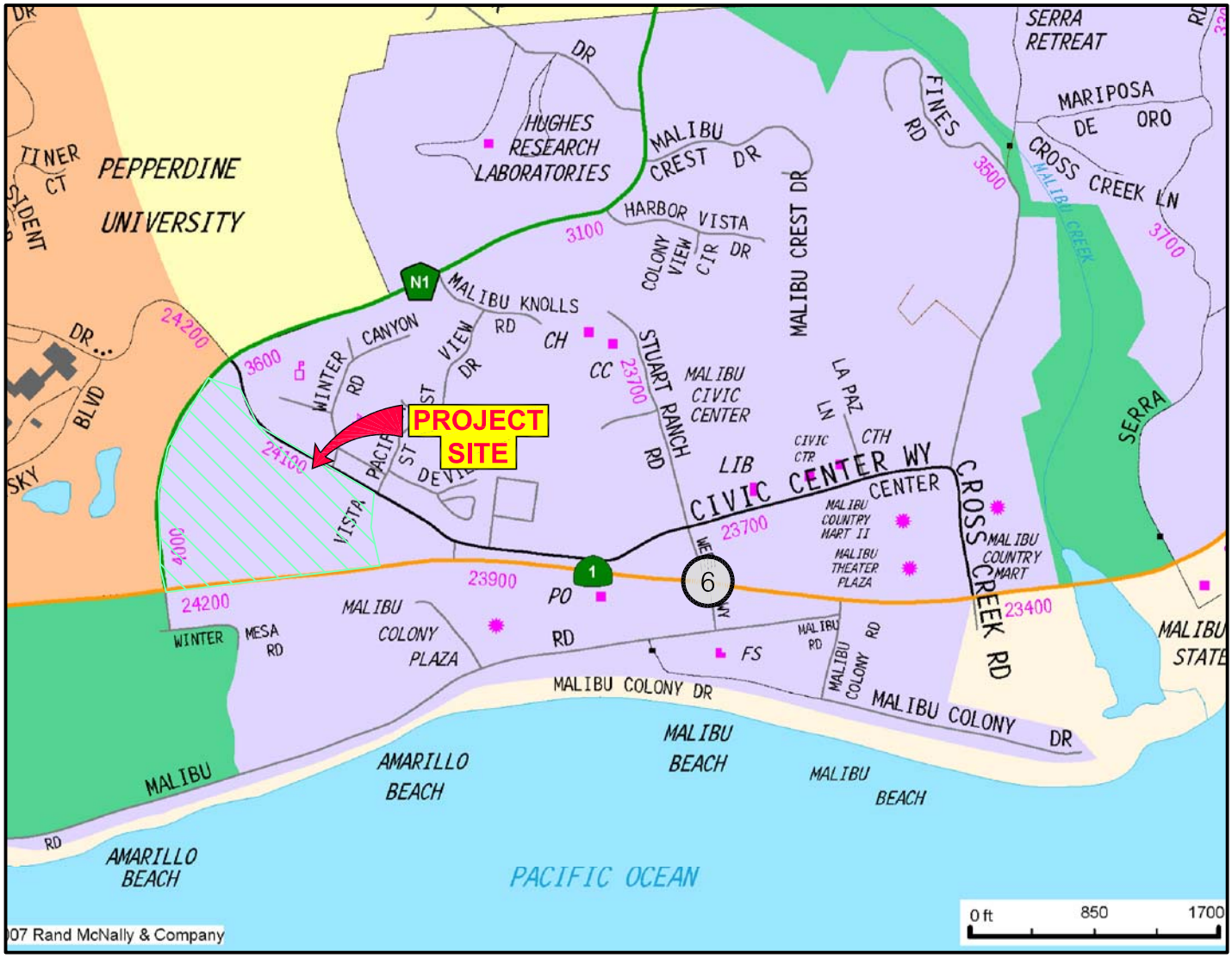
Project's Traffic Mitigation Measures

Using criteria adopted by the City of Malibu, it has been determined that the change in traffic flow generated by the proposed project significantly impacts the intersection of Pacific Coast Highway and Webb Way on Saturday mid-day in the 2030 scenario. Figure 27 illustrates the location and time period for the impacted study intersection.

Listed below are the recommended traffic mitigation measure for the impacted intersection. It should be noted that the proposed roadway improvements on Pacific Coast Highway will require an encroachment permit from Caltrans, the permitting agency. Pacific Coast Highway is a modified urban arterial therefore roadway modifications and may require design exceptions from the Caltrans highway/freeway design standards. The proposed lane widths for PCH are typical for urban arterial streets but non-standard for highways/freeways and will required Caltrans review and approval.

Pacific Coast Highway and Webb Way - The impact of project traffic on the intersection of Pacific Coast Highway and Webb Way could be mitigated by installing eastbound dual left-turn lanes. This mitigation would improve the traffic movement for the eastbound approach to the Pacific Coast Highway and Webb Way intersection. Figure 28 illustrates the conceptual traffic mitigation measure.

With the implementation of the proposed traffic mitigation measure, the project's traffic impacts will be fully mitigated as shown in Table 11 for the "Future (2030) Cumulative + Project" conditions.



SIGNIFICANTLY IMPACTED INTERSECTION:

#6 PACIFIC COAST HIGHWAY AND WEBB WAY
FUTURE 2030 - SATURDAY MID-DAY

FIGURE 27

1/2015

SIGNFICANTLY IMPACTED STUDY INTERSECTION

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FIGURE 28

1/2015

CONCEPTUAL TRAFFIC MITIGATION
WEBB WAY AND PACIFIC COAST HIGHWAY

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Table 11
Future (2030) Traffic Conditions With Project + Mitigation

No.	Intersection	Peak Hour	Without Project V/C	Without Project LOS	With Project + Mitigation V/C	With Project + Mitigation LOS	Impact
6.	Webb Way & Pacific Coast Hwy.	Saturday Mid	0.890	D	0.821	D	- 0.069

Traffic Mitigation Fair Share

Several land developments have been recently filed with the City of Malibu and are expected to occur within a similar time frame with similar traffic impacts. Therefore, the applicant may implement a mitigation funding mechanism through a fair share process to mitigate the cumulative traffic impacts created by a group of development projects enabling the installation of larger traffic improvements.

MALIBU MEMORIAL PARK APPENDIX

Appendix A – Land Use Map

Appendix B – Intersection Photos

Appendix C – Transit Routes

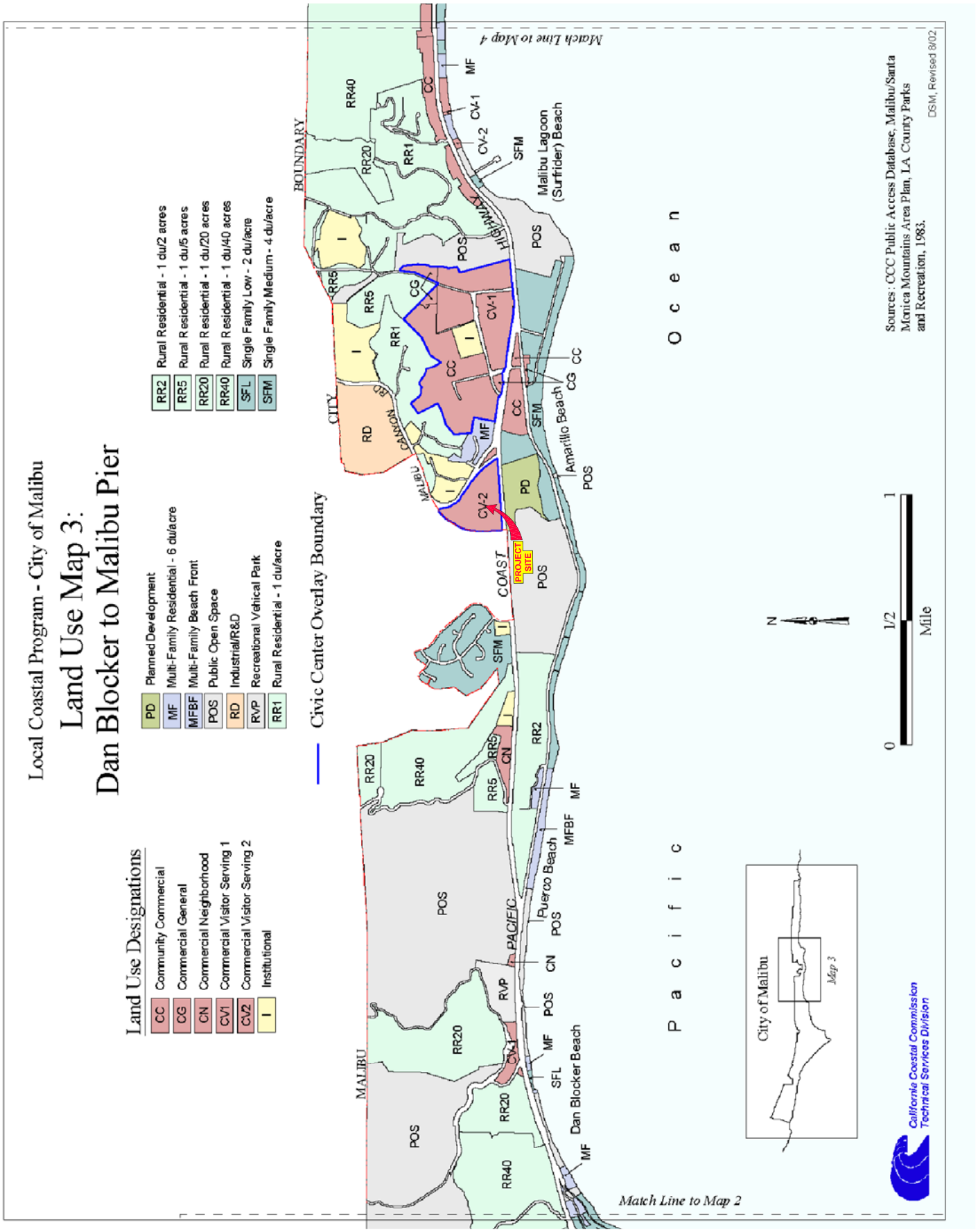
Appendix D – Traffic Count Data

Appendix E – Level of Service Worksheets

Appendix F – Related Project Information

Appendix G – Traffic Signal Warrant (2016)

APPENDIX A
LAND USE MAPS



11/2011

LAND USE MAP

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25876 The Old Road #307, Santa Clarita, CA 91381
(661)799-8423 v, (661)799-8456 f, OTCINC@attbi.com

APPENDIX B
INTERSECTION PHOTOS



KANAN DUME ROAD AND
PACIFIC COAST HIGHWAY

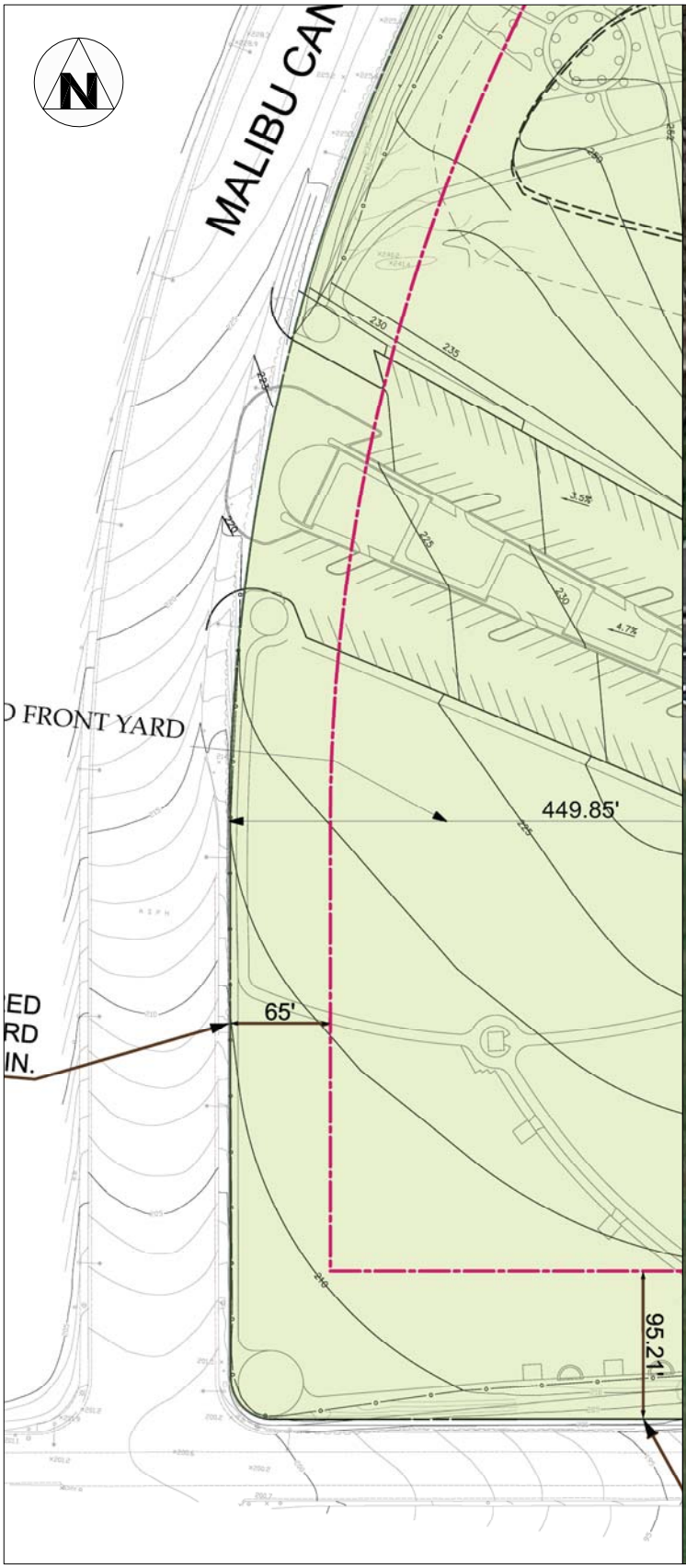


MALIBU CANYON ROAD AND
PACIFIC COAST HIGHWAY

1/2013

STUDY INTERSECTIONS 1 AND 2

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(661)799-8423, OTC@overlandtraffic.com



MALIBU CANYON ROAD AND
FUTURE RANCHO MALIBU RESORT ACCESS



MALIBU CANYON ROAD AND
CIVIC CENTER WAY

1/2015

STUDY INTERSECTIONS 3 AND 4

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com



STUART RANCH ROAD / WEBB WAY AND CIVIC CENTER WAY



WEBB WAY AND PACIFIC COAST HIGHWAY

7/2011

STUDY INTERSECTIONS 5 AND 6

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24325 Main Street #202, Santa Clarita, CA 91321
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CROSS CREEK ROAD AND PACIFIC COAST HIGHWAY



MALIBU PIER SIGNAL AND PACIFIC COAST HIGHWAY

11/2011

STUDY INTERSECTIONS 7 AND 8

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24325 Main Street #202, Santa Clarita, CA 91321
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CARBON CANYON ROAD AND PACIFIC COAST HIGHWAY



LAS FLORES CANYON ROAD AND PACIFIC COAST HIGHWAY

11/2011

STUDY INTERSECTIONS 9 AND 10

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APPENDIX C

TRANSIT ROUTES

Monday through Friday

Effective Dec 14 2014

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Eastbound (Approximate Times)

MALIBU			CASTELLAMMARE	SANTA MONICA	
Trancas Canyon & Pacific Coast Hwy	Cliffside & Dume	Malibu Canyon & Civic Center	Pacific Coast Hwy & Sunset	Ocean & Colorado	Washington/Fairfax Transit Hub
5:55A	—	6:14A	6:34A	6:43A	7:11A
6:20	—	6:39	7:00	7:10	7:38
—	—	6:56	7:20	7:30	7:58
6:57	—	7:16	7:40	7:50	8:20
7:17	—	7:36	8:00	8:10	8:41
7:36	—	7:55	8:20	8:30	9:01
7:59	—	8:18	8:44	8:54	9:24
8:29	—	8:48	9:14	9:24	9:54
9:00	—	9:19	9:44	9:54	10:22
9:31	—	9:50	10:14	10:25	10:53
10:02	—	10:21	10:44	10:55	11:23
10:32	—	10:51	11:14	11:25	11:53
11:02	—	11:21	11:44	11:55	12:23P
11:32	—	11:51	12:14P	12:25P	12:55
12:02P	—	12:21P	12:44	12:54	1:24
12:31	—	12:51	1:14	1:24	1:58
12:55	—	1:17	1:40	1:50	2:28
1:21	—	1:43	2:06	2:17	2:59
—	—	2:03	2:28	2:40	3:26
1:58	—	2:20	2:44	2:56	3:45
—	—	2:36	3:00	3:12	4:03
2:29	—	2:51	3:15	3:27	4:20
—	—	3:06	3:30	3:42	4:36
2:59	—	3:21	3:45	3:57	4:51
—	3:15P	3:36	4:00	4:11	5:05
3:29	—	3:51	4:15	4:26	5:19
—	3:45	4:06	4:30	4:41	5:34
3:59	—	4:21	4:45	4:56	5:48
—	4:15	4:36	5:00	5:11	6:03
4:29	—	4:51	5:15	5:26	6:16
—	4:57	5:18	5:41	5:51	6:39
5:11	—	5:33	5:55	6:05	6:50
5:34	—	5:56	6:18	6:28	7:09
6:05	—	6:26	6:48	6:58	7:34
6:38	—	6:57	7:18	7:28	8:02
7:16	—	7:35	7:56	8:05	8:32
8:09	—	8:27	8:48	8:57	9:24
8:59	—	9:17	9:38	9:47	10:14

Monday through Friday

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Westbound (Approximate Times)

	SANTA MONICA	CASTELLAMMARE	MALIBU		
Washington/Fairfax Transit Hub	Ocean & Colorado	Pacific Coast Hwy & Sunset	Malibu Canyon & Civic Center	Cliffside & Dume	Trancas Canyon & Pacific Coast Hwy
4:30A	4:51A	5:00A	5:19A	—	5:37A
4:55	5:17	5:27	5:48	—	6:07
5:13	5:35	5:45	6:06	—	6:25
5:25	5:48	5:58	6:19	—	—
5:37	6:01	6:11	6:32	6:52A	7:03
5:50	6:14	6:24	6:46	—	—
6:02	6:26	6:37	6:59	—	7:18
6:13	6:37	6:48	7:10	7:30	7:41
6:23	6:48	6:59	7:21	—	—
6:34	6:59	7:11	7:33	—	—
6:44	7:11	7:23	7:45	—	8:05
6:54	7:22	7:35	7:57	8:17	8:28
7:04	7:32	7:47	8:09	—	—
7:15	7:45	8:00	8:22	—	8:41
7:27	8:00	8:13	8:35	—	—
7:41	8:15	8:28	8:51	—	9:10
7:57	8:32	8:45	9:08	—	—
8:17	8:52	9:05	9:27	—	9:45
8:40	9:13	9:25	9:47	—	10:05
9:13	9:43	9:55	10:17	—	10:35
9:45	10:14	10:25	10:47	—	11:05
10:16	10:44	10:55	11:17	—	11:35
10:44	11:12	11:25	11:47	—	12:05P
11:14	11:42	11:55	12:17P	—	12:35
11:44	12:12P	12:25P	12:48	—	1:06
12:13P	12:41	12:55	1:18	—	1:36
12:43	1:11	1:25	1:48	—	2:06
1:13	1:41	1:55	2:18	—	2:36
1:44	2:12	2:25	2:48	—	3:06
2:16	2:44	2:57	3:21	—	3:39
2:47	3:16	3:29	3:53	—	4:11
3:19	3:48	4:01	4:25	—	4:43
3:49	4:18	4:33	4:56	—	5:14
4:19	4:48	5:05	5:28	—	5:46
4:51	5:20	5:37	6:00	—	6:18
5:39	6:08	6:23	6:44	—	7:01
6:38	7:06	7:17	7:38	—	7:55
7:35	8:01	8:11	8:31	—	8:48

Saturday
Effective Dec 14 2014

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Eastbound (Approximate Times)

MALIBU			CASTELLAMMARE	SANTA MONICA	
Trancas Canyon & Pacific Coast Hwy	Cliffside & Dume	Malibu Canyon & Civic Center	Pacific Coast Hwy & Sunset	Ocean & Colorado	Washington/Fairfax Transit Hub
6:45A	—	7:03A	7:22A	7:30A	7:51A
7:22	—	7:40	7:59	8:08	8:32
7:57	—	8:15	8:34	8:43	9:07
8:27	—	8:45	9:04	9:13	9:38
8:57	—	9:15	9:34	9:43	10:08
9:26	—	9:45	10:04	10:14	10:39
9:55	—	10:14	10:34	10:44	11:09
10:25	—	10:44	11:04	11:14	11:40
10:53	—	11:12	11:34	11:44	12:12P
11:22	—	11:41	12:04P	12:15P	12:44
11:51	—	12:11P	12:34	12:45	1:15
12:20P	—	12:41	1:04	1:15	1:46
12:50	—	1:11	1:34	1:45	2:19
1:20	—	1:41	2:04	2:15	2:49
1:46	—	2:07	2:34	2:45	3:21
1:59	2:12P	2:35	3:02	3:14	3:52
2:39	—	3:00	3:32	3:44	4:22
3:08	—	3:30	4:02	4:14	4:52
3:24	3:37	4:00	4:32	4:44	5:22
4:08	—	4:30	5:02	5:14	5:52
4:38	—	5:00	5:32	5:44	6:24
4:55	5:08	5:31	6:03	6:15	6:53
5:41	—	6:03	6:34	6:45	7:21
6:30	—	6:50	7:14	7:24	8:00
7:13	—	7:32	7:55	8:05	8:37
8:10	—	8:28	8:48	8:57	9:26
9:10	—	9:28	9:48	9:57	10:26

Saturday

534

Westbound (Approximate Times)

	SANTA MONICA	CASTELLAMMARE	MALIBU		
Washington/Fairfax Transit Hub	Ocean & Colorado	Pacific Coast Hwy & Sunset	Malibu Canyon & Civic Center	Cliffside & Dume	Trancas Canyon & Pacific Coast Hwy
5:15A	5:35A	5:44A	6:02A	—	6:19A
5:38	5:58	6:07	6:25	—	6:42
5:58	6:18	6:27	6:46	—	7:03
6:15	6:35	6:44	7:03	—	7:20
6:31	6:52	7:01	7:20	—	7:37
6:47	7:09	7:18	7:37	—	7:55
7:07	7:29	7:38	7:58	—	8:16
7:27	7:49	7:58	8:18	—	8:36
7:47	8:09	8:18	8:38	8:58A	9:09
8:07	8:29	8:38	8:58	—	9:16
8:29	8:53	9:02	9:23	9:43	9:54
8:51	9:16	9:26	9:47	—	10:05
9:15	9:40	9:50	10:12	10:32	10:43
9:41	10:07	10:18	10:40	—	10:58
10:09	10:37	10:48	11:11	—	11:29
10:37	11:06	11:18	11:41	—	11:59
11:06	11:35	11:48	12:12P	—	12:30P
11:32	12:03P	12:18P	12:42	—	1:00
11:58	12:33	12:48	1:12	—	1:30
12:32P	1:08	1:24	1:47	—	2:05
12:59	1:38	1:54	2:18	—	2:36
1:28	2:07	2:24	2:48	—	3:06
1:58	2:37	2:54	3:17	—	3:35
2:28	3:07	3:24	3:47	—	4:05
2:58	3:37	3:54	4:17	—	4:35
3:29	4:08	4:25	4:48	—	5:06
4:10	4:47	5:01	5:23	—	5:41
4:47	5:23	5:35	5:55	—	6:13
5:36	6:05	6:17	6:37	—	6:54
6:39	7:06	7:17	7:37	—	7:54
7:39	8:06	8:17	8:37	—	8:54

Sunday

534

Eastbound (Approximate Times)

MALIBU			CASTELLAMMARE	SANTA MONICA	
Trancas Canyon & Pacific Coast Hwy	Cliffside & Dume	Malibu Canyon & Civic Center	Pacific Coast Hwy & Sunset	Ocean & Colorado	Washington/Fairfax Transit Hub
6:57A	—	7:15A	7:35A	7:43A	8:08A
7:52	—	8:10	8:30	8:39	9:04
8:41	—	9:00	9:20	9:29	9:54
9:16	—	9:35	9:55	10:04	10:29
9:49	—	10:09	10:30	10:41	11:07
10:32	—	10:52	11:15	11:26	11:53
11:34	—	11:54	12:18P	12:29P	12:56P
12:34P	—	12:54P	1:18	1:29	1:58
1:34	—	1:54	2:18	2:30	2:59
2:23	—	2:43	3:08	3:20	3:53
3:03	—	3:23	3:55	4:07	4:40
3:40	3:52P	4:12	4:45	4:57	5:30
4:37	—	4:57	5:30	5:42	6:17
5:18	5:30	5:50	6:20	6:31	7:02
6:16	6:28	6:48	7:10	7:21	7:51
7:21	—	7:39	8:00	8:09	8:39
8:11	—	8:29	8:50	8:59	9:29
9:01	—	9:19	9:40	9:49	10:19

Sunday

534

Westbound (Approximate Times)

	SANTA MONICA	CASTELLAMMARE	MALIBU		
Washington/Fairfax Transit Hub	Ocean & Colorado	Pacific Coast Hwy & Sunset	Malibu Canyon & Civic Center	Cliffside & Dume	Trancas Canyon & Pacific Coast Hwy
5:39A	6:00A	6:09A	6:27A	—	6:44A
6:11	6:32	6:41	6:59	—	7:16
6:38	6:59	7:08	7:27	—	7:44
7:04	7:26	7:35	7:54	—	8:11
7:41	8:03	8:12	8:31	8:52A	9:03
8:23	8:45	8:54	9:15	—	9:33
8:57	9:20	9:29	9:51	—	10:09
9:40	10:03	10:14	10:36	10:57	11:08
10:14	10:42	10:54	11:16	—	11:34
10:52	11:22	11:34	11:56	—	12:14P
11:31	12:01P	12:14P	12:38P	12:59P	1:10
12:18P	12:54	1:09	1:34	—	1:52
1:07	1:43	1:59	2:23	—	2:41
1:46	2:23	2:39	3:03	—	3:21
2:39	3:14	3:29	3:53	—	4:11
3:29	4:01	4:14	4:38	—	4:56
4:21	4:51	5:04	5:26	—	5:44
5:08	5:38	5:49	6:10	—	6:28
5:53	6:18	6:29	6:49	—	7:06
6:39	7:03	7:14	7:34	—	7:51
7:29	7:53	8:04	8:24	—	8:41

Sunday & Holiday Schedules

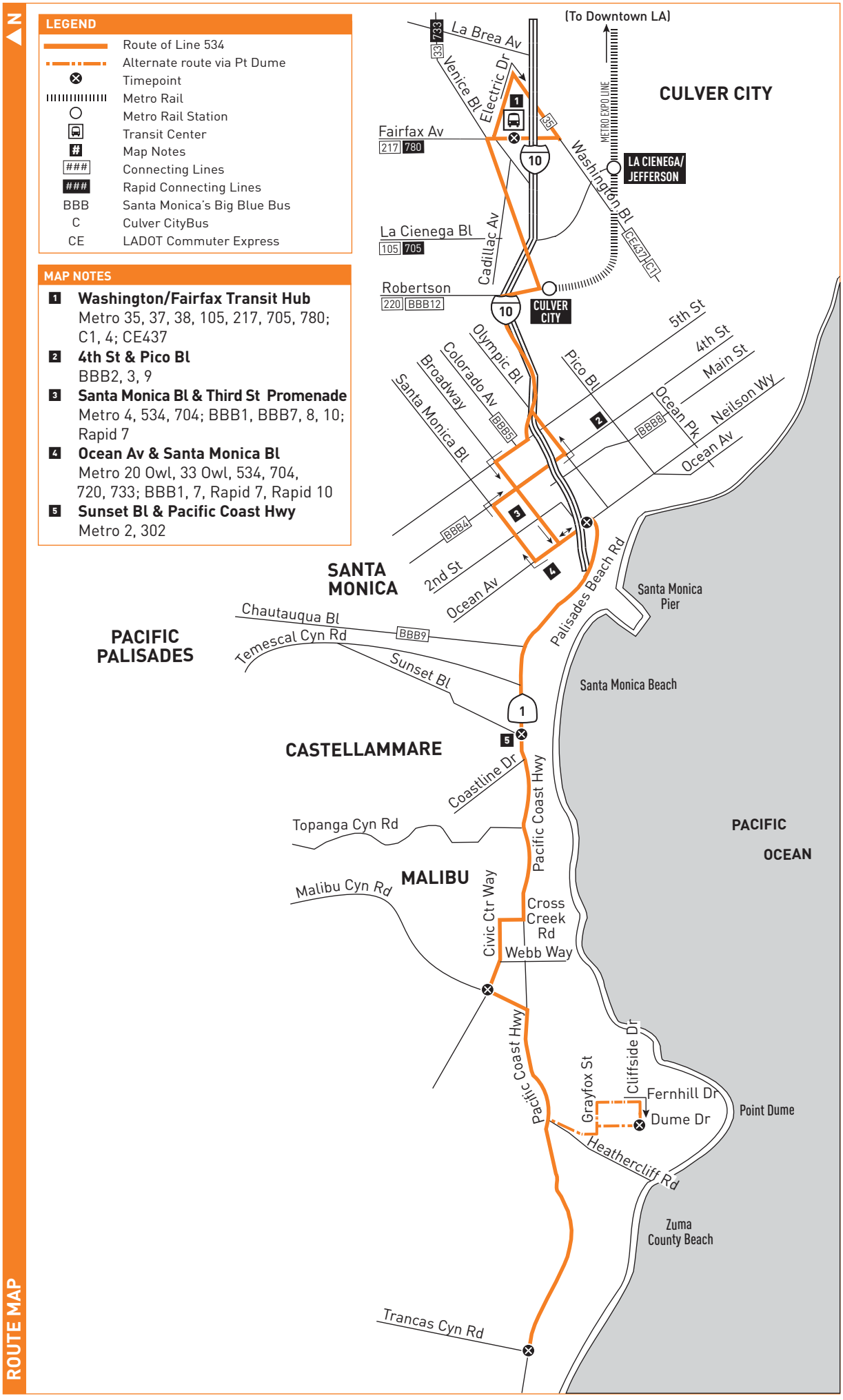
Sunday & Holiday schedule in effect on New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day.

Horarios de domingo y días feriados

Horarios de domingo y días feriados en vigor para New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day y Christmas Day.

ACTUAL TIMES MAY VARY DRASTICALLY DURING INCLEMENT WEATHER OR ACTS OF NATURE THAT AFFECT TRAVEL ON PACIFIC COAST HIGHWAY. CALL METRO INFORMATION FOR ANY UPDATES.

Horarios actuales pueden variar drasticamente dependiendo del clima y actos naturales que puedan afectar el viaje sobre Pacific Coast Highway.


N
LEGEND
Route of Line 534
Alternate route via Pt Dume
Timepoint
Metro Rail
Metro Rail Station
Transit Center
Map Notes
Connecting Lines
Rapid Connecting Lines
BBB Santa Monica's Big Blue Bus
C Culver CityBus
CE LADOT Commuter Express
MAP NOTES
1 Washington/Fairfax Transit Hub
Metro 35, 37, 38, 105, 217, 705, 780; C1, 4; CE437
2 4th St & Pico Bl
BBB2, 3, 9
3 Santa Monica Bl & Third St Promenade
Metro 4, 534, 704; BBB1, BBB7, 8, 10; Rapid 7
4 Ocean Av & Santa Monica Bl
Metro 20 Owl, 33 Owl, 534, 704, 720, 733; BBB1, 7, Rapid 7, Rapid 10
5 Sunset Bl & Pacific Coast Hwy
Metro 2, 302
(To Downtown LA)
La Brea Av
Venice Bl
Electric Dr
CULVER CITY
METRO EXPO LINE
Fairfax Av
217 780
LA CIENEGA/ JEFFERSON
Washington Bl
CE437 C1
La Cienega Bl
105 705
Cadillac Av
Robertson
220 BBB12
CULVER CITY
5th St
4th St
Main St
Olympic Bl
Colorado Av
Broadway
Santa Monica Bl
Pico Bl
Ocean Pk
Neilson Wy
Ocean Av
BBB5
BBB8
BBB4
2nd St
SANTA MONICA
Palisades Beach Rd
Santa Monica Pier
Chautauqua Bl
Temescal Cyn Rd
BBB9
PACIFIC PALISADES
Sunset Bl
Santa Monica Beach
CASTELLAMMARE
Coastline Dr
Pacific Coast Hwy
Topanga Cyn Rd
PACIFIC OCEAN
Malibu Cyn Rd
MALIBU
Civic Ctr Way
Cross Creek Rd
Webb Way
Pacific Coast Hwy
Grayfox St
Cliffside Dr
Fernhill Dr
Dume Dr
Point Dume
Heathercliff Rd
Zuma County Beach
Trancas Cyn Rd
ROUTE MAP

APPENDIX D

TRAFFIC COUNT DATA

ITM Peak Hour Summary

Prepared by:

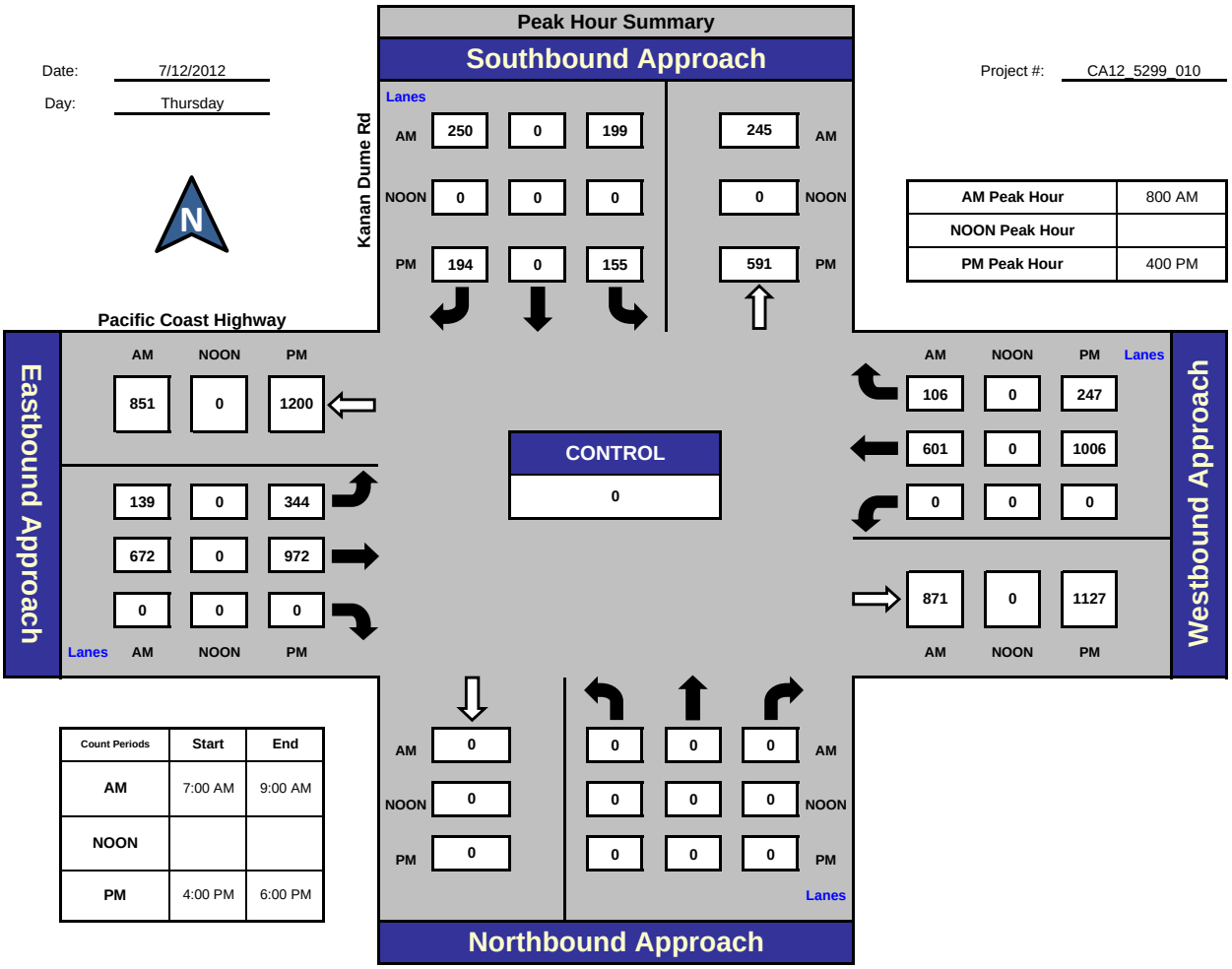
National Data & Surveying Services

Kanan Dume Rd and Pacific Coast Highway , City of Malibu

Date: 7/12/2012

Day: Thursday

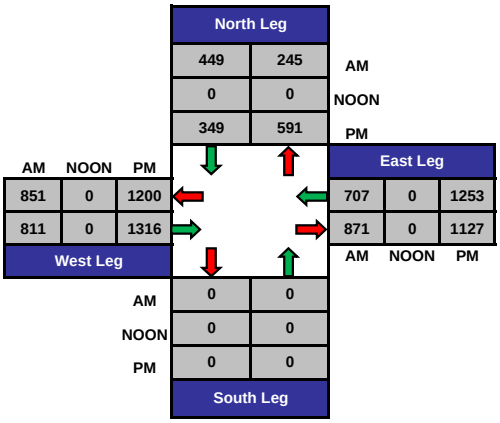
Project #: CA12_5299_010



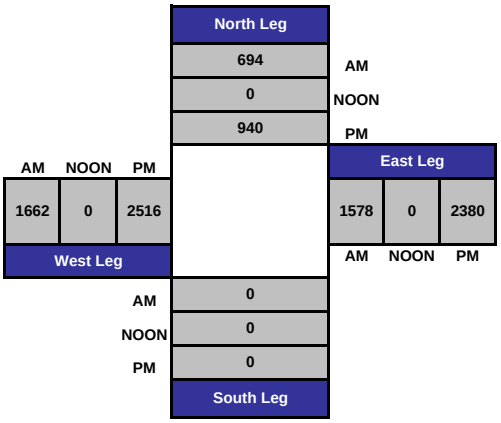
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	400 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_010 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Kanan Dume Rd			Kanan Dume Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM				38		45	23	125			107	11	349
7:15 AM				44		25	13	154			102	19	357
7:30 AM				67		60	26	160			106	19	438
7:45 AM				61		72	30	183			131	22	499
8:00 AM				59		51	23	164			134	23	454
8:15 AM				41		60	34	154			152	28	469
8:30 AM				56		68	39	173			138	28	502
8:45 AM				43		71	43	181			177	27	542

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	409	0	452	231	1294	0	0	1047	177	3610
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	47.50%	0.00%	52.50%	15.15%	84.85%	0.00%	0.00%	85.54%	14.46%	

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	0	0	199	0	250	139	672	0	0	601	106	1967
PEAK HR FACTOR :		0.000			0.905			0.905			0.866		0.907

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_010 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Kanan Dume Rd			Kanan Dume Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM				41		63	95	240			236	58	733
4:15 PM				38		54	85	247			261	58	743
4:30 PM				40		36	97	256			253	61	743
4:45 PM				36		41	67	229			256	70	699
5:00 PM				37		47	77	217			243	66	687
5:15 PM				47		54	59	245			258	72	735
5:30 PM				29		53	82	206			245	83	698
5:45 PM				43		51	56	200			198	60	608

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	311	0	399	618	1840	0	0	1950	528	5646
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	43.80%	0.00%	56.20%	25.14%	74.86%	0.00%	0.00%	78.69%	21.31%	

PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	0	0	0	155	0	194	344	972	0	0	1006	247	2918
PEAK HR FACTOR :		0.000			0.839			0.932			0.961		0.982

CONTROL :

ITM Peak Hour Summary

Prepared by:

