Appendix G
Geotechnical Report

ESA

LGC Valley, Inc.

Geotechnical Consulting

GEOTECHNICAL REPORT
TRACT 54081
CITY OF DIAMOND BAR, CALIFORNIA

Dated: August 31, 2020

Project No. 203008-01

Prepared For:

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August 31, 2020 Project No. 203008-01

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Subject: ***Geotechnical Report, Crooked Creek Development, Tract 54081, City of Diamond Bar, California***

In accordance with your request, LGC Valley, Inc. (LGC) is providing this geotechnical report for Tract 54081 in the City of Diamond Bar, California. Review of previous work performed by Geosoils Consultants, Inc (GSC) and a supplemental field investigation was completed in order to prepare this report. The Grading Exhibit prepared by Michael Baker International, dated August 2020, depicts the current proposed geometry of the site at 20-scale and forms the base map for our Geotechnical Map, Plate 1. Geotechnical Cross Sections are presented on Plates 2A through 2C.

LGC will assume the duties of Geotechnical Consultant-of-record; therefore, this report presents the results of our supplemental investigation, incorporates prior geologic and geotechnical data (by GSC), summarizes our geotechnical analysis of the collected data, and provides our conclusions, opinions and recommendations relative to the proposed development of the site.

If you have any questions regarding our report, please contact this office. We appreciate this opportunity to be of service.

Respectfully submitted,

LGC VALLEY, INC.
Respectfully submitted,

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1.0 INTRODUCTION

1.1 Purpose and Scope of Services

The main purpose of this report is to evaluate the current site design in light of prior work performed at the site by Geosoils Consultants, Inc. (GSC) and provide updated geotechnical interpretations, conclusions and recommendations where necessary. For this report, a supplemental field investigation was undertaken in order to further evaluate the geologic and geotechnical conditions at the site.

Our scope of services for preparation of this document included:

- Review of geotechnical reports, geologic maps and other documents relevant to the site (Appendix A, References).

- Perform a subsurface investigation including the excavation, sampling, and logging of three 8-inch diameter borings and two 24-inch diameter borings. The borings are labeled B-LGC-1 through B-LGC-5. Logs of the borings are presented in Appendix B, and their approximate locations are depicted on the Geotechnical Map (Plate 1). The excavations were sampled and logged under the supervision of a geologist from our firm.

- Prepare geotechnical cross sections A-A' through F-F' to depict interpreted geologic conditions, to evaluate slope stability and to present mitigation measures, Plates 2A through 2C.

- Perform engineering analyses, as necessary, to review slope stability conditions, and settlement potentials.

- Preparation of this report presenting our geologic and geotechnical findings, conclusions, opinions and recommendations with respect to the proposed design.

1.2 Engineer-of-Record

LGC has reviewed the information presented in the geotechnical reports prepared by GeoSoils Consultants, Inc. (References) with respect to the subject site and accepts responsibility as geotechnical engineer-of-record, and concurs with the prior information, except where modified herein.

1.3 Site Location and Project Description

The subject site is located in Brea Canyon east of the 57 Freeway corridor, at the southern terminus of Crooked Creek Drive in the City of Diamond Bar, California. The Assessor's Parcel Number is 8714028003. The site occupies approximately 13 acres that currently consists of vacant hillside terrain with dense vegetation. The site is bound by existing residential Tract 27577 to the west, Tract 25989 to the north and Tract 29053 to the east and vacant property to the south.

The proposed design indicates 7 single-family residential lots to be situated in the southern portion of the site and will entail the extension of Crooked Creek Drive toward the south (see Plate 1, Geotechnical Map). Retaining walls to heights of 15 feet are planned on the east side of the proposed Crooked Creek Drive, and two to three levels of tiered walls of up to 6 feet in height west of Lots 5 through 7, and east of the Brea Canyon Channel.

1.4 Records Review

Review of previous reports for the site included those provided to us and references readily available within our library were used to prepare this report. Reports provided to us were prepared by GSC and are referenced herein.

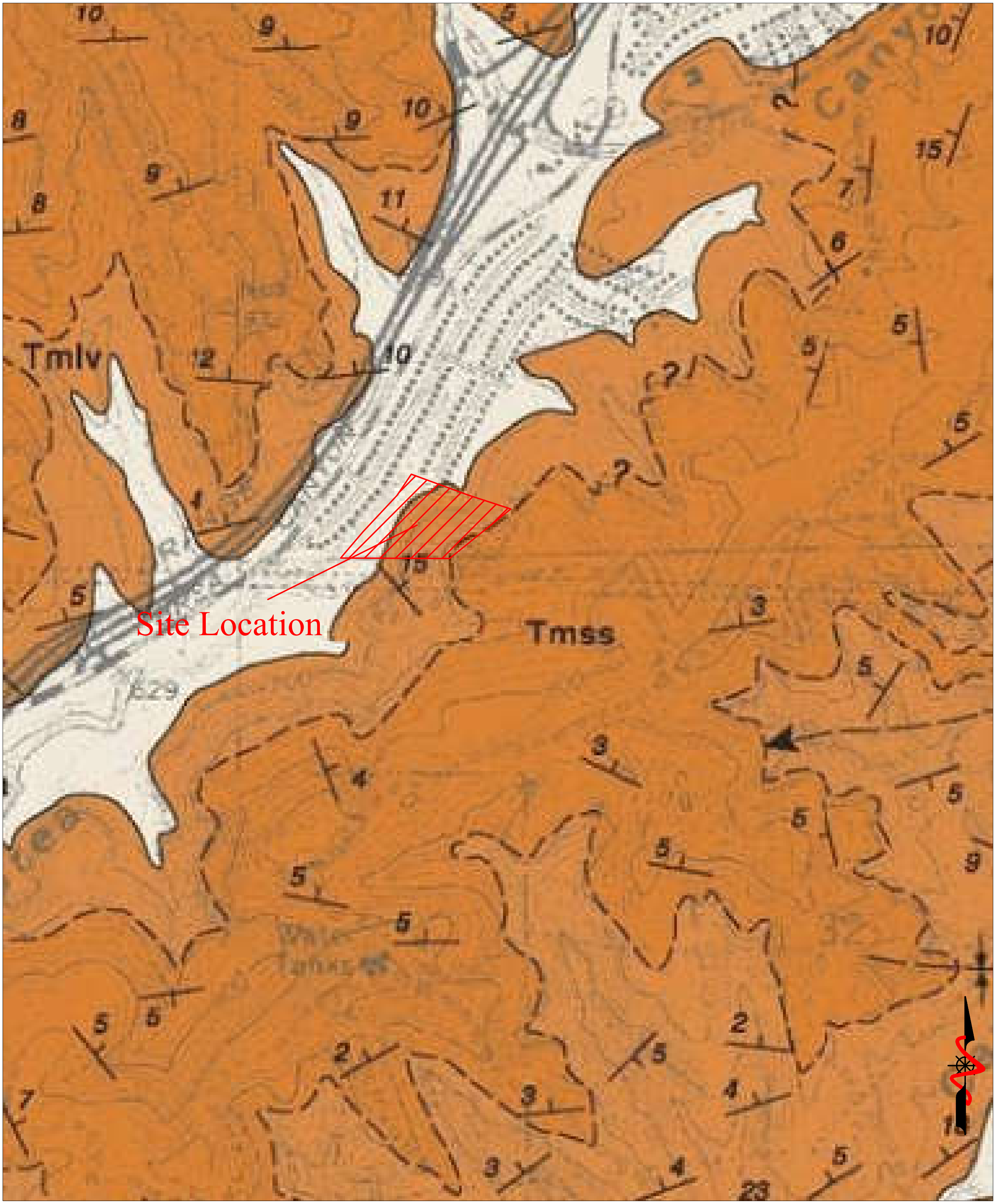
A site history is as follows:

- 1991 – Pacific Soils Engineering, Inc. performed a feasibility study. Two borings were drilled in the vicinity of the proposed development. The diameter of the borings is not indicated; however, kelly weights are given at the top of the log. The logs of PSE1 and PSE2 are attached in Appendix B. The laboratory test data is presented in Appendix C.

- 2003 and 2004 – Geo Environ, Inc. excavated one boring that is not located in the area of the proposed development; therefore, is not shown or attached to this report. Two bedrock shear tests are attached in Appendix C as data for shear strength development for the site.

- 2005 through 2016 – Geosoils Consultants, Inc. performed several field investigations and provided numerous reports. Logs of borings are attached in Appendix B and pertinent laboratory test data are attached in Appendix C. The development plans under GSC's review included more lots than are now planned; therefore, not all borings are included in this report.

- 2020 – LGC assumed duties as Geotechnical Consultant of Record.



LGC

Figure 1:
Site Location Map
Tract 54081
City of Diamond Bar, California

Project Name	Crooked Creek
Project No.	203008-01
Eng. / Geol.	ACR/SMB
Scale	not to scale
Date	August 2020

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The site vicinity lies within the Transverse Ranges Geomorphic Province of California. West-trending valleys and ridges, reflecting a parallel series of anticlines, synclines, and reverse faults characterize this province. This structure and geomorphology is generally considered to be the result of south-directed compression caused by right lateral, strike-slip movement on the "Big Bend" segment of the San Andreas Fault (CGS, 1997 Revised 2001).

Specifically, the site lies within the Puente Hills/Chino Hills at the intersection of the Transverse Ranges and Peninsular Ranges Geomorphic Provinces where east-west faults and folds intersect with north-south faults and folds of the Peninsular Ranges.

2.2 Site-Specific Geology

The site is underlain by surficial soils, alluvium, landslide debris and bedrock assigned to the Puente Formation. A brief description of each unit is as follows:

2.2.1 Surficial Soils

Surficial soils mantle the site and are typically less than 2 feet thick. Surficial soils consist of dark brown, sandy clay that is soft, porous and contains organic debris. Surficial soils are not suitable for support of fills or structures and should be removed and recompacted.

2.2.2 Alluvium

Alluvial soils are present in the bottoms of natural drainage courses having a relatively gently sloping surface. Alluvium consists of sandy/silty clays, clayey sands with minor gravels that are damp to wet, firm to hard and contain carbonate nodules. Removal depths in the alluvium will range from 12.5 to 15 feet and are shown on the Geotechnical Map, Plate 1.

2.2.3 Older Landslide Debris (Qols)

An older landslide is located just south of the terminus of the existing Crooked Creek Road and adjacent to the existing Tract 25989. This landslide was first mapped by PSE, later explored by GSC and reinvestigated by LGC, herein. Based on our field investigation and boring data by GSC and PSE, we interpret the landslide as older, relatively small, and located roughly where PSE mapped it. The upper portion of the older landslide has a faint topographic expression; however, the lower portion appears to be obscured by alluvium. The numerous borings have offered differing interpretations within difficult to distinguish alluvium, landslide debris and weathered bedrock materials. This unclear division lends itself to the interpretation that the landslide is old, eroded and significantly more competent than typical landslide debris. It is our interpretation that not all of the landslide debris requires removal.

The portion of the Older landslide within the proposed slope area should be completely removed; however the portion underlying the pad areas below a depth ranging from 5 to 15 feet was found to be dense/stiff, slightly compressible, and competent, and is considered to be suitable for support of proposed structures below those depths.

GSC's boring GSC1-15 poses a difficult interpretation. GSC interprets that this boring is in the deepest portion of the landslide; however, the location of the boring is at the lateral limit of the mapped feature. The materials described in boring GSC1-15 are not unlike materials we encountered and rendered a different opinion for. With such lack of clarity as to the location and extent of the landslide debris, removals become problematic.

2.2.4 Puente Formation (Tp)

The Puente Formation (Monterey Formation per Dibblee, 2001) underlies the site (Yerkes, 1965). The bedrock consists of interbedded sandstones, siltstones and claystones that are pale yellow to gray brown, damp to moist, very stiff to hard, dense, and occasionally contain quartzite cobble clasts.

2.3 Geologic Structure

The geologic structure of the region is that of east-west trending bedding that dips to the north. Concurrent with the Transverse Ranges Geomorphic Province structure, faults and folds also trend east-west within the vicinity of the site. The bedrock is variably folded and frequently massive. Bedding does not appear to be the controlling structural feature at the site (as depicted by Dibblee, 2001).

2.4 Groundwater

A static groundwater surface was not encountered; however, perched water was encountered near the bedrock contact with alluvium and at the base of the older landslide feature. Nuisance water should be anticipated during grading construction of the site.

2.5 Surface Water

Based on our review of local maps and site reconnaissance, sheet flow is currently toward the west. Surface water runoff relative to project design is the purview of the project civil engineer but is anticipate being directed away from planned structures and into approved drainage devices, where necessary.

2.6 Seismicity, Faulting and Related Effects

2.6.1 Seismicity

The main seismic parameters to be considered when discussing the potential for earthquake-induced damage onsite are the distances to the causative faults, earthquake magnitudes, and expected ground accelerations. We have performed site-specific analysis based on these seismic parameters for the site and the onsite geologic conditions. The results of our analysis are discussed in terms of the potential seismic events that could be produced by the maximum probable earthquakes. A maximum probable earthquake is the maximum earthquake likely to occur given the known tectonic framework. The Whittier Fault is located approximately 2 miles south of the site.

2.6.2 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2019 California Building Code (CBC). Representative site coordinates of latitude 33.9614º N and longitude -117.8514º W were utilized in our analyses. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 1.

Table 1
Seismic Design Parameters

Selected Parameters from 2019 CBC, Section 1613 - Earthquake Loads	Seismic Design Values
Site Class per Chapter 20 of ASCE 7	D
Risk-Targeted Spectral Acceleration for Short Periods (S_S)	1.902g
Risk-Targeted Spectral Accelerations for 1-Second Periods (S_1)	0.667g
Site Coefficient F_a per Table 1613.3.3(1)	1.0
Site Coefficient F_v per Table 1613.3.3(2)	N/A
Site Modified Spectral Acceleration for Short Periods (S_{MS}) for Site Class D [Note: $S_{MS} = F_aS_S$]	1.902g
Site Modified Spectral Acceleration for 1-Second Periods (S_{M1}) for Site Class D [Note: $S_{M1} = F_vS_1$]	N/A
Design Spectral Acceleration for Short Periods (S_{DS}) for Site Class D [Note: $S_{DS} = (^2/_3)S_{MS}$]	1.268g
Design Spectral Acceleration for 1-Second Periods (S_{D1}) for Site Class D [Note: $S_{D1} = (^2/_3)S_{M1}$]	N/A
Seismic Design Category (per Section 1613.2.5)	E

Section 1803.5.12 of the 2019 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake ground motions, Peak Ground Acceleration (PGA) should be used for the geotechnical evaluations. The PGA_M for the site is equal to 0.82g **(**USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2**)**.

A deaggregation of the PGA based on a 2,475-year average return period indicates that an earthquake magnitude of 7.73 at a distance of approximately 3.75 km (2.33 mi) from the site would contribute the most to this ground motion (USGS, 2014).

2.6.3 Faulting

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone (Hart and Bryant, 1997); therefore, there are no known active or potentially active faults onsite.

The possibility of damage due to ground rupture from earthquake fault rupture is considered nil since active faults are not known to cross the site. However, the site is in proximity of active faults (Whittier, Elsinore, Chino, Newport-Inglewood and San Andreas) which are capable of producing significant ground shaking.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the southern California region include shallow ground rupture, soil liquefaction, and seismically induced settlements, seiches and tsunamis.

In general, these secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. The major active fault that could produce these secondary effects is the Whittier Fault located to the southwest of the site. Other active faults that may result in shaking to the site include the Elsinore, Chino, Newport-Inglewood and San Andreas Fault, among others. A discussion of liquefaction and these secondary effects is provided in the following sections

2.6.4 Shallow Ground Rupture

Shallow ground rupture due to active faulting is not likely to occur on site due to the lack of active or potentially active fault traces across the site. Therefore, this phenomenon is not considered a significant hazard, although it is a possibility at any site.

2.6.5 Liquefaction

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions exist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Liquefaction is typified by a buildup of pore-water pressure in the affected soil layer to a point where a total loss of shear strength occurs, causing the soil to behave as a liquid. Studies indicate that saturated, loose to medium dense, near surface cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils and cohesive soils exhibit low to negligible liquefaction potential.

Due to the presence of shallow bedrock at the site, high clay mixtures in the alluvial materials and the general lack of shallow groundwater, the site is considered to have a low liquefaction hazard.

2.6.6 Seismically Induced Settlement

During a strong seismic event, seismically induced settlement can occur within loose to moderately dense, dry or saturated granular soil. Settlement caused by ground shaking is often non-uniformly distributed, which can result in differential settlement.

Provided that the recommendations in this report are followed and removals of unsuitable materials are performed, the site is not anticipated to be susceptible to seismically induced settlement.

2.6.7 Seiches and Tsunamis

A seiche is a standing wave in an enclosed or partially enclosed body of water propagated by earthquake waves. Tsunamis are large ocean waves or series of waves generated by displacement of a large volume of water. The site is not in close proximity to body of water or near the ocean; therefore, the hazard associated with seiches and tsunamis is considered low.

2.7 Laboratory Testing

Based on the results of previous laboratory testing within the vicinity of the project site by GSC, the anticipated near-surface soils are anticipated to have a low to medium expansion potential. Corrosivity and sulfate testing has not been performed.

Shear strengths utilized in our analyses conform to those previously utilized by GSE in the referenced reports for fill, alluvium, landslide rupture surface, and landslide debris. No additional discussion is provided. The table of shear strength data utilized in the analysis is included in Appendix D.

Additional shear strength testing of the Puente Formation was performed, and updated shear strength was utilized in our analysis. A discussion of the additional shear testing and development of composite plots is provided as follows.

2.7.1 *Puente Formation Shear Strengths*

Direct shear testing of undisturbed samples of the bedrock materials encountered at the site were previously performed by GSE and others in order to develop representative shear strengths for the Puente Formation bedrock on site. During this current investigation, an additional six direct shear tests of the Puente Formation Bedrock was performed. Composite plots using the shear strength test data from the previous (by others) and the current testing (by LGC) were developed for residual and peak strengths. Based on the data points, the least square best fit line resulted in a shear strength values of phi = 31.5, C=167 psf for residual, and phi = 30, C=790 psf for peak strengths. However, a more conservative residual shear strength value of phi=28°, C=250 psf, and peak strength of phi=30, C=500 psf was used in the analysis for the Puente Formation bedrock. The composite plots are included in Appendix C. The residual value utilized in the analysis is in line with the reported shear strength data included in the CGS Seismic Hazard Zone report for the Yorba Linda Quadrangle, which indicates that the Puente Formation Bedrock has a shear strength with a Mean Cohesion Value of 343 psf, and phi of 28 degrees. Therefore, based on the site-specific testing, and the reported values, the shear strength value utilized in the current analysis is considered appropriate for the site bedrock.

2.8 ***Slope Stability Analysis***

The new proposed site design consists of design cut, fill, and native slopes planned at gradients of 2:1 (horizontal to vertical; h:v), with a potential for future design of a 1.5:1 gradient small rear yard slopes. Fill/Cut slopes are planned to heights ranging from 5 to 40 feet across the site. The proposed design also includes natural (approximately 2H:1V or flatter) slopes ascending to the east from the from the proposed extension of Crooked Creek Drive.

Based on the latest site design for a 7-lot project, LGC focused on the ascending slopes to the east which included a proposed natural slope, complete removal of the older landslide and rebuilding of the slope, and design of slopes and tiered walls along the western side of the project adjacent to the existing channel. As indicated, LGC performed additional investigation to review the geologic structure at depth to collect additional data for site interpretations.

After a review of the latest plan and based on our supplemental investigation, six cross-sections (A-A’, B-B’, C-C’, and E-E’) were considered representative and critical with regards to slope stability analysis.

Cross-sections A-A’, B-B’, C-C’, and E-E’ were used to analyze the proposed slopes including the proposed tiered retaining walls. The soils underlying the site consist of proposed fills, alluvium, landslide deposits, and Puente Formation Bedrock which is folded and is generally massive/not well bedded.

Results of the slope stability analyses on cross-sections A-A’, B-B’, C-C’, and E-E’ indicate adequate factors of safety greater than 1.5 and 1.1 (as applicable), for rotational modes of failure, under static and pseudo-static (kh=0.15) loading conditions, respectively. It is anticipated that the tiered walls will be designed with caisson footings for support; conservatively the caissons were not considered in the analysis.

Slope stability analyses was conducted using the computer program Slope-W from Geo-Slope International. The Modified Bishop’s or Spencer Method was used to analyze rotational failure modes. A coefficient of horizontal acceleration Kh of 0.15 (FS of 1.1) was used to evaluate the pseudostatic stability analyses. Ground water was modeled based on boring data (where applicable).

Based on the slope stability analysis, the static and pseudostatic analysis resulted in a factor of safety (FOS) greater than a 1.5 and 1.1, respectively. Slope stability of the proposed temporary backcut slopes resulted in a FOS of greater than 1.25. Surficial stability of a 2H:1V fill slope was determined have a Factor of Safety of greater than 1.5. The proposed slopes are considered to be acceptable from a geotechnical point of view.

2.9 <u>Settlement Analysis</u>

Several components of settlement were considered in evaluating the total settlement at the site including static settlement of the left-in-place alluvial and landslide deposits, settlement of fill, hydro-collapse settlement of alluvium and fill, and settlement of foundations due to foundation loads.

Upon loading (placement of fill) on the alluvium/landslide debris, elastic settlement will take place. Elastic settlement of the underlying materials due to the placement of the proposed fill is expected to be up to several inches; however, most of the elastic settlement is anticipated to take place during or shortly after the placement of fill. However, this settlement should be considered in the foundation design.

Hydro-collapse potential of the underlying left-in-place alluvium/landslide desposits was evaluated based upon available geotechnical data including in-situ densities and hydro-collapse test results. Hydro-collapse potential of the underlying materials is considered negligible (i.e. less than 0.5%).

Most of the static settlement of fill (under it's own weight) will also be expected to take place during or shortly after the placement of fill. Geotechnical recommendations for fill placement are provided in section 4.1.9. Fill placed and maintained per our geotechnical recommendations contained in this report, and after all necessary removals as addressed in Section 4.1.2 are performed, is not expected to experience long term settlement.

Structures planned at the site are expected to be of conventional wood-frame construction, and the loads on the footings are not expected to exceed 1,500± lb/ft^2. Foundation settlements due to static column loads are expected to be minor, on the order of ½ -inch, or less.

3.0 CONCLUSIONS

Based on our review of the latest proposed plan, prior reports, and our supplemental investigation, it is our conclusion that the site development proposed on the attached Geotechnical Map (Plate 1) is feasible from a geotechnical standpoint, provided the following recommendations included in this report are incorporated into the project plans and specifications, and followed during site grading and construction.

Our geotechnical conclusions are as follows:

- The site is within the City of Diamond Bar and thus is subject to the Specifications and Guidelines set by the City.
- Engineered fill shall meet the requirements of 90 percent relative compaction and 93 percent relative compaction for fill zones less than and greater than 40 feet in thickness, respectively. However, fills deeper than 40 feet are not anticipated.
- Remedial removals will be necessary within alluvium and the older landslide debris to depths of approximately 5 to 15 feet. Depths of removals are indicated on the Geotechnical Map, Plate 1 and the Geotechnical Cross Sections, Plates 2A through 2C. As necessary, slot cutting maybe performed to achieve remedial removals along the property lines.
- Static groundwater was not encountered at the site. However, perched water was encountered and may be encountered during grading operations, which may pose a nuisance to the grading operation. Groundwater is not anticipated to be a concern for the future development.
- Site bedrock and adjacent units are anticipated to be rippable with conventional earthwork machinery.
- Previous laboratory test results of representative site soils indicate a low to medium expansion potentials.
- The potential for soluble sulfates has not been tested; however, based on our experience in the areas the onsite soils may be preliminarily considered to have negligible soluble sulfate content and be severely corrosive to buried metals.
- Laboratory test results of the onsite soils indicate a negligible potential of hydro-collapse.
- From a geotechnical perspective, the existing onsite soils are suitable for use as fill, provided they are relatively free from rocks (larger than 12 inches in maximum dimension), construction debris, and organic material.

4.0 RECOMMENDATIONS

4.1 Site Earthwork

We anticipate that earthwork during the rough grading operations at the site will consist of site preparation, removals of unsuitable soil, excavation of cut material, and fill placement. We recommend that earthwork onsite be performed in accordance with the recommendations herein, the City of Diamond Bar grading Requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix E. In case of conflict, the recommendations in the following sections shall supersede those included as part of Appendix E.

4.1.1 Site Preparation

Prior to grading of areas to receive structural fill or engineered structures, all ground surfaces should be cleared of obstructions, any existing debris, unsuitable material, and stripped of vegetation. Heavy vegetation and debris should be removed and properly disposed of offsite. All debris from any demolition activities at the site should also be removed and disposed off-site. Holes or depressions resulting from the removal of buried obstructions should be replaced with compacted fill.

Following remedial removals, areas to receive fill should be scarified to a minimum depth of 6 inches, brought to a near-optimum moisture condition, and recompacted to at least 90 or 93 percent relative compaction (based on American Standard of Testing and Materials [ASTM] Test Method D1557) depending on the thickness of fills.

4.1.2 Removal and Recompaction

As discussed in Sections 2.2, portions of the site are underlain by unsuitable soils, which may settle under the surcharge of fill and/or foundation loads. These materials include surficial soils, alluvium, older landslide debris and weathered bedrock of the Puente Formation. Compressible materials not removed by the planned grading should be excavated to competent materials, moisture conditioned or dried back (as needed) to obtain an above-optimum moisture content, and then recompacted prior to additional fill placement or surface improvements. The actual depth and extent of the required removals should be determined during grading operations by the geotechnical consultant; however, estimated removal depths ranging from 5 to 15 feet within the pad areas and complete removal of the older landslide material on the slope are shown on the attached Geotechnical Map (Plate 1). The project geologist should approve all bottoms prior to fill placement.

Debris not suitable for compacted fills, such as, rebar, plastic, trash, metal, etc. should be removed and wasted from the site. Organic debris should be mulched and incorporated into compacted fills such that the fills maintain less than 2 percent organics by volume. Concrete and large rocks (greater than 12 inches in diameter) may be placed in windrows in accordance with the detail provided herein. Windrows should be maintained a minimum of 10 feet below finished grade and 10 from slope faces. Isolated boulders should be maintained a minimum of 20 feet below finish grade.

4.1.3 <u>Cut/Fill Transition Conditions</u>

In order to reduce the potential for differential settlement in areas of cut/fill transitions, we recommend the entire cut portion of the transition building pads be overexcavated and replaced with properly compacted fill to mitigate the transition condition beneath the proposed structure. For transitions less steep than a 2:1 (horizontal to vertical), the overexcavation of the cut portion of the building pad should be a minimum of 5 feet below the planned finish grade elevation of the pad. Lot overexcavations will be reviewed on a lot by lot basis during grading to determine if deeper overexcavations area required based on the exposed graded conditions.

4.1.4 <u>Cut Slope Stability/Replacement Fills</u>

Geologic mapping of design cut slopes and fill over cut slopes should be performed by a geologist during grading operation to evaluate the slopes for potential slope instabilities. If unsuitable soils are present or if potential slope instabilities are found, we recommend that the unsuitable cut slopes on the site be replaced with stability fills.

We recommend that the stability/replacement fill have a minimum horizontal width of 15 feet from the backcut to the slope face. We also recommend that the stability/replacement fill key be excavated a minimum of 15 feet wide with a minimum depth of at least 2 to 3 feet below the toe-of-slope. The key bottom should be tilted a minimum of 2 percent into-the-slope. Benching of the backcut as the fill is placed, as well as, overbuilding the slope and trimming it back may be required.

We also recommend that a subdrain be installed along the back bottom edge of the key and at minimum 30-foot vertical intervals if the replacement fill is greater than 30 feet in height. The outlet locations of the subdrains should be determined in the field during site grading. The subdrains should consist of a 4-inch diameter perforated PVC pipe surrounded by 3 cubic feet (per linear foot) of crushed rock wrapped in filter fabric (Marifi 140N or equivalent). The subdrain should have a minimum fall of 1-percent toward the outlet.

4.1.5 <u>Buttress Keys</u>

Buttress keys are not anticipated at the site.

4.1.6 Fill Slope Keys

Prior to the placement of fill slopes that will be placed above natural and/or cut areas on the site; a fill slope key should be constructed. The fill slope key should be excavated at least 2 feet into competent soil along the toe-of-slope and constructed approximately 15 feet wide with the key bottom angled a minimum of 2 percent into-the-slope.

4.1.7 Shrinkage/Bulking and Subsidence

Based on the previous evaluation and testing, both shrinkage and bulking is anticipated at the site. Our opinion regarding shrinkage and bulking onsite, based upon experience, is as follows:

Soil/Alluvium – Shrink 10-15%
Older Landslide Debris – Shrink 0-5% too 15 feet depth; 15'+ bulk 0-2%
Puente Formation – Bulk 2-4% 0-5 feet depth; 5'+ bulk 5%

These are preliminary rough estimates which will vary with depth of removal, stripping losses, field conditions at the time of grading, etc. In addition, handling losses are not included in the estimates.

4.1.8 Temporary Stability of Removal Excavations

Temporary excavations maybe cut vertically up to five feet. Excavations over five feet should be slot-cut, shored, or cut to a 1:1 (h:v) slope gradient. Surface water should be diverted away from the exposed cut, and not be allowed to pond on top of the excavations. Temporary cuts should not be left open for an extended period of time. Planned temporary conditions should be reviewed by the geotechnical consultant of record in order to reduce the potential for sidewall failure. The geotechnical consultant may provide recommendations for controlling the length of sidewall exposed.

Where sufficient space is not available for sloped cuts directly adjacent to existing structures or improvements the cut shall be performed by the A-B-C slot method as outlined below.

1. The banks of the excavation shall be made at 1H:1V or a combination of vertical cut and a 1H :1V.

2. Vertical cuts, not exceeding 8 feet in width are made in the locations of the first slot "A".

3. Back-fill and compact the first slot.

4. The second adjacent slot, "B" is excavated.

5. Back-fill and compact the second slot.

6. Then the third slot “C” is excavated.

7. Back-fill and compact the third slot.

8. Repeat the above steps until all the required excavations are performed adjacent to the existing improvements.

4.1.9 Fill Placement and Compaction

From a geotechnical perspective, the onsite soils are suitable for use as compacted fill, provided they are screened of rocks greater than 6 inches in maximum dimension, organic material, and construction debris. Areas prepared to receive structural fill and/or other surface improvements should be scarified to a minimum depth of 6 inches, brought to at least optimum-moisture content, and recompacted to at least 90 percent relative compaction (based on ASTM Test Method D1557). Fills greater than 40 feet deep should be compacted to at least 93percent relative compaction. The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts generally not exceeding 8 inches in loose thickness. Placement and compaction of fill should be performed in accordance with local grading ordinances under the observation and testing of the geotechnical consultant.

If possible, import soils to be used as fill shall be essentially free from organic matter and other deleterious substances, and should contain no materials over 6 inches in maximum dimension, have a very low to low expansion potential (i.e Expansion Index ranging from 0 to 50), and negligible sulfate content. Representative samples of the desired import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing grading begins so that its suitability can be determined, and appropriate tests performed.

4.1.10 Trench Backfill and Compaction

The onsite soils may generally be suitable as trench backfill provided, they are screened of rocks and other material over 6 inches in diameter and organic matter. Trench backfill should be compacted in uniform lifts (generally not exceeding 8 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (per ASTM Test Method D1557).

If trenches are shallow and the use of conventional equipment may result in damage to the utilities; clean sand, having sand equivalent (SE) of 30 or greater, should be used to bed and shade the utilities. Sand backfill should be densified. The densification may be accomplished by jetting or flooding and then tamping to ensure adequate compaction. A representative from LGC should observe, probe, and test the backfill to verify compliance with the project specifications.

4.2 *Stability Fill Subdrains*

Subdrains should be provided in the stability fills constructed on-site in order to minimize surficial slope instability. The subdrains should be placed along the heel of the stability fill key (across the entire length of the key) and along the backcut at approximately 30-foot vertical intervals. The subdrains should be placed and constructed in accordance with the recommendations presented in Appendix E.

4.3 *Settlement Monitoring*

Settlement monuments are not anticipated to be required at this site.

4.4 *Surface Drainage and Lot Maintenance*

Positive drainage of surface water away from structures is very important. No water should be allowed to pond adjacent to buildings or the top of slopes. Positive drainage may be accomplished by providing drainage away from buildings at a gradient of at least 2 percent for a distance of at least 5 feet, and further maintained by a swale of drainage path at a gradient of at least 1 percent. Where limited by 5-foot side yards, drainage should be directed away from foundations for a minimum of 3 feet and into a collective swale or pipe system. Where necessary, drainage paths may be shortened by use of area drains and collector pipes. Eave gutters also help reduce water infiltration into the subgrade soils if the downspouts are properly connected to appropriate outlets.

Property owners should be reminded of the responsibilities of hillside maintenance practices (i.e., the maintenance of proper lot drainage; the undertaking of property improvements in accordance with sound engineering practices; and the proper maintenance of vegetation, including prudent lot and slope irrigation).

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.5 *Foundations*

4.5.1 *General*

Preliminary recommendations for foundation design and foundation construction are presented herein. When the structural loads for the proposed structures are known they should be provided to our office to verify the recommendations presented herein. Based on our review of the site, the proposed structures should be designed to account for a medium expansion and for the design differential settlements provided herein.

To that end, the following foundation recommendations are provided. The two foundations recommended for the proposed structures are: (1) Post-Tension foundations; or (2) Mat Slabs.

The information and recommendations presented in this section are not meant to supersede design by the project structural engineer or civil engineer specializing in the structural design nor impede those recommendations by a corrosion consultant. Should conflict arise, modifications to the foundation design provided herein can be provided.

4.5.2 ***Bearing Capacity***

Shallow foundations may be designed for a maximum allowable bearing capacity of 1,500 lb/ft^2 (gross), for continuous footings a minimum of 12 inches wide and 18 inches deep and spread footings 24 inches wide and 18 inches deep, into certified compacted fill. A factor of safety greater than 3 was used in evaluating the above bearing capacity value. This value maybe increased by 300 psf for each additional foot in depth and 100 psf for each additional foot of width to a maximum value of 3,000 psf.

Lateral forces on footings may be resisted by passive earth resistance and friction at the bottom of the footing. Foundations may be designed for a coefficient of friction of 0.35, and a passive earth pressure of 250 lb/ft^2/ft. The passive earth pressure incorporates a factor of safety of greater than 1.5.

All footing excavations should be cut square and level as much as possible, and should be free of sloughed materials including sand, rocks and gravel, and trash debris. Subgrade soils should be pre-moistened for the assumed medium expansion potential (to be confirmed at the end of grading). These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only.

Bearing values indicated above are for total dead loads and frequently applied live loads. The above vertical bearing may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces.

4.5.3 ***Post-Tension Foundations***

Based on the site geotechnical conditions and provided the remedial recommendations provided herein are implemented, the site may be considered suitable for the support of the anticipated structures using a post-tensioned slab-on-grade foundation system, for the anticipated medium expansive soils. The following section summaries our recommendations for the foundation system.

Table 2 contains the geotechnical recommendations for the construction of PT slab on grade foundations. The structural engineer should design the foundation system based on these parameters including the foundation settlement as indicated in the following section to the allowable deflection criteria determined by the structural engineer/architect.

TABLE 2

Preliminary Geotechnical Parameters for Post-Tensioned Foundation Design

Parameter	**Value**
Expansion Classification (Assumed to be confirmed at the completion of grading):	Medium Expansion
Thornthwaite Moisture Index (From Figure 3.3):	-20
Constant Soil Suction (From Figure 3.4):	PF 3.6
Center Lift Edge moisture variation distance (from Figure 3.6), e_m: Center lift, y_m:	**Medium** 9.0 feet 0.47 inches
Edge Lift Edge moisture variation distance (from Figure 3.6), e_m: Edge lift, y_m:	**Medium** 5.0 feet 1.1 inches
Soluble Sulfate Content for Design of Concrete Mix in Contact with Site Soils in Accordance with American Concrete Institute standard 318, Section 4.3:	Assume Negligible Exposure (to be confirmed at the completion of grading)
Corrosivity of Earth Materials to Ferrous Metals:	Severely Corrosive
Modulus of Subgrade Reaction, k (assuming presaturation as indicated below):	85 pci
Additional Recommendations: 1. Presaturate slab subgrade to at least 1.2 times optimum moisture, to minimum depths of 18 inches below ground surface. 2. Install a 15-mil moisture/vapor barrier (or equivalent) moisture/vapor barrier in direct contact with the concrete (unless superseded by the Structural/Post-tension engineer*) with 1 to 2 inches of sand below the moisture/vapor barrier. 3. Minimum perimeter foundation embedment below finish grade for moisture cut off should be 18, inches for medium expansion potential. 4. Minimum slab thickness should be 5 inches.	

* The above sand and Visqueen recommendations are traditionally included with geotechnical foundation recommendations although they are generally not a major factor influencing the geotechnical performance of the foundation. The sand and Visqueen requirements are the purview of the foundation engineer/corrosion engineer (in accordance with ACI Publication 302 "Guide for Concrete Floor and Slab Construction") and the homebuilder to ensure that the concrete cures more evenly than it would otherwise, is protected from corrosive environments, and moisture penetration of through the floor is acceptable to future homeowners. Therefore, the above recommendations may be superseded by the requirements of the previously mentioned parties.

4.5.4 Mat Foundations

A mat foundation can be used for support of proposed residential buildings. An allowable soil bearing pressure of 1,000 psf may be used for the design of the mat at the surface under the slab area.

The allowable bearing value is for total dead loads and frequently applied live loads and may be increased by one-third for short durations of loading which will include the effect of wind or seismic forces. A coefficient of vertical subgrade reaction, k, of 85 pounds per cubic inch (pci) may be used to evaluate the pressure distribution beneath the mat foundation.

The magnitude of total and differential settlements of the mat foundation will be a function of the structural design and stiffness of the mat. Based on assumed structural loads, we estimate that total static settlement will be on the order of an inch at the center of the mat foundation. Post construction differential settlement can be taken as one-half of the maximum estimated settlement

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. Foundations may be designed for a coefficient of friction of 0.35. Minimum perimeter footing embedment provided in the previous sections maybe reduced for the mat slab design.

Coordination with the structural engineer will be required in order to ensure structural loads are adequately distributed throughout the mat foundation to avoid localized stress concentrations resulting in potential settlement. The foundation plan should be reviewed by LGC to confirm preliminary estimated total and differential static settlements.

4.5.5 ***Foundation Settlement***

Based on the site design relative to native grades and considering site remedial removals, fill at the site will range from approximately 5 to over 30 feet in thickness within the site. It is anticipated that most of the consolidation will be complete by the time final design grades are achieved.

Based on a preliminary review of site grading plans major fill differentials are not anticipated across building pad areas. Once site development plans are finalized the anticipated fill thickness and differentials on a lot by lot basis can be determined and considered in future foundation designs.

Based on our current understanding of the project, the results of our site investigation and the recommended remedial grading with shallow foundations embedded into compacted fills, we estimate the post-construction settlement of the site to be less than 1-inch with a differential settlement of approximately of 0.5-inch in 30 feet. Post-construction settlements, for the lots underlain by left-in-place alluvium/landslide deposits, should also include the estimated differential settlements of up to 2-inches in 30 feet.

4.5.6 ***Building Clearance and Foundation Setbacks***

All building foundation located close to slopes should have a minimum setback per Figure 1808.7.1 of the 2019 CBC. The setback distances should be measured from competent materials on the outer slope face, excluding any weathered and loose materials.

Per the 2019 CBC Section 1808.7.1 and Figure 1808.7.1, building clearance from the toe of an ascending slope should be equal one-half of the total slope height to a maximum setback of 15 feet. Retaining walls may be constructed at the base of the slope to achieve the required building clearances.

Per the 2019 CBC Section 1808.7.2 and Figure 1808.7.1, the building foundation constructed on or near a descending slope should be setback or deepened to provide a minimum footing setback equal to the total height of slope (H) divided by 3 (H/3). The footing setback should be a minimum of 5 feet for slopes up to 15 feet in height and vary up to 40 feet for slopes up to 120 feet in height. The footing setbacks should be measured from the edge of the footing to the competent materials on the outer slope face.

4.6 Retaining Wall Design Considerations

4.6.1 Lateral Earth Pressures and Conventional Wall Recommendations

The following lateral earth pressures may be used for the design of any future site retaining walls. We recommend low expansive soils for retaining wall backfill if no on-site soils fit the required minimum parameters (SE >30). The recommended lateral pressures for approved soils (expansion index less than 30 per UBC. 18-I-B, less than 15 percent passing #200 sieve, and PI less than 15) for level or sloping backfill are presented on the table below. The recommended lateral pressures for clean sand or approved select soils for level or sloping backfill are presented on the following Table 3. The design values in Table 3 were calculated considering a soil friction angle of 34 degrees and a soil unit weight of 120 pcf.

Table 3

Lateral Earth Pressures

Conditions	**Equivalent Fluid Weight (pcf)**		
	Level Backfill	**2:1 Backfill Sloping Upwards**	**Seismic Earth Pressure (pcf) ***
	Approved Select Material	**Approved Select Material**	
Active	35	50	21(Level) 35 (2:1)
At Rest	53	80	30

* For walls with greater than 6-feet in backfill height, the above seismic earth pressure should be added to the static pressures given in the table above. The seismic earth pressure should be considered as an inverted triangular distribution with the resultant acting at 0.6H in relation to the base of the retaining wall footing (where H is the retained height). The aforementioned incremental seismic load was determined in general accordance with the standard of practice in the industry (using the Mononobe-Okabe method for active and Woods method for at-rest) for determining earth pressures as a result of seismic events.

If on-site (expansive) soils are used for backfill, the following recommended lateral earth pressures (Table 4) for drained conditions should be used in the design. The design values in Table 4 were calculated considering a soil friction angle of 28 degrees and a soil unit weight of 120 pcf.

Table 4

Lateral Earth Pressures Using On-Site Expansive Soils

Conditions	**Equivalent Fluid Weight (pcf)**	
	Level Backfill	**2:1 Backfill Sloping Upwards**
Active	55	80
At-Rest	70	95
Passive	350	—

All retaining structures should be provided with a subdrain system. If drainage cannot be provided over the full height/length of the wall, additional lateral force due to water accumulation behind the wall should be taken into consideration for the design of the wall portion retaining the undrained zone. For undrained backfill, the equivalent fluid pressures of 83 pcf (level) and 98 pcf (2:1[h:v] slope) for active conditions, and 93 pcf (level) and 108 pcf (2:1[h:v] slope) for at-rest conditions may be used.

Embedded structural walls should be designed for lateral earth pressures exerted on them. The magnitude of these pressures depends on the amount of deformation that the wall can yield under load. If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for “active” pressure. If the wall cannot yield under the applied load, the shear strength of the soil cannot be mobilized and the earth pressure will be higher. Such walls should be designed for “at-rest” conditions. If a structure moves toward the soils, the resulting resistance developed by the soil is the “passive” resistance.

For design purposes, the recommended equivalent fluid pressure for each case for walls founded above the static groundwater and backfilled with low expansive on-site or import soils is provided in the table above. The equivalent fluid pressure values assume free-draining conditions. The backfill soils should be compacted to at least 90 percent relative compaction. The walls should be constructed and backfilled as soon as possible after backcut excavation. Prolonged exposure of backcut slopes may result in some localized slope instability. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Surcharge loading effects from any adjacent structures should be evaluated by the geotechnical and structural engineers. Surcharge loading on retaining walls should be considered when any loads are located within a 1:1 (h:v) projection from the base of the retaining wall and should be added to the applicable lateral earth pressures.

Where applicable, a minimum uniform lateral pressure of 100 psf should be added to the appropriate lateral earth pressures to account for typical vehicle traffic loading.

All retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. The outlet pipe should be sloped to drain to a suitable outlet. Typical wall drainage design is illustrated on the attached Figure 2. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Efflorescence is generally a white crystalline powder (discoloration) that results when water, which contains soluble salts, migrates over a period of time through the face of a retaining wall and evaporates. If such seepage or efflorescence is undesirable, retaining walls should be waterproofed to reduce this potential.

For sliding resistance, the friction coefficient of 0.35 may be used at the concrete and soil interface. Wall footings should be designed in accordance with structural considerations. The passive resistance value may be increased by one-third when considering loads of short duration such as wind or seismic loads. For short term loading (i.e. seismic) the allowable bearing capacity may be increased by one-third for seismic loading.

Foundations for retaining walls in properly compacted fill should be embedded at least 18 inches below lowest adjacent grade. At this depth and a minimum of 12 inches in width, an allowable bearing capacity of 1,500 psf may be assumed. A factor of safety greater than 3 was used in evaluating the above bearing capacity value. This value maybe increased by 300 psf for each additional foot in depth and 150 psf for each additional foot of width to a maximum value of 3,000 psf. All excavations should be made in accordance with Cal OSHA. Excavation safety is the sole responsibility of the contractor.

4.6.2 Soldier Pile/Caisson Wall Recommendations

The following preliminary geotechnical parameters may be utilized by the soldier pile wall consultant for design of the permanent/tiered wall system. The recommendations provided herein with regard to the proposed wall design are based on assumed conditions, extrapolated from the data gathered from our site investigations. The wall designer should independently evaluate the parameters provided, and conduct an additional investigation if they consider necessary.

Prior to construction, the contractor should verify underground clearance of any existing utility lines or structures that must be removed or protected in place during construction, or may conflict with any proposed foundation system.

Typical cantilever soldier pile wall design, where deflection of the wall will not impact the performance of adjacent structures or streets, may be designed using the active equivalent fluid pressures of 40 pounds per square foot (psf) per foot of depth (or pcf). Restrained walls (with soil nails or tied-back) is recommended to limit defections or required due to the proposed wall height. Restrained or tied-back shoring with a level backfill may be designed using an active trapezoidal soil pressure of 38H in pounds per square foot (psf), where H is equal to the depth in feet of the wall (shape of the trapezoid should be 0.2H, 0.6H, 0.2H) or may be designed using an active triangular soil pressure of 60 pounds per square foot (psf). Any building, equipment, or traffic loads located within a 1:1 (h:v) projection from the base of the wall should be added to the applicable lateral earth pressure. A minimum additional uniform lateral pressure of 100 psf for the upper 10 feet should be added to the appropriate lateral earth pressures to account for typical vehicle traffic loading.

A seismic earth pressure of 21 pcf should be added to the static pressures given in the tables above. The seismic earth pressure should be considered as an inverted triangular distribution with the resultant acting at 0.6H in relation to the base of the retaining wall footing (where H is the retained height).

Passive resistance of soldier piles may be assumed to be an equivalent fluid pressure of 350 pcf for level and 150 pcf for sloping down conditions to a maximum value of 3,500 psf. The passive earth pressure may be increased by 100 percent for isolated piles. Piles with spacing greater than 3 times of pile diameter can be considered as isolated piles. In order to develop the full lateral resistance, firm contact between the soldier pile and undisturbed soils must be assured. For vertical capacity, an allowable skin friction of 500 psf may be used for the embedded depth. End bearing should be neglected.

The soldier pile walls should be embedded into competent soils at a minimum depth of 15 feet below the existing grade.

4.7 ***<u>Slope Creep</u>***

Due to the potentially expansive nature of the fill soils within the site, the probability exists for development of a creep condition on the slopes within the site with the passage of time. Creep is a very slow nearly continuous downward and outward movement of slope soils. The movement is minimal under small shear stresses, however sufficient to produce permanent deformation but not large enough to produce a shear failure as occurs in a landslide. For the site slopes, the principal cause for development of a creep condition is a result of repeated cycles of swelling and contraction of expansive soils over a period of time due to seasonal variations in the moisture content and is an irreversible process resulting in a loss of shear strength and subsequent buildup of small shear stresses. Experience has shown that creep can affect surficial soils to vertical depths of several feet depending on the expansiveness of the soils and the slope height and inclination, as well as a number of other factors. Other factors which can contribute to development of a slope creep condition include overwatering and subsequent saturation of the slope soils, prolonged or intense rainfall, prolonged periods of drought, rodent activity, inadequate plant materials used for slope protection, inadequate drainage facilities, and/or lack of a proper slope maintenance program. Creep cannot be stopped or eliminated; however, proper foundation embedment and design can be provided such that the magnitude, depth and rate of creep movement can be mitigated for structures proposed on or near descending slopes. For slope heights greater than 10 feet, the slope creep will impact improvements within approximately 10 to 15 feet from the top of slope. Some settlement and tilting may occur in improvements located in this outer 10 to 15 feet of the pad.

4.8 *Freestanding (Top-of-Slope) Walls*

Freestanding wall footings should be founded a minimum of 24 inches below the lowest adjacent grade. To reduce the potential for unsightly cracks, we recommend inclusion of construction joints at 10- to 20-foot intervals.

Due to the potential creep of soils, where free standing walls are constructed close to top-of-slope, some tilt of the wall should be anticipated. To reduce the amount of tilt, a combination of grade beam and caisson foundations may be used to support the wall. The system should consist of minimum 12-inch diameter caissons placed at 8 feet maximum on centers, and each 8 feet long and connected together at top with 12-inch by 12-inch grade beam. The geotechnical design parameters for the caisson are shown on the attached Figure 3.

4.9 *Pavement Recommendations*

Based on a preliminary assumed minimum R-value of 5 and an assumed Traffic Indices (TI's) of 6, 7, and 8, we recommend the following minimum pavement sections (Table 5). The R-value should be determined during the concluding stages of grading, and the final pavement section should be designed accordingly. TI's for the streets within the subject project site should be obtained from the appropriate regulatory agency or calculated by a traffic engineer. Final pavement sections should be confirmed by the project civil engineer based upon the project traffic index and the County of Los Angeles Department of Public Works minimum requirements.

TABLE 5
Recommended Minimum Pavement Sections

Traffic Index	6	7	8
Asphalt Concrete (in.)	4.5	4.5	5
Aggregate Base (in.)	11	15	18

The aggregate base material should conform to the specifications for Class 2 Aggregate Base (Caltrans) or Crushed Aggregate/Miscellaneous Base (Standard Specifications for Public Works Construction). The base material should be compacted to achieve a minimum relative compaction of 95 percent. The subgrade should achieve a minimum relative compaction of 90 percent through the upper 12 inches. Base and subgrade materials should be moisture-conditioned to relatively uniform moisture content at or slightly over optimum.

4.10 *Corrosivity to Concrete and Metal*

The National Association of Corrosion Engineers (NACE) defines corrosion as "a deterioration of a substance or its properties because of a reaction with its environment." From a geotechnical viewpoint, the "environment" is the prevailing foundation soils and the "substances" are the reinforced concrete foundations or various buried metallic elements such as rebar, piles, pipes, etc., which are in direct contact with or within close vicinity of the foundation soil.

