Geotechnical Evaluation

Proposed Acadia San Diego Medical Facility
830 Showroom Place
Chula Vista, California

Acadia Health Care

6100 Tower Circle, Suite 1000 | Franklin, Tennessee 37067

March 6, 2019 | Project No. 108727001

Geotechnical | Environmental | Construction Inspection & Testing | Forensic Engineering & Expert Witness

Geophysics | Engineering Geology | Laboratory Testing | Industrial Hygiene | Occupational Safety | Air Quality | GIS

Ninyo & Moore

Geotechnical & Environmental Sciences Consultants

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1 INTRODUCTION

In accordance with your request and authorization, we have performed a geotechnical evaluation for the proposed Acadia San Diego Medical Facility located at 830 Showroom Place in Chula Vista, California (Figure 1). The purpose of our study was to evaluate the soil and geologic conditions at the site and to develop geotechnical recommendations regarding the design and construction of the proposed improvements. This report presents our findings, conclusions, and recommendations for the project based on our background review, site reconnaissance, subsurface evaluation, laboratory testing, and geotechnical analyses.

2 SCOPE OF SERVICES

Our scope of services included the following:

- Review of readily available background materials, including a previous geotechnical report for the site (Ninyo & Moore, 2006), published geologic maps, fault and seismic hazards maps, groundwater data, topographic maps, and stereoscopic aerial photographs.
- Coordination and mobilization for subsurface exploration, including a geotechnical reconnaissance of the site to observe the existing site conditions, coordinate with site personnel, and mark the proposed boring locations for utility clearance.
- Acquisition of a boring permit with the County of San Diego Department of Environmental Health for our subsurface exploration.
- Subsurface exploration consisting of drilling, logging, and sampling 16 small-diameter, hollow-stem auger borings and the excavation, logging, and sampling of 14 test pits. The borings and test pits were logged by a representative from our firm and soil samples were collected at selected intervals for laboratory testing.
- Field infiltration testing in general accordance with the City of Chula Vista BMP Design Manual (2017)
- Laboratory testing of selected soil samples, including tests to evaluate in-situ moisture and dry density, gradation analysis, Atterberg limits, consolidation, expansion index, direct shear strength, Proctor density, R-value, and corrosivity.
- Data compilation and engineering analysis of the information obtained from our background review, field reconnaissance, subsurface evaluation, and laboratory testing.
- Preparation of this geotechnical report presenting our findings, conclusions, and recommendations for the design and construction of the proposed improvements at the site.

3 SITE DESCRIPTION

The project site includes two contiguous, previously graded properties located at the northern terminus of Showroom Place in the Eastlake area of Chula Vista, California (Figures 1 and 2). The two properties are designated as Assessor's Parcel Numbers 595-710-11 and 595-710-12 and were graded in 2002 and 2003 as part of the Eastlake Business Center II development

(Geotechnics, 2003). Current access to the site is afforded by Showroom Place, which abuts the southerly property line. The project site is currently vacant and is generally covered with sparse vegetation. An approximately 10- to 15-foot high stockpile of soil is situated within the east-central portion of the site, and two retention basins are located in the southern portion of the property that are up to approximately 10 feet in depth. Graded slopes up to approximately 90 feet in height descend from the northern and eastern property lines to residential developments which bound the property to the north and east. An approximately 25-foot high graded slope descends from the western property line to a commercial development. A boat and RV storage lot and a retail development bound the site to the south.

The existing ground surface in the area where the proposed medical facility is to be constructed is relatively level with a gentle gradient down to the south. Ground surface elevations in the vicinity of the proposed facility building range from approximately 705 feet above mean sea level (MSL) to approximately 715 MSL. The global project site coordinates are approximately 32.6554°N latitude and 116.9553°W longitude

4 PROPOSED CONSTRUCTION

We understand that the proposed Acadia San Diego Medical Facility will consist of an approximately 89,500 square-foot, single-story structure (SWA, 2018). The facility is anticipated to accommodate various administration and medical offices, nurse stations, patient rooms, treatment rooms, and a gymnasium. Additional site improvements will include a parking area south of the proposed building, an access road surrounding the perimeter of the proposed building, underground utilities, and landscaping. Four stormwater basins are also planned – one in the northeast corner of the site, one in the northwest corner, and two in the southern portion of the site. Site excavations are anticipated for subgrade preparation associated with shallow foundations for the new building, hardscape and pavement construction, and excavations for underground utility installation.

5 SUBSURFACE EVALUATION AND LABORATORY TESTING

Our subsurface exploration was conducted January 28 through January 30, 2019 and consisted of drilling of sixteen small-diameter, hollow-stem auger borings (B-1 through B-8, and IT-1 through IT-8) and the excavation of 14 test pits (TP-1 through TP-14). The borings were drilled to depths of up to 46 feet using a truck-mounted drill rig equipped with hollow-stem augers. The test pits were excavated to depths of up to 8 feet using a rubber-tired backhoe. A representative from Ninyo & Moore logged the borings and test pits and obtained bulk and relatively undisturbed soil samples at selected depths for laboratory testing. The exploration locations are shown on Figures 2 and 3. The logs of the borings and test pits are presented in Appendix A.

Geotechnical laboratory testing was performed on representative samples to evaluate the in-situ moisture and dry density, gradation analysis, Atterberg limits, consolidation, direct shear strength, expansion index, Proctor density, corrosivity, and R-value. In-situ moisture content and dry density test results are presented on the boring logs in Appendix A. The remaining laboratory test results are presented in Appendix B.

6 INFILTRATION TESTING

Field infiltration testing was performed on January 29 and January 30, 2019 within the areas of the proposed infiltration basins. Eight infiltration test holes (IT-1 through IT-8) were excavated with a truck-mounted drill rig to depths of approximately 5 feet at the locations shown on Figures 2 and 3. Following the excavation of borings IT-1 through IT-8 on January 29, 2019, the locations were prepared for infiltration testing by placing approximately 2 inches of gravel on the bottom of each boring, installing a 2-inch diameter, perforated PVC pipe in the hole, and backfilling the annulus with pea gravel. As part of the test procedure, presoaking of each hole was performed to represent adverse conditions for infiltration. The presoak consisted of maintaining approximately 1 to 2 feet of water in each boring for approximately 4 hours. The water levels were then allowed to drop overnight.

Infiltration testing was then performed on January 30, 2019 in general accordance with the City of Chula Vista BMP Design Manual (2017). The infiltration test holes were filled with approximately 1 to 2½ feet of water and the water depth was measured in 30-minute intervals during the duration of the tests. As necessary, the borings were refilled to maintain the water level until the infiltration rate stabilized.

Infiltration rates were calculated from the field measurements using the Porchet method. Infiltration test measurements and calculations are included in Appendix C. The Suitability Assessment Safety Factor (S_A) presented in Table 1 was calculated based on the guidelines presented in Appendix D of the City of Chula Vista BMP Design Manual (2017). Appendix C of this report also includes copies of the Categorization of Infiltration Feasibility worksheet (Worksheet C.4-1) and Factor of Safety and Design Infiltration Rate worksheet (Worksheet D.5-1) including responses to the suitability assessment questions. The rates presented in Table 1 are to be used for preliminary design purposes. The design safety factor shall be determined by the design engineer.

Table 1 – Infiltration Test Results Summary						
Infiltration Test	**Approximate Test Depth (feet)**	**Description (Geologic Unit)**	**Observed Infiltration Rate (in/hr)**	**Suitability Assessment Safety Factor, S_A[1]**	**Design Safety Factor, S_B[2]**	**S_A Factored Infiltration Rate[3] (in/hr)**
IT-1	5	Silty Sandstone (Otay Formation)	0.21	2.25	TBD	0.09
IT-2	5	Silty Sandstone (Otay Formation)	0.29	2.25	TBD	0.13
IT-3	5	Silty Sandstone (Otay Formation)	0.04	2.25	TBD	0.02
IT-4	5	Silty Sandstone (Otay Formation)	0.04	2.25	TBD	0.02
IT-5	5	Sandy Silt (Fill)	0.02	2.25	TBD	0.01
IT-6	5	Sandy Silt (Fill)	0.04	2.25	TBD	0.02
IT-7	5	Silty Sandstone (Otay Formation)	0.47	2.25	TBD	0.21
IT-8	5	Silty Sandstone (Otay Formation)	0.27	2.25	TBD	0.12

Notes:
in/hr = inches per hour
TBD = to be determined
[1] Calculated in accordance with Appendix D of the City of Chula Vista BMP Design Manual (2017)
[2] Design safety factor to be determined by the design engineer in accordance with Appendix D of the City of Chula Vista BMP Design Manual (2017)
[3] Factored infiltration rate shall be divided by the design safety factor to obtain the design infiltration rate

Other areas of the site not specifically tested may or may not accommodate partial infiltration of storm water. Additional infiltration testing would be needed in these other areas to evaluate whether infiltration in these areas/depths are feasible.

7 GEOLOGY AND SUBSURFACE CONDITIONS

7.1 Regional Geologic Setting

The project area is situated in the western portion of the Peninsular Ranges Geomorphic Province. This geomorphic province encompasses an area that extends approximately 900 miles from the Transverse Ranges and the Los Angeles Basin south to the southern tip of Baja California (Norris and Webb, 1990; Harden, 2004). The province varies in width from approximately 30 to 100 miles and generally consists of rugged mountains underlain by Jurassic metavolcanic and metasedimentary rocks, and Cretaceous igneous rocks of the southern California batholith. The portion of the province in western San Diego County that includes the project area consists generally of uplifted and dissected coastal plain underlain by Upper Cretaceous-, Tertiary-, and Quaternary-age sedimentary rocks.

The Peninsular Ranges Province is traversed by a group of sub-parallel faults and fault zones trending roughly northwest. Several of these faults are considered to be active. The active fault systems located in the vicinity of the project area include the Rose Canyon, Elsinore, San Jacinto, San Andreas, Coronado Bank, San Diego Trough, and San Clemente faults. The location of the site relative to these regional faults is shown on Figure 4. Major tectonic activity associated with these and other faults within this regional tectonic framework consists primarily of right-lateral, strike-slip movement. The Rose Canyon Fault Zone, the nearest active fault system, has been mapped approximately 12 miles west of the project site.

7.2 Site Geology

Geologic units encountered during our field reconnaissance and subsurface exploration included fill and materials of the Otay Formation. Generalized descriptions of the earth units encountered during our subsurface exploration are provided below. The geology of the site vicinity is shown on Figure 5. Additional descriptions are provided on the boring and test pit logs in Appendix A. Geologic cross sections were prepared at the locations shown on Figure 3 and are shown on Figures 6A through 6C.

7.2.1 Fill

Fill materials were encountered at the ground surface in each of our borings and test pits. The depth of fill materials encountered in our borings ranged from approximately 1 foot to approximately 43 feet. Fill depths up to approximately 65 feet are anticipated in the northeastern corner of the site, near the top of the slope that descends to the adjacent residential development. As encountered, the fill materials generally consisted of various shades of brown and gray, moist, stiff to hard, sandy silt, clayey silt, elastic silt, lean clay, and sandy clay, along with medium dense to very dense silty sand and clayey sand. With the exception of the stockpile in the in the east-central portion of the site, these fill materials were placed under the observation and testing of Geotechnics, Inc. (2003) and are considered to be engineered fill. A copy of the Geotechnical Map prepared by Geotechnics is included in Appendix D.

7.2.2 Otay Formation

Materials comprising the Otay Formation (Todd, 2004), were encountered in each of our exploratory borings and test pits with the exception of IT-5 and IT-6. The Otay Formation was encountered underlying the fill and extending to the total depths explored. As encountered, the Otay Formation generally consisted of various shades of brown, light gray, and gray, moist, moderately to strongly cemented, silty sandstone, and moderately to strongly indurated clayey siltstone and silty claystone. Scattered bentonite lenses were observed within the upper portions of the Otay Formation. Bentonite typically possesses a high expansion potential and poor strength characteristics when wetted or exposed to moisture.

7.3 Groundwater

Groundwater was not encountered in our exploratory borings or test pits. Based on our review of available data, we estimate that the groundwater table is situated at depths greater than 60 feet below the site. Perched water and/or seepage due to the presence of clayey material and/or near the contact between the fill and the Otay Formation may be encountered during construction excavations. Fluctuations in the level of groundwater may occur due to variations in ground surface topography, subsurface stratification, seasonal rainfall, irrigation, and other factors which may not have been evident at the time of our field evaluation.

8 GEOLOGIC HAZARDS

In general, hazards associated with seismic activity include strong ground motion, ground surface rupture, and liquefaction. These considerations and other geologic hazards, such as landsliding and flooding, are discussed in the following sections.

8.1 Faulting and Seismicity

Based on our review of the referenced geologic maps and stereoscopic aerial photographs, as well as on our geologic field mapping, the subject site is not underlain by known active or potentially active faults (i.e., faults that exhibit evidence of ground displacement in the last 11,000 years and 2,000,000 years, respectively). The site is not located within a State of California Earthquake Fault Zone (Hart and Bryant, 1997). However, like the majority of southern California, the site is located in a seismically active area and the potential for strong ground motion is considered significant during the design life of the proposed structures. The nearest known active fault is the Rose Canyon fault, located approximately 12 miles west of the site. Table 2 lists selected principal known active faults that may affect the subject site, including the approximate fault-to-site distances, and the maximum moment magnitudes (Mmax) as published by the USGS (2019).

Table 2 – Principal Active Faults		
Fault	**Approximate Fault-to-Site Distance miles (kilometers)**	**Maximum Moment Magnitude (M_{max})**
Rose Canyon	12 (19)	6.9
Coronado Bank	21 (34)	7.4
Elsinore (Julian Segment)	37 (60)	7.4
Earthquake Valley	41 (66)	6.8
Elsinore (Coyote Mountain Segment)	42 (68)	6.9
Newport-Inglewood (Offshore)	44 (71)	7.0
Elsinore (Temecula)	47 (76)	7.1
San Jacinto (Coyote Creek)	57 (92)	7.0
San Jacinto (Borrego)	58 (93)	6.8

Principal seismic hazards evaluated at the subject site are surface ground rupture, ground shaking, seismically induced liquefaction, and various manifestations of liquefaction related hazards (e.g., dynamic settlement). A brief description of these and other hazards and the potential for their occurrences at the site are discussed below.

8.2 Surface Fault Rupture

Surface fault rupture is the offset or rupturing of the ground surface by relative displacement across a fault during an earthquake. Based on our review of referenced geologic and fault hazard data, the project site is not transected by known active or potentially active faults. Therefore, the probability of damage from surface fault rupture is considered to be low. However, lurching or cracking of the ground surface as a result of nearby seismic events is possible.

8.3 Ground Motion

Based on our review of background information, data pertaining to the historical seismicity of the San Diego area are summarized in Table 3. This table presents historic earthquake data within a radius of approximately 62 miles of the site with a magnitude of 6.0 or greater, as obtained from the CGS Earthquake History and Catalogs website (CGS, 2018) and in-house proprietary data.

Table 3 – Historical Earthquakes that Affected the Site		
Date	**Magnitude (M)**	**Approximate Epicentral Distance miles (kilometers)**
October 23, 1894	6.1	14 (22)
May 27, 1862	6.2	14 (22)
November 22, 1800	6.3	52 (84)
May 28, 1892	6.5	58 (93)
April 9, 1968	6.6	61 (97)

The 2016 California Building Code (CBC) specifies that the Risk-Targeted, Maximum Considered Earthquake (MCE_R) ground motion response accelerations be used to evaluate seismic loads for design of buildings and other structures. The MCE_R ground motion response accelerations are based on the spectral response accelerations for 5 percent damping in the direction of maximum horizontal response and incorporate a target risk for structural collapse equivalent to 1 percent in 50 years with deterministic limits for near-source effects. The horizontal peak ground acceleration (PGA) that corresponds to the MCE_R for the site was calculated as 0.385g using a web-based seismic design tool (SEAOC/OSHPD, 2019). Spectral response acceleration parameters, consistent with the 2016 CBC, are also provided in the Recommendations section of this report for the evaluation of seismic loads on buildings and other structures.

The 2016 CBC specifies that the potential for liquefaction and soil strength loss be evaluated, where applicable, for the Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration with adjustment for site class effects in accordance with the American Society of Civil Engineers (ASCE) 7-10 Standard. The MCE_G peak ground acceleration is based on the geometric mean peak ground acceleration with a 2 percent probability of exceedance in 50 years. The MCE_G peak ground acceleration with adjustment for site class effects (PGA_M) was calculated as 0.374g using a web-based seismic design tool (SEAOC/OSHPD, 2019) that yielded a mapped MCE_G peak ground acceleration of 0.316g for the site and a site coefficient (F_{PGA}) of 1.171 for Site Class D.

8.4 Liquefaction and Seismically Induced Settlement

Liquefaction of cohesionless soils can be caused by strong vibratory motion due to earthquakes. Research and historical data indicate that loose granular soils and non-plastic silts that are saturated by a relatively shallow groundwater table are susceptible to liquefaction. Based on the relatively dense nature of the underlying formational materials and the anticipated depth of groundwater, it is our opinion that the potential for liquefaction and seismically induced settlement to occur at the site is not a design consideration.

8.5 Landslides

Our review of referenced geologic maps, literature, topographic maps, and stereoscopic aerial photographs, no landslides or indications of deep-seated landsliding underlie the subject site (Todd, 2004; Tan, 1992). In addition, no indications of landsliding were observed during our site reconnaissance or subsurface exploration. As such, the potential for significant large-scale slope instability at the site is not a design consideration. The slopes that descend from the project site were evaluated with regards to deep-seated and surficial slope stability, as discussed below.

8.5.1 Deep-Seated Slope Stability Analysis

To evaluate the deep-seated stability of the slopes that descend from the east and west property lines, slope stability calculations were performed on geologic cross sections A-A' and B-B' developed at the locations shown on Figure 3. Our slope stability calculations focused on the stability fill that exists on the west property line and the large graded slope that descends from the northeast and east portions of the site. The cross sections were created using topographic survey data provided by K&S Engineering, Inc. (2019), as-graded geotechnical information reported by Geotechnics (2003), and the findings and results from our subsurface evaluation.

A two-dimensional stability analysis program, Geostase (Gregory, 2019), was used for our slope stability calculations. Our evaluation utilized search routines that incorporate Spencer Method of Slices to define the most critical failure surface within potential block failures and potential rotational failures. Spencer's Method of Slices was utilized in our analyses in order to satisfy force equilibrium and moment equilibrium conditions.

For our analysis, the soil and formational materials were assigned with homogeneous, isotropic properties. The shear strength parameters for the fill materials and materials comprising the Otay Formation were selected based on our laboratory direct shear testing and our experience with similar materials. In keeping with standard practice, our slope stability calculations incorporated ultimate shear strengths for the formational materials and fill materials under static conditions, while peak shear strengths were used for these materials under static/pseudo-static. The relevant shear strength parameters used in our stability calculations for the different material types are presented in Table 4.

Table 4 – Strength Parameters Used in Stability Evaluation

Earth Material	Unit Weight (pcf)	Shear Strength Parameters			
		Peak		Ultimate	
		Cohesion (psf)	Friction Angle (degrees)	Cohesion (psf)	Friction Angle (degrees)
Otay Formation	120	500	30	300	28
Artificial Fill	120	350	30	200	30

A factor of safety of at least 1.5 under static conditions is generally considered adequate as per the guidelines of Special Publication 117A (CGS, 2008a) and accepted engineering practices. Results of our slope stability analyses yielded factors of safety of 1.5 or more under static conditions for the existing slopes as shown on geologic cross sections A-A' through B-B' (Appendix E).

Our analyses of existing slopes also included an evaluation of the slopes' stability when subjected to seismic loading. Our evaluation was performed utilizing a "screening analysis" to evaluate whether a more involved displacement analysis is warranted, as recommended by CGS Special Publication 117A (CGS, 2008). This procedure also incorporates a pseudo-static analysis that is based on site-specific ground motion parameters (Bray, et. al, 1998; Blake, et. al, 2002; Stewart, et. al, 2003). Calculations showing the derivation of the pseudo-static coefficient used in the screening analysis are presented in Appendix F. Results of our "screening analysis," which incorporates a pseudo-static coefficient of 0.20, yielded pseudo-static factors of safety of 1.0 or more for each of the evaluated slopes (Appendix E), which CGS (2008a) considers to be adequate for seismic conditions.

8.5.2 Surficial Slope Stability Analysis

We evaluated the shallow stability of the proposed cut and fill slopes at the site. Our evaluation was based on a slope inclination of 2:1 and assumed a 4-foot thick zone of seepage parallel to the slope face. Using the above shear strength parameters for the onsite materials, our analyses indicate a factor of safety of at least 1.50 with respect to shallow slope stability for the proposed slopes (Appendix E).

8.6 Flood and Dam Inundation Hazards

Based on review of the Federal Emergency Management Agency Flood Insurance Rate Map ([FIRM], FEMA, 2012), the site and immediate surrounding areas are mapped as lying outside of 100- and 500-year flood zones. Accordingly, the potential for flooding of the site is considered low.

We have also a reviewed dam inundation map of the area (Chula Vista, 2005). Based on the review, the site is mapped as lying outside of dam failure inundation zones.

8.7 Tsunamis and Seiches

Tsunamis are long wavelength seismic sea waves (long compared to the ocean depth) generated by sudden movements of the ocean bottom during submarine earthquakes, landslides, or volcanic activity. Seiches are similar oscillating waves on inland or enclosed bodies of water. Based on the inland location and elevation of the site, and the relative distance to nearby lakes or reservoirs, the potential for a tsunami or seiche to affect the site is not a design consideration.

9 CONCLUSIONS

Based on our geotechnical evaluation, it is our opinion that the proposed project is feasible from a geotechnical standpoint provided that the following recommendations are incorporated into the design and construction of the project.

In general, the following conclusions were made:

- Based on our recent subsurface exploration, the site is underlain by fill soils and materials of the Otay Formation. The upper portions of the fill soils are considered to be potentially compressible and are not suitable for the proposed improvements in their present condition. Recommendations for remedial grading are presented in the following sections

- A significant cut-fill transition between the fill soils and the Otay Formation exists below the proposed building pad area. Recommendations to mitigate differential settlement across this cut-fill transition are provided in the following sections of this report.

- The existing fill soils and materials of the Otay Formation encountered on the site should be generally excavatable with heavy-duty earth moving equipment in good working condition. However, portions of the Otay Formation can be expected to contain moderately to strongly cemented zones. Because of this, additional efforts including heavy ripping should be anticipated. Disposal, crushing, pulverizing, or special processing of the resulting oversize material generated from excavations should be anticipated.

- Groundwater was not encountered during our subsurface evaluation. Depth to groundwater may vary due ground surface topography, subsurface stratification, seasonal rainfall, irrigation, and other factors which may not have been evident at the time of our field evaluation.

- Results of our laboratory testing indicate that the onsite fill and materials of the Otay Formation are expansive.

- Results of our slope stability analyses (Appendix E) indicate that the existing slopes that descend from the eastern, northeastern, and western portion of the site possess adequate factors of safety with respect to static and seismic conditions.

- In general, on-site excavations are anticipated to generate soils with a high expansion potential. These materials are not considered suitable for reuse beneath the proposed building or the upper 2 feet of subgrade soils beneath flatwork. Therefore, we anticipate that imported material will be needed for use as fill.

- Excavations performed within the on-site materials are anticipated to generate oversized materials that are not suitable for reuse within the engineered fill soils. Cemented materials and cobbles should be crushed, screened and processed prior to their reuse as fill. The contractor should anticipate disposing of the oversized materials generated during excavation.

- The subject site is not located within a State of California Earthquake Fault Zone. The probability of surface fault rupture at the site is considered to be low.

- Although potential infiltration rates of the onsite soils may be suitable for partial infiltration, we do not recommend infiltration for this site from a geotechnical standpoint. Based on our geotechnical laboratory testing, the onsite fill materials and materials derived from the Otay Formation are clayey in nature and possess a high potential for expansion. In addition, infiltration within 50 feet of the top of a slope is anticipated to induce seepage on the slope face and increase the risk of slope failures in these areas.

- Our limited laboratory corrosion testing indicates that the onsite soils are corrosive based on California Department of Transportation (Caltrans, 2018) corrosion guidelines. As such, we recommend that a corrosion engineer be consulted for further evaluation of these soils.

10 RECOMMENDATIONS

The recommendations presented in the following sections provide general geotechnical criteria regarding the design and construction of the proposed Acadia San Diego Medical Facility and associated improvements. The recommendations are based on the results of our subsurface evaluation, laboratory testing, review of referenced geologic materials, experience in the general vicinity of the project area, and geotechnical analyses. The proposed work should be performed in conformance with the recommendations presented in this report, project specifications, and appropriate agency standards.

10.1 Earthwork

Earthwork at the site is anticipated to include foundation excavations, trenching and backfilling for new utilities, pavement construction, and finish grading for establishment of site drainage. Earthwork should be performed in accordance with the requirements of applicable governing agencies and the recommendations presented in the following sections.

10.1.1 Construction Plan Review and Pre-Construction Conference

We recommend that the grading and foundation plans, and project specifications, be submitted to Ninyo & Moore for review to evaluate for conformance to the recommendations provided in this report. We further recommend that a pre-construction conference be held. The owner and/or their representative, the governing agencies' representatives, the civil engineer, the geotechnical engineer, and the contractor should be in attendance to discuss the work plan and project schedule.

10.1.2 Site Preparation

Prior to commencing earthwork operations, the project areas for the new improvements should be cleared of existing structures and improvements, vegetation, utility lines, asphalt, concrete, and other deleterious debris from areas to be graded. The existing stockpile of soil within the east-central portion of the site should be removed to accommodate construction of the proposed improvements. Tree stumps and roots should be removed to such a depth that organic material is generally not present. Clearing and grubbing should extend to the outside of the proposed excavation and fill areas. The debris and unsuitable material generated during clearing and grubbing should be removed from areas to be graded and disposed of at a legal dumpsite away from the project area.

10.1.3 Excavation Characteristics

The results of our field exploration program indicate that the project site, as presently proposed, is underlain by fill soils and materials comprising the Otay Formation. These soils should be generally excavatable with heavy-duty earth working equipment. Moderately- to strongly-cemented formational materials may be encountered and additional efforts including heavy ripping should be anticipated.

10.1.4 Remedial Grading and Treatment of Near-Surface Soils

As noted, based on the results of our subsurface and laboratory evaluation, the existing fill and upper portions of the Otay Formation are considered to be potentially compressible, expansive, and corrosive. As such, we do not consider these upper soils to be suitable for structural support of buildings and improvements in their present condition. In addition, a significant cut-fill transition between the fill soils and Otay Formation is present beneath the proposed building pad, which could result in considerable differential settlements across the building. Consequently, we recommend that the existing fill and upper portions of the Otay Formation be removed to a depth of 8 feet below the bottoms of the proposed foundations within planned building pads. For the purposes of this report, the building pad is defined as the structural footprint plus a horizontal distance of 5 feet or the depth of the excavation below pad grade, whichever is greater. Depths of these recommended removals will vary, but should extend to a sufficient depth in order to provide 10 feet or more of fill soils, with the upper 5 feet or more possessing a very low to low expansion potential beneath the building pad. The extent and depths of removals should be evaluated by Ninyo & Moore's representative in the field based on the materials exposed. Based on our field representative's observations, deeper removals in some areas may be recommended.

Near-horizontal benching of the removal surface should be performed where the surface gradient exceeds 3:1 (horizontal:vertical). The existing fills may be reused as compacted fill materials provided they meet with the criteria for fill materials.

Where flatwork, concrete pavement, or segmental concrete pavers are proposed, the upper 1 foot of subgrade materials should be removed and replaced with compacted fill material exhibiting a very low to low expansion potential. Remedial grading for site pavements and should consist of scarifying and moisture conditioning the upper 1 foot of subgrade materials.

Our recommendations for removals and placement of structural backfill are summarized on Table 5.

Table 5 – Summary of Remedial Grading Recommendations

Improvement Type	Estimated Depth[1,2] of Remedial Grading	Fill Material
Building Improvements	8 feet below bottoms of foundations	Select Fill[3] in upper 3 ft[4] On-site Material beneath 3 ft[4]
Retaining Walls	3 feet below bottom of footing	Select Fill[3]
Flatwork, Concrete Pavement and Pavers	1 foot below subgrade	Select Fill[3]
Asphalt Concrete Pavement	Scarify and moisture condition the upper 1 foot of subgrade	On-site Materials

Notes:
[1] Actual depth to be evaluated during grading by the geotechnical representative.
[2] Lateral extent of remedial grading removals equal to 5 feet or the depth of the excavation below pad grade, whichever is greater.
[3] Select Fill is granular and exhibits a very low expansion potential and properties as defined in Fill Materials.
[4] Below bottom of foundation

Existing underground utilities may be present within the project site that that could impact the recommended remedial grading. The presence of underground utilities located under or adjacent to the proposed building pads, which cannot be relocated, may hinder the performance of the recommended remedial grading operations. Ninyo & Moore should be contacted for additional recommendations regarding such conflicts on a case-by-case basis.

10.1.5 Temporary Excavations

For temporary excavations, we recommend that the following Occupational Safety and Health Administration (OSHA) soil classifications be used:

Fill	*Type C*
Otay Formation	*Type B*

Upon making the excavations, the soil classifications and excavation performance should be evaluated in the field by the geotechnical consultant in accordance with the OSHA regulations. Temporary excavations should be constructed in accordance with OSHA recommendations. For trenches or other excavations, OSHA requirements regarding personnel safety should be met using appropriate shoring (including trench boxes) or by laying back the slopes to no steeper than 1.5:1 (horizontal to vertical) in fill and 1:1 for Otay Formation materials. Temporary excavations that encounter seepage may be shored or stabilized by placing sandbags or gravel along the base of the seepage zone. Excavations encountering seepage should be evaluated on a case-by-case basis. On-site safety of personnel is the responsibility of the contractor.

10.1.6 Temporary Shoring

Based on our understanding of the proposed construction, the proposed structure will not include a subterranean level. If deep excavations are planned where temporary sloping of the walls of the excavation is not feasible, it may be necessary to install a temporary shoring system. The shoring plans should clearly depict the site constraints and the shoring system. The shoring plans should be signed and stamped by a professional engineer registered in the State of California experienced in the design the shoring systems. Ninyo & Moore should be given the opportunity to review the project plans to check its compliance with design and construction recommendations presented herein.

A cantilever shoring system consisting of soldier piles and lagging can be utilized to facilitate construction staging (Figure 7). The soldier piles may be comprised of structural concrete below the bottom of the excavation and lean concrete slurry backfill above the bottom. H-piles inserted in the drilled shafts, during the placement of concrete, are to act as reinforcement below the bottom of the excavation. Lagging spans the distance between the H-piles, transferring the soil lateral pressure to the H-piles.

Lateral earth pressures exerted on cantilever shoring are indicated on Figure 7. These lateral earth pressures should be evaluated by a structural engineer for the design of the temporary shoring system. These design earth pressures assume that spoils from the excavations, or other surcharge loads, will not be placed above the excavations within a 1:1 plane extending up and back from the base of the excavation. For shoring subjected to surcharge loads, such as soil stockpiles or construction materials/equipment, an additional horizontal uniform pressure of 0.5q may be applied to the full height of the excavation, where “q” is the vertical surcharge pressure. Street traffic or construction traffic may be assumed to induce a surcharge pressure “q” of 240 pounds per square foot (psf). If a braced shoring system is planned for the site, we would be pleased to provide recommendations for their design and construction upon request.

10.1.7 Materials for Fill and Trench Backfill

Material for fill may be obtained from on-site excavations, may be processed from on-site excavations, or may be import materials. On-site soils (other than plastic clays) with an organic content of less than approximately 3 percent by volume (or 1 percent by weight) are suitable for reuse as general fill material in building areas (at depths of more than 3 feet below foundations), in non-structural areas, and in areas where asphalt concrete pavements are proposed. Fill material should not contain rocks or lumps over approximately 3 inches in diameter, and not more than approximately 30 percent larger than ¾ inch. Oversize materials, if encountered, should be crushed, screened, processed, or separated from material to be used for compacted fill and removed from the site. Moisture conditioning (including drying) of existing on-site materials is anticipated if reused as fill.

As recommended in Section 10.1.4, the upper soils (within 3 feet of the bottom of proposed foundations) in the proposed building area, and in areas to receive retaining walls, flatwork, concrete pavement, and pavers, should be overexcavated, exported, and backfilled with imported select fill. Select fill and imported fill materials should generally be granular soils with very low to low expansion potential (i.e., an expansion index of 50 or less as evaluated by ASTM International [ASTM] Test Method D 4829). Select fill and imported fill material should also be tested for corrosive potential and exhibit a minimum resistivity value greater than 1,100 ohm-centimeters, chloride content of less than 500 parts per million (ppm), a sulfate content of less than 1,000 ppm and pH greater than 5.5. The contractor should be responsible for the uniformity of import material brought to the site. We recommend that materials proposed for use as select fill be evaluated from a contractor’s stockpile rather than in place materials. Once an evaluation of a stockpile is requested, three days should be anticipated for results of the material evaluation. Utility trench backfill material should not contain rocks or lumps over approximately 3 inches in general. In general, soils classified as silts or clays should not be used for backfill in the pipe zone. Larger chunks, if generated during excavation, may be broken into acceptably sized pieces or disposed of offsite. A summary of the recommended fill material criteria is presented in Table 6.

Table 6 – Fill Material Criteria	
Fill Material	**Criteria**
General Site Fill	≤3 inches
	≤30 percent retained on ¾ inch sieve
Select Fill	≤3 inches
	≤30 percent retained on ¾ inch sieve
	Expansion Index ≤50, considered non-corrosive
Trench Backfill	≤3 inches
	≤30 percent retained on ¾ inch sieve

Additionally, concrete and AC materials generated from the demolition of the existing improvements may be crushed and reused within the fill materials. These materials are considered suitable, provided they are processed and mixed with onsite soils to meet the gradation recommendations provided above. However, AC materials may not be reused within the engineered fills placed beneath a building pad.

Retaining wall backfill material should also consist of select fill soils as defined in Table 6.

To reduce the potential of importing contaminated materials to the site, prior to delivery, soil materials obtained from off-site sources shall be sampled and tested in compliance with California EPA Department of Toxic Substances Control "Information Advisory, Clean Imported Fill Material", dated October 2001. Do not import soils that exhibit a known risk to human health, the environment, or both.

10.1.8 Fill Placement and Compaction

Prior to placement of compacted fill, the contractor should request an evaluation of the exposed ground surface by Ninyo & Moore. Unless otherwise recommended, the exposed ground surface should then be scarified to a depth of approximately 8 inches and watered or dried, as needed, to achieve moisture contents generally above the optimum moisture content. The scarified materials should then be compacted to a relative compaction of 90 percent as evaluated in accordance with ASTM D 1557. The evaluation of compaction by the geotechnical consultant should not be considered to preclude any requirements for observation or approval by governing agencies. It is the contractor's responsibility to notify this office and the appropriate governing agency when project areas are ready for observation, and to provide reasonable time for that review.

Fill materials should be moisture conditioned to generally above the laboratory optimum moisture content prior to placement. The optimum moisture content will vary with material type and other factors. Moisture conditioning of fill soils should be generally consistent within the soil mass.

Prior to placement of additional compacted fill material following a delay in the grading operations, the exposed surface of previously compacted fill should be prepared to receive fill. Preparation may include scarification, moisture conditioning, and recompaction.

Compacted fill should be placed in horizontal lifts of approximately 8 inches in loose thickness. Prior to compaction, each lift should be watered or dried as needed to achieve a moisture content generally above the laboratory optimum, mixed, and then compacted by mechanical methods, to a relative compaction of 90 percent as evaluated by ASTM D 1557. Successive lifts should be treated in a like manner until the desired finished grades are achieved. The upper 12 inches of the subgrade and aggregate base materials underneath the pavements should be compacted to a relative compaction of 95 percent relative density as evaluated by the current version of ASTM D 1557.

10.1.9 Pipe Bedding

Pipe bedding should be constructed in general accordance with the "Greenbook" Standard Specifications. We recommend that utility lines be supported 6 inches or more of granular bedding material such as sand with a sand equivalent value of 30 or more in accordance with ASTM D 2419. Bedding material should be placed and compacted around the pipe, and 12 inches or more above the top of the pipe. We do not recommend the use of crushed rock for bedding material. It has been our experience that the voids within a crushed rock material are sufficiently large enough to allow fines to migrate into the voids, thereby creating the potential for sinkholes and depressions to develop at the ground surface. Special care should be taken not to allow voids beneath and around the pipe. Bedding material and compaction requirements should be in accordance with the recommendations of this report, the project specifications, and applicable requirements of the appropriate agencies. Compaction of the bedding material and backfill should proceed evenly up both sides of the pipe and be compacted to 90 percent or more relative compaction as evaluated by ASTM D 1557.

10.1.10 Lateral Pressures for Thrust Blocks

Thrust restraint for buried pipelines may be achieved by transferring the thrust force to the soil outside the pipe through a thrust block. Thrust blocks may be designed using the magnitude and distribution of passive lateral earth pressures presented on Figure 8. Thrust blocks should be backfilled with granular backfill material and compacted following the recommendations presented in this report.

10.1.11 Modulus of Soil Reaction

The modulus of soil reaction is used to characterize the stiffness of soil backfill placed at the sides of buried pipelines for the purpose of evaluating deflection caused by the weight of the backfill above the pipe. A soil reaction modulus of 1,000 pounds per square inch (psi) may be used for excavation depths up to 5 feet and 1,400 psi may be used for excavation depths more than 5 feet and backfilled with granular soil and compacted to 90 percent based on ASTM D 1557.

10.2 Seismic Design Considerations

Design of the proposed improvements should be performed in accordance with the requirements of governing jurisdictions and applicable building codes. Table 7 presents the seismic design parameters for the sites in accordance with CBC (2016) guidelines and adjusted MCE_R spectral response acceleration parameters (SEAOC/OSHPD, 2019).

Table 7 – 2016 California Building Code Seismic Design Criteria

Site Coefficients and Spectral Response Acceleration Parameters	Values
Site Class	D
Site Coefficient, F_a	1.171
Site Coefficient, F_v	1.762
Mapped Spectral Response Acceleration at 0.2-second Period, S_s	0.822g
Mapped Spectral Response Acceleration at 1.0-second Period, S_1	0.319g
Spectral Response Acceleration at 0.2-second Period Adjusted for Site Class, S_{Ms}	0.963g
Spectral Response Acceleration at 1.0-second Period Adjusted for Site Class, S_{M1}	0.562g
Design Spectral Response Acceleration at 0.2-second Period, S_{Ds}	0.642g
Design Spectral Response Acceleration at 1.0-second Period, S_{D1}	0.375g

10.3 Site-Specific Ground Response Analysis

We have performed a site-specific ground response analysis in accordance with Section 1616A.1.3 of the California Building Code (CBC, 2016) and Section 21 of American Society of Civil Engineers (ASCE) Standard 7-10 (ASCE, 2010). The analysis consisted of a review of available seismologic information for nearby faults and performance of probabilistic and deterministic seismic hazard analyses to provide an acceleration response spectrum (ARS) to model building response to seismic ground shaking for design of the proposed structure.

We conducted a probabilistic seismic hazard analysis to evaluate the horizontal ground motion with a recurrence interval of approximately 2,500 years or a 2 percent probability of exceedance in 50 years, also known as the ground motion associated with the Maximum Considered Earthquake (MCE). We conducted our analysis using the hazard spectrum calculator program OpenSHA (Field, et al., 2003) and the online database of fault locations, rupture areas, and recurrence intervals (Cao, et al., 2003). We considered several attenuation relationships in our analysis to model spectral response acceleration at the site and selected the relationships by Chiou & Young (2008), Campbell & Bozorgnia (2008), and Boore & Atkinson (2008) in evaluating the probabilistic MCE ARS.

We conducted a deterministic seismic hazard analysis to evaluate ground shaking wherein we computed the 5 percent damped, median ARS for characteristic earthquakes acting individually on known active faults within the region. In our analysis, we used the National Seismic Hazard Maps - Fault Parameters tool (USGS, 2019) to evaluate the fault to site distance for the database of fault locations and magnitude published by the USGS/CGS (Cao et al., 2003). We found that the ARS at the site for a moment magnitude 6.8 earthquake event on the Rose Canyon fault (approximately 17.5 kilometers southwest of the site) exceeds the ARS at the site due to seismic events on other regional faults using published estimates of earthquake magnitude (Cao et al., 2003). We considered several attenuation relationships and modeled the MCE ground motion for a magnitude 6.8 event on the Rose Canyon fault. In accordance with Section 21.2.2 of ASCE 7-10, we constructed the deterministic MCE ground motion from the largest scaled median spectral response acceleration at each period evaluated and the lower limit specified in Section 21.2.2.

The site-specific design ARS is presented on Figure 9. In accordance with Section 21.2.3 of ASCE 7-10, the site-specific design ARS is the lesser of the probabilistic and deterministic MCE ARS at each period evaluated reduced by a factor of one-third. The design ARS for a Site Class D computed in accordance with Section 1613A of the CBC and Section 11.4.5 of ASCE 7-10 is presented on Figure 9 for comparison. The site-specific design ARS presented on Figure 9 meets or exceeds 80 percent of the design ARS for a Site Class D in accordance with Section 21.3 of ASCE 7-10. The spectral ordinates for the site-specific design ARS are tabulated on Figure 9.

10.4 Foundations

Based on our understanding that the proposed Acadia San Diego Medical Facility building will be a single-story structure of slab-on-grade construction, we are providing the following preliminary foundation recommendations. The proposed building may be supported on shallow, spread, or continuous footings bearing on compacted fill prepared, observed, and tested in accordance with the recommendations presented in this report. Foundations should be designed in accordance with structural considerations and the following recommendations. In addition, requirements of the appropriate governing jurisdictions and applicable building codes should be considered in the design of the structures.

10.4.1 Spread Footings

Shallow, spread, or continuous footings, bearing on 3 feet of compacted select fill materials may be designed using an allowable bearing capacity of 2,500 pounds per square foot (psf). The allowable bearing capacity may be increased by one-third when considering loads of short duration such as wind or seismic forces. The allowable bearing capacity is based on a factor of safety of roughly three.

Spread footings should be founded 24 inches below the lowest adjacent grade. Continuous footings should have a width of 15 inches and isolated footings should be 24 inches in width. The allowable bearing capacity recommended above can also be increased by 450 psf for each additional foot of embedment and 150 psf for each additional foot of width to a value of up to 3,500 psf for footings bearing within compacted fill. The spread footings should be reinforced in accordance with the recommendations of the project structural engineer.

10.4.2 Lateral Resistance

For resistance of footings to lateral loads, bearing on compacted fill, we recommend an allowable passive pressure of 300 psf of depth be used with a value of up to 3,000 psf. This value assumes that the ground is horizontal for a distance of 10 feet, or three times the height generating the passive pressure, whichever is greater. We recommend that the upper 1 foot of soil not protected by pavement or a concrete slab be neglected when calculating passive resistance.

For frictional resistance to lateral loads, we recommend a coefficient of friction of 0.35 be used between soil and concrete. The allowable lateral resistance can be taken as the sum of the frictional resistance and passive resistance provided the passive resistance does not exceed one-half of the total allowable resistance. The passive resistance values may be increased by one-third when considering loads of short duration such as wind or seismic forces.

10.4.3 Static Settlement

We estimate that the proposed structures, designed and constructed as recommended herein, and founded in compacted fill will undergo total settlement on the order of 1 inch. Differential settlement on the order of ½ inch over a horizontal span of 40 feet should be expected.

10.5 Slabs-On-Grade

We recommend that conventional, slab-on-grade floors, underlain by 5 feet or more of compacted fill materials of very low to low expansion potential, be 5 inches in thickness and be reinforced with No. 4 reinforcing bars spaced 18 inches on center each way. The reinforcing bars should be placed near the middle of the slab. As a means to help reduce shrinkage cracks, we recommend that the slabs be provided with control joints at intervals of approximately 12 feet each way. The slab reinforcement and expansion joint spacing should be designed by the project structural engineer.

If moisture sensitive floor coverings are to be used, we recommend that slabs be underlain by a vapor retarder and capillary break system consisting of a 15-mil polyethylene (or equivalent) membrane (installed per the manufacturers recommendations) placed over 4 inches of medium to coarse, clean sand or pea gravel. The exposed subgrade should be moistened just prior to the placement of concrete.

10.6 Retaining Walls

We understand that retaining walls may be constructed as part of the project. For the design of a yielding retaining wall that is not restrained against movement by rigid corners or structural connections, an active pressure represented by an equivalent fluid weight of 75 pounds per cubic foot (pcf) may be assumed for 2:1 (horizontal to vertical) backfill and 45 pcf for level backfill as shown on Figure 10. Restrained walls (non-yielding) may be designed for at-rest pressure represented by an equivalent fluid weight of 95 pcf for 2:1 (horizontal to vertical) backfill and 65 pcf for level backfill. Should dynamic earth pressures be considered in the design, a triangular pressure distribution with a magnitude of 17H pcf may be used. These pressures do not include surcharge loads. The designer should evaluate the surcharge pressures from the buildings, traffic, and other structures. These pressures assume low-expansive, granular retaining wall backfill material as defined in the Materials for Fill section of this report. Wall backfill should be moisture conditioned and compacted to a relative compaction of 90 percent at a moisture content near the optimum as evaluated by ASTM D 1557. A drain should be provided behind the wall as shown on Figure 11. The drain should be connected to an appropriate outlet.

10.7 Exterior Flatwork

Exterior concrete flatwork should be 5 inches in thickness and should be reinforced with No. 3 reinforcing bars placed at 24 inches on-center both ways. Exterior slabs should be underlain by 4 inches of clean sand, which is in turn underlain by a 1-foot thickness of select fill (as discussed in Section 10.1.4). A vapor retarder is not needed for exterior flatwork. To reduce the potential manifestation of distress to exterior concrete flatwork due to movement of the underlying soil, we recommend that such flatwork be installed with crack-control joints at appropriate spacing as designed by the structural engineer. Before placement of concrete, the subgrade soils should be scarified to a depth of 8 inches, moisture conditioned to generally above the laboratory optimum moisture content, and compacted to a relative compaction of 90 percent as evaluated by ASTM D 1557. Positive drainage should be established and maintained adjacent to flatwork.

10.8 Corrosion

The corrosion potential of the site soils was evaluated based on laboratory testing of a representative sample of the upper soils obtained from our exploratory boring B-6 and test pits TP-2 and TP-9. Laboratory testing was performed to evaluate pH, electrical resistivity, chloride, and sulfate content. The soil pH and minimum resistivity tests were performed in accordance with California Test Method (CT) 643. The test for chloride content of the soils was performed using CT 422. Sulfate testing was performed in general accordance with CT 417. The laboratory results are presented in Appendix B.

The soil pH was measured to range from approximately 8.3 to 9.0 and the electrical resistivity ranged from approximately 700 to 1,000 ohm-cm. The chloride contents of the samples ranged from approximately 30 parts per million (ppm) to 1035 ppm. The sulfate contents of the tested samples ranged from approximately 0.001 to 0.004 (10 to 40 ppm). Based on the laboratory test results and Caltrans (2018) corrosion criteria, the onsite samples would be classified as corrosive, which is defined as having earth materials with more than 500 ppm chlorides, more than 0.15 percent sulfates (i.e., 1,500 ppm), an electrical resistivity of 1,100 ohm-cm or less, or a pH of 5.5 or less. If corrosion susceptible improvements are planned on site, we recommend that a corrosion engineer be consulted for further evaluation and recommendations.

10.9 Concrete

Concrete in contact with soil or water that contains high concentrations of soluble sulfates can be subject to chemical deterioration. Laboratory testing indicated the sulfate contents of the samples tested were approximately 0.001 to 0.004 percent. Based on ACI 318 criteria, the potential for sulfate attack is negligible for water-soluble sulfate contents in soils ranging from about 0.00 to 0.10 percent by weight. Therefore, the site soils may be considered to have a negligible potential for sulfate attack. However, due to the potential variability of site soils, consideration should be given to using Type II/V cement for normal weight concrete in contact with soil.

In order to reduce the potential for shrinkage cracks in the concrete during curing, we recommend that the concrete for the proposed improvements be placed with a slump of 4 inches based on ASTM C 143. The slump should be checked periodically at the site prior to concrete placement. We further recommend that concrete cover over reinforcing steel for foundations be provided in accordance with CBC (2016). The structural engineer should be consulted for additional concrete specifications.

10.10 Preliminary Pavement Recommendations

We understand that new pavements will be constructed on site. New pavement sections were evaluated based on the encountered subgrade soil conditions and our laboratory testing. Laboratory testing of representative soil samples were performed and indicated R-values ranging from approximately 35 and 39 for the on-site subgrade soils. For preliminary design purposes, an R-value of 30 was used for the evaluation of preliminary pavement structural sections. Actual pavement recommendations should be based on R value tests performed on bulk samples of the soils exposed at the finished subgrade elevations once grading operations have been performed.

It is anticipated that traffic conditions will consist of relatively light passenger vehicles, maintenance/service vehicles, as well as occasional emergency vehicles. As such, our evaluation of pavement structural sections utilized assumed Traffic Indices (TIs) of 5, 6, and 7. Our pavement analysis was performed using the methodology outlined by the Highway Design Manual (Caltrans, 2017). The analysis assumes an approximate 20-year design life for new pavements. Based on the design R value and assumed TIs, our calculated pavement structural section is provided in Table 7.

Table 8 – Preliminary Pavement Recommendations			
Traffic Index	**Design R-Value**	**Asphalt Concrete (inches)**	**Caltrans 2 Aggregate Base (inches)**
5	30	3.0	6.0
6	30	3.5	7.5
7	30	4.0	9.5

As indicated, the above pavement structural sections assume traffic indices of 7.0 or less for site pavements. If traffic loads are different from those assumed, the pavement design should be re-evaluated. In addition, we recommend that the upper 12 inches of the subgrade and aggregate base materials be compacted to a relative compaction of 95 percent as evaluated by the current version of ASTM D 1557.

We suggest that consideration be given to using Portland cement concrete pavements in areas where dumpsters will be stored and where refuse trucks will stop and load. Experience indicates that refuse truck traffic can significantly shorten the useful life of asphalt concrete sections. We recommend that in these areas, 6 inches of 600 psi flexural strength Portland cement concrete reinforced with No. 3 bars, 18 inches on center, be placed over 6 inches or more of Class 2 aggregate base compacted to a relative compaction of 95 percent (based on ASTM D 1557), placed over 1 or more feet of very low to low expansion potential fill materials compacted to the recommendations presented herein. The above section may also be used for fire lane PCC pavements. For light duty vehicle pavements, we recommend 5 inches of PCC over 4 inches of aggregate base.

10.11 Drainage

Roof, pad, and slope drainage should be conveyed such that runoff water is diverted away from slopes and structures to suitable discharge areas by nonerodible devices (e.g., gutters, downspouts, concrete swales, etc.). Positive drainage adjacent to structures should be established and maintained. Positive drainage may be accomplished by providing drainage away from the foundations of the structure at a gradient of 2 percent or steeper for a distance of 5 feet or more outside building perimeters, and further maintained by a graded swale leading to an appropriate outlet, in accordance with the recommendations of the project civil engineer and/or landscape architect.

Surface drainage on the site should be provided so that water is not permitted to pond. A gradient of 2 percent or steeper should be maintained over the pad area and drainage patterns should be established to divert and remove water from the site to appropriate outlets.

Care should be taken by the contractor during grading to preserve any berms, drainage terraces, interceptor swales or other drainage devices of a permanent nature on or adjacent to the property. Drainage patterns established at the time of grading should be maintained for the life of the project. The property owner and the maintenance personnel should be made aware that altering drainage patterns might be detrimental to foundation performance.

11 CONSTRUCTION OBSERVATION

The recommendations provided in this report are based on our understanding of the proposed project and our evaluation of the data collected based on subsurface conditions observed in our exploratory borings. It is imperative that the geotechnical consultant checks the subsurface conditions during construction.

During construction, we recommend that the duties of the geotechnical consultant include, but not be limited to:

- Observing clearing, grubbing, and removals.
- Observing excavation bottoms and the placement and compaction of fill, including trench backfill.
- Evaluating imported materials, if any, prior to their use as fill.
- Performing field tests to evaluate fill compaction.
- Observing foundation excavations for bearing materials and cleaning prior to placement of reinforcing steel or concrete.
- Performing material testing services including concrete compressive strength and steel tensile strength tests and inspections.

The recommendations provided in this report are based on the assumption that Ninyo & Moore will provide geotechnical observation and testing services during construction. In the event that the services of Ninyo & Moore are not utilized during construction, we request that the selected consultant provide the owner with a letter (with a copy to Ninyo & Moore) indicating that they fully understand Ninyo & Moore’s recommendations, and that they are in full agreement with the design parameters and recommendations contained in this report.

12 LIMITATIONS

The field evaluation, laboratory testing, and geotechnical analyses presented in this geotechnical report have been conducted in general accordance with current practice and the standard of care exercised by geotechnical consultants performing similar tasks in the project area. No warranty, expressed or implied, is made regarding the conclusions, recommendations, and opinions presented in this report. There is no evaluation detailed enough to reveal every subsurface condition. Variations may exist and conditions not observed or described in this report may be encountered during construction. Uncertainties relative to subsurface conditions can be reduced through additional subsurface exploration. Additional subsurface evaluation will be performed upon request. Please also note that our evaluation was limited to assessment of the geotechnical aspects of the project, and did not include evaluation of structural issues, environmental concerns, or the presence of hazardous materials.

This document is intended to be used only in its entirety. No portion of the document, by itself, is designed to completely represent any aspect of the project described herein. Ninyo & Moore should be contacted if the reader requires additional information or has questions regarding the content, interpretations presented, or completeness of this document.

This report is intended for design purposes only. It does not provide sufficient data to prepare an accurate bid by contractors. It is suggested that the bidders and their geotechnical consultant perform an independent evaluation of the subsurface conditions in the project areas. The independent evaluations may include, but not be limited to, review of other geotechnical reports prepared for the adjacent areas, site reconnaissance, and additional exploration and laboratory testing.

Our conclusions, recommendations, and opinions are based on an analysis of the observed site conditions. If geotechnical conditions different from those described in this report are encountered, our office should be notified, and additional recommendations, if warranted, will be provided upon request. It should be understood that the conditions of a site could change with time as a result of natural processes or the activities of man at the subject site or nearby sites. In addition, changes to the applicable laws, regulations, codes, and standards of practice may occur due to government action or the broadening of knowledge. The findings of this report may, therefore, be invalidated over time, in part or in whole, by changes over which Ninyo & Moore has no control.

This report is intended exclusively for use by the client. Any use or reuse of the findings, conclusions, and/or recommendations of this report by parties other than the client is undertaken at said parties' sole risk.

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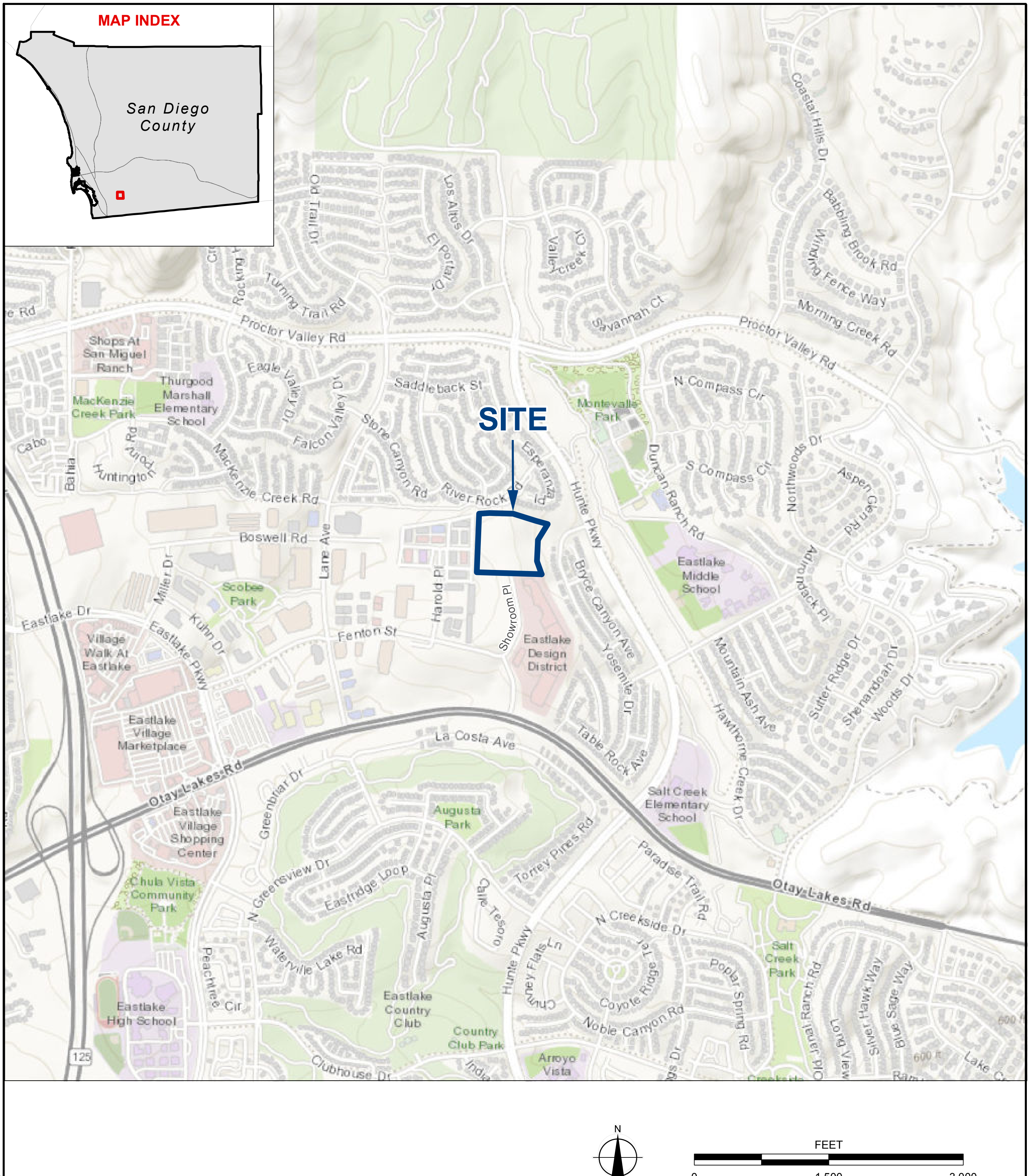
FIGURES



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NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: ESRI WORLD TOPO, 2017

FIGURE 1

SITE LOCATION

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 | 3/19

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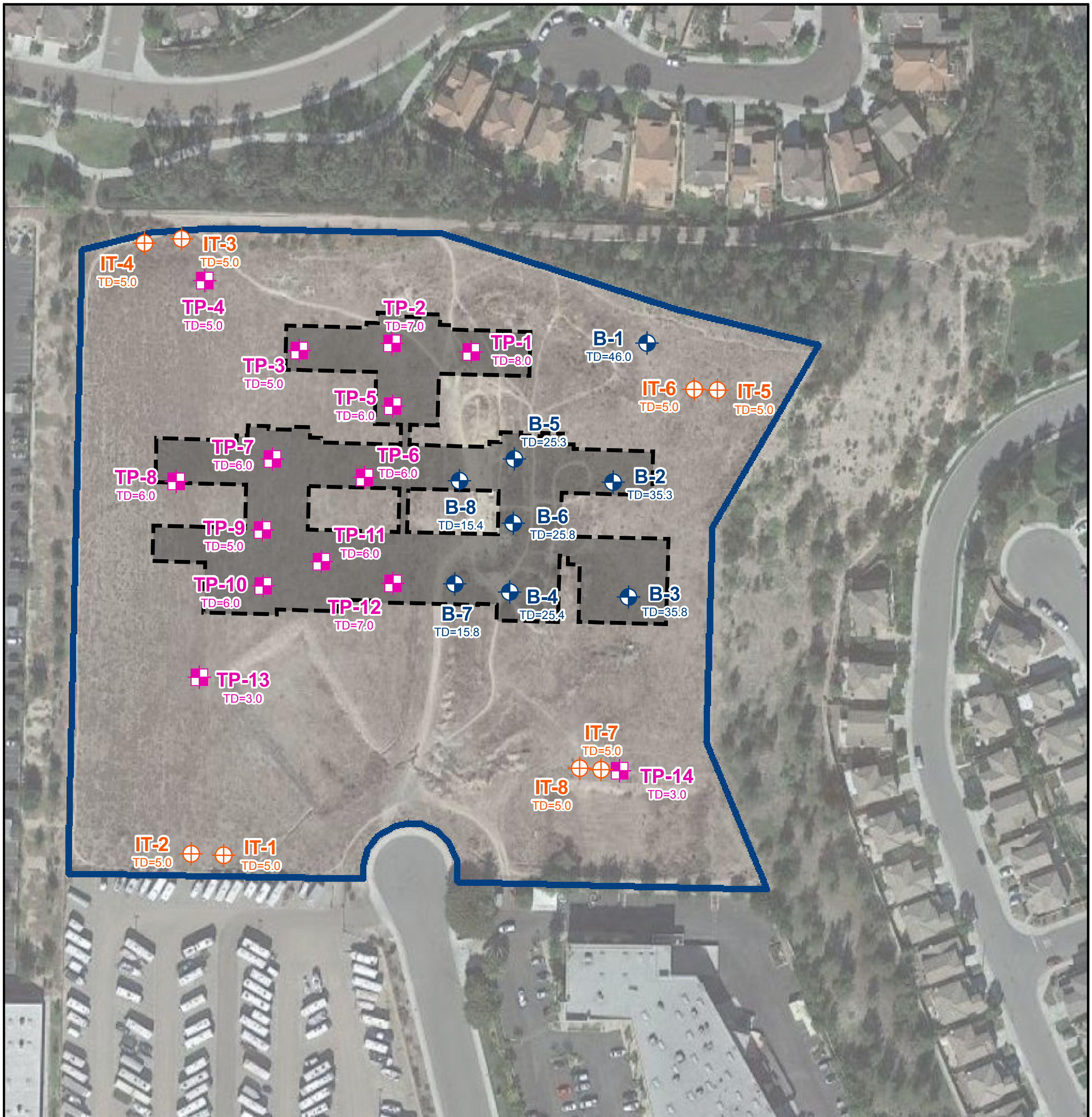

LEGEND

SITE BOUNDARY

B-8 TD=15.4 BORING
TD=TOTAL DEPTH IN FEET

IT-8 TD=5.0 INFILTRATION TEST
TD=TOTAL DEPTH IN FEET

TP-14 TD=3.0 TEST PIT
TD=TOTAL DEPTH IN FEET

PROPOSED BUILDING FOOTPRINT

N

FEET
0 150 300

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE. | SOURCE: GOOGLE EARTH, 2017

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FIGURE 2

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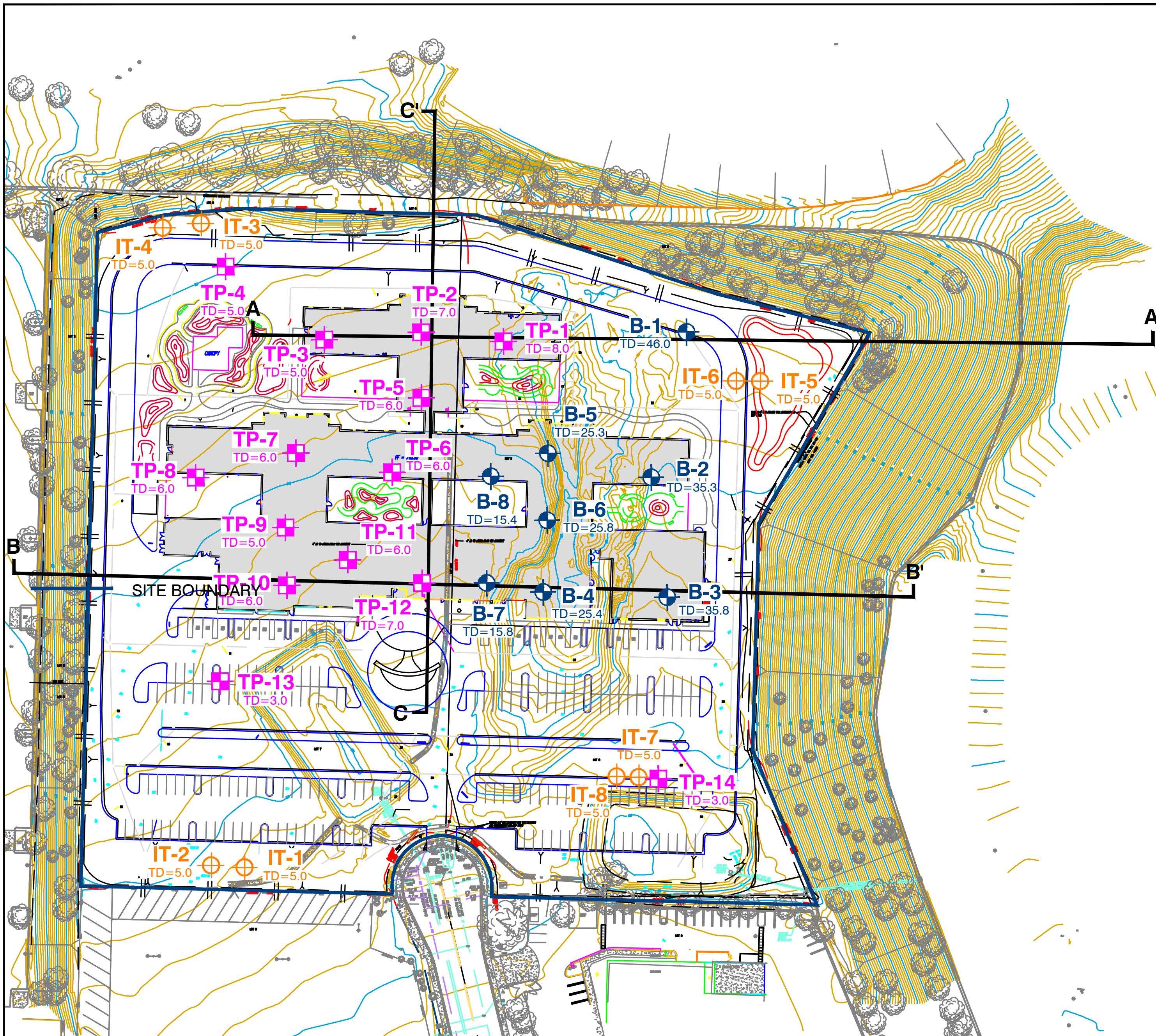
EXPLORATION LOCATIONS - AERIAL PLAN

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 | 3/19



LEGEND

(line)	SITE BOUNDARY
(shaded box)	PROPOSED BUILDING FOOTPRINT
B-8 TD=15.4	BORING TD=TOTAL DEPTH IN FEET
IT-8 TD=5.0	BORING TD=TOTAL DEPTH IN FEET
TP-14 TD=3.0	BORING TD=TOTAL DEPTH IN FEET
C C'	GEOLOGIC CROSS SECTION

N

FEET

0 150 300

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: SWA ARCHITECTS, 2018.

3 108727001 ELSP.DWG AOB

FIGURE 3

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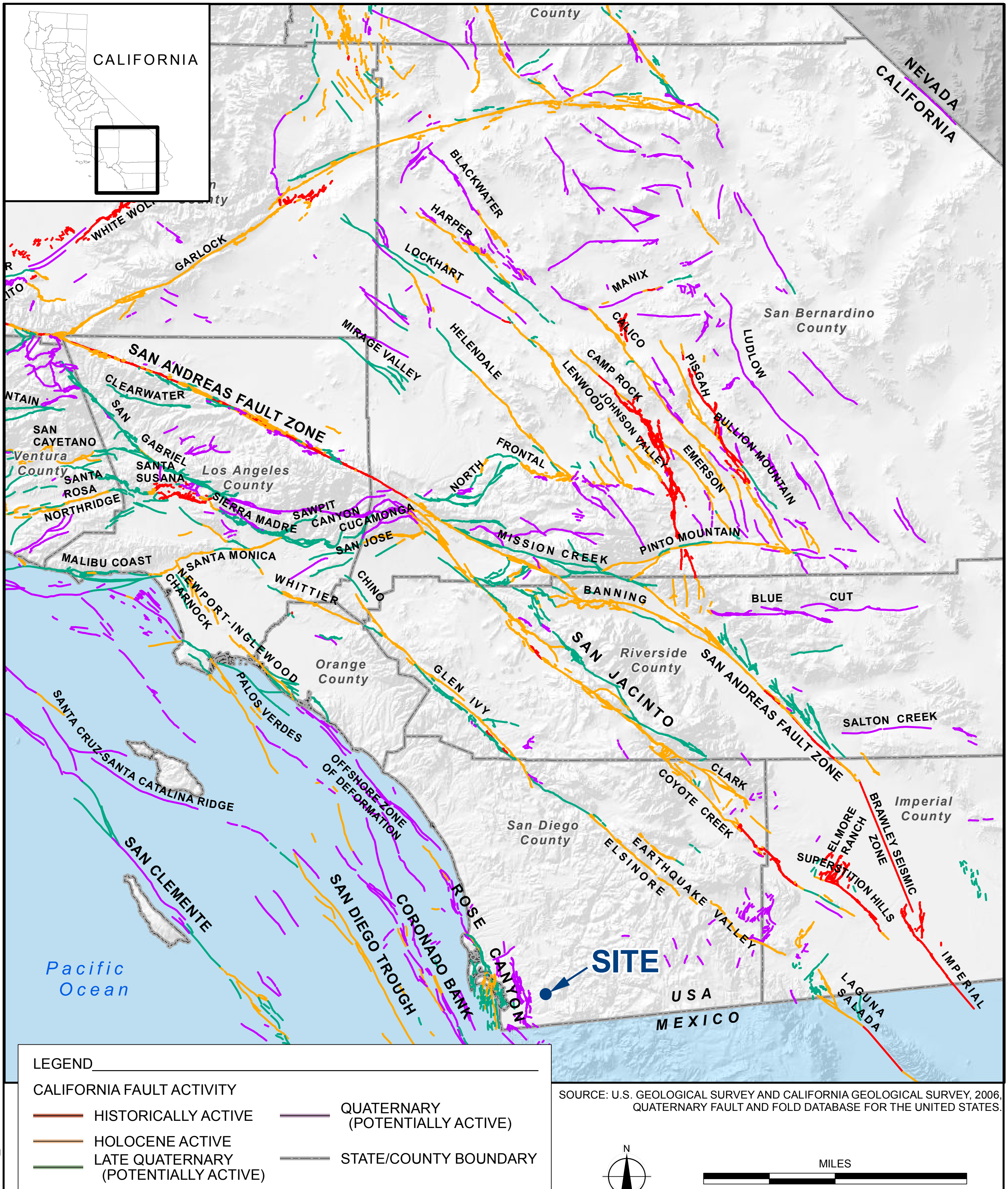
EXPLORATION LOCATIONS - SITE PLAN

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19



SOURCE: U.S. GEOLOGICAL SURVEY AND CALIFORNIA GEOLOGICAL SURVEY, 2006, QUATERNARY FAULT AND FOLD DATABASE FOR THE UNITED STATES.

