City of Beverly Hills

1184-1193 Loma Linda Drive Single Family Dwelling Project

Final Initial Study-Mitigated Negative Declaration

December 2014

rincon

Environmental Scientists Planners Engineers

Final
Initial Study-Mitigated Negative Declaration

1184-1193 Loma Linda Drive Single Family Dwelling Project

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December 2014

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INITIAL STUDY

1. **Project title:** 1184-1193 Loma Linda Single Family Dwelling Project

2. **Lead agency name and address:** City of Beverly Hills
Community Development Department
455 North Rexford Drive, First Floor
Beverly Hills, CA 90210

3. **Contact Person and Phone Number:** Andre Sahakian, Associate Planner, (310) 285-1127

4. **Project location:** The project site is located at 1184-1193 Loma Linda Drive in Beverly Hills, California. The property encompasses two Assessor's parcels: 4350-020-010 and 4350-021-010. The combined lot area is 85,813 square feet or 1.97 acres. The site is located at the southern terminus of Loma Linda Drive west of the intersection of Loma Linda Drive and Coldwater Canyon Drive. The project site is regionally accessible via U.S. 101and Interstate 405. It is locally accessible via Coldwater Canyon Drive and Sunset Boulevard. Please see Figure 1 for the regional location of the project site and Figure 2 for the location of the project site within the City of Beverly Hills. Figure 3 shows photographs of the project site.

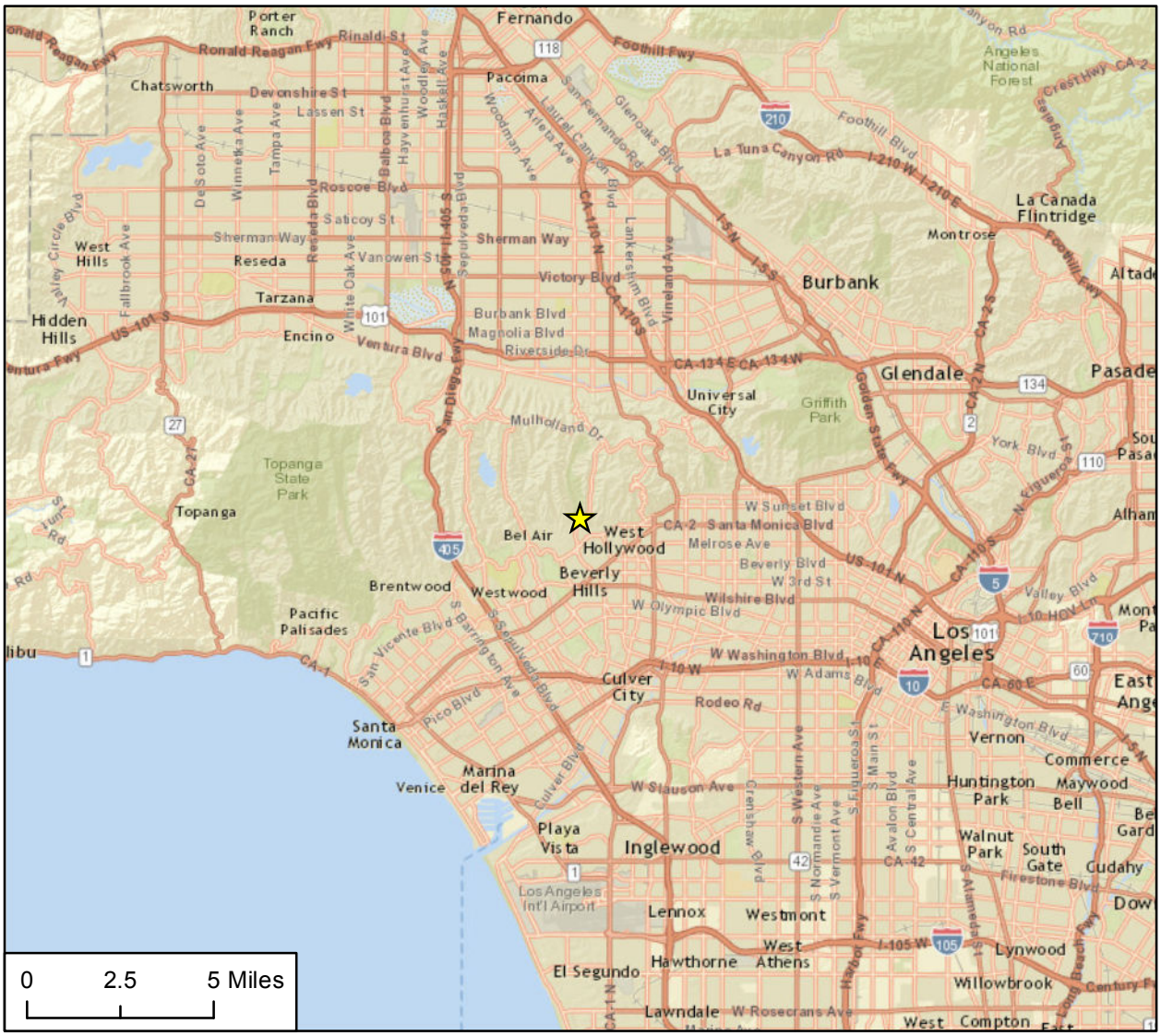
5. **Project sponsor's name and address:**
Owner: Loma Linda Trust
#200-510 West Hastings V6b 1l8
Vancouver, BC V6b 1l8 Canada

Agent: Jason Somers, Crest Real Estate
10960 Wilshire Boulevard, #1510
Los Angeles, California 90024
(310) 344-8474

6. **General Plan designation:** Single-Family Residential Low Density

7. **Zoning:** R-1 (Residential)

8. **Description of project:** The proposed project involves the construction of a single-family house with an attached office and ~~a separate~~ guest house at 1184-1193 Loma Linda Drive in Beverly Hills, California. The project site is currently vacant but previously included a single-family home that was demolished in January 2014.



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N

Project Location

Regional Location

Figure 1

Imagery provided by Google and its licensors © 2014.

Project Site Location

Figure 2

Photo 1: View across the project site looking north.

Photo 2: View across the project site looking south.

Existing Site Conditions

Figure 3

The proposed new single-family house would include two stories and a basement and would reach a height of 28 feet above finished grade ("a plane defined by the finished grade at all points along the building or structure perimeter," as defined in Beverly Hills Municipal Code Section 10-3-100). The project would also include pools, a cantilevered deck, retaining walls, and water features. The proposed lot coverage would be 10,849 square feet or 12.6% of the 1.97-acre lot. The proposed single-family residence would be located toward the center of the existing level pad on the northern portion of the site and would be oriented toward the city view to the southwest.

The main level of the house would be 6,052 square feet and the upper level would be 5,753 square feet (including 1,802 square feet of deck space). The basement would total 15,529 square feet (including 3,086 square feet above grade extending beyond the building footprint and 12,443 square feet below grade). ~~including a 4,316 square foot subterranean garage.~~ The portion of the basement above the natural grade (extending beyond the building footprint) would be 3,086 square feet and the portion of the basement below grade would be 12,443 square feet (including the garage). The total gross square footage of the residence (including deck space) would be 27,334 square feet. The cumulative floor area (used in the floor area ratio calculation which takes into account exemptions under BHMC) would be 23,632 square feet. The building would include the following setbacks from the property boundaries: 5 feet in the front yard, 25 feet in the rear yard, and 15 feet and two inches on the side yards.

~~Construction of the proposed project is anticipated to occur over approximately 30 months. Grading to create the basement for the residence would include 8,749 cubic yards of cut and 862 cubic yards of fill. Approximately 7,887 cubic yards of earth material would be exported from the site. Assuming approximately 20 cubic yards of material per truck trip, the proposed project would result in approximately 395 round-trip hauling truck trips.~~

Access to the site would be provided via a driveway near the existing terminus of Loma Linda Drive. A new sewer line extension approximately 150 feet in length is proposed, extending to the southeast downslope toward an existing sewer line at the toe of the slope.

The roof would include a 300 square foot area designated for potential future installation of solar panels. All toilets, showers, and faucets would be water-efficient, low-flow fixtures.

The proposed site plan, grading plan, elevations, and sections are shown in figures 4 through 8.

The project would also include amending the City's Streets Master Plan to vacate portions of Loma Linda Drive (1,453 square feet) and an intersecting, unpaved alley (825 square feet). In addition, the project would involve amending the Streets Master Plan to dedicate a 1,429 square-foot fire truck turnaround driveway from the northern portion of the 1184 Loma Linda Drive property.

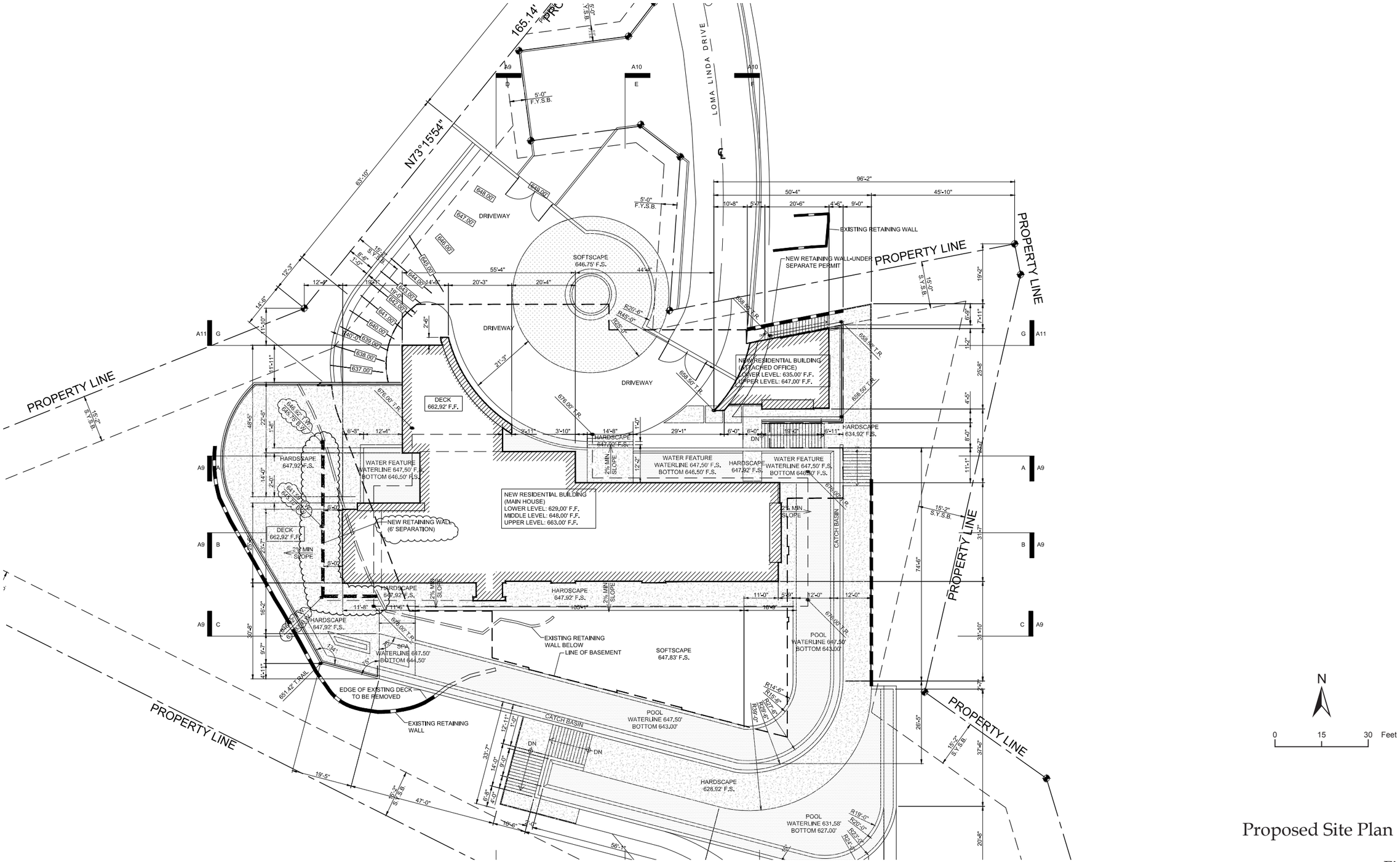
Construction and Grading

Construction of the proposed project is anticipated to occur over approximately 30 months. The following describes the construction phases:

- Grading: Grading would occur over approximately four months. Estimated preliminary project grading would include approximately 8,081 cubic yards (CY) of exported earth material. Assuming each truck has a capacity to haul 12 CY of material, the proposed project would result in approximately 673 round-trip hauling truck trips. Conservatively assuming that the most intense excavation phase would occur over approximately 30 days, the project would generate approximately 22 daily round-trip haul trips.
- Building Construction: Building construction would occur over approximately 26 months and would involve:
  - Concrete Foundation: Foundation laying would occur over approximately six months (132 work days). Approximately 4,000 CY of concrete would be poured for foundations and structures. Assuming each concrete mixer truck would have a capacity of 9 CY, approximately 445 round-trip concrete truck trips would occur.
  - Structural Steel: Delivery truck trailers would be used to deliver steel members. Traffic control would be scheduled to accommodate delivery, particularly for oversized loads. Deliveries would occur approximately six to eight times per month for approximately four months.
  - Rough Framing: Delivery trucks would deliver lumber to the project site approximately eight to ten times per month for approximately four months.
  - Finishes: Trucks delivering finishing materials would take place for the last eight months, delivering approximately 10 to 12 trips per month. These materials would include drywall, tile, flooring, wood, doors and windows, etc.

All heavy truck trips during construction would occur between the hours of 9:30 AM and 4:00 PM. The proposed haul route would utilize Santa Monica Boulevard, Beverly Drive, Coldwater Canyon Drive and Loma Linda Drive. The applicant's contractor would implement construction traffic control and safety measures such as warning signs, speed limit signs, and flagmen on Coldwater Canyon Drive and Loma Linda Drive.

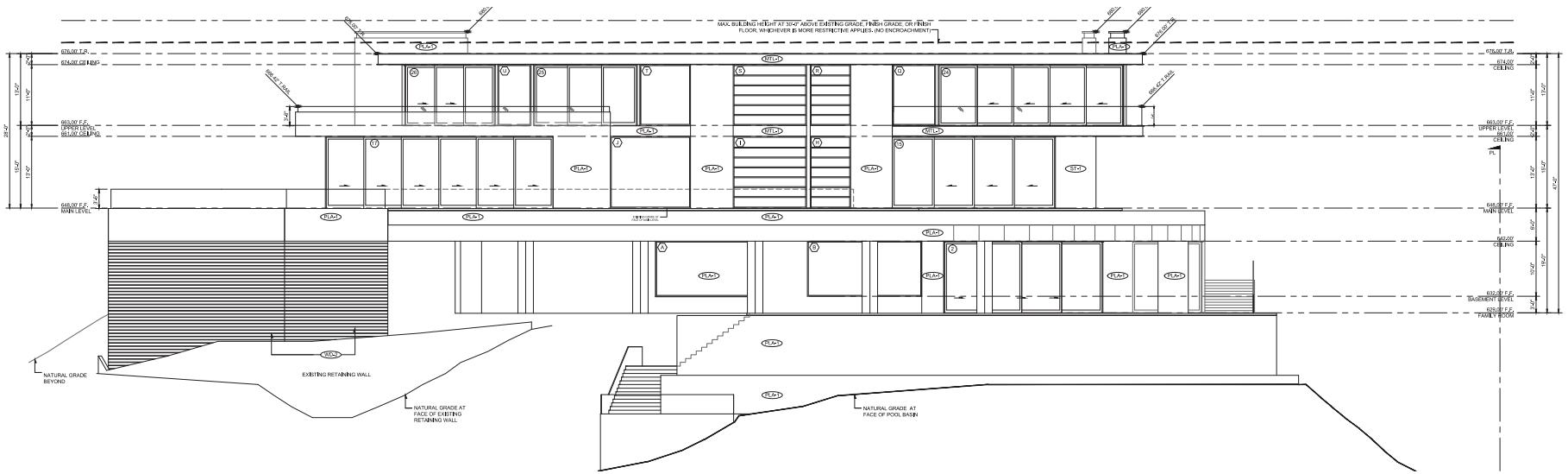
Construction workers would arrive at approximately 7:00 AM and depart at approximately 5:00 PM. The number of construction workers and subcontractors would depend on the construction phase. All construction related parking and staging would be accommodated on-site or at an off-site designated parking location approved by the City.



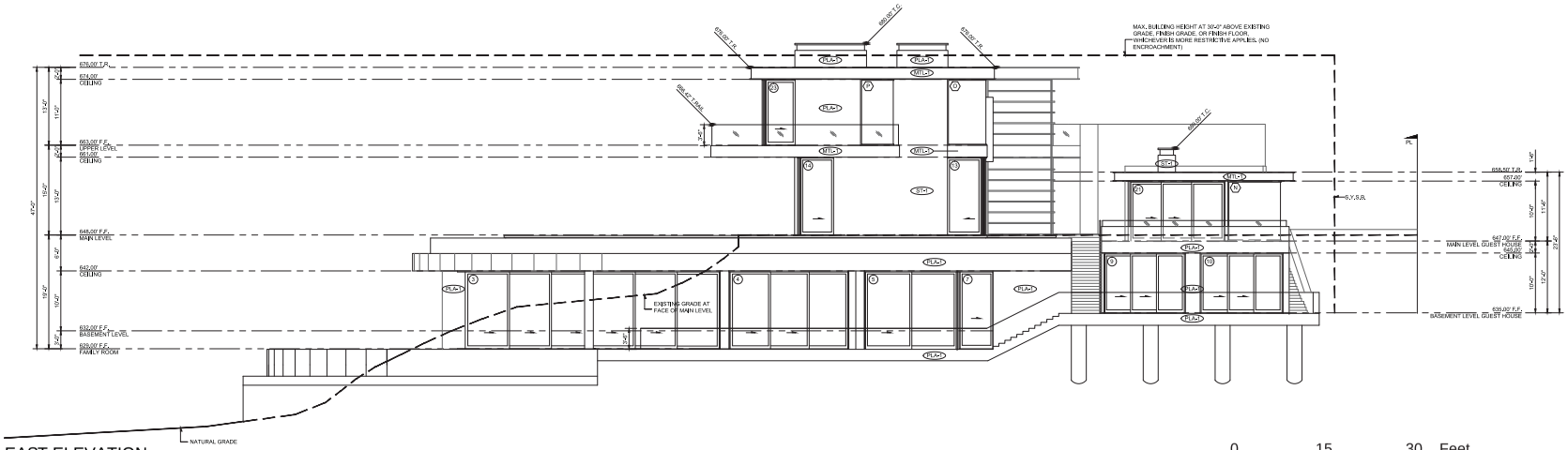
Proposed Site Plan

Source: McClean Design, June 2014

Figure 4



SOUTH ELEVATION



EAST ELEVATION

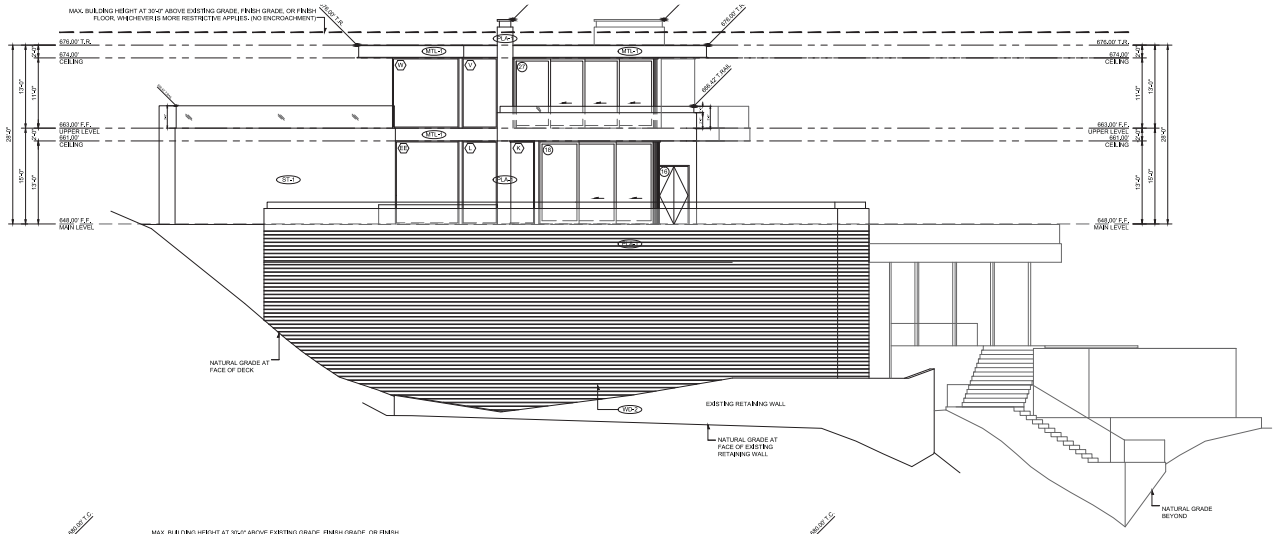
0 15 30 Feet

Note: From revised plans dated October 28, 2014.

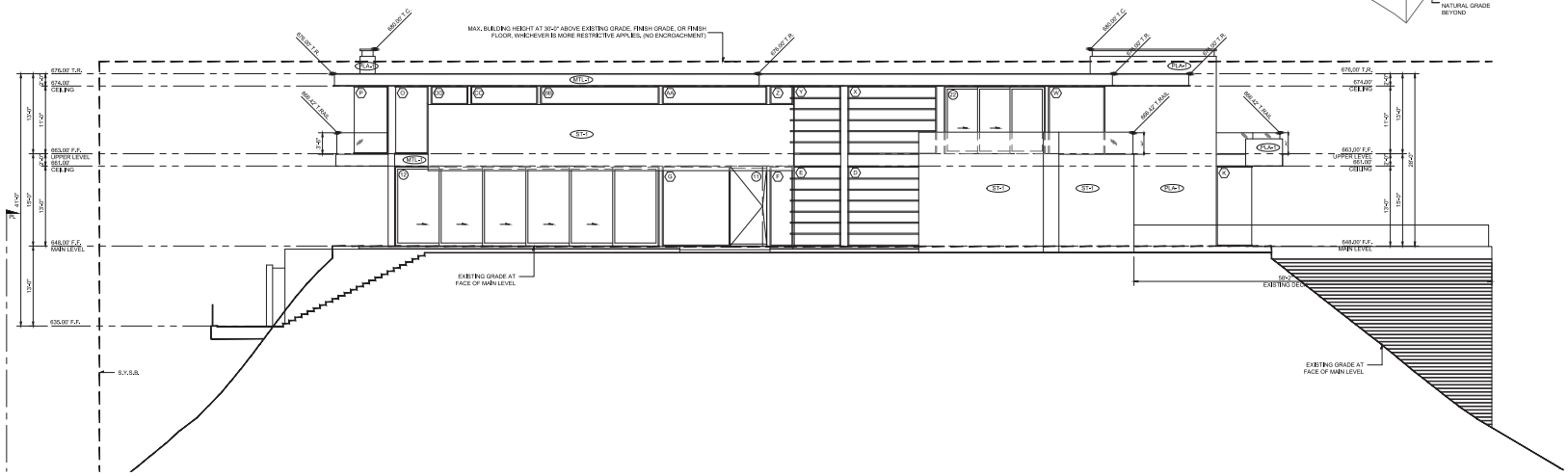
Source: McClean Design, October 28, 2014

Proposed Site Elevations

Figure 5a



WEST ELEVATION



NORTH ELEVATION - MAIN HOUSE

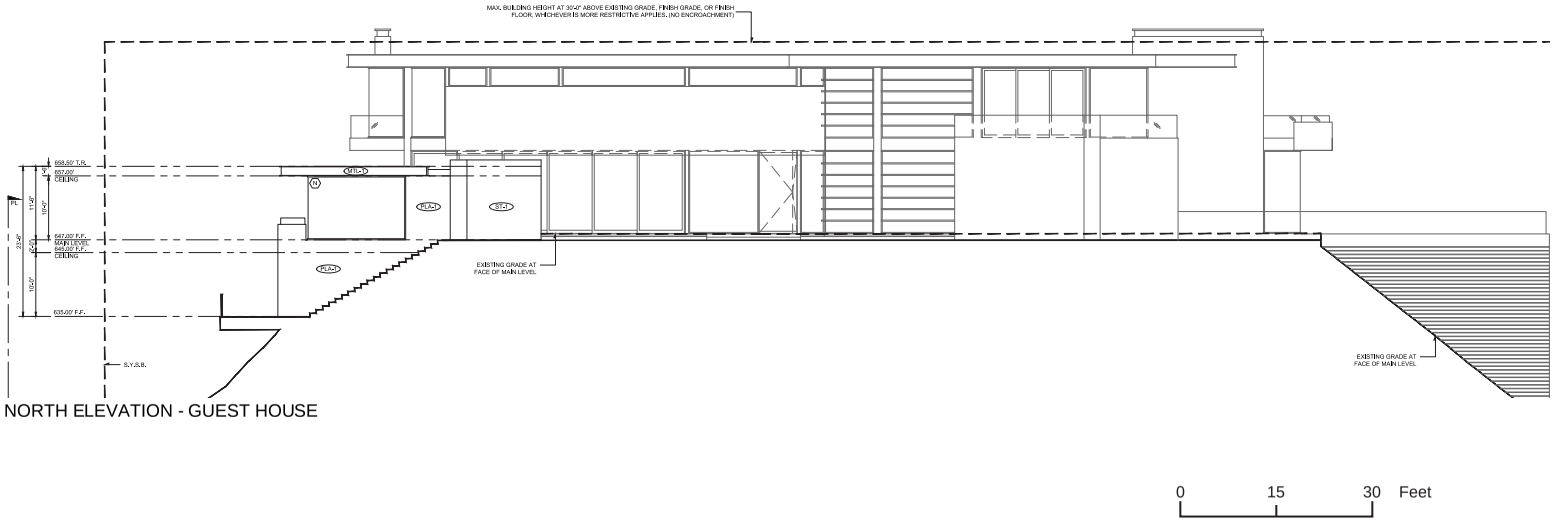
0 15 30 Feet

Note: From revised plans dated October 28, 2014.

Source: McClean Design, September 4, 2014

Proposed Site Elevations

Figure 5b



NORTH ELEVATION - GUEST HOUSE

Note: From revised plans dated October 28, 2014.

Source: McClean Design, October 28, 2014

Proposed Site Elevations

Figure 5c

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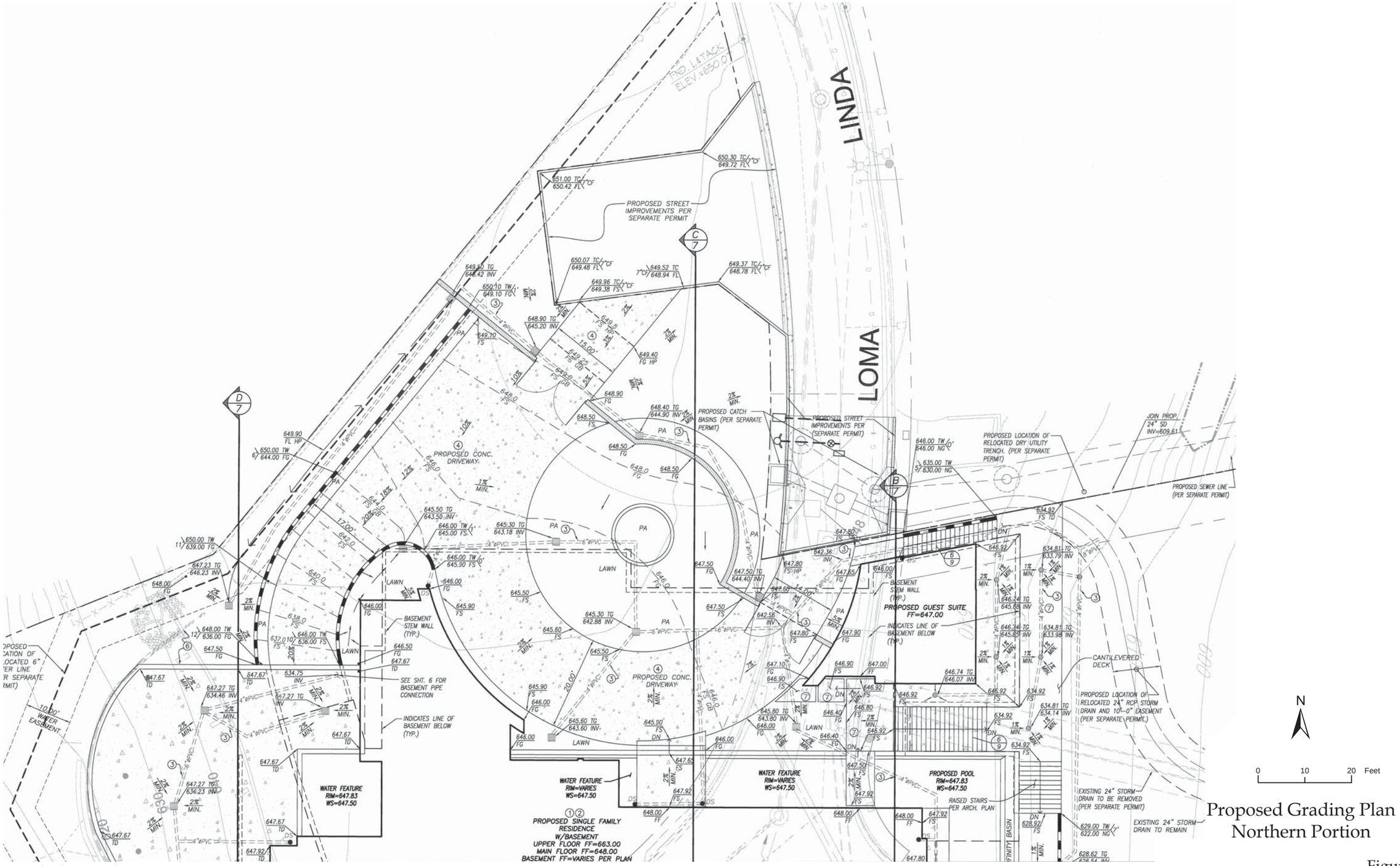
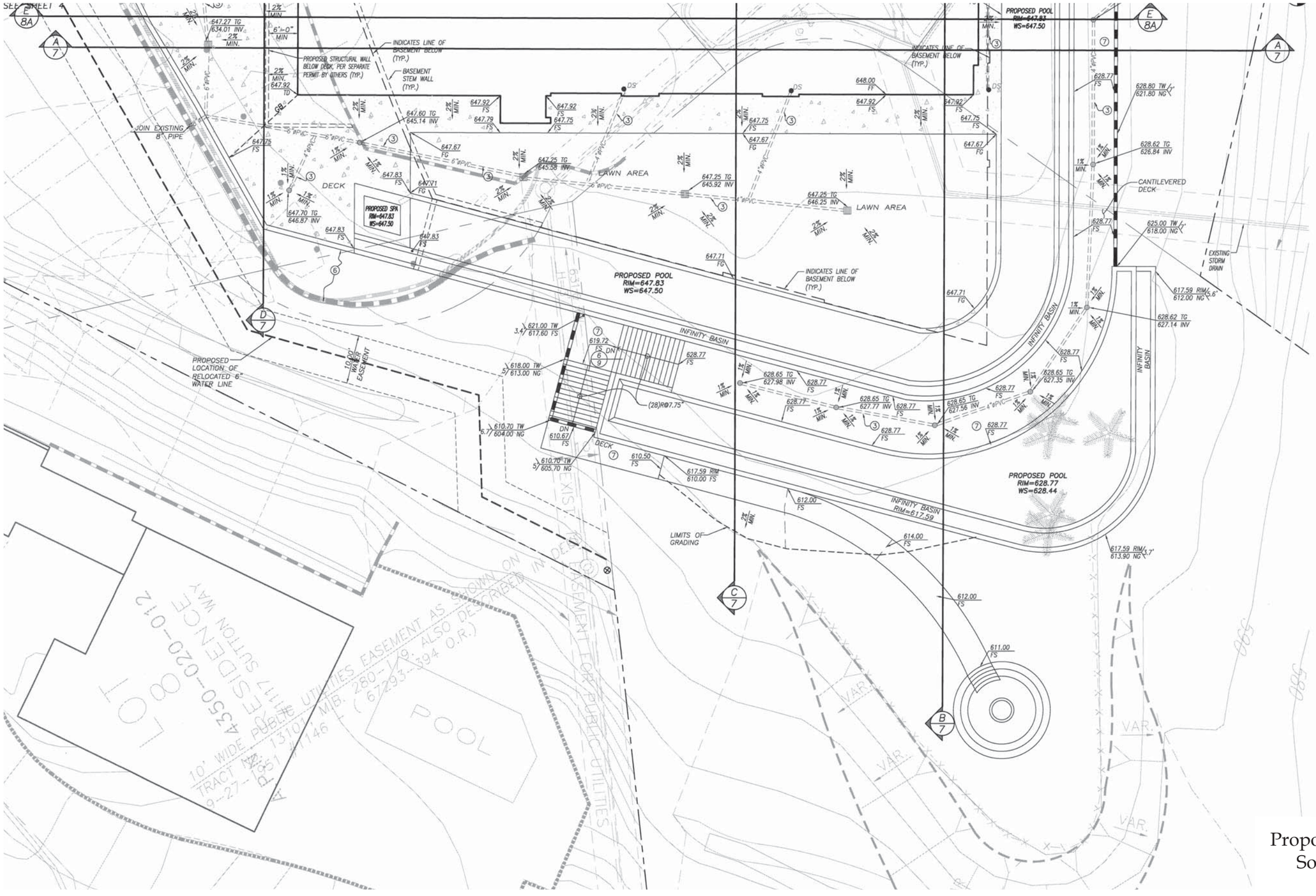


Proposed Grading Plan
Northern Portion

Source: LC Engineering Group, July 2014

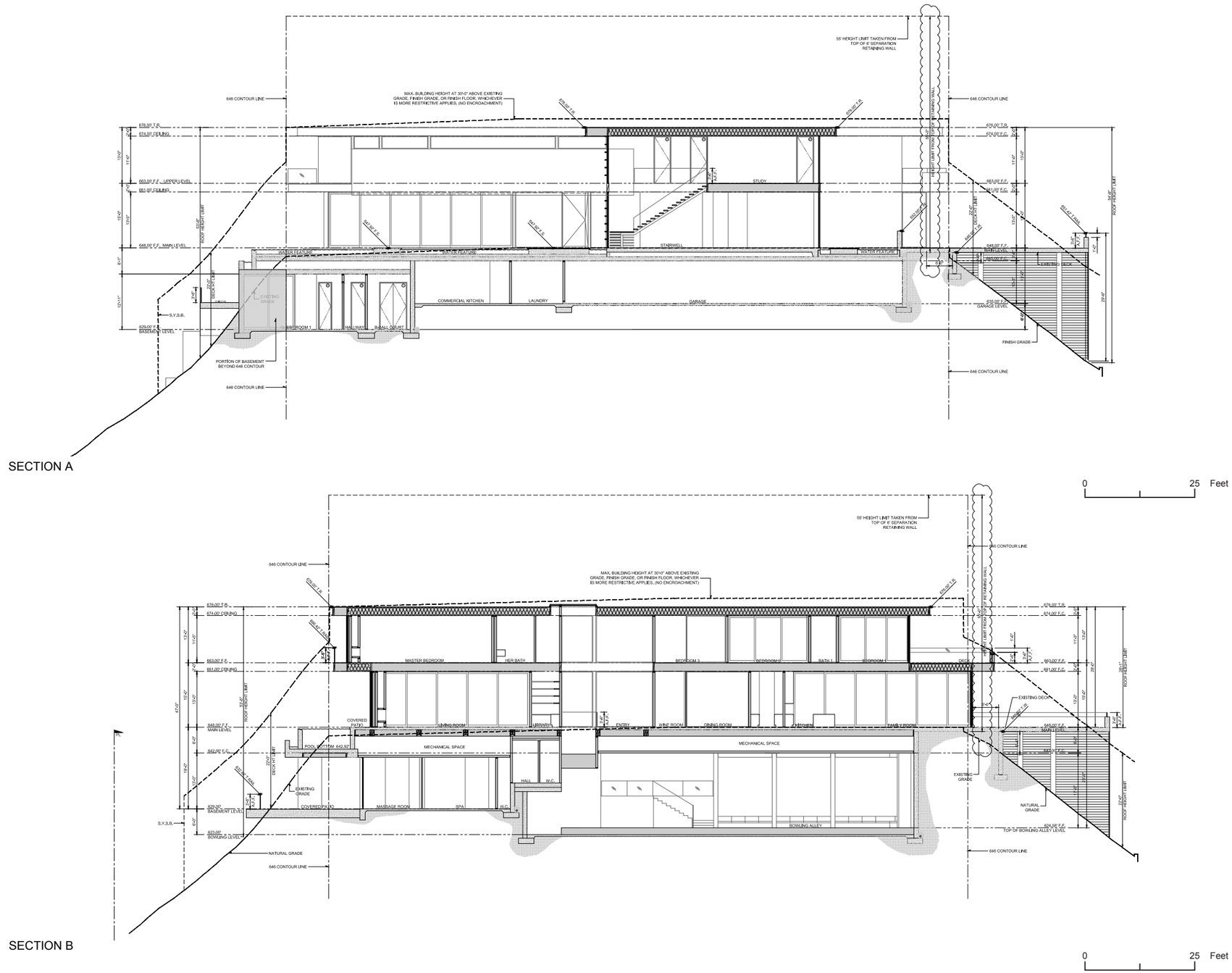
Figure 6



Proposed Grading Plan
Southern Portion

Source: LC Engineering Group, July 2014

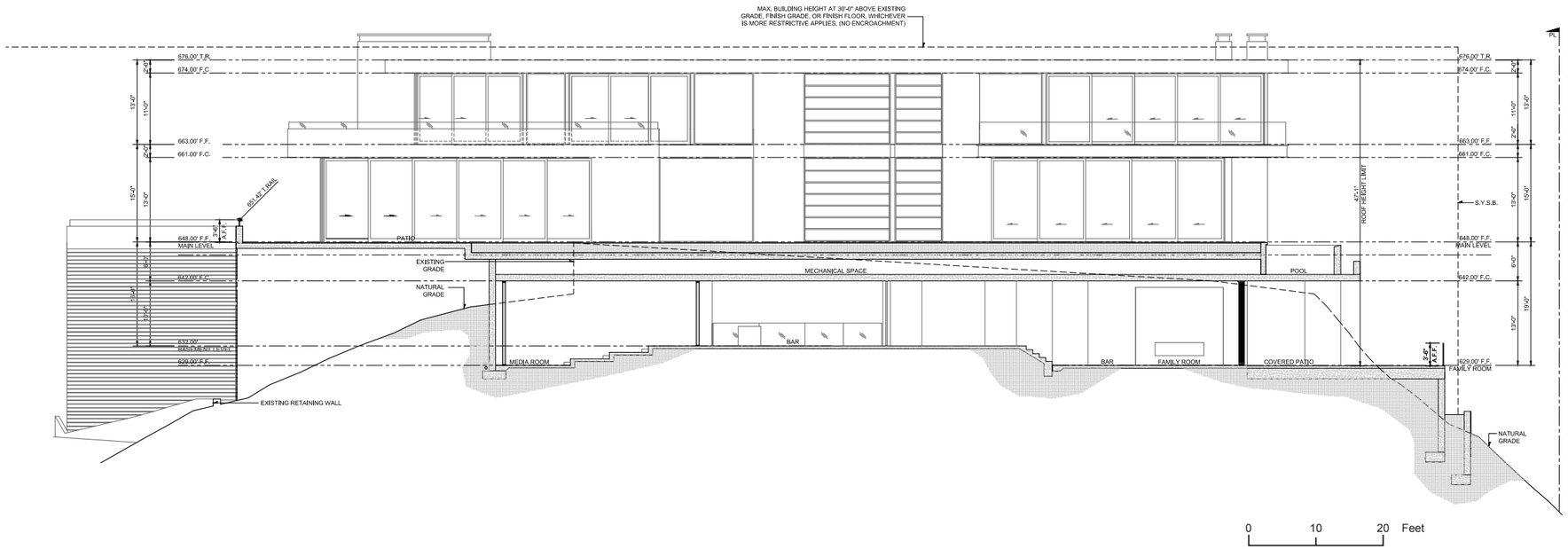
Figure 7



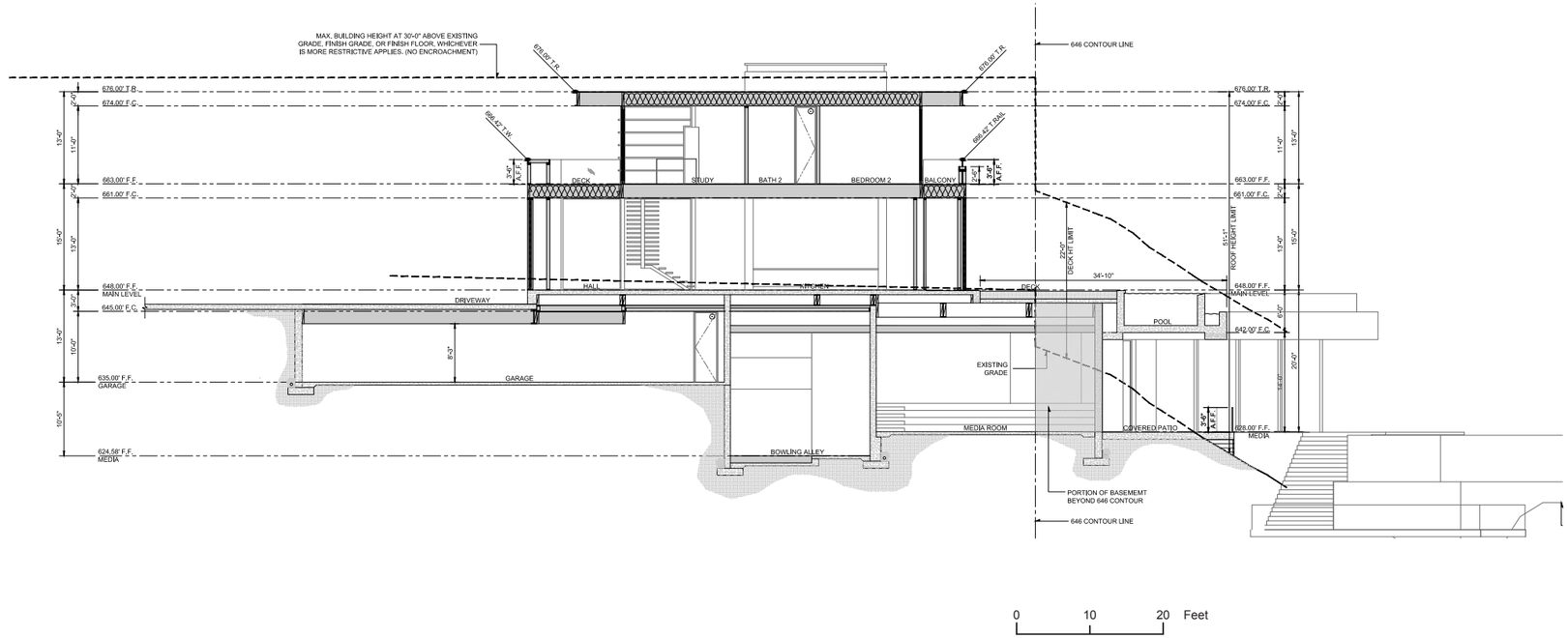
Proposed Site Sections A and B

Source: McClean Design, September 4, 2014

Figure 8a



SECTION C

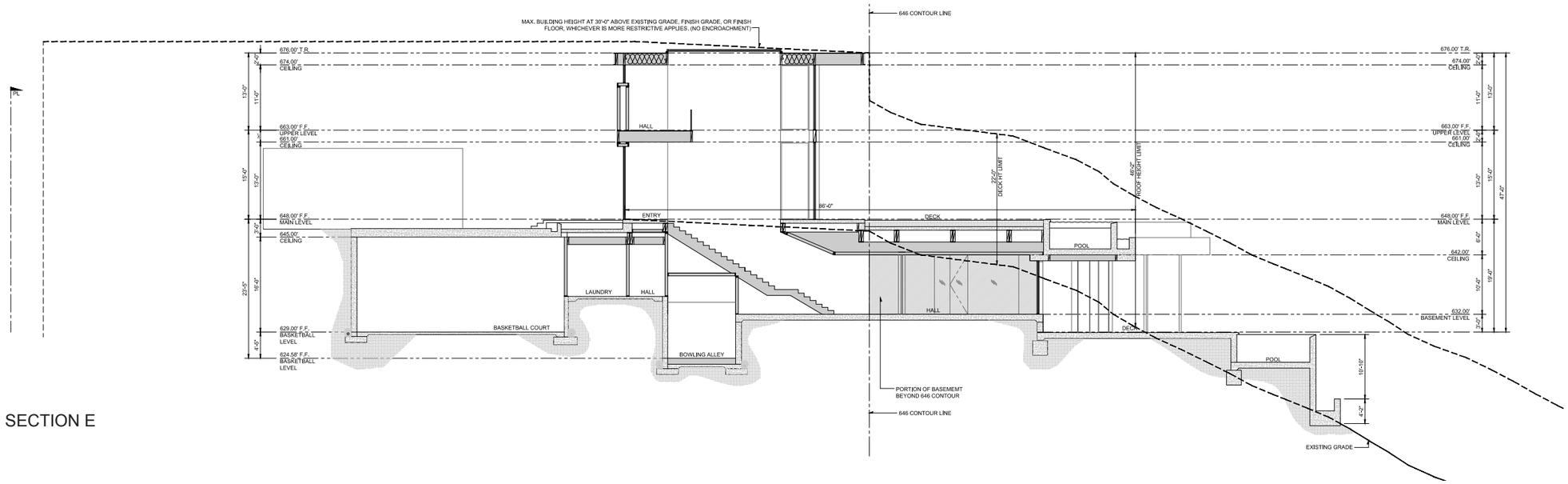


SECTION D

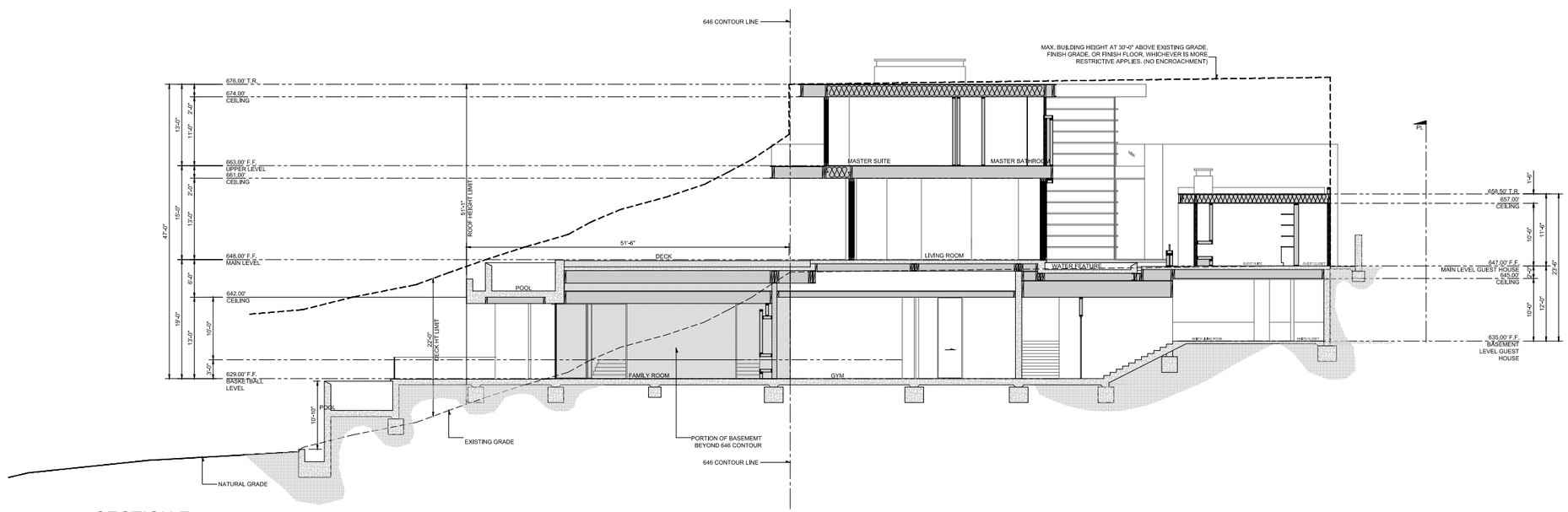
Proposed Site Sections
C and D

Source: McClean Design, September 4, 2014

Figure 8b



SECTION E



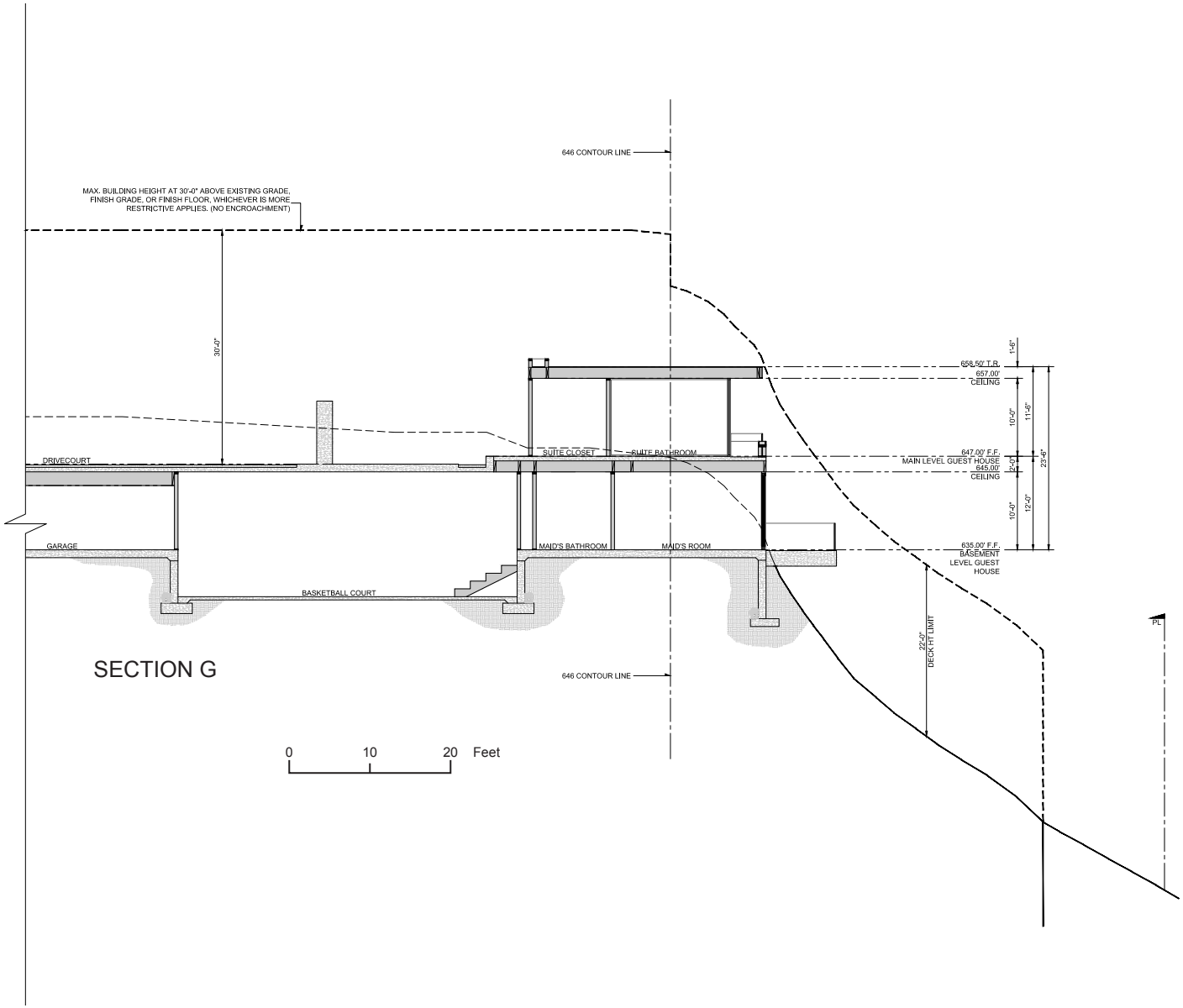
SECTION F

0 10 20 Feet

Proposed Site Sections E & F

Source: McClean Design, September 4, 2014

Figure 8c



Source: McClean Design, September 4, 2014

Proposed Site Section G

Figure 8d

9. Surrounding land uses and setting:

The project site is in a residential area of the City of Beverly Hills. It is bordered by single-family residences on the north, south, east, and west. The closest residence to the project site is the single-family residence approximately 30 feet north of the site. The site is also adjacent to Franklin Canyon on the northwest. Franklin Canyon Park, which includes trails that are accessible to the public, is located in the northern portion of Franklin Canyon above the Lower Franklin Reservoir. The portion of Franklin Canyon closest to the project site is not accessible to the public. Figure 9 shows photos of selected surrounding land uses.

The project site is currently vacant but previously was developed with a single-family residence, carport, deck, and guest house. The residence was located along the west side of the street and situated on the central portion of the building pad. The detached carport was located along the northern property line. The structures were demolished to stabilize the site with grading and soil nail reinforcing. Demolition concluded in January of 2014.

10. Necessary Public Agency Approvals:

The proposed project would require the following approvals from the City of Beverly Hills:

- Approval of a Hillside R-1 Permit for floor area in excess of 15,000 square feet
- Approval of a Hillside R-1 Permit for export of earth materials in excess of 3,000 cubic yards.
- Approval of proposed amendments to the City's Streets Master Plan,
- A street vacation approval and acceptance of a replacement street dedication in order to vacate portions of Loma Linda Drive and an intersecting unimproved alley, and replace the existing turnaround with a ~~a~~ fire truck turnout.
- A Tree Removal Permit pursuant to Beverly Hills Municipal Code sections 10-3.2900-2906.
- Acceptance of an easement for the City to maintain access to the unimproved alley may be required.

No other public agency approvals are required.

Photo 1: Adjacent single family development to the north of the project site.

Photo 2: View of the Franklin Canyon Reservoir area from the project site, looking north.

Surrounding Uses

Figure 9

ENVIRONMENTAL FACTORS AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is "Potentially Significant" or "Potentially Significant Unless Mitigation Incorporated" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture Resources	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☒ Geology/Soils
☐ Hazards & Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/ Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☐ Transportation/Traffic
☐ Utilities/Service Systems	☐ Construction Effects	☒ Mandatory Findings of Significance

DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potential significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Andre Sahakian, Associate Planner
City of Beverly Hills

December 3, 2014
Date

Environmental Checklist

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
I. AESTHETICS – Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

a) **Less than significant.** The project would involve construction of a two-story single-family residence on a vacant site in the City of Beverly Hills. Previously, the project site contained a one-story single-family residence that was recently demolished. The new residence would have a maximum height of 28 feet, which is similar to the height of single-family residential buildings in the area, which are generally one to two stories in height. Most views of and through the site are blocked by existing residential buildings and landscaping. However, the proposed project would be visible from the public viewpoints ~~along~~ near the terminus of Loma Linda Drive and North Beverly Drive and could potentially block views from these viewpoints.

~~The view from the terminus of~~Currently, there are limited views of the Los Angeles Basin and downtown Los Angeles from Loma Linda Drive, as most views are blocked by existing residential development and intervening vegetation. The project site is at the terminus of Loma Linda Drive and is visible to motorists and pedestrians traveling near the terminus (approximately the last 150 feet) of Loma Linda Drive. ~~would be altered for motorists traveling on Loma Linda Drive.~~At the terminus of Loma Linda drive is a turnout from which views of the Los Angeles Basin are available. The proposed project would involve vacating the portion of Loma Linda Drive with this existing turnout and construction of a two-story residence and guest house at the end of the street. Therefore, the proposed project would block one portion of the existing limited views of the Los Angeles Basin for pedestrians and motorists along the last 150 feet of Loma Linda Drive or at the small turnout at its terminus. ~~However, the proposed building would be on the northern side of Loma Linda Drive and would not block existing City vistas for motorists on Loma Linda Drive. Further,~~ However, since Loma Linda Drive is a dead-end street, it is ~~that is~~ primarily used only by the few residents who live there and their guests. In addition, the terminus of Loma Linda Drive is not a ~~There is no~~ designated public viewpoint or scenic corridor or highway ~~on Loma Linda Drive or that has a direct and clear view of the~~

~~project site~~. The small turnout with views available is intended to be used by vehicles turning around at the end of Loma Linda Drive and is not intended to be used as a scenic viewpoint. Views of the basin would remain available from other locations along Loma Linda Drive. Therefore, no significant impact would occur.