In general, soil environments that are detrimental to concrete have high concentrations of soluble sulfates and/or pH values of less than 5.5. ACI 318R-08 Table 4.3.1 provides specific guidelines for the concrete mix design when the soluble sulfate content of the soils exceeds 0.1 percent by weight or 1,000 ppm. The minimum amount of chloride ions in the soil environment that are corrosive to steel, either in the form of reinforcement protected by concrete cover, or plain steel substructures such as steel pipes or piles, is 500 ppm per California Test 532.

Based on our experience in the general area, for preliminary purposes the onsite soils are classified as having a negligible sulfate exposure condition with a potential for localized moderate to severe sulfate content in accordance with ACI 318R. As a preliminary recommendation, concrete in contact with onsite soils should be designed in accordance with ACI 318R Table 4.3.1 for the negligible category. It is also our opinion that onsite soils should be considered severely corrosive to buried metals. Site grading will redistribute the materials, which may result in soils with different corrosion potentials. Therefore, the as-graded soil conditions should be verified with confirmatory sampling and testing during the grading phase of the project.

Despite the minimum recommendation above, LGC is not a corrosion-engineering firm. Therefore, we recommend that after site grading, consultation with a competent corrosion engineer be initiated to evaluate the actual corrosion potential of the site and to provide recommendations to reduce the corrosion potential with respect to the proposed improvements, as necessary. The recommendations of the corrosion engineer may supersede the above requirements.

4.11 Nonstructural Concrete Flatwork

Concrete flatwork (such as walkways, bicycle trails, etc.) have a high potential for cracking due to changes in soil volume related to soil-moisture fluctuations because these slabs are typically much thinner than foundation slabs and are not reinforced with the same dynamic as foundation elements. To reduce the potential for excessive cracking and lifting, concrete should be designed in accordance with the minimum guidelines outlined in Table 6. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints, but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 6
<u>Nonstructural Concrete Flatwork</u>

	Homeowner Sidewalks	Private Drives	Patios/Entryways	City Sidewalk Curb and Gutters
Minimum Thickness (in.)	4	5	5	City/Agency Standard
Presaturation	Wet down prior to placing	Presoak to 12 inches	Presoak to 12 inches	City/Agency Standard
Reinforcement	—	No. 3 at 24 inches on centers	No. 3 at 24 inches on centers	City/Agency Standard
Thickened Edge	—	8” x 8”	-	City/Agency Standard
Crack Control	Saw cut or deep tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep tool joint to a minimum of 1/3 the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	10 feet or quarter cut whichever is closer	6 feet	City/Agency Standard
Aggregate Base	—	4	4	City/Agency Standard

4.12 <u>Slope Maintenance</u>

To reduce the potential for erosion and slumping of graded slopes, all slopes should be planted with ground cover and deep-rooted vegetation as soon as practical upon completion of grading. Surface water runoff and standing water at the top-of-slopes should be avoided. Oversteepening of slopes should be avoided during construction activities and landscaping. Maintenance of proper lot drainage, undertaking of property improvements in accordance with sound engineering practice, and proper maintenance of vegetation, including regular pad and slope irrigation, should be performed. Trenches excavated on a slope face for utility or irrigation lines and/or for any purpose should be properly backfilled and compacted by a vibratory plate, or equivalent, in order to obtain a minimum 90 percent relative compaction, in accordance with ASTM Test Method D1557, to the slope face. Observation/testing and acceptance by the geotechnical consultant during trench backfill is recommended. A rodent control program should be established and maintained.

4.13 ***Construction Observation and Testing***

The recommendations provided in this report are based on subsurface observations and geotechnical analysis by others. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC.

Construction observation and testing should also be performed by the geotechnical consultant during future grading, excavations, backfill of utility trenches, preparation of pavement subgrade and placement of aggregate base, foundation or retaining wall construction or when an unusual soil condition is encountered at the site. Grading plans, foundation plans, and final project drawings should be reviewed by this office prior to construction.

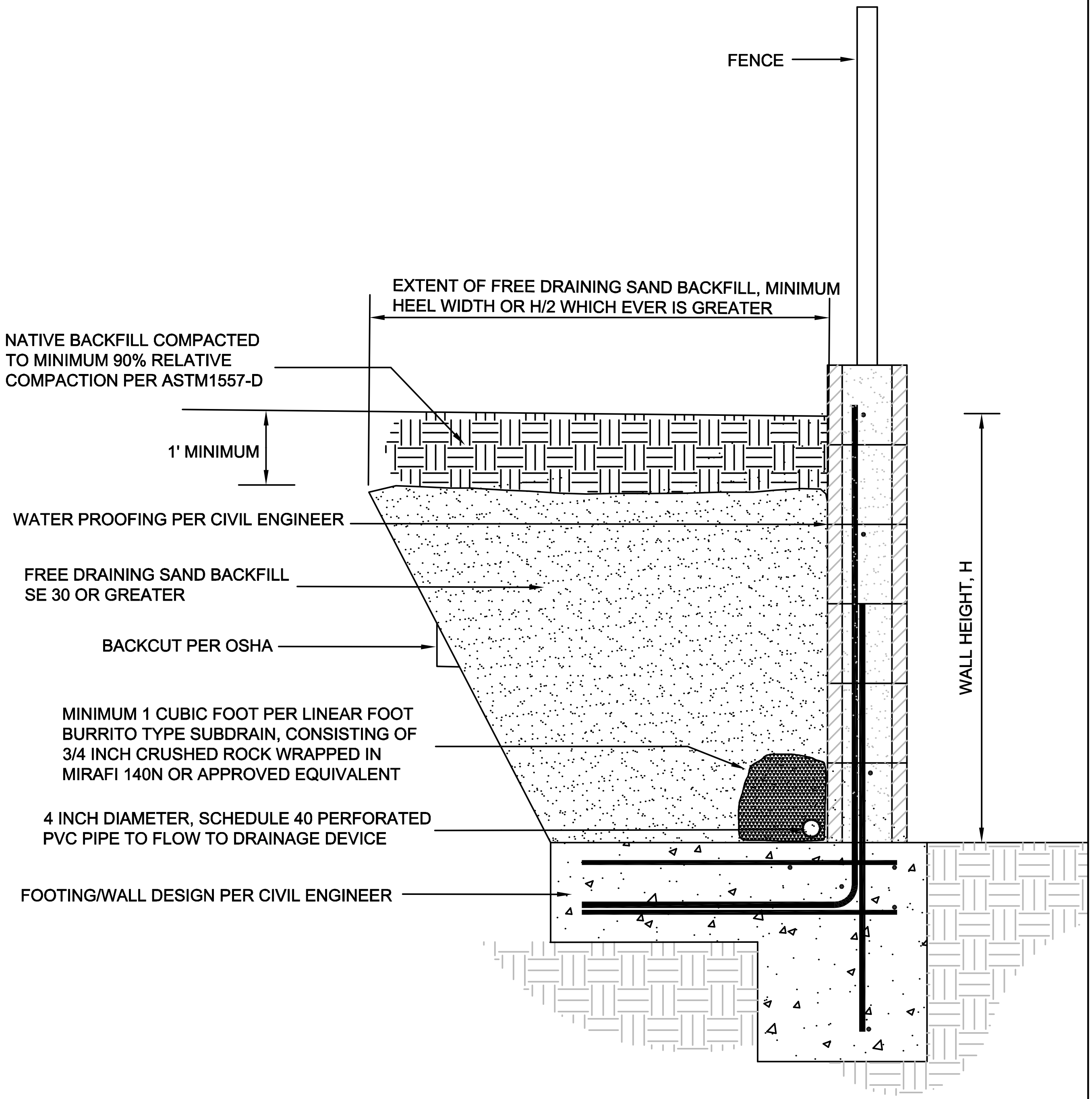
5.0 LIMITATIONS

Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report. The samples taken and submitted for laboratory testing, the observations made and the in-situ field testing performed are believed representative of the entire project; however, soil and geologic conditions revealed by excavation may be different than our preliminary findings. If this occurs, the changed conditions must be evaluated by the project soils engineer and geologist and design(s) adjusted as required or alternate design(s) recommended.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the architect and/or project engineer and incorporated into the plans, and the necessary steps are taken to see that the contractor and/or subcontractor properly implements the recommendations in the field. The contractor and/or subcontractor should notify the owner if they consider any of the recommendations presented herein to be unsafe.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control.



LGC

Figure 2: Retaining Wall Detail, Sand Backfill

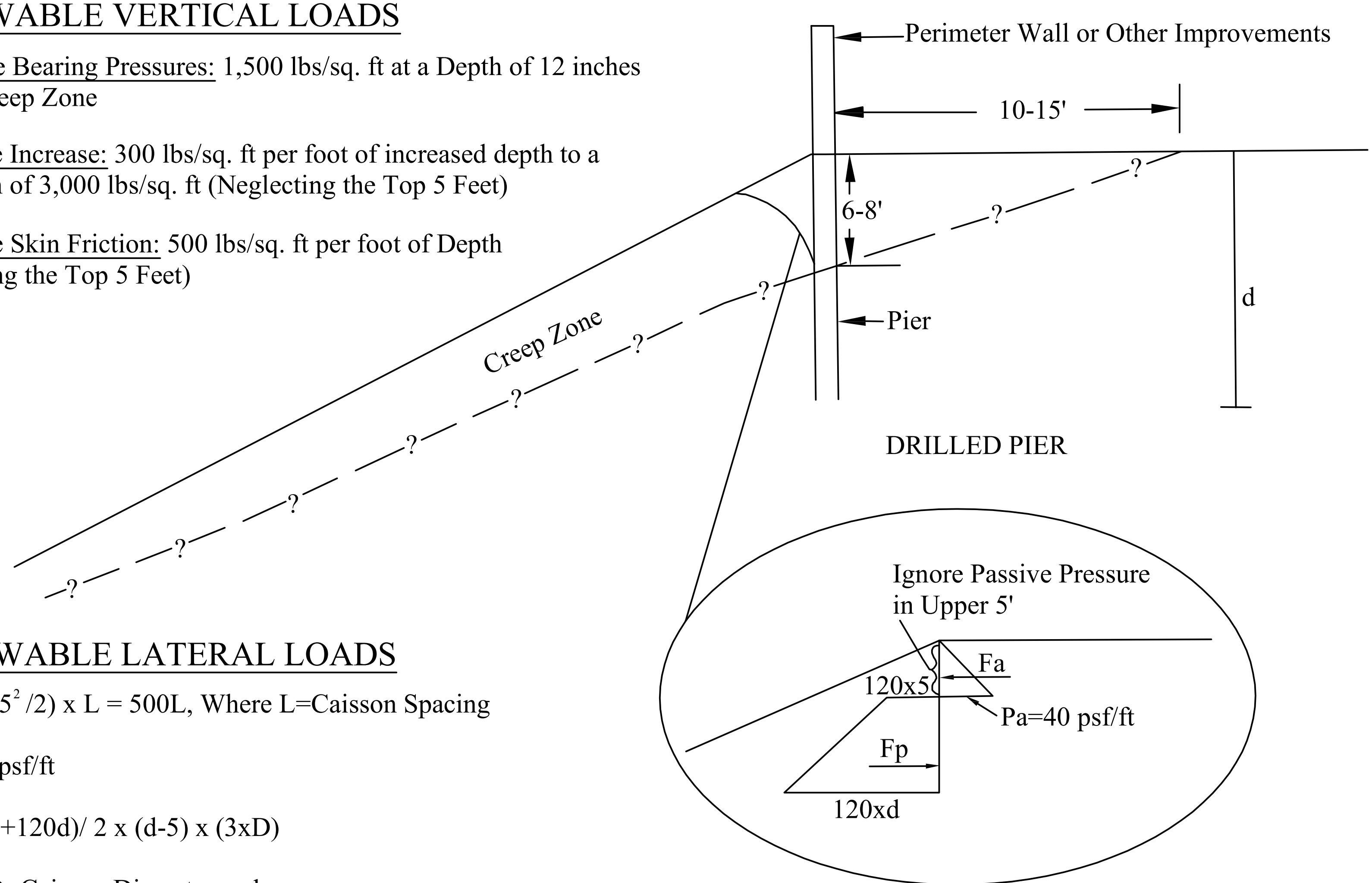
Project Name	Newland Homes/Tract 54081
Project No.	203008-01
Eng. / Geol.	BIH/SMB
Scale	N/A
Date	August 2020

ALLOWABLE VERTICAL LOADS

Allowable Bearing Pressures: 1,500 lbs/sq. ft at a Depth of 12 inches Below Creep Zone

Allowable Increase: 300 lbs/sq. ft per foot of increased depth to a Maximum of 3,000 lbs/sq. ft (Neglecting the Top 5 Feet)

Allowable Skin Friction: 500 lbs/sq. ft per foot of Depth (Neglecting the Top 5 Feet)



ALLOWABLE LATERAL LOADS

Fa=(40x5^2 /2) x L = 500L, Where L=Caisson Spacing

Pp=120 psf/ft

Fp=(600+120d)/ 2 x (d-5) x (3xD)

Where D=Caisson Diameter and
d=Depth Below Ground

Project Name	Newland Homes
Project No.	203008-01
Eng. / Geol.	BIH/SMB
Scale	N/A
Date	August 2020

LGC

Figure 3:
Geotechnical Parameters For Top of Slope Walls

APPENDIX A
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APPENDIX B

<u>EXCAVATION LOGS</u>

Borings B-LGC-1 through B-LGC-5

<u>EXCAVATION LOGS BY OTHERS</u>

<u>Borings by Geosoils Consultants, Inc.</u>

<u>Borings and Test Pits by Pacific Soils Engineering, Inc.</u>

<u>Borings:</u>
PSE1
PSE2

<u>Test Pits:</u>
T-1 through T-9

Geotechnical Boring Log B-LGC-1

Date: 4/27/2020	**Page:**1
Project Name: Newbridge-Diamond Bar	**Project Number: 203008-01**
Drilling Company: Choice Drilling	**Type of Rig:** Hollow Stem
Drive Weight: 140lbs	**Drop:** 30" **Hole Dia: 8"**
Elevation of Top of Hole: 650	**Hole Location: See Plan**

DESCRIPTION
Logged By: NLK
Sampled By: NLK

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Description	Type of Test
650	0							**Quaternary Alluvium (Qal):**	
							CL	0-5'- Brown to dark brown, sandy, silty CLAY, dry, soft, porous, rooted	
645	5		R1	7 9 21	110.0	15.7	CL	5'- Dark brown, sandy, silty CLAY, damp, very stiff, carbonate stringers, rooted	
640	10		R2	18 20 34	116.8	10.8	CL	10'- Brown to dark brown, very fine sandy, silty CLAY, dry to damp, hard, iron staining, carbonate stringers	
635	15		R3	17 18 32				15'- Same as above, porous	con
								18'- Moist	
630	20		R4	9 12 16				20'- Poor Recovery- Same as above, stiff, moist, no pores	con
625	25		R5	3 4 5				**Weathered Bedrock-Puente Formation (TP):** 25'- Light to medium brown, sandy CLAYSTONE, wet, medium stiff, iron staining, seepage	
620	30								

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Geotechnical Boring Log B-LGC-1

Date:	4/27/2020	**Page:2**	
Project Name:	Newbridge-Diamond Bar	**Project Number: 203008-01**	
Drilling Company:	Choice Drilling	**Type of Rig:** Hollow Stem	
Drive Weight: 140lbs		**Drop:** 30"	**Hole Dia: 8"**
Elevation of Top of Hole:	650	**Hole Location: See Plan**	

DESCRIPTION — Logged By: NLK; Sampled By: NLK

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
620	30		R6	5 5 8	103.1	23.0		30'- Light to medium brown, sandy CLAYSTONE, wet, medium stiff, iron staining	
615	35		R7	5 7 9	97.9	26.5		35'- Same as above	
610	40		R8	10 11 17	99.9	25.6		40'- Same as above, medium dense, some gravel	
605	45		R9	12 15 24				**Puente Formation (TP):** 45'- Light to medium brown and gray, sandy, clayey SILTSTONE, moist, very stiff, visible bedding, iron staining, calcium carbonate nodules, gravel	
600	50							Total depth 46.5' Perched water at 25' Backfilled 4/27/20	
595	55								
590	60								

LGC

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Geotechnical Boring Log B-LGC-2

Date:	4/27/2020	**Page:**1	
Project Name:	Newbridge-Diamond Bar	**Project Number: 203008-01**	
Drilling Company:	Choice Drilling	**Type of Rig:** Hollow Stem	
Drive Weight: 140lbs		**Drop:** 30"	**Hole Dia: 8"**
Elevation of Top of Hole: 652		**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
652	0							**Quaternary Alluvium (Qal):**	
							CL	0-5'- Brown to dark brown, sandy, silty CLAY, dry, soft to stiff, rooted	
647	5		R1	12 21 35	108.2	18.9	CL	5'- Dark brown to gray, silty CLAY, damp to moist, hard; some gravel, root hairs	
642	10		R2	12 27 36	116.4	13.0			
							CL	10'- Medium brown, sandy, silty CLAY, dry to damp, hard, some gravel	
637	15		R3	10 15 21				15'- Same as above, very moist	con
632	20		R4	5 7 8			CL	20'-Interfingered brown, silty CLAY and gray, sandy CLAY that is iron stained, moist to wet, stiff, root hairs, seepage	con
627	25		R5	6 9 15				25'- Same as above, no roots observed	con
622	30								

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Geotechnical Boring Log B-LGC-2

Date:	4/27/2020	**Page:2**	
Project Name:	Newbridge-Diamond Bar	**Project Number: 203008-01**	
Drilling Company:	Choice Drilling	**Type of Rig:** Hollow Stem	
Drive Weight: 140lbs		**Drop:** 30"	**Hole Dia: 8"**
Elevation of Top of Hole: 652		**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
622	30		R6	11 12 21	106.2	20.9	CL	30'- Medium brown, silty CLAY and gray, sandy CLAY, moist, very stiff, iron staining, some manganese nodules	
617	35		R7	11 15 21	110.0	18.7	CL	35'- Medium to dark brown, clayey SAND and silty CLAY, moist, very stiff	
			SPT1	5 7 10				**Weathered Bedrock-Puente Formation (TP):** 37.5'- Medium to dark brown, sandy CLAYSTONE, moist, very stiff	
612	40		R8	10 17 16				40'- Medium brown silty, sandy CLAYSTONE, damp to moist, very stiff, thin layers of orange and yellow sandstone with black flecks	con
607	45		R9	10 15 18	104.3	23.2		45'- Medium to dark brown, silty CLAYSTONE, moist, stiff, few pebbles	
602	50		R10	10 11 12	98.7	25.6		**Puente Formation (TP):** 50'- Light to medium brown, sandy CLAYSTONE, moist, stiff, carbonate nodules	
597	55		R11	12 37 50/3				55'- Same as above Tip of sampler- Light brown to orange, silty SANDSTONE, very dense, cemented	
592	60							Total depth 56.5' Seepage at 20' Backfilled 4/27/20	

LGC

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Geotechnical Boring Log B-LGC-3

Date:	4/27/2020	**Page:1**	
Project Name:	Newbridge-Diamond Bar	**Project Number: 203008-01**	
Drilling Company:	Choice Drilling	**Type of Rig:** Hollow Stem	
Drive Weight: 140lbs		**Drop:** 30"	**Hole Dia: 8"**
Elevation of Top of Hole:	645	**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
645	0							**Quaternary Alluvium (Qal):**	
							CL	0-5'- Brown to dark brown, sandy, silty CLAY, dry, soft, porous, rooted	
			Bulk1						
640	5		R1	6 8 10	109.0	16.9	CL	5'- Medium brown to dark brown, silty CLAY, damp, hard, some gravel, root hairs, sandstone clasts appox 3-4mm	
635	10		R2	15 32 40	111.8	12.6	CL	10'-Medium to dark brown, sandy, silty CLAY, dry to damp, hard, carbonate stringers, iron staining pockets of sand, porous, (Sample disturbed)	
			Bulk2						
630	15		R3	18 20 38				15'- Same as above, few pores	con
625	20		R4	10 18 24	108.1	17.5		20'- Same as above 22'- Becomes moist	
620	25		R5	7 11 11			CL	25'- Same as above, color darkens with depth, sub-horizontal iron staining, no carbonate	con
615	30								

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Geotechnical Boring Log B-LGC-3

Date:	4/27/2020	**Page:2**	
Project Name:	Newbridge-Diamond Bar	**Project Number: 203008-01**	
Drilling Company:	Choice Drilling	**Type of Rig:** Hollow Stem	
Drive Weight: 140lbs		**Drop:** 30"	**Hole Dia: 8"**
Elevation of Top of Hole: 645		**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
615	30		R6	10 11 12	99.9	24.7	CL	30'- Brown gray, sandy CLAY, moist, stiff, few pores, sub horizontal iron staining	
								Weathered Bedrock-Puente Formation (TP): 31'- Blue-gray, sandy CLAY, moist, stiff, few, carbonate stingers	
610	35		R7	9 10 12				35'- Same as above	con
605	40		R8	7 8 10				40'- No recovery	
600	45		R9	10 11 14	97.5	28.4		45'- same as above, becoming very moist 48' Seepage	
595	50		R10	10 32 50/5				**Puente Formation (TP):** Pale yellow to orange/brown, sandy CLAYSTONE, moist, hard, sandy pockets with iron staining	
590	55							Total depth 51.5' Seepage at 48' Backfilled 4/27/20	
585	60								

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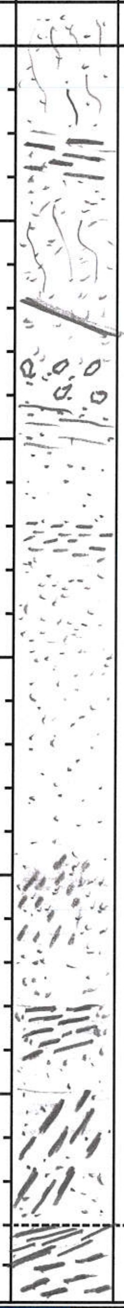
Geotechnical Boring Log B-LGC-4

Date:	5/1/2020	**Page:1**	
Project Name:	Newbridge-Diamond Bar	**Project Number:** 203008-01	
Drilling Company:	RC Drilling	**Type of Rig:** Auger	
Drive Weight:	No blow counts recorded	**Drop:**	**Hole Dia: 24"**
Elevation of Top of Hole:	665	**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
665	0						CL	**Colluvium (Qcol):** 0-1'- Brown, silty SAND, damp, loose, organics	
								Older Landslide Debris (Qols): 1'-Orange-brown, fine SANDSTONE and gray-brown, clayey SILTSTONE, damp, dense; carbonate nodules(approx. 1/4-1/2in), iron staining	
660	5							3'- Orange-brown, sandy CLAYSTONE, damp, dense, iron staining 4.5'- Pale yellow and gray, SANDSTONE, damp, dense, abundant roots, carbonate nodules, friable	
655	10		R1					7'- 1.5-2" wide white carbonate rich SANDSTONE, damp, dense, mottled pale yellow and light gray; B:N10E/44SE 8'- Yellow gray, silty SANDSTONE, damp, dense, abundant carbonate nodules, iron staining, massive, friable	
650	15							9'- Grades into clayey SANDSTONE 12'- Interbedded fractured SILSTONE and carbonate, root hairs, fractures closed and tight 14.5'- Pale yellow, SANDSTONE; damp, hard	
645	20		R2					20'- Pale yellow-brown interbedded very fine SANDSTONE and SILTSTONE, damp, hard, fractured, iron stains, approx. 1/8-1/4" beds 23'- Purple CLAYSTONE and yellow SANDSTONE thinly layered, iron staining, brecciated material, massive	
640	25							25-28'- Interbedded purple CLAYSTONE and yellow orange, sandy CLAYSTONE, very moist, iron staining, steeply dipping	
635	30							28'-30' Shear zone: 1/2" Dark purple, CLAY w/ 3-4" dark gray and yellow CLAYSTONE, wet, caving, truncates steeply dipping beds above; SP:N12E/9NW	

LGC

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Geotechnical Boring Log B-LGC-4

Date:	5/1/2020	**Page:2**	
Project Name:	Newbridge-Diamond Bar	**Project Number:**	203008-01
Drilling Company:	RC Drilling	**Type of Rig:** Auger	
Drive Weight:		**Drop:**	**Hole Dia: 24"**
Elevation of Top of Hole:	665	**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
635	30		R3			23.8		**Puente Formation (TP):** 30'- Yellow orange, SANDSTONE, wet, dense 32'- Grey to purple, SILTSTONE, wet, dense, heavy seepage, B:N60E/29NW and NS/19W	s
630	35							35.5'- B:N20E/60NW 37'- Dark purple, CLAYSTONE, approximately 3/4" thick, hard, tight, B:N50E/21NW 38.5'- B:N25E/7NW	
625	40		R4			29.0		39'- Gray, clayey SANDSTONE interbedded with pale yellow SANDSTONE, moist, very dense, hard, massive, approximatley 1/2" carbonate nodules 42'- 4" thick yellow and purple, sandy CLAYSTONE, moist, hard	s
620	45							44' water level during downhole log	
615	50								
610	55							Total Depth 55' Seepage at 28-30' Caving at 31' (Water level at 44' after 1.5 hours) Backfilled 5/1/20	
	60								

LGC

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Geotechnical Boring Log B-LGC-5

Date:	5/1/2020	**Page:1**	
Project Name:	Newbridge-Diamond Bar	**Project Number:**	203008-01
Drilling Company:	RC Drilling	**Type of Rig:** Auger	
Drive Weight:		**Drop:**	**Hole Dia: 24"**
Elevation of Top of Hole:	676	**Hole Location: See Plan**	

Logged By: NLK
Sampled By: NLK

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
676	0						SC	**Colluvium (Qcol):** 0-1'- Brown, silty, clayey SAND, damp, dense, pinhole pores, approximatley 1/2" sandstone fragments	
								Puente Formation (TP): 2'- Brown, silty, SANDSTONE, damp, dense, carbon flecks, roots, massive	
671	5		R1					4.5'- Gray, clayey carbonate lens, 1" thick, rooted, iron staining, B:N20E/54NW 5'- Orange brown, silty fine SANDSTONE, damp, dense, friable, no visible pores	
666	10		R2			16.8		6'- Light gray to pale yellow, SANDSTONE, damp, dense, iron staining 6.5'- 2.5' thick, gray CLAYSTONE, damp, hard, carbonate and iron staining at contact below, B:N60E/19SE	s
661	15		R3			6.2		8'- Light gray, silty, fine SANDSTONE grades into thin gray, sandy CLAYSTONE, damp, hard, roots massive 10'- Brown, CLAYSTONE grades into black sandy SILTSTONE, damp, hard, EW/4S	s
656	20		R4			9.5		13.5'- Dark brown, clayey SANDSTONE, damp, dense, massive, mottled light brown 15'- Slightly orange brown, F-C SANDSTONE, moist, dense, friable 19'- Reddish brown, SANDSTONE, with 1-2" purple and green, SILTSTONE clasts, damp to moist, dense, quartzite cobbles (subrounded)	s
651	25							22.5'- Medium to dark brown, clayey, coarse SANDSTONE with gravel, damp, hard, massive 25'- Pale yellow to orange, SILTSTONE, damp, very hard, massive	
646	30								

LGC

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Geotechnical Boring Log B-LGC-5

Date:	5/1/2020	**Page:2**	
Project Name:	Newbridge-Diamond Bar	**Project Number:**	203008-01
Drilling Company:	RC Drilling	**Type of Rig:** Auger	
Drive Weight:		**Drop:**	**Hole Dia: 24"**
Elevation of Top of Hole:	676	**Hole Location: See Plan**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number		Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: NLK Sampled By: NLK	Type of Test
646	30		R5				22.2			s
									Total Depth 31' No groundwater Backfilled 5/1/20	
	35									
	40									
	45									
	50									
	55									
	60									

GEOTECHNICAL BORING LOG

PROJECT NAME: RAD
W.O. NO. 5718
DRILLING COMPANY: Roy Bros.
DATE STARTED: 8-19-05
BORING NO. B-1
TYPE OF DRILL RIG: Low Drill
LOGGED BY: LP
SHEET 1 OF 3
DRILLING METHOD: Flight Auger
HAMMER WEIGHT (LBS):
GROUND ELEVATION (FT):
DIAMETER OF HOLE: 24
DROP (IN):
GW ELEVATION:
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-1', COLLUVIUM (Qcol) Dark orange-brown, clayey SAND, loose to medium dense, moist.			
			1-60', PUENTE FORMATION (Tp) Interbedded, orange-brown, slightly clayey SANDSTONE and gray SILTSTONE, medium hard, moist with siltstone clasts, very fractured to 8'.			
5			@ 4.5', Bedding N65E/24NW.			
			@ 8', Harder, hole is cleaner, well-bedded.			
			@ 9', Bedding on gray SILTSTONE, N10E/31NW.			
10	California Ring	15 for 18"	@ 10', Interbedded, orange-brown, fine SANDSTONE and orange-brown SILTSTONE with occasional thin beds of clayey siltstone.	17.4	105.1	
15			@ 14', Bedding on 1/4" clay seam, N25E/30NW, well bedded below similar attitudes.			
20	California Ring	15	@ 20', N21W/23SW, Bedding on hard, light brown, silty SANDSTONE, bed similar orientations below to 27'.	14.5	102.2	
25						
			@ 27', Dark gray SILTSTONE beds, moderately hard, no continuous bedding.			

LEGEND

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

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

PLATE A-1

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME RAD
DRILLING COMPANY Roy Bros.
DATE STARTED: 8-19-05
TYPE OF DRILL RIG Low Drill
LOGGED BY LP
DRILLING METHOD Flight Auger
HAMMER WEIGHT (LBS)
DIAMETER OF HOLE 24
DROP (IN)
BORING LOCATION:

W.O. NO. 5718
BORING NO. B-1
SHEET 2 OF 3
GROUND ELEVATION (FT)
GW ELEVATION

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	17		16.1	100.9	
			@ 33', N62W/35SW, bedding on 6" bed, light brown SANDSTONE .			
35						
			@ 38', Orange-brown SANDSTONE, moderately hard siltstone fragments within sandstone.			
40	California Ring	20		12.0	100.5	
			@ 42', Gray SILTSTONE interbeds, bedding broken and fractured but rock is moderately hard.			
			@ 44', N10E/34SE.			
45						
			@ 47', Consistent bedding to 48.5'.			
50	California Ring	23	@ 49.5, Very fractured SILTSTONE and SANDSTONE, medium soft, N32E/21NW.	14.0	97.7	
			@ 51', Increasing SILTSTONE, orange-gray.			
			@ 52.5', N43E/58SE on thin SILTSTONE bed.			
55						

LEGEND

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

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

PLATE A-2

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME RAD — W.O. NO. 5718
DRILLING COMPANY Roy Bros. — DATE STARTED: 8-19-05 — BORING NO. B-1
TYPE OF DRILL RIG Low Drill — LOGGED BY LP — SHEET 3 OF 3
DRILLING METHOD Flight Auger — HAMMER WEIGHT (LBS) — GROUND ELEVATION (FT)
DIAMETER OF HOLE 24 — DROP (IN) — GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	35		13.4	103.0	
65			T.D. @ 65'. No groundwater. No caving.			
70						
75						
80						
85						

LEGEND

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

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

PLATE A-3

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME RAD
W.O. NO. 5718
DRILLING COMPANY Roy Bros.
DATE STARTED: 8-19-05
BORING NO. B-2
TYPE OF DRILL RIG Low Drill
LOGGED BY LP
SHEET 1 OF 2
DRILLING METHOD Flight Auger
HAMMER WEIGHT (LBS)
GROUND ELEVATION (FT)
DIAMETER OF HOLE 24
DROP (IN)
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-1', COLLUVIUM (Qcol) Dark orange-brown, slightly clayey SAND, loose, moist.			
			1-50', BEDROCK: Puente Formation @ 1-7.5', Orange-brown, fine to medium SANDSTONE, massive, clayfilled fracturing, soft.			
5						
			@ 7.5', Bedding N7E/11NE on 6" gray SILTSTONE bed.			
			@ 8', Back to orange-brown SANDSTONE, interbedded.			
10	California Ring	11 for 18"		7.1	106.8	
			@ 13', Gray CLAYSTONE, orange-brown SANDSTONE, soft, possible slide above siltstone/claystone bed.			
15			@ 15', Medium brown and gray SILTSTONE/CLAYSTONE, N76E/20NW, medium hard.			
			@ 17', N30E/18NW, Bedding on orange CLAYSTONE bed, moist.			
			@ 19', Interbedded, gray SILTSTONE and orange-brown SANDSTONE, N20E/31SE.			
20	California Ring	15		15.9	110.7	
25			@ 25', Brown, very fractured, clayey SILTSTONE, medium hard.			
			@ 28', N28/9NW on 1/16" hard caliche stringers within clayey SILTSTONE. Bedding consistent to 30'.			

LEGEND

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

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

PLATE A-4

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME RAD
W.O. NO. 5718
DRILLING COMPANY Roy Bros.
DATE STARTED: 8-19-05
BORING NO. B-2
TYPE OF DRILL RIG Low Drill
LOGGED BY LP
SHEET 2 OF 2
DRILLING METHOD Flight Auger
HAMMER WEIGHT (LBS)
GROUND ELEVATION (FT)
DIAMETER OF HOLE 24
DROP (IN)
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	17	@ 30', Interbedded, light gray SANDSTONE and orange-brown, silty clay with siltstone, N85W/6SW, similar faint bedding observed to 34'.	21.1	101.7	
35						
			@ 37', N15W/8SW, Bedding on dark brown-black, clayey SILTSTONE.			
40	California Ring	22	@ 40', Dark brown SILTSTONE, occasional sandstone interbeds, hard.	14.3	101.4	
			@ 41', Blue, concrete SANDSTONE bed, N23W/12NE, water seepage from fracture.			
			@ 41.5', Dark brown to dark blue SILTSTONE and occasional sandstone, hard to very hard, moist, N54E/5S, thin concrete on set.`			
45						
50			T.D. @ 50'. No groundwater. No caving.			
55						

LEGEND

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

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

PLATE A-5

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates
W.O. NO. 5718
DRILLING COMPANY Choice
DATE STARTED: 3-22-07
BORING NO. B-1-07
TYPE OF DRILL RIG Mobil B61
LOGGED BY HB
SHEET 1 **OF** 2
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-31', ALLUVIUM (Qal)			
5	California Ring	23/35	@ 5', Dark brown CLAY/SAND, moist, porous, firm, minor roots and rootlets.	6.2	—	
10	California Ring	18/25	@ 10', Dark brown CLAY/SAND, moist, firm, sticky, rootlets.	11.2	—	
15	California Ring	18/26	@ 15', Light brown, clayey, silty SAND, firm, wet, very sticky (water table @ 15').	15.7	107.1	
20	California Ring	22/39	@ 20', Light brown, clayey SAND, very firm, sticky, wet.	19.5	107.9	
25	California Ring	16/25	@ 25', Light brown, silty CLAY, very firm, wet, saturated, white sand veins, sticky.	27.9	97.0	

LEGEND

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

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

PLATE A-6

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates
W.O. NO. 5718
DRILLING COMPANY Choice
DATE STARTED: 3-22-07
BORING NO. B-1-07
TYPE OF DRILL RIG Mobil B61
LOGGED BY HB
SHEET 2 OF 2
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	25/42	@ 30', Light brown, silty SAND with clay, wet, saturated, fine to medium.	29.4	95.1	
			@ 31.5', Bedrock contact (Puente Formation). T.D. @ 32'. Groundwater @ 15'.			
35						
40						
45						
50						
55						

LEGEND

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

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

PLATE A-7

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates		W.O. NO. 5718	
DRILLING COMPANY Choice	DATE STARTED: 3-22-07	BORING NO. B-3-07	
TYPE OF DRILL RIG Mobil B61	LOGGED BY HB	SHEET 1 OF 1	
DRILLING METHOD Hollow Stem	HAMMER WEIGHT (LBS) 140	GROUND ELEVATION (FT)	
DIAMETER OF HOLE 8	DROP (IN) 30	GW ELEVATION	
BORING LOCATION:			

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-12', ALLUVIUM (Qal)			
5	Bulk Sample; California Ring	50	@ 5', Brown CLAY/SAND, loose, porous with roots, very moist, wet.	6.7	106.8	
10	California Ring	50 for 5"	@ 10', Light brown, clayey SAND, silty SAND, wet, porous with rock fragments.	10.5	114.9	
			@ 12', Bedrock (Puente Formation).			
			T.D. @ 12'.			
15						
20						
25						

LEGEND

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

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

PLATE A-10

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates
W.O. NO. 5718
DRILLING COMPANY Choice
DATE STARTED: 12-2-11
BORING NO. B-1-11
TYPE OF DRILL RIG LAR
LOGGED BY LP
SHEET 1 OF 1
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
0-5	Bulk Sample		**0-3', ALLUVIUM (Qal)** Dark brown, silty SAND, loose to moderately dense, slightly porous			
			3-15', BEDROCK: Puente Formation (Tp) Orange-brown, interbedded, fine to medium SANDSTONE, and light brown SILTSTONE, moderately hard, well bedded			
5	California Ring	50 for 3"		7.3	102.5	
10	California Ring	17/34/44		21.2	101.4	
15	California Ring	18/33/50		22.9	104.5	
			T.D. @ 15' No groundwater No caving			
20						
25						

LEGEND

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

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

PLATE A-12

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME: Jewel Ridge Estates
W.O. NO.: 5718
DRILLING COMPANY: Choice
DATE STARTED: 12-2-11
BORING NO.: B-3-11
TYPE OF DRILL RIG: LAR
LOGGED BY: LP
SHEET 1 OF 1
DRILLING METHOD: Hollow Stem
HAMMER WEIGHT (LBS): 140
GROUND ELEVATION (FT):
DIAMETER OF HOLE: 8
DROP (IN): 30
GW ELEVATION:
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-20', ALLUVIUM (Qal) @ 0-5', Dark brown, fine, sandy CLAY, moderately firm, slightly moist, slightly porous, very loose @ 0-3'			
5	California Ring	8/10/13		8.9	113.7	Cons
10	California Ring	13/22/30	@ 10', Dark brown, fine, sandy SILT, slightly moist, moderately firm, slight pinpoint porosity, caliche worm trails	8.7	124.7	Cons
15	California Ring	12/18/22	@ 15', Orange-brown, silty, fine SAND to fine, sandy SILT, slightly moist, moderately dense, slight pinpoint porosity	10.7	120.0	Cons
20	California Ring	33/50	**20-25', BEDROCK: Puente Formation (Tp)** @ 20', Light brown to buff, silty, fine to medium SANDSTONE, moderately hard, moist	12.0	112.1	
25	California Ring	50	@ 25', Light brown, fine, sandy SILTSTONE, moderately friable, moderately hard	12.9	77.9	
			T.D. @ 25' No groundwater No caving			

LEGEND

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

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

PLATE A-15

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates W.O. NO. 5718
DRILLING COMPANY Choice DATE STARTED: 12-2-11 BORING NO. B-4-11
TYPE OF DRILL RIG LAR LOGGED BY LP SHEET 1 OF 2
DRILLING METHOD Hollow Stem HAMMER WEIGHT (LBS) 140 GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 DROP (IN) 30 GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-31', ALLUVIUM (Qal) @ 0-5', Dark brown, silty, SAND, loose to medium dense, slightly moist, sight pinpoint porosity			
5	Bulk Sample, California Ring	8/8/8	@ 5', Orange-brown, slightly clayey, silty, fine SAND, loose to moderately dense, slightly moist	9.9	113.7	
10	California Ring	8/13/17	@ 10', Orange-brown, slightly clayey, silty, fine SAND, moderately dense, slightly moist	11.5	118.4	Cons
15	California Ring	15/17/19	@ 15', Dark brown, silty SAND, moderately dense, caliche worm trails	11.0	122.8	
20	California Ring	10/10/12	@ 20', Orange-brown, slightly clayey, silty SAND with scattered bedrock fragments, moderately dense to dense, slightly moist to moist	11.2	120.1	Cons
25	California Ring	4/7/7	@ 25', Orange-brown, clayey, silty SAND with scattered bedrock fragments, slightly porous, loose to moderately dense	18.3	107.8	
			@ 30', Orange-brown, silty CLAY with fine SAND, soft, very moist to			

LEGEND

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

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

PLATE A-16

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates
DRILLING COMPANY Choice
DATE STARTED: 12-2-11
TYPE OF DRILL RIG LAR
LOGGED BY LP
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
DIAMETER OF HOLE 8
DROP (IN) 30
BORING LOCATION:

W.O. NO. 5718
BORING NO. B-4-11
SHEET 2 OF 2
GROUND ELEVATION (FT)
GW ELEVATION

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	4/5/6	wet, free water at contact, possible bedrock in tip of sampler	26.6	97.5	Cons
			31-35', BEDROCK: Puente Formation (Tp)			
35	California Ring	18/25/33	@ 35', Gray to orange-brown, interbedded, fine SANDSTONE and SILTSTONE, moderately hard, moist, steeply bedded T.D. @ 35' Water @ 30' No caving	33.3	90.8	
40						
45						
50						
55						

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

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

PLATE A-17

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Jewel Ridge Estates | W.O. NO. 5718
DRILLING COMPANY Choice | DATE STARTED: 10-2-11 | BORING NO. B-5-11
TYPE OF DRILL RIG LAR | LOGGED BY LP | SHEET 1 OF 2
DRILLING METHOD Hollow Stem | HAMMER WEIGHT (LBS) 140 | GROUND ELEVATION (FT)
DIAMETER OF HOLE 8 | DROP (IN) 30 | GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-30', ALLUVIUM (Qal)/LANDSLIDE DEBRIS (Qls) @ 0-5', Dark brown, fine, sandy CLAY with silt, slightly moist, soft to 3', pinpoint porosity			
5	California Ring	11/13/19	@ 5', Dark brown, fine, sandy CLAY with silt, slightly moist, moderately dense	13.9	116.2	Cons
10	California Ring	15/24/37	@ 10', Dark brown, fine, sandy CLAY/SILT, moderately dense to dense SANDSTONE in very tip of sampler, moist @ 10-18', Orange-brown, fine SANDSTONE, fine, sandy SILT (Landslide Debris - Qls)	15.9	104.0	
15	California Ring	10/13/27		20.2	102.1	Cons
20	California Ring	9/13/20	@ 20', Dark chocolate brown, slightly silty CLAY, stiff, moist	21.4	106.0	
25	California Ring	7/23/30	@ 25', Orange-brown, fine, sandy, silty CLAY, stiff, moist	19.8	104.6	Cons

LEGEND

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

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

PLATE A-18

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME	Jewel Ridge Estates	W.O. NO.	5718
DRILLING COMPANY	Choice	DATE STARTED:	10-2-11
BORING NO.	B-5-11	TYPE OF DRILL RIG	LAR
LOGGED BY	LP	SHEET	2 OF 2
DRILLING METHOD	Hollow Stem	HAMMER WEIGHT (LBS)	140
GROUND ELEVATION (FT)		DIAMETER OF HOLE	8
DROP (IN)	30	GW ELEVATION	
BORING LOCATION:			

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	10/13/17	**30-35', BEDROCK: Puente Formation (Tp)** @ 30', Orange-brown to gray-brown, clayey, fine, sandy SILTSTONE	27.4	98.1	
35	California Ring	15/25/40	@ 35', Light brown, interbedded, fine SANDSTONE and gray to orange-brown SILTSTONE and CLAYSTONE, moist, moderately hard	22.0	105.4	
			T.D. @ 35' Groundwater @ 30' No caving			
40						
45						
50						
55						

LEGEND

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

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

PLATE A-19

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar		W.O. NO. 5718A	
DRILLING COMPANY Choice	DATE STARTED: 6-23-15	BORING NO. B-1-15	
TYPE OF DRILL RIG LAR	LOGGED BY GCE	SHEET 1 OF 2	
DRILLING METHOD Hollow Stem	HAMMER WEIGHT (LBS) 140	GROUND ELEVATION (FT)	
DIAMETER OF HOLE 8	DROP (IN) 30	GW ELEVATION	
BORING LOCATION:			

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-10', (Qal)?			
5	California Ring	16/23	@ 5', Brown, silty SAND with gravel (pea size), semi moist, semi dense	9.8	124.4	Cons
10	California Ring	19/25		6.7	105.0	
			10-35', ALL CLAY (Qls)?			
			@ 10', Light orange-yellow-brown, medium to fine grained SAND, clean, semi moist			
15	California Ring	20/24	@ 15', Brown, silty CLAY with coarser grained sediment and caliche, moist, dense	19.0	109.7	Cons
	Bulk Sample					
20	California Ring	6/7	@ 20', Light yellow-orange CLAY with gravel, very moist, dense, tacky, stiff	26.3	99.6	Cons
25	California Ring	9/15	@ 25', Dark brown CLAY, very moist, stiff, dense, tacky	21.4	107.1	
	California Ring					

LEGEND

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

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

PLATE A-20

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar
W.O. NO. 5718A
DRILLING COMPANY Choice
DATE STARTED: 6-23-15
BORING NO. B-1-15
TYPE OF DRILL RIG LAR
LOGGED BY GCE
SHEET 2 OF 2
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	California Ring	9/11	@ 30', Light orange-yellow-brown CLAY	21.5	106.7	Cons
35	California Ring	15/21		13.1	116.9	
			35-45', (Qls) Light brown CLAY matrix with Tp fragments, caliche pockets, gravel, _________ of orange, fine sandstone			
40	California Ring	19/18		23.3	105.0	Cons
45	California Ring	12/19		21.8	104.9	
			(Qal) @ 45', Light orange-yellow, clayey, silty SAND with Tp fragments			
50	California Ring	16/32	@ 50', Light orange-yellow, clayey, silty SAND with Tp fragments	22.1	105.7	Cons
55	California Ring	17/35	**BEDROCK: Puente Formation (Tp)** Black SHALE, hard, dense, platty, moist TD @ 55' Groundwater @ 20-25'	22.2	103.6	

LEGEND

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

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

PLATE A-21

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar
W.O. NO. 5718A
DRILLING COMPANY Choice
DATE STARTED: 6-23-15
BORING NO. B-2-15
TYPE OF DRILL RIG LAR
LOGGED BY GCE
SHEET 1 OF 1
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
0			**0-12.5', (Qal)** Orange-brown, silty SAND, dry, semi dense with gravel			
5						
10						
12.5	Bulk Sample; California Ring	50/4	**12.5-27', BEDROCK: Puente Formation (Tp)** @ 12.5', Light yellow-orange SILTSTONE, hard, dense, dry			
15						
17.5	California Ring	22/38	@ 17.5', Hydrated bedrock SILTSTONE, light brown-olive-gray siltstone, moist, firm, dense	18.1	92.1	
20						
22.5	California Ring	32/50 for 4"	@ 22.5', Light yellow-brown, fine grained SANDSTONE with oxidation, moist, dense, semi hard	17.0	112.6	
25						
27			TD @ 27' No groundwater			

LEGEND

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

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

PLATE A-22

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar
W.O. NO. 5718A
DRILLING COMPANY Choice
DATE STARTED: 6-23-15
BORING NO. B-3-15
TYPE OF DRILL RIG LAR
LOGGED BY GCE
SHEET 1 OF 2
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
5	California Ring	13/13	@ 5', Dark brown, clayey, sandy SILT with coarse grained sediment, dense, semi moist, firm	8.6	113.0	Cons
10	Bulk Sample, California Ring	17/22	@ 10', Light yellow-brown, sandy SILT with caliche (stringers) and coarser grained sediment, some rock fragments, semi moist, dense, firm	8.1	117.9	
15	California Ring	17/29	@ 15', Same as 10' but darker brown and changes to silty SAND	11.6	111.5	Cons
20	Bulk Sample, California Ring	12/15	@ 20', Brown orange, silty CLAY with coarser sediments and caliche, moist, stiff, firm	15.7	111.2	
25	California Ring	7/11	@ 25', Olive-gray and brown-orange, silty CLAY, firm, stiff, moist, hydrated siltstone (Puente Formation?)	21.2	106.1	Cons

LEGEND

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

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

PLATE A-23

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar
W.O. NO. 5718A
DRILLING COMPANY Choice
DATE STARTED: 6-23-15
BORING NO. B-3-15
TYPE OF DRILL RIG LAR
LOGGED BY GCE
SHEET 2 OF 2
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
	Bulk Sample / California Ring	9/11	@ 30', Olive-gray and brown-orange, silty CLAY, firm, stiff, very moist, caliche, hydrated siltstone (Puente Formation?)	22.0	104.9	
35	California Ring	8/10	@ 35', Blue gray, unoxidized, clean, silty CLAY, very moist, dense, firm	22.9	104.1	Cons
40	California Ring	6/7	@ 40', Blue gray, unoxidized, clean, silty CLAY, very moist, dense, firm	23.3	103.7	
45	California Ring	7/11	@ 45', Yellow-red-brown, silty CLAY/clayey SILT with ____________ and shale fragments?, hydrated (Tm) Puente Formation	26.4	97.7	Cons
50			@ 50', Blue gray, medium to fine grained, silty SANDSTONE, dense, semi hard, moist TD @ 50' Groundwater @ 33'			
55	California Ring	30/40		25.8	103.6	

LEGEND

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

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

PLATE A-24

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

GEOTECHNICAL BORING LOG

PROJECT NAME Diamond Bar
W.O. NO. 5718A
DRILLING COMPANY Choice
DATE STARTED: 7-2-15
BORING NO. B-8-15
TYPE OF DRILL RIG LAR
LOGGED BY GCE
SHEET 1 OF 1
DRILLING METHOD Hollow Stem
HAMMER WEIGHT (LBS) 140
GROUND ELEVATION (FT)
DIAMETER OF HOLE 8
DROP (IN) 30
GW ELEVATION
BORING LOCATION:

DEPTH (FT)	SAMPLE TYPE	BLOWS/ 6 IN.	GEOTECHNICAL DESCRIPTION	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	OTHER TESTS
			0-20', Qal			
5	California Ring	10/15	@ 5', Brown, sandy SILT with coarser grained sediment, caliche, dry, dense, some roots	9.5	95.6	Cons
10	California Ring	16/30	@ 10', Brown, sandy SILT with coarser grained sediment, caliche, dry, dense	9.3	117.1	Cons
15	California Ring	21/50	@ 15', Brown, sandy SILT with coarser grained sediment, caliche, dry, dense	9.8	120.6	
20	California Ring	50/5	**20-TD', BEDROCK: (Tp)** Light yellow-white-orange-brown, fine grained SANDSTONE, semi hard, dense, dry	8.0	99.3	
			TD @ 20' No groundwater			
25						

LEGEND

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

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

PLATE A-30

GeoSoils Consultants, Inc.
GEOTECHNICAL * GEOLOGIC * ENVIRONMENTAL

TABLE II

LOG OF TEST PITS

Excavation Equipment 931 B Trackhoe

Test Pit No.	Depth (ft.)	Description
5-9-91		
T-1	0.0- 3.0	Soil: Lean Clay, dark brown, moist, firm, porous, roots and rootlets.
	3.0- 9.0	Puente Formation (Tp): Interbedded Siltstone and Sandstone, light to orange brown, moist, slightly hard, highly weathered, roots and rootlets, porous. At 4.0 ft., moderately weathered, soil clasts, rootlets. At. 5.0 ft., Fine-grained Sandstone, light brown, dry, moderately hard, slightly weathered. At 7.0 ft., Siltstone, dark brown, slightly damp, moderately hard, caliche stringers. At 8.0 ft., Bedding Attitude: N10W, 18NE Bearing of Pit: N15W
T-2	0.0- 2.0	Soil: Clayey Sand, brown, slightly damp, soft, very porous, rootlets.
	2.0-16.0	Landslide (Qls): Siltstone and Sandstone fragments, light brown, dry, soft, slightly dense, highly fractured, slightly porous, rootlets. At 15.0 ft., Attitude of Shear: N18E, 51NW. At 16.0 ft., Attitude of Shear: N25E, 31NW.
	16.0-18.0	Puente Formation (Tp): Interbedded Sandstone and Siltstone, light brown, slightly damp, moderately hard. At 16.5 ft., Approximate Bedding Attitude: N85E, 16SE. At 17.0 ft., Bedding Attitude: N80W, 15SW. Bearing of Pit: N60E.

lt-cp-0001

TABLE I

SUMMARY OF LABORATORY TEST DATA

BORING/PIT NO.	DEPTH (ft)	SOIL DESCRIPTION	GROUP SYMBOL, Unified Soil Classification System	MAXIMUM DRY DENSITY: Maximum Density (pcf)	MAXIMUM DRY DENSITY: Optimum Moisture (%)		GRAIN SIZE ANALYSIS: %	GRAIN SIZE ANALYSIS: % SAND	GRAIN SIZE ANALYSIS: % Silt	GRAIN SIZE ANALYSIS: % Clay	EXPANSION INDEX, UBC 29-2	DIRECT SHEAR: Cohesion (psf)	DIRECT SHEAR: Ø, (Degrees)	DIRECT SHEAR: Test Conditions	OTHER TESTS
-1	3	DARK BROWN LEAN CLAY (CL)		117.0	13.5			35	24	41	78	210	27	RS	%SWELL=5.8%
-2	7	BROWN CLAYEY SAND (SC)		119.5	11.5			57	19	24	7	150	23	RS	%SWELL=0.2%
-20	2	LIGHT TAN CLAYEY SILT (Ml) [illegible]		107.5	17.5			39	34	27	22	480	26	RS	%SWELL=0.7%

TEST CONDITIONS: R — Remolded, S — Saturated. U — Undisturbed N — Natural Moisture

TABLE II

LOG OF TEST PITS

Excavation Equipment 931 B Trackhoe

Test Pit No.	Depth (ft.)	Description
T-3	0.0- 9.0	Alluvium (Qal): Lean Clay, dark brown, damp, stiff, porous, rootlets. At 4.0 ft. slightly damp, very stiff, porous, roots.
	9.0-10.0	Puente Formation (Tp): Fine-grained Sandstone, light brown, dry, moderately hard, slightly to moderately weathered. Bearing of Pit: N75W.
T-4	0.0- 2.0	Soil: Clayey Sand, brown, slightly damp, slightly dense, very porous, abundant rootlets.
	2.0-13.0	Puente Formation (Tp): Interbedded Siltstone and Sandstone, light to dark brown, dry, slightly to moderately hard, highly fractured, porous zones, rootlets, moderately weathered. At 10.0 ft., Attitude of shear: N68E, 39NW. At 11.0 ft., Moderately hard, slightly fractured. Bedding Attitude: N28E, 58NW. At 11.5 ft., Bedding Attitude: N35E, 45NW. Bearing of Pit: N75W.
T-5	0.0- 1.0	Soil: Clayey Sand, dark brown, very moist, slightly dense, roots.
	1.0- 8.0	Puente Formation (Tp): Interbedded Siltstone and Sandstone, orangish brown to brown, moist to very moist, slightly to moderately hard, highly weathered, porous, rootlets. At 2.0 ft., moderately weathered, slightly porous.