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 4

FAULT LOCATIONS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 | 3/19

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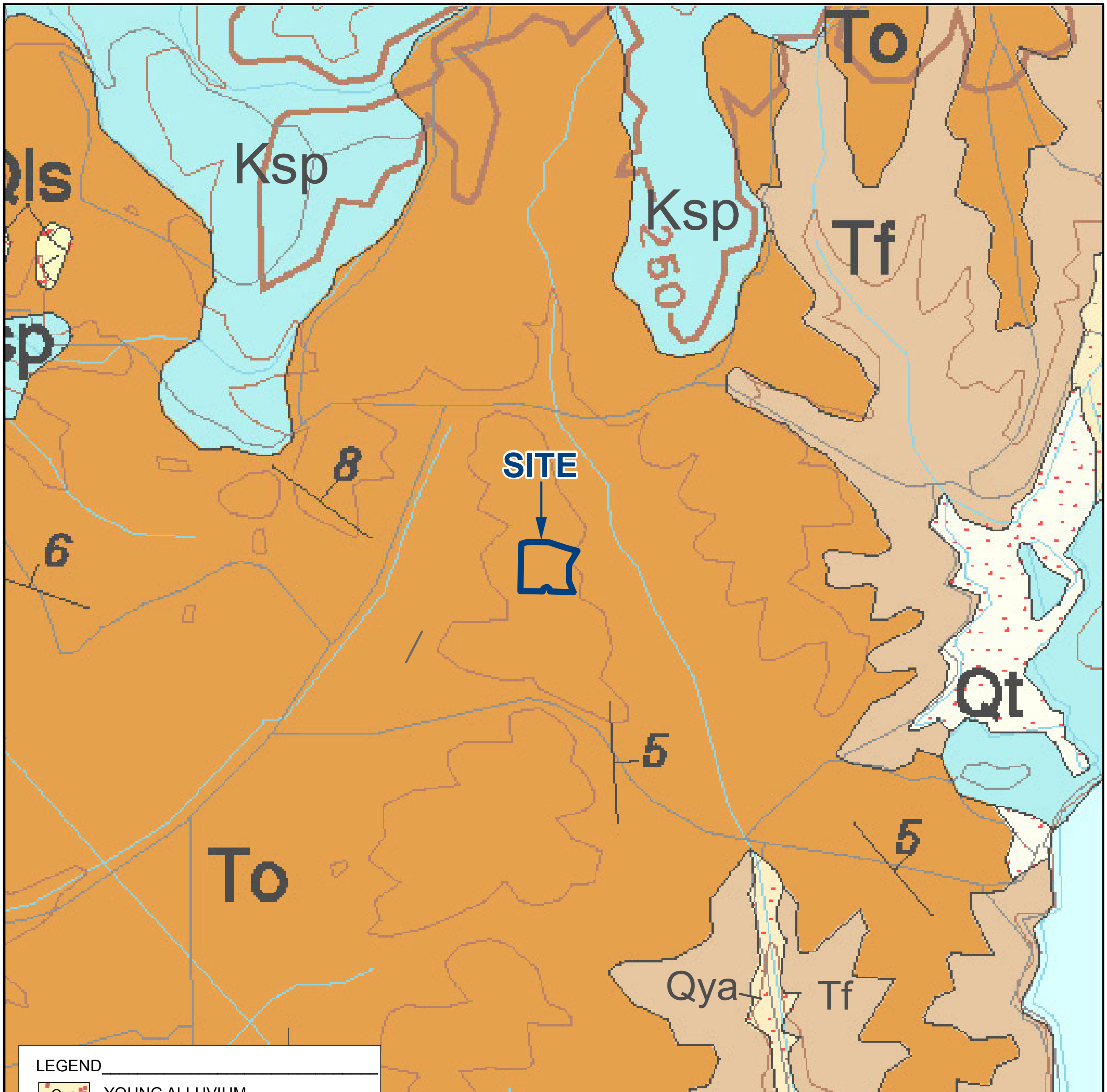

LEGEND

- Qya YOUNG ALLUVIUM
- Qt TERRACE DEPOSITS
- Tf FANGLOMERATE
- To OTAY FORMATION
- Ksp SANTIAGO PEAK VOLCANICS
- 5 STRIKE AND DIP OF BEDS

REFERENCE: TODD, V.R., 2004, PRELIMINARY GEOLOGIC MAP OF THE EL CAJON 30 X 60-MINUTE QUADRANGLE, SOUTHERN CALIFORNIA

N

FEET

0 2,000 4,000

NOTE: DIRECTIONS, DIMENSIONS AND LOCATIONS ARE APPROXIMATE.

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FIGURE 5

GEOLOGY

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 | 3/19

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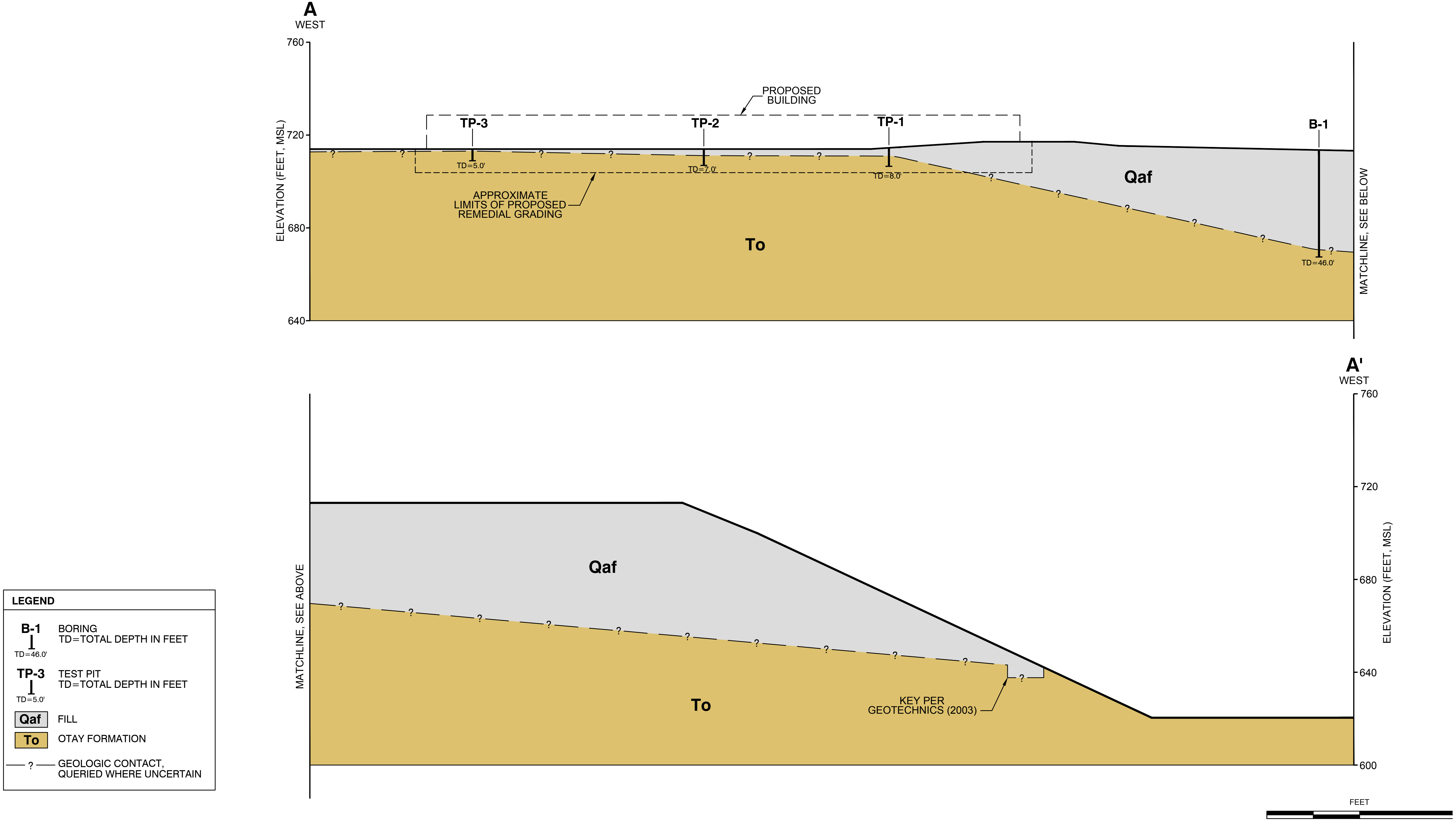

6A 108727001 CS A-A'.DWG

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: SWA ARCHITECTS, 2018. GEOTECHNICS, 2003.

FIGURE 6A

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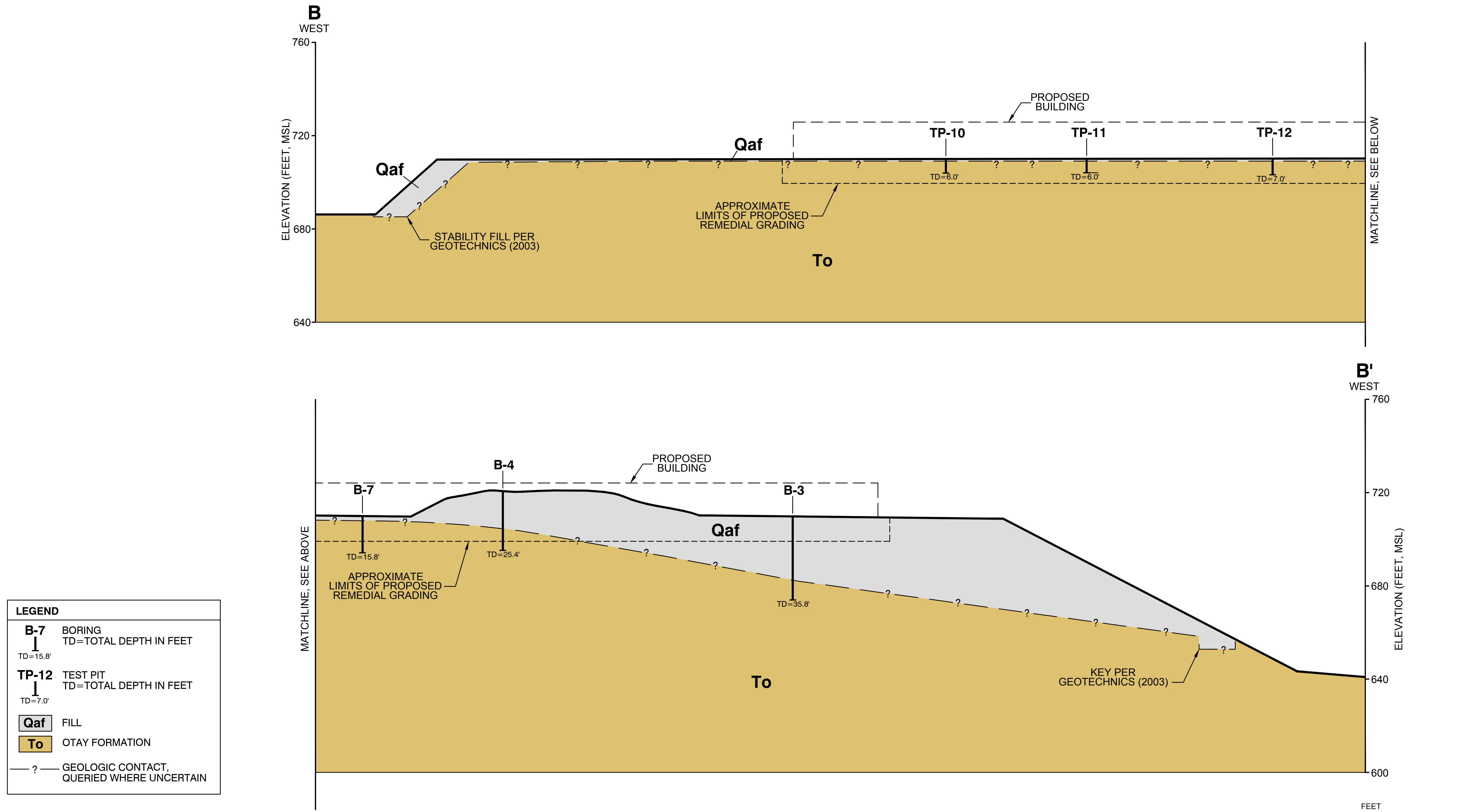
GEOLOGIC CROSS SECTION A-A'

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19



6B 108727001 CS B-B'.DWG

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: SWA ARCHITECTS, 2018. GEOTECHNICS, 2003.

FIGURE 6B

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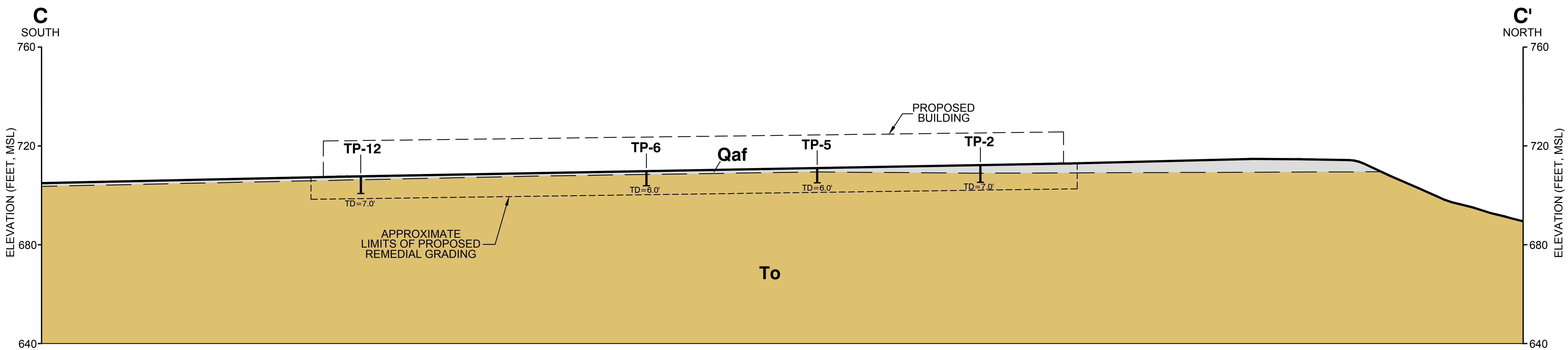
GEOLOGIC CROSS SECTION B-B'

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19



LEGEND

TP-12 TD=7.0'	TEST PIT TD=TOTAL DEPTH IN FEET
Qaf	FILL
To	OTAY FORMATION
—— ? ——	GEOLOGIC CONTACT, QUERIED WHERE UNCERTAIN

NOTE: DIMENSIONS, DIRECTIONS AND LOCATIONS ARE APPROXIMATE. I REFERENCE: SWA ARCHITECTS, 2018.
GEOTECHNICS, 2003.

FEET
0 40 80

6C 108727001 CS C-C.DWG

FIGURE 6C

GEOLOGIC CROSS SECTION C-C'

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19

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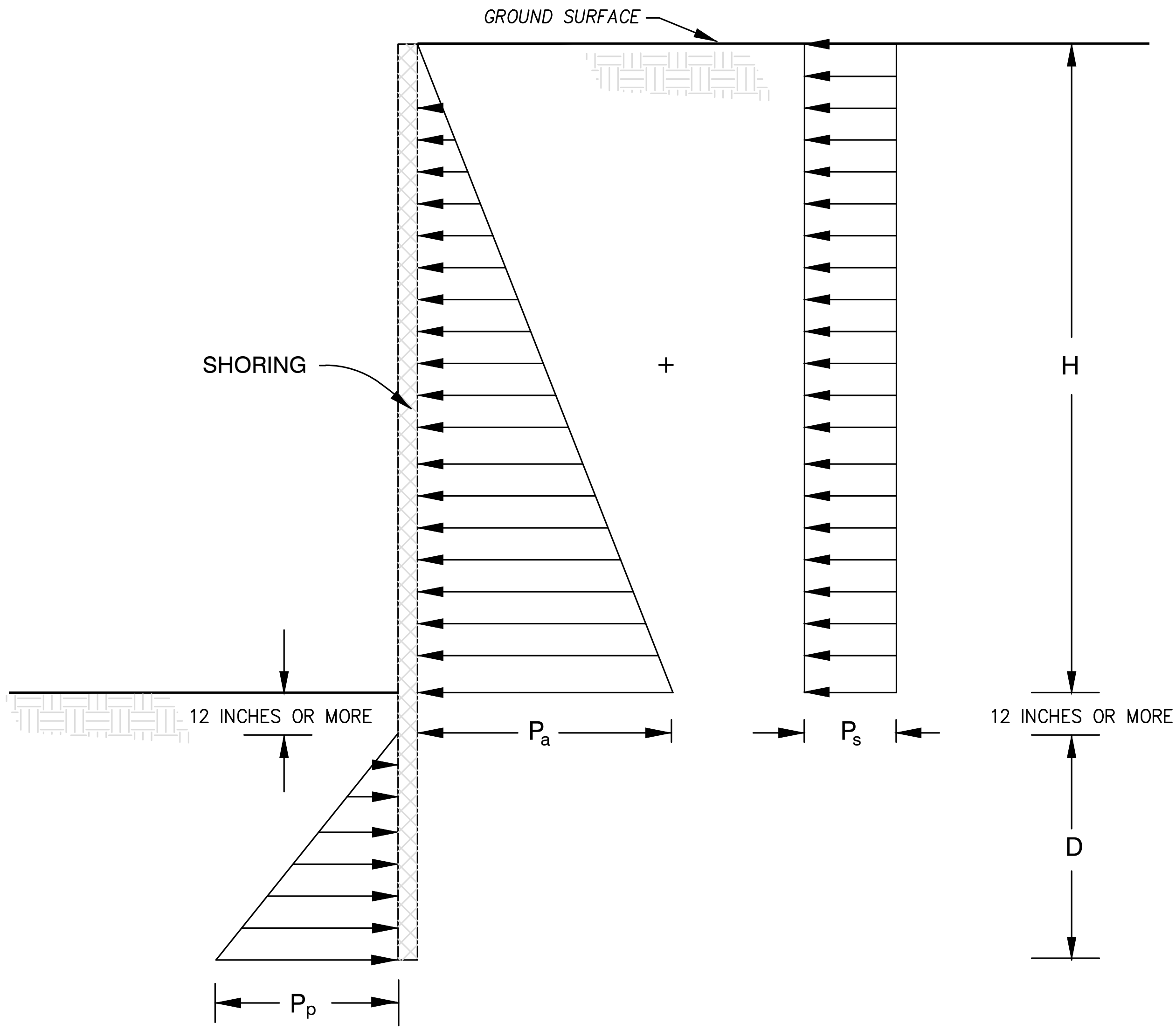

NOTES:

1. ACTIVE LATERAL EARTH PRESSURE, P_a
   P_a = 45 H psf
2. CONSTRUCTION TRAFFIC INDUCED SURCHARGE PRESSURE, P_s
   P_s = 120 psf
3. PASSIVE LATERAL EARTH PRESSURE, P_p
   P_p = 300 D psf
4. ASSUMES GROUNDWATER IS NOT PRESENT
5. H AND D ARE IN FEET

NOT TO SCALE

7 108727001 D-CS.DWG

FIGURE 7

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LATERAL EARTH PRESSURES FOR TEMPORARY CANTILEVERED SHORING

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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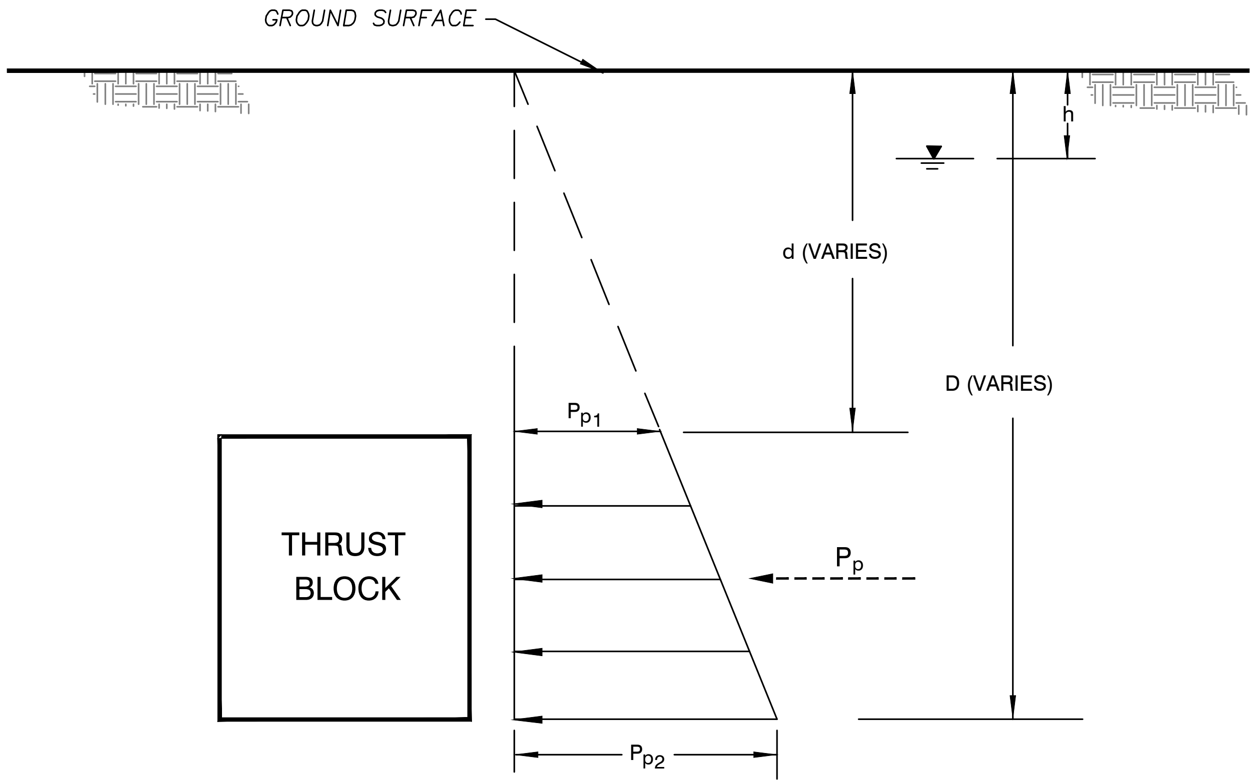

NOTES:

1. GROUNDWATER BELOW BLOCK
   $P_p = 150\ (D^2 - d^2)$ lb/ft
2. GROUNDWATER ABOVE BLOCK
   $P_p = 1.3\ (D - d)[\ 124.8h + 57.6\ (D+d)]$ lb/ft
3. ASSUMES BACKFILL IS GRANULAR MATERIAL
4. ASSUMES THRUST BLOCK IS ADJACENT TO COMPETENT MATERIAL
5. D, d AND h ARE IN FEET
6. GROUNDWATER TABLE

8 108727001 D-TB.DWG

NOT TO SCALE

FIGURE 8

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THRUST BLOCK LATERAL EARTH PRESSURE DIAGRAM

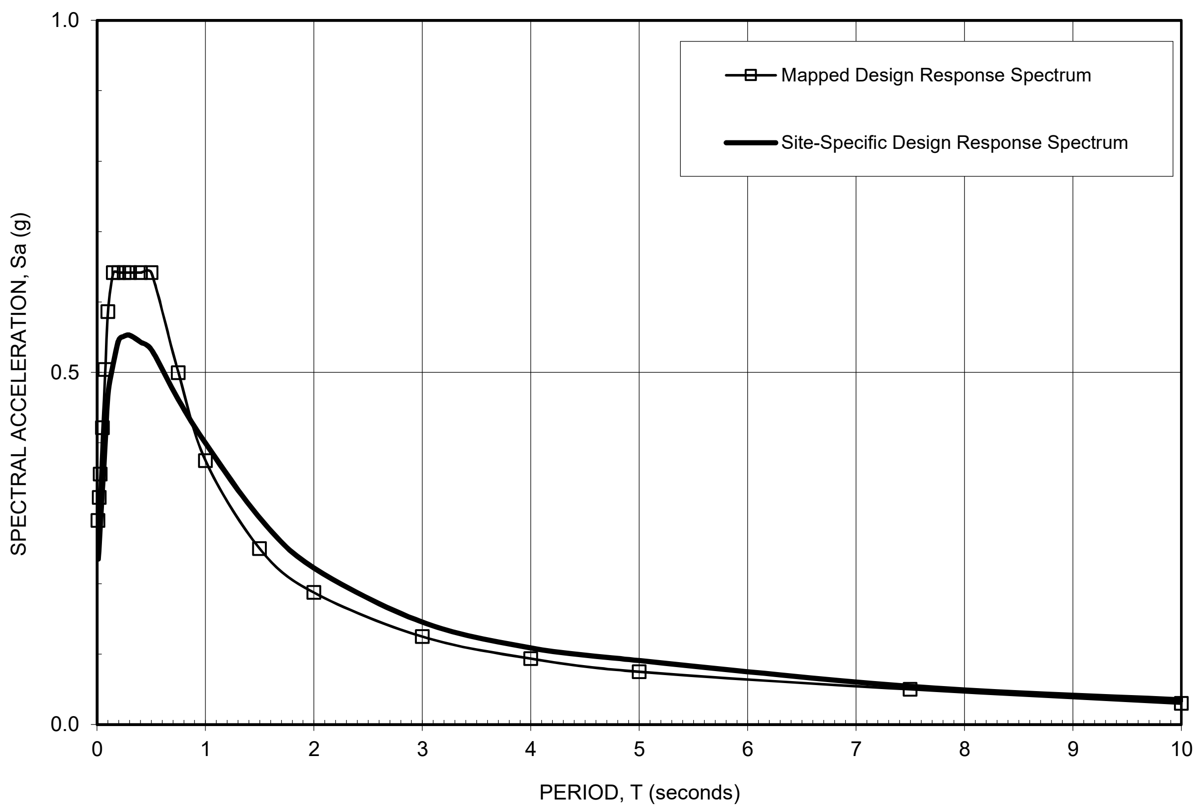
PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19

PERIOD (seconds)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa, (g)
0.010	0.235
0.020	0.258
0.030	0.284
0.050	0.337
0.075	0.403
0.100	0.469
0.150	0.513
0.200	0.546
0.250	0.552
0.300	0.553
0.400	0.543

PERIOD (seconds)	SITE-SPECIFIC DESIGN RESPONSE SPECTRUM Sa, (g)
0.500	0.533
0.750	0.461
1.000	0.400
1.500	0.294
2.000	0.222
3.000	0.146
4.000	0.109
5.000	0.091
7.500	0.054
10.000	0.035

S_{DS} = 0.546 S_{D1} = 0.445 PGA_M = 0.321



NOTES:

1 Probabilistic Ground Motion is for Risk-targeted Maximum Considered Earthquake (MCE_R) with ground motion having 2% probability of exceedance In 50 years using Chiou & Youngs (2008), Campbell & Bozorgnia (2008), and Boore & Atkinson (2008) attenuation relationships andthe risk coeff.

2 Deterministic ARS is 84th percentile of the median values from attenuation relationships by Chiou & Youngs (2008), Campbell & Bozorgnia (2008), and Boore & Atkinson (2008) for deep soils considering a Mw 6.8 event on the Rose Canyon fault located 17.5 kilometers from the site. It conforms with the lower bound limit per ASCE 7-10 Section 21.2.2 as modified by 2009 NEHRP Recommended Seismic Provisions.

3 Site-Specific MCE_R is the lesser of spectral ordinates of deterministic and probabilistic ARS at each period per ASCE 7-10 Section 21.2.3. Site-Specific Design Response Spectrum conforms with lower bound limit per ASCE 7-10 Section 21.3.

4 Mapped Design Response Spectrum is computed from mapped spectral ordinates modified for Site Class D (stiff soil profile) per ASCE 7-10 Section 11.4. It is presented for comparison.

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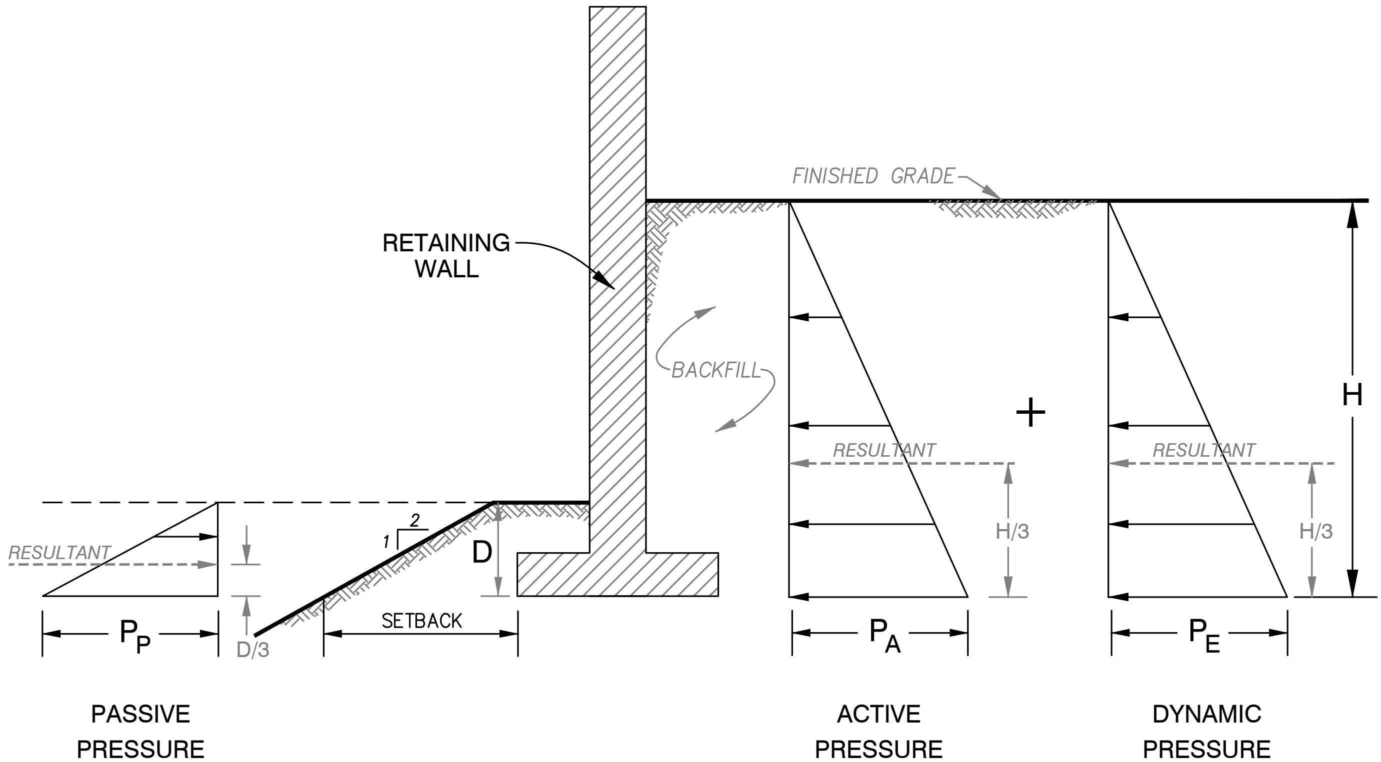
ACCELERATION RESPONSE SPECTRA

PROJECT NO.	DATE		FIGURE
108727001	3/19	Acadia San Diego Medical Facility 830 Showroom Place Chula Vista, California	9



NOTES:

1. ASSUMES NO HYDROSTATIC PRESSURE BUILD-UP BEHIND THE RETAINING WALL
2. STRUCTURAL, GRANULAR BACKFILL MATERIALS AS SPECIFIED IN SECTION 10.1.7 SHOULD BE USED FOR RETAINING WALL BACKFILL
3. DRAINS AS RECOMMENDED IN THE RETAINING WALL DRAINAGE DETAIL SHOULD BE INSTALLED BEHIND THE RETAINING WALL
4. DYNAMIC LATERAL EARTH PRESSURE IS BASED ON A PEAK GROUND ACCELERATION OF 0.374g
5. P_E IS CALCULATED IN ACCORDANCE WITH THE RECOMMENDATIONS OF MONONOBE AND MATSUO (1929), AND ATIK AND SITAR (2010).
6. SURCHARGE PRESSURES CAUSED BY VEHICLES OR NEARBY STRUCTURES ARE NOT INCLUDED
7. H AND D ARE IN FEET
8. SETBACK SHOULD BE IN ACCORDANCE WITH FIGURE 1808.7.1 OF THE IBC (2015)

RECOMMENDED GEOTECHNICAL DESIGN PARAMETERS

Lateral Earth Pressure	Equivalent Fluid Pressure ($lb/ft^2/ft$)(1)	
P_A	Level Backfill with Granular Soils (2)	2H:1V Sloping Backfill with Granular Soils (2)
	45 H	75 H
P_E	17 H	
P_P	Level Ground	2H:1V Descending Ground
	300 D	120 D

NOT TO SCALE

10 108727001 D-YRW.DWG

FIGURE 10

LATERAL EARTH PRESSURES FOR YIELDING RETAINING WALLS

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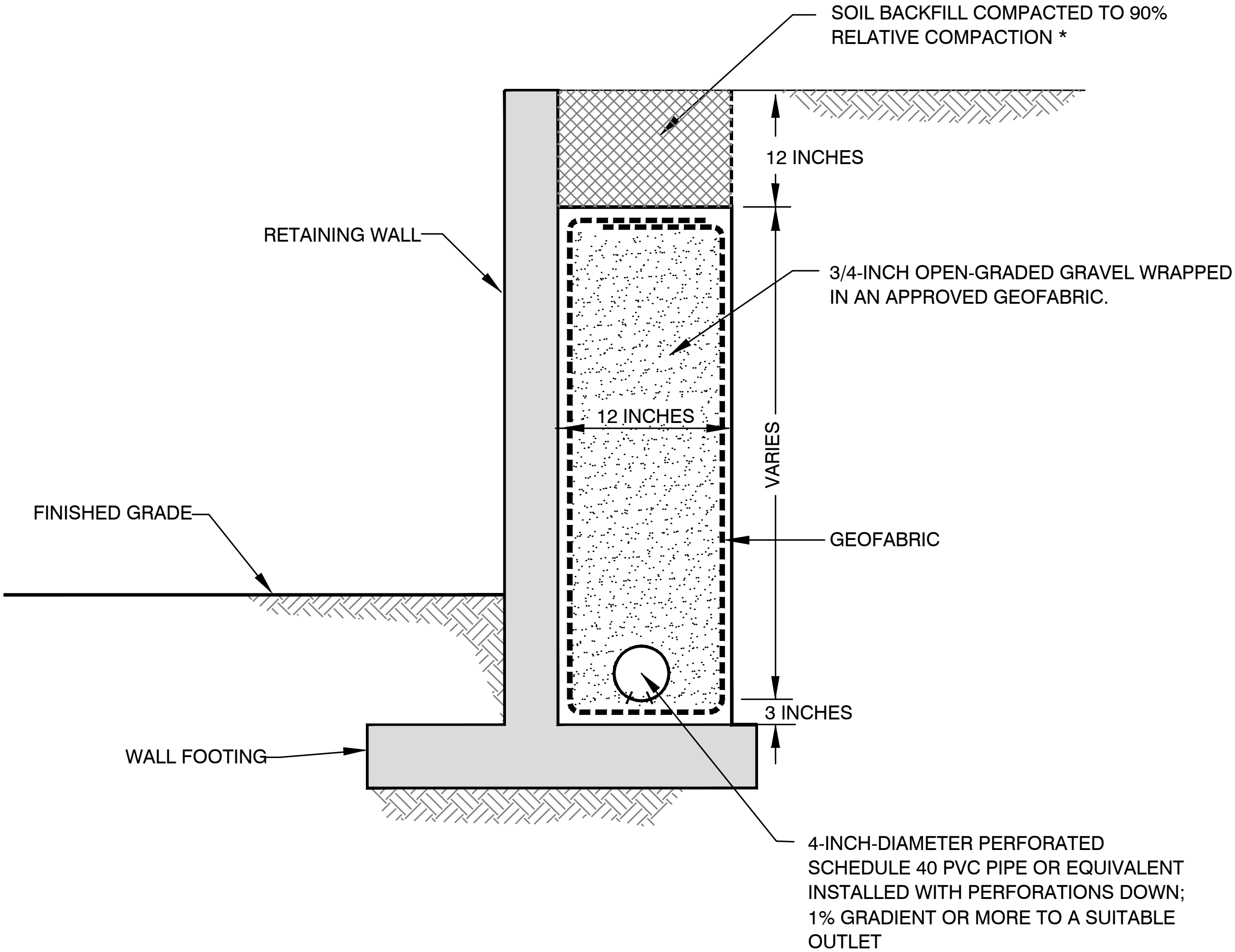
PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19



*BASED ON ASTM D1557

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NOT TO SCALE

FIGURE 11

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RETAINING WALL DRAINAGE DETAIL

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 I 3/19

APPENDIX A

Boring and Test Pit Logs

APPENDIX A

BORING AND TEST PIT LOGS

Field Procedure for the Collection of Disturbed Samples
Disturbed soil samples were obtained in the field using the following methods.

Bulk Samples
Bulk samples of representative earth materials were obtained from the exploratory BORINGS AND TEST PITS. The samples were bagged and transported to the laboratory for testing.

The Standard Penetration Test (SPT) Sampler
Disturbed drive samples of earth materials were obtained by means of a Standard Penetration Test sampler. The sampler is composed of a split barrel with an external diameter of 2 inches and an unlined internal diameter of 1-3/8 inches. The sampler was driven into the ground 12 to 18 inches with a 140-pound hammer falling freely from a height of 30 inches in general accordance with ASTM D 1586. The blow counts were recorded for every 6 inches of penetration; the blow counts reported on the log are those for the last 12 inches of penetration. Soil samples were observed and removed from the sampler, bagged, sealed and transported to the laboratory for testing.

Field Procedure for the Collection of Relatively Undisturbed Samples
Relatively undisturbed soil samples were obtained in the field using the following method.

The Modified Split-Barrel Drive Sampler
The sampler, with an external diameter of 3 inches, was lined with 1-inch-long, thin brass rings with inside diameters of approximately 2.4 inches. The sample barrel was driven into the ground with the weight of a hammer in general accordance with ASTM D 3550. The driving weight was permitted to fall freely. The approximate length of the fall, the weight of the hammer, and the number of blows per foot of driving are presented on the boring logs as an index to the relative resistance of the materials sampled. The samples were removed from the sample barrel in the brass rings, sealed, and transported to the laboratory for testing.

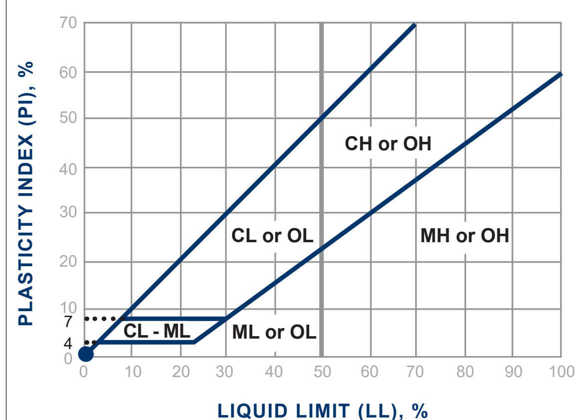
Soil Classification Chart Per ASTM D 2488

Primary Divisions			Secondary Divisions	
			Group Symbol	Group Name
COARSE-GRAINED SOILS more than 50% retained on No. 200 sieve	**GRAVEL** more than 50% of coarse fraction retained on No. 4 sieve	CLEAN GRAVEL less than 5% fines	GW	well-graded GRAVEL
			GP	poorly graded GRAVEL
		GRAVEL with DUAL CLASSIFICATIONS 5% to 12% fines	GW-GM	well-graded GRAVEL with silt
			GP-GM	poorly graded GRAVEL with silt
			GW-GC	well-graded GRAVEL with clay
			GP-GC	poorly graded GRAVEL with
		GRAVEL with FINES more than 12% fines	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND 50% or more of coarse fraction passes No. 4 sieve	CLEAN SAND less than 5% fines	SW	well-graded SAND
			SP	poorly graded SAND
		SAND with DUAL CLASSIFICATIONS 5% to 12% fines	SW-SM	well-graded SAND with silt
			SP-SM	poorly graded SAND with silt
			SW-SC	well-graded SAND with clay
			SP-SC	poorly graded SAND with clay
		SAND with FINES more than 12% fines	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS 50% or more passes No. 200 sieve	**SILT and CLAY** liquid limit less than 50%	INORGANIC	CL	lean CLAY
			ML	SILT
			CL-ML	silty CLAY
		ORGANIC	OL (PI > 4)	organic CLAY
			OL (PI < 4)	organic SILT
	SILT and CLAY liquid limit 50% or more	INORGANIC	CH	fat CLAY
			MH	elastic SILT
		ORGANIC	OH (plots on or above "A"-line)	organic CLAY
			OH (plots below "A"-line)	organic SILT
	Highly Organic Soils		PT	Peat

Grain Size

Description		Sieve Size	Grain Size	Approximate Size
Boulders		> 12"	> 12"	Larger than basketball-sized
Cobbles		3 - 12"	3 - 12"	Fist-sized to basketball-sized
Gravel	Coarse	3/4 - 3"	3/4 - 3"	Thumb-sized to fist-sized
	Fine	#4 - 3/4"	0.19 - 0.75"	Pea-sized to thumb-sized
Sand	Coarse	#10 - #4	0.079 - 0.19"	Rock-salt-sized to pea-sized
	Medium	#40 - #10	0.017 - 0.079"	Sugar-sized to rock-salt-sized
	Fine	#200 - #40	0.0029 - 0.017"	Flour-sized to sugar-sized
Fines		Passing #200	< 0.0029"	Flour-sized and smaller

Plasticity Chart



Apparent Density - Coarse-Grained Soil

Apparent Density	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Loose	≤ 4	≤ 8	≤ 3	≤ 5
Loose	5 - 10	9 - 21	4 - 7	6 - 14
Medium Dense	11 - 30	22 - 63	8 - 20	15 - 42
Dense	31 - 50	64 - 105	21 - 33	43 - 70
Very Dense	> 50	> 105	> 33	> 70

Consistency - Fine-Grained Soil

Consis-tency	Spooling Cable or Cathead		Automatic Trip Hammer	
	SPT (blows/foot)	Modified Split Barrel (blows/foot)	SPT (blows/foot)	Modified Split Barrel (blows/foot)
Very Soft	< 2	< 3	< 1	< 2
Soft	2 - 4	3 - 5	1 - 3	2 - 3
Firm	5 - 8	6 - 10	4 - 5	4 - 6
Stiff	9 - 15	11 - 20	6 - 10	7 - 13
Very Stiff	16 - 30	21 - 39	11 - 20	14 - 26
Hard	> 30	> 39	> 20	> 26

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USCS METHOD OF SOIL CLASSIFICATION

BORING LOG EXPLANATION SHEET

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	
0								Bulk sample.
								Modified split-barrel drive sampler.
								No recovery with modified split-barrel drive sampler.
								Sample retained by others.
								Standard Penetration Test (SPT).
5								No recovery with a SPT.
			XX/XX					Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
								No recovery with Shelby tube sampler.
								Continuous Push Sample.
								Seepage.
10								Groundwater encountered during drilling.
								Groundwater measured after drilling.
							SM	MAJOR MATERIAL TYPE (SOIL): Solid line denotes unit change.
							CL	Dashed line denotes material change.
15								Attitudes: Strike/Dip b: Bedding c: Contact j: Joint f: Fracture F: Fault cs: Clay Seam s: Shear bss: Basal Slide Surface sf: Shear Fracture sz: Shear Zone sbs: Shear Bedding Surface
20								The total depth line is a solid line that is drawn at the bottom of the boring.

DATE DRILLED 1/29/19 BORING NO. B-1

GROUND ELEVATION 710' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	FILL: Light brown to gray, moist, stiff, sandy SILT; trace clay; scattered roots.
			50/5"	23.7	93.8			Hard.
							SM	Light brown to gray, very dense, silty fine to coarse SAND.
10			50	19.6				
			77	22.3	91.7			Scattered fragments of siltstone and sandstone.
							ML	Light brown to gray, moist, hard, sandy SILT.
20			62					
			50/5"	22.0	93.1			
								Gray; cohesionless.
30			53					
			64					Scattered clay nodules.
							MH	Brown to gray, moist, very stiff to hard, elastic SILT.
40								

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED 1/29/19 BORING NO. B-1 GROUND ELEVATION 710' ± (MSL) SHEET 2 OF 2 METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling) DRIVE WEIGHT 140 lbs. (Cathead) DROP 30" SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM DESCRIPTION/INTERPRETATION
40			40	25.1			MH	FILL: (Continued) Brown to gray, moist, hard, elastic SILT; strong organic/hydrocarbon odor; scattered fragments of siltstone and sandstone.
			50/5"					OTAY FORMATION: Light gray, moist, strongly cemented, silty fine-grained SANDSTONE.
50								Total Depth = 46 feet. (Refusal) Groundwater not encountered during drilling. Backfilled with approximately 16 cubic feet of bentonite cement grout shortly after drilling on 1/29/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. B-2

GROUND ELEVATION 710' ± (MSL) SHEET 1 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							CL-ML	FILL: Brown, moist, stiff, lean CLAY to SILT; scattered roots.
				22.3				
			45					Hard.
							ML	Brown, moist, hard, SILT; scattered clay pockets.
10			90/10"	21.6	99.0			Scattered fragments of siltstone and sandstone.
			51					
20			50/5"					Organic odor.
			81					Dark brown.
								OTAY FORMATION: Light gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; slightly micaceous.
30			50/5"					
			50/4"					
								Total Depth = 35.3 feet. Groundwater not encountered during drilling. Backfilled with approximately 12 cubic feet of bentonite cement grout shortly after drilling on 1/29/19.
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DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DATE DRILLED 1/29/19 BORING NO. B-2 GROUND ELEVATION 710' ± (MSL) SHEET 2 OF 2 METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling) DRIVE WEIGHT 140 lbs. (Cathead) DROP 30" SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM **DESCRIPTION/INTERPRETATION**
40								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED	1/30/19	BORING NO.	B-3
GROUND ELEVATION	710' ± (MSL)	SHEET	1 OF 2
METHOD OF DRILLING	8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)		
DRIVE WEIGHT	140 lbs. (Cathead)	DROP	30"
SAMPLED BY	GSW	LOGGED BY	GSW
REVIEWED BY	NMM		

DEPTH (feet)	SAMPLES (Bulk / Driven)	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	Bulk				ML	FILL: Light brown, moist, medium dense, fine sandy SILT; scattered roots; trace clay.
			23.8			
	Driven	57	13.0	98.5		
					SM	Light brown, moist, medium dense, silty fine SAND.
10	Driven	40				Dense; scattered fragments of siltstone and sandstone.
	Driven	90/11"	24.2	97.7		Very dense; scattered clay nodules.
					CL	Gray to brown, moist, hard, sandy CLAY.
20	Driven	53				Organic odor; scattered fragments of siltstone and sandstone.
	Driven	50/5"	20.8	93.7		
						OTAY FORMATION: Light gray, moist, moderately to strongly cemented; silty fine-grained SANDSTONE.
30	Driven	64				
	Driven	50/4"				
						Total Depth = 35.8 feet. Groundwater not encountered during drilling. Backfilled with approximately 12 cubic feet of bentonite cement grout shortly after drilling on 1/30/19.
40						

BORING LOG FIGURE A- 5

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PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.

DATE DRILLED 1/30/19 BORING NO. B-3

GROUND ELEVATION 710' ± (MSL) SHEET 2 OF 2

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DESCRIPTION/INTERPRETATION

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Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

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BORING LOG FIGURE A- 6

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

DATE DRILLED 1/30/19 BORING NO. B-4

GROUND ELEVATION 720' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown, moist, medium dense, silty SAND; scattered roots.
				14.3				
			57	12.9	109.7			Scattered clay nodules.
							SC	Light brown, moist, medium dense, clayey SAND.
10			37					Dense; scattered fragments of claystone and siltstone.
			50/6"	16.6	99.5			Dense to very dense.
								OTAY FORMATION: Light gray, moist, moderately cemented, silty fine-grained SANDSTONE.
20			22					
			50/5"					
								Total Depth = 25.4 feet. Groundwater not encountered during drilling. Backfilled with approximately 8 cubic feet of bentonite cement grout shortly after drilling on 1/30/19.
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Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

BORING LOG FIGURE A- 7

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PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

DATE DRILLED	1/30/19	BORING NO.	B-5	
GROUND ELEVATION	720' ± (MSL)	SHEET	1	OF 1
METHOD OF DRILLING	8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)			
DRIVE WEIGHT	140 lbs. (Cathead)	DROP	30"	
SAMPLED BY	GSW	LOGGED BY	GSW	REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND; scattered roots.
		■	61	21.1	96.2			Scattered fragments of siltstone and sandstone.
10		◣	32					Dense.
		■	87/11"	15.1	104.9			
20		◣	42					Scattered clay nodules.
								OTAY FORMATION: Light gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE.
		■	50/4"					
								Total Depth = 25.3 feet. Groundwater not encountered during drilling. Backfilled with approximately 8 cubic feet of bentonite cement grout shortly after drilling on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/30/19 BORING NO. B-6

GROUND ELEVATION 720' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND; scattered roots.
			40					Dense.
10			59	15.4	110.1			Medium dense; scattered fragments of siltstone and sandstone.
			49					Dense.
20			50/5"	25.1	95.6			Scattered clay nodules.
								OTAY FORMATION: Light gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE.
			50/3"					
								Total Depth = 25.8 feet. Groundwater not encountered during drilling. Backfilled with approximately 8 cubic feet of bentonite cement grout shortly after drilling on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA
108727001 | 3/19

DATE DRILLED 1/30/19 BORING NO. B-7

GROUND ELEVATION 710' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)

DRIVE WEIGHT 140 lbs. (Cathead) DROP 30"

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Grayish brown, moist, medium dense, silty fine SAND; trace clay; scattered roots.
								OTAY FORMATION: Light gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE.
			50/5"	12.2	99.0			
10			50/5"					@ 11': Slow drilling.
			50/4"					
								Total Depth = 15.8 feet. Groundwater not encountered during drilling. Backfilled with grout shortly after drilling on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/30/19	BORING NO. B-8	
GROUND ELEVATION 710' ± (MSL)	SHEET 1 OF 1	
METHOD OF DRILLING 8" Diameter Hollow Stem Auger (A300) (Scott's Drilling)		
DRIVE WEIGHT 140 lbs. (Cathead)	DROP 30"	
SAMPLED BY GSW	LOGGED BY GSW	REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown, moist, medium dense, silty fine SAND; trace clay; scattered roots.
								OTAY FORMATION: Light gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE.
			50/3"	11.8	103.1			
10			50/5"					
			50/5"					
								Total Depth = 15.4 feet. Groundwater not encountered during drilling. Backfilled with grout shortly after drilling on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19	BORING NO. IT-1	
GROUND ELEVATION 705' ± (MSL)	SHEET 1 OF 1	
METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)		
DRIVE WEIGHT N/A	DROP N/A	
SAMPLED BY GSW	LOGGED BY GSW	REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						SC	FILL: Light brown, moist, medium dense, clayey SAND.
	■							OTAY FORMATION: Light brown to gray, moist, moderately cemented, silty fine-grained SANDSTONE.
5								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SC	FILL: Light brown, moist, medium dense, clayey SAND; scattered roots.
								OTAY FORMATION: Light brown to gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; scattered pink bentonite lenses.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19.
10								Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.
								The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-2

GROUND ELEVATION 705' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DATE DRILLED	1/29/19
BORING NO.	IT-3
GROUND ELEVATION	715' ± (MSL)
SHEET	1 OF 1
METHOD OF DRILLING	8" Diameter Hollow Stem Auger (Scott's Drilling)
DRIVE WEIGHT	N/A
DROP	N/A
SAMPLED BY	GSW
LOGGED BY	GSW
REVIEWED BY	NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown, moist, medium dense, silty fine SAND.
								OTAY FORMATION: Light brown to gray, moist, moderately cemented, silty fine-grained SANDSTONE.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							SM	FILL: Light brown, moist, medium dense, silty fine SAND.
								OTAY FORMATION: Gray, moist, moderately cemented, silty fine-grained SANDSTONE.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-4

GROUND ELEVATION 715' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	FILL: Light brown, moist, stiff, sandy SILT; trace clay; scattered roots.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-5

GROUND ELEVATION 710' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0	■						ML	FILL: Light brown, moist, stiff, sandy SILT; trace clay; scattered roots.
5								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-6

GROUND ELEVATION 710' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	FILL: Light brown, moist, stiff, sandy SILT; trace clay; scattered roots.
								OTAY FORMATION: Gray, moist, moderately cemented, silty fine-grained SANDSTONE.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. Note: Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-7

GROUND ELEVATION 705' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DEPTH (feet)	SAMPLES Bulk	SAMPLES Driven	BLOWS/FOOT	MOISTURE (%)	DRY DENSITY (PCF)	SYMBOL	CLASSIFICATION U.S.C.S.	DESCRIPTION/INTERPRETATION
0							ML	<u>FILL:</u> Light brown, moist, stiff, sandy SILT; scattered roots; trace clay.
								<u>OTAY FORMATION:</u> Gray, moist, moderately cemented, silty fine-grained SANDSTONE.
								Total Depth = 5 feet. Groundwater not encountered during drilling. Boring converted to infiltration test on 1/29/19. Backfilled after testing on 1/30/19. <u>Note:</u> Groundwater, though not encountered at the time of drilling, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
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DATE DRILLED 1/29/19 BORING NO. IT-8

GROUND ELEVATION 705' ± (MSL) SHEET 1 OF 1

METHOD OF DRILLING 8" Diameter Hollow Stem Auger (Scott's Drilling)

DRIVE WEIGHT N/A DROP N/A

SAMPLED BY GSW LOGGED BY GSW REVIEWED BY NMM

DATE EXCAVATED ____________________

GROUND ELEVATION ____________________

METHOD OF EXCAVATION ____________________

TEST PIT DIAGRAM

SCALE 1 inch = 2 feet

EXCAVATION LOG EXPLANATION SHEET

DEPTH (FEET)	SAMPLES Bulk	SAMPLES Driven	SAMPLES Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SM	FILL:
							Bulk sample.
1						ML	Dashed line denotes material change.
							Drive sample.
2							Sand cone performed.
							Seepage.
3							Groundwater encountered during excavation.
							No recovery with drive sampler.
4							Groundwater encountered after excavation.
							Sample retained by others.
5				xx/xx			Shelby tube sample. Distance pushed in inches/length of sample recovered in inches.
6							No recovery with Shelby tube sampler.
7						SM	ALLUVIUM:
							Solid line denotes unit change.
							Attitude: Strike/Dip
8							b: Bedding; s: Shear
							c: Contact; bss: Basal Slide Surface
9							j: Joint; sf: Shear Fracture
							f: Fracture; sz: Shear Zone
							F: Fault; sbs: Sheared Bedding Surface
							cs: Clay Seam
10							The total depth is a solid line that is drawn at the bottom of the excavation log.
11							
12							

FIGURE B-1

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TEST PIT LOG
EXPLANATION OF TEST PIT, CORE, TRENCH AND HAND AUGER LOG SYMBOLS

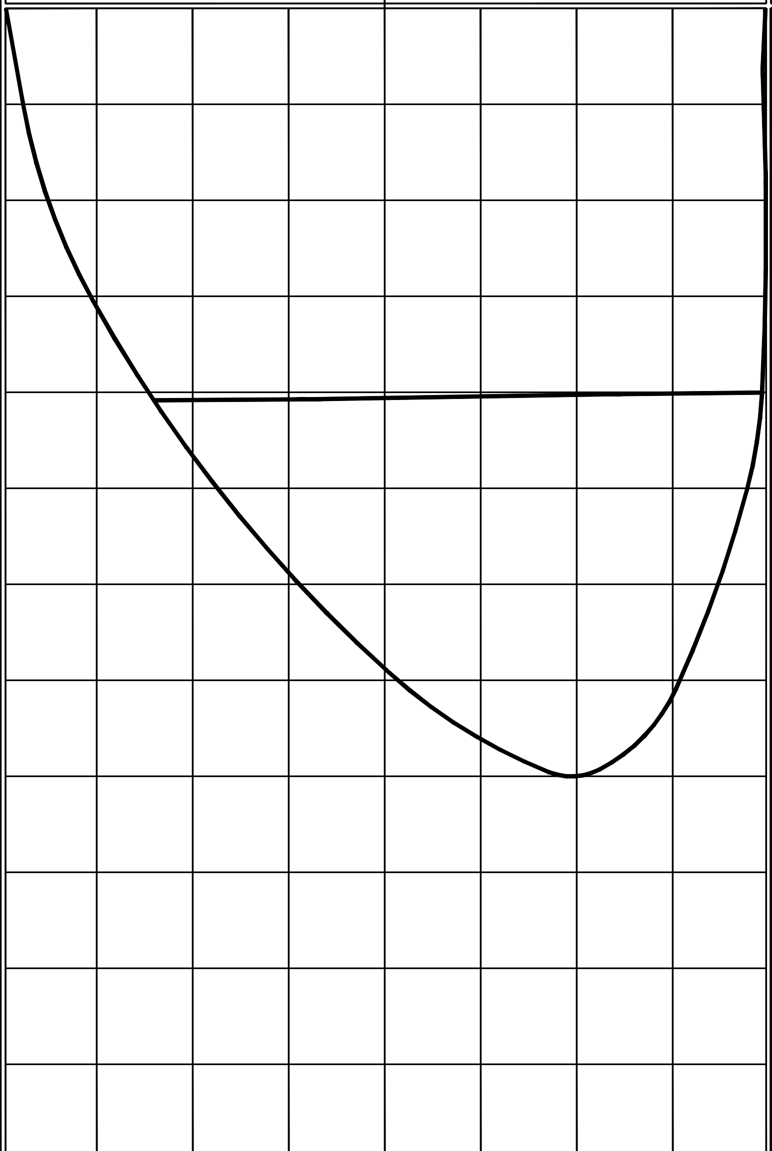
Ninyo & Moore

TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED	1/28/19
TEST PIT NO.	TP-1
GROUND ELEVATION	715' ± (MSL)
LOGGED BY	GSW
METHOD OF EXCAVATION	Backhoe
LOCATION	See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	FILL: Light brown to gravel, moist, medium dense, clayey SAND.
4	■						OTAY FORMATION: Light brown to gray, moist, moderately to strongly cemented, clayey fine-grained SANDSTONE.
8							Total Depth = 8 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

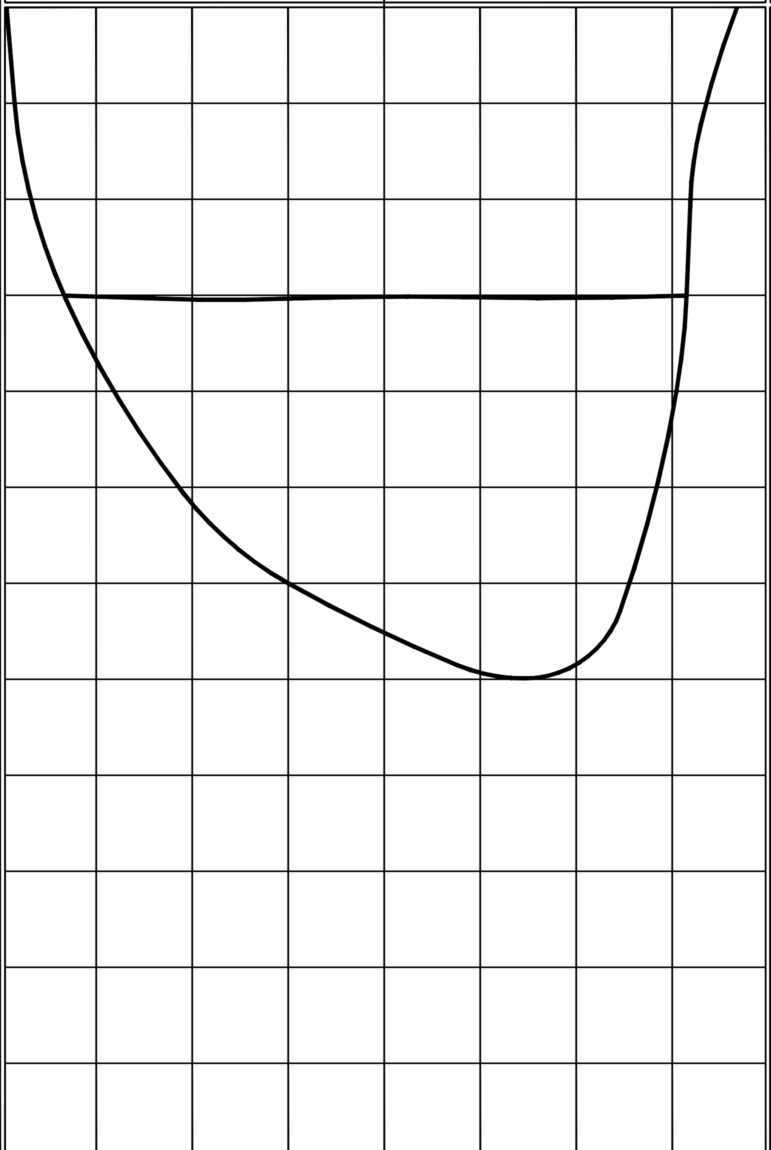
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-2

GROUND ELEVATION 715' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0				29.4		MH	FILL: Light brown to gray, moist, stiff, clayey SILT.
3							OTAY FORMATION: Light brown to gray, moist, moderately to strongly indurated, clayey SILTSTONE; scattered rootlets and pinkish mottling.
7							Total Depth = 7 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

Ninyo & Moore

TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

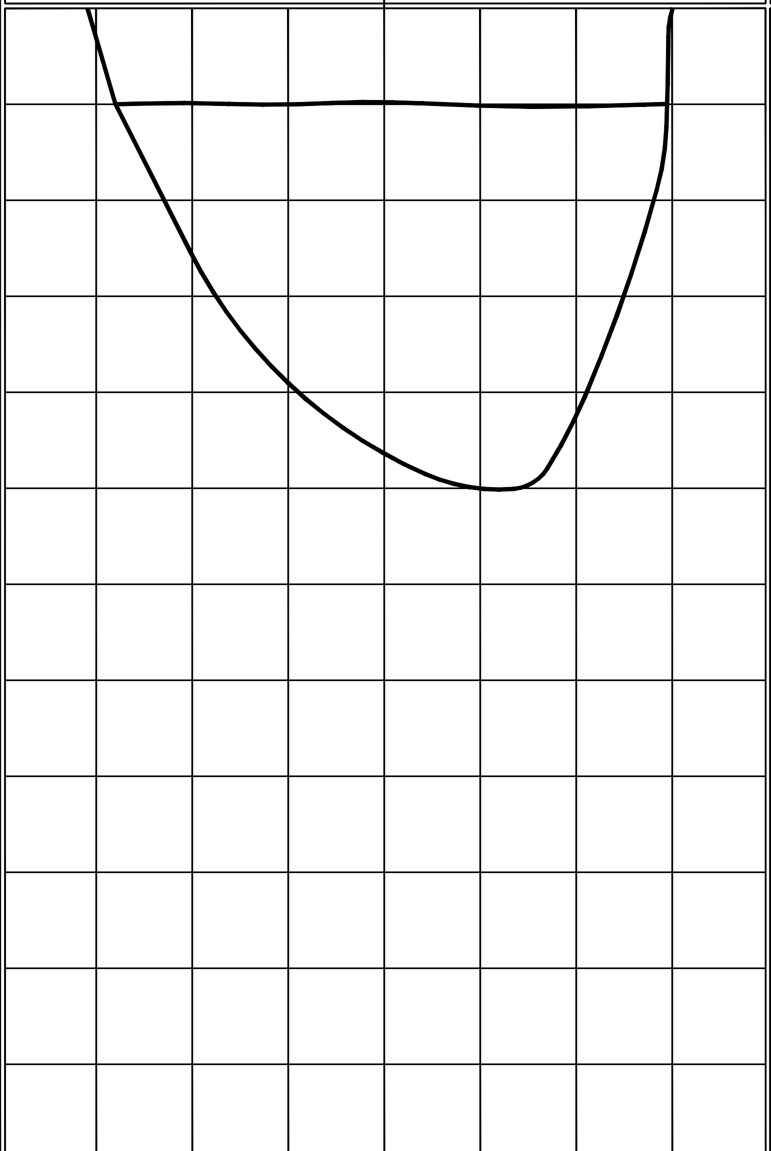
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-3

GROUND ELEVATION 715' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	FILL: Brown to light brown, moist, medium dense. clayey SAND.
1–5	■			18.4			OTAY FORMATION: Light brown to gray, moist, moderately to strongly indurated, clayey SILTSTONE; scattered rootlets.
5							Total Depth = 5 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

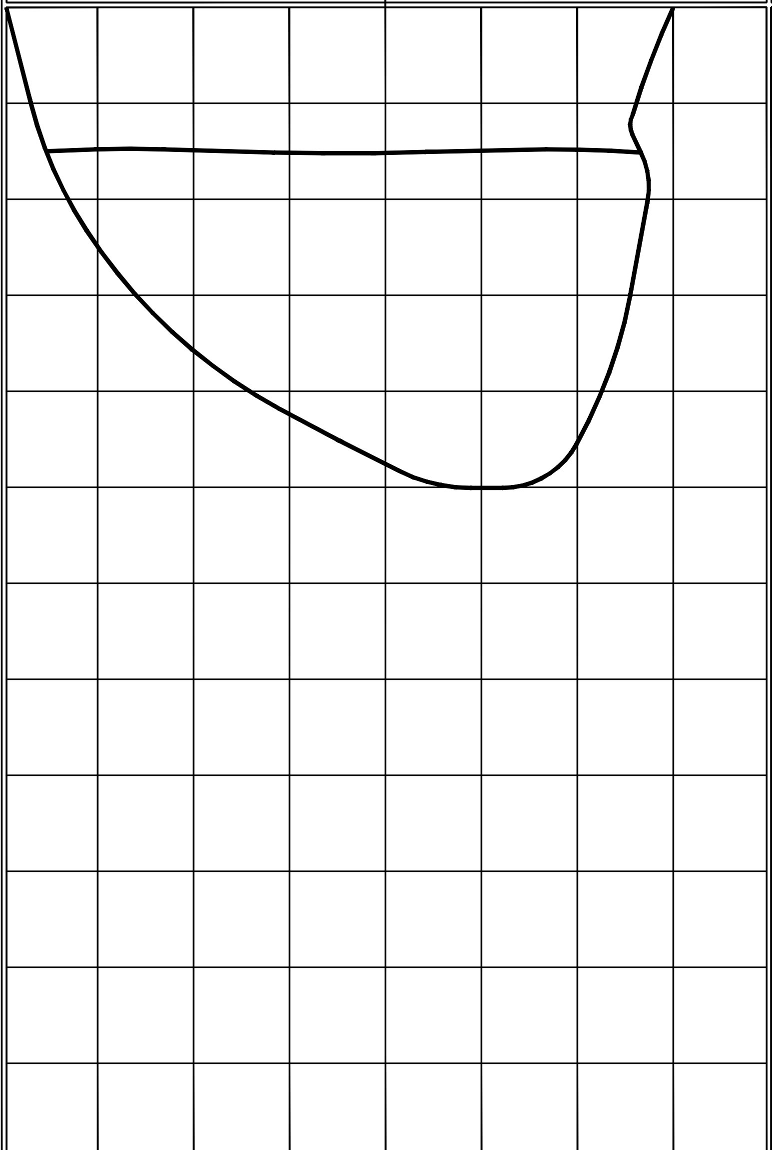
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-4

GROUND ELEVATION 715' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SC	FILL: Brown to gray, moist, medium dense, clayey fine SAND; scattered roots.
1.5							OTAY FORMATION: Gray, moist, moderately to strongly indurated, clayey SILTSTONE.
5							Total Depth = 5 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

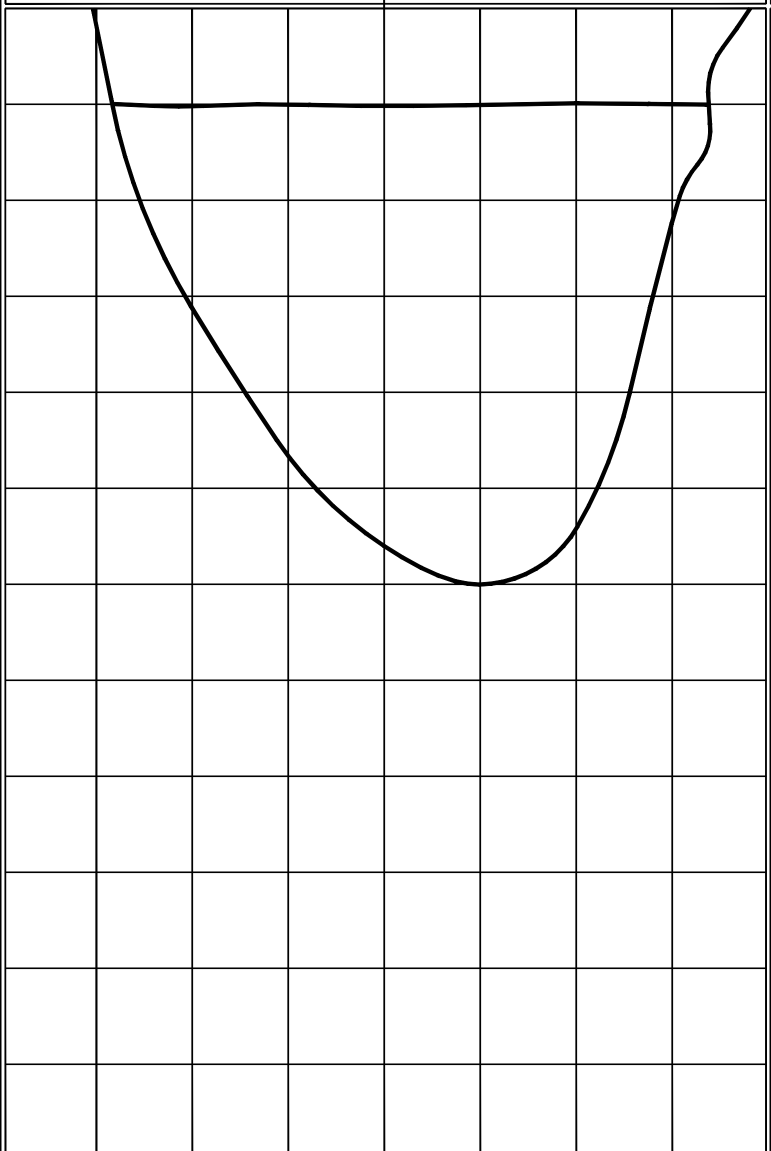
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-5

GROUND ELEVATION 710' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND; scattered roots.
1 to 6	■			21.4			OTAY FORMATION: Brown to gray, moist, moderately to cemented, silty SANDSTONE; scattered claystone lenses at approximately 2 to 3 feet; pinkish mottling and dark brown laminations at approximately 5 to 6 feet.
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19.