Portions of the proposed ~~building~~ residence may be visible from portions of North Beverly Drive through the existing intervening trees and topography. Currently, there are no scenic views from North Beverly Drive through the project site and the project would not block prominent hillside views of areas above. The proposed new residence would be setback at least 30 feet from the western portion of the site, which would reduce visibility of the site from North Beverly Drive due to the difference in elevation. Further, the project area is heavily landscaped, with trees blocking most of the project site from North Beverly Drive.

The site is adjacent to Franklin Canyon on the northwest. Franklin Canyon Park, which includes trails that are accessible to the public, is located in the northern portion of Franklin Canyon above the Lower Franklin Reservoir, approximately 0.5 miles north of the project site. The project site cannot be seen from the publically accessible portion of Franklin Canyon including the public trails due to the distance from the site and the topography of the canyon. The portion of Franklin Canyon that has a view of the project site is not a public viewpoint because it is not accessible to the public.

Although the project would result in an increase in overall height and density of structural development on the site, impacts would not be significant because the views that would be obstructed are not views of scenic vistas or of visual resources that the City has identified as scenic. Therefore, impacts would be **less than significant** and no mitigation is required.

b) **No impact.** None of the roadways that would have clear visual access to the project site are designated scenic routes. Further, the site is not visible from designated scenic highways (California Scenic Highway Mapping System, 2007). There are no major rock outcroppings on the site. There is vegetation and several trees, including eucalyptus trees, on the slope on the western portion of the site that may be removed during project landscaping. In addition, a mature Canary Island pine tree is located adjacent to Loma Linda Drive and may be removed as part of the proposed project. Although this tree is not native, its circumference is approximately 50 inches. Therefore, it is a Heritage Tree for purposes of the ordinance, and its removal would require a permit under BHMC Section 10-3-2901. However, this tree is not considered significant for aesthetic purposes as it is non-native, is one of a number of trees in the immediate vicinity, and is not visible from areas beyond the immediately adjacent residential uses. Impacts would be **less than significant.**

The project site is currently vacant; therefore, the project would not result in a loss of historic resources. **No impact** to scenic resources within a state-designated scenic highway would occur as a result of the project. Santa Monica Boulevard east of Wilshire Boulevard is the City's only designated scenic highway.

c) **Less than significant.** The project site is currently vacant but previously was developed with a single-family home. Current conditions at the project site are shown on Figure 3. The proposed new residence would change the visual character of the project site compared to

previous developed conditions as the new residence would be taller and increase the scale of development compared to the previous single-family residence. However, the height and scale of the proposed new residence would be generally consistent with the height and massing of the surrounding single-family residential neighborhood, which is composed primarily of relatively large houses with building heights of generally two stories.

Construction activities would temporarily alter the visual quality of the site. Construction of the project would require hauling, including export of excavated materials, and construction of below-grade foundations, the building itself, and landscaping. Construction activities would include the storage of equipment and materials onsite for several months. Due to the temporary nature of construction, these activities would not permanently degrade or modify the existing aesthetic image of the neighborhood, nor generate substantial long-term contrast with the visual character of the surrounding area. Therefore, visual quality impacts associated with construction would be less than significant.

Shadow impacts are considered significant if shadow-sensitive uses would create a new source of shade or shadow which would adversely affect existing shade/shadow-sensitive structures or uses. Facilities and operations sensitive to the effects of shading include: solar collectors; nurseries; primarily outdoor-oriented retail uses (e.g., certain restaurants); or routinely useable outdoor spaces associated with recreational, institutional (e.g., schools), or residential land uses. These uses are considered sensitive because sunlight is important to their function, physical comfort, and/or commerce. The single-family residences adjacent to the project site are considered sensitive. However, the project is a two-story residential structure on a hillside, and would not cast shadows substantially beyond the property lines or on nearby residential outdoor space.

Impacts to the visual character of the existing site and surrounding neighborhood would be **less than significant.**

d) **Less than significant.** Implementation of the project would introduce new sources of light and glare to a site where there are currently no existing sources of light and glare. Potential new sources of lighting include windows, car headlights, outdoor lighting in the yard, and exterior security lighting around the proposed building. The project site vicinity is residential in character, with generally low levels of existing lighting, particularly along Loma Linda Drive. Because of the existing residential ambient lighting levels, the proposed single-family residential use would not be expected to substantially alter lighting in the project site vicinity. In addition, the project would be required to comply with adopted City regulations that limit the design, intensity and impacts of night lighting, including City Code Section 5-6-1101, Excessive Lighting Prohibited, which states that "[i]t shall be unlawful for any person, except governmental agencies, to install, use, or maintain any lighting which creates an intensity of light on residential property which is greater than one foot-candle above ambient light level; and provided further, all permissive lighting shall be arranged to focus on the property from which it originates, and shall not directly reflect upon any adjacent residential property."

Potential sources of glare from the proposed project would consist of windows, cars parked outside the house, the roof, future rooftop solar panels, and the pool. However, the project is a single-family residential use in a single-family residential area. Therefore, the project would not

produce glare substantially in excess of the glare produced by surrounding buildings and the prior residence on the property, and typically found in residential areas of Beverly Hills.

The proposed project would increase light and glare sources compared to previously developed conditions as the proposed new residence would be larger than the previous single-family home on the project site. However, the proposed new residence would be compatible with existing light and glare sources from existing single-family residential uses in the project area. As such, impacts from light and glare would be **less than significant**.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
II. AGRICULTURAL RESOURCES -- Would the Project:				
a) Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

a-c) **No impact.** The project would involve construction of a new single-family house on a vacant site that previously included a single-family home. The project site is in a residential area of the City of Beverly Hills. The site is not in the vicinity of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance. In addition, neither the project site nor surrounding land is zoned for agricultural development, nor is under a Williamson Act contract. The project would not directly or indirectly result in the conversion of farmland to non-agricultural use. **No impact** would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
III. AIR QUALITY -- Would the Project:				
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 non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

The project site is located within the South Coast Air Basin (Basin) and is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The SCAQMD monitors air pollutant levels to assure that the air quality standards are met and, in the event they are not, to develop strategies to meet standards. The Basin is a non-attainment area for both the federal and state standards for ozone (O_3) $PM_{2.5}$ and lead (Pb) and the state standards for ozone, PM_{10}, $PM_{2.5}$, NO_2 and lead (California Air Resources Board, Area Designations Maps/State and National, September 2011; EPA, June 26, 2013).

SCAQMD has developed the thresholds in Table 1 for construction and operation activities within the Basin.

Table 1
Air Quality Thresholds

Pollutant	Construction	Operation
NO_x	100 lbs/day	55 lbs/day
VOC	75 lbs/day	55 lbs/day
PM_{10}	150 lbs/day	150 lbs/day
$PM_{2.5}$	55 lbs/day	55 lbs/day
SO_x	150 lbs/day	150 lbs/day
CO	550 lbs/day	550 lbs/day
Lead	3 lbs/day	3 lbs/day

Source: SCAQMD March 2011

SCAQMD has developed Localized Significance Thresholds (LSTs) in response to the Governing Board's Environmental Justice Enhancement Initiative (1-4). 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 would 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, and 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 only for NOx, CO, PM_{10} and $PM_{2.5}$. LSTs are not applicable to mobile sources such as cars on a roadway (Final Localized Significance Threshold Methodology, SCAQMD, June 2003). LSTs have been developed for emissions within areas up to five acres in size, with air pollutant modeling recommended for activity within larger areas. The SCAQMD provides a lookup table for sites that measure one, two or five acres. The project site measures approximately 1.97 acres and is located in Source Receptor Area 2 (SRA-2), which is designated by the SCAQMD as Northwest Coastal LA County and includes the City of Beverly Hills. The LST construction emission thresholds shown in Table 2 are from the LST lookup tables for two-acre project sites. The thresholds in Table 2 were determined based on the distance from the project site to nearby sensitive receptors.

Table 2
SCAQMD LSTs for Construction in SRA-2

Pollutant	Allowable emissions 82 feet (25 meters) from the 2-acre site boundary (lbs/day)
Gradual conversion of NO_x to NO_2	147
CO	827
PM_{10}	6
$PM_{2.5}$	4

Source: http://www.aqmd.gov/CEQA/handbook/LST/appC.pdf, accessed online 7/2014.

Sensitive receptors typically include residences, schools, hospitals and the elderly. The nearest sensitive receptors are single-family residential dwellings adjacent to the project site on the north, south, east, and west. The closest schools to the project site are the Accelerated Charter School and Hawthorne Elementary School, each located approximately one mile from the project site. The closest medical center is the Thalians Mental Health Center, located about two miles southeast of the site.

a) **Less than significant.** The project involves construction of a single-family residential building in a residential area of Beverly Hills. Generally, a project would conflict with or potentially obstruct implementation of an air quality plan if the project would contribute to population growth in excess of that forecasted in the air quality management plan. Adding one single-family residence to the City would result in slight population growth, but would not substantially increase the population in the City. The City's current population is approximately 34,658 residents (2013). The projected 2020 population for the City is 35,000 residents pursuant to the growth forecast of the Southern California Association of Governments' (SCAG) Regional

Transportation Plan (SCAG, 2012). The project could increase the population in the City by about 3 people assuming a persons per household rate of 2.35 for the City of Beverly Hills (U.S. Census average persons per household 2008-2012). An increase of three people would be within the projected 2020 growth increase in the City. The potential impact with respect to conflicts with the Air Quality Management Plan would be **less than significant** and no mitigation is required.

b, c) **Less than significant.** Project implementation would generate temporary air pollutant emissions during construction and long-term emissions due to project-generated vehicle traffic and energy use. Related impacts are discussed below.

Construction Emissions. Construction vehicles and equipment, grading, excavating, and stockpiled soils have the potential to generate fugitive dust (PM_{10} and $PM_{2.5}$) through the exposure of soil to wind erosion and dust entrainment. In addition, exhaust emissions associated with heavy construction equipment would potentially degrade air quality. Dust and exhaust emissions associated with construction activities are considered temporary air quality impacts.

The proposed project's construction related impacts were calculated using California Emissions Estimator Model (CalEEMod) (Version 2013.2.2) software program. Emissions were based on parameters such as the duration of construction activity, area of disturbance, and anticipated equipment use during construction. For the purposes of calculating emissions, compliance with the regulatory requirements of SCAQMD Rule 1133 regarding the use of low-VOC paint was assumed. In addition, it was assumed that the project would comply with SCAQMD Rule 403, which identifies required 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 grading phase 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.

The complete results of air quality emissions calculations from CalEEMod are included in Appendix A and are summarized in Table 3. As shown in Table 3, the estimated daily construction emissions of criteria pollutants are below SCAQMD construction thresholds for this location. Impacts would be **less than significant**.

Table 3
Estimated Maximum Daily Construction Emissions

Construction Phase	Maximum Emissions (lbs/day)					
	ROG	NO_x	CO	PM_{10}	$PM_{2.5}$	SO_X
Maximum lbs/day	~~8.6~~ 8.5	~~62.0~~ 68.3	~~46.4~~ 50.1	~~6.1~~ 6.4	~~4.5~~ 4.8	0.07
SCAQMD Regional Thresholds	*75*	*100*	*550*	*150*	*55*	*150*
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Notes: All calculations were made using the CalEEMod software. See Appendix A for calculations. Grading, Paving, Building Construction, and Architectural Coating totals include worker trips, construction vehicle emissions and fugitive dust.

The Grading phase incorporates anticipated emissions reductions conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust.

Totals may differ from the added total of the area, energy, and mobile sources due to rounding.

Operational Emissions. Long-term operational emissions associated with project operation would include emissions from vehicle trips (mobile emissions), natural gas and electricity usage (energy emissions), and landscape maintenance equipment, consumer products, fireplaces, and architectural coating associated with the onsite development (area emissions). Table 4 summarizes the project-related operational emissions.

Table 4
Projected Daily Operational Emissions

Source	Emissions (lbs/day)					
	ROG	NOx	CO	PM_{10}	$PM_{2.5}$	SO_X
Area	~~0.60~~ 0.86	<0.01	~~0.09~~ 0.59	~~<0.01~~ 0.08	<~~0.01~~ 0.08	~~0~~ <0.01
Energy	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Mobile	~~0.05~~ 0.05	~~0.14~~ 0.13	~~0.56~~ 0.51	0.08	0.02	<0.01
Total	**~~0.65~~ 0.91**	**~~0.15~~ 0.14**	**~~0.65~~ 1.1**	**~~0.08~~ 0.15**	**~~0.03~~ 0.10**	**<0.01**
Threshold	*55*	*55*	*550*	*150*	*55*	*150*
Exceed Threshold?	No	No	No	No	No	No

All calculations were made using CalEEMod. See Appendix A for calculations. Calculations assume adherence to the conditions listed previously that are required by SCAQMD Rule 403 to reduce fugitive dust. Numbers may not add up due to rounding.

As shown in Table 4, operational emissions would not exceed thresholds. Therefore, the project's operational air quality impacts would be **less than significant**.

CO Hot Spots. Impacts would also be significant if project-generated traffic were to cause a significant impact at a local intersection that would result in CO concentrations above the state or federal standards. Areas with high vehicle density, such as congested intersections, have the potential to create high concentrations of CO. These areas are known as CO "hot spots." A project's localized air quality impact is considered significant if CO emissions create a hot spot 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 intersections having a level of service (LOS) of E or F. The 2010 SCAQMD summary card, which provides data on current conditions, states the maximum CO one-hour concentration for SRA-2 (Northwest Coastal LA County) as 2.0 ppm, and the maximum eight-hour concentration as 1.4 ppm. These are the ambient CO concentrations, to which the project would contribute slightly. According to the Caltrans *Transportation Project-Level Carbon Monoxide Protocol* (1997), a detailed CO screening analysis should be conducted when project-generated traffic worsens a signalized intersection from LOS A, B, C, or D to E or F.

As stated in Section XVI, *Transportation and Traffic*¸ the proposed project would generate approximately ~~12 to 15~~22 haul trips per day during grading and ~~approximately 5~~ up to 8 vendor trips per day during building construction. However, these trips would generally be spread evenly throughout the workday. The proposed project would also generate approximately 18 round-trip worker trips per day. As further discussed in Section XVI, construction-related trips would not cause significant congestion on surrounding roadways or worsen LOS levels at nearby intersections to D, E or F. Therefore, a CO hot spot would not occur.

The proposed project is a single-family residential use, which would not generate substantial traffic during operation. The project would result in minimal operational trips daily because it would be used as a single-family residence. As such, it would not result in worsening a signalized intersection or create a CO hotspot during operation.

The thresholds created by the SCAQMD are intended to screen projects' contribution to regional air quality during project construction and future operation, including criteria pollutants for which the air basin is in non-attainment and taking into account cumulative growth based upon forecasts incorporated into the Air Quality Management Plan. As shown in Table 4, the emissions generated by the proposed project would not exceed the SCAQMD's daily operational thresholds for any pollutant and would not significantly affect regional air quality. Thus, the project's long-term impact to regional air quality would be less than significant.

d) **Less than significant impact.** Sensitive receptors typically include residences, schools, hospitals and the elderly. The nearest sensitive receptors are single-family residential dwellings adjacent to the project site on the north, south, east, and west. The closest schools to the project site are the Accelerated Charter School and Hawthorne Elementary School, each located approximately one mile from the project site. The closest medical center is the Thalians Mental Health Center, located about 2 miles southeast of the site. During construction, sensitive receptors could be exposed to higher than normal concentrations of particulate matter as well as exhaust emissions from construction vehicles.

As discussed above, SCAQMD LSTs apply to on-site uses only and do not include off-site vehicle trips and emissions. Table 5 compares the project's maximum daily emissions to the applicable LSTs as shown in Table 2.

As shown in Table 5, the estimated daily construction emissions would be below LST thresholds for all criteria pollutants. Impacts on sensitive receptors would be **less than significant**.

Table 5
Estimated ~~Unmitigated~~ Maximum Daily Construction Emissions Compared to LSTs

	NOx	CO	PM_{10}	$PM_{2.5}$
Maximum lbs/day (on-site only)	~~25.6~~ 29.8	~~16.7~~ 19.8	~~3.3~~ 3.6	~~2.3~~ 2.5
Local Significance Threshold (on-site only)	**147**	**827**	**6**	**4**
Threshold Exceeded?	No	No	No	No

Notes: All calculations were made using CalEEMod. See the Appendix A for calculations. Grading, Paving, Building Construction, and Architectural Coating totals include worker trips, construction vehicle emissions and fugitive dust.

Grading phase incorporate anticipated emissions reductions the conditions listed above, which are required by SCAQMD Rule 403 to reduce fugitive dust.

e) **Less than significant impact.** The project involves construction of a two-story single-family residential building on a site that is currently vacant and previously included a single-family home. Figure 5-5, *Land Uses Associated with Odor Complaints,* of the 1993 SCAQMD CEQA Air Quality Handbook identifies the following land uses associated with odor complaints: Agriculture, Wastewater Treatment Plants, Food Processing Plants, Chemical Plants, Composting, Refineries, Landfills, Dairies, and Fiberglass Molding Plants. Single-family

residences are not typically associated with odor complaints. Therefore, impacts would be **less than significant** and mitigation is not required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IV. <u>BIOLOGICAL RESOURCES</u> -- Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

a) **No Impact.** The project site is currently undeveloped and contains vegetation. Previously, the project site contained a single-family residence that was recently demolished. The majority of the vegetation on and surrounding the project site comprises nonnative ornamental trees, shrubs and groundcover (Rincon Consultants, Inc., Site Visit, 2014). According to Figure OS2 in

the Beverly Hills General Plan, the project site is located in the vicinity of an occurrence of the Braunton's milk-vetch, which is an endangered plant species (Beverly Hills, November 2011; CDFG, 2011). However, the milk-vetch was not observed on the project site. No threatened, endangered or rare species or their habitats are known to exist or where found on the project site. No impact to candidate, sensitive or special status species would occur.

b) **No impact.** As mentioned above, the project site mostly contains nonnative, ornamental landscaping. On-site vegetation includes pine tree (*Pinus sp*.), oleander (*Nerium oleander*), Brazilian pepper tree (*Schinus terebinthifolius*), fountain grass (*Pennisetum setaceum*), eucalyptus (*Eucalyptus spp*.), acacia (*Acacia sp*.), bamboo (*Phyllostachys sp*.), and ice plant (cf. *Drosanthemum floribundum*). Native vegetation found on and near the project site is limited to the following:

1) Remnant coastal sage scrub (CSS) species including laurel sumac (*Malosma laurina*), toyon (*Heteromeles arbutifolia*), brickell bush (*Brickellia californica*), chaparral yucca (*Yucca whipplei*), and coast prickly pear (*Opuntia littoralis*) along the southeastern boundary within ice plant and fountain grass landscaping.
2) An immature, individual coast live oak (*Quercus agrifolia*) tree approximately 5 feet tall at the southern terminus of Loma Linda Drive, and
3) Mature western sycamore trees (*Platanus racemosa*) ornamentally planted within the parcel to the north, but with canopy slightly extending into the subject parcel.

No riparian habitat exists on site. The coastal sage scrub species found are scattered and do not constitute coastal sage scrub habitat. No natural communities exist on the project site. Therefore, the project would not result in the removal of any riparian habitat or other sensitive natural community. In addition, no federal-or-state-listed endangered, threatened, rare, or otherwise sensitive flora or fauna were observed at the project site (Rincon Consultants, Inc., Site Visit, 2014). **No impact** to riparian habitat or other sensitive natural communities would occur.

c) **No Impact.** The project site is not located a federally protected wetland. The closest wetland is located at the Franklin Canyon Reservoir (FWS Wetlands Mapper, 2014). The proposed construction of a single-family home would not impact nearby wetlands. Therefore, **no impact** to wetlands would occur.

d) **Less than Significant with Mitigation.** As described above, there is limited native biological habitat on-site. Nonetheless, the project site and surrounding area contains trees that may be removed or disturbed as part of grading and site preparation for the proposed project. These trees could contain bird nests and birds which are protected under the Migratory Bird Treaty Act. Implementation of Mitigation Measure BIO-1 would reduce impacts to nesting birds to a less than significant level.

BIO- 1 **Nesting/Breeding Native Bird Protection.** To avoid impacts to nesting birds, including birds protected under the Migratory Bird Treaty Act, all initial ground disturbing activities, including tree removal, should be limited to the time period between August 16 and January 31 (i.e., outside the nesting season). If initial site disturbance, grading, and vegetation removal cannot be limited to this time period, a pre-construction survey

for active nests within the project site shall be conducted by a qualified biologist at the site no more than two weeks prior to any construction activities. If active nests are identified, species-specific exclusion buffers shall be determined by the biologist, and construction timing and location adjusted accordingly. The buffer shall be adhered to until the adults and young are no longer reliant on the nest site, as determined by the biologist. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area.

e) **No impact**. The City of Beverly Hills has adopted a tree preservation ordinance, which is contained in Article 29 of the Beverly Hills Municipal Code (BHMC), Regulation Of Trees On Private Property (sections 10-3.2900-2906). Protected trees include:

- Heritage trees – those with a circumference of 48 inches or more and located in the front or street side setback.
- Native trees – those in the City's official list of local native trees with circumference of 24 inches or more and located in the front or street side setback.
- Urban groves – a group of 50 or more trees located anywhere on a single family property.

As mentioned, an immature coast live oak is located on Loma Linda Drive. This tree would not be protected by the city's tree preservation ordinance due to its small size. In addition, a mature Canary Island pine tree (*Pinus canariensis*) is located adjacent to Loma Linda Drive. This tree may be removed as part of the proposed project. Although this tree is not native, its circumference is approximately 50 inches. Therefore, it is a Heritage Tree for purposes of the ordinance, and its removal would require a permit under BHMC Section 10-3-2901. As the applicant has applied for a permit to remove or relocate a protected tree, **no impact** would occur if the permit is granted.

f) The project site is not located within an area that is subject to an adopted conservation plan. **No impact** would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
V. <u>CULTURAL RESOURCES</u> -- Would the Project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?	☐	☒	☐	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
V. CULTURAL RESOURCES -- Would the Project:				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) **No Impact.** The project site previously contained a single-family home that was demolished in January 2014. Currently, the site is vacant. The project site is surrounded by single-family residential uses, none of which are designated as historic resources. Therefore, there would be **no impact** to historic resources.

b-d) **Potentially significant impact unless mitigation incorporated.** There are no unique geological features on the project site. The surface of the project site has been previously disturbed and developed and no archaeological or paleontological resources are known to have been discovered. In addition, the relatively steep topography of the area makes it unlikely that it was a settled or heavily used area for local tribes.

Regarding paleontological resources, the Santa Monica Slate is the single geologic unit mapped within the project site (Dibblee and Ehrenspeck 1991). This formation consists of metamorphosed marine sedimentary rocks (slate, phyllite, metasandstone and schist) of late Jurassic age. This formation originated as a marine-shale and is composed of mica, quartz and feldspar. The Santa Monica Slate is not expected to contain significant paleontological resources; however, fossil pelecypods have been recorded from this formation (Imlay 1963). Typically, metamorphosis destroys the characteristics of the original rock unit including any fossils that may have been contained within. If fossils survive the metamorphic process, they are often modified in their chemical and structural makeup to a degree that they provide little or no useful information for paleontologists. Therefore the Santa Monica Slate is considered to have relatively low paleontological sensitivity.

Nevertheless, excavation required for the subterranean basement and garage has the potential to disturb previously unknown archaeological or paleontological resources and/or human remains. This is a **potentially significant impact unless mitigated.**

Mitigation Measures. The following measures would reduce impacts relating to the possible discovery of as yet undetected archaeological or paleontological resources, or human remains, during excavation to a less than significant level.

CR-1 **Protection of Cultural Resources.** If archaeological or paleontological resources are encountered during grading, the construction manager

shall ensure that all ground disturbance activities are stopped, and shall notify the Community Development Department immediately to arrange for a qualified archaeologist or paleontologist to assess the nature, extent, and potential significance of any cultural resources. If such resources are determined to be significant, appropriate actions to mitigate impacts to the resources shall be identified in consultation with a qualified archaeologist or paleontologist. Depending upon the nature of the find, such mitigation may include, but would not be limited to, avoidance, documentation, or other appropriate actions to be determined by a qualified archaeologist or paleontologist. For example, if significant cultural resources cannot be avoided, impacts may be reduced by filling on top of the sites rather than cutting into the cultural deposits. Alternatively or in addition, a data collection program may be warranted, including mapping the location of artifacts, surface collection of artifacts, or excavation of the cultural deposit to characterize the nature of the buried portions of sites. Curation of the excavated artifacts or samples shall occur as specified by the archaeologist.

CR-2 **Protection of Human Remains.** If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the person(s) thought to be the Most Likely Descendent (MLD) of the deceased Native American, who will then help determine what course of action should be taken in dealing with the remains.

Implementation of the above mitigation measures would reduce the effects of project excavations and ground disturbing activities to archaeological resources, paleontological resources, or human remains to a less than significant level.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VI. <u>GEOLOGY and SOILS</u> – Would the Project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☒	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable as a result of the Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 1-B of the Uniform Building Code, creating substantial risks to life or property?	☐	☒	☐	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

The discussion below is based on a geotechnical report prepared for the project by Irvine Geotechnical Inc. in September 2014 (Appendix B) and reviewed by City of Beverly Hills staff. <u>LGC Valley, Inc. also performed a peer review of the geotechnical report in November 2014 at the City's request. The peer review is also contained in Appendix B. LGC Valley concluded that the project site has been sufficiently reviewed and assessed from a geotechnical perspective and that the proposed project is feasible from a geotechnical perspective based on known data, provided the recommendations contained in the September 2014 geotechnical report are implemented.</u>

The analysis and recommendations contained in the geotechnical report were based on an initial site visit, site observations of grading and soil nail construction, review of previous geotechnical studies on the site, consultation with the project design team, soil explorations, laboratory testing, reviewing historical topographic maps and aerial photographs, preparing a Geologic Map and cross sections, and performing engineering analysis. Extensive subsurface exploration was conducted on the site and adjacent properties as part of investigation of two slope failures that occurred as a consequence of the 2005 high-rainfall year. The exploration was performed sporadically between 2005 and 2010. Downhole observation of the earth materials was performed by the engineering geologist.

The project site consists of two graded hillside lots near the base of the south flank of the Santa Monica Mountains. The site is situated on the crest, nose, and flanks of a south-trending ridge. This main ridge separates Coldwater Canyon on the east from Franklin Canyon on the west. Past grading on the site consisted of cutting and filling along the crest and flanks of the ridge to create level building sites and walkways. Offsite development toward the west, located at the terminus of Sutton Way, included creating significant cuts into the nose and flanks of the ridge to create building pads and access drives. The lower cuts were created up to 25 feet.

Slopes descend from the pad at the ridge top toward the east and southeast up to 130 feet in elevation to graded and developed pads accessed from Coldwater Canyon Drive. Slopes descend toward the west about 90 feet in elevation to graded pads accessed from Sutton Way. Slope gradients on the site range from flatter than 4:1 to as steep as 1:1. Near vertical slopes are present offsite toward the west. Recent grading associated with the repair of the northerly slide included manufacturing cut and fill slopes at a 1.5:1 gradient. Southerly slopes were supported with soil nails and flattened as part of the repair.

Surface drainage on the majority of the site is poor and generally is by sheet flow runoff down the contours of the land toward the east, south and west. The northerly slide repair included terrace drains, benches, and drain inlets. Drainage improvements are planned as part of the southerly slope repair/stabilization.

Groundwater was not discovered during exploration. Seasonal fluctuations in groundwater levels may occur due to variations in climate, irrigation, and other factors not evident at the time of exploration. Fluctuations in groundwater levels may also occur across the site.

Fill associated with previous episodes of site grading underlies portions of the site. The thickest fill deposits are associated with the grading and construction of the 2010-2011 northerly slide repair. Fill was placed to replace slide debris, to restore drill and construction roads and to backfill retaining walls. The thickness of recently placed compacted fill ranges from a few feet up to 10 feet. Fill was also placed in an abandoned pool located onsite between the residence and the guest house. It is unknown whether the fill was compacted and whether the pool shell was removed. Fill blanketing the remainder of the site is generally less than 4 to 6 feet thick. The fill consists of silty sand and gravelly sand that is mottled grey, brown and tan, slightly moist to moist and slightly dense to compacted.

Natural residual and colluvial soils blanket the bedrock on the natural slopes. The soil layer is about 2 to 7 feet thick and consists of silty and clayey sand and gravel that is grey-brown, moist

and loose to medium dense. Bedrock underlying the site and encountered in the test pits and borings consists of slate of the Santa Monica Formation. The bedrock is well exposed in cuts along Sutton Way and offsite from the southwesterly property line. Bedrock was also exposed in trims for the northerly slide repair. The bedrock is grey-brown to orange-brown, moderately hard to hard, thinly to thickly foliated, and fractured. The upper two to seven feet of bedrock is highly fractured and weathered. The weathered bedrock becomes less weathered and fractured with depth.

a. i.) **No Impact.** Southern California is located in an active seismic region. As such, development that occurs within the geographical boundaries of southern California has the potential to expose people and/or structures to potentially substantial adverse effects involving the rupture of an earthquake fault. The City of Beverly Hills contains both active and potentially active faults. Two active or potentially active faults are located within the City limits, including: the Hollywood Fault and the Santa Monica Fault. The Hollywood and Santa Monica Faults are part of a major east/west trending, left lateral reverse fault system that forms the southern boundary of the Transverse Ranges physiographic province. The Newport-Inglewood Fault is located approximately two miles south of the City. The site is located within two kilometers of the Hollywood Fault; however, no known active faults cross the project site and the site is not located within an Alquist-Priolo Fault Rupture Hazard Study Zone (Irvine Geotechnical Inc., 2014). Therefore, **no impact** resulting from fault rupture would occur.

a. ii.) **Less than significant.** Several active and/or potentially active faults within Los Angeles County could potentially affect the structure built on the project site due to seismic shaking. All of southern California is in a seismically active region; therefore, ground motion caused by an earthquake is likely to occur at the site during the lifetime of the project. The site is located within two kilometers of the Hollywood Fault, a known seismic source. However, the proposed building would be constructed pursuant to the California Building Code (CBC). Seismic design parameters within the CBC include amplification of seismic forces on the structure depending on the soil type, distance to seismic source, and intensity of shaking. The purpose of the CBC is to prevent collapse of structures and loss of life during strong ground shaking. Modern, well-constructed buildings are designed to resist ground shaking through the use of shear panels, moment-resisting frames and reinforcement. Additional precautions may be taken to protect personal property and reduce the chance of injury, including strapping water heaters and securing furniture and appliances. Design and construction of the proposed project would comply with the recommendations listed in the standard procedures of the CBC to reduce any potential impacts from seismic related activity affecting the site. In addition, it is assumed that design recommendations contained within the project specific geotechnical study discussed below (Irvine Geotechnical Inc, 2014) would be incorporated. Impacts would be **less than significant**.

a. iii.) **Less than significant.** Liquefaction is a process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking or because of a sudden shock or strain. Liquefaction typically occurs in areas where the groundwater is less than 30 feet from the surface and where the soils are composed of poorly consolidated fine to medium sand.

The California State Legislature enacted the Seismic Hazards Mapping Act of 1990 to protect the public from the effects of strong ground shaking, liquefaction, landslides, and other earthquake-

related hazards. The Act requires that the State Geologist delineate various "seismic hazards zones" and requires a site investigation by a certified engineering geologist and/or civil engineer with expertise in geotechnical engineering for projects sites within a hazard zone. The investigation is to include recommendations for a minimum level of mitigation that should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy. The Seismic Hazards Mapping Act does not require mitigation to a level of no ground failure and/or no structural damage. According to the Seismic Hazard Zones Map, the project site is not within an area susceptible to liquefaction (State of California Seismic Hazard Zones, 1999).

Design and construction of the proposed project would be required to adhere to the recommendations listed in the standard procedures of the CBC to reduce any potential impacts from seismic related activity. Impacts would be **less than significant**.

a. iv.) **Potentially significant unless mitigation incorporated.** The most critical slopes (highest and steepest with respect to the geologic structure) affecting the project site include the westerly slopes between the pad (ridge top) and the properties along Sutton Way. These critical slopes also coincide with the areas of previous instability. Existing and proposed slopes on the project site will be grossly stable with a factor of safety in excess of 1.5. Natural slopes are historically unstable and graded and trimmed slopes onsite could be unstable. Impacts are **potentially significant unless Mitigation Measure GEO-1 is incorporated**.

b) **Less than significant.** Construction activity associated with site development may result in the erosion of soils from wind and water. Beverly Hills Municipal Code Section 9-4-506(I)(4) identifies "planning priority projects" that must implement post-construction treatment controls that meet standards set forth in the Standard Urban Storm Water Mitigation Plan (SUSMP) and the current municipal NPDES Permit to mitigate stormwater pollution. New single-family hillside residential developments of one acre or more of surface area are considered planning priority projects. As such, the project applicant would be required to include measures into their design to conserve natural areas, protect slopes and channels, provide storm drain system stenciling and signage, divert roof runoff to vegetated areas before discharge (unless diversion would result in slope instability), and direct surface flow to vegetated areas before discharging (unless diversion would result in slope instability). Further, the applicant would be required to implement standard Best Management Practices (BMPs) on the construction site, as required by Section 9-4-507(B) of the City of Beverly Hills Municipal Code, which would reduce any potentially significant soil erosion impacts. Specific requirements per Section 9-4-507(B) include the following:

- Sediment, construction waste, and other pollutants from construction sites must be retained on the site to the maximum extent practicable;
- Any sediment or other materials which are not retained on the site must be removed the same day as they leave the site. Where determined necessary by the director of the department of public works or his or her designated representative, a temporary sediment barrier must be installed.
- Excavated soil must be located on the site in a manner that minimizes the amount of sediments running into the street or adjoining properties.
- No washing of construction vehicles shall be allowed adjacent to a construction site.

- Drainage controls must be utilized onsite as necessary and may include detention ponds, sediment ponds, infiltration pits, dikes, filter berms, and downdrains.

With implementation of standard BMPs, impacts would be **less than significant**.

c) **Potentially Significant Unless Mitigation Incorporated.** As discussed under items a(i) through a(iv), the project site has potentially unstable slopes, but does not have any other conditions that pose unusual risks relating to soils or other potential secondary seismic hazards. Slope stability hazards would be mitigated by Mitigation Measure GEO-1. Incorporation of design recommendations contained within the project-specific geotechnical study would further ensure structural design would be adequate for unstable slopes onsite. Therefore, impacts would be **less than significant with mitigation incorporated**.

d) **Potentially Significant Unless Mitigation Incorporated.** Expansive soils are primarily composed of clays, which increase in volume when water is absorbed and shrink when dry. Expansive soils are of concern since building foundations may rise during the rainy season and fall during dry periods in response to the clay's action. If movement varies under different parts of the building, structural portions of the building may distort. Clay soils beneath the City of Beverly Hills have the potential to expand (City of Beverly Hills General Plan Update Negative Declaration and Environmental Initial Study, 2010). Incorporation of design recommendation contained within the project-specific geotechnical study as required by Mitigation Measure GEO-1, in addition to required adherence to the CBC, would mitigate the potential effects of adverse soil conditions. Therefore, the impact would be **less than significant with mitigation incorporated.**

Mitigation Measures. Slopes on the project site may be unstable. Therefore, Mitigation Measure GEO-1 is required.

GEO-1 **Geotechnical Report Recommendations.** The project applicant shall comply with all recommendations contained within the Geotechnical Report prepared by Irvine Geotechnical, Inc. dated September 2014, including the following:

- Bearing material shall be slate bedrock. Existing fill, soil, and fractured bedrock shall not be used for foundation or slab support. Conventional foundations may be used to support portions of the proposed structures that are not located adjacent to slopes and/or over deep fill and soil. Deepened foundations consisting of friction piles tied with grade beams shall be used to support portions of proposed structures on or near slopes.
- Any remaining former pool shell shall be removed.
- Remedial grading shall occur on portions of the site containing surficial materials of fill, soil, or colluvium to improve site conditions for support of any slabs and where fill is to be placed.
- The following grading specifications shall be followed prior to grading. Grading plans shall be reviewed by a geotechnical engineer to ensure that these specifications are included. The grading contractor shall be

provided with a copy of these specifications prior to grading.

- The site shall be prepared to receive compacted fill by removing all vegetation, debris, existing fill, soil, and the entire pool shell. The exposed excavated area shall be observed by a soils engineer or geologist prior to placing compacted fill. The exposed grade shall be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted to 90 percent of its maximum density.
- Fill, consisting of soil approved by a soils engineer, shall be placed in horizontal lifts and compacted in six inch layers with suitable compaction equipment. The excavated onsite materials are satisfactory for reuse in the controlled fills. Any imported fill shall be observed by the soils engineer prior to use in fill areas. Rocks larger than six inches in diameter shall not be used in the fill.
- The fill shall be compacted to at least 90 percent of the maximum laboratory density for the material used. Where cohesionless soil (less than 15 percent finer than 0.005 millimeters) is used for fill, it shall be compacted to a minimum of 95 percent relative compaction. The fill shall be placed at a moisture content that is at or within three percent over optimum. The maximum density and optimum moisture content shall be determined by ASTM D 1557-09 or equivalent.
- Field observation and testing shall be performed by a soils engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until 90 percent compaction is obtained. One compaction test shall be conducted for each 500 cubic yards or two vertical feet of fill placed.

- Fill slopes may be constructed at a 2:1 gradient but shall be keyed and benched into bedrock or supported laterally by retaining walls. Keyways shall be a minimum of 12 feet wide and 3 feet into bedrock as measured on the downhill side. The base of all fills and the axis of drainage courses require subdrains.
- In the event that a caving zone is encountered, casing or special drilling techniques shall be conducted.
- The proposed swimming pool may be constructed using a free-standing design, but shall derive support entirely from the bedrock. This may require over-excavation or the use of a footing, or the use of a deepened foundation system. If the spa is to be attached to the pool, the spa shall be founded at the same depth as the portion of the pool it adjoins.
- The applicant shall meet the following minimum requirements for the foundation:
    - Bearing material shall be bedrock.

  - The minimum embedment depth of footing shall be 12 inches.
  - The vertical bearing shall be 4,000 psf.
  - The coefficient of friction shall be 0.5.
  - The passive earth pressure shall be 400 pcf.
  - The maximum earth pressure shall be 6,000 psf.
- All continuous footings shall be reinforced with a minimum of four #4 steel bars (two placed near the top and two near the bottom). Footings shall be cleaned of all loose soil, moistened, free of shrinkage cracks and approved by a geologist and geotechnical engineer prior to placing forms, steel or concrete. Footings shall not be supported by retaining wall backfill or derive support within the active wedge behind the retaining wall. Foundations adjacent to basements shall be deepened below a 1:1 plane projected up from the base of the retaining wall. Alternatively, foundations adjacent to basements may be designed as a grade beam and structurally connected to the wall.
- Drilled, cast-in-place concrete friction piles shall be used to support portions of the proposed structures located on or adjacent to slopes.
- Pile shafts shall be designed for a lateral load of 1,000 pounds per linear foot for each foot of shaft exposed to the existing fill and soil.
- Differential foundation settlement shall not exceed ¼ inch.
- Restrained walls that are pinned at the top by a non-yielding floor shall be designed for an at-rest earth pressure.
- Retaining walls that are surcharged by traffic and/or structural loads shall be designed to withstand the surcharge.
- Retaining walls shall be provided with a subdrain or weepholes covered with a minimum of 12 inches of ¾ inch crushed gravel.
- Retaining wall backfill shall be compacted to a minimum of 90 percent of the maximum density.
- Retaining walls surcharged by a sloping condition shall be provided with a minimum of 12 inches of freeboard for slough protection.
- Where vertical temporary excavations in the existing fill and soil will exceed 3 ½ feet in height, the upper portion shall be trimmed to 1:1.
- Floor slabs and concrete decking shall be cast over bedrock or approved compact fill. Slabs shall be at least 4 inches thick and reinforced with a minimum of #4 bars on 16 inch centers.
- Pad and roof drains shall be collected and transferred to the street or an approved location in non-erosive drainage devices. Drainage shall not be allowed to pond on the pad or against any foundation or retaining wall.
- Formal plans shall be submitted to the City Building Department and shall be reviewed by a geotechnical engineer.
- During construction, reviews shall be conducted by a geotechnical engineer at a minimum prior to grading, foundation, and drainage excavations and prior to placing fill, forms, pipes, concrete, and steel.

Significance After Mitigation. Implementation of the above mitigation measures would reduce impacts related to soil instability. Impacts would be **less than significant**.

e) **No Impact.** Development on the property would be served by the City's wastewater disposal system. The project does not include a septic system; therefore, there is no potential for adverse effects due to soil incompatibility. **No impact** would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS - Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

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. Climate change is the result of numerous, cumulative sources of greenhouse gases (GHGs). GHGs contribute to the "greenhouse effect," which is a natural occurrence that helps regulate the temperature of the planet. The majority of radiation from the Sun hits the Earth's surface and warms it. The surface in turn radiates heat back towards the atmosphere, known as infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping back into space and re-radiate it in all directions. This process is essential to supporting life on Earth because it warms the planet by approximately 60° Fahrenheit. Emissions from human activities since the beginning of the industrial revolution (approximately 250 years ago) are adding to the natural greenhouse effect by increasing the gases in the atmosphere that trap heat, thereby contributing to an average increase in the Earth's temperature.

GHGs occur naturally and from human activities. Human activities that produce GHGs are the burning of fossil fuels (coal, oil and natural gas for heating and electricity, gasoline and diesel for transportation); methane from landfill wastes and raising livestock, deforestation activities; and some agricultural practices. Greenhouse gases produced by human activities include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF6). Since 1750, it is estimated that the concentrations of carbon dioxide, methane, and nitrous oxide in the atmosphere have increased by 36%, 148%, and 18% respectively, primarily due to human activity. Emissions of GHGs affect the atmosphere directly by changing its chemical composition while changes to the land surface indirectly affect the atmosphere by changing the way in which the Earth absorbs gases from the atmosphere. Potential impacts in California of global warming 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 (CEC, March 2009).

The adopted *CEQA Guidelines* provide regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, while giving lead agencies the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The 2008 SCAQMD threshold considers emissions of over 10,000 metric tons carbon dioxide equivalent (CO_2E) per 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 has a recommended tiered GHG significance threshold (SCAQMD, 2010). Under Tier 2, proposed projects would be less than significant if the project is consistent with an approved GHG reduction plan. Tier 3 includes screening level quantitative thresholds. As the City of Beverly Hills does not have an adopted GHG reduction plan or Climate Action Plan, the proposed project was compared to Tier 3 quantitative thresholds. SCAQMD has a recommended Tier 3 screening level quantitative threshold for all land use types of 3,000 metric tons CO_2E /year.

This analysis is based on the methodologies recommended by the California Air Pollution Control Officers Association [CAPCOA] (January 2008) *CEQA and Climate Change* white paper. The analysis focuses on CO_2, N_2O, and CH_4 as these are the GHG emissions that onsite development would generate in the largest quantities. Emissions of fluorinated gases, such as HFCs, PFCs, and SF_6 would not be significant since fluorinated gases are primarily associated with industrial processes. Calculations were based on the methodologies discussed in the CAPCOA white paper (January 2008) and included the use of the California Climate Action Registry General Reporting Protocol (January 2009). Emissions analyzed are for new park uses on the project site.

Emissions associated with the proposed project were estimated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2. Complete CalEEMod results and assumptions can be viewed in Appendix A.

a) **Less than significant.**

Construction Emissions**.** Based on the CalEEMod modeling results, construction activity for the project would generate an estimated ~~568~~ 665 metric tons CO_2E during construction (see Table 6). For the purpose of comparing construction emissions with annual emissions from operation of the proposed project, it is useful to amortize them over a 30-year period (the assumed life of the project) (SCAQMD, 2009). Thus, construction of the proposed project would generate an estimated ~~19~~ 22 metric tons CO_2E per year.

Table 6
Estimated Construction Emissions of Greenhouse Gases

	Construction Emissions (CO_2E)
Total Emissions	~~568~~ 665 metric tons
Amortized over 30 years	~~19~~ 22 metric tons per year

Source: CalEEMod v 2013.2.2. See Appendix A for GHG emission worksheets and assumptions.

Operational Indirect, Stationary Direct, and Mobile Emissions. Table 7 combines the construction, operational (energy use, solid waste, and water use emissions), and mobile GHG emissions associated with the proposed project. As shown, the proposed project is estimated to generate ~~41~~ 44 metric tons CO_2E emissions per year. As discussed above, the recommended thresholds that would be appropriate for the proposed project include 3,000 metric tons CO_2E per year threshold for all land use types recommended by SCAQMD. As emissions would not exceed these thresholds, the GHG impacts of the proposed project would be **less than significant**.

Table 7
Combined Annual Emissions of Greenhouse Gases

Emission Source	**Annual Emissions (CO_2E)**
Construction	~~19~~ 22 metric tons
Operational	
Area Sources	~~1.5~~ 1 metric ton~~s~~
Energy Use	~~3.9~~ 4 metric tons
Solid Waste	~~0.6~~ 1 metric tons
Water	~~0.5~~ 1 metric tons
Mobile	~~15.5~~ 15 metric tons
Total	**~~41~~ 44 metric tons**

Source: CalEEMod version 2013.2.2. See Appendix A for GHG emission worksheets and assumptions.

b) **Less than significant.** Senate Bill 375, signed in August 2008, requires the inclusion of sustainable communities' strategies (SCS) in regional transportation plans (RTPs) for the purpose of reducing GHG emissions. In April 2012, the South Coast Association of Government (SCAG) adopted the *2012-2035 Regional Transportation Plan/Sustainable Communities Strategy* (RTP/SCS). SCAG's RTP/SCS includes a commitment to reduce emissions from transportation sources by promoting compact and infill development to comply with SB 375. A goal of the SCS is to "promote the development of better places to live and work through measures that encourage more compact development, varied housing options, bike and pedestrian improvements, and efficient transportation infrastructure." The proposed project would be a single-family residence on an infill site that is zoned for residential uses. Therefore, it would be consistent with this goal.

Executive Order (EO) S-3-05 was issued by the Governor in June 2005. EO S-3-05 sets a GHG emission reduction target of 1990 levels by 2020. Assembly Bill 32, the "California Global Warming Solutions Act of 2006," was signed into law in the fall of 2006. This bill also requires achievement of a statewide GHG emissions limit equivalent to 1990 emissions by 2020 (essentially a 25% reduction below 2005 emission levels) and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006, published the *Climate Action Team Report* (CAT Report) (CalEPA, 2006). The 2006 CAT Report identified a recommended list of strategies that the state could pursue to reduce GHG emissions. The strategies include the reduction of passenger and light duty truck emissions, reduction of energy and water use and increased recycling. In addition, in 2008 the California Attorney General published *The California Environmental Quality Act Addressing Global Warming Impacts at the Local Agency Level* (California Department of Justice, 2008). This document provides information that may be helpful to local agencies in carrying out their duties under CEQA as they relate to global warming. Included in this document are various measures that may reduce the global warming related impacts of a project such as reducing construction and demolition waste, reducing water use, and encouraging smart land use. Construction and demolition waste generated by the proposed project would be diverted from landfills in accordance with Beverly Hills requirements (BHMC Section 9-1-1001). The proposed project would also be required to utilize 75% native Californian or drought-tolerant landscaping (BHMC Section 9-1-1102). The proposed project would be consistent with applicable CAT strategies and 2008 Attorney General Greenhouse Gas Reduction Measures.

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 sea level rise in the coming century. The rising sea level increases the likelihood and risk of flooding. However, as the project site is approximately seven miles from the coastline and is not at risk for inundation from sea level rise (California Energy Commission, Cal-Adapt website, 2014; Google Earth, 2013).

The California Office of Planning and Research (OPR) *CEQA Guidelines* also include recommended mitigation strategies to reduce GHG impacts. According to this document, mitigation measures may include:

1. *Potential measures to reduce wasteful, inefficient and unnecessary consumption of energy during construction, operation, maintenance and/or removal.*
2. *The potential of siting, orientation, and design to minimize energy consumption, including transportation energy, water conservation and solid-waste reduction.*
3. *The potential for reducing peak energy demand.*
4. *Alternate fuels (particularly renewable ones) or energy systems.*
5. *Energy conservation which could result from recycling efforts.*

Consistent with OPR mitigation strategies, on-site development would reduce wasteful, inefficient and unnecessary consumption of energy by using energy efficient lighting and appliances in accordance with California's Building Energy Efficiency Standards (Title 24, Part 6). The proposed project would also include water-efficient, low flow faucets, toilets, and showerheads.

GHG emissions generated by the proposed project would not have a significant adverse impact on the environment. Furthermore, the project would not conflict with applicable plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. There is no locally adopted climate action plan or other greenhouse gas reduction plan. Therefore, the contribution of on-site development to cumulative global climate change impacts would be **less than significant.**

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. HAZARDS and HAZARDOUS MATERIALS - Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the Project result in a safety hazard for people residing or working in the Project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
VIII. HAZARDS and HAZARDOUS MATERIALS - Would the Project:				
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

a, b) **No Impact.** The proposed single-family residential use would not require the transport, use, or disposal of potentially hazardous substances because hazardous substances are typically not associated with single-family residential uses. The project would not result in the release of hazardous materials into the environment. **No impact** would occur.

c) **No Impact.** The closest schools to the project site are the Accelerated Charter School and Hawthorne Elementary School, each located approximately one mile from the project site. The project would be a single-family residential residence and would not emit hazardous emissions. Therefore, there would not be potential for hazardous materials to affect schools within ¼ mile of the site. **No impact** would occur.

d) **No Impact.** The following databases were checked for known hazardous materials contamination in the project area:

- *Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database*
- *Geotracker search for leaking underground fuel tanks, Spills-Leaks-Investigations-Cleanups (SLIC) and Landfill sites*
- *Cortese list of Hazardous Waste and Substances Sites*
- *The Department of Toxic Substances Control's Site Mitigation and Brownfields Database*
- *The Environmental Protection Agency's NEPA Assist*

There were no hazardous sites listed on the project site or immediately surrounding properties. The closest hazardous site to the project site is the Los Angeles Department of Water and Power Franklin Reservoir Facility, located at 1300 Beverly Drive, which is approximately 0.3 miles northwest of the project site. Due to the distance of this site to the project site and the nature of the site (RCRA site), there would not be any potential hazards to the future project site occupants from the Franklin Reservoir Facility. **No impact** would occur.

e, f) **No Impact.** The project site is located approximately five miles northeast of Santa Monica Airport. The project site is not within an area covered by an airport land use plan, nor is it located in the vicinity of a private air strip. There would be **no impact**.

g) **No Impact.** The project does not include permanent street closures or changes in traffic flow or access. In addition, the project includes installation of a turnaround for a fire truck on the project site, which would improve access to the site and surrounding properties. **No impact** would occur.

h) **No Impact.** The project site and surrounding areas are urbanized. While there are brush, grass, and trees near the project site, the applicant would be required to show compliance with all applicable codes, regulations, and conditions of approval for fire protection prior to final plan approvals. The applicant would be required to provide proof of compliance with all applicable building and fire code requirements. These requirements include types of roofing materials, building construction, and access and design, as set forth by the Beverly Hills Fire Department (BHFD) and the Uniform Fire Code. Therefore, there would be **no impact**.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IX. HYDROLOGY and WATER QUALITY – Would the Project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering or the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
IX. HYDROLOGY and WATER QUALITY – Would the Project:				
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☒	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

a, f) **Less than significant.**

Temporary Construction-Related Water Quality Impacts. The proposed project involves grading and excavation in order to construction a single-family residence. Excavation for the project would require approximately 8,749 cubic yards of cut and 862 cubic yards of fill. Excavation and grading could result in erosion of soils and sedimentation, which would cause temporary impacts to surface water quality and therefore violate water quality standards or contribute additional sources of polluted runoff. Project development would also likely require temporary onsite storage of excavated soils (stockpiling). During grading and soil storage, there is the potential for soil migration offsite via wind entrainment and/or water erosion. In addition, there is potential for erosion from tires of construction vehicles and equipment.

Discharge of pollutants from the project site during construction of the residence would be restricted by provisions set by the State Water Resources Control Board (SWRCB) and the Los Angeles Regional Water Quality Control Board (LARWQCB). The applicant would be required to ensure that pollutants are not discharged from the site unless the discharge is in compliance with the National Pollution Discharge Elimination System (NPDES) program. The proposed project would involve of over one acre of site area. Therefore, the proposed project would be required to obtain a Construction General Permit and prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) during construction. A SWPPP identifies structural and non-structural controls that will be put in place to minimize potential environmental impacts caused by storm water discharge The purpose of a SWPPP is to minimize erosion and run-off of pollutants and sediment. A SWPPP establishes procedures, including Best Management

Practices (BMPs), which prevent pollutants from negatively affecting downstream water bodies from a construction site. SWPPP BMPs may include the following measures:

- *Erosion Control. Eroded sediments from areas disturbed by construction and from stockpiles of soil will be retained on site to minimize sediment transport from the site to streets, drainage facilities or adjacent properties via runoff, vehicle tracking or wind.*
- *Erosion control techniques will be utilized, such as soil stabilizers, covering soil during construction, wind blocking devices, cease grading during high winds, use of soil binders (watering graded soils should be avoided), filtration devices, and stabilizing ingress/egress points.*
- *Fugitive dust will be reduced to the maximum extent practicable.*
- *Erosion from slopes and channels will be controlled by implementing an effective combination of BMPs (as approved in Regional Board Resolution No. 99-03), such as the limiting of grading schedule during the wet season; inspecting graded areas during rain events; planting and maintenance of vegetation on slopes; and covering erosion susceptible slopes.*
- *Pollutant Detainment Methods. Downstream drainages will be protected from escaping pollutants by capturing materials carried in runoff and preventing transport from the site. Examples of detainment methods that retard movement of water and separate sediment and other contaminants are silt fences, hay bales, sand bags, berms, silt and debris basins.*
- *Construction Materials Control. Construction related materials, wastes, spills or residues will be retained on site to minimize transport from the site to streets, drainage facilities or adjoining properties by wind or runoff. Runoff from equipment and vehicle washing will be contained at the construction site unless treated to remove sediment and pollutants. Non-Stormwater runoff from equipment and vehicle washing and any other activity will be contained at the project site.*
- *Recycling/Disposal. Maintain a clean site. This includes proper recycling of construction-related materials and equipment fluids.*

In addition, the City of Beverly Hills Urban Runoff Mitigation Ordinance (Municipal Code Section 9-4-507) requires implementation of BMPs for all construction sites in the City. In accordance with this requirement, the proposed project includes an erosion control plan to prevent erosion during construction. The proposed project would include temporary sediment barriers and traps on the northern and eastern (down grade) boundaries of the project. These standard construction and erosion control practices would reduce the potential for the degradation of water quality.

With adherence to City and State requirements, the proposed project would not violate water quality standards or waste discharge requirements or otherwise substantially degrade water quality during construction. Water quality impacts during construction would be less than significant.

Operational Water Quality Impacts. The proposed project would increase impervious surface area on-site. Currently, the site does not contain any impervious surfaces. With construction of the proposed residence, approximately 1.43 acres (72%) of the project site would be covered with impervious surfaces. Impermeable surfaces such as driveways would accumulate deposits of oil, grease, and other vehicle fluids and hydrocarbons. In addition, maintenance of new landscaping could introduce chemical inputs such as pesticides and

herbicides. During storms, these deposits could be washed into and through the drainage systems and to water bodies including the Pacific Ocean. The addition of fertilizers, pesticides and other chemicals to new landscaping has the potential to include higher than natural concentrations of trace metals, biodegradable wastes (which affect dissolved oxygen levels), and excessive major nutrients such as nitrogen and phosphorus.