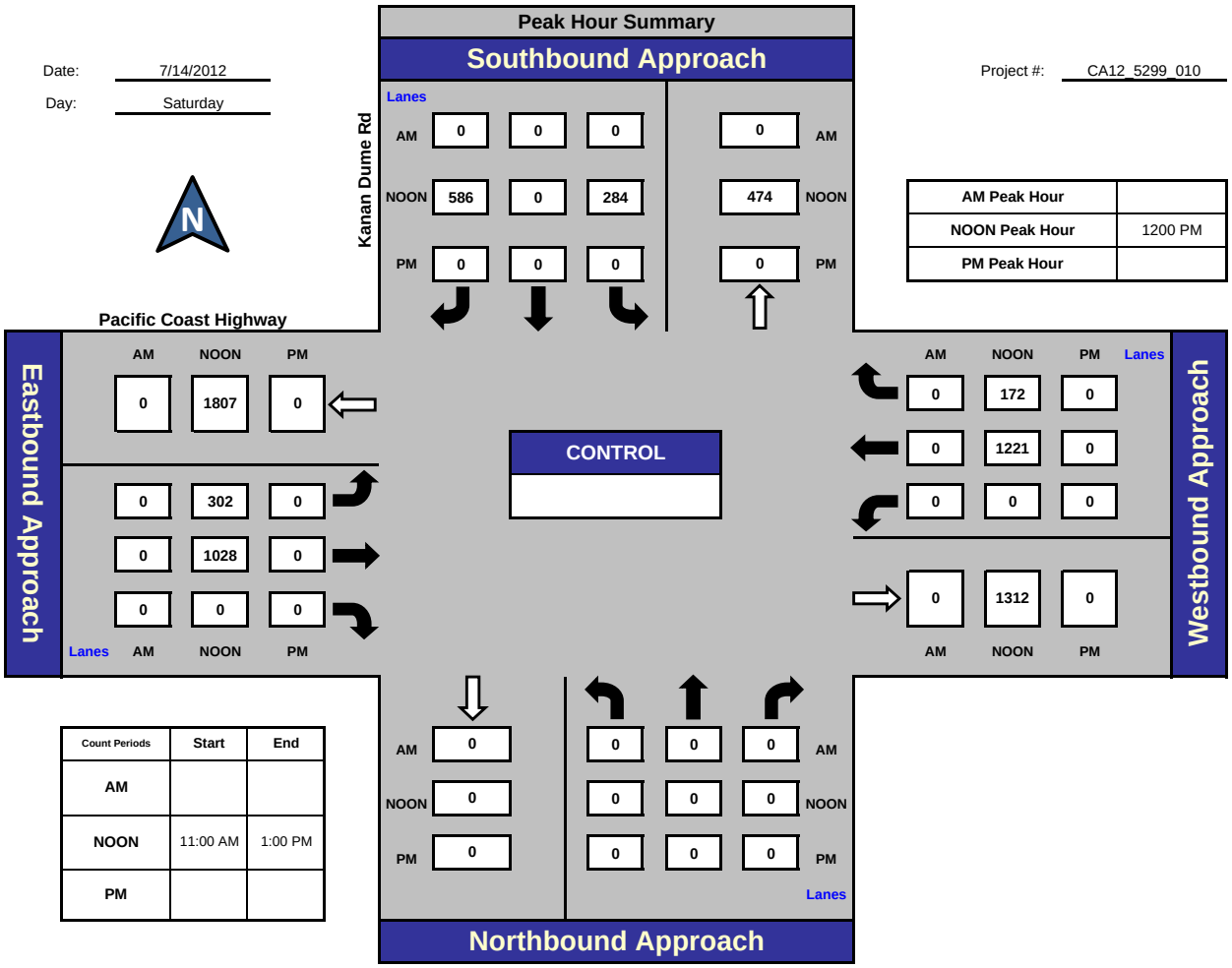
National Data & Surveying Services

Kanan Dume Rd and Pacific Coast Highway , City of Malibu

Date: 7/14/2012

Day: Saturday

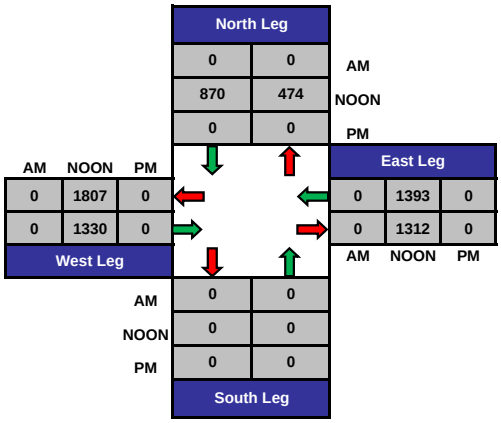
Project #: CA12_5299_010



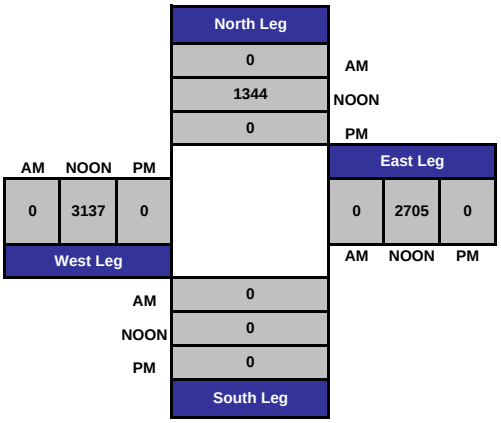
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_010 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Kanan Dume Rd			Kanan Dume Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM				40		111	51	219			304	40	765
11:15 AM				51		126	56	181			291	53	758
11:30 AM				49		133	72	251			288	42	835
11:45 AM				62		147	58	220			326	37	850
12:00 PM				64		144	90	252			298	26	874
12:15 PM				66		166	73	223			271	45	844
12:30 PM				77		142	81	315			333	52	1000
12:45 PM				77		134	58	238			319	49	875
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	486	0	1103	539	1899	0	0	2430	344	6801
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	30.59%	0.00%	69.41%	22.11%	77.89%	0.00%	0.00%	87.60%	12.40%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	0	0	0	284	0	586	302	1028	0	0	1221	172	3593
PEAK HR FACTOR :		0.000			0.938			0.840			0.905		0.898

CONTROL :

ITM Peak Hour Summary

Prepared by:

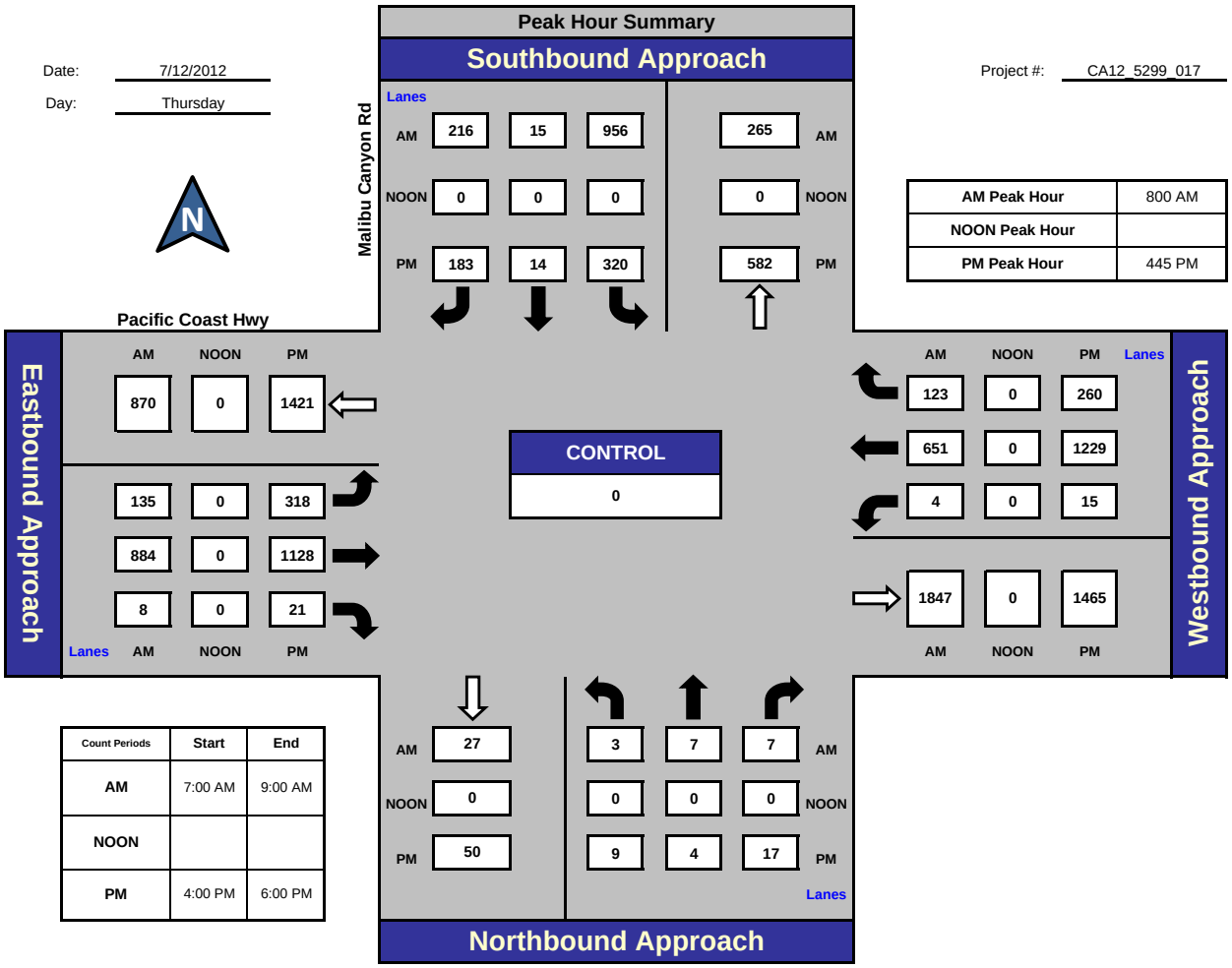
National Data & Surveying Services

Malibu Canyon Rd and Pacific Coast Hwy , City of Malibu

Date: 7/12/2012

Day: Thursday

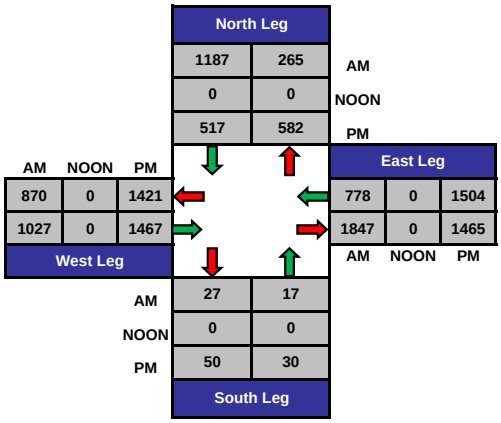
Project #: CA12_5299_017



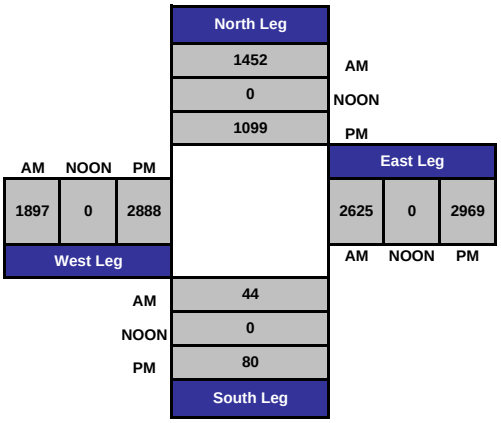
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_017 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	1	248	3	47	13	192	0	1	130	14	649
7:15 AM	0	3	2	215	2	39	18	178	1	2	120	20	600
7:30 AM	0	1	1	224	1	53	29	227	3	1	154	32	726
7:45 AM	0	0	2	203	2	55	22	194	0	2	178	37	695
8:00 AM	1	2	1	270	7	49	38	238	1	1	150	28	786
8:15 AM	0	1	3	200	3	35	20	198	2	2	178	32	674
8:30 AM	1	1	3	276	3	65	35	212	2	0	138	22	758
8:45 AM	1	3	0	210	2	67	42	236	3	1	185	41	791
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	3	11	13	1846	23	410	217	1675	12	10	1233	226	5679
APPROACH %'s :	11.11%	40.74%	48.15%	81.00%	1.01%	17.99%	11.40%	87.97%	0.63%	0.68%	83.93%	15.38%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	3	7	7	956	15	216	135	884	8	4	651	123	3009
PEAK HR FACTOR :		0.850			0.863			0.914			0.857		0.951

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_017 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	3	1	2	74	1	46	78	291	4	2	281	57	840
4:15 PM	4	0	4	52	2	52	83	312	1	6	266	64	846
4:30 PM	3	6	8	57	1	50	85	264	8	3	287	52	824
4:45 PM	2	2	3	67	2	40	94	307	4	2	314	63	900
5:00 PM	3	1	0	61	3	48	82	294	1	1	313	70	877
5:15 PM	1	0	1	112	6	51	67	264	8	7	288	60	865
5:30 PM	3	1	13	80	3	44	75	263	8	5	314	67	876
5:45 PM	1	4	7	88	1	30	53	242	5	9	256	75	771
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	20	15	38	591	19	361	617	2237	39	35	2319	508	6799
APPROACH %'s :	27.40%	20.55%	52.05%	60.87%	1.96%	37.18%	21.33%	77.32%	1.35%	1.22%	81.03%	17.75%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	9	4	17	320	14	183	318	1128	21	15	1229	260	3518
PEAK HR FACTOR :		0.441			0.765			0.906			0.974		0.977

CONTROL :

ITM Peak Hour Summary

Prepared by:

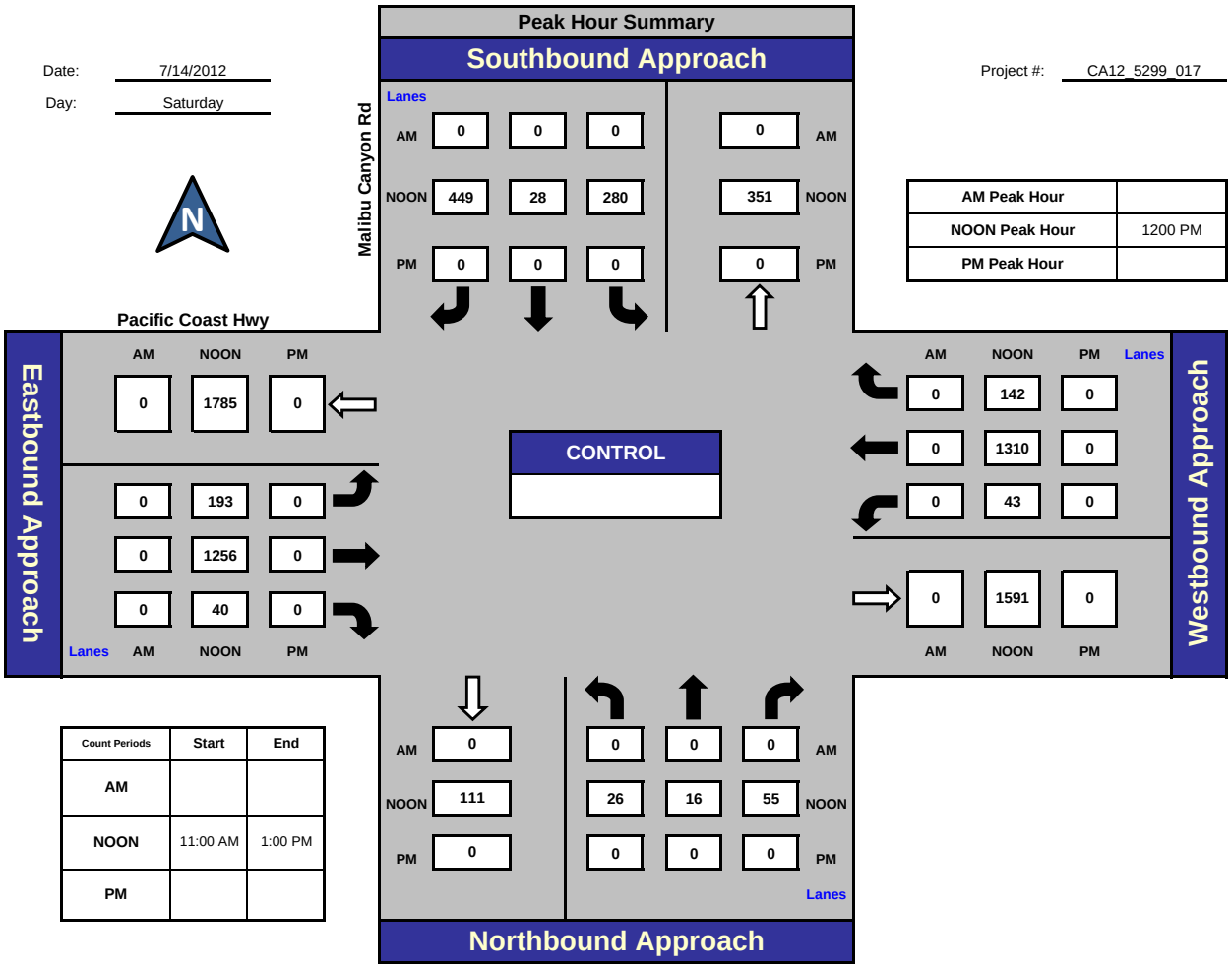
National Data & Surveying Services

Malibu Canyon Rd and Pacific Coast Hwy , City of Malibu

Date: 7/14/2012

Day: Saturday

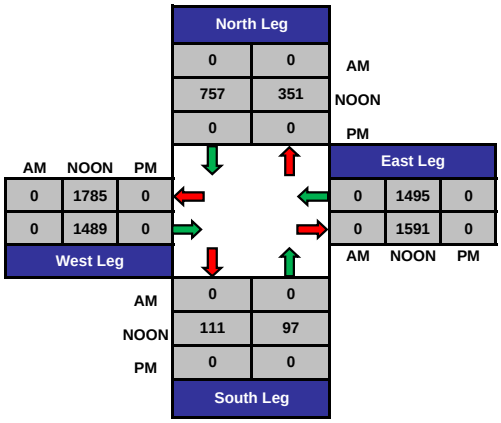
Project #: CA12_5299_017



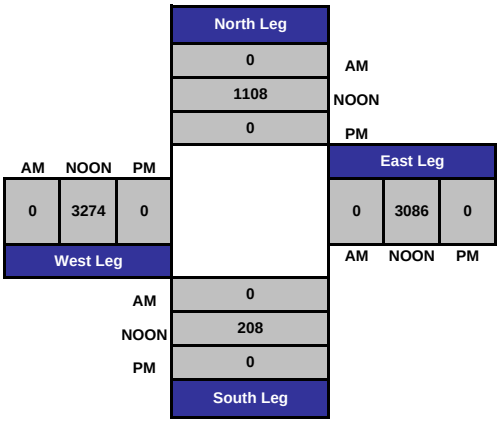
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_017 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	2	4	10	66	6	90	33	248	13	4	321	47	844
11:15 AM	2	4	15	63	8	90	40	265	6	8	278	24	803
11:30 AM	2	2	11	81	6	111	44	244	11	11	326	57	906
11:45 AM	1	3	6	88	3	113	47	287	6	9	316	32	911
12:00 PM	5	1	12	72	9	100	50	275	9	12	305	21	871
12:15 PM	3	4	12	71	3	123	53	291	14	15	290	48	927
12:30 PM	6	7	21	79	7	117	50	317	8	9	355	37	1013
12:45 PM	12	4	10	58	9	109	40	373	9	7	360	36	1027
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	33	29	97	578	51	853	357	2300	76	75	2551	302	7302
APPROACH %'s :	20.75%	18.24%	61.01%	39.00%	3.44%	57.56%	13.06%	84.16%	2.78%	2.56%	87.12%	10.31%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	26	16	55	280	28	449	193	1256	40	43	1310	142	3838
PEAK HR FACTOR :		0.713			0.932			0.882			0.927		0.934

CONTROL :

ITM Peak Hour Summary

Prepared by:

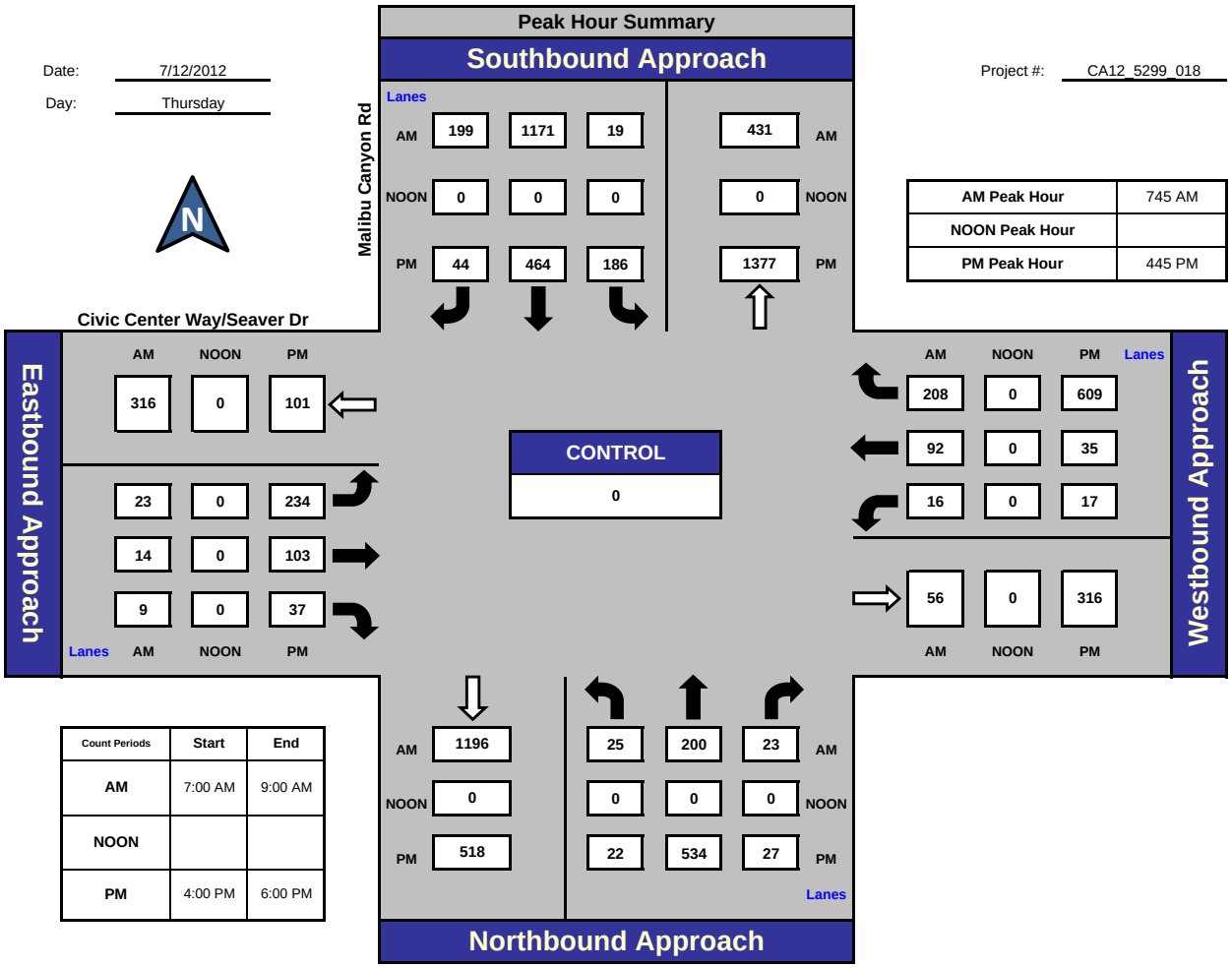
National Data & Surveying Services

Malibu Canyon Rd and Civic Center Way/Seaver Dr , City of Malibu

Date: 7/12/2012

Day: Thursday

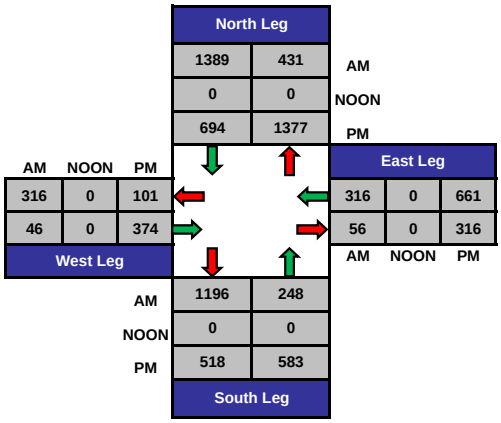
Project #: CA12_5299_018



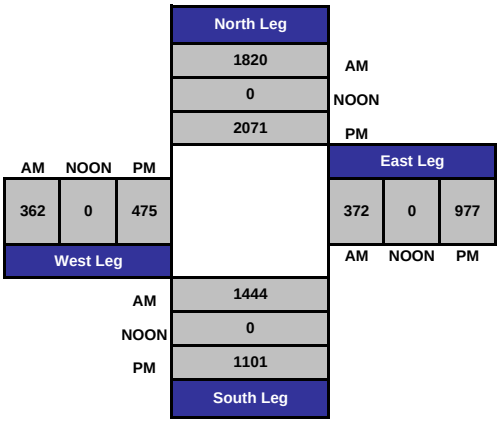
AM Peak Hour	745 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_018 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Civic Center Way/Seaver Dr			Civic Center Way/Seaver Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	1	28	1	1	309	17	4	6	0	2	8	25	402
7:15 AM	5	30	6	2	233	19	2	2	1	2	7	32	341
7:30 AM	6	43	12	7	294	40	5	2	0	6	18	45	478
7:45 AM	12	39	6	2	263	61	6	6	2	3	43	40	483
8:00 AM	6	61	9	4	314	59	4	1	3	2	22	50	535
8:15 AM	5	45	4	4	261	48	8	3	2	3	11	65	459
8:30 AM	2	55	4	9	333	31	5	4	2	8	16	53	522
8:45 AM	3	74	5	12	253	30	4	10	6	4	15	53	469
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	40	375	47	41	2260	305	38	34	16	30	140	363	3689
APPROACH %'s :	8.66%	81.17%	10.17%	1.57%	86.72%	11.70%	43.18%	38.64%	18.18%	5.63%	26.27%	68.11%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	25	200	23	19	1171	199	23	14	9	16	92	208	1999
PEAK HR FACTOR :		0.816			0.921			0.821			0.919		0.934

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_018 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Civic Center Way/Seaver Dr			Civic Center Way/Seaver Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	3	120	9	37	99	5	25	13	10	4	18	131	474
4:15 PM	10	133	6	40	122	9	15	7	8	7	13	124	494
4:30 PM	4	117	3	37	93	6	20	11	7	4	5	146	453
4:45 PM	6	160	10	52	102	9	42	17	6	2	7	144	557
5:00 PM	6	131	7	45	115	8	91	43	9	9	8	173	645
5:15 PM	8	116	4	46	129	9	50	30	10	4	8	143	557
5:30 PM	2	127	6	43	118	18	51	13	12	2	12	149	553
5:45 PM	8	124	6	64	104	18	29	14	6	4	10	144	531
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	47	1028	51	364	882	82	323	148	68	36	81	1154	4264
APPROACH %'s :	4.17%	91.30%	4.53%	27.41%	66.42%	6.17%	59.93%	27.46%	12.62%	2.83%	6.37%	90.79%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	22	534	27	186	464	44	234	103	37	17	35	609	2312
PEAK HR FACTOR :		0.828			0.943			0.654			0.870		0.896

CONTROL :

ITM Peak Hour Summary

Prepared by:

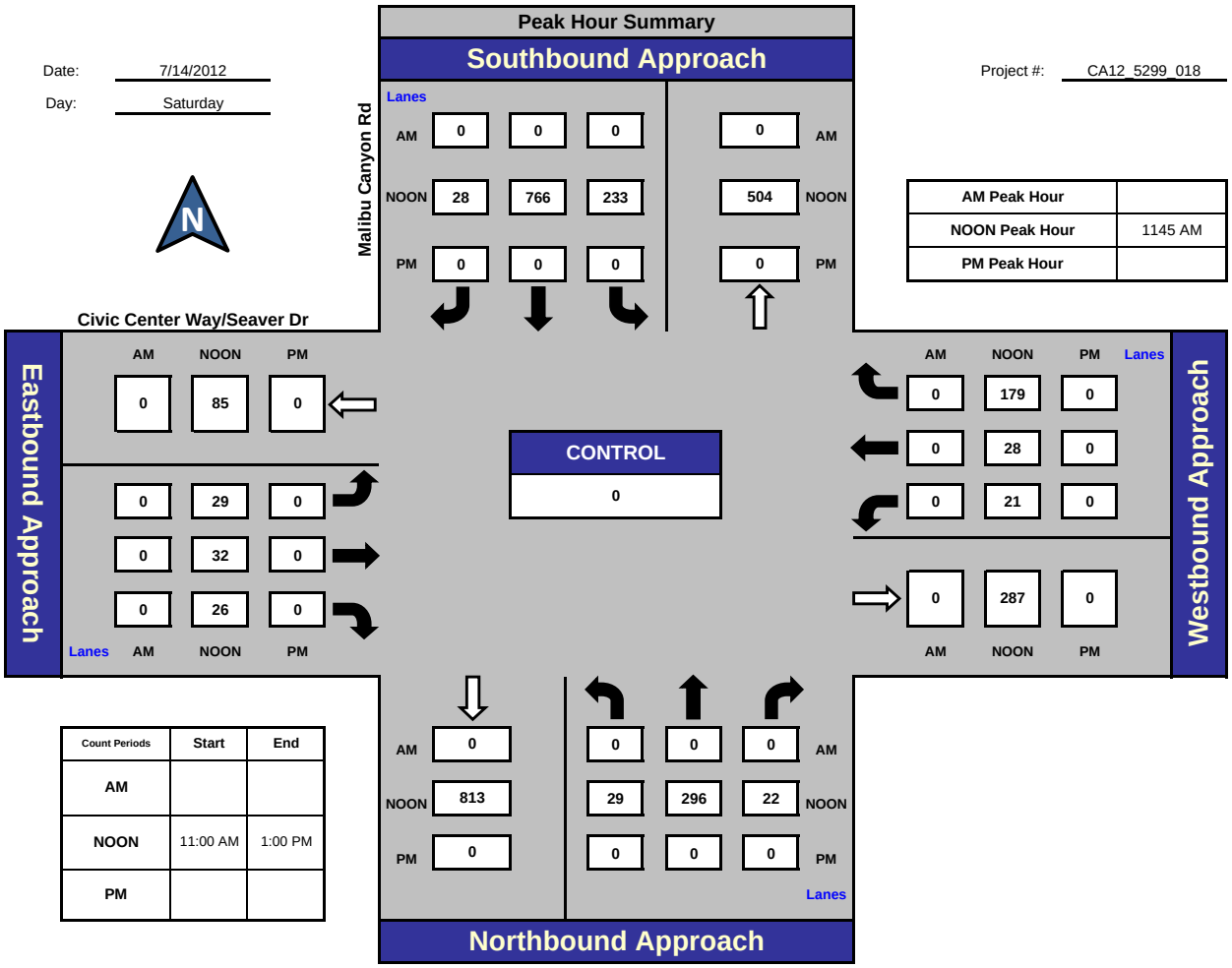
National Data & Surveying Services

Malibu Canyon Rd and Civic Center Way/Seaver Dr , City of Malibu

Date: 7/14/2012

Day: Saturday

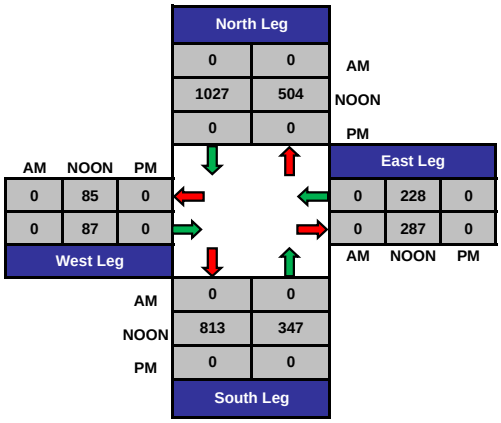
Project #: CA12_5299_018



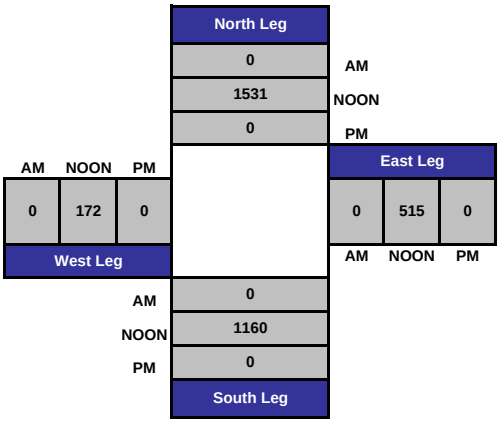
AM Peak Hour	
NOON Peak Hour	1145 AM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_018 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Malibu Canyon Rd			Malibu Canyon Rd			Civic Center Way/Seaver Dr			Civic Center Way/Seaver Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	5	71	6	58	165	10	6	1	6	7	7	40	382
11:15 AM	4	69	4	39	179	4	6	6	3	4	6	41	365
11:30 AM	3	94	5	59	185	6	3	1	1	3	6	37	403
11:45 AM	6	69	7	52	195	8	8	7	4	10	4	40	410
12:00 PM	4	70	4	61	172	5	11	15	11	1	9	53	416
12:15 PM	10	84	4	58	209	10	8	4	4	5	6	37	439
12:30 PM	9	73	7	62	190	5	2	6	7	5	9	49	424
12:45 PM	8	79	3	48	184	12	6	7	9	4	7	33	400
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	49	609	40	437	1479	60	50	47	45	39	54	330	3239
APPROACH %'s :	7.02%	87.25%	5.73%	22.12%	74.85%	3.04%	35.21%	33.10%	31.69%	9.22%	12.77%	78.01%	
PEAK HR START TIME :	1145 AM												TOTAL
PEAK HR VOL :	29	296	22	233	766	28	29	32	26	21	28	179	1689
PEAK HR FACTOR :		0.885			0.927			0.588			0.905		0.962

CONTROL :

ITM Peak Hour Summary

Prepared by:

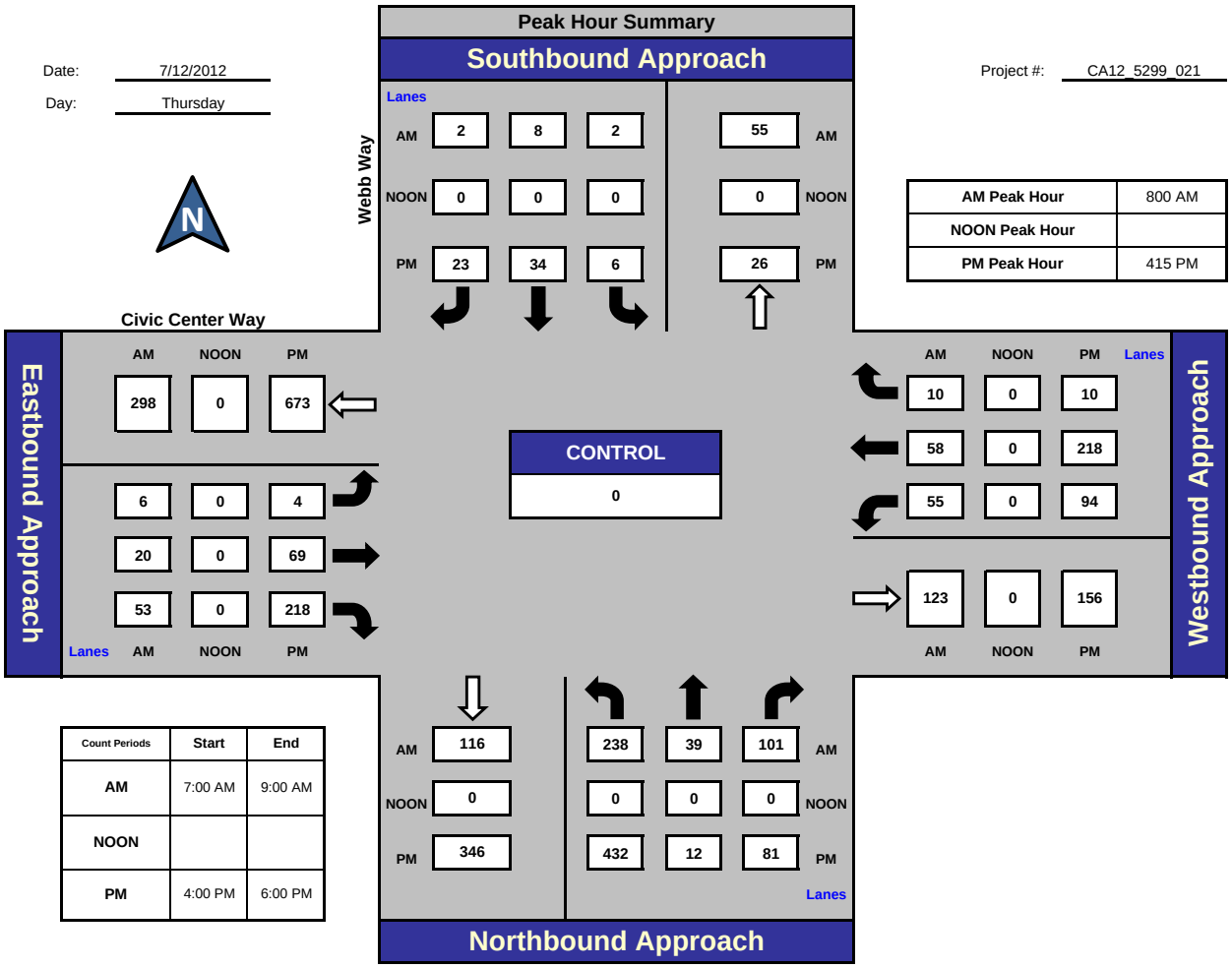
National Data & Surveying Services

Webb Way and Civic Center Way , City of Malibu

Date: 7/12/2012

Day: Thursday

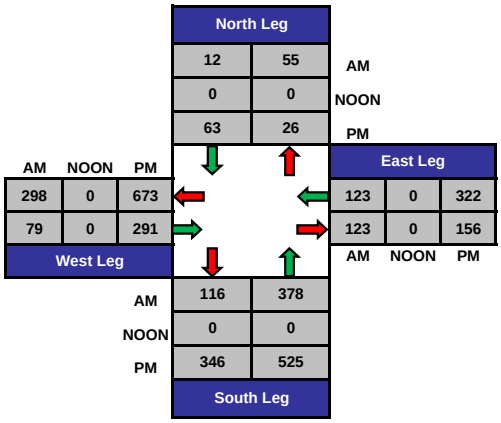
Project #: CA12_5299_021



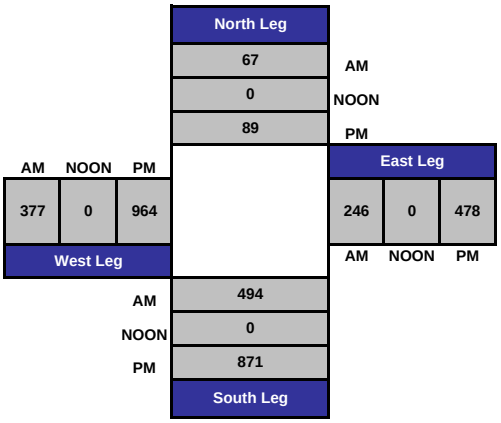
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	415 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_021 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Webb Way			Webb Way			Civic Center Way			Civic Center Way			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	35	8	14	1	0	0	0	4	5	4	12	0	83
7:15 AM	42	11	19	0	1	0	1	5	9	10	4	0	102
7:30 AM	58	19	17	0	0	0	4	9	11	7	15	3	143
7:45 AM	71	13	27	1	0	0	1	5	7	4	13	1	143
8:00 AM	63	10	17	0	1	0	1	6	12	16	13	3	142
8:15 AM	64	10	30	0	1	2	2	5	12	9	19	2	156
8:30 AM	52	8	25	1	4	0	2	5	13	12	14	2	138
8:45 AM	59	11	29	1	2	0	1	4	16	18	12	3	156
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	444	90	178	4	9	2	12	43	85	80	102	14	1063
APPROACH %'s :	62.36%	12.64%	25.00%	26.67%	60.00%	13.33%	8.57%	30.71%	60.71%	40.82%	52.04%	7.14%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	238	39	101	2	8	2	6	20	53	55	58	10	592
PEAK HR FACTOR :		0.909			0.600			0.940			0.932		0.949

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_021 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Webb Way			Webb Way			Civic Center Way			Civic Center Way			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	90	5	22	1	9	4	3	16	40	25	53	2	270
4:15 PM	112	5	25	3	10	5	0	14	43	29	41	3	290
4:30 PM	95	1	21	1	9	6	0	12	49	20	58	3	275
4:45 PM	106	4	17	0	7	7	3	17	61	27	52	2	303
5:00 PM	119	2	18	2	8	5	1	26	65	18	67	2	333
5:15 PM	103	2	9	2	8	5	1	14	73	15	43	1	276
5:30 PM	112	1	8	2	10	4	1	15	54	16	54	2	279
5:45 PM	109	3	15	0	10	4	0	24	65	13	46	0	289
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	846	23	135	11	71	40	9	138	450	163	414	15	2315
APPROACH %'s :	84.26%	2.29%	13.45%	9.02%	58.20%	32.79%	1.51%	23.12%	75.38%	27.53%	69.93%	2.53%	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	432	12	81	6	34	23	4	69	218	94	218	10	1201
PEAK HR FACTOR :		0.924			0.875			0.791			0.925		0.902

CONTROL :

ITM Peak Hour Summary

Prepared by:

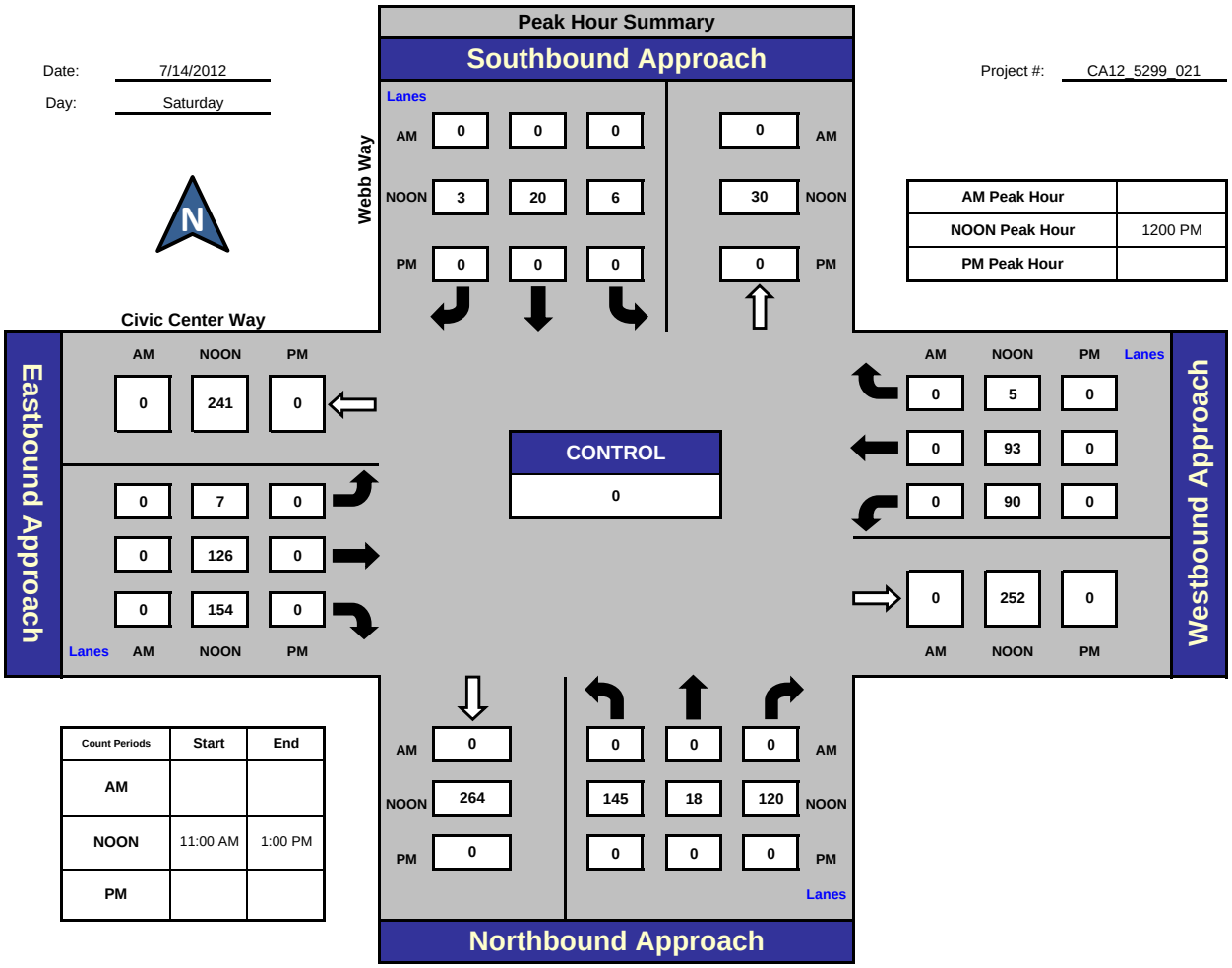
National Data & Surveying Services

Webb Way and Civic Center Way , City of Malibu

Date: 7/14/2012

Day: Saturday

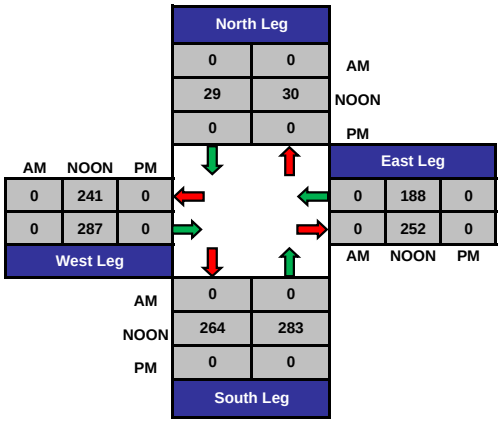
Project #: CA12_5299_021



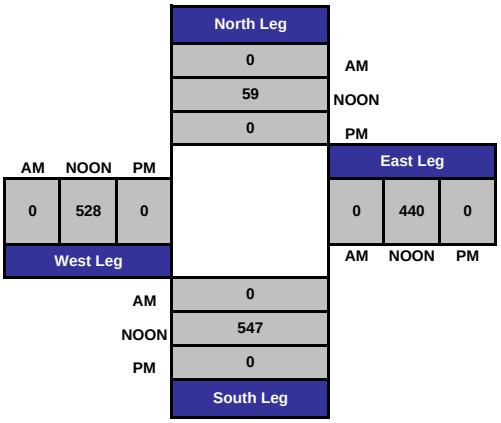
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_021 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Webb Way			Webb Way			Civic Center Way			Civic Center Way			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	30	4	15	0	8	4	0	31	35	25	20	4	176
11:15 AM	38	8	27	1	1	1	0	22	30	17	14	0	159
11:30 AM	34	2	20	1	6	1	2	27	33	26	18	1	171
11:45 AM	34	6	35	0	8	0	1	27	33	18	17	0	179
12:00 PM	42	4	29	2	9	1	3	34	43	21	21	1	210
12:15 PM	30	4	27	3	2	1	3	30	39	23	21	2	185
12:30 PM	33	3	34	0	4	0	0	37	36	17	27	1	192
12:45 PM	40	7	30	1	5	1	1	25	36	29	24	1	200
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	281	38	217	8	43	9	10	233	285	176	162	10	1472
APPROACH %'s :	52.43%	7.09%	40.49%	13.33%	71.67%	15.00%	1.89%	44.13%	53.98%	50.57%	46.55%	2.87%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	145	18	120	6	20	3	7	126	154	90	93	5	787
PEAK HR FACTOR :		0.919			0.604			0.897			0.870		0.937