TABLE II

LOG OF TEST PITS

Excavation Equipment 931 B Trackhoe

Test Pit No.	Depth (ft.)	Description
T-5 (con't)		At 4.0 ft., slightly weathered, few rootlets. At 6.5 ft., Bedding Attitude: N32W, 13SW. At 7.0 ft., slightly damp, Bedding Attitude: N40W, 18SW.
		Bearing of Pit: N35W.
T-6	0.0- 2.0	Soil: Clayey Sand, brown to dark brown, damp, loose to slightly dense, very porous, abundant roots and rootlets, siltstone and sandstone fragments.
	2.0- 7.0	Puente Formation (Tp): Interbedded Siltstone and Sandstone, light brown to brown, slightly damp, moderately hard, few rootlets, caliche stringers in siltstone, highly weathered. At 3.0 ft., moderately weathered to 4.0 ft. At 6.0 ft., Bedding Attitude: N15E, 11NW. At 6.5 ft., Bedding Attitude: N43E, 8NW.
		Bearing of Pit: N25W.
T-7	0.0- 4.5	Colluvium (Qcol): Lean Clay, dark brown, slightly moist, stiff, porous, roots and rootlets.
	4.5 -11.0	Landslide (Qls): Interbedded Siltstone and Sandstone, light brown to buff, dry, moderately hard, abundant caliche, fractured, moderately to highly weathered, roots and rootlets, porous. At 5.5 ft., moderately weathered, fractured, porous. At 8.0 ft., highly fractured, caliche stringers, Disturbed Approximate Bedding Attitude: N70W, 12NE.
		Bearing of Pit: N40W

lt-cp-0001

TABLE II

LOG OF TEST PITS

Excavation Equipment 931 B Trackhoe

Test Pit No.	Depth (ft.)	Description
5-10-91 T-8	0.0- 6.5	Colluvium (Qcol): Lean Clay, dark brown to black, slightly damp, stiff to very stiff with depth, porous, rootlets.
	6.5-13.0	Landslide (Qls): Clayey Sand, light brown, slightly damp, moderately dense to dense, mottled, porous siltstone and sandstone fragments, rootlets decreasing with depth, fractured. At 12.0 ft., porosity decreases, few occasional rootlets. Bearing of Pit: N10W.
T-9	0.0- 2.0	Soil: Lean Clay, dark brown to black, slightly moist, firm, porous, rootlets.
	2.0-12.5	Landslide (Qls): Interbedded Siltstone and Sandstone, light brown, moist, soft to slightly hard, minor porosity, mottled, highly weathered, rootlets. At 5.0 ft., Siltstone, dark gray, slightly damp, slightly hard, fractured, abundant caliche, minor rootlets, moderately weathered. At 7.0 ft., Sandstone, light brown, dry to slightly damp, slightly to moderately hard, fine- to medium-grained, massive, few rootlets. At 8.0 ft., Siltstone, brown to dark gray, slightly damp, slightly to moderately hard, fractured. Disturbed Approximate Bedding Attitude: N75W, 10SW. At 10.0 ft., highly fractured with voids. Bearing of Pit: N30W.

TABLE II

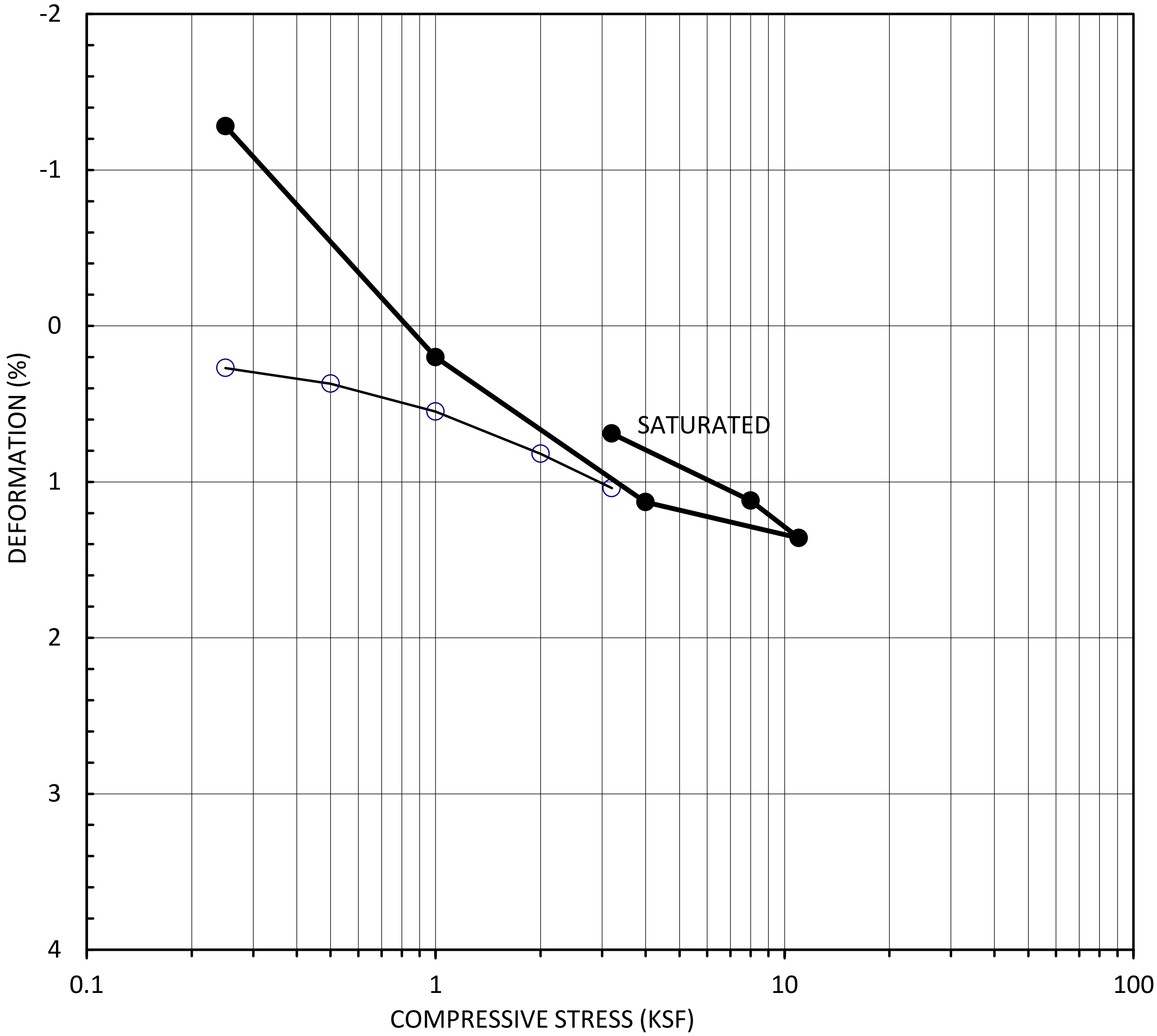
LOG OF TEST PITS

Excavation Equipment 931 B Trackhoe

Test Pit No.	Depth (ft.)	Description
T-10	0.0-13.5	Alluvium (Qal): Lean Clay to Clayey Sand, dark brown, moist, soft, porous, abundant roots. At 7.0 ft., Clayey Sand, brown, moist, soft, porous, rootlets.
	13.5-14.0	Puente Formation (Tp): Fine- to Medium-grained Sandstone, buff, slightly damp, moderately hard, moderately weathered.
		Bearing of Pit: N30W.
T-11	0.0- 8.0	Alluvium (Qal): Clayey Sand, dark brown, slightly moist, soft, porous, abundant roots, siltstone and sandstone fragments. At 5.0 ft., Clayey Sand, brown, slightly moist, soft to slightly dense, porous, rootlets, caliche stringers.
	8.0- 9.0	Puente Formation (Tp): Medium-Grained Sandstone, tan to buff, slightly damp, moderately hard, moderately weathered.
		Bearing of Pit: N50W.
T-12	0.0- 2.0	Soil: Clayey Sand, dark brown to black, moist, loose, porous, roots and rootlets, siltstone and sandstone fragments.
	2.0- 7.0	Puente Formation (Tp): Interbedded Siltstone and Fine- to Medium-grained Sandstone, tan to light orangish brown, dry to slightly damp, moderately hard, occasional scattered rootlets, fish scales in siltstone. At 6.0 ft., Bedding Attitude: N85E, 24SE.
		Bearing of Pit: N10W.

APPENDIX C

Laboratory Testing Results by Geosoils Consultants, Inc. and LGC Valley, Inc.



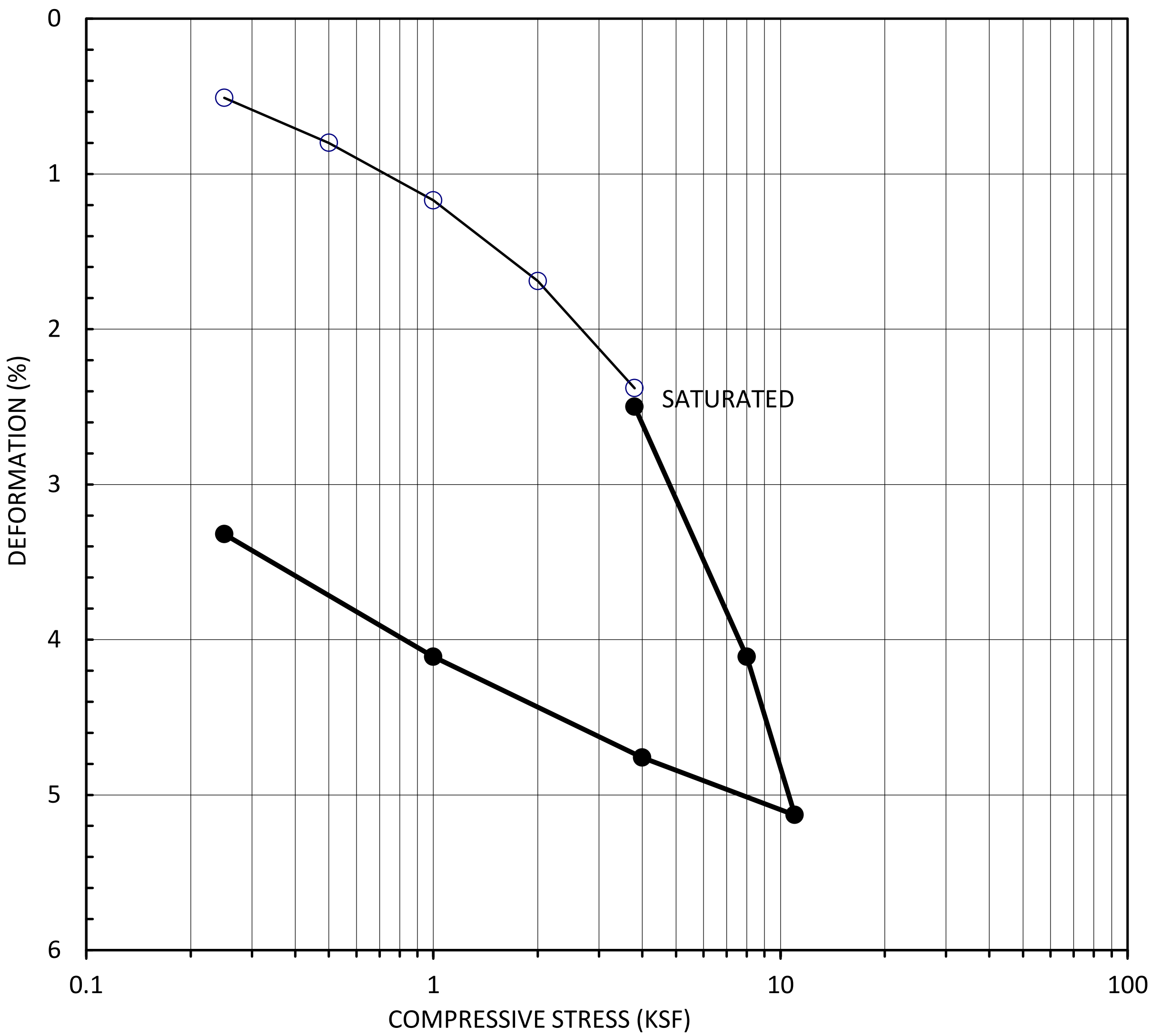
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-1	R-3	15.0	CL	10.1	126.4	0.333

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Job No.: 203008-01
EGLAB Project No.: 20-059-007

EGLAB, INC.

CONSOLIDATION

05/20 (ASTM D2435) Figure

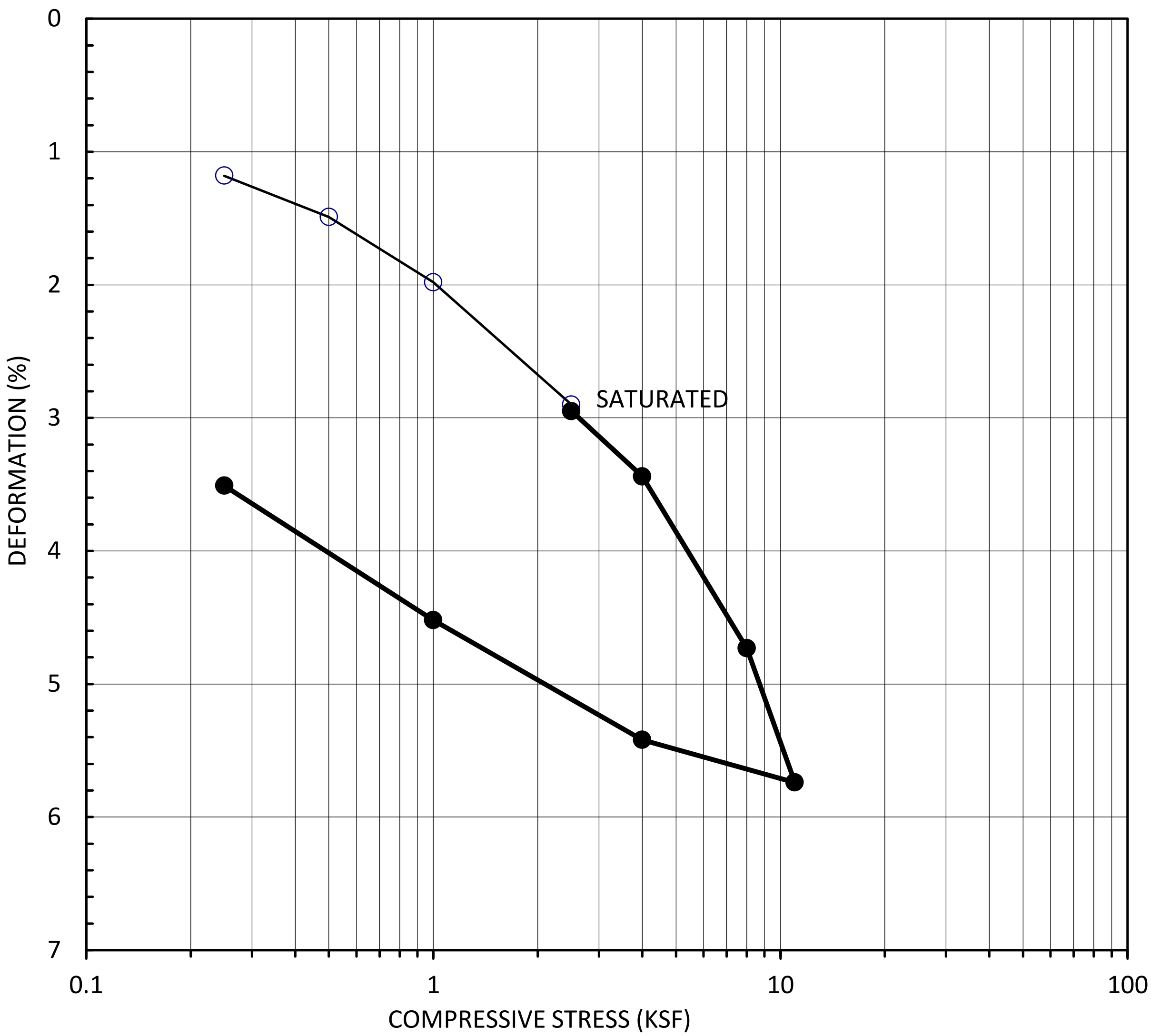


Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-1	R-4	20.0	CL	16.1	114.9	0.466

EGLAB, INC.	Project Name: Newbridge - Diamond Bar Client: LGC Valley, Inc. Job No.: 203008-01 EGLAB Project No.: 20-059-007

CONSOLIDATION

05/20 (ASTM D2435) Figure



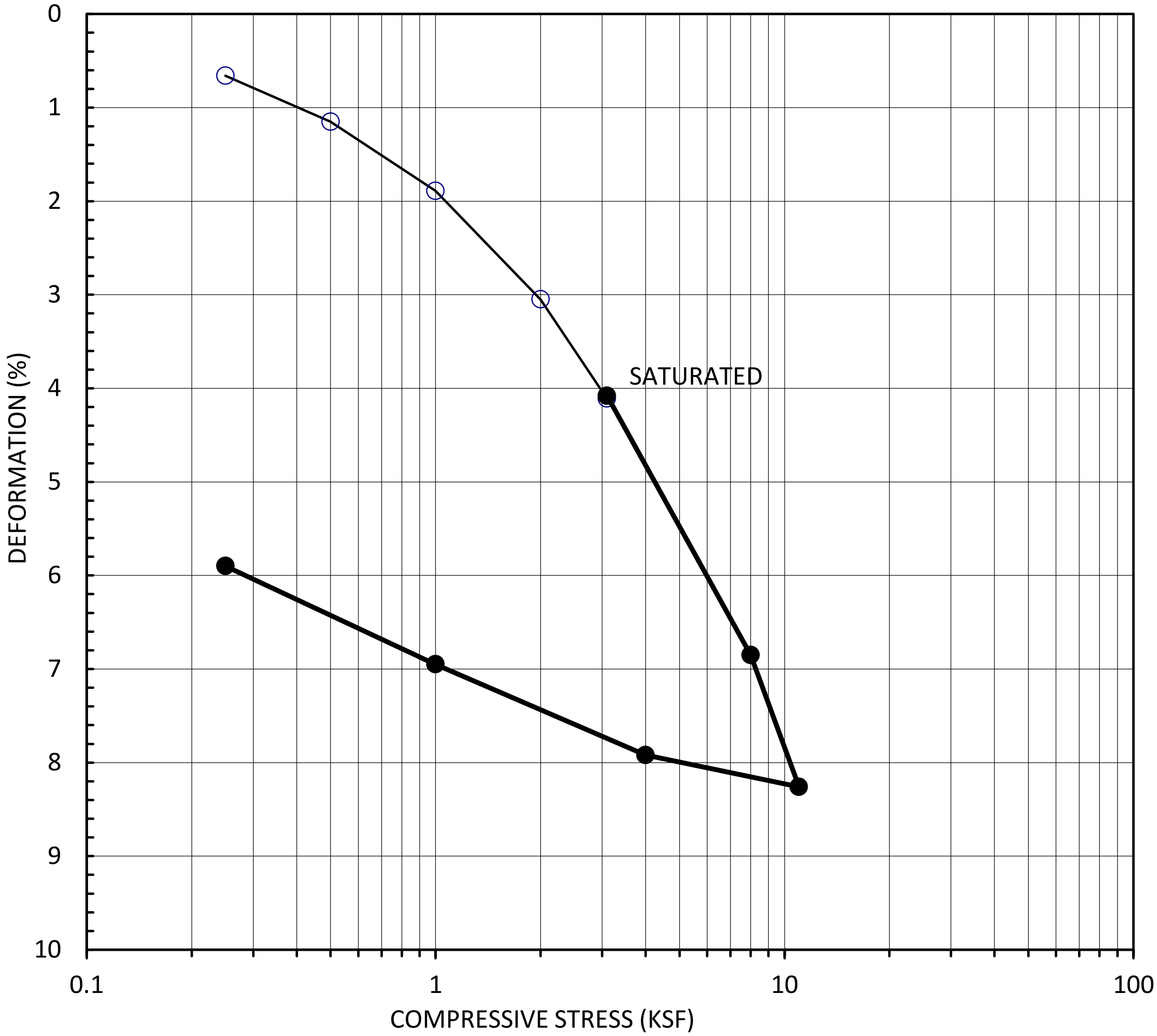
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-2	R-3	15.0	CL	18.1	113.1	0.490

Project Name:	Newbridge - Diamond Bar
Client:	LGC Valley, Inc.
Job No.:	203008-01
EGLAB Project No.:	20-059-007

EGLAB, INC.

CONSOLIDATION

05/20 (ASTM D2435) Figure

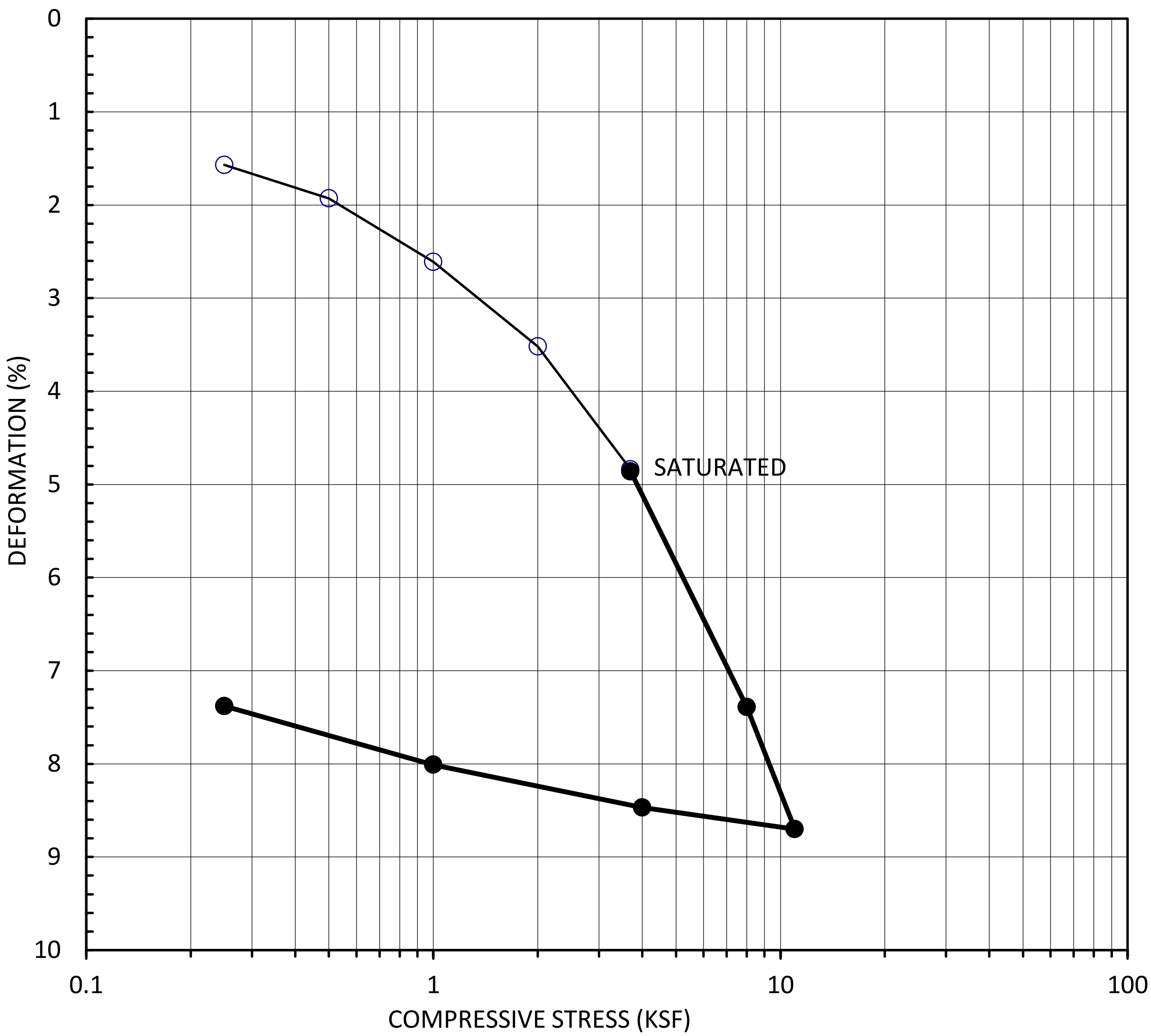


Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-2	R-4	20.0	CL	21.2	109.4	0.540

EGLAB, INC.	Project Name: Newbridge - Diamond Bar Client: LGC Valley, Inc. Job No.: 203008-01 EGLAB Project No.: 20-059-007

CONSOLIDATION

05/20 (ASTM D2435) Figure



Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-2	R-5	25.0	CL	21.1	109.8	0.534

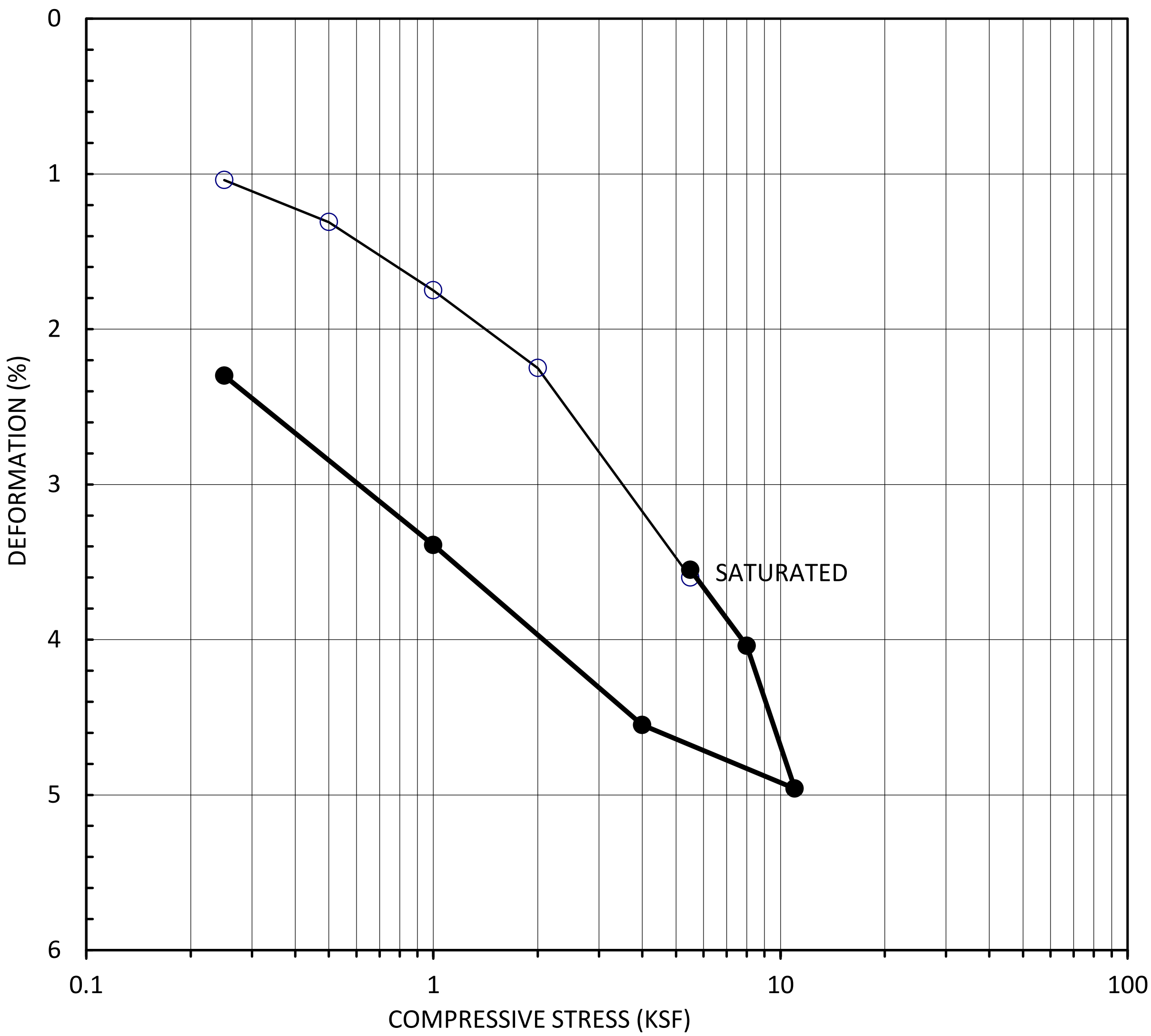
Project Name:
Newbridge - Diamond Bar

Client: LGC Valley, Inc.
Job No.: 203008-01
EGLAB Project No.: 20-059-007

EGLAB, INC.

CONSOLIDATION

05/20 (ASTM D2435) Figure



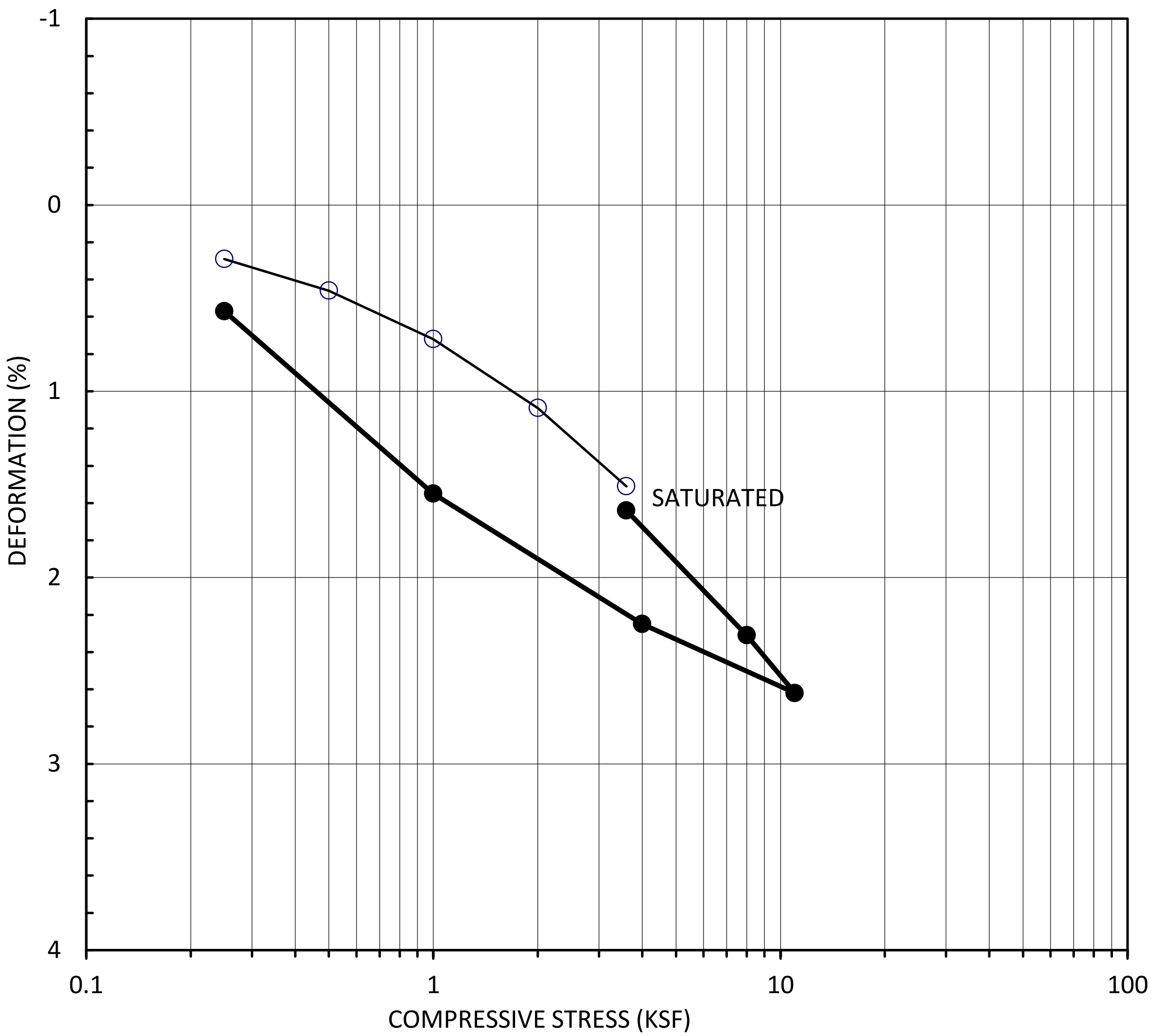
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-2	R-8	40.0	CL	20.6	111.2	0.515

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Job No.: 203008-01
EGLAB Project No.: 20-059-007

CONSOLIDATION

05/20 (ASTM D2435) Figure



Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-3	R-3	15.0	CL	8.5	124.1	0.358

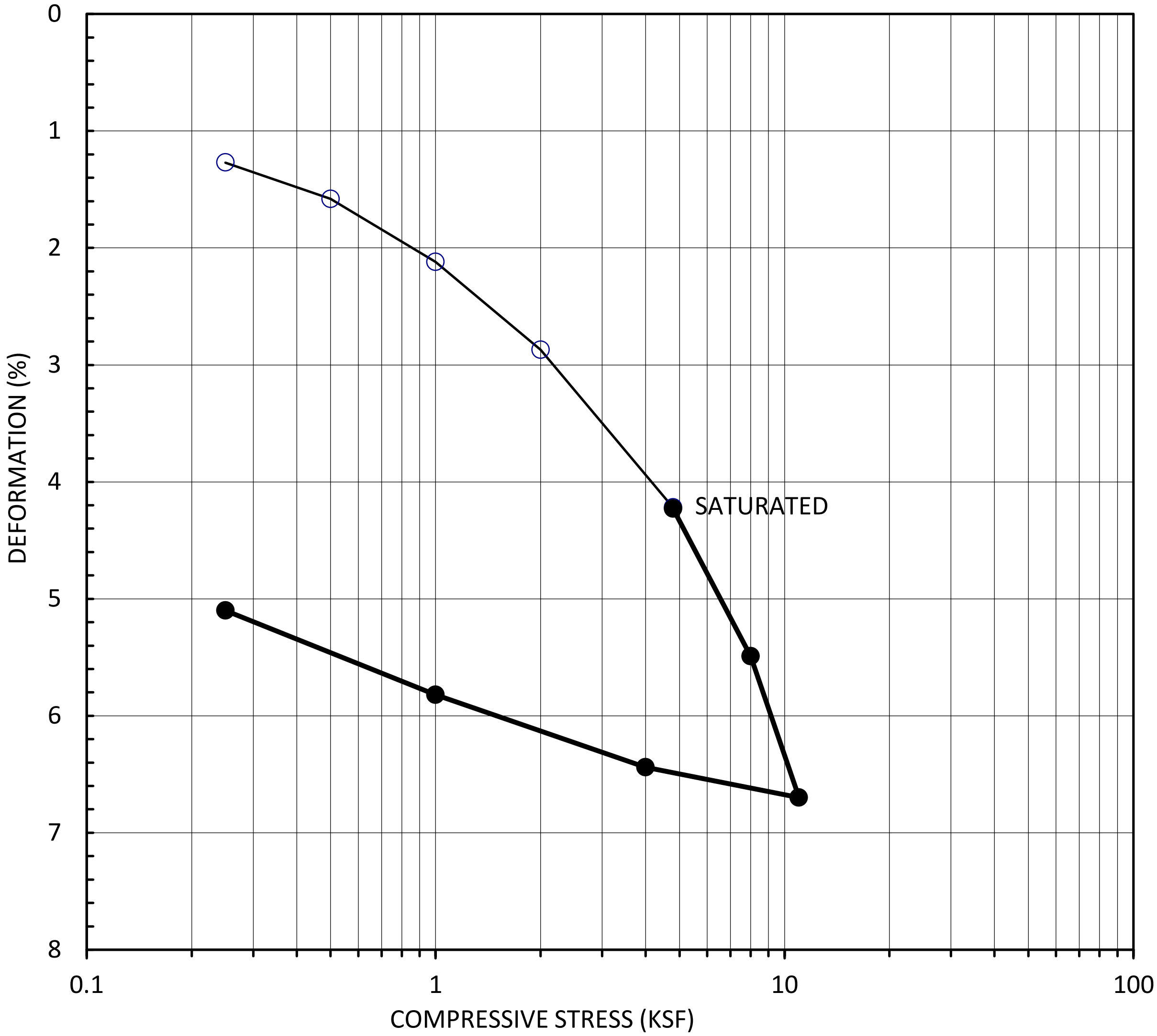
Project Name:
Newbridge - Diamond Bar

EGLAB, INC.

Client: LGC Valley, Inc.
Job No.: 203008-01
EGLAB Project No.: 20-059-007

CONSOLIDATION

05/20 (ASTM D2435) Figure

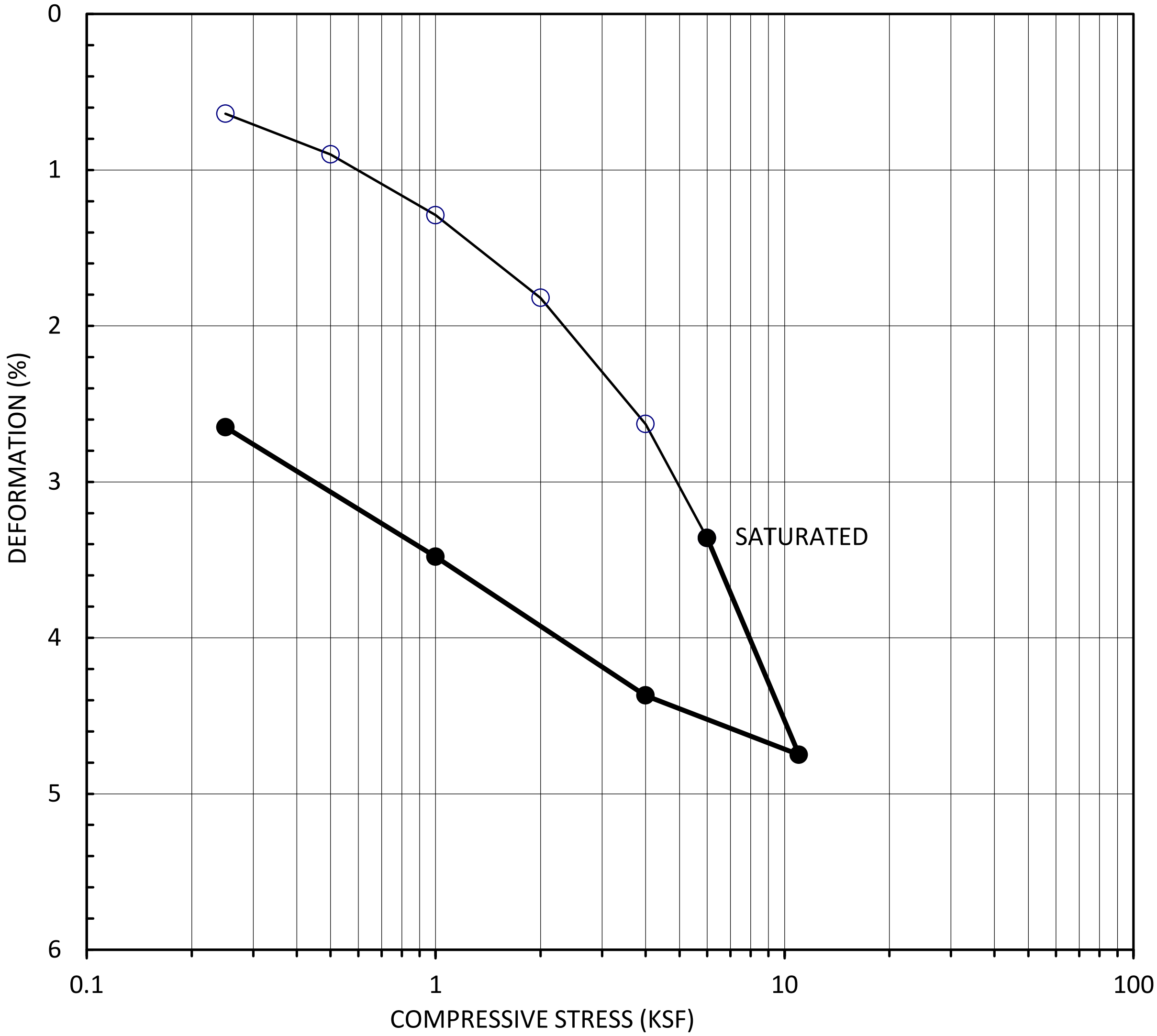


Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-3	R-5	25.0	CL	22.6	108.5	0.553

EGLAB, INC.	Project Name: Newbridge - Diamond Bar Client: LGC Valley, Inc. Job No.: 203008-01 EGLAB Project No.: 20-059-007

CONSOLIDATION

05/20 (ASTM D2435) Figure



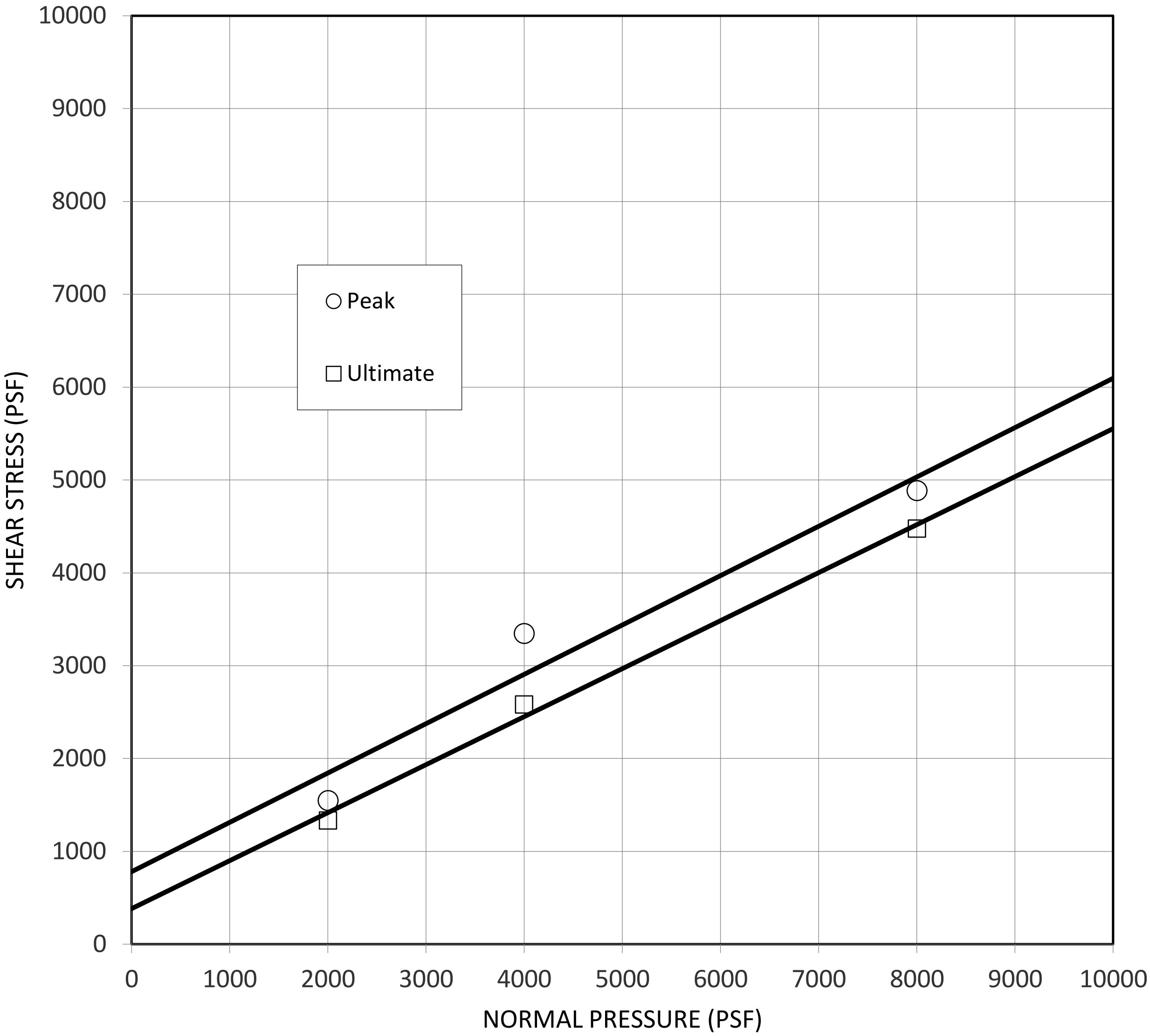
Symbol	Boring No.	Sample No.	Depth (Ft.)	Soil Type	Init. Moisture Content (%)	Init. Dry Density (PCF)	Init. Void Ratio
○	B-3	R-7	35.0	CL	19.7	113.7	0.482

Project Name:	Newbridge - Diamond Bar
Client:	LGC Valley, Inc.
Job No.:	203008-01
EGLAB Project No.:	20-059-007

EGLAB, INC.