The applicant would be required to ensure that pollutants are not discharged from the site unless the discharge is in compliance with the NPDES, which regulates operational stormwater runoff through an NPDES Permit issued to the City of Beverly Hills. Pursuant to NPDES requirements, a SUSMP would be required for the project site. The SUSMP is required to show that 100% of rainfall from the site would flow either into/onto the source control BMPs or onto areas of undisturbed natural vegetation. With implementation of standard requirements, operational water quality impacts would be less than significant.

b) **Less than significant.** The project site is currently vacant and composed entirely of pervious surfaces (bare ground with scattered vegetation). The project site was previously developed with a single-family home. Therefore, previously the site contained impervious surfaces. Upon completion of the project, approximately 1.43 acres of the project site (72%) would be covered by impervious surfaces. Groundwater was not discovered during exploration of the site by Irvine Geotechnical, Inc. (Appendix B). In addition, the proposed drainage plan includes opportunities for infiltration of runoff from impervious surfaces, and approximately 28% of the project site would remain undeveloped and pervious. Therefore, the project would be unlikely to interfere with groundwater quality or recharge. The development of the proposed residence would increase the amount of water used on the project site (see Section XVI, *Utilities and Service Systems*). However, the project would not involve activities that would directly extract water from the ground. The increase of impervious surfaces onsite would not deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table. The impact would be **less than significant**.

c, d) **Less than significant.** There are no streams or rivers present on or around the project site. The proposed project would not alter the course of a stream or river. Although the project would increase the amount of impervious area on the project site, it would not alter the existing drainage system or result in a net increase of water runoff that would lead to flooding on or off site. Temporary sedimentation impacts could occur if bare ground is exposed during winter rains. This, in conjunction with other onsite construction activities, has the potential to result in temporary water quality impacts. However, the applicant would be required to comply with the City of Beverly Hills Urban Runoff Mitigation Ordinance (Municipal Code Section 9-4-506), which requires the implementation of BMPs. Such BMPs include use of plastic coverings on unprotected areas to eliminate erosion; removal of any sediments tracked offsite by construction vehicles; and use of temporary sediment barriers where necessary. These construction and erosion control practices would reduce the potential for adverse effects caused by excavation and general construction. Therefore, impacts relating to drainage and runoff would be **less than significant**.

e) **Less than significant.** <u>As shown on figures 6 and 7, the proposed project would include installation of two storm water catch basins on Loma Linda Drive that would connect to the</u>

City's existing storm drain system. The proposed project would also involve a series of catch basins to collect storm water runoff throughout the site and a system of downspouts and pipes to transport storm water to an existing storm water pipe on the western boundary of the project site and to the proposed new catch basins on Loma Linda Drive. Development of the project would introduce pervious surfaces to the project site, which could increase the quantity of runoff from the site during rain events. Currently, the site is 100% pervious. After the proposed project, approximately 1.43 acres of the site (72%) will be covered with impervious surfaces. However, the project site was previously developed with a single-family residence that was recently demolished. Therefore, the site has included impervious surfaces in the past. In addition, the proposed project involves lawn and landscaped areas that would help filter runoff.

Beverly Hills Municipal Code Section 9-4-506(I)(4) identifies "planning priority projects" that must implement post-construction treatment controls that meet standards set forth in the Standard Urban Storm Water Mitigation Plan (SUSMP) and the current municipal NPDES Permit to mitigate stormwater pollution. New single-family hillside residential developments of one acre or more of surface area are considered planning priority projects. As such, the project applicant would be required to include measures into their design to conserve natural areas, protect slopes and channels, provide storm drain system stenciling and signage, divert roof runoff to vegetated areas before discharge (unless diversion would result in slope instability), and direct surface flow to vegetated areas before discharging (unless diversion would result in slope instability).

Groundwater was not discovered during exploration of the site by Irvine Geotechnical, Inc. (Appendix B). However, seasonal fluctuations in groundwater levels may occur due to variations in climate, irrigation, and other factors not evident at the time of exploration. Fluctuations in groundwater levels may also occur across the site. Excavation for the proposed subterranean garage may require temporary or permanent "dewatering" of ground water. If this were to occur, treatment and discharge of this water would be subject to the requirements of the Beverly Hills Municipal Code, Chapter 9-4-610, Dewatering, and all applicable regulations regarding use of extracted groundwater would apply. Mandatory compliance with the City's dewatering and urban runoff and storm water regulations and NPDES requirements would reduce impacts associated with runoff and storm water drainage systems to a **less than significant level**.

g-j) **Less than significant.** The project site is located in Zone X, which is an area outside of the 0.2% annual chance floodplain by the Federal Emergency Management Agency (FEMA). In addition, FEMA classifies the City of Beverly Hills under Flood Zone C, which does not require mandatory flood mitigation enforcement. However, the City of Beverly Hills lies in the inundation path of the Lower Franklin Canyon Dam which is located north of the City. In the event of a breach of the Lower Franklin Reservoir, the residential area north of Carmelita Drive would be exposed to immediate and severe danger. Below that point, the danger diminishes rapidly (City of Beverly Hills General Plan Update Negative Declaration and Environmental Initial Study, 2010). The project site is not located in the residential area north of Carmelita Drive. The site is located higher in elevation than the Franklin Canyon Dam; therefore, dam inundation would be unlikely. The project site and surrounding areas contain slopes; however, with incorporation of Mitigation Measure GEO-1, impacts related to mudflows would be

reduced. The project site is approximately eight miles northeast of the Pacific Ocean and no other significant bodies of water are within the vicinity of the project site. As a result, the project site would not be affected by tsunamis or seiches. Impacts relating to flooding, mudflows, tsunamis and seiches would be **less than significant** and mitigation is not required.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
X. LAND USE AND PLANNING - Would the proposal:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with an applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

a) **Less than significant.** The project involves construction of a single-family residence on existing parcels surrounded by residential development. Although the project includes a proposed amendment to the Streets Master Plan to vacate portions of Loma Linda Drive and dedicate a fire truck turnaround, it would not affect through streets or interrupt neighborhood continuity or connectivity, or otherwise physically divide an established community. The impact is **less than significant** and mitigation is not required.

b) **Less than significant.** The project site carries a land use designation of Single-Family Residential Low Density and a zoning classification of R-1 (Residential), where single-family residential uses such as the proposed new residence are permitted. The new residence would comply with the height and setback limitations of the R-1 District. The project would be consistent with zoning requirements and impacts would be **less than significant**.

c) **No Impact.** There are no habitat conservation plans or natural community conservation plans applicable to the site or surrounding properties. Therefore, the project would not conflict with any habitat/natural community conservation plans and **no impact** would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XI. <u>MINERAL RESOURCES</u> -- Would the Project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a-b) **No Impact.** The project site is located in an urbanized area of Beverly Hills. No mineral resources of value to the region or the residents of the state are known to be within the project area (City of Beverly Hills General Plan, Conservation Element, 1979). **No impact** would occur.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XII. <u>NOISE</u> – Would the Project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels above levels existing without the Project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XII. NOISE – Would the Project result in:				
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise?	☐	☐	☐	☒

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 power 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).

Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. If a sound's physical intensity is doubled, the sound level increases by 3 dBA, regardless of the initial sound level. For example, 60 dBA plus 60 dBA equals 63 dBA. Where ambient noise levels are high in comparison to a new noise source, the change in noise level would be less than 3 dB. For example, 70 dBA ambient noise levels are combined with a 60 dBA noise source the resulting noise level equals 70.4 dBA. One of the most frequently used noise metrics that considers both a sound's physical intensity and duration 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.

Noise that is experienced at any receptor can be attenuated by distance or the presence of noise barriers or intervening terrain. Sound from a single source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. For acoustically absorptive, or soft, sites (i.e., sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees), an excess ground attenuation value of 1.5 dBA per doubling of distance is normally assumed. A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object, proximity to the noise source and receiver, surface weight, solidity, and the frequency content of the noise source. Natural terrain features (such as hills and dense woods) and human-made features (such as buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction.

The City of Beverly Hills' General Plan contains noise policies that address unnecessary, excessive, and annoying noise levels and sources, such as vehicles, construction, special sources (e.g., radios, musical instrument, animals, etc.) and stationary sources (e.g., heating and cooling

systems, mechanical rooms, etc.). The City's noise ordinance (BHMC Section 5-1-201 and subsequent) include noise standards and regulations. Section 5-1-202 prohibits any person from operating machinery or mechanical devices in a manner which creates a noise increase of more than 5 dBA above the ambient noise level at any property outside the hours permitted by the City's noise ordinance for construction activity.

Section 5-1-205 of the BHMC prohibits construction activity between the hours of 6:00 PM and 8:00 AM any day and prohibits construction activity on Sundays and on public holidays. Further, construction work within 500 feet of a residential zone is prohibited on Saturdays unless an after hours construction permit has been issued. The project site is within a residential zone.

As stated in the City's Noise Element, potentially sensitive land uses in Beverly Hills include residences (including residences for the elderly), schools, churches, and libraries. According to this definition, the proposed project is a noise-sensitive use. In addition, the proposed project is surrounded by noise sensitive uses, the residences north, east, and south of the project site.

On July 28, 2014, Rincon Consultants, Inc. performed one 20-minute weekday noise measurement using an ANSI Type II integrating sound level meter. As shown on Table 8, existing ambient noise levels at the project site were measured at 51.6 dBA Leq.

Table 8
Noise Measurement Results

Measurement Number	Measurement Location	dBA Leq[1]
1	Terminus of Loma Linda Drive	51.6

Source: Rincon Consultants, Inc. Recorded during field visit using ANSI Type II Integrating sound level meter. See Appendix C.
[1] The equivalent noise level (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). For this measurement the Leq was over a 15-minute period.

a, c) **Less than significant.** Operation of the proposed residence would not substantially increase existing ambient noise levels. The primary sources of noise that would be associated with the project are vehicle trips to and from the residence, periodic landscaping (e.g., lawn mower), talking and music. The noise-sensitive uses in the vicinity of the project site that could be affected by project-generated traffic noise are the single-family residences located adjacent to the project site. As shown on Table 8, the ambient noise level at the project site is 51.6 dBA Leq.

The project site is currently undeveloped but previously included a single-family residence. Development of the proposed project would increase the number of vehicle trips to and from the site, which would incrementally increase traffic noise on area roadways. However, the proposed project would be a single-family residence and would not generate substantial trips. Single-family residential uses on average generate 9.57 trips per weekday (ITE Trip Generation Manual 9th Edition), which would not substantially increase the number of trips on Loma Linda Drive. In addition, other operational noise sources such as landscaping equipment, talking, and

music would be comparable to noise from surrounding residences and consistent with existing ambient noise levels. The proposed project would include a vehicle turnaround area in between the project site and the adjacent single-family residence located at 1178 Loma Linda Drive. This would place vehicles adjacent to the existing residence. However, this area was previously developed with a parking area with car ports for the single-family home that was demolished in January 2014. Noise related to vehicles using the turnaround area would be comparable to noise from cars entering and exiting the parking area. In addition, noise from vehicles using the turnaround area would be intermittent. Therefore, the project would not substantially increase ambient noise levels. Noise levels would be anticipated to be below 60 dBA and would be compatible with single-family residential uses during operation of the project. Therefore, the project's impact would be **less than significant**.

b, d) **Less than significant.**

Construction Noise. Noise levels from construction of the proposed project would result from construction of the structure and traffic noise from construction vehicles. Nearby noise-sensitive land uses, including the residence approximately 25 feet north of the project site, would be exposed to temporary construction noise during development of the proposed project. Noise impacts are a function of the type of activity being undertaken and the distance to the receptor location. The grading phase of project construction tends to create the highest construction noise levels because of the operation of heavy equipment. As shown in Table 9, noise levels associated with heavy equipment typically range from about 86 to 91 dBA at 25 feet from the source (representing the nearest sensitive receptors). However, most grading and construction would occur at over 50 feet from the nearest sensitive receptor.

Pursuant to the City's noise ordinance (BHMC Section 5-1-202), a significant impact would occur if construction activities occurring on the project site would result in an increase of 5 dB(A) above the ambient level outside the hours permitted by the City's noise ordinance (i.e., between the hours of 6:00 PM and 8:00 AM on weekdays, at anytime on Saturday without an after hours permit, at any time on Sunday, or on a public holiday). Ambient noise levels on-site were measured during a weekday on July 28, 2014. Noise levels were measured to be 51.6 dBA. Therefore, based on the noise levels shown in Table 9, noise levels would be anticipated to exceed ambient noise levels by more than 5 dBA during construction. However, these noise levels would occur during the daytime in accordance with the permitted hours stipulated in the Municipal Code, and would be temporary, occurring only during certain construction phases. Therefore, impacts would be **less than significant.**

Table 9
Typical Noise Levels at Construction Sites

Equipment	Typical Noise Level		
	At 25 Feet	At 50 Feet	At 100 Feet
Air Compressor	87 dBA	81 dBA	75 dBA
Backhoe	86 dBA	80 dBA	72 dBA
Concrete Mixer	91 dBA	85 dBA	79 dBA
Dozer	91 dBA	85 dBA	79 dBA
Saw	82 dBA	76 dBA	70 dBA
Truck	94 dBA	88 dBA	82 dBA

Source: Federal Transit Administration, May 2006.
Based on a sound attenuation rate of 6 dBA per doubling of distance

Construction Vibration. Vibration energy is carried through buildings, structures, and the ground, whereas ambient noise is carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise, such as the rattling of windows from truck pass-bys. This phenomenon is caused by the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, groundborne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases and vibration rapidly diminishes in amplitude with distance from the source. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the U.S.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel wheeled trains, and traffic on rough roads. If a roadway is smooth, the groundborne vibration from traffic is barely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings.

Significant impacts occur when vibration or groundborne noise levels exceed the Federal Railroad Administration (FRA) maximum acceptable level threshold of 65 VdB for buildings where low ambient vibration is essential for interior operations (such as hospitals and recording studios), 72 VdB for residences and buildings where people normally sleep, including hotels, and 75 VdB for institutional land uses with primary daytime use (such as churches and schools).

Construction activities that would occur on the project site have the potential to generate groundborne vibration. Table 10 identifies various vibration velocity levels for the types of construction equipment that are likely to operate at the project site during construction.

Table 10
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998.

As shown in Table 10, vibration levels could be approximately 87 VdB at the residences located 25 feet north of the project site. However, most construction would occur at a distance of more than 50 feet away; therefore, this represents a worst-case scenario. As noted above, impacts would be significant if vibration levels exceeded 72 VdB during recognized sleep hours (as established by the Federal Railway Administration for places where people normally sleep). As noted above, Section 5-1-205 of the BHMC prohibits construction activity between the hours of 6:00 PM and 8:00 AM any day and prohibits construction activity on Saturdays, Sundays and on public holidays. Therefore, construction would not occur during normal sleep hours. In addition, the project would not exceed vibration levels that could potentially damage nearby buildings. Vibration impacts would be **less than significant.**

e-f) **No Impact.** The closest airport is Los Angeles International Airport, located approximately five miles southwest of the project site. At a distance of five miles, the project would not have the potential to expose people to significant aircraft-generated noise. **No impact would occur.**

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIII. <u>POPULATION AND HOUSING</u> — Would the Project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

a) **Less than significant.** The City's current population is approximately 34,658 residents (2013). The projected 2020 population for the City is 35,000 residents pursuant to the growth forecast in the Southern California Association of Governments' (SCAG) Regional Transportation Plan – Sustainable Communities Strategy (RTP-SCS, April 2012). The average household size in Beverly Hills is 2.35 persons per household (U.S. Census average persons per household 2008-2012). The proposed project involves construction of a new single-family residence on a site which previously contained a single family residence. Therefore, the proposed project would not result in a net increase in population. Impacts relating to population growth would be **less than significant**.

b-c) **No Impact.** The project site previously contained a single-family residence but it was demolished in 2014. The project site is currently vacant. As the project site does not currently contain any residential development, project development would not involve the displacement of housing or people. There would be **no impact.**

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XIV. PUBLIC SERVICES				
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☒	☐
ii) Police protection?	☐	☐	☒	☐
iii) Schools?	☐	☐	☒	☐
iv) Parks?	☐	☐	☒	☐
v) Other public facilities?	☐	☐	☒	☐

a. i.) **Less than significant.** The Beverly Hills Fire Department (BHFD) provides fire prevention, fire suppression, and life safety services to the City of Beverly Hills. Beverly Hills is recognized as one of the seven most fire-safe cities in the country (City of Beverly Hills, Multihazard Functional Plan, 2005). The station closest to the project site is Fire Station #2, located at 1100 Coldwater Canyon Drive, which is less than a mile from the project site.

The project site previously contained a single-family residence; therefore no increase in density or demand for fire protection services would result. The proposed new residence would be required to comply with Fire Code and BHFD standards, and would also require review by the City's Transportation Division, to ensure the driveway and turn-around meet safety specifications, including specific construction specifications, access design, and other design requirements. The proposed new residence would be accessed via a driveway with a minimum width of 21 feet, 3 inches in order to comply with fire department access standards. Impacts would be **less than significant**.

a. ii.) **Less than significant.** The Beverly Hills Police Department (BHPD) provides police protection services to the City of Beverly Hills. The closest station to the project site is BHPD headquarters located at 464 North Rexford Drive, approximately two miles from the project site. The BHPD's main indicator of effectiveness is its response time to emergency calls. Response time calls for the BHPD depend on the priority of the call. The goal for 911 emergency calls and Priority 1 calls is less than three minutes and for Priority 2 through 3 calls from three to five minutes (City of Beverly Hills General Plan Update Negative Declaration and Environmental Initial Study, 2010). The BHPD would continue to serve the project site and the proposed project would not result in the need for new or physically altered police facilities. Impacts would be **less than significant**.

a. iii.) **Less than significant.** The project would involve construction of one single-family residence, which could incrementally increase the number of school children in the City. However, the project site previously contained a residence which was recently demolished. Though the size of the proposed residence is larger than the previous residence, the density on the project site would remain the same (one single-family residence). Therefore, the number of school-aged children would be comparable to previous conditions. The proposed project would not result in the need for new or physically altered school facilities. Impacts to public schools would be **less than significant**.

a. iv.) **Less than significant.** The Beverly Hills Recreation and Parks Department is responsible for maintaining and planning for parkland in the City of Beverly Hills. The proposed project involves construction of a single-family residence. The project site previously contained a single-family residence; therefore no increase in density or demand for parks would result. Impacts to parks would be **less than significant.**

a. v.) **Less than significant.** The project site previously contained a single-family residence; therefore no increase in density or demand for other public ~~services~~ facilities would result from construction of a new single-family residence in its place. Although the proposed project would create additional demands on natural gas and electricity supplies and distribution infrastructure, these demands would be within the service capabilities of Southern California Edison and Southern California Gas. The proposed project would connect to existing utilities that serve the area, requiring little if any disturbance beyond the property boundary. As such, the proposed project would not require major new sources of natural gas or electricity such that new or expanded gas or electricity power plants, or conveyance or transmission lines, would be required. Southern California Edison has indicated that a transformer would likely need to be installed on-site. The transformer would be within area of development analyzed in this document and impacts associated with transformer installation have been analyzed throughout this document. Impacts would be **less than significant**.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XV. RECREATION —				
a) Would the Project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Does the Project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☒	☐

a) **Less than significant.** As discussed above in Section XIII, *Public Services*, the Beverly Hills Recreation and Parks Department is responsible for maintaining and planning for parkland in the City of Beverly Hills. The proposed project would replace one recently demolished single-family residence and therefore would not increase the demand for parks in the City. Impacts to parks would be **less than significant**.

b) **Less than significant.** The project does not include recreational facilities, nor would it require construction of new facilities or expansion of existing facilities as the proposed project is would not generate substantial demand for parks. The project's impact would be **less than significant**.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRAFFIC/CIRCULATION/PARKING — Would the Project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVI. TRAFFIC/CIRCULATION/PARKING — Would the Project:				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

a, b) **Less than significant.** A project's traffic impact is significant if the project would increase the Volume to Capacity ratio at an intersection currently operating at Level of Service D, E, or F. The proposed project would involve construction of a single-family residence in a residential neighborhood to replace a recently demolished residence. Thus, the project would not add a substantial number of new trips to the local street network. During construction of the project, traffic in the vicinity of the project site would increase compared to existing conditions due to worker trips and hauling truck trips to and from the project site. Construction-related worker trips were calculated using assumptions contained in CalEEMod and are shown in Table 11.

Table 11
Construction-Related Trips

Trip Type	Number of 2-Way Daily Trips
Hauling Trips[1]	22 ~~395~~
Building Construction Vendor Trips[2]	8
Worker Trips	
Grading Phase[3]	5
Building Construction[3]	9
Paving[4]	7
Architectural Coating[5]	2
~~Vendor Trips[4]~~	~~5~~

Assumptions derived from CalEEMod. See Appendix A.
[1] Assumes ~~7,887~~8,081 cubic yards of export and 12~~20~~ cubic yards of earth material per truck trip. ~~Hauling trips are only associated with the grading phase.~~
[2] Includes 5 concrete truck trips and up to 3 vendor delivery trips.
[2]~~-~~[3] Assumes 1.25 worker trips per equipment, 4 pieces of equipment in grading phase, 7 pieces of equipment in building construction phase, 5 pieces of equipment in paving phase
[3]~~-~~[4] Assumes 20% of building construction worker trips.
~~[4] Assumes 0.1639 vendor trips per 1,000 square feet of construction and 27,334 square feet of construction. Vendor trips are only associated with the building construction phase.~~

As mentioned in the Project Description, construction is anticipated to occur over approximately 30 months.

Hauling Trips. Estimated preliminary project grading would include approximately ~~7,887~~ 8,081 cubic yards (CY) of exported earth material. Assuming approximately 12 ~~20~~ ~~cubic yards~~CY of material per truck trip, the proposed project would result in approximately ~~395~~ 673 round-trip hauling truck trips. Conservatively assuming the most intense phase of excavation and hauling would occur over approximately 30 days out of the approximately three-month grading phase, the project would generate approximately ~~12 to 15~~ 22 daily haul trips, or fewer than 1 trip every 17 ~~20~~ minutes. It is assumed that the majority of truck traffic would be distributed evenly across the workday between 9:30 AM and 4:00 PM. As such, hauling activities during any hourly period would not cause significant traffic impacts. ~~In addition, the grading phase would include approximately 5 worker trips. This number of trips would not cause significant congestion on area roadways.~~

Building Construction Vendor Trips. The foundation laying phase is estimated to occur over 132 days and require 445 concrete mixer truck trips. Conservatively assuming foundation pouring occurs over 90 days, approximately 5 round-trip concrete mixer truck trips would occur per day. In addition, structural steel deliveries are expected to occur six to eight times per months over four months, lumber deliveries are expected to occur eight to ten times per month over four months, and finishing material deliveries are expected to occur ten to twelve times per month over eight months. Assuming steel, lumber, and finishing materials were all delivered on the same day, approximately three round-trip truck trips would occur in a day. Therefore, total vendor delivery trips during building construction would involve up to 8 trips per day. It is assumed that the majority of truck traffic would be distributed evenly across the workday between 9:30 AM and 4:00 PM. As such, heavy truck deliveries during any hourly period would not cause significant traffic impacts.

Worker Trips. As shown in Table 11, the proposed project would generate an estimated 5 round-trip worker trips in the grading phase, 9 worker trips in the building construction phase, 7 worker trips in the paving phase, and 2 worker trips in the architectural coating phase. According to the preliminary construction schedule, the paving, building construction, and architectural coating phases may overlap. Therefore, as a worst-case scenario, approximately 18 worker trips would be generated. Unlike hauling trips and vendor trips which are spread across the day, w~~W~~orker trips are expected to occur primarily at the beginning of the construction ~~hour~~ day (~~8~~7:00 AM) and at the end of the construction day (~~6~~5:00 PM). This number of trips would not cause significant congestion on surrounding roadways.

~~*Vendor Trips.* As shown in Table 11, the proposed project would include approximately 5 vendor trips during the building construction phase. It is assumed that vendor trips would be distributed evenly throughout the workday. Therefore, vendor trips during any hourly period would not cause significant traffic impacts.~~

c. **No Impact.** Given the nature and scope of the proposed project, and that there are no airports or airstrips in the project vicinity, the project would not change any air traffic patterns. **No impact** to air traffic would occur.

d. **Less than significant.** Construction of the proposed project would occur at the terminus of Loma Linda Drive in a residential area of the City of Beverly Hills. Therefore, it would not require temporary lane detours or closures. Construction may require closure of the turnaround at the terminus of Loma Linda Drive; however, temporary closure would not be expected to result in a change in traffic that is substantial in relation to existing traffic patterns or capacity. Impacts would be **less than significant**.

e. **Less than significant.** The project is a single-family residence that would involve installing a new fire truck turnaround which would improve emergency access to the project site. Development of the fire truck turnaround would require amendments to the City's Streets Master Plan to vacate portions of Loma Linda Drive and an intersecting, unpaved alley and to dedicate the turnaround driveway from the northern portion of the 1184 Loma Linda Drive property. With approval of these amendments and development of the fire truck turnaround, impacts would be **less than significant**.

f. **No impact.** The proposed project is a single-family residence that would provide 10 parking spaces, which would be adequate to serve future residents and household staff and service providers. Installation of the new turnaround area may result in the loss of one to two parking spaces on Loma Linda Drive. Although this loss may result in an inconvenience to guests of Loma Linda Drive residents at peak demand times, the loss of approximately five or six parking spaces from Loma Linda Drive – a small percentage of the overall available on-street parking in the neighborhood – would not result in a significant environmental impact. The proposed project would provide sufficient parking and **no impact** related to parking would occur.

g. **No Impact.** The project involves construction of a single-family residence in a residential neighborhood of the City. The proposed project would not affect adopted policies, plans and programs in support of alternative transportation. The project would have **no impact** related to adopted policies, plans, and programs supportive of alternative transportation.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVII. UTILITIES— Would the Project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVII. UTILITIES— Would the Project:				
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider which serves or may serve the Project that it has adequate capacity to serve the Project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

a,b,e. **Less than significant.** The project would involve construction of a single-family residence on a site that previously contained a single-family residence which was demolished in January 2014. The City's Department of Public Works maintains sewer collection and distribution systems located throughout Beverly Hills. The existing sanitary sewer system consists of over 95 miles of sewer mains that connect to the City of Los Angeles' sewer facilities at the southeastern border of Beverly Hills (City of Beverly Hills General Plan Update Negative Declaration and Environmental Initial Study, 2010).

All of the wastewater flows generated from the City (not including stormwater) are collected and treated at the Los Angeles Hyperion Wastewater Treatment Plant (HTP), located on the coast at 12000 Vista Del Mar in the City of El Segundo. The HTP is the largest of four wastewater treatment plants in the area surrounding the City of Los Angeles. Its primary treatment is completed with retention ponds, chemical coagulants and settling tanks. The plant has a dry weather capacity of 450 million gallons per day (MGD) for full secondary treatment and an 850 MGD wet weather capacity. Current flow (2009) is 340 MGD (http://www.lastormwater.org/Siteorg/general/hypern1.htm). The City's system allows pass-through for flow generated in the portion of the City of Los Angeles north of Beverly Hills. The maximum recorded daily flow generated by the City is about 12 million gallons per day and the average flow is about 6 million gallons per day (GPD) (City of Beverly Hills General Plan Update Negative Declaration and Environmental Initial Study, 2010).

The HTP is currently operating at about 110 million GPD below capacity. Based upon the Los Angeles CEQA Thresholds Guide's published sewage generation rates, each residential dwelling generates approximately 200 gallons of wastewater per day. Therefore, previously, the

single-family residence on the project site generated approximately 200 gallons per day of wastewater. The proposed project involves an approximately 27,000 square foot home on two lots. Assuming the proposed new residence is twice the size of the previous home on the project site, the proposed project would result in a 200 gallon per day increase in wastewater generation compared to previous conditions. The projected increase of 200 GPD of wastewater from the project site represents less than 0.00001% of the 100 million GPD excess capacity. With implementation of the proposed project, the HTP would have a remaining capacity of approximately 99,994,812 GPD. Therefore, sufficient treatment capacity at the Hyperion Plant is available to serve the proposed project.

The Los Angeles Regional Water Quality Control Board stipulates standards and regulations for utility service providers such as the HTP. A substantial increase in wastewater diverted to the HTP could conflict with pollutant standards and regulations of the LARWQCB. The project would not exceed the wastewater limits of the HTP. Therefore, the plant would be able to adequately treat project-generated sewage in addition to existing sewage, and the treatment requirements of the RWQCB would not be exceeded.

As noted in the project description, the proposed project includes improvements to the sewer line which would connect to the residence. Construction of the sewer line is expected to occur over approximately 35 days. Impacts related to the grading and construction of the new sewer line are discussed throughout this document. With these improvements, the city's wastewater conveyance system would be adequate to serve the proposed project. The project's impact with respect to wastewater would be **less than significant**.

c. **Less than significant.** The proposed project would increase the amount of impervious surfaces onsite compared to the currently vacant site and compared to previously developed conditions prior to January 2014 (see Section IX(e) in *Hydrology and Water Quality* for more information about proposed storm water infrastructure). Beverly Hills Municipal Code Section 9-4-506(I)(4) identifies "planning priority projects" that must implement post-construction treatment controls that meet standards set forth in the Standard Urban Storm Water Mitigation Plan (SUSMP) and the current municipal NPDES Permit to mitigate stormwater pollution. New single-family hillside residential developments of one acre or more of surface area are considered planning priority projects. As such, the project applicant would be required to include measures into their design to conserve natural areas, protect slopes and channels, provide storm drain system stenciling and signage, divert roof runoff to vegetated areas before discharge (unless diversion would result in slope instability), and direct surface flow to vegetated areas before discharging (unless diversion would result in slope instability). With implementation of the Beverly Hills Municipal Code and municipal NPDES Permit requirements, impacts would be **less than significant**.

d. **Less than significant.** The City receives water from local groundwater extracted from the Hollywood Basin through the City's wells and imported surface water purchased from the MWD. The City receives 90% of its water supply from the MWD which comes from the State Water Project and the Colorado River. Approximately 10% of the City's water supply comes from groundwater pumped from the Hollywood Basin totaling approximately 1,500 acre-feet (AF)per year.

The City's projected water supply availability is 22,453 AF in 2020 and in 22,441 AF in 2030 (City of Beverly Hills Urban Water Management Plan, 2010). Total demand is 11,786 AF in 2020 and 12,036 AF in 2030. The proposed project involves construction of a single-family home on a project site which was previously developed with a single family home. Assuming the proposed new residence is twice the size of the previous home on the project site, the proposed project would increase in water use compared to previous conditions. Nonetheless, the incremental increase in water use associated with one single-family residence would not increase demand beyond the amount of projected supply through the year 2030.

The proposed project involves improvements to the water line which would connect to the residence. With these improvements, the city's water conveyance system would be adequate to serve the proposed project. The proposed project's impact would be **less than significant**.

f,g. **Less than significant.** The City of Beverly Hills Public Works Department, Solid Waste Division is responsible for solid waste collection in the City of Beverly Hills. The City collects waste from single-family residences and contracts with Crown Disposal, Inc., a private hauling contractor, for other customers. The disposal of solid waste occurs at one of four designated landfills: Puente Hills Landfill, Chiquita Canyon Landfill, Sunshine Canyon Landfill and/or the Calabasas Sanitary Landfill. The proposed project has two components (construction and operation) that would result in the generation of solid waste.

During construction, the handling of all debris and waste would be subject to the City's and State's (AB 939) requirements for salvaging, recycling, and reuse of materials from construction activity on the project site. The City is required to divert at least 50% of its waste from landfills (57% of solid waste is currently diverted). Given that the four landfills serving the City of Beverly Hills have adequate capacity to accommodate the anticipated debris from project construction, the impact of construction on solid waste services would be minimal. Additionally, it is not anticipated that substantial debris and waste would be removed from the site because the project would not involve any further demolition activities.

During operation of the project, waste generated onsite would be increased compared to existing conditions. However, the project involves construction of a single-family residence onsite, which would not substantially increase waste in the City. The City's existing 57% waste diversion rate would reduce impacts from operation of the project. The proposed driveway and fire truck turnaround would provide adequate access for waste haulers to pick up trash.

Continued compliance with solid waste diversion requirements would address impacts related to solid waste generation. Impacts would be **less than significant**.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less than Significant Impact	No Impact
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE —				
a) Does the Project have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self- sustaining levels, eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the Project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

a) **Potentially significant unless mitigation incorporated.** As discussed in Section IV, *Biological Resources*, the project does not have the potential to substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self- sustaining levels; eliminate a plant or animal community; or reduce the number or restrict the range of a rare or endangered plant or animal. As discussed in Section IV, *Biological Resources,* impacts to nesting birds would be less than significant with implementation of Mitigation Measure BIO-1. As discussed in Section V, *Cultural Resources*, Mitigation Measures CR-1 and CR-2 would be required to reduce impacts to cultural resources to a less than significant level. With the implementation of the aforementioned mitigation measures, the proposed project would not eliminate important examples of the major periods of California history or prehistory. Therefore, impacts to cultural resources would be **less than significant with mitigation incorporated**.

b) **Less than significant.** The proposed project would not create any significant impacts that cannot be mitigated. Cumulative development in the region combined with the project would increase traffic and noise in the City. However, the project would not increase traffic or noise substantially. Further, cumulative projects in the City would be required to implement mitigation measures similar to those required for the project. As such, the project's contribution to cumulative impacts would be **less than significant**.

c) **Potentially significant unless mitigation incorporated.** As discussed in Section III, *Air Quality*, the proposed project would not conflict with the Air Quality Management Plan; temporary air pollutant emissions during construction and long-term emissions due to vehicle traffic and energy use would not violate any air quality standards or result in cumulatively considerable net increase of criteria pollutants; and sensitive receptors would not be exposed to substantial pollutant concentrations or objectionable odors. As discussed in Section XI, *Noise*, the proposed project would not result in the exposure of persons to noise levels in exceedance of City standards; exposure of persons to excessive groundborne noise vibration; a significant increase above ambient noise levels in the project vicinity; or subject people to excessive noise from use of an airport or airstrip. As discussed in Section VII, *Hazards and Hazardous Materials*, the proposed project would not create a significant hazard to the public through the use, transport, or disposal of hazardous materials; create an upset hazard; emit or handle hazardous materials; interfere with an emergency plan; expose people to risk from wildland fires; or subject people to the risk from a safety hazard from a nearby airport or airstrip. As discussed in Section VI, *Geology and Soils*, with implementation of Mitigation Measure GEO-1, construction of the proposed project would not expose people to adverse effects from fault rupture, ground shaking, ground failure, liquefaction, or landslides; result in soil erosion, or be constructed on unstable or expansive soils. Compliance with the City of Beverly Hills Municipal Code, compliance with State of California Regional Water Quality Control Board and Los Angeles Regional Water Quality Control Board requirements, compliance with the CBC requirements, and compliance with all applicable state and federal regulations would reduce potential adverse affects to human beings to a less than significant level. As such, impacts to human beings would be **less than significant with mitigation incorporated.**

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Appendix A

Air Quality and Greenhouse Gas Emissions Modeling Results

1184-1193 Loma Linda Drive 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
Single Family Housing	1.00	Dwelling Unit	1.97	27,334.00	3

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	3			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site is 1.97 acres; home is 27,334 sf.

Construction Phase - Construction schedule provided by applicant

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Excavator and loader added per construction schedule

Off-road Equipment -

Trips and VMT - Assume 12 CY per truck trip = 1346 hauling trips. 890 concrete mixer trips. Other trips shown in Table 11.

Grading - 8081 CY of export

Woodstoves - 6 gas fireplaces

Construction Off-road Equipment Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	200.00
tblConstructionPhase	NumDays	200.00	418.00
tblConstructionPhase	NumDays	4.00	98.00
tblConstructionPhase	NumDays	10.00	50.00
tblGrading	MaterialExported	0.00	8,081.00
tblLandUse	LandUseSquareFeet	1,800.00	27,334.00
tblLandUse	LotAcreage	0.32	1.97
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	1,010.00	1,346.00
tblTripsAndVMT	HaulingTripNumber	0.00	890.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2015	3.7089	34.4041	24.3232	0.0346	5.3304	1.7547	7.0851	2.6370	1.6143	4.2513	0.0000	3,566.1715	3,566.1715	0.7191	0.0000	3,581.2715
2016	3.3870	21.7019	15.9410	0.0249	0.0925	1.3828	1.4753	0.0252	1.3333	1.3586	0.0000	2,337.8628	2,337.8628	0.4521	0.0000	2,347.3570
2017	1.4013	12.1711	9.7949	0.0151	0.1453	0.7346	0.8799	0.0385	0.6767	0.7152	0.0000	1,492.8071	1,492.8071	0.4133	0.0000	1,501.4861
Total	**8.4971**	**68.2772**	**50.0591**	**0.0746**	**5.5682**	**3.8720**	**9.4402**	**2.7007**	**3.6243**	**6.3250**	**0.0000**	**7,396.8414**	**7,396.8414**	**1.5844**	**0.0000**	**7,430.1146**

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					
2015	3.7089	34.4041	24.3232	0.0346	2.3270	1.7547	4.0817	1.0955	1.6143	2.7098	0.0000	3,566.1715	3,566.1715	0.7191	0.0000	3,581.2715
2016	3.3870	21.7019	15.9410	0.0249	0.0925	1.3828	1.4753	0.0252	1.3333	1.3586	0.0000	2,337.8628	2,337.8628	0.4521	0.0000	2,347.3570
2017	1.4013	12.1711	9.7949	0.0151	0.1453	0.7346	0.8799	0.0385	0.6767	0.7152	0.0000	1,492.8071	1,492.8071	0.4133	0.0000	1,501.4861
Total	**8.4971**	**68.2772**	**50.0591**	**0.0746**	**2.5648**	**3.8720**	**6.4368**	**1.1592**	**3.6243**	**4.7836**	**0.0000**	**7,396.8414**	**7,396.8414**	**1.5844**	**0.0000**	**7,430.1146**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**53.94**	**0.00**	**31.81**	**57.08**	**0.00**	**24.37**	**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	0.8645	7.6400e-003	0.5867	8.0000e-004		0.0768	0.0768		0.0768	0.0768	9.3669	18.1486	27.5155	0.0281	6.4000e-004	28.3024
Energy	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625
Mobile	0.0453	0.1322	0.5138	1.0600e-003	0.0731	1.9100e-003	0.0750	0.0195	1.7500e-003	0.0213		95.9007	95.9007	4.3900e-003		95.9929
Total	**0.9107**	**0.1477**	**1.1038**	**1.9100e-003**	**0.0731**	**0.0794**	**0.1525**	**0.0195**	**0.0792**	**0.0988**	**9.3669**	**124.1504**	**133.5173**	**0.0327**	**8.3000e-004**	**134.4579**

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	0.8645	7.6400e-003	0.5867	8.0000e-004		0.0768	0.0768		0.0768	0.0768	9.3669	18.1486	27.5155	0.0281	6.4000e-004	28.3024
Energy	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625
Mobile	0.0453	0.1322	0.5138	1.0600e-003	0.0731	1.9100e-003	0.0750	0.0195	1.7500e-003	0.0213		95.9007	95.9007	4.3900e-003		95.9929
Total	**0.9107**	**0.1477**	**1.1038**	**1.9100e-003**	**0.0731**	**0.0794**	**0.1525**	**0.0195**	**0.0792**	**0.0988**	**9.3669**	**124.1504**	**133.5173**	**0.0327**	**8.3000e-004**	**134.4579**

	ROG	NOx	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	Grading	Grading	1/1/2015	5/18/2015	5	98	
2	Building Construction	Building Construction	5/19/2015	12/22/2016	5	418	
3	Architectural Coating	Architectural Coating	12/23/2016	9/28/2017	5	200	
4	Paving	Paving	9/29/2017	12/7/2017	5	50	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 36.75

Acres of Paving: 0

Residential Indoor: 55,351; Residential Outdoor: 18,450; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	1	6.00	162	0.38
Grading	Skid Steer Loaders	1	6.00	64	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	1,346.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	0.00	6.00	890.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2015

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.9236	0.0000	4.9236	2.5270	0.0000	2.5270			0.0000			0.0000
Off-Road	2.7864	29.7896	19.8375	0.0223		1.6809	1.6809		1.5465	1.5465		2,343.2663	2,343.2663	0.6996		2,357.9572
Total	**2.7864**	**29.7896**	**19.8375**	**0.0223**	**4.9236**	**1.6809**	**6.6045**	**2.5270**	**1.5465**	**4.0735**		**2,343.2663**	**2,343.2663**	**0.6996**		**2,357.9572**

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	0.2921	4.5114	3.4051	0.0103	0.2391	0.0721	0.3112	0.0655	0.0663	0.1318		1,042.8890	1,042.8890	8.6000e-003		1,043.0696
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	0.0771	0.1031	1.0807	2.0600e-003	0.1677	1.6800e-003	0.1693	0.0445	1.5300e-003	0.0460		180.0161	180.0161	0.0109		180.2447
Total	**0.3692**	**4.6145**	**4.4858**	**0.0123**	**0.4068**	**0.0738**	**0.4806**	**0.1099**	**0.0678**	**0.1778**		**1,222.9051**	**1,222.9051**	**0.0195**		**1,223.3143**

3.2 Grading - 2015

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.9202	0.0000	1.9202	0.9855	0.0000	0.9855			0.0000			0.0000
Off-Road	2.7864	29.7896	19.8375	0.0223		1.6809	1.6809		1.5465	1.5465	0.0000	2,343.2663	2,343.2663	0.6996		2,357.9572
Total	**2.7864**	**29.7896**	**19.8375**	**0.0223**	**1.9202**	**1.6809**	**3.6011**	**0.9855**	**1.5465**	**2.5320**	**0.0000**	**2,343.2663**	**2,343.2663**	**0.6996**		**2,357.9572**

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	0.2921	4.5114	3.4051	0.0103	0.2391	0.0721	0.3112	0.0655	0.0663	0.1318		1,042.8890	1,042.8890	8.6000e-003		1,043.0696
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	0.0771	0.1031	1.0807	2.0600e-003	0.1677	1.6800e-003	0.1693	0.0445	1.5300e-003	0.0460		180.0161	180.0161	0.0109		180.2447
Total	**0.3692**	**4.6145**	**4.4858**	**0.0123**	**0.4068**	**0.0738**	**0.4806**	**0.1099**	**0.0678**	**0.1778**		**1,222.9051**	**1,222.9051**	**0.0195**		**1,223.3143**

3.3 Building Construction - 2015

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	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344		2,055.6247	2,055.6247	0.4741		2,065.5812
Total	**3.6000**	**21.5642**	**15.0041**	**0.0220**		**1.4851**	**1.4851**		**1.4344**	**1.4344**		**2,055.6247**	**2,055.6247**	**0.4741**		**2,065.5812**

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	0.0453	0.6994	0.5279	1.5900e-003	0.0811	0.0112	0.0923	0.0210	0.0103	0.0312		161.6713	161.6713	1.3300e-003		161.6993
Vendor	0.0636	0.6086	0.8004	1.3100e-003	0.0374	0.0101	0.0475	0.0106	9.2600e-003	0.0199		132.4671	132.4671	1.1000e-003		132.4902
Worker	0.0000	0.0000	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	**0.1089**	**1.3079**	**1.3283**	**2.9000e-003**	**0.1185**	**0.0213**	**0.1398**	**0.0316**	**0.0195**	**0.0511**		**294.1383**	**294.1383**	**2.4300e-003**		**294.1894**

3.3 Building Construction - 2015

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	3.6000	21.5642	15.0041	0.0220		1.4851	1.4851		1.4344	1.4344	0.0000	2,055.6247	2,055.6247	0.4741		2,065.5812
Total	**3.6000**	**21.5642**	**15.0041**	**0.0220**		**1.4851**	**1.4851**		**1.4344**	**1.4344**	**0.0000**	**2,055.6247**	**2,055.6247**	**0.4741**		**2,065.5812**

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	0.0453	0.6994	0.5279	1.5900e-003	0.0811	0.0112	0.0923	0.0210	0.0103	0.0312		161.6713	161.6713	1.3300e-003		161.6993
Vendor	0.0636	0.6086	0.8004	1.3100e-003	0.0374	0.0101	0.0475	0.0106	9.2600e-003	0.0199		132.4671	132.4671	1.1000e-003		132.4902
Worker	0.0000	0.0000	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	**0.1089**	**1.3079**	**1.3283**	**2.9000e-003**	**0.1185**	**0.0213**	**0.1398**	**0.0316**	**0.0195**	**0.0511**		**294.1383**	**294.1383**	**2.4300e-003**		**294.1894**

3.3 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	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176		2,046.9432	2,046.9432	0.4499		2,056.3913
Total	**3.2915**	**20.5459**	**14.7074**	**0.0220**		**1.3656**	**1.3656**		**1.3176**	**1.3176**		**2,046.9432**	**2,046.9432**	**0.4499**		**2,056.3913**

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	0.0397	0.6178	0.4909	1.5900e-003	0.0551	8.8600e-003	0.0639	0.0146	8.1500e-003	0.0227		159.8843	159.8843	1.2000e-003		159.9095
Vendor	0.0558	0.5382	0.7427	1.3100e-003	0.0374	8.3000e-003	0.0457	0.0107	7.6300e-003	0.0183		131.0353	131.0353	1.0000e-003		131.0562
Worker	0.0000	0.0000	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	**0.0955**	**1.1561**	**1.2336**	**2.9000e-003**	**0.0925**	**0.0172**	**0.1096**	**0.0252**	**0.0158**	**0.0410**		**290.9196**	**290.9196**	**2.2000e-003**		**290.9658**

3.3 Building Construction - 2016

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	3.2915	20.5459	14.7074	0.0220		1.3656	1.3656		1.3176	1.3176	0.0000	2,046.9432	2,046.9432	0.4499		2,056.3913
Total	**3.2915**	**20.5459**	**14.7074**	**0.0220**		**1.3656**	**1.3656**		**1.3176**	**1.3176**	**0.0000**	**2,046.9432**	**2,046.9432**	**0.4499**		**2,056.3913**

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	0.0397	0.6178	0.4909	1.5900e-003	0.0551	8.8600e-003	0.0639	0.0146	8.1500e-003	0.0227		159.8843	159.8843	1.2000e-003		159.9095
Vendor	0.0558	0.5382	0.7427	1.3100e-003	0.0374	8.3000e-003	0.0457	0.0107	7.6300e-003	0.0183		131.0353	131.0353	1.0000e-003		131.0562
Worker	0.0000	0.0000	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	**0.0955**	**1.1561**	**1.2336**	**2.9000e-003**	**0.0925**	**0.0172**	**0.1096**	**0.0252**	**0.0158**	**0.0410**		**290.9196**	**290.9196**	**2.2000e-003**		**290.9658**

3.4 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	1.0690					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	**1.4374**	**2.3722**	**1.8839**	**2.9700e-003**		**0.1966**	**0.1966**		**0.1966**	**0.1966**		**281.4481**	**281.4481**	**0.0332**		**282.1449**

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	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Architectural Coating - 2016

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	1.0690					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	**1.4374**	**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**

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	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 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	1.0690					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	**1.4013**	**2.1850**	**1.8681**	**2.9700e-003**		**0.1733**	**0.1733**		**0.1733**	**0.1733**		**281.4481**	**281.4481**	**0.0297**		**282.0721**

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	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.4 Architectural Coating - 2017

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	1.0690					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	**1.4013**	**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**

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	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.5 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	1.1857	12.0981	9.0308	0.0133		0.7333	0.7333		0.6755	0.6755		1,347.6575	1,347.6575	0.4052		1,356.1677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1857**	**12.0981**	**9.0308**	**0.0133**		**0.7333**	**0.7333**		**0.6755**	**0.6755**		**1,347.6575**	**1,347.6575**	**0.4052**		**1,356.1677**

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	0.0540	0.0731	0.7641	1.7800e-003	0.1453	1.3200e-003	0.1466	0.0385	1.2100e-003	0.0398		145.1496	145.1496	8.0400e-003		145.3184
Total	**0.0540**	**0.0731**	**0.7641**	**1.7800e-003**	**0.1453**	**1.3200e-003**	**0.1466**	**0.0385**	**1.2100e-003**	**0.0398**		**145.1496**	**145.1496**	**8.0400e-003**		**145.3184**

3.5 Paving - 2017

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	1.1857	12.0981	9.0308	0.0133		0.7333	0.7333		0.6755	0.6755	0.0000	1,347.6575	1,347.6575	0.4052		1,356.1677
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.1857**	**12.0981**	**9.0308**	**0.0133**		**0.7333**	**0.7333**		**0.6755**	**0.6755**	**0.0000**	**1,347.6575**	**1,347.6575**	**0.4052**		**1,356.1677**

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	0.0540	0.0731	0.7641	1.7800e-003	0.1453	1.3200e-003	0.1466	0.0385	1.2100e-003	0.0398		145.1496	145.1496	8.0400e-003		145.3184
Total	**0.0540**	**0.0731**	**0.7641**	**1.7800e-003**	**0.1453**	**1.3200e-003**	**0.1466**	**0.0385**	**1.2100e-003**	**0.0398**		**145.1496**	**145.1496**	**8.0400e-003**		**145.3184**

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	0.0453	0.1322	0.5138	1.0600e-003	0.0731	1.9100e-003	0.0750	0.0195	1.7500e-003	0.0213		95.9007	95.9007	4.3900e-003		95.9929
Unmitigated	0.0453	0.1322	0.5138	1.0600e-003	0.0731	1.9100e-003	0.0750	0.0195	1.7500e-003	0.0213		95.9007	95.9007	4.3900e-003		95.9929

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	9.57	10.08	8.77	32,561	32,561
Total	9.57	10.08	8.77	32,561	32,561

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.534619	0.058604	0.178185	0.126004	0.038986	0.006286	0.016079	0.029769	0.002429	0.003158	0.003693	0.000543	0.001646

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	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625
NaturalGas Unmitigated	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625

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					
Single Family Housing	85.859	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625
Total		**9.3000e-004**	**7.9100e-003**	**3.3700e-003**	**5.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**10.1011**	**10.1011**	**1.9000e-004**	**1.9000e-004**	**10.1625**

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					
Single Family Housing	0.085859	9.3000e-004	7.9100e-003	3.3700e-003	5.0000e-005		6.4000e-004	6.4000e-004		6.4000e-004	6.4000e-004		10.1011	10.1011	1.9000e-004	1.9000e-004	10.1625
Total		**9.3000e-004**	**7.9100e-003**	**3.3700e-003**	**5.0000e-005**		**6.4000e-004**	**6.4000e-004**		**6.4000e-004**	**6.4000e-004**		**10.1011**	**10.1011**	**1.9000e-004**	**1.9000e-004**	**10.1625**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8645	7.6400e-003	0.5867	8.0000e-004		0.0768	0.0768		0.0768	0.0768	9.3669	18.1486	27.5155	0.0281	6.4000e-004	28.3024
Unmitigated	0.8645	7.6400e-003	0.5867	8.0000e-004		0.0768	0.0768		0.0768	0.0768	9.3669	18.1486	27.5155	0.0281	6.4000e-004	28.3024

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	0.0586					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2620	6.6500e-003	0.5026	8.0000e-004		0.0764	0.0764		0.0764	0.0764	9.3669	18.0000	27.3669	0.0279	6.4000e-004	28.1506
Landscaping	2.6900e-003	9.9000e-004	0.0841	0.0000		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004		0.1486	0.1486	1.5000e-004		0.1518
Total	**0.8645**	**7.6400e-003**	**0.5867**	**8.0000e-004**		**0.0768**	**0.0768**		**0.0768**	**0.0768**	**9.3669**	**18.1486**	**27.5155**	**0.0281**	**6.4000e-004**	**28.3024**

6.2 Area by SubCategory

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	0.0586					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.5412					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.2620	6.6500e-003	0.5026	8.0000e-004		0.0764	0.0764		0.0764	0.0764	9.3669	18.0000	27.3669	0.0279	6.4000e-004	28.1506
Landscaping	2.6900e-003	9.9000e-004	0.0841	0.0000		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004		0.1486	0.1486	1.5000e-004		0.1518
Total	**0.8645**	**7.6400e-003**	**0.5867**	**8.0000e-004**		**0.0768**	**0.0768**		**0.0768**	**0.0768**	**9.3669**	**18.1486**	**27.5155**	**0.0281**	**6.4000e-004**	**28.3024**

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

1184-1193 Loma Linda Drive 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
Single Family Housing	1.00	Dwelling Unit	1.97	27,334.00	3

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	3			**Operational Year**	2015
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Site is 1.97 acres; home is 27,334 sf.

Construction Phase - Construction schedule provided by applicant

Off-road Equipment -

Off-road Equipment -

Off-road Equipment - Excavator and loader added per construction schedule

Off-road Equipment -

Trips and VMT - Assume 12 CY per truck trip = 1346 hauling trips. 890 concrete mixer trips. Other trips shown in Table 11.