CONTROL :

ITM Peak Hour Summary

Prepared by:

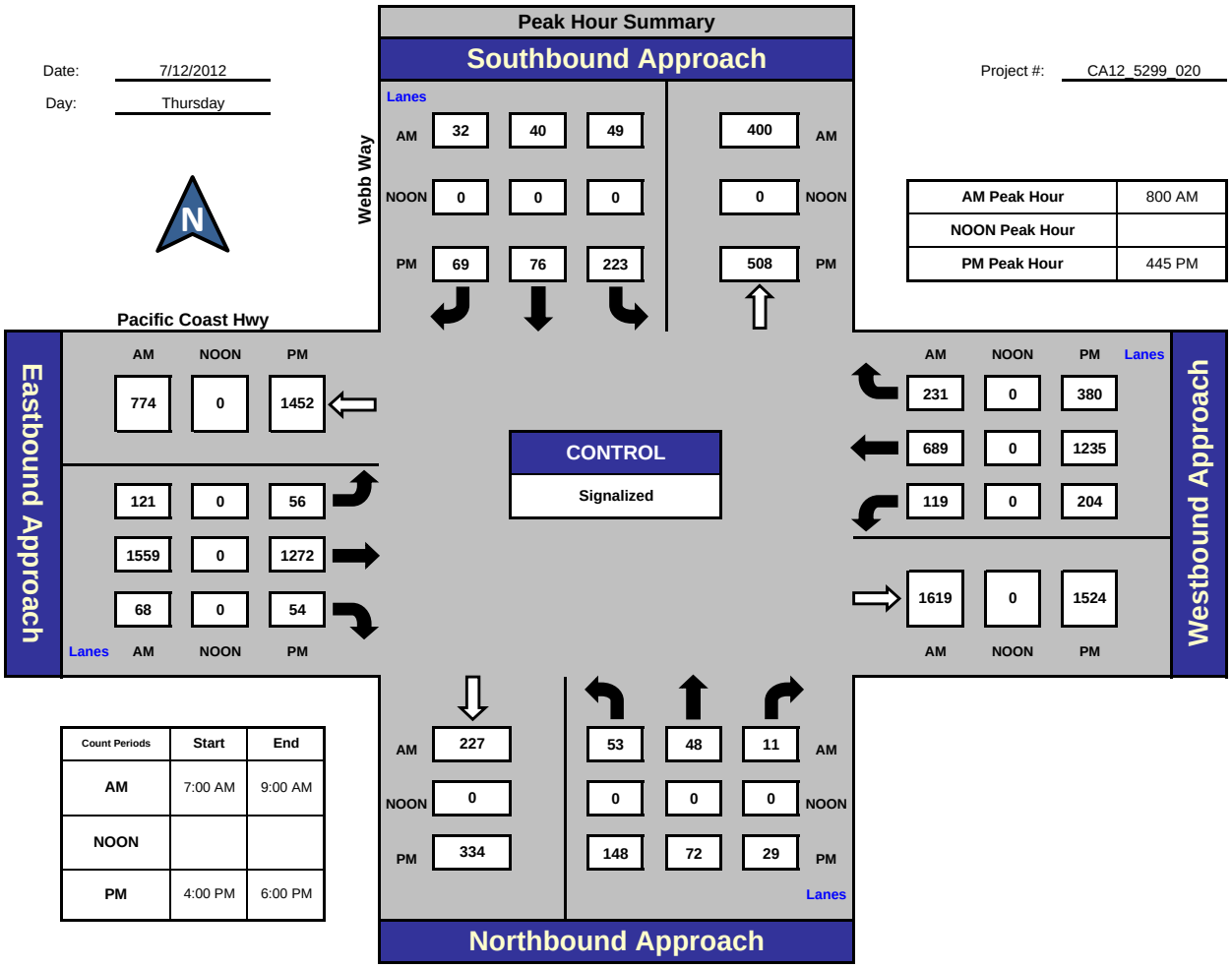
National Data & Surveying Services

Webb Way and Pacific Coast Hwy , City of Malibu

Date: 7/12/2012

Day: Thursday

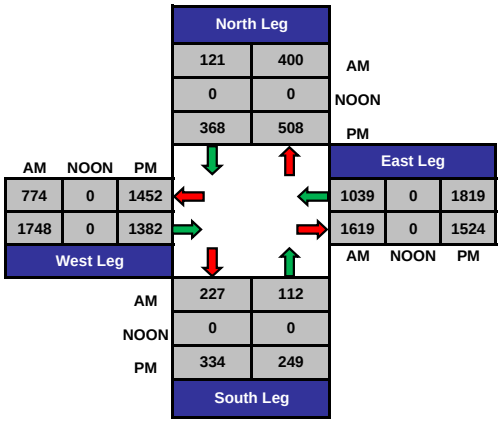
Project #: CA12_5299_020



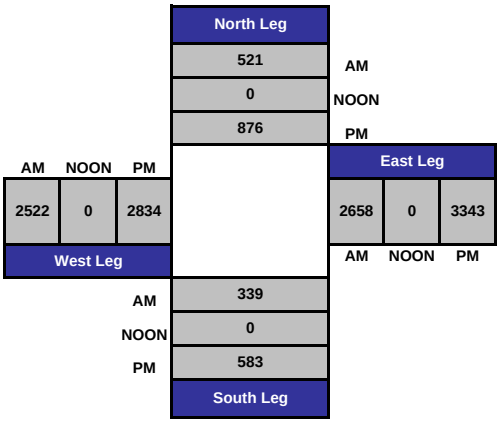
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_020 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Webb Way			Webb Way			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	7	7	2	4	0	4	23	419	26	18	128	29	667
7:15 AM	4	5	2	7	7	3	28	331	12	23	125	39	586
7:30 AM	12	9	5	10	5	6	30	405	11	21	162	54	730
7:45 AM	16	13	5	8	2	3	29	354	21	36	195	72	754
8:00 AM	10	9	2	12	11	7	23	404	10	26	160	61	735
8:15 AM	11	16	4	13	2	7	30	372	13	30	199	62	759
8:30 AM	17	10	2	11	11	7	31	411	26	34	135	46	741
8:45 AM	15	13	3	13	16	11	37	372	19	29	195	62	785
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	92	82	25	78	54	48	231	3068	138	217	1299	425	5757
APPROACH %'s :	46.23%	41.21%	12.56%	43.33%	30.00%	26.67%	6.72%	89.26%	4.02%	11.18%	66.92%	21.90%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	53	48	11	49	40	32	121	1559	68	119	689	231	3020
PEAK HR FACTOR :		0.903			0.756			0.934			0.893		0.962

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_020 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Webb Way			Webb Way			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	38	22	10	40	20	19	18	306	20	54	260	82	889
4:15 PM	33	12	7	36	24	19	27	336	14	43	292	101	944
4:30 PM	34	21	7	45	22	13	10	291	11	47	298	85	884
4:45 PM	40	21	4	58	24	13	14	329	10	63	306	97	979
5:00 PM	40	25	7	56	21	18	17	314	14	52	314	91	969
5:15 PM	36	11	11	63	15	20	15	328	18	48	319	91	975
5:30 PM	32	15	7	46	16	18	10	301	12	41	296	101	895
5:45 PM	32	17	14	66	17	10	15	300	13	39	290	93	906
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	285	144	67	410	159	130	126	2505	112	387	2375	741	7441
APPROACH %'s :	57.46%	29.03%	13.51%	58.66%	22.75%	18.60%	4.59%	91.32%	4.08%	11.05%	67.80%	21.15%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	148	72	29	223	76	69	56	1272	54	204	1235	380	3818
PEAK HR FACTOR :		0.865			0.939			0.957			0.976		0.975

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

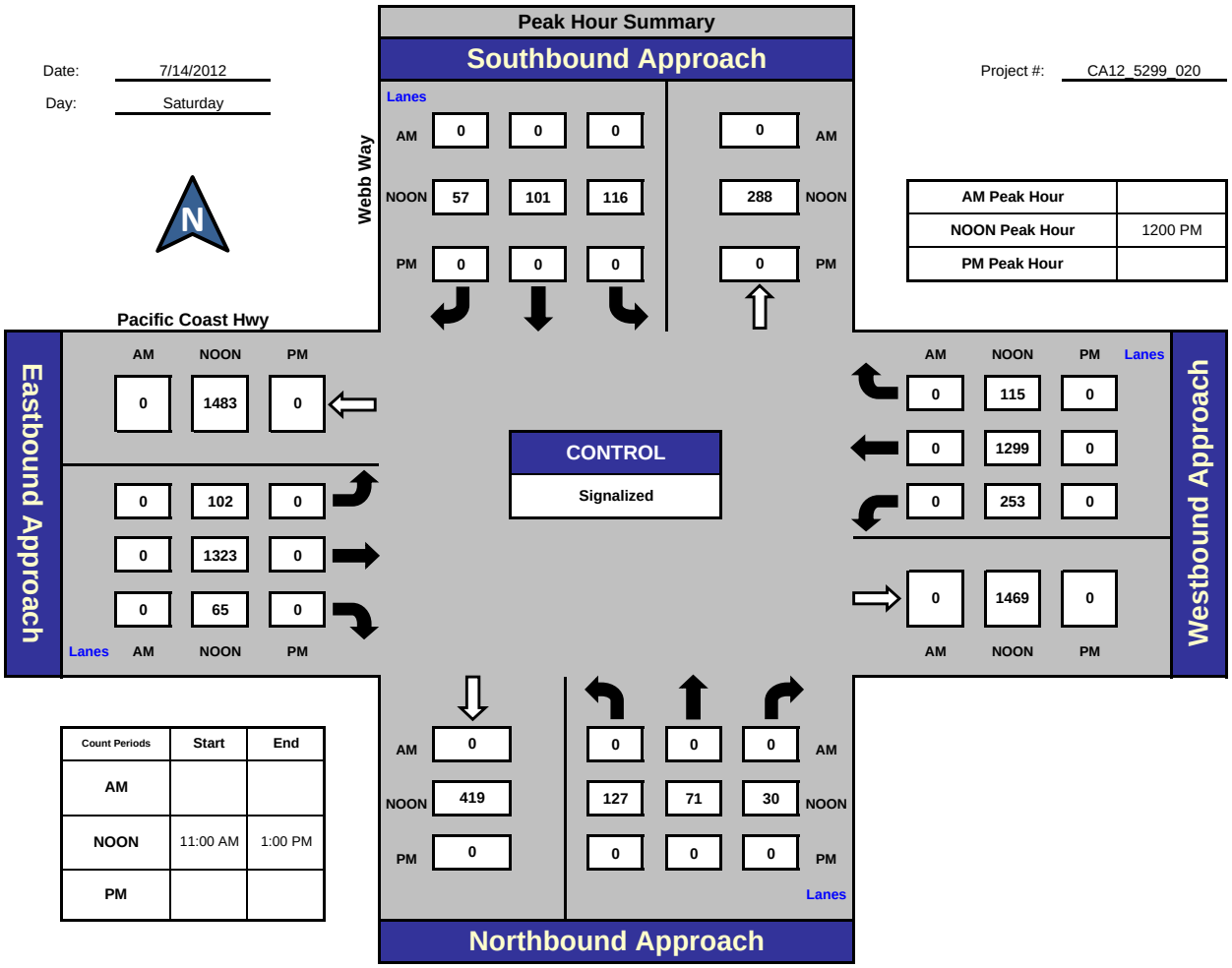
National Data & Surveying Services

Webb Way and Pacific Coast Hwy , City of Malibu

Date: 7/14/2012

Day: Saturday

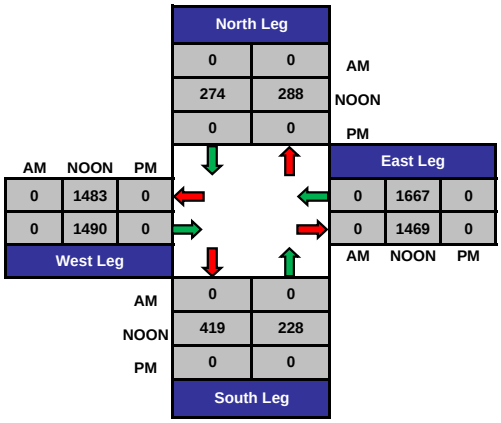
Project #: CA12_5299_020



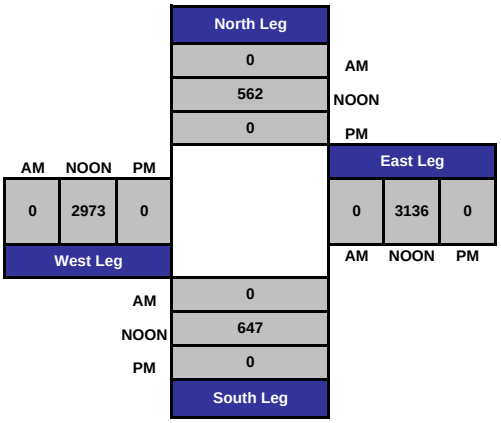
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_020 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Webb Way			Webb Way			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	35	7	8	29	23	15	16	266	26	39	316	27	807
11:15 AM	42	22	3	24	18	4	21	261	23	54	265	27	764
11:30 AM	37	23	5	35	22	15	11	273	17	56	344	25	863
11:45 AM	30	21	10	30	19	8	32	289	18	54	290	24	825
12:00 PM	31	18	3	32	36	12	23	299	15	55	302	34	860
12:15 PM	25	16	9	30	14	16	25	329	18	66	336	21	905
12:30 PM	36	20	8	28	19	13	32	349	10	71	299	22	907
12:45 PM	35	17	10	26	32	16	22	346	22	61	362	38	987
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	271	144	56	234	183	99	182	2412	149	456	2514	218	6918
APPROACH %'s :	57.54%	30.57%	11.89%	45.35%	35.47%	19.19%	6.64%	87.93%	5.43%	14.30%	78.86%	6.84%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	127	71	30	116	101	57	102	1323	65	253	1299	115	3659
PEAK HR FACTOR :		0.891			0.856			0.953			0.904		0.927

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

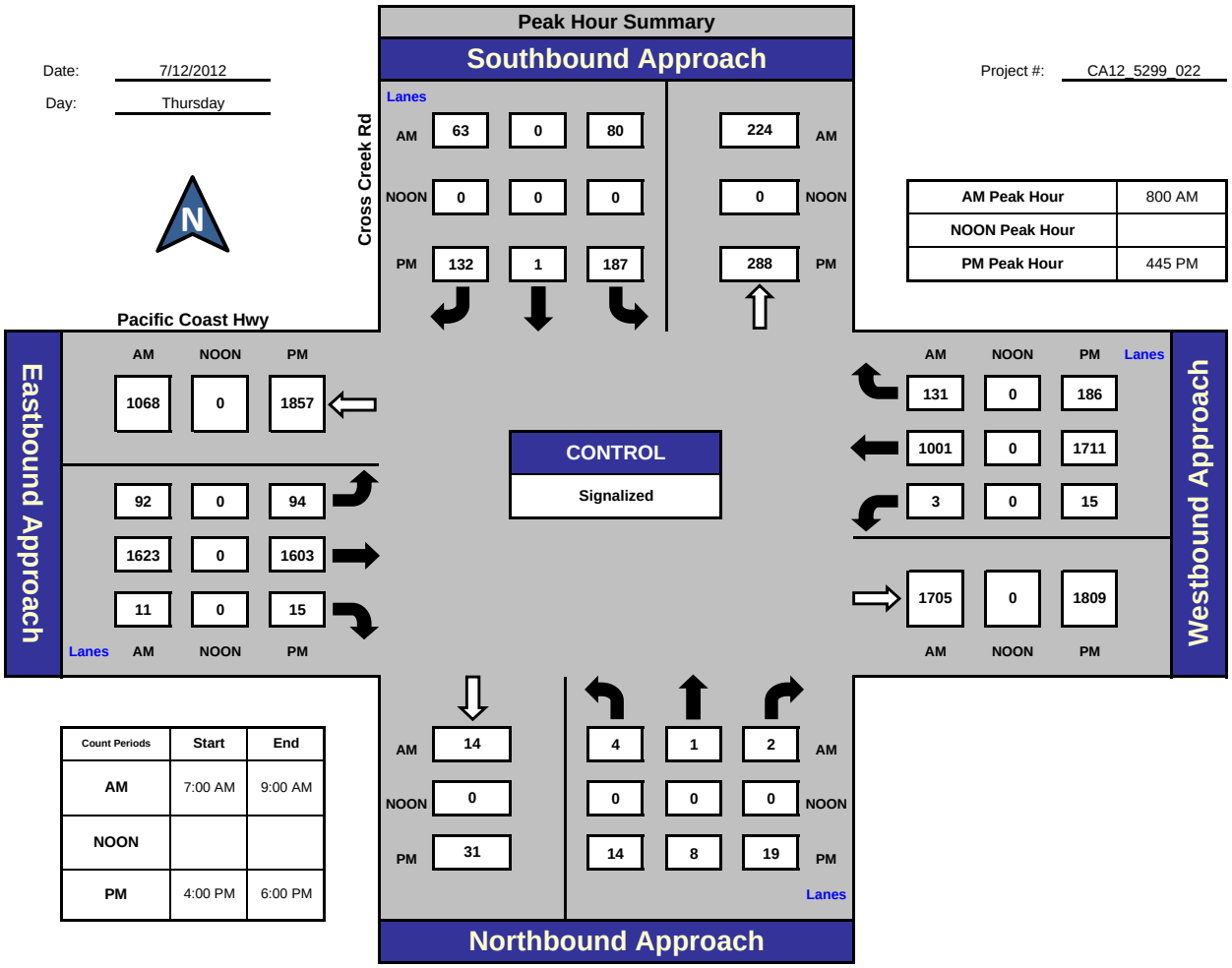
National Data & Surveying Services

Cross Creek Rd and Pacific Coast Hwy , City of Malibu

Date: 7/12/2012

Day: Thursday

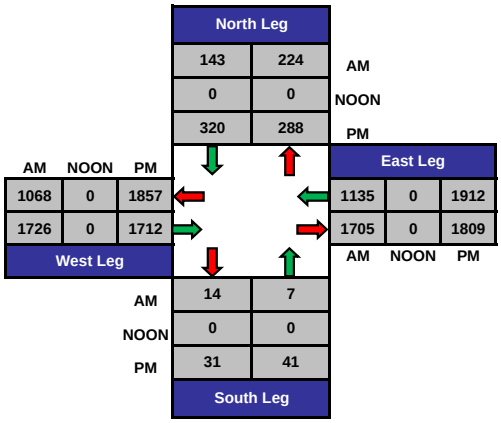
Project #: CA12_5299_022



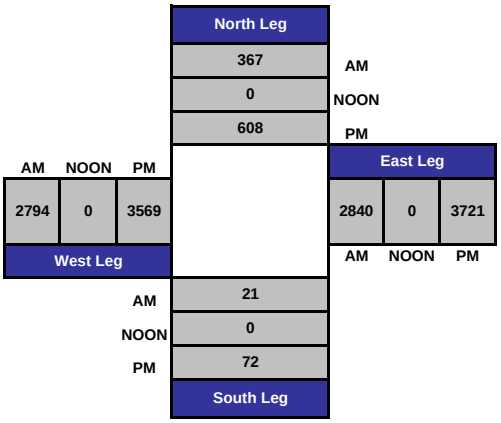
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_022 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Cross Creek Rd			Cross Creek Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	2	1	1	19	1	9	21	401	2	0	154	17	628
7:15 AM	1	0	2	10	0	10	11	343	2	2	193	24	598
7:30 AM	1	0	0	17	0	8	19	419	1	0	225	35	725
7:45 AM	0	0	0	25	0	18	16	369	0	0	305	37	770
8:00 AM	0	0	1	23	0	15	32	412	2	2	239	32	758
8:15 AM	2	0	0	19	0	9	23	396	3	0	273	30	755
8:30 AM	1	0	1	24	0	18	16	424	2	1	212	28	727
8:45 AM	1	1	0	14	0	21	21	391	4	0	277	41	771
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	8	2	5	151	1	108	159	3155	16	5	1878	244	5732
APPROACH %'s :	53.33%	13.33%	33.33%	58.08%	0.38%	41.54%	4.77%	94.74%	0.48%	0.24%	88.29%	11.47%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	4	1	2	80	0	63	92	1623	11	3	1001	131	3011
PEAK HR FACTOR :		0.875			0.851			0.967			0.892		0.976

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_022 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Cross Creek Rd			Cross Creek Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	3	1	5	45	1	37	35	400	2	6	407	38	980
4:15 PM	3	1	2	32	0	26	21	412	3	0	410	47	957
4:30 PM	4	0	2	56	1	30	21	350	2	3	383	48	900
4:45 PM	3	3	8	44	1	33	26	389	7	6	453	51	1024
5:00 PM	3	2	2	54	0	37	21	419	2	3	447	47	1037
5:15 PM	5	2	6	53	0	34	26	405	3	3	416	37	990
5:30 PM	3	1	3	36	0	28	21	390	3	3	395	51	934
5:45 PM	1	2	1	34	1	30	25	378	2	1	424	34	933
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	25	12	29	354	4	255	196	3143	24	25	3335	353	7755
APPROACH %'s :	37.88%	18.18%	43.94%	57.75%	0.65%	41.60%	5.83%	93.46%	0.71%	0.67%	89.82%	9.51%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	14	8	19	187	1	132	94	1603	15	15	1711	186	3985
PEAK HR FACTOR :		0.732			0.879			0.968			0.937		0.961

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

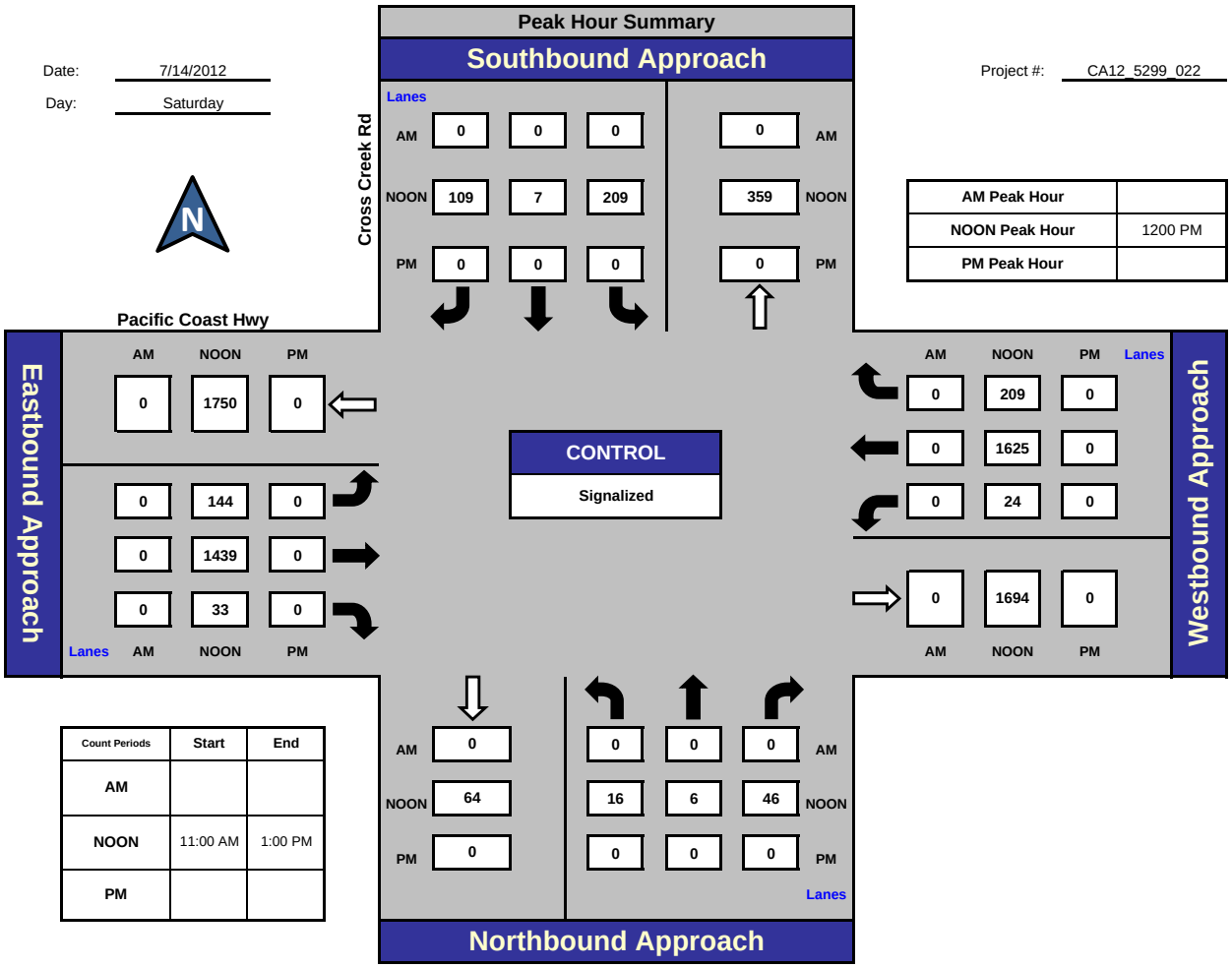
National Data & Surveying Services

Cross Creek Rd and Pacific Coast Hwy , City of Malibu

Date: 7/14/2012

Day: Saturday

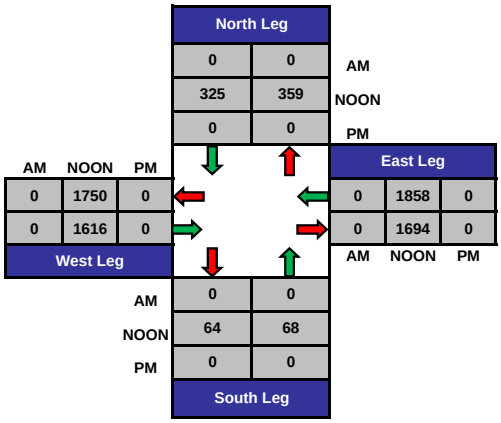
Project #: CA12_5299_022



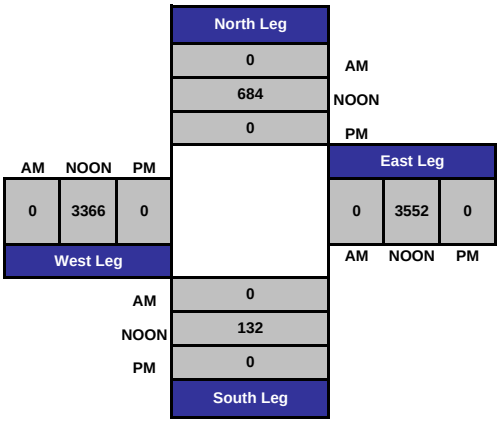
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_022 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Cross Creek Rd			Cross Creek Rd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	2	3	5	35	0	27	37	318	4	7	370	40	848
11:15 AM	3	0	5	31	0	24	30	316	3	4	360	43	819
11:30 AM	0	1	13	44	2	24	36	312	8	8	371	52	871
11:45 AM	4	1	5	53	1	27	42	342	5	7	324	35	846
12:00 PM	3	1	8	59	1	28	33	329	13	2	397	50	924
12:15 PM	7	2	13	40	1	26	35	354	8	7	399	59	951
12:30 PM	5	3	11	58	5	29	44	369	6	1	391	57	979
12:45 PM	1	0	14	52	0	26	32	387	6	14	438	43	1013
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	25	11	74	372	10	211	289	2727	53	50	3050	379	7251
APPROACH %'s :	22.73%	10.00%	67.27%	62.73%	1.69%	35.58%	9.42%	88.86%	1.73%	1.44%	87.67%	10.89%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	16	6	46	209	7	109	144	1439	33	24	1625	209	3867
PEAK HR FACTOR :		0.773			0.883			0.951			0.938		0.954

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Malibu Pier Signal and Pacific Coast Highway , City of Malibu

Date: 7/12/2012

Day: Thursday

Project #: CA12_5299_024

AM Peak Hour	730 AM
NOON Peak Hour	
PM Peak Hour	445 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Peak Hour Summary

Southbound Approach (Malibu Pier Signal)

	Lanes				
AM	0	0	0	3	AM
NOON	0	0	0	0	NOON
PM	3	0	3	1	PM

Eastbound Approach (Pacific Coast Highway)

Lanes	AM	NOON	PM
	1202	0	1940
	2	0	0
	1672	0	1799
	0	0	1

Westbound Approach

Lanes	AM	NOON	PM
	1	0	1
	1202	0	1937
	0	0	0
	1672	0	1802

CONTROL: 0

Northbound Approach

Lanes				
AM	0	0	0	AM
NOON	0	0	0	NOON
PM	1	0	0	PM

Total Ins & Outs

	North Leg		
AM	0	3	AM
NOON	0	0	NOON
PM	6	1	PM

West Leg			East Leg		
AM	NOON	PM			
1202	0	1940	1203	0	1938
1674	0	1800	1672	0	1802
			AM	NOON	PM

	South Leg	
AM	0	0
NOON	0	0
PM	1	0

Total Volume Per Leg

North Leg	
3	AM
0	NOON
7	PM

West Leg			East Leg		
AM	NOON	PM			
2876	0	3740	2875	0	3740
			AM	NOON	PM

South Leg	
AM	0
NOON	0
PM	1

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_024 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Malibu Pier Signal			Malibu Pier Signal			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM							0	414			190	0	604
7:15 AM							0	356			242	0	598
7:30 AM							0	432			279	0	711
7:45 AM							0	376			338	1	715
8:00 AM							0	451			277	0	728
8:15 AM							2	413			308	0	723
8:30 AM							0	428			274	0	702
8:45 AM							1	388			299	0	688

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	0	0	0	3	3258	0	0	2207	1	5469
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	0.09%	99.91%	0.00%	0.00%	99.95%	0.05%	

PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	0	0	0	2	1672	0	0	1202	1	2877
PEAK HR FACTOR :		0.000			0.000			0.928			0.887		0.988

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_024 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Malibu Pier Signal			Malibu Pier Signal			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM				0		4	0	444	0		418	0	866
4:15 PM				0		1	0	423	0		453	0	877
4:30 PM				0		1	0	406	0		467	0	874
4:45 PM				1		1	0	420	0		518	0	940
5:00 PM				0		0	0	466	0		484	0	950
5:15 PM				2		1	0	482	1		464	0	950
5:30 PM				0		1	0	431	0		471	1	904
5:45 PM				0		1	1	404	0		421	1	828

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	3	0	10	1	3476	1	0	3696	2	7189
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	23.08%	0.00%	76.92%	0.03%	99.94%	0.03%	0.00%	99.95%	0.05%	

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	3	0	3	0	1799	1	0	1937	1	3744
PEAK HR FACTOR :		0.000			0.500			0.932			0.935		0.985

CONTROL :

ITM Peak Hour Summary

Prepared by:

National Data & Surveying Services

Malibu Pier Signal and Pacific Coast Highway , City of Malibu

Date: 7/14/2012

Day: Saturday

Project #: CA12_5299_024

AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Peak Hour Summary

Southbound Approach (Malibu Pier Signal)

Lanes					
AM	0	0	0	0	AM
NOON	4	0	1	9	NOON
PM	0	0	0	0	PM

Eastbound Approach (Pacific Coast Highway)

Lanes	AM	NOON	PM
	0	1879	0
	0	4	0
	0	1669	0
	0	0	0

Westbound Approach

Lanes	AM	NOON	PM
	0	5	0
	0	1875	0
	0	0	0
	0	1670	0

CONTROL: 0

Northbound Approach

Lanes					
AM	0	0	0	0	AM
NOON	0	0	0	0	NOON
PM	0	0	0	0	PM

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs

	North Leg		
AM	0	0	AM
NOON	5	9	NOON
PM	0	0	PM

West Leg				East Leg		
AM	NOON	PM		AM	NOON	PM
0	1879	0		0	1880	0
0	1673	0		0	1670	0

	South Leg		
AM	0	0	AM
NOON	0	0	NOON
PM	0	0	PM

Total Volume Per Leg

	North Leg	
AM	0	AM
NOON	14	NOON
PM	0	PM

West Leg			East Leg		
AM	NOON	PM	AM	NOON	PM
0	3552	0	0	3550	0

	South Leg	
AM	0	AM
NOON	0	NOON
PM	0	PM

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_024 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Malibu Pier Signal			Malibu Pier Signal			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM				0		0	0	343			453	1	797
11:15 AM				0		0	7	351			408	11	777
11:30 AM				1		0	2	313			447	5	768
11:45 AM				2		0	3	408			438	0	851
12:00 PM				0		2	1	370			435	2	810
12:15 PM				1		1	2	417			471	1	893
12:30 PM				0		0	0	416			486	2	904
12:45 PM				0		1	1	466			483	0	951

	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	4	0	4	16	3084	0	0	3621	22	6751
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	0.52%	99.48%	0.00%	0.00%	99.40%	0.60%	

PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	0	0	0	1	0	4	4	1669	0	0	1875	5	3558
PEAK HR FACTOR :		0.000			0.625			0.896			0.963		0.935

CONTROL :

ITM Peak Hour Summary

Prepared by:

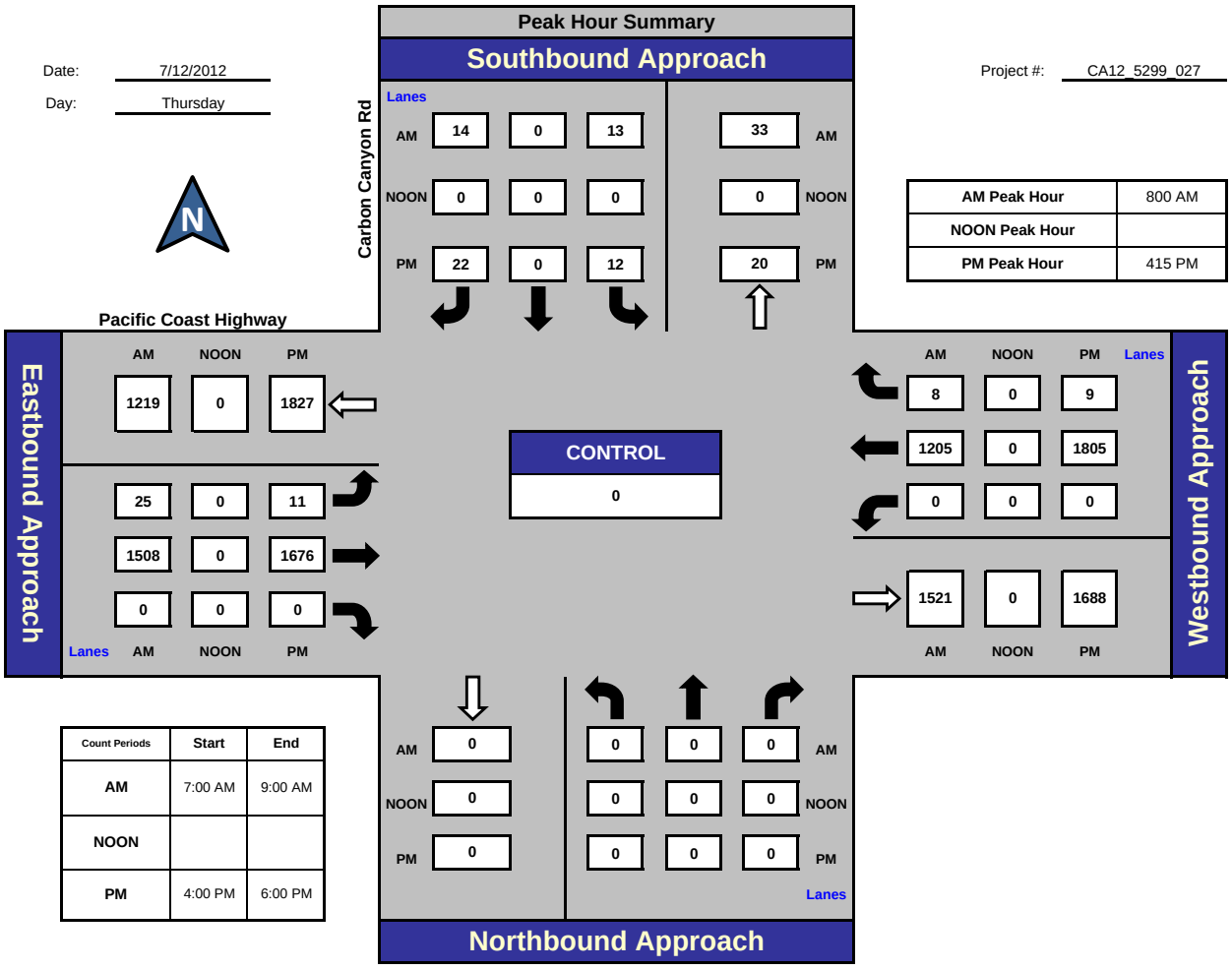
National Data & Surveying Services

Carbon Canyon Rd and Pacific Coast Highway , City of Malibu

Date: 7/12/2012

Day: Thursday

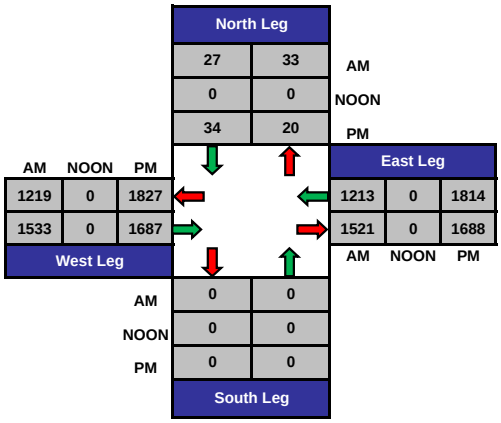
Project #: CA12_5299_027



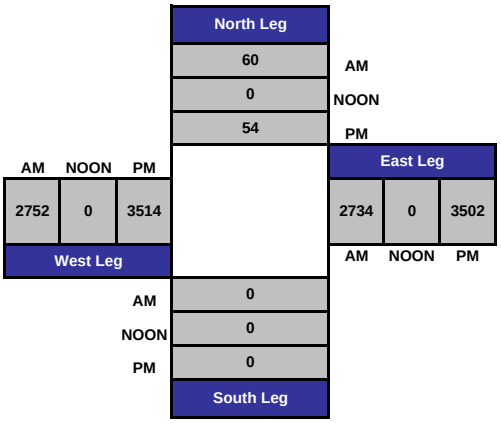
AM Peak Hour	800 AM
NOON Peak Hour	
PM Peak Hour	415 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_027 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Carbon Canyon Rd			Carbon Canyon Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM				3		1	7	364			223	2	600
7:15 AM				2		1	3	353			219	1	579
7:30 AM				3		1	4	391			286	6	691
7:45 AM				1		5	4	361			332	3	706
8:00 AM				2		3	6	391			304	3	709
8:15 AM				4		2	7	348			286	3	650
8:30 AM				5		7	5	379			306	0	702
8:45 AM				2		2	7	390			309	2	712
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	22	0	22	43	2977	0	0	2265	20	5349
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	50.00%	0.00%	50.00%	1.42%	98.58%	0.00%	0.00%	99.12%	0.88%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	0	0	13	0	14	25	1508	0	0	1205	8	2773
PEAK HR FACTOR :		0.000			0.563			0.965			0.975		0.974

CONTROL :