CONSOLIDATION

05/20 (ASTM D2435) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-4	R-3	30.0	Ring	Bedrock	○	780	28
					□	384	27

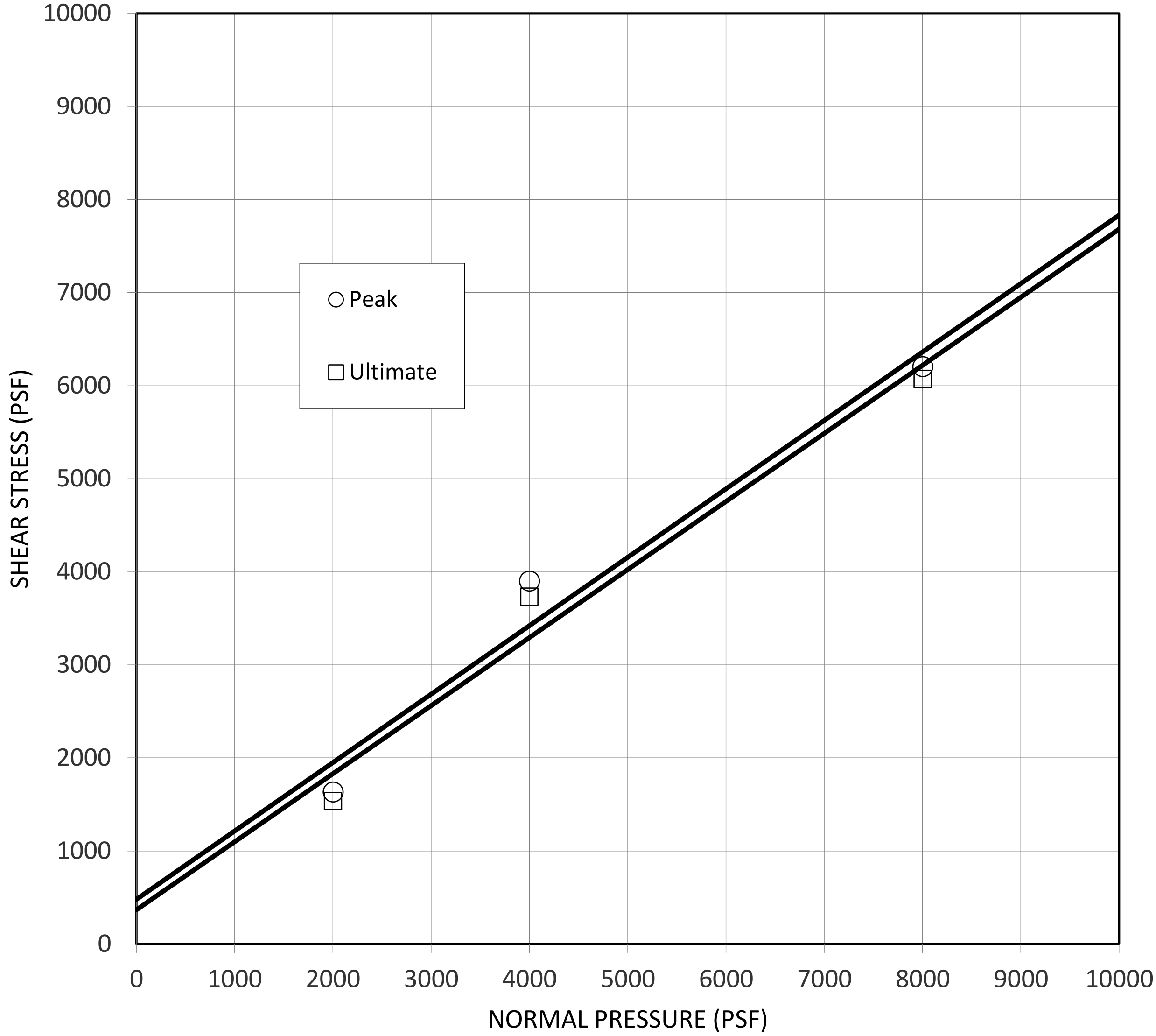
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
2000	23.8	28.6
4000	23.8	26.6
8000	23.8	25.5

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-4	R-4	40.0	Ring	Bedrock	○	480	36
					□	366	36

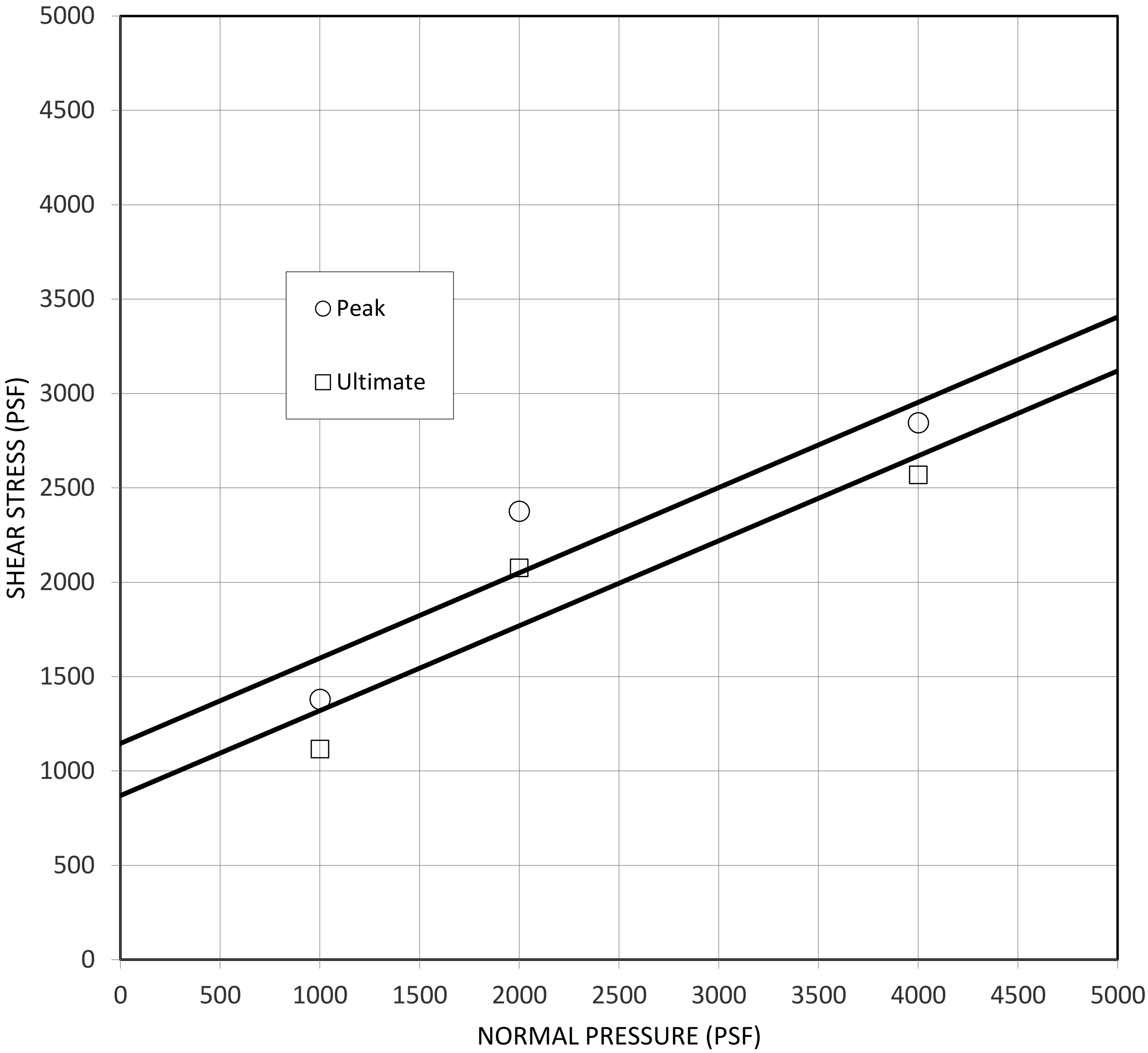
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
2000	29.0	39.9
4000	29.0	41.0
8000	29.0	41.9

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-5	R-2	10.0	Ring	CL	○	1146	24
					□	870	24

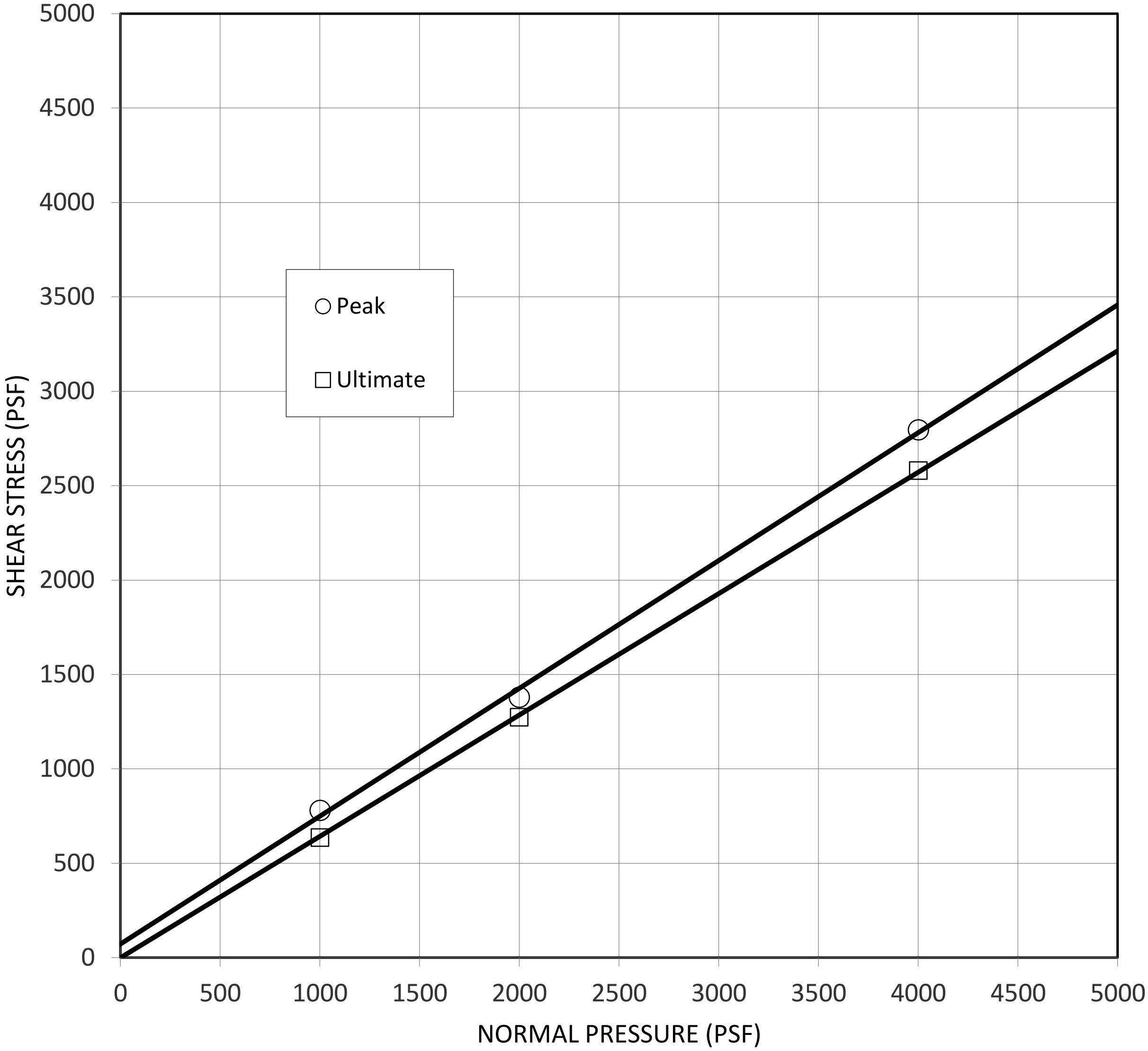
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
1000	16.8	25.9
2000	16.8	24.2
4000	16.8	22.6

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-5	R-3	15.0	Ring	SM	○	72	34
					□	0	33

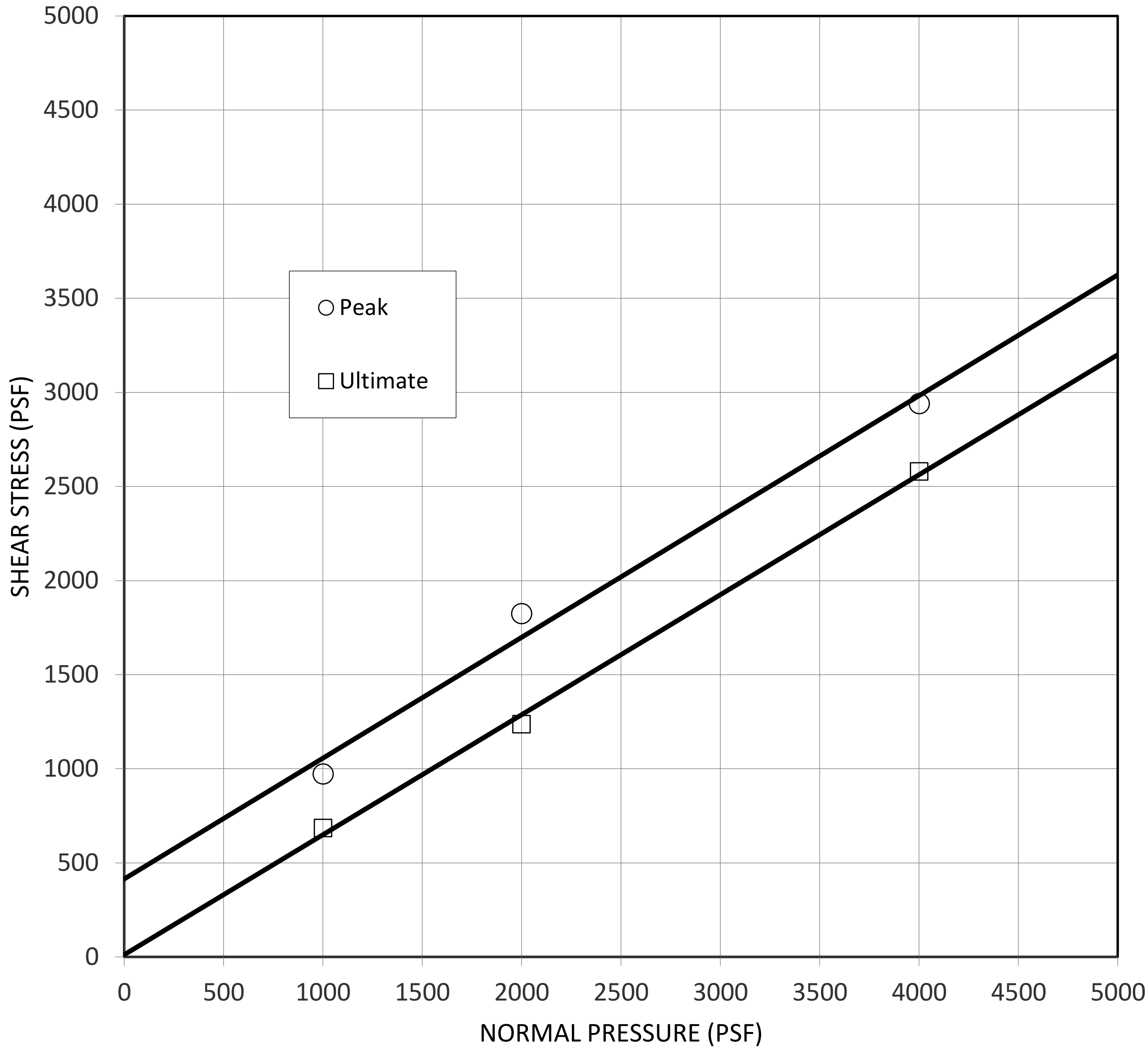
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
1000	6.2	21.6
2000	6.2	20.9
4000	6.2	20.3

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-5	R-4	20.0	Ring	SC/SM	○	414	33
					□	12	33

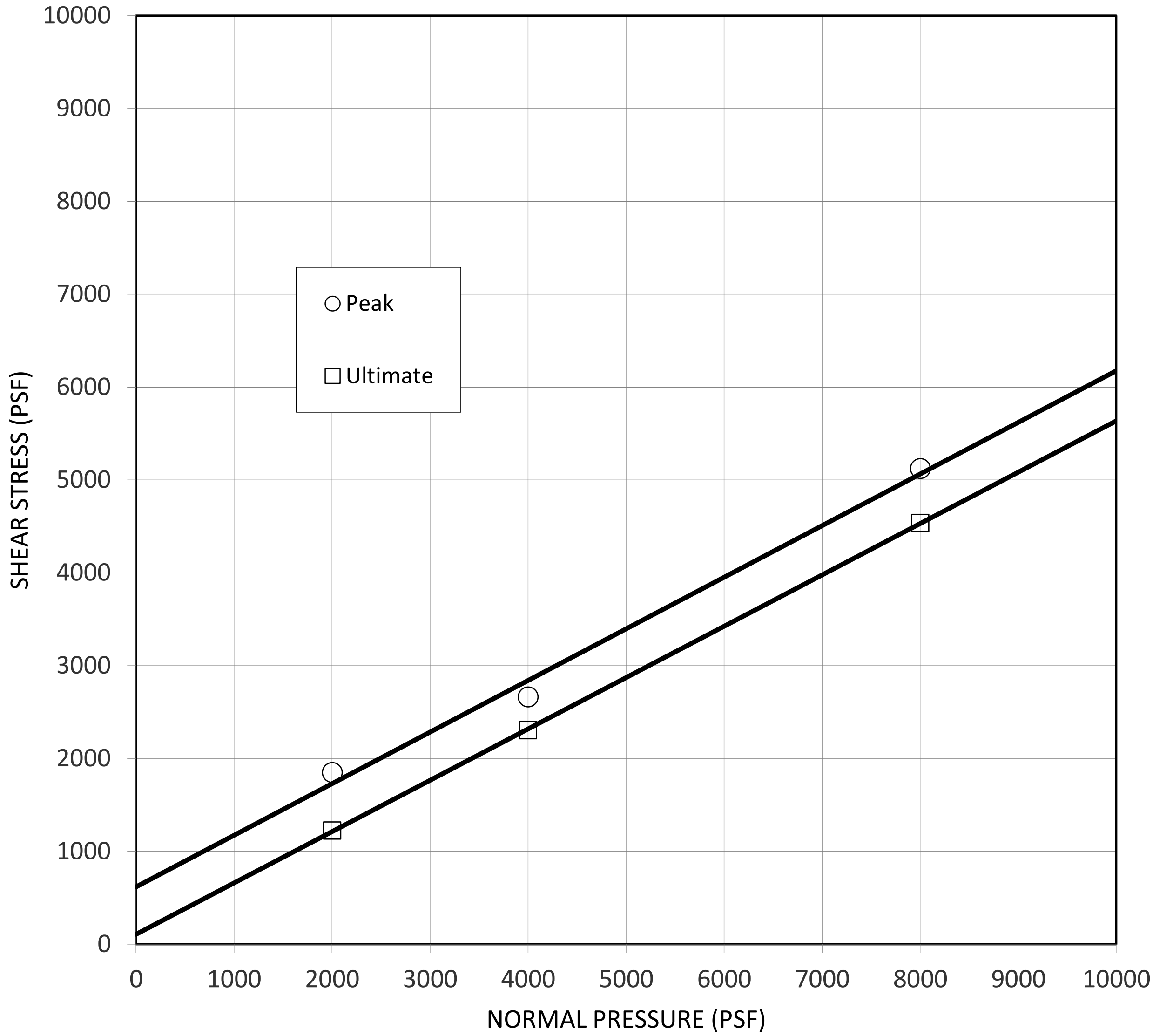
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
1000	9.5	20.5
2000	9.5	19.5
4000	9.5	18.2

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



Boring No.	Sample No.	Depth (ft)	Sample Type	Soil Type	Symbol	Cohesion (PSF)	Friction Angle
B-5	R-5	30.0	Ring	Bedrock	○	618	29
					□	108	29

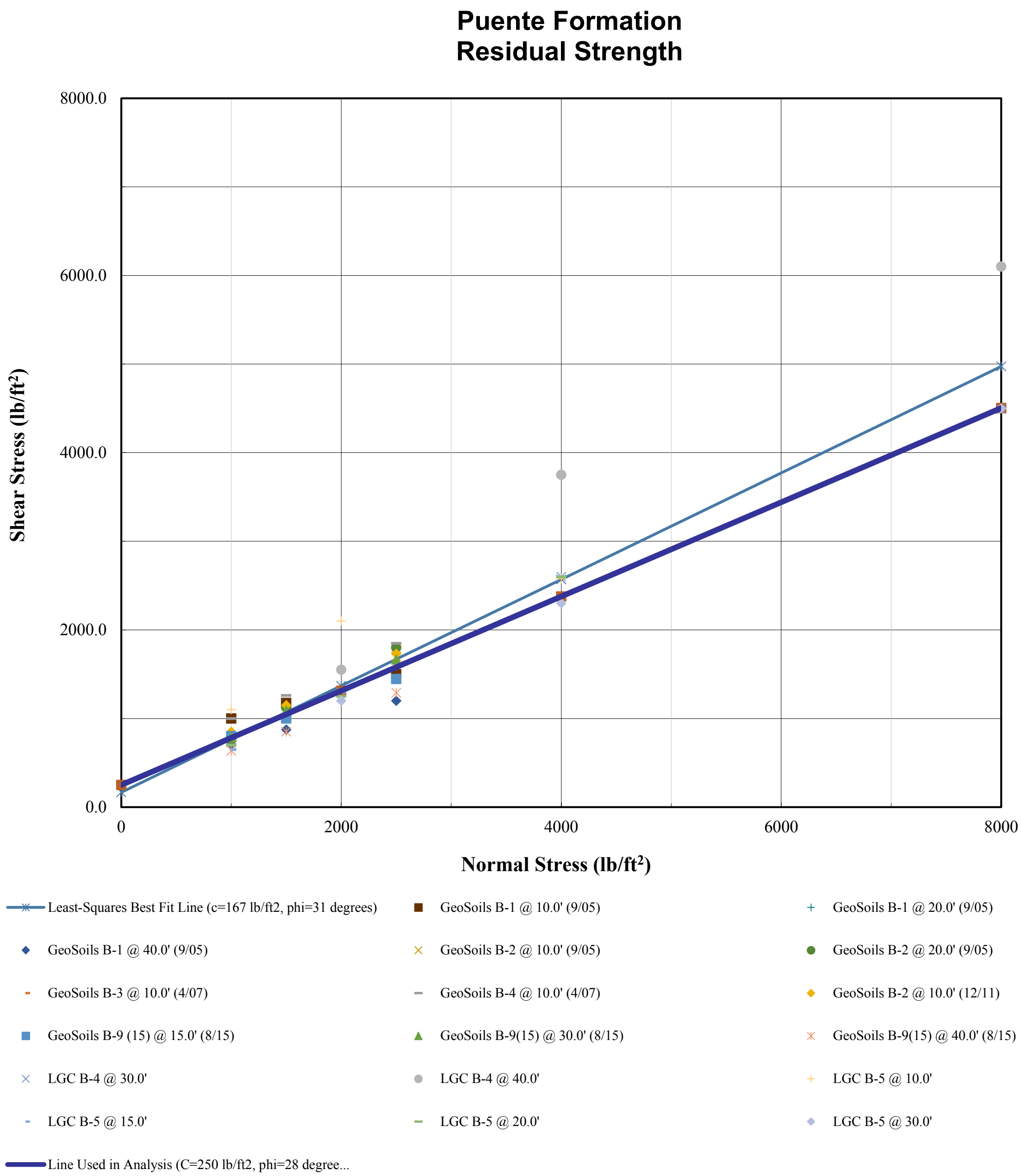
Normal Stress (psf)	Initial Moisture (%)	Final Moisture (%)
2000	22.2	29.4
4000	22.2	33.6
8000	22.2	28.3

EGLAB, INC.

Project Name:
Newbridge - Diamond Bar
Client: LGC Valley, Inc.
Project No.: 203008-01
EGLAB Project No.: 20-059-007

DIRECT SHEAR

05/20 (ASTM D3080) Figure



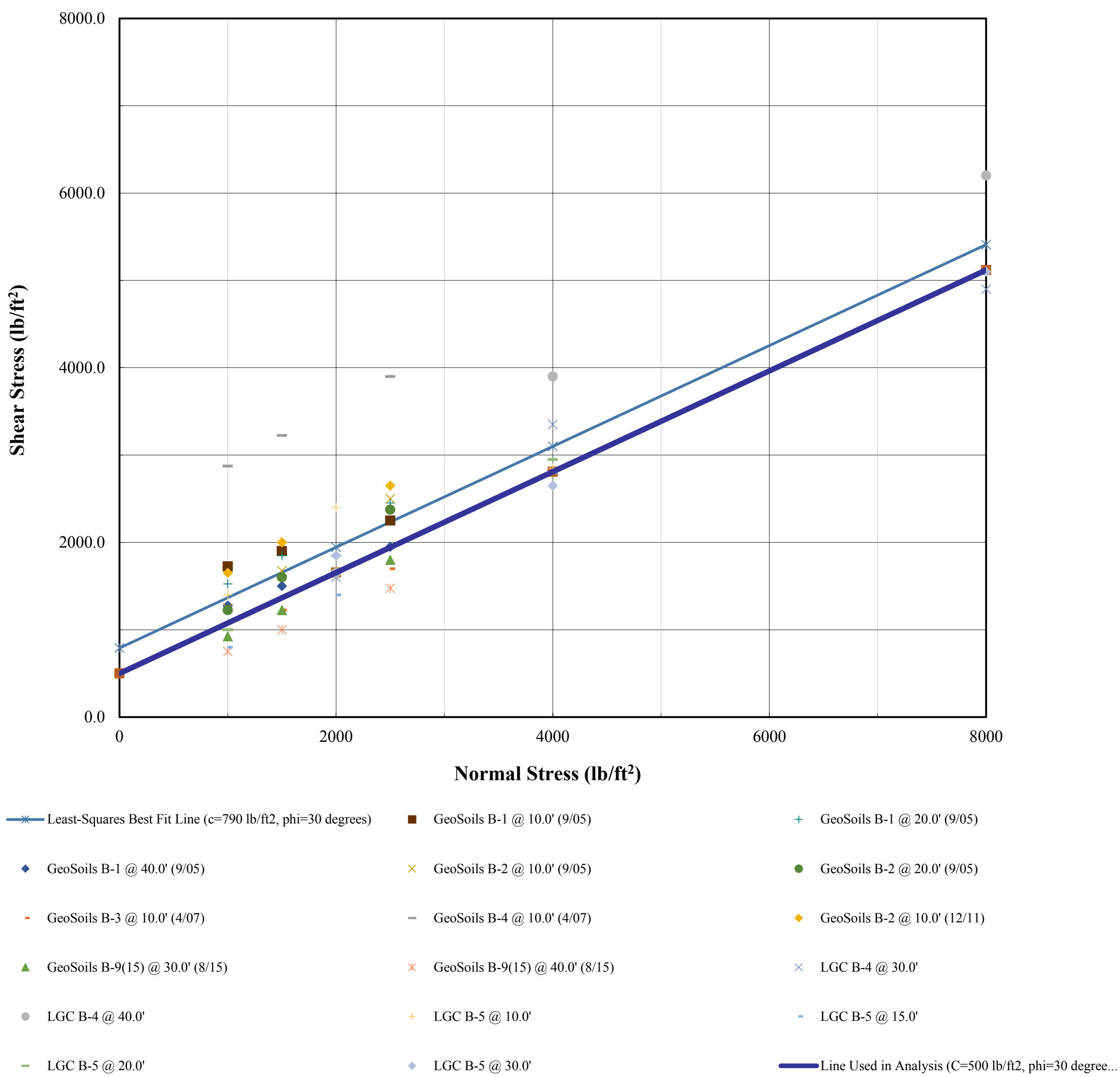
DIRECT SHEAR TEST

Tract 54081, City of Diamond Bar, CA

Project No: 203008-01
Drafted By: ACR
Date : 6/8/2020
Figure No :

LGC

Puente Formation
Peak Strength



DIRECT SHEAR TEST
Tract 54081, City of Diamond Bar, CA

Project No: 203008-01
Drafted By: ACR
Date : 6/8/2020
Figure No :

LGC

RAD Development
W.O.: 5718

Date: 9/05

Sample: B-1 @ 10.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-1

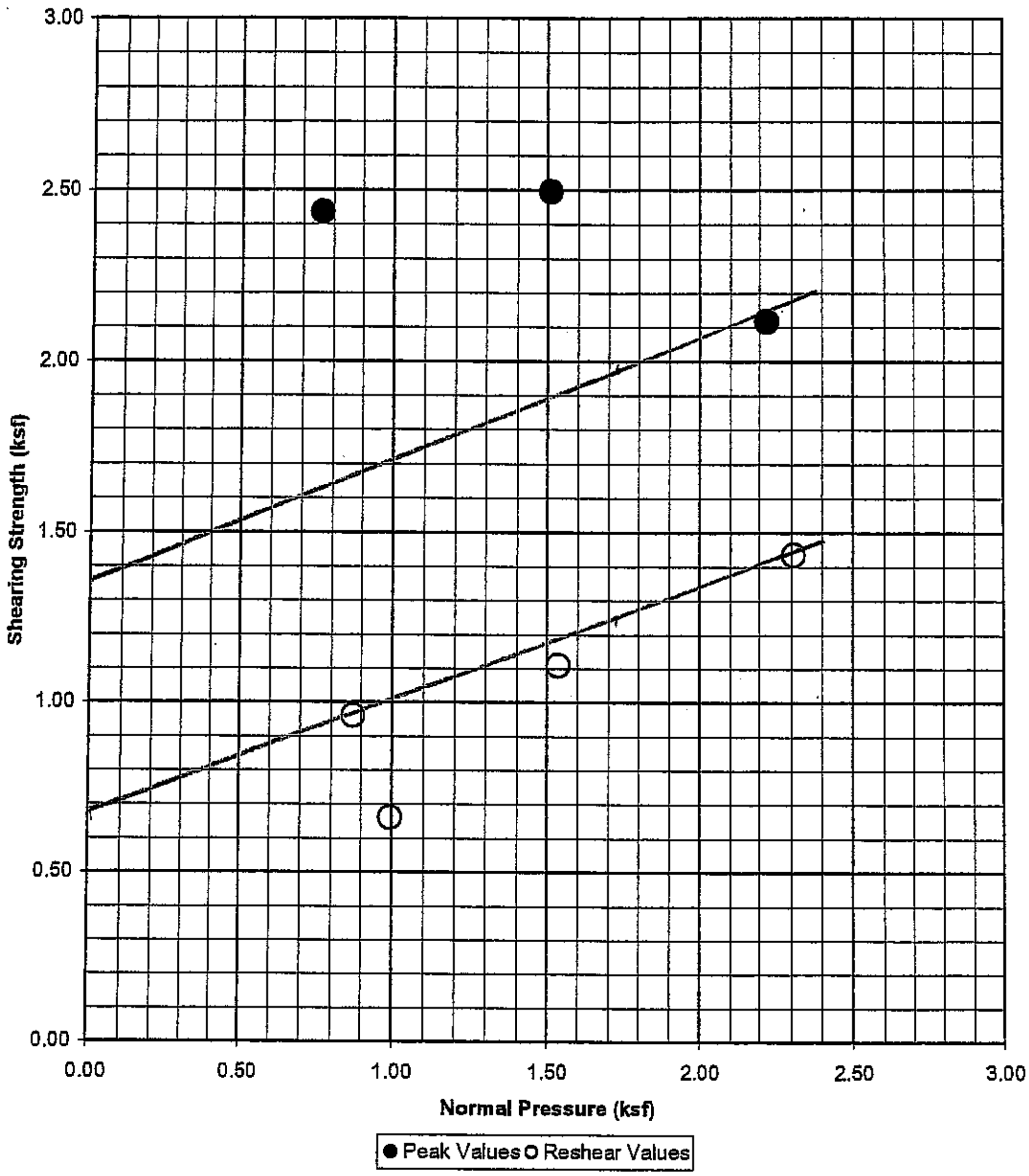
Shear Test Diagram

Peak

C(psf): **1360** Phi (degrees): **20.5**

Reshear

C(psf): **690** Phi (degrees): **19.0**



Undisturbed **Natural** Shear-Saturated

Orange-brown, SILTSTONE / CLAYSTONE / SANDSTONE layers.

38.8% Saturated Moisture Content

RAD Development
W.O.: 5718

Date: 9/05

Sample: B-1 @ 20.0'

PLATE SH-2

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

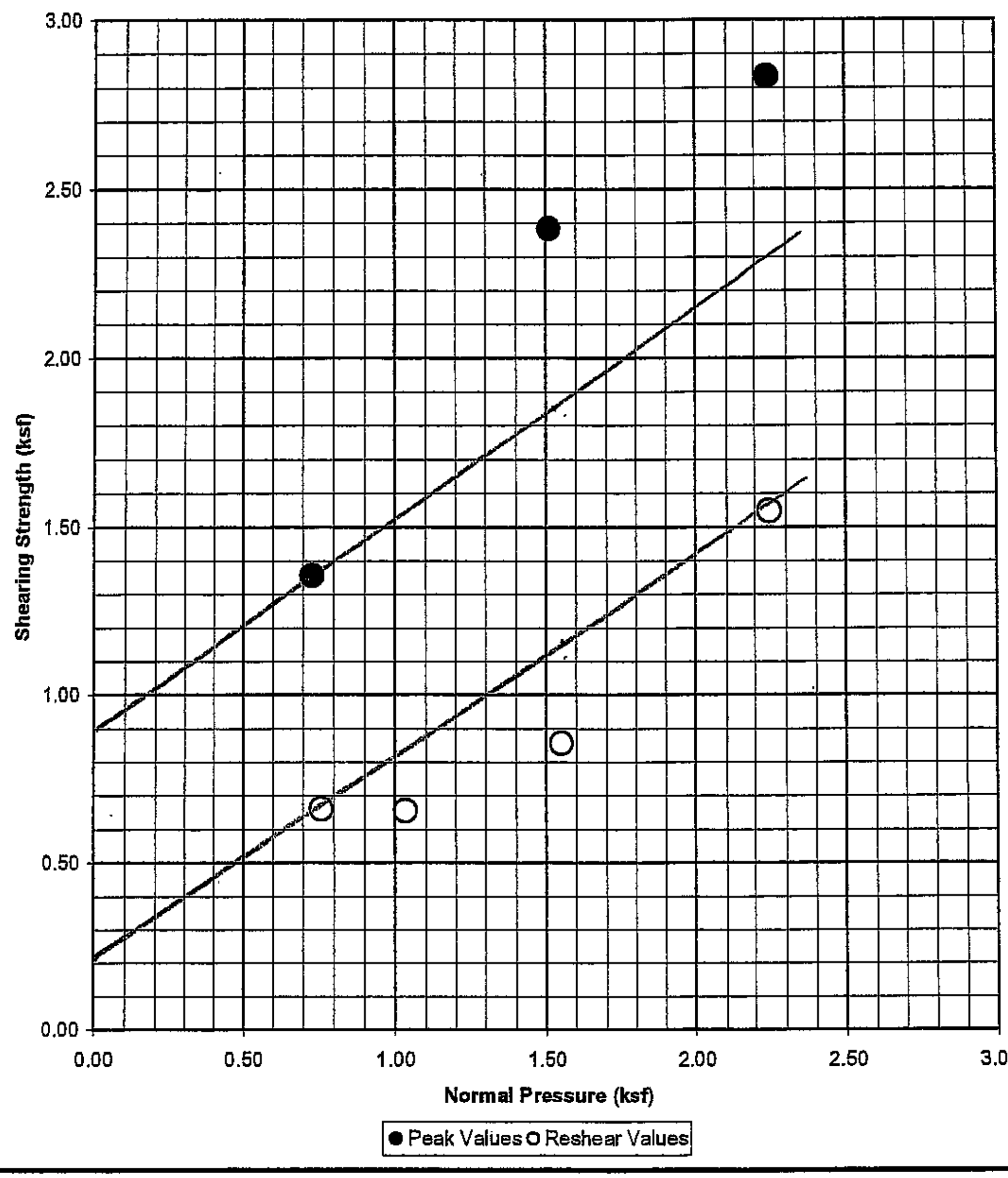
Shear Test Diagram

Peak

C(psf): **900** Phi (degrees): **33.5**

Reshear

C(psf): **220** Phi (degrees): **32.0**



Undisturbed **Natural** Shear-Saturated

Light orange-brown, SANDSTONE / SILTSTONE / CLAYSTONE layers.

27.6% Saturated Moisture Content

RAD Development
W.O.: 5718

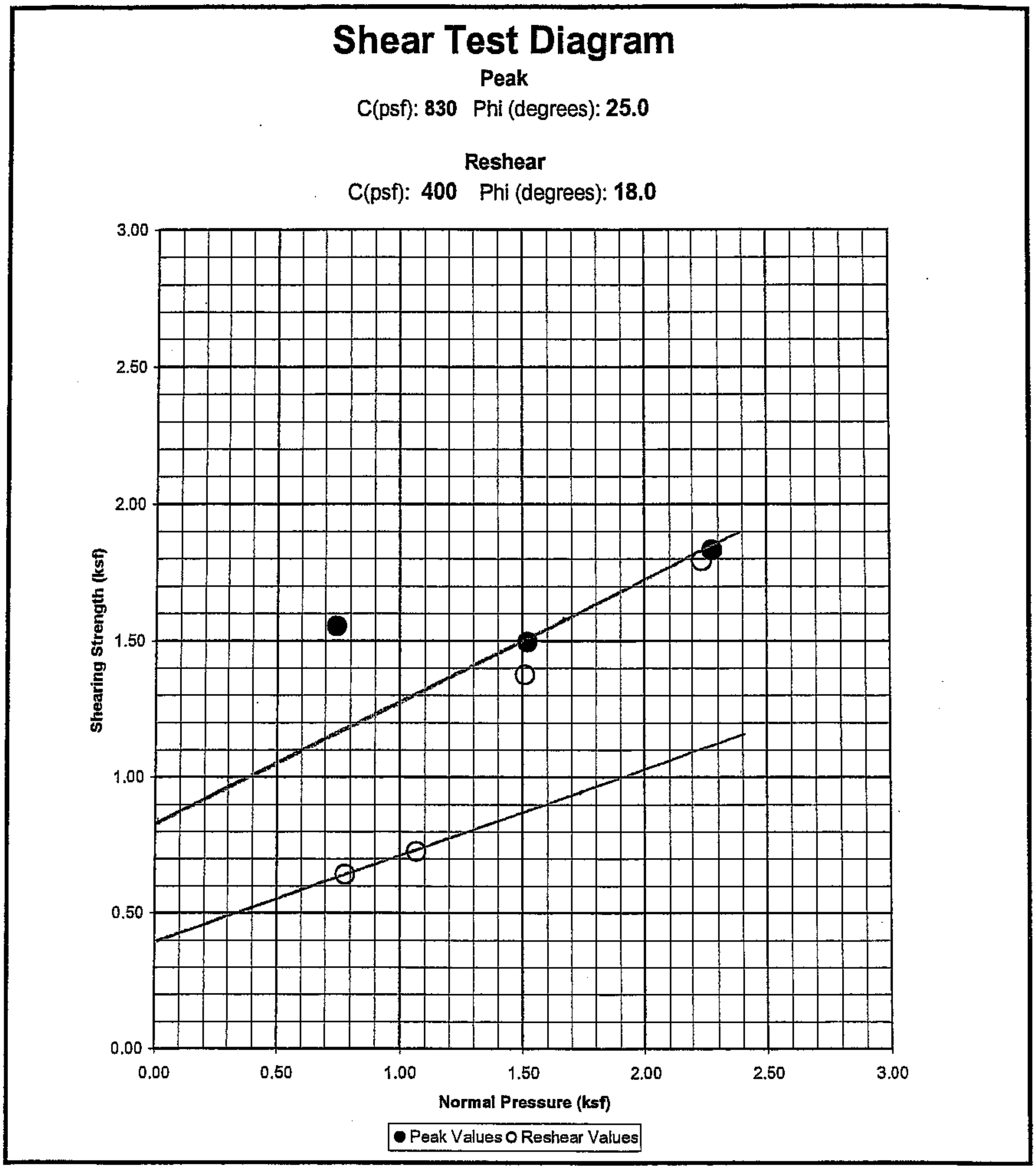
Date: 9/05

Sample: B-1 @ 40.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-3



Undisturbed **Natural** Shear-Saturated

Gray-brown, interbedded SILSTONE / SANDSTONE.

21.0% Saturated Moisture Content

RAD Development
W.O.: 5718

Date: 9/05

Sample: B-2 @ 10.0'

GeoSoils Consultants, Inc.

PLATE SH-4

Geotechnical Engineering * Engineering Geology

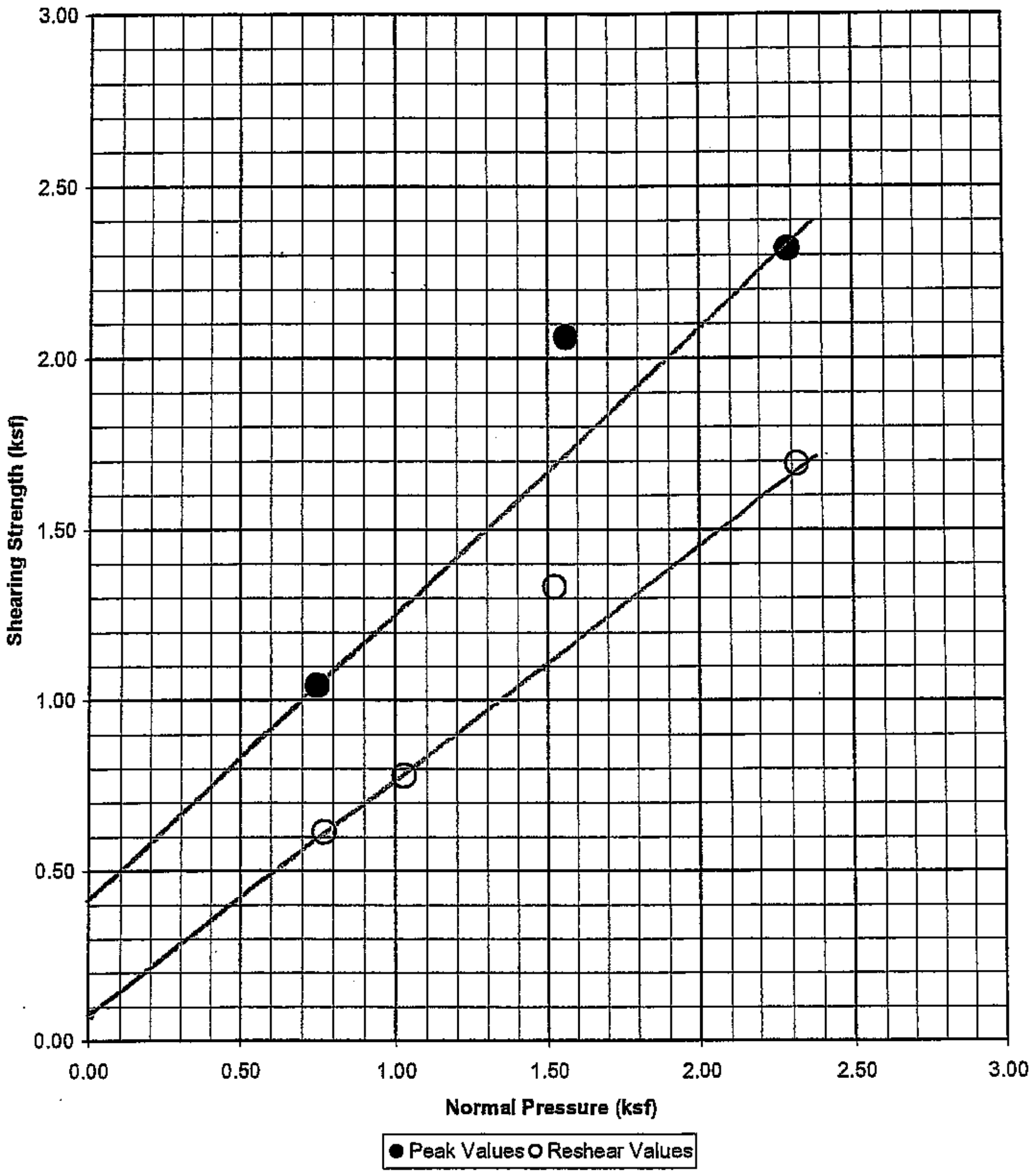
Shear Test Diagram

Peak

C(psf): **430** Phi (degrees): **41.0**

Reshear

C(psf): **90** Phi (degrees): **36.0**



Undisturbed **Natural** Shear-Saturated

Orange-brown, interbedded SANDSTONE / CLAYSTONE.

21.1% Saturated Moisture Content

RAD Development
W.O.: 5718

Date: 9/05

Sample: **B-2 @ 20.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-5

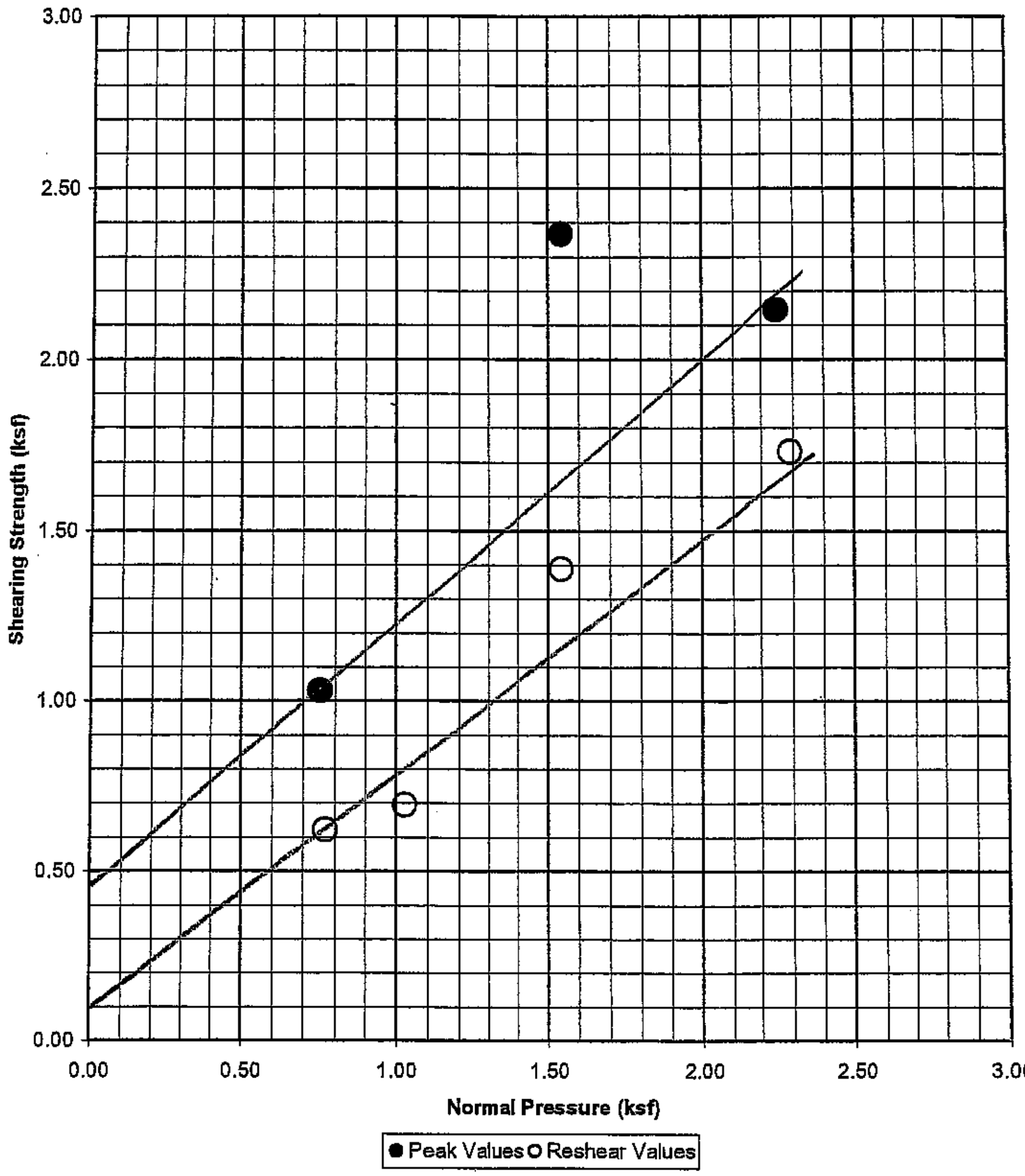
Shear Test Diagram

Peak

C(psf): **470** Phi (degrees): **39.0**

Reshear

C(psf): **100** Phi (degrees): **36.0**



Undisturbed **Natural** Shear-Saturated

Gray-brown, interbedded CLAYSTONE / SILTSTONE.

26.1% Saturated Moisture Content

R A D Development
W.O.: 5718

Date of Test: 9/05

Sample: **B-1 @ 15.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-6

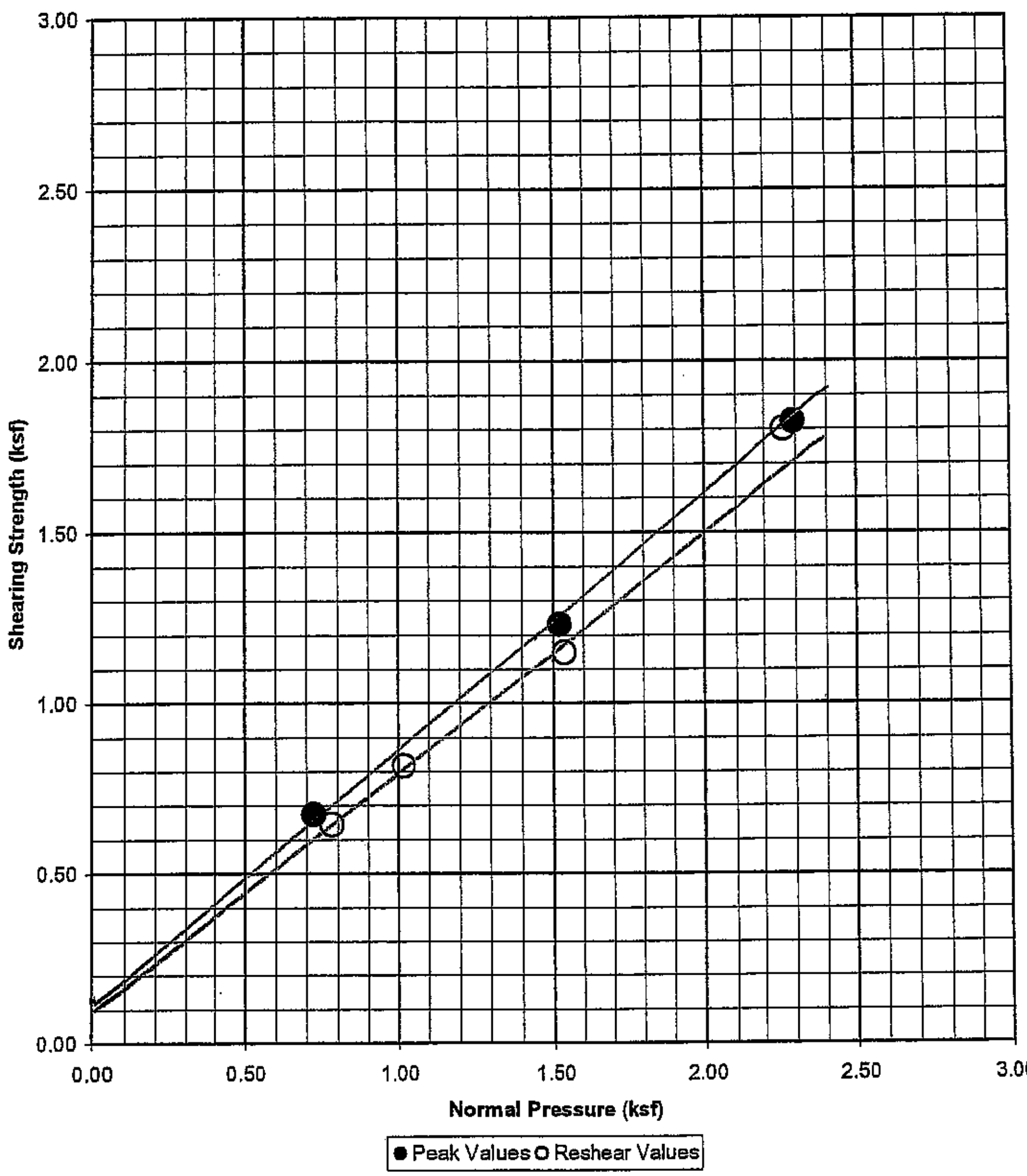
Shear Test Diagram

Peak

C(psf): **120** Phi (degrees): **38.0**

Reshear

C(psf): **100** Phi (degrees): **36.5**



Sample **Remolded** to 90% Relative Density, Saturated.
Rem. Dry Den. = 99.0 PCF

Org-brn, v. silty, very fine to medium SAND.