Depth scale: 0, 2, 4, 6, 8, 10, 12

Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

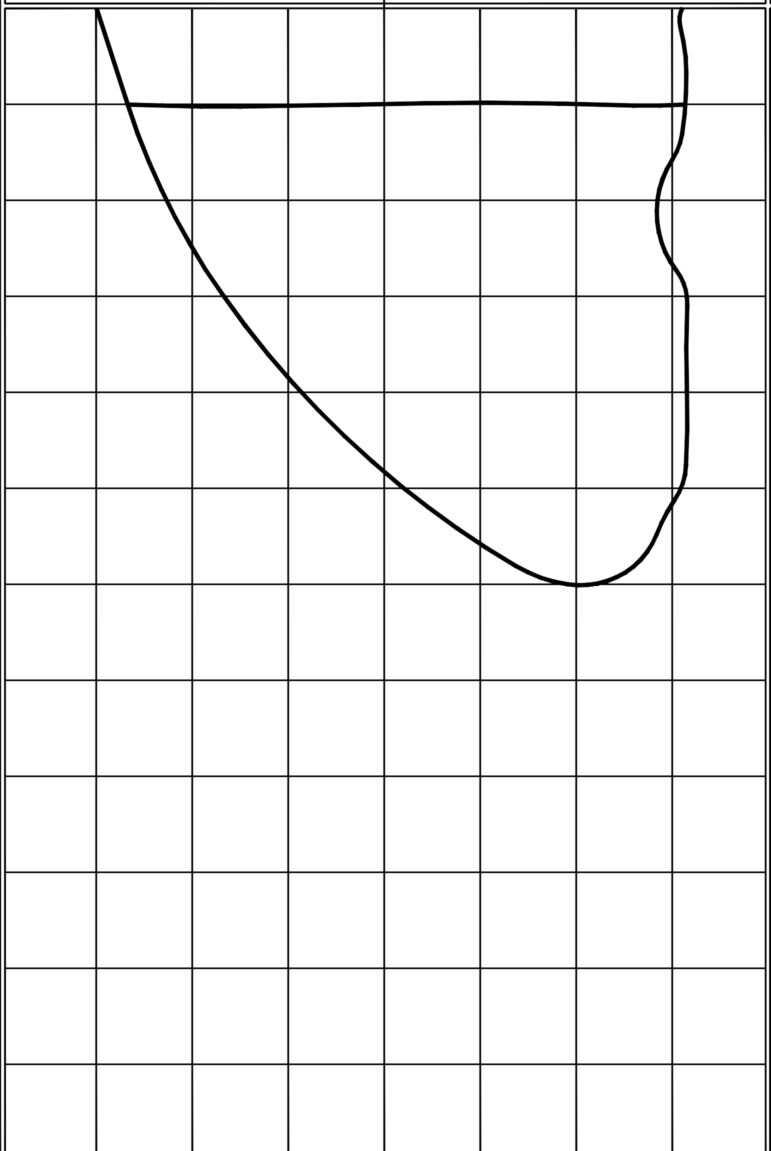
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-6

GROUND ELEVATION 710' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND.
1							OTAY FORMATION: Light brown to gray, moist, moderately to strongly indurated, clayey SILTSTONE; scattered pockets of pink bentonite from approximately 4 to 5.5 feet.
2							
3.5				26.1			
4							
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19.
8							
10							
12							

Total Depth = 6 feet.
Groundwater not encountered.
Backfilled on 1/28/19.

Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report.

The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

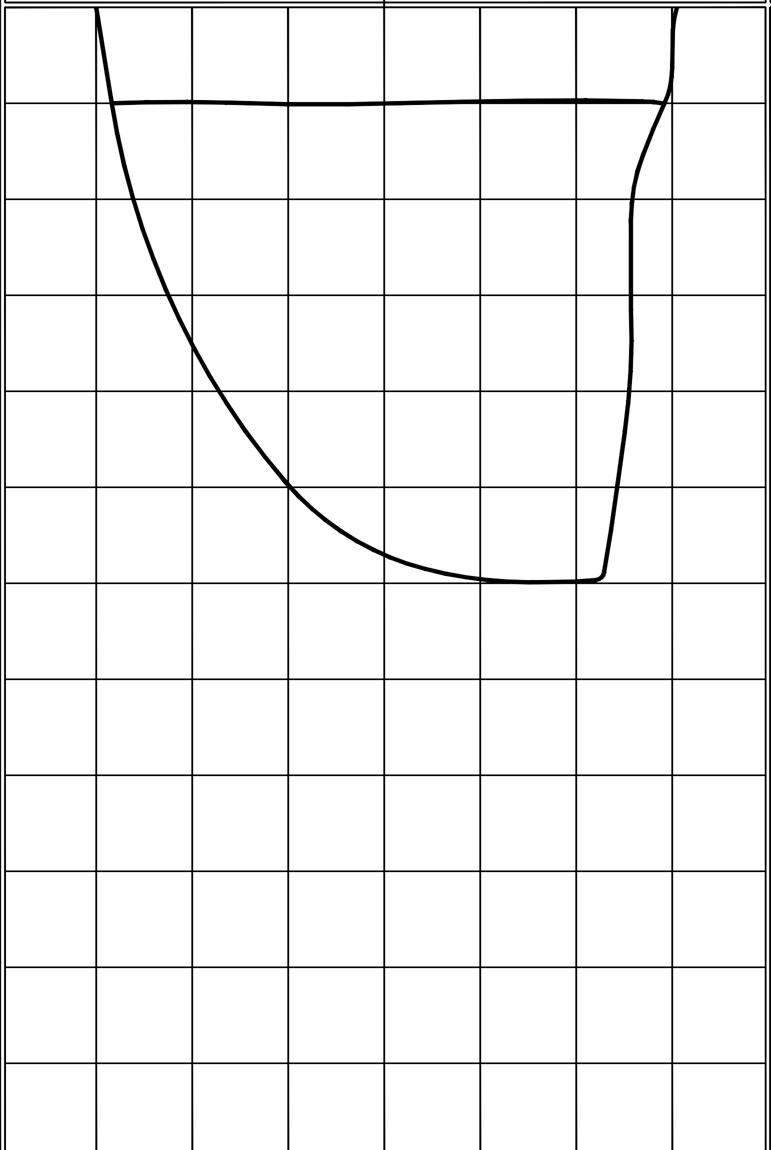
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-7

GROUND ELEVATION 710' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown to gray, moist, medium dense, silty fine SAND.
1	■						OTAY FORMATION: Gray, moist, moderately to strongly indurated, clayey SILTSTONE.
3.5				25.9			
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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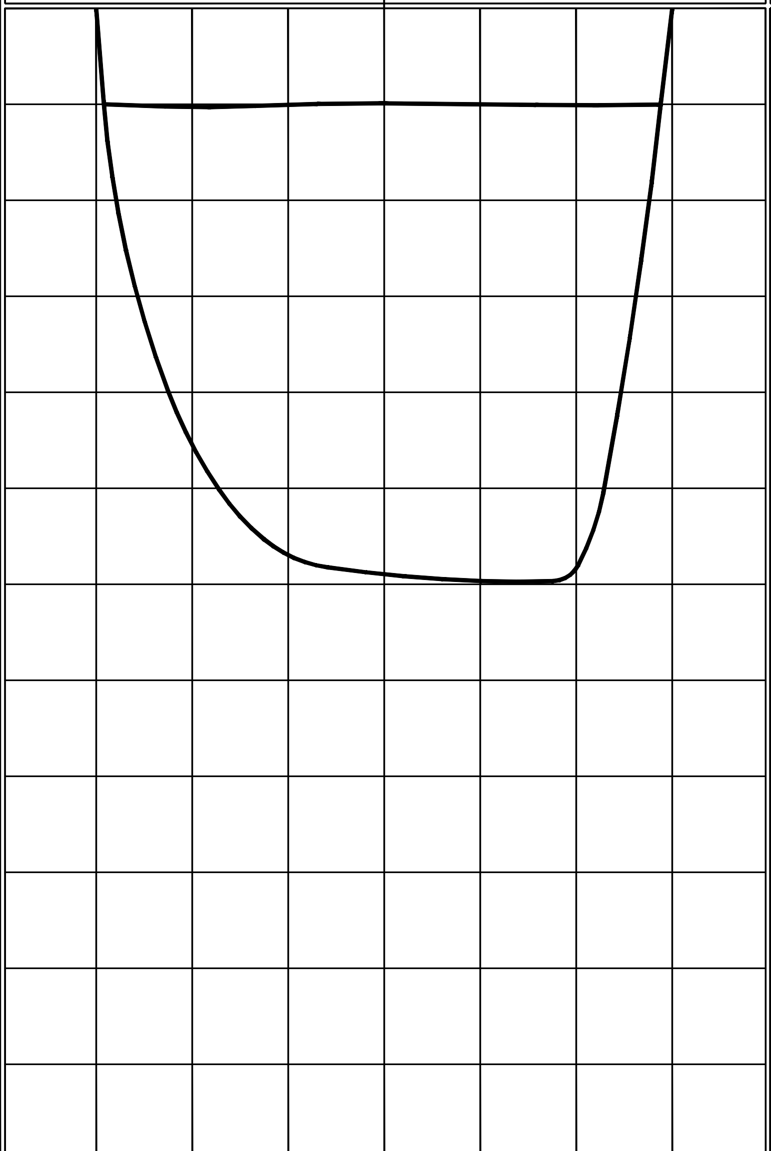
TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED	1/28/19	TEST PIT NO.	TP-8
GROUND ELEVATION	710' ± (MSL)	LOGGED BY	GSW
METHOD OF EXCAVATION	Backhoe		
LOCATION	See Figure 2		



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0						SC	FILL: Light brown, moist, medium dense, clayey SAND.
							OTAY FORMATION: Gray and reddish to yellowish brown, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; scattered claystone lenses from approximately 4 to 5 feet.
2							
4							
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.
8							
10							
12							

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

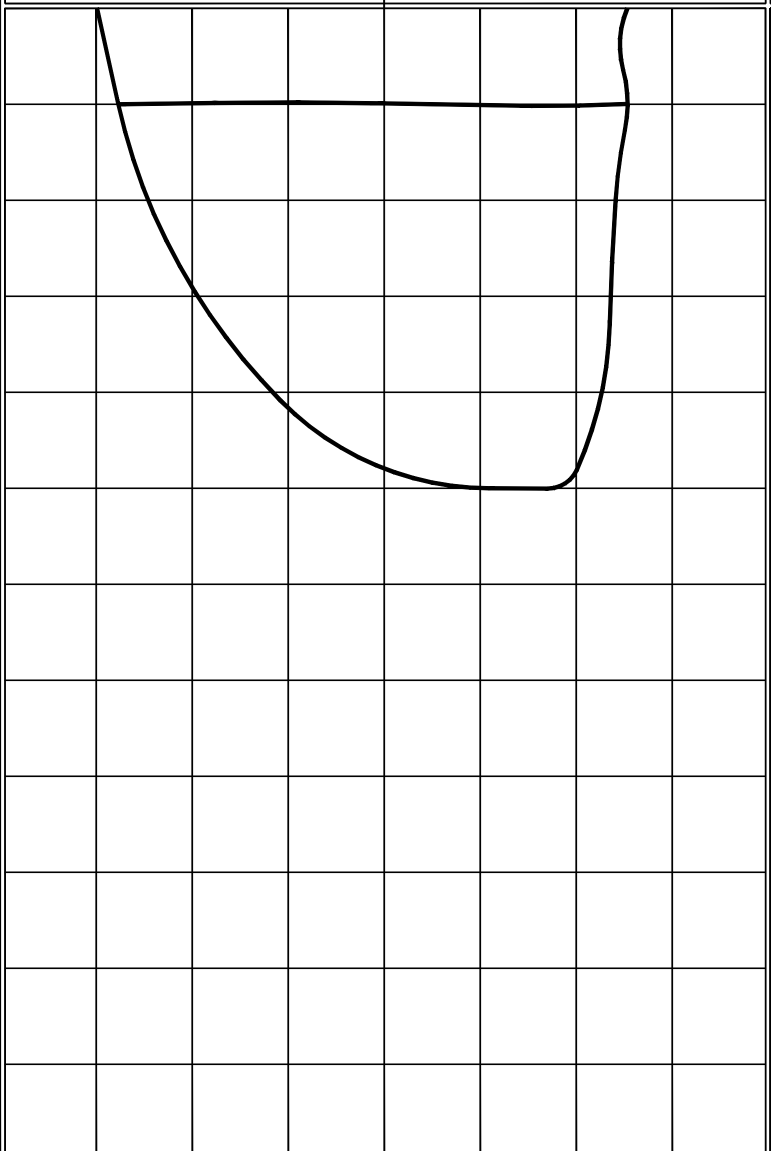
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-9

GROUND ELEVATION 710' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0–1	X					SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND.
1–5	X			19.7			OTAY FORMATION: Gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; scattered rootlets; slightly micaceous.
5							Total Depth = 5 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

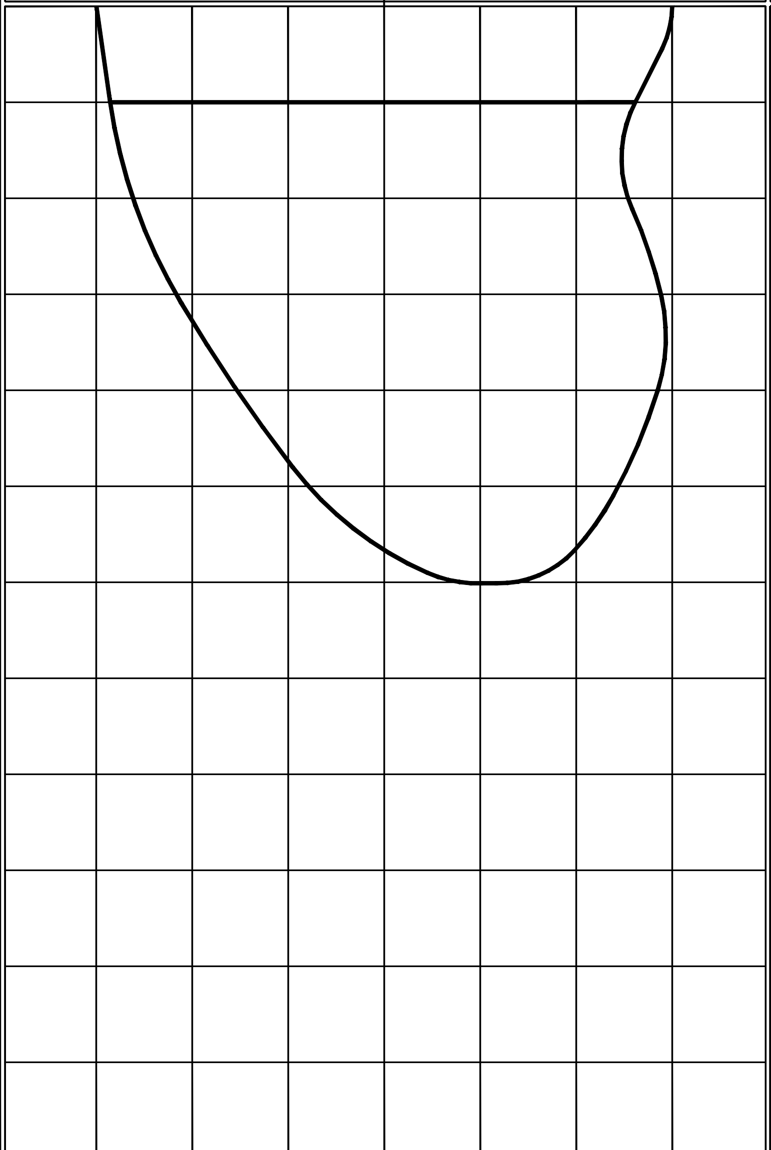
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-10

GROUND ELEVATION 710' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0–1	Bulk (0–6)					SC	FILL: Light brown to gray, moist, medium dense, clayey fine SAND.
1–6				21.3			OTAY FORMATION: Gray and reddish brown to yellowish brown, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; scattered claystone lenses approximately 4 to 5 feet.
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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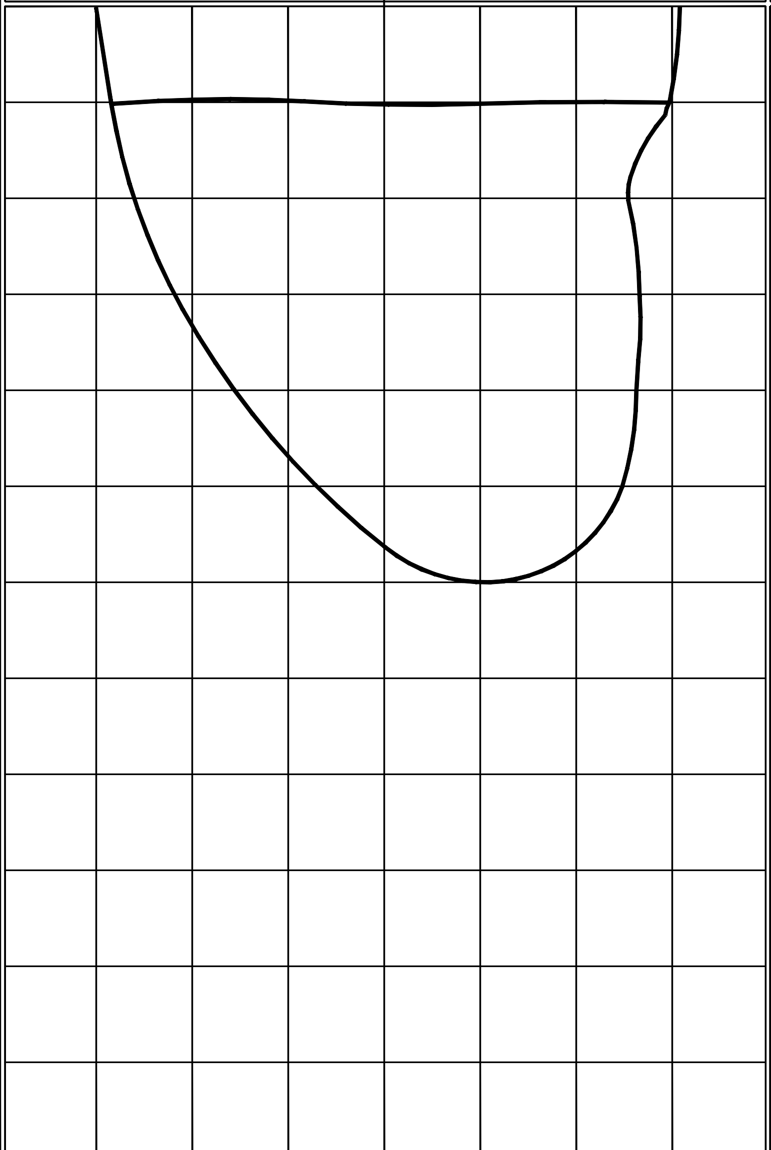
TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED	1/28/19
TEST PIT NO.	TP-11
GROUND ELEVATION	710' ± (MSL)
LOGGED BY	GSW
METHOD OF EXCAVATION	Backhoe
LOCATION	See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	Bulk					SC	FILL: Light brown, moist, medium dense, clayey fine SAND; scattered roots.
1–6	Bulk						OTAY FORMATION: Light brown to gray, moist, moderately to strongly cemented, silty fine-grained SANDSTONE; scattered claystone lenses from approximately 3 to 4 feet.
6							Total Depth = 6 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

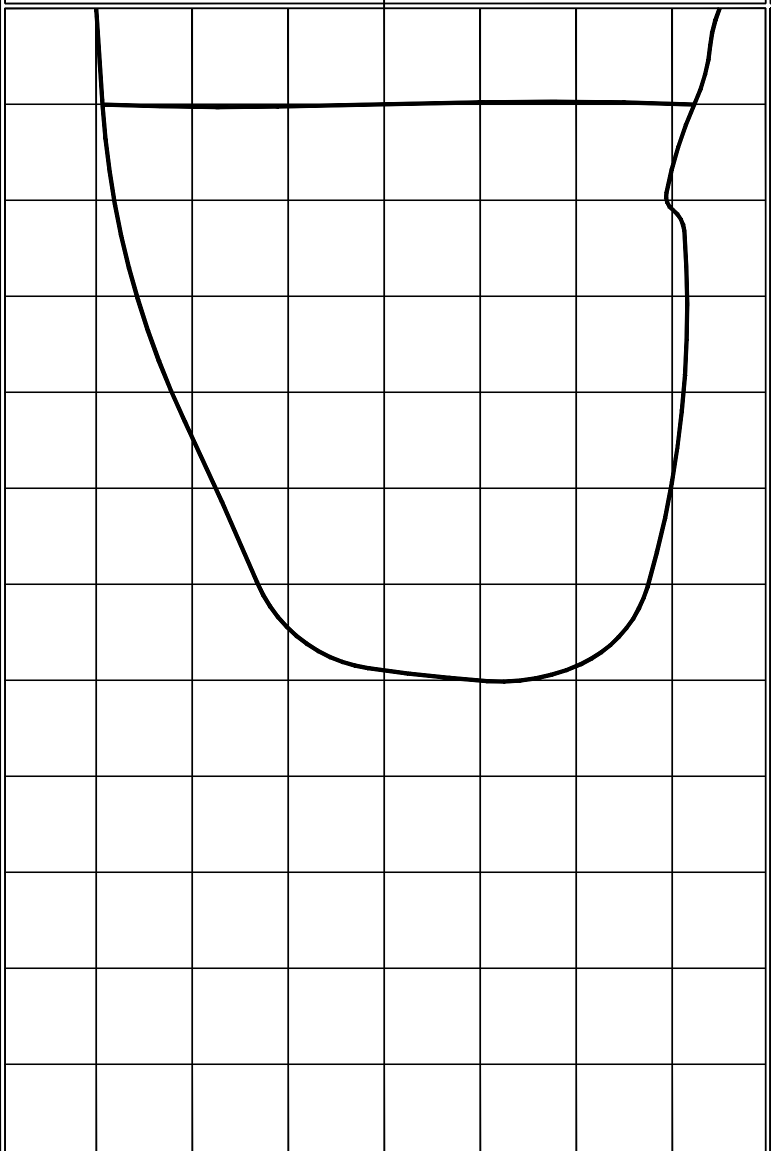
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-12

GROUND ELEVATION 705' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■						FILL: Light brown, moist, medium dense, clayey fine SAND; scattered roots.
1	■						OTAY FORMATION: Gray, moist, moderately to strongly indurated, silty CLAYSTONE; scattered lenses of pinkish gray bentonite.
4	■			36.1			@ 4' to 5': Trace sand.
7							Total Depth = 7 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

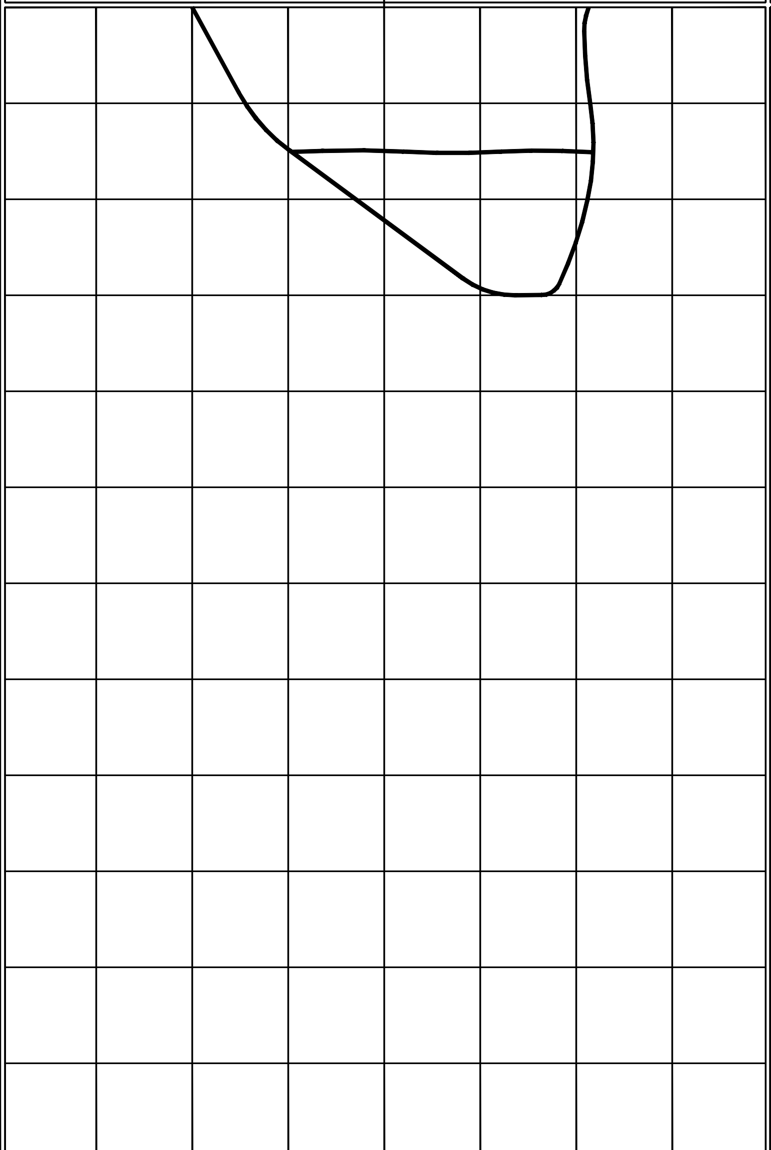
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-13

GROUND ELEVATION 705' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■ (0–3 ft)					SC	FILL: Light brown, moist, medium dense, clayey fine SAND; scattered roots.
1.5							OTAY FORMATION: Gray, moist, moderately indurated, clayey SILTSTONE.
3							Total Depth = 3 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

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TEST PIT LOG

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

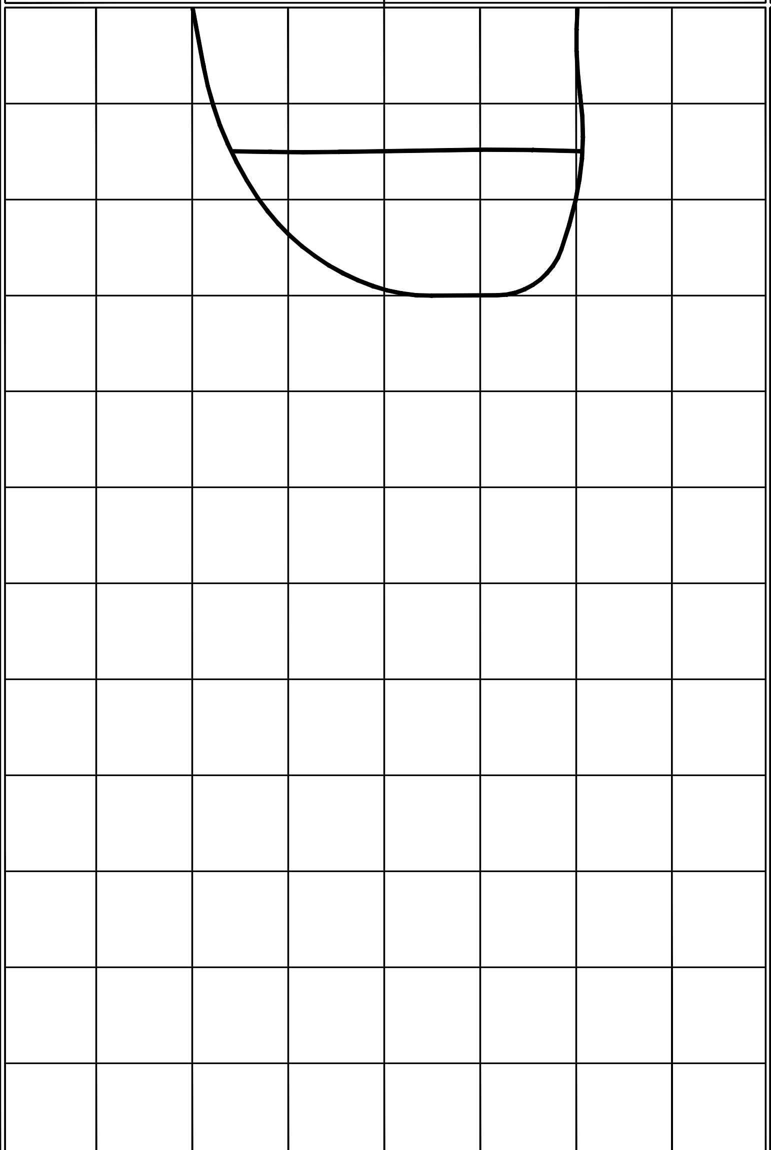
PROJECT NO.	DATE
108727001	3/19

DATE EXCAVATED 1/28/19 TEST PIT NO. TP-14

GROUND ELEVATION 705' ± (MSL) LOGGED BY GSW

METHOD OF EXCAVATION Backhoe

LOCATION See Figure 2



DEPTH (FEET)	SAMPLES: Bulk	SAMPLES: Driven	SAMPLES: Sand Cone	MOISTURE (%)	DRY DENSITY (PCF)	CLASSIFICATION U.S.C.S.	DESCRIPTION
0	■					SM	FILL: Light brown, moist, medium dense, silty fine SAND; scattered roots; trace clay.
1.5	■						OTAY FORMATION: Gray, moist, moderately cemented, silty fine-grained SANDSTONE.
3							Total Depth = 3 feet. Groundwater not encountered. Backfilled on 1/28/19. Note: Groundwater, though not encountered at the time of excavation, may rise to a higher level due to seasonal variations in precipitation and several other factors as discussed in the report. The ground elevation shown above is an estimation only. It is based on our interpretations of published maps and other documents reviewed for the purposes of this evaluation. It is not sufficiently accurate for preparing construction bids and design documents.

Depth scale: 0, 2, 4, 6, 8, 10, 12

SCALE = 1 in./2 ft.

APPENDIX B

Geotechnical Laboratory Testing

APPENDIX B

GEOTECHNICAL LABORATORY TESTING

Classification
Soils were visually and texturally classified in accordance with the Unified Soil Classification System (USCS) in general accordance with ASTM D 2488. Soil classifications are indicated on the logs of the exploratory borings and test pits in Appendix A.

Moisture Content
The moisture content of samples obtained from the exploratory excavations was evaluated in accordance with ASTM D 2216. The test results are presented on the logs of the exploratory excavations in Appendix A.

In-place Moisture and Density Tests
The moisture content and dry density of relatively undisturbed samples obtained from the exploratory borings were evaluated in general accordance with ASTM D 2937. The test results are presented on the logs of the exploratory borings in Appendix A.

Gradation Analysis
Gradation analysis tests were performed on selected representative soil samples in general accordance with ASTM D 422. The grain-size distribution curves are shown on Figures B-1 through B-9. These test results were utilized in evaluating the soil classifications in accordance with the USCS.

Atterberg Limits
Tests were performed on selected representative fine-grained soil samples to evaluate the liquid limit, plastic limit, and plasticity index in general accordance with ASTM D 4318. These test results were utilized to evaluate the soil classification in accordance with the Unified Soil Classification System (USCS). The test results and classifications are shown on Figure B-10.

Consolidation
Consolidation tests were performed on selected relatively undisturbed soil samples in general accordance with ASTM D 2435. The samples were inundated during testing to represent adverse field conditions. The percent of consolidation for each load cycle was recorded as a ratio of the amount of vertical compression to the original height of the sample. The results of the tests are summarized on Figures B-11 and B-12.

Direct Shear Tests
Direct shear testing was performed on relatively undisturbed and remolded samples in general accordance with ASTM D 3080 to evaluate its shear strength characteristics of the selected materials. The samples were inundated during shearing to represent adverse field conditions. The results are shown on Figures B-13 through B-18.

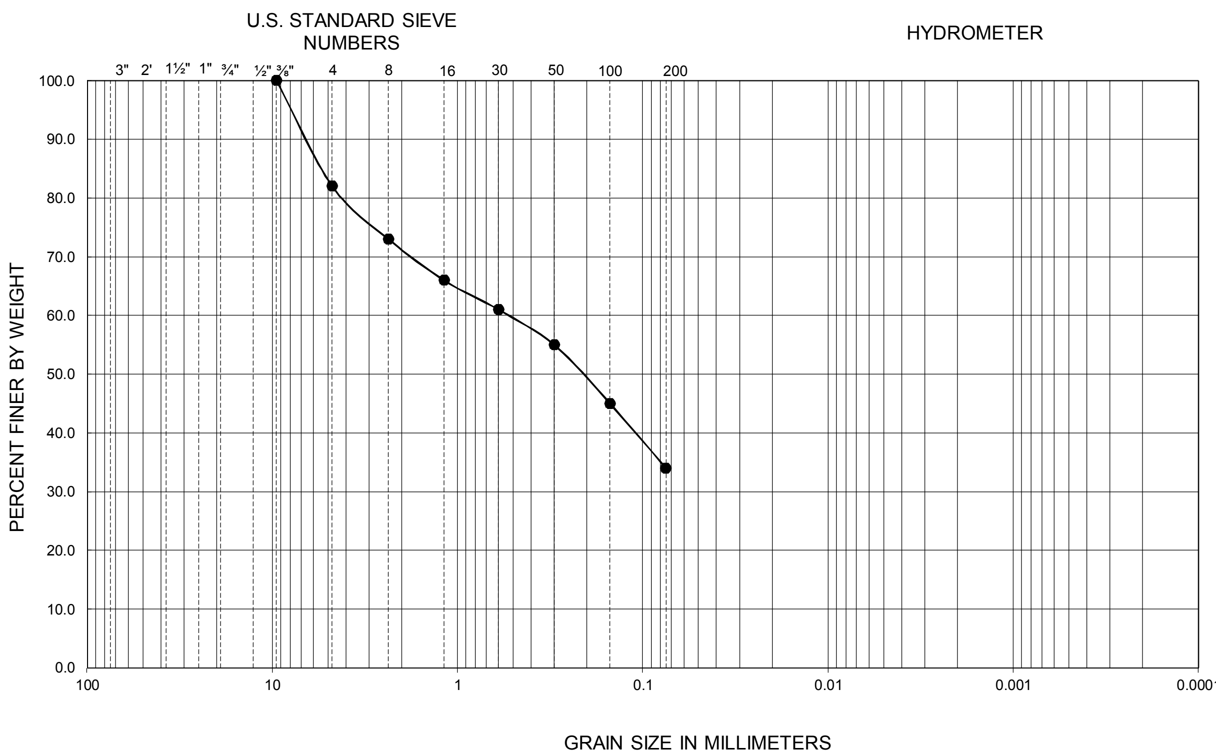
Expansion Index Test
The expansion indices of selected materials were evaluated in general accordance with ASTM D 4829. Specimens were molded under a specified compactive energy at approximately 50 percent saturation (plus or minus 2 percent). The prepared 1-inch thick by 4-inch diameter specimens were loaded with a surcharge of 144 pounds per square foot and was inundated with distilled water. Readings of volumetric swell were made for a period of 24 hours. The results of these tests are presented on Figure B-19.

Proctor Density Tests
The maximum dry density and optimum moisture content of a selected representative soil sample was evaluated using the Modified Proctor method in general accordance with ASTM D 1557. The results of these tests are summarized on Figure B-20.

Soil Corrosivity Tests
Soil pH and resistivity tests were performed on representative samples in general accordance with CT 643. The soluble sulfate and chloride contents of the selected samples were evaluated in general accordance with CT 417 and CT 422, respectively. The test results are presented on Figure B-21.

R-Value
The resistance value, or R-value, for site soils was evaluated in general accordance with California Test (CT) 301. Samples were prepared and evaluated for exudation pressure and expansion pressure. The equilibrium R-value is reported as the lesser or more conservative of the two calculated results. The test results are presented on Figure B-22.

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-1	10.0-11.5	23	19	4	--	--	--	--	--	34	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-1

GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

108727001 | 3/19

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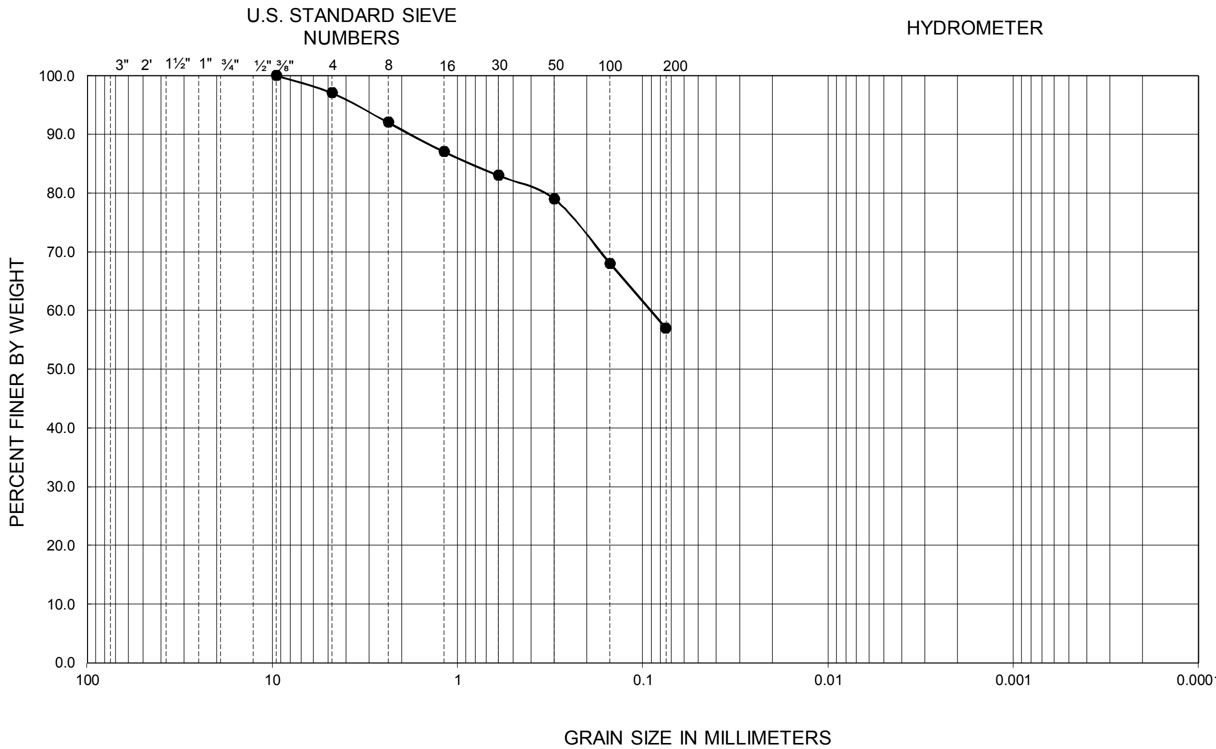
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-1	40.0-41.5	50	37	13	--	--	--	--	--	57	MH

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-2

GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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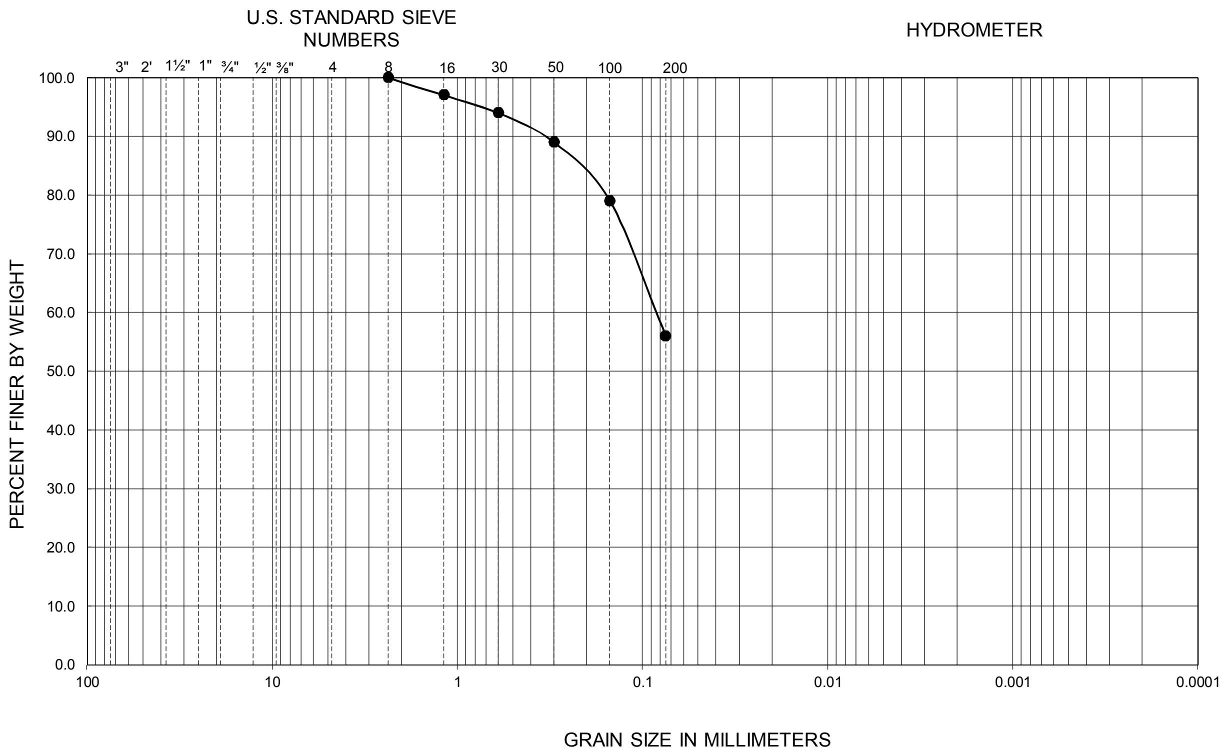
108727001 | 3/19

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-2	0.0-5.0	28	22	6	--	--	--	--	--	56	CL-ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-3

GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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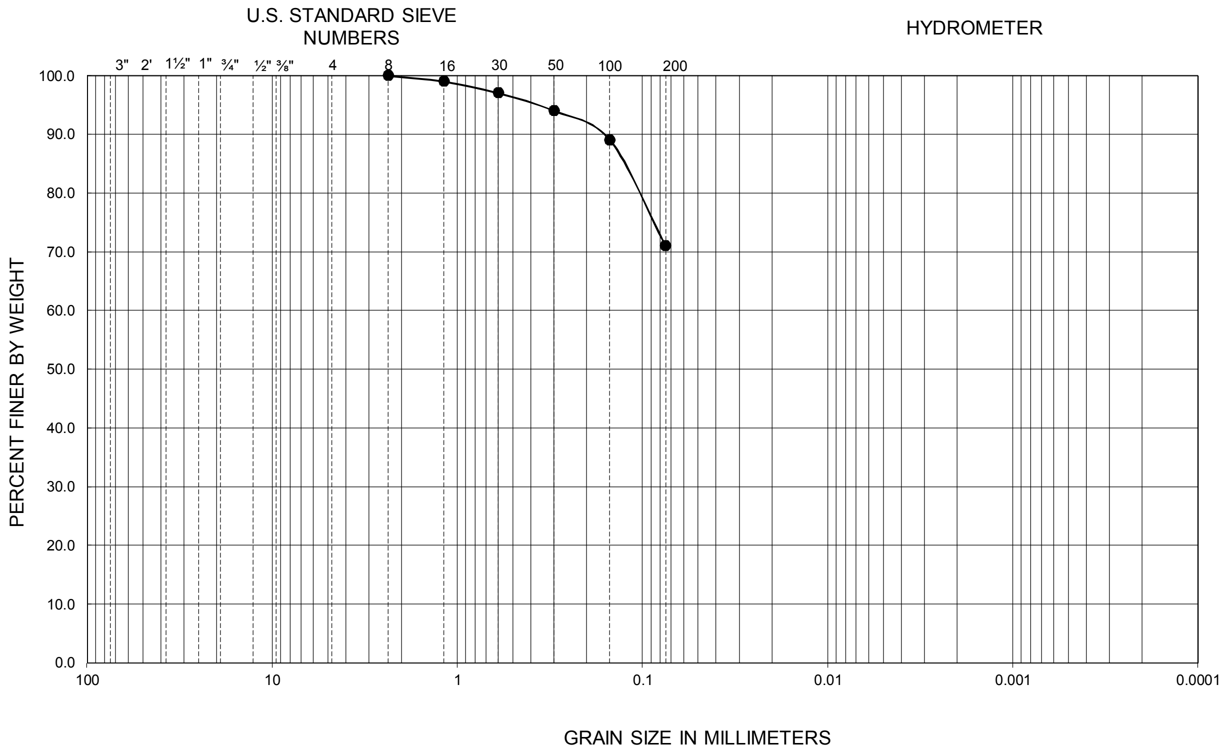
Geotechnical & Environmental Sciences Consultants

108727001 | 3/19

GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-3	0.0-5.0	--	--	--	--	--	--	--	--	71	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-4

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GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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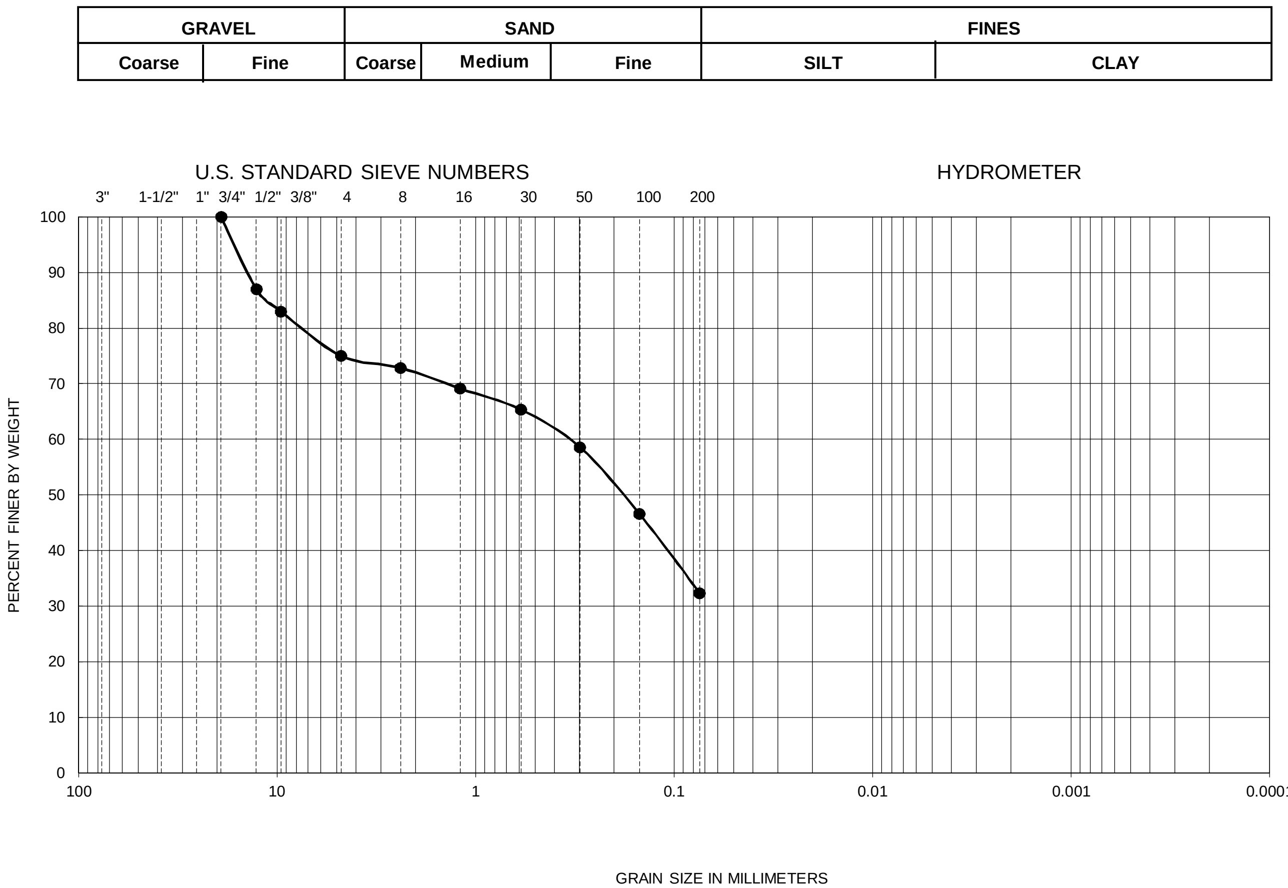

Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-4	0.0-5.0	31	26	5	--	--	--	--	--	32	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-5

GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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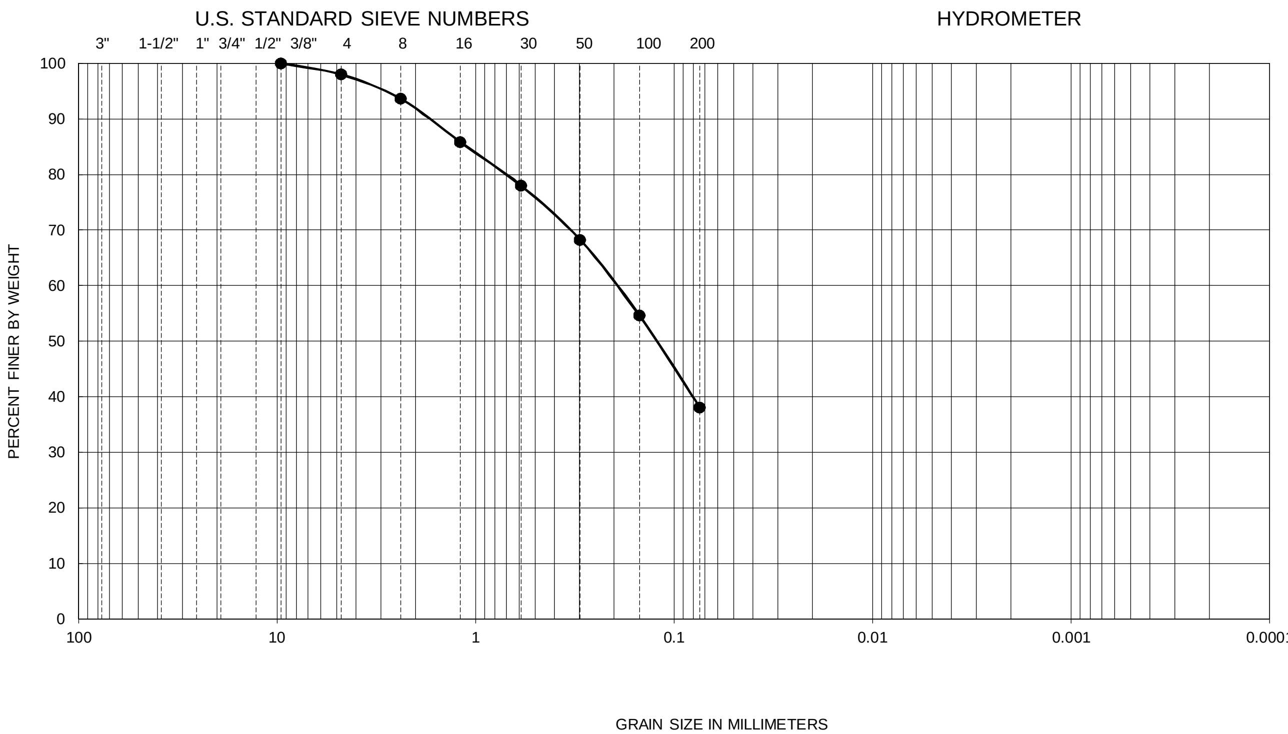
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Hole No.	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (percent)	USCS
●	B-6	0.0-5.0	41	20	21	--	--	--	--	--	38	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-6

GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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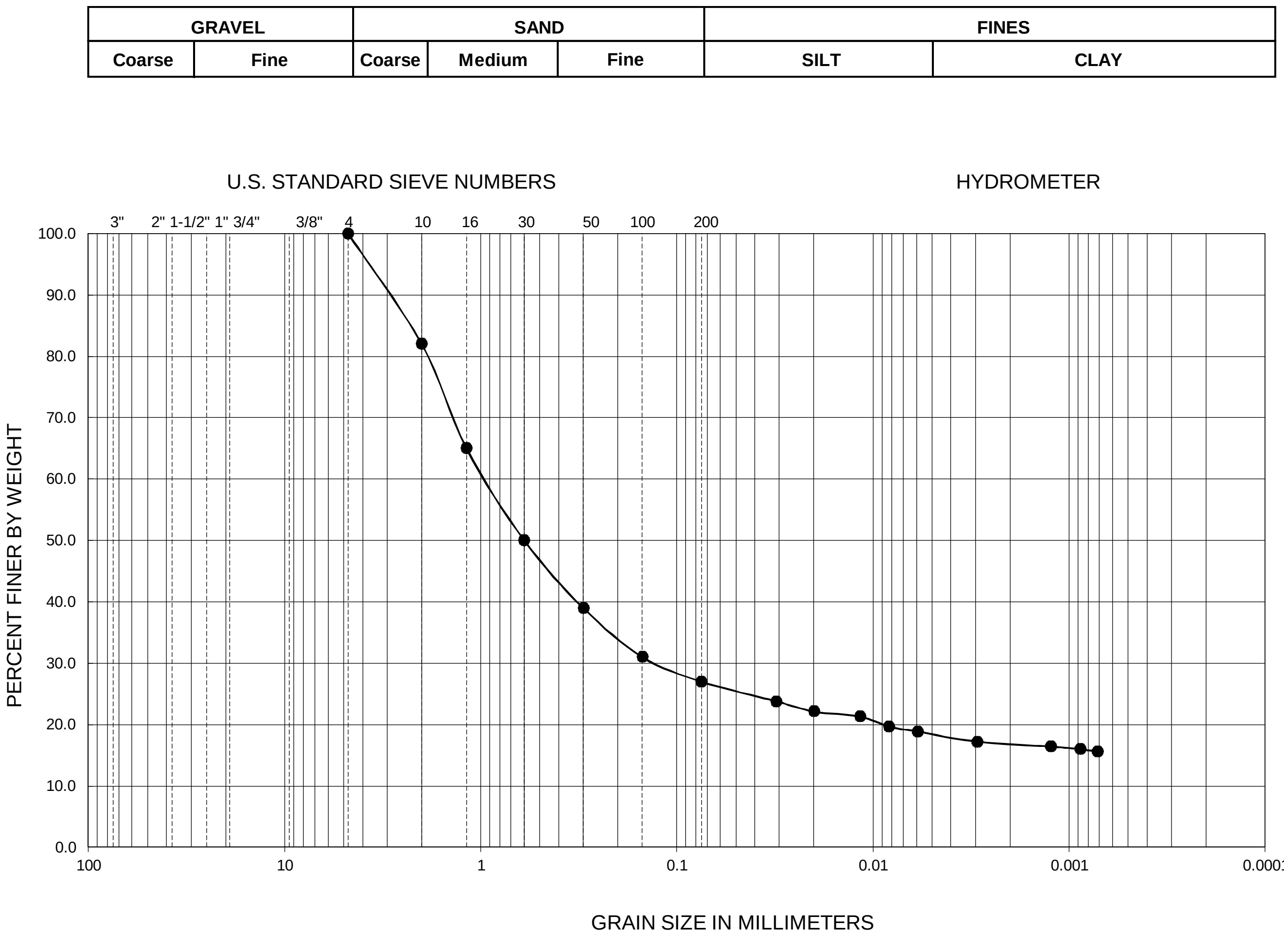

Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	TP-5	1.0-6.0	NP	NP	NP	--	--	--	--	--	27	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

NP - INDICATES NON-PLASTIC

FIGURE B-7

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GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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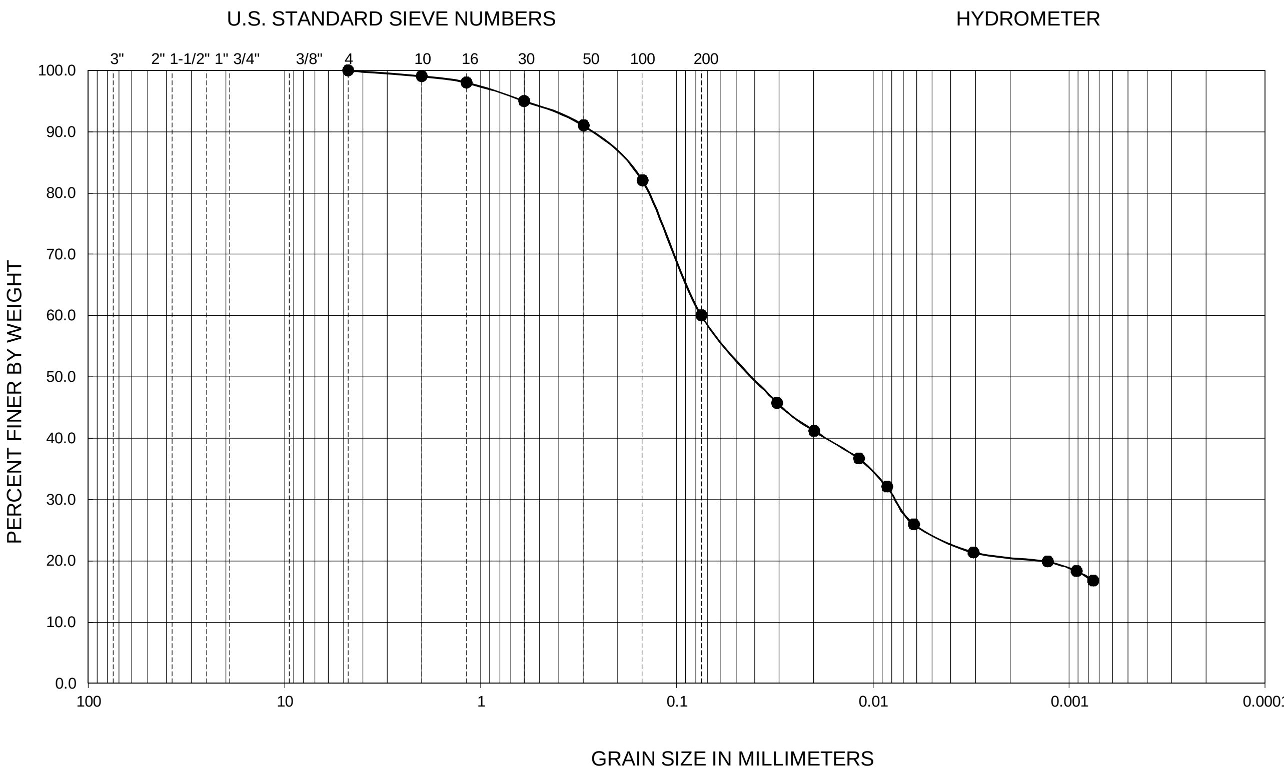
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	TP-7	1.0-6.0	27	25	2	--	--	--	--	--	60	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-8

Ninyo & Moore
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GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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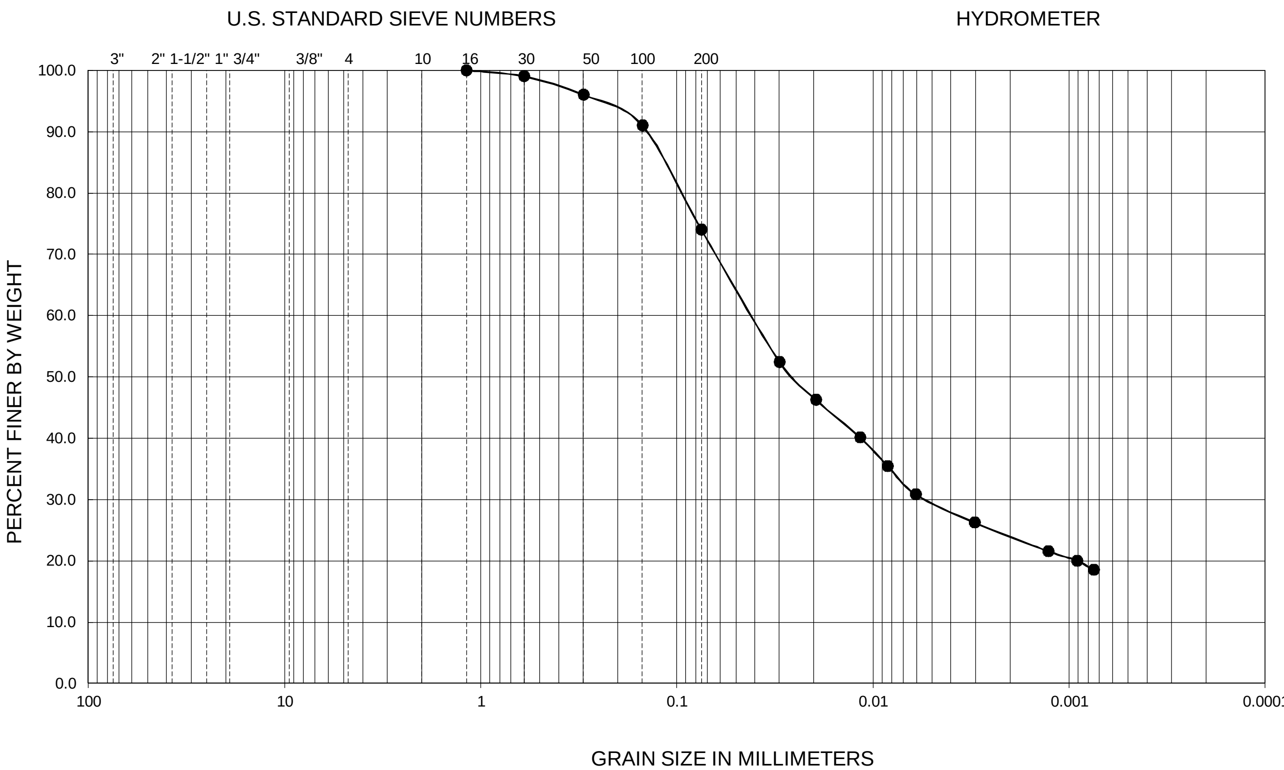
GRAVEL		SAND			FINES	
Coarse	Fine	Coarse	Medium	Fine	SILT	CLAY



Symbol	Sample Location	Depth (ft)	Liquid Limit	Plastic Limit	Plasticity Index	D_{10}	D_{30}	D_{60}	C_u	C_c	Passing No. 200 (%)	USCS
●	TP-12	1.0-7.0	39	19	20	--	--	--	--	--	74	CL

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 422

FIGURE B-9

Ninyo & Moore
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GRADATION TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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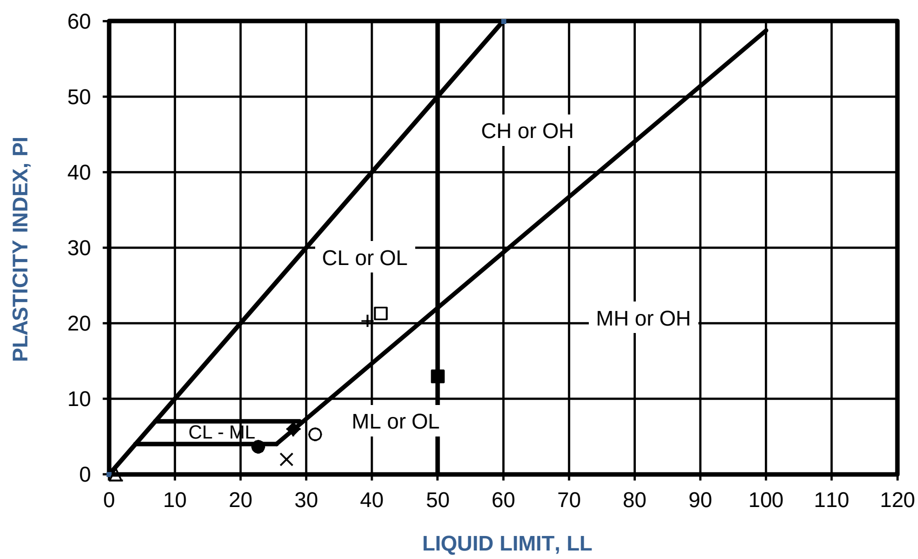
SYMBOL	LOCATION	DEPTH (ft)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	USCS CLASSIFICATION (Fraction Finer Than No. 40 Sieve)	USCS
●	B-1	10.0-11.5	23	19	4	ML	SM
■	B-1	40.0-41.5	50	37	13	MH	MH
◆	B-2	0.0-5.0	28	22	6	CL-ML	CL-ML
○	B-4	0.0-5.0	31	26	5	ML	SM
□	B-6	0.0-5.0	41	20	21	CL	SC
Δ	TP-5	1.0-6.0	NP	NP	NP	ML	SM
X	TP-7	1.0-6.0	27	25	2	ML	ML
+	TP-12	1.0-7.0	39	19	20	CL	CL