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_027 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Carbon Canyon Rd			Carbon Canyon Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM				4		2	2	447			394	2	851
4:15 PM				2		7	3	433			419	3	867
4:30 PM				4		5	3	399			487	3	901
4:45 PM				6		7	0	414			419	1	847
5:00 PM				0		3	5	430			480	2	920
5:15 PM				2		3	3	453			374	0	835
5:30 PM				3		2	1	467			450	6	929
5:45 PM				0		4	2	406			397	2	811
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	21	0	33	19	3449	0	0	3420	19	6961
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	38.89%	0.00%	61.11%	0.55%	99.45%	0.00%	0.00%	99.45%	0.55%	
PEAK HR START TIME :	415 PM												TOTAL
PEAK HR VOL :	0	0	0	12	0	22	11	1676	0	0	1805	9	3535
PEAK HR FACTOR :		0.000			0.654			0.967			0.926		0.961

CONTROL :

ITM Peak Hour Summary

Prepared by:

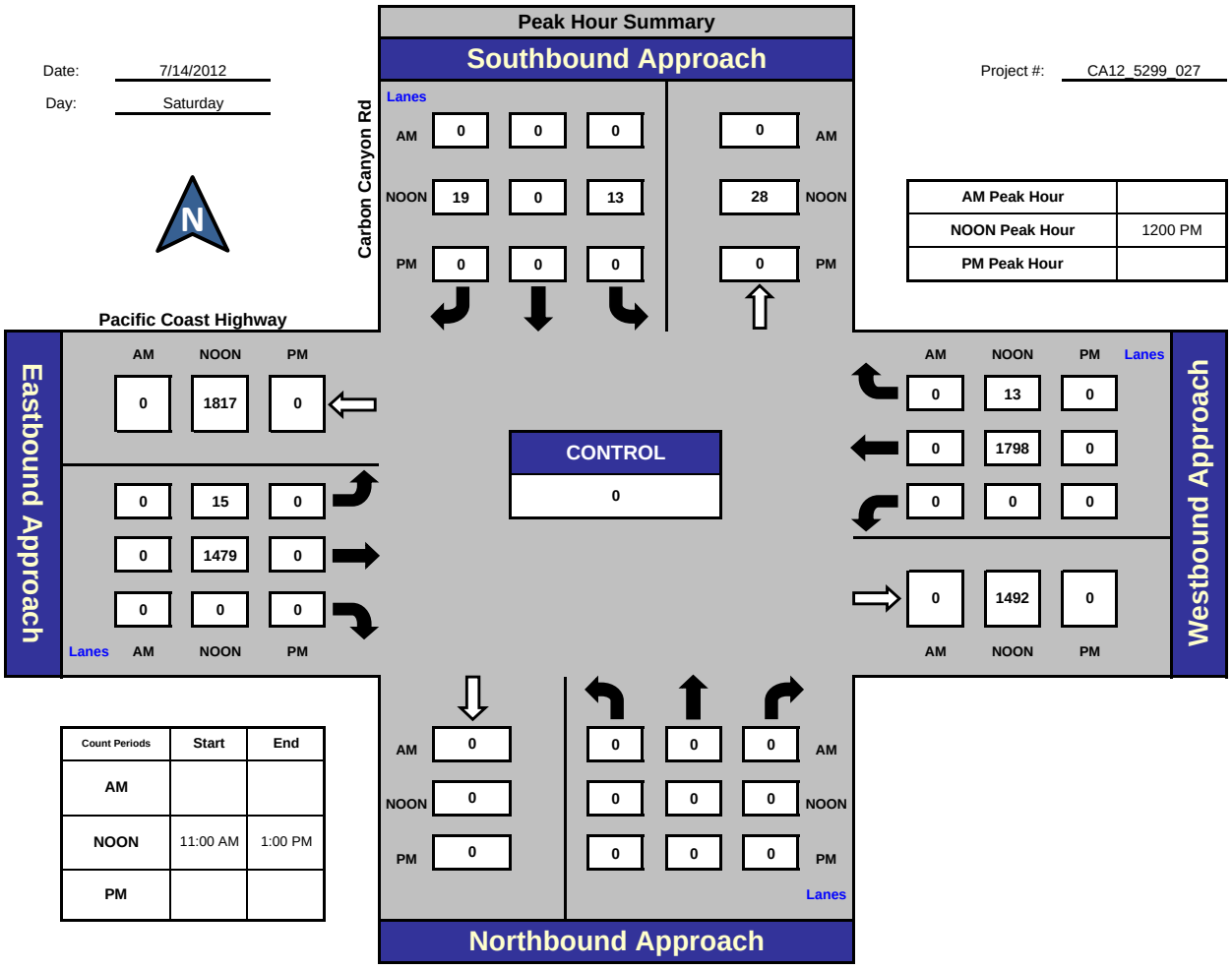
National Data & Surveying Services

Carbon Canyon Rd and Pacific Coast Highway , City of Malibu

Date: 7/14/2012

Day: Saturday

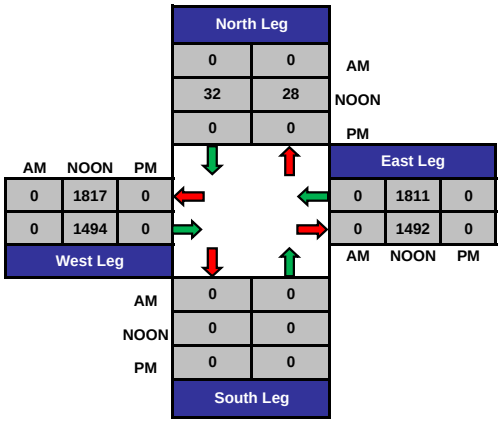
Project #: CA12_5299_027



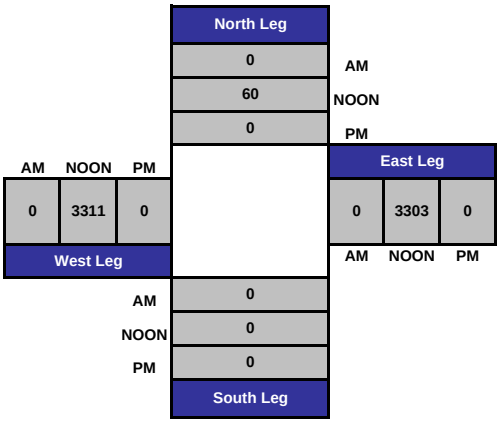
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_027 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Carbon Canyon Rd			Carbon Canyon Rd			Pacific Coast Highway			Pacific Coast Highway			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM				6		3	0	314			432	5	760
11:15 AM				1		2	3	322			421	2	751
11:30 AM				2		1	0	342			393	3	741
11:45 AM				2		2	2	334			428	4	772
12:00 PM				3		5	4	375			452	2	841
12:15 PM				2		5	5	356			434	4	806
12:30 PM				4		4	3	352			454	4	821
12:45 PM				4		5	3	396			458	3	869
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	24	0	27	20	2791	0	0	3472	27	6361
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	47.06%	0.00%	52.94%	0.71%	99.29%	0.00%	0.00%	99.23%	0.77%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	0	0	0	13	0	19	15	1479	0	0	1798	13	3337
PEAK HR FACTOR :		0.000			0.889			0.936			0.982		0.960

CONTROL :

ITM Peak Hour Summary

Prepared by:

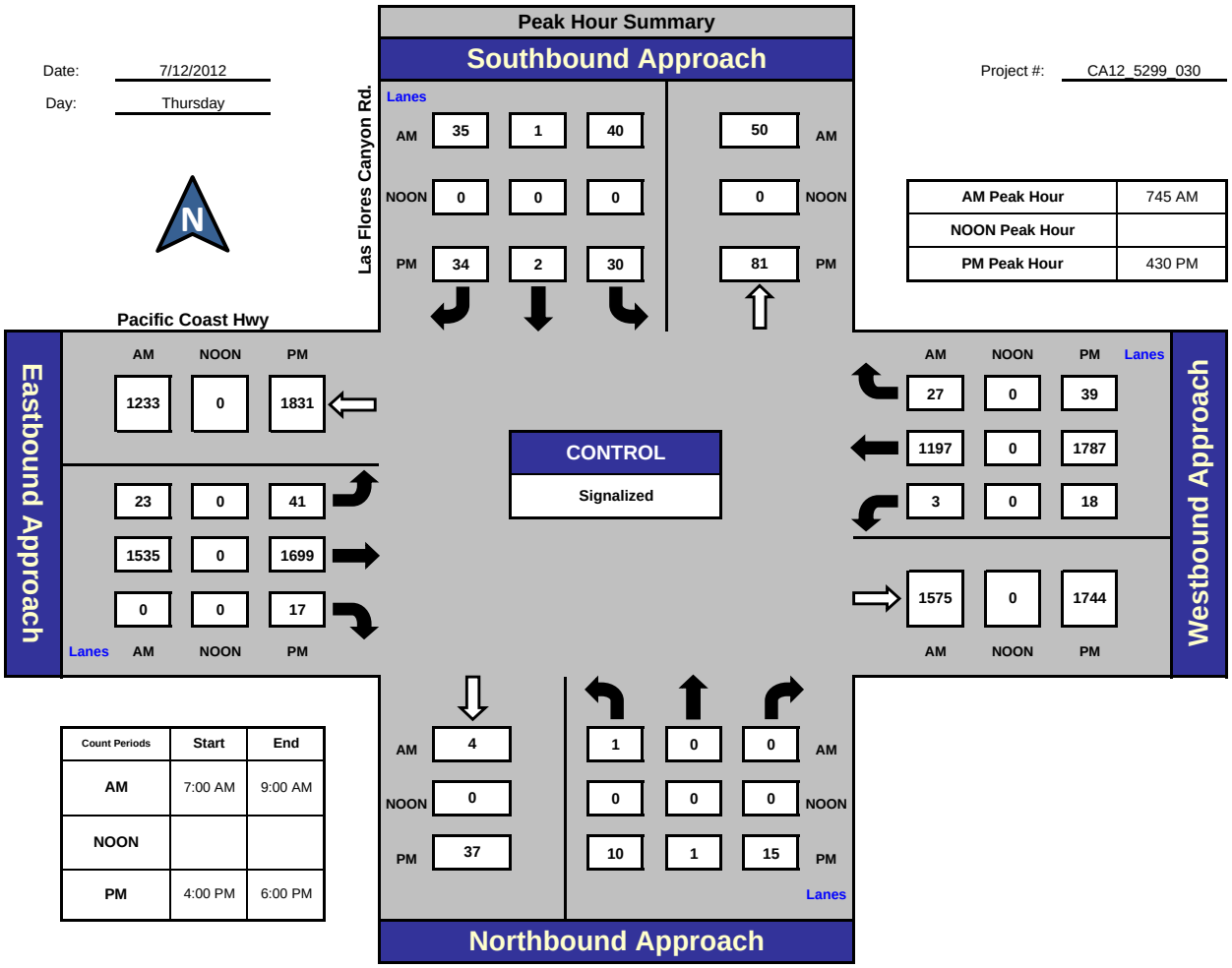
National Data & Surveying Services

Las Flores Canyon Rd. and Pacific Coast Hwy , City of Malibu

Date: 7/12/2012

Day: Thursday

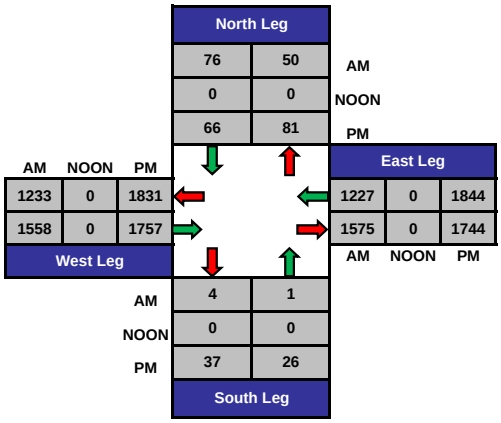
Project #: CA12_5299_030



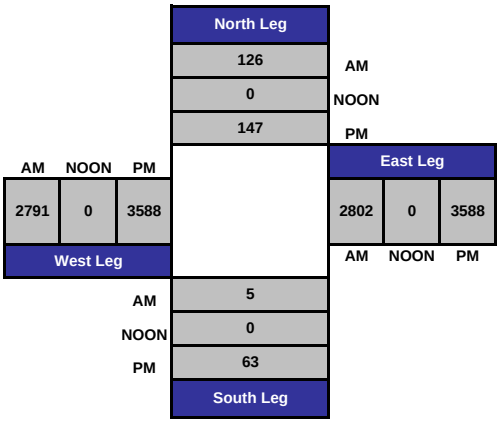
AM Peak Hour	745 AM
NOON Peak Hour	
PM Peak Hour	430 PM

Count Periods	Start	End
AM	7:00 AM	9:00 AM
NOON		
PM	4:00 PM	6:00 PM

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_030 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

AM

NS/EW Streets:	Las Flores Canyon Rd.			Las Flores Canyon Rd.			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
7:00 AM	0	0	1	16	0	3	2	372	0	0	206	8	608
7:15 AM	1	0	0	9	0	7	5	362	0	0	259	8	651
7:30 AM	1	0	0	13	0	4	6	380	0	2	257	8	671
7:45 AM	1	0	0	15	0	12	4	407	0	0	323	7	769
8:00 AM	0	0	0	6	0	9	7	375	0	0	286	6	689
8:15 AM	0	0	0	6	1	7	6	380	0	1	270	7	678
8:30 AM	0	0	0	13	0	7	6	373	0	2	318	7	726
8:45 AM	3	1	2	5	0	12	4	364	3	2	307	7	710
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	6	1	3	83	1	61	40	3013	3	7	2226	58	5502
APPROACH %'s :	60.00%	10.00%	30.00%	57.24%	0.69%	42.07%	1.31%	98.59%	0.10%	0.31%	97.16%	2.53%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	1	0	0	40	1	35	23	1535	0	3	1197	27	2862
PEAK HR FACTOR :		0.250			0.704			0.948			0.930		0.930

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_030 **Day:** THURSDAY

City: City of Malibu **Date:** 7/12/2012

PM

NS/EW Streets:	Las Flores Canyon Rd.			Las Flores Canyon Rd.			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
4:00 PM	1	0	2	9	0	9	10	466	2	3	396	7	905
4:15 PM	3	1	6	10	0	9	7	397	6	3	399	5	846
4:30 PM	4	0	4	7	1	10	6	438	5	1	511	12	999
4:45 PM	0	0	4	5	1	9	9	399	3	5	420	10	865
5:00 PM	2	0	7	9	0	8	14	402	2	8	452	8	912
5:15 PM	4	1	0	9	0	7	12	460	7	4	404	9	917
5:30 PM	4	1	4	1	0	13	9	474	8	4	416	10	944
5:45 PM	1	0	2	8	0	8	12	393	6	2	370	15	817
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	19	3	29	58	2	73	79	3429	39	30	3368	76	7205
APPROACH %'s :	37.25%	5.88%	56.86%	43.61%	1.50%	54.89%	2.23%	96.67%	1.10%	0.86%	96.95%	2.19%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	10	1	15	30	2	34	41	1699	17	18	1787	39	3693
PEAK HR FACTOR :		0.722			0.917			0.917			0.880		0.924

CONTROL : Signalized

ITM Peak Hour Summary

Prepared by:

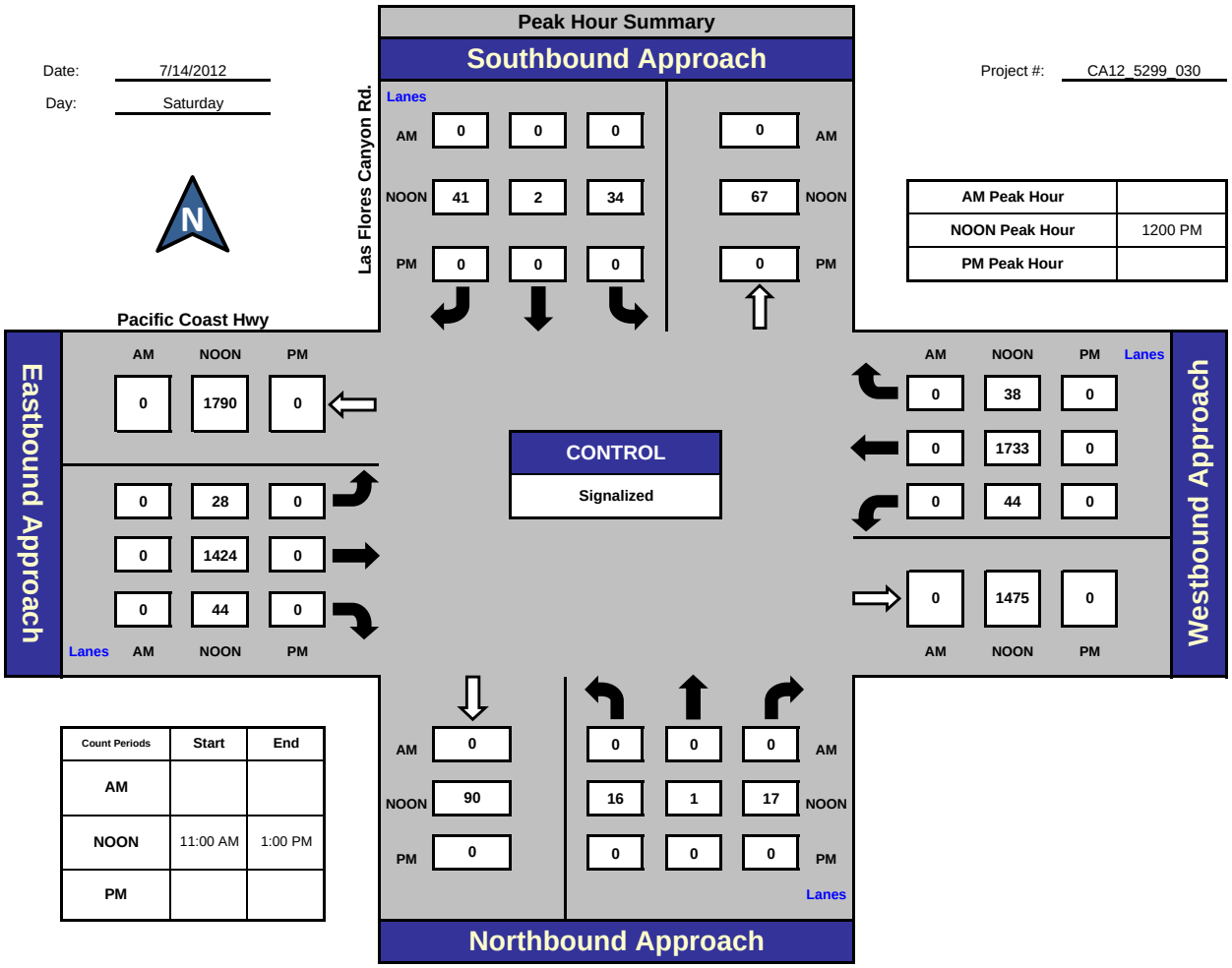
National Data & Surveying Services

Las Flores Canyon Rd. and Pacific Coast Hwy , City of Malibu

Date: 7/14/2012

Day: Saturday

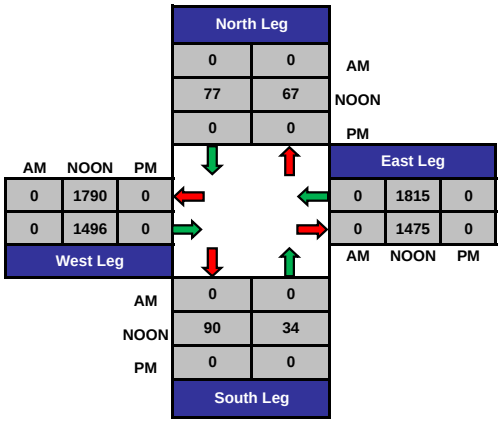
Project #: CA12_5299_030



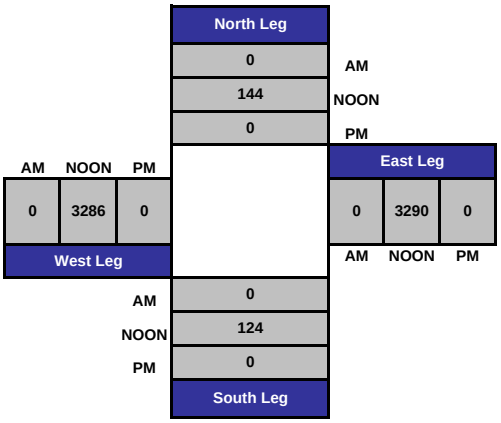
AM Peak Hour	
NOON Peak Hour	1200 PM
PM Peak Hour	

Count Periods	Start	End
AM		
NOON	11:00 AM	1:00 PM
PM		

Total Ins & Outs



Total Volume Per Leg



Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: CA12_5299_030 **Day:** SATURDAY

City: City of Malibu **Date:** 07/14/2012

NOON

NS/EW Streets:	Las Flores Canyon Rd.			Las Flores Canyon Rd.			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
LANES:	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
11:00 AM	2	0	3	7	12	3	10	305	15	3	434	9	803
11:15 AM	1	0	2	14	0	10	6	294	5	7	406	9	754
11:30 AM	2	0	2	6	1	15	6	338	7	4	402	6	789
11:45 AM	2	0	2	6	0	16	8	321	8	15	419	4	801
12:00 PM	1	0	1	12	2	11	7	373	10	5	451	15	888
12:15 PM	1	0	3	7	0	13	9	341	10	9	422	5	820
12:30 PM	9	1	5	9	0	7	7	325	12	11	434	9	829
12:45 PM	5	0	8	6	0	10	5	385	12	19	426	9	885
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	23	1	26	67	15	85	58	2682	79	73	3394	66	6569
APPROACH %'s :	46.00%	2.00%	52.00%	40.12%	8.98%	50.90%	2.06%	95.14%	2.80%	2.07%	96.07%	1.87%	
PEAK HR START TIME :	1200 PM												TOTAL
PEAK HR VOL :	16	1	17	34	2	41	28	1424	44	44	1733	38	3422
PEAK HR FACTOR :		0.567			0.770			0.930			0.963		0.963

CONTROL : Signalized

Prepared by NDS/ATD

VOLUME

Pacific Coast Hwy btwn Malibu Canyon Rd & John Tyler Dr

Day: Saturday
Date: 7/14/2012

City: Malibu
Project #: CA12_5300_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	21,151	21,244	42,395

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			35		57		92		12:00			337		404		741	
00:15			44		35		79		12:15			344		409		753	
00:30			18		48		66		12:30			364		473		837	
00:45			21	118	41	181	62	299	12:45			406	1451	475	1761	881	3212
01:00			33		26		59		13:00			365		465		830	
01:15			15		26		41		13:15			397		472		869	
01:30			17		26		43		13:30			344		499		843	
01:45			12	77	37	115	49	192	13:45			343	1449	441	1877	784	3326
02:00			16		21		37		14:00			431		482		913	
02:15			5		24		29		14:15			382		446		828	
02:30			11		15		26		14:30			381		453		834	
02:45			5	37	15	75	20	112	14:45			403	1597	458	1839	861	3436
03:00			9		9		18		15:00			386		432		818	
03:15			9		14		23		15:15			364		441		805	
03:30			10		9		19		15:30			424		461		885	
03:45			13	41	13	45	26	86	15:45			469	1643	427	1761	896	3404
04:00			6		3		9		16:00			456		408		864	
04:15			12		5		17		16:15			464		408		872	
04:30			10		11		21		16:30			477		376		853	
04:45			12	40	27	46	39	86	16:45			470	1867	389	1581	859	3448
05:00			18		25		43		17:00			502		329		831	
05:15			22		24		46		17:15			505		347		852	
05:30			30		39		69		17:30			468		382		850	
05:45			28	98	58	146	86	244	17:45			493	1968	264	1322	757	3290
06:00			42		64		106		18:00			502		319		821	
06:15			53		90		143		18:15			452		280		732	
06:30			58		124		182		18:30			426		297		723	
06:45			63	216	135	413	198	629	18:45			429	1809	261	1157	690	2966
07:00			79		162		241		19:00			372		289		661	
07:15			108		184		292		19:15			334		235		569	
07:30			96		213		309		19:30			333		256		589	
07:45			112	395	245	804	357	1199	19:45			294	1333	204	984	498	2317
08:00			131		233		364		20:00			305		194		499	
08:15			164		202		366		20:15			296		170		466	
08:30			150		218		368		20:30			306		176		482	
08:45			180	625	221	874	401	1499	20:45			277	1184	144	684	421	1868
09:00			206		245		451		21:00			279		133		412	
09:15			216		227		443		21:15			207		135		342	
09:30			211		279		490		21:30			225		142		367	
09:45			220	853	298	1049	518	1902	21:45			189	900	137	547	326	1447
10:00			264		323		587		22:00			170		145		315	
10:15			272		354		626		22:15			146		129		275	
10:30			243		341		584		22:30			166		125		291	
10:45			310	1089	389	1407	699	2496	22:45			165	647	131	530	296	1177
11:00			301		424		725		23:00			135		102		237	
11:15			321		397		718		23:15			111		92		203	
11:30			300		437		737		23:30			109		88		197	
11:45			355	1277	426	1684	781	2961	23:45			82	437	80	362	162	799
TOTALS				4866		6839		11705	TOTALS				16285		14405		30690
SPLIT %				41.6%		58.4%		27.6%	SPLIT %				53.1%		46.9%		72.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	21,151	21,244	42,395

AM Peak Hour			11:45	11:45	11:45	PM Peak Hour			17:00	12:45	15:30
AM Pk Volume			1400	1712	3112	PM Pk Volume			1968	1911	3517
Pk Hr Factor			0.962	0.905	0.930	Pk Hr Factor			0.974	0.957	0.981
7 - 9 Volume	0	0	1020	1678	2698	4 - 6 Volume	0	0	3835	2903	6738
7 - 9 Peak Hour			08:00	07:45	08:00	4 - 6 Peak Hour			17:00	16:00	16:00
7 - 9 Pk Volume	0	0	625	898	1499	4 - 6 Pk Volume	0	0	1968	1581	3448
Pk Hr Factor	0.000	0.000	0.868	0.916	0.935	Pk Hr Factor	0.000	0.000	0.974	0.969	0.989

Prepared by NDS/ATD

VOLUME

Pacific Coast Hwy e/o Cross Creek Rd

Day: Thursday
Date: 7/12/2012

City: Malibu
Project #: CA12_5300_007

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,014	23,378	46,392

AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL
00:00			27	47	74	12:00			371	382	753
00:15			22	32	54	12:15			381	382	763
00:30			20	37	57	12:30			378	361	739
00:45			15 84	32 148	47 232	12:45			404 1534	419 1544	823 3078
01:00			10	25	35	13:00			381	396	777
01:15			16	26	42	13:15			386	388	774
01:30			13	16	29	13:30			371	411	782
01:45			11 50	15 82	26 132	13:45			390 1528	408 1603	798 3131
02:00			8	14	22	14:00			388	369	757
02:15			11	10	21	14:15			385	434	819
02:30			8	11	19	14:30			356	468	824
02:45			17 44	11 46	28 90	14:45			368 1497	473 1744	841 3241
03:00			6	10	16	15:00			363	432	795
03:15			9	9	18	15:15			456	462	918
03:30			9	11	20	15:30			455	483	938
03:45			6 30	10 40	16 70	15:45			409 1683	473 1850	882 3533
04:00			21	6	27	16:00			442	444	886
04:15			28	10	38	16:15			420	477	897
04:30			23	12	35	16:30			384	465	849
04:45			27 99	28 56	55 155	16:45			423 1669	492 1878	915 3547
05:00			40	37	77	17:00			461	533	994
05:15			48	44	92	17:15			438	484	922
05:30			91	65	156	17:30			418	436	854
05:45			110 289	97 243	207 532	17:45			398 1715	472 1925	870 3640
06:00			150	119	269	18:00			369	466	835
06:15			217	145	362	18:15			358	473	831
06:30			287	206	493	18:30			376	408	784
06:45			348 1002	236 706	584 1708	18:45			324 1427	447 1794	771 3221
07:00			415	179	594	19:00			256	392	648
07:15			354	213	567	19:15			258	385	643
07:30			419	280	699	19:30			233	298	531
07:45			378 1566	348 1020	726 2586	19:45			191 938	237 1312	428 2250
08:00			429	286	715	20:00			164	241	405
08:15			404	312	716	20:15			174	228	402
08:30			437	253	690	20:30			144	218	362
08:45			391 1661	327 1178	718 2839	20:45			162 644	212 899	374 1543
09:00			387	275	662	21:00			152	187	339
09:15			390	295	685	21:15			139	165	304
09:30			374	294	668	21:30			132	137	269
09:45			358 1509	295 1159	653 2668	21:45			144 567	151 640	295 1207
10:00			406	286	692	22:00			111	129	240
10:15			370	271	641	22:15			103	126	229
10:30			317	368	685	22:30			91	96	187
10:45			334 1427	325 1250	659 2677	22:45			84 389	76 427	160 816
11:00			341	385	726	23:00			62	90	152
11:15			345	385	730	23:15			58	54	112
11:30			384	389	773	23:30			28	71	99
11:45			406 1476	404 1563	810 3039	23:45			38 186	56 271	94 457
TOTALS			9237	7491	16728	TOTALS			13777	15887	29664
SPLIT %			55.2%	44.8%	36.1%	SPLIT %			46.4%	53.6%	63.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,014	23,378	46,392

AM Peak Hour			08:00	11:00	11:30	PM Peak Hour			15:15	16:30	16:45
AM Pk Volume			1661	1563	3099	PM Pk Volume			1762	1974	3685
Pk Hr Factor			0.950	0.967	0.956	Pk Hr Factor			0.966	0.926	0.927
7 - 9 Volume	0	0	3227	2198	5425	4 - 6 Volume	0	0	3384	3803	7187
7 - 9 Peak Hour			08:00	07:30	07:30	4 - 6 Peak Hour			16:45	16:30	16:45
7 - 9 Pk Volume	0	0	1661	1226	2856	4 - 6 Pk Volume	0	0	1740	1974	3685
Pk Hr Factor	0.000	0.000	0.950	0.881	0.983	Pk Hr Factor	0.000	0.000	0.944	0.926	0.927

Prepared by NDS/ATD

VOLUME

Pacific Coast Hwy e/o Cross Creek Rd

Day: Saturday
Date: 7/14/2012

City: Malibu
Project #: CA12_5300_007

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,049	23,741	46,790

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			49		66		115		12:00			396		432		828	
00:15			54		55		109		12:15			419		479		898	
00:30			31		54		85		12:30			427		447		874	
00:45			29	163	49	224	78	387	12:45			443	1685	498	1856	941	3541
01:00			39		39		78		13:00			396		443		839	
01:15			22		41		63		13:15			405		442		847	
01:30			18		27		45		13:30			380		490		870	
01:45			15	94	45	152	60	246	13:45			415	1596	433	1808	848	3404
02:00			10		32		42		14:00			456		479		935	
02:15			8		34		42		14:15			474		439		913	
02:30			9		22		31		14:30			431		442		873	
02:45			6	33	15	103	21	136	14:45			428	1789	498	1858	926	3647
03:00			16		16		32		15:00			431		450		881	
03:15			11		13		24		15:15			421		485		906	
03:30			10		12		22		15:30			463		438		901	
03:45			12	49	13	54	25	103	15:45			469	1784	479	1852	948	3636
04:00			5		8		13		16:00			461		422		883	
04:15			11		9		20		16:15			466		484		950	
04:30			9		12		21		16:30			498		425		923	
04:45			17	42	29	58	46	100	16:45			467	1892	460	1791	927	3683
05:00			27		30		57		17:00			518		408		926	
05:15			41		27		68		17:15			489		414		903	
05:30			49		32		81		17:30			447		419		866	
05:45			35	152	47	136	82	288	17:45			457	1911	387	1628	844	3539
06:00			65		55		120		18:00			477		339		816	
06:15			59		64		123		18:15			469		368		837	
06:30			67		82		149		18:30			446		333		779	
06:45			79	270	133	334	212	604	18:45			417	1809	365	1405	782	3214
07:00			98		183		281		19:00			386		386		772	
07:15			109		175		284		19:15			380		318		698	
07:30			124		252		376		19:30			356		280		636	
07:45			138	469	245	855	383	1324	19:45			328	1450	250	1234	578	2684
08:00			156		297		453		20:00			301		241		542	
08:15			155		248		403		20:15			272		208		480	
08:30			182		345		527		20:30			325		213		538	
08:45			181	674	311	1201	492	1875	20:45			294	1192	166	828	460	2020
09:00			239		271		510		21:00			275		190		465	
09:15			273		277		550		21:15			246		183		429	
09:30			242		323		565		21:30			226		156		382	
09:45			270	1024	395	1266	665	2290	21:45			195	942	154	683	349	1625
10:00			296		381		677		22:00			200		170		370	
10:15			309		386		695		22:15			183		127		310	
10:30			306		415		721		22:30			153		144		297	
10:45			375	1286	450	1632	825	2918	22:45			203	739	151	592	354	1331
11:00			369		434		803		23:00			148		129		277	
11:15			366		422		788		23:15			125		118		243	
11:30			354		452		806		23:30			141		123		264	
11:45			415	1504	398	1706	813	3210	23:45			86	500	115	485	201	985
TOTALS				5760		7721		13481	TOTALS				17289		16020		33309
SPLIT %				42.7%		57.3%		28.8%	SPLIT %				51.9%		48.1%		71.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	23,049	23,741	46,790

AM Peak Hour			11:45	11:30	11:45	PM Peak Hour			16:30	14:30	16:15
AM Pk Volume			1657	1761	3413	PM Pk Volume			1972	1875	3726
Pk Hr Factor			0.970	0.919	0.950	Pk Hr Factor			0.952	0.941	0.981
7 - 9 Volume	0	0	1143	2056	3199	4 - 6 Volume	0	0	3803	3419	7222
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:30	16:00	16:15
7 - 9 Pk Volume	0	0	674	1201	1875	4 - 6 Pk Volume	0	0	1972	1791	3726
Pk Hr Factor	0.000	0.000	0.926	0.870	0.889	Pk Hr Factor	0.000	0.000	0.952	0.925	0.981

Prepared by NDS/ATD

VOLUME

Malibu Canyon Rd n/o Civic Center Way

Day: Thursday
Date: 7/12/2012

City: Malibu
Project #: CA12_5300_005

DAILY TOTALS	NB	SB	EB	WB	Total
	10,983	12,026	0	0	23,009

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	21		10				31		12:00	122		191				313	
00:15	8		9				17		12:15	132		208				340	
00:30	14		7				21		12:30	137		211				348	
00:45	10	53	7	33			17	86	12:45	129	520	192	802			321	1322
01:00	9		9				18		13:00	148		176				324	
01:15	8		6				14		13:15	168		161				329	
01:30	5		3				8		13:30	176		168				344	
01:45	10	32	2	20			12	52	13:45	174	666	173	678			347	1344
02:00	5		5				10		14:00	166		137				303	
02:15	2		6				8		14:15	181		134				315	
02:30	2		4				6		14:30	201		149				350	
02:45	0	9	3	18			3	27	14:45	240	788	141	561			381	1349
03:00	3		2				5		15:00	247		135				382	
03:15	10		2				12		15:15	228		150				378	
03:30	1		3				4		15:30	271		152				423	
03:45	3	17	7	14			10	31	15:45	292	1038	138	575			430	1613
04:00	2		4				6		16:00	295		149				444	
04:15	3		6				9		16:15	286		162				448	
04:30	6		9				15		16:30	310		136				446	
04:45	3	14	13	32			16	46	16:45	318	1209	185	632			503	1841
05:00	11		14				25		17:00	324		151				475	
05:15	8		21				29		17:15	354		185				539	
05:30	12		49				61		17:30	358		183				541	
05:45	21	52	77	161			98	213	17:45	338	1374	180	699			518	2073
06:00	19		110				129		18:00	290		177				467	
06:15	32		163				195		18:15	304		181				485	
06:30	33		247				280		18:30	273		175				448	
06:45	61	145	344	864			405	1009	18:45	240	1107	121	654			361	1761
07:00	54		306				360		19:00	231		102				333	
07:15	68		282				350		19:15	225		89				314	
07:30	93		330				423		19:30	180		72				252	
07:45	88	303	347	1265			435	1568	19:45	125	761	67	330			192	1091
08:00	116		368				484		20:00	119		60				179	
08:15	125		332				457		20:15	137		58				195	
08:30	110		361				471		20:30	132		49				181	
08:45	135	486	314	1375			449	1861	20:45	98	486	45	212			143	698
09:00	107		309				416		21:00	90		47				137	
09:15	96		264				360		21:15	100		30				130	
09:30	104		227				331		21:30	75		43				118	
09:45	108	415	280	1080			388	1495	21:45	64	329	42	162			106	491
10:00	100		202				302		22:00	72		20				92	
10:15	104		218				322		22:15	65		42				107	
10:30	110		177				287		22:30	47		28				75	
10:45	97	411	235	832			332	1243	22:45	37	221	21	111			58	332
11:00	93		206				299		23:00	44		18				62	
11:15	82		209				291		23:15	38		19				57	
11:30	116		234				350		23:30	27		15				42	
11:45	125	416	204	853			329	1269	23:45	22	131	11	63			33	194
TOTALS		2353		6547				**8900**	**TOTALS**		8630		5479				**14109**
SPLIT %		26.4%		73.6%				**38.7%**	**SPLIT %**		61.2%		38.8%				**61.3%**

DAILY TOTALS	NB	SB	EB	WB	Total
	10,983	12,026	0	0	23,009

AM Peak Hour	11:45	07:45			**08:00**	**PM Peak Hour**	17:00	12:00			**17:00**
AM Pk Volume	516	1408			**1861**	**PM Pk Volume**	1374	802			**2073**
Pk Hr Factor	0.942	0.957			**0.961**	**Pk Hr Factor**	0.959	0.950			**0.958**
7 - 9 Volume	789	2640	0	0	**3429**	**4 - 6 Volume**	2583	1331	0	0	**3914**
7 - 9 Peak Hour	08:00	07:45			**08:00**	**4 - 6 Peak Hour**	17:00	16:45			**17:00**
7 - 9 Pk Volume	486	1408	0	0	**1861**	**4 - 6 Pk Volume**	1374	704	0	0	**2073**
Pk Hr Factor	0.900	0.957	0.000	0.000	**0.961**	**Pk Hr Factor**	0.959	0.951	0.000	0.000	**0.958**

Prepared by NDS/ATD

VOLUME

Malibu Canyon Rd n/o Civic Center Way

Day: Saturday
Date: 7/14/2012

City: Malibu
Project #: CA12_5300_005

DAILY TOTALS	NB	SB	EB	WB	Total
	9,888	10,680	0	0	20,568

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	29		15				44		12:00	132		231				363	
00:15	29		14				43		12:15	133		265				398	
00:30	14		12				26		12:30	126		286				412	
00:45	21	93	18	59			39	152	12:45	129	520	255	1037			384	1557
01:00	19		6				25		13:00	150		275				425	
01:15	16		10				26		13:15	160		266				426	
01:30	8		5				13		13:30	160		241				401	
01:45	13	56	6	27			19	83	13:45	154	624	272	1054			426	1678
02:00	16		11				27		14:00	166		242				408	
02:15	12		6				18		14:15	170		219				389	
02:30	13		3				16		14:30	163		212				375	
02:45	2	43	8	28			10	71	14:45	192	691	234	907			426	1598
03:00	8		6				14		15:00	180		200				380	
03:15	5		4				9		15:15	205		204				409	
03:30	5		5				10		15:30	211		238				449	
03:45	3	21	3	18			6	39	15:45	224	820	231	873			455	1693
04:00	5		2				7		16:00	219		181				400	
04:15	2		0				2		16:15	233		180				413	
04:30	3		4				7		16:30	251		189				440	
04:45	2	12	13	19			15	31	16:45	218	921	163	713			381	1634
05:00	4		12				16		17:00	260		162				422	
05:15	8		22				30		17:15	221		168				389	
05:30	6		24				30		17:30	234		171				405	
05:45	7	25	37	95			44	120	17:45	248	963	156	657			404	1620
06:00	14		44				58		18:00	262		148				410	
06:15	13		40				53		18:15	239		152				391	
06:30	22		52				74		18:30	232		134				366	
06:45	21	70	74	210			95	280	18:45	212	945	155	589			367	1534
07:00	39		89				128		19:00	184		123				307	
07:15	33		99				132		19:15	198		123				321	
07:30	35		120				155		19:30	189		119				308	
07:45	41	148	113	421			154	569	19:45	169	740	84	449			253	1189
08:00	45		108				153		20:00	184		66				250	
08:15	57		105				162		20:15	181		61				242	
08:30	62		118				180		20:30	140		73				213	
08:45	61	225	131	462			192	687	20:45	146	651	54	254			200	905
09:00	66		146				212		21:00	134		48				182	
09:15	67		146				213		21:15	114		47				161	
09:30	96		143				239		21:30	118		67				185	
09:45	93	322	177	612			270	934	21:45	91	457	43	205			134	662
10:00	94		167				261		22:00	108		44				152	
10:15	97		159				256		22:15	90		49				139	
10:30	88		201				289		22:30	97		33				130	
10:45	106	385	237	764			343	1149	22:45	88	383	44	170			132	553
11:00	114		242				356		23:00	81		22				103	
11:15	116		220				336		23:15	78		17				95	
11:30	136		264				400		23:30	71		19				90	
11:45	116	482	255	981			371	1463	23:45	61	291	18	76			79	367
TOTALS		1882		3696				**5578**	**TOTALS**		8006		6984				**14990**
SPLIT %		33.7%		66.3%				**27.1%**	**SPLIT %**		53.4%		46.6%				**72.9%**

DAILY TOTALS	NB	SB	EB	WB	Total
	9,888	10,680	0	0	20,568

AM Peak Hour	11:30	11:45				**11:45**	**PM Peak Hour**	17:30	12:30				**15:30**
AM Pk Volume	517	1037				**1544**	**PM Pk Volume**	983	1082				**1717**
Pk Hr Factor	0.950	0.906				**0.937**	**Pk Hr Factor**	0.938	0.946				**0.943**
7 - 9 Volume	373	883	0	0		**1256**	**4 - 6 Volume**	1884	1370	0	0		**3254**
7 - 9 Peak Hour	08:00	08:00				**08:00**	**4 - 6 Peak Hour**	17:00	16:00				**16:15**
7 - 9 Pk Volume	225	462	0	0		**687**	**4 - 6 Pk Volume**	963	713	0	0		**1656**
Pk Hr Factor	0.907	0.882	0.000	0.000		**0.895**	**Pk Hr Factor**	0.926	0.943	0.000	0.000		**0.941**

Prepared by NDS/ATD

VOLUME

Pacific Coast Hwy btwn Malibu Canyon Rd & John Tyler Dr

Day: Thursday
Date: 7/12/2012

City: Malibu
Project #: CA12_5300_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	18,096	17,562	35,658