MAX: 110.0 PCF: 17.0%

25.6% Saturated Moisture Content

5718.6

R A D Development
W.O.: 5718

Date of Test: 9/05

Sample: **B-2 @ 20.0'**

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-7

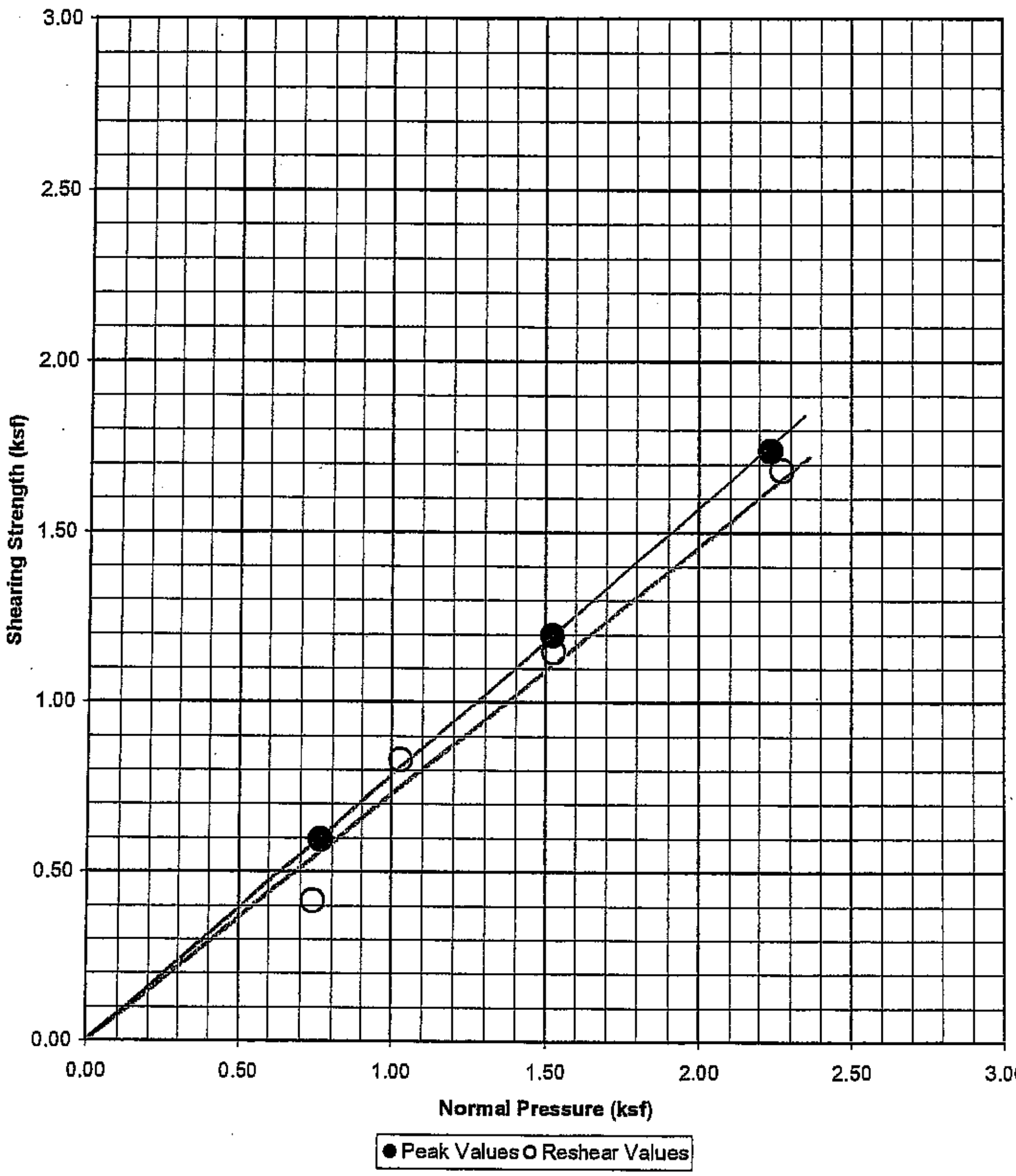
Shear Test Diagram

Peak

C(psf): **0** Phi (degrees): **40.0**

Reshear

C(psf): **0** Phi (degrees): **38.0**



Sample **Remolded** to 90% Relative Density, Saturated.
Rem. Dry Den. = 103.5 PCF

Lt. Org-brn, v. silty, v. fine to med. SAND.

MAX: 115.0 PCF: 14.0%

19.0% Saturated Moisture Content

5718.7

Diamond Bar
W.O.: 5718

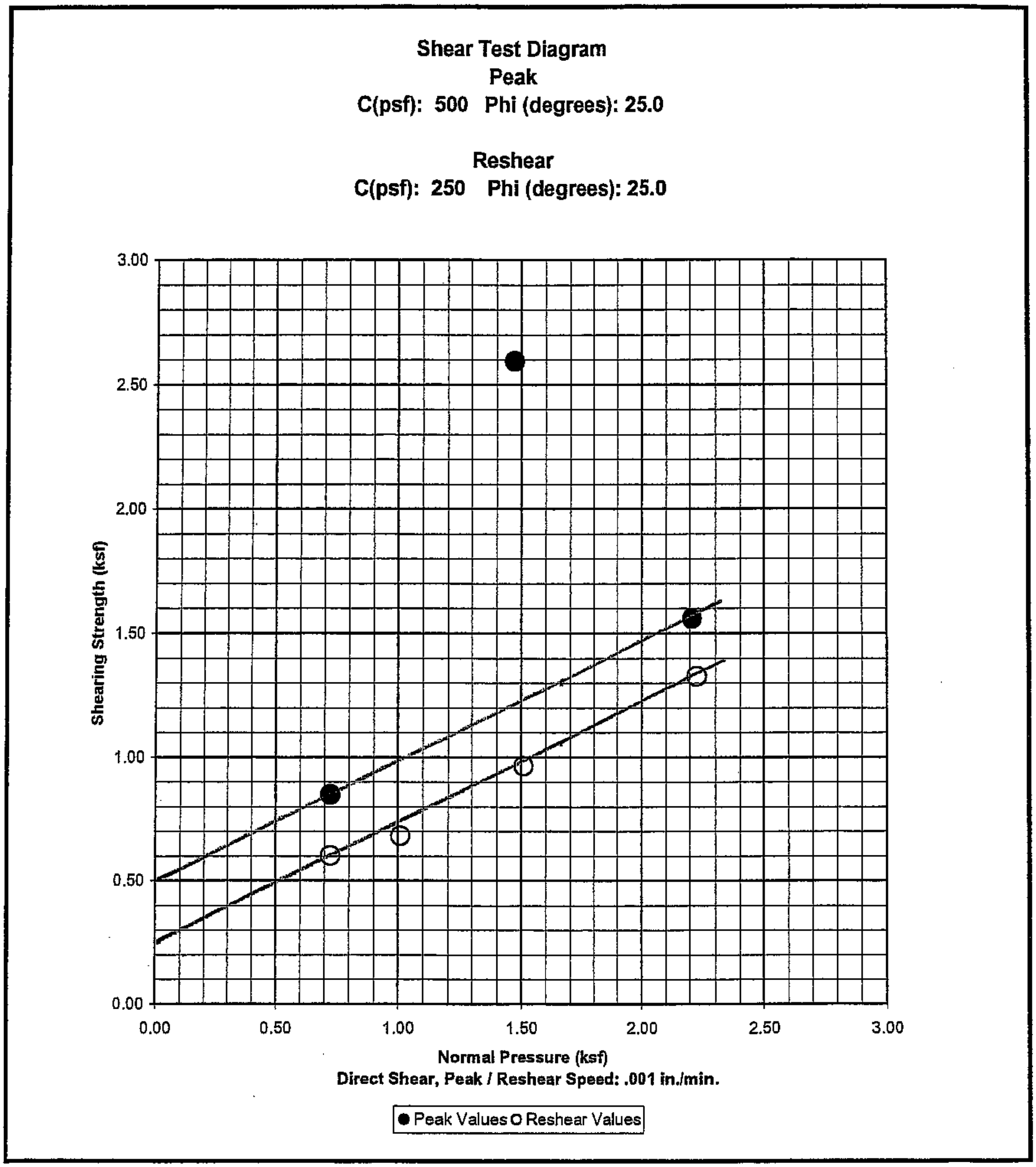
Date of Test: 4/07

Sample: B-3 @ 10.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-8



Undisturbed **Natural** Shear-Saturated

Brown, slightly sandy, silty CLAY.

22.3% Saturated Moisture Content

5718.10

Diamond Bar
W.O.: 5718

Date of Test: 4/07

Sample: B-4 @ 10.0'

GeoSoils Consultants, Inc.

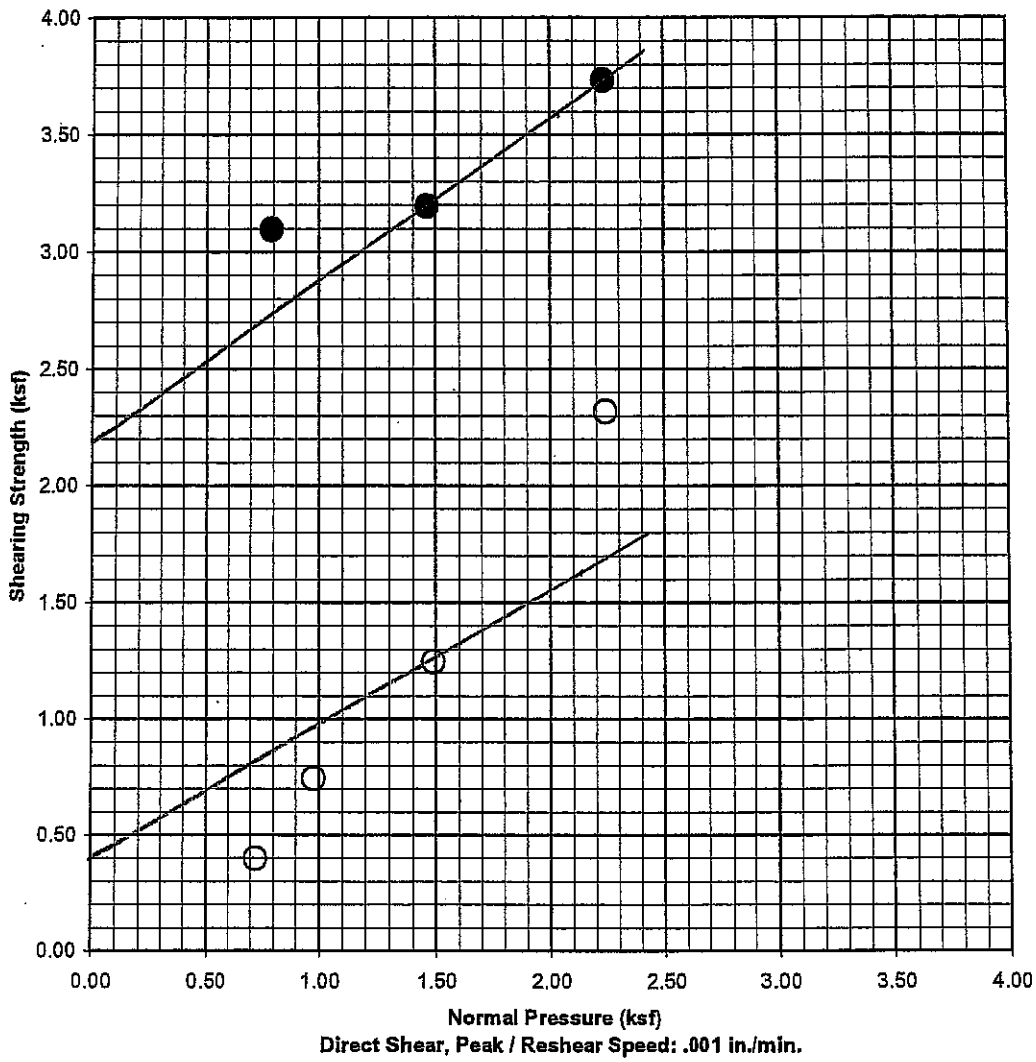
Geotechnical Engineering * Engineering Geology

PLATE SH-9

Shear Test Diagram

Peak
C(psf): 2200 Phi (degrees): 33.5

Reshear
C(psf): 400 Phi (degrees): 29.0



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

Undisturbed **Natural** Shear-Saturated

Brown, slightly sandy, silty CLAY.

22.0% Saturated Moisture Content

5718.11

Hammond
W.O.: 5718

Date of Test: 4/07

Sample: B-3 @ 5.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-10

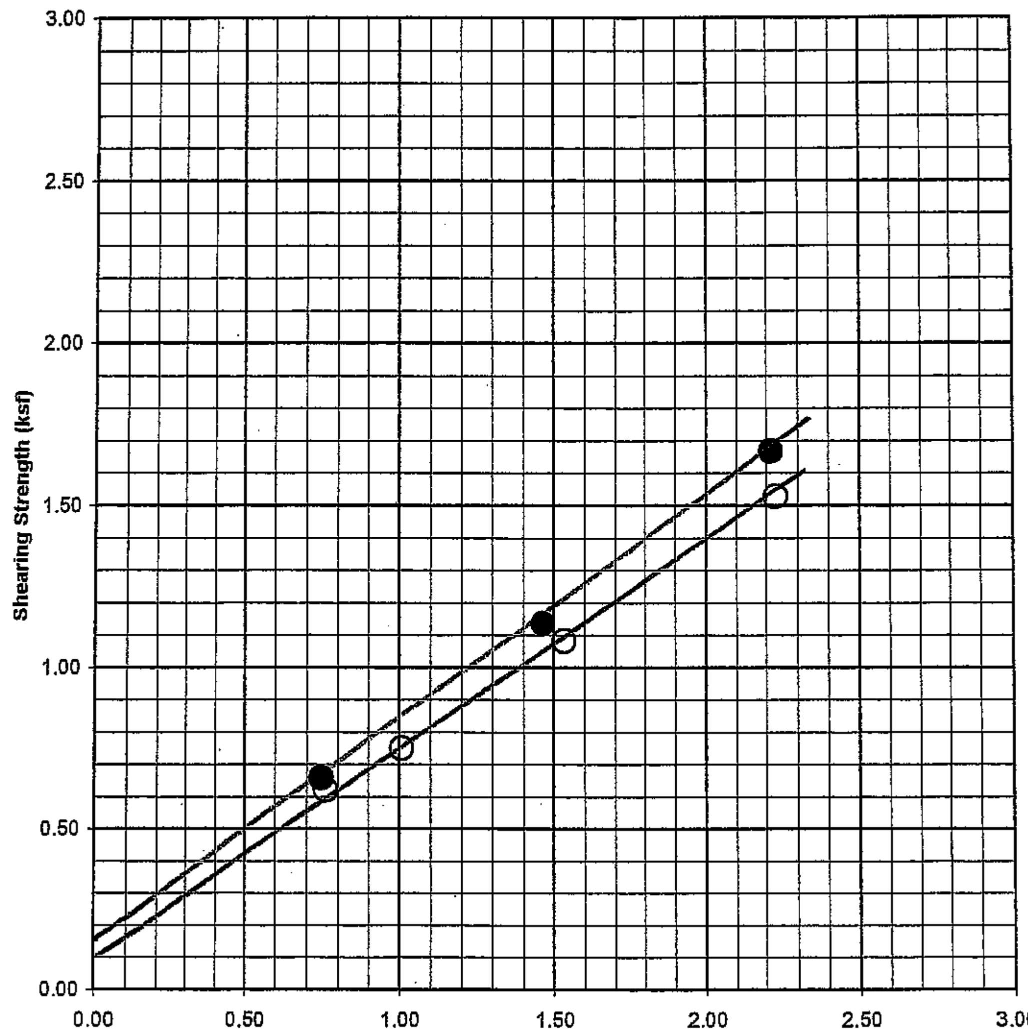
Shear Test Diagram

Peak

C(psf): **160** Phi (degrees): **34.5**

Reshear

C(psf): **100** Phi (degrees): **33.0**



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

● Peak Values O Reshear Values

Sample **Remolded** to 90% Relative Density, Saturated.
Remolded Dry Density = 108.0 PCF

Brown, slightly sandy, silty CLAY.

MAX: 120.0 PCF; 13.0%

21.0% Saturated Moisture Content

5718.12

Diamond Bar
W.O.: 5718

PLATE SH-11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Date of Test: 4/07

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

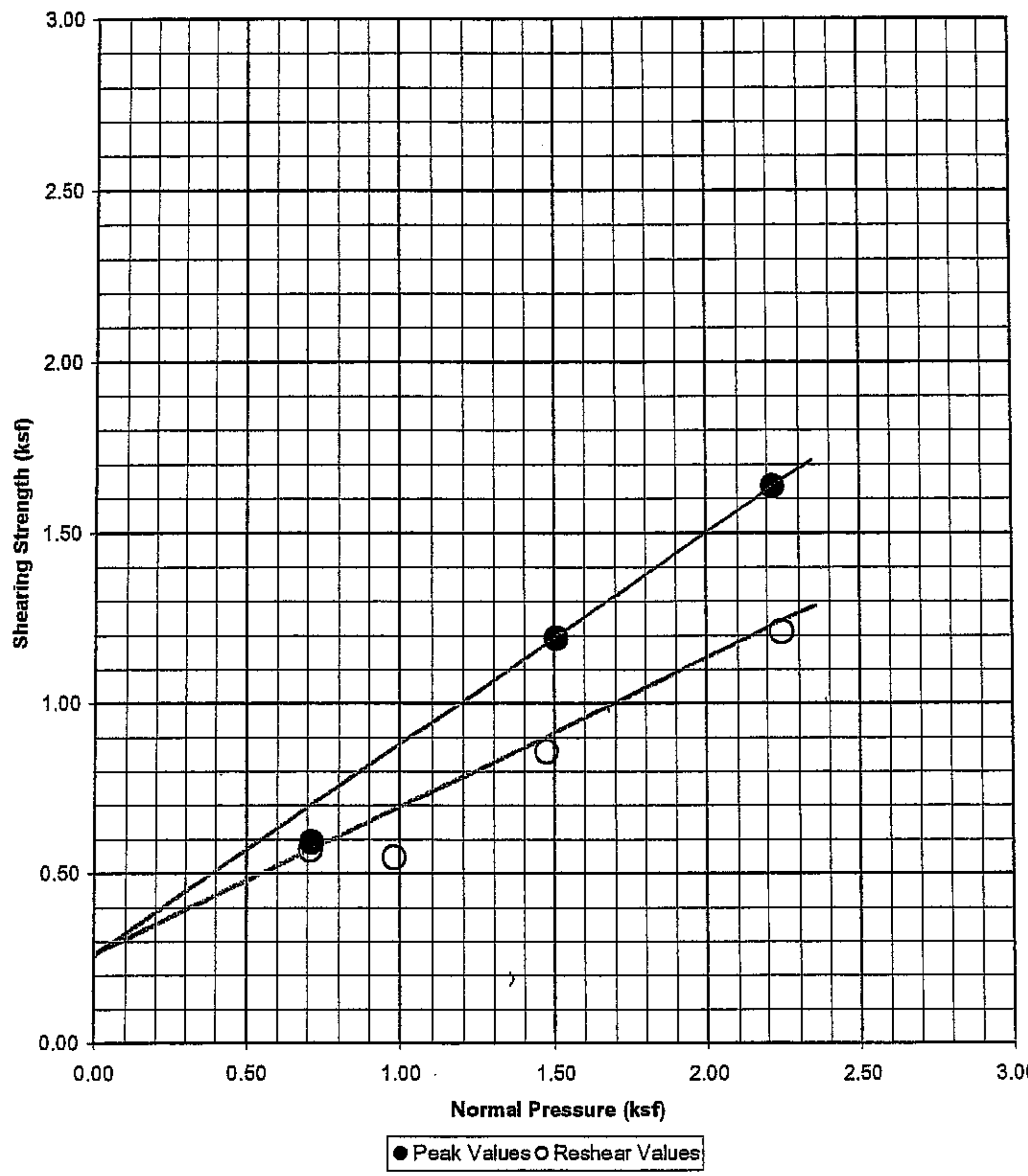
Shear Test Diagram

Peak

C(psf): **280** Phi (degrees): **33.0**

Reshear

C(psf): **280** Phi (degrees): **24.0**



Sample **Remolded** to 90% Relative Density, Saturated.
Remolded Dry Density = 103.5 PCF

Brown, slightly sandy, silty CLAY.

MAX: 113.5 PCF: 17.0%

32.6% Saturated Moisture Content

5718.13

Jewel Ridge Estates
W.O.: 5718

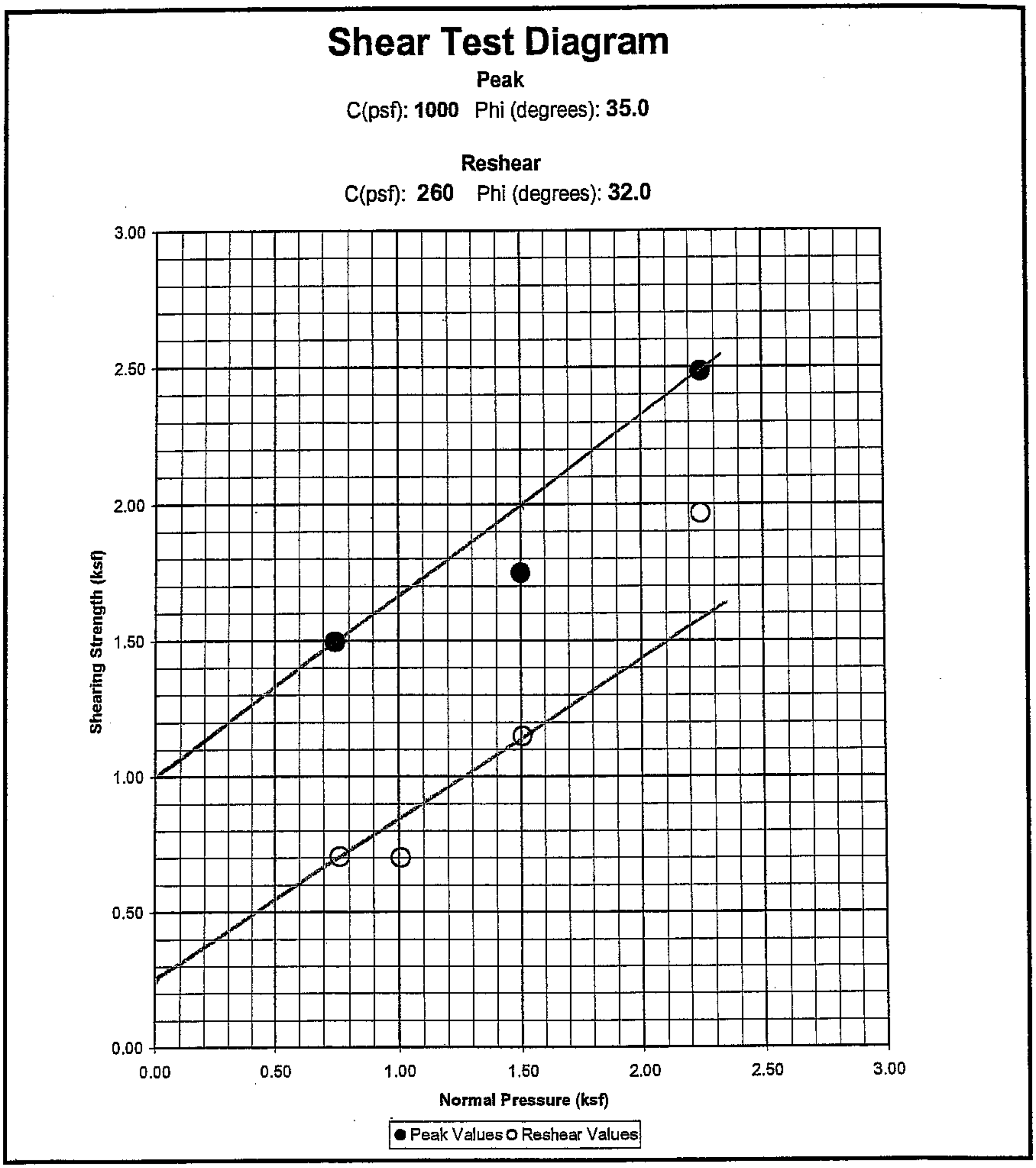
Date: 12/11

Sample: B-2 @ 10.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-12



Undisturbed **Natural** Shear-Saturated

Brown, sandy CLAY.

19.5% Saturated Moisture Content

Diamond Bar
W.O.: 5718 A

Date of Test: 8/15

Sample: B-9 (15) @ 15.0'

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

PLATE SH-13

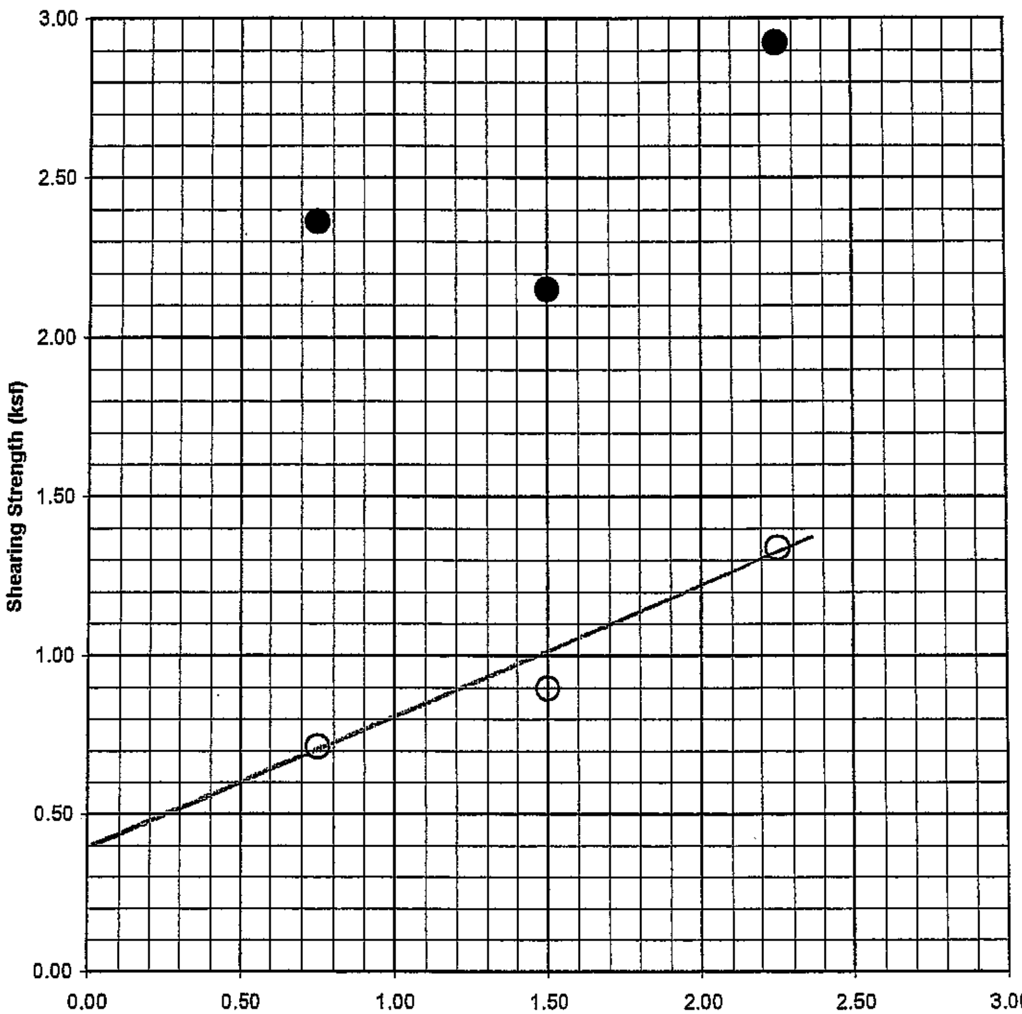
Shear Test Diagram

Peak

C(psf): ??? Phi (degrees): ???

Reshear

C(psf): 400 Phi (degrees): 22.0



Normal Pressure (ksf)
Direct Shear, Peak / Reshear Speed: .001 in./min.

● Peak Values O Reshear Values

Undisturbed **Natural** Shear-Saturated

Light-brown SILT, w/ clay.

28.5% Saturated Moisture Content

5718A.5

Diamond Bar
W.O.: 5718 A

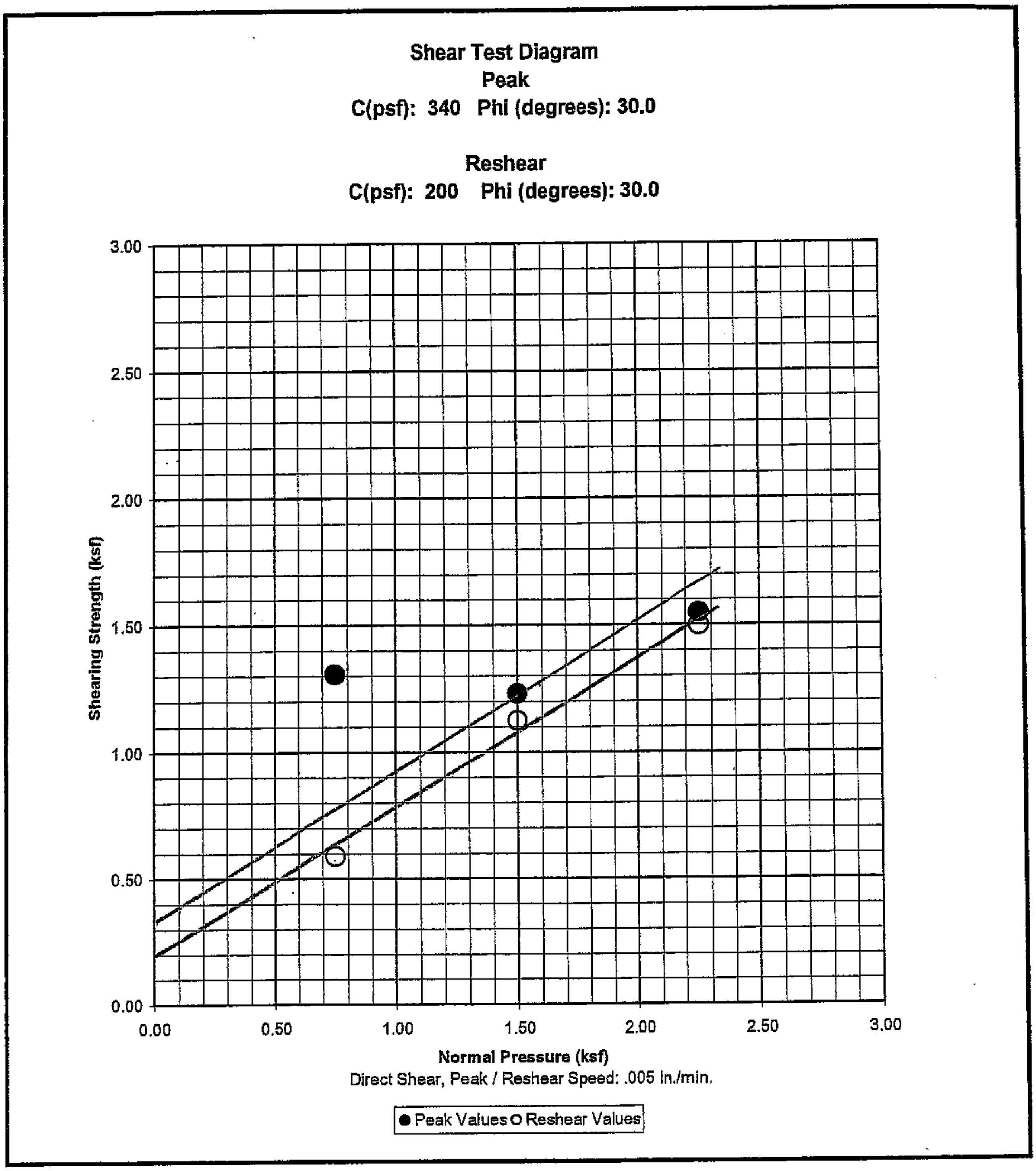
PLATE SH-14

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Date of Test: 8/15

Sample: B-9 (15) @ 30.0'



Undisturbed **Natural** Shear-Saturated

Orange-brown, very fine to fine SAND, w/ brown clay.

21.9% Saturated Moisture Content

Diamond Bar
W.O.: 5718 A

PLATE SH-15

GeoSoils Consultants, Inc.

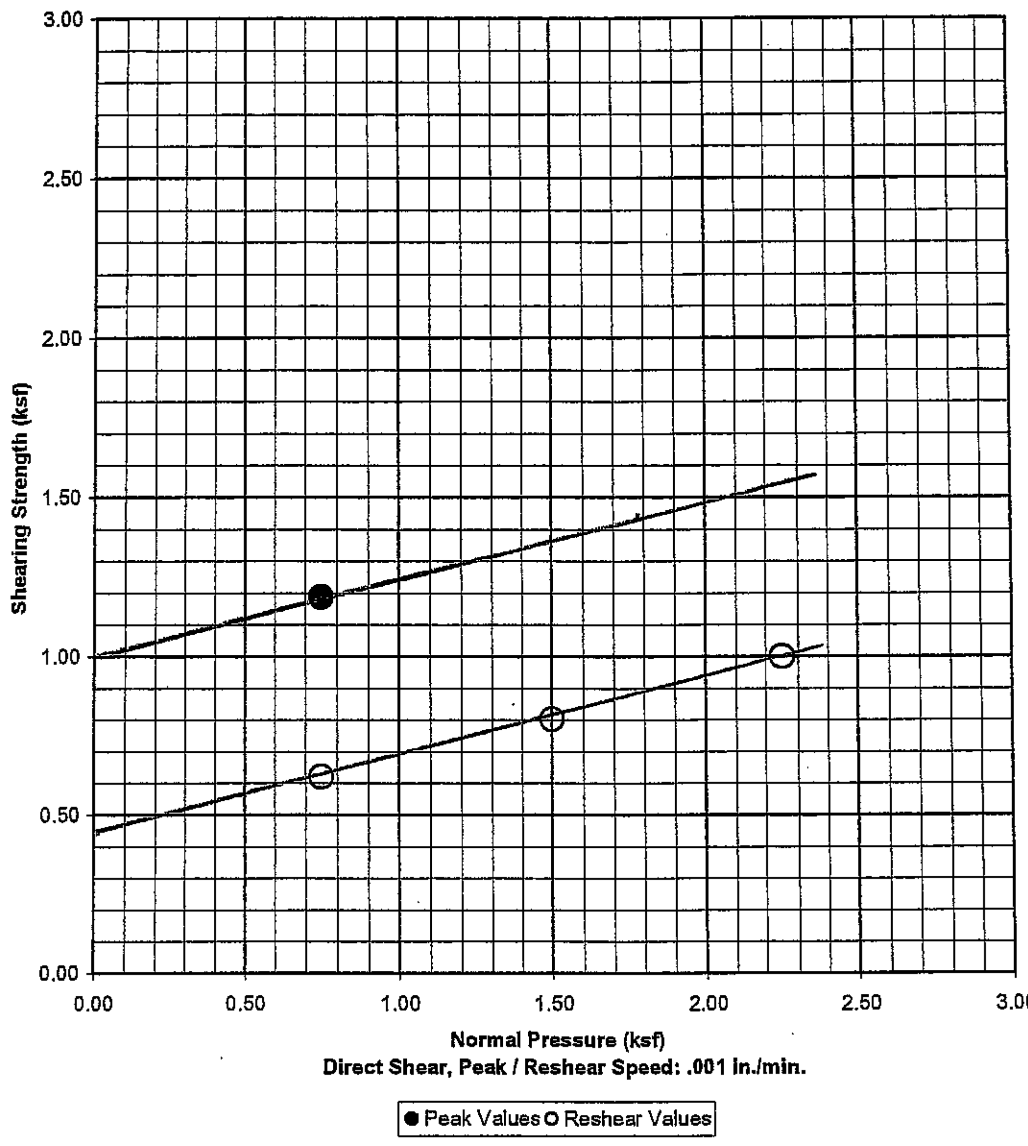
Date of Test: 8/15

Geotechnical Engineering * Engineering Geology

Sample: **B-9 (15) @ 31.0'**
Slide Plane

Shear Test Diagram
Peak
C(psf): 1000 Phi (degrees): 13.5

Reshear
C(psf): 450 Phi (degrees): 13.5



Undisturbed **Natural** Shear-Saturated. Muli-reshear.

Orange-brown, silty CLAY.

29.6% Saturated Moisture Content

Diamond Bar
W.O.: 5718 A

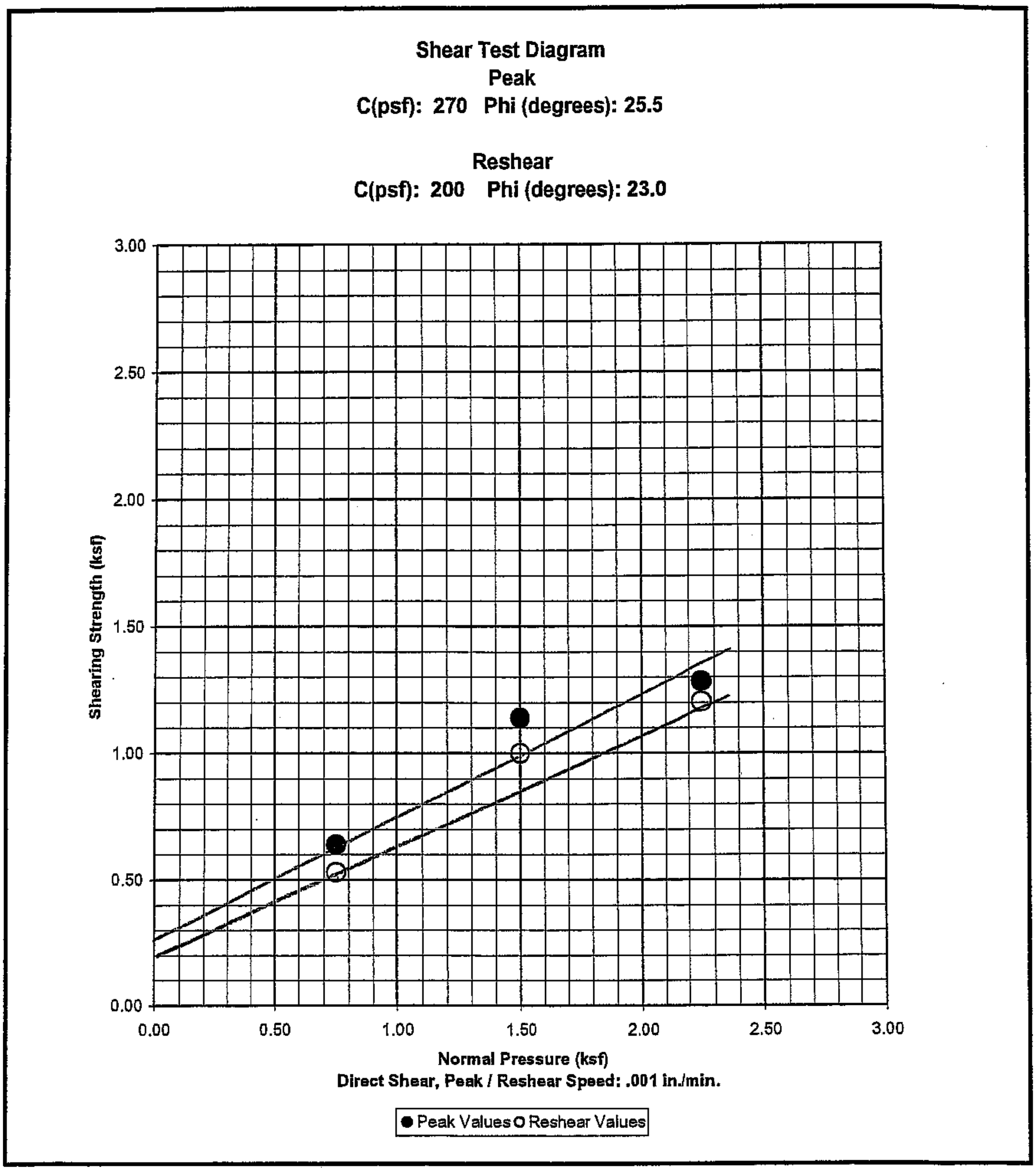
Date of Test: 8/15

Sample: B-9 (15) @ 40.0'

PLATE SH-16

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology



Undisturbed **Natural** Shear-Saturated

Grey-brown, silty CLAY.

29.1% Saturated Moisture Content

5718A.8

Dimond Bar
W.O.: 5718

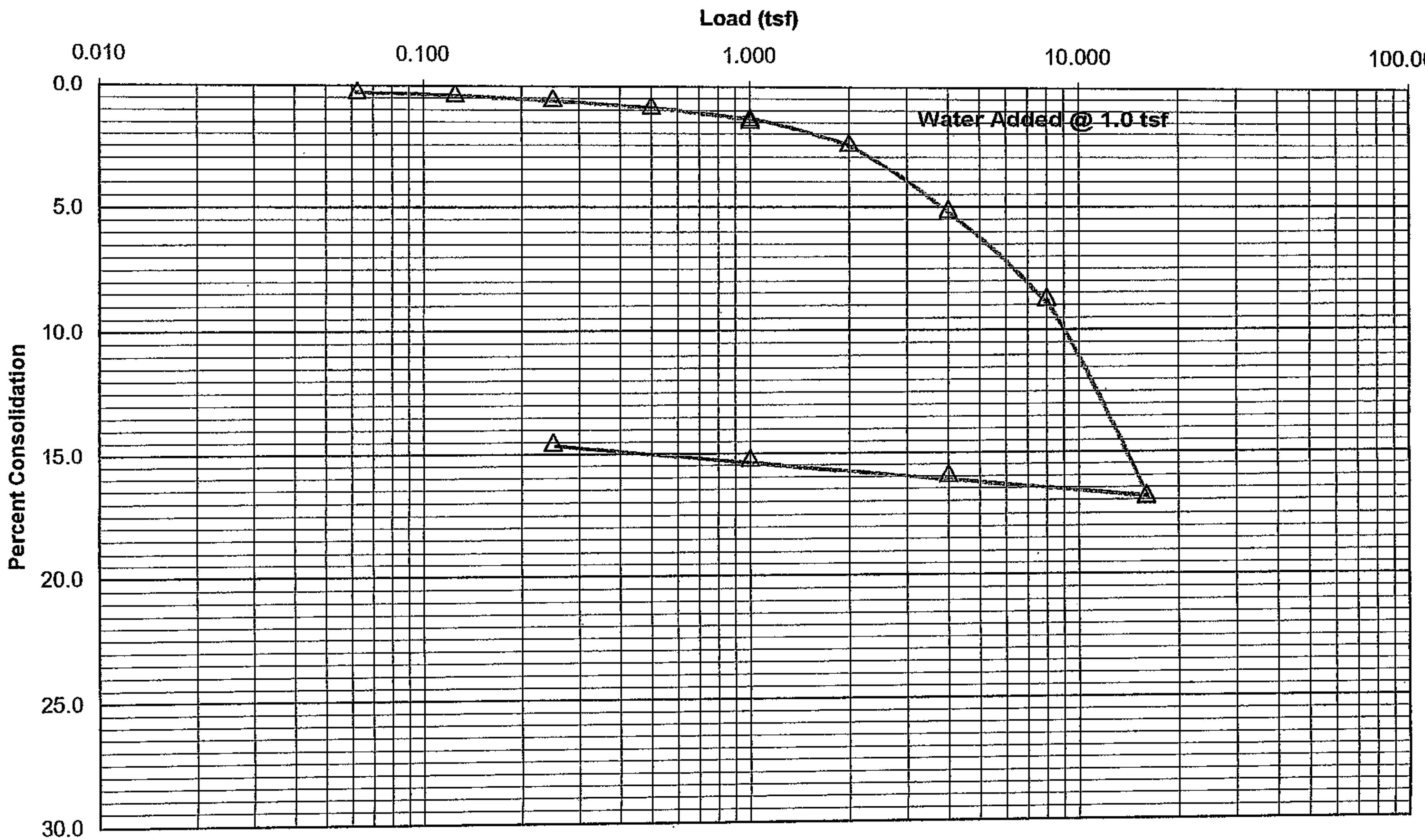
Date of Test: 4/07

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 15.7 After: 18.7

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (07) @ 15.0'
Brown, silty Clay.

Consolidation Diagram

C5718.1

Plate C-1

Dimond Bar
W.O.: 5718

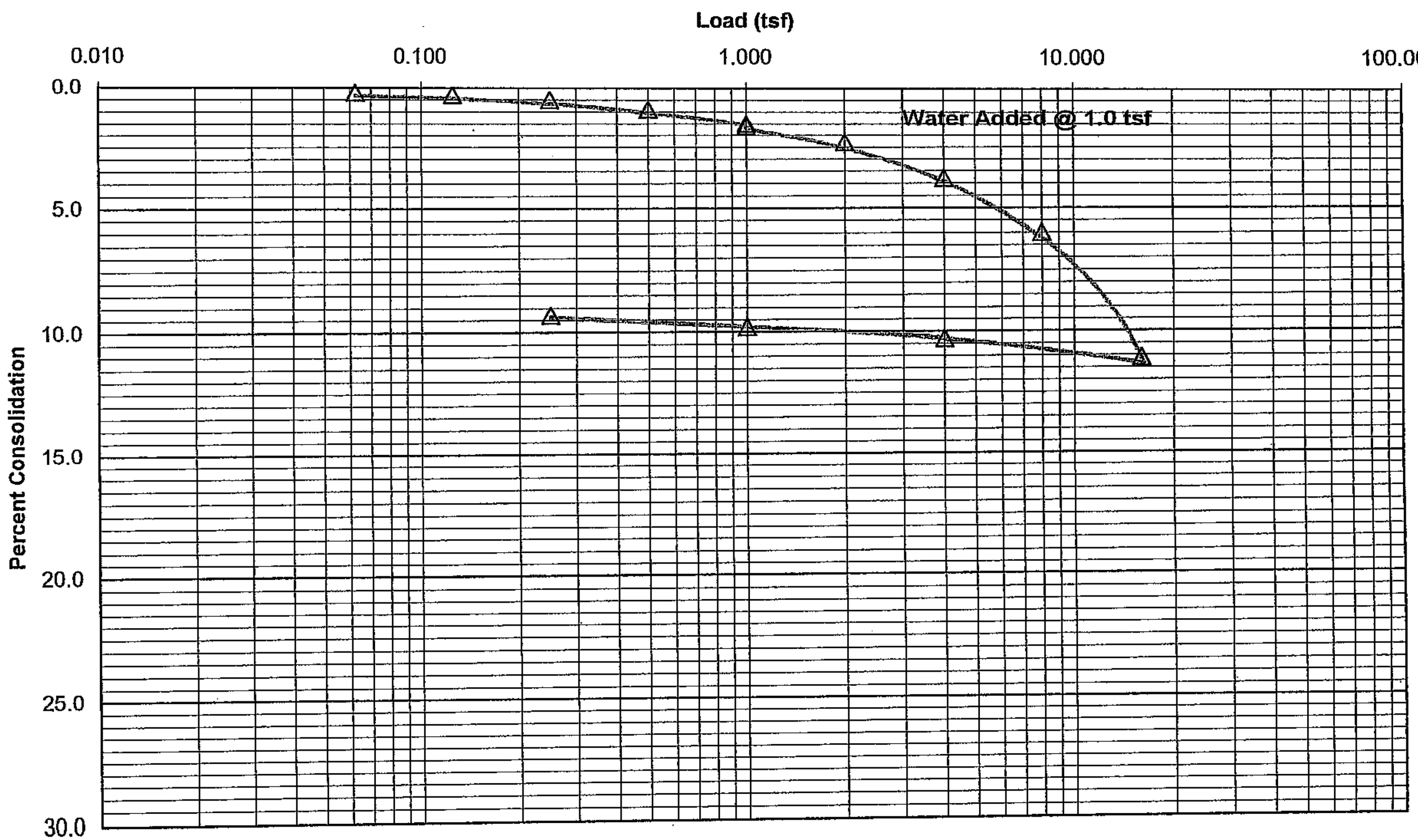
Date of Test: 4/07

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 14.9 After: 16.1

Sample(in.)
Height: 1.00 Diameter: 2.36



B-2 (07) @ 20.0'
Medium-brown, slightly sandy, silty Clay, w/ some rock fragment.