Grading - 8081 CY of export

Woodstoves - 6 gas fireplaces

Construction Off-road Equipment Mitigation -

Waste Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	10.00	200.00
tblConstructionPhase	NumDays	200.00	418.00
tblConstructionPhase	NumDays	4.00	98.00
tblConstructionPhase	NumDays	10.00	50.00
tblGrading	MaterialExported	0.00	8,081.00
tblLandUse	LandUseSquareFeet	1,800.00	27,334.00
tblLandUse	LotAcreage	0.32	1.97
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Skid Steer Loaders
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblProjectCharacteristics	OperationalYear	2014	2015
tblTripsAndVMT	HaulingTripNumber	1,010.00	1,346.00
tblTripsAndVMT	HaulingTripNumber	0.00	890.00
tblTripsAndVMT	VendorTripNumber	0.00	6.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2015	0.4562	3.5560	2.5158	3.7200e-003	0.2703	0.2087	0.4790	0.1317	0.1976	0.3292	0.0000	332.5099	332.5099	0.0672	0.0000	333.9210
2016	0.4358	2.7769	2.0325	3.1800e-003	0.0116	0.1769	0.1885	3.1600e-003	0.1706	0.1738	0.0000	271.2762	271.2762	0.0524	0.0000	272.3762
2017	0.1668	0.5163	0.4265	6.7000e-004	3.5600e-003	0.0352	0.0387	9.5000e-004	0.0337	0.0347	0.0000	58.6759	58.6759	0.0120	0.0000	58.9276
Total	**1.0588**	**6.8491**	**4.9749**	**7.5700e-003**	**0.2854**	**0.4208**	**0.7062**	**0.1358**	**0.4019**	**0.5377**	**0.0000**	**662.4619**	**662.4619**	**0.1316**	**0.0000**	**665.2247**

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					
2015	0.4562	3.5560	2.5158	3.7200e-003	0.1231	0.2087	0.3319	0.0561	0.1976	0.2537	0.0000	332.5096	332.5096	0.0672	0.0000	333.9207
2016	0.4358	2.7769	2.0325	3.1800e-003	0.0116	0.1769	0.1885	3.1600e-003	0.1706	0.1738	0.0000	271.2759	271.2759	0.0524	0.0000	272.3759
2017	0.1668	0.5163	0.4265	6.7000e-004	3.5600e-003	0.0352	0.0387	9.5000e-004	0.0337	0.0347	0.0000	58.6758	58.6758	0.0120	0.0000	58.9275
Total	**1.0588**	**6.8491**	**4.9749**	**7.5700e-003**	**0.1383**	**0.4208**	**0.5591**	**0.0602**	**0.4019**	**0.4621**	**0.0000**	**662.4613**	**662.4613**	**0.1316**	**0.0000**	**665.2241**

	ROG	NOx	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**	**51.56**	**0.00**	**20.84**	**55.63**	**0.00**	**14.05**	**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	0.1131	2.1000e-004	0.0168	1.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.1062	0.2210	0.3272	3.3000e-004	1.0000e-005	0.3364
Energy	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	3.8654	3.8654	1.3000e-004	5.0000e-005	3.8842
Mobile	7.4100e-003	0.0232	0.0889	1.8000e-004	0.0123	3.3000e-004	0.0127	3.3000e-003	3.0000e-004	3.6000e-003	0.0000	15.1417	15.1417	6.8000e-004	0.0000	15.1561
Waste						0.0000	0.0000		0.0000	0.0000	0.2497	0.0000	0.2497	0.0148	0.0000	0.5596
Water						0.0000	0.0000		0.0000	0.0000	0.0207	0.3734	0.3940	2.1400e-003	5.0000e-005	0.4556
Total	**0.1207**	**0.0248**	**0.1063**	**2.0000e-004**	**0.0123**	**1.4600e-003**	**0.0138**	**3.3000e-003**	**1.4300e-003**	**4.7300e-003**	**0.3766**	**19.6015**	**19.9781**	**0.0180**	**1.1000e-004**	**20.3919**

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	0.1131	2.1000e-004	0.0168	1.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.1062	0.2210	0.3272	3.3000e-004	1.0000e-005	0.3364
Energy	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	3.8654	3.8654	1.3000e-004	5.0000e-005	3.8842
Mobile	7.4100e-003	0.0232	0.0889	1.8000e-004	0.0123	3.3000e-004	0.0127	3.3000e-003	3.0000e-004	3.6000e-003	0.0000	15.1417	15.1417	6.8000e-004	0.0000	15.1561
Waste						0.0000	0.0000		0.0000	0.0000	0.2497	0.0000	0.2497	0.0148	0.0000	0.5596
Water						0.0000	0.0000		0.0000	0.0000	0.0207	0.3734	0.3940	2.1400e-003	5.0000e-005	0.4556
Total	**0.1207**	**0.0248**	**0.1063**	**2.0000e-004**	**0.0123**	**1.4600e-003**	**0.0138**	**3.3000e-003**	**1.4300e-003**	**4.7300e-003**	**0.3766**	**19.6015**	**19.9781**	**0.0180**	**1.1000e-004**	**20.3919**

	ROG	NOx	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	Grading	Grading	1/1/2015	5/18/2015	5	98	
2	Building Construction	Building Construction	5/19/2015	12/22/2016	5	418	
3	Architectural Coating	Architectural Coating	12/23/2016	9/28/2017	5	200	
4	Paving	Paving	9/29/2017	12/7/2017	5	50	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 36.75

Acres of Paving: 0

Residential Indoor: 55,351; Residential Outdoor: 18,450; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Graders	1	6.00	174	0.41
Grading	Rubber Tired Dozers	1	6.00	255	0.40
Grading	Tractors/Loaders/Backhoes	2	7.00	97	0.37
Building Construction	Cranes	1	6.00	226	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	125	0.42
Paving	Paving Equipment	1	8.00	130	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Excavators	1	6.00	162	0.38
Grading	Skid Steer Loaders	1	6.00	64	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	6	15.00	0.00	1,346.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	0.00	6.00	890.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	0.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	14.70	6.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Grading - 2015

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					0.2413	0.0000	0.2413	0.1238	0.0000	0.1238	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1365	1.4597	0.9720	1.0900e-003		0.0824	0.0824		0.0758	0.0758	0.0000	104.1630	104.1630	0.0311	0.0000	104.8160
Total	**0.1365**	**1.4597**	**0.9720**	**1.0900e-003**	**0.2413**	**0.0824**	**0.3236**	**0.1238**	**0.0758**	**0.1996**	**0.0000**	**104.1630**	**104.1630**	**0.0311**	**0.0000**	**104.8160**

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	0.0140	0.2250	0.1623	5.0000e-004	0.0115	3.5300e-003	0.0150	3.1600e-003	3.2400e-003	6.4000e-003	0.0000	46.4217	46.4217	3.8000e-004	0.0000	46.4296
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	3.5600e-003	5.1900e-003	0.0540	1.0000e-004	8.0500e-003	8.0000e-005	8.1400e-003	2.1400e-003	8.0000e-005	2.2100e-003	0.0000	8.1306	8.1306	4.8000e-004	0.0000	8.1408
Total	**0.0176**	**0.2302**	**0.2163**	**6.0000e-004**	**0.0196**	**3.6100e-003**	**0.0232**	**5.3000e-003**	**3.3200e-003**	**8.6100e-003**	**0.0000**	**54.5523**	**54.5523**	**8.6000e-004**	**0.0000**	**54.5704**

3.2 Grading - 2015

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					0.0941	0.0000	0.0941	0.0483	0.0000	0.0483	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1365	1.4597	0.9720	1.0900e-003		0.0824	0.0824		0.0758	0.0758	0.0000	104.1629	104.1629	0.0311	0.0000	104.8159
Total	**0.1365**	**1.4597**	**0.9720**	**1.0900e-003**	**0.0941**	**0.0824**	**0.1765**	**0.0483**	**0.0758**	**0.1241**	**0.0000**	**104.1629**	**104.1629**	**0.0311**	**0.0000**	**104.8159**

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	0.0140	0.2250	0.1623	5.0000e-004	0.0115	3.5300e-003	0.0150	3.1600e-003	3.2400e-003	6.4000e-003	0.0000	46.4217	46.4217	3.8000e-004	0.0000	46.4296
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	3.5600e-003	5.1900e-003	0.0540	1.0000e-004	8.0500e-003	8.0000e-005	8.1400e-003	2.1400e-003	8.0000e-005	2.2100e-003	0.0000	8.1306	8.1306	4.8000e-004	0.0000	8.1408
Total	**0.0176**	**0.2302**	**0.2163**	**6.0000e-004**	**0.0196**	**3.6100e-003**	**0.0232**	**5.3000e-003**	**3.3200e-003**	**8.6100e-003**	**0.0000**	**54.5523**	**54.5523**	**8.6000e-004**	**0.0000**	**54.5704**

3.3 Building Construction - 2015

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	0.2934	1.7575	1.2228	1.7900e-003		0.1210	0.1210		0.1169	0.1169	0.0000	151.9838	151.9838	0.0351	0.0000	152.7199
Total	**0.2934**	**1.7575**	**1.2228**	**1.7900e-003**		**0.1210**	**0.1210**		**0.1169**	**0.1169**	**0.0000**	**151.9838**	**151.9838**	**0.0351**	**0.0000**	**152.7199**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6200e-003	0.0580	0.0419	1.3000e-004	6.4800e-003	9.1000e-004	7.3900e-003	1.6800e-003	8.4000e-004	2.5100e-003	0.0000	11.9695	11.9695	1.0000e-004	0.0000	11.9716
Vendor	5.0100e-003	0.0506	0.0628	1.1000e-004	3.0000e-003	8.1000e-004	3.8100e-003	8.5000e-004	7.5000e-004	1.6000e-003	0.0000	9.8414	9.8414	8.0000e-005	0.0000	9.8431
Worker	0.0000	0.0000	0.0000	0.0000	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	**8.6300e-003**	**0.1086**	**0.1046**	**2.4000e-004**	**9.4800e-003**	**1.7200e-003**	**0.0112**	**2.5300e-003**	**1.5900e-003**	**4.1100e-003**	**0.0000**	**21.8109**	**21.8109**	**1.8000e-004**	**0.0000**	**21.8146**

3.3 Building Construction - 2015

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	0.2934	1.7575	1.2228	1.7900e-003		0.1210	0.1210		0.1169	0.1169	0.0000	151.9836	151.9836	0.0351	0.0000	152.7197
Total	**0.2934**	**1.7575**	**1.2228**	**1.7900e-003**		**0.1210**	**0.1210**		**0.1169**	**0.1169**	**0.0000**	**151.9836**	**151.9836**	**0.0351**	**0.0000**	**152.7197**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.6200e-003	0.0580	0.0419	1.3000e-004	6.4800e-003	9.1000e-004	7.3900e-003	1.6800e-003	8.4000e-004	2.5100e-003	0.0000	11.9695	11.9695	1.0000e-004	0.0000	11.9716
Vendor	5.0100e-003	0.0506	0.0628	1.1000e-004	3.0000e-003	8.1000e-004	3.8100e-003	8.5000e-004	7.5000e-004	1.6000e-003	0.0000	9.8414	9.8414	8.0000e-005	0.0000	9.8431
Worker	0.0000	0.0000	0.0000	0.0000	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	**8.6300e-003**	**0.1086**	**0.1046**	**2.4000e-004**	**9.4800e-003**	**1.7200e-003**	**0.0112**	**2.5300e-003**	**1.5900e-003**	**4.1100e-003**	**0.0000**	**21.8109**	**21.8109**	**1.8000e-004**	**0.0000**	**21.8146**

3.3 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	0.4197	2.6196	1.8752	2.8000e-003		0.1741	0.1741		0.1680	0.1680	0.0000	236.7619	236.7619	0.0520	0.0000	237.8547
Total	**0.4197**	**2.6196**	**1.8752**	**2.8000e-003**		**0.1741**	**0.1741**		**0.1680**	**0.1680**	**0.0000**	**236.7619**	**236.7619**	**0.0520**	**0.0000**	**237.8547**

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	4.9700e-003	0.0802	0.0608	2.0000e-004	6.8900e-003	1.1300e-003	8.0200e-003	1.8200e-003	1.0400e-003	2.8600e-003	0.0000	18.5184	18.5184	1.4000e-004	0.0000	18.5213
Vendor	6.8800e-003	0.0700	0.0909	1.7000e-004	4.6900e-003	1.0500e-003	5.7400e-003	1.3400e-003	9.7000e-004	2.3000e-003	0.0000	15.2299	15.2299	1.1000e-004	0.0000	15.2323
Worker	0.0000	0.0000	0.0000	0.0000	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	**0.0119**	**0.1502**	**0.1517**	**3.7000e-004**	**0.0116**	**2.1800e-003**	**0.0138**	**3.1600e-003**	**2.0100e-003**	**5.1600e-003**	**0.0000**	**33.7484**	**33.7484**	**2.5000e-004**	**0.0000**	**33.7536**

3.3 Building Construction - 2016

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	0.4197	2.6196	1.8752	2.8000e-003		0.1741	0.1741		0.1680	0.1680	0.0000	236.7616	236.7616	0.0520	0.0000	237.8544
Total	**0.4197**	**2.6196**	**1.8752**	**2.8000e-003**		**0.1741**	**0.1741**		**0.1680**	**0.1680**	**0.0000**	**236.7616**	**236.7616**	**0.0520**	**0.0000**	**237.8544**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	4.9700e-003	0.0802	0.0608	2.0000e-004	6.8900e-003	1.1300e-003	8.0200e-003	1.8200e-003	1.0400e-003	2.8600e-003	0.0000	18.5184	18.5184	1.4000e-004	0.0000	18.5213
Vendor	6.8800e-003	0.0700	0.0909	1.7000e-004	4.6900e-003	1.0500e-003	5.7400e-003	1.3400e-003	9.7000e-004	2.3000e-003	0.0000	15.2299	15.2299	1.1000e-004	0.0000	15.2323
Worker	0.0000	0.0000	0.0000	0.0000	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	**0.0119**	**0.1502**	**0.1517**	**3.7000e-004**	**0.0116**	**2.1800e-003**	**0.0138**	**3.1600e-003**	**2.0100e-003**	**5.1600e-003**	**0.0000**	**33.7484**	**33.7484**	**2.5000e-004**	**0.0000**	**33.7536**

3.4 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	3.2100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1100e-003	7.1200e-003	5.6500e-003	1.0000e-005		5.9000e-004	5.9000e-004		5.9000e-004	5.9000e-004	0.0000	0.7660	0.7660	9.0000e-005	0.0000	0.7679
Total	**4.3200e-003**	**7.1200e-003**	**5.6500e-003**	**1.0000e-005**		**5.9000e-004**	**5.9000e-004**		**5.9000e-004**	**5.9000e-004**	**0.0000**	**0.7660**	**0.7660**	**9.0000e-005**	**0.0000**	**0.7679**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Architectural Coating - 2016

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	3.2100e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.1100e-003	7.1200e-003	5.6500e-003	1.0000e-005		5.9000e-004	5.9000e-004		5.9000e-004	5.9000e-004	0.0000	0.7660	0.7660	9.0000e-005	0.0000	0.7679
Total	**4.3200e-003**	**7.1200e-003**	**5.6500e-003**	**1.0000e-005**		**5.9000e-004**	**5.9000e-004**		**5.9000e-004**	**5.9000e-004**	**0.0000**	**0.7660**	**0.7660**	**9.0000e-005**	**0.0000**	**0.7679**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Architectural Coating - 2017

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1037					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	**0.1359**	**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**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.4 Architectural Coating - 2017

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1037					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	**0.1359**	**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**

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	0.0000	0.0000	0.0000	0.0000	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	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.5 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	0.0296	0.3025	0.2258	3.3000e-004		0.0183	0.0183		0.0169	0.0169	0.0000	30.5644	30.5644	9.1900e-003	0.0000	30.7574
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0296**	**0.3025**	**0.2258**	**3.3000e-004**		**0.0183**	**0.0183**		**0.0169**	**0.0169**	**0.0000**	**30.5644**	**30.5644**	**9.1900e-003**	**0.0000**	**30.7574**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2700e-003	1.8800e-003	0.0195	5.0000e-005	3.5600e-003	3.0000e-005	3.5900e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	3.3449	3.3449	1.8000e-004	0.0000	3.3488
Total	**1.2700e-003**	**1.8800e-003**	**0.0195**	**5.0000e-005**	**3.5600e-003**	**3.0000e-005**	**3.5900e-003**	**9.5000e-004**	**3.0000e-005**	**9.8000e-004**	**0.0000**	**3.3449**	**3.3449**	**1.8000e-004**	**0.0000**	**3.3488**

3.5 Paving - 2017

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	0.0296	0.3025	0.2258	3.3000e-004		0.0183	0.0183		0.0169	0.0169	0.0000	30.5643	30.5643	9.1900e-003	0.0000	30.7573
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0296**	**0.3025**	**0.2258**	**3.3000e-004**		**0.0183**	**0.0183**		**0.0169**	**0.0169**	**0.0000**	**30.5643**	**30.5643**	**9.1900e-003**	**0.0000**	**30.7573**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.2700e-003	1.8800e-003	0.0195	5.0000e-005	3.5600e-003	3.0000e-005	3.5900e-003	9.5000e-004	3.0000e-005	9.8000e-004	0.0000	3.3449	3.3449	1.8000e-004	0.0000	3.3488
Total	**1.2700e-003**	**1.8800e-003**	**0.0195**	**5.0000e-005**	**3.5600e-003**	**3.0000e-005**	**3.5900e-003**	**9.5000e-004**	**3.0000e-005**	**9.8000e-004**	**0.0000**	**3.3449**	**3.3449**	**1.8000e-004**	**0.0000**	**3.3488**

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	7.4100e-003	0.0232	0.0889	1.8000e-004	0.0123	3.3000e-004	0.0127	3.3000e-003	3.0000e-004	3.6000e-003	0.0000	15.1417	15.1417	6.8000e-004	0.0000	15.1561
Unmitigated	7.4100e-003	0.0232	0.0889	1.8000e-004	0.0123	3.3000e-004	0.0127	3.3000e-003	3.0000e-004	3.6000e-003	0.0000	15.1417	15.1417	6.8000e-004	0.0000	15.1561

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	9.57	10.08	8.77	32,561	32,561
Total	9.57	10.08	8.77	32,561	32,561

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
Single Family Housing	14.70	5.90	8.70	40.20	19.20	40.60	86	11	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.534619	0.058604	0.178185	0.126004	0.038986	0.006286	0.016079	0.029769	0.002429	0.003158	0.003693	0.000543	0.001646

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	2.1931	2.1931	1.0000e-004	2.0000e-005	2.2017
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	2.1931	2.1931	1.0000e-004	2.0000e-005	2.2017
NaturalGas Mitigated	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6723	1.6723	3.0000e-005	3.0000e-005	1.6825
NaturalGas Unmitigated	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6723	1.6723	3.0000e-005	3.0000e-005	1.6825

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					
Single Family Housing	31338.5	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6723	1.6723	3.0000e-005	3.0000e-005	1.6825
Total		**1.7000e-004**	**1.4400e-003**	**6.1000e-004**	**1.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**1.6723**	**1.6723**	**3.0000e-005**	**3.0000e-005**	**1.6825**

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					
Single Family Housing	31338.5	1.7000e-004	1.4400e-003	6.1000e-004	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6723	1.6723	3.0000e-005	3.0000e-005	1.6825
Total		**1.7000e-004**	**1.4400e-003**	**6.1000e-004**	**1.0000e-005**		**1.2000e-004**	**1.2000e-004**		**1.2000e-004**	**1.2000e-004**	**0.0000**	**1.6723**	**1.6723**	**3.0000e-005**	**3.0000e-005**	**1.6825**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	7663.71	2.1931	1.0000e-004	2.0000e-005	2.2017
Total		**2.1931**	**1.0000e-004**	**2.0000e-005**	**2.2017**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	7663.71	2.1931	1.0000e-004	2.0000e-005	2.2017
Total		**2.1931**	**1.0000e-004**	**2.0000e-005**	**2.2017**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1131	2.1000e-004	0.0168	1.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.1062	0.2210	0.3272	3.3000e-004	1.0000e-005	0.3364
Unmitigated	0.1131	2.1000e-004	0.0168	1.0000e-005		1.0100e-003	1.0100e-003		1.0100e-003	1.0100e-003	0.1062	0.2210	0.3272	3.3000e-004	1.0000e-005	0.3364

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	0.0107					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0988					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2800e-003	8.0000e-005	6.2800e-003	1.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.1062	0.2041	0.3103	3.2000e-004	1.0000e-005	0.3192
Landscaping	3.4000e-004	1.2000e-004	0.0105	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0169	0.0169	2.0000e-005	0.0000	0.0172
Total	**0.1131**	**2.0000e-004**	**0.0168**	**1.0000e-005**		**1.0100e-003**	**1.0100e-003**		**1.0100e-003**	**1.0100e-003**	**0.1062**	**0.2210**	**0.3272**	**3.4000e-004**	**1.0000e-005**	**0.3364**

6.2 Area by SubCategory

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	0.0107					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0988					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	3.2800e-003	8.0000e-005	6.2800e-003	1.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.1062	0.2041	0.3103	3.2000e-004	1.0000e-005	0.3192
Landscaping	3.4000e-004	1.2000e-004	0.0105	0.0000		6.0000e-005	6.0000e-005		6.0000e-005	6.0000e-005	0.0000	0.0169	0.0169	2.0000e-005	0.0000	0.0172
Total	**0.1131**	**2.0000e-004**	**0.0168**	**1.0000e-005**		**1.0100e-003**	**1.0100e-003**		**1.0100e-003**	**1.0100e-003**	**0.1062**	**0.2210**	**0.3272**	**3.4000e-004**	**1.0000e-005**	**0.3364**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.3940	2.1400e-003	5.0000e-005	0.4556
Unmitigated	0.3940	2.1400e-003	5.0000e-005	0.4556

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.065154 / 0.0410754	0.3940	2.1400e-003	5.0000e-005	0.4556
Total		**0.3940**	**2.1400e-003**	**5.0000e-005**	**0.4556**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	0.065154 / 0.0410754	0.3940	2.1400e-003	5.0000e-005	0.4556
Total		**0.3940**	**2.1400e-003**	**5.0000e-005**	**0.4556**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.2497	0.0148	0.0000	0.5596
Unmitigated	0.2497	0.0148	0.0000	0.5596

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	1.23	0.2497	0.0148	0.0000	0.5596
Total		**0.2497**	**0.0148**	**0.0000**	**0.5596**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	1.23	0.2497	0.0148	0.0000	0.5596
Total		**0.2497**	**0.0148**	**0.0000**	**0.5596**

9.0 Operational Offroad

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

10.0 Vegetation

Appendix B

Geotechnical Study
Geotechnical Peer Review

GEOLOGIC & SOILS ENGINEERING EXPLORATION UPDATE

PROPOSED RESIDENCE, OFFICE, POOL & TERRACES

LOTS 4 & 6, TRACT13161

1184 LOMA LINDA DRIVE

BEVERLY HILLS, CALIFORNIA

FOR AQUILINI DEVELOPMENT AND CONSTRUCTION

IRVINE GEOTECHNICAL, INC. PROJECT NUMBER IC 12053-I

SEPTEMBER 4, 2014

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INTRODUCTION

This report has been prepared per our agreement and summarizes findings of Irvine Geotechnical's geologic and soils engineering exploration update performed on the site. The purpose of this study is to evaluate the nature, distribution, engineering properties, relative stability and geologic structure of the earth materials underlying the site with respect to the design and construction of the proposed project.

INTENT

It is the intent of this update report to assist in the design and completion of the proposed project. The recommendations are intended to reduce geotechnical risks affecting the project. The professional opinions and advice presented in this report are based upon commonly accepted standards and are subject to the general conditions described in the NOTICE section of this report.

EXPLORATION

The scope of this update report was determined from our initial site visit, site observations of grading and soil nail construction, review of previous geotechnical studies of the site, and consultation with the client and the design team. The preliminary plans prepared by McClean Design were considered prior to beginning work on this project. Exploration was conducted using techniques normally applied to this type of project in this setting. This report is limited to the area of the exploration and the proposed project as shown on the enclosed Geologic Map and cross sections. Conditions affecting portions of the property outside the area explored, are beyond the scope of this report.

Extensive subsurface exploration has been conducted on the subject and adjacent properties as part of investigation two slope failures that occurred as a consequence of the 2005 rainfall year. The exploration was performed sporadically between 2005 and 2010 with the aid of hand labor and bucket auger drill rigs. It included excavating more than 16 test pits and drilling four borings on the subject property. Samples of the earth materials were obtained and delivered to the soils engineering laboratory of Grover-Holingsworth and Associates for testing and analysis. Downhole observation of the earth materials was performed by the engineering geologist. Irvine Geotechnical also performed inspections of the soil nail reinforced slope and site grading to stabilize the southern portions of the site and offsite properties.

Office tasks for this update report included reviewing the previous laboratory testing, reviewing previous reports for the site, reviewing historical topographic maps and aerial photographs, preparing the Geologic Map and cross sections and performing engineering analysis. Earth materials exposed in the test pits and borings are described on the enclosed Log of Test Pits and Log of Borings. Appendix I contains a discussion of the laboratory testing procedures and results.

The proposed project, surface geologic conditions, and the location of the test pits are shown on the Geologic Map. Subsurface distribution of the earth materials, projected geologic structure, and the proposed project are shown on Sections A through H. Sections A, D, E, & F form the basis for the enclosed stability calculations.

RESEARCH - PREVIOUS WORK

The subject and adjacent property toward the west (1117 Sutton Way) has been previously explored by primarily by Grover-Hollingsworth and Associates (GHA) and secondarily by GeoSoils Consultants (GeoSoils). The work was performed to study the stability of the common slopes following two slope failures that occurred in 2005. The northerly of the slides was repaired following the advice and geotechnical supervision of GHA. This repair included: constructing a pile-supported retaining wall on the slope immediately below the existing structural deck at 1181 Loma Linda Drive; trimming the slide debris and weathered bedrock to a stable gradient; removing and replacing existing slide debris in the center of the slope with a compacted stabilization fill; and implementing drainage control. The topographic survey, which forms the basis of the enclosed Geologic Map, shows the as-built walls, contours, and drainage improvements constructed in 2010 and 2011.

The repair concept for the southerly slide recommended by (GHA) included regrading the slope at a 1½:1 gradient as a compacted stabilization fill. Pile-supported retaining walls were required along the toe of slope to minimize the amount of earth work and to avoid

grading onto the 1130 Sutton Way property. This report was deemed too costly by the affected property owners.

Geosoils was retained in 2011 to perform additional exploration in order to develop an alternative stabilization plan for the southerly slide area. Geosoils performed additional exploration and laboratory testing. The Geosoils repair concept included trimming the affected slope back at a 1.5:1 gradient. The 1.5:1 trim removed a thick section of earth near the center of the trim and feathered out to nothing along the margins. The 1.5:1:1 trim extends significantly farther upslope than the GHA stabilization fill and requires the export of a large amount of earth.

Irvine Geotechnical was retained in 2012 to study an alternative repair concept of trimming the lower portion of the slopes to 1½:1 gradient and then transitioning from the trim to meet the 610-foot contour line to maintain the prominent natural "knoll." The transition slope was to be reinforced with soil nails and a shotcrete facing to achieve the required stability factor of 1.5. It is our understanding that this repair option is being designed for formal review and permitting by the City of Beverly Hills.

The following reports were reviewed:

Reports by Grover-Hollingsworth and Associates, Inc.:

Geologic and Soils Engineering Exploration and Plan Review, Proposed South Slope Repair and Retaining Walls, Lots 6 and 8, and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated August 20, 2008;

Geologic and Soils Engineering Update, Plan Review and Revised Recommendations, Proposed South Slope Repair and Retaining Walls, Lots 6 and 8, and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated February 13, 2009;

Geologic and Soils Engineering Update, Plan Review and Revised Recommendations, Proposed Slope Repair, dated September 26, 2006;

Additional Geotechnical Comments, Proposed Slope Repair, Lots 6 and 8 and Portions of Lots 4 and 5, Tract 13101, 1184 Lorna Linda Drive and 1117 Sutton Way, Beverly Hills, California, July 29,2009;

As-Built Friction Pile, Geologic and Compaction Report, Retaining Wall; and Slope Repair, Lots 6 and 8 and Portions of Lots 4 and 5, Tract 13101, 1184 Lorna Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated June 9, 2011.

Additional Geologic Exploration, Proposed Remedial South Slope Failure Repair, Lots 3, 4 and 5, Tract 13101; 1184 Lorna Linda Drive and 1117 and 1130 Sutton Way, Beverly Hills, California, dated June 13, 2011; and

Additional Geologic Exploration and Slope Stability Analyses, Proposed Remedial South Slope Failure Repair, Lots 3, 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 and 1130 Sutton Way, Beverly Hills, California, dated August 9, 2011

Report by GeoSoils Consultants, Inc.:

Geologic and Geotechnical Engineering Study of Existing Slope Failure, Lots 3, 4, and 8, Tract 13101, 1184 Loma Linda Drive, 1117 and 1130 Sutton Way, Beverly Hills, California, dated December 7, 2011

Report by Irvine Geotechnical, Inc.:

Geologic and Soils Engineering Exploration Update, Proposed Soil Nail Slope Stabilization Alternative, Lots 4 and 6, Tract 13161 / Lot 8, Tract 13161 / Portion of Lot 3, Tract 13161, 1184 & 1191 Loma Linda Drive / 1117 Sutton Way / 1130 Sutton Way, Beverly Hills, California, dated July 24, 2012;

Geologic & Soils Engineering Exploration Update, Proposed Residence, Pool & Terraces, Lots 4 & 6, Tract131611184 & 1193 Loma Linda Drive, Beverly Hills, California, dated September 27, 2012;

Addendum Geologic and Soils Engineering Report, Proposed Soil Nail Slope Stabilization, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated November 6, 2012;

Geologic and Soils Engineering Report, As-Built Soil Nail Slope Stabilization, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated December 26, 2013; and

Supplemental Geologic and Soils Engineering Report, Proposed Deck Shoring and Stabilization Retaining Wall, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated July 23, 2014

Statement of Responsibility

Irvine Geotechnical and Jon A. Irvine has reviewed referenced reports by GHA. The geologic interpretation and the results of laboratory testing appear to be reasonable for this area of the Santa Monica Mountains. Irvine Geotechnical and the undersigned engineer concurs with the findings of GHA and accepts professional responsibility for utilizing their data, which form the basis for the design recommendations contained in this report.

PROPOSED PROJECT

Information concerning the proposed project was provided by the client and the design team. The preliminary plans prepared by McClean Design were a guide for preparing this update report. It is proposed to redevelop the site with a new, single-family residence, office, pools, terraces and an entry court. The structural deck will be modified to accommodate the new design. The main residential structure will consist of two stories of living space over a subterranean level of basement and parking. The south and east sides of the lower basement level will open onto terraces and pools. Retaining walls on the order of 10 to 12 feet high are proposed to support excavations for the basement level and create terraces.

As part of the proposed project the southern portion of Loma Linda Drive has been vacated, and a new hammer head is being created on the northern portion of the site. The City sewer and storm drain structures will also be modified.

SITE DESCRIPTION

The subject property consists of two graded and developed hillside lots, near the base of the south flank of the Santa Monica Mountains, in the City of Beverly Hills, California. It is located at the southern terminus of the Loma Linda Drive, west of Coldwater Canyon Drive, southeast of Franklin Canyon Reservoir, and approximately ½ mile north of Sunset Boulevard. At one time, the site was developed with a single-family residence, carport, deck, and a guest house. The residence was located along the west side of the street and situated on the central portion of the building pad. The detached carport was present along the northern property line. The structural deck remains and cantilevers over the slope west and south of the former residence. The guest house was present south of the cul-de-sac of the street, on a lower pad. The structures were torn down in 2012 and 2013 to stabilize the site with grading and soil nail reinforcing.

Topographically, the site is situated on the crest, nose and flanks of a south-trending ridge. This main ridge separates Coldwater Canyon on the east from Franklin Canyon on the west. Past grading on the site consisted of cutting and filling along the crest and flanks of the ridge to create level building sites and walkways. Offsite development toward the west, located at the terminus of Sutton Way, included creating significant cuts into the nose and flanks of the ridge to create building pads and access drives. The lower cuts were created up to 25 feet.

Slopes descend from the pad at the ridge top toward the east and southeast up to 130 feet in elevation to graded and developed pads accessed from Coldwater Canyon Drive. Slopes descend toward the west about 90 feet in elevation to graded pads accessed from Sutton Way. Slope gradients on the site range from flatter than 4:1 to as steep as 1:1. Near vertical slopes are present offsite toward the west. Recent grading associated with the repair of the northwesterly slide included manufacturing cut and fill slopes at a 1½:1

gradient. Southerly slopes were supported with soil nails and flattened as part of the repair.

Vegetation on the pad is sparse. Vegetation on the slopes consists of mature trees and an assemblage of cultured plants, grasses, weeds and chaparral. Surface drainage on the majority of the property is poor and generally is by sheet flow runoff down the contours of the land toward the east, south and west. The northerly slide repair included terrace drains, benches and drain inlets. Significant drainage improvements are planned as part of the southerly slope repair/stabilization.

GROUNDWATER

Groundwater was not reported during exploration by GHA. Seasonal fluctuations in groundwater levels may occur due to variations in climate, irrigation, and other factors not evident at the time of the exploration. Fluctuations in groundwater levels may also occur across the site.

EARTH MATERIALS

Fill

Fill, associated with previous episodes of site grading, underlies portions of the site. The thickest fill deposits are associated with the grading and construction of the 2010-2011 northerly slide repair. Fill was placed to replace slide debris, to restore drill and construction roads and to backfill the retaining walls. The thickness of recently placed compacted fill ranges from a few feet up to 10 feet. Fill was also placed within an abandoned pool located between the residence and the guest house. It is not known if this fill was compacted and if the pool shell was removed. Fill blanketing the remainder of the site is generally less than 4 to 6 feet thick. The fill consists of silty sand and gravelly sand that is mottled grey, brown and tan, slightly moist to moist and slightly dense to compacted.

Soil - Colluvium

Natural residual and colluvial soils blanket the bedrock on the natural slopes. The soil layer is in the order of 2 to 7 feet thick and consists of silty and clayey sand and gravel that is grey-brown, moist and loose to medium dense.

Bedrock

Bedrock underlying the site and encountered in the test pits and borings consists of slate of the Santa Monica Formation as mapped by T.W. Dibblee, (*Geologic Map of the Santa Monica Mountains and Vicinity,* CD Compilation, 2001). The bedrock is well exposed in cuts along Sutton Way and the offsite from the southwesterly property line. Bedrock was also exposed in trims for the northerly slide repair. The bedrock is grey-brown to orange-brown, moderately hard to hard, thinly to thickly foliated, and fractured. The upper two to seven feet of bedrock is highly fractured and weathered, The weathered bedrock becomes less weathered and fractured with depth.

GEOLOGIC STRUCTURE

The bedrock described is common to this area of the Santa Monica Mountains. The predominant geologic structure strikes northwest and dips moderately to steeply toward the southwest. The bedrock near the southwestern portion of the site is locally folded, contorted and sheared by faulting. Most of the contorted and sheared bedrock will be removed and/or trimmed to a flatter gradient as part of the repair of the southerly slide. The dip of the remaining foliation is generally steeper than the slope angle, which is favorable for slope stability. Recommendations to eliminate or support any unfavorably oriented bedding are presented in the CONCLUSIONS AND RECOMMENDATIONS section of this report.

GENERAL SEISMIC CONSIDERATIONS

Southern California is located in an active seismic region and numerous known and undiscovered earthquake faults are present in the region. Hazards associated with fault rupture and earthquakes include direct affects such as strong ground shaking and ground rupture, as well as secondary affects such as liquefaction, landsliding and lurching. The United States Geological Survey (USGS), California Geologic Survey (CGS), Southern California Earthquake Center (SCEC), private consultants and universities have been studying earthquakes in southern California for several decades. Early studies were directed toward earthquake prediction and early warning of strong ground shaking. Research and practice have shown that earthquake prediction is not practical or sufficiently accurate to benefit the general public. Also, several recent and damaging earthquakes have occurred on faults that were unknown prior to rupture. Current standards and the California Building Code call for earthquake resistant design of structures as opposed to prediction.

Alquist-Priolo Fault Rupture Hazard Study Zone

California faults are classified as active, potentially active or inactive. Faults from past geologic periods of mountain building, but do not display any evidence of recent offset are considered "inactive" or "potentially active." Faults that have historically produced earthquakes or show evidence of movement within the Holocene (past 11,000 years) are considered "active faults." Active faults that are capable of causing large earthquakes may also cause ground rupture. The Alquist-Priolo Act of 1971 was enacted to protect structures from hazards associated with fault ground rupture. No known active faults cross the subject property and the site is not located within an Alquist-Priolo Fault Rupture Hazard Study Zone. The ground rupture hazard at the site is considered nil.

Building Code Seismic Coefficients

Seismic design parameters within the Building Code include amplification of the seismic forces on the structure depending on the soil type, distance to seismic source and intensity of shaking. The purpose of the code seismic design parameters is to prevent collapse of structures and loss of life during strong ground shaking. Cosmetic damage should be expected.

The site is located within two kilometers of a known seismic source (Hollywood fault). The following table lists the applicable seismic coefficients for the 2013 Building Code.

SEISMIC COEFFICIENTS (2013 California Building Code)		
Latitude = 34.09273°N Longitude = 118.41031°W	Short Period (0.2s)	One-Second Period
Earth Materials and Site Class from Table 1613.5.2 and Section 1613.5.2	Bedrock - C	
Seismic Design Category from Table 1613.5.6(1) and 1613.5.6(2)	E	
Spectral Accelerations from Figures 1613.5 (1) through 1613.5(14)	S_s = 2.423 (g)	S_1 = 0.877 (g)
Site Coefficients from Tables 1613.5.3 (1) and 1613.5.3 (2)	F_A = 1.0	F_V = 1.3
Spectral Response Accelerations from Equations 16-36 and 16-37	S_{MS} = 2.423 (g)	S_{M1} = 1.140 (g)
Design Accelerations from Equations 16-38 and 16-39	S_{DS} = 1.615 (g)	S_{D1} = 0.760 (g)

The computed PGA_M for this site is 0.94g.

Seismic Hazards

The principal seismic hazard to the subject property and proposed project is strong ground shaking from earthquakes produced by local faults. Modern, well-constructed buildings are designed to resist ground shaking through the use of shear panels, moment-resisting frames and reinforcement. Additional precautions may be taken to protect personal property and reduce the chance of injury, including strapping water heaters and securing furniture and appliances. It is likely that the subject property will be shaken by future earthquakes produced in southern California.

Seismic Hazard Zones

The California State Legislature enacted the Seismic Hazards Mapping Act of 1990, which was prompted by damaging earthquakes in California, and was intended to protect public safety from the effects of strong ground shaking, liquefaction, landslides, and other earthquake-related hazards. The Seismic Hazards Mapping Act requires that the State Geologist delineate various "seismic hazards zones." The maps depicting the zones are released by the California Geological Survey.

The Seismic Hazards Mapping Act requires a site investigation by a certified engineering geologist and/or civil engineer with expertise in geotechnical engineering, for projects sited within a hazard zone. The investigation is to include recommendations for a "minimum level of mitigation" that should reduce the risk of ground failure during an earthquake to a level that does not cause the collapse of buildings for human occupancy. The Seismic Hazards Mapping Act does not require mitigation to a level of no ground failure and/or no structural damage.

Seismic Hazard Zone delineations are based on correlation of a combination of factors, including: surface distribution of soil deposits; physical relief; depth to historic high

groundwater; shear strength of the soils; and occurrence of past seismic deformation. The subject property is located within the United States Geologic Survey, Beverly Hills Quadrangle. Seismic hazards within the Beverly Hills Quadrangle were evaluated by the CGS in their report, *"Seismic Hazard Zone Report for the Beverly Hills 7.5-minute Quadrangle, Los Angeles County, California, Seismic Hazard Zone Report* 023*."* According to the Seismic Hazard Zones Map, the subject property is **not** within an area that has been subject to, or may be subject to earthquake induced ground deformation.

SLOPE STABILITY

Gross Stability

The most critical slopes (highest and steepest with respect to the geologic structure) affecting the subject property include the westerly slopes between the pad (ridge top) and the properties along Sutton Way. These critical slopes also coincide with the areas of previous instability. Sections A, D, E, and F were prepared to show the critical slopes. Sections A and F coincide with the repaired northerly slide and Sections D and E coincide with the southerly slide and the proposed trim/soil nail slope.

Shear strengths of the earth materials were adopted from the GHA reports. The shear strength of the bedrock was assigned a phi angle/cohesion value of 42 degrees/500 psf. Foliation planes were assigned a phi angle/cohesion value strength of 38 degrees/260 psf. The weathered/fractured bedrock has a phi angle/cohesion value strength of 32 degrees/180 psf. The soil shear strength is a phi angle/cohesion value of 25 degrees/150 psf. Because of the layered and foliated nature of the bedrock, an anisotropic function was defined. For the southerly slide and the proposed trim/soil nail slope, potential failure surfaces between 30 and 60 degrees use the shear strength of the foliation. Consistently steeper foliation is present for the northerly slopes and potential failure surfaces between

40 and 60 were assigned a foliation shear strength. All other potential failure angles use the bedrock strength.

The slope stability software (SLIDE Version 6.018 developed by ROCSCIENCE, Inc.) has the ability to model soil nails within layered slopes. All of the values assigned to the soil nails are based upon similar, nearby projects and have been factored. The nails were assumed to all be 20 feet long, with an inclination from the horizontal of 15 degrees. The nails were assumed to be 1.0 inches in diameter and Grade-75 steel. The nails were assumed to be spaced on 7-foot centers, both vertically and horizontally. The allowable bond strength was assumed to be 10 psi (2.262 kips/ft for a 6-inch diameter grouted nail) and . The bearing plate capacity at the slope face was assumed to be 20 kips.

The global stability of the proposed soil nail slope configurations shown in Sections D and E was calculated using a computerized version of Spencer's method. Failures through, beneath and behind the soil nail slope and 1.5:1 trim were checked. The computed gross stability of Sections A and F is also greater than 1.5. The analysis shows that the subject property and existing and proposed slopes will be grossly stable with a factor of safety in excess of 1.5. The calculations use the shear tests of samples believed to represent the weakest earth materials encountered during exploration. The cross sections and geologic structure used are the most critical for the slopes analyzed.

The seismic stability of the site was calculated in conformance with Southern California Earthquake Center (SCEC), 2002, "*Recommended Procedures for Implementation of DMG Special Publication 117* and California Geological Survey (CGS), Special Publication 117A, 2008 "*Guidelines for Evaluating and Mitigating Seismic Hazards in California.*" Using the screening procedure and for a maximum allowable displacement of 5 cm, the horizontal acceleration (Keq) is 0.235g.

The analysis shows that the subject property and existing slopes are grossly stable with a factor of safety in excess of 1.1 under seismic conditions.

Surficial Stability

Based upon the enclosed calculations, it is reasonable to assume that the graded and trimmed slopes are or will be surficially stable. Natural slopes have been historically unstable. Significant drainage improvements are recommended to improve the surficial stability of the site. Also, drainage benches and debris fences will be implemented to protect the downslope properties toward the west.

CONCLUSIONS AND RECOMMENDATIONS

General Findings

The conclusions and recommendations of this update report are based upon extensive subsurface exploration and testing, field geologic mapping, research of available records, consultation, years of experience observing similar properties in similar settings and review of the development plans. It is the finding of Irvine Geotechnical that construction of the proposed project is feasible from a geologic and soils engineering standpoint provided the advice and recommendations contained in this report are included in the plans and are implemented during construction.

The recommended bearing material is the slate bedrock. The existing fill, soil and weathered/fractured bedrock are not recommended for foundation or slab support. The recommended bearing material will be exposed at the elevation of the majority of the basement/garage. Conventional foundations may be used to support portions of the proposed structures that are not located adjacent to slopes and/or over deep fill and soil.

Deepened foundations consisting of friction piles tied with grade beams are recommended to support portions of proposed structures on or near slopes.

SITE PREPARATION

Surficial materials consisting of fill, soil and colluvium are present on portions of the site. Remedial grading is recommended to improve site conditions for support of any slabs and/or where fill is to be placed near existing grade.

General Grading Specifications

The following guidelines may be used in preparation of the grading plan and job specifications. Irvine Geotechnical would appreciate the opportunity of reviewing the plans to insure that these recommendations are included. The grading contractor should be provided with a copy of this report.

A. The site should be prepared to receive compacted fill by removing all vegetation, debris, existing fill, soil, and the entire pool shell. The exposed excavated area should be observed by the soils engineer or geologist prior to placing compacted fill. Specific removal depths can be found in the "Site Preparation" section of this report. The exposed grade should be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted to 90 percent of the maximum density.

B. Fill, consisting of soil approved by the soils engineer, shall be placed in horizontal lifts and compacted in six inch layers with suitable compaction equipment. The excavated onsite materials are considered satisfactory for reuse in the controlled fills. Any imported fill shall be observed by the soils engineer prior to use in fill areas. Rocks larger than six inches in diameter shall not be used in the fill.

C. The fill shall be compacted to at least 90 percent of the maximum laboratory density for the material used. Where cohesionless soil (less than 15 percent finer than 0.005 millimeters) is used for fill, it shall be compacted to a minimum of 95 percent relative compaction. The fill should be placed at a

moisture content that is at or within 3 percent over optimum. The maximum density and optimum moisture content shall be determined by ASTM D 1557-09 or equivalent.

D. Field observation and testing shall be performed by the soils engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until 90 percent compaction is obtained. One compaction test is required for each 500 cubic yards or two vertical feet of fill placed.

Fill Slopes

Fill slopes may be constructed at a 2:1 gradient and should be keyed and benched into bedrock or supported laterally by retaining walls. Keyways should be a minimum of 12 feet wide and 3 feet into bedrock as measured on the downhill side. The base of all fills and the axis of drainage courses require subdrains.

Excavation Characteristics

The test pits and borings did not encounter hard, cemented bedrock. Excavation difficulty is a function of the degree of weathering and amount of fracturing within the bedrock. The bedrock generally becomes harder and more difficult to excavate with increasing depth. Hard cemented layers are also known to occur at random locations and depths and may be encountered during foundation excavation. Should a hard cemented layer be encountered, coring or the use of jackhammers may be necessary.

Caving zones may be encountered. Casing or special drilling techniques may be required should caving be encountered.

SWIMMING POOLS

The proposed swimming pools may be constructed using a free-standing design. The pool should derive support entirely from the bedrock. This may will require over-excavation, the use of a footing, or the use of a deepened foundation system. Pool walls supporting soil should also capable of supporting an inward soil pressure of 35 pcf.

FOUNDATION DESIGN

General Conditions

The following foundation recommendations are minimum requirements. The structural engineer may require footings that are deeper, wider, or larger in diameter, depending on the final loads.

Spread Footings

Continuous and/or pad footings may be used to support the proposed structures provided they are founded in bedrock. Continuous footings should be a minimum of 12 inches in width. Pad footings should be a minimum of 24 inches square. The following chart contains the recommended allowable design parameters.

Bearing Material	Minimum Embedment Depth of Footing (Inches)	Vertical Bearing (psf)	Coefficient of Friction	Passive Earth Pressure (pcf)	Maximum Earth Pressure (psf)
Bedrock	12	4,000	0.50	400	6,000

The bearing value shown above is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces. When combining passive and friction for lateral resistance, the passive component should be reduced by one third. For bearing calculations, the weight of the concrete in the footing may be neglected.

The on-site soils are non-expansive. All continuous footings should be reinforced following the recommendations of the structural engineer. It is recommended that continuous footings be reinforced with a minimum of four #4 steel bars; two placed near the top and two near the bottom of the footings. Footings should be cleaned of all loose soil, moistened, free of shrinkage cracks and approved by the geologist and geotechnical engineer prior to placing forms, steel or concrete.

Footings should not be supported by retaining wall backfill or derive support within the active wedge behind the retaining wall. Foundations adjacent to basements should be deepened below a 1:1 plane projected up from the base of the retaining wall. Alternatively, foundations adjacent to basements may be designed as a grade beam and structurally connected to the wall.

Deepened Foundations - Friction Piles

Drilled, cast-in-place concrete friction piles are recommended to support portions of the proposed structures located on or adjacent to slopes. Piles should be a minimum of 24 inches in diameter and a minimum of 10 feet into bedrock. Piles may be assumed fixed at 4 feet into bedrock. For the vertical forces, the piles may be designed for a skin friction of 800 pounds per square foot for that portion of pile in contact with the bedrock. The friction value is for the total of dead and frequently applied live loads and may be increased by one third for short duration loading, which includes the effects of wind or seismic forces.

Lateral Design

The existing fill and soil on the site are subject to downhill creep. Pile shafts are subject to lateral loads due to the creep forces. Pile shafts should be designed for a lateral load of 1,000 pounds per linear foot for each foot of shaft exposed to the existing fill and soil.

Resistance to lateral loading may be provided by passive earth pressure within the bedrock. Passive earth pressure may be computed as an equivalent fluid having a density of 400 pounds per cubic foot. The maximum allowable earth pressure is 6,000 pounds per square foot. For design of isolated piles, the allowable passive and maximum earth pressures may be increased by 100 percent. Piles spaced more than 2½ pile diameters on center may be considered isolated.

All piles should be designed to resist lateral forces in conformance with Section 1810.2 of the Building Code. This may require tying the piles in two horizontal directions with grade beams, structural slabs or pool shells.

Foundation Settlement

Settlement of the foundation system is expected to occur on initial application of loading. A settlement of ¼ to ½ inch may be anticipated. Differential settlement should not exceed ¼ inch.

Foundation Setback

The Building Code requires that foundations be a sufficient depth to provide horizontal setback from a descending slope steeper than 3:1. The required setback is ⅓ the height of the slope with a minimum of five feet and a maximum of 40 feet measured horizontally from the base of the foundation to the slope face. The setback for pools is half that of

other structures or H/6 with a maximum of 20 feet. On the subject property, the slope descends below the building area 90 to 120 feet. The code required clearance is 30 to 40 feet for structures and 15 to 20 feet for pools.

Toe of Slope Clearance

The Building Code requires a level yard setback between the toe of an ascending slope and the rear wall of the proposed structure of one half the slope height to a maximum 15 feet clearance for slopes steeper than 3:1. For retained slopes, the face of the retaining wall is considered the toe of the slope.

RETAINING WALLS

General Design - Static Loading

Cantilevered retaining walls up to 12 feet high that support bedrock and approved retaining wall backfill, may be designed for an equivalent fluid pressures shown in the following table. Restrained walls that are pinned at the top by a non-yielding floor should be designed for an at-rest earth pressure. The recommended design at-rest earth pressure on restrained basement walls is an equivalent fluid pressure of 50 pcf.

DESIGN EARTH PRESSURES - CANTILEVERED WALLS

Surface Slope Gradient	Design EFP
Level	35
3:1	38
2:1	43
1.5:1	55

Seismic Surcharge

Cantilevered retaining walls higher than 6 feet, need to be considered for seismic loading for the Maximum Considered Earthquake. The recommended seismic surcharge on cantilevered retaining walls higher than 6 feet is an equivalent fluid pressure of 15 pcf. The seismic surcharge should be applied as a conventional fluid. Restrained retaining walls need not be designed for a seismic surcharge.

Surcharge Loading

Retaining walls that are surcharged by traffic and/or structural loads should be designed to withstand the surcharge. For traffic within 10 feet of retaining walls, the recommended traffic surcharge is 100 psf, distributed evenly over the upper 10 feet of wall. Irvine Geotechnical would be happy to assist the structural engineer in evaluating the surcharge pressure and the point of application from concentrated structural loads.

Subdrain

The recommended design earth pressures assume a free-draining backfill and no buildup of hydrostatic pressures. Retaining walls should be provided with a subdrain or weepholes covered with a minimum of 12 inches of ¾ inch crushed gravel. Not all subdrain systems and pipes are approved by all Building Departments. It is recommended that the Building Department be consulted when using non-conventional systems. The subdrain system should discharge to the atmosphere or to an engineered sump via gravity. Surface drains should not be connected to the subdrain system.

Backfill

Retaining wall backfill should be compacted to a minimum of 90 percent of the maximum density as determined by ASTM D 1557-09. Where access between the retaining wall and the temporary excavation prevents the use of compaction equipment, retaining walls should be backfilled with ¾ inch crushed gravel to within 2 feet of the ground surface. Where the area between the wall and the excavation exceeds 18 inches, the gravel must be vibrated or wheel-rolled, and tested for compaction. The upper 2 feet of backfill above the gravel should consist of a compacted fill blanket to the surface. Retaining wall backfill should be capped with a paved surface drain or a concrete slab.

Foundation Design

Retaining wall footings may be sized per the FOUNDATION DESIGN section of this report.

Freeboard

Retaining walls surcharged by a sloping condition should be provided with a minimum of 12 inches of freeboard for slough protection. An open "V" drain should be placed behind the wall so that all upslope flows are directed around the structure to the street.

TEMPORARY EXCAVATIONS

Temporary excavations will be required to construct various aspects of the proposed project. The excavations will range from 2 feet for shallow foundations to 14 feet for the basement. Where not surcharged by existing footings or structures, excavations within existing fill, soil and colluvium may be made up to a vertical height of 3½ feet. Where vertical excavations in the existing fll and soil will exceed 3½ feet in height, the upper portion should be trimmed to 1:1 (45 degrees). Where not surcharged by existing footings, structures or construction

traffic, the favorably oriented bedrock is capable of maintaining vertical excavations up to 8 feet per the enclosed calculations. Where vertical excavations in the favorable bedrock exceed 8 feet in height, the upper portion should be trimmed to 1:1 (45 degrees). Excavations that unsupported foliation planes within the bedrock should be trimmed along the lowest unsupported plane (40 to 65 degrees). It is likely that southwest and west-facing vertical excavation into bedrock will unsupport foliation. It appears that there is space on the site to safely lay back excavations if needed without the need of temporary shoring.

A representative of the geotechnical engineer or geologist should be present during grading to see temporary slopes. All excavations should be stabilized within 30 days of initial excavation. Water should not be allowed to pond on top of the excavations nor to flow toward them. No vehicular surcharge should be allowed within three feet of the top of the cut.

CORROSION

The pH of the soils is near neutral and not a factor in corrosion. The chloride content is low and not a factor in design. The sulfate content is negligible and not a factor in concrete design. The resistivity indicates that the soils are corrosive to ferrous metals.

FLOOR SLABS & CONCRETE DECKING

Floor slabs and concrete decking should be cast over bedrock or approved compacted fill. In areas of existing fill and soil, the ground should be prepared and the fill placed in conformance with the SITE PREPARATION section of this report.

Slabs should be at least 4 inches thick and reinforced with a minimum of #4 bars on 16 inch centers, each way. Care should be taken to cast the reinforcement near the center of the slab. Slabs which will be provided with a floor covering should be protected by a

polyethylene plastic vapor barrier. The barrier should be covered with a thin layer of sand, about two inches, to prevent punctures and aid in the concrete cure.

Decking that caps a retaining wall should be provided with a flexible joint to allow for the normal one to two percent deflection of the retaining wall. Decking that does not cap a retaining wall should not be tied to the wall. The space between the wall and the deck will require periodic caulking to prevent moisture intrusion into the retaining wall backfill.

It should be noted that cracking of concrete floor slabs is very common during curing. The cracking occurs because concrete shrinks as it dries. Crack control joints which are commonly used in exterior decking to control such cracking are normally not used in interior slabs. The reinforcement recommended above is intended to reduce cracking and its proper placement is critical to the slab's performance. The minor shrinkage cracks which often form in interior slabs generally do not present a problem when carpeting, linoleum, or wood floor coverings are used. The slab cracks can, however, lead to surface cracks in brittle floor coverings such as ceramic tile. A mortar bed or slip sheet is recommended between the slab and tile to limit, the potential for cracking.

Slabs should be protected with a polyethylene plastic vapor barrier placed beneath the slab. This barrier is intended to prevent the upward migration of moisture from the subgrade soils through the porous concrete slab. It should be noted that vapor barriers are penetrated by any number of elements including water lines, drain lines, and footings. These barriers are therefore not completely watertight. It is recommended that a surface seal be placed on slabs which will receive a wood floor. The floor installer should be consulted regarding an adequate product.

DRAINAGE

Control of site drainage is important for the performance of the proposed project. Pad and roof drainage should be collected and transferred to the street or approved location in non-erosive drainage devices. Drainage should not be allowed to pond on the pad or against any foundation or retaining wall. The 2013 California Building Code specifies that the grade within 10 feet of the foundation be sloped to drain at a 5 percent gradient away from the building. Drainage should not be allowed to flow uncontrolled over any descending slope. Planters located within retaining wall backfill should be sealed to prevent moisture intrusion into the backfill. Drainage control devices require periodic cleaning, testing and maintenance to remain effective.

WATERPROOFING

Interior and exterior retaining walls are subject to moisture intrusion, seepage, and leakage and should be waterproofed. Waterproofing paints, compounds, or sheeting can be effective if properly installed. Equally important is the use of a subdrain that daylights to the atmosphere. The subdrain should be covered with ¾ inch crushed gravel to help the collection of water. Yard areas above the wall should be sealed or properly drained to prevent moisture contact with the wall or saturation of wall backfill.

PLAN REVIEW

Formal plans ready for submittal to the Building Department should be reviewed by Irvine Geotechnical. Any change in scope of the project may require additional work.

SITE OBSERVATIONS DURING CONSTRUCTION

Please advise Irvine Geotechnical at least 24 hours prior to any required site visit. The agency approved plans and permits should be at the jobsite and available to our representative. The project consultant will perform the observation and post a notice at the jobsite of his visit and findings. This notice should be given to the agency inspector.

During construction, a number of reviews by this office are recommended to verify site geotechnical conditions and conformance with the intent of the recommendations for construction. Although not all possible geotechnical observation and testing services are required by the reviewing agency, the more site reviews requested, the lower the risk of future problems. It is recommended that all grading, foundation, and drainage excavations be seen by a representative of the geotechnical engineer PRIOR to placing fill, forms, pipe, concrete, or steel. Any fill which is placed should be approved, tested, and verified if used for engineering purposes. Temporary excavations should be observed by a representative of the Geotechnical Engineer.

The following site reviews are advised or required. Should the observations reveal any unforeseen hazards, the geologist/engineer will recommend treatment.

Pre-construction meeting	Advised
Temporary excavations	Required
Bottom excavation for removals	Required
Keyway excavations and benching	Required
Subdrains	Required
Compaction of fill	Required
Foundation excavations	Required
Slab subgrade moisture barrier membrane	Advised
Slab subgrade rock placement	Advised
Slab steel placement	Advised
Subdrain and rock placement behind retaining walls	Required
Compaction of retaining wall backfill	Required
Compaction of utility trench backfill	Advised

Irvine Geotechnical requires at least a 24 hour notice prior to any required site visits. The approved plans and building/grading permits should be on the job and available to the project consultant.

FINAL INSPECTION

Many projects are required by the agency to have final geologic and soils engineering reports upon completion of the grading.

CONSTRUCTION SITE MAINTENANCE

It is the responsibility of the contractor to maintain a safe construction site. When excavations exist on a site, the area should be fenced and warning signs posted. All pile excavations must be properly covered and secured. Soil generated by foundation and subgrade excavations should be either removed from the site or properly placed as a certified compacted fill. Soil must not be spilled over any descending slope. Workers should not be allowed to enter any unshored trench excavations over five feet deep.

GENERAL CONDITIONS

This report and the exploration are subject to the following NOTICE. Please read the NOTICE carefully, it limits our liability.

NOTICE

In the event of any changes in the design or location of any structure, as outlined in this report, the conclusions and recommendations contained herein may not be considered valid unless the changes are reviewed by us and the conclusions and recommendations are modified or reaffirmed after such review.

The subsurface conditions, excavation characteristics, and geologic structure described herein and shown on the enclosed cross sections have been projected from excavations on the site as indicated and should in no way be construed to reflect any variations that may occur between these excavations or that may result from changes in subsurface conditions.

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, irrigation, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can be extremely hazardous. Saturation of earth materials can cause subsidence or slippage of the site.

If conditions encountered during construction appear to differ from those disclosed herein, notify us immediately so we may consider the need for modifications. Compliance with the design concepts, specifications or recommendations during construction requires the review of the engineering geologist and geotechnical engineer during the course of construction.

THE EXPLORATION WAS PERFORMED ONLY ON A PORTION OF THE SITE, AND CANNOT BE CONSIDERED AS INDICATIVE OF THE PORTIONS OF THE SITE NOT EXPLORED.

This report is issued and made for the sole use and benefit of the client, is not transferable and is as of the exploration date. Any liability in connection herewith shall not exceed the fee for the exploration. No warranty, expressed or implied, is made or intended in connection with the above exploration or by the furnishing of this report or by any other oral or written statement.