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			29		40		69		12:00			355		336		691	
00:15			11		27		38		12:15			309		309		618	
00:30			11		28		39		12:30			321		354		675	
00:45			9	60	22	117	31	177	12:45			310	1295	300	1299	610	2594
01:00			9		16		25		13:00			359		312		671	
01:15			9		29		38		13:15			349		299		648	
01:30			8		15		23		13:30			336		314		650	
01:45			15	41	11	71	26	112	13:45			365	1409	335	1260	700	2669
02:00			7		13		20		14:00			333		321		654	
02:15			9		11		20		14:15			363		352		715	
02:30			6		5		11		14:30			292		355		647	
02:45			9	31	8	37	17	68	14:45			317	1305	352	1380	669	2685
03:00			5		6		11		15:00			365		357		722	
03:15			10		5		15		15:15			387		382		769	
03:30			5		8		13		15:30			455		304		759	
03:45			3	23	8	27	11	50	15:45			367	1574	352	1395	719	2969
04:00			29		3		32		16:00			362		311		673	
04:15			18		10		28		16:15			397		342		739	
04:30			21		6		27		16:30			340		334		674	
04:45			20	88	15	34	35	122	16:45			397	1496	351	1338	748	2834
05:00			25		12		37		17:00			381		358		739	
05:15			35		24		59		17:15			340		339		679	
05:30			68		35		103		17:30			324		340		664	
05:45			97	225	73	144	170	369	17:45			297	1342	291	1328	588	2670
06:00			93		102		195		18:00			284		279		563	
06:15			129		117		246		18:15			278		288		566	
06:30			155		145		300		18:30			280		283		563	
06:45			209	586	181	545	390	1131	18:45			241	1083	264	1114	505	2197
07:00			195		174		369		19:00			229		268		497	
07:15			216		161		377		19:15			201		230		431	
07:30			252		203		455		19:30			199		192		391	
07:45			218	881	234	772	452	1653	19:45			156	785	179	869	335	1654
08:00			279		200		479		20:00			151		170		321	
08:15			229		218		447		20:15			153		162		315	
08:30			253		201		454		20:30			133		157		290	
08:45			277	1038	252	871	529	1909	20:45			121	558	145	634	266	1192
09:00			275		230		505		21:00			112		144		256	
09:15			289		218		507		21:15			107		134		241	
09:30			280		216		496		21:30			88		111		199	
09:45			280	1124	237	901	517	2025	21:45			99	406	138	527	237	933
10:00			315		239		554		22:00			85		106		191	
10:15			272		238		510		22:15			60		98		158	
10:30			281		278		559		22:30			72		93		165	
10:45			269	1137	297	1052	566	2189	22:45			45	262	65	362	110	624
11:00			266		296		562		23:00			50		73		123	
11:15			302		312		614		23:15			42		37		79	
11:30			299		338		637		23:30			28		47		75	
11:45			332	1199	334	1280	666	2479	23:45			28	148	48	205	76	353
TOTALS				6433		5851		12284	TOTALS				11663		11711		23374
SPLIT %				52.4%		47.6%		34.4%	SPLIT %				49.9%		50.1%		65.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	18,096	17,562	35,658

AM Peak Hour			11:45	11:45	11:45	PM Peak Hour			15:30	14:30	15:00
AM Pk Volume			1317	1333	2650	PM Pk Volume			1581	1446	2969
Pk Hr Factor			0.927	0.941	0.959	Pk Hr Factor			0.869	0.946	0.965
7 - 9 Volume	0	0	1919	1643	3562	4 - 6 Volume	0	0	2838	2666	5504
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:15	16:45	16:15
7 - 9 Pk Volume	0	0	1038	871	1909	4 - 6 Pk Volume	0	0	1515	1388	2900
Pk Hr Factor	0.000	0.000	0.930	0.864	0.902	Pk Hr Factor	0.000	0.000	0.954	0.969	0.969

APPENDIX E

LEVEL OF SERVICE WORKSHEETS

Existing / Existing + Project

Future Cumulative + Project

EXISTING / EXISTING + PROJECT

Intersection Capacity Utilization (ICU)

Intersection No. 1	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Kanan Dume Road		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	199	2	0.069	4%	0	199	2	0.069
Southbound Lt-Th		0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	250	1	**0.069**	0%	0	250	1	**0.069**
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	139	1	**0.087**	0%	0	139	1	**0.087**
Eastbound Lt-Th		0	0.000	0%			0	0.000
Eastbound Thru	672	2	0.210	10%	1	673	2	0.210
Eastbound Th-Rt		0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	601	2	**0.188**	(10%)	1	602	2	**0.188**
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	106	1	0.066	(4%)	0	106	1	0.066
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.069			North-South:		0.069
	East-West:		0.275			East-West:		0.275
	Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.394					0.394
Level of Service (LOS):			**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Kanan Dume Road		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
PM Peak: 4:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	155	2	**0.054**	4%	1	156	2	**0.054**
Southbound Lt-Th		0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	194	1	0.000	0%	0	194	1	0.000
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	344	1	**0.215**	0%	0	344	1	**0.215**
Eastbound Lt-Th		0	0.000	0%			0	0.000
Eastbound Thru	972	2	0.304	10%	1	973	2	0.304
Eastbound Th-Rt		0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	1006	2	**0.314**	(10%)	2	1008	2	**0.315**
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	247	1	0.154	(4%)	1	248	1	0.155
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:	0.054				North-South:	0.054
		East-West:	0.529				East-West:	0.530
		Loss Time:	0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:			0.633					0.634
Level of Service (LOS):			**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street: **Kanan Dume Road**	Capacity:	vphpl	1600				In	Out	Total
		Dual	2880		Trip Gen 1	PM	67	52	119
East/West Street: **Pacific Coast Highway**									
WEEKEND PM Peak: 12:00 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000	0%			0	0.000
	Thru	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000	0%			0	0.000
Southbound	Left	284	2	0.099	4%	3	287	2	0.100
	Lt-Th		0	0.000	0%			0	0.000
	Thru	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	586	1	**0.178**	0%	0	586	1	**0.178**
	Shared		0	0.000	0%			0	0.000
Eastbound	Left	302	1	0.105	0%	0	302	1	0.105
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1028	2	0.321	10%	7	1035	2	0.323
	Th-Rt		0	0.000	0%			0	0.000
	Right	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1221	2	0.382	(10%)	5	1226	2	0.383
	Th-Rt		0	0.000	0%			0	0.000
	Right	172	1	0.108	(4%)	2	174	1	0.109
	Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.178			North-South:		0.178
		East-West:		0.487			East-West:		0.488
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.715					0.716
Level of Service (LOS):				**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Malibu Canyon Road		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	3	0	0.000	0%	0	3	0	0.000
Northbound Lt-Th		1	**0.005**	0%			1	**0.005**
Northbound Thru	7	0	0.000	0%	0	7	0	0.000
Northbound Th-Rt		1	**0.005**	0%			1	**0.005**
Northbound Right	7	0	0.000	0%	0	7	0	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	956	1	**0.337**	0%	0	956	1	**0.337**
Southbound Lt-Th		1	0.337	0%			1	0.337
Southbound Thru	15	0	0.000	0%	0	15	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	216	1	0.093	0%	0	216	1	0.093
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	135	2	0.048	24%	1	136	2	0.049
Eastbound Lt-Th		0	0.000	0%			0	0.000
Eastbound Thru	884	1	0.279	0%	0	884	1	0.279
Eastbound Th-Rt		1	0.279	0%			1	0.279
Eastbound Right	8	0	0.000	0%	0	8	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	4	1	0.003	0%	0	4	1	0.003
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	651	2	0.203	(24%)	1	652	2	0.204
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	123	1	0.000	46%	3	126	1	0.000
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.342			North-South:		0.342
	East-West:		0.282			East-West:		0.282
	Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.674					0.674
Level of Service (LOS):			**B**					**B**

PROJECT IMPACT	
Change in *v/c* due to project:	0.000
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	2012, EXISTING			2012, WITH PROJECT				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Malibu Canyon Road		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	9	0	0.000	0%	0	9	0	0.000
Northbound Lt-Th		1	0.009	0%			1	0.009
Northbound Thru	4	0	0.000	0%	0	4	0	0.000
Northbound Th-Rt		1	0.009	0%			1	0.009
Northbound Right	17	0	0.000	0%	0	17	0	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	320	1	**0.116**	0%	0	320	1	**0.116**
Southbound Lt-Th		1	0.116	0%			1	0.116
Southbound Thru	14	0	0.000	0%	0	14	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	183	1	0.015	0%	0	183	1	0.014
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	318	2	**0.110**	25%	2	320	2	**0.111**
Eastbound Lt-Th		0	0.000	0%			0	0.000
Eastbound Thru	1128	1	0.359	0%	0	1128	1	0.359
Eastbound Th-Rt		1	0.359	0%			1	0.359
Eastbound Right	21	0	0.000	0%	0	21	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	15	1	0.009	0%	0	15	1	0.009
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	1229	2	**0.384**	(25%)	4	1233	2	**0.385**
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	260	1	0.063	45%	5	265	1	0.066
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.125			North-South:		0.125
	East-West:		0.494			East-West:		0.496
	Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.669					0.671
Level of Service (LOS):			**B**					**B**
				PROJECT IMPACT				
				Change in *v/c* due to project:				0.002
				Significantly impacted?				NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street: **Malibu Canyon Road**	Capacity:	vphpl	1600				In	Out	Total
		Dual	2880	Trip Gen 1	PM		67	52	119
East/West Street: **Pacific Coast Highway**									
WEEKEND PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	26	0	0.000	0%	0	26	0	0.000
Northbound Lt-Th		1	**0.030**	0%			1	**0.030**
Northbound Thru	16	0	0.000	0%	0	16	0	0.000
Northbound Th-Rt		1	**0.030**	0%			1	**0.030**
Northbound Right	55	0	0.000	0%	0	55	0	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	280	1	0.107	0%	0	280	1	0.107
Southbound Lt-Th		1	0.110	0%			1	0.110
Southbound Thru	28	0	0.000	0%	0	28	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	256	1	**0.160**	0%	0	256	1	**0.160**
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	193	2	**0.067**	25%	17	210	2	**0.073**
Eastbound Lt-Th		0	0.000	0%			0	0.000
Eastbound Thru	1256	1	0.405	0%	0	1256	1	0.405
Eastbound Th-Rt		1	0.405	0%			1	0.405
Eastbound Right	40	0	0.000	0%	0	40	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	43	1	0.027	0%	0	43	1	0.027
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	1310	2	**0.409**	(25%)	13	1323	2	**0.413**
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	142	1	0.001	45%	30	172	1	0.020
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.190				North-South:		0.190
	East-West:		0.476				East-West:		0.486
	Loss Time:		0.050				Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.716						0.726
Level of Service (LOS):			**C**						**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. RD & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2012*

Project Description *EXISTING + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*265*	*4*	*2*	*1187*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*265*	*4*	*2*	*1187*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*4*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*2*			*4*			
C (m) (veh/h)		*1306*			*920*			
v/c		*0.00*			*0.00*			
95% queue length		*0.00*			*0.01*			
Control Delay (s/veh)		*7.8*			*8.9*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*8.9*					
Approach LOS	--	--	*A*					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. RD & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2012*

Project Description *EXISTING + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*582*	*7*	*3*	*517*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*582*	*7*	*3*	*517*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*19*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*19*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*3*			*19*			
C (m) (veh/h)		*996*			*750*			
v/c		*0.00*			*0.03*			
95% queue length		*0.01*			*0.08*			
Control Delay (s/veh)		*8.6*			*9.9*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*9.9*					
Approach LOS	--	--	*A*					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*SAT MID-DAY PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. & MEMEORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2012*

Project Description *EXISTING + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*351*	*47*	*20*	*757*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*351*	*47*	*20*	*757*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*52*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*52*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*20*			*52*			
C (m) (veh/h)		*1172*			*847*			
v/c		*0.02*			*0.06*			
95% queue length		*0.05*			*0.20*			
Control Delay (s/veh)		*8.1*			*9.5*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*9.5*					
Approach LOS	--	--	*A*					

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Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600				In	Out	Total
Malibu Canyon Road	Dual	2880			AM	6	4	10
East/West Street:					PM	10	19	29
Civic Center Way	east-west split							
WEEKDAY								
AM Peak: 7:45 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	25	1	**0.016**	0%	0	25	1	**0.016**
Northbound Lt-Th		0	0.000	0%			0	0.000
Northbound Thru	200	2	0.063	(25%)	1	201	2	0.063
Northbound Th-Rt		0	0.000	0%			0	0.000
Northbound Right	23	1	0.000	(75%)	3	26	1	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	19	1	0.012	0%	0	19	1	0.012
Southbound Lt-Th		0	0.000	0%			0	0.000
Southbound Thru	1171	2	0.366	25%	2	1173	2	0.367
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	199	1	0.000	0%	0	199	1	0.000
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	23	1	0.013	0%	0	23	1	0.013
Eastbound Lt-Th		1	0.013	0%			1	0.013
Eastbound Thru	14	0	0.000	0%	0	14	0	0.000
Eastbound Th-Rt		0	0.000	0%			0	0.000
Eastbound Right	9	1	0.000	0%	0	9	1	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	16	1	0.010	5%	0	16	1	0.010
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	92	1	0.058	0%	0	92	1	0.058
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	208	1	0.000	0%	0	208	1	0.000
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.382			North-South:		0.382
	East-West:		0.071			East-West:		0.071
	Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.503					0.503
Level of Service (LOS):			**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600				In	Out	Total
Malibu Canyon Road	Dual	2880			AM	6	4	10
East/West Street:					PM	10	19	29
Civic Center Way	east-west split							
WEEKDAY PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	22	1	0.014	0%	0	22	1	0.014
Northbound Lt-Th		0	0.000	0%			0	0.000
Northbound Thru	534	2	**0.167**	(25%)	5	539	2	**0.168**
Northbound Th-Rt		0	0.000	0%			0	0.000
Northbound Right	27	1	0.000	(75%)	14	41	1	0.000
Northbound Shared		0	0.000	0%			0	0.000
Southbound Left	186	1	0.116	0%	0	186	1	0.116
Southbound Lt-Th		0	0.000	0%			0	0.000
Southbound Thru	464	2	0.145	25%	3	467	2	0.146
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	44	1	0.000	0%	0	44	1	0.000
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	234	1	**0.117**	0%	0	234	1	**0.117**
Eastbound Lt-Th		1	**0.117**	0%			1	**0.117**
Eastbound Thru	103	0	0.000	0%	0	103	0	0.000
Eastbound Th-Rt		0	0.000	0%			0	0.000
Eastbound Right	37	1	0.000	0%	0	37	1	0.000
Eastbound Shared		0	0.000	0%			0	0.000
Westbound Left	17	1	0.011	5%	0	17	1	0.011
Westbound Lt-Th		0	0.000	0%			0	0.000
Westbound Thru	35	1	0.022	0%	0	35	1	0.022
Westbound Th-Rt		0	0.000	0%			0	0.000
Westbound Right	609	1	0.000	0%	0	609	1	0.000
Westbound Shared		0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.283			North-South:		0.285
	East-West:		0.139			East-West:		0.139
	Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.472					0.474
Level of Service (LOS):			**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity: vphpl	1600				In	Out	Total
Malibu Canyon Road		Dual	2880		Trip				
East/West Street:					Gen 1	PM	67	52	119
Civic Center Way		east-west split							
WEEKEND									
PM Peak: 11:45 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	29	1	**0.018**	0%	0	29	1	0.018
	Lt-Th		0	0	0%			0	0
	Thru	296	2	0.093	(25%)	13	309	2	0.097
	Th-Rt		0	0	0%			0	0
	Right	22	1	0.014	(75%)	39	61	1	0.038
	Shared		0	0	0%			0	0
Southbound	Left	233	1	0.146	0%	0	233	1	0.146
	Lt-Th		0	0	0%			0	0
	Thru	766	2	0.239	25%	17	783	2	0.245
	Th-Rt		0	0	0%			0	0
	Right	28	1	0.018	0%	0	28	1	0.018
	Shared		0	0	0%			0	0
Eastbound	Left	29	1	0.021	0%	0	29	1	0.021
	Lt-Th		1	0.021	0%			1	0.021
	Thru	32	0	0	0%	0	32	0	0
	Th-Rt		0	0	0%			0	0
	Right	26	1	0.016	0%	0	26	1	0.016
	Shared		0	0	0%			0	0
Westbound	Left	21	1	0.013	5%	3	24	1	0.015
	Lt-Th		0	0	0%			0	0
	Thru	28	1	0.018	0%	0	28	1	0.018
	Th-Rt		0	0	0%			0	0
	Right	179	1	0.112	0%	0	179	1	0.112
	Shared		0	0	0%			0	0
Critical Volumes:		North-South:		0.258			North-South:		0.262
		East-West:		0.039			East-West:		0.039
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.347					0.351
Level of Service (LOS):				**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.004

Significantly impacted? NO

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JTO
Agency/Co.	OTC INC
Date Performed	1/2015
Analysis Time Period	AM PEAK HOUR

Site Information

Intersection	CIVIC CENTER WAY & WEBB WAY
Jurisdiction	MALIBU
Analysis Year	2012 + PROJECT

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	6	22	56	55	58	10
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	238	39	101	2	8	2
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	L	TR	LT	R	LTR	
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flow Rate (veh/h)	28	56	55	68	277	101	12	
% Heavy Vehicles	0	0	0	0	0	0	0	
No. Lanes	2		2		2		1	
Geometry Group	5		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2	0.0	1.0	0.0	0.9	0.0	0.2	
Prop. Right-Turns	0.0	1.0	0.0	0.1	0.0	1.0	0.2	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1	-0.7	0.5	-0.1	0.4	-0.7	-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	
x, initial	0.02	0.05	0.05	0.06	0.25	0.09	0.01	
hd, final value (s)	5.78	4.97	6.12	5.51	5.49	4.37	5.43	
x, final value	0.04	0.08	0.09	0.10	0.42	0.12	0.02	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	3.5	2.7	3.8	3.2	3.2	2.1	3.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	278	306	305	318	527	351	262	
Delay (s/veh)	8.76	8.09	9.45	8.85	12.15	7.67	8.23	
LOS	A	A	A	A	B	A	A	
Approach: Delay (s/veh)	8.31		9.12		10.96		8.23	
LOS	A		A		B		A	
Intersection Delay (s/veh)	10.15							
Intersection LOS	B							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*JTO*
Agency/Co.	*OTC INC*
Date Performed	*1/2015*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*CIVIC CENTER WAY & WEBB WAY*
Jurisdiction	*MALIBU*
Analysis Year	*2012 + PROJECT*

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*4*	*70*	*231*	*94*	*218*	*10*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*432*	*12*	*81*	*6*	*34*	*23*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*	*R*	*L*	*TR*	*LT*	*R*	*LTR*	
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Flow Rate (veh/h)	*74*	*231*	*94*	*228*	*444*	*81*	*63*	
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
No. Lanes	*2*		*2*		*2*		*1*	
Geometry Group	*5*		*5*		*5*		*4b*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.1*	*0.0*	*1.0*	*0.0*	*1.0*	*0.0*	*0.1*	
Prop. Right-Turns	*0.0*	*1.0*	*0.0*	*0.0*	*0.0*	*1.0*	*0.4*	
Prop. Heavy Vehicle	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
hLT-adj	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.2*	*0.2*
hRT-adj	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.0*	*-0.7*	*0.5*	*-0.0*	*0.5*	*-0.7*	*-0.2*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	
x, initial	*0.07*	*0.21*	*0.08*	*0.20*	*0.39*	*0.07*	*0.06*	
hd, final value (s)	*7.14*	*6.40*	*7.55*	*7.01*	*6.98*	*5.79*	*7.23*	
x, final value	*0.15*	*0.41*	*0.20*	*0.44*	*0.86*	*0.13*	*0.13*	
Move-up time, m (s)	*2.3*		*2.3*		*2.3*		*2.3*	
Service Time, t_s (s)	*4.8*	*4.1*	*5.2*	*4.7*	*4.7*	*3.5*	*4.9*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*324*	*481*	*344*	*478*	*511*	*331*	*313*	
Delay (s/veh)	*11.07*	*13.50*	*12.09*	*15.18*	*39.06*	*9.35*	*10.97*	
LOS	*B*	*B*	*B*	*C*	*E*	*A*	*B*	
Approach: Delay (s/veh)	*12.91*		*14.28*		*34.48*		*10.97*	
LOS	*B*		*B*		*D*		*B*	
Intersection Delay (s/veh)	*22.49*							
Intersection LOS	*C*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JTO
Agency/Co.	OTC INC
Date Performed	1/2015
Analysis Time Period	SAT MID PEAK HOUR

Site Information

Intersection	CIVIC CENTER WAY & WEBB WAY
Jurisdiction	MALIBU
Analysis Year	2012 + PROJECT

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	7	129	190	90	96	5
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	145	18	120	6	20	3
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	L	TR	LT	R	LTR	
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flow Rate (veh/h)	136	190	90	101	163	120	29	
% Heavy Vehicles	0	0	0	0	0	0	0	
No. Lanes	2		2		2		1	
Geometry Group	5		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.1	0.0	1.0	0.0	0.9	0.0	0.2	
Prop. Right-Turns	0.0	1.0	0.0	0.0	0.0	1.0	0.1	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.0	-0.7	0.5	-0.0	0.4	-0.7	-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	
x, initial	0.12	0.17	0.08	0.09	0.14	0.11	0.03	
hd, final value (s)	5.67	4.94	6.28	5.74	6.27	5.12	6.16	
x, final value	0.21	0.26	0.16	0.16	0.28	0.17	0.05	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	3.4	2.6	4.0	3.4	4.0	2.8	3.9	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	386	440	340	351	413	370	279	
Delay (s/veh)	9.91	9.38	10.14	9.54	11.43	8.87	9.18	
LOS	A	A	B	A	B	A	A	
Approach: Delay (s/veh)	9.60		9.82		10.35		9.18	
LOS	A		A		B		A	
Intersection Delay (s/veh)	9.89							
Intersection LOS	A							

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Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Webb Way		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	53	1	0.033	0%	0	53	1	0.033
Northbound Lt-Th		0	0	0%			0	0
Northbound Thru	48	0	0	0%	0	48	0	0
Northbound Th-Rt		1	**0.037**	0%			1	0.037
Northbound Right	11	0	0	0%	0	11	0	0
Northbound Shared		0	0	0%			0	0
Southbound Left	49	1	**0.031**	(45%)	2	51	1	0.032
Southbound Lt-Th		1	**0.031**	0%			1	0.032
Southbound Thru	40	0	0.000	0%	0	40	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	32	1	0.020	(25%)	1	33	1	0.021
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	130	1	0.081	0%	0	130	1	0.081
Eastbound Lt-Th		0	0	0%			0	0.000
Eastbound Thru	1559	3	0.325	0%	0	1559	3	0.325
Eastbound Th-Rt		0	0	0%			0	0
Eastbound Right	68	1	0.043	0%	0	68	1	0.043
Eastbound Shared		0	0	0%			0	0
Westbound Left	132	1	0.083	0%	0	132	1	0.083
Westbound Lt-Th		0	0	0%			0	0
Westbound Thru	689	2	0.215	45%	3	692	2	0.216
Westbound Th-Rt		0	0	0%			0	0
Westbound Right	231	1	0.144	0%	0	231	1	0.144
Westbound Shared		0	0	0%			0	0
Critical Volumes:		North-South:	0.068				North-South:	0.069
		East-West:	0.408				East-West:	0.408
		Loss Time:	0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:			0.526					0.527
Level of Service (LOS):			**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project:	0.001
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600			In	Out	Total
Webb Way		Dual	2880		AM	6	4	10
East/West Street:					PM	10	19	29
Pacific Coast Highway								
WEEKDAY								
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	148	1	0.093	0%	0	148	1	0.093
Northbound Lt-Th		0	0	0%			0	0
Northbound Thru	72	0	0	0%	0	72	0	0
Northbound Th-Rt		1	**0.063**	0%			1	**0.063**
Northbound Right	29	0	0	0%	0	29	0	0
Northbound Shared		0	0	0%			0	0
Southbound Left	223	1	**0.104**	(45%)	9	232	1	**0.107**
Southbound Lt-Th		1	**0.104**	0%			1	**0.107**
Southbound Thru	76	0	0.000	0%	0	76	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000
Southbound Right	69	1	0.043	(25%)	4	73	1	0.046
Southbound Shared		0	0.000	0%			0	0.000
Eastbound Left	93	1	0.058	0%	0	93	1	0.058
Eastbound Lt-Th		0	0	0%			0	0
Eastbound Thru	1272	3	0.265	0%	0	1272	3	0.265
Eastbound Th-Rt		0	0	0%			0	0
Eastbound Right	54	1	0.034	0%	0	54	1	0.034
Eastbound Shared		0	0	0%			0	0
Westbound Left	225	1	0.141	0%	0	225	1	0.141
Westbound Lt-Th		0	0	0%			0	0
Westbound Thru	1235	2	**0.386**	45%	5	1240	2	**0.388**
Westbound Th-Rt		0	0	0%			0	0
Westbound Right	380	1	0.168	0%	0	380	1	0.165
Westbound Shared		0	0	0%			0	0
Critical Volumes:		North-South:	0.167				North-South:	0.170
		East-West:	0.444				East-West:	0.446
		Loss Time:	0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:			0.661					0.666
Level of Service (LOS):			**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.005

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	2012, EXISTING			2012, WITH PROJECT					2012, WITH TRAFFIC MITIGATION			
North/South Street:	Capacity:	vphpl	1600			In	Out	Total		Critical Phases:	1600	
Webb Way		Dual	2880	Trip						Capacity:	0	
East/West Street:				Gen 1	PM	67	52	119	FALSE		0	
Pacific Coast Highway											0%	
WEEKEND											0	
PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project**	**Volume**	**Total Volume**	**Lanes**	**V / C**	**Adjusted Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound Left	127	1	0.079	0%	0	127	1	**0.079**	0	127	1	**0.079**
Northbound Lt-Th		0	0	0%			0	0			0	0
Northbound Thru	71	0	0	0%	0	71	0	0	0	71	0	0
Northbound Th-Rt		1	0.063	0%			1	0.063			1	0.063
Northbound Right	30	0	0	0%	0	30	0	0	0	30	0	0
Northbound Shared		0	0	0%			0	0			0	0
Southbound Left	116	1	0.075	(45%)	23	139	1	0.083	0	139	1	0.083
Southbound Lt-Th		1	0.075	0%			1	0.083			1	0.083
Southbound Thru	101	0	0	0%	0	101	0	0	0	101	0	0
Southbound Th-Rt		0	0	0%			0	0			0	0
Southbound Right	57	1	0	(25%)	13	70	1	0	0	70	1	0
Southbound Shared		0	0	0%			0	0			0	0
Eastbound Left	149	1	0.093	0%	0	149	1	0.093	0	149	2	0.052
Eastbound Lt-Th		0	0	0%			0	0			0	0
Eastbound Thru	1323	3	0.276	0%	0	1323	3	0.276	0	1323	3	0.276
Eastbound Th-Rt		0	0	0%			0	0			0	0
Eastbound Right	65	1	0.041	0%	0	65	1	0.041	0	65	1	0.041
Eastbound Shared		0	0	0%			0	0			0	0
Westbound Left	287	1	0.179	0%	0	287	1	0.179	0	287	1	0.179
Westbound Lt-Th		0	0	0%			0	0			0	0
Westbound Thru	1299	2	0.406	45%	30	1329	2	0.415	0	1329	2	0.415
Westbound Th-Rt		0	0	0%			0	0			0	0
Westbound Right	115	1	0.036	0%	0	115	1	0.028	0	115	1	0.028
Westbound Shared		0	0	0%			0	0			0	0
Critical Volumes:	North-South:		0.154			North-South:		0.163		North-South:		0.163
	East-West:		0.499			East-West:		0.508		East-West:		0.467
	Loss Time:		0.050			Loss Time:		0.050		Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.703					0.721				0.680
Level of Service (LOS):			**C**					**C**				**B**

PROJECT IMPACT

Change in *v/c* due to project:	0.018	*Δv/c* after mitigation:	-0.024
Significantly impacted?	NO	Fully mitigated?	N/A

Intersection Capacity Utilization (ICU)

Intersection No. 7		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Cross Creek Road			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway		north-south split							
WEEKDAY									
AM Peak: 8:00 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	4	0	0.000	0%	0	4	0	0.000
	Lt-Th		1	**0.003**	0%			1	**0.003**
	Thru	1	0	0.000	0%	0	1	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	2	1	0.000	0%	0	2	1	0.000
	Shared		0	0.000	0%			0	0.000
Southbound	Left	80	1	**0.028**	0%	0	80	1	**0.028**
	Lt-Th		1	**0.028**	0%			1	**0.028**
	Thru	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	63	1	0.000	0%	0	63	1	0.000
	Shared		0	0.000	0%			0	0.000
Eastbound	Left	92	1	0.058	0%	0	92	1	0.058
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1623	1	**0.511**	(45%)	2	1625	1	0.511
	Th-Rt		1	0.511	0%			1	0.511
	Right	11	0	0.000	0%	0	11	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	3	1	0.002	0%	0	3	1	0.002
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1001	1	0.354	45%	3	1004	1	0.355
	Th-Rt		1	0.354	0%			1	0.355
	Right	131	0	0.000	0%	0	131	0	0.000
	Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.031			North-South:		0.031
		East-West:		0.513			East-West:		0.514
		Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:				0.594					0.595
Level of Service (LOS):				**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Cross Creek Road			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway		north-south split							
WEEKDAY									
PM Peak: 4:45 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	14	0	0.000	0%	0	14	0	0.000
	Lt-Th		1	**0.014**	0%			1	**0.014**
	Thru	8	0	0.000	0%	0	8	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	19	1	0.000	0%	0	19	1	0.000
	Shared		0	0.000	0%			0	0.000
Southbound	Left	187	1	**0.065**	0%	0	187	1	**0.065**
	Lt-Th		1	**0.065**	0%			1	**0.065**
	Thru	1	0	0.000	0%	0	1	0	0.000
	Th-Rt		0	0.000	0%			0	0.000
	Right	132	1	0.000	0%	0	132	1	0.000
	Shared		0	0.000	0%			0	0.000
Eastbound	Left	94	1	**0.059**	0%	0	94	1	0.059
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1603	1	0.506	(45%)	9	1612	1	0.508
	Th-Rt		1	0.506	0%			1	0.508
	Right	15	0	0.000	0%	0	15	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	15	1	0.009	0%	0	15	1	0.009
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1711	1	0.593	45%	5	1716	1	0.594
	Th-Rt		1	0.593	0%			1	0.594
	Right	186	0	0.000	0%	0	186	0	0.000
	Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.079			North-South:		0.079
		East-West:		0.652			East-West:		0.654
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.781					0.783
Level of Service (LOS):				**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2012, WITH PROJECT**					**2012, WITH TRAFFIC MITIGATION**			
North/South Street:	Capacity: vphpl	1600				In	Out	Total		Critical Phases:	1600	
Cross Creek Road	Dual	2880		Trip						Capacity:	0	
East/West Street:				Gen 1	PM	67	52	119	FALSE		0	
Pacific Coast Highway	north-south split										0%	
WEEKEND											0	
PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**	**Adjusted Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound Left	16	0	0.000	0%	0	16	0	0.000	0	16	0	0.000
Northbound Lt-Th		1	0.014	0%			1	0.014			1	0.014
Northbound Thru	6	0	0.000	0%	0	6	0	0.000	0	6	0	0.000
Northbound Th-Rt		0	0.000	0%			0	0.000			0	0.000
Northbound Right	46	1	0.000	0%	0	46	1	0.000	0	46	1	0.000
Northbound Shared		0	0.000	0%			0	0.000			0	0.000
Southbound Left	209	1	0.073	0%	0	209	1	0.073	0	209	1	0.073
Southbound Lt-Th		1	0.073	0%			1	0.073			1	0.073
Southbound Thru	7	0	0.000	0%	0	7	0	0.000	0	7	0	0.000
Southbound Th-Rt		0	0.000	0%			0	0.000			0	0.000
Southbound Right	109	1	0.000	0%	0	109	1	0.000	0	109	1	0.000
Southbound Shared		0	0.000	0%			0	0.000			0	0.000
Eastbound Left	144	1	**0.090**	0%	0	144	1	**0.090**	0	144	1	**0.090**
Eastbound Lt-Th		0	0.000	0%			0	0.000			0	0.000
Eastbound Thru	1439	1	0.460	(45%)	23	1462	1	0.467	0	1462	1	0.467
Eastbound Th-Rt		1	0.460	0%			1	0.467			1	0.467
Eastbound Right	33	0	0.000	0%	0	33	0	0.000	0	33	0	0.000
Eastbound Shared		0	0.000	0%			0	0.000			0	0.000
Westbound Left	24	1	0.015	0%	0	24	1	0.015	0	24	1	0.015
Westbound Lt-Th		0	0.000	0%			0	0.000			0	0.000
Westbound Thru	1625	1	0.573	45%	30	1655	1	0.583	0	1655	2	0.517
Westbound Th-Rt		1	0.573	0%			1	0.583			0	0.000
Westbound Right	209	0	0.000	0%	0	209	0	0.000	0	209	1	0.131
Westbound Shared		0	0.000	0%			0	0.000			0	0.000
Critical Volumes:	North-South:		0.087			North-South:		0.087		North-South:		0.087
	East-West:		0.663			East-West:		0.673		East-West:		0.607
	Loss Time:		0.050			Loss Time:		0.050		Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.800					0.810				0.744
Level of Service (LOS):			**C**					**D**				**C**

PROJECT IMPACT			
Change in *v/c* due to project:	0.010	Δ*v/c* after mitigation:	-0.056
Significantly impacted?	NO	Fully mitigated?	N/A

Intersection Capacity Utilization (ICU)

Intersection No. 8		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Malibu Pier Signal			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
AM Peak: 7:30 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left not part of signal	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		1	0	0%			1	0
Eastbound	Left	2	1	0.001	0%	0	2	1	0.001
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1672	2	**0.523**	(45%)	2	1674	2	**0.523**
	Th-Rt		0	0.000	0%			0	0.000
	Right	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	5	1	0.003	0%	0	5	1	0.003
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1202	2	0.376	45%	3	1205	2	0.377
	Th-Rt		0	0.000	0%			0	0.000
	Right	1	1	0.001	0%	0	1	1	0.001
	Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.000			North-South:		0.000
		East-West:		0.526			East-West:		0.526
		Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:				0.576					0.576
Level of Service (LOS):				**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 8		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Malibu Pier Signal			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
PM Peak: 4:45 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left not part of signal	3	0	0	0%	0	3	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	3	0	0	0%	0	3	0	0
	Shared		1	0.000	0%			1	0.000
Eastbound	Left	0	1	0.000	0%	0	0	1	0.000
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1799	2	0.562	(45%)	9	1808	2	0.565
	Th-Rt		0	0.000	0%			0	0.000
	Right	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	13	1	0.008	0%	0	13	1	0.008
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1937	2	**0.605**	45%	5	1942	2	**0.607**
	Th-Rt		0	0.000	0%			0	0.000
	Right	1	1	0.001	0%	0	1	1	0.001
	Shared		0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.000			North-South:		0.000
		East-West:		0.605			East-West:		0.607
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.655					0.657
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.8		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600				In	Out	Total
Malibu Pier Signal			Dual	2880	Trip	AM		0	0	0
East/West Street:					Gen 1	PM		67	52	119
Pacific Coast Highway										
WEEKEND										
PM Peak: 12:00 PM		**Counts Volume**	**Lanes**	**V / C**		**+ Project Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left not part of signal	1	0	0	0%	0	1	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	4	0	0	0%	0	4	0	0
	Shared		1	0.000	0%			1	0
Eastbound	Left	4	1	0.003	0%	0	4	1	0.003
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1669	2	0.522	(45%)	23	1692	2	0.529
	Th-Rt		0	0.000	0%			0	0.000
	Right	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000	0%			0	0.000
Westbound	Left	17	1	0.011	0%	0	17	1	0.011
	Lt-Th		0	0.000	0%			0	0.000
	Thru	1875	2	**0.586**	45%	30	1905	2	0.595
	Th-Rt		0	0.000	0%			0	0.000
	Right	5	1	0.003	0%	0	5	1	0.003
	Shared		0	0.000	0%			0	0.000
Critical Volumes:			North-South:	0.000				North-South:	0.000
			East-West:	0.588				East-West:	0.595
			Loss Time:	0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:				0.638					0.645
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT	
hange in *v/c* due to project:	0.007
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No.9		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Carbon Canyon Road			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
AM Peak: 8:00 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left	13	0	0	0%	0	13	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	14	0	0	0%	0	14	0	0
	Shared		1	**0.017**	0%			1	**0.017**
Eastbound	Left	28	1	0.018	0%	0	28	1	0.018
	Lt-Th		0	0	0%			0	0
	Thru	1508	2	**0.471**	(45%)	2	1510	2	**0.472**
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Westbound	Left	1	0	0	0%	0	1	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1205	2	0.377	45%	3	1208	2	0.378
	Th-Rt		0	0	0%			0	0
	Right	8	1	0.005	0%	0	8	1	0.005
	Shared		0	0	0%			0	0
Critical Volumes:			North-South:	0.017				North-South:	0.017
			East-West:	0.471				East-West:	0.472
			Loss Time:	0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:				0.538					0.539
Level of Service (LOS):				**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.9		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Carbon Canyon Road			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
PM Peak:	4:15 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left	12	0	0	0%	0	12	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	22	0	0	0%	0	22	0	0
	Shared		1	**0.021**	0%			1	**0.021**
Eastbound	Left	15	1	0.009	0%	0	15	1	0.009
	Lt-Th		0	0	0%			0	0
	Thru	1676	2	0.524	(45%)	9	1685	2	0.527
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Westbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1805	2	**0.564**	45%	5	1810	2	**0.566**
	Th-Rt		0	0	0%			0	0
	Right	9	1	0.006	0%	0	9	1	0.006
	Shared		0	0	0%			0	0
Critical Volumes:		North-South:		0.021			North-South:		0.021
		East-West:		0.573			East-West:		0.575
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.644					0.646
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT	
Change in *v/c* due to project:	0.002
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 9		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Carbon Canyon Road			Dual	2880	Trip				
East/West Street:					Gen 1	PM	67	52	119
Pacific Coast Highway									
WEEKEND									
PM Peak: 12:00 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Southbound	Left	13	0	0	0%	0	13	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	19	0	0		0	19	0	0
	Shared		1	**0.020**	0%			1	**0.020**
Eastbound	Left	25	1	**0.016**		0	25	1	**0.016**
	Lt-Th		0	0	0%			0	0
	Thru	1479	2	0.462	(45%)	23	1502	2	0.469
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Westbound	Left	0	0	0	0%	0	0	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1798	2	**0.562**	45%	30	1828	2	**0.571**
	Th-Rt		0	0	0%			0	0
	Right	13	1	0.008	0%	0	13	1	0.008
	Shared		0	0	0%			0	0
Critical Volumes:		North-South:		0.020			North-South:		0.020
		East-West:		0.578			East-West:		0.587
		Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.648					0.657
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.009

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Las Flores Canyon Rd.			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
AM Peak: 7:45 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	1	0	0	0%	0	1	0	0
	Lt-Th		0	0	0%			0	0
	Thru	0	0	0	0%	0	0	0	0
	Th-Rt		0	0	0%			0	0
	Right	0	0	0	0%	0	0	0	0
	Shared		1	0.001	0%			1	0.001
Southbound	Left	40	0	0	0%	0	40	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1	0	0	0%	0	1	0	0
	Th-Rt		0	0	0%			0	0
	Right	35	0	0	0%	0	35	0	0
	Shared		1	**0.048**	0%			1	**0.048**
Eastbound	Left	23	1	0.014	0%	0	23	1	0.014
	Lt-Th		0	0	0%			0	0
	Thru	1535	1	**0.480**	(45%)	2	1537	1	**0.480**
	Th-Rt		1	**0.480**	0%			1	**0.480**
	Right	0	0	0	0%	0	0	0	0
	Shared		0	0	0%			0	0
Westbound	Left	3	1	0.002	0%	0	3	1	0.002
	Lt-Th		0	0	0%			0	0
	Thru	1197	2	0.374	45%	3	1200	2	0.375
	Th-Rt		0	0	0%			0	0
	Right	27	1	0.017	0%	0	27	1	0.017
	Shared		0	0	0%			0	0
Critical Volumes:		North-South:		0.048			North-South:		0.048
		East-West:		0.482			East-West:		0.482
		Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:				0.580					0.580
Level of Service (LOS):				**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Las Flores Canyon Rd.			Dual	2880		AM	6	4	10
East/West Street:						PM	10	19	29
Pacific Coast Highway									
WEEKDAY									
PM Peak: 4:30 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	10	0	0	0%	0	10	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1	0	0	0%	0	1	0	0
	Th-Rt		0	0	0%			0	0
	Right	15	0	0	0%	0	15	0	0
	Shared		1	0.016	0%			1	**0.016**
Southbound	Left	30	0	0	0%	0	30	0	0
	Lt-Th		0	0	0%			0	0
	Thru	2	0	0	0%	0	2	0	0
	Th-Rt		0	0	0%			0	0
	Right	34	0	0	0%	0	34	0	0
	Shared		1	0.041	0%			1	**0.041**
Eastbound	Left	41	1	**0.026**	0%	0	41	1	**0.026**
	Lt-Th		0	0	0%			0	0
	Thru	1699	1	0.531	(45%)	9	1708	1	0.534
	Th-Rt		1	0.531	0%			1	0.534
	Right	17	0	0	0%	0	17	0	0
	Shared		0	0	0%			0	0
Westbound	Left	18	1	0.011	0%	0	18	1	0.011
	Lt-Th		0	0	0%			0	0
	Thru	1787	2	0.558	45%	5	1792	2	0.560
	Th-Rt		0	0	0%			0	0
	Right	39	1	0.024	0%	0	39	1	0.024
	Shared		0	0	0%			0	0
Critical Volumes:			North-South:	0.057				North-South:	0.058
			East-West:	0.584				East-West:	0.586
			Loss Time:	0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:				0.691					0.694
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 10		**2012, EXISTING**			**2012, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600			In	Out	Total
Las Flores Canyon Rd.			Dual	2880	Trip				
East/West Street:					Gen 1	PM	67	52	119
Pacific Coast Highway									
WEEKEND									
PM Peak: 12:00 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	16	0	0	0%	0	16	0	0
	Lt-Th		0	0	0%			0	0
	Thru	1	0	0	0%	0	1	0	0
	Th-Rt		0	0	0%			0	0
	Right	17	0	0	0%	0	17	0	0
	Shared		1	**0.021**	0%			1	**0.021**
Southbound	Left	34	0	0	0%	0	34	0	0
	Lt-Th		0	0	0%			0	0
	Thru	2	0	0	0%	0	2	0	0
	Th-Rt		0	0	0%			0	0
	Right	41	0	0	0%	0	41	0	0
	Shared		1	**0.048**	0%			1	**0.048**
Eastbound	Left	28	1	**0.018**	0%	0	28	1	**0.018**
	Lt-Th		0	0	0%			0	0
	Thru	1424	1	0.445	(45%)	23	1447	1	0.452
	Th-Rt		1	0.445	0%			1	0.452
	Right	44	0	0	0%	0	44	0	0
	Shared		0	0	0%			0	0
Westbound	Left	44	1	0.028	0%	0	44	1	0.028
	Lt-Th		0	0	0%			0	0
	Thru	1733	2	0.542	45%	30	1763	2	0.551
	Th-Rt		0	0	0%			0	0
	Right	38	1	0.024	0%	0	38	1	0.024
	Shared		0	0	0%			0	0
Critical Volumes:			North-South:	0.069				North-South:	0.069
			East-West:	0.559				East-West:	0.568
			Loss Time:	0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:				0.678					0.687
Level of Service (LOS):				**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.009