Consolidation Diagram

C5718.2

Plate C-2

Dimond Bar
W.O.: 5718

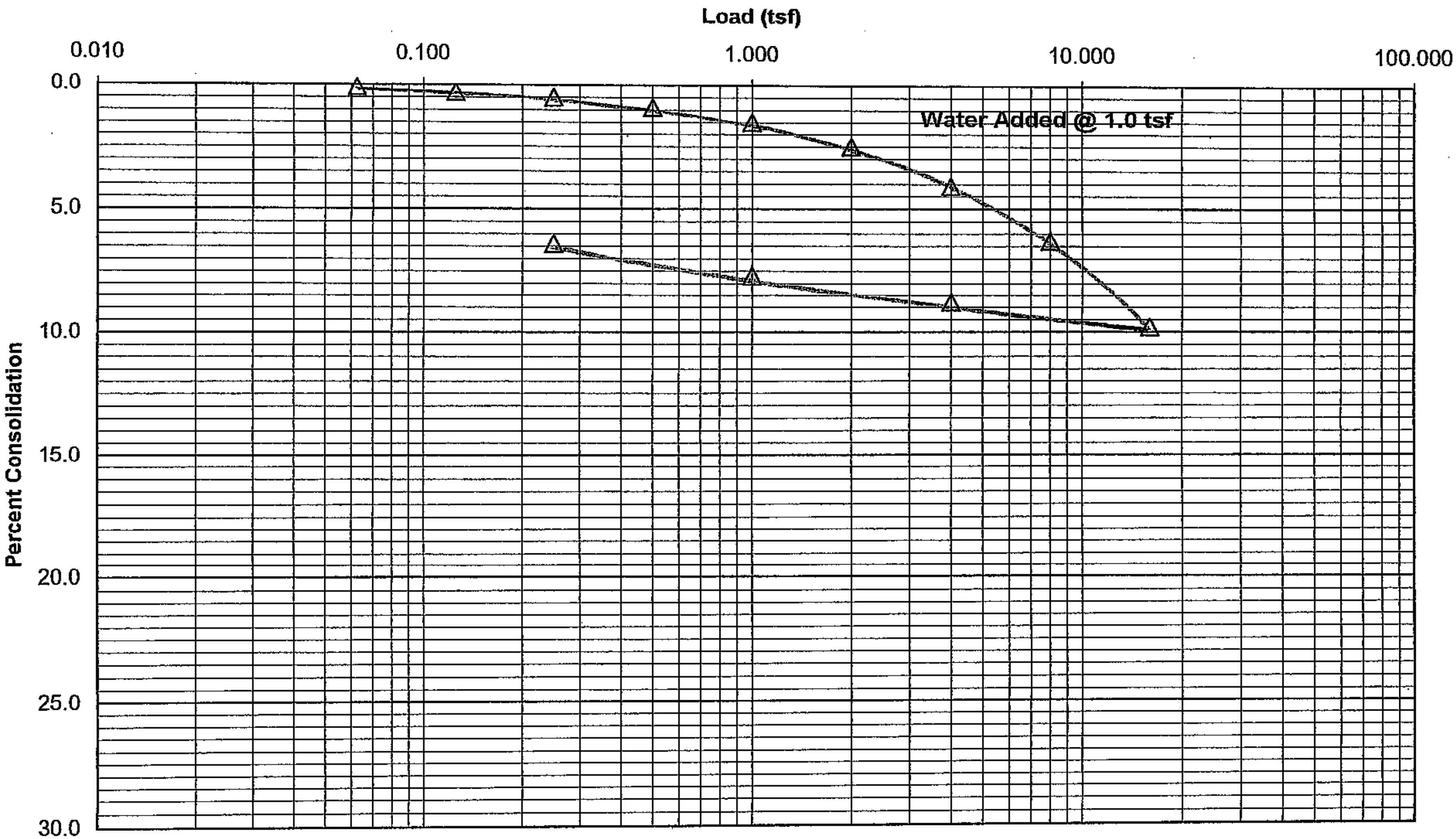
Date of Test: 4/07

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 16.0 After: 23.3

Sample(in.)
Height: 1.00 Diameter: 2.36



Consolidation Diagram

C5718.3

B-4 (07) @ 15.0'
Orange-brown, very fine sandy, silty Clay.

Plate C-3

Jewel Ridge Estates
W.O.: 5718

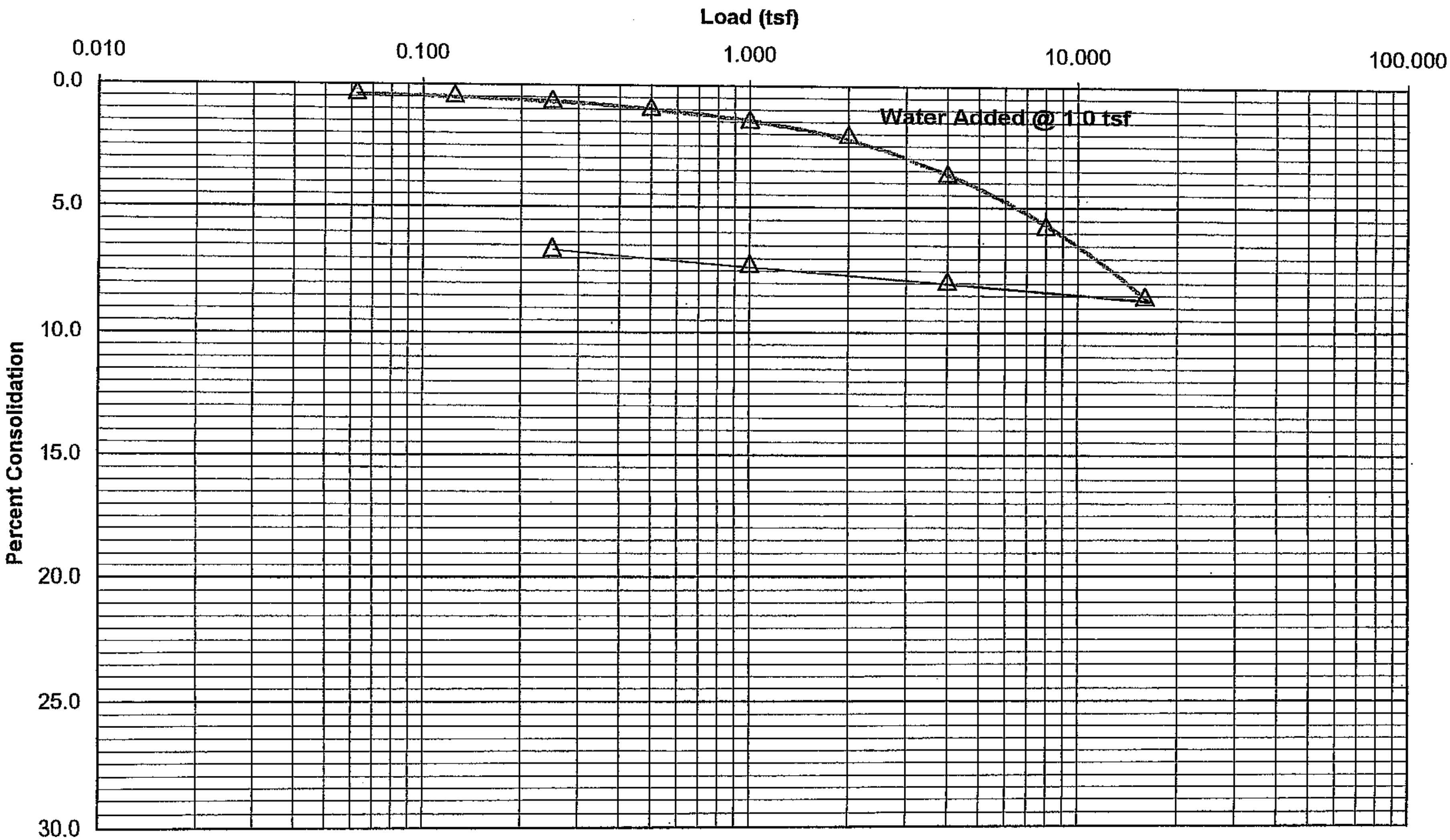
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 11.6 After: 14.0

Sample(In.)
Height: 1.00 Diameter: 2.36



B-2 @ 5.0'
Brown, slightly clayey, sandy SILT.

Consolidation Diagram

C5718.4

Plate C-4

Jewel Ridge Estates
W.O.: 5718

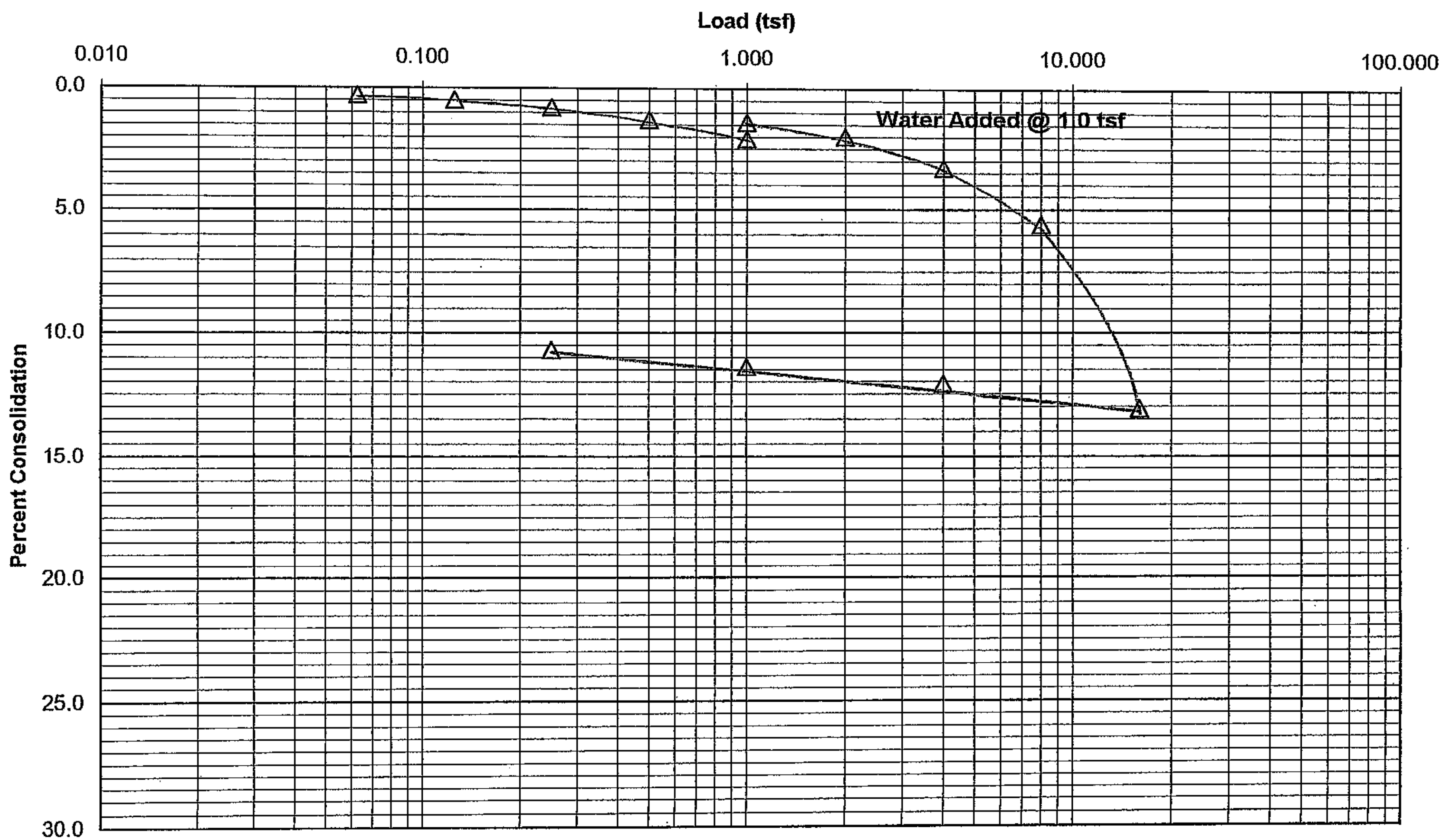
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 18.9 After: 19.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-2 @ 20.0'
Brown CLAY.

Consolidation Diagram

C5718.5

Plate C-5

Jewel Ridge Estates
W.O.: 5718

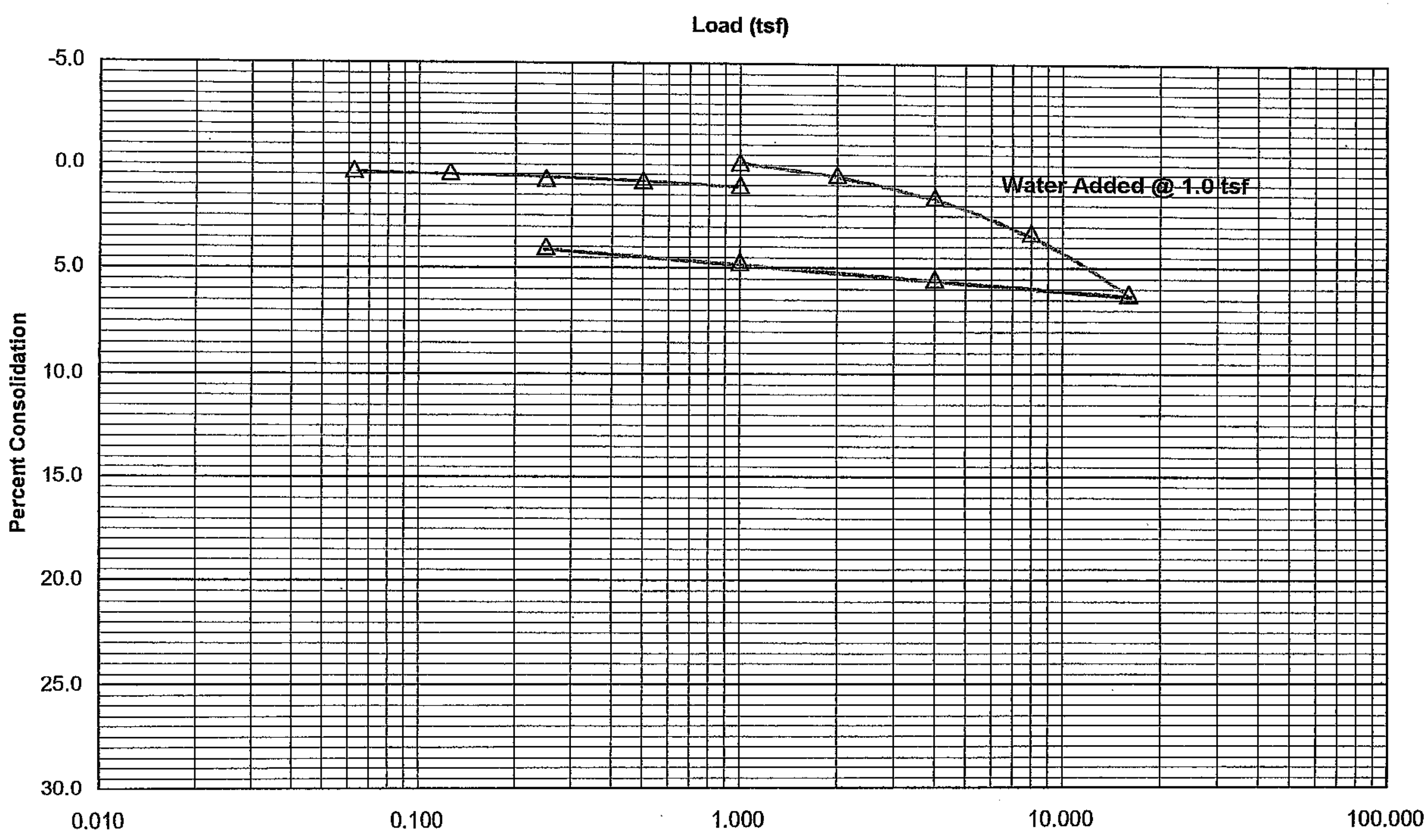
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 8.9 After: 14.4

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 5.0'
Brown, sandy, clayey SILT.

Consolidation Diagram

C5718.6

Plate C-6

Jewel Ridge Estates
W.O.: 5718

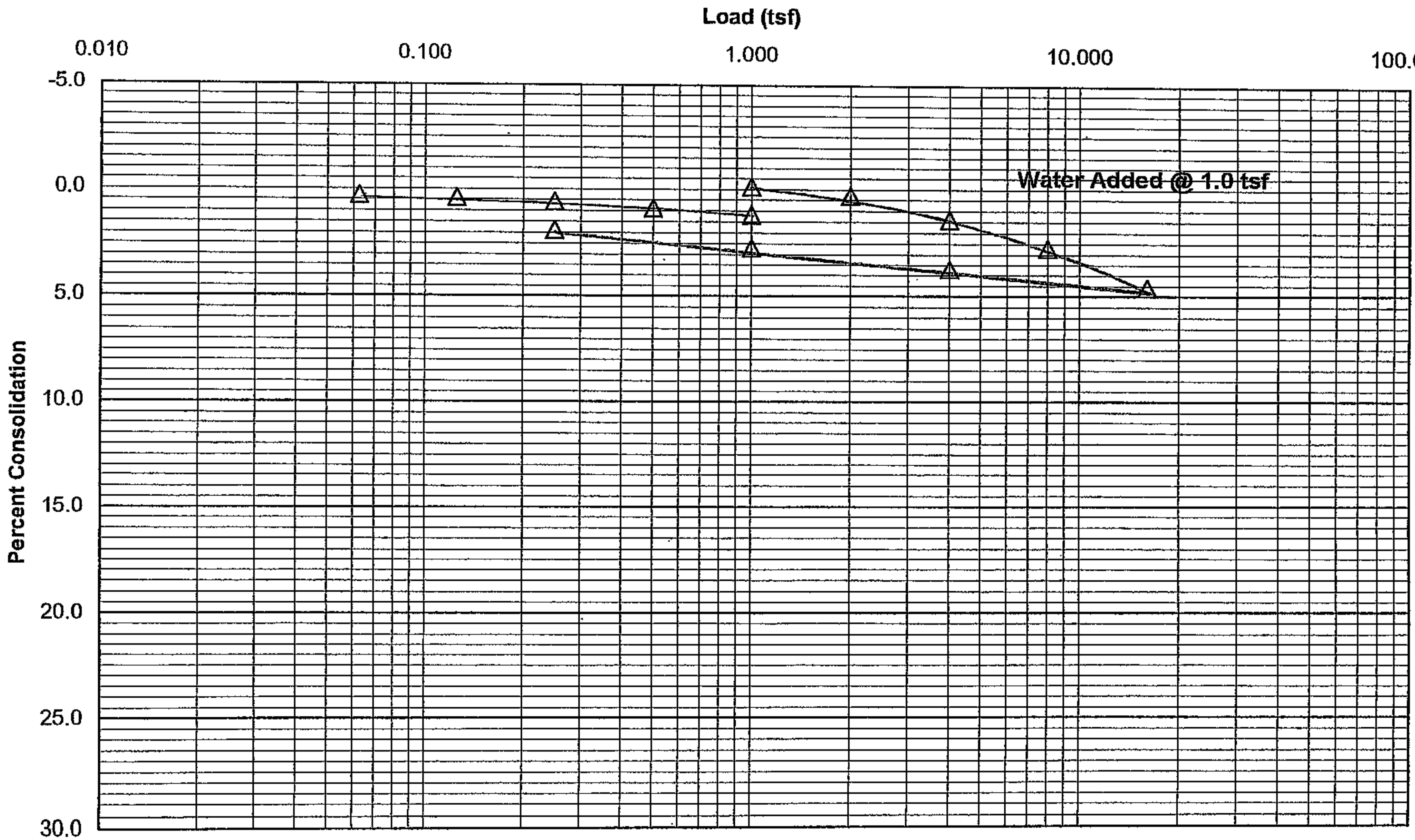
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 8.7 After: 13.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 10.0'
Brown, slightly sandy, clayey SILT.

Consolidation Diagram

C5718.7

Plate C-7

Jewel Ridge Estates
W.O.: 5718

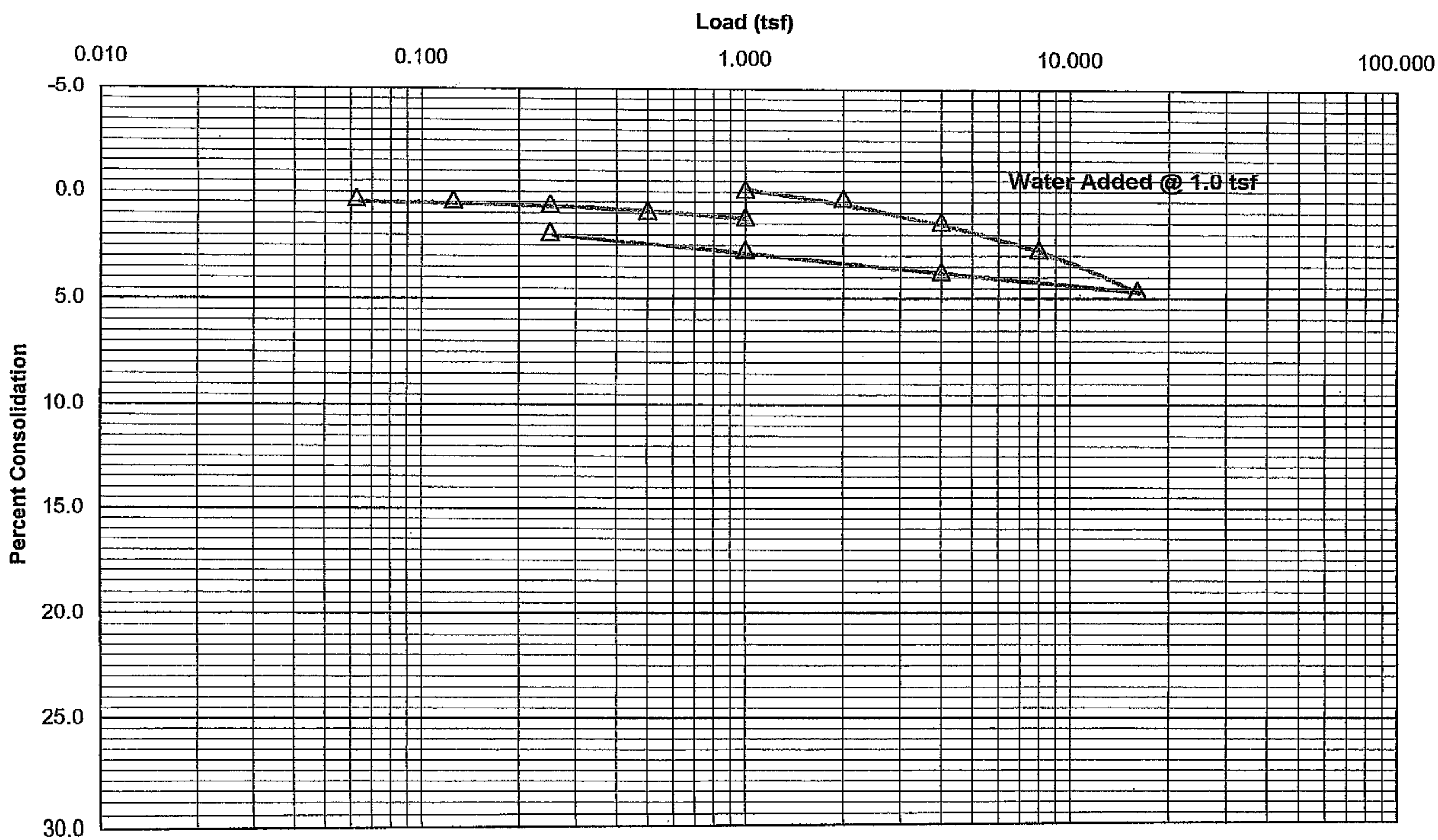
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 8.7 After: 13.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 10.0'
Brown, slightly sandy, clayey SILT.

Consolidation Diagram

C5718.7

Plate C-7

Jewel Ridge Estates
W.O.: 5718

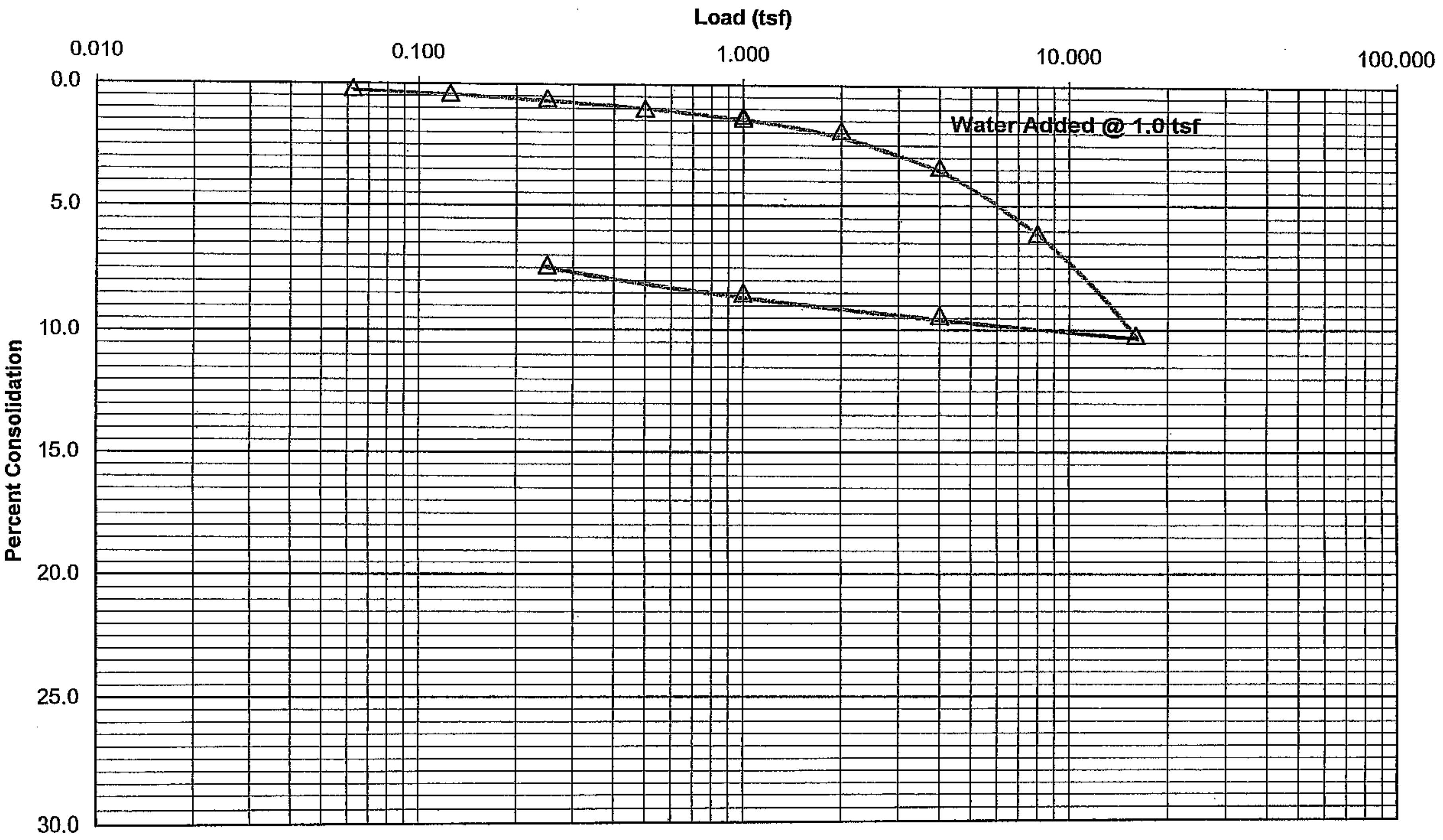
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 10.7 After: 16.2

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 @ 15.0'
Brown, slightly sandy, clayey SILT.

Consolidation Diagram

C5718.8

Plate C-8

Jewel Ridge Estates
W.O.: 5718

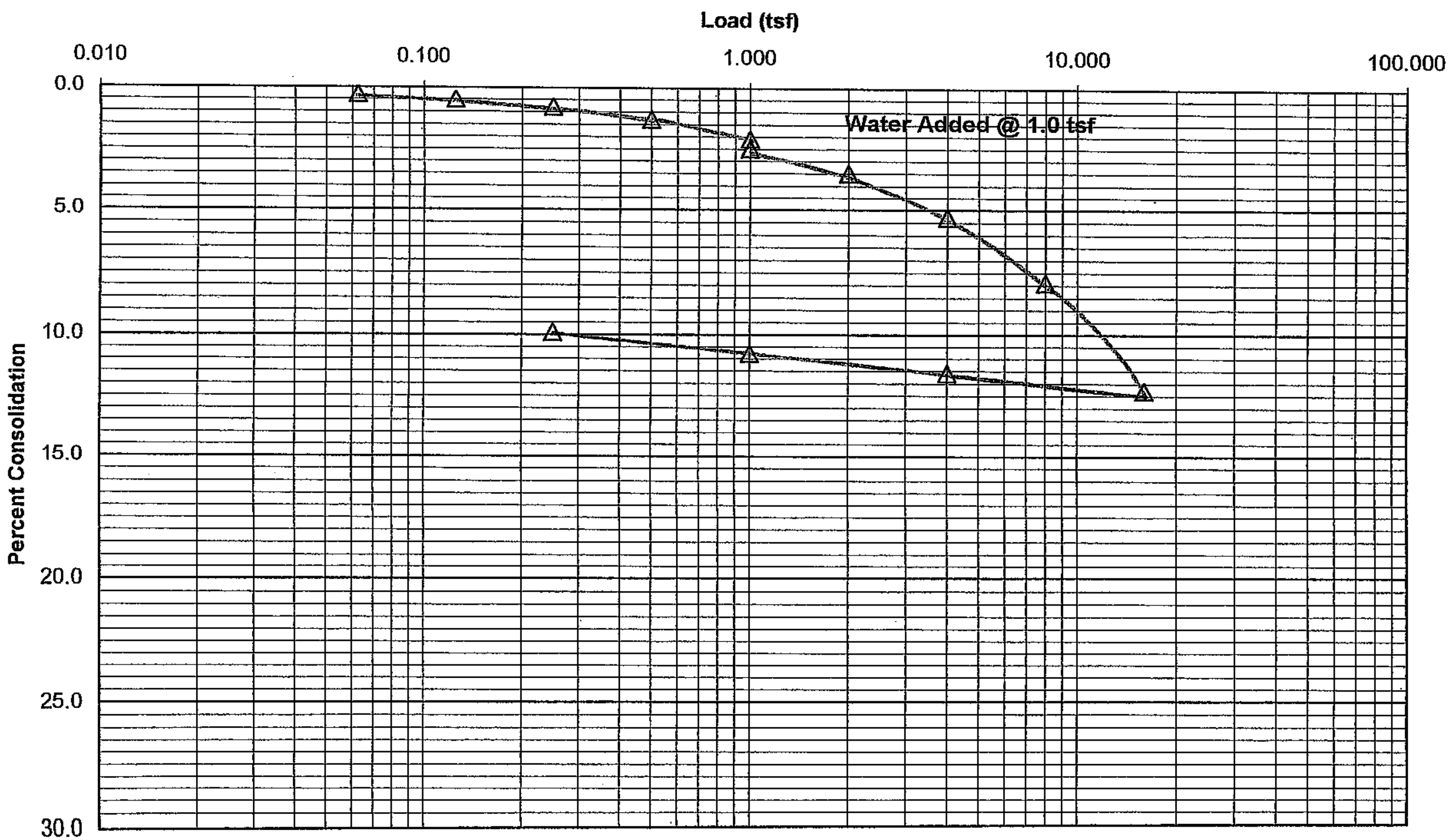
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 11.5 After: 15.1

Sample(in.)
Height: 1.00 Diameter: 2.36



B-4 @ 10.0'
Orange-brown, sandy, clayey SILT.

Consolidation Diagram

C5718.9

Plate C-9

Jewel Ridge Estates
W.O.: 5718

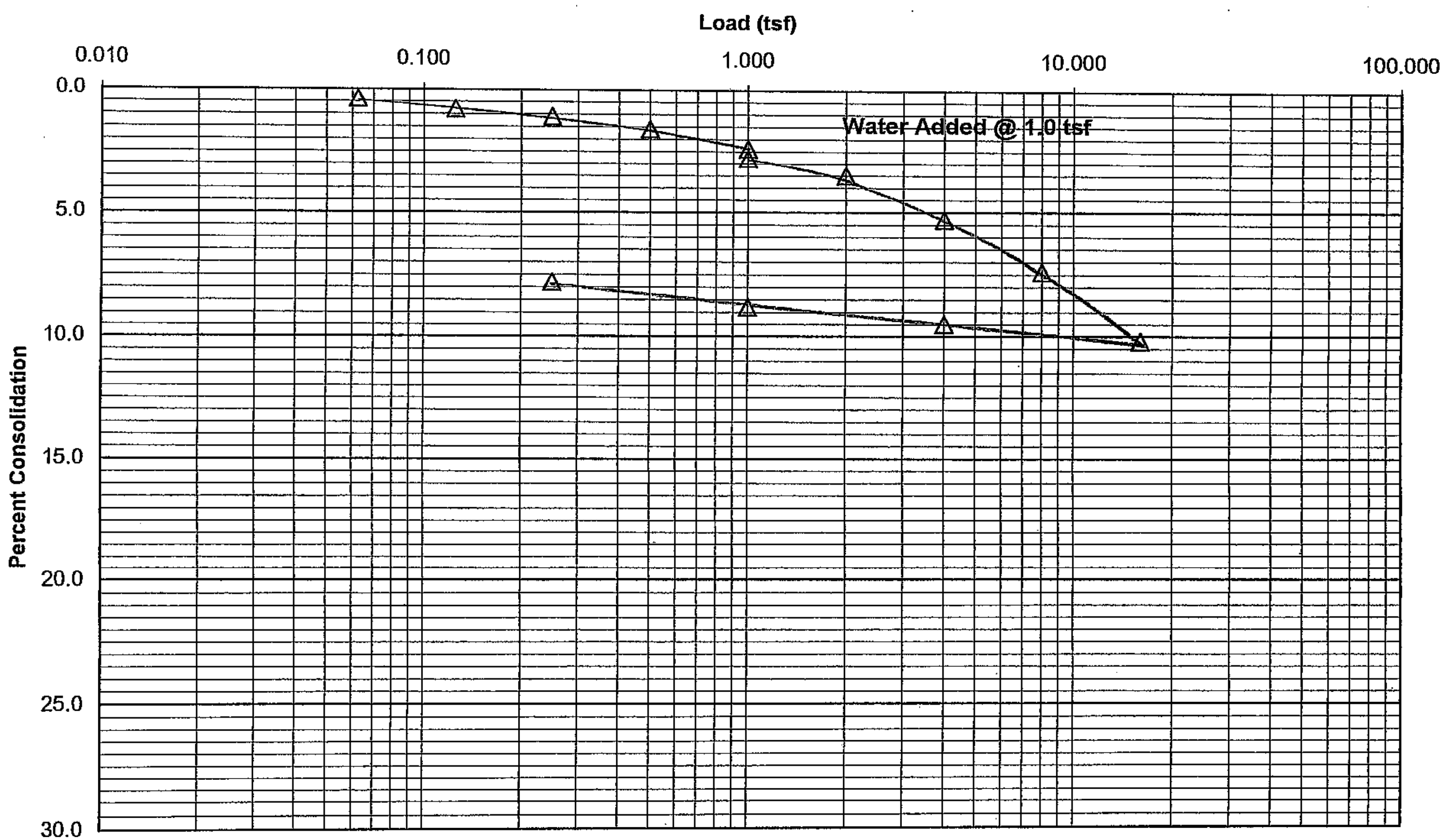
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 11.2 After: 15.4

Sample(in.)
Height: 1.00 Diameter: 2.36



B-4 @ 20.0'
Brown, sandy, clayey SILT, w/ rock fragments.

Consolidation Diagram

C5718.10

Plate C-10

Jewel Ridge Estates
W.O.: 5718

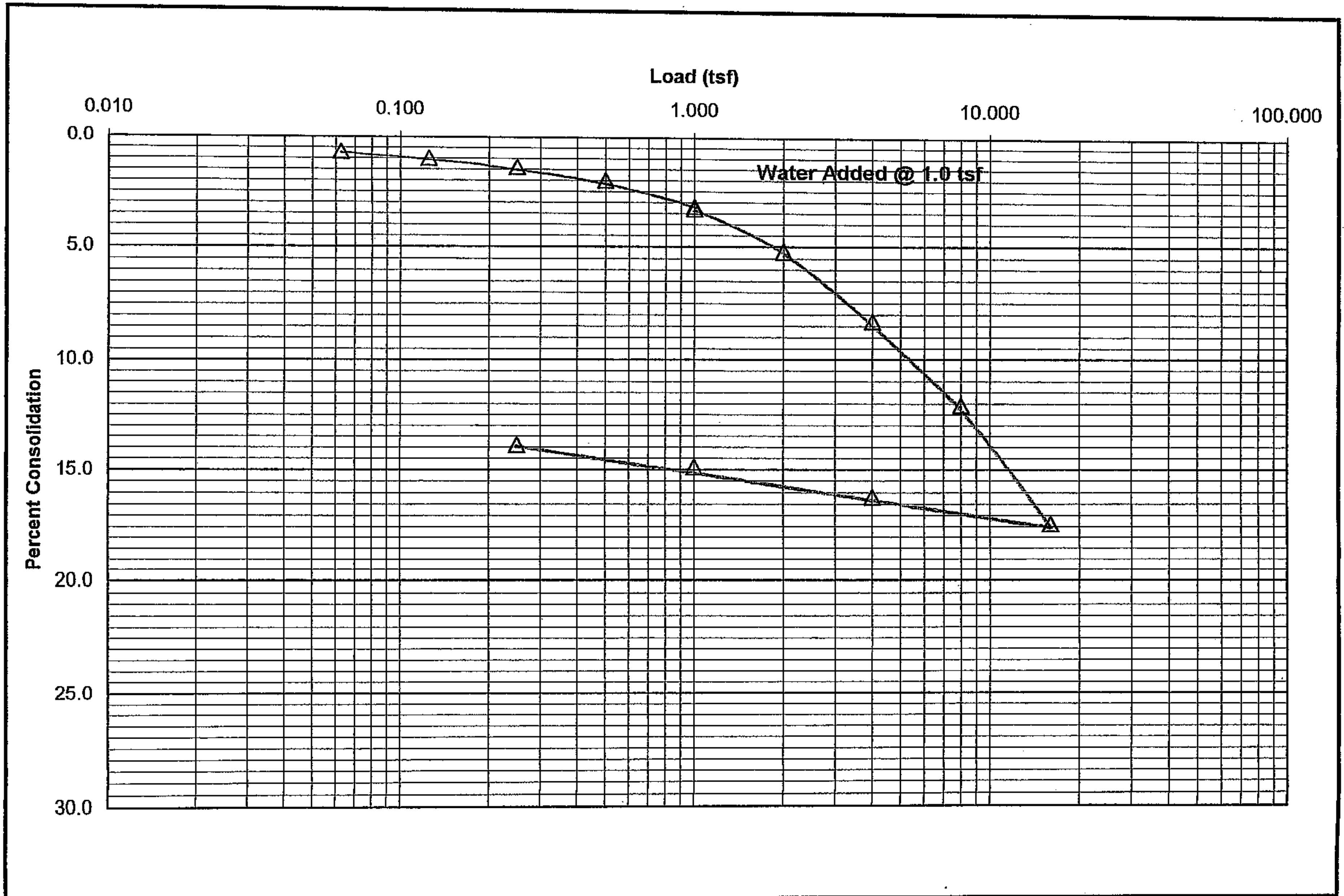
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 26.6 After: 23.0

Sample(in.)
Height: 1.00 Diameter: 2.36



B-4 @ 30.0'
Orange-brown, sandy, silty CLAY.

Consolidation Diagram

C5718.11

Plate C-11

Jewel Ridge Estates
W.O.: 5718

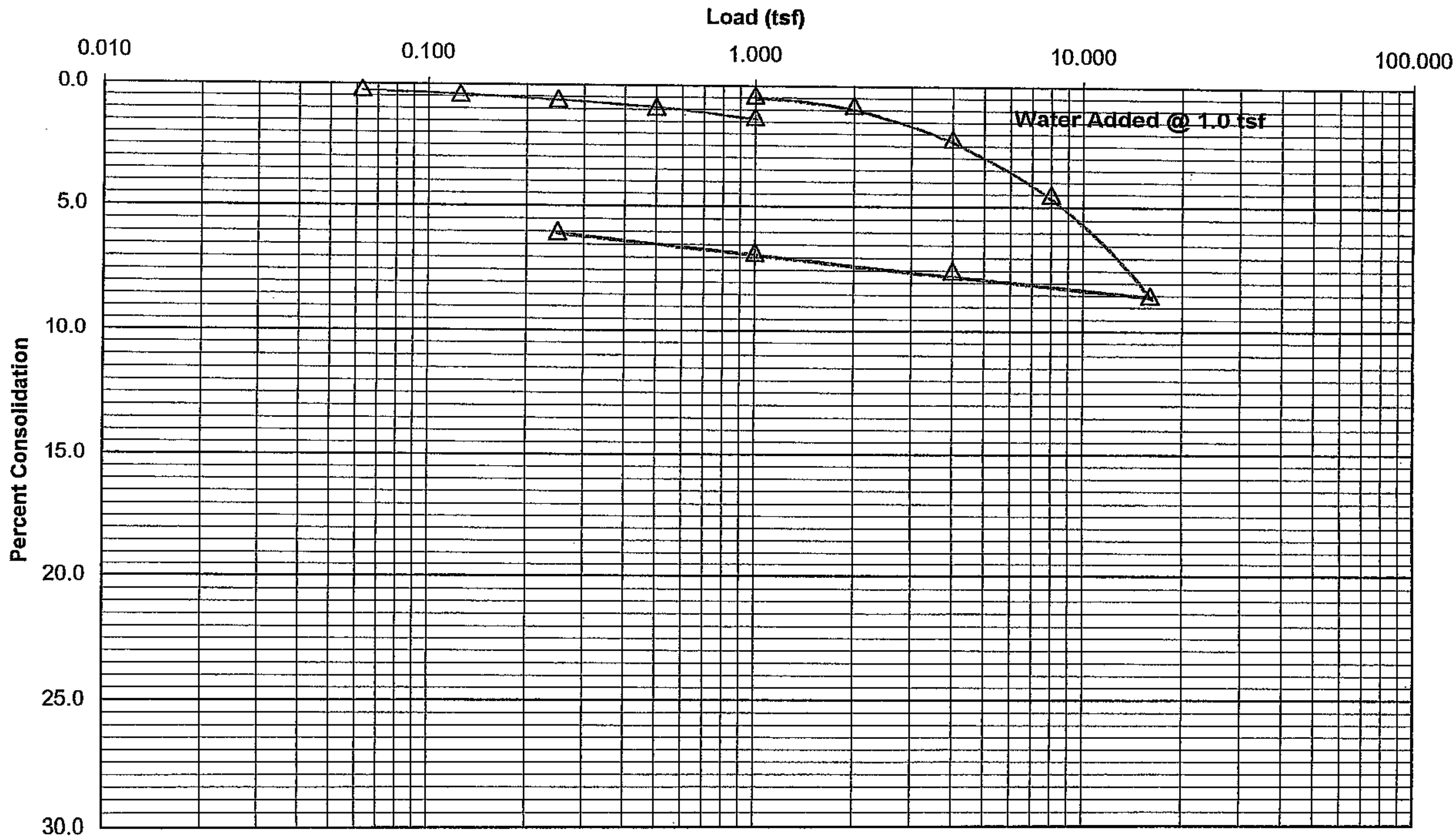
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 13.9 After: 16.9

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 @ 5.0'
Dark-brown, sandy CLAY.

Consolidation Diagram

C5718.12

Plate C-12

Jewel Ridge Estates
W.O.: 5718

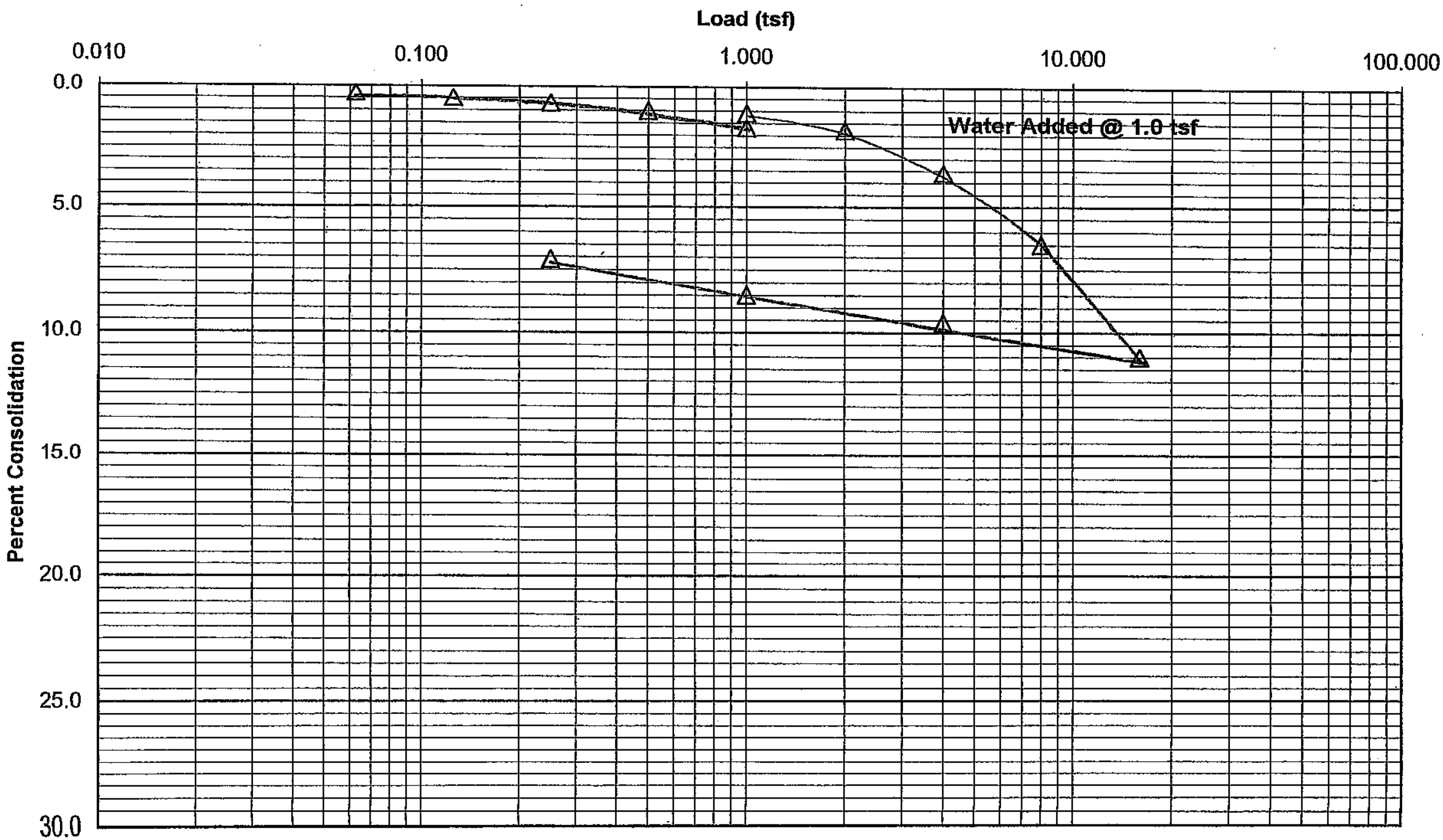
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 20.2 After: 23.2

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 @ 15.0'
Orange-brown, silty CLAY.

Consolidation Diagram

C5718.13

Plate C-13

Jewel Ridge Estates
W.O.: 5718

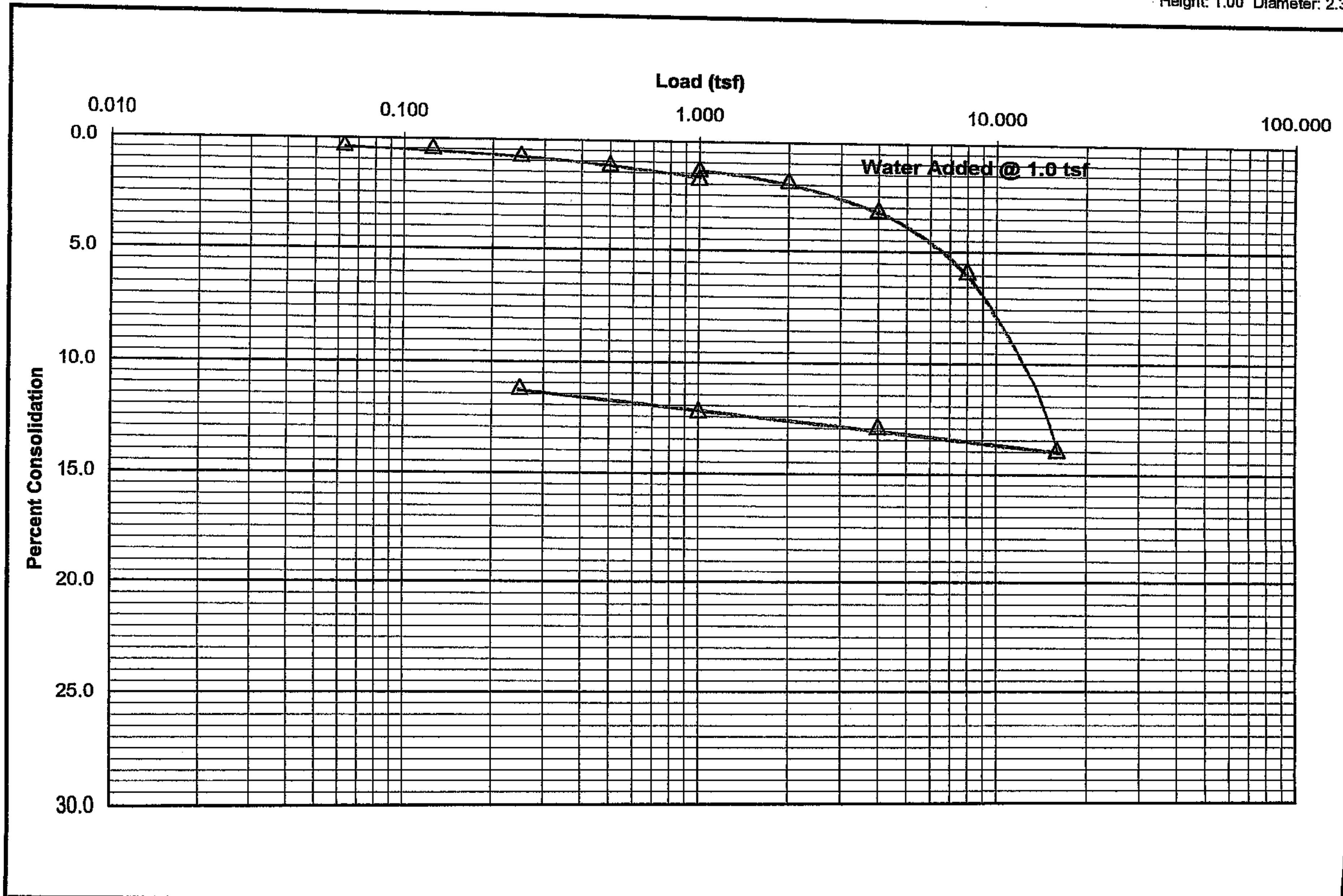
Date of Test: 12/11

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 19.8 After: 20.1

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 @ 25.0'
Brown, slightly sandy CLAY.