NP - INDICATES NON-PLASTIC



PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 4318

FIGURE B-10

Ninyo & Moore
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ATTERBERG LIMITS TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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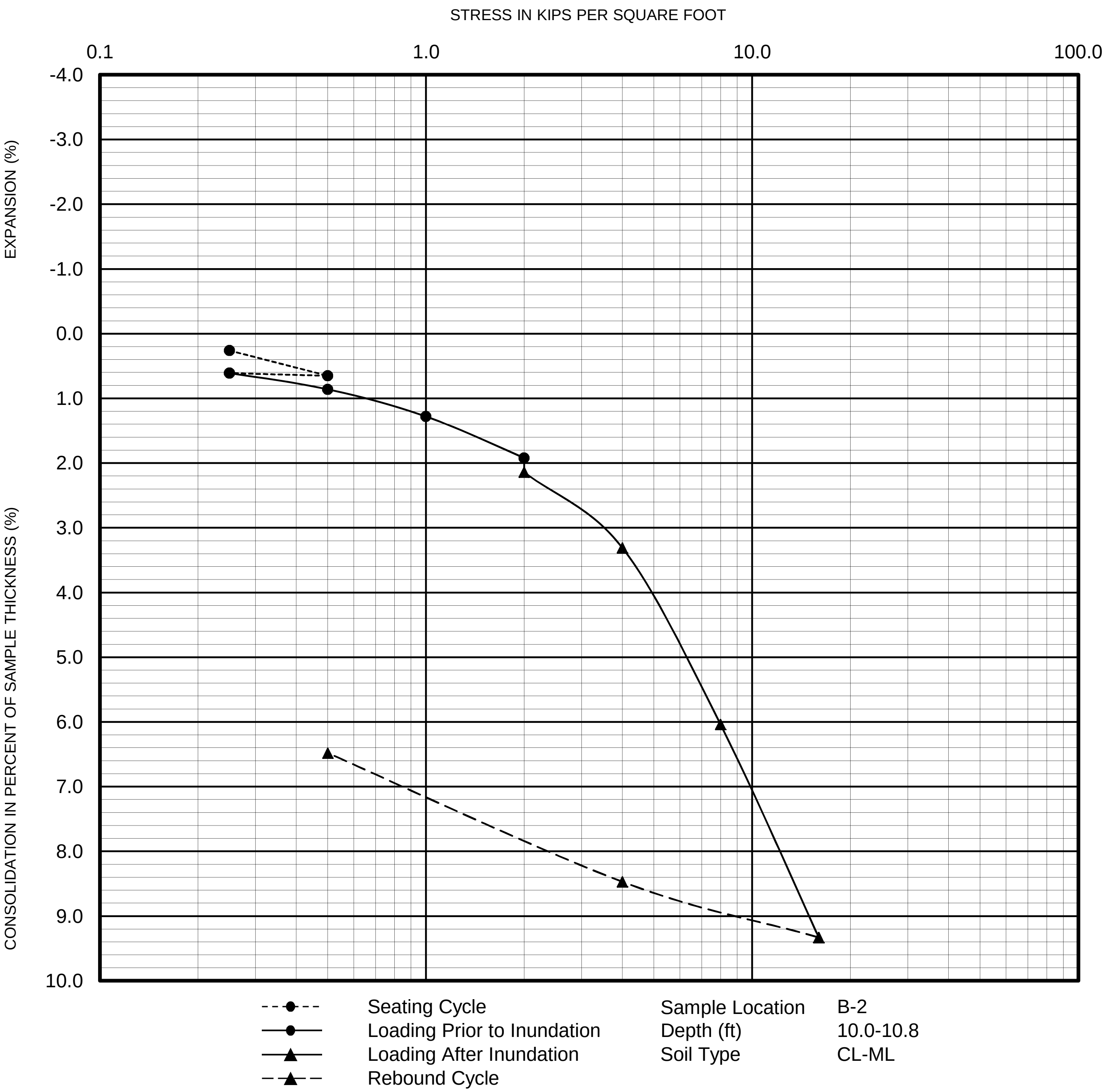

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE B-11

CONSOLIDATION TEST RESULTS

Ninyo & Moore
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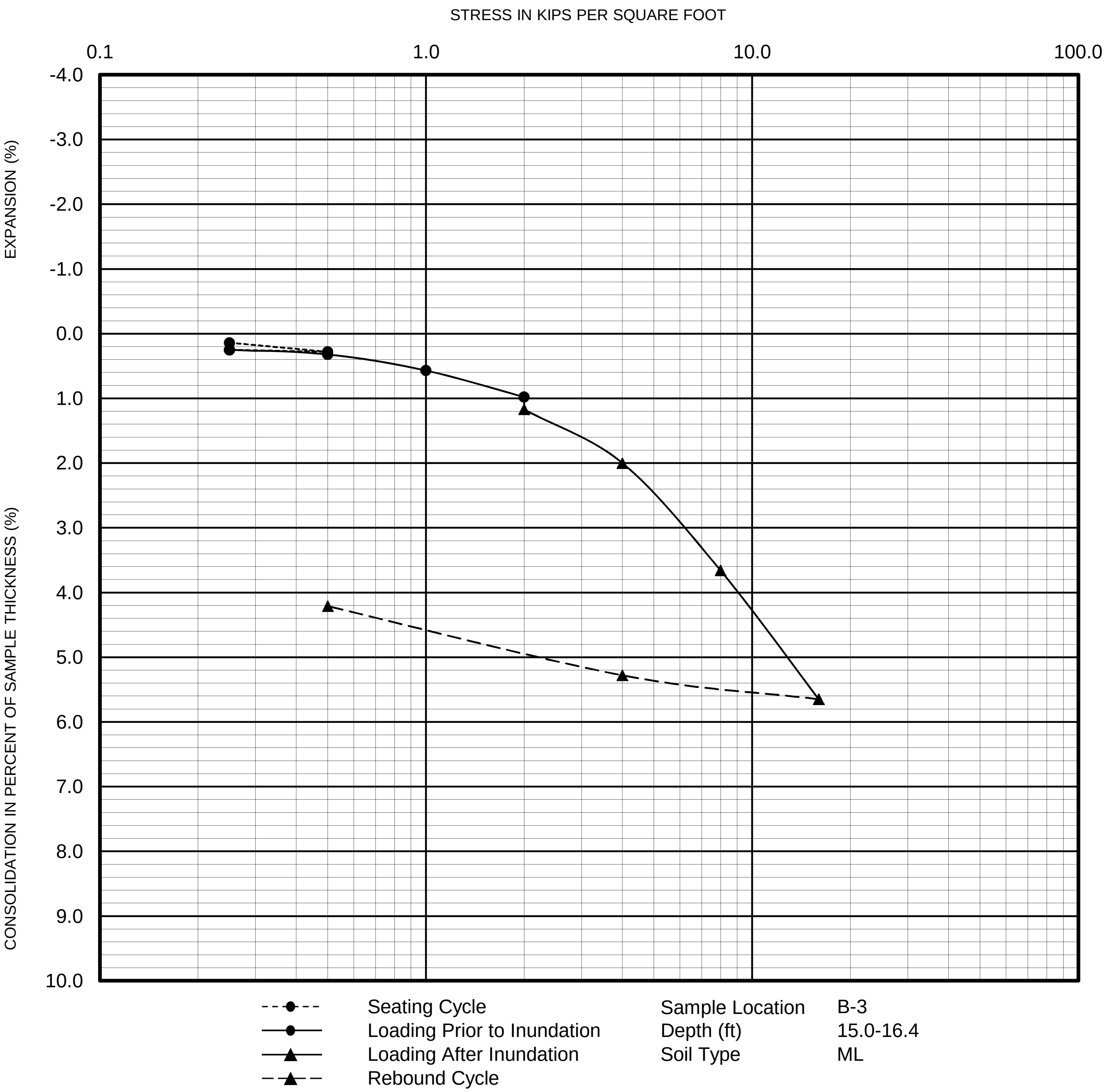
PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA



Sample Location	B-3
Depth (ft)	15.0-16.4
Soil Type	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2435

FIGURE B-12

CONSOLIDATION TEST RESULTS

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PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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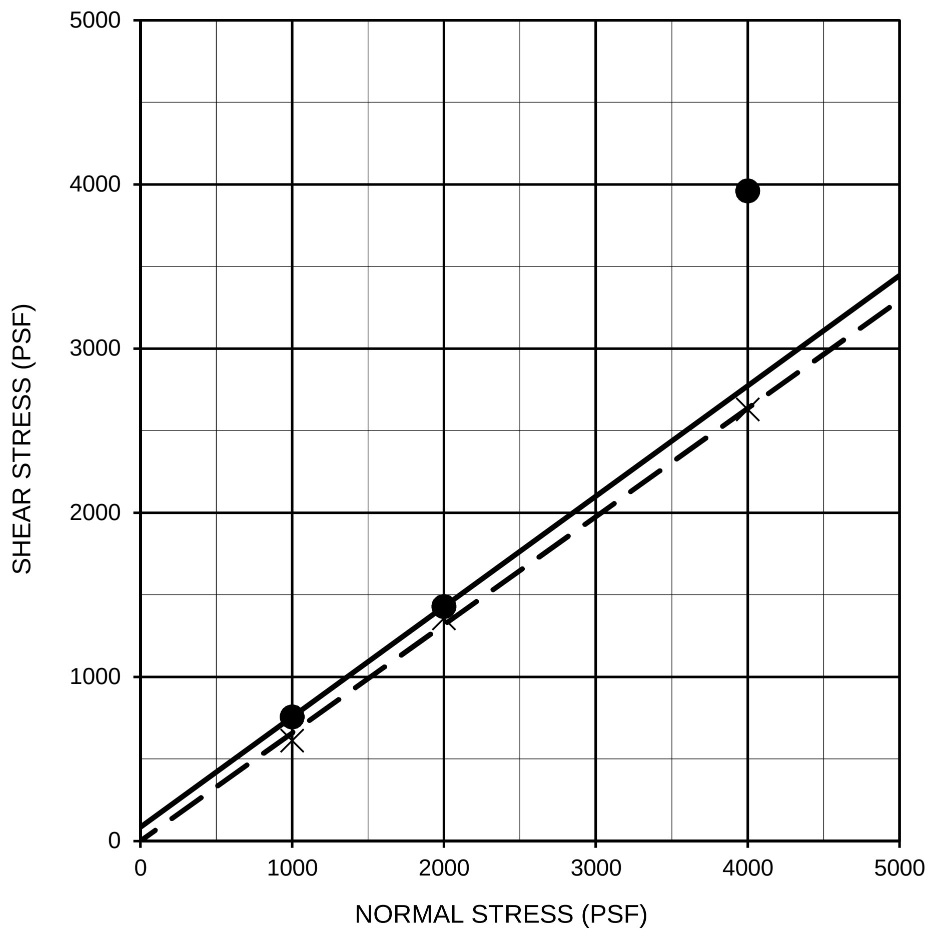

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Silty SAND	—●—	B-1	15.0-16.5	Peak	80	34	SM
Silty SAND	- - X - -	B-1	15.0-16.5	Ultimate	0	33	SM

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-13

Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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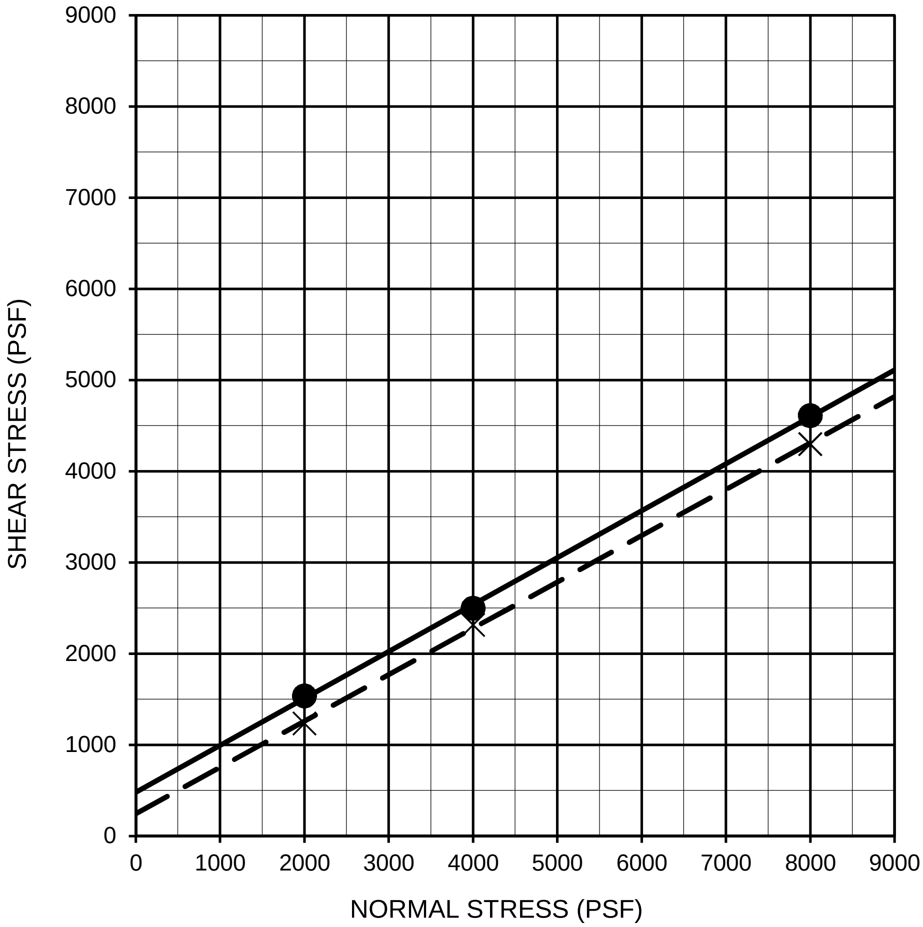

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Sandy SILT	——●——	B-1	25.0-25.9	Peak	480	27	ML
Sandy SILT	– – X – –	B-1	25.0-25.9	Ultimate	250	27	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-14

Ninyo & Moore
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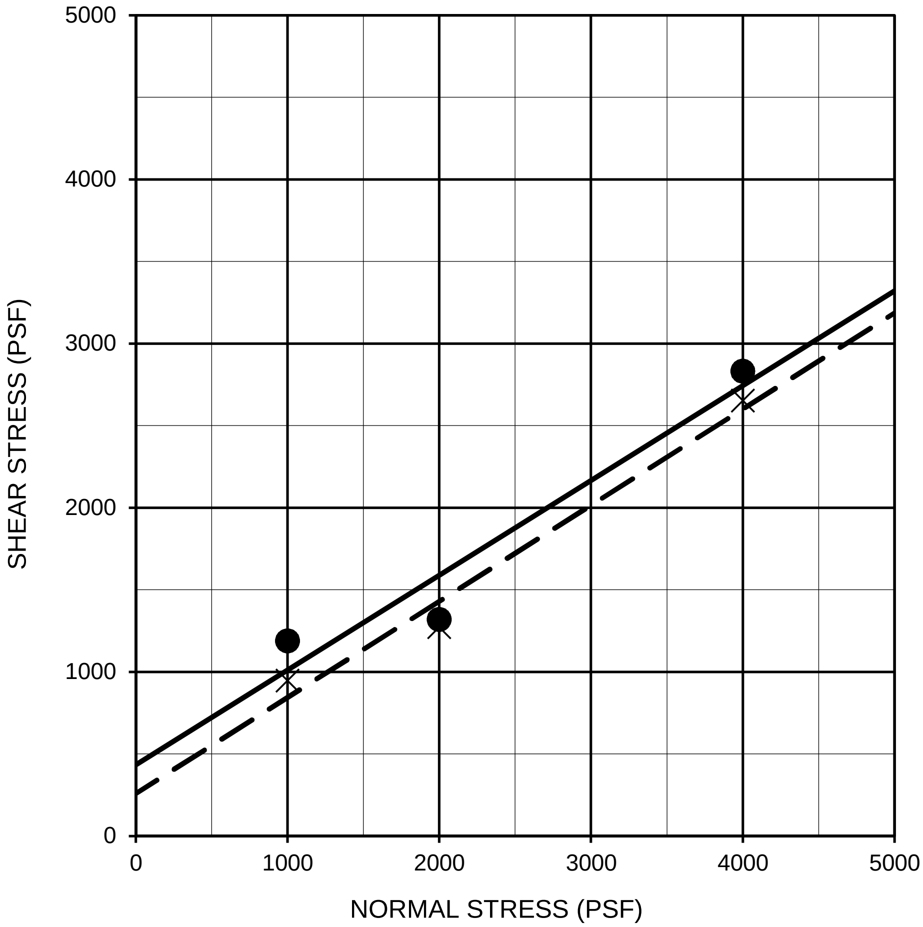
DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA



Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Clayey SAND	——●——	B-5	5.0-6.5	Peak	400	30	SC
Clayey SAND	- - X - -	B-5	5.0-6.5	Ultimate	260	30	SC

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-15

Ninyo & Moore
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DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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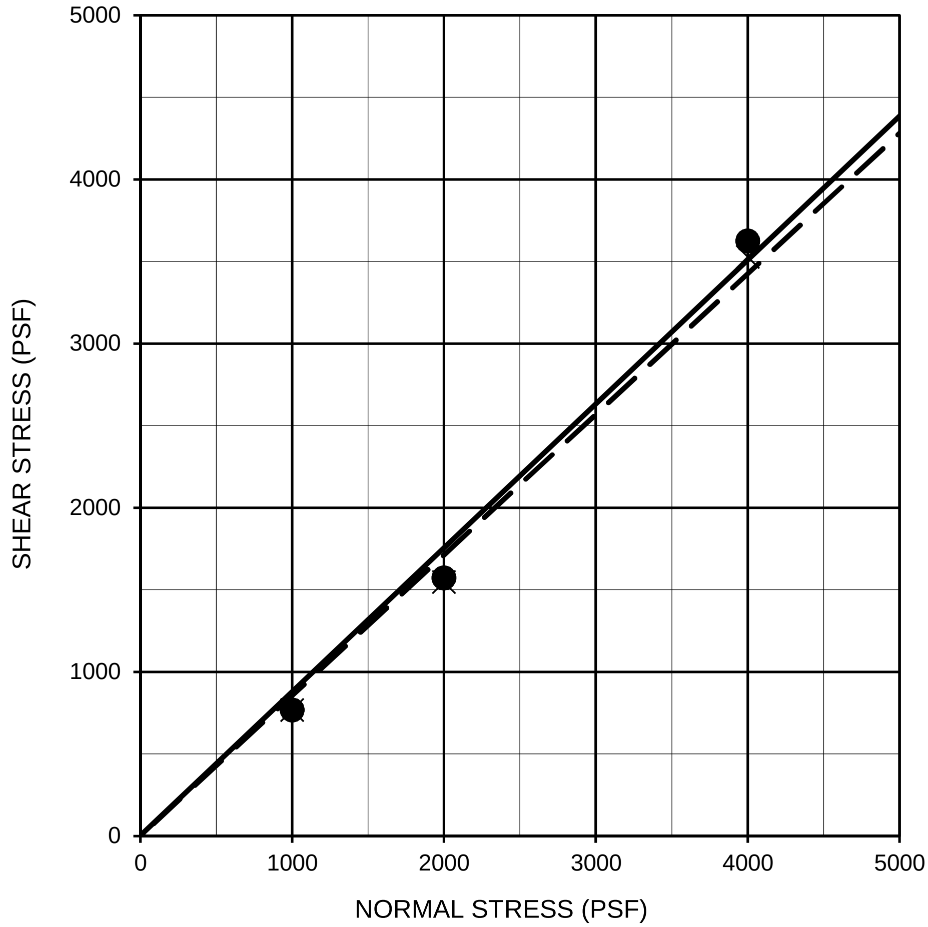

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Silty SANDSTONE	—●—	B-7	5.0-5.4	Peak	0	41	Formation
Silty SANDSTONE	– – X – –	B-7	5.0-5.4	Ultimate	0	41	Formation

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-16

Ninyo & Moore
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DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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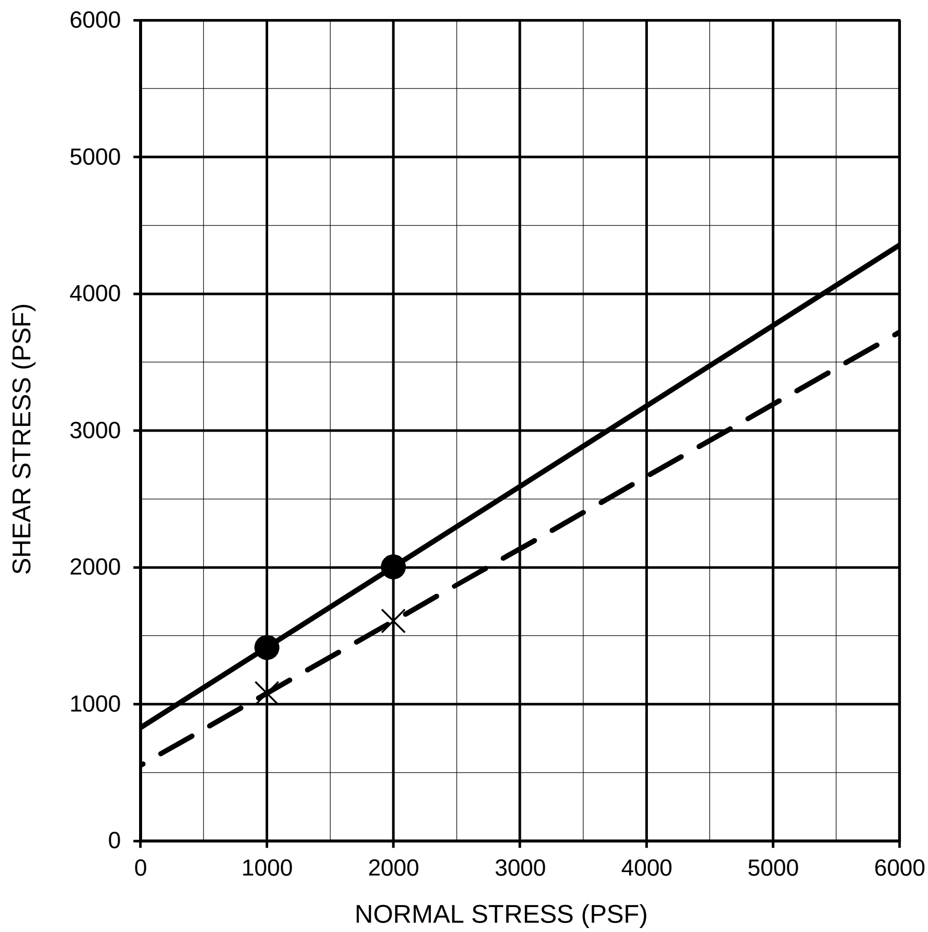

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Silty SANDSTONE	——●——	B-8	5.0-5.8	Peak	830	30	Formation
Silty SANDSTONE	– – X – –	B-8	5.0-5.8	Ultimate	550	28	Formation

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-17

Ninyo & Moore
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DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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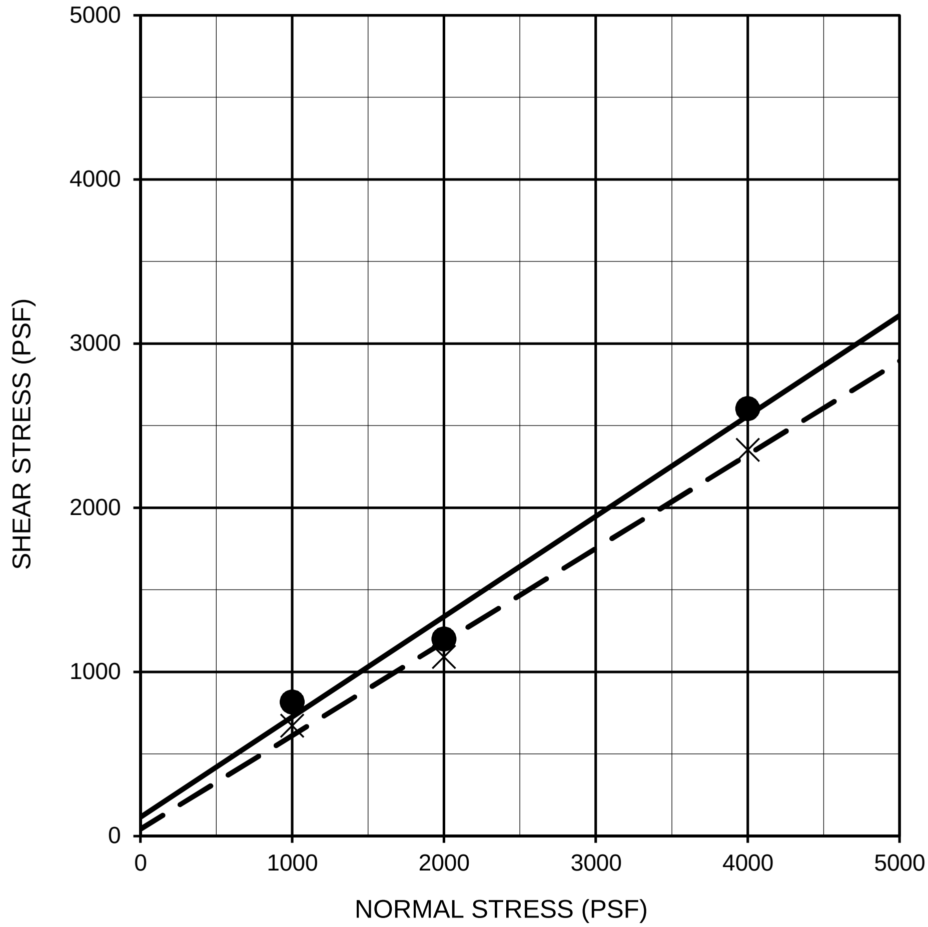

Description	Symbol	Sample Location	Depth (ft)	Shear Strength	Cohesion (psf)	Friction Angle (degrees)	Soil Type
Remolded @ 90% Relative Compaction	——●——	TP-6	1.0-6.0	Peak	110	31	ML
	— — X — —	TP-6	1.0-6.0	Ultimate	40	30	ML

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 3080

FIGURE B-18

Ninyo & Moore
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DIRECT SHEAR TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	INITIAL MOISTURE (percent)	COMPACTED DRY DENSITY (pcf)	FINAL MOISTURE (percent)	VOLUMETRIC SWELL (in)	EXPANSION INDEX	POTENTIAL EXPANSION
B-6	0.0-5.0	9.5	112.2	19.5	0.024	24	Low
TP-2	0.0-3.0	14.5	92.8	38.0	0.102	102	High
TP-6	1.0-6.0	17.5	88.0	36.3	0.075	75	Medium
TP-9	1.0-5.0	13.0	97.4	28.6	0.088	88	Medium

PERFORMED IN GENERAL ACCORDANCE WITH ☐ UBC STANDARD 18-2 ☑ ASTM D 4829

FIGURE B-19

EXPANSION INDEX TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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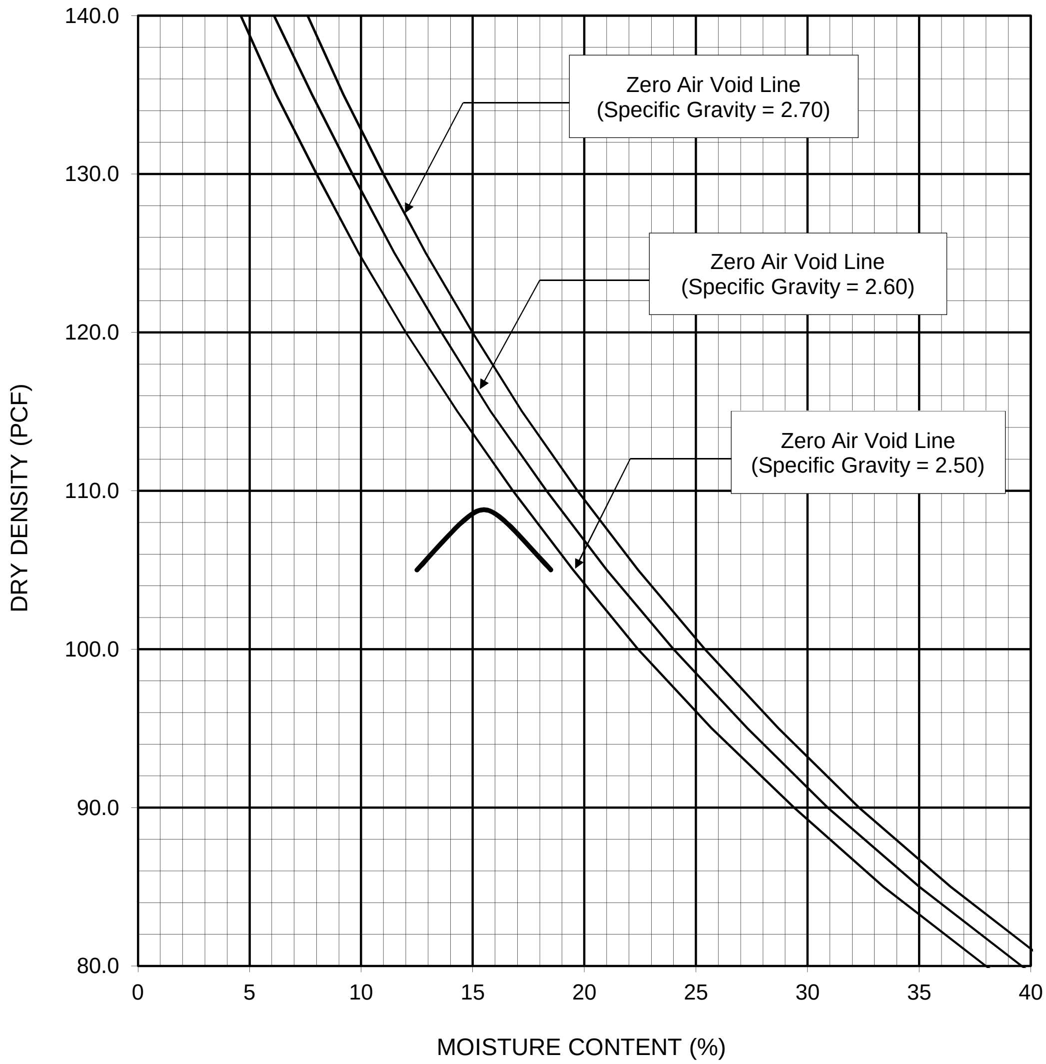

Sample Location	Depth (ft)	Soil Description	Maximum Dry Density (pcf)	Optimum Moisture Content (percent)
TP-6	1.0-6.0	SILTSTONE (excavated as SILT)	108.8	15.5

PERFORMED IN GENERAL ACCORDANCE WITH ☑ ASTM D 1557 ☐ ASTM D 698 METHOD ☑ A ☐ B ☐ C

FIGURE B-20

PROCTOR DENSITY TEST RESULTS

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PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

SAMPLE LOCATION	SAMPLE DEPTH (ft)	pH [1]	RESISTIVITY [1] (ohm-cm)	SULFATE CONTENT [2]		CHLORIDE CONTENT [3] (ppm)
				(ppm)	(%)	
B-6	0.0-5.0	8.9	1,000	40	0.004	30
TP-2	0.0-3.0	9.0	800	10	0.001	1000
TP-9	1.0-5.0	8.3	700	10	0.001	1035

[1] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 643
[2] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 417
[3] PERFORMED IN GENERAL ACCORDANCE WITH CALIFORNIA TEST METHOD 422

FIGURE B-21

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CORROSIVITY TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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SAMPLE LOCATION	SAMPLE DEPTH (ft)	SOIL TYPE	R-VALUE
TP-13	0.0-3.0	Clayey SAND (SC)	35
TP-14	0.0-3.0	Silty SAND (SM)	39

PERFORMED IN GENERAL ACCORDANCE WITH ASTM D 2844/CT 301

FIGURE B-22

Ninyo & Moore

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R-VALUE TEST RESULTS

PROPOSED ACADIA SAN DIEGO MEDICAL FACILITY
830 SHOWROOM PLACE, CHULA VISTA, CALIFORNIA

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APPENDIX C

Infiltration Testing Results

Test Date:	1/30/2019					Infiltration Test No.:		IT-1
Test Hole Diameter, D (inches):			8.0			Excavation Depth (feet):		5.00
Test performed and recorded by:			GLC			Pipe Length (feet):		5.67

t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:54	2.50	9:19	3.36	25	0.86	2.42	2.74	1.42
9:19	3.36	9:44	3.53	25	0.17	12.25	2.23	0.34
9:44	3.53	10:14	3.71	30	0.18	13.89	2.05	0.32
10:14	3.71	10:44	3.89	30	0.18	13.89	1.87	0.35
10:44	3.21	11:14	3.34	30	0.13	19.23	2.40	0.20
11:14	3.34	11:44	3.46	30	0.12	20.83	2.27	0.20
11:44	3.46	12:14	3.63	30	0.17	14.71	2.13	0.30
12:14	3.63	12:44	3.80	30	0.17	14.71	1.96	0.32
12:44	3.80	1:14	3.94	30	0.14	17.86	1.80	0.28
1:14	3.94	1:44	4.08	30	0.14	17.86	1.66	0.31
1:44	3.11	2:14	3.25	30	0.14	17.86	2.49	0.21
2:14	3.25	2:44	3.38	30	0.13	19.23	2.36	0.21

Test Date:	1/30/2019					Infiltration Test No.:		IT-2
Test Hole Diameter, D (inches):			8.0			Excavation Depth (feet):		5.00
Test performed and recorded by:			GLC			Pipe Length (feet):		5.33

t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:53	3.00	9:18	3.23	25	0.23	9.06	2.22	0.46
9:18	3.23	9:43	3.46	25	0.23	9.06	1.99	0.51
9:43	3.46	10:13	3.67	30	0.21	11.90	1.77	0.43
10:13	3.67	10:43	3.88	30	0.21	11.90	1.56	0.49
10:43	2.94	11:13	3.10	30	0.16	15.63	2.31	0.26
11:13	3.10	11:43	3.25	30	0.15	16.67	2.16	0.26
11:43	3.25	12:13	3.46	30	0.21	11.90	1.98	0.39
12:13	3.46	12:43	3.67	30	0.21	11.90	1.77	0.43
12:43	3.67	1:13	3.81	30	0.14	17.86	1.59	0.32
1:13	3.81	1:43	3.95	30	0.14	17.86	1.45	0.35
1:43	3.95	2:13	4.06	30	0.11	22.73	1.33	0.29
2:13	4.06	2:43	4.16	30	0.10	25.00	1.22	0.29

Notes:

t_1 = initial time when filling or refilling is completed

d_1 = initial depth to water in hole at t_1

t_2 = final time when incremental water level reading is taken

d_2 = final depth to water in hole at t_2

Δt = change in time between initial and final water level readings

ΔH = change in depth to water or change in height of water column (i.e., $d_2 - d_1$)

H_0 = Initial height of water column

in/hr = inches per hour

Percolation Rate to Infiltration Rate Conversion [1]

$$I_t = \frac{\Delta H \times 60 \times r}{\Delta t(r + 2H_{avg})}$$

I_t = tested infiltration rate, inches/hour

ΔH = change in head over the time interval, inches

Δt = time interval, minutes

r = effective radius of test hole

H_{avg} = average head over the time interval, inches

[1] Based on the "Porchet Method" as presented in:
Riverside County Flood Control, 2011, Design Handbook for Low Impact Development Best Management Practices: dated September.

Test Date:	1/30/2019						Infiltration Test No.:	IT-3
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.42
t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:40	2.34	9:05	2.76	25	0.42	4.96	2.87	0.66
9:05	2.76	9:30	2.90	25	0.14	14.88	2.59	0.24
9:30	2.90	10:00	3.10	30	0.20	12.50	2.42	0.31
10:00	3.10	10:30	3.27	30	0.17	14.71	2.24	0.28
10:30	3.27	11:00	3.40	30	0.13	19.23	2.09	0.23
11:00	3.40	11:30	3.49	30	0.09	27.78	1.98	0.17
11:30	3.49	12:00	3.57	30	0.08	31.25	1.89	0.16
12:00	3.57	12:30	3.64	30	0.07	35.71	1.82	0.14
12:30	3.64	1:00	3.68	30	0.04	62.50	1.76	0.08
1:00	3.68	1:30	3.70	30	0.02	125.00	1.73	0.04
1:30	3.70	2:00	3.72	30	0.02	125.00	1.71	0.04
2:00	3.72	2:30	3.74	30	0.02	125.00	1.69	0.04

Test Date:	1/30/2019						Infiltration Test No.:	IT-4
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.42
t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:37	2.35	9:02	2.74	25	0.39	5.34	2.88	0.62
9:02	2.74	9:27	2.90	25	0.16	13.02	2.60	0.28
9:27	2.90	9:57	3.10	30	0.20	12.50	2.42	0.31
9:57	3.10	10:27	3.24	30	0.14	17.86	2.25	0.23
10:27	3.24	10:57	3.38	30	0.14	17.86	2.11	0.25
10:57	3.38	11:27	3.48	30	0.10	25.00	1.99	0.19
11:27	3.48	11:57	3.57	30	0.09	27.78	1.90	0.17
11:57	3.57	12:27	3.64	30	0.07	35.71	1.82	0.14
12:27	3.64	12:57	3.67	30	0.03	83.33	1.77	0.06
12:57	3.67	1:27	3.69	30	0.02	125.00	1.74	0.04
1:27	3.69	1:57	3.72	30	0.03	83.33	1.72	0.06
1:57	3.72	2:27	3.74	30	0.02	125.00	1.69	0.04

Notes:

t_1 = initial time when filling or refilling is completed

d_1 = initial depth to water in hole at t_1

t_2 = final time when incremental water level reading is taken

d_2 = final depth to water in hole at t_2

Δt = change in time between initial and final water level readings

ΔH = change in depth to water or change in height of water column (i.e., $d_2 - d_1$)

H_0 = Initial height of water column

in/hr = inches per hour

Percolation Rate to Infiltration Rate Conversion [1]

$$I_t = \frac{\Delta H \times 60 \times r}{\Delta t(r + 2H_{avg})}$$

I_t = tested infiltration rate, inches/hour

ΔH = change in head over the time interval, inches

Δt = time interval, minutes

r = effective radius of test hole

H_{avg} = average head over the time interval, inches

[1] Based on the "Porchet Method" as presented in:
Riverside County Flood Control, 2011, Design Handbook for Low Impact Development Best Management Practices: dated September.

Test Date:	1/30/2019						Infiltration Test No.:	IT-5
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.42

t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:57	3.10	9:22	3.12	25	0.02	104.17	2.31	0.04
9:22	3.12	9:47	3.22	25	0.10	20.83	2.25	0.20
9:47	3.22	10:17	3.31	30	0.09	27.78	2.16	0.16
10:17	3.31	10:47	3.38	30	0.07	35.71	2.08	0.12
10:47	3.40	11:17	3.45	30	0.05	50.00	2.00	0.09
11:17	3.49	11:47	3.53	30	0.04	62.50	1.91	0.08
11:47	3.56	12:17	3.59	30	0.03	83.33	1.85	0.06
12:17	3.63	12:47	3.66	30	0.03	83.33	1.78	0.06
12:47	3.72	1:17	3.75	30	0.03	83.33	1.69	0.06
1:17	3.80	1:47	3.82	30	0.02	125.00	1.61	0.05
1:47	3.84	2:17	3.85	30	0.01	250.00	1.58	0.02
2:17	3.88	2:47	3.89	30	0.01	250.00	1.54	0.02

Test Date:	1/30/2019						Infiltration Test No.:	IT-6
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.50

t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
8:58	3.59	9:23	3.59	25	0.00	#DIV/0!	1.91	<0.01
9:23	3.59	9:52	3.61	25	0.02	104.17	1.90	0.05
9:52	3.61	10:22	3.63	30	0.02	125.00	1.88	0.04
10:22	3.63	10:52	3.66	30	0.03	83.33	1.86	0.06
10:52	3.66	11:22	3.69	30	0.03	83.33	1.83	0.06
11:22	3.69	11:52	3.71	30	0.02	125.00	1.80	0.04
11:52	3.71	12:22	3.73	30	0.02	125.00	1.78	0.04
12:22	3.73	12:52	3.77	30	0.04	62.50	1.75	0.08
12:52	3.77	1:22	3.81	30	0.04	62.50	1.71	0.09
1:22	3.81	1:52	3.83	30	0.02	125.00	1.68	0.04
1:52	3.83	2:22	3.84	30	0.01	250.00	1.67	0.02
2:22	3.84	2:52	3.86	30	0.02	125.00	1.65	0.04

Notes:

t_1 = initial time when filling or refilling is completed

d_1 = initial depth to water in hole at t_1

t_2 = final time when incremental water level reading is taken

d_2 = final depth to water in hole at t_2

Δt = change in time between initial and final water level readings

ΔH = change in depth to water or change in height of water column (i.e., $d_2 - d_1$)

H_0 = Initial height of water column

in/hr = inches per hour

Percolation Rate to Infiltration Rate Conversion [1]

$$I_t = \frac{\Delta H \times 60 \times r}{\Delta t(r + 2H_{avg})}$$

I_t = tested infiltration rate, inches/hour

ΔH = change in head over the time interval, inches

Δt = time interval, minutes

r = effective radius of test hole

H_{avg} = average head over the time interval, inches

[1] Based on the "Porchet Method" as presented in:
Riverside County Flood Control, 2011, Design Handbook for Low Impact Development Best Management Practices: dated September.

Test Date:	1/30/2019						Infiltration Test No.:	IT-7
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.42
t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
9:14	2.49	9:39	3.01	25	0.52	4.01	2.67	0.88
9:39	3.01	10:03	3.42	25	0.41	5.08	2.21	0.83
10:03	3.42	10:33	3.82	30	0.40	6.25	1.80	0.81
10:33	3.82	11:03	4.21	30	0.39	6.41	1.41	0.99
11:03	3.32	11:33	3.64	30	0.32	7.81	1.94	0.61
11:33	3.64	12:03	3.95	30	0.31	8.06	1.63	0.69
12:03	3.95	12:33	4.21	30	0.26	9.62	1.34	0.69
12:33	4.25	1:03	4.43	30	0.18	13.89	1.08	0.58
1:03	2.39	1:33	2.75	30	0.36	6.94	2.85	0.48
1:33	2.89	2:03	3.20	30	0.31	8.06	2.38	0.49
2:03	3.39	2:33	3.64	30	0.25	10.00	1.91	0.48
2:33	3.77	3:03	3.97	30	0.20	12.50	1.55	0.47

Test Date:	1/30/2019						Infiltration Test No.:	IT-8
Test Hole Diameter, D (inches):			8.0				Excavation Depth (feet):	5.00
Test performed and recorded by:			GLC				Pipe Length (feet):	5.58
t_1	d_1 (feet)	t_2	d_2 (feet)	Δt (min)	ΔH (feet)	Percolation Rate (min/in)	H_{avg} (feet)	Infiltration Rate (in/hr)
9:12	2.74	9:37	3.85	25	1.11	1.88	2.29	2.17
9:37	3.85	10:02	3.95	25	0.10	20.83	1.68	0.26
10:02	3.95	10:32	4.06	30	0.11	22.73	1.58	0.25
10:32	4.06	11:02	4.17	30	0.11	22.73	1.47	0.27
11:02	3.02	11:32	3.23	30	0.21	11.90	2.46	0.32
11:32	3.23	12:02	3.44	30	0.21	11.90	2.25	0.35
12:02	3.44	12:32	3.59	30	0.15	16.67	2.07	0.27
12:32	3.59	1:02	3.73	30	0.14	17.86	1.92	0.27
1:02	3.73	1:32	3.84	30	0.11	22.73	1.80	0.22
1:32	3.84	2:02	3.96	30	0.12	20.83	1.68	0.26
2:02	3.96	2:32	4.08	30	0.12	20.83	1.56	0.28
2:32	4.08	3:02	4.19	30	0.11	22.73	1.45	0.27

Notes:

t_1 = initial time when filling or refilling is completed

d_1 = initial depth to water in hole at t_1

t_2 = final time when incremental water level reading is taken

d_2 = final depth to water in hole at t_2

Δt = change in time between initial and final water level readings

ΔH = change in depth to water or change in height of water column (i.e., d_2 - d_1)

H_0 = Initial height of water column

in/hr = inches per hour

Percolation Rate to Infiltration Rate Conversion [1]

$$I_t = \frac{\Delta H \times 60 \times r}{\Delta t(r + 2H_{avg})}$$

I_t = tested infiltration rate, inches/hour

ΔH = change in head over the time interval, inches

Δt = time interval, minutes

r = effective radius of test hole

H_{avg} = average head over the time interval, inches

[1] Based on the "Porchet Method" as presented in:
Riverside County Flood Control, 2011, Design Handbook for Low Impact Development Best Management Practices: dated September.

Worksheet C.4-1: Categorization of Infiltration Feasibility Condition

Categorization of Infiltration Feasibility Condition		Worksheet C.4-1	
Part 1 - Full Infiltration Feasibility Screening Criteria **Would infiltration of the full design volume be feasible from a physical perspective without any undesirable consequences that cannot be reasonably mitigated?**			
Criteria	Screening Question	**Yes**	**No**
1	**Is the estimated reliable infiltration rate below proposed facility locations greater than 0.5 inches per hour?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.		✓
Provide basis: As presented in the project geotechnical evaluation report (Ninyo & Moore, 2019), in-situ infiltration rates at the site were measured between 0.02 inches per hour and 0.47 inches per hour. Any infiltration system utilizing these results should apply the appropriate factor of safety to determine applicable site infiltration rates prior to design. For this project, a Suitability Assessment Safety Factor of 2.25 should be used. The design safety factor shall be determined by the design engineer. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	**Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.		✓
Provide basis: As discussed in the project geotechnical evaluation report (Ninyo & Moore, 2019), laboratory testing of the subsurface soils indicated the presence the presence of soils with high expansion potential. Infiltration of storm water into expansive soils is not recommended. Additionally, fill slopes up to 90 feet in height are present on the west, east, and north portions of the site. Infiltration within 50 feet of the top of a slope is anticipated to induce seepage on the slope face and increase the risk of slope failures in these areas. As stated in the project geotechnical evaluation report, Ninyo & Moore recommends that the bottom and sides of stormwater control devices be lined with an impermeable liner. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 2 of 4</th></tr>
<tr><th>Criteria</th><th>Screening Question</th><th>Yes</th><th>No</th></tr>
<tr><td>3</td><td>Can infiltration greater than 0.5 inches per hour be allowed without increasing risk of groundwater contamination (shallow water table, storm water pollutants or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>✓</td><td></td></tr>
<tr><td colspan="4">Provide basis:

As discussed in the project geotechnical evaluation report (Ninyo & Moore, 2019), groundwater was not encountered during our subsurface exploration and is anticipated at depths in excess of 60 feet. Based on the measured infiltration rates and the anticipated groundwater depth, infiltration at the site is not likely to have a significant impact on groundwater contamination.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>4</td><td>Can infiltration greater than 0.5 inches per hour be allowed without causing potential water balance issues such as change of seasonality of ephemeral streams or increased discharge of contaminated groundwater to surface waters? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.</td><td>✓</td><td></td></tr>
<tr><td colspan="4">Provide basis:

Based on the measured infiltration rates and the distance between the proposed BMPs and the nearest surface water (Salt Creek), infiltration at the site is not likely to have a significant impact to the water balance of the creek or increased discharge of contaminated groundwater to surface waters.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.</td></tr>
<tr><td>Part 1 Result*</td><td>If all answers to rows 1 - 4 are “Yes” a full infiltration design is potentially feasible. The feasibility screening category is Full Infiltration

If any answer from row 1-4 is “No”, infiltration may be possible to some extent but would not generally be feasible or desirable to achieve a “full infiltration” design. Proceed to Part 2</td><td colspan="2">Proceed to Part 2</td></tr>
</table>

*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by City Engineer to substantiate findings.

<table>
<tr><th colspan="4">Worksheet C.4-1 Page 3 of 4</th></tr>
<tr><td colspan="4"><u>Part 2 – Partial Infiltration vs. No Infiltration Feasibility Screening Criteria</u>

Would infiltration of water in any appreciable amount be physically feasible without any negative consequences that cannot be reasonably mitigated?</td></tr>
<tr><td>Criteria</td><td>Screening Question</td><td>Yes</td><td>No</td></tr>
<tr><td>5</td><td>Do soil and geologic conditions allow for infiltration in any appreciable rate or volume? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2 and Appendix D.</td><td>✓</td><td></td></tr>
<tr><td colspan="4">Provide basis:

As presented in the project geotechnical evaluation report (Ninyo & Moore, 2019), in-situ infiltration rates at the site were measured between 0.02 inches per hour and 0.47 inches per hour. Any infiltration system utilizing these results should apply the appropriate factor of safety to determine applicable site infiltration rates prior to design. For this project, a Suitability Assessment Safety Factor of 2.25 should be used. The design safety factor shall be determined by the design engineer.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
<tr><td>6</td><td>Can Infiltration in any appreciable quantity be allowed without increasing risk of geotechnical hazards (slope stability, groundwater mounding, utilities, or other factors) that cannot be mitigated to an acceptable level? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.2.</td><td></td><td>✓</td></tr>
<tr><td colspan="4">Provide basis:

As discussed in the project geotechnical evaluation report (Ninyo & Moore, 2019), laboratory testing of the subsurface soils indicated the presence the presence of soils with high expansion potential. Infiltration of storm water into expansive soils is not recommended. Additionally, fill slopes up to 90 feet in height are present on the west, east, and north portions of the site. Infiltration within 50 feet of the top of a slope is anticipated to induce seepage on the slope face and increase the risk of slope failures in these areas. As stated in the project geotechnical evaluation report, Ninyo & Moore recommends that the bottom and sides of stormwater control devices be lined with an impermeable liner.

Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.</td></tr>
</table>

Worksheet C.4-1 Page 4 of 4			
Criteria	Screening Question	**Yes**	**No**
7	**Can Infiltration in any appreciable quantity be allowed without posing significant risk for groundwater related concerns (shallow water table, storm water pollutants or other factors)?** The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	✓	
Provide basis: As discussed in the project geotechnical evaluation report (Ninyo & Moore, 2019), groundwater was not encountered during our subsurface exploration and is anticipated at depths in excess of 60 feet. Based on the measured infiltration rates and the anticipated groundwater depth, infiltration at the site is not likely to have a significant impact on groundwater contamination. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
8	**Can infiltration be allowed without violating downstream water rights**? The response to this Screening Question shall be based on a comprehensive evaluation of the factors presented in Appendix C.3.	✓	
Provide basis: Based on the measured infiltration rates and the distance between the proposed BMPs and the nearest surface water (Salt Creek), infiltration at the site is not likely to have a significant impact to the water balance of the creek or increased discharge of contaminated groundwater to surface waters. Summarize findings of studies; provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability and why it was not feasible to mitigate low infiltration rates.			
Part 2 Result*	If all answers from row 1-4 are yes then partial infiltration design is potentially feasible. The feasibility screening category is **Partial Infiltration.** If any answer from row 5-8 is no, then infiltration of any volume is considered to be **infeasible** within the drainage area. The feasibility screening category is **No Infiltration.**	No infiltration	

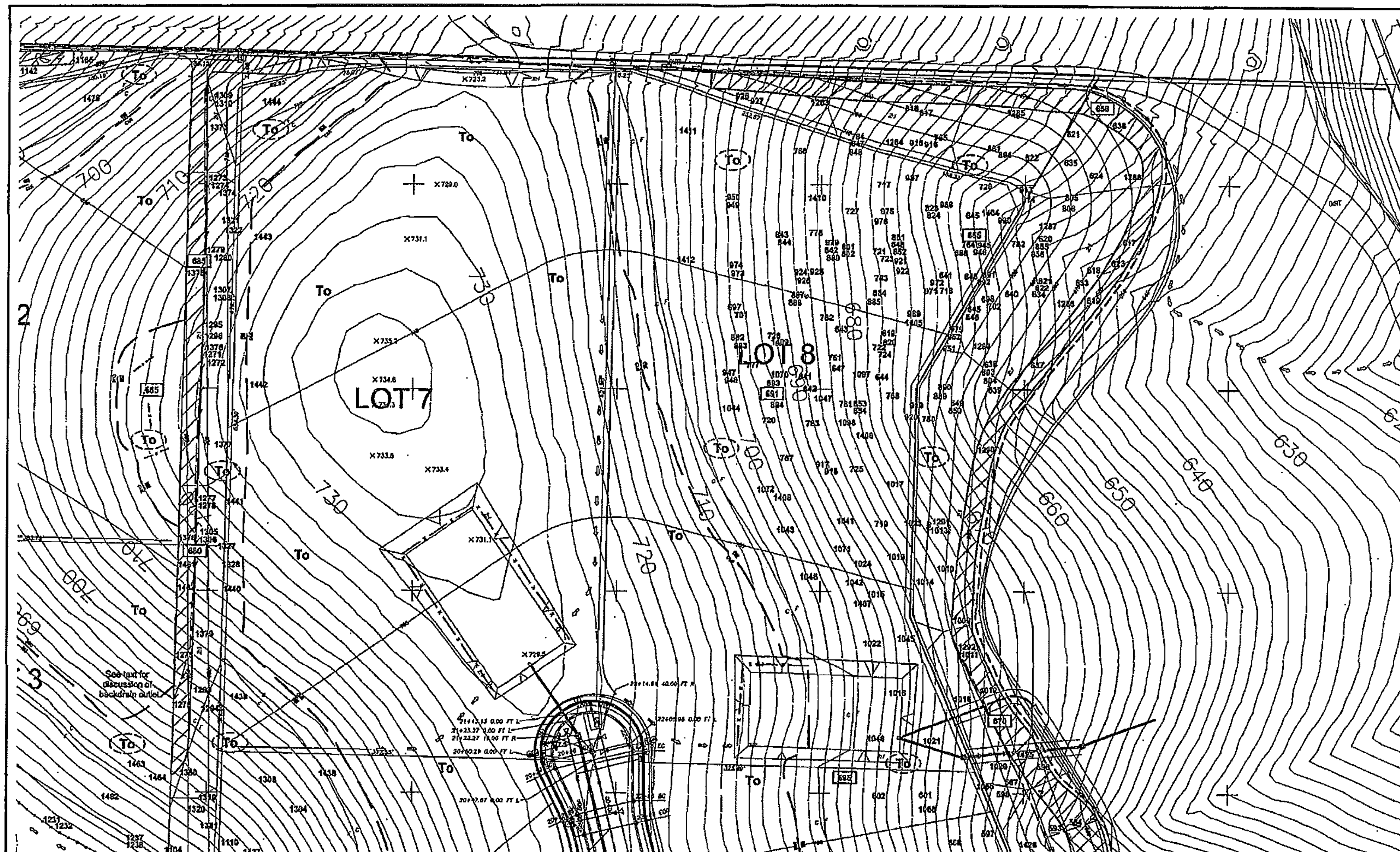
*To be completed using gathered site information and best professional judgment considering the definition of MEP in the MS4 Permit. Additional testing and/or studies may be required by Agency/Jurisdictions to substantiate findings

Worksheet D.5-1: Factor of Safety and Design Infiltration Rate Worksheet

Factor of Safety and Design Infiltration Rate Worksheet			**Worksheet D.5-1**		
Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	2	0.50
		Predominant soil texture	0.25	3	0.75
		Site soil variability	0.25	3	0.75
		Depth to groundwater / impervious layer	0.25	1	0.25
		Suitability Assessment Safety Factor, $S_A = \Sigma p$			2.25
B	Design	Level of pretreatment/ expected sediment loads	0.5		
		Redundancy/resiliency	0.25		
		Compaction during construction	0.25		
		Design Safety Factor, $S_B = \Sigma p$			
Combined Safety Factor, $S_{total} = S_A \times S_B$					
Observed Infiltration Rate, inch/hr, $K_{observed}$ (corrected for test-specific bias)					
Design Infiltration Rate, in/hr, $K_{design} = K_{observed} / S_{total}$					
Supporting Data					
Briefly describe infiltration test and provide reference to test forms: Two infiltration tests were performed at each of the four proposed basin areas for a total of eight tests Tests were performed in boreholes drilled to depths of 5 feet below existing grades. In-situ infiltration rates at the site were measured between 0.02 and 0.47 inches per hour. Test locations and infiltration test results are presented in the project geotechnical evaluation report (Ninyo & Moore, 2019).					

APPENDIX D

Geotechnical Map (Geotechnics, 2003)



SCALE: 1" = 40'

Reference: 0101Base.dwg, provided by Hunsaker & Associates, Inc., 2002.

GEOTECHNICAL MAP

EastLake Business Center II, Phase 2
The EastLake Development Company, LLC

Geotechnics Incorporated

Project No. 0147-028-03
Document No. 02-0258

PLATE 2

SEE PLATE 1 FOR EXPLANATION

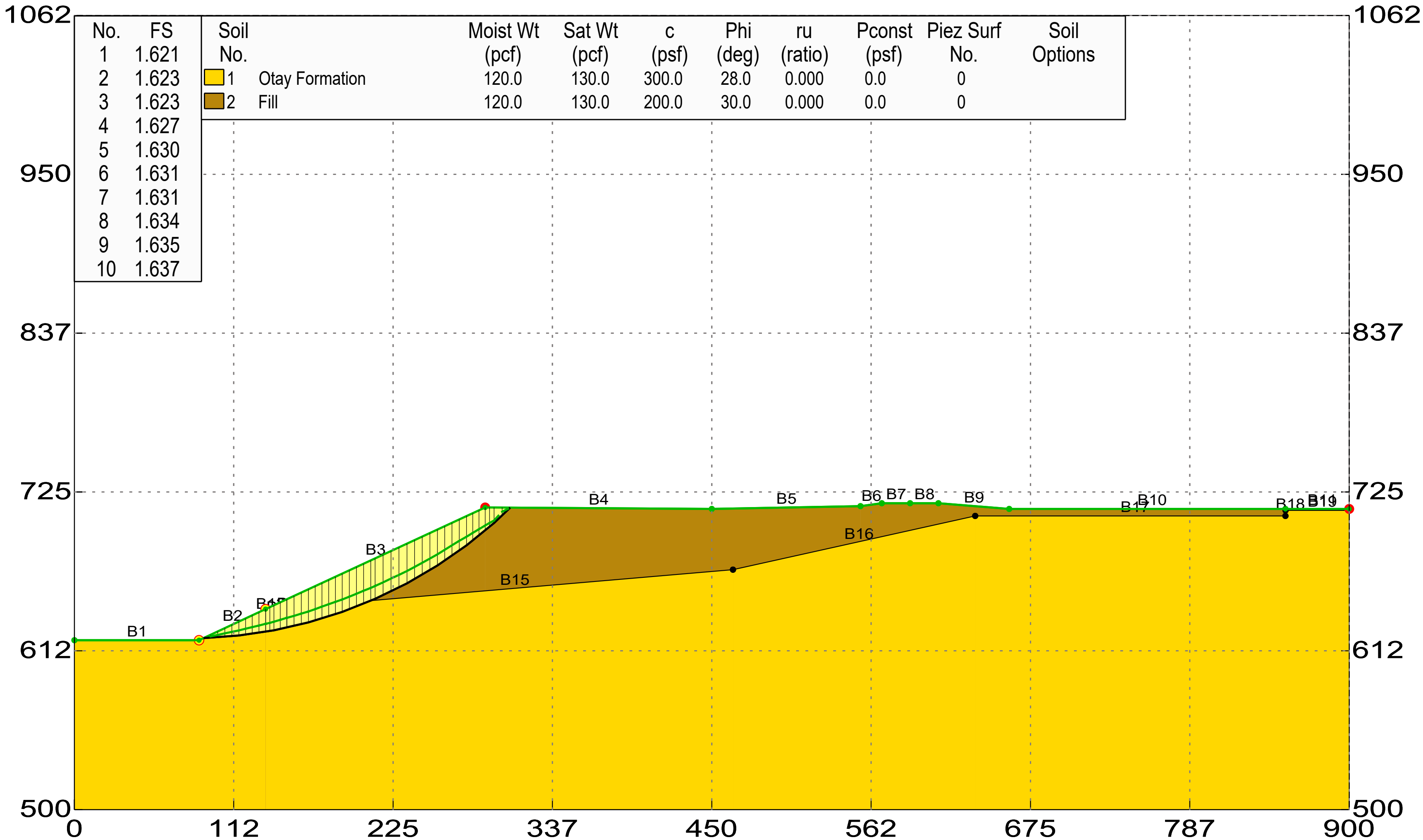
APPENDIX E

Slope Stability Analyses

Acadia Medical Facility, Chula Vista, CA
Section A-A' Circular (Static)

Ninyo & Moore / WRM

\A-A' Circular.gsd



GEOSTASE FS = 1.621

Spencer Method

GEOSTASE
Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-1

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Circular\A-A' Circular.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Circular\A-A' Circular.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section A-A' Circular (Static)

BOUNDARY DATA

11 Surface Boundaries
19 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	620.000	88.000	620.000	1
2	88.000	620.000	135.000	642.000	1
3	135.000	642.000	290.000	714.000	2
4	290.000	714.000	450.000	713.000	2
5	450.000	713.000	555.000	715.000	2
6	555.000	715.000	570.000	717.000	2
7	570.000	717.000	590.000	717.000	2
8	590.000	717.000	610.000	717.000	2
9	610.000	717.000	660.000	713.000	2
10	660.000	713.000	855.000	713.000	2
11	855.000	713.000	900.000	713.000	2
12	135.000	642.000	135.100	637.000	1
13	135.100	637.000	149.900	637.000	1
14	149.900	637.000	150.000	643.000	1
15	150.000	643.000	465.000	670.000	1
16	465.000	670.000	636.000	708.000	1
17	636.000	708.000	855.000	708.000	1
18	855.000	708.000	855.100	712.000	1
19	855.100	712.000	900.000	712.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.1128(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 88.00(ft)
and X = 135.00(ft)

Each Surface Enters within a Range Between X = 290.00(ft)
and X = 900.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 500.00(ft)

Specified Maximum Radius = 5000.000(ft)

25.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 836

Number of Trial Surfaces With Valid FS = 4164

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 16.7 %

Statistical Data On All Valid FS Values:
FS Max = 10.713   FS Min = 1.621   FS Ave = 3.981
Standard Deviation = 2.001   Coefficient of Variation = 50.27 %

Critical Surface is Sequence Number 297 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X = 79.780997(ft) ; Y = 948.776488(ft); and Radius = 327.479219(ft)

Circular Trial Failure Surface Generated With 11 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	91.197	621.496
2	116.130	623.321
3	140.851	627.042
4	165.217	632.638
5	189.085	640.077
6	212.315	649.315
7	234.774	660.298
8	256.329	672.962
9	276.855	687.234
10	296.232	703.030
11	307.652	713.890

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.755823	1.604422	0.268	0.1514010E+00
2	19.9500	1.675343	1.615690	0.363	0.5965232E-01
3	23.1677	1.595856	1.623454	0.428	0.2759794E-01
4	22.1501	1.624274	1.620956	0.407	0.3318397E-02
5	22.2595	1.621384	1.621222	0.409	0.1620673E-03
6	22.2651	1.621235	1.621236	0.409	0.9935420E-06

Factor Of Safety For The Preceding Specified Surface = 1.621
Theta (fx = 1.0) = 22.27 Deg   Lambda = 0.409

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	96.18	622.70	0.426	1266.36	1.000	22.27	479.8
2	101.17	623.80	0.400	2885.50	1.000	22.27	1093.3
3	106.16	624.86	0.384	4857.41	1.000	22.27	1840.4
4	111.14	625.90	0.373	7182.09	1.000	22.27	2721.2
5	116.13	626.91	0.365	9859.54	1.000	22.27	3735.7
6	120.85	628.09	0.358	12024.63	1.000	22.27	4556.1
7	125.56	629.26	0.352	14356.20	1.000	22.27	5439.5
8	130.28	630.43	0.347	16854.25	1.000	22.27	6386.0
9	135.00	631.60	0.343	19518.78	1.000	22.27	7395.5
10	135.10	631.62	0.343	19577.06	1.000	22.27	7417.6
11	137.98	632.34	0.341	21284.78	1.000	22.27	8064.7
12	140.85	633.04	0.340	23053.67	1.000	22.27	8734.9
13	145.38	634.40	0.337	24987.98	1.000	22.27	9467.8
14	149.90	635.76	0.335	26981.48	1.000	22.27	10223.1
15	150.00	635.79	0.335	27026.21	1.000	22.27	10240.0
16	155.07	637.30	0.333	29333.04	1.000	22.27	11114.1
17	160.14	638.82	0.331	31714.27	1.000	22.27	12016.3
18	165.22	640.34	0.329	34169.89	1.000	22.27	12946.7
19	169.99	642.03	0.328	35344.61	1.000	22.27	13391.8
20	174.76	643.72	0.326	36526.05	1.000	22.27	13839.5
21	179.54	645.41	0.325	37714.22	1.000	22.27	14289.7
22	184.31	647.10	0.324	38909.10	1.000	22.27	14742.4
23	189.08	648.80	0.322	40110.70	1.000	22.27	15197.7
24	194.11	650.87	0.321	40048.45	1.000	22.27	15174.1
25	199.14	652.94	0.320	39973.03	1.000	22.27	15145.5
26	204.17	655.02	0.319	39884.43	1.000	22.27	15111.9
27	209.19	657.10	0.318	39782.65	1.000	22.27	15073.4
28	212.32	658.38	0.317	39785.09	1.000	22.27	15074.3
29	217.93	661.02	0.315	38292.68	1.000	22.27	14508.8
30	223.54	663.67	0.313	36811.12	1.000	22.27	13947.5
31	229.16	666.33	0.311	35340.40	1.000	22.27	13390.2
32	234.77	669.00	0.310	33880.52	1.000	22.27	12837.1
33	240.16	671.92	0.309	31184.47	1.000	22.27	11815.6
34	245.55	674.85	0.308	28570.63	1.000	22.27	10825.2
35	250.94	677.81	0.308	26038.98	1.000	22.27	9866.0
36	256.33	680.80	0.309	23589.54	1.000	22.27	8937.9
37	261.46	684.06	0.311	20283.75	1.000	22.27	7685.4
38	266.59	687.29	0.312	17134.97	0.948	21.22	6202.6
39	271.72	690.38	0.308	14169.86	0.830	18.77	4558.8
40	276.85	693.29	0.293	11437.56	0.711	16.24	3198.4
41	281.24	696.02	0.273	8609.65	0.610	14.03	2086.7
42	285.62	698.66	0.243	6047.23	0.509	11.77	1233.6
43	290.00	701.26	0.206	3741.85	0.408	9.48	616.1
44	293.12	703.09	0.192	2348.92	0.336	7.83	319.9
45	296.23	704.77	0.159	1271.03	0.264	6.16	136.5
46	301.94	711.01	0.467	-166.16	0.132	3.09	-9.0
47	307.65	713.89	0.000	0.07	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 47 Slices

Slice	Width	Height	X-Cntr	Y-Cntr-Base	Y-Cntr-Top	Alpha	Beta	Base Length

No.	(ft)	(ft)	(ft)	(ft)	(ft)	(deg)	(deg)	(ft)
1	4.99	0.98	93.69	621.68	622.66	4.19	25.08	5.00
2	4.99	2.95	98.68	622.04	625.00	4.19	25.08	5.00
3	4.99	4.92	103.66	622.41	627.33	4.19	25.08	5.00
4	4.99	6.89	108.65	622.77	629.67	4.19	25.08	5.00
5	4.99	8.86	113.64	623.14	632.00	4.19	25.08	5.00
6	4.72	10.60	118.49	623.68	634.27	8.56	25.08	4.77
7	4.72	12.09	123.21	624.39	636.48	8.56	25.08	4.77
8	4.72	13.59	127.92	625.10	638.69	8.56	25.08	4.77
9	4.72	15.09	132.64	625.81	640.90	8.56	25.08	4.77
10	0.10	15.85	135.05	626.17	642.02	8.56	24.92	0.10
11	2.88	16.32	136.54	626.39	642.71	8.56	24.92	2.91
12	2.88	17.22	139.41	626.83	644.05	8.56	24.92	2.91
13	4.52	18.21	143.11	627.56	645.77	12.94	24.92	4.64
14	4.52	19.27	147.64	628.60	647.87	12.94	24.92	4.64
15	0.10	19.81	149.95	629.13	648.94	12.94	24.92	0.10
16	5.07	20.42	152.54	629.73	650.15	12.94	24.92	5.20
17	5.07	21.61	157.61	630.89	652.50	12.94	24.92	5.20
18	5.07	22.80	162.68	632.06	654.86	12.94	24.92	5.20
19	4.77	23.76	167.60	633.38	657.14	17.31	24.92	5.00
20	4.77	24.49	172.38	634.87	659.36	17.31	24.92	5.00
21	4.77	25.22	177.15	636.36	661.58	17.31	24.92	5.00
22	4.77	25.95	181.92	637.85	663.80	17.31	24.92	5.00
23	4.77	26.68	186.70	639.33	666.01	17.31	24.92	5.00
24	5.03	27.21	191.60	641.08	668.29	21.69	24.92	5.41
25	5.03	27.55	196.63	643.08	670.63	21.69	24.92	5.41
26	5.03	27.89	201.65	645.08	672.96	21.69	24.92	5.41
27	5.03	28.22	206.68	647.07	675.30	21.69	24.92	5.41
28	3.12	28.50	210.75	648.69	677.19	21.69	24.92	3.36
29	5.61	28.53	215.12	650.69	679.22	26.06	24.92	6.25
30	5.61	28.39	220.74	653.43	681.83	26.06	24.92	6.25
31	5.61	28.26	226.35	656.18	684.43	26.06	24.92	6.25
32	5.61	28.12	231.97	658.92	687.04	26.06	24.92	6.25
33	5.39	27.72	237.47	661.88	689.60	30.44	24.92	6.25
34	5.39	27.05	242.86	665.05	692.10	30.44	24.92	6.25
35	5.39	26.39	248.25	668.21	694.60	30.44	24.92	6.25
36	5.39	25.73	253.63	671.38	697.11	30.44	24.92	6.25
37	5.13	24.80	258.89	674.75	699.55	34.81	24.92	6.25
38	5.13	23.62	264.03	678.31	701.93	34.81	24.92	6.25
39	5.13	22.44	269.16	681.88	704.32	34.81	24.92	6.25
40	5.13	21.25	274.29	685.45	706.70	34.81	24.92	6.25
41	4.38	19.89	279.05	689.02	708.91	39.19	24.92	5.65
42	4.38	18.36	283.43	692.59	710.95	39.19	24.92	5.65
43	4.38	16.82	287.81	696.16	712.98	39.19	24.92	5.65
44	3.12	14.77	291.56	699.22	713.99	39.19	-0.36	4.02
45	3.12	12.21	294.67	701.76	713.97	39.19	-0.36	4.02
46	5.71	8.20	299.09	705.74	713.94	43.56	-0.36	7.88
47	5.71	2.73	304.80	711.17	713.91	43.56	-0.36	7.88

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	91.196639	621.496299
2	96.183306	621.861204
3	101.169973	622.226108
4	106.156639	622.591013
5	111.143306	622.955917
6	116.129973	623.320822
7	120.847480	624.030933
8	125.564986	624.741044
9	130.282493	625.451155
10	135.000000	626.161266
11	135.100000	626.176319
12	137.975734	626.609194
13	140.851468	627.042069
14	145.375734	628.081202
15	149.900000	629.120335

16	150.000000	629.143303
17	155.072350	630.308320
18	160.144700	631.473337
19	165.217050	632.638354
20	169.990584	634.126096
21	174.764118	635.613838
22	179.537651	637.101579
23	184.311185	638.589321
24	189.084719	640.077063
25	194.112166	642.076251
26	199.139614	644.075439
27	204.167062	646.074627
28	209.194509	648.073815
29	212.315376	649.314842
30	217.929941	652.060596
31	223.544505	654.806349
32	229.159070	657.552103
33	234.773635	660.297856
34	240.162379	663.463916
35	245.551123	666.629976
36	250.939868	669.796036
37	256.328612	672.962097
38	261.460130	676.530012
39	266.591649	680.097927
40	271.723167	683.665842
41	276.854685	687.233757
42	281.236457	690.805626
43	285.618228	694.377495
44	290.000000	697.949363
45	293.116116	700.489514
46	296.232232	703.029664
47	301.942118	708.459669
48	307.652004	713.889675

Table 3 - Force and Pore Pressure Data On The 47 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	589.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2	1767.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3	2946.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4	4124.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	5302.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	5998.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	6846.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	7694.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	8542.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
10	190.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
11	5632.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
12	5944.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
13	9884.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
14	10461.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
15	237.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
16	12429.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
17	13154.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
18	13879.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
19	13611.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
20	14029.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
21	14447.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
22	14865.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
23	15283.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
24	16418.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
25	16621.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
26	16823.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
27	17026.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
28	10671.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
29	19222.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
30	19129.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00

31	19036.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
32	18944.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
33	17923.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
34	17494.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
35	17065.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
36	16637.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
37	15274.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
38	14545.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
39	13815.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
40	13086.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
41	10459.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
42	9651.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
43	8843.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
44	5523.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
45	4566.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
46	5617.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
47	1872.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 514135.26(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 514135.26(lbs)

TOTAL AREA OF SLIDING MASS = 4284.46(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 47 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	1	300.00	28.00	
2	1	300.00	28.00	
3	1	300.00	28.00	
4	1	300.00	28.00	
5	1	300.00	28.00	
6	1	300.00	28.00	
7	1	300.00	28.00	
8	1	300.00	28.00	
9	1	300.00	28.00	
10	1	300.00	28.00	
11	1	300.00	28.00	
12	1	300.00	28.00	
13	1	300.00	28.00	
14	1	300.00	28.00	
15	1	300.00	28.00	
16	1	300.00	28.00	
17	1	300.00	28.00	
18	1	300.00	28.00	
19	1	300.00	28.00	
20	1	300.00	28.00	
21	1	300.00	28.00	
22	1	300.00	28.00	
23	1	300.00	28.00	
24	1	300.00	28.00	
25	1	300.00	28.00	
26	1	300.00	28.00	
27	1	300.00	28.00	
28	2	200.00	30.00	
29	2	200.00	30.00	
30	2	200.00	30.00	
31	2	200.00	30.00	
32	2	200.00	30.00	
33	2	200.00	30.00	
34	2	200.00	30.00	
35	2	200.00	30.00	
36	2	200.00	30.00	
37	2	200.00	30.00	
38	2	200.00	30.00	
39	2	200.00	30.00	
40	2	200.00	30.00	
41	2	200.00	30.00	
42	2	200.00	30.00	
43	2	200.00	30.00	

44	2	200.00	30.00
45	2	200.00	30.00
46	2	200.00	30.00
47	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 47 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	4.19	93.69	5.00	196.13	118.16	1.660
2	4.19	98.68	5.00	453.08	354.47	1.278
3	4.19	103.66	5.00	710.03	590.78	1.202
4	4.19	108.65	5.00	966.98	827.10	1.169
5	4.19	113.64	5.00	1223.93	1063.41	1.151
6	8.56	118.49	4.77	1350.81	1271.45	1.062
7	8.56	123.21	4.77	1534.86	1451.22	1.058
8	8.56	127.92	4.77	1718.91	1630.99	1.054
9	8.56	132.64	4.77	1902.97	1810.76	1.051
10	8.56	135.05	0.10	1996.93	1902.53	1.050
11	8.56	136.54	2.91	2054.32	1958.59	1.049
12	8.56	139.41	2.91	2165.26	2066.95	1.048
13	12.94	143.11	4.64	2142.94	2184.87	0.981
14	12.94	147.64	4.64	2266.12	2312.37	0.980
15	12.94	149.95	0.10	2329.06	2377.52	0.980
16	12.94	152.54	5.20	2399.47	2450.40	0.979
17	12.94	157.61	5.20	2537.57	2593.34	0.978
18	12.94	162.68	5.20	2675.66	2736.28	0.978
19	17.31	167.60	5.00	2619.36	2851.53	0.919
20	17.31	172.38	5.00	2699.29	2939.09	0.918
21	17.31	177.15	5.00	2779.21	3026.65	0.918
22	17.31	181.92	5.00	2859.13	3114.20	0.918
23	17.31	186.70	5.00	2939.05	3201.76	0.918
24	21.69	191.60	5.41	2819.70	3265.71	0.863
25	21.69	196.63	5.41	2854.50	3306.05	0.863
26	21.69	201.65	5.41	2889.31	3346.38	0.863
27	21.69	206.68	5.41	2924.11	3386.72	0.863
28	21.69	210.75	3.36	2952.53	3419.41	0.863
29	26.06	215.12	6.25	2778.70	3423.67	0.812
30	26.06	220.74	6.25	2765.25	3407.14	0.812
31	26.06	226.35	6.25	2751.80	3390.62	0.812
32	26.06	231.97	6.25	2738.35	3374.09	0.812
33	30.44	237.47	6.25	2533.85	3326.06	0.762
34	30.44	242.86	6.25	2472.85	3246.51	0.762
35	30.44	248.25	6.25	2411.85	3166.96	0.762
36	30.44	253.63	6.25	2350.84	3087.41	0.761
37	34.81	258.89	6.25	2121.44	2976.59	0.713
38	34.81	264.03	6.25	2027.53	2834.48	0.715
39	34.81	269.16	6.25	1943.35	2692.37	0.722
40	34.81	274.29	6.25	1857.12	2550.26	0.728
41	39.19	279.05	5.65	1649.33	2387.02	0.691
42	39.19	283.43	5.65	1535.25	2202.64	0.697
43	39.19	287.81	5.65	1417.99	2018.26	0.703
44	39.19	291.56	4.02	1247.89	1772.50	0.704
45	39.19	294.67	4.02	1028.54	1465.34	0.702
46	43.56	299.09	7.88	636.99	983.82	0.647
47	43.56	304.80	7.88	157.34	327.94	0.480

TABLE 5A - Total Base Force Data on the 47 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr	Base Leng.	Total Normal Force	Total Vert. Force	Total Normal/Vert.