Significantly impacted? NO

FUTURE (2016) CUMULATIVE + PROJECT

Intersection Capacity Utilization (ICU)

Intersection No. 1	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year							
WEEKDAY AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	199	2	0.069	12	16	227	2	**0.079**	4%	0	227	2	**0.079**
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	250	1	**0.069**	15	17	282	1	0.075	0%	0	282	1	0.075
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	139	1	**0.087**	9	15	163	1	**0.102**	0%	0	163	1	**0.102**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	672	2	0.210	41	198	911	2	0.285	10%	1	912	2	0.285
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	601	2	**0.188**	37	164	802	2	**0.251**	(10%)	1	803	2	**0.251**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	106	1	0.066	7	7	120	1	0.075	(4%)	0	120	1	0.075
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.069			North-South:		0.079			North-South:		0.079
	East-West:		0.275			East-West:		0.352			East-West:		0.352
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.394					0.481					0.481
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year							
WEEKDAY													
PM Peak: 4:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	155	2	**0.054**	10	18	183	2	**0.063**	4%	1	184	2	**0.064**
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	194	1	0.000	12	24	230	1	0.000	0%	0	230	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	344	1	**0.215**	21	25	390	1	**0.244**	0%	0	390	1	**0.244**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	972	2	0.304	60	250	1282	2	0.401	10%	1	1283	2	0.401
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1006	2	**0.314**	62	262	1330	2	**0.416**	(10%)	2	1332	2	**0.416**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	247	1	0.154	15	25	287	1	0.179	(4%)	1	288	1	0.180
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.054			North-South:		0.063			North-South:		0.064
	East-West:		0.529			East-West:		0.659			East-West:		0.660
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.633					0.772					0.774
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road			Dual	2880	from:	2012								
East/West Street:					to:	2016				Trip Gen 1	PM	67	52	119
Pacific Coast Highway					at:	1.50%	per year							
WEEKEND														
PM Peak:	12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Southbound	Left	284	2	0.099	17	23	324	2	0.113	4%	3	327	2	0.114
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	586	1	**0.178**	36	26	648	1	**0.186**	0%	0	648	1	**0.186**
	Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound	Left	302	1	0.105	19	30	351	1	0.122	0%	0	351	1	0.122
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1028	2	0.321	63	299	1390	2	0.434	10%	7	1397	2	0.437
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1221	2	0.382	75	266	1562	2	0.488	(10%)	5	1567	2	0.490
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	172	1	0.108	11	22	205	1	0.128	(4%)	2	207	1	0.129
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.178			North-South:		0.186				North-South:	0.186
		East-West:		0.486			East-West:		0.610				East-West:	0.611
		Loss Time:		0.050			Loss Time:		0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:				0.714					0.846					0.847
Level of Service (LOS):				**C**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road		Dual	2880	from: 2012						AM	6	4	10
East/West Street:				to: 2016						PM	10	19	29
Pacific Coast Highway				at: 1.50% per year									
WEEKDAY AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	3	0	0.000	0	1	4	0	0.000	0%	0	4	0	0.000
Northbound Lt-Th		1	**0.005**				1	0.007	0%			1	0.007
Northbound Thru	7	0	0.000	0	0	7	0	0.000	0%	0	7	0	0.000
Northbound Th-Rt		1	**0.005**				1	0.007	0%			1	0.007
Northbound Right	7	0	0.000	0	2	9	0	0.000	0%	0	9	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	956	1	**0.337**	59	23	1038	1	0.366	0%	0	1038	1	0.366
Southbound Lt-Th		1	0.337				1	0.366	0%			1	0.366
Southbound Thru	15	0	0.000	1	0	16	0	0.000	0%	0	16	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	216	1	0.093	13	1	230	1	0.103	0%	0	230	1	0.102
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	135	2	0.047	8	-11	132	2	0.046	25%	1	133	2	0.046
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	884	1	**0.279**	54	164	1102	1	**0.347**	0%	0	1102	1	**0.347**
Eastbound Th-Rt		1	**0.279**				1	**0.347**	0%			1	**0.347**
Eastbound Right	8	0	0.000	0	0	8	0	0.000	0%	0	8	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	4	1	**0.003**	0	1	5	1	0.003	0%	0	5	1	0.003
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	651	2	0.203	40	90	781	2	0.244	(25%)	1	782	2	0.244
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	123	1	0.000	8	-16	115	1	0.000	45%	3	118	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.342			North-South:		0.373			North-South:		0.373
	East-West:		0.281			East-West:		0.350			East-West:		0.350
	Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.673					0.773					0.773
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT	
Change in *v/c* due to project:	0.000
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year							
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	9	0	0.000	1	14	24	0	0.000	0%	0	24	0	0.000
Northbound Lt-Th		1	0.009				1	**0.020**	0%			1	**0.020**
Northbound Thru	4	0	0.000	0	2	6	0	0.000	0%	0	6	0	0.000
Northbound Th-Rt		1	0.009				1	**0.020**	0%			1	**0.020**
Northbound Right	17	0	0.000	1	16	34	0	0.000	0%	0	34	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	320	1	**0.116**	20	4	344	1	**0.125**	0%	0	344	1	**0.125**
Southbound Lt-Th		1	0.116				1	0.125	0%			1	0.125
Southbound Thru	14	0	0.000	1	2	17	0	0.000	0%	0	17	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	183	1	0.015	11	0	194	1	0.013	0%	0	194	1	0.013
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	318	2	0.110	20	8	346	2	0.120	25%	2	348	2	0.121
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1128	1	**0.359**	69	186	1383	1	**0.444**	0%	0	1383	1	**0.444**
Eastbound Th-Rt		1	**0.359**				1	**0.444**	0%			1	**0.444**
Eastbound Right	21	0	0.000	1	15	37	0	0.000	0%	0	37	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	15	1	0.009	1	17	33	1	**0.021**	0%	0	33	1	**0.021**
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1229	2	0.384	75	235	1539	2	0.481	(25%)	4	1543	2	0.482
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	260	1	0.000	16	-5	271	1	0.000	45%	5	276	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.125			North-South:		0.145			North-South:		0.145
	East-West:		0.368			East-West:		0.464			East-West:		0.464
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.543					0.659					0.659
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT	
Change in *v/c* due to project:	0.000
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 2		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road			Dual	2880	from:	2012				Trip				
East/West Street:					to:	2016				Gen 1	PM	67	52	119
Pacific Coast Highway					at:	1.50%	per year							
WEEKEND														
PM Peak:	12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	26	0	0.000	2	22	50	0	0.000	0%	0	50	0	0.000
	Lt-Th		1	**0.030**				1	**0.047**	0%			1	**0.047**
	Thru	16	0	0.000	1	2	19	0	0.000	0%	0	19	0	0.000
	Th-Rt		1	**0.030**				1	**0.047**	0%			1	**0.047**
	Right	55	0	0.000	3	24	82	0	0.000	0%	0	82	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Southbound	Left	280	1	0.107	17	-4	293	1	0.113	0%	0	293	1	0.113
	Lt-Th		1	0.110				1	0.116	0%			1	0.116
	Thru	28	0	0.000	2	2	32	0	0.000	0%	0	32	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	256	1	**0.160**	16	7	279	1	**0.174**	0%	0	279	1	**0.174**
	Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound	Left	193	2	**0.067**	12	10	215	2	**0.075**	25%	17	232	2	**0.081**
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1256	1	0.405	77	228	1561	1	0.508	0%	0	1561	1	0.508
	Th-Rt		1	0.405				1	0.508	0%			1	0.508
	Right	40	0	0.000	2	22	64	0	0.000	0%	0	64	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	43	1	0.027	3	25	71	1	0.044	0%	0	71	1	0.044
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1310	2	**0.409**	80	233	1623	2	**0.507**	(25%)	13	1636	2	**0.511**
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	142	1	0.001	9	-6	145	1	-0.001	46%	30	175	1	0.018
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.190			North-South:		0.221			North-South:		0.221
		East-West:		0.476			East-West:		0.582			East-West:		0.592
		Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.716					0.853					0.863
Level of Service (LOS):				**C**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. RD & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2016*

Project Description *2016 + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*270*	*4*	*2*	*1287*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*270*	*4*	*2*	*1287*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*4*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*2*			*4*			
C (m) (veh/h)		*1301*			*917*			
v/c		*0.00*			*0.00*			
95% queue length		*0.00*			*0.01*			
Control Delay (s/veh)		*7.8*			*8.9*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*8.9*					
Approach LOS	--	--	*A*					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. RD & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2016*

Project Description *2016 + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*626*	*7*	*3*	*562*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*626*	*7*	*3*	*562*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*19*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*19*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*3*			*19*			
C (m) (veh/h)		*960*			*729*			
v/c		*0.00*			*0.03*			
95% queue length		*0.01*			*0.08*			
Control Delay (s/veh)		*8.8*			*10.1*			
LOS		*A*			*B*			
Approach Delay (s/veh)	--	--	*10.1*					
Approach LOS	--	--	*B*					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*SAT MID-DAY PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2016*

Project Description *2016 + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*383*	*47*	*20*	*810*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*383*	*47*	*20*	*810*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*52*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*52*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*20*			*52*			
C (m) (veh/h)		*1140*			*830*			
v/c		*0.02*			*0.06*			
95% queue length		*0.05*			*0.20*			
Control Delay (s/veh)		*8.2*			*9.6*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*9.6*					
Approach LOS	--	--	*A*					

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Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Malibu Canyon Road	Dual	2880		from: 2012						AM	6	4	10
East/West Street:				to: 2016						PM	10	19	29
Civic Center Way	east-west split			at: 1.50% per year									
WEEKDAY													
AM Peak: 7:45 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	25	1	**0.016**	2	-16	11	1	**0.007**	0%	0	11	1	**0.007**
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	200	2	0.063	12	3	215	2	0.067	(25%)	1	216	2	0.068
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	23	1	0.000	1	0	24	1	0.000	(75%)	3	27	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	19	1	0.012	1	0	20	1	0.013	0%	0	20	1	0.013
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	1171	2	0.366	72	51	1294	2	0.404	25%	2	1296	2	0.405
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	199	1	0.000	12	-8	203	1	0.000	0%	0	203	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	23	1	**0.013**	1	-2	22	1	**0.012**	0%	0	22	1	**0.012**
Eastbound Lt-Th		1	**0.013**				1	**0.012**	0%			1	**0.012**
Eastbound Thru	14	0	0.000	1	-4	11	0	0.000	0%	0	11	0	0.000
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	9	1	0.000	1	-4	6	1	0.000	0%	0	6	1	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	16	1	0.010	1	0	17	1	0.011	5%	0	17	1	0.011
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	92	1	0.058	6	-16	82	1	0.051	0%	0	82	1	0.051
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	208	1	0.000	13	22	243	1	0.000	0%	0	243	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.382			North-South:		0.411			North-South:		0.412
	East-West:		0.070			East-West:		0.063			East-West:		0.063
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.502					0.524					0.525
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity: vphpl 1600			Ambient Growth							In	Out	Total
Malibu Canyon Road	Dual 2880			from: 2012						AM	6	4	10
East/West Street:				to: 2016						PM	10	19	29
Civic Center Way	east-west split			at: 1.50% per year									
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	22	1	**0.014**	1	-5	18	1	**0.011**	0%	0	18	1	**0.011**
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	534	2	0.167	33	14	581	2	0.181	(25%)	5	586	2	0.183
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	27	1	0.000	2	0	29	1	0.000	(75%)	14	43	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	186	1	0.116	11	46	243	1	0.152	0%	0	243	1	0.152
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	464	2	0.145	28	11	503	2	0.157	25%	3	506	2	0.158
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	44	1	0.000	3	-2	45	1	0.000	0%	0	45	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	234	1	**0.117**	14	-6	242	1	**0.118**	0%	0	242	1	**0.118**
Eastbound Lt-Th		1	**0.117**				1	**0.118**	0%			1	**0.118**
Eastbound Thru	103	0	0.000	6	-11	98	0	0.000	0%	0	98	0	0.000
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	37	1	0.000	2	-11	28	1	0.000	0%	0	28	1	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	17	1	0.011	1	0	18	1	0.011	5%	0	18	1	0.011
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	35	1	0.022	2	-5	32	1	0.020	0%	0	32	1	0.020
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	609	1	0.000	37	63	709	1	0.000	0%	0	709	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.159			North-South:		0.169			North-South:		0.170
	East-West:		0.139			East-West:		0.138			East-West:		0.138
	Total:		0.050			Total:		0.050			Total:		0.050
Volume/capacity (*v/c*) ratio:			0.348					0.357					0.358
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road			Dual	2880	from:	2012				Trip				
East/West Street:					to:	2016				Gen 1	PM	67	52	119
Civic Center Way		east-west split			at:	1.50%	per year							
WEEKEND														
PM Peak:	11:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project**	**Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound	Left	29	1	**0.018**	2	-6	25	1	**0.015**	0%	0	25	1	**0.015**
	Lt-Th		0	0				0	0	0%			0	0
	Thru	296	2	0.093	18	17	331	2	0.103	(25%)	13	344	2	0.108
	Th-Rt		0	0				0	0	0%			0	0
	Right	22	1	0.014	1	0	23	1	0.015	(75%)	39	62	1	0.039
	Shared		0	0				0	0	0%			0	0
Southbound	Left	233	1	0.146	14	63	310	1	0.194	0%	0	310	1	0.194
	Lt-Th		0	0				0	0	0%			0	0
	Thru	766	2	0.239	47	13	826	2	0.258	25%	17	843	2	0.263
	Th-Rt		0	0				0	0	0%			0	0
	Right	28	1	0.018	2	-3	27	1	0.017	0%	0	27	1	0.017
	Shared		0	0				0	0	0%			0	0
Eastbound	Left	29	1	0.021	2	-2	29	1	0.020	0%	0	29	1	0.020
	Lt-Th		1	0.021				1	0.020	0%			1	0.020
	Thru	32	0	0	2	-4	30	0	0	0%	0	30	0	0
	Th-Rt		0	0				0	0	0%			0	0
	Right	26	1	0.016	2	-4	24	1	0.015	0%	0	24	1	0.015
	Shared		0	0				0	0	0%			0	0
Westbound	Left	21	1	0.013	1	0	22	1	0.014	5%	3	25	1	0.016
	Lt-Th		0	0				0	0	0%			0	0
	Thru	28	1	0.018	2	-6	24	1	0.015	0%	0	24	1	0.015
	Th-Rt		0	0				0	0	0%			0	0
	Right	179	1	0.112	11	60	250	1	0.156	0%	0	250	1	0.156
	Shared		0	0				0	0	0%			0	0
Critical Volumes:		North-South:		0.258			North-South:		0.274			North-South:		0.279
		East-West:		0.039			East-West:		0.035			East-West:		0.035
		Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.347					0.359					0.364
Level of Service (LOS):				**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.005

Significantly impacted? NO

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*JTO*
Agency/Co.	*OTC INC*
Date Performed	*1/2015*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*CIVIC CENTER WAY & WEBB WAY*
Jurisdiction	*MALIBU*
Analysis Year	*2016 WITH PROJECT*

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*6*	*21*	*57*	*87*	*72*	*11*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*245*	*101*	*206*	*20*	*33*	*13*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*	*R*	*L*	*TR*	*LT*	*R*	*LTR*	
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Flow Rate (veh/h)	*27*	*57*	*87*	*83*	*346*	*206*	*66*	
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
No. Lanes	*2*		*2*		*2*		*1*	
Geometry Group	*5*		*5*		*5*		*4b*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*	*0.0*	*1.0*	*0.0*	*0.7*	*0.0*	*0.3*	
Prop. Right-Turns	*0.0*	*1.0*	*0.0*	*0.1*	*0.0*	*1.0*	*0.2*	
Prop. Heavy Vehicle	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
hLT-adj	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.2*	*0.2*
hRT-adj	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.1*	*-0.7*	*0.5*	*-0.1*	*0.4*	*-0.7*	*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	
x, initial	*0.02*	*0.05*	*0.08*	*0.07*	*0.31*	*0.18*	*0.06*	
hd, final value (s)	*6.44*	*5.62*	*6.67*	*6.08*	*5.68*	*4.63*	*5.81*	
x, final value	*0.05*	*0.09*	*0.16*	*0.14*	*0.55*	*0.26*	*0.11*	
Move-up time, m (s)	*2.3*		*2.3*		*2.3*		*2.3*	
Service Time, t_s (s)	*4.1*	*3.3*	*4.4*	*3.8*	*3.4*	*2.3*	*3.5*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*277*	*307*	*337*	*333*	*596*	*456*	*316*	
Delay (s/veh)	*9.46*	*8.86*	*10.65*	*9.76*	*15.01*	*8.99*	*9.20*	
LOS	*A*	*A*	*B*	*A*	*C*	*A*	*A*	
Approach: Delay (s/veh)	*9.06*		*10.22*		*12.77*		*9.20*	
LOS	*A*		*B*		*B*		*A*	
Intersection Delay (s/veh)	*11.64*							
Intersection LOS	*B*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JTO
Agency/Co.	OTC INC
Date Performed	1/2015
Analysis Time Period	PM PEAK HOUR

Site Information

Intersection	CIVIC CENTER WAY & WEBB WAY
Jurisdiction	MALIBU
Analysis Year	2016 WITH PROJECT

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	23	95	238	201	285	11
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	457	58	156	41	85	45
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	L	TR	LT	R	LTR	
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flow Rate (veh/h)	118	238	201	296	515	156	171	
% Heavy Vehicles	0	0	0	0	0	0	0	
No. Lanes	2		2		2		1	
Geometry Group	5		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2	0.0	1.0	0.0	0.9	0.0	0.2	
Prop. Right-Turns	0.0	1.0	0.0	0.0	0.0	1.0	0.3	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1	-0.7	0.5	-0.0	0.4	-0.7	-0.1	

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	
x, initial	0.10	0.21	0.18	0.26	0.46	0.14	0.15	
hd, final value (s)	8.50	7.67	8.58	8.04	8.15	6.99	8.41	
x, final value	0.28	0.51	0.48	0.66	1.17	0.30	0.40	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	6.2	5.4	6.3	5.7	5.8	4.7	6.1	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	368	460	415	443	515	406	413	
Delay (s/veh)	14.44	18.01	18.94	25.10	123.46	12.70	16.59	
LOS	B	C	C	D	F	B	C	
Approach: Delay (s/veh)	16.83		22.61		97.71		16.59	
LOS	C		C		F		C	
Intersection Delay (s/veh)	50.52							
Intersection LOS	F							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	JTO
Agency/Co.	OTC INC
Date Performed	1/2015
Analysis Time Period	SAT MID PEAK HOUR

Site Information

Intersection	CIVIC CENTER WAY & WEBB WAY
Jurisdiction	MALIBU
Analysis Year	2016 WITH PROJECT

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	33	180	213	185	154	5
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	151	79	225	44	75	26
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LT	R	L	TR	LT	R	LTR	
PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flow Rate (veh/h)	213	213	185	159	230	225	145	
% Heavy Vehicles	0	0	0	0	0	0	0	
No. Lanes	2		2		2		1	
Geometry Group	5		5		5		4b	
Duration, T	0.25							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	0.2	0.0	1.0	0.0	0.7	0.0	0.3	
Prop. Right-Turns	0.0	1.0	0.0	0.0	0.0	1.0	0.2	
Prop. Heavy Vehicle	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
hLT-adj	0.5	0.5	0.5	0.5	0.5	0.5	0.2	0.2
hRT-adj	-0.7	-0.7	-0.7	-0.7	-0.7	-0.7	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
hadj, computed	0.1	-0.7	0.5	-0.0	0.3	-0.7	-0.0	

Departure Headway and Service Time

hd, initial value (s)	3.20	3.20	3.20	3.20	3.20	3.20	3.20	
x, initial	0.19	0.19	0.16	0.14	0.20	0.20	0.13	
hd, final value (s)	7.19	6.39	7.70	7.17	7.41	6.38	7.47	
x, final value	0.43	0.38	0.40	0.32	0.47	0.40	0.30	
Move-up time, m (s)	2.3		2.3		2.3		2.3	
Service Time, t_s (s)	4.9	4.1	5.4	4.9	5.1	4.1	5.2	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	463	463	435	409	469	475	395	
Delay (s/veh)	15.10	12.93	15.36	13.16	16.61	13.24	13.35	
LOS	C	B	C	B	C	B	B	
Approach: Delay (s/veh)	14.02		14.34		14.94		13.35	
LOS	B		B		B		B	
Intersection Delay (s/veh)	14.33							
Intersection LOS	B							

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Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street: **Webb Way**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from: 2012						AM	6	4	10
East/West Street: **Pacific Coast Highway**				to: 2016						PM	10	19	29
WEEKDAY AM Peak: 8:00 AM				at: 1.50% per year									
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	53	1	0.033	3	1	57	1	0.036	0%	0	57	1	0.036
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	48	0	0	3	3	54	0	0	0%	0	54	0	0
Northbound Th-Rt		1	**0.037**				1	0.042	0%			1	0.042
Northbound Right	11	0	0	1	1	13	0	0	0%	0	13	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	49	1	**0.031**	3	-2	50	1	0.033	(45%)	2	52	1	0.033
Southbound Lt-Th		1	**0.031**				1	0.033	0%			1	0.033
Southbound Thru	40	0	0.000	2	2	44	0	0.000	0%	0	44	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	32	1	0.020	2	56	90	1	0.056	(25%)	1	91	1	0.057
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	130	1	0.081	8	148	286	1	0.179	0%	0	286	1	0.179
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1559	3	**0.325**	96	67	1722	3	**0.359**	0%	0	1722	3	**0.359**
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	68	1	0.043	4	1	73	1	0.046	0%	0	73	1	0.046
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	132	1	0.083	8	7	147	1	0.092	0%	0	147	1	0.092
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	689	2	0.215	42	27	758	2	0.237	45%	3	761	2	0.238
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	231	1	0.144	14	-8	237	1	0.148	0%	0	237	1	0.148
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.068			North-South:		0.075			North-South:		0.076
	East-West:		0.407			East-West:		0.451			East-West:		0.451
	Loss Time:		0.050			LossTime:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.525					0.576					0.577
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street: **Webb Way**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from: 2012						AM	6	4	10
East/West Street: **Pacific Coast Highway**				to: 2016						PM	10	19	29
WEEKDAY				at: 1.50% per year									
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	148	1	0.093	9	2	159	1	0.099	0%	0	159	1	0.099
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	72	0	0	4	5	81	0	0	0%	0	81	0	0
Northbound Th-Rt		1	**0.063**				1	**0.071**	0%			1	**0.071**
Northbound Right	29	0	0	2	2	33	0	0	0%	0	33	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	223	1	**0.104**	14	-6	231	1	**0.110**	(45%)	9	240	1	**0.113**
Southbound Lt-Th		1	**0.104**				1	**0.110**	0%			1	**0.113**
Southbound Thru	76	0	0.000	5	5	86	0	0.000	0%	0	86	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	69	1	0.043	4	159	232	1	0.145	(25%)	4	236	1	0.148
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	93	1	0.058	6	102	201	1	0.125	0%	0	201	1	0.125
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1272	3	**0.265**	78	98	1448	3	**0.302**	0%	0	1448	3	**0.302**
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	54	1	0.034	3	2	59	1	0.037	0%	0	59	1	0.037
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	225	1	0.141	14	9	248	1	0.155	0%	0	248	1	0.155
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1235	2	0.386	76	98	1409	2	0.440	45%	5	1414	2	0.442
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	380	1	0.238	23	1	404	1	0.253	0%	0	404	1	0.253
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.167			North-South:		0.181			North-South:		0.184
	East-West:		0.406			East-West:		0.457			East-West:		0.457
	Loss Time:		0.050			LossTime:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.623					0.688					0.691
Level of Service (LOS):			**B**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street: **Webb Way**	Capacity: vphpl 1600			Ambient Growth							In	Out	Total
	Dual 2880			from: 2012					Trip				
East/West Street: **Pacific Coast Highway**				to: 2016					Gen 1	PM	67	52	119
	nort-south split			at: 1.50% per year									
WEEKEND PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	127	1	**0.079**	8	2	137	1	**0.085**	0%	0	137	1	**0.085**
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	71	0	0	4	5	80	0	0	0%	0	80	0	0
Northbound Th-Rt		1	0.063				1	0.071	0%			1	0.071
Northbound Right	30	0	0	2	2	34	0	0	0%	0	34	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	116	1	0.007	7	-2	121	1	0.008	(45%)	23	144	1	0.009
Southbound Lt-Th		1	0.075				1	0.081	0%			1	0.089
Southbound Thru	101	0	0	6	5	112	0	0	0%	0	112	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	57	1	0	3	154	214	1	0	(25%)	13	227	1	0
Southbound Shared		0	0				0	0	0%			0	0
Eastbound Left	149	1	0.093	9	148	306	1	0.191	0%	0	306	1	0.191
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1323	3	0.276	81	122	1526	3	0.318	0%	0	1526	3	0.318
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	65	1	0.041	4	3	72	1	0.045	0%	0	72	1	0.045
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	287	1	0.179	18	6	311	1	0.194	0%	0	311	1	0.194
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1299	2	0.406	80	105	1484	2	0.464	45%	30	1514	2	0.473
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	115	1	0.036	7	2	124	1	0.040	0%	0	124	1	0.032
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.155			North-South:		0.167			North-South:		0.174
	East-West:		0.499			East-West:		0.655			East-West:		0.664
	Total:		0.050			Total:		0.050			Total:		0.050
Volume/capacity (*v/c*) ratio:			0.704					0.872					0.888
Level of Service (LOS):			**C**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.016

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Cross Creek Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway	north-south split			at:	1.50%	per year							
WEEKDAY													
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	4	0	0.000	0	0	4	0	0.000	0%	0	4	0	0.000
Northbound Lt-Th		1	**0.003**				1	**0.003**	0%			1	**0.003**
Northbound Thru	1	0	0.000	0	0	1	0	0.000	0%	0	1	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	2	1	0.000	0	0	2	1	0.000	0%	0	2	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	80	1	**0.028**	5	78	163	1	**0.057**	0%	0	163	1	**0.057**
Southbound Lt-Th		1	**0.028**				1	**0.057**	0%			1	**0.057**
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	63	1	0.000	4	8	75	1	0.000	0%	0	75	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	92	1	0.058	6	22	120	1	0.075	0%	0	120	1	0.075
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1623	1	**0.511**	100	44	1767	1	**0.556**	(45%)	2	1769	1	**0.556**
Eastbound Th-Rt		1	0.511				1	0.556	0%			1	0.556
Eastbound Right	11	0	0.000	1	0	12	0	0.000	0%	0	12	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	3	1	0.002	0	0	3	1	0.002	0%	0	3	1	0.002
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1001	1	0.354	61	12	1074	1	0.427	45%	3	1077	1	0.428
Westbound Th-Rt		1	0.354				1	0.427	0%			1	0.428
Westbound Right	131	0	0.000	8	154	293	0	0.000	0%	0	293	0	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.031			North-South:		0.060			North-South:		0.060
	East-West:		0.513			East-West:		0.558			East-West:		0.558
	Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.594					0.668					0.668
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: FALSE

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity: vphpl 1600			Ambient Growth							In	Out	Total
Cross Creek Road	Dual 2880			from: 2012						AM	6	4	10
East/West Street:				to: 2016						PM	10	19	29
Pacific Coast Highway	north-south split			at: 1.50% per year									
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	14	0	0.000	1	0	15	0	0.000	0%	0	15	0	0.000
Northbound Lt-Th		1	**0.014**				1	0.015	0%			1	0.015
Northbound Thru	8	0	0.000	0	0	8	0	0.000	0%	0	8	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	19	1	0.000	1	0	20	1	0.000	0%	0	20	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	187	1	**0.065**	11	201	399	1	0.139	0%	0	399	1	0.139
Southbound Lt-Th		1	**0.065**				1	0.139	0%			1	0.139
Southbound Thru	1	0	0.000	0	0	1	0	0.000	0%	0	1	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	132	1	0.000	8	33	173	1	0.000	0%	0	173	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	94	1	**0.059**	6	21	121	1	0.075	0%	0	121	1	0.075
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1603	1	0.506	98	73	1774	1	0.559	(45%)	9	1783	1	0.562
Eastbound Th-Rt		1	0.506				1	0.559	0%			1	0.562
Eastbound Right	15	0	0.000	1	0	16	0	0.000	0%	0	16	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	15	1	0.009	1	2	18	1	0.011	0%	0	18	1	0.011
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1711	1	0.593	105	63	1879	1	0.701	45%	5	1884	1	0.702
Westbound Th-Rt		1	0.593				1	0.701	0%			1	0.702
Westbound Right	186	0	0.000	11	166	363	0	0.000	0%	0	363	0	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.079			North-South:		0.154			North-South:		0.154
	East-West:		0.652			East-West:		0.775			East-West:		0.777
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.781					0.979					0.981
Level of Service (LOS):			**C**					**E**					**E**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? YES

Intersection Capacity Utilization (ICU)

Intersection No. 7		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Cross Creek Road			Dual	2880	from:	2012								
East/West Street:					to:	2016				Trip Gen 1	PM	67	52	119
Pacific Coast Highway		north-south split			at:	1.50%	per year							
WEEKEND														
PM Peak:	12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	16	0	0.000	1	0	17	0	0.000	0%	0	17	0	0.000
	Lt-Th		1	**0.014**				1	**0.015**	0%			1	**0.015**
	Thru	6	0	0.000	0	0	6	0	0.000	0%	0	6	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	46	1	0.000	3	0	49	1	0.000	0%	0	49	1	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Southbound	Left	209	1	**0.073**	13	195	417	1	**0.145**	0%	0	417	1	**0.145**
	Lt-Th		1	**0.073**				1	**0.145**	0%			1	**0.145**
	Thru	7	0	0.000	0	0	7	0	0.000	0%	0	7	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	109	1	0.000	7	23	139	1	0.000	0%	0	139	1	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound	Left	144	1	**0.090**	9	26	179	1	**0.112**	0%	0	179	1	**0.112**
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1439	1	0.460	88	96	1623	1	0.518	(45%)	23	1646	1	0.525
	Th-Rt		1	0.460				1	0.518	0%			1	0.525
	Right	33	0	0.000	2	0	35	0	0.000	0%	0	35	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	24	1	0.015	1	2	27	1	0.017	0%	0	27	1	0.017
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1625	1	0.573	100	77	1802	1	0.700	45%	30	1832	1	0.709
	Th-Rt		1	0.573				1	0.700	0%			1	0.709
	Right	209	0	0.000	13	217	439	0	0.000	0%	0	439	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.086			North-South:		0.159			North-South:		0.159
		East-West:		0.663			East-West:		0.812			East-West:		0.820
		Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.799					1.021					1.029
Level of Service (LOS):				**C**					**F**					**F**

PROJECT IMPACT

Change in *v/c* due to project: 0.008

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 8	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Pier Signal		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year							
WEEKDAY													
AM Peak: 7:30 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left (not part of signal)	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Shared		1	0				1	0	0%			1	0
Eastbound Left	2	1	0.001	0	0	2	1	0.001	0%	0	2	1	0.001
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1672	2	**0.523**	103	100	1875	2	**0.586**	(45%)	2	1877	2	**0.586**
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	5	1	0.003	0	0	5	1	0.003	0%	0	5	1	0.003
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1202	2	0.376	74	178	1454	2	0.454	45%	3	1457	2	0.455
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	1	1	0.001	0	0	1	1	0.001	0%	0	1	1	0.001
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:	0.000				North-South:	0.000				North-South:	0.000
		East-West:	0.526				East-West:	0.589				East-West:	0.590
		Loss Time:	0.050				Loss Time:	0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:			0.576					0.639					0.640
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 8	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Pier Signal		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2016					PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year							
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left (not part of signal)	3	0	0	0	0	3	0	0	0%	0	3	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	3	0	0	0	0	3	0	0	0%	0	3	0	0
Southbound Shared		1	0.000				1	0.000	0%			1	0.000
Eastbound Left	0	1	0.000	0	0	0	1	0.000	0%	0	0	1	0.000
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1799	2	0.562	110	263	2172	2	0.679	(45%)	9	2181	2	0.682
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	13	1	0.008	1	0	14	1	0.009	0%	0	14	1	0.009
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1937	2	**0.605**	119	230	2286	2	**0.714**	45%	5	2291	2	**0.716**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	1	1	0.001	0	0	1	1	0.001	0%	0	1	1	0.001
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:	0.000				North-South:	0.000				North-South:	0.000
		East-West:	0.605				East-West:	0.714				East-West:	0.716
		Total:	0.050				Total:	0.050				Total:	0.050
Volume/capacity (*v/c*) ratio:			0.655					0.764					0.766
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.8		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Pier Signal			Dual	2880	from:	2012				Trip	AM	0	0	0
East/West Street:					to:	2016				Gen 1	PM	67	52	119
Pacific Coast Highway					at:	1.50%	per year							
WEEKEND														
PM Peak:	12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**		**+ Project Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th		0	0				0	0	0%			0	0
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Southbound	Left not part of signal	1	0	0	0	0	1	0	0	0%	0	1	0	0
	Lt-Th		0	0				0	0	0%			0	0
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt		0	0				0	0	0%			0	0
	Right	4	0	0	0	0	4	0	0	0%	0	4	0	0
	Shared		1	0.000				1	0.000	0%			1	0
Eastbound	Left	4	1	0.003	0	0	4	1	0.003	0%	0	4	1	0.003
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1669	2	0.522	102	289	2060	2	0.644	(45%)	23	2083	2	0.651
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	17	1	0.011	1	0	18	1	0.011	0%	0	18	1	0.011
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1875	2	**0.586**	115	287	2277	2	**0.712**	45%	30	2307	2	**0.721**
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	5	1	0.003	0	0	5	1	0.003	0%	0	5	1	0.003
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.000			North-South:		0.000			North-South:		0.000
		East-West:		0.588			East-West:		0.714			East-West:		0.724
		Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.638					0.764					0.774
Level of Service (LOS):				**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.9		2012, EXISTING			2016, PROJECTED CUMULATIVE BASE					2016, WITH PROJECT				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Carbon Canyon Road			Dual	2880	from: 2012						AM	6	4	10
East/West Street:					to: 2016						PM	10	19	29
Pacific Coast Highway					at: 1.50% per year									
WEEKDAY														
AM Peak: 8:00 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th N/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Southbound	Left	13	0	0	1	0	14	0	0	0%	0	14	0	0
	Lt-Th S/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	14	0	0	1	0	15	0	0	0%	0	15	0	0
	Shared		1	**0.017**				1	**0.018**	0%			1	**0.018**
Eastbound	Left	28	1	0.018	2	0	30	1	0.019	0%	0	30	1	0.019
	Lt-Th E/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1508	2	**0.471**	93	121	1722	2	**0.538**	(45%)	2	1724	2	**0.539**
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Westbound	Left	1	0	0	0	0	1	0	0	0%	0	1	0	0
	Lt-Th W/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1205	2	0.377	74	174	1453	2	0.454	45%	3	1456	2	0.455
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	8	1	0.005	0	0	8	1	0.005	0%	0	8	1	0.005
	Shared		0	0				0	0	0%			0	0
Critical Volumes:		North-South:		0.017			North-South:		0.018			North-South:		0.018
		East-West:		0.471			East-West:		0.538			East-West:		0.539
		Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:				0.538					0.606					0.607
Level of Service (LOS):				**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.9		**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street:		Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Carbon Canyon Road		Dual	2880		from: 2012						AM	6	4	10
East/West Street:					to: 2016						PM	10	19	29
Pacific Coast Highway					at: 1.50% per year									
WEEKDAY														
PM Peak: 4:15 PM		**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th N/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Southbound	Left	12	0	0	1	0	13	0	0	0%	0	13	0	0
	Lt-Th S/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	22	0	0	1	0	23	0	0	0%	0	23	0	0
	Shared		1	**0.021**				1	**0.023**	0%			1	**0.023**
Eastbound	Left	15	1	0.009	1	0	16	1	0.010	0%	0	16	1	0.010
	Lt-Th E/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1676	2	0.524	103	272	2051	2	0.641	(45%)	9	2060	2	0.644
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Westbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th W/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1805	2	**0.564**	111	241	2157	2	**0.674**	45%	5	2162	2	**0.676**
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	9	1	0.006	1	0	10	1	0.006	0%	0	10	1	0.006
	Shared		0	0				0	0	0%			0	0
Critical Volumes:		North-South:		0.021			North-South:		0.023				North-South:	0.023
		East-West:		0.573			East-West:		0.684				East-West:	0.685
		Loss Time:		0.050			Loss Time:		0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:				0.644					0.757					0.758
Level of Service (LOS):				**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 9	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**					
North/South Street: **Carbon Canyon Road**	Capacity:	vphpl	1600	Ambient Growth								In	Out	Total
		Dual	2880	from:	2012				Trip					
East/West Street: **Pacific Coast Highway**				to:	2016				Gen 1	PM		67	52	119
WEEKEND PM Peak: 1:00 PM				at:	1.50%	per year								
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**	
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Northbound Lt-Th		0	0				0	0	0%			0	0	
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Northbound Th-Rt		0	0				0	0	0%			0	0	
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Northbound Shared		0	0				0	0	0%			0	0	
Southbound Left	13	0	0	1	0	14	0	0	0%	0	14	0	0	
Southbound Lt-Th		0	0				0	0	0%			0	0	
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Southbound Th-Rt		0	0				0	0	0%			0	0	
Southbound Right	19	0	0	1	0	20	0	0		0	20	0	0	
Southbound Shared		1	**0.020**				1	**0.021**	0%			1	**0.021**	
Eastbound Left	25	1	**0.016**	2	0	27	1	**0.017**		0	27	1	**0.017**	
Eastbound Lt-Th		0	0				0	0	0%			0	0	
Eastbound Thru	1479	2	0.462	91	296	1866	2	0.583	(45%)	23	1889	2	0.590	
Eastbound Th-Rt		0	0				0	0	0%			0	0	
Eastbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Eastbound Shared		0	0				0	0	0%			0	0	
Westbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0	
Westbound Lt-Th		0	0				0	0	0%			0	0	
Westbound Thru	1798	2	**0.562**	110	304	2212	2	**0.691**	45%	30	2242	2	**0.701**	
Westbound Th-Rt		0	0				0	0	0%			0	0	
Westbound Right	13	1	0.008	1	0	14	1	0.009	0%	0	14	1	0.009	
Westbound Shared		0	0				0	0	0%			0	0	
Critical Volumes:	North-South:		0.020			North-South:		0.021			North-South:		0.021	
	East-West:		0.578			East-West:		0.708			East-West:		0.717	
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050	
Volume/capacity (*v/c*) ratio:			0.648					0.779					0.788	
Level of Service (LOS):			**B**					**C**					**C**	

PROJECT IMPACT

Change in *v/c* due to project: 0.009

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10	2012, EXISTING			2016, PROJECTED CUMULATIVE BASE					2016, WITH PROJECT				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Las Flores Canyon Rd.		Dual	2880	from: 2012						AM	6	4	10
East/West Street:				to: 2016						PM	10	19	29
Pacific Coast Highway				at: 1.50% per year									
WEEKDAY AM Peak: 7:45 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	1	0	0	0	0	1	0	0	0%	0	1	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		1	0.001				1	**0.001**	0%			1	**0.001**
Southbound Left	40	0	0	2	0	42	0	0	0%	0	42	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	1	0	0	0	0	1	0	0	0%	0	1	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	35	0	0	2	3	40	0	0	0%	0	40	0	0
Southbound Shared		1	**0.048**				1	**0.052**	0%			1	**0.052**
Eastbound Left	23	1	0.014	1	2	26	1	0.017	0%	0	26	1	0.017
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1535	1	**0.480**	94	101	1730	1	**0.541**	(45%)	2	1732	1	**0.541**
Eastbound Th-Rt		1	**0.480**				1	**0.541**	0%			1	**0.541**
Eastbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	3	1	0.002	0	0	3	1	0.002	0%	0	3	1	0.002
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1197	2	0.374	73	130	1400	2	0.438	45%	3	1403	2	0.439
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	27	1	0.017	2	0	29	1	0.018	0%	0	29	1	0.018
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.048			North-South:		0.053			North-South:		0.053
	East-West:		0.482			East-West:		0.543			East-West:		0.543
	Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.580					0.646					0.646
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10	2012, EXISTING			2016, PROJECTED CUMULATIVE BASE					2016, WITH PROJECT					
North/South Street:	Capacity:	vphpl	1600	Ambient Growth								In	Out	Total
Las Flores Canyon Rd.		Dual	2880	from:	2012						AM	6	4	10
East/West Street:				to:	2016						PM	10	19	29
Pacific Coast Highway				at:	1.50%	per year								
WEEKDAY														
PM Peak: 4:30 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**	
Northbound Left	10	0	0	1	0	11	0	0	0%	0	11	0	0	
Northbound Lt-Th		0	0				0	0	0%			0	0	
Northbound Thru	1	0	0	0	0	1	0	0	0%	0	1	0	0	
Northbound Th-Rt		0	0				0	0	0%			0	0	
Northbound Right	15	0	0	1	0	16	0	0	0%	0	16	0	0	
Northbound Shared		1	**0.016**				1	**0.017**	0%			1	**0.017**	
Southbound Left	30	0	0	2	0	32	0	0	0%	0	32	0	0	
Southbound Lt-Th		0	0				0	0	0%			0	0	
Southbound Thru	2	0	0	0	0	2	0	0	0%	0	2	0	0	
Southbound Th-Rt		0	0				0	0	0%			0	0	
Southbound Right	34	0	0	2	10	46	0	0	0%	0	46	0	0	
Southbound Shared		1	**0.041**				1	**0.050**	0%			1	**0.050**	
Eastbound Left	41	1	**0.026**	3	10	54	1	**0.033**	0%	0	54	1	**0.033**	
Eastbound Lt-Th		0	0				0	0	0%			0	0	
Eastbound Thru	1699	1	0.531	104	200	2003	1	0.626	(45%)	9	2012	1	0.629	
Eastbound Th-Rt		1	0.531				1	0.626	0%			1	0.629	
Eastbound Right	17	0	0	1	0	18	0	0	0%	0	18	0	0	
Eastbound Shared		0	0				0	0	0%			0	0	
Westbound Left	18	1	0.011	1	0	19	1	0.012	0%	0	19	1	0.012	
Westbound Lt-Th		0	0				0	0	0%			0	0	
Westbound Thru	1787	2	0.558	110	187	2084	2	0.651	45%	4	2088	2	0.652	
Westbound Th-Rt		0	0				0	0	0%			0	0	
Westbound Right	39	1	0.024	2	0	41	1	0.026	0%	0	41	1	0.026	
Westbound Shared		0	0				0	0	0%			0	0	
Critical Volumes:	North-South:		0.058			North-South:		0.067			North-South:		0.067	
	East-West:		0.584			East-West:		0.685			East-West:		0.686	
	Total:		0.050			Total:		0.050			Total:		0.050	
Volume/capacity (*v/c*) ratio:			0.692					0.802					0.803	
Level of Service (LOS):			**B**					**D**					**D**	