Consolidation Diagram

G5718.14

Plate C-14

Diamond Bar
W.O.: 5718 A

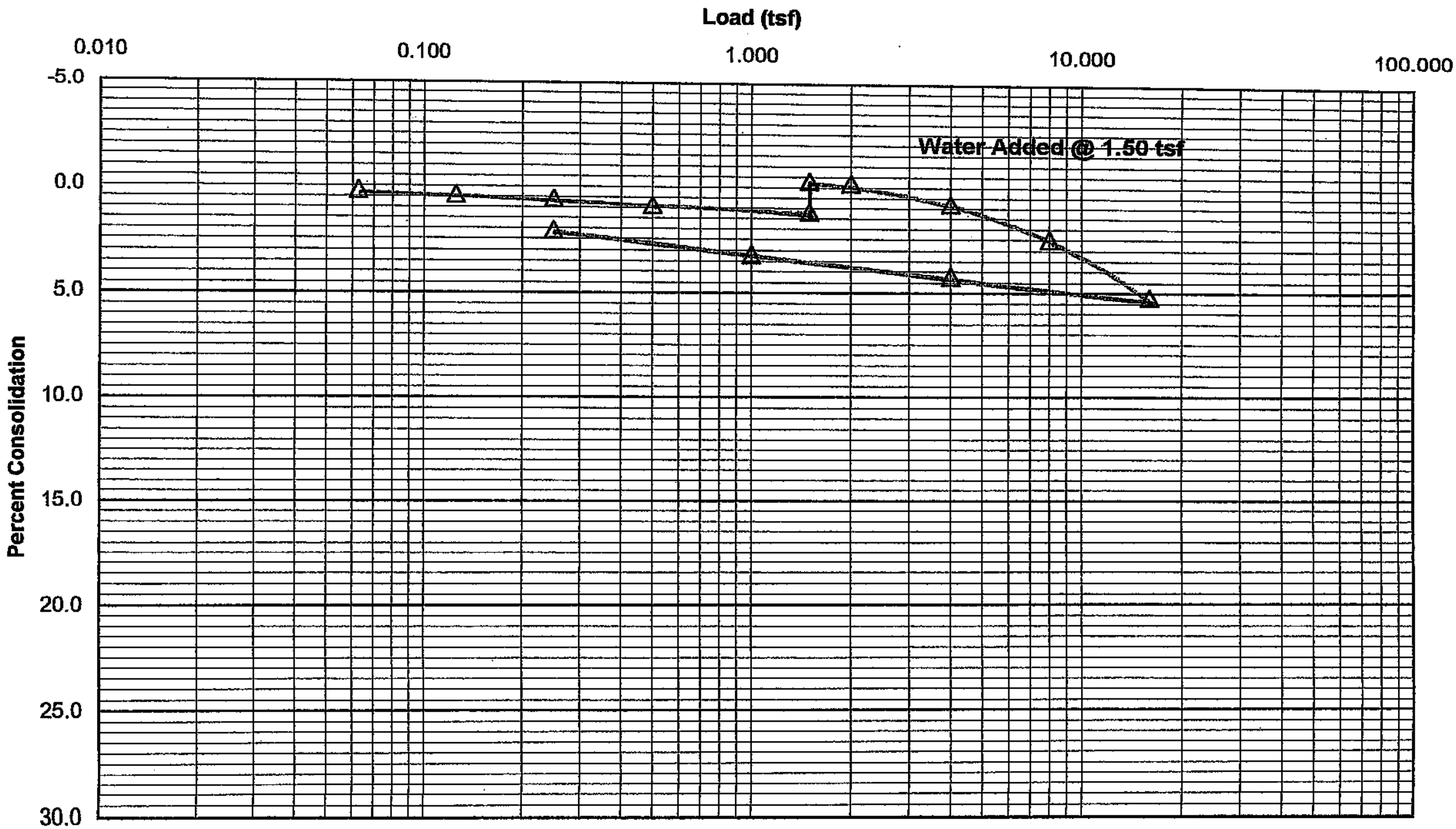
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 9.8 After: 15.0

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 5.0'
Brown, slightly clayey, sandy SILT.

Consolidation Diagram

C5718A.1

Plate C-15

Diamond Bar
W.O.: 5718 A

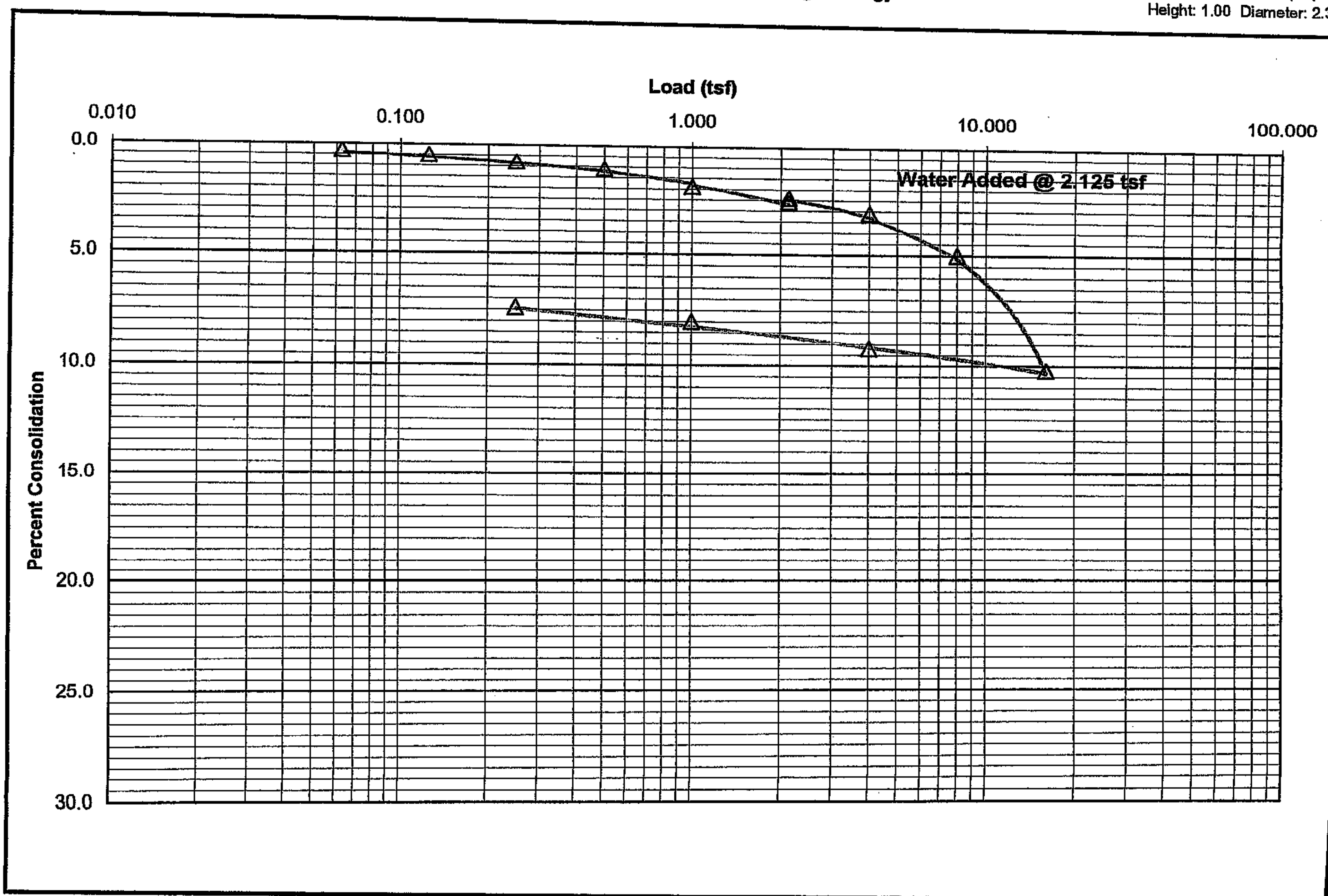
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 19.0 After: 20.6

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 15.0'
Brown, slightly sandy CLAY.

Consolidation Diagram

C5718A.2

Plate C-16

Diamond Bar
W.O.: 5718 A

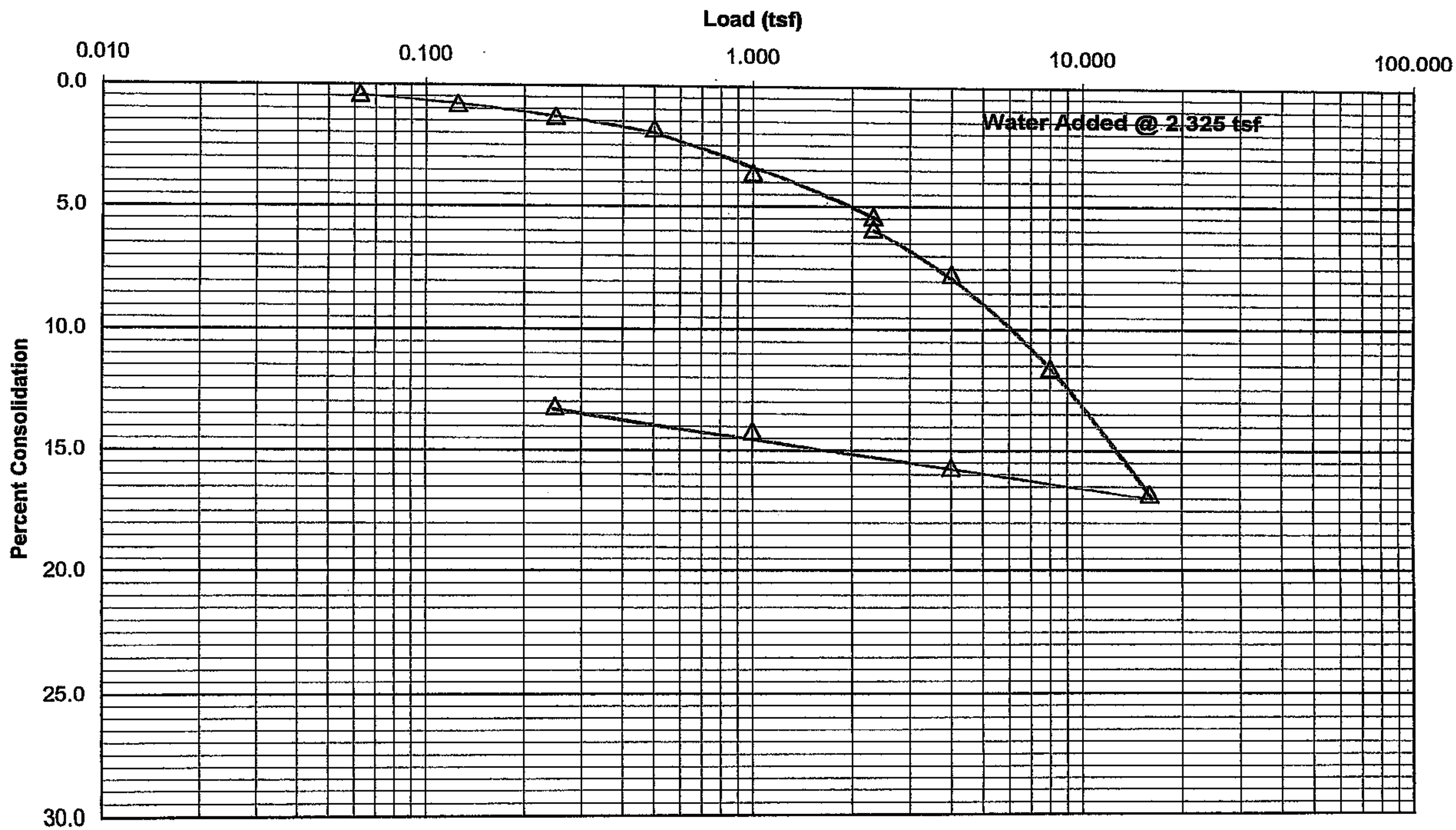
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 26.3 After: 21.5

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 20.0'
Brown, silty CLAY.

Consolidation Diagram

C5718A.3

Plate C-17

Diamond Bar
W.O.: 5718 A

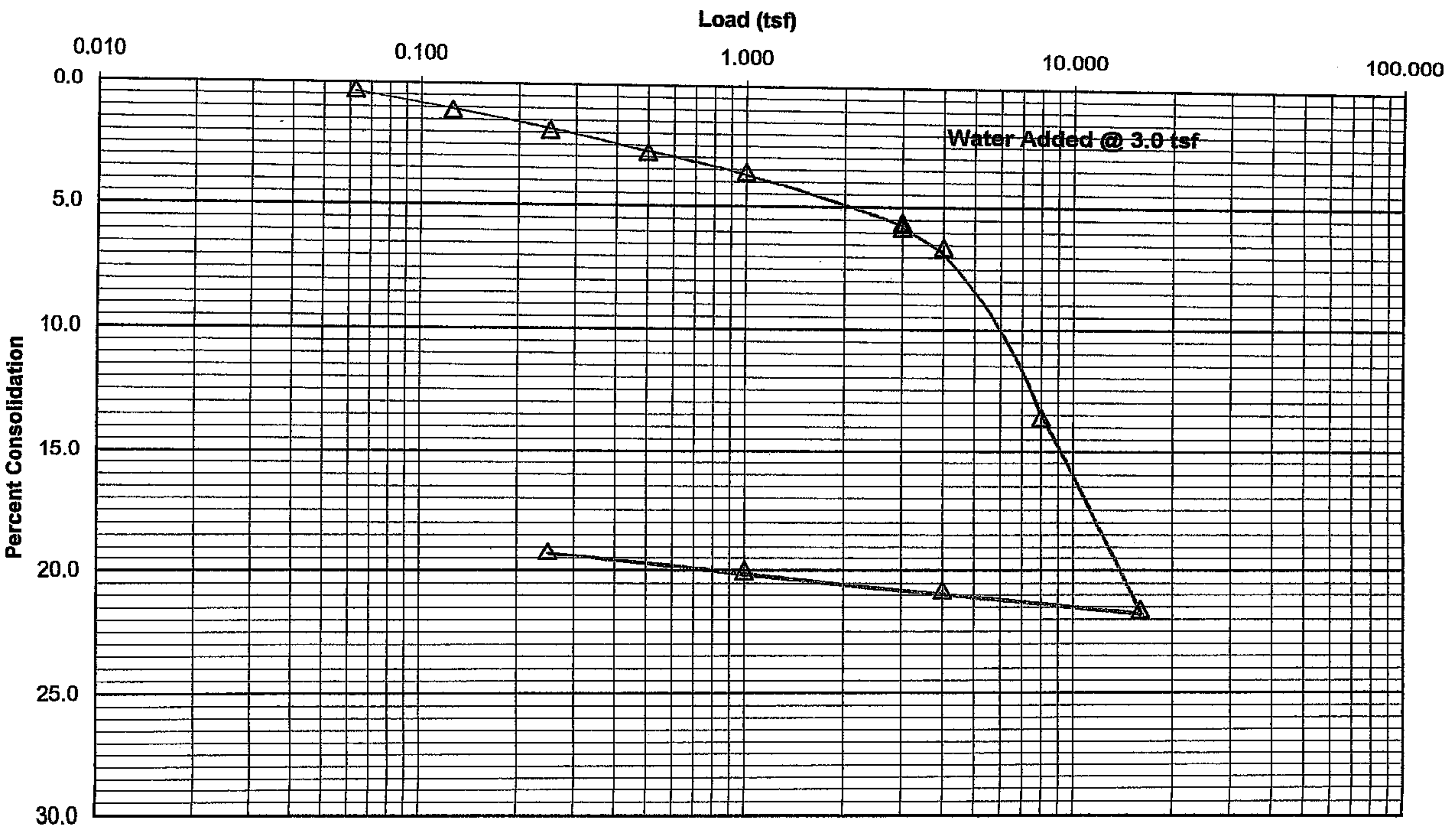
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 21.5 After: 18.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 30.0'
Orange-brown CLAY.

Consolidation Diagram

C5718A.4

Plate C-18

Diamond Bar
W.O.: 5718 A

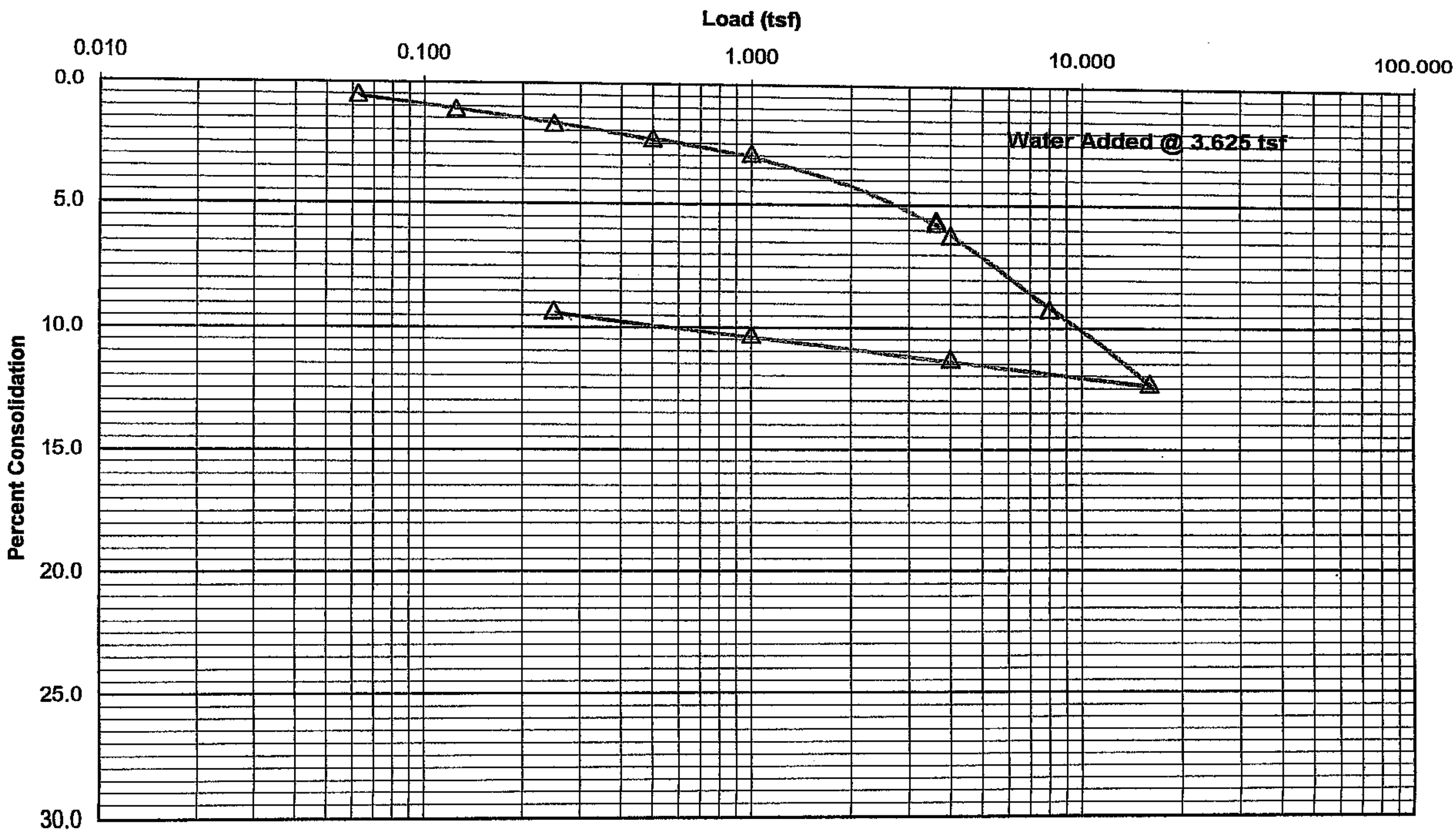
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 23.3 After: 20.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 40.0'
Orange-brown, sandy SILT, w/ silty CLAY.

Consolidation Diagram

C5718A.5

Plate C-19

Diamond Bar
W.O.: 5718 A

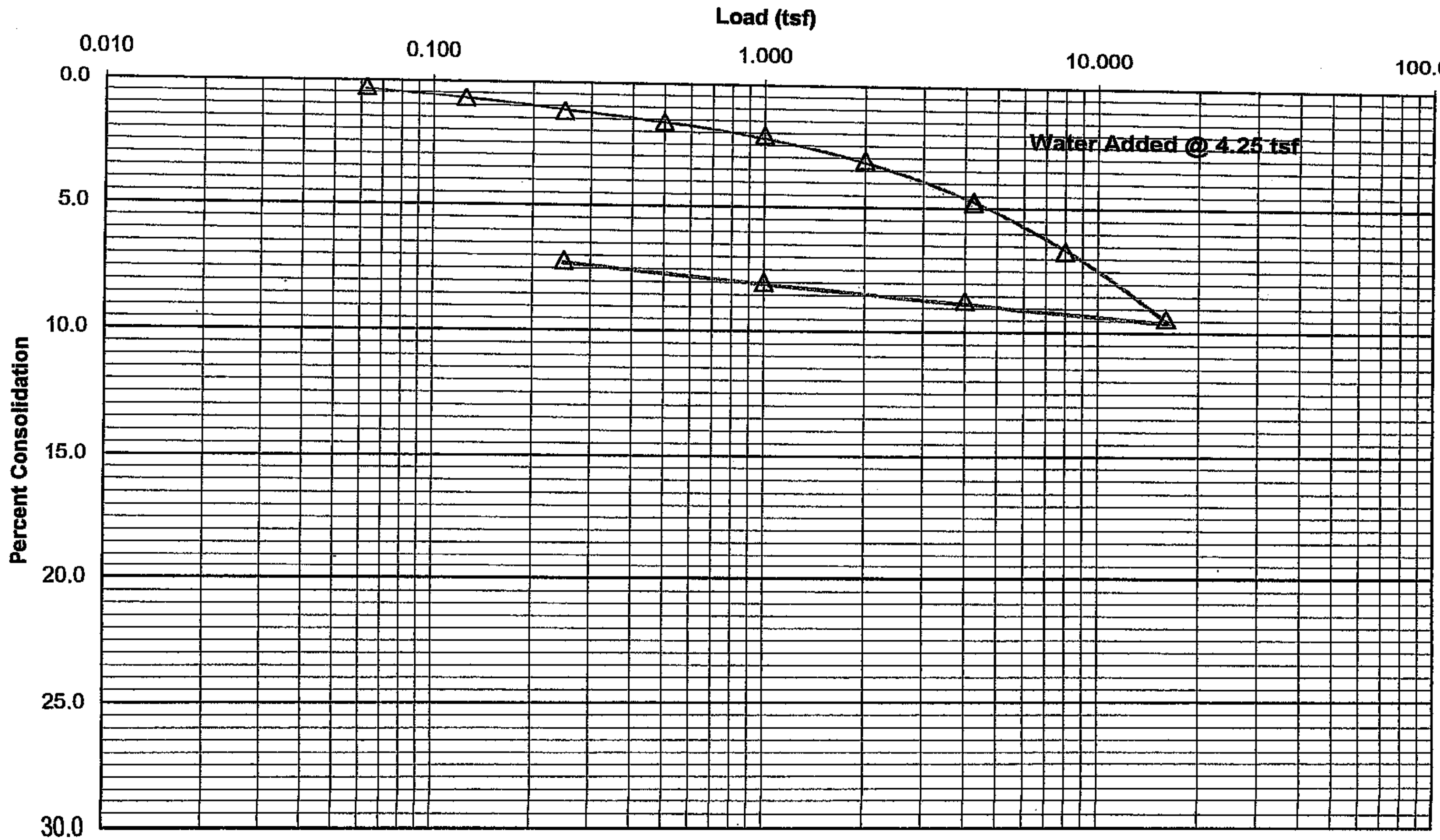
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 22.1 After: 22.6

Sample(in.)
Height: 1.00 Diameter: 2.36



B-1 (15) @ 50.0'
Orange-brown, slightly sandy, clayey SILT.

Consolidation Diagram

C5718A.6

Plate C-20

Diamond Bar
W.O.: 5718 A

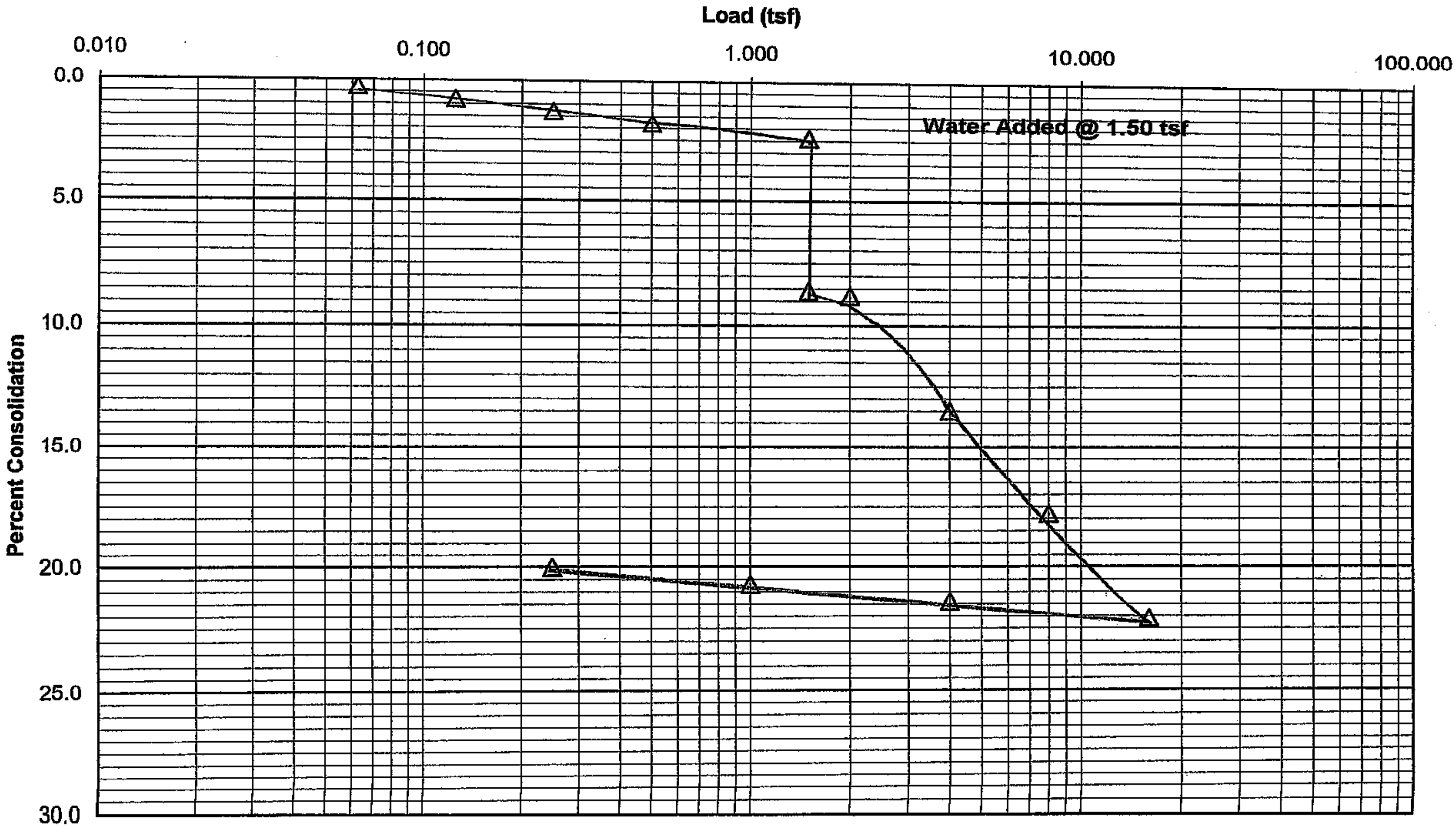
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 8.6 After: 14.4

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 (15) @ 5.0'
Brown, slightly clayey, sandy SILT.

Consolidation Diagram

C5718A.7

Plate C-21

Diamond Bar
W.O.: 5718 A

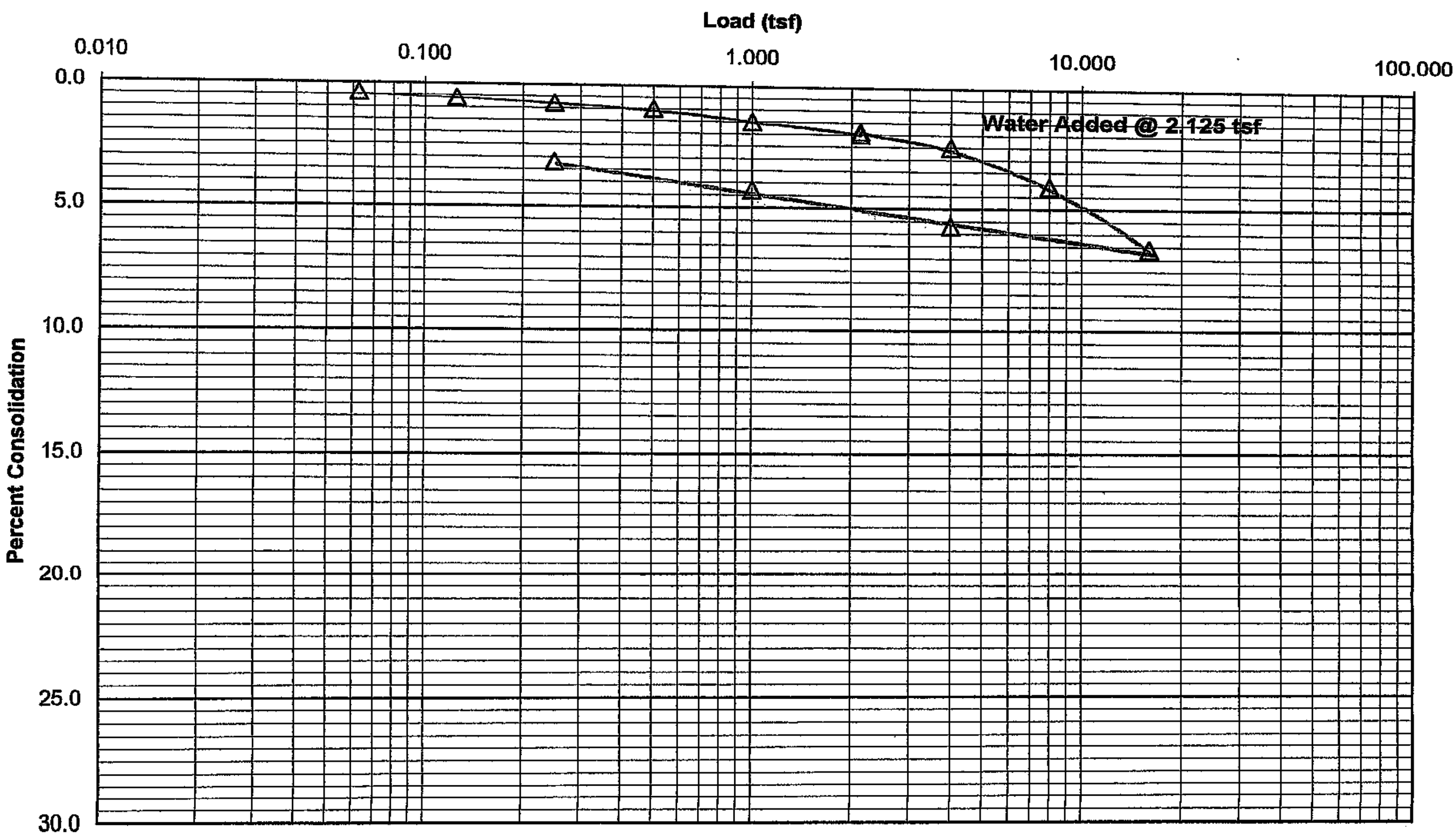
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 11.6 After: 17.9

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 (15) @ 15.0'
Orange-brown, slightly clayey, silty CLAY.

Consolidation Diagram

C5718A.8

Plate C-22

Diamond Bar
W.O.: 5718 A

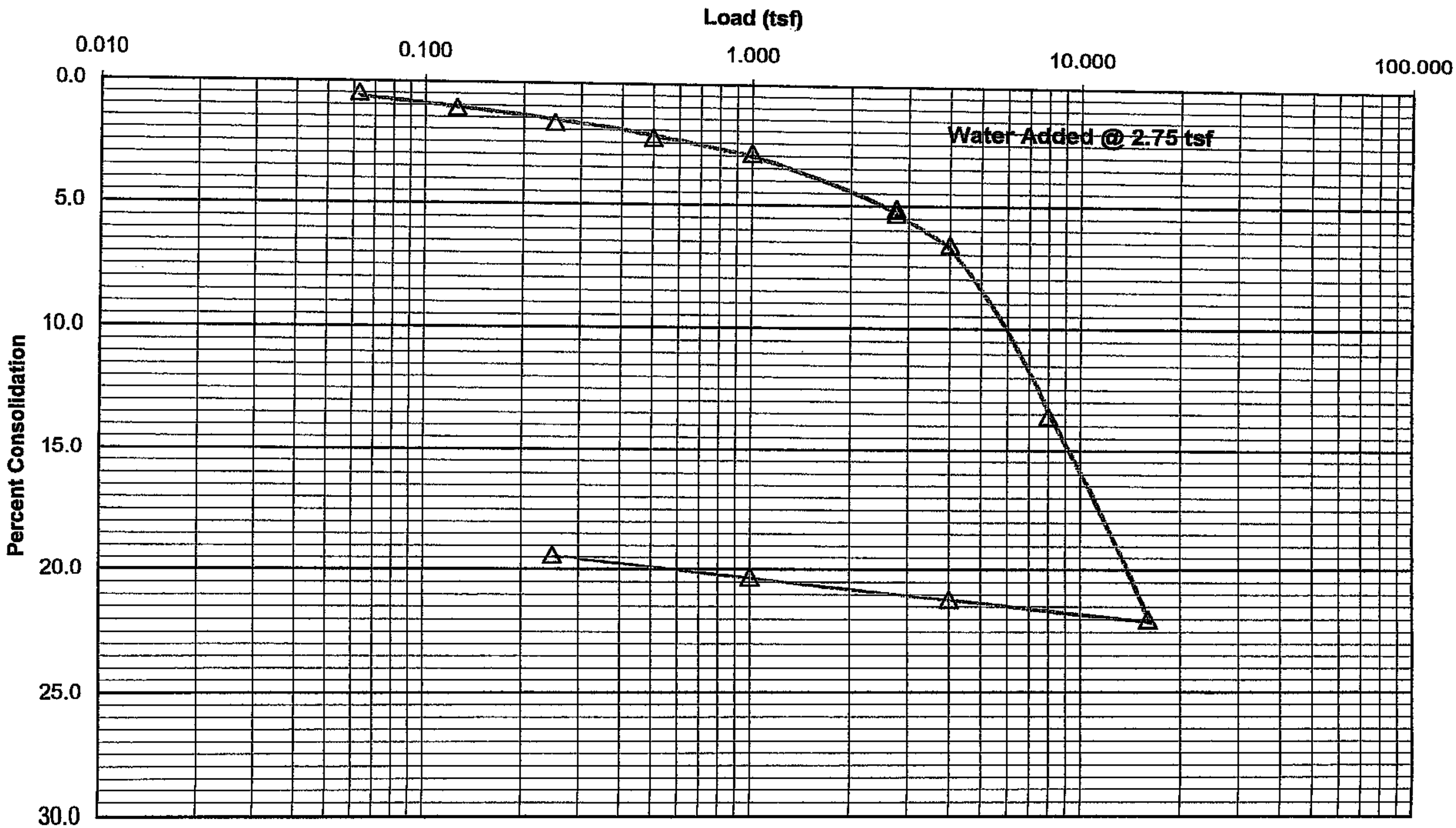
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 21.2 After: 17.2

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 (15) @ 25.0'
Brown, slightly sandy CLAY.

Consolidation Diagram

C5718A.9

Plate C-23

Diamond Bar
W.O.: 5718 A

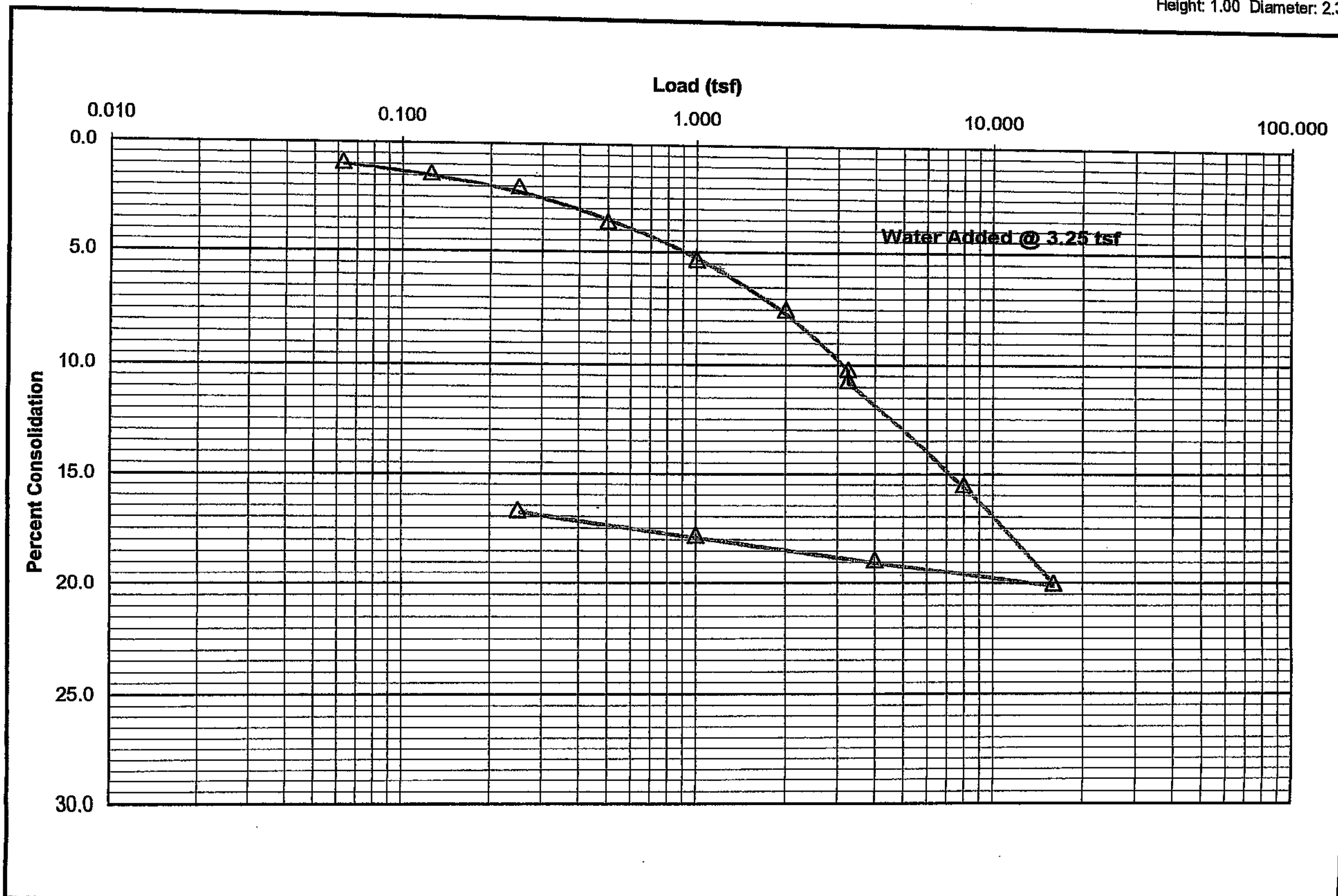
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 22.9 After: 17.7

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 (15) @ 35.0'
Grey, silty CLAY to clayey sand.

Consolidation Diagram

C5718A.10

Plate C-24

Diamond Bar
W.O.: 5718 A

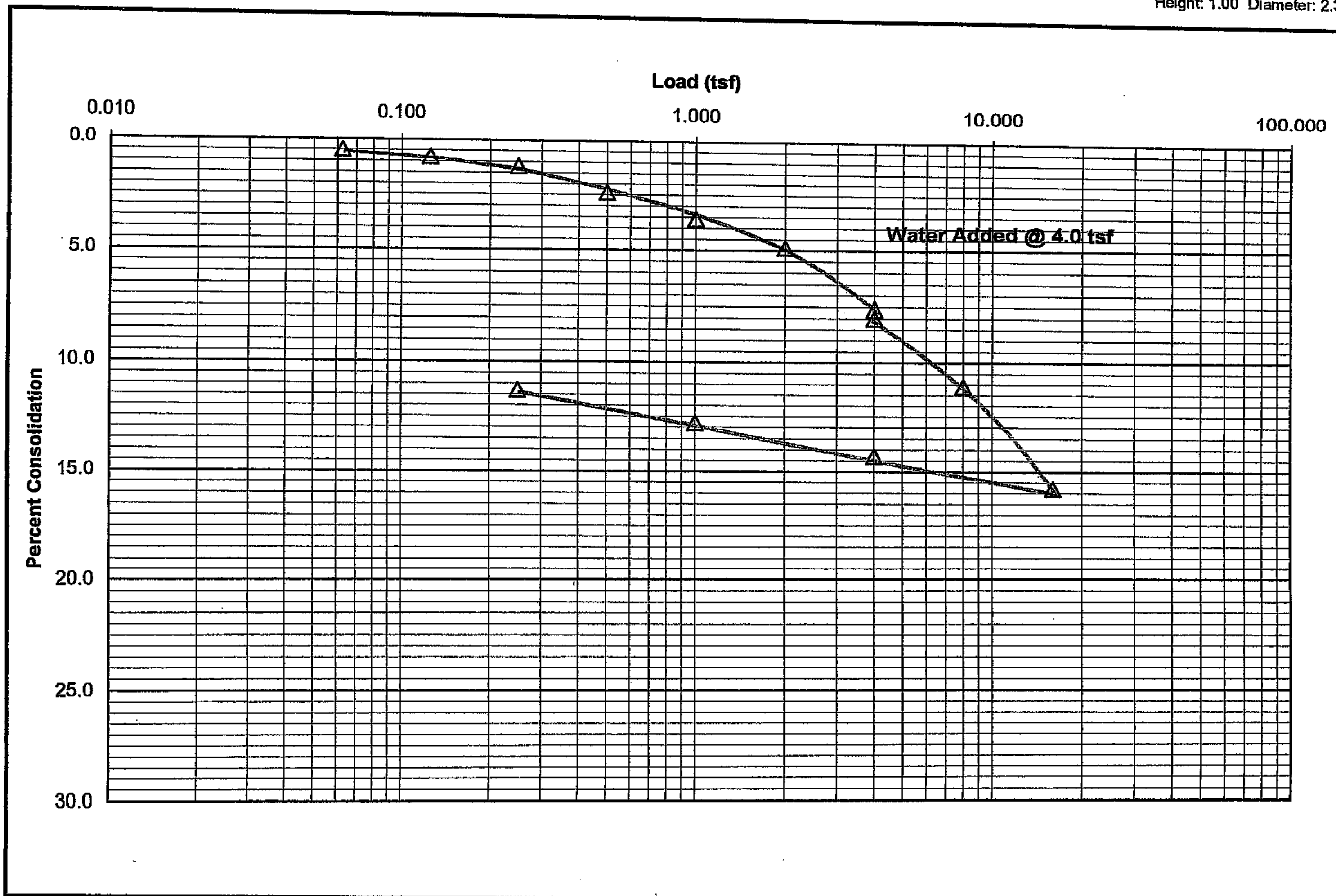
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 26.4 After: 26.5

Sample(in.)
Height: 1.00 Diameter: 2.36



B-3 (15) @ 45.0'
Orange-brown, slightly sandy CLAY.

Consolidation Diagram

C5718A.11

Plate C-25

Diamond Bar
W.O.: 5718 A

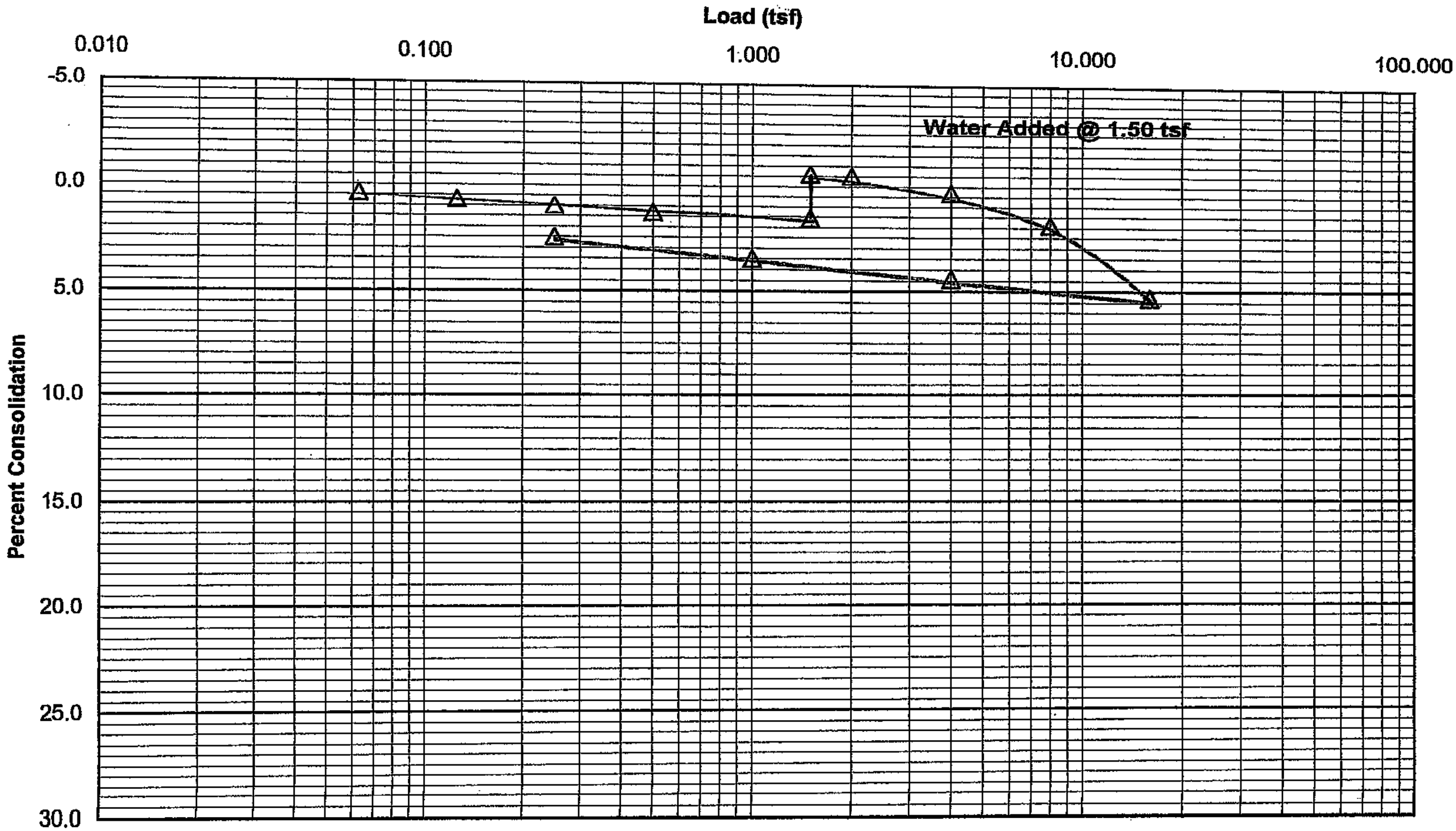
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 13.6 After: 17.9

Sample(in.)
Height: 1.00 Diameter: 2.36



B-4 (15) @ 5.0'
Dark-brown, slightly sandy, silty CLAY.

Consolidation Diagram

C5718A.12

Plate C-26

Diamond Bar
W.O.: 5718 A

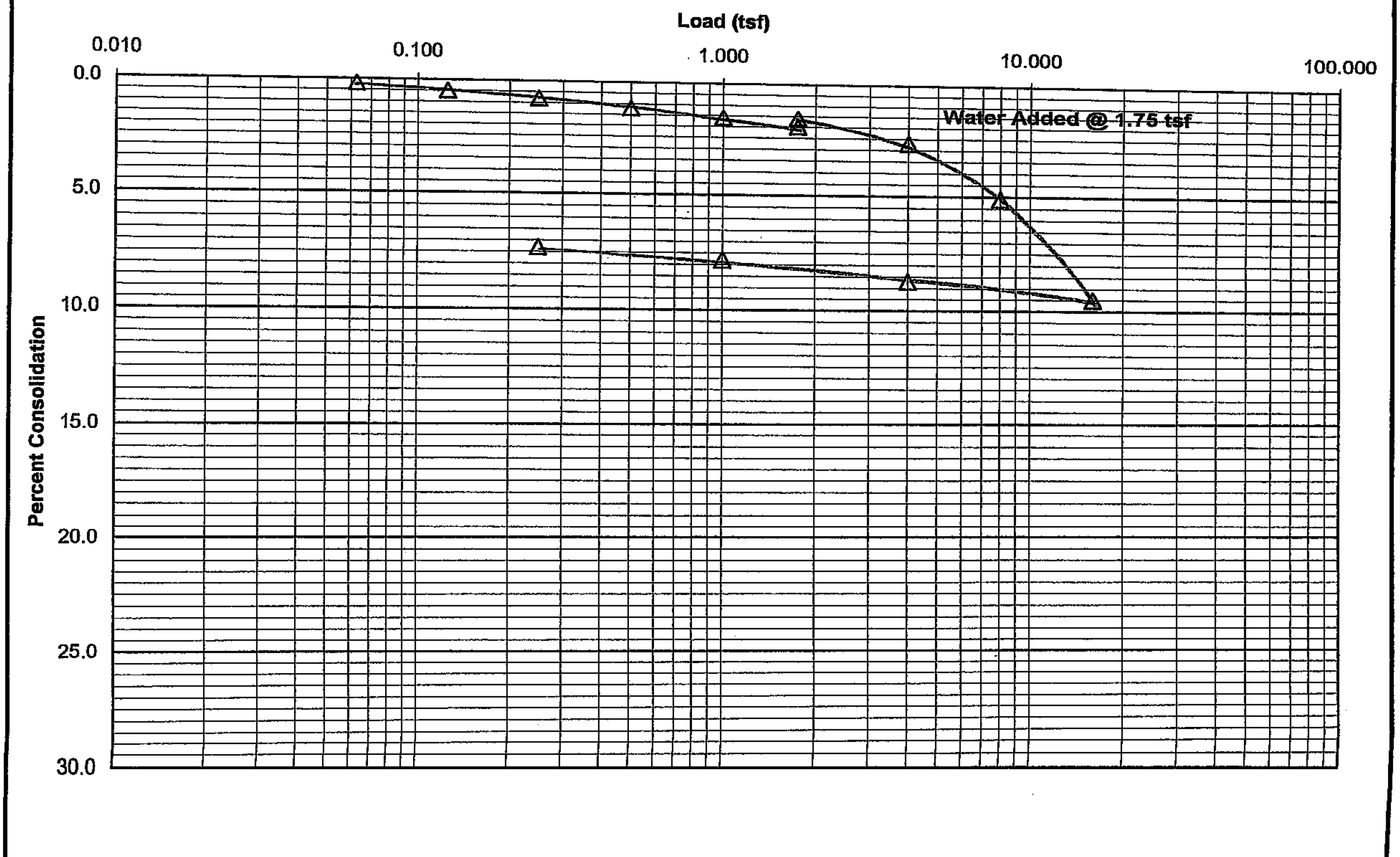
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 13.3 After: 17.8

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 (15) @ 10.0'
Brown, slightly sandy CLAY.