THIS REPORT WAS PREPARED ON THE BASIS OF THE PRELIMINARY DEVELOPMENT PLAN OR CONCEPT FURNISHED. FINAL PLANS SHOULD BE REVIEWED BY THIS OFFICE AS ADDITIONAL GEOTECHNICAL WORK MAY BE REQUIRED.

Irvine Geotechnical appreciates the opportunity to provide our service on this project. Any questions concerning the data or interpretation of this report should be directed to the undersigned.

Respectfully submitted,
Irvine Geotechnical, Inc.

Jon A. Irvine
E.G. 1691/G.E. 2891
R:\ICprojects\2012 Projects\IC12053 Aquillini\IC12053 Loma Linda House Report Update 2014.wpd

Enc: Appendix I - Laboratory testing and subsurface exploration by GHA
Vicinity Map
Regional Geologic Map
Calculation Sheets (37)
Sections A through H
In pocket: Geologic Map

xc: (1) Addressee
(1) McClean Design
(3) Crest Real Estate

IRVINE GEOTECHNICAL Inc

TEMPORARY EXCAVATION HEIGHT

IC: **12115-I** CONSULT: **JAI**
CLIENT: **AQUILINI**

CALCULATION SHEET #

CALCULATE THE HEIGHT TO WHICH TEMPORARY EXCAVATIONS ARE STABLE (NEGATIVE THRUST). THE EXCAVATION HEIGHT AND BACKSLOPE AND SURCHARGE CONDITIONS ARE LISTED BELOW. ASSUME THE EARTH MATERIAL IS SATURATED WITH NO EXCESS HYDROSTATIC PRESSURE.

CALCULATION PARAMETERS

EARTH MATERIAL:	BEDROCK	WALL HEIGHT:	8 feet
SHEAR DIAGRAM:	B-8	BACKSLOPE ANGLE:	45 degrees
COHESION:	400 psf	SURCHARGE:	0 pounds
PHI ANGLE:	41 degrees	SURCHARGE TYPE:	P Point
DENSITY:	145 pcf	INITIAL FAILURE ANGLE:	30 degrees
SAFETY FACTOR:	1.25	FINAL FAILURE ANGLE:	70 degrees
WALL FRICTION:	0 degrees	INITIAL TENSION CRACK:	3 feet
CD (C/FS):	320.0 psf	FINAL TENSION CRACK:	30 feet

PHID = ATAN(TAN(PHI)/FS) = 34.8 degrees

CALCULATED RESULTS

CRITICAL FAILURE ANGLE	56 degrees
AREA OF TRIAL FAILURE WEDGE	21.8 square feet
TOTAL EXTERNAL SURCHARGE	0.0 pounds
WEIGHT OF TRIAL FAILURE WEDGE	3165.1 pounds
NUMBER OF TRIAL WEDGES ANALYZED	1148 trials
LENGTH OF FAILURE PLANE	5.4 feet
DEPTH OF TENSION CRACK	6.6 feet
HORIZONTAL DISTANCE TO UPSLOPE TENSION CRACK	3.0 feet
CALCULATED HORIZONTAL THRUST	**-284.9 pounds**
CALCULATED EQUIVALENT FLUID PRESSURE	**-8.9 pcf**
MAXIMUM HEIGHT OF TEMPORARY EXCAVATION	**8.0 feet**

CONCLUSIONS:

THE CALCULATION INDICATES THAT THE TEMPORARY EXCAVATIONS IN BEDROCK UP TO 8 FEET HIGH HAVE A NEGATIVE THRUST AND ARE TEMPORARILY STABLE.

APPENDIX I

TESTING & EXPLORATION

LABORATORY TESTING

Sample Retrieval - Hand Labor
Undisturbed samples of earth materials were obtained by driving a thin-walled steel sampler with successive blows of a drop hammer. The material was retained in brass rings of 2.41 inches inside diameter and 1.00 inch height. The samples were stored in close-fitting, water-tight containers for transportation to the laboratory.

Sample Retrieval - Drill Rig
Undisturbed samples of earth materials were obtained at frequent intervals by driving a thin-walled steel sampler with successive drops of the Kelly bar. The material was retained in brass rings of 2.41 inches inside diameter and 1.00 inch height. The central portion of the sample was stored in close-fitting, water-tight containers for transportation to the laboratory.

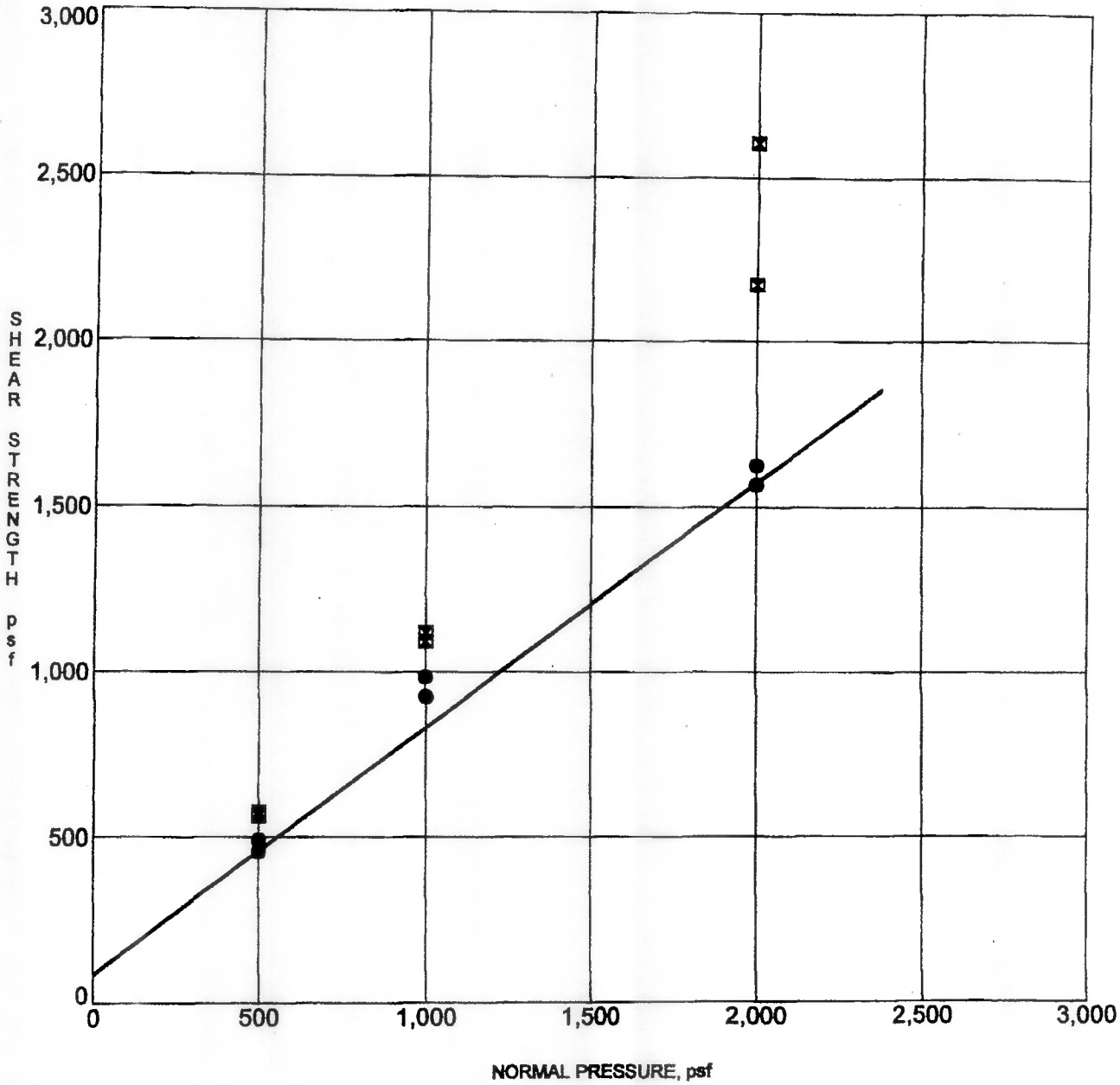
Moisture Density
The field moisture content and dry density were determined for each of the undisturbed soil samples. The dry density was determined in pounds per cubic foot. The moisture content was determined as a percentage of the dry soil weight. The results are presented on the A-plates.

Compaction Character
Compaction tests were performed on bulk samples of the future fill in accordance with ASTM D1557-07. The results of the tests are provided on the table below. Remolded samples were prepared at 95 percent of the maximum density for shear tests.

Boring/ Test Pit No.	Sample Depth (Feet)	Soil Type	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
TP-1	5	Bedrock	126.0	11.0
B-1	3	Bedrock	134.5	10.5

Shear Strength
The peak shear strengths of the bedrock, weathered bedrock, and future fill and the ultimate shear strength of the soil and weathered bedrock were determined by performing direct shear tests. The tests were performed in a strain-controlled machine manufactured by GeoMatic. The rate of deformation was 0.01 inches per minute. Samples were sheared under varying confining pressures, as shown on the "Shear Test Diagrams," B-plates. The residual shear strengths of the weathered bedrock and gouge were determined by repeatedly shearing a sample under varying confining pressures in the direct shear machine. The rate of deformation for the last test at each confining pressure was 0.01 inches per minute. The moisture conditions during testing are shown on the B-plates. The samples indicated as saturated were artificially saturated in the laboratory and were sheared under submerged conditions.

SHEAR TEST DIAGRAM



***NOTE-RESIDUAL STRENGTH VALUES**

	Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-5	2.0	WEATHERED BEDROCK			107.1	13.0
⊠	TP-5	4.0	WEATHERED BEDROCK	60	37	101.5	26.0

PROJECT FACTOR - 1184 LOMA LINDA DRIVE, BEVERLY HILLS

JOB NO. GH12280-G
DATE 4/05

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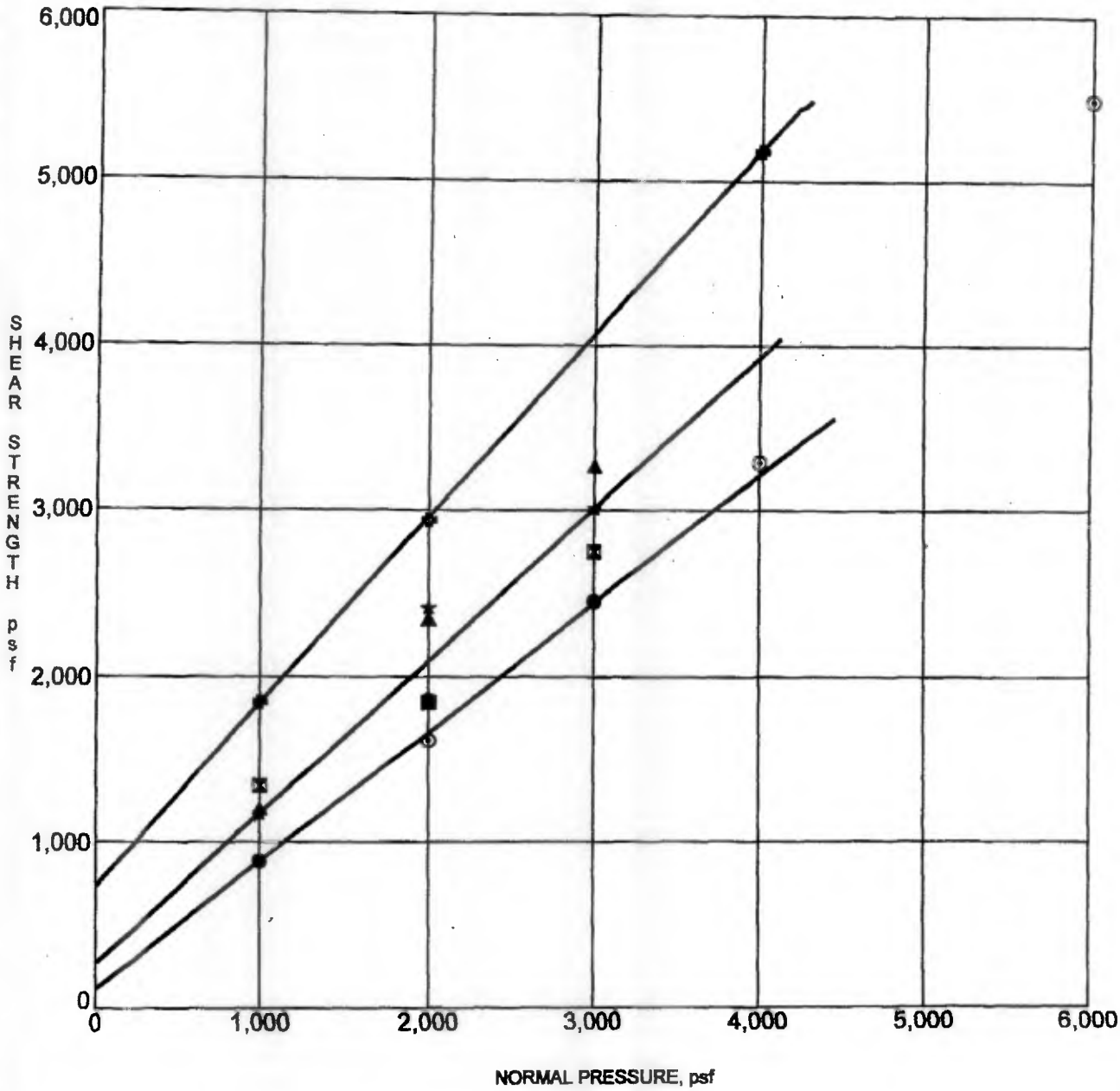
Westlake Village, California

PLATE B-1

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

Specimen Identification			Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-1	10.0	BEDROCK	110	38	120.2	16.2
⊠	TP-2	6.0	BEDROCK			126.7	11.2
▲	TP-3	4.0	BEDROCK			136.2	12.8
★	TP-3	6.0	BEDROCK	260	42	124.9	8.8
⊙	TP-5	17.0	BEDROCK			127.7	13.6
⊕	TP-5	18.0	CUT BEDROCK	740	48	139.3	8.6

PROJECT FACTOR - 1184 LOMA LINDA DRIVE, BEVERLY HILLS

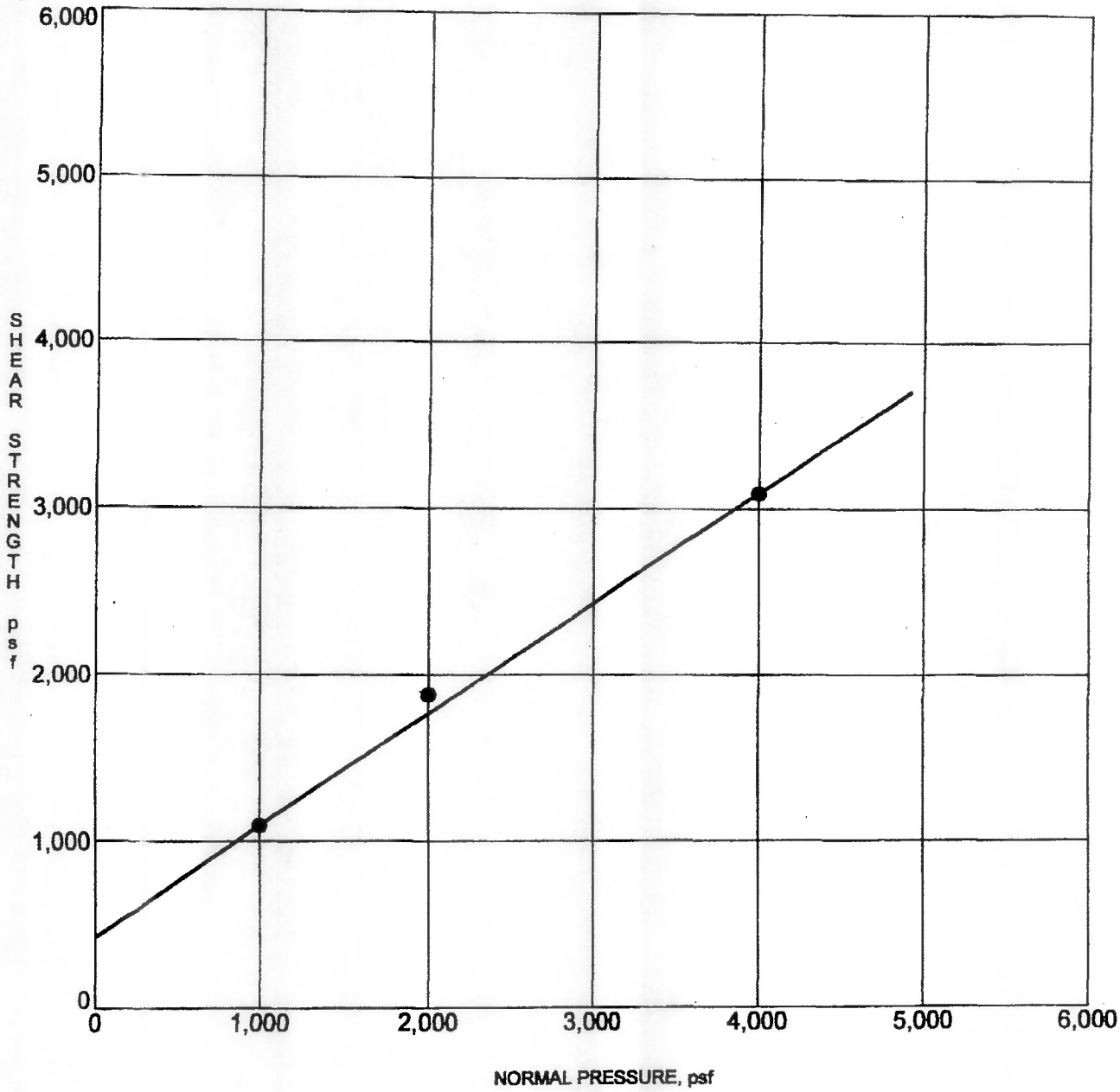
JOB NO. GH12280-G

DATE

GROVER-HOLLINGSWORTH & ASSOCIATES, INC.
Westlake Village, California

PLATE B-2

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

	Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-1	5.0	REMOLDED SLATE (95%)	420	34	120.4	13.9

PROJECT FACTOR - 1184 LOMA LINDA DRIVE, BEVERLY HILLS

JOB NO. GH12280-G

DATE 4/05

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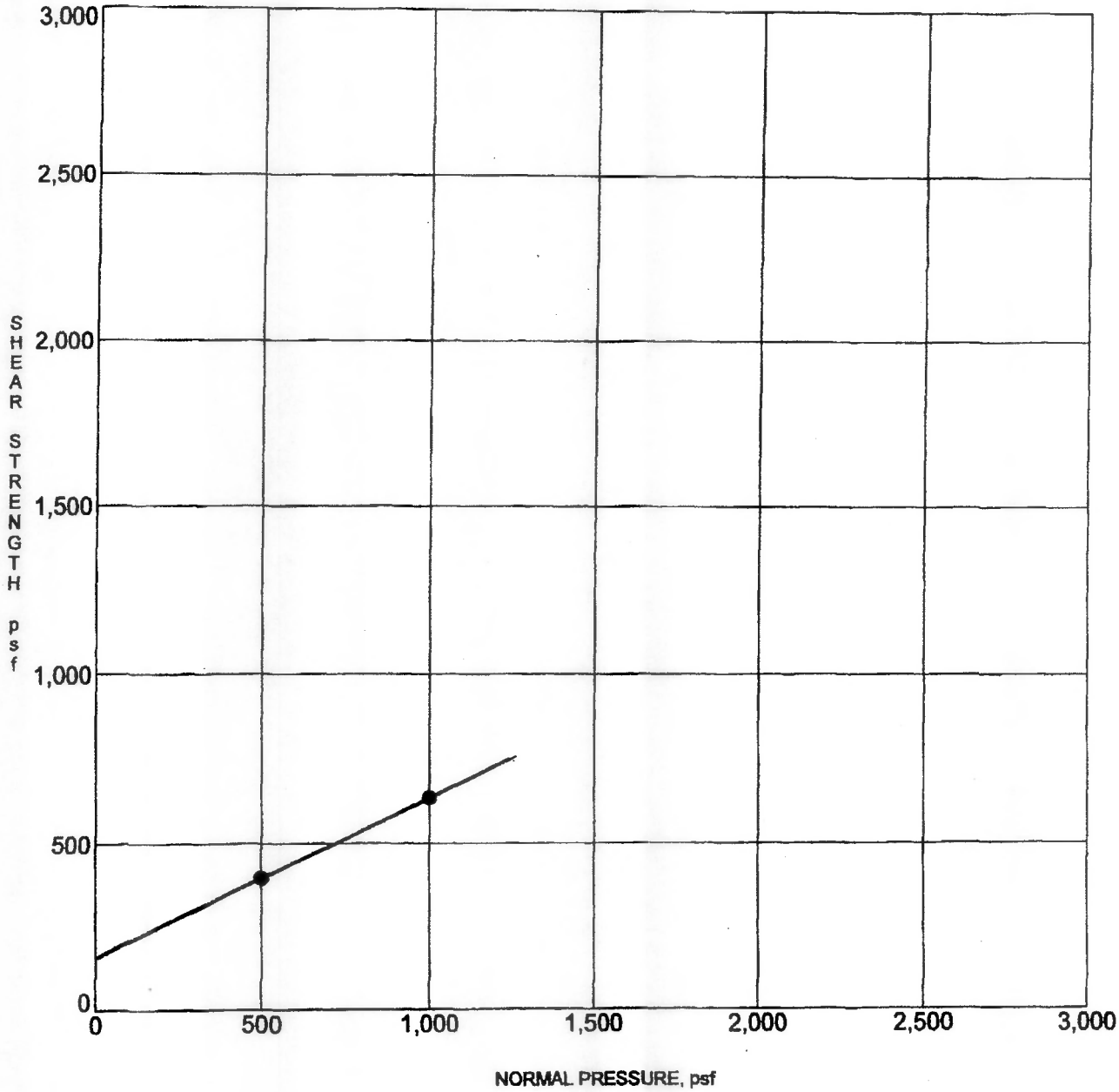
PLATE B-3

SHEAR TEST DIAGRAM



***NOTE-ULTIMATE STRENGTH VALUES**

	Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-14	2.0	SOIL	150	25	100.4	22.5

PROJECT BLAKE - 1184 LOMA LINDA DR, BEVERLY HILLS, CA

JOB NO. GH13907-G
DATE 8/08

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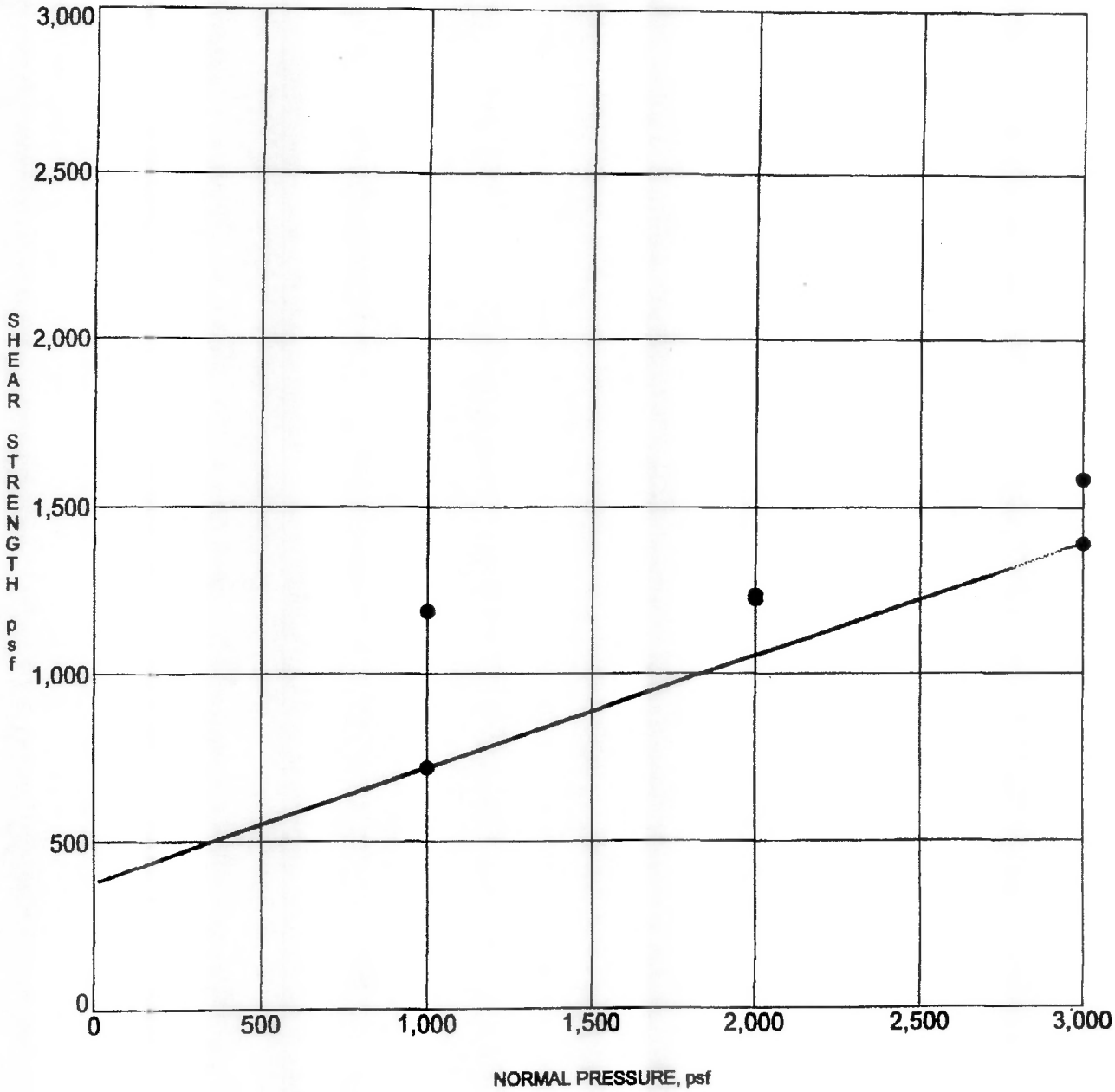
PLATE B-4

SHEAR TEST DIAGRAM



***NOTE-RESIDUAL STRENGTH VALUES**

Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
● TP-7	8.0	GOUGE	370	19	98.7	25.2

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JOB NO. GH13907-G
DATE 8/08

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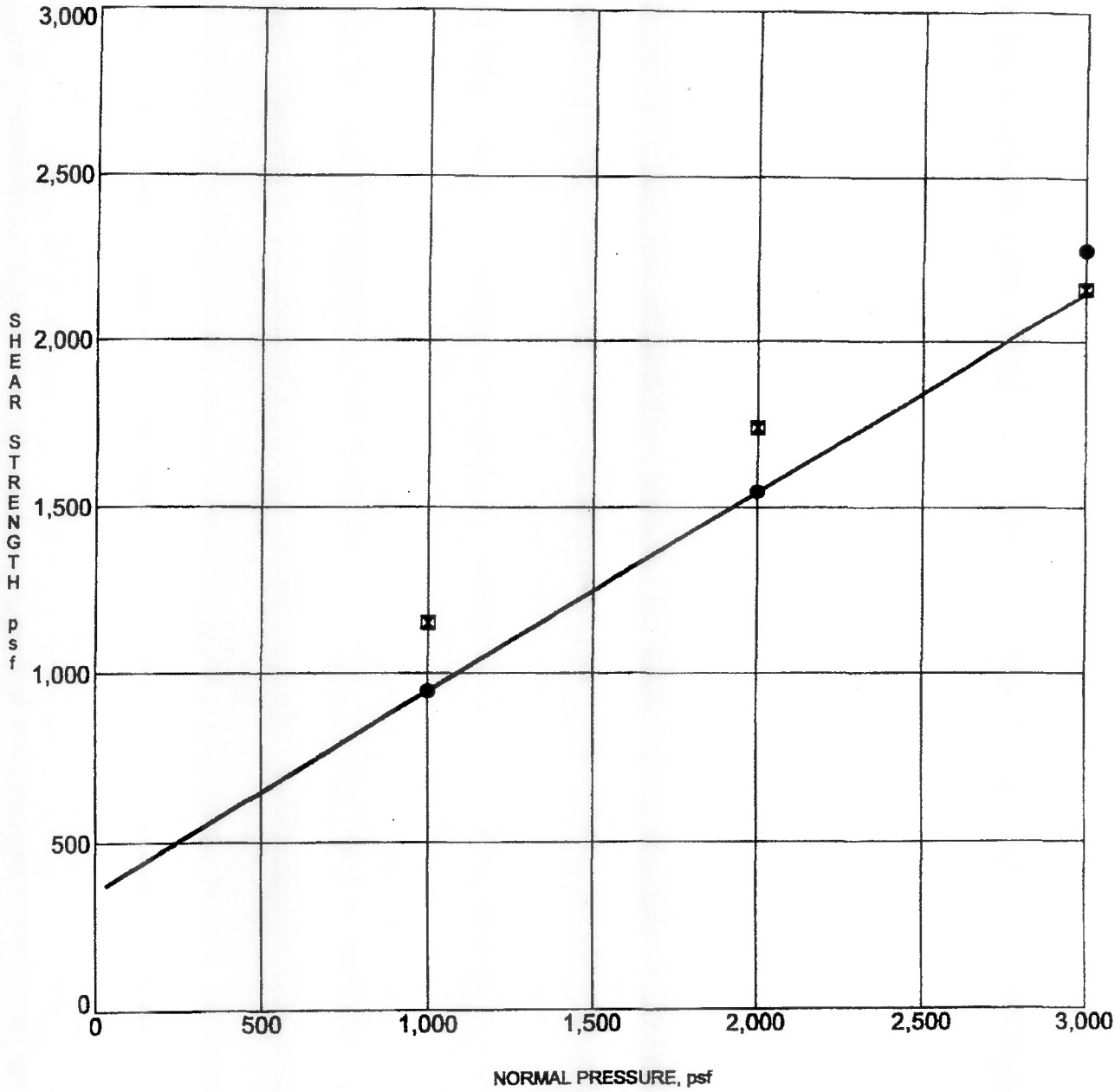
PLATE B-5

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

	Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-14	6.0	WEATHERED BEDROCK	330	31	110.6	22.5
⊠	TP-6	8.0	WEATHERED BEDROCK			127.5	18.5

PROJECT BLAKE - 1184 LOMA LINDA DR, BEVERLY HILLS, CA

JOB NO. GH13907-G
DATE 8/08

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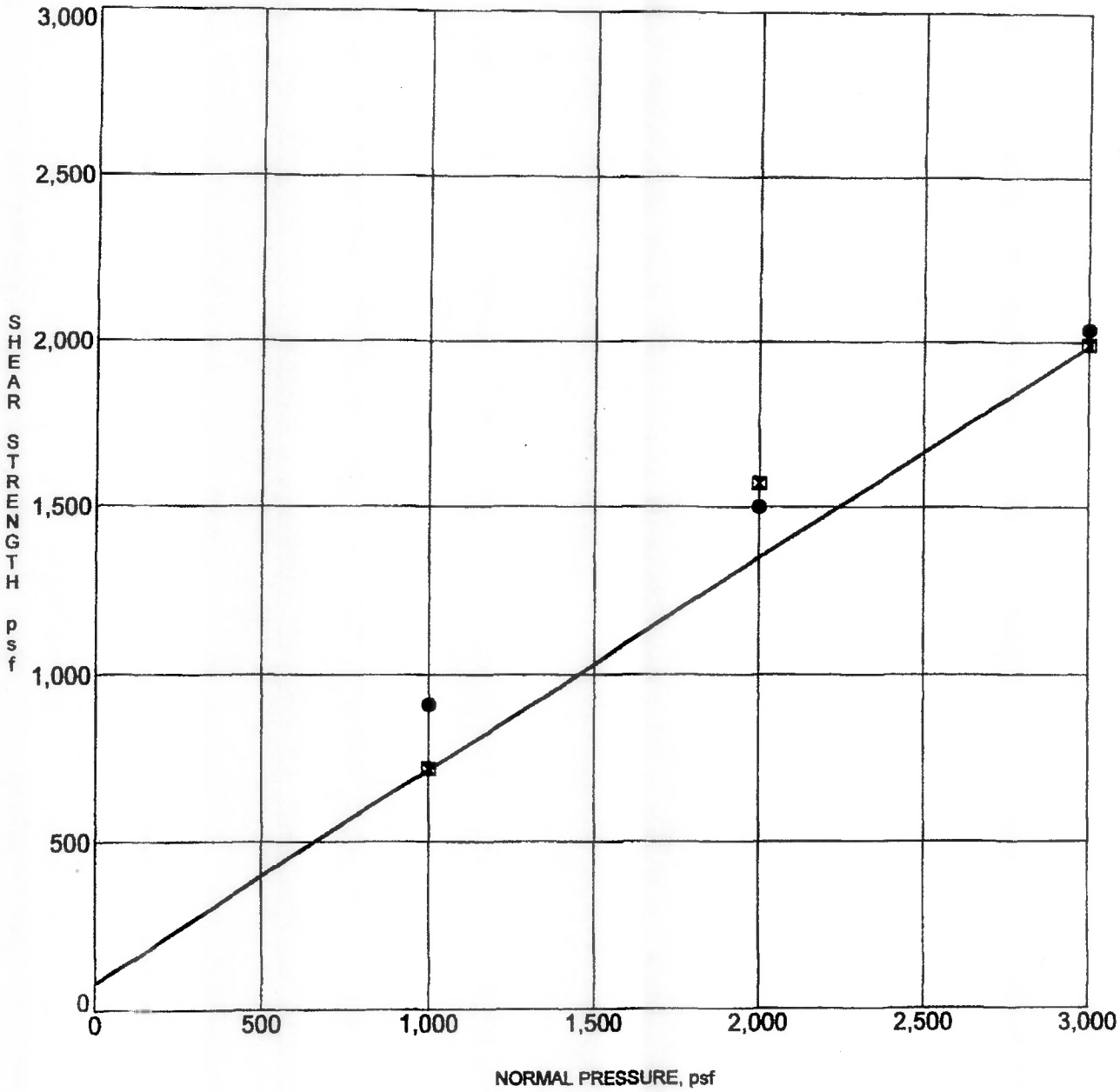
PLATE B-6

SHEAR TEST DIAGRAM



***NOTE-ULTIMATE STRENGTH VALUES**

Specimen Identification			Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	TP-14	6.0	WEATHERED BEDROCK			110.6	22.5
⊠	TP-6	8.0	WEATHERED BEDROCK	80	32	127.5	18.5

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JOB NO. GH13907-G
DATE 8/08

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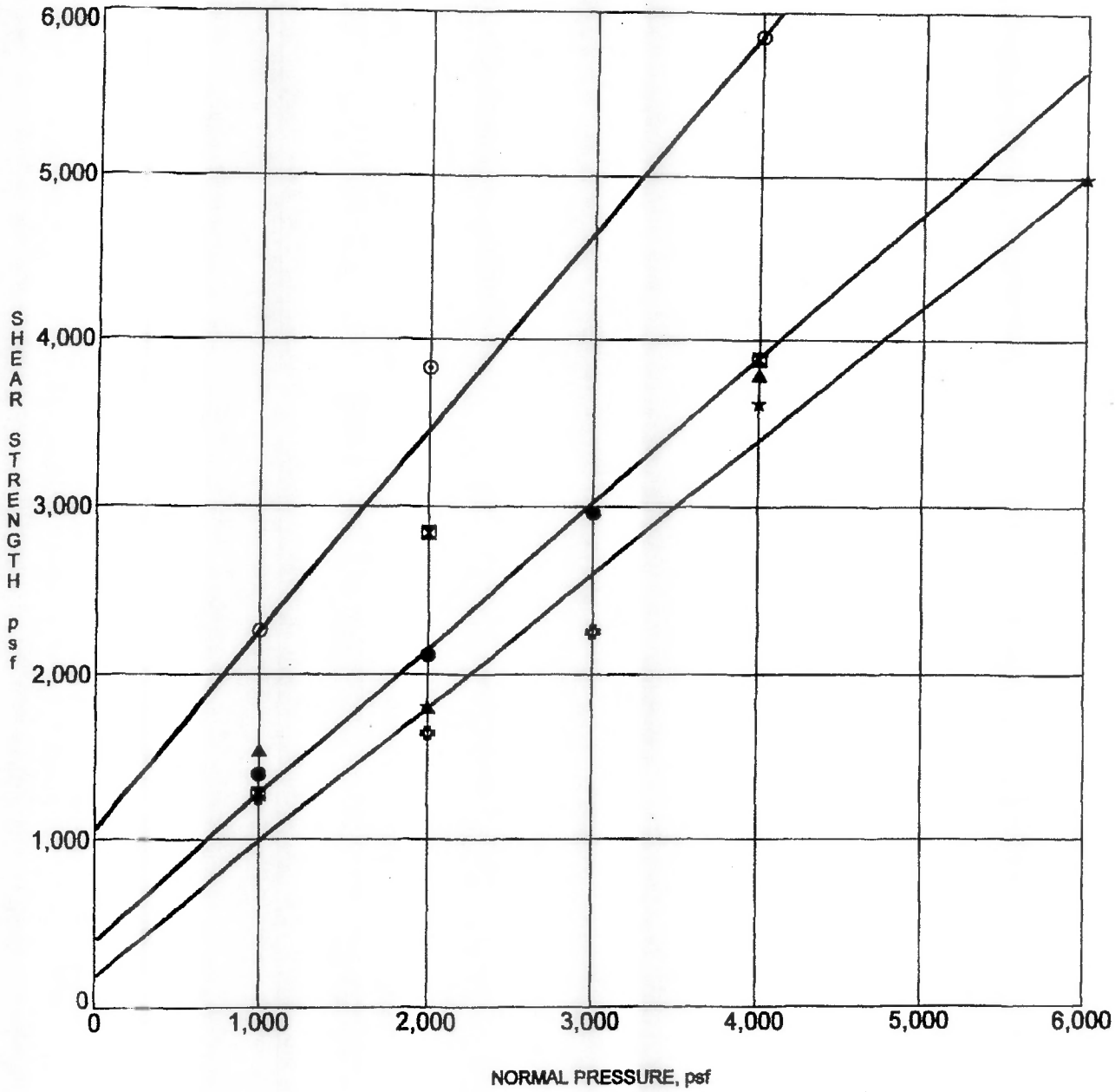
PLATE B-7

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

Specimen Identification			Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	B-1	5.0	BEDROCK			129.4	15.1
⊠	B-1	15.0	BEDROCK	400	41	127.1	15.9
▲	B-1	20.0	BEDROCK			129.3	14.3
★	B-1	25.0	BEDROCK	220	39	126.2	20.1
⊙	B-1	26.0	BEDROCK-CUT	1090	50	138.6	11.4
✿	TP-14	8.0	BEDROCK			116.7	16.3

PROJECT BLAKE - 1184 LOMA LINDA DR, BEVERLY HILLS, CA

JOB NO. GH13907-G

DATE 8/08

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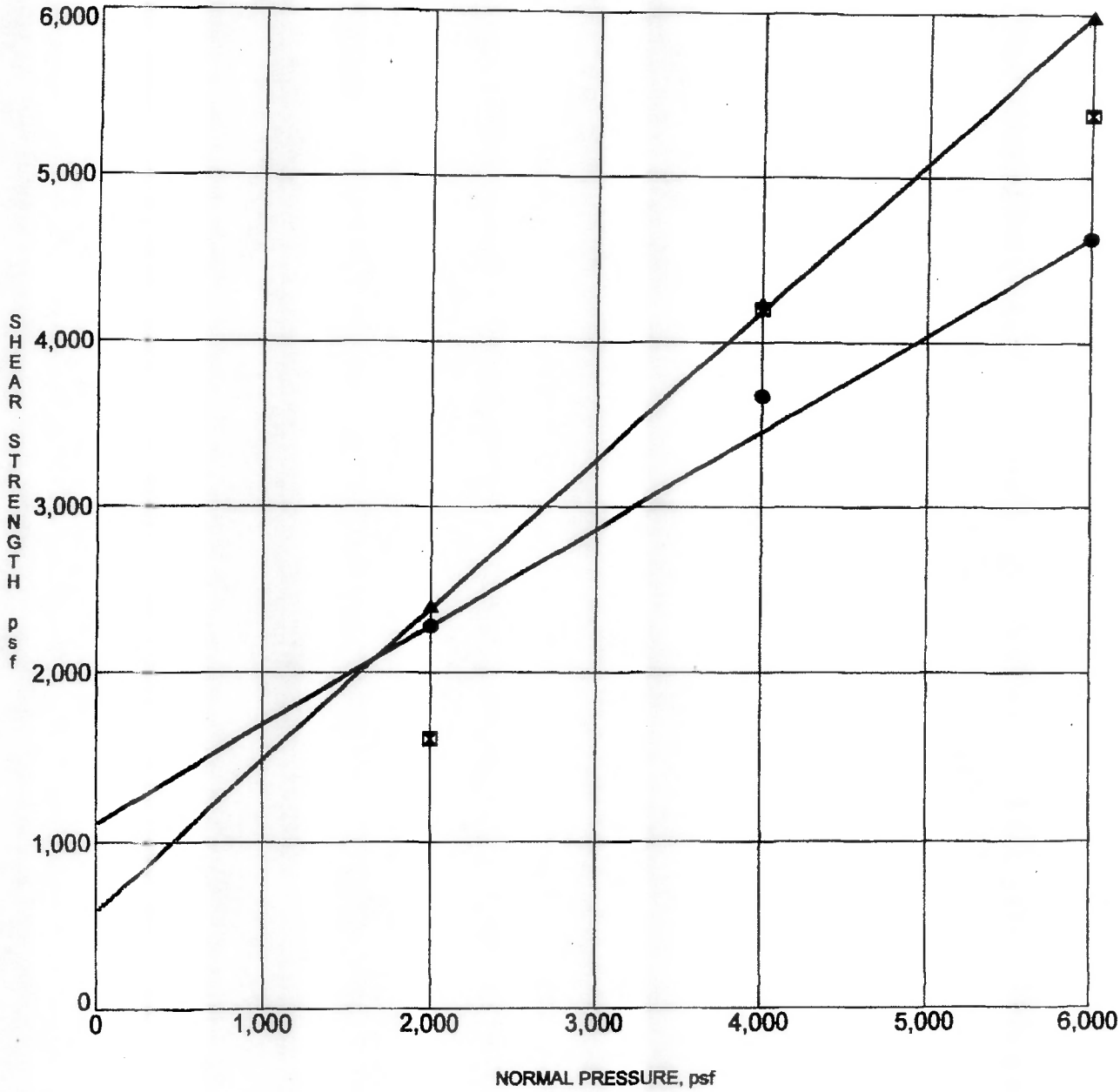
PLATE B-8

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

	Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
●	B-1	30.0	BEDROCK	1090	31	138.3	14.3
⊠	B-1	40.0	BEDROCK			129.9	17.6
▲	B-1	55.0	BEDROCK	610	42	135.1	16.1

PROJECT BLAKE - 1184 LOMA LINDA DR, BEVERLY HILLS, CA

JOB NO. GH13907-G
DATE 8/08

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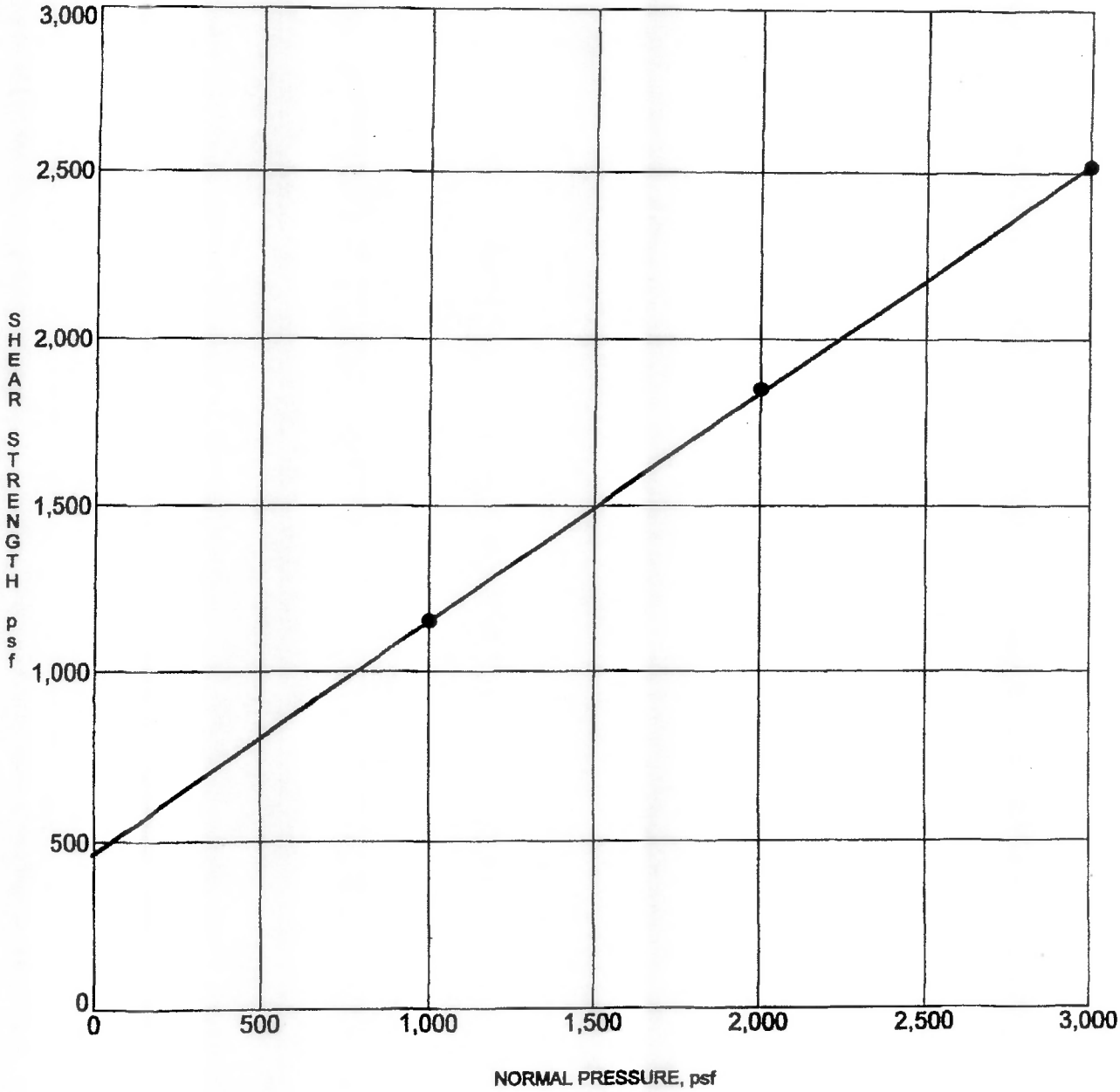
PLATE B-9

SHEAR TEST DIAGRAM



***NOTE-PEAK STRENGTH VALUES**

Specimen Identification		Soil Type/Classification	Cohesion	Friction Angle	DD	MC%
● B-1	3.0	FUTURE FILL	460	34	127.2	18.4

PROJECT BLAKE - 1184 LOMA LINDA DR, BEVERLY HILLS, CA

JOB NO. GH13907-G
DATE 8/08

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PLATE B-10

LOG OF BORING TP-1

Date Drilled: 3/21/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingswor

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		SLIDE DEBRIS: Slate Bedrock in a matrix of Sandy Silt to Silty Sand, brown,moist, medium firm to medium dense. Fracture that extends down from head scarp observed in test pit to 5' below down slope side of pit and 7' below top of head scarp. Fracture is 1" to 2" wide and contains a loose mixture of slate rock fragments, silt and sand. Orientation of Fracture: N15W, 77W.						
			■			5.7	127.8	R
			■			12.0	100.9	R
5				▨				B
			■			15.0	84.5	R
		SHEAR: Slate pulverized to a gray, sandy silt, moist upslope of fracture to wet downslope of fracture. Shear zone seam is 2" to 3" thick, orientation of shear: N15E, 53W						
		BEDROCK: Slate, brown, very hard, very fractured, tight, moderately to highly weathered.	■			11.2	107.6	R
		Foliation: N85E, 75N						
10			■			9.2	120.5	R

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-1a

LOG OF BORING TP-1

Date Drilled: 3/21/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingswort

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		End at 11' No Water; No Caving No Fill						
15								
20								

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-1b

LOG OF BORING TP-2

Date Drilled: 3/21/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		SLIDE DEBRIS: Slate Bedrock in a Sandy Silt matrix, brown and gray, slightly moist to moist. A 3" wide fracture decreasing in width with depth extends down through slide debris to 3' below the ground sruface.						
			■			19.6	86.9	R
		SHEAR/SLIDE PLANE: Sandy Silt, gray, slightly moist and firm upslope of fracture to wet and soft downslope of fracture. Shear/slide plane is 1" to 2" thick						
		Shear Orientation: N42E, 43NW	■			10.2	107.9	R
		BEDROCK: Slate, brown and gray, very hard, very fractured, tight, contorted foliation, moderately weathered. Foliation at 3-1/2': E-W, 72N Trend of Recumbent Fold at 4': N78W Foliation at 4-1/2': N68W, 62S						
5			■			6.5	126.7	R
		End at 6-1/2' No Water; No Caving No Fill						
10								

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-2

LOG OF BORING TP-3

Date Drilled: 3/23/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		FILL: Gravelly Sandy Silt, brown and gray, slighlty moist to moist, slightly to medium firm.	■			8.8	118.9	R
		SOIL: Clayey Sandy Silt, brown-green to gray, very moist, moderately firm. Soil is 2-1/2' thick on downslope side of pit but pinched out on upslope side of pit. contact with bedrock: N38E, 51-58NW						
		BEDROCK: Slate, brown, very fractured, tight, highly weathered, no obvious continuous structure.	■			7.3	136.2	R
5		Slate Foliation below more apparent and continuous around pit.						
		Moderately to highy weathered Foliation at 5-1/2': N28W, 43W	■			13.8	124.9	R
		Moderately Folitaion at 7-1/2': N5E, 46W						
10		End at 9-1/2' No Water; No Caving Fill to 2-1/2'						

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-3

LOG OF BORING TP-4

Date Drilled: 3/22/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingswort

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		CASING						
			■			14.6	104.0	R
		SLIDE DEBRIS: Blocks of Slate Bedrock, brown and gray, moderately hard to hard, very fractured, some open fractures up to 1" in width between coherent blocks of slate.	■			6.2	117.1	R
5		Crushed Slate Seam up to 1 to 2 inches thick, orientation N82W, 56N.						
		Relict foliation: N78E, 28N						
		End at 9'						
		No Water; No Caving						
		No Fill						
10								

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-4

LOG OF BORING TP-5

Date Drilled: 3/23/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		SOIL: Clayey Sandy Silt, brown, moist, slighlty firm.						
		contact with weathered bedrock N20E, 30W						
		WEATHERED BEDROCK: Weathered Slate Bedrock to Clayey Sandy Silt to Clayey Silty Sand with Gravel, brown and gray, very moist.	■			20.1	107.1	R
		BEDROCK: Slate, brown and gray-brown, moderately hard to hard, intensely to very fractured, tight, highly weathered.	■			13.4	101.5	R
5		Foliation at 5-1/2': N26W, 12W						
			■			5.7	128.3	R
		Foliation at 7': N16W, 53W						
			■			6.3	125.7	R
		Foliation at 9-1/2': N34E, 50W						
10			■			3.9	128.6	R

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-5a

LOG OF BORING TP-5

Date Drilled: 3/23/05 Logged by: Stephen M. Watry Project Manager: Robert Hollingswort

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY DENSITY (pcf)	SAMPLE TYPE
		Slate foliation becomes consistant around hole, moderately weathered.						
		Foliation at 12': N24E, 52W						
		Foliation at 13-1/2': N18E, 47W						
		Foliation at 15-1/2': N34E, 75W						
15			■			8.5	127.7	R
				▨				
		End at 18-1/2' No Water; No Caving No Fill						
20								

GEO 12280.GPJ 6/2/05

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-5b

LOG OF TEST PIT TP-6

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Sand, brown, moist, medium dense.						
		Slightly Clayey Sandy Silt to Clayey Silty Sand, brown, gray, moist to very moist, dense, minor gravel, minor roots.						
			■			15.1	116.5	R
		Approximate contact with underlying bedrock: N40E, 28NW						
		BEDROCK: Slate, brown and gray, soft to slightly hard, intensely fractured, roots, moderately to highly weathered.	■			8.3	124.4	R
5								
			■			14.6	118.3	R
			■			9.7	127.5	R
		End at 8-1/2' No Water; No Caving; Fill to 4'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-6

LOG OF TEST PIT TP-7

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Sand, brown, slightly moist, slightly dense.						
		Silty Gravel, gray, moist, loose, roots, large fragments of asphalt.						
		SOIL: Clayey Sand Silt, brown, very moist, firm, minor gravel.						
5		WEATHERED BEDROCK: Slate, brown and gray, soft, intensely fractured, highly weathered, contains rootlets.						
		Clay zone (gouge) 1" - 3" thick, Clayey Sand to Sandy Clay, orange-brown, moist, slightly firm, moderately to highly plastic, continuous around pit. Orientation: N20E, 30SE Decreased rootlets below 9'.						B

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-7a

LOG OF TEST PIT TP-7

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
10		BEDROCK: Santa Monica Slate, gray, gray-brown and medium brown, moist, moderately hard, generally well-foliated with massive zones, highly jointed, joints tight, moderately weathered.						
		becomes generally hard Foliation: N60W, 45SW N40W, 50SW						
		End at 14' No Water; No Caving Fill to 3'						
15								

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-7b

LOG OF TEST PIT TP-8

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Gravelly Sand, brown, moist, slightly dense.						
		SOIL: Silty Gravelly Sand to Silty Sandy Gravel, gray, moist, loose to moderately dense.						
5		WEATHERED BEDROCK: Slate, gray, soft, intensely fractured, highly weathered, minor roots.						
		BEDROCK: Slate, brown and gray, moderately hard, moderately fractured, fractures tight, moderately weathered. Foliation: N63W, 52S						
		End at 8-1/2' No Water; No Caving; Fill to 2-1/2'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-8

LOG OF TEST PIT TP-9

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Gravelly Sand, brown, moist, slightly dense.						
		SOIL: brown and gray, moist, loose, roots, and rotated blocks of slate.						
5		BEDROCK: Slate, brown and gray, moderately hard, moderately fractured, tight, moderately to highly weathered. Foliation: N85W, 34S Joint: N80W, 6S						
		End at 7-1/2' No Water; No Caving Possible Fill to 1-1/2'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-9

LOG OF TEST PIT TP-10

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Gravelly Sand, brown, slightly moist, slightly dense.						
		SOIL: Silty Gravelly Sand, brown and gray, moist to very moist, medium dense, some bedrock fragments, minor roots.						
5		BEDROCK: Slate, brown and gray, slightly to moderately hard, intensely to moderately fractured, tight, moderately to highly weathered, some andalusite crystals.						
		Possible foliation: N85E, 70S						
		End at 8' No Water; No Caving Fill to 1'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-10

LOG OF TEST PIT TP-11

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Sandy Gravel, brown, dry to slightly moist, loose, requiring casing.						
		Fill to about 3-1/2' below ground surface.						
		Obscured by casing to 5-1/2'						
5								
		HIGHLY WEATHERED BEDROCK: Slate, brown and gray, very moist, very to moderately fractured, open, creep-prone, intensely weathered.						
		blocks of slate bedrock in a gravel matrix, moist, loose, contains roots, portions of deposit are clast-supported, voids present between bedrock blocks, caving.						