*		(ft)	(ft)	(lbs)	(lbs)	Force Ratio
1	4.19	93.69	5.00	980.65	589.21	1.664
2	4.19	98.68	5.00	2265.40	1767.63	1.282
3	4.19	103.66	5.00	3550.16	2946.04	1.205
4	4.19	108.65	5.00	4834.91	4124.46	1.172
5	4.19	113.64	5.00	6119.67	5302.88	1.154
6	8.56	118.49	4.77	6444.22	5998.09	1.074
7	8.56	123.21	4.77	7322.28	6846.15	1.070
8	8.56	127.92	4.77	8200.34	7694.22	1.066
9	8.56	132.64	4.77	9078.41	8542.29	1.063
10	8.56	135.05	0.10	201.94	190.25	1.061
11	8.56	136.54	2.91	5974.24	5632.39	1.061
12	8.56	139.41	2.91	6296.86	5943.99	1.059
13	12.94	143.11	4.64	9947.68	9884.94	1.006
14	12.94	147.64	4.64	10519.46	10461.76	1.006
15	12.94	149.95	0.10	238.97	237.75	1.005
16	12.94	152.54	5.20	12487.86	12429.30	1.005
17	12.94	157.61	5.20	13206.57	13154.35	1.004
18	12.94	162.68	5.20	13925.28	13879.39	1.003
19	17.31	167.60	5.00	13096.82	13611.89	0.962
20	17.31	172.38	5.00	13496.43	14029.84	0.962
21	17.31	177.15	5.00	13896.03	14447.80	0.962
22	17.31	181.92	5.00	14295.64	14865.76	0.962
23	17.31	186.70	5.00	14695.25	15283.71	0.961
24	21.69	191.60	5.41	15255.57	16418.18	0.929
25	21.69	196.63	5.41	15443.88	16620.97	0.929
26	21.69	201.65	5.41	15632.18	16823.76	0.929
27	21.69	206.68	5.41	15820.49	17026.55	0.929
28	21.69	210.75	3.36	9916.28	10671.52	0.929
29	26.06	215.12	6.25	17366.85	19222.39	0.903
30	26.06	220.74	6.25	17282.79	19129.62	0.903
31	26.06	226.35	6.25	17198.73	19036.85	0.903
32	26.06	231.97	6.25	17114.67	18944.07	0.903
33	30.44	237.47	6.25	15836.59	17923.28	0.884
34	30.44	242.86	6.25	15455.32	17494.61	0.883
35	30.44	248.25	6.25	15074.04	17065.95	0.883
36	30.44	253.63	6.25	14692.76	16637.29	0.883
37	34.81	258.89	6.25	13259.01	15274.40	0.868
38	34.81	264.03	6.25	12672.07	14545.17	0.871
39	34.81	269.16	6.25	12145.96	13815.93	0.879
40	34.81	274.29	6.25	11606.99	13086.70	0.887
41	39.19	279.05	5.65	9323.95	10459.36	0.891
42	39.19	283.43	5.65	8679.02	9651.47	0.899
43	39.19	287.81	5.65	8016.14	8843.57	0.906
44	39.19	291.56	4.02	5016.86	5523.31	0.908
45	39.19	294.67	4.02	4134.99	4566.18	0.906
46	43.56	299.09	7.88	5019.18	5617.53	0.893
47	43.56	304.80	7.88	1239.78	1872.51	0.662

TABLE 6 - Effective and Base Shear Stress Data on the 47 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	4.19	93.69	5.00	196.13	404.28	249.37
2	4.19	98.68	5.00	453.08	540.91	333.64
3	4.19	103.66	5.00	710.03	677.53	417.91
4	4.19	108.65	5.00	966.98	814.15	502.18
5	4.19	113.64	5.00	1223.93	950.78	586.45
6	8.56	118.49	4.77	1350.81	1018.24	628.06
7	8.56	123.21	4.77	1534.86	1116.10	688.43
8	8.56	127.92	4.77	1718.91	1213.96	748.79
9	8.56	132.64	4.77	1902.97	1311.83	809.15
10	8.56	135.05	0.10	1996.93	1361.78	839.97
11	8.56	136.54	2.91	2054.32	1392.30	858.79
12	8.56	139.41	2.91	2165.26	1451.29	895.17
13	12.94	143.11	4.64	2142.94	1439.42	887.86
14	12.94	147.64	4.64	2266.12	1504.91	928.25
15	12.94	149.95	0.10	2329.06	1538.38	948.90

16	12.94	152.54	5.20	2399.47	1575.82	971.99
17	12.94	157.61	5.20	2537.57	1649.25	1017.28
18	12.94	162.68	5.20	2675.66	1722.68	1062.57
19	17.31	167.60	5.00	2619.36	1692.74	1044.11
20	17.31	172.38	5.00	2699.29	1735.24	1070.32
21	17.31	177.15	5.00	2779.21	1777.73	1096.53
22	17.31	181.92	5.00	2859.13	1820.23	1122.74
23	17.31	186.70	5.00	2939.05	1862.72	1148.95
24	21.69	191.60	5.41	2819.70	1799.26	1109.81
25	21.69	196.63	5.41	2854.50	1817.77	1121.22
26	21.69	201.65	5.41	2889.31	1836.27	1132.64
27	21.69	206.68	5.41	2924.11	1854.78	1144.05
28	21.69	210.75	3.36	2952.53	1904.65	1174.81
29	26.06	215.12	6.25	2778.70	1804.28	1112.90
30	26.06	220.74	6.25	2765.25	1796.52	1108.12
31	26.06	226.35	6.25	2751.80	1788.75	1103.33
32	26.06	231.97	6.25	2738.35	1780.99	1098.54
33	30.44	237.47	6.25	2533.85	1662.92	1025.71
34	30.44	242.86	6.25	2472.85	1627.70	1003.99
35	30.44	248.25	6.25	2411.85	1592.48	982.26
36	30.44	253.63	6.25	2350.84	1557.26	960.54
37	34.81	258.89	6.25	2121.44	1424.81	878.85
38	34.81	264.03	6.25	2027.53	1370.60	845.40
39	34.81	269.16	6.25	1943.35	1322.00	815.43
40	34.81	274.29	6.25	1857.12	1272.21	784.71
41	39.19	279.05	5.65	1649.33	1152.24	710.72
42	39.19	283.43	5.65	1535.25	1086.38	670.09
43	39.19	287.81	5.65	1417.99	1018.68	628.34
44	39.19	291.56	4.02	1247.89	920.47	567.76
45	39.19	294.67	4.02	1028.54	793.83	489.64
46	43.56	299.09	7.88	636.99	567.76	350.20
47	43.56	304.80	7.88	157.34	290.84	179.39

TABLE 6A - Effective and Base Shear Force Data on the 47 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	4.19	93.69	5.00	980.65	2021.42	1246.84
2	4.19	98.68	5.00	2265.40	2704.53	1668.19
3	4.19	103.66	5.00	3550.16	3387.65	2089.55
4	4.19	108.65	5.00	4834.91	4070.77	2510.90
5	4.19	113.64	5.00	6119.67	4753.88	2932.26
6	8.56	118.49	4.77	6444.22	4857.65	2996.26
7	8.56	123.21	4.77	7322.28	5324.52	3284.24
8	8.56	127.92	4.77	8200.34	5791.40	3572.21
9	8.56	132.64	4.77	9078.41	6258.27	3860.19
10	8.56	135.05	0.10	201.94	137.71	84.94
11	8.56	136.54	2.91	5974.24	4049.00	2497.48
12	8.56	139.41	2.91	6296.86	4220.54	2603.28
13	12.94	143.11	4.64	9947.68	6681.89	4121.48
14	12.94	147.64	4.64	10519.46	6985.91	4309.01
15	12.94	149.95	0.10	238.97	157.84	97.36
16	12.94	152.54	5.20	12487.86	8201.24	5058.64
17	12.94	157.61	5.20	13206.57	8583.38	5294.35
18	12.94	162.68	5.20	13925.28	8965.53	5530.06
19	17.31	167.60	5.00	13096.82	8463.70	5220.53
20	17.31	172.38	5.00	13496.43	8676.18	5351.58
21	17.31	177.15	5.00	13896.03	8888.65	5482.64
22	17.31	181.92	5.00	14295.64	9101.13	5613.70
23	17.31	186.70	5.00	14695.25	9313.60	5744.75
24	21.69	191.60	5.41	15255.57	9734.64	6004.46
25	21.69	196.63	5.41	15443.88	9834.76	6066.21
26	21.69	201.65	5.41	15632.18	9934.89	6127.97
27	21.69	206.68	5.41	15820.49	10035.01	6189.73
28	21.69	210.75	3.36	9916.28	6396.88	3945.68
29	26.06	215.12	6.25	17366.85	11276.75	6955.65
30	26.06	220.74	6.25	17282.79	11228.22	6925.72
31	26.06	226.35	6.25	17198.73	11179.69	6895.78
32	26.06	231.97	6.25	17114.67	11131.16	6865.85

33	30.44	237.47	6.25	15836.59	10393.26	6410.70
34	30.44	242.86	6.25	15455.32	10173.13	6274.92
35	30.44	248.25	6.25	15074.04	9953.00	6139.15
36	30.44	253.63	6.25	14692.76	9732.87	6003.37
37	34.81	258.89	6.25	13259.01	8905.09	5492.78
38	34.81	264.03	6.25	12672.07	8566.22	5283.76
39	34.81	269.16	6.25	12145.96	8262.47	5096.41
40	34.81	274.29	6.25	11606.99	7951.30	4904.47
41	39.19	279.05	5.65	9323.95	6513.81	4017.81
42	39.19	283.43	5.65	8679.02	6141.47	3788.14
43	39.19	287.81	5.65	8016.14	5758.75	3552.08
44	39.19	291.56	4.02	5016.86	3700.54	2282.54
45	39.19	294.67	4.02	4134.99	3191.39	1968.49
46	43.56	299.09	7.88	5019.18	4473.74	2759.46
47	43.56	304.80	7.88	1239.78	2291.70	1413.55

Average Effective Normal Stress = 2011.4672(psf)
Average Available Shear Strength = 1363.8408(psf)
Total Length of Failure Surface = 240.7592(ft)

SUM OF MOMENTS = -0.148934E+00 (ft/lbs);Imbalance (Fraction of Total Weight) = -
0.2896781E-06
SUM OF FORCES = -.409033E-04 (lbs);Imbalance (Fraction of Total Weight) = -0.7955748E-
10

Sum of Available Shear Forces = 328357.16(lbs)

Sum of Mobilized Shear Forces = 202535.15(lbs)

FS Balance Check: FS = 1.621235

**** END OF GEOSTASE OUTPUT ****

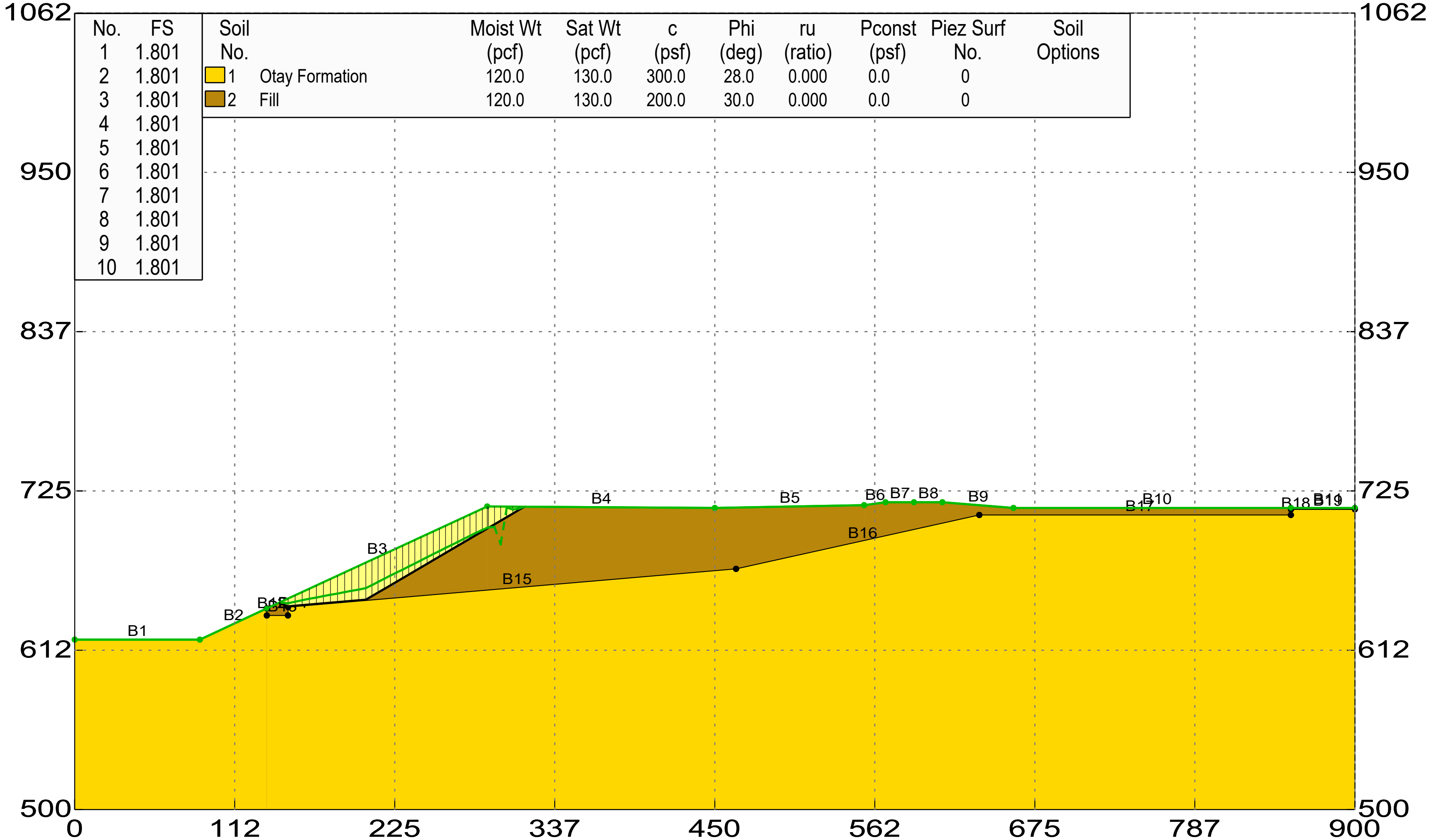
Acadia Medical Facility, Chula Vista, CA
Section A-A' Block (Static)

Ninyo & Moore / WRM

\A-A' Block.gsd

No.	FS
1	1.801
2	1.801
3	1.801
4	1.801
5	1.801
6	1.801
7	1.801
8	1.801
9	1.801
10	1.801

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	



GEOSTASE FS = 1.801

Spencer Method

GEOSTASE
Slope Stability
Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-2

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Block\A-A' Block.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Block\A-A' Block.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section A-A' Block (Static)

BOUNDARY DATA

11 Surface Boundaries
19 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	620.000	88.000	620.000	1
2	88.000	620.000	135.000	642.000	1
3	135.000	642.000	290.000	714.000	2
4	290.000	714.000	450.000	713.000	2
5	450.000	713.000	555.000	715.000	2
6	555.000	715.000	570.000	717.000	2
7	570.000	717.000	590.000	717.000	2
8	590.000	717.000	610.000	717.000	2
9	610.000	717.000	660.000	713.000	2
10	660.000	713.000	855.000	713.000	2
11	855.000	713.000	900.000	713.000	2
12	135.000	642.000	135.100	637.000	1
13	135.100	637.000	149.900	637.000	1
14	149.900	637.000	150.000	643.000	1
15	150.000	643.000	465.000	670.000	1
16	465.000	670.000	636.000	708.000	1
17	636.000	708.000	855.000	708.000	1
18	855.000	708.000	855.100	712.000	1
19	855.100	712.000	900.000	712.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

A Non-Circular Zone Search Has Been Selected For Analysis
Using Random Generation Within Specified Zones.

2 Zones Defined For Generation Of Non-Circular Surfaces

5000 Trial Surfaces Have Been Generated.

Length Of Line Segments For Active And Passive Portions Of
Non-Circular Zone Search = 5.00(ft)

Zone No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Height (ft)
1	150.00	643.50	150.00	643.50	0.10
2	150.10	643.50	465.00	670.50	0.10

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 483

Number of Trial Surfaces With Valid FS = 4517

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 9.7 %

Statistical Data On All Valid FS Values:
FS Max = 9.030 FS Min = 1.801 FS Ave = 3.130
Standard Deviation = 0.934 Coefficient of Variation = 29.84 %

Critical Surface is Sequence Number 447 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.923519	1.765767	0.268	0.1577516E+00
2	19.9500	1.838297	1.792615	0.363	0.4568249E-01
3	21.9674	1.778809	1.804638	0.403	0.2582887E-01
4	21.2389	1.802694	1.800213	0.389	0.2481708E-02
5	21.3029	1.800716	1.800597	0.390	0.1183768E-03
6	21.3061	1.800616	1.800617	0.390	0.5640570E-06

Factor Of Safety For The Preceding Specified Surface = 1.801
Theta (fx = 1.0) = 21.31 Deg   Lambda = 0.390

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	145.33	645.99	0.461	667.03	1.000	21.31	242.4
2	150.00	645.72	0.404	4139.63	1.000	21.31	1504.1
3	154.97	646.81	0.391	5807.66	1.000	21.31	2110.2
4	159.94	647.83	0.376	7779.92	1.000	21.31	2826.8
5	164.91	648.82	0.362	10056.41	1.000	21.31	3654.0
6	169.88	649.78	0.351	12637.12	1.000	21.31	4591.7
7	174.85	650.73	0.342	15522.06	1.000	21.31	5639.9
8	179.82	651.67	0.335	18711.23	1.000	21.31	6798.7
9	184.79	652.60	0.328	22204.63	1.000	21.31	8068.0
10	189.76	653.54	0.323	26002.26	1.000	21.31	9447.9
11	194.73	654.47	0.319	30104.11	1.000	21.31	10938.3
12	199.70	655.40	0.315	34510.19	1.000	21.31	12539.3
13	204.67	656.33	0.311	39220.49	1.000	21.31	14250.8
14	208.97	658.52	0.305	36768.22	1.000	21.31	13359.7
15	213.28	660.71	0.297	34377.90	1.000	21.31	12491.2

16	217.59	662.91	0.290	32049.53	1.000	21.31	11645.2
17	221.90	665.09	0.282	29783.12	1.000	21.31	10821.7
18	226.20	667.28	0.273	27578.67	1.000	21.31	10020.7
19	230.51	669.47	0.264	25436.18	1.000	21.31	9242.2
20	234.82	671.65	0.255	23355.64	1.000	21.31	8486.3
21	239.13	673.83	0.244	21337.05	1.000	21.31	7752.8
22	243.43	676.00	0.234	19380.43	1.000	21.31	7041.9
23	247.74	678.18	0.222	17485.76	1.000	21.31	6353.4
24	252.05	680.35	0.210	15653.04	1.000	21.31	5687.5
25	256.36	682.52	0.197	13882.28	1.000	21.31	5044.1
26	260.66	684.68	0.183	12173.48	1.000	21.31	4423.2
27	264.97	686.84	0.168	10526.64	1.000	21.31	3824.9
28	269.28	689.00	0.152	8941.75	1.000	21.31	3249.0
29	273.59	691.16	0.135	7418.82	1.000	21.31	2695.6
30	277.89	693.32	0.117	5957.84	1.000	21.31	2164.8
31	282.20	695.46	0.097	4554.98	0.983	20.98	1630.8
32	286.51	697.47	0.067	3202.00	0.858	18.51	1016.3
33	290.00	698.86	0.026	2164.02	0.757	16.45	612.7
34	290.82	699.13	0.013	1932.12	0.733	15.96	531.2
35	295.13	699.72	0.000-	888.90	0.608	13.35	205.2
36	299.43	687.46	0.000-	141.05	0.483	10.67	26.1
37	303.74	713.31	0.918	-315.71	0.358	7.96	-43.7
38	308.05	711.79	0.563	-482.00	0.233	5.20	-43.7
39	312.36	712.66	0.459	-354.48	0.108	2.42	-15.0
40	316.09	713.84	0.000	0.02	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 40 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	1.58	0.75	144.54	645.68	646.43	-25.80	24.92	1.75
2	4.67	3.47	147.66	644.41	647.88	-20.80	24.92	5.00
3	4.97	6.39	152.48	643.74	650.12	4.86	24.92	4.99
4	4.97	8.27	157.45	644.16	652.43	4.86	24.92	4.99
5	4.97	10.16	162.42	644.58	654.74	4.86	24.92	4.99
6	4.97	12.04	167.39	645.00	657.05	4.86	24.92	4.99
7	4.97	13.93	172.36	645.42	659.36	4.86	24.92	4.99
8	4.97	15.82	177.33	645.85	661.66	4.86	24.92	4.99
9	4.97	17.70	182.30	646.27	663.97	4.86	24.92	4.99
10	4.97	19.59	187.27	646.69	666.28	4.86	24.92	4.99
11	4.97	21.48	192.24	647.11	668.59	4.86	24.92	4.99
12	4.97	23.36	197.21	647.54	670.90	4.86	24.92	4.99
13	4.97	25.25	202.18	647.96	673.21	4.86	24.92	4.99
14	4.31	25.92	206.82	649.44	675.36	30.51	24.92	5.00
15	4.31	25.39	211.13	651.98	677.36	30.51	24.92	5.00
16	4.31	24.85	215.43	654.52	679.36	30.51	24.92	5.00
17	4.31	24.31	219.74	657.05	681.36	30.51	24.92	5.00
18	4.31	23.77	224.05	659.59	683.37	30.51	24.92	5.00
19	4.31	23.23	228.36	662.13	685.37	30.51	24.92	5.00
20	4.31	22.70	232.66	664.67	687.37	30.51	24.92	5.00
21	4.31	22.16	236.97	667.21	689.37	30.51	24.92	5.00
22	4.31	21.62	241.28	669.75	691.37	30.51	24.92	5.00
23	4.31	21.08	245.59	672.29	693.37	30.51	24.92	5.00
24	4.31	20.55	249.90	674.82	695.37	30.51	24.92	5.00
25	4.31	20.01	254.20	677.36	697.37	30.51	24.92	5.00
26	4.31	19.47	258.51	679.90	699.37	30.51	24.92	5.00
27	4.31	18.93	262.82	682.44	701.37	30.51	24.92	5.00
28	4.31	18.40	267.13	684.98	703.37	30.51	24.92	5.00
29	4.31	17.86	271.43	687.52	705.38	30.51	24.92	5.00
30	4.31	17.32	275.74	690.06	707.38	30.51	24.92	5.00
31	4.31	16.78	280.05	692.60	709.38	30.51	24.92	5.00
32	4.31	16.24	284.36	695.13	711.38	30.51	24.92	5.00
33	3.49	15.76	288.25	697.43	713.19	30.51	24.92	4.05
34	0.82	15.30	290.41	698.70	714.00	30.51	-0.36	0.95
35	4.31	13.77	292.97	700.21	713.98	30.51	-0.36	5.00

36	4.31	11.20	297.28	702.75	713.95	30.51	-0.36	5.00
37	4.31	8.64	301.59	705.29	713.93	30.51	-0.36	5.00
38	4.31	6.07	305.89	707.83	713.90	30.51	-0.36	5.00
39	4.31	3.51	310.20	710.37	713.87	30.51	-0.36	5.00
40	3.74	1.11	314.22	712.74	713.85	30.51	-0.36	4.34

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	143.747378	646.063298
2	145.325863	645.300238
3	150.000000	643.524725
4	154.969591	643.946952
5	159.939181	644.369179
6	164.908772	644.791406
7	169.878362	645.213632
8	174.847953	645.635859
9	179.817544	646.058086
10	184.787134	646.480313
11	189.756725	646.902540
12	194.726316	647.324766
13	199.695906	647.746993
14	204.665497	648.169220
15	208.973097	650.707840
16	213.280697	653.246460
17	217.588297	655.785080
18	221.895896	658.323700
19	226.203496	660.862320
20	230.511096	663.400940
21	234.818696	665.939560
22	239.126296	668.478180
23	243.433896	671.016800
24	247.741496	673.555421
25	252.049096	676.094041
26	256.356696	678.632661
27	260.664295	681.171281
28	264.971895	683.709901
29	269.279495	686.248521
30	273.587095	688.787141
31	277.894695	691.325761
32	282.202295	693.864381
33	286.509895	696.403001
34	290.000000	698.459843
35	290.817495	698.941621
36	295.125095	701.480241
37	299.432694	704.018861
38	303.740294	706.557481
39	308.047894	709.096101
40	312.355494	711.634721
41	316.092250	713.836923

Table 3 - Force and Pore Pressure Data On The 40 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	141.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2	1946.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3	3808.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4	4933.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	6058.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	7182.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	8307.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	9432.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	10557.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00

10	11682.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
11	12807.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
12	13932.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
13	15056.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
14	13399.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
15	13121.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
16	12843.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
17	12566.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
18	12288.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
19	12010.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
20	11732.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
21	11454.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
22	11176.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
23	10898.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
24	10620.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
25	10342.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
26	10064.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
27	9786.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
28	9508.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
29	9230.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
30	8952.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
31	8675.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
32	8397.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
33	6599.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
34	1500.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
35	7118.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
36	5792.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
37	4465.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
38	3139.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
39	1813.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
40	499.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 343844.72(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 343844.72(lbs)

TOTAL AREA OF SLIDING MASS = 2865.37(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 40 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	2	200.00	30.00	
2	2	200.00	30.00	
3	2	200.00	30.00	
4	2	200.00	30.00	
5	2	200.00	30.00	
6	2	200.00	30.00	
7	2	200.00	30.00	
8	2	200.00	30.00	
9	2	200.00	30.00	
10	2	200.00	30.00	
11	2	200.00	30.00	
12	2	200.00	30.00	
13	2	200.00	30.00	
14	2	200.00	30.00	
15	2	200.00	30.00	
16	2	200.00	30.00	
17	2	200.00	30.00	
18	2	200.00	30.00	
19	2	200.00	30.00	
20	2	200.00	30.00	
21	2	200.00	30.00	
22	2	200.00	30.00	
23	2	200.00	30.00	
24	2	200.00	30.00	
25	2	200.00	30.00	
26	2	200.00	30.00	
27	2	200.00	30.00	
28	2	200.00	30.00	
29	2	200.00	30.00	

30	2	200.00	30.00
31	2	200.00	30.00
32	2	200.00	30.00
33	2	200.00	30.00
34	2	200.00	30.00
35	2	200.00	30.00
36	2	200.00	30.00
37	2	200.00	30.00
38	2	200.00	30.00
39	2	200.00	30.00
40	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 40 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-25.80	144.54	1.75	351.50	89.78	3.915
2	-20.80	147.66	5.00	829.53	416.36	1.992
3	4.86	152.48	4.99	855.55	766.34	1.116
4	4.86	157.45	4.99	1097.55	992.68	1.106
5	4.86	162.42	4.99	1339.55	1219.03	1.099
6	4.86	167.39	4.99	1581.54	1445.38	1.094
7	4.86	172.36	4.99	1823.54	1671.73	1.091
8	4.86	177.33	4.99	2065.54	1898.07	1.088
9	4.86	182.30	4.99	2307.54	2124.42	1.086
10	4.86	187.27	4.99	2549.54	2350.77	1.085
11	4.86	192.24	4.99	2791.54	2577.11	1.083
12	4.86	197.21	4.99	3033.53	2803.46	1.082
13	4.86	202.18	4.99	3275.53	3029.81	1.081
14	30.51	206.82	5.00	2387.30	3110.72	0.767
15	30.51	211.13	5.00	2337.43	3046.20	0.767
16	30.51	215.43	5.00	2287.56	2981.68	0.767
17	30.51	219.74	5.00	2237.69	2917.16	0.767
18	30.51	224.05	5.00	2187.81	2852.64	0.767
19	30.51	228.36	5.00	2137.94	2788.12	0.767
20	30.51	232.66	5.00	2088.07	2723.60	0.767
21	30.51	236.97	5.00	2038.20	2659.08	0.767
22	30.51	241.28	5.00	1988.33	2594.56	0.766
23	30.51	245.59	5.00	1938.46	2530.04	0.766
24	30.51	249.90	5.00	1888.59	2465.52	0.766
25	30.51	254.20	5.00	1838.72	2401.00	0.766
26	30.51	258.51	5.00	1788.85	2336.48	0.766
27	30.51	262.82	5.00	1738.98	2271.96	0.765
28	30.51	267.13	5.00	1689.11	2207.44	0.765
29	30.51	271.43	5.00	1639.24	2142.92	0.765
30	30.51	275.74	5.00	1589.37	2078.40	0.765
31	30.51	280.05	5.00	1541.03	2013.88	0.765
32	30.51	284.36	5.00	1502.13	1949.35	0.771
33	30.51	288.25	4.05	1465.19	1890.96	0.775
34	30.51	290.41	0.95	1423.53	1835.61	0.776
35	30.51	292.97	5.00	1287.89	1652.46	0.779
36	30.51	297.28	5.00	1048.77	1344.59	0.780
37	30.51	301.59	5.00	804.55	1036.73	0.776
38	30.51	305.89	5.00	555.05	728.86	0.762
39	30.51	310.20	5.00	300.12	421.00	0.713
40	30.51	314.22	4.34	57.25	133.53	0.429

TABLE 5A - Total Base Force Data on the 40 Slices

Slice No.	Alpha (deg)	X-Coord. Slice Cntr	Base Leng.	Total Normal Force	Total Vert. Force	Total Normal/Vert.

*		(ft)	(ft)	(lbs)	(lbs)	Force Ratio
1	-25.80	144.54	1.75	616.26	141.71	4.349
2	-20.80	147.66	5.00	4147.66	1946.12	2.131
3	4.86	152.48	4.99	4267.05	3808.37	1.120
4	4.86	157.45	4.99	5474.01	4933.23	1.110
5	4.86	162.42	4.99	6680.98	6058.08	1.103
6	4.86	167.39	4.99	7887.94	7182.94	1.098
7	4.86	172.36	4.99	9094.91	8307.79	1.095
8	4.86	177.33	4.99	10301.87	9432.64	1.092
9	4.86	182.30	4.99	11508.84	10557.50	1.090
10	4.86	187.27	4.99	12715.80	11682.35	1.088
11	4.86	192.24	4.99	13922.77	12807.21	1.087
12	4.86	197.21	4.99	15129.73	13932.06	1.086
13	4.86	202.18	4.99	16336.70	15056.91	1.085
14	30.51	206.82	5.00	11936.49	13399.75	0.891
15	30.51	211.13	5.00	11687.14	13121.82	0.891
16	30.51	215.43	5.00	11437.78	12843.89	0.891
17	30.51	219.74	5.00	11188.43	12565.97	0.890
18	30.51	224.05	5.00	10939.08	12288.04	0.890
19	30.51	228.36	5.00	10689.72	12010.11	0.890
20	30.51	232.66	5.00	10440.37	11732.18	0.890
21	30.51	236.97	5.00	10191.02	11454.25	0.890
22	30.51	241.28	5.00	9941.66	11176.32	0.890
23	30.51	245.59	5.00	9692.31	10898.40	0.889
24	30.51	249.90	5.00	9442.96	10620.47	0.889
25	30.51	254.20	5.00	9193.60	10342.54	0.889
26	30.51	258.51	5.00	8944.25	10064.61	0.889
27	30.51	262.82	5.00	8694.90	9786.68	0.888
28	30.51	267.13	5.00	8445.55	9508.75	0.888
29	30.51	271.43	5.00	8196.19	9230.83	0.888
30	30.51	275.74	5.00	7946.84	8952.90	0.888
31	30.51	280.05	5.00	7705.16	8674.97	0.888
32	30.51	284.36	5.00	7510.64	8397.04	0.894
33	30.51	288.25	4.05	5935.64	6599.64	0.899
34	30.51	290.41	0.95	1350.78	1500.60	0.900
35	30.51	292.97	5.00	6439.45	7118.14	0.905
36	30.51	297.28	5.00	5243.87	5791.98	0.905
37	30.51	301.59	5.00	4022.75	4465.82	0.901
38	30.51	305.89	5.00	2775.27	3139.66	0.884
39	30.51	310.20	5.00	1500.58	1813.50	0.827
40	30.51	314.22	4.34	248.34	498.98	0.498

TABLE 6 - Effective and Base Shear Stress Data on the 40 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-25.80	144.54	1.75	351.50	402.94	223.78
2	-20.80	147.66	5.00	829.53	678.93	377.05
3	4.86	152.48	4.99	855.55	693.95	385.40
4	4.86	157.45	4.99	1097.55	833.67	462.99
5	4.86	162.42	4.99	1339.55	973.39	540.59
6	4.86	167.39	4.99	1581.54	1113.10	618.18
7	4.86	172.36	4.99	1823.54	1252.82	695.77
8	4.86	177.33	4.99	2065.54	1392.54	773.37
9	4.86	182.30	4.99	2307.54	1532.26	850.96
10	4.86	187.27	4.99	2549.54	1671.98	928.56
11	4.86	192.24	4.99	2791.54	1811.69	1006.15
12	4.86	197.21	4.99	3033.53	1951.41	1083.75
13	4.86	202.18	4.99	3275.53	2091.13	1161.34
14	30.51	206.82	5.00	2387.30	1578.31	876.54
15	30.51	211.13	5.00	2337.43	1549.51	860.55
16	30.51	215.43	5.00	2287.56	1520.72	844.56
17	30.51	219.74	5.00	2237.69	1491.93	828.57
18	30.51	224.05	5.00	2187.81	1463.14	812.57
19	30.51	228.36	5.00	2137.94	1434.34	796.58
20	30.51	232.66	5.00	2088.07	1405.55	780.59
21	30.51	236.97	5.00	2038.20	1376.76	764.60
22	30.51	241.28	5.00	1988.33	1347.96	748.61

23	30.51	245.59	5.00	1938.46	1319.17	732.62
24	30.51	249.90	5.00	1888.59	1290.38	716.63
25	30.51	254.20	5.00	1838.72	1261.59	700.64
26	30.51	258.51	5.00	1788.85	1232.79	684.65
27	30.51	262.82	5.00	1738.98	1204.00	668.66
28	30.51	267.13	5.00	1689.11	1175.21	652.67
29	30.51	271.43	5.00	1639.24	1146.41	636.68
30	30.51	275.74	5.00	1589.37	1117.62	620.69
31	30.51	280.05	5.00	1541.03	1089.71	605.19
32	30.51	284.36	5.00	1502.13	1067.25	592.72
33	30.51	288.25	4.05	1465.19	1045.93	580.87
34	30.51	290.41	0.95	1423.53	1021.88	567.51
35	30.51	292.97	5.00	1287.89	943.56	524.02
36	30.51	297.28	5.00	1048.77	805.51	447.35
37	30.51	301.59	5.00	804.55	664.51	369.04
38	30.51	305.89	5.00	555.05	520.46	289.05
39	30.51	310.20	5.00	300.12	373.27	207.30
40	30.51	314.22	4.34	57.25	233.06	129.43

TABLE 6A - Effective and Base Shear Force Data on the 40 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-25.80	144.54	1.75	616.26	706.45	392.34
2	-20.80	147.66	5.00	4147.66	3394.65	1885.27
3	4.86	152.48	4.99	4267.05	3461.08	1922.16
4	4.86	157.45	4.99	5474.01	4157.92	2309.17
5	4.86	162.42	4.99	6680.98	4854.76	2696.17
6	4.86	167.39	4.99	7887.94	5551.60	3083.17
7	4.86	172.36	4.99	9094.91	6248.45	3470.17
8	4.86	177.33	4.99	10301.87	6945.29	3857.17
9	4.86	182.30	4.99	11508.84	7642.13	4244.17
10	4.86	187.27	4.99	12715.80	8338.97	4631.18
11	4.86	192.24	4.99	13922.77	9035.81	5018.18
12	4.86	197.21	4.99	15129.73	9732.65	5405.18
13	4.86	202.18	4.99	16336.70	10429.50	5792.18
14	30.51	206.82	5.00	11936.49	7891.53	4382.69
15	30.51	211.13	5.00	11687.14	7747.57	4302.73
16	30.51	215.43	5.00	11437.78	7603.61	4222.78
17	30.51	219.74	5.00	11188.43	7459.64	4142.83
18	30.51	224.05	5.00	10939.08	7315.68	4062.87
19	30.51	228.36	5.00	10689.72	7171.71	3982.92
20	30.51	232.66	5.00	10440.37	7027.75	3902.97
21	30.51	236.97	5.00	10191.02	6883.79	3823.02
22	30.51	241.28	5.00	9941.66	6739.82	3743.06
23	30.51	245.59	5.00	9692.31	6595.86	3663.11
24	30.51	249.90	5.00	9442.96	6451.89	3583.16
25	30.51	254.20	5.00	9193.60	6307.93	3503.21
26	30.51	258.51	5.00	8944.25	6163.97	3423.25
27	30.51	262.82	5.00	8694.90	6020.00	3343.30
28	30.51	267.13	5.00	8445.55	5876.04	3263.35
29	30.51	271.43	5.00	8196.19	5732.07	3183.40
30	30.51	275.74	5.00	7946.84	5588.11	3103.44
31	30.51	280.05	5.00	7705.16	5448.58	3025.95
32	30.51	284.36	5.00	7510.64	5336.27	2963.58
33	30.51	288.25	4.05	5935.64	4237.17	2353.18
34	30.51	290.41	0.95	1350.78	969.66	538.51
35	30.51	292.97	5.00	6439.45	4717.82	2620.11
36	30.51	297.28	5.00	5243.87	4027.55	2236.76
37	30.51	301.59	5.00	4022.75	3322.54	1845.22
38	30.51	305.89	5.00	2775.27	2602.31	1445.23
39	30.51	310.20	5.00	1500.58	1866.36	1036.51
40	30.51	314.22	4.34	248.34	1010.86	561.40

Average Effective Normal Stress = 1727.2581(psf)
Average Available Shear Strength = 1197.2329(psf)
Total Length of Failure Surface = 190.9531(ft)

SUM OF MOMENTS = -0.366176E-01 (ft/lbs);Imbalance (Fraction of Total Weight) = -
0.1064947E-06
SUM OF FORCES = -.299739E-04 (lbs);Imbalance (Fraction of Total Weight) = -0.8717272E-
10

Sum of Available Shear Forces = 228615.34(lbs)

Sum of Mobilized Shear Forces = 126965.04(lbs)

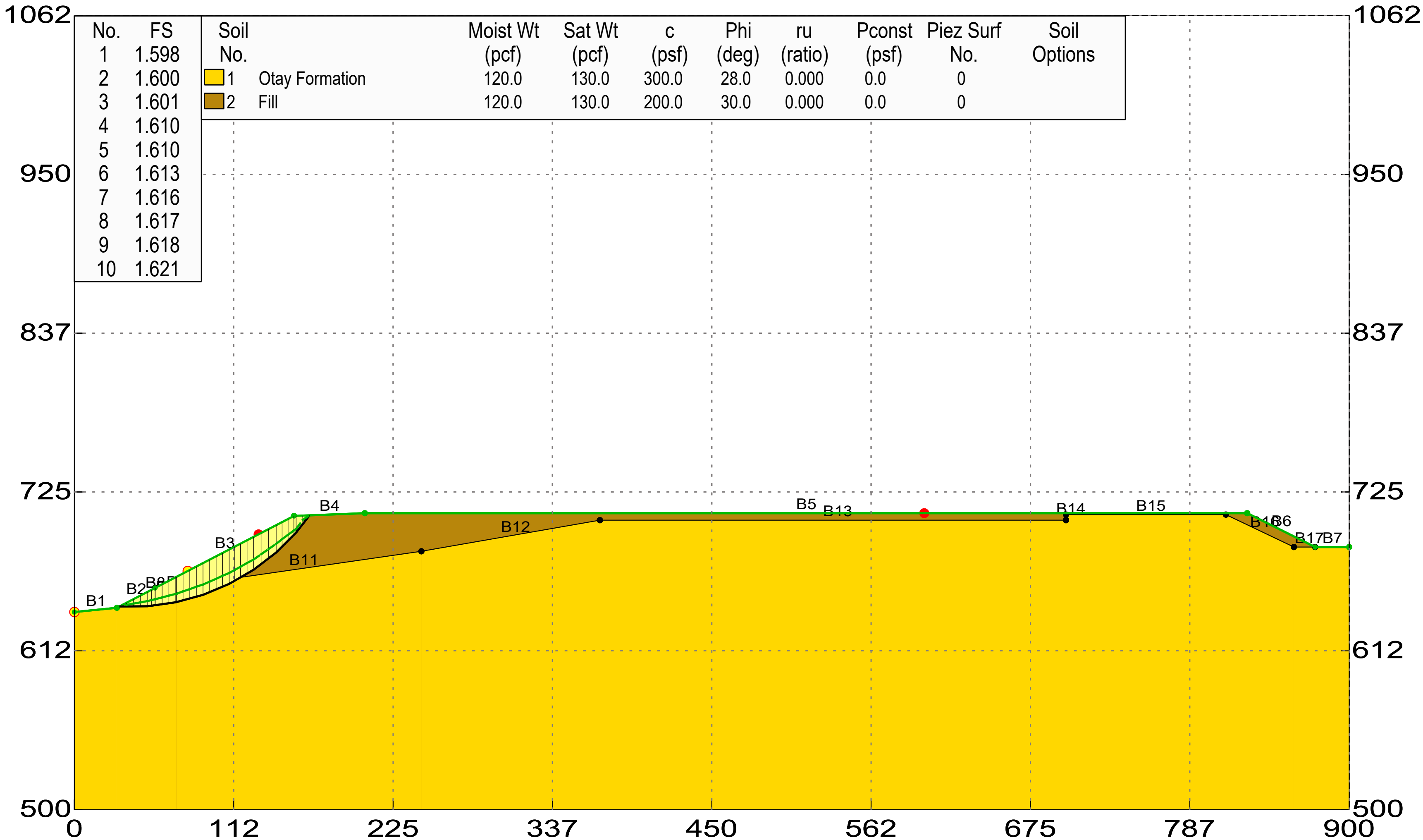
FS Balance Check: FS = 1.800616

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section B-B' Easterly Slope - Circular

Ninyo & Moore / WRM

\B-B' East Slope Circular.gsd



No.	FS
1	1.598
2	1.600
3	1.601
4	1.610
5	1.610
6	1.613
7	1.616
8	1.617
9	1.618
10	1.621

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	

GEOSTASE FS = 1.598

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-3

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****

SLOPE STABILITY ANALYSIS SOFTWARE

Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.

****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Circular.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Circular.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Easterly Slope - Circular

BOUNDARY DATA

7 Surface Boundaries
17 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	640.000	30.000	643.000	1
2	30.000	643.000	57.000	657.000	1
3	57.000	657.000	155.000	708.000	2
4	155.000	708.000	205.000	710.000	2
5	205.000	710.000	828.000	710.000	2
6	828.000	710.000	876.000	686.000	2
7	876.000	686.000	900.000	686.000	1
8	57.000	657.000	57.100	652.000	1
9	57.100	652.000	71.900	652.000	1
10	71.900	652.000	72.000	658.000	1
11	72.000	658.000	245.000	683.000	1
12	245.000	683.000	371.000	705.000	1
13	371.000	705.000	700.000	705.000	1
14	700.000	705.000	700.100	709.000	1
15	700.100	709.000	813.000	709.000	1
16	813.000	709.000	861.000	686.000	1
17	861.000	686.000	876.000	686.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number Moist Saturated Cohesion Friction Pore Pressure Water

	and Description	Unit Wt. (pcf)	Unit Wt. (pcf)	Intercept (psf)	Angle (deg)	Pressure Ratio(ru)	Constant (psf)	Surface No.	Water Option
1	Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2	Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.1920(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 0.00(ft)
and X = 80.00(ft)

Each Surface Enters within a Range Between X = 130.00(ft)
and X = 600.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 500.00(ft)

Specified Maximum Radius = 5000.000(ft)

20.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 969

Number of Trial Surfaces With Valid FS = 4031

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 19.4 %

Statistical Data On All Valid FS Values:
FS Max = 11.962 FS Min = 1.598 FS Ave = 3.888

Standard Deviation = 1.997 Coefficient of Variation = 51.36 %

Critical Surface is Sequence Number 1743 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X = 40.107367(ft) ; Y = 798.816762(ft); and Radius = 155.152730(ft)

Circular Trial Failure Surface Generated With 9 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	31.718	643.891
2	51.717	644.099
3	71.523	646.878
4	90.807	652.182
5	109.249	659.922
6	126.541	669.970
7	142.398	682.159
8	156.554	696.287
9	165.935	708.437

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.735514	1.564095	0.268	0.1714187E+00
2	19.9500	1.669606	1.582938	0.363	0.8666738E-01
3	25.0109	1.565991	1.603849	0.467	0.3785826E-01
4	23.4726	1.602877	1.597285	0.434	0.5592380E-02
5	23.6708	1.598434	1.598120	0.438	0.3142604E-03
6	23.6827	1.598167	1.598169	0.439	0.2728417E-05
7	23.6826	1.598169	1.598169	0.439	0.5028648E-08

Factor Of Safety For The Preceding Specified Surface = 1.598
Theta (fx = 1.0) = 23.68 Deg Lambda = 0.439

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	36.72	645.01	0.421	1500.00	1.000	23.68	602.5
2	41.72	645.95	0.385	3622.22	1.000	23.68	1454.9
3	46.72	646.84	0.366	6366.65	1.000	23.68	2557.3
4	51.72	647.70	0.354	9733.31	1.000	23.68	3909.6
5	54.36	648.38	0.350	11044.77	1.000	23.68	4436.3
6	57.00	649.06	0.347	12425.35	1.000	23.68	4990.9
7	57.10	649.09	0.347	12478.98	1.000	23.68	5012.4
8	61.91	650.32	0.341	15174.68	1.000	23.68	6095.2
9	66.72	651.54	0.336	18100.55	1.000	23.68	7270.4
10	71.52	652.75	0.332	21256.59	1.000	23.68	8538.1
11	71.90	652.88	0.332	21381.83	1.000	23.68	8588.4
12	72.00	652.91	0.332	21415.11	1.000	23.68	8601.8
13	76.70	654.54	0.329	22999.73	1.000	23.68	9238.3
14	81.40	656.17	0.327	24622.80	1.000	23.68	9890.2
15	86.11	657.79	0.325	26284.32	1.000	23.68	10557.6
16	90.81	659.41	0.322	27984.28	1.000	23.68	11240.4
17	95.42	661.45	0.320	27917.33	1.000	23.68	11213.5
18	100.03	663.49	0.319	27829.65	1.000	23.68	11178.3
19	104.64	665.54	0.317	27721.26	1.000	23.68	11134.8
20	109.25	667.60	0.316	27592.14	1.000	23.68	11082.9
21	113.21	669.78	0.315	26034.44	1.000	23.68	10457.2
22	117.18	671.98	0.313	24500.57	1.000	23.68	9841.1
23	121.86	674.59	0.312	22714.59	1.000	23.68	9123.7
24	126.54	677.23	0.313	20957.94	1.000	23.68	8418.2
25	131.83	680.87	0.312	17374.86	1.000	23.68	6978.9
26	137.11	684.60	0.316	14046.09	1.000	23.68	5641.9
27	142.40	688.24	0.316	10930.28	0.877	21.04	3923.5
28	146.60	691.53	0.300	7763.10	0.720	17.53	2338.8
29	150.80	694.66	0.270	5012.56	0.564	13.89	1203.4
30	155.00	697.75	0.227	2657.26	0.407	10.13	467.4
31	156.55	698.92	0.223	1913.42	0.349	8.71	289.9
32	161.24	705.22	0.485	-15.70	0.175	4.38	-1.2
33	165.93	708.44	0.000	0.00	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 33 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	5.00	1.27	34.22	643.92	645.19	0.60	27.41	5.00
2	5.00	3.81	39.22	643.97	647.78	0.60	27.41	5.00
3	5.00	6.35	44.22	644.02	650.37	0.60	27.41	5.00
4	5.00	8.89	49.22	644.07	652.96	0.60	27.41	5.00
5	2.64	10.66	53.04	644.28	654.95	7.99	27.41	2.67
6	2.64	11.66	55.68	644.65	656.32	7.99	27.41	2.67
7	0.10	12.18	57.05	644.85	657.03	7.99	27.49	0.10
8	4.81	13.11	59.50	645.19	658.30	7.99	27.49	4.85
9	4.81	14.94	64.31	645.87	660.81	7.99	27.49	4.85
10	4.81	16.77	69.12	646.54	663.31	7.99	27.49	4.85
11	0.38	17.73	71.71	646.93	664.66	15.38	27.49	0.39
12	0.10	17.78	71.95	647.00	664.78	15.38	27.49	0.10
13	4.70	18.37	74.35	647.66	666.03	15.38	27.49	4.88
14	4.70	19.53	79.05	648.95	668.48	15.38	27.49	4.88
15	4.70	20.68	83.75	650.24	670.92	15.38	27.49	4.88

16	4.70	21.84	88.46	651.53	673.37	15.38	27.49	4.88
17	4.61	22.64	93.11	653.15	675.79	22.77	27.49	5.00
18	4.61	23.11	97.72	655.08	678.19	22.77	27.49	5.00
19	4.61	23.57	102.33	657.02	680.59	22.77	27.49	5.00
20	4.61	24.04	106.94	658.95	682.99	22.77	27.49	5.00
21	3.96	24.15	111.23	661.07	685.22	30.16	27.49	4.58
22	3.96	23.91	115.19	663.38	687.29	30.16	27.49	4.58
23	4.68	23.65	119.52	665.89	689.53	30.16	27.49	5.42
24	4.68	23.36	124.20	668.61	691.97	30.16	27.49	5.42
25	5.29	22.56	129.18	672.00	694.57	37.55	27.49	6.67
26	5.29	21.25	134.47	676.06	697.32	37.55	27.49	6.67
27	5.29	19.94	139.76	680.13	700.07	37.55	27.49	6.67
28	4.20	18.28	144.50	684.26	702.53	44.94	27.49	5.93
29	4.20	16.27	148.70	688.45	704.72	44.94	27.49	5.93
30	4.20	14.27	152.90	692.64	706.91	44.94	27.49	5.93
31	1.55	12.52	155.78	695.51	708.03	44.94	2.29	2.20
32	4.69	8.83	158.90	699.32	708.16	52.33	2.29	7.68
33	4.69	2.94	163.59	705.40	708.34	52.33	2.29	7.68

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	31.718344	643.890993
2	36.718073	643.943000
3	41.717803	643.995006
4	46.717532	644.047013
5	51.717262	644.099019
6	54.358631	644.469619
7	57.000000	644.840220
8	57.100000	644.854250
9	61.907754	645.528808
10	66.715509	646.203365
11	71.523263	646.877922
12	71.900000	646.981535
13	72.000000	647.009037
14	76.701810	648.302160
15	81.403620	649.595282
16	86.105431	650.888404
17	90.807241	652.181526
18	95.417621	654.116570
19	100.028001	656.051615
20	104.638381	657.986659
21	109.248761	659.921703
22	113.212817	662.225077
23	117.176873	664.528450
24	121.859131	667.249144
25	126.541388	669.969839
26	131.826852	674.032882
27	137.112316	678.095924
28	142.397780	682.158967
29	146.598520	686.351073
30	150.799260	690.543179
31	155.000000	694.735286
32	156.554456	696.286547
33	161.244676	702.361971
34	165.934895	708.437396

Table 3 - Force and Pore Pressure Data On The 33 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	762.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2	2286.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3	3810.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00

4	5334.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	3379.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	3695.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	146.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	7564.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	8618.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
10	9673.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
11	801.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
12	213.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
13	10366.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
14	11017.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
15	11668.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
16	12319.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
17	12527.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
18	12784.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
19	13041.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
20	13298.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
21	11487.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
22	11372.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
23	13286.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
24	13126.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
25	14311.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
26	13478.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
27	12646.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
28	9214.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
29	8203.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
30	7192.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
31	2335.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
32	4970.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
33	1656.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 266593.63(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 266593.63(lbs)

TOTAL AREA OF SLIDING MASS = 2221.61(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 33 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	1	300.00	28.00	
2	1	300.00	28.00	
3	1	300.00	28.00	
4	1	300.00	28.00	
5	1	300.00	28.00	
6	1	300.00	28.00	
7	1	300.00	28.00	
8	1	300.00	28.00	
9	1	300.00	28.00	
10	1	300.00	28.00	
11	1	300.00	28.00	
12	1	300.00	28.00	
13	1	300.00	28.00	
14	1	300.00	28.00	
15	1	300.00	28.00	
16	1	300.00	28.00	
17	1	300.00	28.00	
18	1	300.00	28.00	
19	1	300.00	28.00	
20	1	300.00	28.00	
21	1	300.00	28.00	
22	1	300.00	28.00	
23	2	200.00	30.00	
24	2	200.00	30.00	
25	2	200.00	30.00	
26	2	200.00	30.00	
27	2	200.00	30.00	
28	2	200.00	30.00	
29	2	200.00	30.00	
30	2	200.00	30.00	

31	2	200.00	30.00
32	2	200.00	30.00
33	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 33 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	0.60	34.22	5.00	270.05	152.43	1.772
2	0.60	39.22	5.00	623.66	457.28	1.364
3	0.60	44.22	5.00	977.28	762.13	1.282
4	0.60	49.22	5.00	1330.90	1066.99	1.247
5	7.99	53.04	2.67	1387.67	1279.35	1.085
6	7.99	55.68	2.67	1512.25	1399.23	1.081
7	7.99	57.05	0.10	1576.91	1461.45	1.079
8	7.99	59.50	4.85	1693.22	1573.38	1.076
9	7.99	64.31	4.85	1921.10	1792.67	1.072
10	7.99	69.12	4.85	2148.99	2011.97	1.068
11	15.38	71.71	0.39	2023.87	2127.16	0.951
12	15.38	71.95	0.10	2030.46	2134.18	0.951
13	15.38	74.35	4.88	2096.76	2204.87	0.951
14	15.38	79.05	4.88	2226.62	2343.32	0.950
15	15.38	83.75	4.88	2356.47	2481.77	0.950
16	15.38	88.46	4.88	2486.32	2620.22	0.949
17	22.77	93.11	5.00	2310.10	2717.30	0.850
18	22.77	97.72	5.00	2357.40	2773.01	0.850
19	22.77	102.33	5.00	2404.70	2828.72	0.850
20	22.77	106.94	5.00	2451.99	2884.42	0.850
21	30.16	111.23	4.58	2204.72	2897.85	0.761
22	30.16	115.19	4.58	2182.57	2869.00	0.761
23	30.16	119.52	5.42	2158.50	2837.53	0.761
24	30.16	124.20	5.42	2132.41	2803.45	0.761
25	37.55	129.18	6.67	1830.75	2707.66	0.676
26	37.55	134.47	6.67	1722.62	2550.17	0.675
27	37.55	139.76	6.67	1634.54	2392.67	0.683
28	44.94	144.50	5.93	1349.97	2193.57	0.615
29	44.94	148.70	5.93	1224.60	1952.85	0.627
30	44.94	152.90	5.93	1091.79	1712.13	0.638
31	44.94	155.78	2.20	957.90	1502.42	0.638
32	52.33	158.90	7.68	589.33	1059.81	0.556
33	52.33	163.59	7.68	130.23	353.27	0.369

TABLE 5A - Total Base Force Data on the 33 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	0.60	34.22	5.00	1350.23	762.09	1.772
2	0.60	39.22	5.00	3118.32	2286.28	1.364
3	0.60	44.22	5.00	4886.41	3810.46	1.282
4	0.60	49.22	5.00	6654.50	5334.65	1.247
5	7.99	53.04	2.67	3701.25	3379.25	1.095
6	7.99	55.68	2.67	4033.53	3695.89	1.091
7	7.99	57.05	0.10	159.24	146.15	1.090
8	7.99	59.50	4.85	8220.32	7564.43	1.087
9	7.99	64.31	4.85	9326.67	8618.73	1.082
10	7.99	69.12	4.85	10433.01	9673.04	1.079
11	15.38	71.71	0.39	790.78	801.38	0.987
12	15.38	71.95	0.10	210.58	213.42	0.987
13	15.38	74.35	4.88	10224.64	10366.90	0.986

14	15.38	79.05	4.88	10857.85	11017.86	0.985
15	15.38	83.75	4.88	11491.05	11668.82	0.985
16	15.38	88.46	4.88	12124.26	12319.78	0.984
17	22.77	93.11	5.00	11550.50	12527.78	0.922
18	22.77	97.72	5.00	11786.99	12784.62	0.922
19	22.77	102.33	5.00	12023.48	13041.45	0.922
20	22.77	106.94	5.00	12259.97	13298.29	0.922
21	30.16	111.23	4.58	10107.94	11487.24	0.880
22	30.16	115.19	4.58	10006.36	11372.87	0.880
23	30.16	119.52	5.42	11688.99	13286.04	0.880
24	30.16	124.20	5.42	11547.71	13126.47	0.880
25	37.55	129.18	6.67	12205.03	14311.25	0.853
26	37.55	134.47	6.67	11484.11	13478.82	0.852
27	37.55	139.76	6.67	10896.95	12646.40	0.862
28	44.94	144.50	5.93	8011.62	9214.61	0.869
29	44.94	148.70	5.93	7267.56	8203.40	0.886
30	44.94	152.90	5.93	6479.40	7192.20	0.901
31	44.94	155.78	2.20	2103.62	2335.45	0.901
32	52.33	158.90	7.68	4523.24	4970.73	0.910
33	52.33	163.59	7.68	999.52	1656.91	0.603

TABLE 6 - Effective and Base Shear Stress Data on the 33 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	0.60	34.22	5.00	270.05	443.59	277.56
2	0.60	39.22	5.00	623.66	631.61	395.21
3	0.60	44.22	5.00	977.28	819.63	512.86
4	0.60	49.22	5.00	1330.90	1007.65	630.50
5	7.99	53.04	2.67	1387.67	1037.84	649.39
6	7.99	55.68	2.67	1512.25	1104.08	690.84
7	7.99	57.05	0.10	1576.91	1138.46	712.35
8	7.99	59.50	4.85	1693.22	1200.30	751.05
9	7.99	64.31	4.85	1921.10	1321.47	826.86
10	7.99	69.12	4.85	2148.99	1442.64	902.68
11	15.38	71.71	0.39	2023.87	1376.11	861.06
12	15.38	71.95	0.10	2030.46	1379.61	863.25
13	15.38	74.35	4.88	2096.76	1414.87	885.31
14	15.38	79.05	4.88	2226.62	1483.91	928.51
15	15.38	83.75	4.88	2356.47	1552.96	971.71
16	15.38	88.46	4.88	2486.32	1622.00	1014.91
17	22.77	93.11	5.00	2310.10	1528.30	956.28
18	22.77	97.72	5.00	2357.40	1553.45	972.02
19	22.77	102.33	5.00	2404.70	1578.60	987.76
20	22.77	106.94	5.00	2451.99	1603.75	1003.49
21	30.16	111.23	4.58	2204.72	1472.27	921.22
22	30.16	115.19	4.58	2182.57	1460.49	913.85
23	30.16	119.52	5.42	2158.50	1446.21	904.92
24	30.16	124.20	5.42	2132.41	1431.15	895.49
25	37.55	129.18	6.67	1830.75	1256.99	786.52
26	37.55	134.47	6.67	1722.62	1194.55	747.45
27	37.55	139.76	6.67	1634.54	1143.70	715.63
28	44.94	144.50	5.93	1349.97	979.41	612.83
29	44.94	148.70	5.93	1224.60	907.02	567.54
30	44.94	152.90	5.93	1091.79	830.35	519.56
31	44.94	155.78	2.20	957.90	753.04	471.19
32	52.33	158.90	7.68	589.33	540.25	338.04
33	52.33	163.59	7.68	130.23	275.19	172.19

TABLE 6A - Effective and Base Shear Force Data on the 33 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	0.60	34.22	5.00	1350.23	2217.93	1387.80
2	0.60	39.22	5.00	3118.32	3158.04	1976.04
3	0.60	44.22	5.00	4886.41	4098.15	2564.28

4	0.60	49.22	5.00	6654.50	5038.26	3152.52
5	7.99	53.04	2.67	3701.25	2768.16	1732.08
6	7.99	55.68	2.67	4033.53	2944.84	1842.63
7	7.99	57.05	0.10	159.24	114.96	71.93
8	7.99	59.50	4.85	8220.32	5827.27	3646.22
9	7.99	64.31	4.85	9326.67	6415.53	4014.30
10	7.99	69.12	4.85	10433.01	7003.78	4382.38
11	15.38	71.71	0.39	790.78	537.68	336.44
12	15.38	71.95	0.10	210.58	143.08	89.53
13	15.38	74.35	4.88	10224.64	6899.45	4317.10
14	15.38	79.05	4.88	10857.85	7236.14	4527.77
15	15.38	83.75	4.88	11491.05	7572.82	4738.43
16	15.38	88.46	4.88	12124.26	7909.50	4949.10
17	22.77	93.11	5.00	11550.50	7641.51	4781.41
18	22.77	97.72	5.00	11786.99	7767.25	4860.09
19	22.77	102.33	5.00	12023.48	7893.00	4938.78
20	22.77	106.94	5.00	12259.97	8018.74	5017.46
21	30.16	111.23	4.58	10107.94	6749.89	4223.51
22	30.16	115.19	4.58	10006.36	6695.88	4189.72
23	30.16	119.52	5.42	11688.99	7831.71	4900.42
24	30.16	124.20	5.42	11547.71	7750.14	4849.39
25	37.55	129.18	6.67	12205.03	8379.91	5243.44
26	37.55	134.47	6.67	11484.11	7963.69	4983.01
27	37.55	139.76	6.67	10896.95	7624.69	4770.89
28	44.94	144.50	5.93	8011.62	5812.44	3636.93
29	44.94	148.70	5.93	7267.56	5382.86	3368.14
30	44.94	152.90	5.93	6479.40	4927.81	3083.41
31	44.94	155.78	2.20	2103.62	1653.74	1034.77
32	52.33	158.90	7.68	4523.24	4146.54	2594.55
33	52.33	163.59	7.68	999.52	2112.11	1321.58

Average Effective Normal Stress = 1625.5225(psf)
Average Available Shear Strength = 1147.3254(psf)
Total Length of Failure Surface = 155.3504(ft)

SUM OF MOMENTS = -0.362302E-03 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.1359004E-08
SUM OF FORCES = -.309219E-07 (lbs);Imbalance (Fraction of Total Weight) = -0.1159889E-12

Sum of Available Shear Forces = 178237.50(lbs)

Sum of Mobilized Shear Forces = 111526.07(lbs)

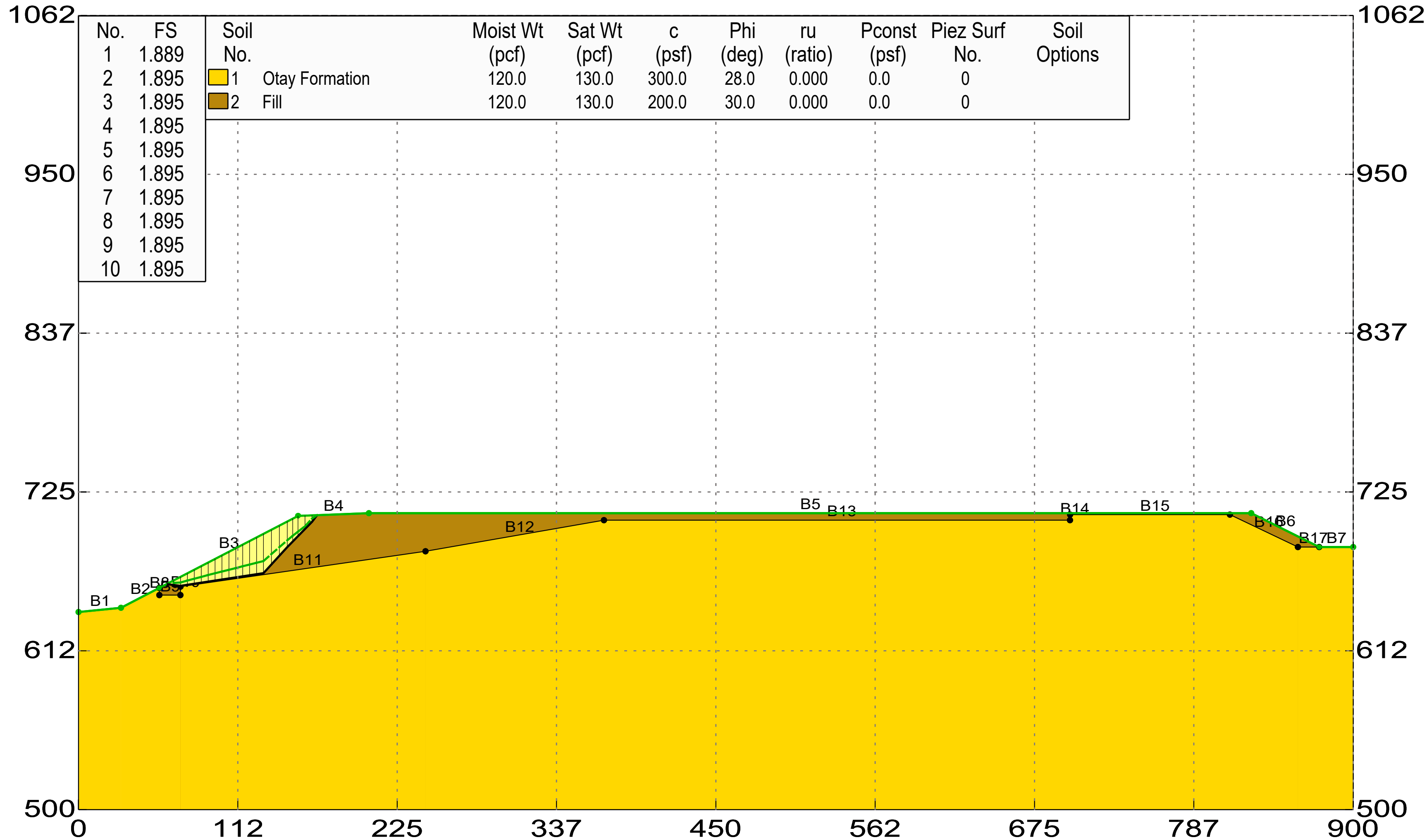
FS Balance Check: FS = 1.598169

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section B-B' Easterly Slope - Block (Static)

Ninyo & Moore / WRM

\B-B' East Slope Block.gsd



GEOSTASE FS = 1.889

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-4

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Block.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Block.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Easterly Slope - Block (Static)

BOUNDARY DATA

7 Surface Boundaries
17 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	640.000	30.000	643.000	1
2	30.000	643.000	57.000	657.000	1
3	57.000	657.000	155.000	708.000	2
4	155.000	708.000	205.000	710.000	2
5	205.000	710.000	828.000	710.000	2
6	828.000	710.000	876.000	686.000	2
7	876.000	686.000	900.000	686.000	1
8	57.000	657.000	57.100	652.000	1
9	57.100	652.000	71.900	652.000	1
10	71.900	652.000	72.000	658.000	1
11	72.000	658.000	245.000	683.000	1
12	245.000	683.000	371.000	705.000	1
13	371.000	705.000	700.000	705.000	1
14	700.000	705.000	700.100	709.000	1
15	700.100	709.000	813.000	709.000	1
16	813.000	709.000	861.000	686.000	1
17	861.000	686.000	876.000	686.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number Moist Saturated Cohesion Friction Pore Pressure Water

```
Water
           and              Unit Wt. Unit Wt. Intercept   Angle  Pressure Constant Surface
Option
       Description           (pcf)    (pcf)     (psf)     (deg)  Ratio(ru)  (psf)      No.

  1 Otay Formation           120.0    130.0     300.00    28.00    0.000      0.0      0
0
  2 Fill                     120.0    130.0     200.00    30.00    0.000      0.0      0
0
```

A Non-Circular Zone Search Has Been Selected For Analysis
Using Random Generation Within Specified Zones.