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 10	**2012, EXISTING**			**2016, PROJECTED CUMULATIVE BASE**					**2016, WITH PROJECT**				
North/South Street: **Las Flores Canyon Rd.**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from:	2012				Trip				
East/West Street: **Pacific Coast Highway**				to:	2016				Gen 1	PM	67	52	119
WEEKEND PM Peak: 12:00 PM				at:	1.50%	per year							
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	16	0	0	1	0	17	0	0	0%	0	17	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	1	0	0	0	0	1	0	0	0%	0	1	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	17	0	0	1	0	18	0	0	0%	0	18	0	0
Northbound Shared		1	**0.021**				1	**0.023**	0%			1	**0.023**
Southbound Left	34	0	0	2	0	36	0	0	0%	0	36	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	2	0	0	0	0	2	0	0	0%	0	2	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	41	0	0	3	10	54	0	0	0%	1	55	0	0
Southbound Shared		1	**0.048**				1	**0.057**	0%			1	**0.058**
Eastbound Left	28	1	**0.018**	2	10	40	1	**0.025**	0%	0	40	1	**0.025**
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1424	1	0.445	87	228	1739	1	0.544	(45%)	23	1762	1	0.551
Eastbound Th-Rt		1	0.445				1	0.544	0%			1	0.551
Eastbound Right	44	0	0	3	0	47	0	0	0%	0	47	0	0
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	44	1	0.028	3	0	47	1	0.029	0%	0	47	1	0.029
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1733	2	0.542	106	231	2070	2	0.647	45%	30	2100	2	0.656
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	38	1	0.024	2	0	40	1	0.025	0%	0	40	1	0.025
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.069			North-South:		0.080			North-South:		0.081
	East-West:		0.559			East-West:		0.672			East-West:		0.681
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.678					0.802					0.812
Level of Service (LOS):			**B**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

FUTURE (2030) CUMULATIVE + PROJECT

Intersection Capacity Utilization (ICU)

Intersection No. 1	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	199	2	0.069	18	16	233	2	**0.081**	4%	0	233	2	**0.081**
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	250	1	**0.069**	23	17	290	1	0.077	0%	0	290	1	0.077
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	139	1	**0.087**	13	15	167	1	**0.104**	0%	0	167	1	**0.104**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	672	2	0.210	60	198	930	2	0.291	10%	1	931	2	0.291
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	601	2	**0.188**	54	164	819	2	**0.256**	(10%)	1	820	2	**0.256**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	106	1	0.066	10	7	123	1	0.077	(4%)	0	123	1	0.077
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.069			North-South:		0.081			North-South:		0.081
	East-West:		0.275			East-West:		0.360			East-West:		0.360
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.394					0.491					0.491
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1	2012, EXISTING			2030, PROJECTED CUMULATIVE BASE					2030, WITH PROJECT				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY													
PM Peak: 4:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	155	2	**0.054**	14	18	187	2	**0.065**	4%	1	188	2	**0.065**
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	194	1	0.000	17	24	235	1	0.000	0%	0	235	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	344	1	**0.215**	31	25	400	1	**0.250**	0%	0	400	1	**0.250**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	972	2	0.304	87	250	1309	2	0.409	10%	1	1310	2	0.410
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1006	2	**0.314**	91	262	1359	2	**0.425**	(10%)	2	1361	2	**0.425**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	247	1	0.154	22	25	294	1	0.184	(4%)	1	295	1	0.185
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.054			North-South:		0.065			North-South:		0.065
	East-West:		0.529			East-West:		0.675			East-West:		0.675
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.633					0.789					0.789
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 1		**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Kanan Dume Road			Dual	2880	from:	2012								
East/West Street:					to:	2030					Trip Gen 1	PM	67	52	119
Pacific Coast Highway					at:	0.48%	per year								
WEEKEND															
PM Peak:	12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Southbound	Left	284	2	0.099	26	23	333	2	0.115	4%	3	336	2	0.117
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	586	1	**0.178**	53	26	665	1	**0.191**	0%	0	665	1	**0.191**
	Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound	Left	302	1	0.105	27	30	359	1	0.125	0%	0	359	1	0.125
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1028	2	0.321	93	299	1420	2	0.444	10%	7	1427	2	0.446
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1221	2	0.382	110	266	1597	2	0.499	(10%)	5	1602	2	0.501
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	172	1	0.108	15	22	209	1	0.131	(4%)	2	211	1	0.132
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.178			North-South:		0.191				North-South:	0.191
		East-West:		0.487			East-West:		0.624				East-West:	0.625
		Loss Time:		0.050			Loss Time:		0.050				Loss Time:	0.050
Volume/capacity (*v/c*) ratio:				0.715					0.865					0.866
Level of Service (LOS):				**C**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY													
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	3	0	0.000	0	1	4	0	0.000	0%	0	4	0	0.000
Northbound Lt-Th		1	**0.005**				1	0.007	0%			1	0.007
Northbound Thru	7	0	0.000	1	0	8	0	0.000	0%	0	8	0	0.000
Northbound Th-Rt		1	**0.005**				1	0.007	0%			1	0.007
Northbound Right	7	0	0.000	1	2	10	0	0.000	0%	0	10	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	956	1	**0.337**	86	23	1065	1	**0.375**	0%	0	1065	1	**0.375**
Southbound Lt-Th		1	0.337				1	0.375	0%			1	0.375
Southbound Thru	15	0	0.000	1	0	16	0	0.000	0%	0	16	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	216	1	0.093	19	1	236	1	0.105	0%	0	236	1	0.105
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	135	2	0.048	12	-11	136	2	0.049	25%	1	137	2	0.049
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	884	1	**0.279**	80	164	1128	1	**0.355**	0%	0	1128	1	**0.355**
Eastbound Th-Rt		1	**0.279**				1	**0.355**	0%			1	**0.355**
Eastbound Right	8	0	0.000	1	0	9	0	0.000	0%	0	9	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	4	1	**0.003**	0	1	5	1	0.003	0%	0	5	1	0.003
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	651	2	0.203	59	90	800	2	0.250	(25%)	1	801	2	0.250
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	123	1	0.000	11	-16	118	1	0.000	45%	3	121	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.342			North-South:		0.382			North-South:		0.382
	East-West:		0.281			East-West:		0.358			East-West:		0.358
	Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.673					0.790					0.790
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 2	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	9	0	0.000	1	14	24	0	0.000	0%	0	24	0	0.000
Northbound Lt-Th		1	0.009				1	**0.020**	0%			1	**0.020**
Northbound Thru	4	0	0.000	0	2	6	0	0.000	0%	0	6	0	0.000
Northbound Th-Rt		1	0.009				1	**0.020**	0%			1	**0.020**
Northbound Right	17	0	0.000	2	16	35	0	0.000	0%	0	35	0	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	320	1	**0.116**	29	4	353	1	**0.128**	0%	0	353	1	**0.128**
Southbound Lt-Th		1	0.116				1	0.128	0%			1	0.128
Southbound Thru	14	0	0.000	1	2	17	0	0.000	0%	0	17	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	183	1	0.015	16	0	199	1	0.014	0%	0	199	1	0.013
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	318	2	0.114	29	8	355	2	0.127	25%	2	357	2	0.127
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1128	1	**0.359**	102	186	1416	1	**0.454**	0%	0	1416	1	**0.454**
Eastbound Th-Rt		1	**0.359**				1	**0.454**	0%			1	**0.454**
Eastbound Right	21	0	0.000	2	15	38	0	0.000	0%	0	38	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	15	1	0.009	1	17	33	1	**0.021**	0%	0	33	1	**0.021**
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1229	2	0.384	111	235	1575	2	0.492	(25%)	4	1579	2	0.493
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	260	1	0.000	23	-5	278	1	0.000	45%	5	283	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.125			North-South:		0.149			North-South:		0.149
	East-West:		0.368			East-West:		0.475			East-West:		0.475
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.543					0.674					0.674
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT	
Change in *v/c* due to project:	0.000
Significantly impacted?	NO

Intersection Capacity Utilization (ICU)

Intersection No. 2		**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street: **Malibu Canyon Road**		Capacity: vphpl 1600			Ambient Growth							In	Out	Total
East/West Street: **Pacific Coast Highway**		Dual 2880			from: 2012					Trip Gen 1	PM	67	52	119
WEEKEND PM Peak: 12:00 PM					to: 2030									
					at: 0.48% per year									
		Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	26	0	0.000	2	22	50	0	0.000	0%	0	50	0	0.000
	Lt-Th		1	**0.030**				1	**0.048**	0%			1	**0.048**
	Thru	16	0	0.000	1	2	19	0	0.000	0%	0	19	0	0.000
	Th-Rt		1	**0.030**				1	**0.048**	0%			1	**0.048**
	Right	55	0	0.000	5	24	84	0	0.000	0%	0	84	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Southbound	Left	280	1	0.107	25	-4	301	1	0.116	0%	0	301	1	0.116
	Lt-Th		1	0.110				1	0.119	0%			1	0.119
	Thru	28	0	0.000	3	2	33	0	0.000	0%	0	33	0	0.000
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	256	1	**0.160**	23	7	286	1	**0.179**	0%	0	286	1	**0.179**
	Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound	Left	193	2	**0.067**	17	10	220	2	**0.077**	25%	17	237	2	0.082
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1256	1	0.405	113	228	1597	1	0.520	0%	0	1597	1	0.520
	Th-Rt		1	0.405				1	0.520	0%			1	0.520
	Right	40	0	0.000	4	22	66	0	0.000	0%	0	66	0	0.000
	Shared		0	0.000				0	0.000	0%			0	0.000
Westbound	Left	43	1	0.027	4	25	72	1	0.045	0%	0	72	1	0.045
	Lt-Th		0	0.000				0	0.000	0%			0	0.000
	Thru	1310	2	**0.409**	118	233	1661	2	**0.519**	(25%)	13	1674	2	**0.523**
	Th-Rt		0	0.000				0	0.000	0%			0	0.000
	Right	142	1	0.001	13	-6	149	1	-0.001	45%	30	179	1	0.018
	Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:		0.190			North-South:		0.227			North-South:		0.227
		East-West:		0.476			East-West:		0.596			East-West:		0.606
		Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:				0.716					0.873					0.883
Level of Service (LOS):				**C**					**D**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2030*

Project Description *2030 + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*278*	*4*	*2*	*1321*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*278*	*4*	*2*	*1321*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*4*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*4*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*2*			*4*			
C (m) (veh/h)		*1292*			*912*			
v/c		*0.00*			*0.00*			
95% queue length		*0.00*			*0.01*			
Control Delay (s/veh)		*7.8*			*9.0*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*9.0*					
Approach LOS	--	--	*A*					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	JTO
Agency/Co.	OTC
Date Performed	1/2015
Analysis Time Period	PM PEAK HOUR

Site Information

Intersection	MALIBU CYN. RD & Memorial Drwy
Jurisdiction	MALIBU
Analysis Year	2030

Project Description 2030 + PROJECT

East/West Street: MEMORIAL DRIVEWAY | North/South Street: MALIBU CANYON ROAD

Intersection Orientation: North-South | Study Period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		642	7	3	577	
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	642	7	3	577	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type	Undivided					
RT Channelized			0			0
Lanes	0	2	0	1	2	0
Configuration		T	TR	L	T	
Upstream Signal		0			0	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						19
Peak-Hour Factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	19
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)	0			0		
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		L			R			
v (veh/h)		3			19			
C (m) (veh/h)		947			722			
v/c		0.00			0.03			
95% queue length		0.01			0.08			
Control Delay (s/veh)		8.8			10.1			
LOS		A			B			
Approach Delay (s/veh)	--	--	10.1					
Approach LOS	--	--	B					

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TWO-WAY STOP CONTROL SUMMARY

General Information

Analyst	*JTO*
Agency/Co.	*OTC*
Date Performed	*1/2015*
Analysis Time Period	*SAT MID-DAY PEAK HOUR*

Site Information

Intersection	*MALIBU CYN. RD & MEMORIAL DRWY*
Jurisdiction	*MALIBU*
Analysis Year	*2030*

Project Description *2030 + PROJECT*

East/West Street: *MEMORIAL DRIVEWAY* | North/South Street: *MALIBU CANYON ROAD*

Intersection Orientation: *North-South* | Study Period (hrs): *0.25*

Vehicle Volumes and Adjustments

Major Street	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)		*393*	*47*	*20*	*832*	
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*393*	*47*	*20*	*832*	*0*
Percent Heavy Vehicles	*0*	--	--	*0*	--	--
Median Type	*Undivided*					
RT Channelized			*0*			*0*
Lanes	*0*	*2*	*0*	*1*	*2*	*0*
Configuration		*T*	*TR*	*L*	*T*	
Upstream Signal		*0*			*0*	

Minor Street	Eastbound			Westbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume (veh/h)						*47*
Peak-Hour Factor, PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*
Hourly Flow Rate, HFR (veh/h)	*0*	*0*	*0*	*0*	*0*	*47*
Percent Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*
Percent Grade (%)		*0*			*0*	
Flared Approach		*N*			*N*	
Storage		*0*			*0*	
RT Channelized			*0*			*0*
Lanes	*0*	*0*	*0*	*0*	*0*	*1*
Configuration						*R*

Delay, Queue Length, and Level of Service

Approach	Northbound	Southbound	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration		*L*			*R*			
v (veh/h)		*20*			*47*			
C (m) (veh/h)		*1131*			*825*			
v/c		*0.02*			*0.06*			
95% queue length		*0.05*			*0.18*			
Control Delay (s/veh)		*8.2*			*9.6*			
LOS		*A*			*A*			
Approach Delay (s/veh)	--	--	*9.6*					
Approach LOS	--	--	*A*					

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Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Canyon Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Civic Center Way	east-west split			at:	0.48%	per year							
WEEKDAY													
AM Peak: 7:45 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	25	1	**0.016**	2	-16	11	1	**0.007**	0%	0	11	1	**0.007**
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	200	2	0.063	18	3	221	2	0.069	(25%)	1	222	2	0.069
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	23	1	0.000	2	0	25	1	0.000	(75%)	3	28	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	19	1	0.012	2	0	21	1	0.013	0%	0	21	1	0.013
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	1171	2	0.366	105	51	1327	2	0.415	25%	2	1329	2	0.415
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	199	1	0.000	18	-8	209	1	0.000	0%	0	209	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	23	1	**0.013**	2	-2	23	1	**0.012**	0%	0	23	1	**0.012**
Eastbound Lt-Th		1	**0.013**				1	**0.012**	0%			1	**0.012**
Eastbound Thru	14	0	0.000	1	-4	11	0	0.000	0%	0	11	0	0.000
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	9	1	0.000	1	-4	6	1	0.000	0%	0	6	1	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	16	1	0.010	1	0	17	1	0.011	5%	0	17	1	0.011
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	92	1	0.058	8	-16	84	1	0.053	0%	0	84	1	0.053
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	208	1	0.000	19	22	249	1	0.000	0%	0	249	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.382			North-South:		0.422			North-South:		0.422
	East-West:		0.070			East-West:		0.065			East-West:		0.065
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.502					0.537					0.537
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.000

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity: vphpl 1600			Ambient Growth							In	Out	Total
Malibu Canyon Road	Dual 2880			from: 2012						AM	6	4	10
East/West Street:				to: 2030						PM	10	19	29
Civic Center Way	east-west split			at: 0.48% per year									
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	22	1	**0.014**	2	-5	19	1	**0.012**	0%	0	19	1	**0.012**
Northbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Northbound Thru	534	2	0.167	48	14	596	2	0.186	(25%)	5	601	2	0.188
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	27	1	0.000	2	0	29	1	0.000	(75%)	14	43	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	186	1	0.116	17	46	249	1	0.155	0%	0	249	1	0.155
Southbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Southbound Thru	464	2	0.145	42	11	517	2	0.161	25%	3	520	2	0.162
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	44	1	0.000	4	-2	46	1	0.000	0%	0	46	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	234	1	**0.117**	21	-6	249	1	**0.122**	0%	0	249	1	**0.122**
Eastbound Lt-Th		1	**0.117**				1	**0.122**	0%			1	**0.122**
Eastbound Thru	103	0	0.000	9	-11	101	0	0.000	0%	0	101	0	0.000
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	37	1	0.000	3	-11	29	1	0.000	0%	0	29	1	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	17	1	0.011	2	0	19	1	0.012	5%	0	19	1	0.012
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	35	1	0.022	3	-5	33	1	0.021	0%	0	33	1	0.021
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	609	1	0.000	55	63	727	1	0.000	0%	0	727	1	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.159			North-South:		0.173			North-South:		0.174
	East-West:		0.139			East-West:		0.142			East-West:		0.142
	Total:		0.050			Total:		0.050			Total:		0.050
Volume/capacity (*v/c*) ratio:			0.348					0.365					0.366
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 4	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Malibu Canyon Road	Dual	2880		from: 2012					Trip				
East/West Street:				to: 2030					Gen 1	PM	67	52	119
Civic Center Way	east-west split			at: 0.48% per year									
WEEKEND													
PM Peak: 11:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	29	1	**0.018**	3	-6	26	1	**0.016**	0%	0	26	1	**0.016**
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	296	2	0.093	27	17	340	2	0.106	(25%)	13	353	2	0.110
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	22	1	0.014	2	0	24	1	0.015	(75%)	39	63	1	0.039
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	233	1	0.146	21	63	317	1	0.198	0%	0	317	1	0.198
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	766	2	0.239	69	13	848	2	0.265	25%	17	865	2	0.270
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	28	1	0.018	3	-3	28	1	0.017	0%	0	28	1	0.017
Southbound Shared		0	0				0	0	0%			0	0
Eastbound Left	29	1	0.021	3	-2	30	1	0.021	0%	0	30	1	0.021
Eastbound Lt-Th		1	0.021				1	0.021	0%			1	0.021
Eastbound Thru	32	0	0	3	-4	31	0	0	0%	0	31	0	0
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	26	1	0.016	2	-4	24	1	0.015	0%	0	24	1	0.015
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	21	1	0.013	2	0	23	1	0.014	5%	3	26	1	0.016
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	28	1	0.018	3	-6	25	1	0.015	0%	0	25	1	0.015
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	179	1	0.112	16	60	255	1	0.159	0%	0	255	1	0.159
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.258			North-South:		0.281			North-South:		0.286
	East-West:		0.039			East-West:		0.036			East-West:		0.036
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.347					0.367					0.372
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.004

Significantly impacted? NO

ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*JTO*
Agency/Co.	*OTC INC*
Date Performed	*/2015*
Analysis Time Period	*AM PEAK HOUR*

Site Information

Intersection	*CIVIC CENTER WAY & WEBB WAY*
Jurisdiction	*MALIBU*
Analysis Year	*2030 WITH PROJECT*

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*7*	*22*	*59*	*89*	*73*	*11*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*251*	*103*	*209*	*20*	*34*	*13*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*	*R*	*L*	*TR*	*LT*	*R*	*LTR*	
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Flow Rate (veh/h)	*29*	*59*	*89*	*84*	*354*	*209*	*67*	
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
No. Lanes	*2*		*2*		*2*		*1*	
Geometry Group	*5*		*5*		*5*		*4b*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*	*0.0*	*1.0*	*0.0*	*0.7*	*0.0*	*0.3*	
Prop. Right-Turns	*0.0*	*1.0*	*0.0*	*0.1*	*0.0*	*1.0*	*0.2*	
Prop. Heavy Vehicle	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
hLT-adj	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.2*	*0.2*
hRT-adj	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.1*	*-0.7*	*0.5*	*-0.1*	*0.4*	*-0.7*	*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	
x, initial	*0.03*	*0.05*	*0.08*	*0.07*	*0.31*	*0.19*	*0.06*	
hd, final value (s)	*6.49*	*5.66*	*6.72*	*6.12*	*5.71*	*4.66*	*5.85*	
x, final value	*0.05*	*0.09*	*0.17*	*0.14*	*0.56*	*0.27*	*0.11*	
Move-up time, m (s)	*2.3*		*2.3*		*2.3*		*2.3*	
Service Time, t_s (s)	*4.2*	*3.4*	*4.4*	*3.8*	*3.4*	*2.4*	*3.6*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*279*	*309*	*339*	*334*	*604*	*459*	*317*	
Delay (s/veh)	*9.55*	*8.94*	*10.75*	*9.83*	*15.48*	*9.07*	*9.26*	
LOS	*A*	*A*	*B*	*A*	*C*	*A*	*A*	
Approach: Delay (s/veh)	*9.14*		*10.30*		*13.10*		*9.26*	
LOS	*A*		*B*		*B*		*A*	
Intersection Delay (s/veh)	*11.88*							
Intersection LOS	*B*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*JTO*
Agency/Co.	*OTC INC*
Date Performed	*1/2015*
Analysis Time Period	*PM PEAK HOUR*

Site Information

Intersection	*CIVIC CENTER WAY & WEBB WAY*
Jurisdiction	*MALIBU*
Analysis Year	*2030 WITH PROJECT*

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*23*	*100*	*245*	*203*	*292*	*11*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*469*	*58*	*158*	*42*	*86*	*46*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*	*R*	*L*	*TR*	*LT*	*R*	*LTR*	
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Flow Rate (veh/h)	*123*	*245*	*203*	*303*	*527*	*158*	*174*	
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
No. Lanes	*2*		*2*		*2*		*1*	
Geometry Group	*5*		*5*		*5*		*4b*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*	*0.0*	*1.0*	*0.0*	*0.9*	*0.0*	*0.2*	
Prop. Right-Turns	*0.0*	*1.0*	*0.0*	*0.0*	*0.0*	*1.0*	*0.3*	
Prop. Heavy Vehicle	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
hLT-adj	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.2*	*0.2*
hRT-adj	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.1*	*-0.7*	*0.5*	*-0.0*	*0.4*	*-0.7*	*-0.1*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	
x, initial	*0.11*	*0.22*	*0.18*	*0.27*	*0.47*	*0.14*	*0.15*	
hd, final value (s)	*8.54*	*7.72*	*8.64*	*8.10*	*8.23*	*7.07*	*8.48*	
x, final value	*0.29*	*0.53*	*0.49*	*0.68*	*1.21*	*0.31*	*0.41*	
Move-up time, m (s)	*2.3*		*2.3*		*2.3*		*2.3*	
Service Time, t_s (s)	*6.2*	*5.4*	*6.3*	*5.8*	*5.9*	*4.8*	*6.2*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*373*	*457*	*413*	*441*	*527*	*408*	*410*	
Delay (s/veh)	*14.72*	*18.64*	*19.27*	*26.42*	*138.26*	*12.92*	*16.95*	
LOS	*B*	*C*	*C*	*D*	*F*	*B*	*C*	
Approach: Delay (s/veh)	*17.33*		*23.55*		*109.35*		*16.95*	
LOS	*C*		*C*		*F*		*C*	
Intersection Delay (s/veh)	*55.48*							
Intersection LOS	*F*							

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ALL-WAY STOP CONTROL ANALYSIS

General Information

Analyst	*JTO*
Agency/Co.	*OTC INC*
Date Performed	*1/2015*
Analysis Time Period	*SAT MID PEAK HOUR*

Site Information

Intersection	*CIVIC CENTER WAY & WEBB WAY*
Jurisdiction	*MALIBU*
Analysis Year	*2030 WITH PROJECT*

Project ID *MEMORIAL PARK*

East/West Street: *CIVIC CENTER WAY* | North/South Street: *WEBB WAY / STUART RANCH ROAD*

Volume Adjustments and Site Characteristics

Approach	Eastbound			Westbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*34*	*160*	*202*	*187*	*153*	*5*
%Thrus Left Lane						

Approach	Northbound			Southbound		
Movement	L	T	R	L	T	R
Volume (veh/h)	*155*	*80*	*229*	*45*	*76*	*26*
%Thrus Left Lane						

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	*LT*	*R*	*L*	*TR*	*LT*	*R*	*LTR*	
PHF	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	*1.00*	
Flow Rate (veh/h)	*194*	*202*	*187*	*158*	*235*	*229*	*147*	
% Heavy Vehicles	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
No. Lanes	*2*		*2*		*2*		*1*	
Geometry Group	*5*		*5*		*5*		*4b*	
Duration, T	*0.25*							

Saturation Headway Adjustment Worksheet

Prop. Left-Turns	*0.2*	*0.0*	*1.0*	*0.0*	*0.7*	*0.0*	*0.3*	
Prop. Right-Turns	*0.0*	*1.0*	*0.0*	*0.0*	*0.0*	*1.0*	*0.2*	
Prop. Heavy Vehicle	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	
hLT-adj	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.5*	*0.2*	*0.2*
hRT-adj	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.7*	*-0.6*	*-0.6*
hHV-adj	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*	*1.7*
hadj, computed	*0.1*	*-0.7*	*0.5*	*-0.0*	*0.3*	*-0.7*	*-0.0*	

Departure Headway and Service Time

hd, initial value (s)	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	*3.20*	
x, initial	*0.17*	*0.18*	*0.17*	*0.14*	*0.21*	*0.20*	*0.13*	
hd, final value (s)	*7.21*	*6.41*	*7.67*	*7.13*	*7.35*	*6.31*	*7.41*	
x, final value	*0.39*	*0.36*	*0.40*	*0.31*	*0.48*	*0.40*	*0.30*	
Move-up time, m (s)	*2.3*		*2.3*		*2.3*		*2.3*	
Service Time, t_s (s)	*4.9*	*4.1*	*5.4*	*4.8*	*5.0*	*4.0*	*5.1*	

Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Capacity (veh/h)	*444*	*452*	*437*	*408*	*474*	*479*	*397*	
Delay (s/veh)	*14.42*	*12.67*	*15.35*	*13.05*	*16.64*	*13.18*	*13.29*	
LOS	*B*	*B*	*C*	*B*	*C*	*B*	*B*	
Approach: Delay (s/veh)	*13.53*		*14.30*		*14.93*		*13.29*	
LOS	*B*		*B*		*B*		*B*	
Intersection Delay (s/veh)	*14.18*							
Intersection LOS	*B*							

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Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street: **Webb Way**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from: 2012						AM	6	4	10
East/West Street: **Pacific Coast Highway**				to: 2030						PM	10	19	29
WEEKDAY AM Peak: 8:00 AM				at: 0.48% per year									
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	53	1	0.033	5	1	59	1	0.037	0%	0	59	1	0.037
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	48	0	0	4	3	55	0	0	0%	0	55	0	0
Northbound Th-Rt		1	**0.037**				1	**0.043**	0%			1	0.043
Northbound Right	11	0	0	1	1	13	0	0	0%	0	13	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	49	1	**0.031**	4	-2	51	1	**0.034**	(45%)	2	53	1	0.034
Southbound Lt-Th		1	**0.031**				1	**0.034**	0%			1	0.034
Southbound Thru	40	0	0.000	4	2	46	0	0.000	0%	0	46	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	32	1	0.020	3	56	91	1	0.057	(25%)	1	92	1	0.057
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	130	1	0.081	12	148	290	1	0.181	0%	0	290	1	0.181
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1559	3	**0.325**	140	67	1766	3	**0.368**	0%	0	1766	3	**0.368**
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	68	1	0.043	6	1	75	1	0.047	0%	0	75	1	0.047
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	132	1	0.083	12	7	151	1	0.094	0%	0	151	1	0.094
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	689	2	0.215	62	27	778	2	0.243	45%	3	781	2	0.244
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	231	1	0.144	21	-8	244	1	0.152	0%	0	244	1	0.152
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.068			North-South:		0.076			North-South:		0.078
	East-West:		0.407			East-West:		0.462			East-West:		0.462
	Loss Time:		0.050			LossTime:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.525					0.588					0.590
Level of Service (LOS):			**A**					**A**					**A**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street: **Webb Way**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from:	2012					AM	6	4	10
East/West Street: **Pacific Coast Highway**				to:	2030					PM	10	19	29
				at:	0.48%	per year							
WEEKDAY PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	148	1	0.093	13	2	163	1	0.102	0%	0	163	1	0.102
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	72	0	0	6	5	83	0	0	0%	0	83	0	0
Northbound Th-Rt		1	**0.063**				1	**0.073**	0%			1	**0.073**
Northbound Right	29	0	0	3	2	34	0	0	0%	0	34	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	223	1	**0.104**	20	-6	237	1	**0.113**	(45%)	9	246	1	**0.116**
Southbound Lt-Th		1	**0.104**				1	**0.113**	0%			1	**0.116**
Southbound Thru	76	0	0.000	7	5	88	0	0.000	0%	0	88	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	69	1	0.043	6	159	234	1	0.146	(25%)	4	238	1	0.149
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	93	1	0.058	8	102	203	1	0.127	0%	0	203	1	0.127
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1272	3	**0.265**	115	98	1485	3	**0.309**	0%	0	1485	3	**0.309**
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	54	1	0.034	5	2	61	1	0.038	0%	0	61	1	0.038
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	225	1	0.141	20	9	254	1	0.159	0%	0	254	1	0.159
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1235	2	0.386	111	98	1444	2	0.451	45%	5	1449	2	0.453
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	380	1	0.238	34	1	415	1	0.260	0%	0	415	1	0.260
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.167			North-South:		0.186			North-South:		0.189
	East-West:		0.406			East-West:		0.468			East-West:		0.468
	Loss Time:		0.050			LossTime:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.623					0.704					0.707
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.003

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 6	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**					**2030, WITH TRAFFIC MITIGATION**			
North/South Street: **Webb Way**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total				
East/West Street: **Pacific Coast Highway**		Dual	2880	from:	2012				Trip Gen 1	PM	67	52	119				
WEEKEND PM Peak: 12:00 PM	nort-south split			to:	2030												
				at:	0.48%	per year											
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**	**Adjusted Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound Left	127	1	**0.079**	11	2	140	1	**0.088**	0%	0	140	1	**0.088**	0	140	1	**0.088**
Northbound Lt-Th		0	0				0	0	0%			0	0			0	0
Northbound Thru	71	0	0	6	5	82	0	0	0%	0	82	0	0	0	82	0	0
Northbound Th-Rt		1	0.063				1	0.073	0%			1	0.073			1	0.073
Northbound Right	30	0	0	3	2	35	0	0	0%	0	35	0	0	0	35	0	0
Northbound Shared		0	0				0	0	0%			0	0			0	0
Southbound Left	116	1	0.007	10	-2	124	1	0.008	(45%)	23	147	1	0.009	0	147	1	0.009
Southbound Lt-Th		1	0.075				1	0.083	0%			1	0.091			1	0.091
Southbound Thru	101	0	0	9	5	115	0	0	0%	0	115	0	0	0	115	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0			0	0
Southbound Right	57	1	0	5	154	216	1	0	(25%)	13	229	1	0	0	229	1	0
Southbound Shared		0	0				0	0	0%			0	0			0	0
Eastbound Left	149	1	0.093	13	148	310	1	0.194	0%	0	310	1	0.194	0	310	**2**	0.108
Eastbound Lt-Th		0	0				0	0	0%			0	0			0	0
Eastbound Thru	1323	3	0.276	119	122	1564	3	0.326	0%	0	1564	3	0.326	0	1564	3	0.326
Eastbound Th-Rt		0	0				0	0	0%			0	0			0	0
Eastbound Right	65	1	0.041	6	3	74	1	0.046	0%	0	74	1	0.046	0	74	1	0.046
Eastbound Shared		0	0				0	0	0%			0	0			0	0
Westbound Left	287	1	0.179	26	6	319	1	0.199	0%	0	319	1	0.199	0	319	1	0.199
Westbound Lt-Th		0	0				0	0	0%			0	0			0	0
Westbound Thru	1299	2	0.406	117	105	1521	2	0.475	45%	30	1551	2	0.485	0	1551	2	0.485
Westbound Th-Rt		0	0				0	0	0%			0	0			0	0
Westbound Right	115	1	0.036	10	2	127	1	0.041	0%	0	127	1	0.034	0	127	1	0.034
Westbound Shared		0	0				0	0	0%			0	0			0	0
Critical Volumes:	North-South:		0.155			North-South:		0.171			North-South:		0.179		North-South:		0.179
	East-West:		0.499			East-West:		0.669			East-West:		0.679		East-West:		0.592
	Total:		0.050			Total:		0.050			Total:		0.050		Total:		0.050
Volume/capacity (*v/c*) ratio:			0.704					0.890					0.908				0.821
Level of Service (LOS):			**C**					**D**					**E**				**D**

PROJECT IMPACT

Change in *v/c* due to project:	0.018	*Δv/c* after mitigation:	-0.068
Significantly impacted?	YES	Fully mitigated?	YES

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Cross Creek Road		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway	north-south split			at:	0.48%	per year							
WEEKDAY													
AM Peak: 8:00 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	4	0	0.000	0	0	4	0	0.000	0%	0	4	0	0.000
Northbound Lt-Th		1	**0.003**				1	0.003	0%			1	0.003
Northbound Thru	1	0	0.000	0	0	1	0	0.000	0%	0	1	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	2	1	0.000	0	0	2	1	0.000	0%	0	2	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	80	1	**0.028**	7	78	165	1	0.057	0%	0	165	1	0.057
Southbound Lt-Th		1	**0.028**				1	0.057	0%			1	0.057
Southbound Thru	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	63	1	0.000	6	8	77	1	0.000	0%	0	77	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	92	1	0.058	8	22	122	1	0.076	0%	0	122	1	0.076
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1623	1	**0.511**	146	44	1813	1	**0.570**	(45%)	2	1815	1	**0.571**
Eastbound Th-Rt		1	0.511				1	0.570	0%			1	0.571
Eastbound Right	11	0	0.000	1	0	12	0	0.000	0%	0	12	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	3	1	0.002	0	0	3	1	0.002	0%	0	3	1	0.002
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1001	1	0.354	90	12	1103	1	0.437	45%	3	1106	1	0.438
Westbound Th-Rt		1	0.354				1	0.437	0%			1	0.438
Westbound Right	131	0	0.000	12	154	297	0	0.000	0%	0	297	0	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.031			North-South:		0.060			North-South:		0.060
	East-West:		0.513			East-West:		0.572			East-West:		0.573
	Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:			0.594					0.682					0.683
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Cross Creek Road	Dual	2880		from: 2012						AM	6	4	10
East/West Street:				to: 2030						PM	10	19	29
Pacific Coast Highway	north-south split			at: 0.48%	per year								
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	14	0	0.000	1	0	15	0	0.000	0%	0	15	0	0.000
Northbound Lt-Th		1	**0.014**				1	**0.015**	0%			1	**0.015**
Northbound Thru	8	0	0.000	1	0	9	0	0.000	0%	0	9	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	19	1	0.000	2	0	21	1	0.000	0%	0	21	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	187	1	**0.065**	17	201	405	1	**0.141**	0%	0	405	1	**0.141**
Southbound Lt-Th		1	**0.065**				1	**0.141**	0%			1	**0.141**
Southbound Thru	1	0	0.000	0	0	1	0	0.000	0%	0	1	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	132	1	0.000	12	33	177	1	0.000	0%	0	177	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	94	1	**0.059**	8	19	121	1	**0.076**	0%	0	121	1	**0.076**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1603	1	0.506	144	73	1820	1	0.574	(45%)	9	1829	1	0.577
Eastbound Th-Rt		1	0.506				1	0.574	0%			1	0.577
Eastbound Right	15	0	0.000	1	0	16	0	0.000	0%	0	16	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	15	1	0.009	1	2	18	1	0.011	0%	0	18	1	0.011
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1711	1	0.593	154	63	1928	1	0.718	45%	5	1933	1	0.719
Westbound Th-Rt		1	0.593				1	0.718	0%			1	0.719
Westbound Right	186	0	0.000	17	166	369	0	0.000	0%	0	369	0	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.079			North-South:		0.156			North-South:		0.156
	East-West:		0.652			East-West:		0.794			East-West:		0.795
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.781					1.000					1.001
Level of Service (LOS):			**C**					**E**					**F**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 7	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Cross Creek Road	Dual	2880		from: 2012					Trip				
East/West Street:				to: 2030					Gen 1	PM	67	52	119
Pacific Coast Highway	north-south split			at: 0.48% per year									
WEEKEND													
PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	16	0	0.000	1	0	17	0	0.000	0%	0	17	0	0.000
Northbound Lt-Th		1	**0.014**				1	**0.015**	0%			1	**0.015**
Northbound Thru	6	0	0.000	1	0	7	0	0.000	0%	0	7	0	0.000
Northbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Northbound Right	46	1	0.000	4	0	50	1	0.000	0%	0	50	1	0.000
Northbound Shared		0	0.000				0	0.000	0%			0	0.000
Southbound Left	209	1	**0.073**	19	195	423	1	**0.147**	0%	0	423	1	**0.147**
Southbound Lt-Th		1	**0.073**				1	**0.147**	0%			1	**0.147**
Southbound Thru	7	0	0.000	1	0	8	0	0.000	0%	0	8	0	0.000
Southbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Southbound Right	109	1	0.000	10	23	142	1	0.000	0%	0	142	1	0.000
Southbound Shared		0	0.000				0	0.000	0%			0	0.000
Eastbound Left	144	1	**0.090**	13	26	183	1	**0.114**	0%	0	183	1	**0.114**
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1439	1	0.460	130	96	1665	1	0.531	(45%)	23	1688	1	0.539
Eastbound Th-Rt		1	0.460				1	0.531	0%			1	0.539
Eastbound Right	33	0	0.000	3	0	36	0	0.000	0%	0	36	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	24	1	0.015	2	2	28	1	0.018	0%	0	28	1	0.018
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1625	1	0.573	146	77	1848	1	0.717	45%	30	1878	1	0.726
Westbound Th-Rt		1	0.573				1	0.717	0%			1	0.726
Westbound Right	209	0	0.000	19	217	445	0	0.000	0%	0	445	0	0.000
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.086			North-South:		0.162			North-South:		0.162
	East-West:		0.663			East-West:		0.831			East-West:		0.840
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.799					1.043					1.052
Level of Service (LOS):			**C**					**F**					**F**

PROJECT IMPACT

Change in *v/c* due to project: 0.009

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 8	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Pier Signal		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY													
AM Peak: 7:30 AM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left (not part of signal)	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Shared		1	0				1	0	0%			1	0
Eastbound Left	2	1	0.001	0	0	2	1	0.001	0%	0	2	1	0.001
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1672	2	**0.523**	151	100	1923	2	0.601	(45%)	2	1925	2	**0.601**
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	5	1	0.003	0	0	5	1	0.003	0%	0	5	1	0.003
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1202	2	0.376	108	178	1488	2	0.465	45%	3	1491	2	0.466
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	1	1	0.001	0	0	1	1	0.001	0%	0	1	1	0.001
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:	0.000				North-South:	0.000				North-South:	0.000
		East-West:	0.526				East-West:	0.603				East-West:	0.605
		Loss Time:	0.050				Loss Time:	0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:			0.576					0.653					0.655
Level of Service (LOS):			**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 8	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Malibu Pier Signal		Dual	2880	from:	2012					AM	6	4	10
East/West Street:				to:	2030					PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year							
WEEKDAY													
PM Peak: 4:45 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left (not part of signal)	3	0	0	0	0	3	0	0	0%	0	3	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	3	0	0	0	0	3	0	0	0%	0	3	0	0
Southbound Shared		1	**0.004**				1	**0.004**	0%			1	**0.004**
Eastbound Left	0	1	0.000	0	0	0	1	0.000	0%	0	0	1	0.000
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1799	2	0.562	162	263	2224	2	0.695	(45%)	9	2233	2	0.698
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	13	1	0.008	1	0	14	1	0.009	0%	0	14	1	0.009
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1937	2	**0.605**	174	230	2341	2	**0.732**	45%	5	2346	2	**0.733**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	1	1	0.001	0	0	1	1	0.001	0%	0	1	1	0.001
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:		North-South:	0.004				North-South:	0.004				North-South:	0.004
		East-West:	0.605				East-West:	0.732				East-West:	0.733
		Total:	0.050				Total:	0.050				Total:	0.050
Volume/capacity (*v/c*) ratio:			0.659					0.786					0.787
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.8	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:	Capacity: vphpl	1600		Ambient Growth							In	Out	Total
Malibu Pier Signal	Dual	2880		from: 2012					Trip	AM	0	0	0
East/West Street:				to: 2030					Gen 1	PM	67	52	119
Pacific Coast Highway				at: 0.48% per year									
WEEKEND													
PM Peak: 12:00 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**		**+ Project Volume**	**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left (not part of signal)	1	0	0	0	0	1	0	0	0%	0	1	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	4	0	0	0	0	4	0	0	0%	0	4	0	0
Southbound Shared		1	0.000				1	0.000	0%			1	0
Eastbound Left	4	1	0.003	0	0	4	1	0.003	0%	0	4	1	0.003
Eastbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Eastbound Thru	1669	2	0.522	150	289	2108	2	0.659	(45%)	23	2131	2	0.666
Eastbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Eastbound Right	0	0	0.000	0	0	0	0	0.000	0%	0	0	0	0.000
Eastbound Shared		0	0.000				0	0.000	0%			0	0.000
Westbound Left	17	1	0.011	2	0	19	1	0.012	0%	0	19	1	0.012
Westbound Lt-Th		0	0.000				0	0.000	0%			0	0.000
Westbound Thru	1875	2	0.586	169	287	2331	2	0.728	45%	30	2361	2	**0.738**
Westbound Th-Rt		0	0.000				0	0.000	0%			0	0.000
Westbound Right	5	1	0.003	0	0	5	1	0.003	0%	0	5	1	0.003
Westbound Shared		0	0.000				0	0.000	0%			0	0.000
Critical Volumes:	North-South:		0.000			North-South:		0.000			North-South:		0.000
	East-West:		0.589			East-West:		0.732			East-West:		0.740
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.639					0.782					0.790
Level of Service (LOS):			**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.008