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-11a

LOG OF TEST PIT TP-11

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
10								
		Contact gradational						
		BEDROCK: Santa Monica Slate, dark gray-brown and medium brown to orange-brown, slightly moist to moist, moderately hard, slightly to moderately jointed, joints tight, moderately weathered, few rootlets present. Foliation: N20W, 40SW						
		End at 13-1/2' No Water Some Caving in highly weathered bedrock Filt to 3-1/2'						
15								

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-11b

LOG OF TEST PIT TP-12

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Gravelly Sand, brown, slightly moist, slightly dense.						
		Silty Gravel, brown, moist, slightly dense, gravel angular						
		SOIL: Silty Gravelly Sand, brown, moist, medium dense, minor roots.						
5		BEDROCK: Slate, brown and gray, moderately hard, moderately fractured, tight, moderately to highly weathered.						
		End at 6' No Water; No Caving Fill to 3-1/2'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-12

LOG OF TEST PIT TP-13

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Silty Gravelly Sand to Silty Sandy Gravel, brown, moist, slightly dense.						
		Silty Sandy Gravel, brown, moist, loose.						
		SOIL: Silty Gravelly Sand, very moist, medium dense.						
5		BEDROCK: Slate, brown and gray, moderately hard, moderately fractured, tight, moderately to highly weathered.						
		End at 5-1/2' No Water; No Caving Fill to 2'						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-13

LOG OF TEST PIT TP-14

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		SOIL: Gravelly Silty Sand, brown, very moist, moderately dense.						
		Clayey Silt, brown, very moist, firm.						
		Clayey Silty Sand, brown and gray, moist, dense.	■			23.4	100.4	R
		WEATHERED BEDROCK: Slate, orange-brown with gray zones, moist, soft, intensely fractured, highly weathered.						
			■			15.3	109.5	R
5								
			■			11.1	110.9	R
		Contact gradational						
		BEDROCK: Santa Monica Slate, dark gray with white quartzite lenses, slightly moist, moderately hard to hard, jointed, joints closed, moderately weathered.						
		Foliation subtle.						
		Foliation: N50W, 44SW N60W, 40SW	■			9.1	116.7	R

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-14a

LOG OF TEST PIT TP-14

Date Drilled: 2/28/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
10			■			7.3	96.1	R
		End at 10-1/2' No Water; No Caving No Fill						
15								

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-14b

LOG OF TEST PIT TP-15

Date Drilled: 5/20/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		FILL: Sandy Gravelly Silt, light brown, dry, loose.						
		COLLUVIUM: Sandy Gravelly Silt to Sandy Silty Gravel, light brown, dry to slightly moist, minor roots.	■			4.8	97.1	R
		Gravelly Sandy Silt, light brown, dry to slightly moist, medium firm roots.	■			5.4	127.3	R
5		Sandy Silty Gravel, brown, slightly moist, medium dense, minor roots.						
		WEATHERED BEDROCK: Slate, gray and brown, moderately intensely weathered, no discernible structure.	■			5.2	123.4	R
		BEDROCK: Slate, gray, moderately hard to hard, very fractured, tight, some steep joints, moderately weathered.	■			4.3	136.8	R

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-15a

LOG OF TEST PIT TP-15

Date Drilled: 5/20/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		End at 9-1/2' No Water; No Caving Fill to 1'						
10								
15								

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-15b

LOG OF TEST PIT TP-16

Date Drilled: 5/20/08 Logged by: Steve Watry Project Manager: Robert Hollingsworth

Equipment: Hand Labor Driving Weight and Drop: Hand Sampler

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		COLLUVIUM: Sandy Silty Gravel, light brown, dry, loose.						
		At 2': Slate rock fragments with silty soil in fractures.	■			6.3	88.9	R
		End at 3-1/2' No Water; No Caving No Fill						
5								

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-16

LOG OF TEST PIT B-1

Date Drilled: 3/4/08 Logged by: Dan Daugherty Project Manager: Robert Hollingsworth

Equipment: 24" Bucket Auger Driving Weight and Drop: Kelly Bar

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		Asphalt.						
		Sand, light brown, moist, medium dense.						
		FILL: Silty Sand and Gravelly Sand, gray-brown, moist, medium dense.						
		Contact: near-horizontal, looks scarified.						
		BEDROCK: Santa Monica Slate, dark olive-brown, orange-brown and blue-gray, moist, hard.						
5		Foliation: N50W, 46SW	■		8-6" 12-6"	5.4	129.4	R
		Foliation: N20W, 36SW						
10		Fractured Bedrock, locally sheared, dark blue-gray, orange-brown and olive-brown, moderately moist, moderately hard; Fracture: N40W, 22NE	■		10-6" 7-3"	4.5	117.0	R
		Slate Bedrock, dark blue-gray and orange-brown, moist, hard.						
		Foliation: N40W, 47NE						
		Shear: N10W, 30W						
		Moderately moist.						

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-17a

LOG OF TEST PIT B-1

Date Drilled: 3/4/08 Logged by: Dan Daugherty Project Manager: Robert Hollingsworth

Equipment: 24" Bucket Auger Driving Weight and Drop: Kelly Bar

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		Shear: E-W, 46S	■		3-6" 8-6"	8.5	127.1	R
		Bedrock, highly jointed and joints tight with local quartz veins.						
		Dark blue-gray and orange-brown, moderately moist, hard. Foliation: N45W, 50NE						
20			■		8-6" 7-3"	6.1	129.3	R
		Foliation: N17W, 26SW						
25		Shear zone, orange-brown and olive-brown, moist, slightly hard, N50W, 25NE	■		4-6" 7-6"	10.7	126.2	R
		Santa Monica Slate, dark blue-gray, orange-brown moderately moist, hard.		▨				B
		Fault/Shear zone: N20E, 55N. Bedrock locally crushed.						

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-17b

LOG OF TEST PIT B-1

Date Drilled: 3/4/08 Logged by: Dan Daugherty Project Manager: Robert Hollingsworth

Equipment: 24" Bucket Auger Driving Weight and Drop: Kelly Bar

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
			■		7-6" 12-6"	6.5	138.3	R
		Highly fractured ravels.						
35		Less Fracturing Foliation: N55W, 45SW N80W, 17N N40W, 41S	■		7-6" 11-6"	2.6	133.9	R
		Joint set: N20E, 75NW						
40		very hard, sampler bouncing, can't sample. Foliation: N40W, 65S	■		25/6"	8.2	129.9	R

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-17c

LOG OF TEST PIT B-1

Date Drilled: 3/4/08 Logged by: Dan Daugherty Project Manager: Robert Hollingsworth

Equipment: 24" Bucket Auger Driving Weight and Drop: Kelly Bar

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
			■		10-6" 10-3"	7.6	130.1	R
50		No Recovery at 50'.	■		20/6"	NR	NR	R
		Foliation: N43E, 40SE						
		Foliation: N25W, 44SW						
		Foliation: N5E, 60W						
55			■		10-6" 12-3"	5.1	135.1	R

GEO5 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-17d

LOG OF TEST PIT B-1

Date Drilled: 3/4/08 Logged by: Dan Daugherty Project Manager: Robert Hollingsworth

Equipment: 24" Bucket Auger Driving Weight and Drop: Kelly Bar

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
			■		15/6"	4.6	120.6	R
		End at 61' No Water; No Caving Local ravelling at 32' Fill to 3'						
65								
70								

GEOS 13907LOG.GPJ 8/19/08

Grover Hollingsworth and Associates, Inc.

Project Name: Blake
1184 Loma Linda Dr., Beverly Hills, California

Project No. 13907-G

Plate A-17e

LOG OF BORING B-1

Date Drilled: 5/3/11 Logged by: Greg Byrne Project Manager: Robert Hollingsworth

Equipment: Limited Access Drill Rig Driving Weight and Drop:

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		SOIL/COLLUVIUM: Sandy Gravel to Gravelly Sand, light gray-brown, dry, loose, deposit is clast-supported, contains roots.						
		FRACTURED SLATE BEDROCK: Gray to brown with medium brown staining, dry, slightly to moderately hard, highly fractured/jointed, some joints are open, scattered roots, slight caving/raveling.						
5		Foliation at 5-1/2': N65E, 42NW						
		At 8' - 10' zone of caving, boring diameter gets larger, slate more blocky. Foliation at 8': N45E, 30NW						
10		Base of fractured zone delineated by 1" - 2" thick discontinuous zone of crushed bedrock, Sandy Clay/Clayey Sand, gray to gray-brown, slightly moist, soft, zone observable in upslope half of boring, not found in downslope wall; orientation of crushed zone: N45W, 35SW						
		BEDROCK: Santa Monica Slate, gray to gray-brown with medium brown staining, slightly moist, moderately hard to locally hard, jointed, joints are tight.						
15		Foliation at 14': N20W, 43SW						
		End at 19' No Water; Some Caving from 8' - 10'; No Fill						

GEO 12280.GPJ 5/26/11

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-6

LOG OF BORING B-2

Date Drilled: 5/4/11 Logged by: Greg Byrne Project Manager: Robert Hollingsworth

Equipment: Limited Access Drill Rig Driving Weight and Drop:

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		SOIL: Silty Sand, gray-brown, dry, loose to slightly dense, contains scattered gravel and abundant roots, some caving.						
5		HIGHLY FRACTURED/WEATHERED SLATE BEDROCK: Brown to gray-brown with yellow- and orange-brown mottling, dry, loose, deposit consits of gravel to cobble-size slate bedrock fragments in a gravelly and sandy matrix, abundant roots in places, some open joints/voids, some caving.						
10		BEDROCK: Santa Monica Slate, gray, medium brown, gray-brown with yellow-brown staining, dry, moderately hard, well-foliated, highly jointed, some joints open slightly. Foliation at 8': N55E, 28NW Foliation at 9': N55E, 20NW						
15		Decreased jointing, generally moderately hard to hard at 11'. Foliation at 13': N70E, 15NW N60E, 18NW						
		End at 19' No Water; Caving from 1' - 8'; No Fill						

GEO 12280.GPJ 5/26/11

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-7

LOG OF BORING B-3

Date Drilled: 5/6/11 Logged by: Greg Byrne Project Manager: Robert Hollingsworth

Equipment: Limited Access Drill Rig Driving Weight and Drop:

Surface Elevation(ft): Depth to Water(ft):

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		SOIL: Silty Sand, light brown to brown, dry, loose, contains roots and scattered gravel.						
5		COLLUVIUM: Gravelly Sand to Sandy Gravel, gray-brown to brown, dry, loose to slightly dense, increasing gravel toward base of deposit, slight to moderate caving.						
10		FRACTURED SLATE BEDROCK: Gray to gray-brown, medium brown and orange-brown, dry to slightly moist, moderately hard, jointed/fractured, no significant open joints, foliated. Foliation at 9': N30E, 48NW Foliation at 11': N25E, 45NW						
15		BEDROCK: Santa Monica Slate, gray to dark gray w/brown and medium brown staining, slightly moist, moderately hard, jointed, joints are tight. Foliation at 13': N40E, 65NW Foliation at 15': N35E, 60NW						

GEO 12280.GPJ 5/26/11

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

Project No. GH12280-G

Plate A-8a

LOG OF BORING B-3

Date Drilled: 5/6/11 Logged by: Greg Byrne Project Manager: Robert Hollingsworth

Equipment: Limited Access Drill Rig Driving Weight and Drop: _____

Surface Elevation(ft): _____ Depth to Water(ft): _____

DEPTH (ft)	GRAPHIC LOG	SUMMARY OF SUBSURFACE CONDITIONS	SAMPLES DRIVE	SAMPLES BULK	BLOWS/FOOT (Equiv. SPT)	MOISTURE (%)	DRY UNIT WT. (pcf)	SAMPLE TYPE
		End at 20' No Water; Caving in soil and upper colluvium No Fill						
25								
30								
35								

GEO 12280.GPJ 5/26/11

Grover Hollingsworth and Associates, Inc.

Project Name: Factor 1184 Loma Linda Drive

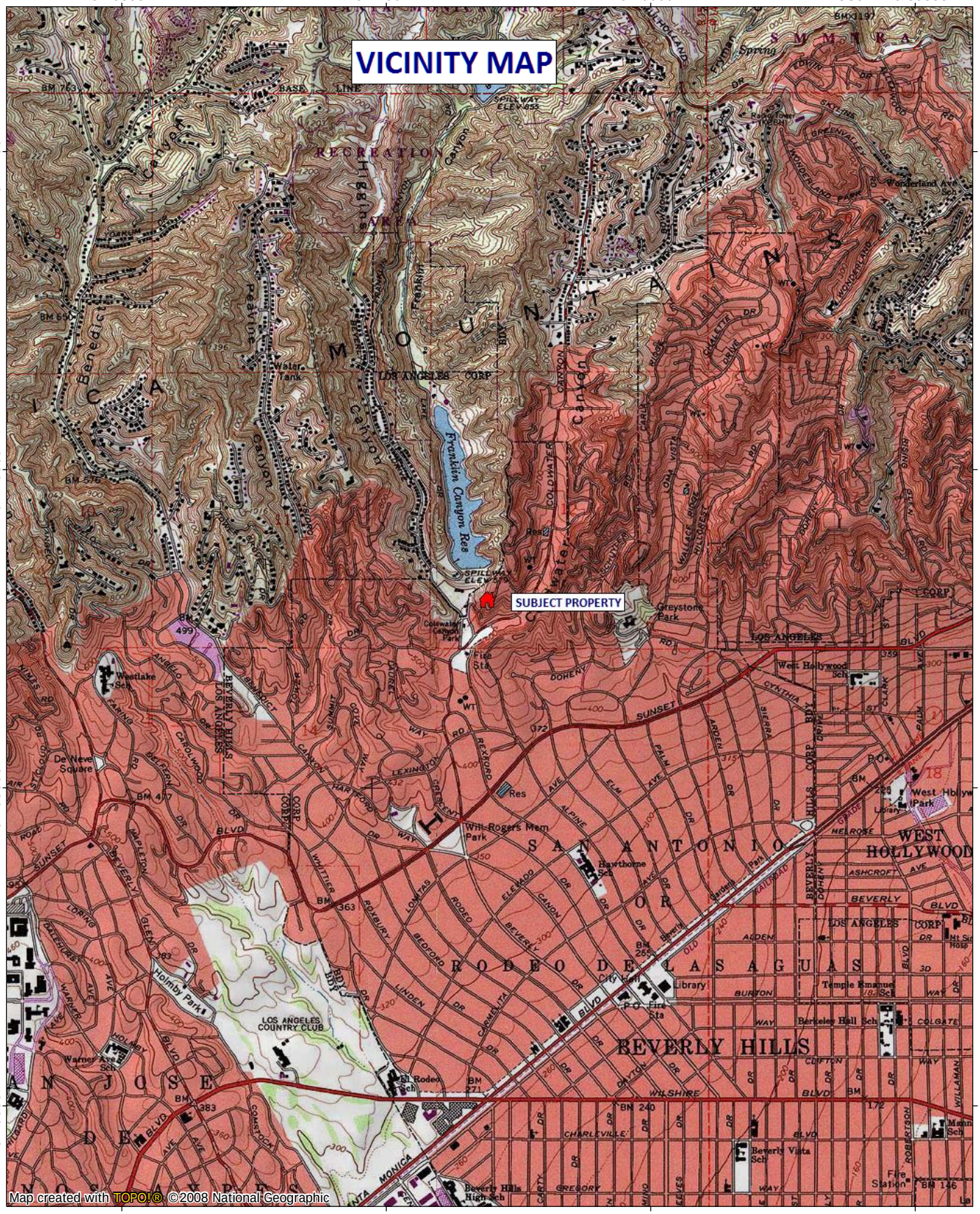
Project No. GH12280-G

Plate A-8b

TOPO! map printed on 09/27/12 from "IRVINE.tpo"

118.43333° W 118.41667° W 118.40000° W WGS84 118.38333° W

34.11667° N 34.10000° N 34.08333° N 34.06667° N



118.43333° W 118.41667° W 118.40000° W WGS84 118.38333° W

NATIONAL GEOGRAPHIC

0 .5 1 MILES

1000 0 1000 2000 3000 4000 5000 FEET

1 .5 0 KILOMETERS 1

1000 0 METERS 1000

TN MN

12½°

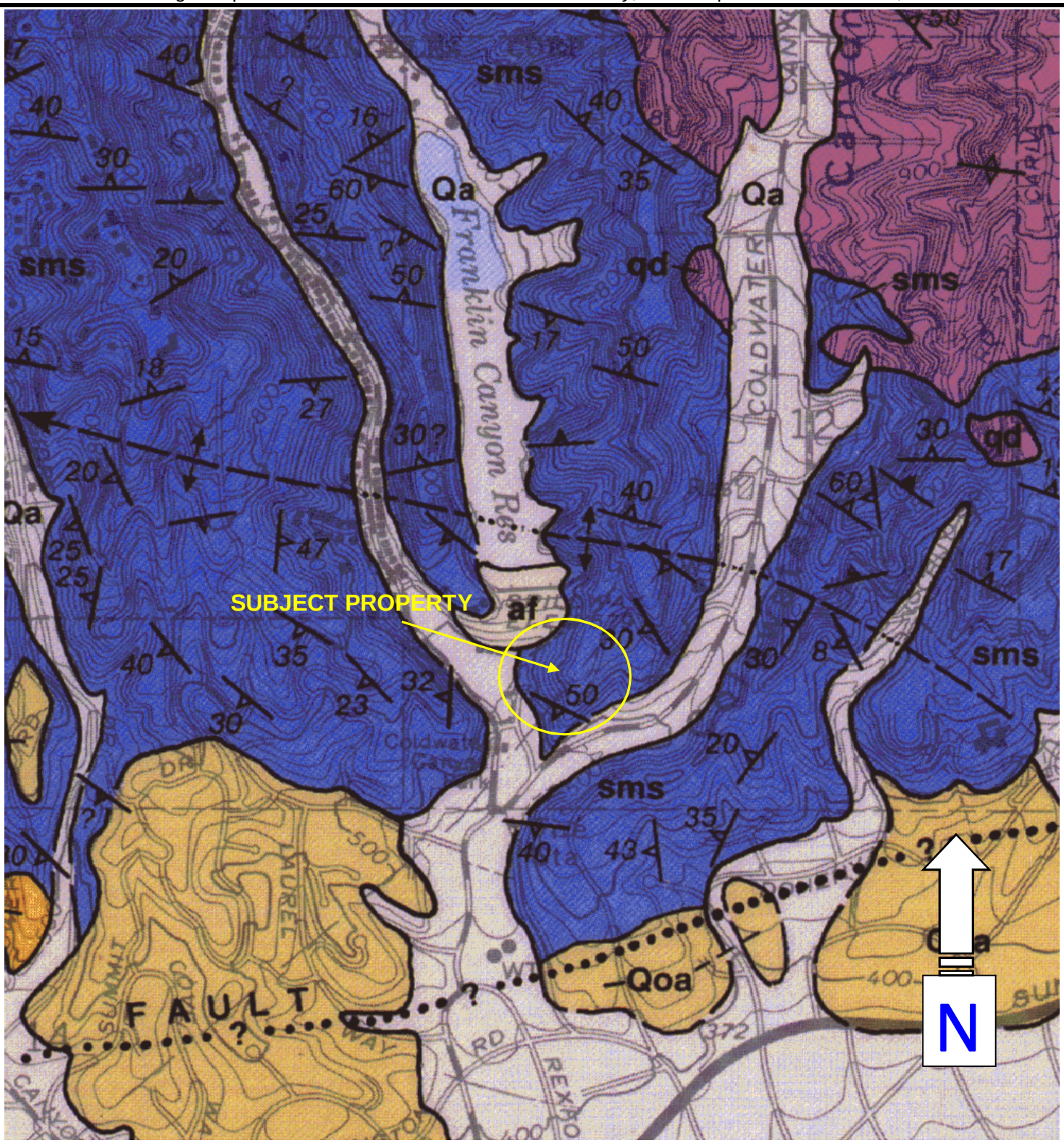
09/27/12

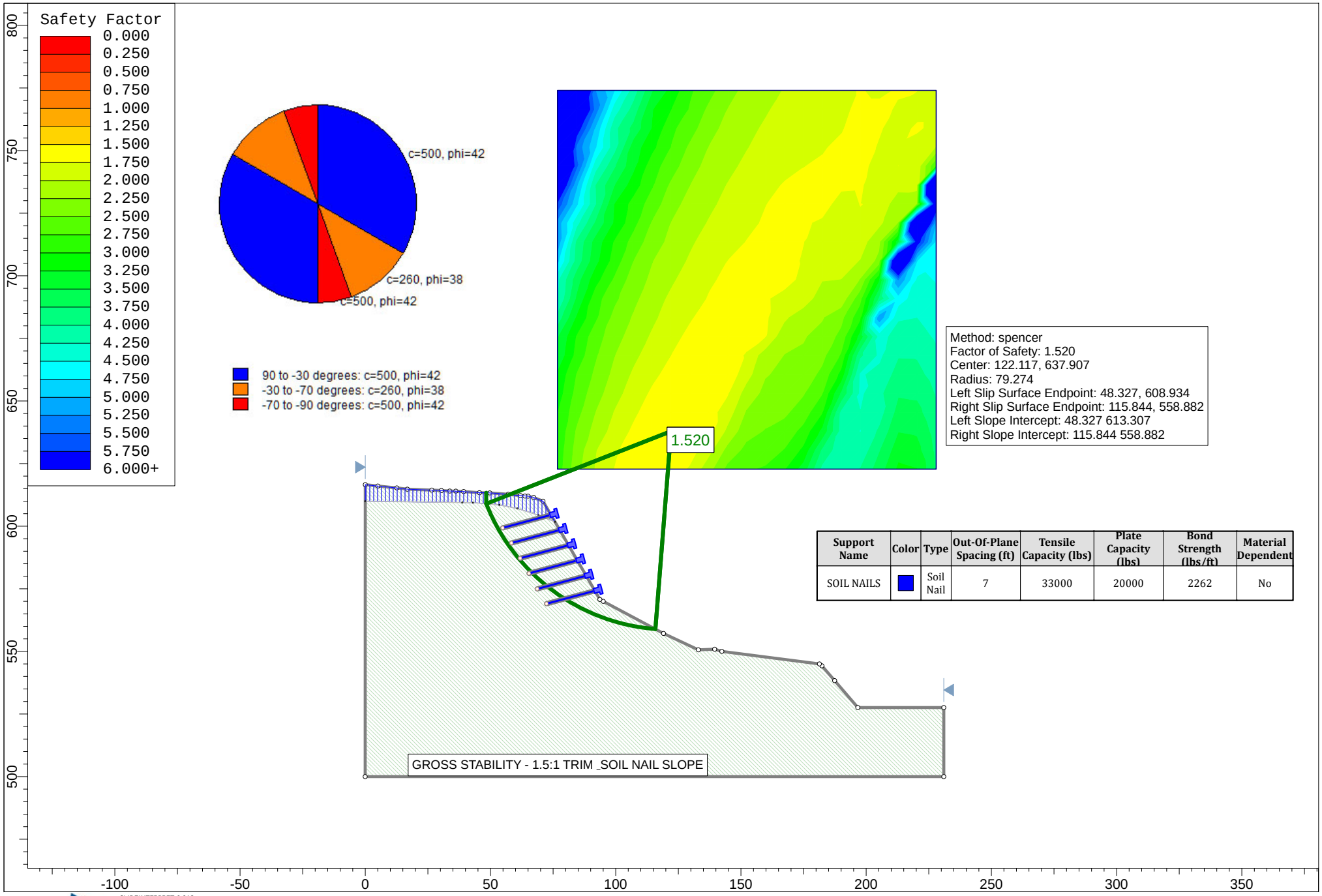
REGIONAL GEOLOGIC MAP

IRVINE GEOTECHNICAL Inc

IC:	**12053-I**	CONSULT:	**JAI**
CLIENT	**AQUILINI**		
SCALE:	**1" = 1,000'**		

REFERENCE: Geologic Maps of the Santa Monica Mountains and Vicinity, CD Compilation T.W. Dibblee, 2001





Support Name	Color	Type	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent
SOIL NAILS		Soil Nail	7	33000	20000	2262	No

SLIDEINTERPRET 6.018

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: Section D Calc Nail.slim
Slide Modeler Version: 6.018
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 7/7/2012, 1:42:52 PM

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

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: Create Tension Crack
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Tension Crack

Tension crack Water level: filled with water

Material Properties

Property	FOLIATED BEDROCK
Color	
Strength Type	Anisotropic function
Unit Weight [lbs/ft3]	145
Water Surface	None
Ru Value	0

Anisotropic Functions

Name: User Defined 1

Angle From	Angle To	c	phi
-70	-90	500	42
-30	-70	260	38
90	-30	500	42

Support Properties

SOIL NAILS

Support Type: Soil Nail
Force Application: Active
Out-of-Plane Spacing: 7 ft
Tensile Capacity: 33000 lb
Plate Capacity: 20000 lb
Bond Strength: 2262 lb/ft

Global Minimums

Method: spencer

FS: 1.519570
Center: 122.117, 637.907
Radius: 79.274
Left Slip Surface Endpoint: 48.327, 608.934
Right Slip Surface Endpoint: 115.844, 558.882
Left Slope Intercept: 48.327 613.307
Right Slope Intercept: 115.844 558.882
Resisting Moment=1.10104e+007 lb-ft
Driving Moment=7.24573e+006 lb-ft
Resisting Horizontal Force=110245 lb
Driving Horizontal Force=72550.1 lb
Total Slice Area=1050.87 ft2

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 4014
Number of Invalid Surfaces: 837

Error Codes:

Error Code -98 reported for 420 surfaces
Error Code -103 reported for 6 surfaces
Error Code -105 reported for 22 surfaces
Error Code -106 reported for 3 surfaces
Error Code -107 reported for 103 surfaces
Error Code -108 reported for 159 surfaces
Error Code -111 reported for 124 surfaces

Error Codes

The following errors were encountered during the computation:

-98 = Circular slip surface is entirely within the tension crack zone.
-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).
-111 = safety factor equation did not converge

Slice Data

Global Minimum Query (spencer) - Safety Factor: 1.51957

					Base			Base		Effective

Slice Number	Width [ft]	Weight [lbs]	Base Material	Cohesion [psf]	Friction Angle [degrees]	Stress [psf]	Strength [psf]	Normal Stress [psf]	Pressure [psf]	Normal Stress [psf]
1	2.70067	2889.12	FOLIATED BEDROCK	260	38	272.402	413.934	197.027	0	197.027
2	2.70067	4995.58	FOLIATED BEDROCK	260	38	466.909	709.501	575.335	0	575.335
3	2.70067	6738.36	FOLIATED BEDROCK	260	38	641.836	975.314	915.561	0	915.561
4	2.70067	8225.94	FOLIATED BEDROCK	260	38	817.895	1242.85	1257.99	0	1257.99
5	2.70067	9505.2	FOLIATED BEDROCK	260	38	993.242	1509.3	1599.03	0	1599.03
6	2.70067	10639.3	FOLIATED BEDROCK	260	38	1169.5	1777.13	1941.84	0	1941.84
7	2.70067	11638.6	FOLIATED BEDROCK	260	38	1380.85	2098.3	2352.92	0	2352.92
8	2.70067	12327.5	FOLIATED BEDROCK	260	38	1498.38	2276.89	2581.5	0	2581.5
9	2.70067	12567.6	FOLIATED BEDROCK	260	38	1748.7	2657.27	3068.38	0	3068.38
10	2.70067	11690.5	FOLIATED BEDROCK	260	38	1585.74	2409.64	2751.41	0	2751.41
11	2.70067	10637	FOLIATED BEDROCK	260	38	1529.93	2324.83	2642.86	0	2642.86
12	2.70067	9517.89	FOLIATED BEDROCK	260	38	1759.07	2673.03	3088.54	0	3088.54
13	2.70067	8338.25	FOLIATED BEDROCK	260	38	1353.41	2056.6	2299.54	0	2299.54
14	2.70067	7102.43	FOLIATED BEDROCK	500	42	1575.93	2394.74	2104.33	0	2104.33
15	2.70067	5814.02	FOLIATED BEDROCK	500	42	1414.8	2149.89	1832.38	0	1832.38
16	2.70067	4476.01	FOLIATED BEDROCK	500	42	1223.69	1859.49	1509.87	0	1509.87
17	2.70067	3115.97	FOLIATED BEDROCK	500	42	1005.44	1527.84	1141.53	0	1141.53
18	2.70067	2536.12	FOLIATED BEDROCK	500	42	926.195	1407.42	1007.79	0	1007.79
19	2.70067	2325.29	FOLIATED BEDROCK	500	42	918.531	1395.77	994.854	0	994.854
20	2.70067	2073.8	FOLIATED BEDROCK	500	42	899.181	1366.37	962.201	0	962.201
21	2.70067	1782.02	FOLIATED BEDROCK	500	42	866.583	1316.83	907.187	0	907.187
22	2.70067	1451.05	FOLIATED BEDROCK	500	42	819.078	1244.65	827.012	0	827.012
23	2.70067	1081.78	FOLIATED BEDROCK	500	42	754.637	1146.72	718.26	0	718.26
24	2.70067	674.94	FOLIATED BEDROCK	500	42	670.762	1019.27	576.709	0	576.709

25	2.70067	231.104	FOLIATED BEDROCK	500	42	571.127	867.867	408.559	0	408.559

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.51957

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	48.3274	608.934	596.556	0	0
2	51.028	602.826	1065.03	745.973	35.0083
3	53.7287	597.815	2688.03	1882.77	35.0085
4	56.4294	593.529	4880.76	3418.62	35.0085
5	59.13	589.772	7399.12	5182.54	35.0084
6	61.8307	586.43	10063.2	7048.52	35.0084
7	64.5314	583.426	12741.3	8924.36	35.0085
8	67.232	580.706	15051.2	10542.2	35.0083
9	69.9327	578.232	17394.7	12183.7	35.0084
10	72.6333	575.974	18342.2	12847.4	35.0085
11	75.334	573.91	19743.6	13829	35.0085
12	78.0347	572.021	20608.6	14434.8	35.0084
13	80.7353	570.292	18844.7	13199.3	35.0084
14	83.436	568.711	18827	13186.9	35.0084
15	86.1367	567.269	17608.9	12333.7	35.0083
16	88.8373	565.957	16194.9	11343.4	35.0086
17	91.538	564.769	14687.7	10287.6	35.0083
18	94.2387	563.697	13197.7	9244.03	35.0084
19	96.9393	562.738	11665.2	8170.6	35.0084
20	99.64	561.887	10033.5	7027.74	35.0085
21	102.341	561.14	8325.84	5831.64	35.0084
22	105.041	560.495	6573.08	4603.96	35.0084
23	107.742	559.948	4815.02	3372.57	35.0084
24	110.443	559.498	3101.88	2172.64	35.0084
25	113.143	559.143	1496.53	1048.21	35.0084
26	115.844	558.882	0	0	0

List Of Coordinates

Tension Crack

X	Y
0.00347645	609.947
38.7723	609.456
43.0374	609.402
53.5461	608.473

60.747	607.089
69.2011	604.416
75.7556	601.733

External Boundary

X	Y
196.702	527.568
187.45	538.321
182.348	544.252
181.367	545.006
142.399	550.006
139.503	550.878
133	550.621
119.115	557.137
95.0003	570.006
93.696	570.731
91.692	574.194
84.6818	586.308
81.1749	592.368
77.6679	598.429
74.161	604.489
70.9716	610.001
67.2996	611.459
65.0146	612.003
63.754	612.026
61.9769	612.216
57.1056	612.731
49.7451	613.271
45.5824	613.377
39.3232	613.806
36.1935	614.004
33.7342	614.023
30.3775	614.239
26.553	614.386
16.8292	614.761
12.614	615.297
5.0089	616.035
0.00380661	616.59
-0.00198804	500
231.033	499.989
231.033	527.568

Material Boundary

X	Y

72.3775	569.018
91.692	574.194

Material Boundary

X	Y
68.6847	574.965
88.0032	580.141

Material Boundary

X	Y
65.3811	581.136
84.6818	586.308

Material Boundary

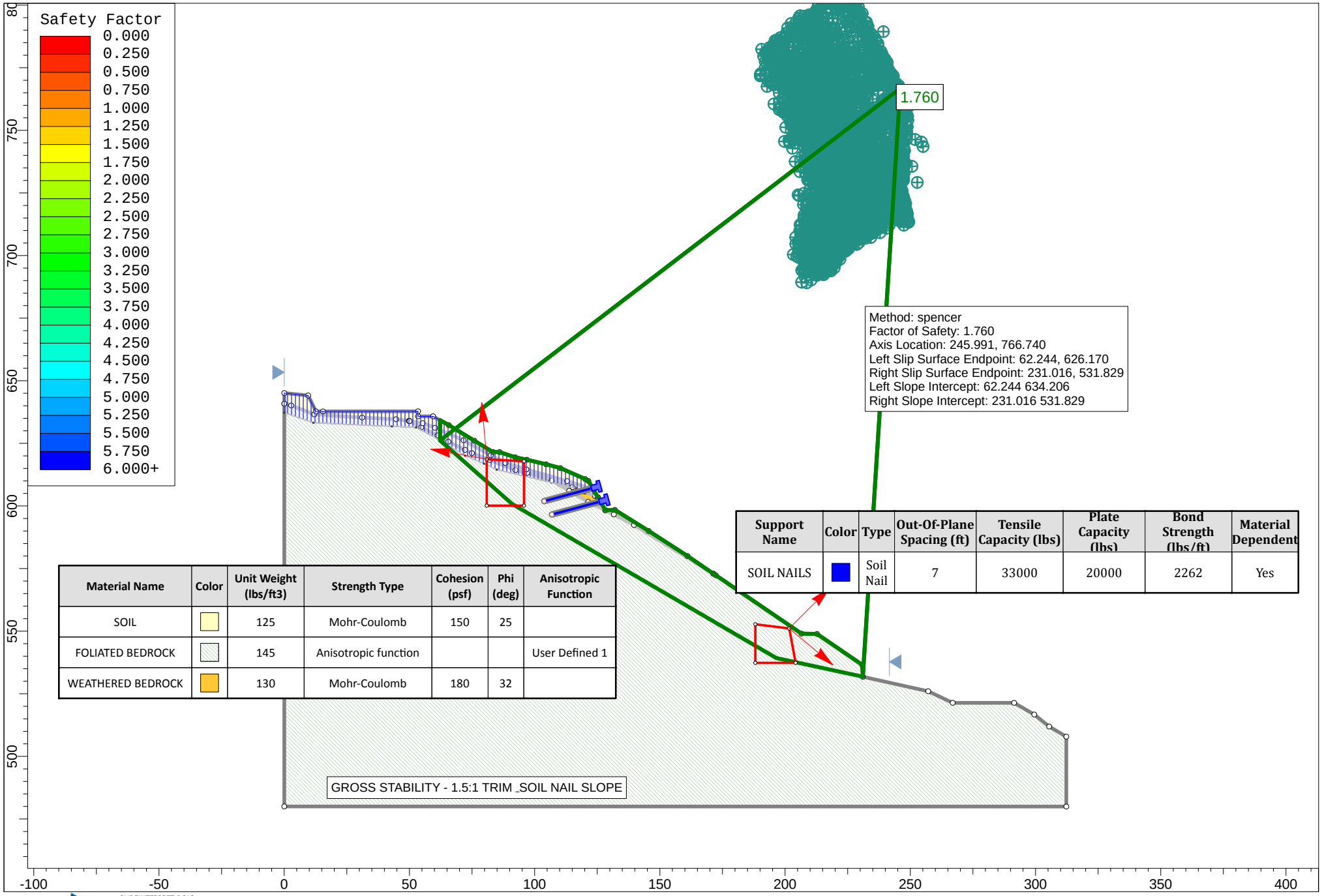
X	Y
61.8811	587.199
81.1749	592.368

Material Boundary

X	Y
58.3811	593.261
77.6679	598.429

Material Boundary

X	Y
54.8811	599.323
74.161	604.489



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Anisotropic Function
SOIL		125	Mohr-Coulomb	150	25	
FOLIATED BEDROCK		145	Anisotropic function			User Defined 1
WEATHERED BEDROCK		130	Mohr-Coulomb	180	32	

Support Name	Color	Type	Out-Of-Plane Spacing (ft)	Tensile Capacity (lbs)	Plate Capacity (lbs)	Bond Strength (lbs/ft)	Material Dependent
SOIL NAILS		Soil Nail	7	33000	20000	2262	Yes

SLIDEINTERPRET 6.018

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: Section E calc Nails.slim
Slide Modeler Version: 6.018
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 7/7/2012, 11:22:09 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

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: Non-Circular Block Search
Number of Surfaces: 5000
Pseudo-Random Surfaces: Enabled
Convex Surfaces Only: Disabled
Left Projection Angle (Start Angle): 170
Left Projection Angle (End Angle): 95
Right Projection Angle (Start Angle): 45
Right Projection Angle (End Angle): -40
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Tension Crack

Tension crack Water level: filled with water

Material Properties

Property	SOIL	FOLIATED BEDROCK	WEATHERED BEDROCK
Color			
Strength Type	Mohr-Coulomb	Anisotropic function	Mohr-Coulomb
Unit Weight [lbs/ft3]	125	145	130
Cohesion [psf]	150		180
Friction Angle [deg]	25		32
Water Surface	None	None	None
Ru Value	0	0	0

Anisotropic Functions

Name: User Defined 1

Angle From	Angle To	c	phi
-70	-90	500	42
-30	-70	260	38
90	-30	500	42

Support Properties

SOIL NAILS

Support Type: Soil Nail
Force Application: Active
Out-of-Plane Spacing: 7 ft
Tensile Capacity: 33000 lb
Plate Capacity: 20000 lb
Default Bond Strength: 2262 lb/ft

and Material Dependent

Bond Strength Dependency:

Material	Bond Strength (lbs/ft)
SOIL	0
FOLIATED BEDROCK	2262
WEATHERED BEDROCK	500

Global Minimums

Method: spencer

FS: 1.759580
Axis Location: 245.991, 766.740
Left Slip Surface Endpoint: 62.244, 626.170
Right Slip Surface Endpoint: 231.016, 531.829
Left Slope Intercept: 62.244 634.206
Right Slope Intercept: 231.016 531.829
Resisting Moment=8.05305e+007 lb-ft
Driving Moment=4.57668e+007 lb-ft
Resisting Horizontal Force=314255 lb
Driving Horizontal Force=178596 lb
Total Slice Area=2955.89 ft2

Global Minimum Coordinates

Method: spencer

X	Y
62.2435	626.17
91.066	600.768
196.52	539.239
231.016	531.829

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 4644
Number of Invalid Surfaces: 356

Error Codes:

Error Code -108 reported for 195 surfaces
Error Code -111 reported for 161 surfaces

Error Codes

The following errors were encountered during the computation:

-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: 1.75958

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	7.20562	8600.65	FOLIATED BEDROCK	260	38	422.344	743.148	618.401	0	618.401
2	7.20562	10796.8	FOLIATED BEDROCK	260	38	544.677	958.402	893.915	0	893.915
3	7.20562	13053.9	FOLIATED BEDROCK	260	38	630.967	1110.24	1088.25	0	1088.25
4	7.20562	17045	FOLIATED BEDROCK	260	38	783.545	1378.71	1431.89	0	1431.89
5	6.59088	18571.6	FOLIATED BEDROCK	260	38	1083.81	1907.05	2108.13	0	2108.13
6	6.59088	20761.2	FOLIATED BEDROCK	260	38	1194.61	2102.01	2357.66	0	2357.66
7	6.59088	22757.2	FOLIATED BEDROCK	260	38	1295.6	2279.71	2585.11	0	2585.11
8	6.59088	24004.3	FOLIATED BEDROCK	260	38	1358.7	2390.75	2727.23	0	2727.23
9	6.59088	24238	FOLIATED BEDROCK	260	38	1370.53	2411.55	2753.86	0	2753.86
10	6.59088	19881.1	FOLIATED BEDROCK	260	38	1150.08	2023.65	2257.37	0	2257.37
11	6.59088	20250.6	FOLIATED BEDROCK	260	38	1168.77	2056.54	2299.48	0	2299.48
12	6.59088	20130.9	FOLIATED BEDROCK	260	38	1162.71	2045.88	2285.83	0	2285.83
13	6.59088	19854.6	FOLIATED BEDROCK	260	38	1148.73	2021.28	2254.34	0	2254.34
14	6.59088	19490.8	FOLIATED BEDROCK	260	38	1130.32	1988.89	2212.88	0	2212.88
15	6.59088	19107.6	FOLIATED BEDROCK	260	38	1110.93	1954.77	2169.21	0	2169.21
16	6.59088	18574.2	FOLIATED BEDROCK	260	38	1083.94	1907.28	2108.43	0	2108.43
17	6.59088	17987.6	FOLIATED BEDROCK	260	38	1054.26	1855.05	2041.57	0	2041.57
			FOLIATED							

			BEDROCK							
19	6.59088	16756.1	FOLIATED BEDROCK	260	38	991.953	1745.42	1901.24	0	1901.24
20	6.59088	16140.1	FOLIATED BEDROCK	260	38	960.775	1690.56	1831.04	0	1831.04
21	6.89916	14962.8	FOLIATED BEDROCK	500	42	1484.98	2612.94	2346.66	0	2346.66
22	6.89916	12436.1	FOLIATED BEDROCK	500	42	1289.64	2269.23	1964.93	0	1964.93
23	6.89916	12366.6	FOLIATED BEDROCK	500	42	1284.27	2259.78	1954.43	0	1954.43
24	6.89916	9411.34	FOLIATED BEDROCK	500	42	1055.81	1857.78	1507.96	0	1507.96
25	6.89916	6100.26	FOLIATED BEDROCK	500	42	813.042	1430.61	1033.55	0	1033.55

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.75958

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	62.2435	626.17	2015.14	0	0
2	69.4492	619.819	2892.16	1483.35	27.1527
3	76.6548	613.469	4635.34	2377.4	27.1526
4	83.8604	607.119	6989.47	3584.81	27.1527
5	91.066	600.768	10423.9	5346.29	27.1527
6	97.6569	596.923	11371.7	5832.4	27.1527
7	104.248	593.077	12547.2	6435.3	27.1527
8	110.839	589.232	13930.3	7144.66	27.1527
9	117.43	585.386	15443.1	7920.54	27.1526
10	124.02	581.541	16980.1	8708.89	27.1527
11	130.611	577.695	18064.1	9264.85	27.1527
12	137.202	573.849	19186.5	9840.51	27.1527
13	143.793	570.004	20296.5	10409.8	27.1527
14	150.384	566.158	21377.7	10964.3	27.1526
15	156.975	562.313	22421.1	11499.5	27.1527
16	163.566	558.467	23424.6	12014.2	27.1528
17	170.157	554.621	24372.7	12500.4	27.1526
18	176.747	550.776	25259.7	12955.4	27.1527
19	183.338	546.93	26082.8	13377.5	27.1526
20	189.929	543.085	26841.8	13766.8	27.1527
21	196.52	539.239	27536.7	14123.2	27.1527
22	203.419	537.757	20746.4	10640.5	27.1526
23	210.318	536.275	14741	7560.49	27.1528
24	217.218	534.793	8757.29	4491.5	27.1527
25	224.117	533.311	3691.61	1893.38	27.1527

26	231.016	531.829	0	0	0

List Of Coordinates

Tension Crack

X	Y
0.012252	637.197
11.6323	633.192
42.9633	631.761
52.6302	631.337
62.1401	626.233
72.2358	620.071
79.7684	616.861
84.8567	614.504
116.584	606.996
125.225	603.477

Block Search Window

X	Y
80.858	618.665
80.858	600.131
95.72	600.131
95.72	617.834

Block Search Window

X	Y
188.09	552.731
188.09	537.34
204.189	537.34
201.652	551.1

External Boundary

X	Y
305.439	511.916
299.476	516.703
291.441	521.361
266.906	521.361
257.162	526.015
231.018	531.792
230.782	536.548
212.716	548.894
206.533	548.984

172.34	572.279
171.316	572.976
161.007	580
145.508	590
132.01	598.42
128.219	598.291
126.219	601.755
125.225	603.477
123.426	606.592
123.125	607.114
121.459	609.999
120.152	610.769
110.238	615.11
104.564	616.616
96.8649	618.477
92.2527	619.405
86.0002	621.504
83.3236	621.504
75.8829	626.045
65.6809	632.273
59.4398	635.784
53.4556	635.784
53.4556	637.777
15.4894	637.745
12.6517	637.745
9.56228	644.146
0.012252	645.103
0.012252	640.849
0.012252	480
312.277	479.977
312.279	507.88

Material Boundary

X	Y
0.012252	640.849
2.77128	640.129
12.0352	636.565
31.1229	635.287
44.6534	634.606
49.8278	633.976

Material Boundary

X	Y
49.8278	633.976

50.0454	633.864
54.753	631.454
61.2049	628.149
65.5104	625.665
72.1533	622.402
74.9464	621.087
82.1365	618.323
92.3026	614.282
97.005	613.171
106.787	610.13
115.115	607.54
119.147	606.048
119.946	605.752
124.056	604.009
125.225	603.477

Material Boundary

X	Y
106.787	610.13
113.771	606.025
115.44	605.054
121.34	601.625
122.904	600.867
128.219	598.291
131.612	596.646
139.632	592.394
171.316	572.976

Material Boundary

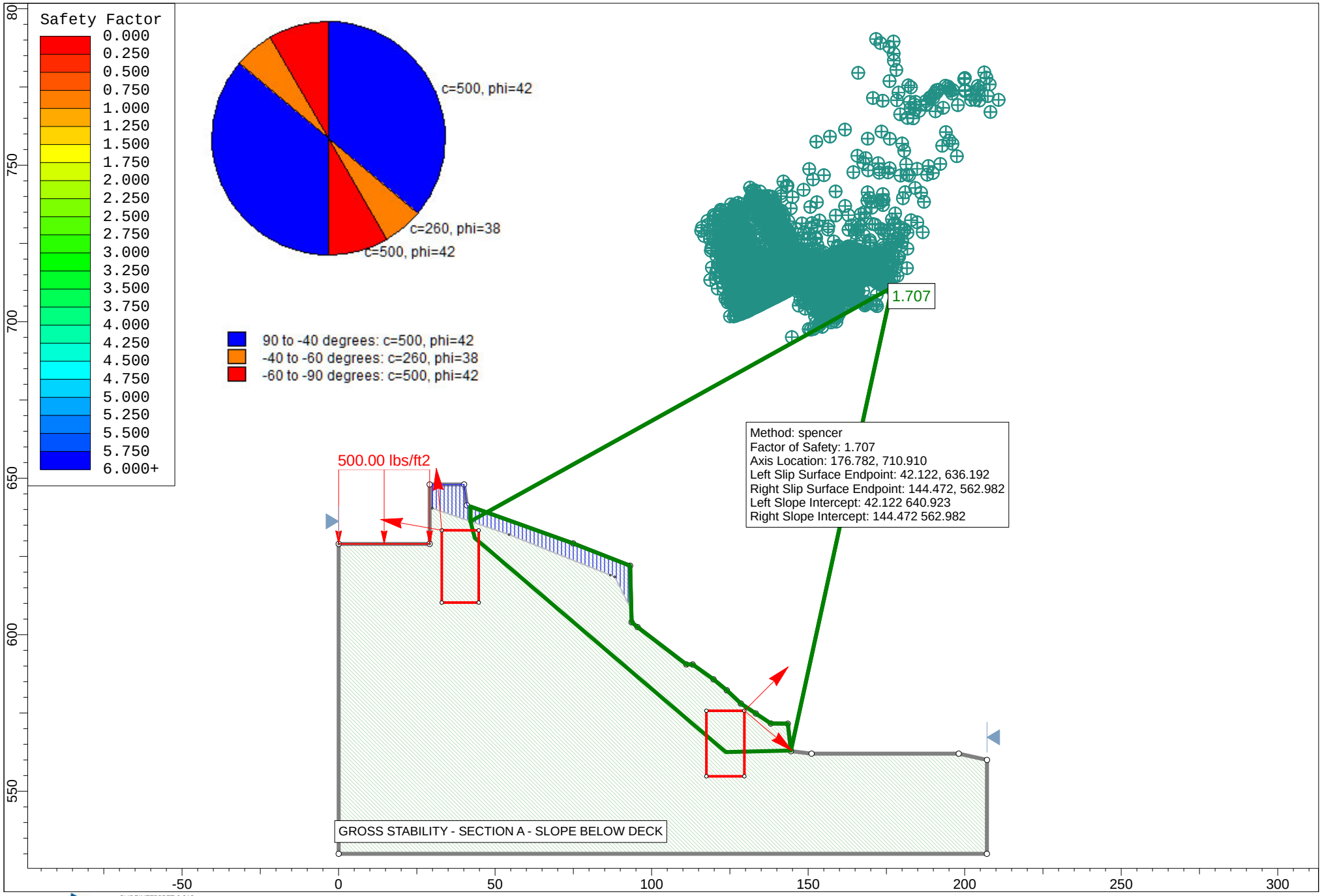
X	Y
106.9	596.578
122.904	600.867
126.219	601.755

Material Boundary

X	Y
103.806	601.937
115.44	605.054
119.147	606.048
122.398	606.919
123.125	607.114

Material Boundary

X	Y
50.0454	633.864
55.3222	633.044
60.2518	631.189
71.5939	626.192
82.4645	620.236
88.3513	617.168
96.705	614.623
112.938	609.932
122.398	606.919
123.426	606.592



SLIDEINTERPRET 6.018

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: SectionAcalc.slim
Slide Modeler Version: 6.018
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 9/27/2012, 10:47:52 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

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: Non-Circular Block Search
Number of Surfaces: 5000
Pseudo-Random Surfaces: Enabled
Convex Surfaces Only: Disabled
Left Projection Angle (Start Angle): 95
Left Projection Angle (End Angle): 170
Right Projection Angle (Start Angle): 45
Right Projection Angle (End Angle): -40
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

1 Distributed Load present

Distributed Load 1

Distribution: Constant
Magnitude [psf]: 500
Orientation: Normal to boundary

Tension Crack

Tension crack Water level: filled with water

Material Properties

Property	SLATE BEDROCK
Color	
Strength Type	Anisotropic function
Unit Weight [lbs/ft3]	145
Water Surface	None
Ru Value	0

Anisotropic Functions

Name: User Defined 1

Angle From	Angle To	c	phi
-60	-90	500	42
-40	-60	260	38
90	-40	500	42

Global Minimums

Method: spencer

FS: 1.706970
Axis Location: 176.782, 710.910
Left Slip Surface Endpoint: 42.122, 636.192
Right Slip Surface Endpoint: 144.472, 562.982
Left Slope Intercept: 42.122 640.923
Right Slope Intercept: 144.472 562.982
Resisting Moment=3.60876e+007 lb-ft
Driving Moment=2.11413e+007 lb-ft
Resisting Horizontal Force=202055 lb
Driving Horizontal Force=118370 lb
Total Slice Area=1882.94 ft2

Global Minimum Coordinates

Method: spencer

X	Y
42.1221	636.192
43.5119	630.845
123.703	562.482
144.472	562.982

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 4455
Number of Invalid Surfaces: 545

Error Codes:

Error Code -108 reported for 334 surfaces
Error Code -111 reported for 211 surfaces

Error Codes

The following errors were encountered during the computation:

-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: 1.70697

					Base			Base		Effective

Slice Number	Width [ft]	Weight [lbs]	Base Material	Cohesion [psf]	Friction Angle [degrees]	Stress [psf]	Strength [psf]	Normal Stress [psf]	Pressure [psf]	Normal Stress [psf]
1	1.38981	1441.78	SLATE BEDROCK	500	42	274.437	468.456	-35.0336	0	-35.0336
2	4.22056	6499.31	SLATE BEDROCK	260	38	569.279	971.743	910.989	0	910.989
3	4.22056	7773.96	SLATE BEDROCK	260	38	652.39	1113.61	1092.57	0	1092.57
4	4.22056	9048.61	SLATE BEDROCK	260	38	735.501	1255.48	1274.15	0	1274.15
5	4.22056	10323.3	SLATE BEDROCK	260	38	818.614	1397.35	1455.74	0	1455.74
6	4.22056	11597.9	SLATE BEDROCK	260	38	901.721	1539.21	1637.32	0	1637.32
7	4.22056	12872.5	SLATE BEDROCK	260	38	984.833	1681.08	1818.9	0	1818.9
8	4.22056	14147.2	SLATE BEDROCK	260	38	1067.94	1822.95	2000.49	0	2000.49
9	4.22056	15408.2	SLATE BEDROCK	260	38	1150.17	1963.3	2180.11	0	2180.11
10	4.22056	16604	SLATE BEDROCK	260	38	1228.14	2096.39	2350.47	0	2350.47
11	4.22056	17791.3	SLATE BEDROCK	260	38	1305.55	2228.53	2519.61	0	2519.61
12	4.22056	18978.6	SLATE BEDROCK	260	38	1382.97	2360.68	2688.74	0	2688.74
13	4.22056	18065.7	SLATE BEDROCK	260	38	1323.44	2259.07	2558.7	0	2558.7
14	4.22056	9769.33	SLATE BEDROCK	260	38	782.492	1335.69	1376.83	0	1376.83
15	4.22056	9988.6	SLATE BEDROCK	260	38	796.792	1360.1	1408.06	0	1408.06
16	4.22056	10217.4	SLATE BEDROCK	260	38	811.707	1385.56	1440.66	0	1440.66
17	4.22056	10446.2	SLATE BEDROCK	260	38	826.628	1411.03	1473.25	0	1473.25
18	4.22056	11395.8	SLATE BEDROCK	260	38	888.545	1516.72	1608.52	0	1608.52
19	4.22056	11966.2	SLATE BEDROCK	260	38	925.74	1580.21	1689.79	0	1689.79
20	4.22056	12195	SLATE BEDROCK	260	38	940.655	1605.67	1722.38	0	1722.38
21	4.15379	10845.7	SLATE BEDROCK	500	42	2743.45	4682.99	4645.68	0	4645.68
22	4.15379	8676.36	SLATE BEDROCK	500	42	2289.64	3908.35	3785.35	0	3785.35
23	4.15379	6939.43	SLATE BEDROCK	500	42	1926.28	3288.1	3096.51	0	3096.51
24	4.15379	5454.45	SLATE BEDROCK	500	42	1615.63	2757.83	2507.56	0	2507.56

25	4.15379	4579.41	SLATE BEDROCK	500	42	1446.23	2468.67	2186.43	0	2186.43

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.70697

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	42.1221	636.192	698.101	0	0
2	43.5119	630.845	129.491	89.4189	34.6267
3	47.7325	627.247	1005.52	694.348	34.6265
4	51.953	623.649	2184.24	1508.3	34.6265
5	56.1736	620.051	3665.67	2531.29	34.6266
6	60.3942	616.453	5449.8	3763.3	34.6266
7	64.6147	612.855	7536.64	5204.34	34.6266
8	68.8353	609.257	9926.17	6854.41	34.6266
9	73.0558	605.658	12618.4	8713.51	34.6266
10	77.2764	602.06	15610.1	10779.4	34.6266
11	81.497	598.462	18885.8	13041.4	34.6266
12	85.7175	594.864	22443.4	15498.1	34.6267
13	89.9381	591.266	26283	18149.4	34.6265
14	94.1586	587.668	29905.8	20651.1	34.6266
15	98.3792	584.07	31558.4	21792.3	34.6266
16	102.6	580.472	33263	22969.4	34.6266
17	106.82	576.874	35022	24184.1	34.6266
18	111.041	573.276	36835.4	25436.3	34.6266
19	115.261	569.678	38874.2	26844.1	34.6265
20	119.482	566.08	41048.5	28345.6	34.6266
21	123.703	562.482	43277.1	29884.6	34.6267
22	127.856	562.582	31421.2	21697.5	34.6265
23	132.01	562.682	21535.5	14871.1	34.6266
24	136.164	562.782	13227.6	9134.14	34.6265
25	140.318	562.882	6268.37	4328.55	34.6266
26	144.472	562.982	0	0	0