2 Zones Defined For Generation Of Non-Circular Surfaces

5000 Trial Surfaces Have Been Generated.

Length Of Line Segments For Active And Passive Portions Of
Non-Circular Zone Search = 25.00(ft)

Zone No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Height (ft)
1	72.00	658.50	72.00	658.50	0.10
2	72.10	658.50	370.00	704.50	0.10

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 1472

Number of Trial Surfaces With Valid FS = 3528

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 29.4 %

Statistical Data On All Valid FS Values:
FS Max = 11.465   FS Min = 1.889   FS Ave = 3.112
Standard Deviation = 0.828   Coefficient of Variation = 26.61 %

Critical Surface is Sequence Number 4 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	2.021309	1.803180	0.268	0.2181291E+00
2	19.9500	1.961303	1.850477	0.363	0.1108254E+00
3	25.0614	1.858517	1.902728	0.468	0.4421077E-01
4	23.6041	1.893488	1.887415	0.437	0.6073402E-02
5	23.7804	1.889536	1.889248	0.441	0.2877992E-03
6	23.7892	1.889337	1.889339	0.441	0.1926737E-05
7	23.7891	1.889339	1.889339	0.441	0.4101654E-08

Factor Of Safety For The Preceding Specified Surface = 1.889
Theta (fx = 1.0) = 23.79 Deg Lambda = 0.441

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	67.15	660.52	0.438	1299.43	1.000	23.79	524.2
2	72.00	660.87	0.372	3717.98	1.000	23.79	1499.7
3	76.88	662.23	0.366	5020.97	1.000	23.79	2025.3
4	81.76	663.55	0.357	6502.06	1.000	23.79	2622.7
5	86.64	664.84	0.349	8161.25	1.000	23.79	3292.0
6	91.52	666.12	0.342	9998.54	1.000	23.79	4033.1
7	96.40	667.38	0.335	12013.93	1.000	23.79	4846.1
8	101.28	668.63	0.330	14207.41	1.000	23.79	5730.9
9	106.16	669.88	0.325	16579.00	1.000	23.79	6687.5
10	111.04	671.12	0.321	19128.68	1.000	23.79	7716.0
11	115.92	672.36	0.317	21856.46	1.000	23.79	8816.3
12	120.80	673.60	0.314	24762.33	1.000	23.79	9988.4
13	125.68	674.83	0.311	27846.31	1.000	23.79	11232.4
14	130.56	676.06	0.308	31108.38	1.000	23.79	12548.2
15	136.17	680.94	0.296	22910.60	1.000	23.79	9241.5
16	141.79	685.84	0.283	15832.06	1.000	23.79	6386.2

17	147.40	690.82	0.268	9876.63	0.991	23.60	3954.8
18	151.20	693.93	0.251	6719.10	0.812	19.70	2265.3
19	155.00	696.97	0.224	3960.14	0.633	15.60	1065.0
20	159.92	700.79	0.208	1287.90	0.402	10.04	224.5
21	164.84	706.08	0.486	-39.63	0.170	4.28	-3.0
22	168.45	708.54	0.000	0.00	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 22 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	4.85	1.57	64.72	659.45	661.02	-7.20	27.49	4.89
2	4.85	4.71	69.57	658.83	663.54	-7.20	27.49	4.89
3	4.88	7.17	74.44	658.90	666.08	8.72	27.49	4.94
4	4.88	8.96	79.32	659.65	668.62	8.72	27.49	4.94
5	4.88	10.76	84.20	660.40	671.15	8.72	27.49	4.94
6	4.88	12.55	89.08	661.15	673.69	8.72	27.49	4.94
7	4.88	14.34	93.96	661.90	676.23	8.72	27.49	4.94
8	4.88	16.13	98.84	662.64	678.77	8.72	27.49	4.94
9	4.88	17.92	103.72	663.39	681.31	8.72	27.49	4.94
10	4.88	19.71	108.60	664.14	683.85	8.72	27.49	4.94
11	4.88	21.50	113.48	664.89	686.39	8.72	27.49	4.94
12	4.88	23.29	118.36	665.64	688.93	8.72	27.49	4.94
13	4.88	25.08	123.24	666.39	691.47	8.72	27.49	4.94
14	4.88	26.88	128.12	667.13	694.01	8.72	27.49	4.94
15	5.62	26.15	133.36	670.59	696.74	47.64	27.49	8.33
16	5.62	22.92	138.98	676.74	699.66	47.64	27.49	8.33
17	5.62	19.68	144.59	682.90	702.58	47.64	27.49	8.33
18	3.80	17.10	149.30	687.93	705.03	45.76	27.49	5.45
19	3.80	15.18	153.10	691.83	707.01	45.76	27.49	5.45
20	4.92	11.79	157.46	696.31	708.10	45.76	2.29	7.05
21	4.92	6.93	162.38	701.36	708.30	45.76	2.29	7.05
22	3.60	2.25	166.65	706.21	708.47	52.19	2.29	5.88

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	62.292693	659.754360
2	67.146346	659.141374
3	72.000000	658.528387
4	76.879694	659.276685
5	81.759388	660.024982
6	86.639082	660.773279
7	91.518776	661.521576
8	96.398471	662.269873
9	101.278165	663.018170
10	106.157859	663.766467
11	111.037553	664.514764
12	115.917247	665.263062
13	120.796941	666.011359
14	125.676635	666.759656
15	130.556329	667.507953
16	136.171419	673.665486
17	141.786509	679.823019
18	147.401598	685.980553
19	151.200799	689.882077
20	155.000000	693.783601
21	159.921419	698.837567
22	164.842837	703.891533
23	168.447676	708.537907

Table 3 - Force and Pore Pressure Data On The 22 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	914.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2	2742.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3	4200.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4	5249.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	6298.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	7346.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	8395.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	9444.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	10493.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
10	11542.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
11	12591.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
12	13639.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
13	14688.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
14	15737.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
15	17622.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
16	15442.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
17	13262.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
18	7797.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
19	6920.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
20	6961.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
21	4093.1	0.0	0.0	0.0	0.0	0.0	0.0	0.00
22	973.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 196357.25(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 196357.25(lbs)

TOTAL AREA OF SLIDING MASS = 1636.31(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 22 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	2	200.00	30.00	
2	2	200.00	30.00	
3	2	200.00	30.00	
4	2	200.00	30.00	
5	2	200.00	30.00	
6	2	200.00	30.00	
7	2	200.00	30.00	
8	2	200.00	30.00	
9	2	200.00	30.00	
10	2	200.00	30.00	
11	2	200.00	30.00	
12	2	200.00	30.00	
13	2	200.00	30.00	
14	2	200.00	30.00	
15	2	200.00	30.00	
16	2	200.00	30.00	
17	2	200.00	30.00	
18	2	200.00	30.00	
19	2	200.00	30.00	
20	2	200.00	30.00	
21	2	200.00	30.00	
22	2	200.00	30.00	

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 22 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-7.20	64.72	4.89	322.12	188.33	1.710
2	-7.20	69.57	4.89	810.65	565.00	1.435
3	8.72	74.44	4.94	909.65	860.80	1.057
4	8.72	79.32	4.94	1129.02	1075.73	1.050
5	8.72	84.20	4.94	1348.40	1290.67	1.045
6	8.72	89.08	4.94	1567.78	1505.61	1.041
7	8.72	93.96	4.94	1787.16	1720.54	1.039
8	8.72	98.84	4.94	2006.54	1935.48	1.037
9	8.72	103.72	4.94	2225.92	2150.41	1.035
10	8.72	108.60	4.94	2445.29	2365.35	1.034
11	8.72	113.48	4.94	2664.67	2580.29	1.033
12	8.72	118.36	4.94	2884.05	2795.22	1.032
13	8.72	123.24	4.94	3103.43	3010.16	1.031
14	8.72	128.12	4.94	3322.81	3225.10	1.030
15	47.64	133.36	8.33	1822.67	3138.44	0.581
16	47.64	138.98	8.33	1592.09	2750.19	0.579
17	47.64	144.59	8.33	1363.73	2361.94	0.577
18	45.76	149.30	5.45	1260.43	2052.36	0.614
19	45.76	153.10	5.45	1149.85	1821.43	0.631
20	45.76	157.46	7.05	918.88	1414.54	0.650
21	45.76	162.38	7.05	534.36	831.69	0.643
22	52.19	166.65	5.88	95.91	270.13	0.355

TABLE 5A - Total Base Force Data on the 22 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-7.20	64.72	4.89	1575.90	914.10	1.724
2	-7.20	69.57	4.89	3965.86	2742.30	1.446
3	8.72	74.44	4.94	4490.68	4200.42	1.069
4	8.72	79.32	4.94	5573.69	5249.25	1.062
5	8.72	84.20	4.94	6656.71	6298.07	1.057
6	8.72	89.08	4.94	7739.72	7346.89	1.053
7	8.72	93.96	4.94	8822.73	8395.72	1.051
8	8.72	98.84	4.94	9905.74	9444.54	1.049
9	8.72	103.72	4.94	10988.76	10493.36	1.047
10	8.72	108.60	4.94	12071.77	11542.19	1.046
11	8.72	113.48	4.94	13154.78	12591.01	1.045
12	8.72	118.36	4.94	14237.79	13639.83	1.044
13	8.72	123.24	4.94	15320.80	14688.65	1.043
14	8.72	128.12	4.94	16403.82	15737.48	1.042
15	47.64	133.36	8.33	15188.90	17622.62	0.862
16	47.64	138.98	8.33	13267.43	15442.58	0.859
17	47.64	144.59	8.33	11364.44	13262.53	0.857
18	45.76	149.30	5.45	6863.93	7797.32	0.880
19	45.76	153.10	5.45	6261.74	6919.98	0.905
20	45.76	157.46	7.05	6482.01	6961.55	0.931
21	45.76	162.38	7.05	3769.54	4093.09	0.921
22	52.19	166.65	5.88	564.04	973.78	0.579

TABLE 6 - Effective and Base Shear Stress Data on the 22 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-7.20	64.72	4.89	322.12	385.98	204.29
2	-7.20	69.57	4.89	810.65	668.03	353.58
3	8.72	74.44	4.94	909.65	725.18	383.83
4	8.72	79.32	4.94	1129.02	851.84	450.87
5	8.72	84.20	4.94	1348.40	978.50	517.91

6	8.72	89.08	4.94	1567.78	1105.16	584.94
7	8.72	93.96	4.94	1787.16	1231.82	651.98
8	8.72	98.84	4.94	2006.54	1358.47	719.02
9	8.72	103.72	4.94	2225.92	1485.13	786.06
10	8.72	108.60	4.94	2445.29	1611.79	853.10
11	8.72	113.48	4.94	2664.67	1738.45	920.14
12	8.72	118.36	4.94	2884.05	1865.11	987.17
13	8.72	123.24	4.94	3103.43	1991.76	1054.21
14	8.72	128.12	4.94	3322.81	2118.42	1121.25
15	47.64	133.36	8.33	1822.67	1252.32	662.83
16	47.64	138.98	8.33	1592.09	1119.19	592.37
17	47.64	144.59	8.33	1363.73	987.35	522.59
18	45.76	149.30	5.45	1260.43	927.71	491.02
19	45.76	153.10	5.45	1149.85	863.86	457.23
20	45.76	157.46	7.05	918.88	730.51	386.65
21	45.76	162.38	7.05	534.36	508.51	269.15
22	52.19	166.65	5.88	95.91	255.37	135.17

TABLE 6A - Effective and Base Shear Force Data on the 22 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-7.20	64.72	4.89	1575.90	1888.29	999.44
2	-7.20	69.57	4.89	3965.86	3268.13	1729.78
3	8.72	74.44	4.94	4490.68	3580.04	1894.87
4	8.72	79.32	4.94	5573.69	4205.32	2225.82
5	8.72	84.20	4.94	6656.71	4830.60	2556.77
6	8.72	89.08	4.94	7739.72	5455.88	2887.72
7	8.72	93.96	4.94	8822.73	6081.15	3218.67
8	8.72	98.84	4.94	9905.74	6706.43	3549.62
9	8.72	103.72	4.94	10988.76	7331.71	3880.57
10	8.72	108.60	4.94	12071.77	7956.99	4211.52
11	8.72	113.48	4.94	13154.78	8582.26	4542.47
12	8.72	118.36	4.94	14237.79	9207.54	4873.42
13	8.72	123.24	4.94	15320.80	9832.82	5204.37
14	8.72	128.12	4.94	16403.82	10458.09	5535.32
15	47.64	133.36	8.33	15188.90	10435.98	5523.62
16	47.64	138.98	8.33	13267.43	9326.62	4936.45
17	47.64	144.59	8.33	11364.44	8227.93	4354.92
18	45.76	149.30	5.45	6863.93	5052.04	2673.97
19	45.76	153.10	5.45	6261.74	4704.36	2489.95
20	45.76	157.46	7.05	6482.01	5153.24	2727.54
21	45.76	162.38	7.05	3769.54	3587.20	1898.66
22	52.19	166.65	5.88	564.04	1501.80	794.88

Average Effective Normal Stress = 1558.5378(psf)
Average Available Shear Strength = 1099.8222(psf)
Total Length of Failure Surface = 124.9060(ft)

SUM OF MOMENTS = -0.151208E-03 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.7700665E-09
SUM OF FORCES = -.428195E-07 (lbs);Imbalance (Fraction of Total Weight) = -0.2180693E-12

Sum of Available Shear Forces = 137374.43(lbs)

Sum of Mobilized Shear Forces = 72710.33(lbs)

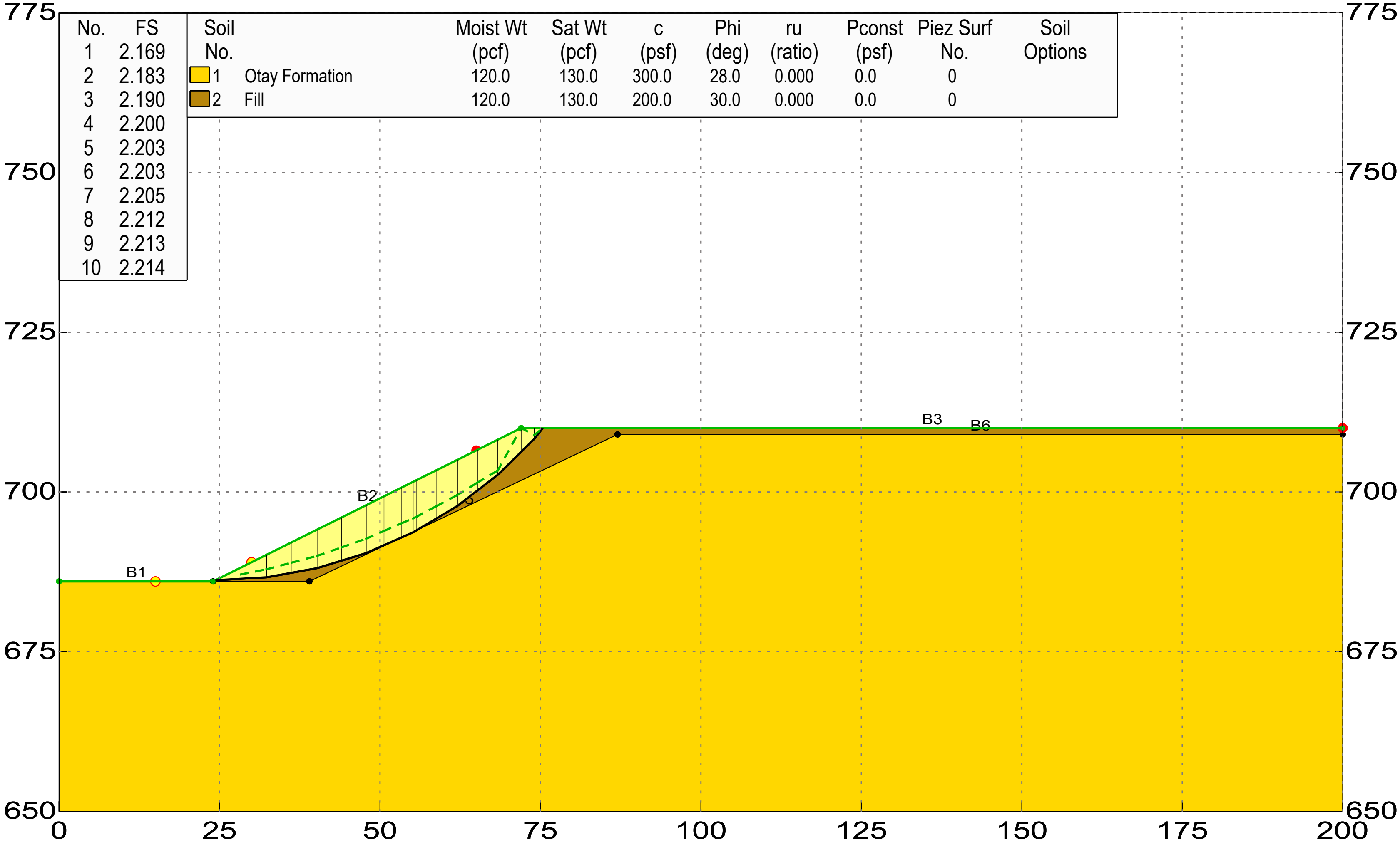
FS Balance Check: FS = 1.889339

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section B-B' Stability Fill (Static)

Ninyo & Moore / WRM

\B-B' Stability Fill Static.gsd



GEOSTASE FS = 2.169

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-5

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

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SLOPE STABILITY ANALYSIS SOFTWARE

Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.

****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' Stability Fill Static.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' Stability Fill Static.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Stability Fill (Static)

BOUNDARY DATA

3 Surface Boundaries
6 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	686.000	24.000	686.000	1
2	24.000	686.000	72.000	710.000	2
3	72.000	710.000	200.000	710.000	2
4	24.000	686.000	39.000	686.000	1
5	39.000	686.000	87.000	709.000	1
6	87.000	709.000	200.000	709.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 650.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.0360(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 15.00(ft)
and X = 30.00(ft)

Each Surface Enters within a Range Between X = 65.00(ft)
and X = 200.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 650.00(ft)

Specified Maximum Radius = 5000.000(ft)

8.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Constant (1.0)

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 488

Number of Trial Surfaces With Valid FS = 4512

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 9.8 %

Statistical Data On All Valid FS Values:
FS Max = 9.589 FS Min = 2.169 FS Ave = 4.436
Standard Deviation = 1.770 Coefficient of Variation = 39.90 %

Critical Surface is Sequence Number 2971 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X = 24.427814(ft) ; Y = 752.816904(ft); and Radius = 66.642014(ft)

Circular Trial Failure Surface Generated With 9 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	24.350	686.175
2	32.336	686.646
3	40.208	688.070
4	47.853	690.428
5	55.160	693.684
6	62.024	697.793
7	68.347	702.694
8	74.037	708.318
9	75.372	710.000

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	2.345018	2.109622	0.268	0.2353964E+00
2	19.9500	2.236837	2.130058	0.363	0.1067799E+00
3	24.0588	2.055723	2.178462	0.446	0.1227395E+00
4	21.8611	2.167436	2.169207	0.401	0.1770779E-02
5	21.8294	2.168751	2.169075	0.401	0.3248744E-03
6	21.8223	2.169045	2.169046	0.400	0.1337365E-05
7	21.8223	2.169046	2.169046	0.400	0.6883573E-07

Factor Of Safety For The Preceding Specified Surface = 2.169
Theta (fx = 1.0) = 21.82 Deg   Lambda = 0.400

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Constant (1.0)

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)

1	28.34	687.09	0.387	527.67	1.000	21.82	196.2
2	32.34	687.90	0.356	1257.29	1.000	21.82	467.4
3	36.27	688.95	0.332	1832.94	1.000	21.82	681.4
4	40.21	690.01	0.321	2462.30	1.000	21.82	915.3
5	44.03	691.34	0.309	2719.19	1.000	21.82	1010.8
6	47.85	692.68	0.301	2962.18	1.000	21.82	1101.1
7	50.62	693.89	0.292	2830.35	1.000	21.82	1052.1
8	53.39	695.11	0.284	2690.39	1.000	21.82	1000.1
9	55.16	695.85	0.275	2653.46	1.000	21.82	986.4
10	55.66	696.10	0.270	2592.89	1.000	21.82	963.9
11	58.84	697.79	0.252	2111.28	1.000	21.82	784.8
12	62.02	699.49	0.235	1662.88	1.000	21.82	618.1
13	65.19	701.46	0.191	1018.55	1.000	21.82	378.6
14	68.35	703.36	0.121	502.60	1.000	21.82	186.8
15	72.00	710.03	1.000+	-43.09	1.000	21.82	-16.0
16	74.04	708.89	0.341	-114.74	1.000	21.82	-42.7
17	75.37	710.00	0.000	0.00	1.000	21.82	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 17 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	3.99	0.88	26.35	686.29	687.17	3.37	26.57	4.00
2	3.99	2.64	30.34	686.53	689.17	3.37	26.57	4.00
3	3.94	4.15	34.30	687.00	691.15	10.26	26.57	4.00
4	3.94	5.41	38.24	687.71	693.12	10.26	26.57	4.00
5	3.82	6.40	42.12	688.66	695.06	17.14	26.57	4.00
6	3.82	7.13	45.94	689.84	696.97	17.14	26.57	4.00
7	2.77	7.57	49.24	691.04	698.62	24.02	26.57	3.03
8	2.77	7.72	52.01	692.28	700.00	24.02	26.57	3.03
9	1.77	7.85	54.28	693.29	701.14	24.02	26.57	1.94
10	0.50	7.87	55.41	693.83	701.70	30.90	26.57	0.58
11	3.18	7.69	57.25	694.93	702.62	30.90	26.57	3.71
12	3.18	7.38	60.43	696.84	704.22	30.90	26.57	3.71
13	3.16	6.78	63.61	699.02	705.80	37.78	26.57	4.00
14	3.16	5.91	66.77	701.47	707.38	37.78	26.57	4.00
15	3.65	4.59	70.17	704.50	709.09	44.67	26.57	5.14
16	2.04	2.69	73.02	707.31	710.00	44.67	0.00	2.86
17	1.34	0.84	74.70	709.16	710.00	51.55	0.00	2.15

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	24.349870	686.174935
2	28.342936	686.410354
3	32.336002	686.645772
4	36.272088	687.357976
5	40.208173	688.070179
6	44.030555	689.248904
7	47.852938	690.427628
8	50.622427	691.661878
9	53.391917	692.896127
10	55.160131	693.684148
11	55.656401	693.981192
12	58.840427	695.887001
13	62.024452	697.792810
14	65.185716	700.243607
15	68.346981	702.694405
16	72.000000	706.305221
17	74.036605	708.318298
18	75.371931	710.000000

Table 3 - Force and Pore Pressure Data On The 17 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	421.9	0.0	0.0	0.0	0.0	0.0	0.0	0.00
2	1265.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
3	1960.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
4	2553.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
5	2935.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
6	3271.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
7	2517.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
8	2567.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
9	1665.2	0.0	0.0	0.0	0.0	0.0	0.0	0.00
10	468.8	0.0	0.0	0.0	0.0	0.0	0.0	0.00
11	2938.3	0.0	0.0	0.0	0.0	0.0	0.0	0.00
12	2818.4	0.0	0.0	0.0	0.0	0.0	0.0	0.00
13	2573.6	0.0	0.0	0.0	0.0	0.0	0.0	0.00
14	2243.5	0.0	0.0	0.0	0.0	0.0	0.0	0.00
15	2010.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00
16	657.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00
17	134.7	0.0	0.0	0.0	0.0	0.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 33003.27(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 33003.27(lbs)

TOTAL AREA OF SLIDING MASS = 275.03(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 17 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	2	200.00	30.00	
2	2	200.00	30.00	
3	2	200.00	30.00	
4	2	200.00	30.00	
5	2	200.00	30.00	
6	2	200.00	30.00	
7	2	200.00	30.00	
8	2	200.00	30.00	
9	1	300.00	28.00	
10	1	300.00	28.00	
11	2	200.00	30.00	
12	2	200.00	30.00	
13	2	200.00	30.00	
14	2	200.00	30.00	
15	2	200.00	30.00	
16	2	200.00	30.00	
17	2	200.00	30.00	

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 17 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	3.37	26.35	4.00	147.05	105.67	1.392
2	3.37	30.34	4.00	373.62	317.00	1.179

3	10.26	34.30	4.00	511.08	498.02	1.026
4	10.26	38.24	4.00	659.70	648.72	1.017
5	17.14	42.12	4.00	706.57	768.02	0.920
6	17.14	45.94	4.00	786.55	855.91	0.919
7	24.02	49.24	3.03	759.95	908.89	0.836
8	24.02	52.01	3.03	775.12	926.95	0.836
9	24.02	54.28	1.94	786.43	941.74	0.835
10	30.90	55.41	0.58	711.96	944.58	0.754
11	30.90	57.25	3.71	699.89	922.81	0.758
12	30.90	60.43	3.71	670.75	885.16	0.758
13	37.78	63.61	4.00	552.80	814.12	0.679
14	37.78	66.77	4.00	478.75	709.70	0.675
15	44.67	70.17	5.14	319.66	550.43	0.581
16	44.67	73.02	2.86	172.88	322.59	0.536
17	51.55	74.70	2.15	12.52	100.90	0.124

TABLE 5A - Total Base Force Data on the 17 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	3.37	26.35	4.00	588.18	421.93	1.394
2	3.37	30.34	4.00	1494.50	1265.80	1.181
3	10.26	34.30	4.00	2044.33	1960.24	1.043
4	10.26	38.24	4.00	2638.79	2553.41	1.033
5	17.14	42.12	4.00	2826.28	2935.65	0.963
6	17.14	45.94	4.00	3146.19	3271.63	0.962
7	24.02	49.24	3.03	2304.23	2517.16	0.915
8	24.02	52.01	3.03	2350.23	2567.18	0.915
9	24.02	54.28	1.94	1522.42	1665.21	0.914
10	30.90	55.41	0.58	411.78	468.76	0.878
11	30.90	57.25	3.71	2597.15	2938.26	0.884
12	30.90	60.43	3.71	2489.04	2818.36	0.883
13	37.78	63.61	4.00	2211.19	2573.65	0.859
14	37.78	66.77	4.00	1915.01	2243.55	0.854
15	44.67	70.17	5.14	1641.90	2010.74	0.817
16	44.67	73.02	2.86	495.07	656.99	0.754
17	51.55	74.70	2.15	26.89	134.74	0.200

TABLE 6 - Effective and Base Shear Stress Data on the 17 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	3.37	26.35	4.00	147.05	284.90	131.35
2	3.37	30.34	4.00	373.62	415.71	191.66
3	10.26	34.30	4.00	511.08	495.07	228.25
4	10.26	38.24	4.00	659.70	580.88	267.80
5	17.14	42.12	4.00	706.57	607.94	280.28
6	17.14	45.94	4.00	786.55	654.11	301.57
7	24.02	49.24	3.03	759.95	638.76	294.49
8	24.02	52.01	3.03	775.12	647.52	298.53
9	24.02	54.28	1.94	786.43	718.15	331.09
10	30.90	55.41	0.58	711.96	678.55	312.84
11	30.90	57.25	3.71	699.89	604.08	278.50
12	30.90	60.43	3.71	670.75	587.26	270.75
13	37.78	63.61	4.00	552.80	519.16	239.35
14	37.78	66.77	4.00	478.75	476.41	219.64
15	44.67	70.17	5.14	319.66	384.56	177.29
16	44.67	73.02	2.86	172.88	299.81	138.22
17	51.55	74.70	2.15	12.52	207.23	95.54

TABLE 6A - Effective and Base Shear Force Data on the 17 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)

1	3.37	26.35	4.00	588.18	1139.59	525.39
2	3.37	30.34	4.00	1494.50	1662.85	766.63
3	10.26	34.30	4.00	2044.33	1980.30	912.98
4	10.26	38.24	4.00	2638.79	2323.51	1071.21
5	17.14	42.12	4.00	2826.28	2431.75	1121.12
6	17.14	45.94	4.00	3146.19	2616.46	1206.27
7	24.02	49.24	3.03	2304.23	1936.76	892.91
8	24.02	52.01	3.03	2350.23	1963.32	905.15
9	24.02	54.28	1.94	1522.42	1390.24	640.95
10	30.90	55.41	0.58	411.78	392.46	180.94
11	30.90	57.25	3.71	2597.15	2241.63	1033.46
12	30.90	60.43	3.71	2489.04	2179.21	1004.69
13	37.78	63.61	4.00	2211.19	2076.63	957.39
14	37.78	66.77	4.00	1915.01	1905.63	878.56
15	44.67	70.17	5.14	1641.90	1975.23	910.64
16	44.67	73.02	2.86	495.07	858.55	395.82
17	51.55	74.70	2.15	26.89	445.00	205.16

Average Effective Normal Stress = 528.0235(psf)
Average Available Shear Strength = 507.6602(psf)
Total Length of Failure Surface = 58.1474(ft)

SUM OF MOMENTS = -0.109033E-03 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.3303709E-08
SUM OF FORCES = -.190984E-05 (lbs);Imbalance (Fraction of Total Weight) = -0.5786835E-10

Sum of Available Shear Forces = 29519.11(lbs)

Sum of Mobilized Shear Forces = 13609.26(lbs)

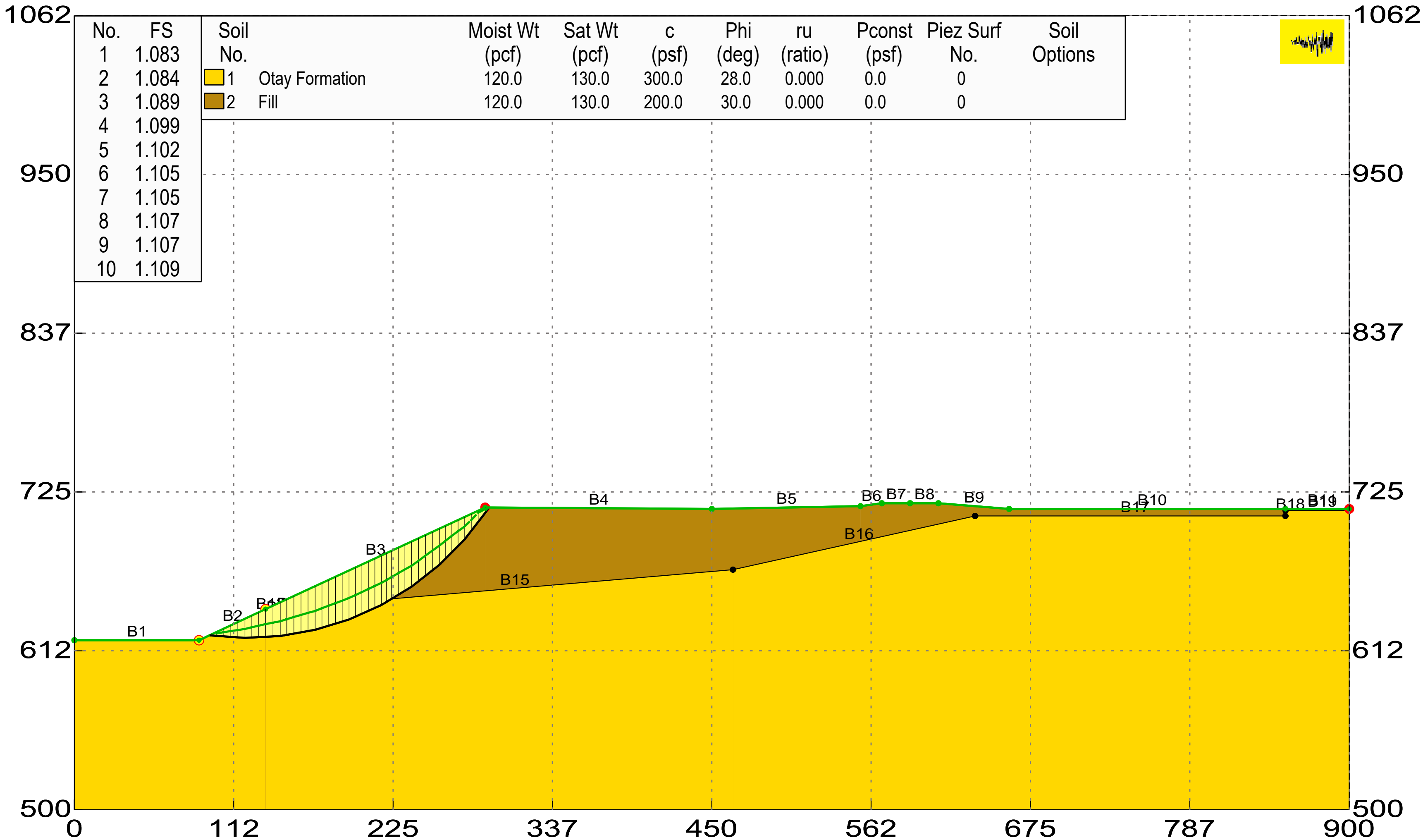
FS Balance Check: FS = 2.169046

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section A-A' Circular (Seismic)

Ninyo & Moore / WRM

\A-A' Circular (Seismic).gsd



No.	FS
1	1.083
2	1.084
3	1.089
4	1.099
5	1.102
6	1.105
7	1.105
8	1.107
9	1.107
10	1.109

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	

GEOSTASE FS = 1.083

Spencer Method

GEOSTASE
Slope Stability
Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Circular\A-A' Circular (Seismic).gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Circular\A-A' Circular (Seismic).OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section A-A' Circular (Seismic)

BOUNDARY DATA

11 Surface Boundaries
19 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	620.000	88.000	620.000	1
2	88.000	620.000	135.000	642.000	1
3	135.000	642.000	290.000	714.000	2
4	290.000	714.000	450.000	713.000	2
5	450.000	713.000	555.000	715.000	2
6	555.000	715.000	570.000	717.000	2
7	570.000	717.000	590.000	717.000	2
8	590.000	717.000	610.000	717.000	2
9	610.000	717.000	660.000	713.000	2
10	660.000	713.000	855.000	713.000	2
11	855.000	713.000	900.000	713.000	2
12	135.000	642.000	135.100	637.000	1
13	135.100	637.000	149.900	637.000	1
14	149.900	637.000	150.000	643.000	1
15	150.000	643.000	465.000	670.000	1
16	465.000	670.000	636.000	708.000	1
17	636.000	708.000	855.000	708.000	1
18	855.000	708.000	855.100	712.000	1
19	855.100	712.000	900.000	712.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

SEISMIC (EARTHQUAKE) DATA

Specified Peak Ground Acceleration Coefficient (PGA) = 0.374(g)
Default Velocity = 1.870(ft) per second
Specified Horizontal Earthquake Coefficient (kh) = 0.2000(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
(NOTE:Input Velocity = 0.0 will result in default Peak
Velocity = 2 times(PGA) times 2.5 fps or 0.762 mps)
Specified Seismic Pore-Pressure Factor = 0.000
Horizontal Seismic Force is Applied at Center of Gravity of Slices

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.1128(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 88.00(ft)
and X = 135.00(ft)

Each Surface Enters within a Range Between X = 290.00(ft)
and X = 900.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 500.00(ft)

Specified Maximum Radius = 5000.000(ft)

25.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces

Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 1506

Number of Trial Surfaces With Valid FS = 3494

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 30.1 %

Statistical Data On All Valid FS Values:
FS Max = 3.094 FS Min = 1.083 FS Ave = 2.100
Standard Deviation = 0.443 Coefficient of Variation = 21.07 %

Critical Surface is Sequence Number 547 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X = 122.265688(ft) ; Y = 824.954712(ft); and Radius = 203.246462(ft)

Circular Trial Failure Surface Generated With 11 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	95.446	623.485
2	120.384	621.717
3	145.349	623.023
4	169.966	627.385
5	193.861	634.736
6	216.673	644.965
7	238.056	657.917
8	257.687	673.396
9	275.270	691.168
10	290.537	710.965
11	292.323	713.985

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.224198	1.031802	0.268	0.1923959E+00
2	19.9500	1.205217	1.045646	0.363	0.1595707E+00
3	44.0083	0.000000	1.156963	0.966	0.1156963E+01
4	22.8654	1.187821	1.054611	0.422	0.1332099E+00
5	25.0522	1.169927	1.061821	0.467	0.1081056E+00
6	34.4672	0.936700	1.099526	0.686	0.1628255E+00
7	28.8082	1.122790	1.075386	0.550	0.4740330E-01
8	30.0850	1.098995	1.080398	0.579	0.1859749E-01
9	30.9093	1.080307	1.083756	0.599	0.3448741E-02
10	30.7804	1.083437	1.083224	0.596	0.2134901E-03
11	30.7879	1.083256	1.083255	0.596	0.1654751E-05
12	30.7880	1.083255	1.083255	0.596	0.2918654E-09

Factor Of Safety For The Preceding Specified Surface = 1.083
Theta (fx = 1.0) = 30.79 Deg Lambda = 0.596

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500

FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	100.43	624.79	0.619	3110.71	1.000	30.79	1592.3
2	105.42	625.70	0.543	7316.76	1.000	30.79	3745.2
3	110.41	626.50	0.505	12618.13	1.000	30.79	6458.7
4	115.40	627.21	0.478	19014.83	1.000	30.79	9733.0
5	120.38	627.88	0.458	26506.86	1.000	30.79	13567.9
6	125.26	629.13	0.463	31570.58	1.000	30.79	16159.8
7	130.13	630.28	0.460	37055.18	1.000	30.79	18967.1
8	135.00	631.35	0.454	42960.67	1.000	30.79	21989.9
9	135.10	631.37	0.454	43086.29	1.000	30.79	22054.2
10	140.22	632.44	0.447	49759.20	1.000	30.79	25469.9
11	145.35	633.45	0.438	56893.79	1.000	30.79	29121.8
12	149.90	634.90	0.441	60236.22	1.000	30.79	30832.6
13	150.00	634.93	0.441	60310.67	1.000	30.79	30870.8
14	154.99	636.47	0.442	64081.42	1.000	30.79	32800.9
15	159.98	637.95	0.441	67959.12	1.000	30.79	34785.7
16	164.97	639.38	0.438	71943.78	1.000	30.79	36825.3
17	169.97	640.77	0.434	76035.40	1.000	30.79	38919.7
18	174.75	642.65	0.436	76713.82	1.000	30.79	39266.9
19	179.52	644.49	0.438	77369.67	1.000	30.79	39602.6
20	184.30	646.30	0.438	78002.94	1.000	30.79	39926.8
21	189.08	648.08	0.437	78613.65	1.000	30.79	40239.4
22	193.86	649.82	0.436	79201.78	1.000	30.79	40540.4
23	198.42	652.00	0.439	76955.53	1.000	30.79	39390.6
24	202.99	654.16	0.441	74701.37	1.000	30.79	38236.8
25	207.55	656.30	0.443	72439.31	1.000	30.79	37079.0
26	212.11	658.42	0.444	70169.35	1.000	30.79	35917.0
27	216.67	660.53	0.445	67891.48	1.000	30.79	34751.1
28	220.28	662.61	0.449	64261.68	1.000	30.79	32893.1
29	223.88	664.69	0.452	60702.18	1.000	30.79	31071.2
30	228.61	667.40	0.457	56240.59	1.000	30.79	28787.4
31	233.33	670.10	0.461	51887.66	1.000	30.79	26559.3
32	238.06	672.81	0.466	47643.37	1.000	30.79	24386.8
33	242.96	676.31	0.478	41401.36	1.000	30.79	21191.8
34	247.87	679.86	0.494	35533.39	1.000	30.79	18188.2
35	252.78	683.51	0.514	30039.44	1.000	30.79	15376.1
36	257.69	686.95	0.530	24454.65	0.880	27.66	11352.3
37	262.08	690.50	0.546	18952.25	0.768	24.59	7886.1
38	266.48	693.90	0.559	14195.87	0.656	21.36	5170.4
39	270.87	697.18	0.569	10140.11	0.545	17.98	3130.4
40	275.27	700.34	0.574	6744.67	0.433	14.47	1685.3

41	280.18	705.01	0.628	3168.39	0.308	10.41	572.6
42	285.09	710.24	0.810	983.91	0.184	6.25	107.1
43	290.00	712.86	0.694	242.90	0.059	2.01	8.5
44	290.54	712.45	0.490	258.75	0.045	1.55	7.0
45	292.32	713.99	0.000	669.53	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 45 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	4.99	1.34	97.94	623.31	624.65	-4.06	25.08	5.00
2	4.99	4.03	102.93	622.95	626.99	-4.06	25.08	5.00
3	4.99	6.72	107.91	622.60	629.32	-4.06	25.08	5.00
4	4.99	9.41	112.90	622.25	631.66	-4.06	25.08	5.00
5	4.99	12.10	117.89	621.89	633.99	-4.06	25.08	5.00
6	4.87	14.45	122.82	621.84	636.30	3.00	25.08	4.88
7	4.87	16.48	127.69	622.10	638.58	3.00	25.08	4.88
8	4.87	18.51	132.56	622.35	640.86	3.00	25.08	4.88
9	0.10	19.54	135.05	622.48	642.02	3.00	24.92	0.10
10	5.12	20.62	137.66	622.62	643.24	3.00	24.92	5.13
11	5.12	22.73	142.79	622.89	645.62	3.00	24.92	5.13
12	4.55	24.44	147.62	623.43	647.86	10.05	24.92	4.62
13	0.10	25.11	149.95	623.84	648.94	10.05	24.92	0.10
14	4.99	25.84	152.50	624.29	650.13	10.05	24.92	5.07
15	4.99	27.27	157.49	625.17	652.45	10.05	24.92	5.07
16	4.99	28.71	162.48	626.06	654.76	10.05	24.92	5.07
17	4.99	30.14	167.47	626.94	657.08	10.05	24.92	5.07
18	4.78	31.23	172.36	628.12	659.35	17.10	24.92	5.00
19	4.78	31.98	177.13	629.59	661.57	17.10	24.92	5.00
20	4.78	32.73	181.91	631.06	663.79	17.10	24.92	5.00
21	4.78	33.48	186.69	632.53	666.01	17.10	24.92	5.00
22	4.78	34.23	191.47	634.00	668.23	17.10	24.92	5.00
23	4.56	34.64	196.14	635.76	670.40	24.15	24.92	5.00
24	4.56	34.72	200.70	637.80	672.52	24.15	24.92	5.00
25	4.56	34.79	205.27	639.85	674.64	24.15	24.92	5.00
26	4.56	34.86	209.83	641.90	676.76	24.15	24.92	5.00
27	4.56	34.94	214.39	643.94	678.88	24.15	24.92	5.00
28	3.61	34.72	218.48	646.06	680.78	31.20	24.92	4.22
29	3.61	34.21	222.08	648.24	682.45	31.20	24.92	4.22
30	4.72	33.62	226.25	650.76	684.39	31.20	24.92	5.52
31	4.72	32.95	230.97	653.62	686.58	31.20	24.92	5.52
32	4.72	32.29	235.69	656.49	688.77	31.20	24.92	5.52
33	4.91	31.16	240.51	659.85	691.01	38.26	24.92	6.25
34	4.91	29.57	245.42	663.72	693.29	38.26	24.92	6.25
35	4.91	27.98	250.33	667.59	695.57	38.26	24.92	6.25
36	4.91	26.39	255.23	671.46	697.85	38.26	24.92	6.25
37	4.40	24.39	259.89	675.62	700.01	45.31	24.92	6.25
38	4.40	21.99	264.28	680.06	702.05	45.31	24.92	6.25
39	4.40	19.59	268.68	684.50	704.09	45.31	24.92	6.25
40	4.40	17.19	273.07	688.95	706.14	45.31	24.92	6.25
41	4.91	13.95	277.72	694.35	708.30	52.36	24.92	8.04
42	4.91	9.86	282.63	700.72	710.58	52.36	24.92	8.04
43	4.91	5.78	287.54	707.08	712.86	52.36	24.92	8.04
44	0.54	3.38	290.27	710.62	714.00	52.36	-0.36	0.88
45	1.79	1.52	291.43	712.48	713.99	59.41	-0.36	3.51

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	95.446289	623.485497
2	100.433763	623.131790

3	105.421236	622.778083
4	110.408710	622.424377
5	115.396183	622.070670
6	120.383657	621.716963
7	125.255771	621.971912
8	130.127886	622.226861
9	135.000000	622.481810
10	135.100000	622.487043
11	140.224749	622.755212
12	145.349499	623.023381
13	149.900000	623.829646
14	150.000000	623.847364
15	154.991522	624.731770
16	159.983043	625.616175
17	164.974565	626.500581
18	169.966087	627.384986
19	174.745064	628.855146
20	179.524042	630.325306
21	184.303020	631.795467
22	189.081998	633.265627
23	193.860976	634.735787
24	198.423309	636.781543
25	202.985642	638.827299
26	207.547974	640.873056
27	212.110307	642.918812
28	216.672640	644.964568
29	220.278686	647.148772
30	223.884732	649.332977
31	228.608469	652.194174
32	233.332207	655.055372
33	238.055944	657.916569
34	242.963798	661.786384
35	247.871652	665.656199
36	252.779506	669.526014
37	257.687361	673.395828
38	262.082988	677.838908
39	266.478616	682.281988
40	270.874243	686.725068
41	275.269871	691.168148
42	280.179914	697.534684
43	285.089957	703.901219
44	290.000000	710.267755
45	290.537453	710.964636
46	292.323147	713.985480

Table 3 - Force and Pore Pressure Data On The 45 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	804.5	0.0	0.0	0.0	0.0	160.9	0.0	0.00
2	2413.4	0.0	0.0	0.0	0.0	482.7	0.0	0.00
3	4022.3	0.0	0.0	0.0	0.0	804.5	0.0	0.00
4	5631.2	0.0	0.0	0.0	0.0	1126.2	0.0	0.00
5	7240.1	0.0	0.0	0.0	0.0	1448.0	0.0	0.00
6	8450.7	0.0	0.0	0.0	0.0	1690.1	0.0	0.00
7	9635.0	0.0	0.0	0.0	0.0	1927.0	0.0	0.00
8	10819.2	0.0	0.0	0.0	0.0	2163.8	0.0	0.00
9	234.5	0.0	0.0	0.0	0.0	46.9	0.0	0.00
10	12678.0	0.0	0.0	0.0	0.0	2535.6	0.0	0.00
11	13977.0	0.0	0.0	0.0	0.0	2795.4	0.0	0.00
12	13344.6	0.0	0.0	0.0	0.0	2668.9	0.0	0.00
13	301.3	0.0	0.0	0.0	0.0	60.3	0.0	0.00
14	15476.2	0.0	0.0	0.0	0.0	3095.2	0.0	0.00
15	16335.3	0.0	0.0	0.0	0.0	3267.1	0.0	0.00
16	17194.4	0.0	0.0	0.0	0.0	3438.9	0.0	0.00
17	18053.5	0.0	0.0	0.0	0.0	3610.7	0.0	0.00
18	17911.0	0.0	0.0	0.0	0.0	3582.2	0.0	0.00
19	18340.9	0.0	0.0	0.0	0.0	3668.2	0.0	0.00

20	18770.9	0.0	0.0	0.0	0.0	3754.2	0.0	0.00
21	19200.9	0.0	0.0	0.0	0.0	3840.2	0.0	0.00
22	19630.8	0.0	0.0	0.0	0.0	3926.2	0.0	0.00
23	18966.3	0.0	0.0	0.0	0.0	3793.3	0.0	0.00
24	19006.5	0.0	0.0	0.0	0.0	3801.3	0.0	0.00
25	19046.8	0.0	0.0	0.0	0.0	3809.4	0.0	0.00
26	19087.0	0.0	0.0	0.0	0.0	3817.4	0.0	0.00
27	19127.3	0.0	0.0	0.0	0.0	3825.5	0.0	0.00
28	15023.8	0.0	0.0	0.0	0.0	3004.8	0.0	0.00
29	14803.5	0.0	0.0	0.0	0.0	2960.7	0.0	0.00
30	19058.5	0.0	0.0	0.0	0.0	3811.7	0.0	0.00
31	18680.5	0.0	0.0	0.0	0.0	3736.1	0.0	0.00
32	18302.4	0.0	0.0	0.0	0.0	3660.5	0.0	0.00
33	18351.2	0.0	0.0	0.0	0.0	3670.2	0.0	0.00
34	17414.7	0.0	0.0	0.0	0.0	3482.9	0.0	0.00
35	16478.3	0.0	0.0	0.0	0.0	3295.7	0.0	0.00
36	15541.9	0.0	0.0	0.0	0.0	3108.4	0.0	0.00
37	12867.1	0.0	0.0	0.0	0.0	2573.4	0.0	0.00
38	11600.5	0.0	0.0	0.0	0.0	2320.1	0.0	0.00
39	10333.9	0.0	0.0	0.0	0.0	2066.8	0.0	0.00
40	9067.3	0.0	0.0	0.0	0.0	1813.5	0.0	0.00
41	8217.4	0.0	0.0	0.0	0.0	1643.5	0.0	0.00
42	5810.1	0.0	0.0	0.0	0.0	1162.0	0.0	0.00
43	3402.7	0.0	0.0	0.0	0.0	680.5	0.0	0.00
44	218.1	0.0	0.0	0.0	0.0	43.6	0.0	0.00
45	324.9	0.0	0.0	0.0	0.0	65.0	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 561196.38(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 561196.38(lbs)

TOTAL AREA OF SLIDING MASS = 4676.64(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 45 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	1	300.00	28.00	
2	1	300.00	28.00	
3	1	300.00	28.00	
4	1	300.00	28.00	
5	1	300.00	28.00	
6	1	300.00	28.00	
7	1	300.00	28.00	
8	1	300.00	28.00	
9	1	300.00	28.00	
10	1	300.00	28.00	
11	1	300.00	28.00	
12	1	300.00	28.00	
13	1	300.00	28.00	
14	1	300.00	28.00	
15	1	300.00	28.00	
16	1	300.00	28.00	
17	1	300.00	28.00	
18	1	300.00	28.00	
19	1	300.00	28.00	
20	1	300.00	28.00	
21	1	300.00	28.00	
22	1	300.00	28.00	
23	1	300.00	28.00	
24	1	300.00	28.00	
25	1	300.00	28.00	
26	1	300.00	28.00	
27	1	300.00	28.00	
28	1	300.00	28.00	
29	1	300.00	28.00	
30	2	200.00	30.00	
31	2	200.00	30.00	
32	2	200.00	30.00	
33	2	200.00	30.00	
34	2	200.00	30.00	

35	2	200.00	30.00
36	2	200.00	30.00
37	2	200.00	30.00
38	2	200.00	30.00
39	2	200.00	30.00
40	2	200.00	30.00
41	2	200.00	30.00
42	2	200.00	30.00
43	2	200.00	30.00
44	2	200.00	30.00
45	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 45 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-4.06	97.94	5.00	518.23	161.30	3.213
2	-4.06	102.93	5.00	968.92	483.89	2.002
3	-4.06	107.91	5.00	1419.62	806.48	1.760
4	-4.06	112.90	5.00	1870.31	1129.07	1.657
5	-4.06	117.89	5.00	2321.00	1451.67	1.599
6	3.00	122.82	4.88	2195.60	1734.50	1.266
7	3.00	127.69	4.88	2475.70	1977.57	1.252
8	3.00	132.56	4.88	2755.80	2220.65	1.241
9	3.00	135.05	0.10	2898.70	2344.66	1.236
10	3.00	137.66	5.13	3047.59	2473.87	1.232
11	3.00	142.79	5.13	3339.69	2727.35	1.225
12	10.05	147.62	4.62	2998.66	2932.55	1.023
13	10.05	149.95	0.10	3077.12	3012.72	1.021
14	10.05	152.50	5.07	3163.02	3100.50	1.020
15	10.05	157.49	5.07	3331.45	3272.61	1.018
16	10.05	162.48	5.07	3499.88	3444.72	1.016
17	10.05	167.47	5.07	3668.31	3616.82	1.014
18	17.10	172.36	5.00	3245.30	3747.86	0.866
19	17.10	177.13	5.00	3321.36	3837.83	0.865
20	17.10	181.91	5.00	3397.43	3927.80	0.865
21	17.10	186.69	5.00	3473.50	4017.77	0.865
22	17.10	191.47	5.00	3549.56	4107.75	0.864
23	24.15	196.14	5.00	3098.89	4157.14	0.745
24	24.15	200.70	5.00	3105.40	4165.96	0.745
25	24.15	205.27	5.00	3111.90	4174.79	0.745
26	24.15	209.83	5.00	3118.41	4183.61	0.745
27	24.15	214.39	5.00	3124.91	4192.43	0.745
28	31.20	218.48	4.22	2685.03	4166.29	0.644
29	31.20	222.08	4.22	2645.63	4105.20	0.644
30	31.20	226.25	5.52	2600.00	4034.63	0.644
31	31.20	230.97	5.52	2548.39	3954.60	0.644
32	31.20	235.69	5.52	2496.79	3874.57	0.644
33	38.26	240.51	6.25	2071.86	3739.15	0.554
34	38.26	245.42	6.25	1964.98	3548.34	0.554
35	38.26	250.33	6.25	1858.10	3357.54	0.553
36	38.26	255.23	6.25	1792.58	3166.73	0.566
37	45.31	259.89	6.25	1455.13	2927.26	0.497
38	45.31	264.28	6.25	1343.46	2639.11	0.509
39	45.31	268.68	6.25	1223.07	2350.96	0.520
40	45.31	273.07	6.25	1093.46	2062.81	0.530
41	52.36	277.72	8.04	768.05	1673.59	0.459
42	52.36	282.63	8.04	528.67	1183.30	0.447
43	52.36	287.54	8.04	264.99	693.01	0.382
44	52.36	290.27	0.88	98.88	405.86	0.244
45	59.41	291.43	3.51	-68.58	181.92	-0.377

TABLE 5A - Total Base Force Data on the 45 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-4.06	97.94	5.00	2591.14	804.46	3.221
2	-4.06	102.93	5.00	4844.61	2413.38	2.007
3	-4.06	107.91	5.00	7098.08	4022.30	1.765
4	-4.06	112.90	5.00	9351.55	5631.22	1.661
5	-4.06	117.89	5.00	11605.02	7240.14	1.603
6	3.00	122.82	4.88	10711.87	8450.67	1.268
7	3.00	127.69	4.88	12078.41	9634.96	1.254
8	3.00	132.56	4.88	13444.94	10819.24	1.243
9	3.00	135.05	0.10	290.27	234.47	1.238
10	3.00	137.66	5.13	15639.53	12677.97	1.234
11	3.00	142.79	5.13	17138.48	13977.00	1.226
12	10.05	147.62	4.62	13857.94	13344.56	1.038
13	10.05	149.95	0.10	312.50	301.27	1.037
14	10.05	152.50	5.07	16034.21	15476.21	1.036
15	10.05	157.49	5.07	16888.02	16335.29	1.034
16	10.05	162.48	5.07	17741.83	17194.38	1.032
17	10.05	167.47	5.07	18595.63	18053.46	1.030
18	17.10	172.36	5.00	16226.48	17910.96	0.906
19	17.10	177.13	5.00	16606.81	18340.93	0.905
20	17.10	181.91	5.00	16987.15	18770.89	0.905
21	17.10	186.69	5.00	17367.48	19200.86	0.905
22	17.10	191.47	5.00	17747.81	19630.82	0.904
23	24.15	196.14	5.00	15494.47	18966.26	0.817
24	24.15	200.70	5.00	15526.99	19006.51	0.817
25	24.15	205.27	5.00	15559.51	19046.77	0.817
26	24.15	209.83	5.00	15592.03	19087.02	0.817
27	24.15	214.39	5.00	15624.55	19127.27	0.817
28	31.20	218.48	4.22	11320.00	15023.85	0.753
29	31.20	222.08	4.22	11153.87	14803.53	0.753
30	31.20	226.25	5.52	14358.98	19058.55	0.753
31	31.20	230.97	5.52	14074.00	18680.49	0.753
32	31.20	235.69	5.52	13789.02	18302.43	0.753
33	38.26	240.51	6.25	12949.14	18351.19	0.706
34	38.26	245.42	6.25	12281.14	17414.75	0.705
35	38.26	250.33	6.25	11613.15	16478.31	0.705
36	38.26	255.23	6.25	11203.63	15541.87	0.721
37	45.31	259.89	6.25	9094.57	12867.13	0.707
38	45.31	264.28	6.25	8396.62	11600.54	0.724
39	45.31	268.68	6.25	7644.18	10333.94	0.740
40	45.31	273.07	6.25	6834.14	9067.35	0.754
41	52.36	277.72	8.04	6175.14	8217.41	0.751
42	52.36	282.63	8.04	4250.50	5810.07	0.732
43	52.36	287.54	8.04	2130.53	3402.73	0.626
44	52.36	290.27	0.88	87.02	218.13	0.399
45	59.41	291.43	3.51	-240.66	324.85	-0.741

TABLE 6 - Effective and Base Shear Stress Data on the 45 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-4.06	97.94	5.00	518.23	575.55	531.31
2	-4.06	102.93	5.00	968.92	815.18	752.53
3	-4.06	107.91	5.00	1419.62	1054.82	973.75
4	-4.06	112.90	5.00	1870.31	1294.46	1194.97
5	-4.06	117.89	5.00	2321.00	1534.10	1416.19
6	3.00	122.82	4.88	2195.60	1467.42	1354.64
7	3.00	127.69	4.88	2475.70	1616.35	1492.13
8	3.00	132.56	4.88	2755.80	1765.28	1629.61
9	3.00	135.05	0.10	2898.70	1841.27	1699.75
10	3.00	137.66	5.13	3047.59	1920.43	1772.84
11	3.00	142.79	5.13	3339.69	2075.74	1916.21
12	10.05	147.62	4.62	2998.66	1894.42	1748.82

13	10.05	149.95	0.10	3077.12	1936.13	1787.33
14	10.05	152.50	5.07	3163.02	1981.81	1829.49
15	10.05	157.49	5.07	3331.45	2071.36	1912.17
16	10.05	162.48	5.07	3499.88	2160.92	1994.84
17	10.05	167.47	5.07	3668.31	2250.47	2077.51
18	17.10	172.36	5.00	3245.30	2025.55	1869.88
19	17.10	177.13	5.00	3321.36	2066.00	1907.21
20	17.10	181.91	5.00	3397.43	2106.45	1944.55
21	17.10	186.69	5.00	3473.50	2146.89	1981.89
22	17.10	191.47	5.00	3549.56	2187.34	2019.23
23	24.15	196.14	5.00	3098.89	1947.71	1798.02
24	24.15	200.70	5.00	3105.40	1951.17	1801.21
25	24.15	205.27	5.00	3111.90	1954.63	1804.40
26	24.15	209.83	5.00	3118.41	1958.09	1807.60
27	24.15	214.39	5.00	3124.91	1961.54	1810.79
28	31.20	218.48	4.22	2685.03	1727.66	1594.88
29	31.20	222.08	4.22	2645.63	1706.71	1575.54
30	31.20	226.25	5.52	2600.00	1701.11	1570.37
31	31.20	230.97	5.52	2548.39	1671.32	1542.86
32	31.20	235.69	5.52	2496.79	1641.52	1515.36
33	38.26	240.51	6.25	2071.86	1396.19	1288.88
34	38.26	245.42	6.25	1964.98	1334.48	1231.92
35	38.26	250.33	6.25	1858.10	1272.78	1174.96
36	38.26	255.23	6.25	1792.58	1234.95	1140.03
37	45.31	259.89	6.25	1455.13	1040.12	960.18
38	45.31	264.28	6.25	1343.46	975.65	900.66
39	45.31	268.68	6.25	1223.07	906.14	836.50
40	45.31	273.07	6.25	1093.46	831.31	767.42
41	52.36	277.72	8.04	768.05	643.44	593.98
42	52.36	282.63	8.04	528.67	505.23	466.40
43	52.36	287.54	8.04	264.99	352.99	325.86
44	52.36	290.27	0.88	98.88	257.09	237.33
45	59.41	291.43	3.51	0.00	0.00	0.00

TABLE 6A - Effective and Base Shear Force Data on the 45 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-4.06	97.94	5.00	2591.14	2877.73	2656.56
2	-4.06	102.93	5.00	4844.61	4075.92	3762.66
3	-4.06	107.91	5.00	7098.08	5274.12	4868.77
4	-4.06	112.90	5.00	9351.55	6472.31	5974.87
5	-4.06	117.89	5.00	11605.02	7670.50	7080.97
6	3.00	122.82	4.88	10711.87	7159.24	6609.00
7	3.00	127.69	4.88	12078.41	7885.84	7279.76
8	3.00	132.56	4.88	13444.94	8612.44	7950.52
9	3.00	135.05	0.10	290.27	184.38	170.21
10	3.00	137.66	5.13	15639.53	9855.21	9097.78
11	3.00	142.79	5.13	17138.48	10652.22	9833.53
12	10.05	147.62	4.62	13857.94	8754.81	8081.95
13	10.05	149.95	0.10	312.50	196.63	181.52
14	10.05	152.50	5.07	16034.21	10046.32	9274.20
15	10.05	157.49	5.07	16888.02	10500.30	9693.28
16	10.05	162.48	5.07	17741.83	10954.28	10112.37
17	10.05	167.47	5.07	18595.63	11408.25	10531.46
18	17.10	172.36	5.00	16226.48	10127.77	9349.39
19	17.10	177.13	5.00	16606.81	10330.00	9536.07
20	17.10	181.91	5.00	16987.15	10532.23	9722.76
21	17.10	186.69	5.00	17367.48	10734.45	9909.44
22	17.10	191.47	5.00	17747.81	10936.68	10096.13
23	24.15	196.14	5.00	15494.47	9738.56	8990.09
24	24.15	200.70	5.00	15526.99	9755.85	9006.05
25	24.15	205.27	5.00	15559.51	9773.14	9022.01
26	24.15	209.83	5.00	15592.03	9790.43	9037.98
27	24.15	214.39	5.00	15624.55	9807.72	9053.94
28	31.20	218.48	4.22	11320.00	7283.74	6723.94
29	31.20	222.08	4.22	11153.87	7195.41	6642.40
30	31.20	226.25	5.52	14358.98	9394.70	8672.66
31	31.20	230.97	5.52	14074.00	9230.17	8520.77

32	31.20	235.69	5.52	13789.02	9065.63	8368.88
33	38.26	240.51	6.25	12949.14	8726.19	8055.53
34	38.26	245.42	6.25	12281.14	8340.52	7699.50
35	38.26	250.33	6.25	11613.15	7954.86	7343.47
36	38.26	255.23	6.25	11203.63	7718.42	7125.21
37	45.31	259.89	6.25	9094.57	6500.75	6001.13
38	45.31	264.28	6.25	8396.62	6097.79	5629.14
39	45.31	268.68	6.25	7644.18	5663.37	5228.10
40	45.31	273.07	6.25	6834.14	5195.69	4796.37
41	52.36	277.72	8.04	6175.14	5173.22	4775.62
42	52.36	282.63	8.04	4250.50	4062.02	3749.83
43	52.36	287.54	8.04	2130.53	2838.06	2619.94
44	52.36	290.27	0.88	87.02	226.25	208.86
45	59.41	291.43	3.51	0.00	0.00	0.00

Average Effective Normal Stress = 2223.4219(psf)
Average Available Shear Strength = 1465.0357(psf)
Total Length of Failure Surface = 228.5092(ft)

SUM OF MOMENTS = -0.877362E-04 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.1563377E-09
SUM OF FORCES = -.510676E-01 (lbs);Imbalance (Fraction of Total Weight) = -0.9099779E-07

Sum of Available Shear Forces = 334774.08(lbs)

Sum of Mobilized Shear Forces = 309044.60(lbs)

FS Balance Check: FS = 1.083255

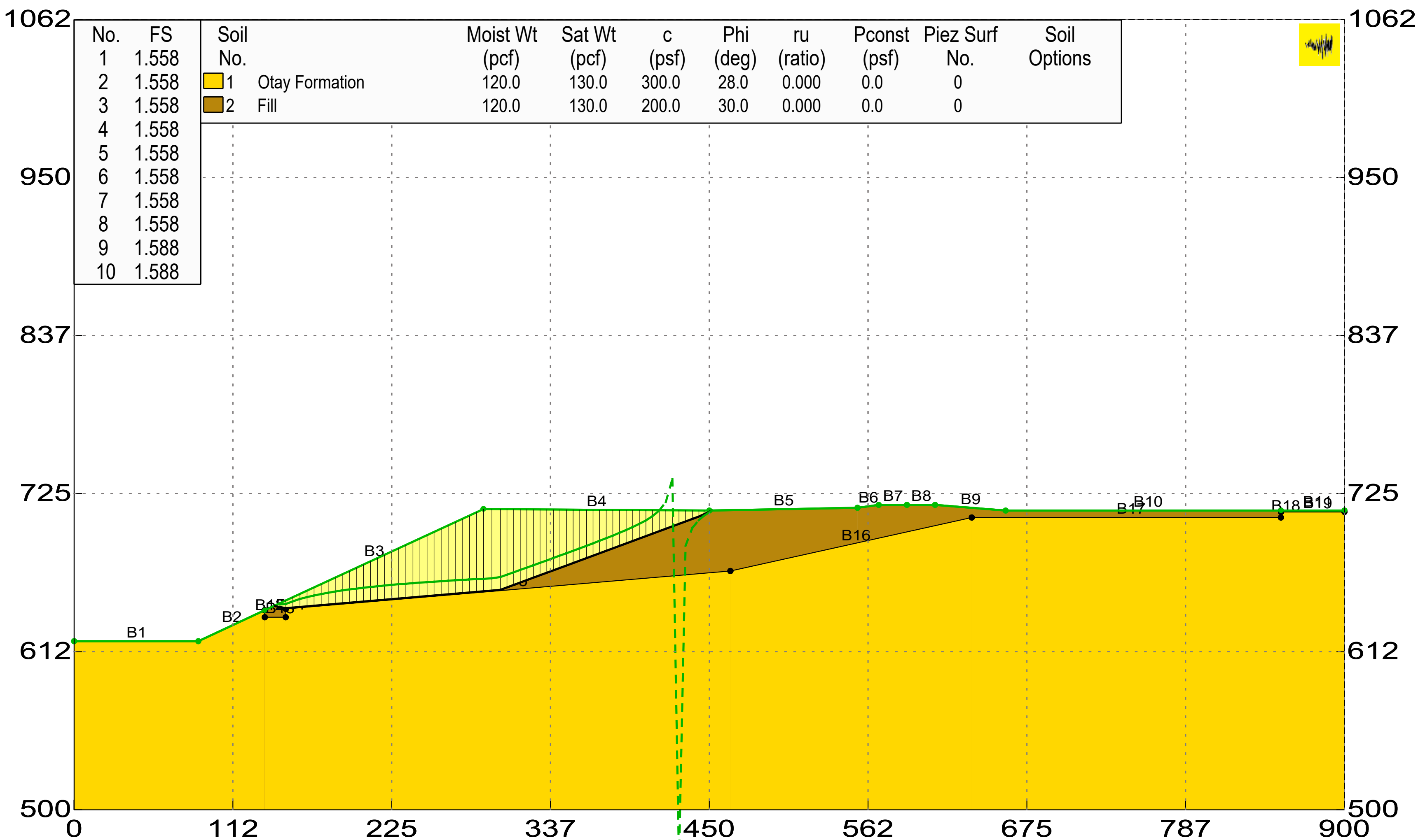
The FS Calculation To Determine The Seismic Yield
Coefficient (ky) Did Not Converge in 50 Iterations.