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.9		**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Carbon Canyon Road			Dual	2880	from:	2012					AM	6	4	10
East/West Street:					to:	2030					PM	10	19	29
Pacific Coast Highway					at:	0.48%	per year							
WEEKDAY														
AM Peak: 8:00 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th N/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Southbound	Left	13	0	0	1	0	14	0	0	0%	0	14	0	0
	Lt-Th S/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	14	0	0	1	0	15	0	0	0%	0	15	0	0
	Shared		1	**0.017**				1	**0.018**	0%			1	**0.018**
Eastbound	Left	28	1	0.018	3	0	31	1	0.019	0%	0	31	1	0.019
	Lt-Th E/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1508	2	**0.471**	136	121	1765	2	**0.551**	(45%)	2	1767	2	**0.552**
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Westbound	Left	1	0	0	0	0	1	0	0	0%	0	1	0	0
	Lt-Th W/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1205	2	0.377	108	174	1487	2	0.465	45%	3	1490	2	0.466
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	8	1	0.005	1	0	9	1	0.005	0%	0	9	1	0.005
	Shared		0	0				0	0	0%			0	0
Critical Volumes:		North-South:		0.017			North-South:		0.018			North-South:		0.018
		East-West:		0.471			East-West:		0.551			East-West:		0.552
		Loss Time:		0.050			Loss Time:		0.050			LossTime:		0.050
Volume/capacity (*v/c*) ratio:				0.538					0.619					0.620
Level of Service (LOS):				**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.9		2012, EXISTING			2030, PROJECTED CUMULATIVE BASE					2030, WITH PROJECT				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Carbon Canyon Road			Dual	2880	from:	2012					AM	6	4	10
East/West Street:					to:	2030					PM	10	19	29
Pacific Coast Highway					at:	0.48%	per year							
WEEKDAY														
PM Peak:	4:15 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th N/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Southbound	Left	12	0	0	1	0	13	0	0	0%	0	13	0	0
	Lt-Th S/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	22	0	0	2	0	24	0	0	0%	0	24	0	0
	Shared		1	**0.021**				1	**0.023**	0%			1	**0.023**
Eastbound	Left	15	1	0.009	1	0	16	1	**0.010**	0%	0	16	1	**0.010**
	Lt-Th E/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1676	2	0.524	151	272	2099	2	0.656	(45%)	9	2108	2	0.659
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Westbound	Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Lt-Th W/B RTOR:		0	0				0	0	0%			0	0
	Thru Existing: 50%	1805	2	**0.564**	162	241	2208	2	**0.690**	45%	5	2213	2	**0.692**
	Th-Rt Projected: 50%		0	0				0	0	0%			0	0
	Right	9	1	0.006	1	0	10	1	0.006	0%	0	10	1	0.006
	Shared		0	0				0	0	0%			0	0
Critical Volumes:		North-South:		0.021			North-South:		0.023				North-South:	0.023
		East-West:		0.573			East-West:		0.700				East-West:	0.702
		Loss Time:		0.050			Loss Time:		0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:				0.644					0.773					0.775
Level of Service (LOS):				**B**					**C**					**C**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 9	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street: **Carbon Canyon Road**	Capacity: vphpl 1600			Ambient Growth							In	Out	Total
East/West Street: **Pacific Coast Highway**	Dual 2880			from: 2012					Trip Gen 1	PM	67	52	119
WEEKEND PM Peak: 1:00 PM				to: 2030									
				at: 0.48% per year									
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Northbound Shared		0	0				0	0	0%			0	0
Southbound Left	13	0	0	1	0	14	0	0	0%	0	14	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	19	0	0	2	0	21	0	0		0	21	0	0
Southbound Shared		1	**0.020**				1	**0.022**	0%			1	**0.022**
Eastbound Left	25	1	**0.016**	2	0	27	1	**0.017**		0	27	1	**0.017**
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1479	2	0.462	133	296	1908	2	0.596	(45%)	23	1931	2	0.603
Eastbound Th-Rt		0	0				0	0	0%			0	0
Eastbound Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	0	0	0	0	0	0	0	0	0%	0	0	0	0
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1798	2	**0.562**	162	304	2264	2	**0.707**	45%	30	2294	2	**0.717**
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	13	1	0.008	1	0	14	1	0.009	0%	0	14	1	0.009
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.020			North-South:		0.022			North-South:		0.022
	East-West:		0.578			East-West:		0.724			East-West:		0.734
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.648					0.796					0.806
Level of Service (LOS):			**B**					**C**					**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10		**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street:		Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
Las Flores Canyon Rd.			Dual	2880	from: 2012						AM	6	4	10
East/West Street:					to: 2030						PM	10	19	29
Pacific Coast Highway					at: 0.48% per year									
WEEKDAY														
AM Peak: 7:45 AM		**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**= Total Volume**	**Lanes**	**V / C**
Northbound	Left	1	0	0	0	0	1	0	0	0%	0	1	0	0
	Lt-Th		0	0				0	0	0%			0	0
	Thru	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Th-Rt		0	0				0	0	0%			0	0
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		1	0.001				1	**0.001**	0%			1	**0.001**
Southbound	Left	40	0	0	4	0	44	0	0	0%	0	44	0	0
	Lt-Th		0	0				0	0	0%			0	0
	Thru	1	0	0	0	0	1	0	0	0%	0	1	0	0
	Th-Rt		0	0				0	0	0%			0	0
	Right	35	0	0	3	3	41	0	0	0%	0	41	0	0
	Shared		1	0.048				1	**0.054**	0%			1	**0.054**
Eastbound	Left	23	1	0.014	2	2	27	1	0.017	0%	0	27	1	0.017
	Lt-Th		0	0				0	0	0%			0	0
	Thru	1535	1	**0.480**	138	101	1774	1	**0.554**	(45%)	2	1776	1	**0.555**
	Th-Rt		1	**0.480**				1	**0.554**	0%			1	**0.555**
	Right	0	0	0	0	0	0	0	0	0%	0	0	0	0
	Shared		0	0				0	0	0%			0	0
Westbound	Left	3	1	0.002	0	0	3	1	0.002	0%	0	3	1	0.002
	Lt-Th		0	0				0	0	0%			0	0
	Thru	1197	2	0.374	108	130	1435	2	0.448	45%	3	1438	2	0.449
	Th-Rt		0	0				0	0	0%			0	0
	Right	27	1	0.017	2	0	29	1	0.018	0%	0	29	1	0.018
	Shared		0	0				0	0	0%			0	0
Critical Volumes:			North-South:	0.049				North-South:	0.054				North-South:	0.054
			East-West:	0.482				East-West:	0.556				East-West:	0.557
			Loss Time:	0.050				Loss Time:	0.050				LossTime:	0.050
Volume/capacity (*v/c*) ratio:				0.581					0.660					0.661
Level of Service (LOS):				**A**					**B**					**B**

PROJECT IMPACT

Change in *v/c* due to project: 0.001

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No.10	2012, EXISTING			2030, PROJECTED CUMULATIVE BASE					2030, WITH PROJECT					
North/South Street:	Capacity:	vphpl	1600	Ambient Growth								In	Out	Total
Las Flores Canyon Rd.		Dual	2880	from:	2012						AM	6	4	10
East/West Street:				to:	2030						PM	10	19	29
Pacific Coast Highway				at:	0.48%	per year								
WEEKDAY														
PM Peak: 4:30 PM	**Counts Volume**	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**			**Total Volume**	**Lanes**	**V / C**
Northbound Left	10	0	0	1	0	11	0	0	0%	0		11	0	0
Northbound Lt-Th		0	0				0	0	0%				0	0
Northbound Thru	1	0	0	0	0	1	0	0	0%	0		1	0	0
Northbound Th-Rt		0	0				0	0	0%				0	0
Northbound Right	15	0	0	1	0	16	0	0	0%	0		16	0	0
Northbound Shared		1	0.016				1	**0.018**	0%				1	**0.018**
Southbound Left	30	0	0	3	0	33	0	0	0%	0		33	0	0
Southbound Lt-Th		0	0				0	0	0%				0	0
Southbound Thru	2	0	0	0	0	2	0	0	0%	0		2	0	0
Southbound Th-Rt		0	0				0	0	0%				0	0
Southbound Right	34	0	0	3	10	47	0	0	0%	0		47	0	0
Southbound Shared		1	0.041				1	**0.051**	0%				1	**0.051**
Eastbound Left	41	1	**0.026**	4	10	55	1	**0.034**	0%	0		55	1	**0.034**
Eastbound Lt-Th		0	0				0	0	0%				0	0
Eastbound Thru	1699	1	0.531	153	200	2052	1	0.641	(45%)	9		2061	1	0.644
Eastbound Th-Rt		1	0.531				1	0.641	0%				1	0.644
Eastbound Right	17	0	0	2	0	19	0	0	0%	0		19	0	0
Eastbound Shared		0	0				0	0	0%				0	0
Westbound Left	18	1	0.011	2	0	20	1	0.012	0%	0		20	1	0.012
Westbound Lt-Th		0	0				0	0	0%				0	0
Westbound Thru	1787	2	0.558	161	187	2135	2	0.667	45%	5		2140	2	0.669
Westbound Th-Rt		0	0				0	0	0%				0	0
Westbound Right	39	1	0.024	4	0	43	1	0.027	0%	0		43	1	0.027
Westbound Shared		0	0				0	0	0%				0	0
Critical Volumes:	North-South:		0.057			North-South:		0.069					North-South:	0.069
	East-West:		0.584			East-West:		0.701					East-West:	0.703
	Total:		0.050			Total:		0.050					Total:	0.050
Volume/capacity (*v/c*) ratio:			0.691					0.820						0.822
Level of Service (LOS):			**B**					**D**						**D**

PROJECT IMPACT

Change in *v/c* due to project: 0.002

Significantly impacted? NO

Intersection Capacity Utilization (ICU)

Intersection No. 10	**2012, EXISTING**			**2030, PROJECTED CUMULATIVE BASE**					**2030, WITH PROJECT**				
North/South Street: **Las Flores Canyon Rd.**	Capacity:	vphpl	1600	Ambient Growth							In	Out	Total
		Dual	2880	from:	2012				Trip				
East/West Street: **Pacific Coast Highway**				to:	2030				Gen 1	PM	67	52	119
WEEKEND PM Peak: 12:00 PM				at:	0.48%	per year							
	Counts Volume	**Lanes**	**V / C**	**+ Amb. Growth**	**+ Area Projects**	**= Total Volume**	**Lanes**	**V / C**	**+ Project Volume**		**Total Volume**	**Lanes**	**V / C**
Northbound Left	16	0	0	1	0	17	0	0	0%	0	17	0	0
Northbound Lt-Th		0	0				0	0	0%			0	0
Northbound Thru	1	0	0	0	0	1	0	0	0%	0	1	0	0
Northbound Th-Rt		0	0				0	0	0%			0	0
Northbound Right	17	0	0	2	0	19	0	0	0%	0	19	0	0
Northbound Shared		1	**0.021**				1	**0.023**	0%			1	**0.023**
Southbound Left	34	0	0	3	0	37	0	0	0%	0	37	0	0
Southbound Lt-Th		0	0				0	0	0%			0	0
Southbound Thru	2	0	0	0	0	2	0	0	0%	0	2	0	0
Southbound Th-Rt		0	0				0	0	0%			0	0
Southbound Right	41	0	0	4	10	55	0	0	0%	0	55	0	0
Southbound Shared		1	**0.048**				1	**0.059**	0%			1	**0.059**
Eastbound Left	28	1	0.018	3	10	41	1	0.025	0%	0	41	1	**0.025**
Eastbound Lt-Th		0	0				0	0	0%			0	0
Eastbound Thru	1424	1	0.445	128	228	1780	1	0.556	(45%)	23	1803	1	0.563
Eastbound Th-Rt		1	0.445				1	0.556	0%			1	0.563
Eastbound Right	44	0	0	4	0	48	0	0	0%	0	48	0	0
Eastbound Shared		0	0				0	0	0%			0	0
Westbound Left	44	1	0.028	4	0	48	1	0.030	0%	0	48	1	0.030
Westbound Lt-Th		0	0				0	0	0%			0	0
Westbound Thru	1733	2	0.542	156	231	2120	2	0.662	45%	30	2150	2	0.672
Westbound Th-Rt		0	0				0	0	0%			0	0
Westbound Right	38	1	0.024	3	0	41	1	0.026	0%	0	41	1	0.026
Westbound Shared		0	0				0	0	0%			0	0
Critical Volumes:	North-South:		0.069			North-South:		0.082			North-South:		0.082
	East-West:		0.560			East-West:		0.687			East-West:		0.697
	Loss Time:		0.050			Loss Time:		0.050			Loss Time:		0.050
Volume/capacity (*v/c*) ratio:			0.679					0.819					0.829
Level of Service (LOS):			**B**					**D**					**D**

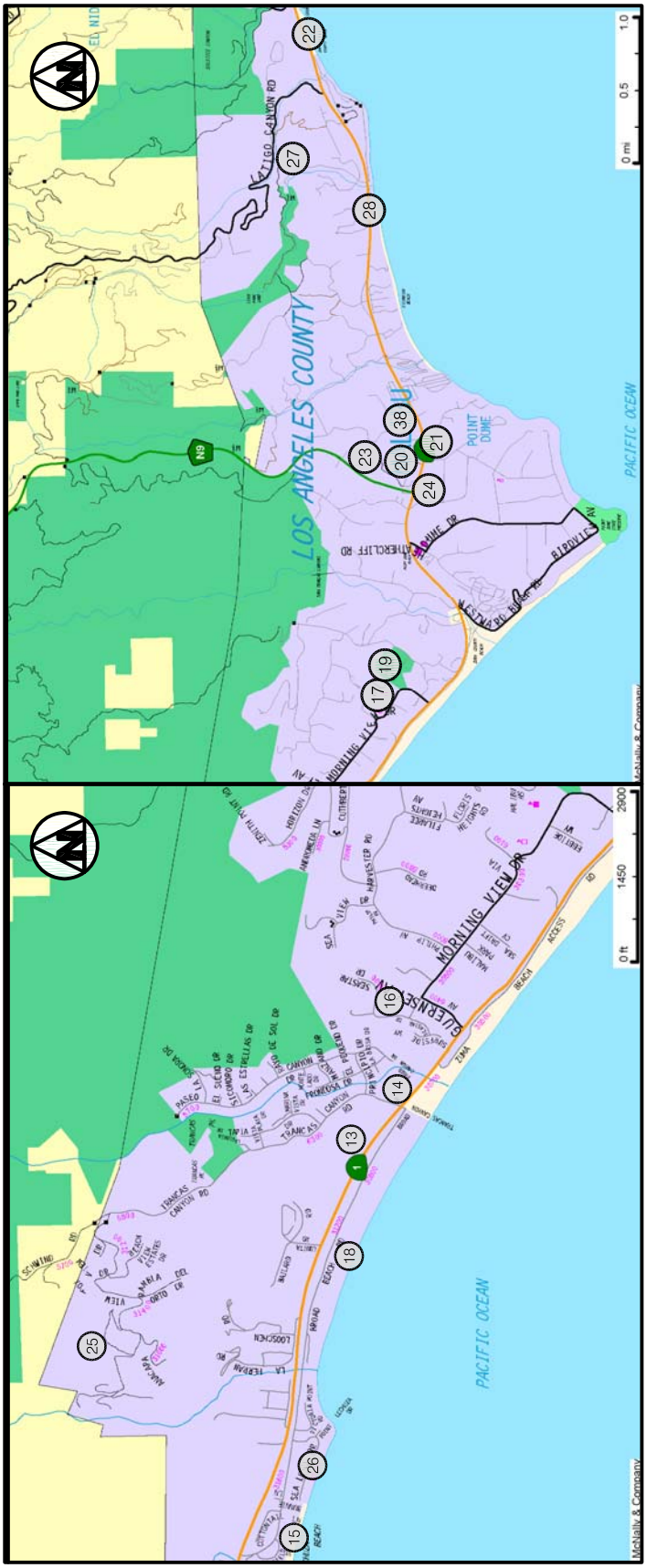
PROJECT IMPACT

Change in *v/c* due to project: 0.010

Significantly impacted? NO

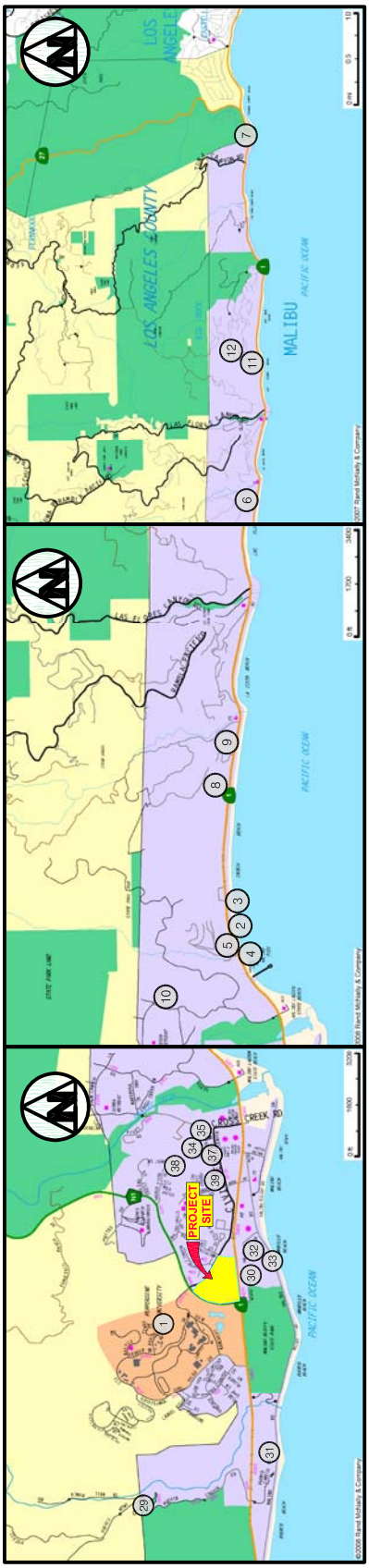
APPENDIX F

RELATED PROJECT INFORMATION



POINT DUME STUDY AREA

WEST STUDY AREA



EAST STUDY AREA

CARBON BEACH STUDY AREA

CIVIC CENTER STUDY AREA

8/2012

RELATED PROJECTS LOCATION MAP

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

RELATED PROJECTS DESCRIPTIONS AND LOCATIONS

Number	Name/Location	Size		Land Use Description
1	Pepperdine Univeristy			Campus Wide upgrades
2	22716 Pacific Coast Highway	7,100	sf	Restaurant
3	22706 Pacific Coast Highway	5,904	sf	Restaurant
4	22959 Pacific Coast Highway	2,630	sf	Office
		4,517	sf	Retail
5	22729 Pacific Coast Highway	2,499	sf	Office
6	22065 Pacific Coast Hghway	8	units	Condominiums
7	18805,07,09 Pacific Coast Highway	3	du	Single Family
8	22301,03,05,09 Pacific Coast Highway	4	du	Single Family
9	21997 and 22003 Pacific Coast Highway	2	du	Single Family
10	3314 Serra Road	3	du	Single Family
11	20624 and 20630 Pacific Coast Highway	2	du	Single Family
12	2110 Seaboard	4	du	Single Family
13	6155 Trancas Canyon Road	32	units	Townhomes
14	30745 Pacific Coast Highway	53,423	sf	Shopping Center
15	31720.5 Pacific Coast Highway	Public Access Improvements		
16	6270,6304,6312,6282,6398 Sea Star Drive	5	du	Single Family
17	30215 Morning View Drive	35,315	sf	High School Improvements
18	Broad Beach Road	Restoration Project		
19	30215 Morning View Drive	Sports Field Lighting		
20	28811 Pacific Coast Highway	3	du	Single Family
21	28722 Pacific Coast Highway	6,033	sf	Fire Station
22	26038.5 Pacific Coast Highway	Fish Ladder Project		
23	6061Galahad Road	4	du	Single Family
24	6271 and 6277 Zuma Mesa Drive	2	du	Single Family
25	31537 Anacapa View Drive	Trancas Highlands Water Assessment Project		
26	31864 and 31866 Sea Level Drive	2	du	Single Family
27	5905 and 5909 Latigo Canyon Road	2	du	Single Family
28	27535 Pacific Coast Highway	2	du	Single Family
29	3500 Puerco Canyon Road	7	du	Single Family
30	24120 Pacific Coast Highway	5	du	Single Family
		1	field	Baseball Field
31	24903 Pacific Coast Highway	9,685	sf	Office
32	23915 Malibu Road	7	du	Single Family
33	24038 Malbu Canyon Road	SMMC Beach Access Improvements		
34	23465 Civic Center Way	53,825	sf	Office/Institutional
		77,110	sf	Retail
35	23401 Civic Center Way	34,825	sf	Shopping Center
		4,000	sf	Restaurant
36	City of Malibu	Wastewater Treatment Facility		
37	23525 Civic Center Way	25,000	sf	Satellite Campus (200 Students)
38	28455 Pacific Coast Highway	5.12	acres	102 du (6 du per acre)
	28401 Pacific Coast Highway	3.25	acres	20 du (6 du per acre)
	370 Laz Paz Lane	2.30	acres	14 du (6 du per acre)
39	23575 Civic Center Way	76,000	sf	Shopping Center

Source: City Malibu for Cumulative Listing May 2012

n/a - not available

RELATED PROJECTS DESCRIPTIONS AND TRIP GENERATION

		Daily	AM Peak Hour			PM Peak Hour			Sat. Mid-day Peak Hour			Sat.
Number	Name/Location	Traffic	In	Out	Total	In	Out	Total	In	Out	Total	Daily
1	Pepperdine Univeristy	(744)	(54)	(13)	(67)	(15)	(37)	(52)	(20)	(14)	(34)	(402)
2	22716 Pacific Coast Highway	639	52	1	6	36	18	54	45	32	77	670
3	22706 Pacific Coast Highway	597	5	0	5	30	15	45	38	26	64	577
4	22959 Pacific Coast Highway	29	4	0	4	1	3	4	1	0	1	6
		200	0	0	0	5	7	12	5	7	12	190
5	22729 Pacific Coast Highway	28	3	1	4	1	3	4	1	0	1	6
6	22065 Pacific Coast Hghway	46	1	3	4	3	1	4	2	2	4	45
7	18805,07,09 Pacific Coast Highway	29	1	2	3	2	1	3	1	2	3	30
8	22301,03,05,09 Pacific Coast Highway	38	1	2	3	3	1	4	2	2	4	40
9	21997 and 22003 Pacific Coast Highway	19	1	1	2	1	1	2	1	1	2	20
10	3314 Serra Road	29	1	2	3	2	1	3	1	2	3	30
11	20624 and 20630 Pacific Coast Highway	19	1	1	2	1	1	2	1	1	2	20
12	2110 Seaboard	38	1	2	3	3	1	4	2	2	4	40
13	6155 Trancas Canyon Road	186	2	12	14	12	5	17	8	7	15	181
14	30745 Pacific Coast Highway	1,366	37	10	47	73	109	182	101	135	236	1,590
15	31720.5 Pacific Coast Highway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
16	6270,6304,6312,6282,6398 Sea Star Drive	48	1	3	4	3	2	5	2	2	4	50
17	30215 Morning View Drive	455	77	31	108	18	16	34	18	10	28	154
18	Broad Beach Road	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
19	30215 Morning View Drive	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
20	28811 Pacific Coast Highway	29	1	2	3	2	1	3	1	2	3	30
21	28722 Pacific Coast Highway	66	8	1	9	2	7	9	2	7	9	66
22	26038.5 Pacific Coast Highway	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
23	6061Galahad Road	38	1	2	3	3	1	4	2	2	4	40
24	6271 and 6277 Zuma Mesa Drive	19	1	1	2	1	1	2	1	1	2	20
25	31537 Anacapa View Drive	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
26	31864 and 31866 Sea Level Drive	19	1	1	2	1	1	2	1	1	2	20
27	5905 and 5909 Latigo Canyon Road	19	1	1	2	1	1	2	1	1	2	20
28	27535 Pacific Coast Highway	19	1	1	2	1	1	2	1	1	2	20
29	3500 Puerco Canyon Road	67	1	4	5	4	3	7	3	3	6	71
30	24120 Pacific Coast Highway	48	1	3	4	3	2	5	2	2	4	50
		120	0	0	0	30	30	60	46	46	92	970
31	24903 Pacific Coast Highway	107	13	2	15	2	12	14	2	2	4	23
32	23915 Malibu Road	67	1	4	5	4	3	7	3	3	6	71
33	24038 Malbu Canyon Road	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
34	23465 Civic Center Way	825	100	14	114	20	98	118	13	10	23	133
		2,038	22	14	37	56	74	130	90	84	174	2,107
35	23401 Civic Center Way	1,182	17	10	27	50	52	102	70	64	134	1,376
		1,114	44	32	76	29	25	54	47	447	94	1,152
36	City of Malibu	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
37	23525 Civic Center Way	240	20	4	24	16	8	24	6	4	10	84
38	28455 Pacific Coast Highway	976	19	57	76	65	38	103	50	45	95	1,028
	28401 Pacific Coast Highway	191	4	11	15	13	7	20	10	9	19	202
	370 Laz Paz Lane	134	3	8	11	9	5	14	7	6	13	141
39	23575 Civic Center Way	4,592	122	84	206	158	154	312	231	22	456	5,056

Source: City Malibu for Cumulative Listing May 2012

n/a - not available

Los Angeles County

Pepperdine Campus Life Project	Project would develop and re-develop property within an existing approximately 365 acre area on the Pepperdine campus through a two-phase development program that will take 12 years	24255 PCH	PA; pending approval of an amendment at CCC	Six components of proposed development include approximately 394,137 sf of net new development comprised of the following: 1) Student Housing Rehabilitation; 2) Athletics and Events Center and Parking Structure; 3) Upgraded NCAA Soccer Field and Maintenance Facilities; 4) Town Square and Welcome Center over Subterranean Parking; 5) Enhanced Recreation Center Area; and 6) School of Law Parking Structure.	County of Los Angeles Regional Planning, S. Danner

East Malibu

Project Name	Brief Description	Location	Status	Size	Planner
Pierview	New restaurant	22716 PCH	PA; UC	7,100 sf; 70 parking spaces (joint use parking agreement with 22706 PCH to donate 10 spaces - total of 59 spaces required for this use with 1 extra)	S. Edmondson
Windsail	New restaurant	22706 PCH	PA; UC	5,904 sf; 64 parking spaces (joint use parking agreement with 22716 PCH for 10 additional spaces - total of 74 spaces required for this use)	S. Edmondson
N/A	New office and retail	22959 PCH	UPR	2,630 sf office; 4,517 sf retail; 31 parking spaces	J. Smith
N/A	New office	22729 PCH	PA; pre-BPC	2,499 sf; 32 parking spaces	H. Ly
Carbon Condominiums	New condominium	22065 PCH	UC	8 units	J. Smith
N/A	LLA and 3 NSFRs	18805, 18807 & 18809 PCH	PA; BPC	9,559 sf, 9,141 sf, and 7,429 sf	S. Edmondson
N/A	4 NSFRs	22301, 22303, 22305 and 22309 PCH	PA; BPC	9,529 sf, 8,649 sf, 8,271 sf, and 9,249 sf	S. Edmondson
N/A	LLA and 2 NSFRs	21997 and 22003 PCH	PA; BPC	9,818 sf and 8,542 sf	A. Fernandez
Serra Retreat	3 lot subdivision	3314 Serra Rd	PA; pending Final Parcel Map approval	Development potential for each lot equals a maximum TDSF of 7,037 sf, 7,033 sf, and 7,740 sf	S. Danner
N/A	2 NSFR	20624 and 20630 PCH	UPR	2,911 sf and 2,911 sf	R. Mollica
Seaboard	4 lot LLA and 1 NSFR	21100 Seaboard	UPR	10,517 sf NSFR and improve 2,590 linear feet of roadway. Proposed lot sizes are 7.6, 1.3, 20 an 2.6 acres.	A. Fernandez

Civic Center Area

Project Name	Brief Description	Location	Status	Size	Planner
Crummer	7 lot subdivision (5 for residential)	24120 PCH	UPR; final project scope pending	(Preliminary) 5 NSFRs; expanded parking for Bluffs Park; 1.74 acre dedication to City for recreation use	H. Ly
Hajian	New office	24903 PCH	PA; UC	9,685 sf; 44 parking spaces	H. Ly
Towing Subdivision	7 lot subdivision (4 for residential)	23915 Malibu Rd	PA; BPC	4 NSFRs	S. Danner
Rancho Malibu Hotel	New hotel and spa	4000 MCR (NW corner of MCR and PCH, along Winter Canyon Rd)	UPR	146-room luxury hotel with related facilities. The hotel's 141,428 sf main building contains a retail component, day spa, fitness center, lobby, restaurant, bar, banquet and meeting facilities, and guest rooms. Development also includes 133,873 sf of detached buildings which include guest rooms. A large swimming pool, subterranean parking structure, function lawn, landscaping, and hardscape. CUP for live entertainment, events, alcohol sales and a TTM for a commercial airspace subdivision (146 hotel rooms and 2 retail spaces will be available for private ownership).	S. Danner
SMMC Beach Public Access Improvements	Public beach access improvements and a new stairway	24038 Malibu Rd	PA; pre-BPC	Beach access	R. Mollica
La Paz Shopping Center	New retail, office and institutional development	23465 Civic Center Way	PA; BPC	112,058 sf retail and office; 20,000 sf institutional; 543 parking spaces	S. Edmondson
Whole Foods Shopping Center	New retail development	23401 CCW	UPR	25,000 sf grocery; 14,839 sf retail/commercial (up to 4,000 sf restaurant)l; 220 parking spaces	B. Blue
City of Malibu Civic Center Wastewater Treatment Facility	Wastewater treatment and treated water recycling facility	unknown	Testing and preliminary design underway, pending CDP submittal	Scheduled to be online by November 2015 to serve first phase of Civic Center (commercial parcels); second phase by 2019 (residential parcels)	B. Blue
Santa Monica College	New satellite campus on 2.94 acre ground lease site out of 9.18 acre County Civic Center parcel	23525 CCW (APN 4458-022-904, lease area addressed as 23555 by County)	Pending CDP submittal	+/- 25,000 sf building to replace vacant County Sheriff facility; will serve +/- 200 FTE; 2 classrooms, 3 lab/studios, multipurpose room, 2,100 sf lecture hall, 5,700 sf sheriff substation, interpretive center	B. Blue
Housing Element Update	Overlay to allow up to 20 dwelling units per acre on three sites	28455 PCH, 28401 Pacific Coast Highway, 3700 La Paz Lane (APNs 4458-022-023 and 4458-022-024)	UPR	5.12, 3.25 and 2.3 ac sites -> change from allowing 6 units per ac up to 20 units per ac	S. Danner, R. Mollica
Malibu Sycamore Village	New non-residential mixed use commercial project	23575 CCW (APN 4458-022-011); addressed as 23789 Stuart Ranch Rd per LA County Assessor	UPR	Two projects alternatives submitted: 1) 76,000 sf retail, restaurant, and office space with a public benefit of a 5,000 sf urgent care facility, and 360 pkg spaces ; 2) 60,000 sf of retail, restaurant, and office space with 300 pkg spaces; project site is a 10 acre commercial parcel and both alternatives include outdoor exhibition space.	J. Smith

West Malibu

Project Name	Brief Description	Location	Status	Size	Planner
Trancas Town	New residential development	6155 TCR	Pending CDP submittal; zone change UPR	Zone change from Rural Residential to Multi-Family; 32 detached townhomes (preliminary)	B. Blue
HOWS / Trancas Country Market	Remodel and expansion of existing retail	30745 PCH (at TCR)	PA; UC	53,423 sf total (27,695 sf existing; 25,728 sf new); 339 parking spaces	R. Mollica
SMMC Lechuza Beach Public Access Improvements	Several public access improvements along the areas of East Sea Level, West Sea Level and Bunnie Lane, including stairways	31720.5 PCH	UPR	Beach access stairways, view platforms, public restroom and 4 ADA parking spaces	S. Danner
Sea Star Estates	5 NSFRs (infill)	6270, 6304, 6312, 6282, and 6398 Sea Star Dr	UPR	5 NSFRs on 5 existing parcels	S. Edmondson
Malibu High and Middle School Campus Improvement Project	New admin building, remodel existing buildings, new parking area and site improvements	30215 Morning View Drive	UPR	35,315 sf of new construction, 12,509 sf of renovation/modernization of existing buildings, new 150 space parking lot, various parking and site improvements	J. Smith
Broad Beach Restoration Project	Beachwide rock revetment, off-shore sand dredging, sand nourishment, dune restoration	Broad Beach Road	UPR	Westward terminus of Zuma Beach to 6525 Point Lechuza	CA State Lands Commission / Coastal Commission, S. Danner
Malibu Athletic Field Lighting Project	Sports field lighting	30215 Morning View Drive	BPC (State)	Four 70 ft tall lights installed on the MHS football field/track (limited usability allowed - 16 nights/yr till 10:30pm between Nov to May and 45 nights/yr till 7:30pm between Nov to Mar - no lights used between June to Aug per year)	J. Smith
28811 PCH Subdivision	3 lot subdivision	28811 PCH	UPR	Potential development for each lot equals a maximum TDSF of 8,620 sf; 8,342 sf; and 8,470 sf	S. Danner
LA County Fire Station No. 71	Fire station reconstruction	28722 PCH	UPR	6,033 sf total (2,881 sf existing; 3,152 sf new); 12 parking spaces; temporary fire station relocation to Zuma Beach Lifegaurd HQ	J. Smith
Solstice Creek Fish Ladder	New fish ladder project at mouth of Solstice Creek / across a portion of Dan Blocker Beach	26038.5 PCH	BPC (State)	Bridge culvert and stream channel reconstruction with rock weirs and step-pools for a total length of 436 feet	S. Edmondson
Galahad Subdivision	5 lot subdivision; 4 buildable lots and 1 open space lot	6061 Galahad Rd	UPR	Potential development for each lot equals a maximum TDSF of 7,044 sf, 7,142 sf, 7,234 sf, and 8,414 sf	A. Fernandez
Zuma Mesa	LLA and 2 NSFR	6271 and 6277 Zuma Mesa Dr	PA; UC	5,329 sf and 6,984 sf	A. Fernandez
Trancas Highlands Water Assessment District	Water tank/line, buster pump station and NSFR	31537 Anacapa View Dr, Anacapa View Dr and TCR	PA, assessment district formation process underway	500,000 gallon water tank, +/- 12,400 linear feet of trenching, assessment district (+/- 66 existing lots), one NSFR +/- 11,000 sf	B. Blue
Sea Level	2 NSFR (infill) and road widening project	31864 and 31866 Sea Level Dr	UPR	2,185 sf and 1,925 sf, 2,000 sf; and 130 linear feet of road widening (Sea Level Dr)	A. Fernandez
N/A	2-lot LLA and 2 NSFR	5905 and 5909 Latigo Canyon Rd	UPR	Lot line adjustment and construction of 2 NSFR - 8,223 sf and 5,935 sq respectively	S. Danner
N/A	TPM	27535 PCH	PA	Subdivision of 1 lot into 2 lots	H. Ly
Puerco Canyon Road Extension	Road extension	3500 Puerco Canyon Rd	UPR	3,500 linear feet of road extension to provide access to 7 residentially zoned lots (1 City lot/6 County lots)	S. Danner

City of Malibu Cumulative Projects Listing
Updated August 1, 2012

Acronyms
ac = acres
BPC = in building plan check
CCC = California Coastal Commission
CCD = Cross Creek Drive
CCW = Civic Center Way
CDP = coastal development permit
LLA = lot line adjustment
MCR = Malibu Canyon Road
NSFR = new, single-family residence
PA = planning approval / CDP received
PCH = Pacific Coast Highway
sf = square feet
TCR = Trancas Canyon Road
UC = under construction
UPR = still under planning review

EXHIBIT H1

8/2012

CUMULATIVE RELATED PROJECTS TRAFFIC VOLUME
WEEKDAY AM PEAK HOUR

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

EXHIBIT H2

8/2012

CUMULATIVE RELATED PROJECTS TRAFFIC VOLUME
WEEKDAY PM PEAK HOUR

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

EXHIBIT H3

8/2012

CUMULATIVE RELATED PROJECTS TRAFFIC VOLUME
SATURDAY MID-DAY PEAK HOUR

Overland Traffic Consultants, Inc.
24325 Main Street #202, Santa Clarita, CA 91321
(661)799-8423, OTC@overlandtraffic.com

APPENDIX G

MUTCD TRAFFIC SIGNAL WARRANT 2016

Warrant 3 – Peak Hour

The Peak Hour Warrant is intended for use at a location where the minor street encounters undue delay when entering or crossing the major street for a at least one hour of a typical day.

Standard:

This signal warrant shall be applied only in unusual cases, such as office complexes, manufacturing plants, industrial complexes, or high-occupancy vehicle facilities that attract or discharge large numbers of vehicles over a short time.

The need for a traffic control signal shall be considered if an engineering study finds that the criteria in either of the following two categories are met:

A. If all three of the following conditions exist for the same 1 hour (any four consecutive 15-muinute periods) of an average day:
    1. The total stopped time delay experienced by the traffic on one minor street approach (one direction only) controlled by a stop sign equals or exceeds: 4 vehicle hours for a one lane approach; or 5 vehicles hours for a two lane approach, and
    2. The volume on the same minor street approach (one direction only) equals or exceeds 100 vehicles per hour for one moving lane of traffic or 150 vehicles per hour for two moving lanes, and
    3. The total entering volume serviced during the hour equals or exceeds 650 vehicles per hour for intersections with three approaches or 800 vehicles per hour for intersections with four or more approaches.

B. The plotted point representing the vehicles per hour on the major street (total of both approaches) and the corresponding vehicles per hour on the higher volume minor street approach (one direction only) for 1 hour (any four consecutive 15-minute periods) of an average day falls above the applicable (see curve data on warrant volume summary sheet and Figure 25) for the existing combination of approach lanes.

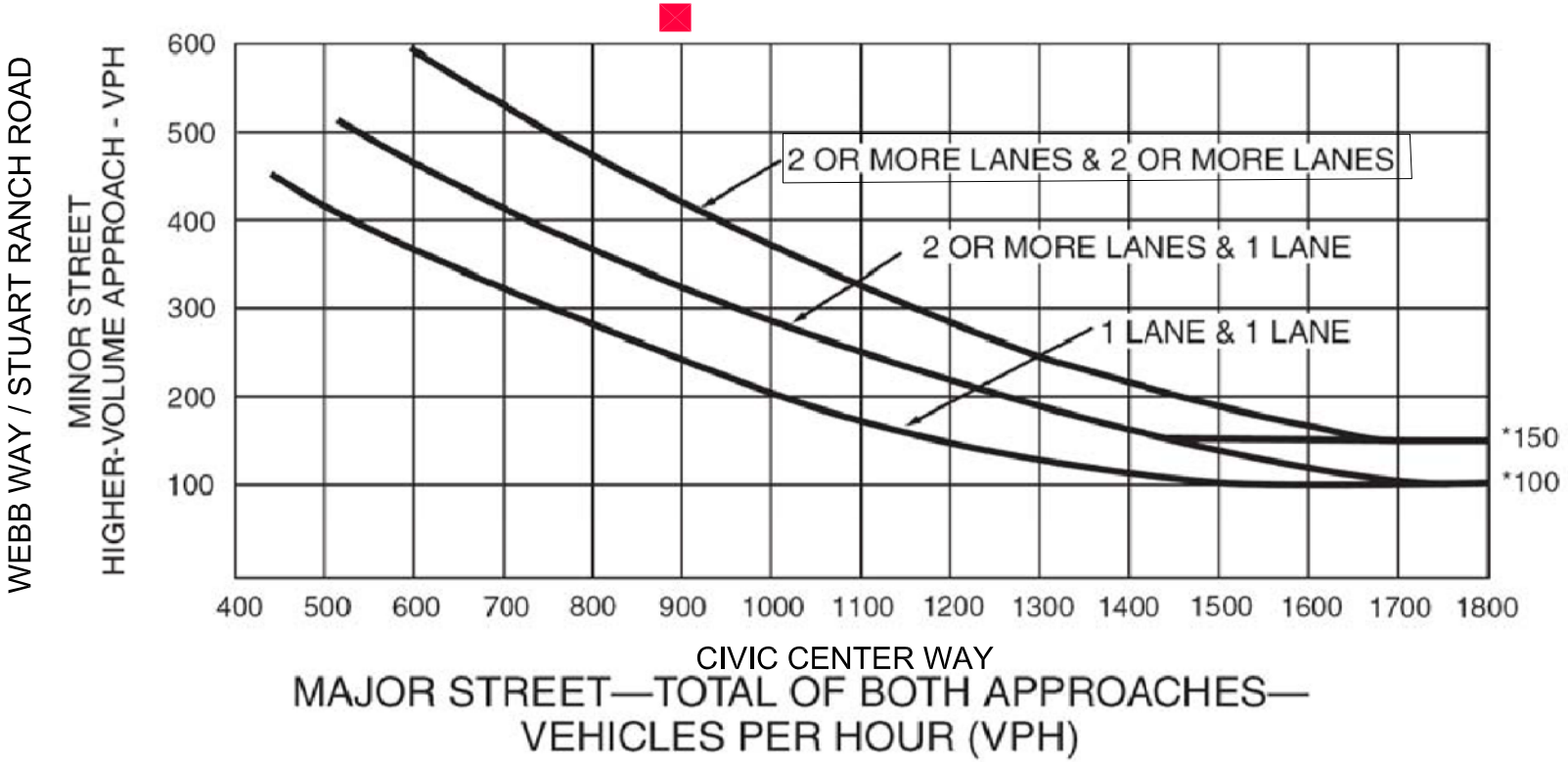
Warrant 3 - Peak Hour - SATISFIED

CIVIC CENTER WAY AND WEBB WAY / STUART RANCH ROAD
2016 Peak Hour Traffic Signal Warrant

FIGURE 29

Figure 4C-3. Warrant 3, Peak Hour

CIVIC CENTER WAY AND WEBB WAY / STUART RANCH ROAD
FUTURE (2016) CUMULATIVE WITHOUT PROJECT
(839 , 671)



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

WEEKDAY PM PEAK HOUR

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