List Of Coordinates

Line Load

X	Y
29.0811	628.999
0.00831899	628.999

Tension Crack

X	Y
29.9271	640.379
54.4312	631.967
86.7819	619.021
88.2006	618.493
93.4863	607.973

Block Search Window

X	Y
32.963	633.361
32.963	610.243
44.737	610.243
44.737	633.326

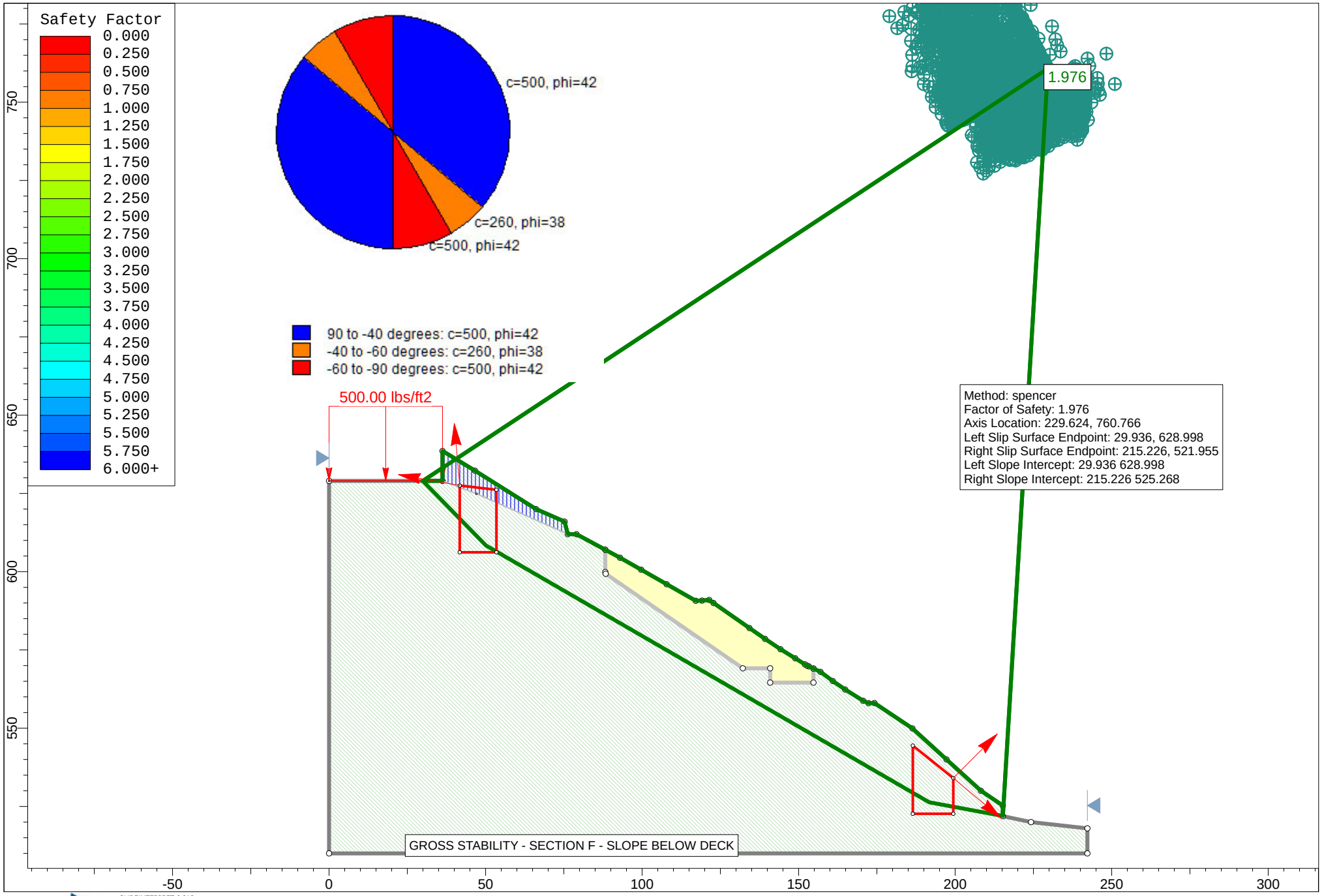
Block Search Window

X	Y
117.488	575.698
117.488	554.742
129.626	554.742
129.626	575.698

External Boundary

X	Y
0.00831899	628.999
0.00831249	530
207.1	530
207.106	560
198.08	562
151.09	562
144.495	562.778
143.481	571.539
138.047	571.611
133.259	574.806
128.471	578
124.011	582.209
119.763	585.721
113.083	590.5
111.083	590.5
95.4854	602.416
93.5945	604.001
93.1042	622.004
74.9152	629.149
40.9988	641.326

40.0866	648.001
29.0951	648.001
29.0811	628.999



SLIDEINTERPRET 6.018

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: SectionFcalc.slim
Slide Modeler Version: 6.018
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 9/27/2012, 11:21:29 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

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: Non-Circular Block Search
Number of Surfaces: 5000
Pseudo-Random Surfaces: Enabled
Convex Surfaces Only: Disabled
Left Projection Angle (Start Angle): 95
Left Projection Angle (End Angle): 170
Right Projection Angle (Start Angle): 45
Right Projection Angle (End Angle): -40
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

1 Distributed Load present

Distributed Load 1

Distribution: Constant
Magnitude [psf]: 500
Orientation: Normal to boundary

Tension Crack

Tension crack Water level: filled with water

Material Properties

Property	COMPACTED FILL	SLATE BEDROCK
Color		
Strength Type	Mohr-Coulomb	Anisotropic function
Unit Weight [lbs/ft3]	135	145
Cohesion [psf]	430	
Friction Angle [deg]	34	
Water Surface	None	None
Ru Value	0	0

Anisotropic Functions

Name: User Defined 1

Angle From	Angle To	c	phi
-60	-90	500	42
-40	-60	260	38
90	-40	500	42

Global Minimums

Method: spencer

FS: 1.976160
Axis Location: 229.624, 760.766
Left Slip Surface Endpoint: 29.936, 628.998
Right Slip Surface Endpoint: 215.226, 521.955
Left Slope Intercept: 29.936 628.998
Right Slope Intercept: 215.226 525.268
Resisting Moment=1.11946e+008 lb-ft
Driving Moment=5.66483e+007 lb-ft
Resisting Horizontal Force=432475 lb
Driving Horizontal Force=218846 lb
Total Slice Area=3534.93 ft2

Global Minimum Coordinates

Method: spencer

X	Y
29.9363	628.998
50.1233	608.341
191.714	526.329
215.226	521.955
215.227	525.268

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 4548
Number of Invalid Surfaces: 452

Error Codes:

Error Code -108 reported for 297 surfaces
Error Code -111 reported for 155 surfaces

Error Codes

The following errors were encountered during the computation:

-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: 1.97616

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	6.729	3960.53	SLATE BEDROCK	260	38	357.912	707.291	572.506	0	572.506
2	6.729	17150.2	SLATE BEDROCK	260	38	700.409	1384.12	1438.81	0	1438.81
3	6.729	19855.8	SLATE BEDROCK	260	38	792.658	1566.42	1672.14	0	1672.14
4	7.45215	23249.2	SLATE BEDROCK	500	42	1317.07	2602.74	2335.33	0	2335.33
5	7.45215	22859.7	SLATE BEDROCK	500	42	1299.18	2567.39	2296.07	0	2296.07
6	7.45215	23020.9	SLATE BEDROCK	500	42	1306.58	2582.02	2312.32	0	2312.32
7	7.45215	22345.4	SLATE BEDROCK	500	42	1275.56	2520.72	2244.24	0	2244.24
8	7.45215	22197.1	SLATE BEDROCK	500	42	1268.75	2507.26	2229.29	0	2229.29
9	7.45215	21983.6	SLATE BEDROCK	500	42	1258.95	2487.89	2207.78	0	2207.78
10	7.45215	22004.2	SLATE BEDROCK	500	42	1259.9	2489.76	2209.85	0	2209.85
11	7.45215	22022.1	SLATE BEDROCK	500	42	1260.72	2491.38	2211.65	0	2211.65
12	7.45215	22027.6	SLATE BEDROCK	500	42	1260.97	2491.88	2212.2	0	2212.2
13	7.45215	23898.7	SLATE BEDROCK	500	42	1346.89	2661.68	2400.79	0	2400.79
14	7.45215	23883	SLATE BEDROCK	500	42	1346.18	2660.26	2399.21	0	2399.21
15	7.45215	23119.5	SLATE BEDROCK	500	42	1311.11	2590.97	2322.26	0	2322.26
16	7.45215	22425.3	SLATE BEDROCK	500	42	1279.24	2527.98	2252.3	0	2252.3
17	7.45215	22353.1	SLATE BEDROCK	500	42	1275.92	2521.42	2245.02	0	2245.02
18	7.45215	22927.1	SLATE BEDROCK	500	42	1302.28	2573.51	2302.86	0	2302.86
19	7.45215	22109	SLATE BEDROCK	500	42	1264.71	2499.27	2220.41	0	2220.41
20	7.45215	22537.6	SLATE BEDROCK	500	42	1284.39	2538.16	2263.61	0	2263.61
21	7.45215	22666.2	SLATE BEDROCK	500	42	1290.3	2549.83	2276.56	0	2276.56
22	7.45215	21440.5	SLATE BEDROCK	500	42	1234.01	2438.6	2153.04	0	2153.04
			SLATE							

			BEDROCK							
24	7.83713	11570	SLATE BEDROCK	500	42	1010.27	1996.45	1661.98	0	1661.98
25	7.83713	5958.76	SLATE BEDROCK	500	42	674.595	1333.11	925.258	0	925.258

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.97616

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	29.9363	628.998	0	0	0
2	36.6653	622.112	1536.12	831.282	28.4203
3	43.3943	615.226	6735	3644.69	28.4203
4	50.1233	608.341	12920.4	6991.98	28.4204
5	57.5755	604.024	13195.2	7140.7	28.4204
6	65.0276	599.708	13433.8	7269.78	28.4203
7	72.4798	595.391	13687.3	7406.98	28.4204
8	79.9319	591.075	13877.9	7510.14	28.4204
9	87.3841	586.758	14054.7	7605.82	28.4204
10	94.8362	582.442	14211.7	7690.73	28.4202
11	102.288	578.126	14370.5	7776.69	28.4203
12	109.741	573.809	14531	7863.55	28.4203
13	117.193	569.493	14692	7950.68	28.4204
14	124.645	565.176	15027.3	8132.14	28.4204
15	132.097	560.86	15361.2	8312.81	28.4203
16	139.549	556.544	15623.9	8454.98	28.4203
17	147.001	552.227	15822	8562.17	28.4203
18	154.453	547.911	16013.3	8665.71	28.4203
19	161.906	543.594	16258.1	8798.19	28.4204
20	169.358	539.278	16426.7	8889.43	28.4204
21	176.81	534.961	16635.2	9002.27	28.4204
22	184.262	530.645	16855.7	9121.59	28.4204
23	191.714	526.329	16962.1	9179.13	28.4203
24	199.551	524.871	9633.25	5213.1	28.4203
25	207.388	523.413	4146.34	2243.82	28.4203
26	215.226	521.955	0	0	0

List Of Coordinates

Line Load

X	Y
36.2256	628.998

-6.2057e-012	628.998

Tension Crack

X	Y
36.2256	628.998
47.075	624.888
76.2256	611.991

Block Search Window

X	Y
41.745	627.528
41.745	606.2
53.475	606.2
53.475	626.17

Block Search Window

X	Y
186.452	544.413
186.452	522.646
199.409	522.646
199.409	534.048

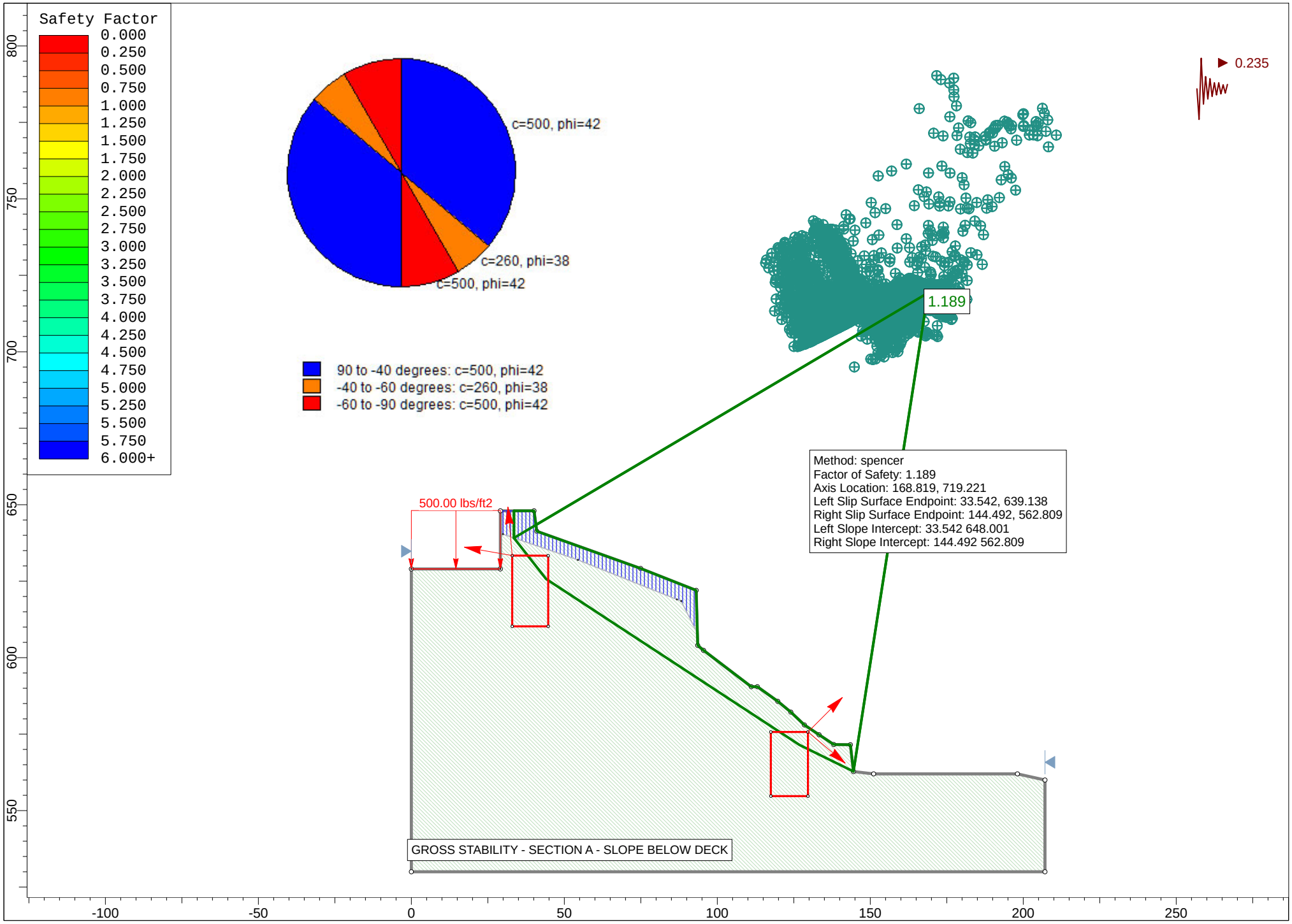
External Boundary

X	Y
224.228	520
215.226	521.891
215.226	525.268
208.226	530
197.226	540
186.325	549.909
174.191	558.021
172.327	558
170.601	558.741
164.848	562.353
160.91	565.068
156.959	568
154.726	569.041
153.275	569.718
152.621	570
152.016	570.375
148.904	572.309
144.206	575.214

139.267	578.515
134.257	582
122.809	590
121.445	590.942
119.121	590.77
117.131	590.687
107.825	596
99.694	600.624
92.9308	604.465
88.2256	606.999
79.0485	611.941
76.2256	611.991
75.2256	615.991
66.1158	620
46.5959	632.25
36.2256	638.562
36.2256	628.998
-6.2057e-012	628.998
-9.1933e-012	510
242.226	510
242.226	518

Material Boundary

X	Y
88.2256	606.999
88.2256	599.892
88.3749	599.32
132.16	569.109
140.896	569.109
140.896	564.552
154.726	564.552
154.726	569.041


Safety Factor
0.000
0.250
0.500
0.750
1.000
1.250
1.500
1.750
2.000
2.250
2.500
2.750
3.000
3.250
3.500
3.750
4.000
4.250
4.500
4.750
5.000
5.250
5.500
5.750
6.000+
c=500, phi=42
c=260, phi=38
c=500, phi=42
90 to -40 degrees: c=500, phi=42
-40 to -60 degrees: c=260, phi=38
-60 to -90 degrees: c=500, phi=42
0.235
1.189
Method: spencer
Factor of Safety: 1.189
Axis Location: 168.819, 719.221
Left Slip Surface Endpoint: 33.542, 639.138
Right Slip Surface Endpoint: 144.492, 562.809
Left Slope Intercept: 33.542 648.001
Right Slope Intercept: 144.492 562.809
500.00 lbs/ft2
GROSS STABILITY - SECTION A - SLOPE BELOW DECK
800
750
700
650
600
550
-100
-50
0
50
100
150
200
250

Slide Analysis Information

SLIDE - An Interactive Slope Stability Program

Project Summary

File Name: SectionAcalc SEIS
Slide Modeler Version: 6.029
Project Title: SLIDE - An Interactive Slope Stability Program
Date Created: 9/27/2012, 10:47:52 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

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: Non-Circular Block Search
Number of Surfaces: 5000
Pseudo-Random Surfaces: Enabled
Convex Surfaces Only: Disabled
Left Projection Angle (Start Angle): 95
Left Projection Angle (End Angle): 170
Right Projection Angle (Start Angle): 45
Right Projection Angle (End Angle): -40
Minimum Elevation: Not Defined
Minimum Depth: Not Defined

Loading

Seismic Load Coefficient (Horizontal): 0.235
1 Distributed Load present

Distributed Load 1

Distribution: Constant
Magnitude [psf]: 500
Orientation: Normal to boundary

Tension Crack

Tension crack Water level: filled with water

Material Properties

Property	SLATE BEDROCK
Color	
Strength Type	Anisotropic function
Unit Weight [lbs/ft3]	145
Water Surface	None
Ru Value	0

Anisotropic Functions

Name: User Defined 1

Angle From	Angle To	c	phi
-90	-60	500	42
-60	-40	260	38
-40	90	500	42

Global Minimums

Method: spencer

FS: 1.188880
Axis Location: 168.819, 719.221
Left Slip Surface Endpoint: 33.542, 639.138
Right Slip Surface Endpoint: 144.492, 562.809
Left Slope Intercept: 33.542 648.001
Right Slope Intercept: 144.492 562.809
Resisting Moment=3.16231e+007 lb-ft
Driving Moment=2.65991e+007 lb-ft
Resisting Horizontal Force=178692 lb
Driving Horizontal Force=150303 lb
Total Slice Area=1644.11 ft2

Global Minimum Coordinates

Method: spencer

X	Y
33.5416	639.138
44.0133	625.728
126.869	571.464
144.492	562.809

Valid / Invalid Surfaces

Method: spencer

Number of Valid Surfaces: 3729
Number of Invalid Surfaces: 1271

Error Codes:

Error Code -108 reported for 523 surfaces
Error Code -111 reported for 748 surfaces

Error Codes

The following errors were encountered during the computation:

-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: 1.18888

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	5.23582	9274.03	SLATE BEDROCK	260	38	396.355	471.218	270.346	0	270.346
2	5.23582	10768.6	SLATE BEDROCK	260	38	589.356	700.673	564.036	0	564.036
3	4.36083	9586.45	SLATE BEDROCK	500	42	1417.98	1685.81	1316.98	0	1316.98

4	4.36083	10402.4	SLATE BEDROCK	500	42	1491.4	1773.1	1413.92	0	1413.92
5	4.36083	11218.3	SLATE BEDROCK	500	42	1564.83	1860.4	1510.87	0	1510.87
6	4.36083	12034.3	SLATE BEDROCK	500	42	1638.26	1947.69	1607.82	0	1607.82
7	4.36083	12850.2	SLATE BEDROCK	500	42	1711.68	2034.98	1704.77	0	1704.77
8	4.36083	13666.2	SLATE BEDROCK	500	42	1785.11	2122.28	1801.72	0	1801.72
9	4.36083	14482.1	SLATE BEDROCK	500	42	1858.53	2209.57	1898.67	0	1898.67
10	4.36083	15259.1	SLATE BEDROCK	500	42	1928.45	2292.7	1990.99	0	1990.99
11	4.36083	15982.2	SLATE BEDROCK	500	42	1993.52	2370.06	2076.92	0	2076.92
12	4.36083	16704.9	SLATE BEDROCK	500	42	2058.56	2447.38	2162.78	0	2162.78
13	4.36083	17427.6	SLATE BEDROCK	500	42	2123.59	2524.69	2248.65	0	2248.65
14	4.36083	10178.2	SLATE BEDROCK	500	42	1471.23	1749.12	1387.28	0	1387.28
15	4.36083	6365.15	SLATE BEDROCK	500	42	1128.1	1341.18	934.223	0	934.223
16	4.36083	6064.56	SLATE BEDROCK	500	42	1101.05	1309.02	898.507	0	898.507
17	4.36083	5763.97	SLATE BEDROCK	500	42	1074	1276.86	862.792	0	862.792
18	4.36083	5842.49	SLATE BEDROCK	500	42	1081.07	1285.26	872.121	0	872.121
19	4.36083	6217.43	SLATE BEDROCK	500	42	1114.81	1325.37	916.67	0	916.67
20	4.36083	5989.83	SLATE BEDROCK	500	42	1094.33	1301.03	889.629	0	889.629
21	4.36083	5467.67	SLATE BEDROCK	500	42	1047.34	1245.16	827.586	0	827.586
22	4.4056	4661.65	SLATE BEDROCK	500	42	1191.77	1416.88	1018.3	0	1018.3
23	4.4056	4114.91	SLATE BEDROCK	500	42	1127.82	1340.84	933.843	0	933.843
24	4.4056	3816.63	SLATE BEDROCK	500	42	1092.92	1299.35	887.77	0	887.77
25	4.4056	4257.5	SLATE BEDROCK	500	42	1140.02	1355.35	949.958	0	949.958

Interslice Data

Global Minimum Query (spencer) - Safety Factor: 1.18888

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	33.5416	639.138	2450.91	0	0
2	38.7775	632.433	4371.98	5399.33	51.002
3	44.0133	625.728	7605.01	9392.09	51.002
4	48.3741	622.872	7448.14	9198.35	51.002
5	52.735	620.016	7440.35	9188.73	51.002
6	57.0958	617.16	7581.65	9363.24	51.002
7	61.4566	614.304	7872.05	9721.87	51.002
8	65.8175	611.448	8311.53	10264.6	51.002
9	70.1783	608.592	8900.11	10991.5	51.002
10	74.5391	605.736	9637.78	11902.5	51.002
11	78.9	602.88	10517.4	12988.9	51.0021
12	83.2608	600.024	11529.2	14238.4	51.002
13	87.6216	597.168	12673	15651	51.0021
14	91.9825	594.312	13948.9	17226.7	51.002
15	96.3433	591.456	13900.1	17166.5	51.0021
16	100.704	588.6	13154.7	16245.8	51.0019
17	105.065	585.744	12354.2	15257.3	51.0021
18	109.426	582.888	11498.9	14201	51.0021

19	113.787	580.032	10657.9	13162.4	51.0021
20	118.147	577.176	9885.44	12208.4	51.0021
21	122.508	574.32	9071.38	11203	51.0019
22	126.869	571.464	8161.91	10079.8	51.0019
23	131.275	569.3	6221.13	7683	51.002
24	135.68	567.137	4250.32	5249.09	51.002
25	140.086	564.973	2263.14	2794.94	51.002
26	144.492	562.809	0	0	0

List Of Coordinates

Line Load

X	Y
29.0811	628.999
0.00831899	628.999

Tension Crack

X	Y
29.9271	640.379
54.4312	631.967
86.7819	619.021
88.2006	618.493
93.4863	607.973

Block Search Window

X	Y
32.963	633.361
32.963	610.243
44.737	610.243
44.737	633.326

Block Search Window

X	Y
117.488	575.698
117.488	554.742
129.626	554.742
129.626	575.698

External Boundary

X	Y
0.00831899	628.999
0.00831249	530

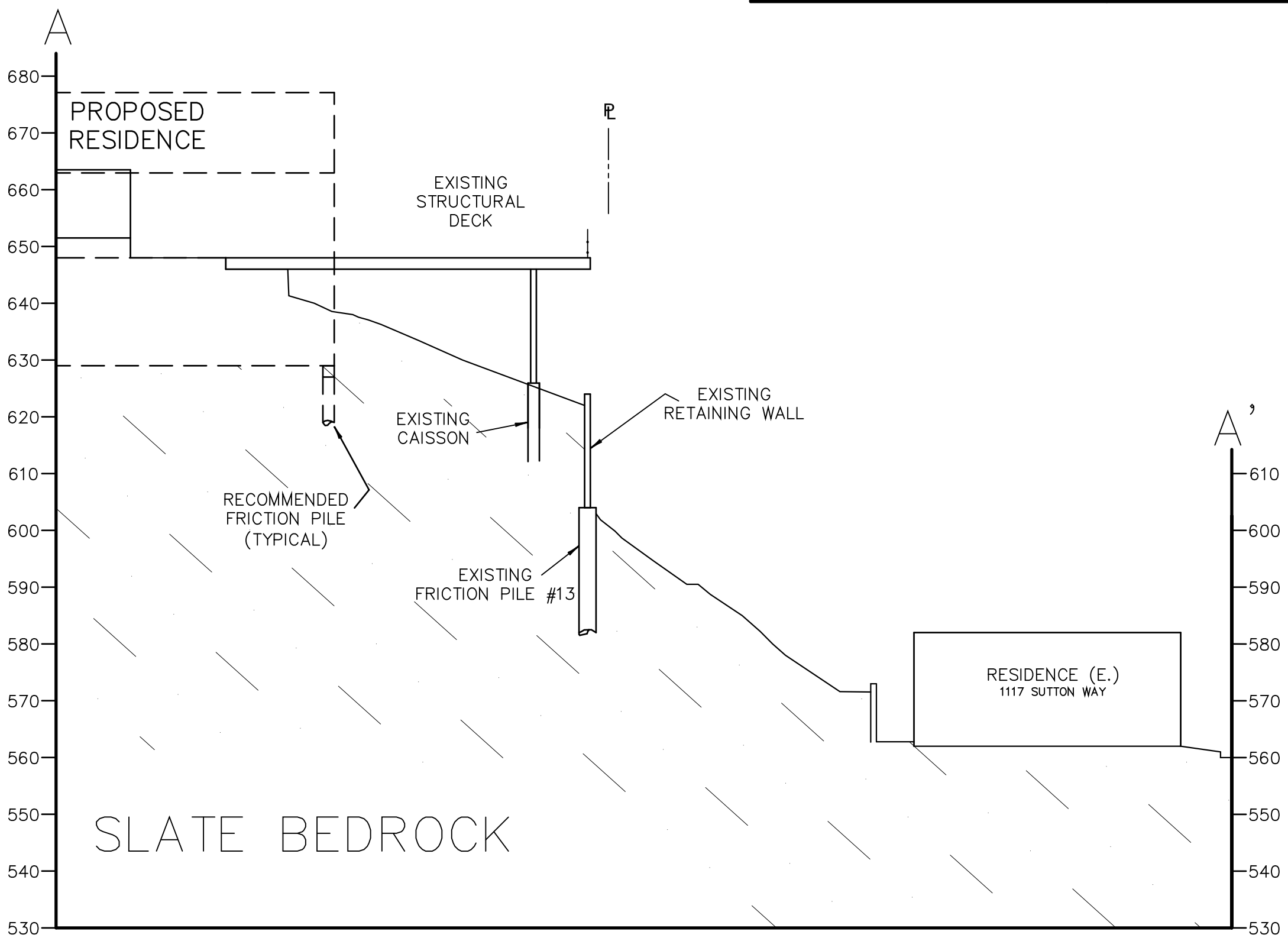
207.1	530
207.106	560
198.08	562
151.09	562
144.495	562.778
143.481	571.539
138.047	571.611
133.259	574.806
128.471	578
124.011	582.209
119.763	585.721
113.083	590.5
111.083	590.5
95.4854	602.416
93.5945	604.001
93.1042	622.004
74.9152	629.149
40.9988	641.326
40.0866	648.001
29.0951	648.001
29.0811	628.999

IRVINE GEOTECHNICAL Inc

SECTION A - A'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

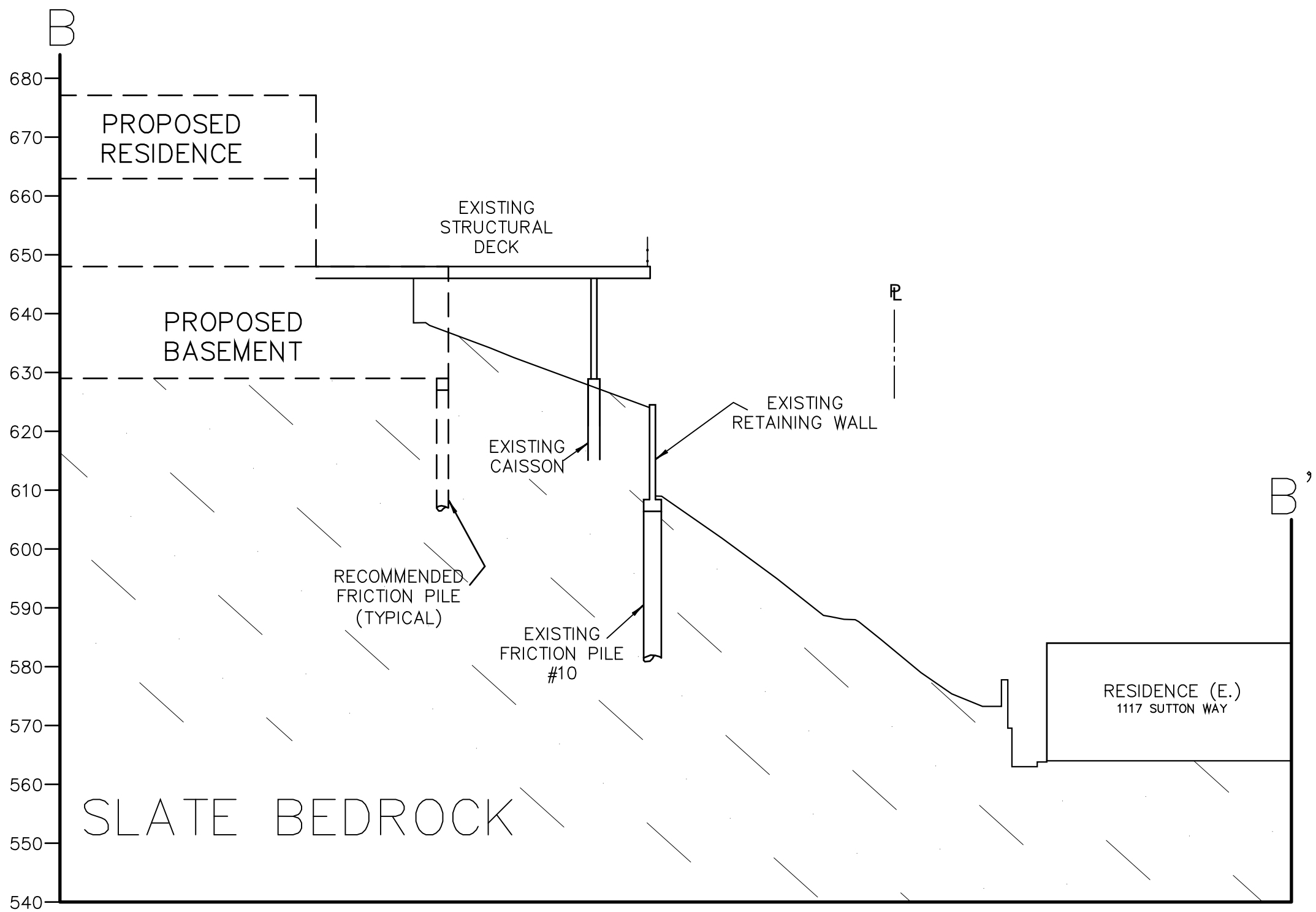


IRVINE GEOTECHNICAL Inc

SECTION B - B'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

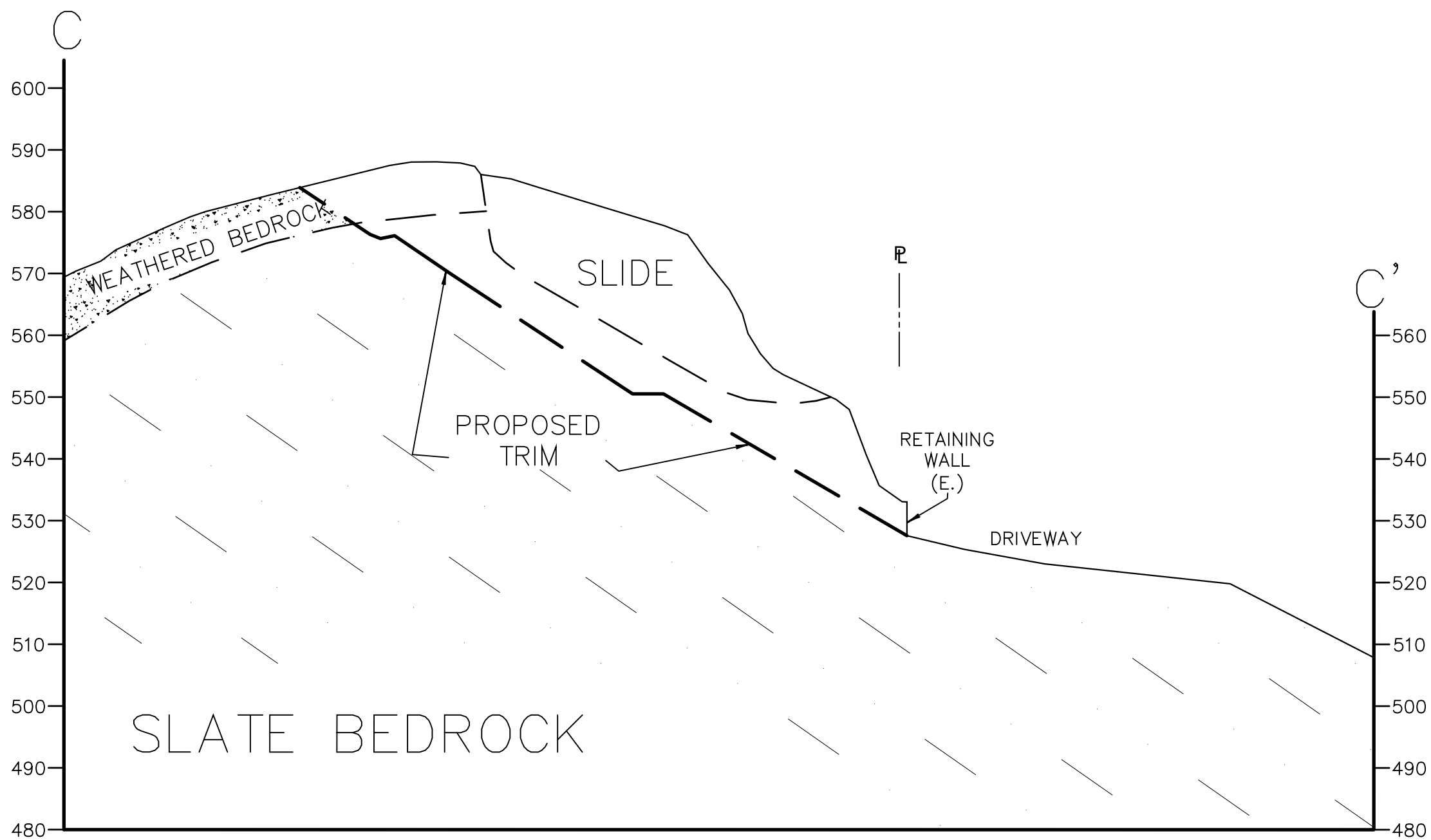


IRVINE GEOTECHNICAL Inc

SECTION C - C'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

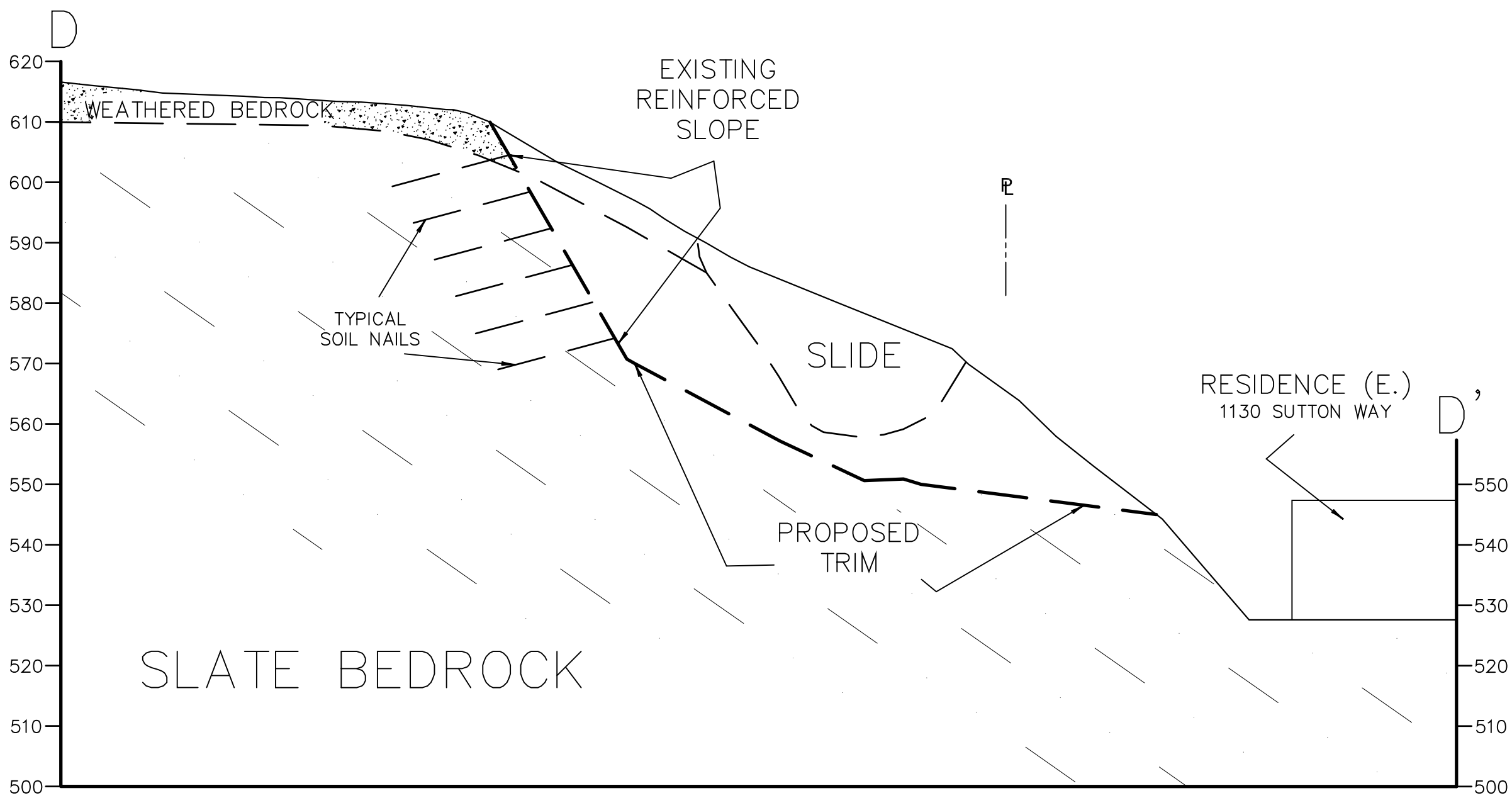


IRVINE GEOTECHNICAL Inc

SECTION D - D'

PROJECT: IC12053- AQUILINI

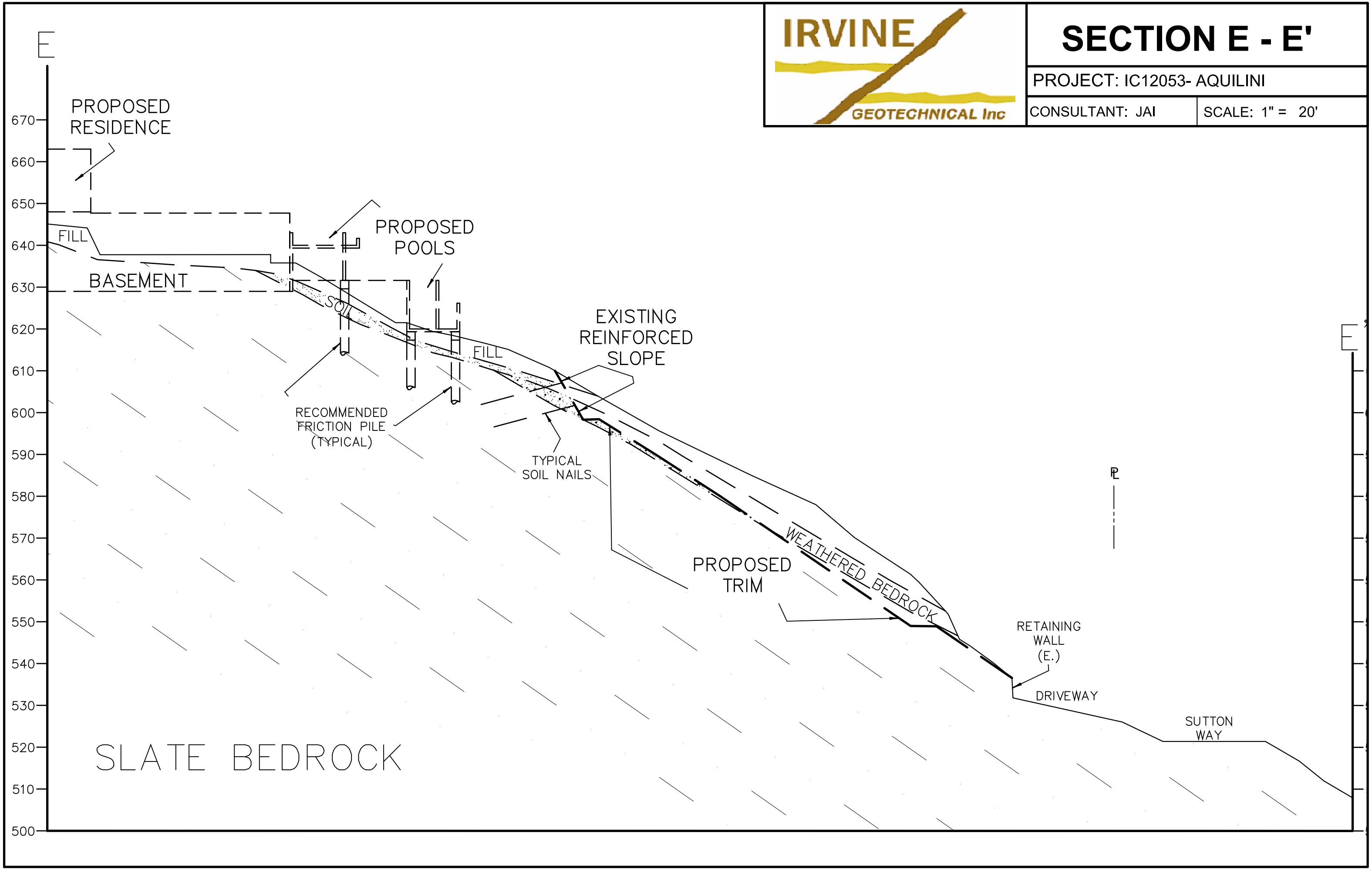
CONSULTANT: JAI | SCALE: 1" = 20'



SECTION E - E'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

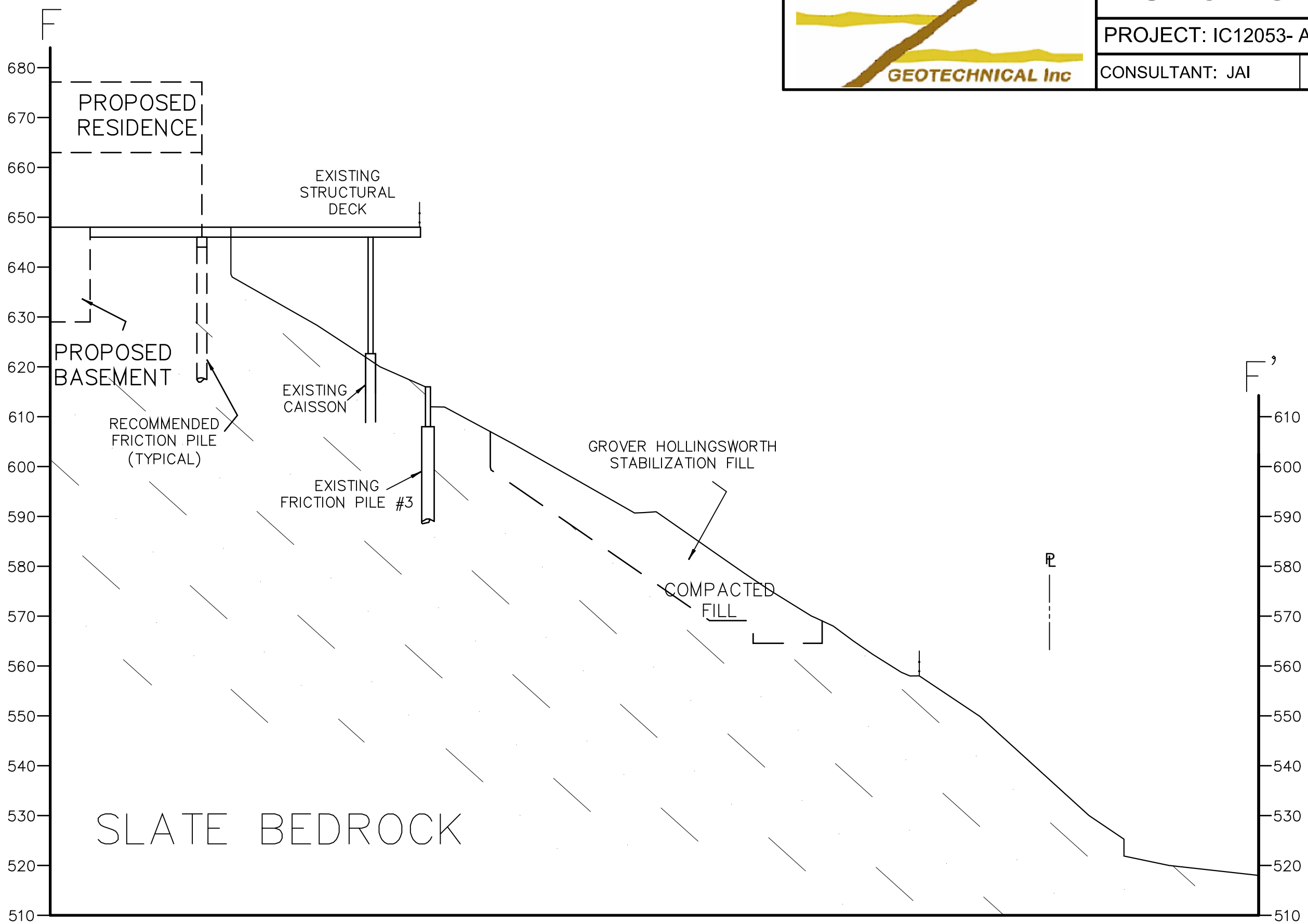


IRVINE GEOTECHNICAL Inc

SECTION F - F'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

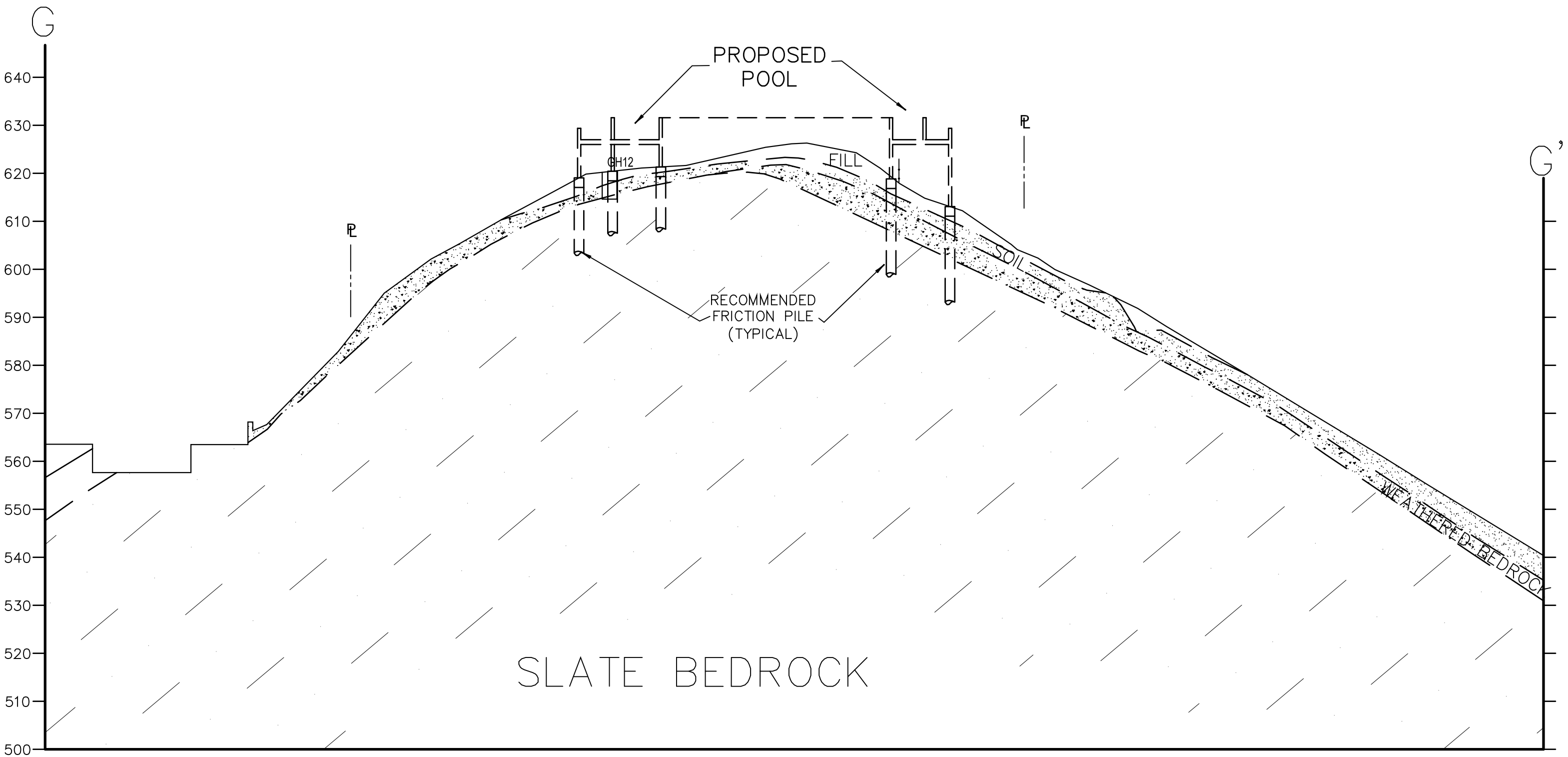


IRVINE GEOTECHNICAL Inc

SECTION G - G'

PROJECT: IC12053- AQUIILINI

CONSULTANT: JAI | SCALE: 1" = 20'

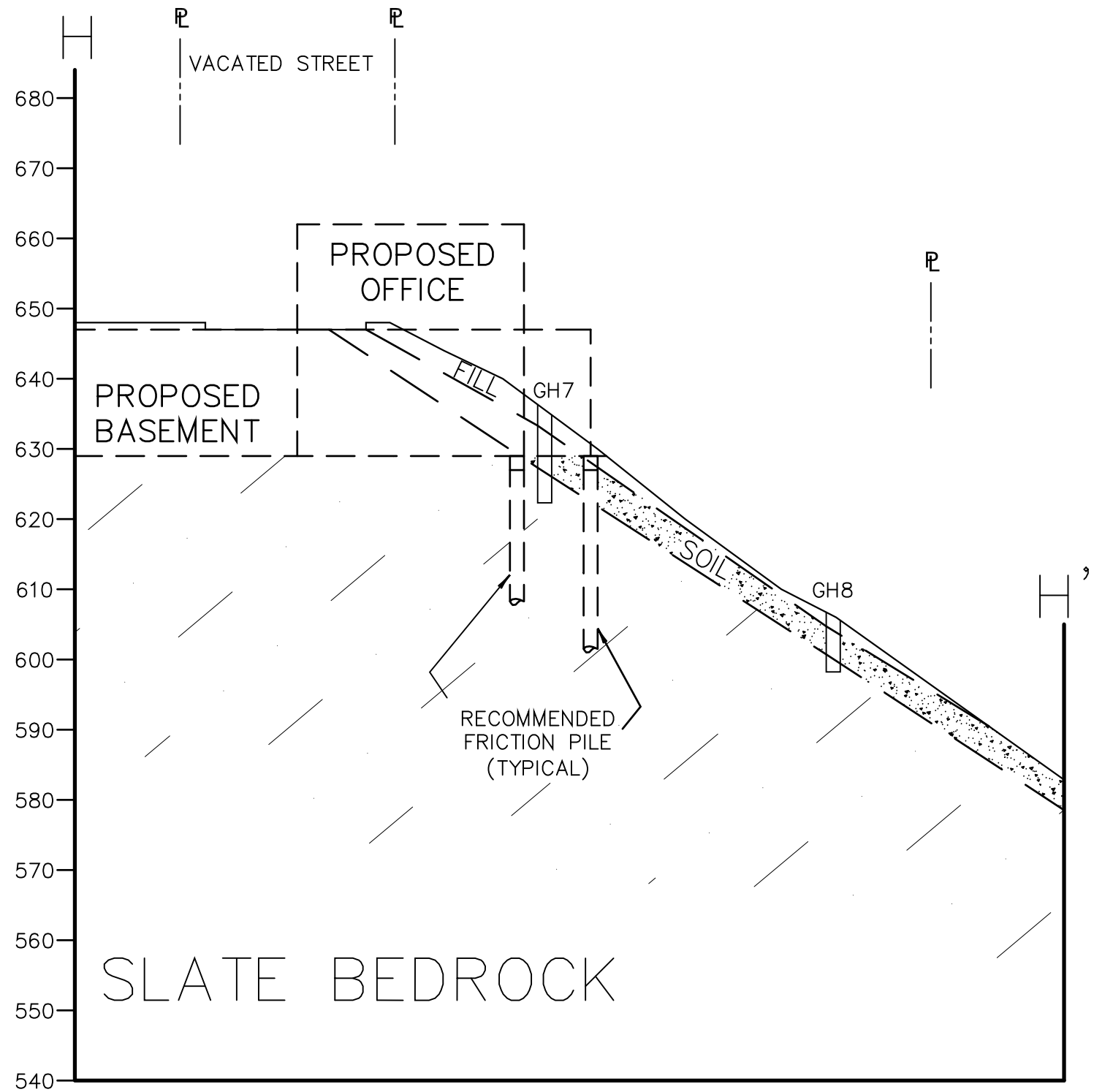


IRVINE GEOTECHNICAL Inc

SECTION H - H'

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'



IRVINE GEOTECHNICAL Inc

GEOLOGIC MAP

PROJECT: IC12053- AQUILINI

CONSULTANT: JAI | SCALE: 1" = 20'

TOPOGRAPHIC SURVEY

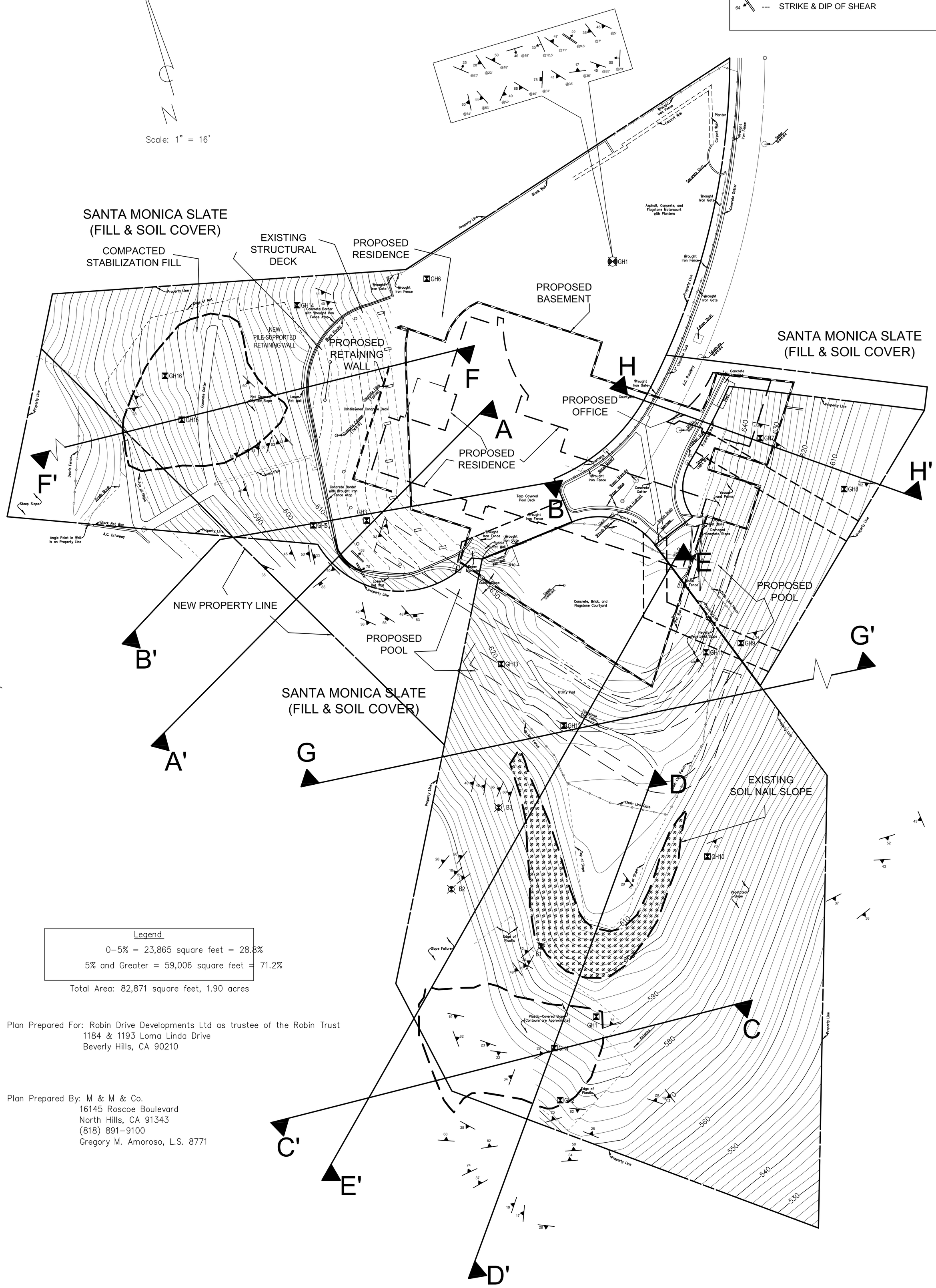
Site Address: 1184 & 1193 Loma Linda Drive, Beverly Hills
Area: 82,871 square feet, 1.90 acres
Date: March 26, 2012

LEGEND

- GH1 --- NUMBER & LOCATION OF HAND DUG TEST PIT
- B1 --- NUMBER & LOCATION OF BORING
- --- STRIKE & DIP OF JOINTING
- --- STRIKE & DIP OF FOLIATION
- --- STRIKE & DIP OF SHEAR

N

Scale: 1" = 16'



Legend	
0–5% = 23,865 square feet = 28.8%	
5% and Greater = 59,006 square feet = 71.2%	

Total Area: 82,871 square feet, 1.90 acres

Plan Prepared For: Robin Drive Developments Ltd as trustee of the Robin Trust
1184 & 1193 Loma Linda Drive
Beverly Hills, CA 90210

Plan Prepared By: M & M & Co.
16145 Roscoe Boulevard
North Hills, CA 91343
(818) 891–9100
Gregory M. Amoroso, L.S. 8771

LGC Valley, Inc.
Geotechnical Consulting

November 24, 2014 Project No. 143021-01

Mr. Abe Leider
Rincon Consultants, Inc.
180 N. Ashwood Avenue
Ventura, California 93003

Subject: ***Geotechnical Peer Review of Site Soils Reports for 1184 and 1193 Loma Linda Drive, City of Beverly Hills, California.***

INTRODUCTION

In accord with your authorization, LGC Valley, Inc. (LGC) has prepared this geotechnical peer review letter of the site geologic and soils engineering reports for the project located at 1184 and 1193 Loma Linda Drive (Lot 4 and 6), Tract 13161 in the city of Beverly Hills, California. The purpose of our review was to determine if the major geotechnical considerations affecting the site were identified, reviewed, and analyzed, and that proper geotechnical mitigation measures were provided for development of the subject site. This review letter provides a summary of our conclusions and opinions of the work performed from a geotechnical perspective.