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section A-A' Block (Seismic)

Ninyo & Moore / WRM

\A-A' Block (Seismic).gsd



GEOSTASE FS = 1.558

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-7

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Block\A-A' Block (Seismic).gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\A-A'\Block\A-A' Block (Seismic).OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section A-A' Block (Seismic)

BOUNDARY DATA

11 Surface Boundaries
19 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	620.000	88.000	620.000	1
2	88.000	620.000	135.000	642.000	1
3	135.000	642.000	290.000	714.000	2
4	290.000	714.000	450.000	713.000	2
5	450.000	713.000	555.000	715.000	2
6	555.000	715.000	570.000	717.000	2
7	570.000	717.000	590.000	717.000	2
8	590.000	717.000	610.000	717.000	2
9	610.000	717.000	660.000	713.000	2
10	660.000	713.000	855.000	713.000	2
11	855.000	713.000	900.000	713.000	2
12	135.000	642.000	135.100	637.000	1
13	135.100	637.000	149.900	637.000	1
14	149.900	637.000	150.000	643.000	1
15	150.000	643.000	465.000	670.000	1
16	465.000	670.000	636.000	708.000	1
17	636.000	708.000	855.000	708.000	1
18	855.000	708.000	855.100	712.000	1
19	855.100	712.000	900.000	712.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

SEISMIC (EARTHQUAKE) DATA

Specified Peak Ground Acceleration Coefficient (PGA) = 0.374(g)
Default Velocity = 1.870(ft) per second
Specified Horizontal Earthquake Coefficient (kh) = 0.2000(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
(NOTE:Input Velocity = 0.0 will result in default Peak
Velocity = 2 times(PGA) times 2.5 fps or 0.762 mps)
Specified Seismic Pore-Pressure Factor = 0.000
Horizontal Seismic Force is Applied at Center of Gravity of Slices

A Non-Circular Zone Search Has Been Selected For Analysis
Using Random Generation Within Specified Zones.

2 Zones Defined For Generation Of Non-Circular Surfaces

5000 Trial Surfaces Have Been Generated.

Length Of Line Segments For Active And Passive Portions Of
Non-Circular Zone Search = 25.00(ft)

Zone No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Height (ft)
1	150.00	643.50	150.00	643.50	0.10
2	150.10	643.50	465.00	670.50	0.10

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Constant (1.0)

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 3758

Number of Trial Surfaces With Valid FS = 1242

Percentage of Trial Surfaces With Non-Converged and/or

Non-Valid FS Solutions of the Total Attempted = 75.2 %

Statistical Data On All Valid FS Values:
FS Max = 12.184 FS Min = 1.558 FS Ave = 2.202
Standard Deviation = 1.194 Coefficient of Variation = 54.25 %

Critical Surface is Sequence Number 108 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	0.000000	1.518894	0.268	0.1518894E+01
2	19.9500	0.886289	1.527130	0.363	0.6408409E+00
3	23.5620	1.232911	1.533686	0.436	0.3007755E+00
4	26.7560	1.380052	1.539972	0.504	0.1599195E+00
5	30.3816	1.481424	1.547796	0.586	0.6637214E-01
6	32.9535	1.532456	1.553892	0.648	0.2143612E-01
7	34.1801	1.553046	1.556988	0.679	0.3941989E-02
8	34.4565	1.557423	1.557704	0.686	0.2811723E-03
9	34.4777	1.557756	1.557760	0.687	0.4007720E-05
10	34.4780	1.557760	1.557760	0.687	0.7232433E-08

Factor Of Safety For The Preceding Specified Surface = 1.558
Theta (fx = 1.0) = 34.48 Deg Lambda = 0.687

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Constant (1.0)

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	145.80	646.12	0.671	1801.21	1.000	34.48	1019.6

2	150.00	646.51	0.551	4735.02	1.000	34.48	2680.4
3	155.00	648.44	0.612	6112.47	1.000	34.48	3460.2
4	160.00	650.02	0.612	7619.60	1.000	34.48	4313.4
5	165.00	651.37	0.591	9256.41	1.000	34.48	5240.0
6	170.00	652.54	0.562	11022.89	1.000	34.48	6239.9
7	175.00	653.57	0.531	12919.05	1.000	34.48	7313.3
8	180.00	654.50	0.501	14944.89	1.000	34.48	8460.1
9	185.00	655.34	0.472	17100.40	1.000	34.48	9680.4
10	190.00	656.10	0.445	19385.59	1.000	34.48	10974.0
11	195.00	656.79	0.419	21800.46	1.000	34.48	12341.0
12	200.00	657.44	0.396	24345.01	1.000	34.48	13781.5
13	205.00	658.03	0.373	27019.23	1.000	34.48	15295.3
14	210.00	658.59	0.353	29823.14	1.000	34.48	16882.6
15	215.00	659.11	0.334	32756.71	1.000	34.48	18543.2
16	220.00	659.60	0.316	35819.97	1.000	34.48	20277.3
17	225.00	660.06	0.299	39012.90	1.000	34.48	22084.8
18	230.00	660.49	0.283	42335.51	1.000	34.48	23965.7
19	235.00	660.90	0.269	45787.80	1.000	34.48	25920.0
20	240.00	661.30	0.255	49369.77	1.000	34.48	27947.7
21	245.00	661.67	0.242	53081.41	1.000	34.48	30048.8
22	250.00	662.02	0.230	56922.73	1.000	34.48	32223.4
23	255.00	662.36	0.218	60893.72	1.000	34.48	34471.3
24	260.00	662.69	0.207	64994.40	1.000	34.48	36792.7
25	265.00	663.00	0.197	69224.75	1.000	34.48	39187.4
26	270.00	663.30	0.187	73584.78	1.000	34.48	41655.6
27	275.00	663.59	0.178	78074.48	1.000	34.48	44197.2
28	280.00	663.87	0.169	82693.86	1.000	34.48	46812.2
29	285.00	664.15	0.160	87442.93	1.000	34.48	49500.5
30	290.00	664.41	0.152	92321.66	1.000	34.48	52262.4
31	296.00	664.87	0.153	98229.06	1.000	34.48	55606.5
32	302.00	665.59	0.158	104091.20	1.000	34.48	58925.0
33	306.68	667.28	0.162	97082.22	1.000	34.48	54957.3
34	311.37	668.96	0.166	90315.66	1.000	34.48	51126.8
35	316.06	670.65	0.171	83791.53	1.000	34.48	47433.5
36	320.74	672.34	0.176	77509.81	1.000	34.48	43877.5
37	325.43	674.04	0.182	71470.52	1.000	34.48	40458.7
38	330.12	675.74	0.188	65673.65	1.000	34.48	37177.2
39	334.80	677.45	0.194	60119.21	1.000	34.48	34032.9
40	339.49	679.16	0.201	54807.19	1.000	34.48	31025.8
41	344.18	680.88	0.210	49737.59	1.000	34.48	28155.9
42	348.87	682.61	0.219	44910.41	1.000	34.48	25423.3
43	353.55	684.35	0.229	40325.66	1.000	34.48	22827.9
44	358.24	686.10	0.240	35983.33	1.000	34.48	20369.8
45	362.93	687.87	0.253	31883.42	1.000	34.48	18048.9
46	367.61	689.66	0.269	28025.93	1.000	34.48	15865.2
47	372.30	691.47	0.286	24410.87	1.000	34.48	13818.7
48	376.99	693.31	0.307	21038.23	1.000	34.48	11909.5
49	381.67	695.19	0.332	17908.02	1.000	34.48	10137.5
50	386.36	697.12	0.363	15020.22	1.000	34.48	8502.8
51	391.05	699.13	0.401	12374.85	1.000	34.48	7005.3
52	395.74	701.24	0.450	9971.90	1.000	34.48	5645.0
53	400.42	703.50	0.515	7811.38	1.000	34.48	4421.9
54	405.11	706.02	0.607	5893.28	1.000	34.48	3336.1
55	409.80	708.99	0.745	4217.60	1.000	34.48	2387.5
56	414.48	712.87	0.976	2784.34	1.000	34.48	1576.2
57	419.17	719.09	1.000+	1593.51	1.000	34.48	902.1
58	423.86	735.50	1.000+	645.10	1.000	34.48	365.2
59	428.54	462.56	0.000-	-60.89	1.000	34.48	-34.5
60	433.23	688.01	0.000-	-524.45	1.000	34.48	-296.9
61	437.92	700.54	0.000-	-745.59	1.000	34.48	-422.1
62	442.61	706.11	0.000-	-724.31	1.000	34.48	-410.0
63	446.30	709.34	0.000-	-627.37	1.000	34.48	-355.1
64	450.00	711.78	0.000-	-303.10	1.000	34.48	-171.6
65	452.23	713.04	0.000	0.00	1.000	34.48	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 65 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	4.20	1.37	143.70	644.68	646.04	-10.59	24.92	4.27
2	4.20	4.10	147.90	643.89	647.99	-10.59	24.92	4.27
3	5.00	6.42	152.50	643.71	650.13	4.90	24.92	5.02
4	5.00	8.31	157.50	644.14	652.45	4.90	24.92	5.02
5	5.00	10.20	162.50	644.57	654.77	4.90	24.92	5.02
6	5.00	12.10	167.50	645.00	657.10	4.90	24.92	5.02
7	5.00	13.99	172.50	645.43	659.42	4.90	24.92	5.02
8	5.00	15.89	177.50	645.85	661.74	4.90	24.92	5.02
9	5.00	17.78	182.50	646.28	664.06	4.90	24.92	5.02
10	5.00	19.68	187.50	646.71	666.39	4.90	24.92	5.02
11	5.00	21.57	192.50	647.14	668.71	4.90	24.92	5.02
12	5.00	23.46	197.50	647.57	671.03	4.90	24.92	5.02
13	5.00	25.36	202.50	648.00	673.35	4.90	24.92	5.02
14	5.00	27.25	207.50	648.42	675.68	4.90	24.92	5.02
15	5.00	29.15	212.50	648.85	678.00	4.90	24.92	5.02
16	5.00	31.04	217.50	649.28	680.32	4.90	24.92	5.02
17	5.00	32.94	222.50	649.71	682.65	4.90	24.92	5.02
18	5.00	34.83	227.50	650.14	684.97	4.90	24.92	5.02
19	5.00	36.72	232.50	650.57	687.29	4.90	24.92	5.02
20	5.00	38.62	237.50	650.99	689.61	4.90	24.92	5.02
21	5.00	40.51	242.50	651.42	691.94	4.90	24.92	5.02
22	5.00	42.41	247.50	651.85	694.26	4.90	24.92	5.02
23	5.00	44.30	252.50	652.28	696.58	4.90	24.92	5.02
24	5.00	46.20	257.50	652.71	698.90	4.90	24.92	5.02
25	5.00	48.09	262.50	653.14	701.23	4.90	24.92	5.02
26	5.00	49.99	267.50	653.56	703.55	4.90	24.92	5.02
27	5.00	51.88	272.50	653.99	705.87	4.90	24.92	5.02
28	5.00	53.77	277.50	654.42	708.19	4.90	24.92	5.02
29	5.00	55.67	282.50	654.85	710.52	4.90	24.92	5.02
30	5.00	57.56	287.50	655.28	712.84	4.90	24.92	5.02
31	6.00	58.23	293.00	655.75	713.98	4.90	-0.36	6.02
32	6.00	57.68	299.00	656.26	713.94	4.90	-0.36	6.02
33	4.69	56.52	304.34	657.39	713.91	20.38	-0.36	5.00
34	4.69	54.75	309.03	659.13	713.88	20.38	-0.36	5.00
35	4.69	52.98	313.71	660.87	713.85	20.38	-0.36	5.00
36	4.69	51.21	318.40	662.61	713.82	20.38	-0.36	5.00
37	4.69	49.44	323.09	664.35	713.79	20.38	-0.36	5.00
38	4.69	47.67	327.77	666.09	713.76	20.38	-0.36	5.00
39	4.69	45.90	332.46	667.84	713.73	20.38	-0.36	5.00
40	4.69	44.13	337.15	669.58	713.71	20.38	-0.36	5.00
41	4.69	42.36	341.83	671.32	713.68	20.38	-0.36	5.00
42	4.69	40.59	346.52	673.06	713.65	20.38	-0.36	5.00
43	4.69	38.82	351.21	674.80	713.62	20.38	-0.36	5.00
44	4.69	37.05	355.90	676.54	713.59	20.38	-0.36	5.00
45	4.69	35.27	360.58	678.28	713.56	20.38	-0.36	5.00
46	4.69	33.50	365.27	680.03	713.53	20.38	-0.36	5.00
47	4.69	31.73	369.96	681.77	713.50	20.38	-0.36	5.00
48	4.69	29.96	374.64	683.51	713.47	20.38	-0.36	5.00
49	4.69	28.19	379.33	685.25	713.44	20.38	-0.36	5.00
50	4.69	26.42	384.02	686.99	713.41	20.38	-0.36	5.00
51	4.69	24.65	388.70	688.73	713.38	20.38	-0.36	5.00
52	4.69	22.88	393.39	690.47	713.35	20.38	-0.36	5.00
53	4.69	21.11	398.08	692.21	713.32	20.38	-0.36	5.00
54	4.69	19.34	402.77	693.96	713.30	20.38	-0.36	5.00
55	4.69	17.57	407.45	695.70	713.27	20.38	-0.36	5.00
56	4.69	15.80	412.14	697.44	713.24	20.38	-0.36	5.00
57	4.69	14.03	416.83	699.18	713.21	20.38	-0.36	5.00
58	4.69	12.26	421.51	700.92	713.18	20.38	-0.36	5.00
59	4.69	10.49	426.20	702.66	713.15	20.38	-0.36	5.00
60	4.69	8.72	430.89	704.40	713.12	20.38	-0.36	5.00
61	4.69	6.95	435.57	706.14	713.09	20.38	-0.36	5.00
62	4.69	5.17	440.26	707.89	713.06	20.38	-0.36	5.00
63	3.70	3.45	444.45	709.58	713.03	24.00	-0.36	4.05
64	3.70	1.79	448.15	711.23	713.01	24.00	-0.36	4.05
65	2.23	0.48	451.11	712.55	713.02	24.00	1.09	2.44

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	141.606586	645.068866
2	145.803293	644.284222
3	150.000000	643.499579
4	155.000000	643.927823
5	160.000000	644.356067
6	165.000000	644.784311
7	170.000000	645.212555
8	175.000000	645.640799
9	180.000000	646.069043
10	185.000000	646.497287
11	190.000000	646.925531
12	195.000000	647.353775
13	200.000000	647.782019
14	205.000000	648.210263
15	210.000000	648.638506
16	215.000000	649.066750
17	220.000000	649.494994
18	225.000000	649.923238
19	230.000000	650.351482
20	235.000000	650.779726
21	240.000000	651.207970
22	245.000000	651.636214
23	250.000000	652.064458
24	255.000000	652.492702
25	260.000000	652.920946
26	265.000000	653.349190
27	270.000000	653.777434
28	275.000000	654.205678
29	280.000000	654.633922
30	285.000000	655.062166
31	290.000000	655.490410
32	295.997714	656.004107
33	301.995428	656.517804
34	306.682421	658.259098
35	311.369413	660.000393
36	316.056405	661.741687
37	320.743397	663.482982
38	325.430389	665.224276
39	330.117382	666.965570
40	334.804374	668.706865
41	339.491366	670.448159
42	344.178358	672.189453
43	348.865350	673.930748
44	353.552342	675.672042
45	358.239335	677.413337
46	362.926327	679.154631
47	367.613319	680.895925
48	372.300311	682.637220
49	376.987303	684.378514
50	381.674296	686.119809
51	386.361288	687.861103
52	391.048280	689.602397
53	395.735272	691.343692
54	400.422264	693.084986
55	405.109256	694.826281
56	409.796249	696.567575
57	414.483241	698.308869
58	419.170233	700.050164
59	423.857225	701.791458
60	428.544217	703.532752
61	433.231210	705.274047
62	437.918202	707.015341
63	442.605194	708.756636
64	446.302597	710.403109
65	450.000000	712.049581
66	452.229681	713.042470

Table 3 - Force and Pore Pressure Data On The 65 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	688.4	0.0	0.0	0.0	0.0	137.7	0.0	0.00
2	2065.3	0.0	0.0	0.0	0.0	413.1	0.0	0.00
3	3849.2	0.0	0.0	0.0	0.0	769.8	0.0	0.00
4	4985.8	0.0	0.0	0.0	0.0	997.2	0.0	0.00
5	6122.4	0.0	0.0	0.0	0.0	1224.5	0.0	0.00
6	7259.0	0.0	0.0	0.0	0.0	1451.8	0.0	0.00
7	8395.6	0.0	0.0	0.0	0.0	1679.1	0.0	0.00
8	9532.2	0.0	0.0	0.0	0.0	1906.4	0.0	0.00
9	10668.8	0.0	0.0	0.0	0.0	2133.8	0.0	0.00
10	11805.4	0.0	0.0	0.0	0.0	2361.1	0.0	0.00
11	12942.0	0.0	0.0	0.0	0.0	2588.4	0.0	0.00
12	14078.6	0.0	0.0	0.0	0.0	2815.7	0.0	0.00
13	15215.2	0.0	0.0	0.0	0.0	3043.0	0.0	0.00
14	16351.8	0.0	0.0	0.0	0.0	3270.4	0.0	0.00
15	17488.4	0.0	0.0	0.0	0.0	3497.7	0.0	0.00
16	18625.0	0.0	0.0	0.0	0.0	3725.0	0.0	0.00
17	19761.6	0.0	0.0	0.0	0.0	3952.3	0.0	0.00
18	20898.2	0.0	0.0	0.0	0.0	4179.6	0.0	0.00
19	22034.8	0.0	0.0	0.0	0.0	4407.0	0.0	0.00
20	23171.4	0.0	0.0	0.0	0.0	4634.3	0.0	0.00
21	24308.0	0.0	0.0	0.0	0.0	4861.6	0.0	0.00
22	25444.6	0.0	0.0	0.0	0.0	5088.9	0.0	0.00
23	26581.2	0.0	0.0	0.0	0.0	5316.2	0.0	0.00
24	27717.8	0.0	0.0	0.0	0.0	5543.6	0.0	0.00
25	28854.4	0.0	0.0	0.0	0.0	5770.9	0.0	0.00
26	29991.0	0.0	0.0	0.0	0.0	5998.2	0.0	0.00
27	31127.6	0.0	0.0	0.0	0.0	6225.5	0.0	0.00
28	32264.2	0.0	0.0	0.0	0.0	6452.8	0.0	0.00
29	33400.9	0.0	0.0	0.0	0.0	6680.2	0.0	0.00
30	34537.5	0.0	0.0	0.0	0.0	6907.5	0.0	0.00
31	41912.5	0.0	0.0	0.0	0.0	8382.5	0.0	0.00
32	41515.8	0.0	0.0	0.0	0.0	8303.2	0.0	0.00
33	31790.1	0.0	0.0	0.0	0.0	6358.0	0.0	0.00
34	30794.3	0.0	0.0	0.0	0.0	6158.9	0.0	0.00
35	29798.4	0.0	0.0	0.0	0.0	5959.7	0.0	0.00
36	28802.6	0.0	0.0	0.0	0.0	5760.5	0.0	0.00
37	27806.7	0.0	0.0	0.0	0.0	5561.3	0.0	0.00
38	26810.9	0.0	0.0	0.0	0.0	5362.2	0.0	0.00
39	25815.1	0.0	0.0	0.0	0.0	5163.0	0.0	0.00
40	24819.2	0.0	0.0	0.0	0.0	4963.8	0.0	0.00
41	23823.4	0.0	0.0	0.0	0.0	4764.7	0.0	0.00
42	22827.5	0.0	0.0	0.0	0.0	4565.5	0.0	0.00
43	21831.7	0.0	0.0	0.0	0.0	4366.3	0.0	0.00
44	20835.8	0.0	0.0	0.0	0.0	4167.2	0.0	0.00
45	19840.0	0.0	0.0	0.0	0.0	3968.0	0.0	0.00
46	18844.1	0.0	0.0	0.0	0.0	3768.8	0.0	0.00
47	17848.3	0.0	0.0	0.0	0.0	3569.7	0.0	0.00
48	16852.4	0.0	0.0	0.0	0.0	3370.5	0.0	0.00
49	15856.6	0.0	0.0	0.0	0.0	3171.3	0.0	0.00
50	14860.7	0.0	0.0	0.0	0.0	2972.1	0.0	0.00
51	13864.9	0.0	0.0	0.0	0.0	2773.0	0.0	0.00
52	12869.0	0.0	0.0	0.0	0.0	2573.8	0.0	0.00
53	11873.2	0.0	0.0	0.0	0.0	2374.6	0.0	0.00
54	10877.3	0.0	0.0	0.0	0.0	2175.5	0.0	0.00
55	9881.5	0.0	0.0	0.0	0.0	1976.3	0.0	0.00
56	8885.6	0.0	0.0	0.0	0.0	1777.1	0.0	0.00
57	7889.8	0.0	0.0	0.0	0.0	1578.0	0.0	0.00
58	6893.9	0.0	0.0	0.0	0.0	1378.8	0.0	0.00
59	5898.1	0.0	0.0	0.0	0.0	1179.6	0.0	0.00
60	4902.2	0.0	0.0	0.0	0.0	980.4	0.0	0.00
61	3906.4	0.0	0.0	0.0	0.0	781.3	0.0	0.00
62	2910.6	0.0	0.0	0.0	0.0	582.1	0.0	0.00
63	1532.9	0.0	0.0	0.0	0.0	306.6	0.0	0.00
64	792.1	0.0	0.0	0.0	0.0	158.4	0.0	0.00

65	127.1	0.0	0.0	0.0	0.0	25.4	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 1146557.72(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 1146557.72(lbs)

TOTAL AREA OF SLIDING MASS = 9554.65(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 65 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	2	200.00	30.00	
2	2	200.00	30.00	
3	2	200.00	30.00	
4	2	200.00	30.00	
5	2	200.00	30.00	
6	2	200.00	30.00	
7	2	200.00	30.00	
8	2	200.00	30.00	
9	2	200.00	30.00	
10	2	200.00	30.00	
11	2	200.00	30.00	
12	2	200.00	30.00	
13	2	200.00	30.00	
14	2	200.00	30.00	
15	2	200.00	30.00	
16	2	200.00	30.00	
17	2	200.00	30.00	
18	2	200.00	30.00	
19	2	200.00	30.00	
20	2	200.00	30.00	
21	2	200.00	30.00	
22	2	200.00	30.00	
23	2	200.00	30.00	
24	2	200.00	30.00	
25	2	200.00	30.00	
26	2	200.00	30.00	
27	2	200.00	30.00	
28	2	200.00	30.00	
29	2	200.00	30.00	
30	2	200.00	30.00	
31	2	200.00	30.00	
32	2	200.00	30.00	
33	2	200.00	30.00	
34	2	200.00	30.00	
35	2	200.00	30.00	
36	2	200.00	30.00	
37	2	200.00	30.00	
38	2	200.00	30.00	
39	2	200.00	30.00	
40	2	200.00	30.00	
41	2	200.00	30.00	
42	2	200.00	30.00	
43	2	200.00	30.00	
44	2	200.00	30.00	
45	2	200.00	30.00	
46	2	200.00	30.00	
47	2	200.00	30.00	
48	2	200.00	30.00	
49	2	200.00	30.00	
50	2	200.00	30.00	
51	2	200.00	30.00	
52	2	200.00	30.00	
53	2	200.00	30.00	
54	2	200.00	30.00	
55	2	200.00	30.00	
56	2	200.00	30.00	
57	2	200.00	30.00	
58	2	200.00	30.00	
59	2	200.00	30.00	

60	2	200.00	30.00
61	2	200.00	30.00
62	2	200.00	30.00
63	2	200.00	30.00
64	2	200.00	30.00
65	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 65 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-10.59	143.70	4.27	463.10	164.04	2.823
2	-10.59	147.90	4.27	979.77	492.13	1.991
3	4.90	152.50	5.02	886.65	769.84	1.152
4	4.90	157.50	5.02	1121.21	997.16	1.124
5	4.90	162.50	5.02	1355.76	1224.48	1.107
6	4.90	167.50	5.02	1590.32	1451.80	1.095
7	4.90	172.50	5.02	1824.88	1679.12	1.087
8	4.90	177.50	5.02	2059.43	1906.44	1.080
9	4.90	182.50	5.02	2293.99	2133.76	1.075
10	4.90	187.50	5.02	2528.55	2361.08	1.071
11	4.90	192.50	5.02	2763.10	2588.40	1.067
12	4.90	197.50	5.02	2997.66	2815.72	1.065
13	4.90	202.50	5.02	3232.21	3043.04	1.062
14	4.90	207.50	5.02	3466.77	3270.36	1.060
15	4.90	212.50	5.02	3701.33	3497.68	1.058
16	4.90	217.50	5.02	3935.88	3725.00	1.057
17	4.90	222.50	5.02	4170.44	3952.33	1.055
18	4.90	227.50	5.02	4405.00	4179.65	1.054
19	4.90	232.50	5.02	4639.55	4406.97	1.053
20	4.90	237.50	5.02	4874.11	4634.29	1.052
21	4.90	242.50	5.02	5108.67	4861.61	1.051
22	4.90	247.50	5.02	5343.22	5088.93	1.050
23	4.90	252.50	5.02	5577.78	5316.25	1.049
24	4.90	257.50	5.02	5812.34	5543.57	1.048
25	4.90	262.50	5.02	6046.89	5770.89	1.048
26	4.90	267.50	5.02	6281.45	5998.21	1.047
27	4.90	272.50	5.02	6516.01	6225.53	1.047
28	4.90	277.50	5.02	6750.56	6452.85	1.046
29	4.90	282.50	5.02	6985.12	6680.17	1.046
30	4.90	287.50	5.02	7219.67	6907.49	1.045
31	4.90	293.00	6.02	7302.83	6988.08	1.045
32	4.90	299.00	6.02	7234.58	6921.94	1.045
33	20.38	304.34	5.00	5175.73	6782.63	0.763
34	20.38	309.03	5.00	5014.71	6570.16	0.763
35	20.38	313.71	5.00	4853.69	6357.69	0.763
36	20.38	318.40	5.00	4692.67	6145.22	0.764
37	20.38	323.09	5.00	4531.65	5932.75	0.764
38	20.38	327.77	5.00	4370.63	5720.28	0.764
39	20.38	332.46	5.00	4209.61	5507.81	0.764
40	20.38	337.15	5.00	4048.59	5295.34	0.765
41	20.38	341.83	5.00	3887.57	5082.87	0.765
42	20.38	346.52	5.00	3726.55	4870.40	0.765
43	20.38	351.21	5.00	3565.53	4657.93	0.765
44	20.38	355.90	5.00	3404.51	4445.46	0.766
45	20.38	360.58	5.00	3243.49	4232.98	0.766
46	20.38	365.27	5.00	3082.47	4020.51	0.767
47	20.38	369.96	5.00	2921.45	3808.04	0.767
48	20.38	374.64	5.00	2760.43	3595.57	0.768
49	20.38	379.33	5.00	2599.41	3383.10	0.768
50	20.38	384.02	5.00	2438.40	3170.63	0.769
51	20.38	388.70	5.00	2277.38	2958.16	0.770

52	20.38	393.39	5.00	2116.36	2745.69	0.771
53	20.38	398.08	5.00	1955.34	2533.22	0.772
54	20.38	402.77	5.00	1794.32	2320.75	0.773
55	20.38	407.45	5.00	1633.30	2108.28	0.775
56	20.38	412.14	5.00	1472.28	1895.81	0.777
57	20.38	416.83	5.00	1311.26	1683.34	0.779
58	20.38	421.51	5.00	1150.24	1470.87	0.782
59	20.38	426.20	5.00	989.22	1258.40	0.786
60	20.38	430.89	5.00	828.20	1045.93	0.792
61	20.38	435.57	5.00	667.18	833.46	0.800
62	20.38	440.26	5.00	506.16	620.99	0.815
63	24.00	444.45	4.05	319.51	414.57	0.771
64	24.00	448.15	4.05	177.42	214.23	0.828
65	24.00	451.11	2.44	65.93	57.03	1.156

TABLE 5A - Total Base Force Data on the 65 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-10.59	143.70	4.27	1977.19	688.45	2.872
2	-10.59	147.90	4.27	4183.07	2065.35	2.025
3	4.90	152.50	5.02	4449.48	3849.20	1.156
4	4.90	157.50	5.02	5626.56	4985.80	1.129
5	4.90	162.50	5.02	6803.63	6122.40	1.111
6	4.90	167.50	5.02	7980.71	7259.00	1.099
7	4.90	172.50	5.02	9157.78	8395.61	1.091
8	4.90	177.50	5.02	10334.86	9532.21	1.084
9	4.90	182.50	5.02	11511.94	10668.81	1.079
10	4.90	187.50	5.02	12689.01	11805.41	1.075
11	4.90	192.50	5.02	13866.09	12942.01	1.071
12	4.90	197.50	5.02	15043.16	14078.62	1.069
13	4.90	202.50	5.02	16220.24	15215.22	1.066
14	4.90	207.50	5.02	17397.32	16351.82	1.064
15	4.90	212.50	5.02	18574.39	17488.42	1.062
16	4.90	217.50	5.02	19751.47	18625.02	1.060
17	4.90	222.50	5.02	20928.55	19761.63	1.059
18	4.90	227.50	5.02	22105.62	20898.23	1.058
19	4.90	232.50	5.02	23282.70	22034.83	1.057
20	4.90	237.50	5.02	24459.77	23171.43	1.056
21	4.90	242.50	5.02	25636.85	24308.03	1.055
22	4.90	247.50	5.02	26813.93	25444.64	1.054
23	4.90	252.50	5.02	27991.00	26581.24	1.053
24	4.90	257.50	5.02	29168.08	27717.84	1.052
25	4.90	262.50	5.02	30345.15	28854.44	1.052
26	4.90	267.50	5.02	31522.23	29991.04	1.051
27	4.90	272.50	5.02	32699.31	31127.65	1.050
28	4.90	277.50	5.02	33876.38	32264.25	1.050
29	4.90	282.50	5.02	35053.46	33400.85	1.049
30	4.90	287.50	5.02	36230.53	34537.45	1.049
31	4.90	293.00	6.02	43960.64	41912.51	1.049
32	4.90	299.00	6.02	43549.81	41515.81	1.049
33	20.38	304.34	5.00	25878.63	31790.14	0.814
34	20.38	309.03	5.00	25073.54	30794.29	0.814
35	20.38	313.71	5.00	24268.44	29798.45	0.814
36	20.38	318.40	5.00	23463.34	28802.60	0.815
37	20.38	323.09	5.00	22658.24	27806.75	0.815
38	20.38	327.77	5.00	21853.15	26810.90	0.815
39	20.38	332.46	5.00	21048.05	25815.05	0.815
40	20.38	337.15	5.00	20242.95	24819.21	0.816
41	20.38	341.83	5.00	19437.85	23823.36	0.816
42	20.38	346.52	5.00	18632.76	22827.51	0.816
43	20.38	351.21	5.00	17827.66	21831.66	0.817
44	20.38	355.90	5.00	17022.56	20835.81	0.817
45	20.38	360.58	5.00	16217.46	19839.97	0.817
46	20.38	365.27	5.00	15412.37	18844.12	0.818
47	20.38	369.96	5.00	14607.27	17848.27	0.818
48	20.38	374.64	5.00	13802.17	16852.42	0.819
49	20.38	379.33	5.00	12997.07	15856.58	0.820
50	20.38	384.02	5.00	12191.98	14860.73	0.820

51	20.38	388.70	5.00	11386.88	13864.88	0.821
52	20.38	393.39	5.00	10581.78	12869.03	0.822
53	20.38	398.08	5.00	9776.68	11873.18	0.823
54	20.38	402.77	5.00	8971.59	10877.34	0.825
55	20.38	407.45	5.00	8166.49	9881.49	0.826
56	20.38	412.14	5.00	7361.39	8885.64	0.828
57	20.38	416.83	5.00	6556.29	7889.79	0.831
58	20.38	421.51	5.00	5751.20	6893.94	0.834
59	20.38	426.20	5.00	4946.10	5898.10	0.839
60	20.38	430.89	5.00	4141.00	4902.25	0.845
61	20.38	435.57	5.00	3335.90	3906.40	0.854
62	20.38	440.26	5.00	2530.81	2910.55	0.870
63	24.00	444.45	4.05	1293.20	1532.85	0.844
64	24.00	448.15	4.05	718.08	792.08	0.907
65	24.00	451.11	2.44	160.91	127.15	1.266

TABLE 6 - Effective and Base Shear Stress Data on the 65 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-10.59	143.70	4.27	463.10	467.37	300.03
2	-10.59	147.90	4.27	979.77	765.67	491.52
3	4.90	152.50	5.02	886.65	711.91	457.01
4	4.90	157.50	5.02	1121.21	847.33	543.94
5	4.90	162.50	5.02	1355.76	982.75	630.87
6	4.90	167.50	5.02	1590.32	1118.17	717.81
7	4.90	172.50	5.02	1824.88	1253.59	804.74
8	4.90	177.50	5.02	2059.43	1389.01	891.67
9	4.90	182.50	5.02	2293.99	1524.43	978.61
10	4.90	187.50	5.02	2528.55	1659.86	1065.54
11	4.90	192.50	5.02	2763.10	1795.28	1152.47
12	4.90	197.50	5.02	2997.66	1930.70	1239.41
13	4.90	202.50	5.02	3232.21	2066.12	1326.34
14	4.90	207.50	5.02	3466.77	2201.54	1413.27
15	4.90	212.50	5.02	3701.33	2336.96	1500.21
16	4.90	217.50	5.02	3935.88	2472.38	1587.14
17	4.90	222.50	5.02	4170.44	2607.80	1674.07
18	4.90	227.50	5.02	4405.00	2743.23	1761.01
19	4.90	232.50	5.02	4639.55	2878.65	1847.94
20	4.90	237.50	5.02	4874.11	3014.07	1934.87
21	4.90	242.50	5.02	5108.67	3149.49	2021.81
22	4.90	247.50	5.02	5343.22	3284.91	2108.74
23	4.90	252.50	5.02	5577.78	3420.33	2195.67
24	4.90	257.50	5.02	5812.34	3555.75	2282.61
25	4.90	262.50	5.02	6046.89	3691.17	2369.54
26	4.90	267.50	5.02	6281.45	3826.60	2456.47
27	4.90	272.50	5.02	6516.01	3962.02	2543.41
28	4.90	277.50	5.02	6750.56	4097.44	2630.34
29	4.90	282.50	5.02	6985.12	4232.86	2717.27
30	4.90	287.50	5.02	7219.67	4368.28	2804.21
31	4.90	293.00	6.02	7302.83	4416.29	2835.03
32	4.90	299.00	6.02	7234.58	4376.89	2809.73
33	20.38	304.34	5.00	5175.73	3188.21	2046.66
34	20.38	309.03	5.00	5014.71	3095.24	1986.98
35	20.38	313.71	5.00	4853.69	3002.28	1927.30
36	20.38	318.40	5.00	4692.67	2909.31	1867.63
37	20.38	323.09	5.00	4531.65	2816.35	1807.95
38	20.38	327.77	5.00	4370.63	2723.38	1748.27
39	20.38	332.46	5.00	4209.61	2630.42	1688.59
40	20.38	337.15	5.00	4048.59	2537.45	1628.91
41	20.38	341.83	5.00	3887.57	2444.49	1569.23
42	20.38	346.52	5.00	3726.55	2351.53	1509.56
43	20.38	351.21	5.00	3565.53	2258.56	1449.88
44	20.38	355.90	5.00	3404.51	2165.60	1390.20
45	20.38	360.58	5.00	3243.49	2072.63	1330.52
46	20.38	365.27	5.00	3082.47	1979.67	1270.84
47	20.38	369.96	5.00	2921.45	1886.70	1211.16
48	20.38	374.64	5.00	2760.43	1793.74	1151.48
49	20.38	379.33	5.00	2599.41	1700.77	1091.81

50	20.38	384.02	5.00	2438.40	1607.81	1032.13
51	20.38	388.70	5.00	2277.38	1514.84	972.45
52	20.38	393.39	5.00	2116.36	1421.88	912.77
53	20.38	398.08	5.00	1955.34	1328.91	853.09
54	20.38	402.77	5.00	1794.32	1235.95	793.41
55	20.38	407.45	5.00	1633.30	1142.98	733.74
56	20.38	412.14	5.00	1472.28	1050.02	674.06
57	20.38	416.83	5.00	1311.26	957.06	614.38
58	20.38	421.51	5.00	1150.24	864.09	554.70
59	20.38	426.20	5.00	989.22	771.13	495.02
60	20.38	430.89	5.00	828.20	678.16	435.34
61	20.38	435.57	5.00	667.18	585.20	375.67
62	20.38	440.26	5.00	506.16	492.23	315.99
63	24.00	444.45	4.05	319.51	384.47	246.81
64	24.00	448.15	4.05	177.42	302.43	194.15
65	24.00	451.11	2.44	65.93	238.06	152.82

TABLE 6A - Effective and Base Shear Force Data on the 65 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-10.59	143.70	4.27	1977.19	1995.41	1280.95
2	-10.59	147.90	4.27	4183.07	3268.98	2098.51
3	4.90	152.50	5.02	4449.48	3572.57	2293.40
4	4.90	157.50	5.02	5626.56	4252.15	2729.66
5	4.90	162.50	5.02	6803.63	4931.74	3165.92
6	4.90	167.50	5.02	7980.71	5611.33	3602.17
7	4.90	172.50	5.02	9157.78	6290.91	4038.43
8	4.90	177.50	5.02	10334.86	6970.50	4474.69
9	4.90	182.50	5.02	11511.94	7650.08	4910.95
10	4.90	187.50	5.02	12689.01	8329.67	5347.21
11	4.90	192.50	5.02	13866.09	9009.25	5783.46
12	4.90	197.50	5.02	15043.16	9688.84	6219.72
13	4.90	202.50	5.02	16220.24	10368.42	6655.98
14	4.90	207.50	5.02	17397.32	11048.01	7092.24
15	4.90	212.50	5.02	18574.39	11727.59	7528.49
16	4.90	217.50	5.02	19751.47	12407.18	7964.75
17	4.90	222.50	5.02	20928.55	13086.76	8401.01
18	4.90	227.50	5.02	22105.62	13766.35	8837.27
19	4.90	232.50	5.02	23282.70	14445.93	9273.53
20	4.90	237.50	5.02	24459.77	15125.52	9709.78
21	4.90	242.50	5.02	25636.85	15805.10	10146.04
22	4.90	247.50	5.02	26813.93	16484.69	10582.30
23	4.90	252.50	5.02	27991.00	17164.27	11018.56
24	4.90	257.50	5.02	29168.08	17843.86	11454.81
25	4.90	262.50	5.02	30345.15	18523.44	11891.07
26	4.90	267.50	5.02	31522.23	19203.03	12327.33
27	4.90	272.50	5.02	32699.31	19882.61	12763.59
28	4.90	277.50	5.02	33876.38	20562.20	13199.85
29	4.90	282.50	5.02	35053.46	21241.78	13636.10
30	4.90	287.50	5.02	36230.53	21921.37	14072.36
31	4.90	293.00	6.02	43960.64	26584.62	17065.92
32	4.90	299.00	6.02	43549.81	26347.43	16913.66
33	20.38	304.34	5.00	25878.63	15941.04	10233.30
34	20.38	309.03	5.00	25073.54	15476.21	9934.91
35	20.38	313.71	5.00	24268.44	15011.39	9636.52
36	20.38	318.40	5.00	23463.34	14546.57	9338.13
37	20.38	323.09	5.00	22658.24	14081.74	9039.74
38	20.38	327.77	5.00	21853.15	13616.92	8741.34
39	20.38	332.46	5.00	21048.05	13152.10	8442.95
40	20.38	337.15	5.00	20242.95	12687.27	8144.56
41	20.38	341.83	5.00	19437.85	12222.45	7846.17
42	20.38	346.52	5.00	18632.76	11757.63	7547.78
43	20.38	351.21	5.00	17827.66	11292.80	7249.38
44	20.38	355.90	5.00	17022.56	10827.98	6950.99
45	20.38	360.58	5.00	16217.46	10363.16	6652.60
46	20.38	365.27	5.00	15412.37	9898.33	6354.21
47	20.38	369.96	5.00	14607.27	9433.51	6055.82
48	20.38	374.64	5.00	13802.17	8968.69	5757.42

49	20.38	379.33	5.00	12997.07	8503.86	5459.03
50	20.38	384.02	5.00	12191.98	8039.04	5160.64
51	20.38	388.70	5.00	11386.88	7574.22	4862.25
52	20.38	393.39	5.00	10581.78	7109.39	4563.86
53	20.38	398.08	5.00	9776.68	6644.57	4265.46
54	20.38	402.77	5.00	8971.59	6179.75	3967.07
55	20.38	407.45	5.00	8166.49	5714.92	3668.68
56	20.38	412.14	5.00	7361.39	5250.10	3370.29
57	20.38	416.83	5.00	6556.29	4785.28	3071.90
58	20.38	421.51	5.00	5751.20	4320.45	2773.50
59	20.38	426.20	5.00	4946.10	3855.63	2475.11
60	20.38	430.89	5.00	4141.00	3390.81	2176.72
61	20.38	435.57	5.00	3335.90	2925.98	1878.33
62	20.38	440.26	5.00	2530.81	2461.16	1579.94
63	24.00	444.45	4.05	1293.20	1556.12	998.94
64	24.00	448.15	4.05	718.08	1224.07	785.79
65	24.00	451.11	2.44	160.91	581.05	373.01

Average Effective Normal Stress = 3393.7038(psf)
Average Available Shear Strength = 2159.3558(psf)
Total Length of Failure Surface = 321.6264(ft)

SUM OF MOMENTS = -0.359421E-02 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.3134784E-08
SUM OF FORCES = 0.153846E-05 (lbs);Imbalance (Fraction of Total Weight) = 0.1341808E-11

Sum of Available Shear Forces = 694505.78(lbs)

Sum of Mobilized Shear Forces = 445836.05(lbs)

FS Balance Check: FS = 1.557760

The FS Calculation To Determine The Seismic Yield
Coefficient (ky) Did Not Converge in 50 Iterations.

**** END OF GEOSTASE OUTPUT ****

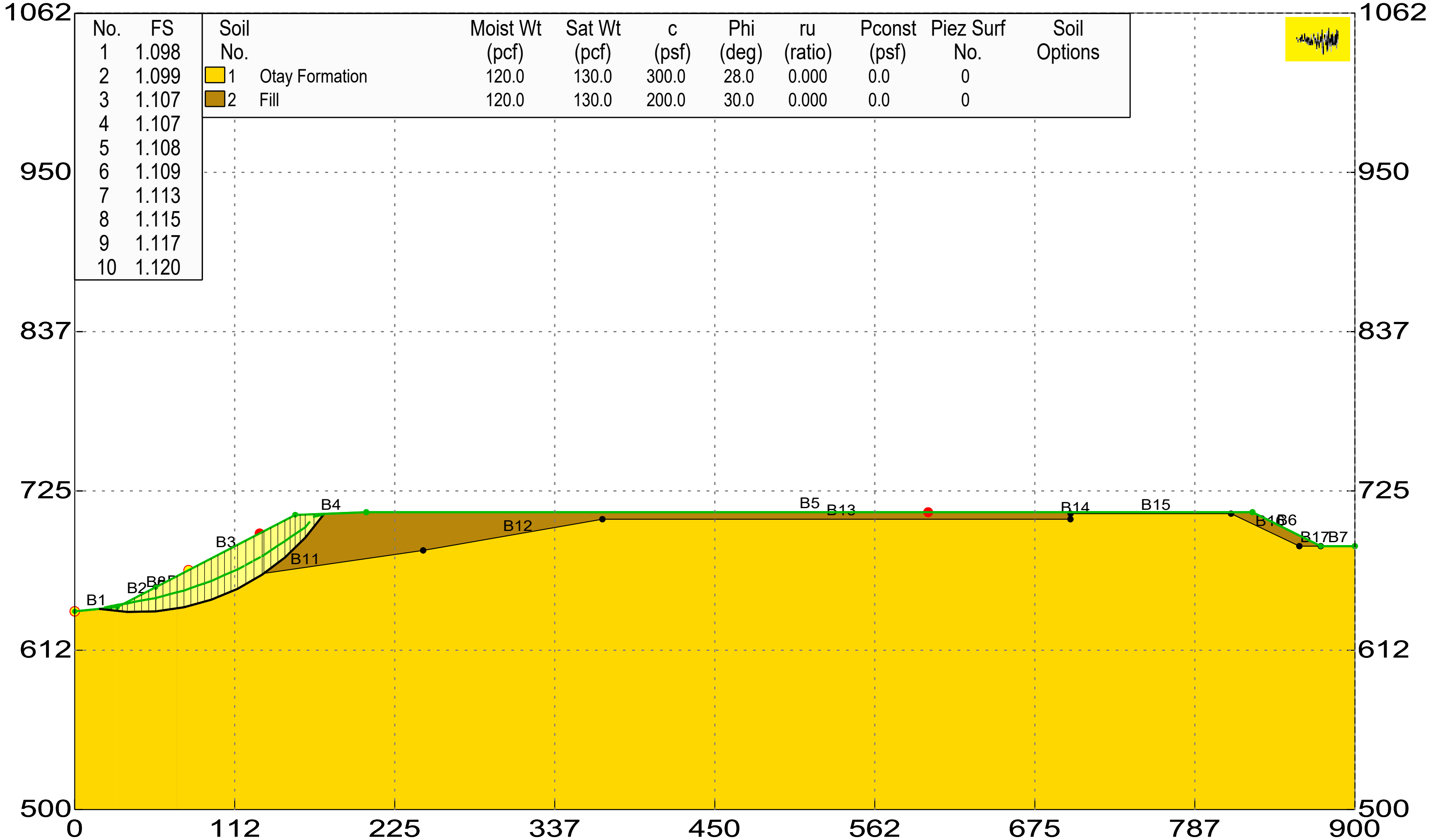
Acadia Medical Facility, Chula Vista, CA
Section B-B' Easterly Slope - Circular (Seismic)

Ninyo & Moore / WRM

\B-B' East Slope Circular Seismic.gsd

No.	FS
1	1.098
2	1.099
3	1.107
4	1.107
5	1.108
6	1.109
7	1.113
8	1.115
9	1.117
10	1.120

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	



GEOSTASE FS = 1.098

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-8

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Circular Seismic.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Circular Seismic.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Easterly Slope - Circular (Seismic)

BOUNDARY DATA

7 Surface Boundaries
17 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	640.000	30.000	643.000	1
2	30.000	643.000	57.000	657.000	1
3	57.000	657.000	155.000	708.000	2
4	155.000	708.000	205.000	710.000	2
5	205.000	710.000	828.000	710.000	2
6	828.000	710.000	876.000	686.000	2
7	876.000	686.000	900.000	686.000	1
8	57.000	657.000	57.100	652.000	1
9	57.100	652.000	71.900	652.000	1
10	71.900	652.000	72.000	658.000	1
11	72.000	658.000	245.000	683.000	1
12	245.000	683.000	371.000	705.000	1
13	371.000	705.000	700.000	705.000	1
14	700.000	705.000	700.100	709.000	1
15	700.100	709.000	813.000	709.000	1
16	813.000	709.000	861.000	686.000	1
17	861.000	686.000	876.000	686.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number Moist Saturated Cohesion Friction Pore Pressure Water

and Description	Unit Wt. (pcf)	Unit Wt. (pcf)	Intercept (psf)	Angle (deg)	Pressure Ratio(ru)	Constant (psf)	Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

SEISMIC (EARTHQUAKE) DATA

Specified Peak Ground Acceleration Coefficient (PGA) = 0.374(g)
Default Velocity = 1.870(ft) per second
Specified Horizontal Earthquake Coefficient (kh) = 0.2000(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
(NOTE:Input Velocity = 0.0 will result in default Peak
Velocity = 2 times(PGA) times 2.5 fps or 0.762 mps)
Specified Seismic Pore-Pressure Factor = 0.000
Horizontal Seismic Force is Applied at Center of Gravity of Slices

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.1920(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 0.00(ft)
and X = 80.00(ft)

Each Surface Enters within a Range Between X = 130.00(ft)
and X = 600.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 500.00(ft)

Specified Maximum Radius = 5000.000(ft)

20.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 1231

Number of Trial Surfaces With Valid FS = 3769

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 24.6 %

Statistical Data On All Valid FS Values:
FS Max = 3.375 FS Min = 1.098 FS Ave = 2.168
Standard Deviation = 0.529 Coefficient of Variation = 24.38 %

Critical Surface is Sequence Number 908 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X = 43.988802(ft) ; Y = 798.171438(ft); and Radius =
158.753135(ft)

Circular Trial Failure Surface Generated With 11 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	17.107	641.711
2	36.993	639.573
3	56.989	639.952
4	76.779	642.842
5	96.049	648.197
6	114.492	655.933
7	131.817	665.926
8	147.747	678.018
9	162.031	692.018
10	174.441	707.702
11	175.107	708.804

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.261973	1.042377	0.268	0.2195959E+00
2	19.9500	1.240119	1.057185	0.363	0.1829341E+00
3	44.6444	0.000000	1.185282	0.988	0.1185282E+01
4	23.2510	1.216857	1.068154	0.430	0.1487032E+00
5	25.6396	1.192798	1.076774	0.480	0.1160239E+00
6	34.1183	0.946170	1.113848	0.678	0.1676778E+00
7	29.1064	1.138970	1.090539	0.557	0.4843103E-01
8	30.2304	1.113536	1.095376	0.583	0.1815981E-01
9	30.9045	1.095345	1.098376	0.599	0.3031443E-02
10	30.8081	1.098107	1.097942	0.596	0.1647498E-03
11	30.8131	1.097966	1.097965	0.596	0.8357895E-06

Factor Of Safety For The Preceding Specified Surface = 1.098
Theta (fx = 1.0) = 30.81 Deg Lambda = 0.596

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000

Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	21.40	642.76	1.000+	2505.56	1.000	30.81	1283.4
2	25.70	643.69	1.000+	5373.16	1.000	30.81	2752.3
3	30.00	644.56	1.000+	8602.77	1.000	30.81	4406.7
4	33.50	645.13	1.000+	11739.05	1.000	30.81	6013.2
5	36.99	645.51	0.842	15598.23	1.000	30.81	7990.0
6	41.99	646.67	0.733	19861.04	1.000	30.81	10173.6
7	46.99	647.65	0.655	24752.03	1.000	30.81	12679.0
8	51.99	648.52	0.596	30271.22	1.000	30.81	15506.1
9	56.99	649.32	0.550	36418.59	1.000	30.81	18655.0
10	57.00	649.32	0.550	36426.30	1.000	30.81	18659.0
11	57.10	649.35	0.549	36497.74	1.000	30.81	18695.6
12	62.03	650.79	0.534	40114.77	1.000	30.81	20548.4
13	66.97	652.15	0.517	43913.59	1.000	30.81	22494.3
14	71.90	653.43	0.499	47894.18	1.000	30.81	24533.3
15	72.00	653.45	0.499	47976.75	1.000	30.81	24575.6
16	76.78	654.63	0.482	52009.97	1.000	30.81	26641.5
17	81.60	656.41	0.477	53299.45	1.000	30.81	27302.1
18	86.41	658.13	0.471	54572.94	1.000	30.81	27954.4
19	91.23	659.80	0.463	55830.44	1.000	30.81	28598.5
20	96.05	661.41	0.454	57071.95	1.000	30.81	29234.5
21	100.66	663.50	0.452	55698.15	1.000	30.81	28530.8
22	105.27	665.56	0.449	54279.06	1.000	30.81	27803.9
23	109.88	667.57	0.445	52814.69	1.000	30.81	27053.8
24	114.49	669.55	0.439	51305.04	1.000	30.81	26280.5
25	120.27	672.71	0.439	46646.32	1.000	30.81	23894.1
26	126.04	675.85	0.437	42056.24	1.000	30.81	21542.9
27	131.82	678.94	0.434	37534.81	1.000	30.81	19226.8
28	132.98	679.72	0.434	36171.81	1.000	30.81	18528.6
29	137.91	683.04	0.437	30558.17	1.000	30.81	15653.1
30	142.83	686.40	0.443	25213.84	1.000	30.81	12915.5
31	147.75	689.50	0.438	19705.21	0.866	27.31	9041.4
32	151.37	692.15	0.431	15026.67	0.751	24.13	6143.1
33	155.00	694.66	0.417	10807.61	0.636	20.78	3834.7
34	158.52	696.98	0.430	7288.71	0.525	17.39	2178.2
35	162.03	699.21	0.442	4469.11	0.414	13.86	1070.9
36	168.24	706.73	0.792	577.07	0.217	7.39	74.2
37	174.44	708.21	0.471	34.22	0.021	0.72	0.4
38	175.11	708.80	0.000	242.55	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 38 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	4.30	0.45	19.26	641.48	641.93	-6.14	5.71	4.32
2	4.30	1.34	23.55	641.02	642.36	-6.14	5.71	4.32
3	4.30	2.23	27.85	640.56	642.79	-6.14	5.71	4.32
4	3.50	3.77	31.75	640.14	643.91	-6.14	27.41	3.52
5	3.50	5.96	35.24	639.76	645.72	-6.14	27.41	3.52
6	5.00	8.30	39.49	639.62	647.92	1.09	27.41	5.00
7	5.00	10.80	44.49	639.71	650.51	1.09	27.41	5.00
8	5.00	13.30	49.49	639.81	653.11	1.09	27.41	5.00
9	5.00	15.79	54.49	639.90	655.70	1.09	27.41	5.00
10	0.01	17.04	56.99	639.95	657.00	8.31	27.41	0.01
11	0.10	17.07	57.05	639.96	657.03	8.31	27.49	0.10
12	4.93	18.01	59.57	640.33	658.34	8.31	27.49	4.99
13	4.93	19.85	64.50	641.05	660.90	8.31	27.49	4.99
14	4.93	21.70	69.43	641.77	663.47	8.31	27.49	4.99
15	0.10	22.64	71.95	642.14	664.78	8.31	27.49	0.10
16	4.78	23.56	74.39	642.49	666.05	8.31	27.49	4.83
17	4.82	25.04	79.19	643.51	668.55	15.53	27.49	5.00
18	4.82	26.20	84.01	644.85	671.05	15.53	27.49	5.00
19	4.82	27.37	88.82	646.19	673.56	15.53	27.49	5.00
20	4.82	28.54	93.64	647.53	676.07	15.53	27.49	5.00
21	4.61	29.36	98.35	649.16	678.52	22.75	27.49	5.00
22	4.61	29.82	102.97	651.10	680.92	22.75	27.49	5.00
23	4.61	30.29	107.58	653.03	683.32	22.75	27.49	5.00
24	4.61	30.75	112.19	654.97	685.72	22.75	27.49	5.00
25	5.77	30.82	117.38	657.60	688.42	29.98	27.49	6.67
26	5.77	30.50	123.15	660.93	691.43	29.98	27.49	6.67
27	5.77	30.17	128.93	664.26	694.43	29.98	27.49	6.67
28	1.17	29.87	132.40	666.37	696.24	37.20	27.49	1.47
29	4.92	29.14	135.45	668.68	697.82	37.20	27.49	6.18
30	4.92	27.97	140.37	672.42	700.38	37.20	27.49	6.18
31	4.92	26.79	145.29	676.15	702.95	37.20	27.49	6.18
32	3.63	25.37	149.56	679.80	705.17	44.42	27.49	5.08
33	3.63	23.71	153.19	683.35	707.06	44.42	27.49	5.08
34	3.52	21.22	156.76	686.85	708.07	44.42	2.29	4.92
35	3.52	17.92	160.27	690.29	708.21	44.42	2.29	4.92
36	6.21	12.47	165.13	695.94	708.41	51.65	2.29	10.00
37	6.21	4.87	171.34	703.78	708.65	51.65	2.29	10.00
38	0.67	0.54	174.77	708.25	708.79	58.87	2.29	1.29

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	17.107421	641.710742
2	21.404948	641.248642
3	25.702474	640.786543
4	30.000000	640.324443
5	33.496397	639.948486
6	36.992794	639.572529
7	41.991896	639.667273
8	46.990999	639.762017
9	51.990101	639.856760
10	56.989203	639.951504
11	57.000000	639.953081
12	57.100000	639.967685
13	62.033333	640.688150
14	66.966667	641.408615
15	71.900000	642.129080
16	72.000000	642.143684
17	76.779278	642.841651
18	81.596689	644.180514
19	86.414100	645.519376

20	91.231510	646.858238
21	96.048921	648.197101
22	100.659765	650.131039
23	105.270610	652.064977
24	109.881454	653.998915
25	114.492298	655.932853
26	120.267093	659.263946
27	126.041889	662.595039
28	131.816685	665.926132
29	132.984845	666.812839
30	137.905603	670.548002
31	142.826361	674.283166
32	147.747119	678.018330
33	151.373560	681.572552
34	155.000000	685.126774
35	158.515382	688.572150
36	162.030764	692.017526
37	168.235841	699.859530
38	174.440917	707.701534
39	175.106928	708.804277

Table 3 - Force and Pore Pressure Data On The 38 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	230.0	0.0	0.0	0.0	0.0	46.0	0.0	0.00
2	689.9	0.0	0.0	0.0	0.0	138.0	0.0	0.00
3	1149.8	0.0	0.0	0.0	0.0	230.0	0.0	0.00
4	1581.8	0.0	0.0	0.0	0.0	316.4	0.0	0.00
5	2500.2	0.0	0.0	0.0	0.0	500.0	0.0	0.00
6	4980.3	0.0	0.0	0.0	0.0	996.1	0.0	0.00
7	6478.5	0.0	0.0	0.0	0.0	1295.7	0.0	0.00
8	7976.7	0.0	0.0	0.0	0.0	1595.3	0.0	0.00
9	9474.8	0.0	0.0	0.0	0.0	1895.0	0.0	0.00
10	22.1	0.0	0.0	0.0	0.0	4.4	0.0	0.00
11	204.8	0.0	0.0	0.0	0.0	41.0	0.0	0.00
12	10660.6	0.0	0.0	0.0	0.0	2132.1	0.0	0.00
13	11754.0	0.0	0.0	0.0	0.0	2350.8	0.0	0.00
14	12847.3	0.0	0.0	0.0	0.0	2569.5	0.0	0.00
15	271.7	0.0	0.0	0.0	0.0	54.3	0.0	0.00
16	13510.3	0.0	0.0	0.0	0.0	2702.1	0.0	0.00
17	14472.9	0.0	0.0	0.0	0.0	2894.6	0.0	0.00
18	15148.2	0.0	0.0	0.0	0.0	3029.6	0.0	0.00
19	15823.5	0.0	0.0	0.0	0.0	3164.7	0.0	0.00
20	16498.8	0.0	0.0	0.0	0.0	3299.8	0.0	0.00
21	16243.3	0.0	0.0	0.0	0.0	3248.7	0.0	0.00
22	16500.9	0.0	0.0	0.0	0.0	3300.2	0.0	0.00
23	16758.5	0.0	0.0	0.0	0.0	3351.7	0.0	0.00
24	17016.1	0.0	0.0	0.0	0.0	3403.2	0.0	0.00
25	21360.1	0.0	0.0	0.0	0.0	4272.0	0.0	0.00
26	21134.3	0.0	0.0	0.0	0.0	4226.9	0.0	0.00
27	20908.5	0.0	0.0	0.0	0.0	4181.7	0.0	0.00
28	4187.1	0.0	0.0	0.0	0.0	837.4	0.0	0.00
29	17208.7	0.0	0.0	0.0	0.0	3441.7	0.0	0.00
30	16515.3	0.0	0.0	0.0	0.0	3303.1	0.0	0.00
31	15821.8	0.0	0.0	0.0	0.0	3164.4	0.0	0.00
32	11042.0	0.0	0.0	0.0	0.0	2208.4	0.0	0.00
33	10316.5	0.0	0.0	0.0	0.0	2063.3	0.0	0.00
34	8951.9	0.0	0.0	0.0	0.0	1790.4	0.0	0.00
35	7557.8	0.0	0.0	0.0	0.0	1511.6	0.0	0.00
36	9282.9	0.0	0.0	0.0	0.0	1856.6	0.0	0.00
37	3628.5	0.0	0.0	0.0	0.0	725.7	0.0	0.00
38	43.0	0.0	0.0	0.0	0.0	8.6	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 380753.31(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 380753.31(lbs)

TOTAL AREA OF SLIDING MASS = 3172.94(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE   38 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	1	300.00	28.00	
2	1	300.00	28.00	
3	1	300.00	28.00	
4	1	300.00	28.00	
5	1	300.00	28.00	
6	1	300.00	28.00	
7	1	300.00	28.00	
8	1	300.00	28.00	
9	1	300.00	28.00	
10	1	300.00	28.00	
11	1	300.00	28.00	
12	1	300.00	28.00	
13	1	300.00	28.00	
14	1	300.00	28.00	
15	1	300.00	28.00	
16	1	300.00	28.00	
17	1	300.00	28.00	
18	1	300.00	28.00	
19	1	300.00	28.00	
20	1	300.00	28.00	
21	1	300.00	28.00	
22	1	300.00	28.00	
23	1	300.00	28.00	
24	1	300.00	28.00	
25	1	300.00	28.00	
26	1	300.00	28.00	
27	1	300.00	28.00	
28	1	300.00	28.00	
29	2	200.00	30.00	
30	2	200.00	30.00	
31	2	200.00	30.00	
32	2	200.00	30.00	
33	2	200.00	30.00	
34	2	200.00	30.00	
35	2	200.00	30.00	
36	2	200.00	30.00	
37	2	200.00	30.00	
38	2	200.00	30.00	

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the   38 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-6.14	19.26	4.32	402.50	53.51	7.522
2	-6.14	23.55	4.32	560.92	160.53	3.494
3	-6.14	27.85	4.32	719.34	267.56	2.689
4	-6.14	31.75	3.52	992.97	452.40	2.195
5	-6.14	35.24	3.52	1381.79	715.07	1.932
6	1.09	39.49	5.00	1414.88	996.25	1.420
7	1.09	44.49	5.00	1775.62	1295.93	1.370
8	1.09	49.49	5.00	2136.36	1595.62	1.339
9	1.09	54.49	5.00	2497.11	1895.30	1.318
10	8.31	56.99	0.01	2214.59	2045.39	1.083
11	8.31	57.05	0.10	2217.11	2047.88	1.083
12	8.31	59.57	4.99	2331.69	2160.94	1.079

13	8.31	64.50	4.99	2556.31	2382.56	1.073
14	8.31	69.43	4.99	2780.92	2604.19	1.068
15	8.31	71.95	0.10	2895.51	2717.25	1.066
16	8.31	74.39	4.83	3006.59	2826.85	1.064
17	15.53	79.19	5.00	2701.83	3004.29	0.899
18	15.53	84.01	5.00	2823.88	3144.47	0.898
19	15.53	88.82	5.00	2945.93	3284.64	0.897
20	15.53	93.64	5.00	3067.98	3424.82	0.896
21	22.75	98.35	5.00	2705.99	3522.85	0.768
22	22.75	102.97	5.00	2748.25	3578.72	0.768
23	22.75	107.58	5.00	2790.50	3634.59	0.768
24	22.75	112.19	5.00	2832.76	3690.46	0.768
25	29.98	117.38	6.67	2445.00	3698.84	0.661
26	29.98	123.15	6.67	2419.20	3659.74	0.661
27	29.98	128.93	6.67	2393.39	3620.64	0.661
28	37.20	132.40	1.47	2032.25	3584.36	0.567
29	37.20	135.45	6.18	1983.03	3497.17	0.567
30	37.20	140.37	6.18	1902.34	3356.25	0.567
31	37.20	145.29	6.18	1868.31	3215.33	0.581
32	44.42	149.56	5.08	1556.35	3044.85	0.511
33	44.42	153.19	5.08	1492.80	2844.81	0.525
34	44.42	156.76	4.92	1366.74	2546.50	0.537
35	44.42	160.27	4.92	1173.74	2149.93	0.546
36	51.65	165.13	10.00	710.48	1496.02	0.475
37	51.65	171.34	10.00	212.31	584.76	0.363
38	58.87	174.77	1.29	-126.71	64.57	-1.963

TABLE 5A - Total Base Force Data on the 38 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-6.14	19.26	4.32	1739.72	229.97	7.565
2	-6.14	23.55	4.32	2424.47	689.90	3.514
3	-6.14	27.85	4.32	3109.22	1149.83	2.704
4	-6.14	31.75	3.52	3491.82	1581.77	2.208
5	-6.14	35.24	3.52	4859.14	2500.17	1.944
6	1.09	39.49	5.00	7074.38	4980.34	1.420
7	1.09	44.49	5.00	8878.10	6478.50	1.370
8	1.09	49.49	5.00	10681.81	7976.66	1.339
9	1.09	54.49	5.00	12485.53	9474.82	1.318
10	8.31	56.99	0.01	24.16	22.08	1.094
11	8.31	57.05	0.10	224.06	204.79	1.094
12	8.31	59.57	4.99	11625.05	10660.62	1.090
13	8.31	64.50	4.99	12744.90	11753.97	1.084
14	8.31	69.43	4.99	13864.75	12847.32	1.079
15	8.31	71.95	0.10	292.62	271.72	1.077
16	8.31	74.39	4.83	14521.73	13510.28	1.075
17	15.53	79.19	5.00	13509.13	14472.88	0.933
18	15.53	84.01	5.00	14119.39	15148.18	0.932
19	15.53	88.82	5.00	14729.65	15823.48	0.931
20	15.53	93.64	5.00	15339.91	16498.78	0.930
21	22.75	98.35	5.00	13529.94	16243.30	0.833
22	22.75	102.97	5.00	13741.23	16500.91	0.833
23	22.75	107.58	5.00	13952.51	16758.52	0.833
24	22.75	112.19	5.00	14163.79	17016.13	0.832
25	29.98	117.38	6.67	16300.01	21360.06	0.763
26	29.98	123.15	6.67	16127.98	21134.26	0.763
27	29.98	128.93	6.67	15955.95	20908.46	0.763
28	37.20	132.40	1.47	2980.45	4187.11	0.712
29	37.20	135.45	6.18	12250.77	17208.75	0.712
30	37.20	140.37	6.18	11752.32	16515.30	0.712
31	37.20	145.29	6.18	11542.05	15821.85	0.730
32	44.42	149.56	5.08	7902.75	11041.95	0.716
33	44.42	153.19	5.08	7580.08	10316.52	0.735
34	44.42	156.76	4.92	6727.42	8951.93	0.752
35	44.42	160.27	4.92	5777.45	7557.83	0.764
36	51.65	165.13	10.00	7104.79	9282.90	0.765
37	51.65	171.34	10.00	2123.10	3628.48	0.585
38	58.87	174.77	1.29	-163.24	43.00	-3.796

TABLE 6 - Effective and Base Shear Stress Data on the 38 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-6.14	19.26	4.32	402.50	514.01	468.15
2	-6.14	23.55	4.32	560.92	598.25	544.87
3	-6.14	27.85	4.32	719.34	682.48	621.59
4	-6.14	31.75	3.52	992.97	827.97	754.09
5	-6.14	35.24	3.52	1381.79	1034.71	942.39
6	1.09	39.49	5.00	1414.88	1052.30	958.41
7	1.09	44.49	5.00	1775.62	1244.11	1133.11
8	1.09	49.49	5.00	2136.36	1435.92	1307.80
9	1.09	54.49	5.00	2497.11	1627.73	1482.50
10	8.31	56.99	0.01	2214.59	1477.52	1345.69
11	8.31	57.05	0.10	2217.11	1478.86	1346.91
12	8.31	59.57	4.99	2331.69	1539.78	1402.40
13	8.31	64.50	4.99	2556.31	1659.21	1511.17
14	8.31	69.43	4.99	2780.92	1778.64	1619.95
15	8.31	71.95	0.10	2895.51	1839.57	1675.43
16	8.31	74.39	4.83	3006.59	1898.63	1729.23
17	15.53	79.19	5.00	2701.83	1736.59	1581.64
18	15.53	84.01	5.00	2823.88	1801.48	1640.75
19	15.53	88.82	5.00	2945.93	1866.38	1699.85
20	15.53	93.64	5.00	3067.98	1931.27	1758.96
21	22.75	98.35	5.00	2705.99	1738.80	1583.66
22	22.75	102.97	5.00	2748.25	1761.27	1604.12
23	22.75	107.58	5.00	2790.50	1783.74	1624.58
24	22.75	112.19	5.00	2832.76	1806.20	1645.05
25	29.98	117.38	6.67	2445.00	1600.03	1457.27
26	29.98	123.15	6.67	2419.20	1586.31	1444.77
27	29.98	128.93	6.67	2393.39	1572.59	1432.28
28	37.20	132.40	1.47	2032.25	1380.57	1257.39
29	37.20	135.45	6.18	1983.03	1344.90	1224.90
30	37.20	140.37	6.18	1902.34	1298.32	1182.48
31	37.20	145.29	6.18	1868.31	1278.67	1164.58
32	44.42	149.56	5.08	1556.35	1098.56	1000.54
33	44.42	153.19	5.08	1492.80	1061.87	967.12
34	44.42	156.76	4.92	1366.74	989.09	900.84
35	44.42	160.27	4.92	1173.74	877.66	799.35
36	51.65	165.13	10.00	710.48	610.20	555.75
37	51.65	171.34	10.00	212.31	322.58	293.80
38	58.87	174.77	1.29	0.00	0.00	0.00

TABLE 6A - Effective and Base Shear Force Data on the 38 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-6.14	19.26	4.32	1739.72	2221.71	2023.48
2	-6.14	23.55	4.32	2424.47	2585.80	2355.09
3	-6.14	27.85	4.32	3109.22	2949.89	2686.69
4	-6.14	31.75	3.52	3491.82	2911.60	2651.81
5	-6.14	35.24	3.52	4859.14	3638.61	3313.96
6	1.09	39.49	5.00	7074.38	5261.52	4792.06
7	1.09	44.49	5.00	8878.10	6220.57	5665.54
8	1.09	49.49	5.00	10681.81	7179.62	6539.02
9	1.09	54.49	5.00	12485.53	8138.67	7412.51
10	8.31	56.99	0.01	24.16	16.12	14.68
11	8.31	57.05	0.10	224.06	149.45	136.12
12	8.31	59.57	4.99	11625.05	7676.85	6991.88
13	8.31	64.50	4.99	12744.90	8272.28	7534.19
14	8.31	69.43	4.99	13864.75	8867.72	8076.50
15	8.31	71.95	0.10	292.62	185.91	169.32
16	8.31	74.39	4.83	14521.73	9170.33	8352.12
17	15.53	79.19	5.00	13509.13	8682.93	7908.20
18	15.53	84.01	5.00	14119.39	9007.41	8203.73

19	15.53	88.82	5.00	14729.65	9331.89	8499.26
20	15.53	93.64	5.00	15339.91	9656.37	8794.79
21	22.75	98.35	5.00	13529.94	8694.00	7918.28
22	22.75	102.97	5.00	13741.23	8806.34	8020.60
23	22.75	107.58	5.00	13952.51	8918.68	8122.92
24	22.75	112.19	5.00	14163.79	9031.02	8225.23
25	29.98	117.38	6.67	16300.01	10666.87	9715.12
26	29.98	123.15	6.67	16127.98	10575.40	9631.82
27	29.98	128.93	6.67	15955.95	10483.93	9548.51
28	37.20	132.40	1.47	2980.45	2024.71	1844.05
29	37.20	135.45	6.18	12250.77	8308.55	7567.22
30	37.20	140.37	6.18	11752.32	8020.76	7305.12
31	37.20	145.29	6.18	11542.05	7899.37	7194.55
32	44.42	149.56	5.08	7902.75	5578.21	5080.49
33	44.42	153.19	5.08	7580.08	5391.91	4910.82
34	44.42	156.76	4.92	6727.42	4868.53	4434.14
35	44.42	160.27	4.92	5777.45	4320.06	3934.61
36	51.65	165.13	10.00	7104.79	6101.95	5557.51
37	51.65	171.34	10.00	2123.10	3225.77	2937.96
38	58.87	174.77	1.29	0.00	0.00	0.00

Average Effective Normal Stress = 1903.5370(psf)
Average Available Shear Strength = 1296.5061(psf)
Total Length of Failure Surface = 181.2883(ft)

SUM OF MOMENTS = -0.486694E-01 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.1278241E-06
SUM OF FORCES = 0.412015E-02 (lbs);Imbalance (Fraction of Total Weight) = 0.1082104E-07

Sum of Available Shear Forces = 235041.34(lbs)

Sum of Mobilized Shear Forces = 214069.92(lbs)

FS Balance Check: FS = 1.097965

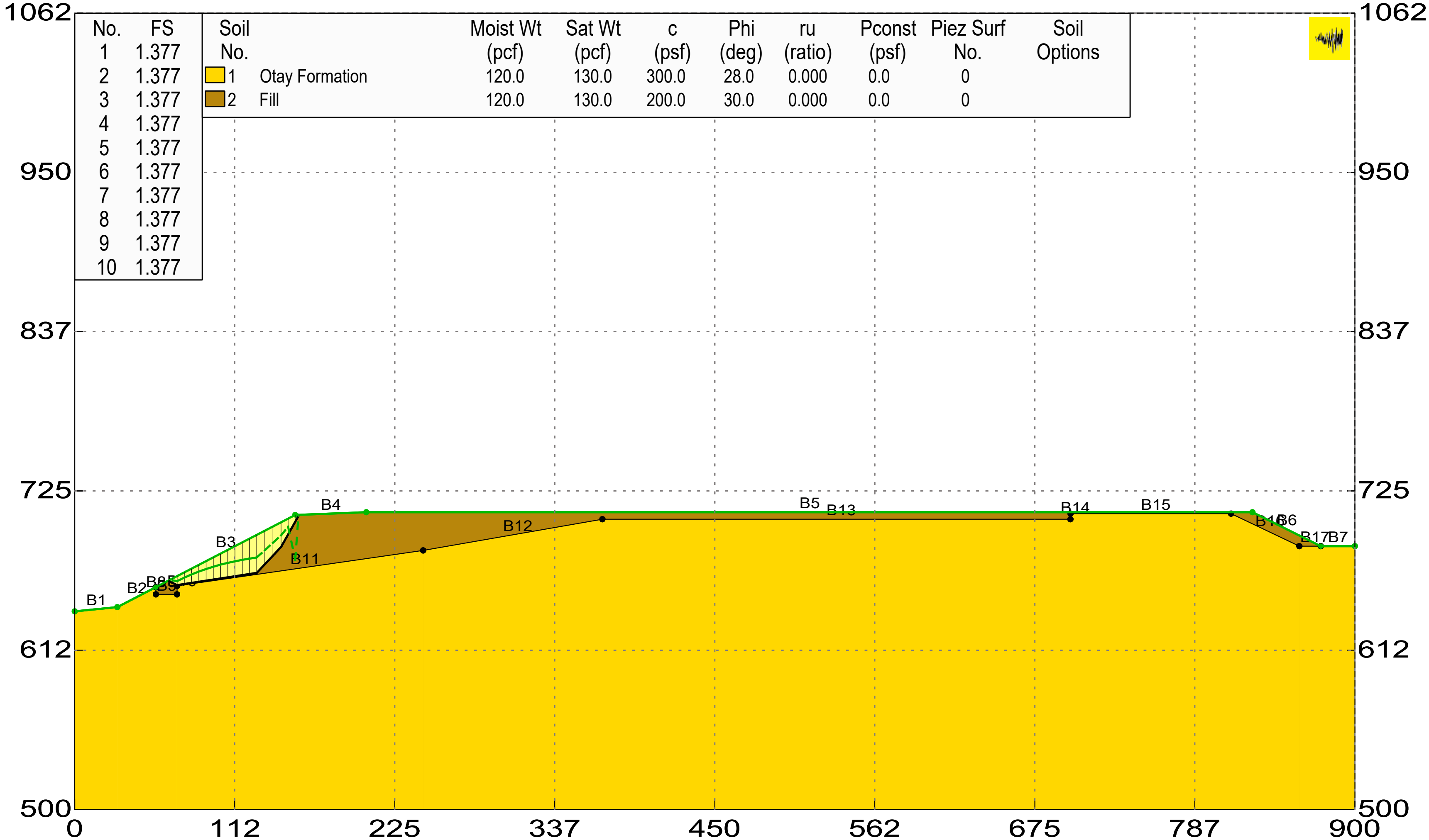
The FS Calculation To Determine The Seismic Yield
Coefficient (ky) Did Not Converge in 50 Iterations.