SCOPE OF WORK

Our geotechnical work focused on review of the latest geotechnical report completed by Irvine Consulting, Inc., dated September 4, 2014. However, we also reviewed numerous previous reports completed for the site that encompassed a review of landslide identification and mitigation. The focus of our review was to determine if the geotechnical impacts of the proposed development to the site and adjacent areas were sufficiently reviewed and mitigated through current and previous site recommendations.

Our scope of services for preparation of this document included:

- Review of geotechnical and geologic reports (provided by the city of Beverley Hills), geologic maps and other documents relevant to the site (Appendix A).
- A site visit to review the existing condition.
- Spoke with Irvine Geotechnical, Inc. (Mr. John Irvine), for clarification of the work completed to date.
- Preparation of this letter presenting our findings, conclusions, opinions and recommendations with respect to the evaluated geologic and geotechnical conditions at the site.

Please note that this review did not include a review of the latest grading and construction plans.

EXECUTIVE SUMMARY

Based on our review of the referenced reports and documents listed herein, we conclude that the subject site has been sufficiently reviewed and assessed from a geotechnical perspective and that the subject development is suitable based on the known data, provided the recommendations contained within the referenced reports are implemented into the design and carried through during project construction.

EXISTING CONDITION

The subject property consists of graded hillside lots located at 1184 and 1193 Loma Linda Drive in the city of Beverly Hills, California. The subject site is located at the southern end of Loma Linda Drive, approximately ½ mile north of Sunset Boulevard, west of Coldwater Canyon Drive, and southeast of Franklin Canyon Reservoir near the base of the south flank of the Santa Monica Mountains.

Previously the site consisted of a single-family structure, with carport, deck, and a guest house. It is our understanding that a structural deck remains that cantilevers over the slope to the west and south of the former residence.

Topographically, the site is situated on a steeply-sided south-trending ridge spur that has been graded to create a level building pad. Earthwork at the site consisted of shallow cuts and fills, along with soil nail walls, and retaining walls founded on piles to create the level terraces and building space.

Slopes that descend from the pad are up to 130 feet in height and vary in slope angle from 1:1 (Horizontal to Vertical) to around 4:1 along the nose of the ridge spur. Vegetation on the pad is sparse and consists of local mature trees and various grasses, weeds and chaparral. Surface drainage at the site is uncertain but is anticipated to flow away from the tops of slopes due to grading activities which commonly design for this condition.

Slope repairs performed in response to rainfall-induced landslides have been completed along the northwest and southwestern slopes below the level building pad area. These repairs were the focus of much of our review.

PROPOSED DEVELOPMENT

Although we did not review development plans for the site, on our review of the latest geotechnical report (Irvine, 2014), indicates the proposed site development consists of a new, large, single-family structure with a separate office along the eastern margin of the property, a large motor court, a pool along the eastern and southern margin of the pad, and level terraces mostly along the west. It is our understanding that an existing structural deck supported in part on a pile foundation retaining wall along the western margin of the site will remain but be modified to accommodate the new design.

The proposed structure will consist of two stories over a subterranean level of basement and parking. The south and east sides of the lower basement level will open onto terraces and pools. Numerous retaining walls supported on caissons as much as approximately 10 to 12 feet high are proposed to support excavations for the basement level, create the terraces, and support the proposed pool.

GEOLOGY

Site bedrock is composed of the foliated Santa Monica Slate which is a metamorphosed mud rock. Foliation refers to the repetitive layering or planar-like slabs observed in the rock which is a result of, in this case, pressures due to mountain building effects. The foliation planes are significant because their orientation generally indicates the direction of potential slope instability.

Numerous borings and test pits were excavated at the site and it appears that some reconnaissance mapping was also performed to produce a geologic map of the site which indicates the orientation of the foliation planes across the site and surrounding areas. Based on our review of the map, there does not appear to be a continuous representative orientation across the site. Rather, the foliation appears to generally follow the general dip direction of the slopes, with similarly steep to slightly steeper dip angles than the angle of the slope itself. These orientations likely justify the shape of the south-trending ridge spur that is the backbone for the site.

A weathered rind of soil derived from the underlying bedrock was noted in several excavations performed across the site. These soils have a lower strength than the underlying bedrock and are susceptible to mud flow or debris flow due to the steep orientation of the native slopes.

GEOTECHNICAL CONSIDERATIONS

Based on the site geology and these overall observations, it is not surprising that during a season of heavy storms in 2005, two shallow landslides occurred within the soil or weathered portion of site bedrock on the steep slopes surrounding the proposed development to the west and south of the flat pad area. The landslides occurred within the weathered zone of the bedrock and slumped down slope, locally onto neighboring properties. Geotechnical investigation ensued and recommendations for repairing the slopes were provided and subsequently implemented. These fixes included in all or part: soil nails, removal of slide debris, and lay back of slopes; locally a thin wedge of engineered fill was placed to bring a portion of the slope back to near pre-landslide grades west of the proposed improvements.

Overall, it is our conclusion that these fixes were sufficiently reviewed, analyzed and repaired in accord with generally accepted principals and practice in the southern California area. However, it should be noted that not the entire slope area was repaired or improved, but only those areas that failed during the heavy storm year. Thus, it is possible that similar heavy storms or an influx of water from a broken water line or other similar structure could saturate the native soils, and similar slumps and slides can occur.

The consultant of record, Irvine Geotechnical, Inc., has reviewed the repaired portions of slopes and the slopes in general at the site and have concluded that the “existing and proposed slopes will be grossly stable with a factor of safety in excess of 1.5”. They also conclude that “the subject property and existing slopes are grossly stable with a factor of safety in excess of 1.1 under seismic conditions.” However, they note that the “natural slopes have been historically unstable” and that improved site drainage will help with surficial stability. Thus it should be taken that these slopes may undergo future instabilities under similar adverse conditions. It is our opinion that it should be noted that these types of slope instabilities, under these types of conditions, are commonly accepted risks associated with hillside development in southern California and are not considered overly detrimental or risk adverse to site development.

In summary, based on the previous site repairs performed and the geotechnical recommendations for the proposed development, the recommendations contained within the referenced geotechnical reports appear suitable for the known site conditions (including the potential landsliding within the soil or weathered portion of site bedrock).

Overall, the consultant has provided reasonably conservative recommendations for slope repairs that have been implemented at the site and is aware of the weathered rind that mantles the remaining native slopes at the site, and has provided geotechnical recommendations that extend below these soils and into dense bedrock for support of the proposed structure and various building elements. These conclusions and recommendation are reasonable and valid.

The following is a list of the main geotechnical recommendations of the latest Irvine Geotechnical, Inc. report (dated September 4, 2014).

- The proposed building and wall foundations should be founded into native dense bedrock.

- Foundations located on or near the slope should be deepened to be founded into native dense bedrock using friction piles tied with grade beams.

- Conventional foundations may be used to support portions of the proposed structures that are not located adjacent to slopes and/or over deep fill and soil.

- Any new fill slopes may be constructed at a 2:1 gradient and should be keyed and benched into bedrock or supported laterally by retaining walls. Keyways should be a minimum of 12 feet wide and 3 feet into bedrock as measured on the downhill side. The base of all fills and the axis of drainage courses require subdrains.

- The Building Code requires that foundations be a sufficient depth to provide horizontal setback from a descending slope steeper than 3:1. On the subject property, the slope descends below the building area 90 to 120 feet. The Building Code required setback is 30 to 40 feet for structures and 15 to 20 feet for pools.

For all the current site recommendations refer to the referenced Irvine Geotechnical report dated September 4, 2014.

CONCLUSIONS

Based on our review of the referenced materials and our understanding of the proposed development, we conclude that the site appears to be sufficiently reviewed and assessed from a geologic and geotechnical perspective and the proposed development appears suitable based on the known data. The recommendations contained within the relevant referenced reports should be implemented during site design and site construction.

LIMITATIONS

Our conclusions and opinions were prepared in accordance with generally accepted professional geotechnical engineering and geologic principles and practice. We make no other warranty, either express or implied.

CLOSURE

If you should have any questions, please do not hesitate to contact us. The undersigned can be reached at (661) 702-8474.

Sincerely,

LGC Valley, Inc.

Matthew Hawley, CEG 2122
President

Basil Hattar
Principal Engineer, GE 2734

MCH/BIH

Distribution: (1) Addressee, via e-mail

REFERNCES

1) ***Reports by Grover-Hollingsworth and Associates, Inc.:***

a) Geologic and Soils Engineering Exploration and Plan Review, Proposed South Slope Repair and Retaining Walls, Lots 6 and 8, and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated August 20, 2008;

b) Geologic and Soils Engineering Update, Plan Review and Revised Recommendations, Proposed South Slope Repair and Retaining Walls, Lots 6 and 8, and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated February 13, 2009;

c) Additional Geotechnical Comments, Proposed Slope Repair, Lots 6 and 8 and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, July 29,2009;

d) As-Built Friction Pile, Geologic and Compaction Report, Retaining Wall; and Slope Repair, Lots 6 and 8 and Portions of Lots 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 Sutton Way, Beverly Hills, California, dated June 9, 2011.

e) Additional Geologic Exploration, Proposed Remedial South Slope Failure Repair, Lots 3, 4 and 5, Tract 13101; 1184 Loma Linda Drive and 1117 and 1130 Sutton Way, Beverly Hills, California, dated June 13, 2011; and

f) Additional Geologic Exploration and Slope Stability Analyses, Proposed Remedial South Slope Failure Repair, Lots 3, 4 and 5, Tract 13101, 1184 Loma Linda Drive and 1117 and 1130 Sutton Way, Beverly Hills, California, dated August 9, 2011

2) ***Report by GeoSoils Consultants, Inc.:***

a) Geologic and Geotechnical Engineering Study of Existing Slope Failure, Lots 3, 4, and 8, Tract 13101, 1184 Loma Linda Drive, 1117 and 1130 Sutton Way, Beverly Hills, California, dated December 7, 2011

3) **Report by Irvine Geotechnical, Inc.:**

a) Geologic and Soils Engineering Exploration Update, Proposed Soil Nail Slope Stabilization Alternative, Lots 4 and 6, Tract 13161 /Lot 8, Tract 13161 /Portion of Lot 3, Tract 13161, 1184 & 1191 Loma Linda Drive /1117 Sutton Way /1130 Sutton Way, Beverly Hills, California, dated July 24, 2012;

b) Geologic and Soils Engineering Exploration Update Proposed Residence, Pool and Terraces, Lot 4 and 6, Tract 13161, 1184 and 1193 Loma Linda Drive, City of Beverley Hills, California, Project Number IC 12053-I, dated September 27, 2012

c) Addendum Geologic and Soils Engineering Report, Proposed Soil Nail Slope Stabilization, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated November 6, 2012;

d) Geologic and Soils Engineering Report, As-Built Soil Nail Slope Stabilization, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated December 26, 2013;

e) Supplemental Geologic and Soils Engineering Report, Proposed Deck Shoring and Stabilization Retaining Wall, Lots 4 & 6, Tract13161, 1184 & 1193 Loma Linda Drive, Beverly Hills, California, dated July 23, 2014

f) Geologic and Soils Engineering Exploration Update Proposed Residence, Office, Pool and Terraces, Lot 4 and 6, Tract 13161, 1184 Loma Linda Drive, City of Beverley Hills, California, Project Number IC 12053-I, dated September 4, 2014

Appendix C

Noise Measurement Data

C:\LARDAV\LOMLIN.bin Interval Data

Site	Peak Meas Location	Uwpk Excd Number	Excd Over	Date	Time	Duration	Leq	SEL	Lmax	Lmin
0		0		11Sep 94	3:41:53	1200	51.6	82.4	70.1	42.4

Peak	Uwpk	L(10)	L(33)	L(50)	L(90)	Count	Count	loads
85.9	0	51.8	48.9	48.1	45.3	62	0	0

C:\LARDAV\LOMLIN.bin Time History Data
Sample Period (sec): 10.000

Meas Site	Location	Number	Date	Time	Level	Lmax	SEL
Run	Key						
0		0	11Sep 94	3:41:53	49.6	53.3	59.6
0		0	11Sep 94	3:42:03	46.9	50.1	56.9
0		0	11Sep 94	3:42:13	45.2	47.3	55.2
0		0	11Sep 94	3:42:23	47.9	49.3	57.9
0		0	11Sep 94	3:42:33	45.4	48.2	55.4
0		0	11Sep 94	3:42:43	45.7	50	55.7
0		0	11Sep 94	3:42:53	48	50.8	58
0		0	11Sep 94	3:43:03	48.1	50.8	58.1
0		0	11Sep 94	3:43:13	47.3	49.7	57.3
0		0	11Sep 94	3:43:23	47.2	48.4	57.2
0		0	11Sep 94	3:43:33	48.8	50.8	58.8
0		0	11Sep 94	3:43:43	48.4	49.9	58.4
0		0	11Sep 94	3:43:53	48.1	49.9	58.1
0		0	11Sep 94	3:44:03	48	50.2	58
0		0	11Sep 94	3:44:13	48.3	51.3	58.3
0		0	11Sep 94	3:44:23	51.1	52.9	61.1
0		0	11Sep 94	3:44:33	52.8	54.8	62.8
0		0	11Sep 94	3:44:43	50.6	53.6	60.6
0		0	11Sep 94	3:44:53	49	50.9	59
0		0	11Sep 94	3:45:03	47.2	48.9	57.2
0		0	11Sep 94	3:45:13	50.1	53.6	60.1
0		0	11Sep 94	3:45:23	53.9	58.8	63.9
0		0	11Sep 94	3:45:33	53.8	56.9	63.8
0		0	11Sep 94	3:45:43	54.4	58.4	64.4
0		0	11Sep 94	3:45:53	51.7	56.7	61.7
0		0	11Sep 94	3:46:03	49.7	53.3	59.7
0		0	11Sep 94	3:46:13	49.8	55.8	59.8
0		0	11Sep 94	3:46:23	48.1	49.8	58.1
0		0	11Sep 94	3:46:33	47.3	51.1	57.3
0		0	11Sep 94	3:46:43	48.7	54.5	58.7
0		0	11Sep 94	3:46:53	49.3	52	59.3
0		0	11Sep 94	3:47:03	49.2	50.9	59.2
0		0	11Sep 94	3:47:13	49.9	55.3	59.9
0		0	11Sep 94	3:47:23	50.5	57.6	60.5
0		0	11Sep 94	3:47:33	47.8	50.7	57.8
0		0	11Sep 94	3:47:43	47.7	49.3	57.7
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0		0	11Sep 94	3:48:03	47.7	51.5	57.7
0		0	11Sep 94	3:48:13	46	47.8	56
0		0	11Sep 94	3:48:23	48.4	52.9	58.4

0	0	11Sep 94	3:48:33	49.2	50.6	59.2
0	0	11Sep 94	3:48:43	48.6	52	58.6
0	0	11Sep 94	3:48:53	47.8	49.2	57.8
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0	0	11Sep 94	3:49:23	44.2	45.6	54.2
0	0	11Sep 94	3:49:33	44.4	46.1	54.4
0	0	11Sep 94	3:49:43	45.3	46.6	55.3
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0	0	11Sep 94	3:50:13	47.5	51.1	57.5
0	0	11Sep 94	3:50:23	45.8	49.3	55.8
0	0	11Sep 94	3:50:33	45.1	51.1	55.1
0	0	11Sep 94	3:50:43	44.2	48.4	54.2
0	0	11Sep 94	3:50:53	46.8	49	56.8
0	0	11Sep 94	3:51:03	48.6	50.5	58.6
0	0	11Sep 94	3:51:13	49.1	51.9	59.1
0	0	11Sep 94	3:51:23	48	50.5	58
0	0	11Sep 94	3:51:33	47.1	48.6	57.1
0	0	11Sep 94	3:51:43	48.3	50.4	58.3
0	0	11Sep 94	3:51:53	45.7	48.8	55.7
0	0	11Sep 94	3:52:03	46.7	48.5	56.7
0	0	11Sep 94	3:52:13	47.7	49.4	57.7
0	0	11Sep 94	3:52:23	47.7	50	57.7
0	0	11Sep 94	3:52:33	47	48.4	57
0	0	11Sep 94	3:52:43	45.8	47.9	55.8
0	0	11Sep 94	3:52:53	47.5	50.8	57.5
0	0	11Sep 94	3:53:03	50.2	51.7	60.2
0	0	11Sep 94	3:53:13	50.6	52.3	60.6
0	0	11Sep 94	3:53:23	48.8	50.5	58.8
0	0	11Sep 94	3:53:33	47.8	50.3	57.8
0	0	11Sep 94	3:53:43	49.4	51.3	59.4
0	0	11Sep 94	3:53:53	49.8	51.9	59.8
0	0	11Sep 94	3:54:03	48.7	49.8	58.7
0	0	11Sep 94	3:54:13	48.4	50.5	58.4
0	0	11Sep 94	3:54:23	47	52.4	57
0	0	11Sep 94	3:54:33	47.7	51.3	57.7
0	0	11Sep 94	3:54:43	49	51.9	59
0	0	11Sep 94	3:54:53	48	51.5	58
0	0	11Sep 94	3:55:03	48.6	52.7	58.6
0	0	11Sep 94	3:55:13	44.9	49.2	54.9
0	0	11Sep 94	3:55:23	44.7	46.9	54.7
0	0	11Sep 94	3:55:33	46.1	48.4	56.1
0	0	11Sep 94	3:55:43	48	49.4	58
0	0	11Sep 94	3:55:53	48.4	49.8	58.4
0	0	11Sep 94	3:56:03	46.8	50.4	56.8
0	0	11Sep 94	3:56:13	47.6	50.1	57.6

	0	0	11Sep 94	3:56:23	48.6	50	58.6
	0	0	11Sep 94	3:56:33	46.8	48.4	56.8
	0	0	11Sep 94	3:56:43	47.1	53.9	57.1
	0	0	11Sep 94	3:56:53	47.7	49.8	57.7
	0	0	11Sep 94	3:57:03	46.8	50.1	56.8
	0	0	11Sep 94	3:57:13	45.3	47.1	55.3
	0	0	11Sep 94	3:57:23	48.7	50.6	58.7
	0	0	11Sep 94	3:57:33	46.9	48.2	56.9
	0	0	11Sep 94	3:57:43	45.7	50.6	55.7
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	0	0	11Sep 94	3:58:03	48	49.8	58
	0	0	11Sep 94	3:58:13	48.6	50	58.6
	0	0	11Sep 94	3:58:23	49	50.8	59
	0	0	11Sep 94	3:58:33	48.6	51.3	58.6
	0	0	11Sep 94	3:58:43	52.2	55.6	62.2
	0	0	11Sep 94	3:58:53	61	67.8	71
	0	0	11Sep 94	3:59:03	67.2	70.1	77.2
	0	0	11Sep 94	3:59:13	61.9	66.3	71.9
	0	0	11Sep 94	3:59:23	54.4	59.3	64.4
	0	0	11Sep 94	3:59:33	51.2	53.9	61.2
	0	0	11Sep 94	3:59:43	50.7	52.7	60.7
	0	0	11Sep 94	3:59:53	52.4	53.9	62.4
	0	0	11Sep 94	4:00:03	51.4	53.1	61.4
	0	0	11Sep 94	4:00:13	48.2	51.3	58.2
	0	0	11Sep 94	4:00:23	46.9	48.6	56.9
	0	0	11Sep 94	4:00:33	47.7	50.1	57.7
	0	0	11Sep 94	4:00:43	49	53.6	59
	0	0	11Sep 94	4:00:53	50	54.5	60
	0	0	11Sep 94	4:01:03	48.6	49.8	58.6
	0	0	11Sep 94	4:01:13	47.5	50.1	57.5
	0	0	11Sep 94	4:01:23	49.5	51.5	59.5
	0	0	11Sep 94	4:01:33	50.3	52.2	60.3
	0	0	11Sep 94	4:01:43	54	58.2	64
	0	0	11Sep 94	4:01:53	51.1	51.1	61.1
Stop	Intv						

C:\LARDAV\LOMLIN.bin Event Data

Meas Site	Time of Location	Excd Number	Over Date	Time	Lmax	Duration	Leq	SEL	Peak Lmax
0		0	11Sep 94	3:59:02	3:59:08	14.8	66.4	78.1	70.1

Peak	Uwpk	Sym	Decay	Type	Count	loads
85.9	0	41.8	0	0	0	0

C:\LARDAV\LOMLIN.bin Run/Stop Data

Meas Site	Location	Number	Date	Time	Type	Cause
0		0	11Sep 94	3:41:53	Run	Key
0		0	11Sep 94	4:01:53	Stop	Intv

Appendix D

Mitigation Monitoring and Reporting Program

MITIGATION MONITORING AND REPORTING PROGRAM

The Final Initial Study-Mitigated Negative Declaration identifies the mitigation measures that will be implemented to reduce the impacts associated with the 1184-1193 Loma Linda Drive Single Family Dwelling Project. The California Environmental Quality Act (CEQA) requires a public agency to adopt a monitoring and reporting program for assessing and ensuring compliance with any required mitigation measures applied to proposed development. As stated in section 21081.6(a)(1) of the Public Resources Code:

> *... the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment*.

Section 21081.6 also provides general guidelines for implementing mitigation monitoring programs and indicates that specific reporting and/or monitoring requirements, to be enforced during project implementation, shall be defined as part of adopting a mitigated negative declaration.

The mitigation monitoring table lists those mitigation measures that may be included as conditions of approval for the project. To ensure that the mitigation measures are properly implemented, a monitoring program has been devised which identifies the timing and responsibility for monitoring each measure. The project applicant will have the responsibility for implementing the measures, and the various City of Beverly Hills departments will have the primary responsibility for monitoring and reporting the implementation of the mitigation measures.

1184-1193 Loma Linda Drive Single Family Dwelling Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		**Action Required**	**When Monitoring to Occur**	**Responsible Agency or Party**	**Verification of Completion**		
					Initial	**Date**	**Comments**
BIOLOGICAL RESOURCES							
BIO-1	**Nesting/Breeding Native Bird Protection.** To avoid impacts to nesting birds, including birds protected under the Migratory Bird Treaty Act, all initial ground disturbing activities, including tree removal, should be limited to the time period between August 16 and January 31 (i.e., outside the nesting season). If initial site disturbance, grading, and vegetation removal cannot be limited to this time period, a pre-construction survey for active nests within the project site shall be conducted by a qualified biologist at the site no more than two weeks prior to any construction activities. If active nests are identified, species-specific exclusion buffers shall be determined by the biologist, and construction timing and location adjusted accordingly. The buffer shall be adhered to until the adults and young are no longer reliant on the nest site, as determined by the biologist. Limits of construction to avoid a nest should be established in the field with flagging and stakes or construction fencing. Construction personnel shall be instructed on the sensitivity of the area.	Verification of completed surveys, if applicable; verification that prescribed measures taken and timing adhered to if species observed.	If work planned during nesting season, at least once before work commences to ensure surveys properly completed and periodically during initial ground disturbance and/or vegetation removal.	Beverly Hills Community Development Department			
CULTURAL RESOURCES							
CR-1	**Protection of Cultural Resources**. If archaeological or paleontological resources are encountered during grading, the construction manager shall ensure that all ground disturbance activities are stopped, and shall notify the Community Development Department immediately to arrange for a qualified archaeologist or paleontologist to assess the nature, extent, and potential significance of any cultural resources. If such resources are determined to be significant, appropriate actions to mitigate impacts to the resources shall be identified in consultation with a qualified archaeologist or paleontologist. Depending upon the nature of the find, such mitigation may include, but would not be limited to, avoidance, documentation, or other appropriate actions to be determined by a qualified archaeologist or paleontologist. For example, if significant cultural resources cannot be avoided, impacts may be reduced by filling on top of the sites rather than cutting into the cultural	If cultural resources found, verify that recommendations are carried out.	During construction if undiscovered cultural resources are found as appropriate.	Beverly Hills Community Development Department; Construction manager			

1184-1193 Loma Linda Drive Single Family Dwelling Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		**Action Required**	**When Monitoring to Occur**	**Responsible Agency or Party**	**Verification of Completion**		
					Initial	**Date**	**Comments**
	deposits. Alternatively or in addition, a data collection program may be warranted, including mapping the location of artifacts, surface collection of artifacts, or excavation of the cultural deposit to characterize the nature of the buried portions of sites. Curation of the excavated artifacts or samples shall occur as specified by the archaeologist.						
CR-2	**Protection of Human Remains**. If human remains are unearthed, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to Public Resources Code Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the Native American Heritage Commission (NAHC). The NAHC will then identify the person(s) thought to be the Most Likely Descendent (MLD) of the deceased Native American, who will then help determine what course of action should be taken in dealing with the remains.	If human remains are found, confirm that the County Coroner and Native American Heritage Commission notified	During construction if human remains are found as appropriate.	Beverly Hills Community Development Department			
GEOLOGY AND SOILS							
GEO-1	**Geotechnical Report Recommendations**. The project applicant shall comply with all recommendations contained within the Geotechnical Report prepared by Irvine Geotechnical, Inc. dated September 2014, including the following: • Bearing material shall be slate bedrock. Existing fill, soil, and fractured bedrock shall not be used for foundation or slab support. Conventional foundations may be used to support portions of the proposed structures that are not located adjacent to slopes and/or over deep fill and soil. Deepened foundations consisting of friction piles tied with grade beams shall be used to support portions of proposed structures on or near slopes. • Any remaining former pool shell shall be removed. • Remedial grading shall occur on portions of the site containing surficial materials of fill, soil, or colluvium to improve site conditions for support of any slabs and where fill is to be placed.	Verify project plans include the recommendations, and that recommendations adhered to in the field during grading and construction	Prior to issuance of grading and building permits and during grading and construction	Beverly Hills Community Development Department			

1184-1193 Loma Linda Drive Single Family Dwelling Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	• The following grading specifications shall be followed prior to grading. Grading plans shall be reviewed by a geotechnical engineer to ensure that these specifications are included. The grading contractor shall be provided with a copy of these specifications prior to grading. ○ The site shall be prepared to receive compacted fill by removing all vegetation, debris, existing fill, soil, and the entire pool shell. The exposed excavated area shall be observed by a soils engineer or geologist prior to placing compacted fill. The exposed grade shall be scarified to a depth of six inches, moistened to optimum moisture content, and recompacted to 90 percent of its maximum density. ○ Fill, consisting of soil approved by a soils engineer, shall be placed in horizontal lifts and compacted in six inch layers with suitable compaction equipment. The excavated onsite materials are satisfactory for reuse in the controlled fills. Any imported fill shall be observed by the soils engineer prior to use in fill areas. Rocks larger than six inches in diameter shall not be used in the fill. ○ The fill shall be compacted to at least 90 percent of the maximum laboratory density for the material used. Where cohesionless soil (less than 15 percent finer than 0.005 millimeters) is used for fill, it shall be compacted to a minimum of 95 percent relative compaction. The fill shall be placed at a moisture content that is at or within three percent over optimum. The maximum density and optimum moisture content shall be determined by ASTM D 1557-09 or equivalent. ○ Field observation and testing shall be performed by a soils engineer during grading to assist the contractor in obtaining the required degree of compaction and the proper moisture content. Where compaction is less than required, additional compactive effort shall be made with adjustment of the moisture content, as necessary, until 90 percent compaction is obtained. One compaction test shall be conducted for each 500 cubic yards or two vertical feet of						

1184-1193 Loma Linda Drive Single Family Dwelling Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments

	fill placed.
	• Fill slopes may be constructed at a 2:1 gradient but shall be keyed and benched into bedrock or supported laterally by retaining walls. Keyways shall be a minimum of 12 feet wide and 3 feet into bedrock as measured on the downhill side. The base of all fills and the axis of drainage courses require subdrains.
	• In the event that a caving zone is encountered, casing or special drilling techniques shall be conducted.
	• The proposed swimming pool may be constructed using a free-standing design, but shall derive support entirely from the bedrock. This may require over-excavation or the use of a footing, or the use of a deepened foundation system. If the spa is to be attached to the pool, the spa shall be founded at the same depth as the portion of the pool it adjoins.
	• The applicant shall meet the following minimum requirements for the foundation:
	  ○ Bearing material shall be bedrock.
	  ○ The minimum embedment depth of footing shall be 12 inches.
	  ○ The vertical bearing shall be 4,000 psf.
	  ○ The coefficient of friction shall be 0.5.
	  ○ The passive earth pressure shall be 400 pcf.
	  ○ The maximum earth pressure shall be 6,000 psf.
	• All continuous footings shall be reinforced with a minimum of four #4 steel bars (two placed near the top and two near the bottom). Footings shall be cleaned of all loose soil, moistened, free of shrinkage cracks and approved by a geologist and geotechnical engineer prior to placing forms, steel or concrete. Footings shall not be supported by retaining wall backfill or derive support within the active wedge behind the retaining wall. Foundations adjacent to basements shall be deepened below a 1:1 plane projected up from the base of the retaining wall. Alternatively, foundations adjacent to basements may be designed as a grade beam and structurally connected to the wall.
	• Drilled, cast-in-place concrete friction piles shall be used to						

1184-1193 Loma Linda Drive Single Family Dwelling Project Final Initial Study-Mitigated Negative Declaration Mitigation Monitoring and Reporting Plan							
Mitigation Measure		Action Required	When Monitoring to Occur	Responsible Agency or Party	Verification of Completion		
					Initial	Date	Comments
	support portions of the proposed structures located on or adjacent to slopes. • Pile shafts shall be designed for a lateral load of 1,000 pounds per linear foot for each foot of shaft exposed to the existing fill and soil. • Differential foundation settlement shall not exceed ¼ inch. • Restrained walls that are pinned at the top by a non-yielding floor shall be designed for an at-rest earth pressure. • Retaining walls that are surcharged by traffic and/or structural loads shall be designed to withstand the surcharge. • Retaining walls shall be provided with a subdrain or weepholes covered with a minimum of 12 inches of ¾ inch crushed gravel. • Retaining wall backfill shall be compacted to a minimum of 90 percent of the maximum density. • Retaining walls surcharged by a sloping condition shall be provided with a minimum of 12 inches of freeboard for slough protection. • Where vertical temporary excavations in the existing fill and soil will exceed 3 ½ feet in height, the upper portion shall be trimmed to 1:1. • Floor slabs and concrete decking shall be cast over bedrock or approved compact fill. Slabs shall be at least 4 inches thick and reinforced with a minimum of #4 bars on 16 inch centers. • Pad and roof drains shall be collected and transferred to the street or an approved location in non-erosive drainage devices. Drainage shall not be allowed to pond on the pad or against any foundation or retaining wall. • Formal plans shall be submitted to the City Building Department and shall be reviewed by a geotechnical engineer. • During construction, reviews shall be conducted by a geotechnical engineer at a minimum prior to grading, foundation, and drainage excavations and prior to placing fill, forms, pipes, concrete, and steel.						

Appendix E

Comments and Responses on the Draft IS-MND

COMMENTS and RESPONSES

This appendix contains the written comments received in response to the Draft Mitigated Negative Declaration (MND). The Draft MND was circulated for a period of 20 days, concluding on October 20, 2014. Each comment letter received by the City of Beverly Hills (City) has been included within this section. Responses to the comments have been prepared to address the environmental concerns raised by the commenters and to indicate where and how the MND addresses these environmental issues. Each letter is presented first, with the responses following.

The City received three written comment letters on the Draft MND during the comment period. These letters are listed below.

Commenter	Page #
1. Jack Nourafshan	E-2
2. Thomas Schulhof	E-6
3. Debbie Weiss	E-8

The comment letters and the City's responses follow. Each comment letter has been numbered sequentially and each separate issue raised by the commenter, if more than one, is also numbered.

In addition to written comments, verbal comments were received at the Planning Commission hearing of October 9, 2014. Responses to verbal comments from the hearing follow the responses to the written comments received.

Andre Sahakian

Subject: FW: 1184 Loma linda Dr project

Letter 1

From: Jack Nourafshan [mailto:jack@reliableprop.com]
Sent: Wednesday, October 08, 2014 6:35 PM
To: Andre Sahakian
Subject: RE: 1184 Loma linda Dr project

Dear Mr. Sahakian, It was a pleasure to meet with you at city Hall and review the project. As I mentioned we have live on Loma linda since 1991 and in Beverly Hills since 1977. We are very concerned about the massive and scale of this project on hillside. The MND is very detailed and time consuming to comprehend. Our concerns are as follows:

1) Part of the street is planned to be given to 1184. We need every space we can to park on this street. Parking is very tight on this street when any neighbor has an event. 1184 must be required to provide more parking for neighbors for the amount of spaces taken. These spaces should not be locked, chained or controlled by 1184 and be useable anytime by the public. 1.1
2) Turn around for a truck should be accommodated. 1.2
3) Currently we have vista point at end of the street overlooking the surrounding area. The project should provide vista point for the neighbors after the construction and not controlled or locked by 1184 1.3
4) Storm Water drains are currently at this location. City should make sure there are no issues when a strong rain or flood comes. Also sewer lines, electrical and other utilities to be protected for continued use. 1.4
5) Report shows about 400 times heavy trucks for hauling and many other construction trucks have to go through this narrow streets to haul dirt and do construction. What will happen to the street asphalt after all this? They should redo the asphalt if necessary in reasonable judgment of neighbors. 1.5
6) Staging of haul trucks and parking should be clearly addressed. 1.6
7) There is a pedestrian alley adjacent to 1189 that in case of emergency (fire, hillslide, flood, etc) people can take to evacuate the street to Coldwater Canyon. 1184 must preserve this emergency and accessible at all times. 1.7
8) As we review the MND and hearings there could be others. Please state our concerns to the members of Planning Commission and city Council. Thank you

Jack Nourafshan
Neighbor to 1184

Letter 1

COMMENTER: Jack Nourafshan

DATE: October 8, 2014

RESPONSE:

Response 1.1

The commenter states an opinion that parking is limited on Loma Linda Drive, and is concerned that the project may result in a loss of public parking spaces. The commenter requests that public parking spaces that are lost be replaced by the applicant.

The Final IS-MND includes the following additional language to describe the changes to on-street parking on Loma Linda Drive:

> The proposed project is a single-family residence that would provide 10 parking spaces, which would be adequate to serve future residents and household staff and service providers. Installation of the new turnaround area may result in the loss of one to two parking spaces on Loma Linda Drive. Although this loss may result in an inconvenience to guests of Loma Linda Drive residents at peak demand times, the loss of one to two parking spaces from Loma Linda Drive – a small percentage of the overall available on-street parking in the neighborhood – would not result in a significant environmental impact. The proposed project would provide sufficient parking and **no impact** related to parking would occur.

Impacts would remain less than significant.

Response 1.2

The commenter states an opinion that the project should be designed so that trucks can turn around at the end of Loma Linda Drive. The proposed project includes a truck turnaround designed to accommodate a fire truck or similar-sized commercial truck or emergency vehicle.

Response 1.3

The commenter states an opinion that there is a "vista point" at end of Loma Linda Drive that would be affected by the proposed project. The commenter requests that the applicant replace the view location for the public after construction.

New text has been added to the IS-MND in Section I, *Aesthetics*, to clarify that there are intermittent views of the Los Angeles Basin and downtown Los Angeles from Loma Linda Drive, as most views are blocked by existing residential development and intervening vegetation. At the terminus of Loma Linda drive is a turnout from which views of the Los Angeles Basin are available; it is assumed that this turnout is what the commenter refers to. The proposed project would involve vacating the portion of Loma Linda Drive with this existing turnout and construction of a two-story residence and guest house at the end of the street.

Therefore, the proposed project would block one portion of the existing limited views of the Los Angeles Basin for pedestrians and motorists along the last 150 feet of Loma Linda Drive or at the small turnout at its terminus. However, since Loma Linda Drive is a dead-end street, it is primarily used only by the few residents who live there and their guests. In addition, the terminus of Loma Linda Drive is not a designated public viewpoint or scenic corridor or highway. The small turnout with views available is intended to be used by vehicles turning around at the end of Loma Linda Drive and is not intended to be used as a scenic viewpoint. Views of the basin would remain available from other locations along Loma Linda Drive. Therefore, no significant impact would occur and mitigation such as replacement of the turnout is not required.

Response 1.4

The commenter requests that the City make sure there that storm water runoff is properly handled for the project, and that sewer service, electrical service and other utilities are "protected for continued use." The Final IS-MND includes additional information regarding services and utilities serving the project site. These changes are in Section XVII, *Utilities*, and Section XIV, *Public Services*, and are summarized below.

The proposed project would include installation of two storm water catch basins on Loma Linda Drive that would connect to the City's existing storm drain system. The proposed project would also involve a series of catch basins to collect storm water runoff throughout the site and a system of downspouts and pipes to transport storm water to an existing storm water pipe on the western boundary of the project site and to the proposed new catch basins on Loma Linda Drive. Final drainage plans are required to be reviewed and approved by the City's Building and Safety Division to ensure that runoff is properly handled onsite and directed to an approved and adequate off-site conveyance facility. Wastewater connection to the existing city sewer system is also required; the addition of one single family residence, even of the substantial size proposed, is not expected to require system upgrades or new infrastructure.

Regarding "dry utilities," the IS-MND has been augmented in Section XIV, *Public Services*, to note that, although the proposed project would create additional demands on natural gas and electricity supplies and distribution infrastructure, these demands would be within the service capabilities of Southern California Edison and Southern California Gas. The proposed project would connect to existing utilities that serve the area, requiring little if any disturbance beyond the property boundary. As such, the proposed project would not require major new sources of natural gas or electricity such that new or expanded gas or electricity power plants, or conveyance or transmission lines, would be required.

Response 1.5

The commenter states concerns regarding potential damage to local streets from construction traffic. The City is responsible for maintenance of Loma Linda Drive, a public street, and may require the applicant to conduct cleaning of and repair to the street during and after construction. The need for pavement maintenance and repair is not considered a significant environmental impact under CEQA.

Response 1.6

The commenter requests that staging for construction vehicles be appropriately planned and limited. The following text was added to Page 6 of the Final IS-MND in response to this comment:

> All construction related parking and staging would be accommodated on-site or at an off-site designated parking location approved by the City.

Staging would take place on the project site and would not be expected to directly affect use of adjacent public streets or private property.

Response 1.7

The commenter states an opinion that there is a "pedestrian alley" adjacent to 1189 Loma Linda Drive that provides an emergency pedestrian evacuation route to Coldwater Canyon. Although it may be possible to get down the slope to Coldwater Canyon Drive, there is no public or city-maintained formal thoroughfare that connects these two streets. In addition, the owners of the properties that would be traversed by such a route could erect signage, fencing or otherwise bar such access at any time without the need for permits. As discussed in Section VIII, *Hazards and Hazardous Materials*, of the draft IS-MND, the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. As discussed in Section XVI, Traffic/Circulation, of the draft IS-MND, the project would not result in inadequate emergency access.

Andre Sahakian

From: Thomas Schulhof <tbschulhof@gmail.com>
Sent: Saturday, October 04, 2014 7:57 AM
To: Andre Sahakian

Letter 2

Mr. Sahakian:
My wife and I live at 1271 Lago Vista Place. While we are not directly affected by the proposed home at 1184-1193 Loma Linda Drive, we received in the mail the official notificiation and request for comment as our home is in the general area.

We would like to formally object on the basis of 2 issues:
The zoning permitting a maximum of 15,000 floor feet for the hillside area was enacted after much thought. To waive it ad hoc just because someone wants a bigger house strikes us as imprudent. If someone wants a larger footprint for a home, they should buy a lot in an area where it is permitted. If this exception is granted then I suppose every homeowner on Loma Linda should be so entitled. Considering the narrow nature of Loma Linda this would create significant issues. If this exception is granted is the town prepared to grant it to every home on the road as a matter of fairness? 2.1

We also have a concern with removal of 7,000 cubic yards of soil. If i am not mistaken, the average truck can move 15 cubic years, which would mean almost 500 trucks coming down a narrow and winding street just for removing soil - aside from all the trucks required for construction. At 10 trucks a day - or over 1 per hour, this would mean 50 days, or close to 2 1/2 months of work days of trucks just removing dirt. Is this fair to the people living on Loma Linda? 2.2

Respectfully submitted,
Tom Schulhof
cell - 917-969-7700

Letter 2

COMMENTER: Thomas Schulhof

DATE: October 4, 2014

RESPONSE:

Response 2.1

The commenter opposes granting a permit for a house exceeding 15,000 square feet in the Hillside area, and states an opinion that such an approval could result in an entitlement for every house on Loma Linda Drive to be similar in size. The commenter further states concerns that such a scenario would create significant impacts on Loma Linda Drive due to its narrow width.

In order to permit a building larger than 15,000 square feet in the Hillside R-1 District, the reviewing authority must find that the project would "not have a substantial adverse impact on the scale, integrity, or character of the area or on the privacy of neighboring properties." This consideration would be required for each application based on its individual merits. Thus the granting of one permit would not make it more likely that others on the same street would be granted the same approval. As the IS-MND only examines the development that could occur under the pending permit application, the impact analysis focuses on the effects of the proposed project; an analysis of impacts of potential future development not related to the proposed project would be speculative.

Response 2.2

The commenter states concerns regarding the number of construction truck trips that would be required for the proposed project, calculating that 500 trips at one trip per hour over 50 days would be generated during construction.

Traffic in the vicinity of the project site would increase compared to existing conditions during construction due to worker trips and hauling truck trips to and from the project site. A revised construction traffic discussion based on a detailed construction equipment and delivery vehicle schedule provided by the project applicant is included in the Final IS-MND (see Table 11 in Section XVI, *Traffic/Circulation/Parking*). As shown in the Final IS-MND, the proposed project would require, at most, 22 round-trip hauling trips per day during the grading phase, 8 round-trip heavy delivery trucks during the building construction phase, and 18 round-trip worker trips throughout construction. Delivery and hauling trips during grading and building construction would be spread out generally evenly throughout the delivery hours of 9:30 AM to 4:00 PM, while worker trips would be generally concentrated at the beginning of the construction day (7:00 AM) and at the end of the construction day (5:00 PM). The temporary increase in trips at these levels would not result in a significant impact on the environment under CEQA. Construction-related traffic would not cause significant traffic impacts during any hourly period.

Letter 3

We are not in support of the project as proposed at 1184 Loma Linda Drive.

Our concerns:

- Our sense of privacy, and that of the street will be materially negatively affected
- This house and second structure will materially block our views, and those of the street
- A project of this size at a dead end street could be unreasonably disruptive to our lives
- Possible other concerns, but we haven't had sufficient time to look over the documents properly

Diminished Sense of Privacy / View Interference

We have lived at 1185 Loma Linda (across the street from the proposed project) for almost 13 years and have 4 children, including 2 one year old twins. One of the main reasons we bought the house was because of its sense of privacy. It is at the end of a dead end street, and the previous house at 1184 was across from us and allowed for city views from our property to the end of the road.

There is also a **proposed second smaller structure** adjoining our pool area. We have concerns that this structure will

- look down onto our property, pool, and our children who swim in the pool regularly
- the structure and proposed landscaping will increase the shade on our pool
    - materially negatively diminishing our kids ability to enjoy the pool
    - this could increase foliage falling onto our property that we will have to remove, including dirtying the pool and clogging the filtration system

3.1

Our immediate reaction to the incomplete renderings supplied to us is that the 1184 project will materially diminish our sense of privacy.

We have view windows that look out towards the end of the street which the old Factor house did not block. The proposed project will significantly block this view.

We have a great sense of privacy being the last house on our side of the street. The proposed project will now be the last house on the end of the street, it will chop off the end of the street, and be much closer to our house than it is now, resulting in our property feeling much smaller and more cramped.

A huge part of our house's value is the views, and it is another one of the main reasons we purchased this house. This proposed project will materially interfere with our views, and thus negatively materially affect the value of our house. We do not understand why the value of our home should suffer in deference to adding value to someone else's home.

We understand that we have certain view preservation rights under Beverly Hills ordinances.

Aesthetics to the street

We feel aesthetically it will negatively affect the street. Instead of having a lovely open feel with a view at the end, the house will significantly cut this view off, make the street shorter, and butt up against our land, making the street feel more cramped. 3.2

Construction Concerns

The construction thus far has resulted in:

- Vehicles sometimes bocked the emergency turn around. What is proposing to be done to ensure that while construction is occurring, emergency vehicles have the clearance needed?
- Almost daily last minute knocks on our door demanding that our cars be moved.
    - With babies in the house, it is not easy for us to drop everything and move our cars around to suit people who didn't supply us with any notice.
- Large vehicles often blocked the road resulting in late arrivals to doctor appointments and our kids' school.
- The street surface has already been significantly damaged due to their heavy vehicles, making the surface a bit uneven and unsafe.

If the construction thus far is any indication, a project of this scope will be a large nuisance to us and our neighbors on the street. 3.3

Representations have been made by the owner's representative that our views will not be affected, our sense of privacy will not be affected, nor that the structure will reduce the value of our property.

From our meetings with him, it was our understating that they would provide us with the necessary plans and renderings to be able to give careful consideration in plenty of time before any City meetings. We have yet to receive all of the agreed to information.

Now while we understand that they are under no obligation to supply us with these documents, we feel that if information is promised, it should be forthcoming.

It was only about a week ago that we discovered that the plans were available for review at the City, and with full-time jobs and 4 kids, we have been able to set up an appointment at the earliest date possible to meet with Andre which is Oct 15th. 3.4

We respectfully request that some consideration be given to our position and that we be given the full plans and renderings demonstrating that our views and privacy will not be impeded (we requested **specific renderings of certain areas**) as promised by the owner's representative and enough time to have these properly examined.

Please find below Google earth images for reference.

1191 Loma Linda Dr
Exit Street View
© 2014 INEGI
© 2014 Google
© 2014 Google
Report a problem
Google earth
34°05'35.57" N 118°24'35.64" W elev 649 ft eye alt 658 ft

1191 Loma Linda Dr
Exit Street View
© 2014 Google
© 2014 Google
Report a problem
Google earth
34°05'35.39" N 118°24'35.93" W elev 648 ft eye alt 658 ft

Yours Sincerely,

Debbie Weiss and Adrian Lorimer

1185 Loma Linda Dr

Letter 3

COMMENTER: Debbie Weiss

DATE: Undated

RESPONSE:

Response 3.1

The commenter states concerns regarding the proposed project's potential impacts on neighbors' privacy and on views from the neighboring residence. Privacy is not an environmental issue pursuant to the California Environmental Quality Act (CEQA). However, the commenter's concerns in this regard will be forwarded to the Planning Commission for their consideration.

Regarding views from the neighboring house, the proposed project may affect a portion of the existing view from this property. The project must comply with the City's view preservation regulations, which provide that, except as authorized by a Hillside R-1 permit, "no structure in the Hillside Area shall be constructed to a height in excess of fourteen feet (14') if such construction in excess of fourteen feet (14') would substantially disrupt a view of the Los Angeles area basin from the level pad which contains the primary residential building on a property within three hundred feet (300') of the subject property, and such view would not have been substantially disrupted by development of a fourteen foot (14') structure."

CEQA does not typically consider impacts to private views as significant unless the number of properties significantly affected is relatively high. As noted by the California Court of Appeal in Ocean View Homeowners Assn., Inc. v. Montecito Water District (116 Cal. App. 4th 396), "[t]hat a project affects only a few private views may be a factor in determining whether the impact is significant." Although the City acknowledges that some homeowners – perhaps one or two – may experience interference with portions of their existing private views to varying degrees depending on location and elevation, the impact is not significant for purposes of the CEQA analysis due to the limited number of affected properties. Nevertheless, the commenter's concerns in this regard will be forwarded to the Planning Commission for their consideration.

Finally, the commenter states concerns regarding potential impacts to property values. Economic impacts are not considered significant under CEQA unless they can be shown to lead to physical impacts on the environment. As this would not be the case with a potential incremental reduction in home values in Beverly Hills, impacts would not be significant in this regard.

Response 3.2

The commenter states concerns regarding the proposed project's potential impacts on the aesthetic environment on Loma Linda Drive, opining that "instead of having a lovely open feel with a view at the end, the house will significantly cut this view off, make the street shorter, and butt up against our land, making the street feel more cramped." Although the visual conditions at the end of Loma Linda Drive would change, this change would only affect the final

approximately 100 feet of the street. This end portion and terminus of Loma Linda Drive may be frequented by several homeowners on the street but is not a major thoroughfare, identified bicycle or pedestrian route, or established view location for the general public. Views of the Los Angeles Basin would still be visible from other locations along this stretch of Loma Linda Drive. In summary, although the visual environment at the very end of Loma Linda Drive would change in ways similar to those expressed by the commenter, and those changes would be adverse, they would not be adverse to the point of a significant impact pursuant to CEQA.

Response 3.3

The commenter states concerns regarding impacts of construction traffic on the surrounding neighborhood, including traffic disruption, emergency access, and pavement damage. Please see Response 1.5 above regarding pavement conditions. Regarding traffic disruption, please see Response 2.2.

In response to the comment regarding emergency access, the following text has been added to Page 6 of the Final IS-MND.

> The applicant's contractor would implement construction traffic control and safety measures such as warning signs, speed limit signs, and flagmen on Coldwater Canyon Drive and Loma Linda Drive.

The use of construction traffic control and safety measures would ensure that adequate emergency access for the surrounding neighborhood would be provided.

Response 3.4

The commenter requests the opportunity to review the project plans. Selected plan sheets necessary for the environmental analysis are included as figures in the Draft IS-MND. Others are available at City Hall by appointment, as noted by the commenter.

PLANNING COMMISSION PUBLIC HEARING

October 9, 2014

The City of Beverly Hills Planning Commission held a public hearing on October 9, 2014, at which comments on the Draft IS-MND were received. In addition to the planning commissioners, several members of the public offered verbal comments on the Draft IS-MND or the project. The public comments from the hearing are summarized below, followed by the City's responses. Only comments related to the project's potential environmental effects are included.

- *Street Parking – Commenters discussed the amount of street parking current available on Loma Linda Drive and how the vacation of the terminus of Loma Linda would result in the loss of parking.*

  Response: Please see Response 1.1 for a discussion of this topic.

- *Proposed vehicle turnaround – commenters asked about the location of the new turnaround both in terms of the parking issue discussed in the comment above and due to the proposed location's proximity to the neighbor's house.*

  Response: The proposed project would involve a vehicle turnaround area in between the project site and the adjacent single-family residence located at 1178 Loma Linda Drive. As discussed in new text added to the Final IS-MND, this would place vehicles adjacent to the existing residence. However, this area was previously developed with a parking area with car ports for the single-family home that was demolished in January 2014. Noise related to vehicles using the turnaround area would be comparable to noise from cars entering and exiting the parking area. In addition, noise from vehicles using the turnaround area would be temporary and intermittent.

- *Views of LA Basin - Concerns were raised about loss of views from neighboring houses and people walking along Loma Linda Drive to the LA Basin.*

  Response: Please see Response 1.3 above for a discussion of this topic.

- *Storm drains – a commenter stated concern over adequate handling of storm water drainage for the project.*

  Response: Please see Response 1.4 above for a discussion of this topic.

- *Construction impacts on streets – a commenter stated concern over how construction would affect the condition of Loma Linda Drive and suggested the need to condition the project so it would have to be cleaned and repaved post construction.*

  Response: Please see Response 1.5 above for a discussion of this topic.

- *Pedestrian Alley – A commenter stated an opinion that there is an existing "pedestrian alley" that provides emergency access from the top of Loma Linda Drive to Coldwater Canyon Drive below.*

  Response: Please see Response 1.7 above for a discussion of this topic.

- *Construction Safety - There were several comments made in regards to construction safety especially regarding heavy truck trips on both Loma Linda and Coldwater Canyon drives.*

  Response: Please see Response 3.3 above for a discussion of this topic.

- *Privacy of neighbors – A commenter stated concern regarding impacts to their privacy from the proposed project, and requested that the project design or landscaping address this issue.*

  Response: Please see Response 3.1 above for a discussion of this topic.

- *Geotechnical Report and Landslides – Several questions were raised by the public and the Planning Commission regarding the completeness of the geotechnical report and if it has accounted for all historical landslides. A peer review was suggested.*

  Response: In November 2014, LGC Valley, Inc. (LGC) prepared a peer review of Irvine Consulting Inc.'s September 2014 geotechnical report at the City's request. LGC concluded that the project site has been sufficiently reviewed and assessed from a geotechnical perspective and that the proposed project is feasible from a geotechnical perspective based on known data, provided the recommendations contained in the September 2014 geotechnical report are implemented. LGC's peer review can be found in Appendix B of the Final IS-MND.

- *Construction Trips – It was suggested at the hearing that the project would include approximately 400 cement mixer trips (each trip carrying 10 cubic yards of cement) that have not been specifically included in the construction trip generation estimates or air quality modeling inputs.*

  Response: Information regarding cement mixer delivery trucks was added to Page 6 of the Final IS-MND. According to a detailed delivery schedule provided by the applicant, approximately 445 round-trip cement mixer delivery trucks would be required. The air quality analysis was updated in the Final IS-MND in response to this new information (see Section II, *Air Quality).* As shown in Tables 3 and 5, construction-related emissions would not exceed regional thresholds. Please see Response 2.2 regarding traffic disruption from the cement mixer trips.

- *A commenter questioned whether new facilities would be needed for public facilities and services to serve the proposed project.*

  Response: Please see Response 1.4 above for a discussion of this topic.