**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section B-B' Easterly Slope - Block (Seismic)

Ninyo & Moore / WRM

\B-B' East Slope Block Seismic.gsd



No.	FS
1	1.377
2	1.377
3	1.377
4	1.377
5	1.377
6	1.377
7	1.377
8	1.377
9	1.377
10	1.377

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	

GEOSTASE FS = 1.377

Spencer Method

GEOSTASE Slope Stability Analysis

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** Current Version 4.30.30-Double Precision, January 2019 **

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SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.

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Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Block Seismic.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' East Slope Block Seismic.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Easterly Slope - Block (Seismic)

BOUNDARY DATA

7 Surface Boundaries
17 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	640.000	30.000	643.000	1
2	30.000	643.000	57.000	657.000	1
3	57.000	657.000	155.000	708.000	2
4	155.000	708.000	205.000	710.000	2
5	205.000	710.000	828.000	710.000	2
6	828.000	710.000	876.000	686.000	2
7	876.000	686.000	900.000	686.000	1
8	57.000	657.000	57.100	652.000	1
9	57.100	652.000	71.900	652.000	1
10	71.900	652.000	72.000	658.000	1
11	72.000	658.000	245.000	683.000	1
12	245.000	683.000	371.000	705.000	1
13	371.000	705.000	700.000	705.000	1
14	700.000	705.000	700.100	709.000	1
15	700.100	709.000	813.000	709.000	1
16	813.000	709.000	861.000	686.000	1
17	861.000	686.000	876.000	686.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 500.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number Moist Saturated Cohesion Friction Pore Pressure Water

Water and Option Description		Unit Wt. (pcf)	Unit Wt. (pcf)	Intercept (psf)	Angle (deg)	Pressure Ratio(ru)	Constant (psf)	Surface No.
1	Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0
0								
2	Fill	120.0	130.0	200.00	30.00	0.000	0.0	0
0								

SEISMIC (EARTHQUAKE) DATA

Specified Peak Ground Acceleration Coefficient (PGA) = 0.374(g)
Default Velocity = 1.870(ft) per second
Specified Horizontal Earthquake Coefficient (kh) = 0.2000(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
(NOTE:Input Velocity = 0.0 will result in default Peak
Velocity = 2 times(PGA) times 2.5 fps or 0.762 mps)
Specified Seismic Pore-Pressure Factor = 0.000
Horizontal Seismic Force is Applied at Center of Gravity of Slices

A Non-Circular Zone Search Has Been Selected For Analysis
Using Random Generation Within Specified Zones.

2 Zones Defined For Generation Of Non-Circular Surfaces

5000 Trial Surfaces Have Been Generated.

Length Of Line Segments For Active And Passive Portions Of
Non-Circular Zone Search = 25.00(ft)

Zone No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Height (ft)
1	72.00	658.50	72.00	658.50	0.10
2	72.10	658.50	370.00	704.50	0.10

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 3640

Number of Trial Surfaces With Valid FS = 1360

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 72.8 %

Statistical Data On All Valid FS Values:
FS Max = 18.439 FS Min = 1.377 FS Ave = 2.223
Standard Deviation = 1.621 Coefficient of Variation = 72.91 %

Critical Surface is Sequence Number 32 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.439362	1.213403	0.268	0.2259582E+00
2	19.9500	1.435144	1.249919	0.363	0.1852253E+00
3	42.4547	0.000000	1.131334	0.915	0.1131334E+01
4	23.1155	1.428559	1.277321	0.427	0.1512379E+00
5	25.3994	1.420794	1.299971	0.475	0.1208233E+00
6	34.4702	1.307135	1.437779	0.687	0.1306439E+00
7	29.7568	1.393295	1.353420	0.572	0.3987502E-01
8	30.8597	1.381702	1.369990	0.598	0.1171238E-01
9	31.3183	1.375972	1.377357	0.608	0.1385114E-02
10	31.2698	1.376608	1.376564	0.607	0.4374176E-04
11	31.2713	1.376588	1.376588	0.607	0.1028740E-06

Factor Of Safety For The Preceding Specified Surface = 1.377
Theta (fx = 1.0) = 31.27 Deg Lambda = 0.607

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force = 0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice = 0.000(ft)

Depth of Water in Tension Crack = 0.000(ft)

Theoretical Tension Crack Depth = 5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	68.86	661.74	0.544	4577.35	1.000	31.27	2376.1

2	72.00	661.35	0.449	13158.97	1.000	31.27	6830.7
3	77.09	663.83	0.555	14438.51	1.000	31.27	7494.9
4	82.17	666.06	0.596	15795.63	1.000	31.27	8199.4
5	87.26	668.06	0.605	17230.35	1.000	31.27	8944.1
6	92.34	669.85	0.597	18742.66	1.000	31.27	9729.2
7	97.43	671.46	0.578	20332.55	1.000	31.27	10554.5
8	102.51	672.89	0.553	22000.03	1.000	31.27	11420.0
9	107.60	674.16	0.526	23745.11	1.000	31.27	12325.9
10	112.68	675.30	0.496	25567.77	1.000	31.27	13272.0
11	117.77	676.31	0.466	27468.01	1.000	31.27	14258.4
12	122.85	677.21	0.436	29445.85	1.000	31.27	15285.1
13	127.94	678.00	0.406	31501.28	1.000	31.27	16352.0
14	133.64	683.09	0.417	22354.62	1.000	31.27	11604.1
15	139.33	688.49	0.447	14474.49	0.996	31.18	7493.6
16	145.03	693.64	0.473	7810.98	0.687	22.63	3005.9
17	150.01	699.77	0.493	2511.13	0.415	14.16	614.3
18	155.00	676.49	0.000-	-9.54	0.144	5.01	-0.8
19	157.22	707.66	0.510	24.43	0.023	0.81	0.3
20	157.65	708.11	0.000	178.38	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the 20 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	3.14	1.57	67.29	660.79	662.35	-25.54	27.49	3.48
2	3.14	4.70	70.43	659.28	663.99	-25.54	27.49	3.48
3	5.09	7.20	74.54	658.92	666.13	8.75	27.49	5.15
4	5.09	9.07	79.63	659.71	668.78	8.75	27.49	5.15
5	5.09	10.93	84.71	660.49	671.42	8.75	27.49	5.15
6	5.09	12.80	89.80	661.27	674.07	8.75	27.49	5.15
7	5.09	14.66	94.88	662.05	676.72	8.75	27.49	5.15
8	5.09	16.53	99.97	662.84	679.36	8.75	27.49	5.15
9	5.09	18.39	105.05	663.62	682.01	8.75	27.49	5.15
10	5.09	20.25	110.14	664.40	684.65	8.75	27.49	5.15
11	5.09	22.12	115.22	665.18	687.30	8.75	27.49	5.15
12	5.09	23.98	120.31	665.97	689.95	8.75	27.49	5.15
13	5.09	25.85	125.40	666.75	692.59	8.75	27.49	5.15
14	5.70	25.22	130.79	670.18	695.40	46.87	27.49	8.33
15	5.70	22.10	136.48	676.26	698.36	46.87	27.49	8.33
16	5.70	18.99	142.18	682.34	701.33	46.87	27.49	8.33
17	4.99	14.26	147.52	689.85	704.11	60.81	27.49	10.22
18	4.99	7.93	152.51	698.77	706.70	60.81	27.49	10.22
19	2.22	2.83	156.11	705.22	708.04	60.81	2.29	4.56
20	0.43	0.44	157.44	707.66	708.10	64.39	2.29	1.00

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	65.715803	661.535775
2	68.857901	660.034571
3	72.000000	658.533368
4	77.085279	659.315708
5	82.170558	660.098047
6	87.255837	660.880387
7	92.341116	661.662727
8	97.426394	662.445067
9	102.511673	663.227406
10	107.596952	664.009746
11	112.682231	664.792086
12	117.767510	665.574426
13	122.852789	666.356765

14	127.938068	667.139105
15	133.635309	673.220708
16	139.332550	679.302310
17	145.029792	685.383913
18	150.014896	694.306946
19	155.000000	703.229978
20	157.222909	707.208851
21	157.652988	708.106120

Table 3 - Force and Pore Pressure Data On The 20 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	591.3	0.0	0.0	0.0	0.0	118.3	0.0	0.00
2	1773.9	0.0	0.0	0.0	0.0	354.8	0.0	0.00
3	4396.6	0.0	0.0	0.0	0.0	879.3	0.0	0.00
4	5534.1	0.0	0.0	0.0	0.0	1106.8	0.0	0.00
5	6671.7	0.0	0.0	0.0	0.0	1334.3	0.0	0.00
6	7809.2	0.0	0.0	0.0	0.0	1561.8	0.0	0.00
7	8946.7	0.0	0.0	0.0	0.0	1789.3	0.0	0.00
8	10084.2	0.0	0.0	0.0	0.0	2016.8	0.0	0.00
9	11221.8	0.0	0.0	0.0	0.0	2244.4	0.0	0.00
10	12359.3	0.0	0.0	0.0	0.0	2471.9	0.0	0.00
11	13496.8	0.0	0.0	0.0	0.0	2699.4	0.0	0.00
12	14634.3	0.0	0.0	0.0	0.0	2926.9	0.0	0.00
13	15771.9	0.0	0.0	0.0	0.0	3154.4	0.0	0.00
14	17241.6	0.0	0.0	0.0	0.0	3448.3	0.0	0.00
15	15110.8	0.0	0.0	0.0	0.0	3022.2	0.0	0.00
16	12980.0	0.0	0.0	0.0	0.0	2596.0	0.0	0.00
17	8532.4	0.0	0.0	0.0	0.0	1706.5	0.0	0.00
18	4746.5	0.0	0.0	0.0	0.0	949.3	0.0	0.00
19	753.6	0.0	0.0	0.0	0.0	150.7	0.0	0.00
20	22.7	0.0	0.0	0.0	0.0	4.5	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 172679.35(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 172679.35(lbs)

TOTAL AREA OF SLIDING MASS = 1438.99(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 20 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	2	200.00	30.00	
2	2	200.00	30.00	
3	2	200.00	30.00	
4	2	200.00	30.00	
5	2	200.00	30.00	
6	2	200.00	30.00	
7	2	200.00	30.00	
8	2	200.00	30.00	
9	2	200.00	30.00	
10	2	200.00	30.00	
11	2	200.00	30.00	
12	2	200.00	30.00	
13	2	200.00	30.00	
14	2	200.00	30.00	
15	2	200.00	30.00	
16	2	200.00	30.00	
17	2	200.00	30.00	
18	2	200.00	30.00	
19	2	200.00	30.00	
20	2	200.00	30.00	

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,

R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 20 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-25.54	67.29	3.48	1267.85	188.18	6.737
2	-25.54	70.43	3.48	2565.83	564.55	4.545
3	8.75	74.54	5.15	913.87	864.58	1.057
4	8.75	79.63	5.15	1131.44	1088.27	1.040
5	8.75	84.71	5.15	1349.01	1311.95	1.028
6	8.75	89.80	5.15	1566.58	1535.64	1.020
7	8.75	94.88	5.15	1784.16	1759.33	1.014
8	8.75	99.97	5.15	2001.73	1983.02	1.009
9	8.75	105.05	5.15	2219.30	2206.71	1.006
10	8.75	110.14	5.15	2436.87	2430.40	1.003
11	8.75	115.22	5.15	2654.44	2654.09	1.000
12	8.75	120.31	5.15	2872.01	2877.78	0.998
13	8.75	125.40	5.15	3089.58	3101.47	0.996
14	46.87	130.79	8.33	1407.64	3026.31	0.465
15	46.87	136.48	8.33	1230.62	2652.31	0.464
16	46.87	142.18	8.33	1160.61	2278.30	0.509
17	60.81	147.52	10.22	668.65	1711.58	0.391
18	60.81	152.51	10.22	367.82	952.13	0.386
19	60.81	156.11	4.56	45.22	339.01	0.133
20	64.39	157.44	1.00	-133.50	52.80	-2.528

TABLE 5A - Total Base Force Data on the 20 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-25.54	67.29	3.48	4415.04	591.29	7.467
2	-25.54	70.43	3.48	8934.99	1773.87	5.037
3	8.75	74.54	5.15	4701.96	4396.61	1.069
4	8.75	79.63	5.15	5821.39	5534.13	1.052
5	8.75	84.71	5.15	6940.81	6671.66	1.040
6	8.75	89.80	5.15	8060.24	7809.18	1.032
7	8.75	94.88	5.15	9179.67	8946.71	1.026
8	8.75	99.97	5.15	10299.10	10084.23	1.021
9	8.75	105.05	5.15	11418.52	11221.75	1.018
10	8.75	110.14	5.15	12537.95	12359.28	1.014
11	8.75	115.22	5.15	13657.38	13496.80	1.012
12	8.75	120.31	5.15	14776.81	14634.33	1.010
13	8.75	125.40	5.15	15896.23	15771.85	1.008
14	46.87	130.79	8.33	11730.37	17241.64	0.680
15	46.87	136.48	8.33	10255.13	15110.85	0.679
16	46.87	142.18	8.33	9671.74	12980.05	0.745
17	60.81	147.52	10.22	6834.42	8532.39	0.801
18	60.81	152.51	10.22	3759.53	4746.45	0.792
19	60.81	156.11	4.56	206.11	753.58	0.274
20	64.39	157.44	1.00	-132.83	22.71	-5.849

TABLE 6 - Effective and Base Shear Stress Data on the 20 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-25.54	67.29	3.48	1267.85	931.99	677.03
2	-25.54	70.43	3.48	2565.83	1681.38	1221.41
3	8.75	74.54	5.15	913.87	727.62	528.57
4	8.75	79.63	5.15	1131.44	853.24	619.82

5	8.75	84.71	5.15	1349.01	978.85	711.07
6	8.75	89.80	5.15	1566.58	1104.47	802.32
7	8.75	94.88	5.15	1784.16	1230.08	893.57
8	8.75	99.97	5.15	2001.73	1355.70	984.82
9	8.75	105.05	5.15	2219.30	1481.31	1076.07
10	8.75	110.14	5.15	2436.87	1606.93	1167.33
11	8.75	115.22	5.15	2654.44	1732.54	1258.58
12	8.75	120.31	5.15	2872.01	1858.16	1349.83
13	8.75	125.40	5.15	3089.58	1983.77	1441.08
14	46.87	130.79	8.33	1407.64	1012.70	735.66
15	46.87	136.48	8.33	1230.62	910.50	661.42
16	46.87	142.18	8.33	1160.61	870.08	632.05
17	60.81	147.52	10.22	668.65	586.05	425.72
18	60.81	152.51	10.22	367.82	412.36	299.55
19	60.81	156.11	4.56	45.22	226.11	164.25
20	64.39	157.44	1.00	0.00	0.00	0.00

TABLE 6A - Effective and Base Shear Force Data on the 20 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-25.54	67.29	3.48	4415.04	3245.48	2357.63
2	-25.54	70.43	3.48	8934.99	5855.08	4253.33
3	8.75	74.54	5.15	4701.96	3743.70	2719.55
4	8.75	79.63	5.15	5821.39	4390.00	3189.04
5	8.75	84.71	5.15	6940.81	5036.30	3658.54
6	8.75	89.80	5.15	8060.24	5682.60	4128.03
7	8.75	94.88	5.15	9179.67	6328.91	4597.53
8	8.75	99.97	5.15	10299.10	6975.21	5067.02
9	8.75	105.05	5.15	11418.52	7621.51	5536.52
10	8.75	110.14	5.15	12537.95	8267.81	6006.02
11	8.75	115.22	5.15	13657.38	8914.11	6475.51
12	8.75	120.31	5.15	14776.81	9560.41	6945.01
13	8.75	125.40	5.15	15896.23	10206.72	7414.50
14	46.87	130.79	8.33	11730.37	8439.20	6130.52
15	46.87	136.48	8.33	10255.13	7587.47	5511.79
16	46.87	142.18	8.33	9671.74	7250.65	5267.11
17	60.81	147.52	10.22	6834.42	5990.08	4351.40
18	60.81	152.51	10.22	3759.53	4214.79	3061.77
19	60.81	156.11	4.56	206.11	1030.54	748.62
20	64.39	157.44	1.00	0.00	0.00	0.00

Average Effective Normal Stress = 1474.9544(psf)
Average Available Shear Strength = 1050.4976(psf)
Total Length of Failure Surface = 114.5558(ft)

SUM OF MOMENTS = -0.550249E-04 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.3186534E-09
SUM OF FORCES = -.188141E-01 (lbs);Imbalance (Fraction of Total Weight) = -0.1089538E-06

Sum of Available Shear Forces = 120340.57(lbs)

Sum of Mobilized Shear Forces = 87419.43(lbs)

FS Balance Check: FS = 1.376588

The FS Calculation To Determine The Seismic Yield Coefficient (ky) Did Not Converge in 50 Iterations.

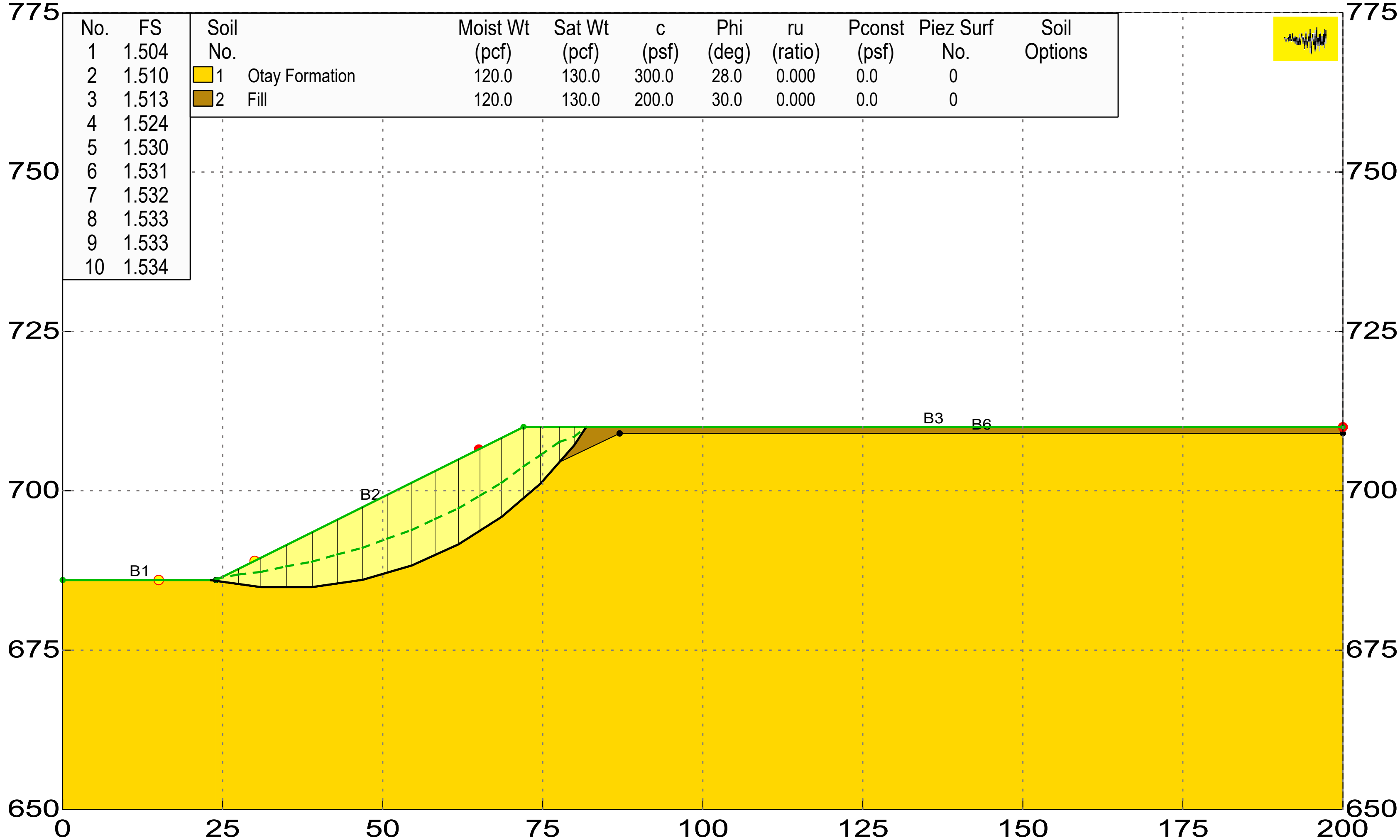
**** END OF GEOSTASE OUTPUT ****

Acadia Medical Facility, Chula Vista, CA
Section B-B' Stability Fill (Seismic)

Ninyo & Moore / WRM

\B-B' Stability Fill Seismic.gsd

Soil No.		Moist Wt (pcf)	Sat Wt (pcf)	c (psf)	Phi (deg)	ru (ratio)	Pconst (psf)	Piez Surf No.	Soil Options
1	Otay Formation	120.0	130.0	300.0	28.0	0.000	0.0	0	
2	Fill	120.0	130.0	200.0	30.0	0.000	0.0	0	



GEOSTASE FS = 1.504

Spencer Method

GEOSTASE Slope Stability Analysis

GEOSTASE® by GREGORY GEOTECHNICAL SOFTWARE

PLATE E-10

*** GEOSTASE(R) ***

** GEOSTASE(R) (c)Copyright by Garry H. Gregory, Ph.D., P.E.,D.GE **

** Current Version 4.30.30-Double Precision, January 2019 **

****
SLOPE STABILITY ANALYSIS SOFTWARE
Simplified Bishop, Simplified Janbu, or General Equilibrium (GE) Options.
(Spencer, Morgenstern-Price, USACE, and Lowe & Karafiath)
Including Pier/Pile, Planar Reinf, Nail, Tieback, Line Loads
Applied Forces, Fiber-Reinforced Soil (FRS), Distributed Loads
Nonlinear Undrained Shear Strength, Curved Strength Envelope,
Anisotropic Strengths, Water Surfaces, 3-Stage Rapid Drawdown
2- or 3-Stage Pseudo-Static & Simplified Newmark Seismic Analyses.
****

Analysis Date: 3/ 5/ 2019
Analysis Time:
Analysis By: Ninyo & Moore / WRM
Input File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' Stability Fill Seismic.gsd
Output File Name: G:\File Share\WRM.temp\108727001 Acadia\Slope Stability Calcs\B-B'\Stability Fill\B-B' Stability Fill Seismic.OUT
Unit System: English

PROJECT: Acadia Medical Facility, Chula Vista, CA

DESCRIPTION: Section B-B' Stability Fill (Seismic)

BOUNDARY DATA

3 Surface Boundaries
6 Total Boundaries

Boundary No.	X - 1 (ft)	Y - 1 (ft)	X - 2 (ft)	Y - 2 (ft)	Soil Type Below Bnd
1	0.000	686.000	24.000	686.000	1
2	24.000	686.000	72.000	710.000	2
3	72.000	710.000	200.000	710.000	2
4	24.000	686.000	39.000	686.000	1
5	39.000	686.000	87.000	709.000	1
6	87.000	709.000	200.000	709.000	1

User Specified X-Origin = 0.000(ft)

User Specified Y-Origin = 650.000(ft)

MOHR-COULOMB SOIL PARAMETERS

2 Type(s) of Soil Defined

Soil Number and Description	Moist Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Ratio(ru)	Pressure Constant (psf)	Water Surface No.	Water Option
1 Otay Formation	120.0	130.0	300.00	28.00	0.000	0.0	0	0
2 Fill	120.0	130.0	200.00	30.00	0.000	0.0	0	0

SEISMIC (EARTHQUAKE) DATA

Specified Peak Ground Acceleration Coefficient (PGA) = 0.374(g)
Default Velocity = 1.870(ft) per second
Specified Horizontal Earthquake Coefficient (kh) = 0.2000(g)
Specified Vertical Earthquake Coefficient (kv) = 0.000(g)
(NOTE:Input Velocity = 0.0 will result in default Peak
Velocity = 2 times(PGA) times 2.5 fps or 0.762 mps)
Specified Seismic Pore-Pressure Factor = 0.000
Horizontal Seismic Force is Applied at Center of Gravity of Slices

TRIAL FAILURE SURFACE DATA

Circular Trial Failure Surfaces Have Been Generated Using A Random Procedure.

5000 Trial Surfaces Have Been Generated.

5000 Surfaces Generated at Increments of 0.0360(in) Equally Spaced Within the Start Range

Along The Specified Surface Between X = 15.00(ft)
and X = 30.00(ft)

Each Surface Enters within a Range Between X = 65.00(ft)
and X = 200.00(ft)

Unless XCLUDE Lines Were Specified, The Minimum Elevation
To Which A Surface Extends Is Y = 650.00(ft)

Specified Maximum Radius = 5000.000(ft)

8.000(ft) Line Segments Were Used For Each Trial Failure Surface.

The Spencer Method Was Selected for FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR SPENCER METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Allowable negative side force = -1000.0(lbs)
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Specified Tension Crack Water Depth Factor = 0.000

Total Number of Trial Surfaces Attempted = 5000

WARNING! The Factor of Safety Calculation for one or More Trial Surfaces
Did Not Converge in 50 Iterations.

Number of Trial Surfaces with Non-Converged FS = 973

Number of Trial Surfaces With Valid FS = 4027

Percentage of Trial Surfaces With Non-Converged and/or
Non-Valid FS Solutions of the Total Attempted = 19.5 %

Statistical Data On All Valid FS Values:
FS Max = 3.230 FS Min = 1.504 FS Ave = 2.301

Standard Deviation =   0.421   Coefficient of Variation =   18.31 %

Critical Surface is Sequence Number   2355 of Those Analyzed.

*****BEGINNING OF DETAILED GEOSTASE OUTPUT FOR CRITICAL SURFACE FROM A SEARCH*****

BACK-CALCULATED CIRCULAR SURFACE PARAMETERS:

Circle Center At X =   34.835015(ft) ; Y =   741.325658(ft); and Radius = 56.571786(ft)

Circular Trial Failure Surface Generated With 10 Coordinate Points

Point No.	X-Coord. (ft)	Y-Coord. (ft)
1	23.027	686.000
2	30.949	684.888
3	38.949	684.904
4	46.867	686.048
5	54.544	688.298
6	61.827	691.608
7	68.570	695.913
8	74.638	701.126
9	79.911	707.142
10	81.776	710.000

Iter. No.	Theta (deg) (fx=1.0)	FS (Moment)	FS (Force)	Lambda	Delta FS
1	15.0000	1.775816	1.427048	0.268	0.3487675E+00
2	19.9500	1.737002	1.449784	0.363	0.2872182E+00
3	43.0444	0.000000	1.616067	0.934	0.1616067E+01
4	23.4344	1.690233	1.467403	0.433	0.2228301E+00
5	25.8141	1.641901	1.480397	0.484	0.1615036E+00
6	32.0798	1.337240	1.519496	0.627	0.1822560E+00
7	28.7573	1.548547	1.497772	0.549	0.5077562E-01
8	29.4817	1.516229	1.502302	0.565	0.1392772E-01
9	29.7555	1.502619	1.504042	0.572	0.1422601E-02
10	29.7302	1.503916	1.503880	0.571	0.3635844E-04
11	29.7308	1.503884	1.503884	0.571	0.1797223E-06

Factor Of Safety For The Preceding Specified Surface = 1.504
Theta (fx = 1.0) = 29.73 Deg   Lambda =   0.571

The Spencer Method Has Been Selected For FS Analysis.

Selected fx function = Bi-linear

SELECTED CONVERGENCE PARAMETERS FOR ANALYSIS METHOD:
Initial estimate of FS = 1.500
FS tolerance = 0.000001000
Initial estimate of theta(deg) = 15.00
Theta tolerance(radians) = 0.0001000
Minimum theta(deg) = -45.00 ; Maximum theta(deg) = 45.00
Theta convergence Step Factor = 5000.00
Maximum number of iterations = 50
Maximum force imbalance = 100.000000(lbs)
Maximum moment imbalance(if Applicable) = 100.000000 (ft/lbs)

Selected Lambda Coefficient = 1.00

Tension Crack Water Force =   0.00(lbs)

Specified Tension Crack Water Depth Factor = 0.000

Depth of Tension Crack (zo) at Side of Last Slice =   0.000(ft)

Depth of Water in Tension Crack =   0.000(ft)

Theoretical Tension Crack Depth =   5.774(ft)

NOTE: In Table 1 following, when a tension crack with water is present on the first slice (right facing slope) or on the last slice (left facing slope), the "side force" in the tension crack is set equal to the water pressure resultant.

*** Table 1 - Line of Thrust(if applicable) and Slice Force Data ***

Slice No.	X Coord.	Y Coord.	h/H	Side Force (lbs)	fx	Force Angle (Deg)	Vert. Shear Force(lbs)
1	24.00	686.21	1.000+	345.41	1.000	29.73	171.3
2	27.47	686.87	0.632	1836.18	1.000	29.73	910.6
3	30.95	687.29	0.523	3812.84	1.000	29.73	1890.9
4	34.95	688.15	0.495	5545.59	1.000	29.73	2750.2
5	38.95	688.88	0.463	7486.72	1.000	29.73	3712.9
6	39.00	688.89	0.463	7499.51	1.000	29.73	3719.2
7	42.93	690.03	0.455	8483.00	1.000	29.73	4206.9
8	46.87	691.06	0.440	9465.51	1.000	29.73	4694.2
9	50.71	692.49	0.437	9424.46	1.000	29.73	4673.8
10	54.54	693.85	0.428	9320.26	1.000	29.73	4622.2
11	58.19	695.57	0.427	8352.33	1.000	29.73	4142.1
12	61.83	697.24	0.423	7361.61	1.000	29.73	3650.8
13	65.20	699.26	0.428	5822.08	1.000	29.73	2887.3
14	68.57	701.28	0.434	4365.51	1.000	29.73	2165.0
15	72.00	703.82	0.445	2522.84	0.832	25.41	1082.7
16	74.64	705.59	0.503	1434.88	0.607	19.13	470.3
17	77.59	707.64	0.572	593.04	0.357	11.51	118.3
18	79.91	708.49	0.470	278.16	0.159	5.18	25.1
19	81.78	710.00	0.000	522.85	0.000	0.00	0.0

NOTE: A value of 0.000- for h/H indicates that the line of thrust is at or below the lower boundary of the sliding mass. A value of 1.000+ for h/H indicates that the line of thrust is at or above the upper boundary of the sliding mass.

Table 2 - Geometry Data on the   19 Slices

Slice No.	Width (ft)	Height (ft)	X-Cntr (ft)	Y-Cntr-Base (ft)	Y-Cntr-Top (ft)	Alpha (deg)	Beta (deg)	Base Length (ft)
1	0.97	0.07	23.51	685.93	686.00	-7.99	0.00	0.98
2	3.47	1.25	25.74	685.62	686.87	-7.99	26.57	3.51
3	3.47	3.47	29.21	685.13	688.61	-7.99	26.57	3.51
4	4.00	5.58	32.95	684.89	690.47	0.12	26.57	4.00
5	4.00	7.57	36.95	684.90	692.47	0.12	26.57	4.00
6	0.05	8.58	38.97	684.91	693.49	8.22	26.57	0.05
7	3.93	9.29	40.97	685.20	694.48	8.22	26.57	3.97
8	3.93	10.69	44.90	685.76	696.45	8.22	26.57	3.97
9	3.84	11.78	48.79	686.61	698.39	16.33	26.57	4.00
10	3.84	12.58	52.62	687.74	700.31	16.33	26.57	4.00
11	3.64	13.06	56.36	689.13	702.18	24.44	26.57	4.00
12	3.64	13.22	60.01	690.78	704.00	24.44	26.57	4.00
13	3.37	13.07	63.51	692.68	705.76	32.55	26.57	4.00
14	3.37	12.61	66.88	694.84	707.44	32.55	26.57	4.00
15	3.43	11.76	70.28	697.39	709.14	40.66	26.57	4.52
16	2.64	10.01	73.32	699.99	710.00	40.66	0.00	3.48
17	2.95	7.19	76.11	702.81	710.00	48.77	0.00	4.47
18	2.32	4.18	78.75	705.82	710.00	48.77	0.00	3.53
19	1.86	1.43	80.84	708.57	710.00	56.88	0.00	3.41

Table 2A - Coordinates of Slice Points Defining the Slip Surface

Point No.	X-Pt (ft)	Y-Pt (ft)
1	23.026605	686.000000
2	24.000000	685.863310
3	27.474438	685.375409
4	30.948875	684.887507
5	34.948867	684.895577
6	38.948859	684.903648
7	39.000000	684.911040
8	42.933288	685.479569
9	46.866575	686.048099
10	50.705131	687.173037
11	54.543688	688.297975
12	58.185180	689.953129
13	61.826672	691.608283
14	65.198279	693.760554
15	68.569885	695.912824
16	72.000000	698.859164
17	74.638478	701.125518
18	77.586267	704.489253
19	79.911093	707.142123
20	81.775568	710.000000

Table 3 - Force and Pore Pressure Data On The 19 Slices (Excluding Reinforcement)

Slice No.	Weight (lbs)	Ubeta Force Top (lbs)	Ubeta Stress Top (psf)	Ualpha Force Bot (lbs)	Pore Pressure (psf)	Earthquake Force Hor (lbs)	Earthquake Force Ver (lbs)	Distributed Load (lbs)
1	8.0	0.0	0.0	0.0	0.0	1.6	0.0	0.00
2	520.9	0.0	0.0	0.0	0.0	104.2	0.0	0.00
3	1448.6	0.0	0.0	0.0	0.0	289.7	0.0	0.00
4	2679.8	0.0	0.0	0.0	0.0	536.0	0.0	0.00
5	3635.9	0.0	0.0	0.0	0.0	727.2	0.0	0.00
6	52.7	0.0	0.0	0.0	0.0	10.5	0.0	0.00
7	4383.9	0.0	0.0	0.0	0.0	876.8	0.0	0.00
8	5043.8	0.0	0.0	0.0	0.0	1008.8	0.0	0.00
9	5427.3	0.0	0.0	0.0	0.0	1085.5	0.0	0.00
10	5793.2	0.0	0.0	0.0	0.0	1158.6	0.0	0.00
11	5705.5	0.0	0.0	0.0	0.0	1141.1	0.0	0.00
12	5777.8	0.0	0.0	0.0	0.0	1155.6	0.0	0.00
13	5288.8	0.0	0.0	0.0	0.0	1057.8	0.0	0.00
14	5100.0	0.0	0.0	0.0	0.0	1020.0	0.0	0.00
15	4839.1	0.0	0.0	0.0	0.0	967.8	0.0	0.00
16	3168.6	0.0	0.0	0.0	0.0	633.7	0.0	0.00
17	2544.3	0.0	0.0	0.0	0.0	508.9	0.0	0.00
18	1167.3	0.0	0.0	0.0	0.0	233.5	0.0	0.00
19	319.7	0.0	0.0	0.0	0.0	63.9	0.0	0.00

TOTAL WEIGHT OF SLIDING MASS = 62905.06(lbs)

EFFECTIVE WEIGHT OF SLIDING MASS = 62905.06(lbs)

TOTAL AREA OF SLIDING MASS = 524.21(ft2)

TABLE 4 - SOIL STRENGTH & SOIL OPTIONS DATA ON THE 19 SLICES

Slice No.	Soil Type	Cohesion (psf)	Phi(Deg)	Options
1	1	300.00	28.00	
2	1	300.00	28.00	
3	1	300.00	28.00	
4	1	300.00	28.00	
5	1	300.00	28.00	
6	1	300.00	28.00	
7	1	300.00	28.00	
8	1	300.00	28.00	
9	1	300.00	28.00	

10	1	300.00	28.00
11	1	300.00	28.00
12	1	300.00	28.00
13	1	300.00	28.00
14	1	300.00	28.00
15	1	300.00	28.00
16	1	300.00	28.00
17	1	300.00	28.00
18	2	200.00	30.00
19	2	200.00	30.00

SOIL OPTIONS: A = ANISOTROPIC, C = CURVED STRENGTH ENVELOPE (TANGENT PHI & C),
F = FIBER-REINFORCED SOIL (FRS), N = NONLINEAR UNDRAINED SHEAR STRENGTH,
R = RAPID DRAWDOWN OR RAPID LOADING (SEISMIC) SHEAR STRENGTH
NOTE: Phi and C in Table 4 are modified values based on specified
Soil Options (if any).

TABLE 5 - Total Base Stress Data on the 19 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Stress (psf)	Total Vert. Stress (psf)	Total Normal/Vert. Stress Ratio
1	-7.99	23.51	0.98	223.28	8.20	27.224
2	-7.99	25.74	3.51	411.12	149.91	2.742
3	-7.99	29.21	3.51	765.06	416.92	1.835
4	0.12	32.95	4.00	883.74	669.95	1.319
5	0.12	36.95	4.00	1148.42	908.98	1.263
6	8.22	38.97	0.05	1070.13	1029.58	1.039
7	8.22	40.97	3.97	1150.91	1114.56	1.033
8	8.22	44.90	3.97	1310.41	1282.34	1.022
9	16.33	48.79	4.00	1223.36	1413.88	0.865
10	16.33	52.62	4.00	1302.34	1509.20	0.863
11	24.44	56.36	4.00	1158.19	1566.80	0.739
12	24.44	60.01	4.00	1172.63	1586.67	0.739
13	32.55	63.51	4.00	991.14	1568.62	0.632
14	32.55	66.88	4.00	955.42	1512.64	0.632
15	40.66	70.28	4.52	777.38	1410.78	0.551
16	40.66	73.32	3.48	686.57	1200.92	0.572
17	48.77	76.11	4.47	409.87	863.11	0.475
18	48.77	78.75	3.53	234.50	502.12	0.467
19	56.88	80.84	3.41	-20.38	171.47	-0.119

TABLE 5A - Total Base Force Data on the 19 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Total Normal Force (lbs)	Total Vert. Force (lbs)	Total Normal/Vert. Force Ratio
1	-7.99	23.51	0.98	219.47	7.98	27.492
2	-7.99	25.74	3.51	1442.43	520.85	2.769
3	-7.99	29.21	3.51	2684.24	1448.58	1.853
4	0.12	32.95	4.00	3534.97	2679.78	1.319
5	0.12	36.95	4.00	4593.69	3635.91	1.263
6	8.22	38.97	0.05	55.30	52.65	1.050
7	8.22	40.97	3.97	4573.92	4383.89	1.043
8	8.22	44.90	3.97	5207.79	5043.80	1.033
9	16.33	48.79	4.00	4893.44	5427.27	0.902
10	16.33	52.62	4.00	5209.36	5793.16	0.899
11	24.44	56.36	4.00	4632.75	5705.49	0.812
12	24.44	60.01	4.00	4690.53	5777.85	0.812
13	32.55	63.51	4.00	3964.55	5288.76	0.750
14	32.55	66.88	4.00	3821.69	5100.03	0.749
15	40.66	70.28	4.52	3515.16	4839.13	0.726
16	40.66	73.32	3.48	2388.04	3168.60	0.754
17	48.77	76.11	4.47	1833.17	2544.28	0.721
18	48.77	78.75	3.53	827.16	1167.34	0.709
19	56.88	80.84	3.41	-69.54	319.71	-0.218

TABLE 6 - Effective and Base Shear Stress Data on the 19 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Stress (psf)	Available Shear Strength (psf)	Mobilized Shear Stress (psf)
1	-7.99	23.51	0.98	223.28	418.72	278.43
2	-7.99	25.74	3.51	411.12	518.60	344.84
3	-7.99	29.21	3.51	765.06	706.79	469.98
4	0.12	32.95	4.00	883.74	769.89	511.94
5	0.12	36.95	4.00	1148.42	910.63	605.52
6	8.22	38.97	0.05	1070.13	869.00	577.84
7	8.22	40.97	3.97	1150.91	911.95	606.40
8	8.22	44.90	3.97	1310.41	996.76	662.79
9	16.33	48.79	4.00	1223.36	950.47	632.01
10	16.33	52.62	4.00	1302.34	992.47	659.94
11	24.44	56.36	4.00	1158.19	915.82	608.97
12	24.44	60.01	4.00	1172.63	923.50	614.08
13	32.55	63.51	4.00	991.14	827.00	549.91
14	32.55	66.88	4.00	955.42	808.01	537.28
15	40.66	70.28	4.52	777.38	713.34	474.33
16	40.66	73.32	3.48	686.57	665.06	442.23
17	48.77	76.11	4.47	409.87	517.93	344.39
18	48.77	78.75	3.53	234.50	335.39	223.01
19	56.88	80.84	3.41	0.00	0.00	0.00

TABLE 6A - Effective and Base Shear Force Data on the 19 Slices

Slice No. *	Alpha (deg)	X-Coord. Slice Cntr (ft)	Base Leng. (ft)	Effective Normal Force (lbs)	Available Shear Force (lbs)	Mobilized Shear Force (lbs)
1	-7.99	23.51	0.98	219.47	411.58	273.68
2	-7.99	25.74	3.51	1442.43	1819.51	1209.87
3	-7.99	29.21	3.51	2684.24	2479.79	1648.93
4	0.12	32.95	4.00	3534.97	3079.58	2047.75
5	0.12	36.95	4.00	4593.69	3642.51	2422.07
6	8.22	38.97	0.05	55.30	44.90	29.86
7	8.22	40.97	3.97	4573.92	3624.25	2409.92
8	8.22	44.90	3.97	5207.79	3961.28	2634.03
9	16.33	48.79	4.00	4893.44	3801.89	2528.05
10	16.33	52.62	4.00	5209.36	3969.86	2639.74
11	24.44	56.36	4.00	4632.75	3663.28	2435.88
12	24.44	60.01	4.00	4690.53	3694.00	2456.31
13	32.55	63.51	4.00	3964.55	3307.99	2199.63
14	32.55	66.88	4.00	3821.69	3232.03	2149.12
15	40.66	70.28	4.52	3515.16	3225.58	2144.83
16	40.66	73.32	3.48	2388.04	2313.20	1538.15
17	48.77	76.11	4.47	1833.17	2316.49	1540.34
18	48.77	78.75	3.53	827.16	1183.04	786.66
19	56.88	80.84	3.41	0.00	0.00	0.00

Average Effective Normal Stress = 860.6457(psf)
Average Available Shear Strength = 738.3039(psf)
Total Length of Failure Surface = 67.4123(ft)

SUM OF MOMENTS = -0.758897E-03 (ft/lbs);Imbalance (Fraction of Total Weight) = -0.1206416E-07
SUM OF FORCES = -.116901E-04 (lbs);Imbalance (Fraction of Total Weight) = -0.1858371E-09

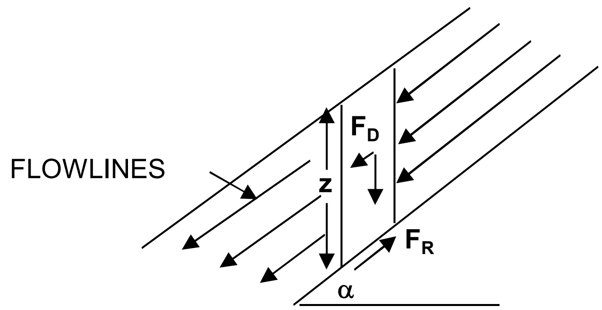
Sum of Available Shear Forces = 49770.76(lbs)

Sum of Mobilized Shear Forces = 33094.81(lbs)

FS Balance Check: FS = 1.503884

The FS Calculation To Determine The Seismic Yield
Coefficient (ky) Did Not Converge in 50 Iterations.

**** END OF GEOSTASE OUTPUT ****



Problem Description: Surficial Stability of Existing Cut Slopes
Acadia San Diego Medical Facility, Chula Vista, CA

Parameters

Depth of Saturation (ft), z	=	**4.0**
Buoyant Unit Weight of Soil (pcf), Y_b	=	**67.6**
Total Unit Weight of Soil (pcf), Y_t	=	**130**
Slope Angle, α	=	**26.6**
Angle of Internal Friction, Φ	=	**28.0**
Cohesion (psf), c	=	**300.0**

Driving Force Acting in Downslope Direction

$F_D = (1/2)\, z.Y_t.\sin 2\alpha$ = **208.19** lb/ft

Resisting Force Acting in Upslope Direction

$F_R = z.Y_b.\cos^2\alpha.\tan\Phi + c$

= **414.95** lb/ft

Factor of Safety, F.S.

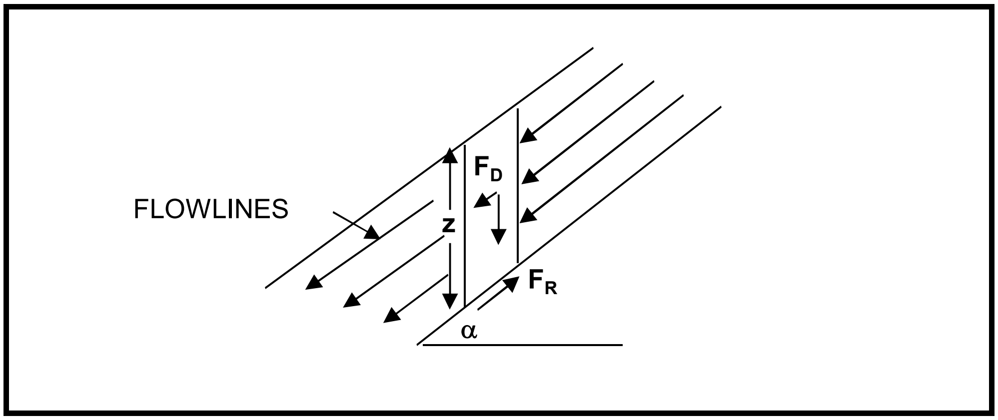
$$F.S. = \frac{2.z.Y_b.\cos^2\alpha.\tan\Phi + 2c}{z.Y_t.\sin 2\alpha}$$

= $\boxed{1.99}$

Ninyo & Moore

SURFICIAL SLOPE STABILITY ANALYSIS

Project Name:	Acadia San Diego Medical
Project No:	108727001
Designed/Checked:	WRM/KHM



Problem Description: Surficial Stability of Existing Fill Slopes
Acadia San Diego Medical Facility, Chula Vista, CA

Parameters

Depth of Saturation (ft), z	=	**4.0**
Buoyant Unit Weight of Soil (pcf), Y_b	=	**67.6**
Total Unit Weight of Soil (pcf), Y_t	=	**130**
Slope Angle, α	=	**26.6**
Angle of Internal Friction, Φ	=	**30.0**
Cohesion (psf), c	=	**200.0**

Driving Force Acting in Downslope Direction

$F_D = (1/2)\ z.Y_t.\sin 2\alpha$ = **208.19** lb/ft

Resisting Force Acting in Upslope Direction

$F_R = z.Y_b.\cos^2\alpha.\tan\Phi + c$

= **324.82** lb/ft

Factor of Safety, F.S.

$$F.S. = \frac{2.z.Y_b.\cos^2\alpha.\tan\Phi + 2c}{z.Y_t.\sin 2\alpha}$$

= $\boxed{1.56}$

Ninyo & Moore

SURFICIAL SLOPE STABILITY ANALYSIS

Project Name:	Acadia San Diego Medical
Project No:	108727001
Designed/Checked:	WRM/KHM

APPENDIX F

Derivation of Pseudostatic Coefficient

DETERMINATION OF PSEUDOSTATIC PARAMETER
FOR SCREENING ANALYSIS FOR SEISMIC SLOPE STABILITY

References: Abrahamson, N.A. and Silva, W.J., 1996, Empirical Ground Motion Models, report prepared for Brookhaven National Laboratory, New York, NY, 144 p.

Blake, T.F., Hollingsworth, R.A. and Stewart, J.P., 2002, Recommended Procedures for Implementation of DMG Special Publication 117-Guidelines for Analyzing and Mitigating Landslide Hazards in California: Committee Organized Through the ASCE, Los Angeles Section Geotechnical Group, Document Published by the Southern California Earthquake Center, 101p.

Bray, J.D., Rathje E.M., Auguello, A.J. and Merry, S.M., 1998, Simplified Seismic Design Procedure for Geosynthetic-Lined Solid Waste Landfills: Geosynthetics International, V.5, No. 1-2, pp. 203-235.

Stewart, J.P., Blake, T.F. and Hollingsworth, R.A., 2003, A Screen Analysis Procedure for Seismic Slope Stability: Earthquake Spectra, Vol. 19, No. 3, pp. 697-712.

Given: Modal Magnitude, M = 6.69

Modal Distance, r = 17.5 km

Screening Threshold, u = 5 cm

Design Ground Acceleration (rock), MHA = 0.37 g

Duration (D$_{5\text{-}95}$)

For r > 10 km

$$\ln(D_{5-95}) = \ln\left[\frac{\left(\exp[5.204+0.851\cdot(M-6)]/10^{1.5M+16.05}\right)^{-1/3}}{15.7\times10^{6}}+0.063\cdot(r-10)\right]+0.8664$$

For r < 10 km

$$\ln(D_{5-95}) = \ln\left[\frac{\left(\exp[5.204+0.851\cdot(M-6)]/10^{1.5M+16.05}\right)^{-1/3}}{15.7\times10^{6}}\right]+0.8664$$

$\ln(D_{5\text{-}95}) =$ 2.4858

$(D_{5\text{-}95}) =$ 12.01 sec

DETERMINATION OF PSEUDOSTATIC PARAMETER
FOR SCREENING ANALYSIS FOR SEISMIC SLOPE STABILITY

<u>Non-Linear Response Factor</u> (NRF)

$$NRF \approx 0.6225 + 0.9196 \cdot \exp(-MHA / 0.4449)$$

$$NRF \approx 1.0192$$

<u>Seismicity Factor</u> (f_{eq})

$$f_{eq} = (NRF / 3.477) \times \left[1.87 - \log_{10} \left[\frac{u}{(MHA) \cdot (NRF) \cdot (D_{5-95})} \right] \right]$$

$$f_{eq} = 0.54$$

<u>Seismic Coefficient</u> (k)

$$k = f_{eq} \cdot MHA$$

<u>k = 0.20</u>

U.S. Geological Survey - Earthquake Hazards Program

Unified Hazard Tool

Please do not use this tool to obtain ground motion parameter values for the design code reference documents covered by the U.S. Seismic Design Maps web tools (e.g., the International Building Code and the ASCE 7 or 41 Standard). The values returned by the two applications are not identical.

Input

Edition

Dynamic: Conterminous U.S. 2008 (v3.3.

Latitude

Decimal degrees

32.65539

Longitude

Decimal degrees, negative values for western longitudes

-116.95575

Site Class

760 m/s (B/C boundary)

Spectral Period

Peak ground acceleration

Time Horizon

Return period in years

2475

Hazard Curve

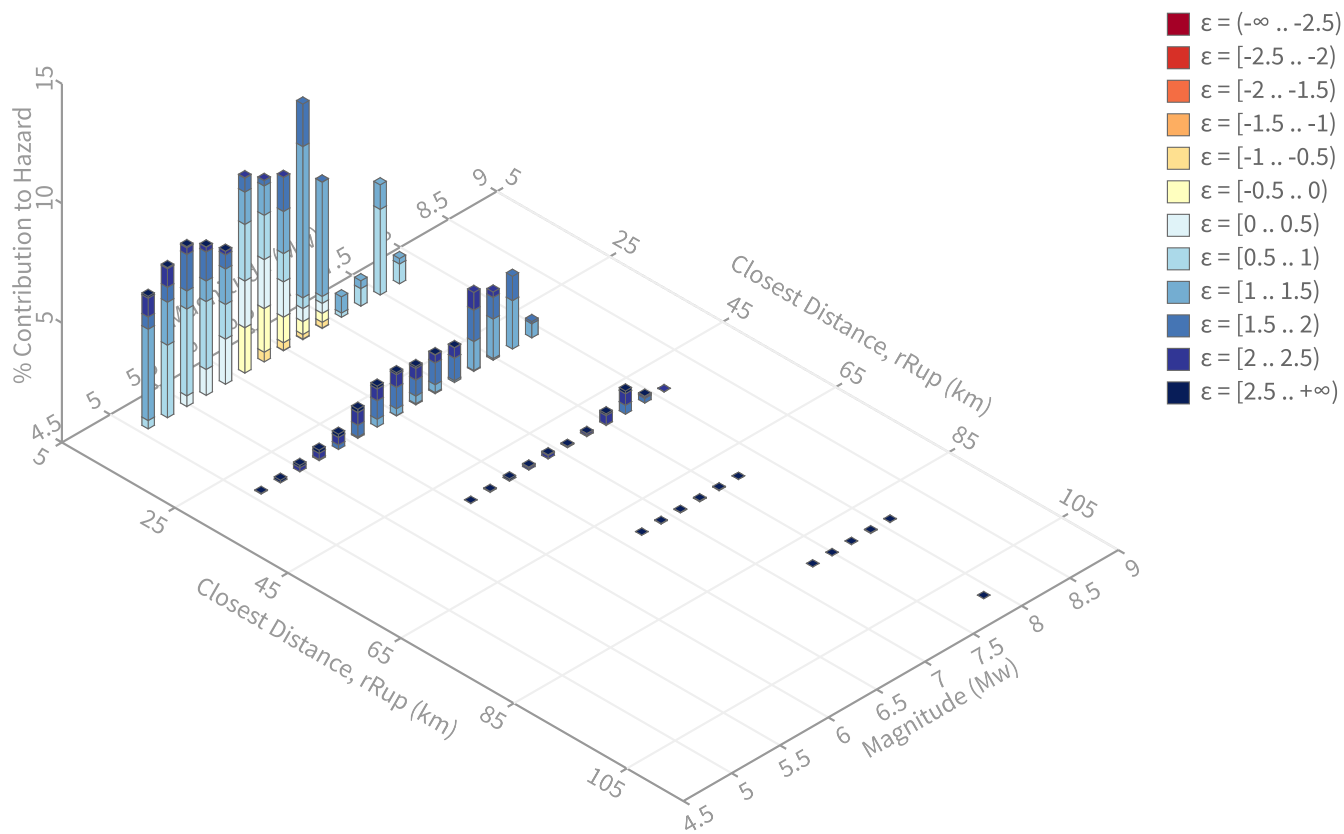
Please select “Edition”, “Location” & “Site Class” above to compute a hazard curve.

Compute Hazard Curve

Deaggregation

Component

Total



Summary statistics for, Deaggregation: Total

Deaggregation targets

Return period: 2475 yrs
Exceedance rate: 0.0004040404 yr^{-1}
PGA ground motion: 0.30518296 g

Recovered targets

Return period: 2722.9266 yrs
Exceedance rate: 0.00036725191 yr^{-1}

Totals

Binned: 100 %
Residual: 0 %
Trace: 0.06 %

Mean (for all sources)

r: 18.03 km
m: 6.39
ε_0: 1.12 σ

Mode (largest r-m bin)

r: 17.48 km
m: 6.69
ε_0: 1.16 σ
Contribution: 9.85 %

Mode (largest ε_0 bin)

r: 19.14 km
m: 6.71
ε_0: 1.35 σ
Contribution: 6.32 %

Discretization

r: min = 0.0, max = 1000.0, Δ = 20.0 km
m: min = 4.4, max = 9.4, Δ = 0.2
ε: min = -3.0, max = 3.0, Δ = 0.5 σ

Epsilon keys

ε0: [-∞ .. -2.5)
ε1: [-2.5 .. -2.0)
ε2: [-2.0 .. -1.5)
ε3: [-1.5 .. -1.0)
ε4: [-1.0 .. -0.5)
ε5: [-0.5 .. 0.0)
ε6: [0.0 .. 0.5)
ε7: [0.5 .. 1.0)
ε8: [1.0 .. 1.5)
ε9: [1.5 .. 2.0)
ε10: [2.0 .. 2.5)
ε11: [2.5 .. +∞]

Deaggregation Contributors

Source Set ↳ Source	Type	r	m	ε_0	lon	lat	az	%
bFault.ch	Fault							22.76
Rose Canyon		19.13	6.79	1.33	117.151°W	32.603°N	252.43	9.45
Coronado Bank		33.91	7.37	1.64	117.298°W	32.552°N	250.35	3.62
Palos Verdes Connected		33.91	7.72	1.37	117.298°W	32.552°N	250.35	3.57
Newport Inglewood Connected alt 2		19.13	7.51	0.84	117.151°W	32.603°N	252.43	3.07
Newport Inglewood Connected alt 1		19.13	7.51	0.84	117.151°W	32.603°N	252.43	3.05
CAmap.21.ch.in (opt)	Grid							20.28
PointSourceFinite: -116.956, 32.723		8.74	5.76	0.60	116.956°W	32.723°N	0.00	5.97
PointSourceFinite: -116.956, 32.714		8.07	5.73	0.51	116.956°W	32.714°N	0.00	3.38
PointSourceFinite: -116.956, 32.732		9.42	5.79	0.68	116.956°W	32.732°N	0.00	2.46
PointSourceFinite: -116.956, 32.795		14.55	6.03	1.17	116.956°W	32.795°N	0.00	1.70
PointSourceFinite: -116.956, 32.804		15.31	6.06	1.23	116.956°W	32.804°N	0.00	1.41
PointSourceFinite: -116.956, 32.786		13.91	5.96	1.14	116.956°W	32.786°N	0.00	1.38
CAmap.24.ch.in (opt)	Grid							20.27
PointSourceFinite: -116.956, 32.723		8.74	5.76	0.60	116.956°W	32.723°N	0.00	5.96
PointSourceFinite: -116.956, 32.714		8.07	5.73	0.51	116.956°W	32.714°N	0.00	3.38
PointSourceFinite: -116.956, 32.732		9.42	5.79	0.68	116.956°W	32.732°N	0.00	2.46
PointSourceFinite: -116.956, 32.795		14.55	6.03	1.17	116.956°W	32.795°N	0.00	1.70
PointSourceFinite: -116.956, 32.804		15.31	6.06	1.23	116.956°W	32.804°N	0.00	1.41
PointSourceFinite: -116.956, 32.786		13.91	5.96	1.14	116.956°W	32.786°N	0.00	1.38
bFault.gr	Fault							14.00
Rose Canyon		19.55	6.66	1.44	117.151°W	32.603°N	252.43	6.33
Coronado Bank		34.27	7.00	1.91	117.298°W	32.552°N	250.35	2.92
Palos Verdes Connected		34.58	7.30	1.70	117.298°W	32.552°N	250.35	2.64
Newport Inglewood Connected alt 2		22.65	7.12	1.27	117.151°W	32.603°N	252.43	1.06
Newport Inglewood Connected alt 1		22.66	7.12	1.27	117.151°W	32.603°N	252.43	1.05
CAmap.24.gr.in (opt)	Grid							9.98
PointSourceFinite: -116.956, 32.723		8.74	5.76	0.60	116.956°W	32.723°N	0.00	2.98
PointSourceFinite: -116.956, 32.714		8.07	5.73	0.51	116.956°W	32.714°N	0.00	1.69
PointSourceFinite: -116.956, 32.732		9.42	5.79	0.68	116.956°W	32.732°N	0.00	1.23
CAmap.21.gr.in (opt)	Grid							9.98
PointSourceFinite: -116.956, 32.723		8.74	5.76	0.60	116.956°W	32.723°N	0.00	2.98
PointSourceFinite: -116.956, 32.714		8.07	5.73	0.51	116.956°W	32.714°N	0.00	1.69
PointSourceFinite: -116.956, 32.732		9.42	5.79	0.68	116.956°W	32.732°N	0.00	1.23

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