Consolidation Diagram

C5718A.13

Plate C-27

Diamond Bar
W.O.: 5718 A

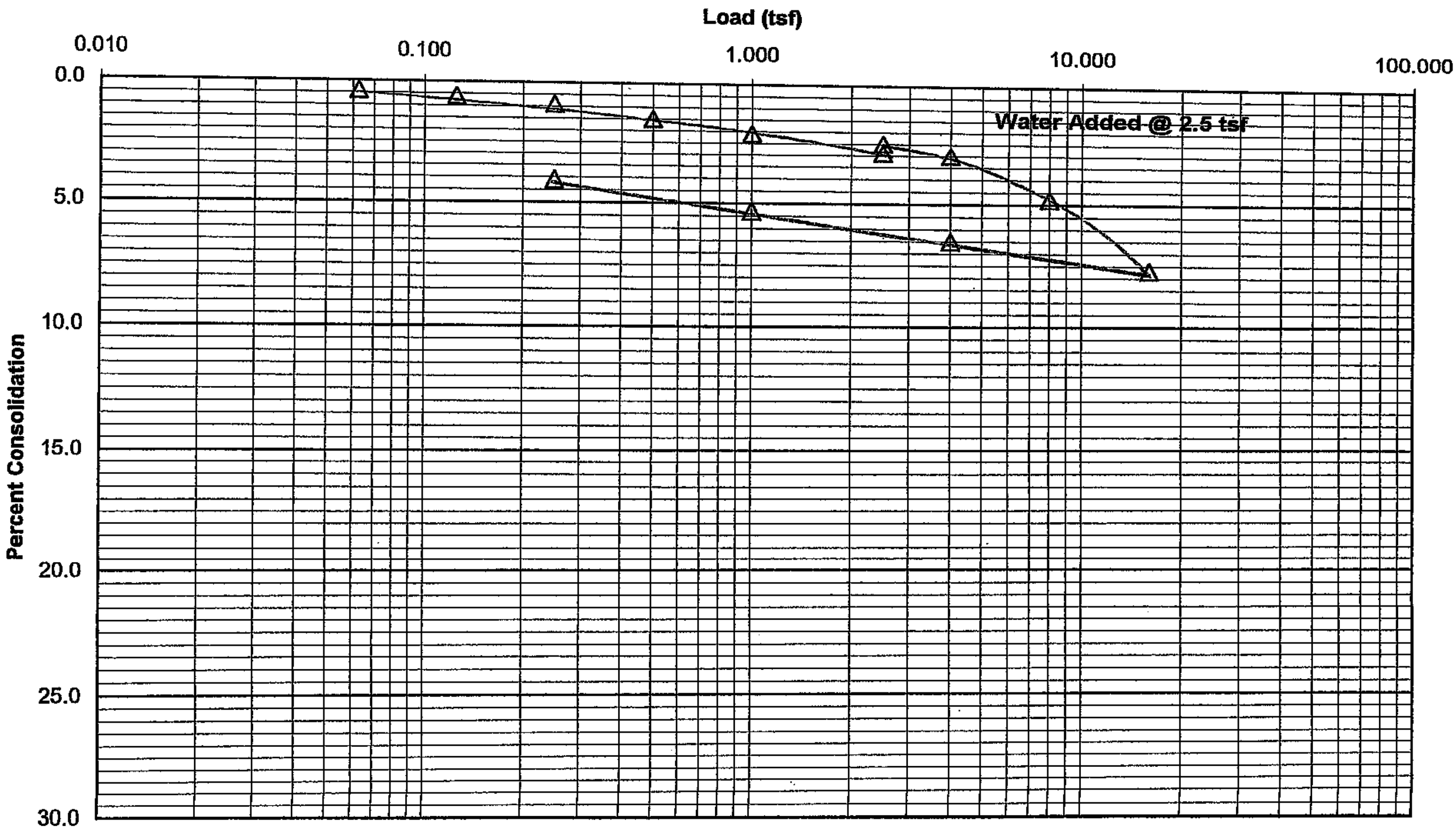
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 14.3 After: 17.9

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 (15) @ 20.0'
Brown, sandy CLAY.

Consolidation Diagram

C5718A.14

Plate C-28

Diamond Bar
W.O.: 5718 A

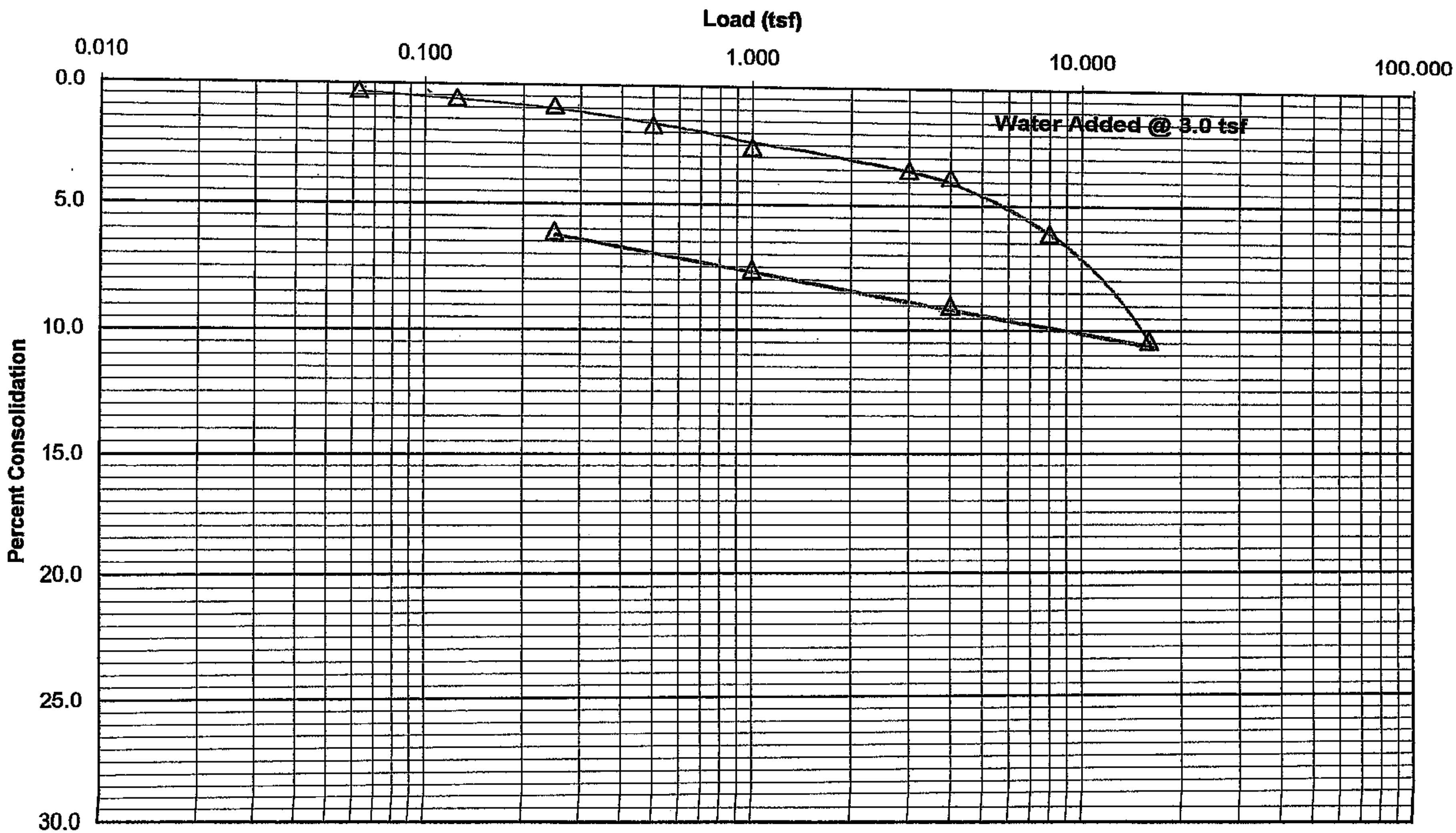
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 25.3 After: 25.2

Sample(in.)
Height: 1.00 Diameter: 2.36



B-5 (15) @ 30.0'
Brown, silty CLAY.

Consolidation Diagram

C5718A.15

Plate C-29

Diamond Bar
W.O.: 5718 A

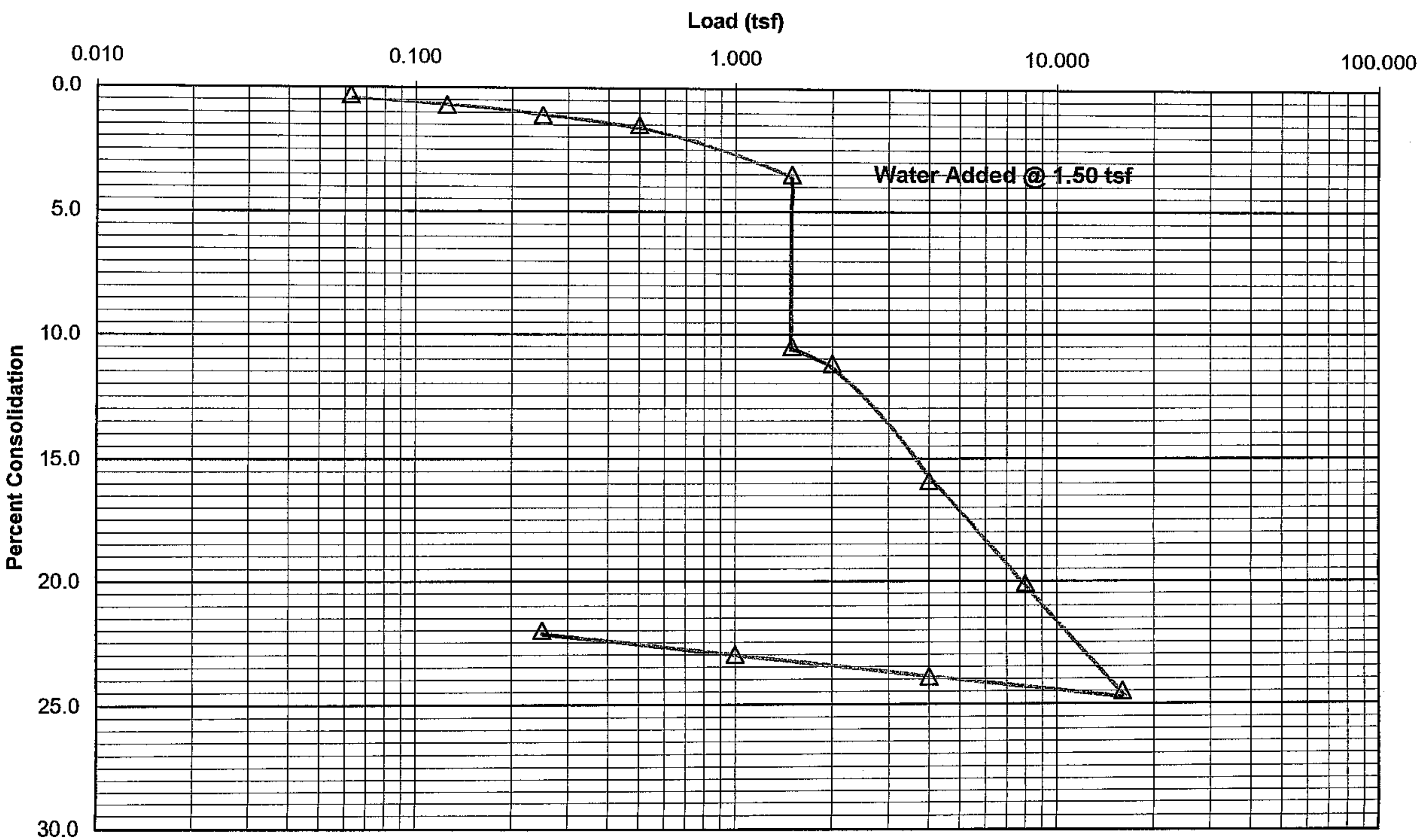
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 9.5 After: 17.3

Sample(in.)
Height: 1.00 Diameter: 2.36



B-8 (15) @ 5.0'
Brown, slightly sandy SILT.

Consolidation Diagram

C5718A.16

Plate C-30

Diamond Bar
W.O.: 5718 A

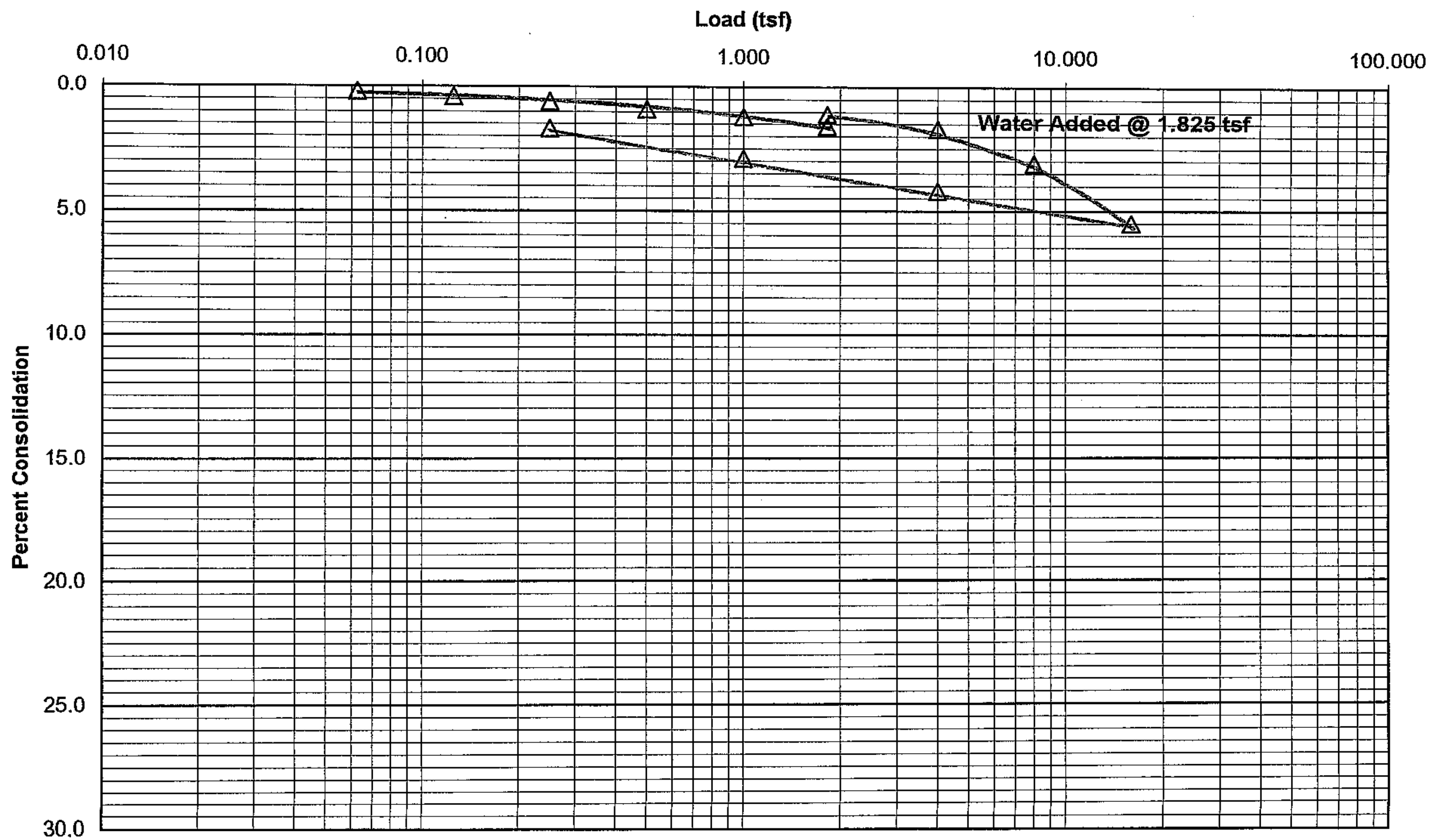
Date of Test: 7/15

GeoSoils Consultants, Inc.

Geotechnical Engineering * Engineering Geology

Moisture(%)
Before: 9.3 After: 16.4

Sample(in.)
Height: 1.00 Diameter: 2.36

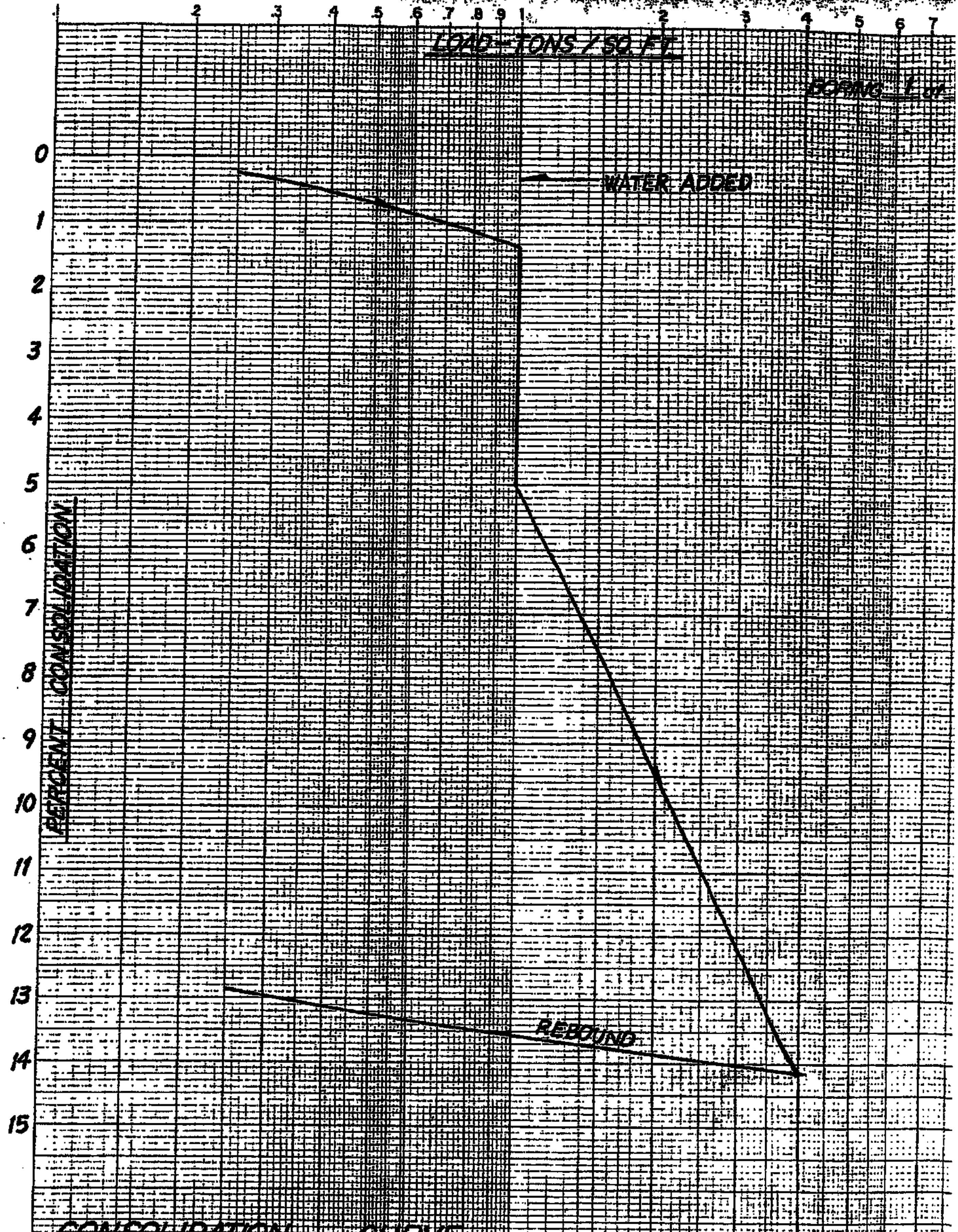


B-8 (15) @ 10.0'
Brown, slightly sandy, clayey SILT.

Consolidation Diagram

C5718A.17

Plate C-31

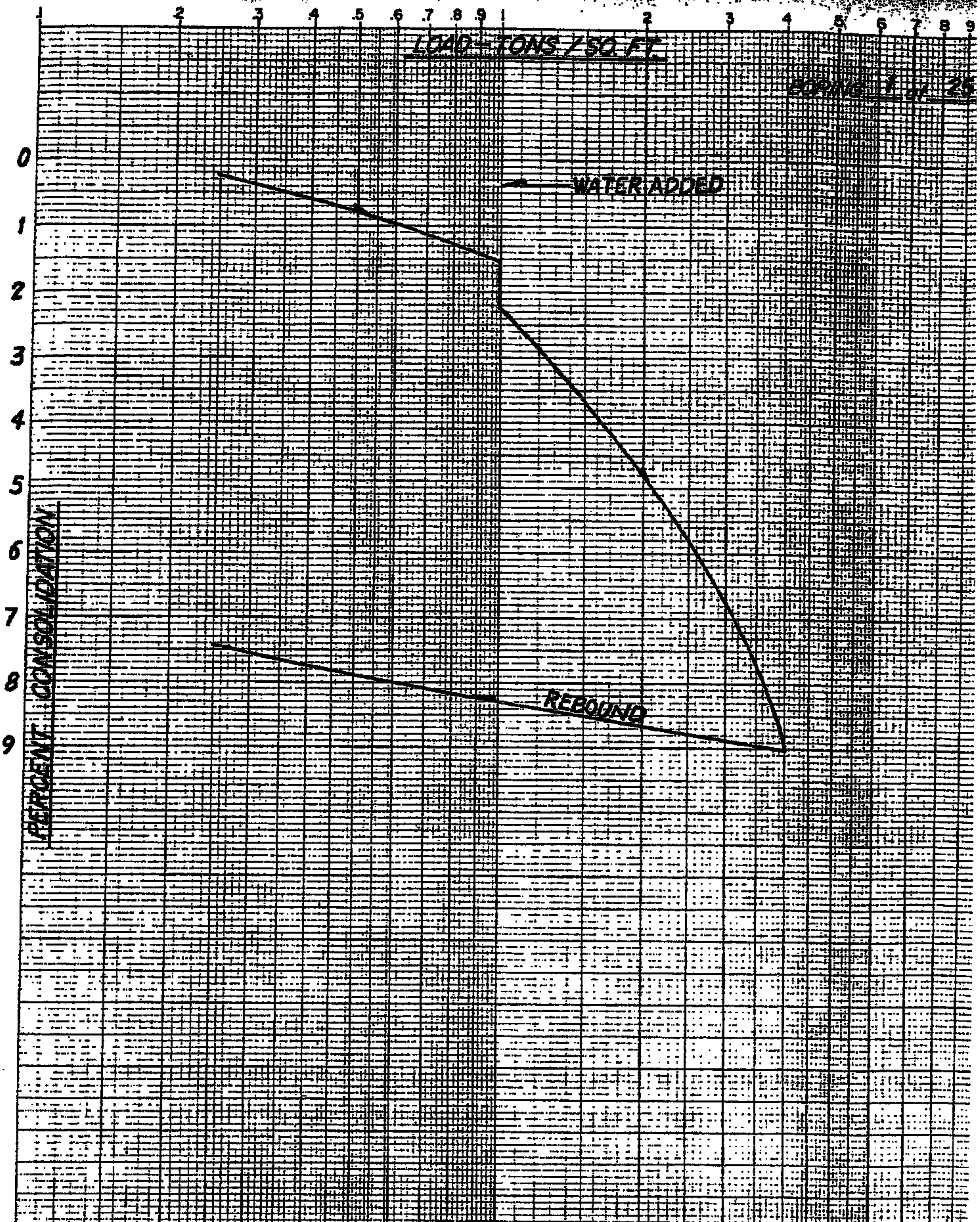


CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.
W.O. 11386 DATE 6-5-91

Form CC2

PLATE B-1

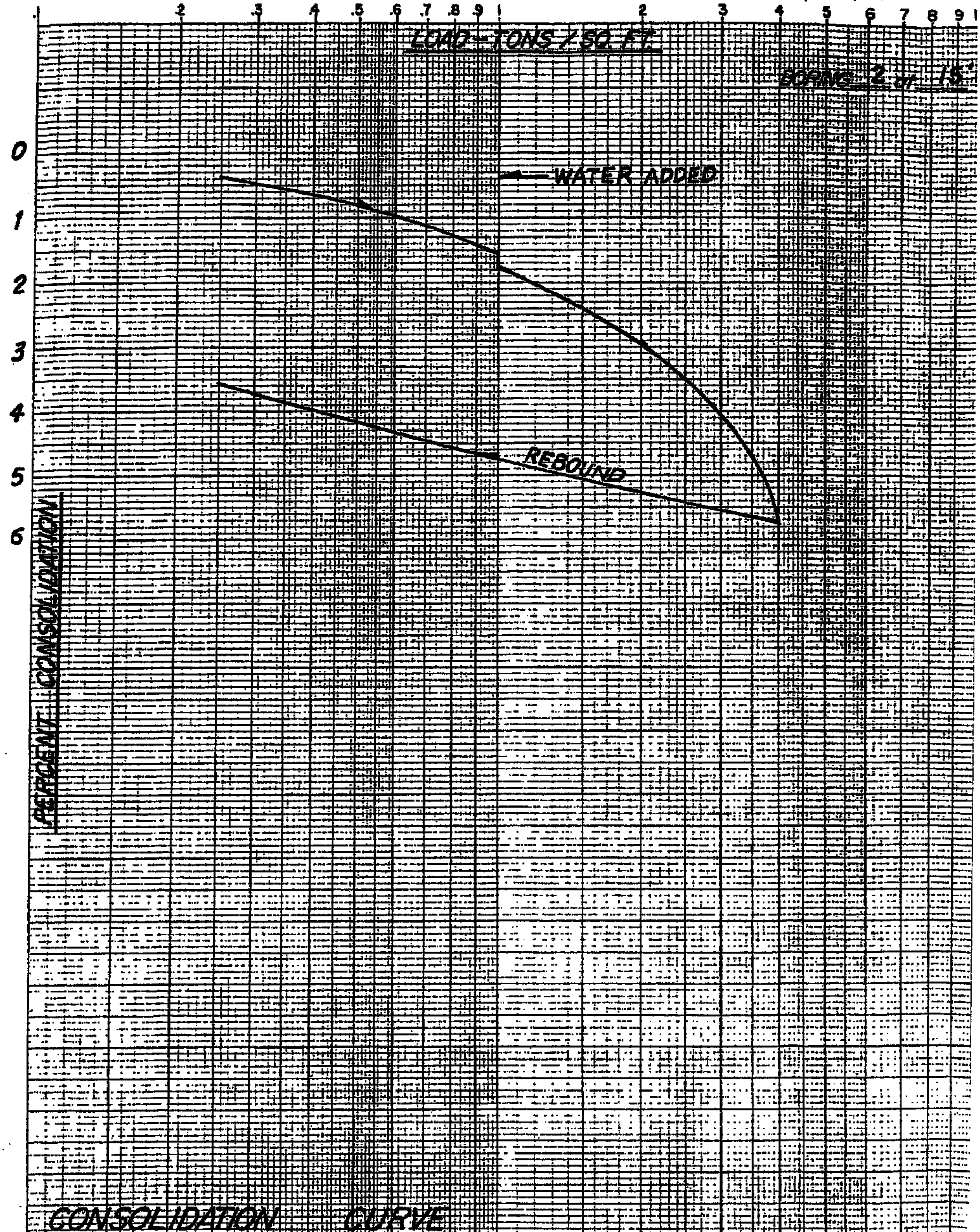


CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.
W.O. 11386 DATE 6-5-91

Form CC2

PLATE B-2

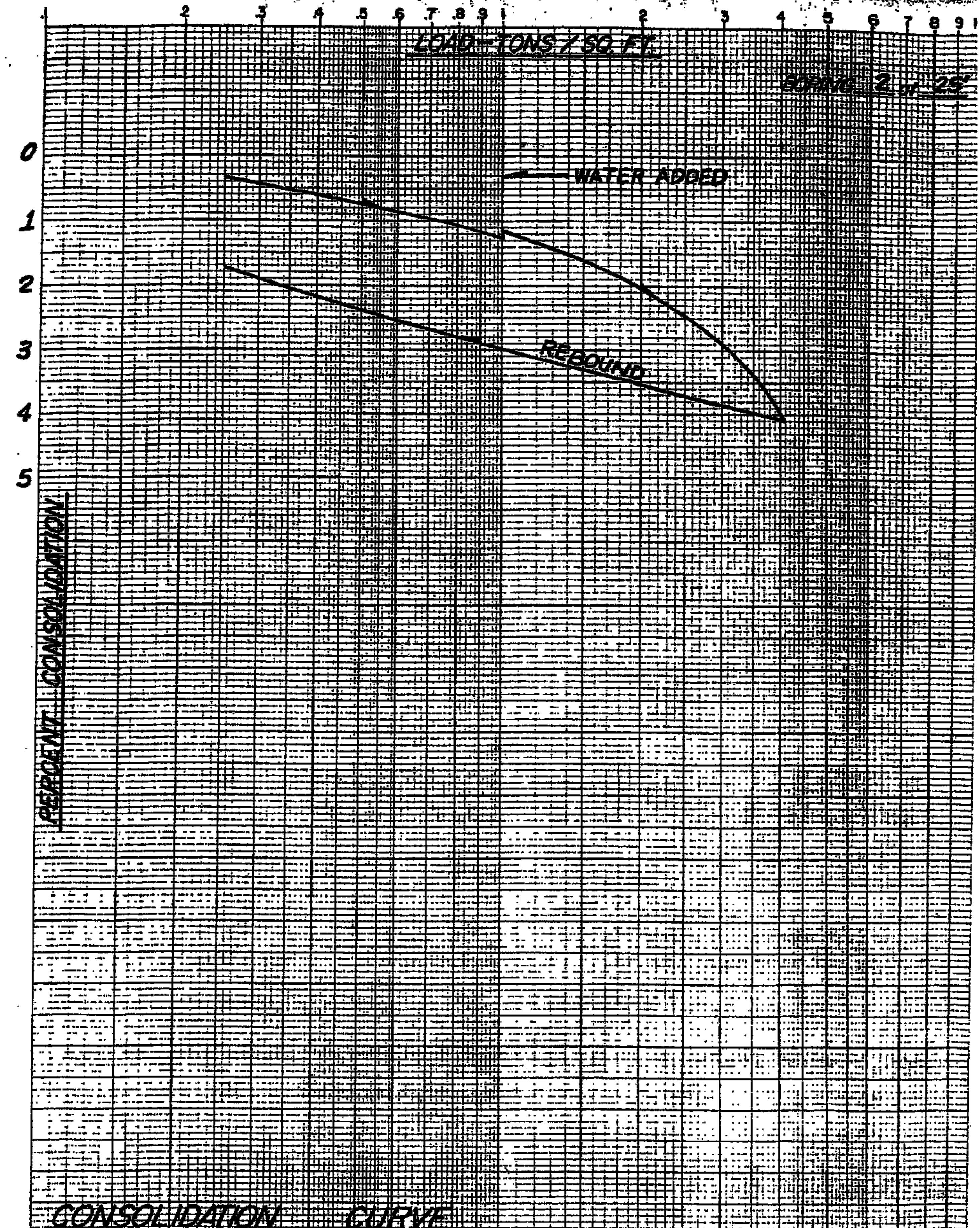


CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.
W.O. 11386 DATE 6-5-91

Form CC2

PLATE B-3



CONSOLIDATION CURVE

PACIFIC SOILS ENGINEERING, INC.
W.O. 11386 DATE 6-5-91

Form CC2

PLATE B-4

APPENDIX D

Slope Stability Analysis

Index

Section ***Page***

Tables

Figures

APPENDIX D

Slope Stability Analyses

1.0 Approach

- Slope stability analyses were conducted using the computer program Slope W. The Modified Bishop's Method was used to analyze rotational failure modes. A coefficient of horizontal acceleration of 0.15g (FS of 1.1) was used to evaluate the pseudostatic stability analyses.

- After a review of the latest grading plan and based on our supplemental investigation and review, four cross-sections (A-A', B-B', C-C', and E-E') were considered representative and critical with regards slope stability analysis.

2.0 Design Shear Strength

Direct shear testing of undisturbed samples of the bedrock materials encountered at the site were previously performed by GSE and others in order to develop representative shear strengths for the Puente Formation bedrock on site. During this current investigation, an additional six direct shear tests of the Puente Formation Bedrock was performed. Composite plots using the shear strength test data from the previous (by others) and the current testing (by LGC) were developed for residual and peak strengths. Based on the data points, the least square best fit line resulted in a shear strength values of phi = 31.5, C=167 psf for residual, and phi = 30, C=790 psf for peak strengths. However, a more conservative residual shear strength value of phi=28°, C=250 psf, and peak strength of phi=30, C=500 psf was used in the analysis for the Puente Formation bedrock. The composite plots are included in Appendix C. The residual value utilized in the analysis is in line with the reported shear strength data included in the CGS Seismic Hazard Zone report for the Yorba Linda Quadrangle, which indicates that the Puente Formation Bedrock has a shear strength with a Mean Cohesion Value of 343 psf, and phi of 28 degrees. Therefore, based on the site-specific testing, and the reported values, the shear strength value utilized in the current analysis is considered appropriate for the site bedrock. The parameters used in the slope stability analysis are presented in Table D-1.

Table D-1 Design Shear Strength Parameters for Slope Stability Analyses					
Material	**Cohesion (lb/ft^2)**		**Angle of Internal Friction (Degrees)**		**Saturated Bulk Density (lb/ft^3)**
	Residual	**Peak**	**Residual**	**Peak**	
Engineered Fill (Af)	200	200	27	34	120
Quaternary Alluvium (Qal)	250	-	25	-	125
Landslide Material (Qols)	200	-	30	-	120
Landslide Plane	150	150	10	10	120
Bedrock/Puente Formation (Tp)	250	500	28	30	120

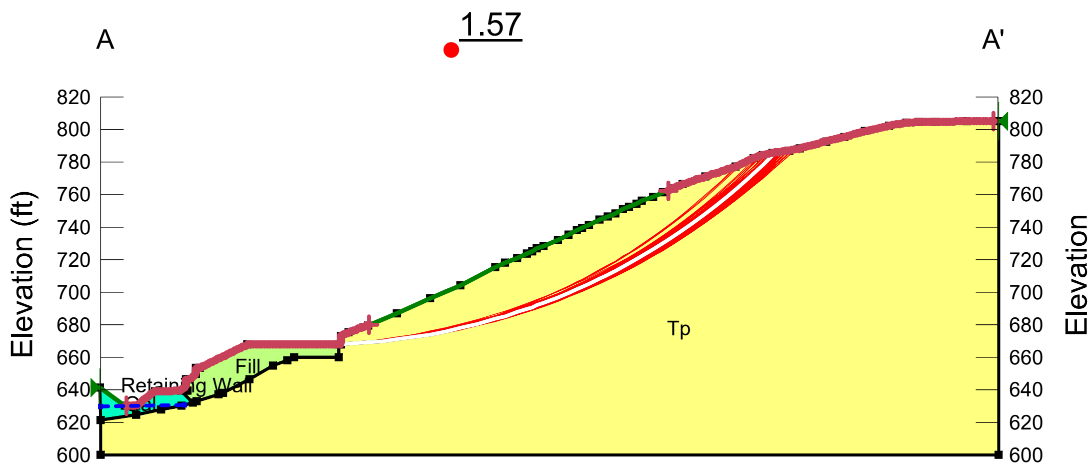
Table D-2 Summary of Slope Stability Analyses			
Cross-Section	**Condition**	**Factor of Safety**	**Remarks**
A-A’	Global Stability, Static	1.57	Modified Bishop Method
A-A’	Global Stability, Pseudostatic	1.37	Modified Bishop Method
A-A’	Lower Slope, Static	1.50	Modified Bishop Method
A-A’	Lower Slope, Pseudostatic	1.42	Modified Bishop Method
A-A’	Temporary	1.50	Modified Bishop Method
B-B’	Global Stability, Static	1.79	Modified Bishop Method
B-B’	Global Stability, Pseudostatic	1.62	Modified Bishop Method
B-B’	Lower Slope, Static	1.55	Modified Bishop Method
B-B’	Lower Slope, Pseudostatic	1.43	Modified Bishop Method
B-B’	Temporary	1.61	Modified Bishop Method
C-C’	Global Stability, Static	1.50	Modified Bishop Method
C-C’	Global Stability, Pseudostatic	1.33	Modified Bishop Method

Table D-2 Summary of Slope Stability Analyses			
Cross-Section	**Condition**	**Factor of Safety**	**Remarks**
C-C’	Temporary	1.28	Modified Bishop Method
E-E’	Global Stability, Static	2.45	Modified Bishop Method
E-E’	Global Stability, Pseudostatic	2.03	Modified Bishop Method
E-E’	Lower Slope, Static	1.93	Modified Bishop Method
E-E’	Lower Slope, Pseudostatic	1.75	Modified Bishop Method
E-E’	Temporary	1.96	Modified Bishop Method

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz 08/24/2020 04:00:53 PM

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz

1 - Rotational Static Global
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

1 - Rotational Static Global

File Information

- File Version: 10.01
- Title: Slope Stability Analyses Cross-section
- Revision Number: 505
- Date: 08/24/2020
- Time: 04:00:53 PM
- Tool Version: 10.1.0.18696
- File Name: Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz
- Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
- Last Solved Date: 08/24/2020
- Last Solved Time: 04:01:20 PM

Project Settings

- Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Global

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 10
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (15.98173, 630.31414) ft
Left-Zone Right Coordinate: (165.05872, 680.00727) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (349.14104, 762.52181) ft
Right-Zone Right Coordinate: (549.14843, 805.01893) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.20223, 641.52948) ft
Right Coordinate: (552.24099, 805.01893) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.11878 ft	629.93263 ft
Coordinate 2	51.83951 ft	630.76731 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.20223 ft	641.52948 ft
Point 2	15.04854 ft	630.31414 ft
Point 3	22.11915 ft	630.31414 ft
Point 4	33.36607 ft	639.1584 ft
Point 5	49.45717 ft	639.39887 ft
Point 6	90.34935 ft	667.81503 ft
Point 7	147.6961 ft	668.04326 ft
Point 8	147.86873 ft	673.22787 ft
Point 9	152.46017 ft	675.18661 ft
Point 10	164.38107 ft	679.73592 ft
Point 11	182.35278 ft	686.9324 ft
Point 12	202.92297 ft	696.40954 ft
Point 13	221.44051 ft	704.40178 ft
Point 14	242.8405 ft	715.23279 ft
Point 15	248.73642 ft	718.07157 ft
Point 16	256.42294 ft	721.04136 ft
Point 17	262.10049 ft	723.88013 ft
Point 18	265.52869 ft	725.23738 ft
Point 19	268.32989 ft	726.81701 ft
Point 20	272.62647 ft	728.27026 ft
Point 21	281.15644 ft	731.89286 ft
Point 22	287.64343 ft	735.1153 ft
Point 23	293.09839 ft	738.02181 ft
Point 24	296.0049 ft	739.454 ft
Point 25	300.42785 ft	741.30742 ft
Point 26	307.08333 ft	744.40349 ft
Point 27	312.07495 ft	746.53071 ft
Point 28	316.41365 ft	748.17352 ft
Point 29	321.25783 ft	750.91154 ft
Point 30	324.81725 ft	752.61753 ft
Point 31	329.53506 ft	754.61839 ft
Point 32	332.96811 ft	756.19801 ft
Point 33	339.79208 ft	758.74647 ft
Point 34	345.79465 ft	761.16856 ft

Point 35	352.51332 ft	763.88552 ft
Point 36	358.0736 ft	766.28655 ft
Point 37	372.0796 ft	770.96223 ft
Point 38	390.52961 ft	777.07011 ft
Point 39	401.60804 ft	782.31447 ft
Point 40	407.10513 ft	784.23108 ft
Point 41	413.50787 ft	785.51584 ft
Point 42	423.51216 ft	787.13758 ft
Point 43	429.87278 ft	788.16961 ft
Point 44	446.19135 ft	792.6549 ft
Point 45	457.47366 ft	795.26317 ft
Point 46	469.96911 ft	798.90262 ft
Point 47	484.79989 ft	802.39043 ft
Point 48	495.44529 ft	803.90687 ft
Point 49	502.95672 ft	804.53451 ft
Point 50	513.48755 ft	804.53451 ft
Point 51	532.63259 ft	805.01893 ft
Point 52	552.24099 ft	805.01893 ft
Point 53	552.24099 ft	600.04807 ft
Point 54	0.09626 ft	600.04807 ft
Point 55	146.56291 ft	668.02355 ft
Point 56	146.49218 ft	659.95505 ft
Point 57	119.00276 ft	660.00944 ft
Point 58	114.66406 ft	658.02964 ft
Point 59	106.0709 ft	654.72296 ft
Point 60	91.70685 ft	646.74059 ft
Point 61	75.34195 ft	638.40018 ft
Point 62	72.60393 ft	637.09436 ft
Point 63	59.06129 ft	632.92415 ft
Point 64	56.78129 ft	632.16593 ft
Point 65	49.58186 ft	630.09262 ft
Point 66	37.42002 ft	628.03026 ft
Point 67	22.013 ft	624.9064 ft
Point 68	-0.05751 ft	621.418 ft
Point 69	60.87673 ft	653.37987 ft
Point 70	58.80453 ft	653.34567 ft
Point 71	58.799 ft	649.61776 ft
Point 72	54.7561 ft	646.35467 ft
Point 73	52.65098 ft	646.32278 ft
Point 74	52.62793 ft	642.47786 ft
Point 75	52.62793 ft	639.42935 ft
Point 76	53.64237 ft	639.42935 ft
Point 77	53.66296 ft	646.33811 ft

Regions

	Material	Points	Area
Region 1	Tp	54,53,52,51,50,49,48,47,46,45,44,43,42,41,40,39,38,37,36,35,34,33,32,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,55,56,57,58,59,60,61,62,63,64,65,66,67,68	68,481 ft²
Region 2	Qal	64,5,4,3,2,1,68,67,66,65	545.85 ft²
Region 3	Fill	69,70,71,72,77,76,75,74,5,64,63,62,61,60,59,58,57,56,55,6	1,397.1 ft²
Region 4	Retaining Wall	74,75,76,77,73	7.0272 ft²

Slip Results

Slip Surfaces Analysed: 144746 of 163216 converged

Current Slip Surface

Slip Surface: 139,525

Factor of Safety: 1.57

Volume: 6,655.2532 ft³

Weight: 798,630.39 lbf

Resisting Moment: 1.9208939e+08 lbf·ft

Activating Moment: 1.2231958e+08 lbf·ft

Slip Rank: 1 of 163,216 slip surfaces

Exit: (147.69639, 668.05194) ft

Entry: (415.13323, 785.77932) ft

Radius: 400.22046 ft

Center: (131.29541, 1,067.9362) ft

Slip Slices

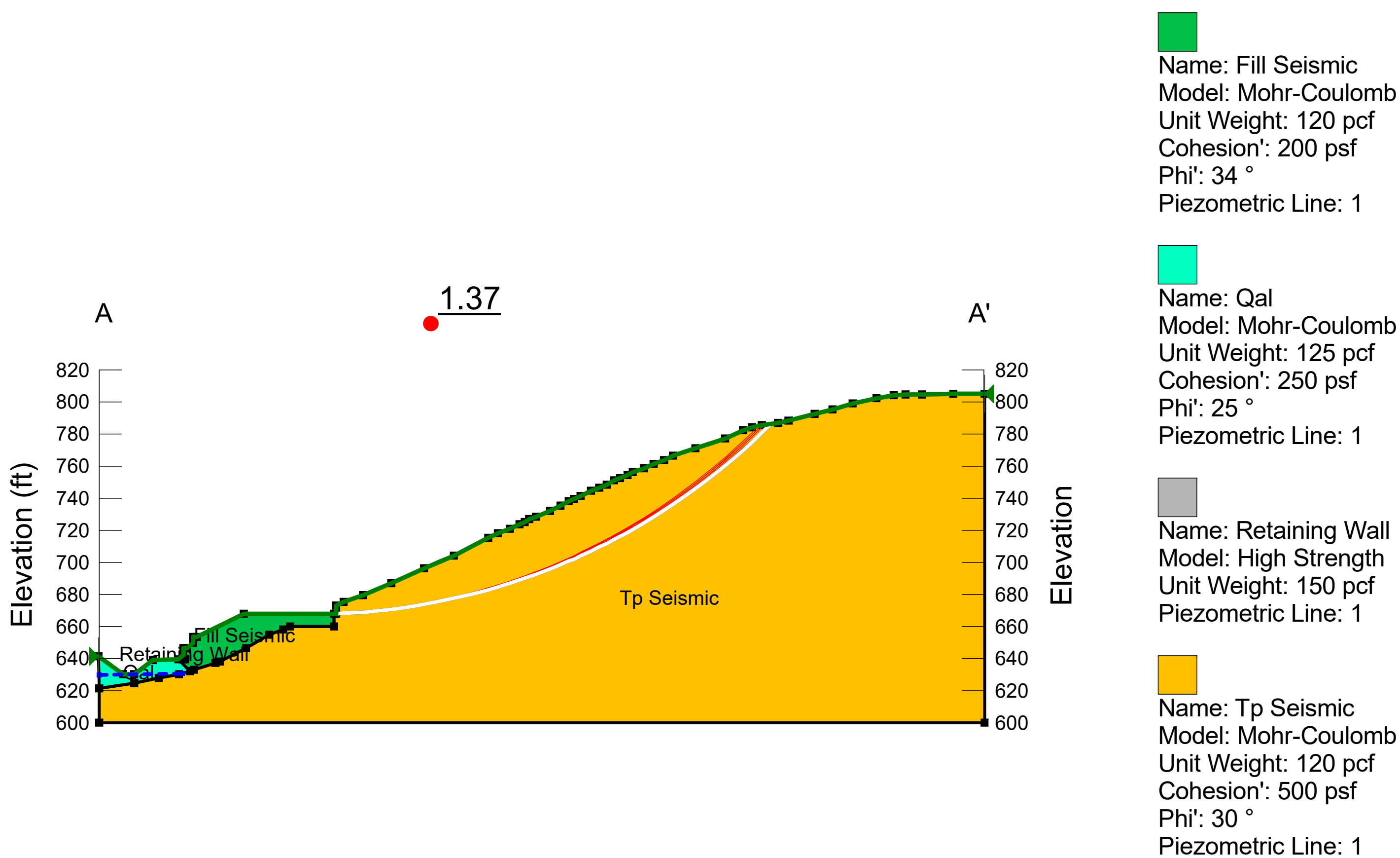
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	147.78256 ft	668.0555 ft	0 psf	300.37882 psf	159.71425 psf	250 psf	0 psf	Tp
Slice 2	150.16445 ft	668.16741 ft	0 psf	707.71715 psf	376.29989 psf	250 psf	0 psf	Tp
Slice 3	158.42062 ft	668.68071 ft	0 psf	1,022.5414 psf	543.69493 psf	250 psf	0 psf	Tp
Slice 4	168.874 ft	669.50943 ft	0 psf	1,389.2498 psf	738.67724 psf	250 psf	0 psf	Tp
Slice 5	177.85985 ft	670.45953 ft	0 psf	1,683.4192 psf	895.08986 psf	250 psf	0 psf	Tp
Slice 6	187.49533 ft	671.7153 ft	0 psf	2,002.7178 psf	1,064.8639 psf	250 psf	0 psf	Tp
Slice 7	197.78042 ft	673.31111 ft	0 psf	2,342.0852 psf	1,245.3088 psf	250 psf	0 psf	Tp
Slice 8	207.55236 ft	675.07611 ft	0 psf	2,615.9317 psf	1,390.9156 psf	250 psf	0 psf	Tp
Slice 9	216.81113 ft	676.98733 ft	0 psf	2,828.5183 psf	1,503.9498 psf	250 psf	0 psf	Tp
Slice 10	226.79051 ft	679.3146 ft	0 psf	3,068.5206 psf	1,631.5613 psf	250 psf	0 psf	Tp
Slice 11	237.4905 ft	682.10175 ft	0 psf	3,329.8062 psf	1,770.4894 psf	250 psf	0 psf	Tp
Slice 12	245.78846 ft	684.4544 ft	0 psf	3,499.9498 psf	1,860.9563 psf	250 psf	0 psf	Tp
Slice 13	252.57968 ft	686.55677 ft	0 psf	3,566.0289 psf	1,896.0912 psf	250 psf	0 psf	Tp
Slice 14	259.26171 ft	688.73696 ft	0 psf	3,622.932 psf	1,926.3471 psf	250 psf	0 psf	Tp
Slice 15	263.81459 ft	690.29645 ft	0 psf	3,666.0189 psf	1,949.2568 psf	250 psf	0 psf	Tp
Slice 16	266.92929 ft	691.40248 ft	0 psf	3,694.5461 psf	1,964.425 psf	250 psf	0 psf	Tp
Slice 17	270.47818 ft	692.70385 ft	0 psf	3,705.4296 psf	1,970.2119 psf	250 psf	0 psf	Tp
Slice 18	276.89146 ft	695.16651 ft	0 psf	3,691.002 psf	1,962.5406 psf	250 psf	0 psf	Tp
Slice 19	284.39994 ft	698.17534 ft	0 psf	3,708.4377 psf	1,971.8113 psf	250 psf	0 psf	Tp
Slice 20	290.37091 ft	700.69982 ft	0 psf	3,744.0074 psf	1,990.724 psf	250 psf	0 psf	Tp
Slice 21	294.55165 ft	702.53056 ft	0 psf	3,764.2584 psf	2,001.4917 psf	250 psf	0 psf	Tp
Slice 22	298.21638 ft	704.19469 ft	0 psf	3,748.2097 psf	1,992.9584 psf	250 psf	0 psf	Tp
Slice 23	303.75559 ft	706.79869 ft	0 psf	3,713.6264 psf	1,974.5702 psf	250 psf	0 psf	Tp
Slice 24	309.57914 ft	709.62969 ft	0 psf	3,668.4833 psf	1,950.5672 psf	250 psf	0 psf	Tp
Slice 25	314.2443 ft	711.98653 ft	0 psf	3,601.5852 psf	1,914.9968 psf	250 psf	0 psf	Tp
Slice 26	318.83574 ft	714.38632 ft	0 psf	3,562.2724 psf	1,894.0938 psf	250 psf	0 psf	Tp
Slice 27	323.03754 ft	716.64251 ft	0 psf	3,542.4685 psf	1,883.5639 psf	250 psf	0 psf	Tp
Slice 28	327.17615 ft	718.93788 ft	0 psf	3,480.999 psf	1,850.88 psf	250 psf	0 psf	Tp
Slice 29	331.25158 ft	721.25189 ft	0 psf	3,411.6284 psf	1,813.995 psf	250 psf	0 psf	Tp
Slice 30	336.38009 ft	724.27809 ft	0 psf	3,293.9011 psf	1,751.3983 psf	250 psf	0 psf	Tp
Slice 31	342.79336 ft	728.18257 ft	0 psf	3,125.9539 psf	1,662.0992 psf	250 psf	0 psf	Tp
Slice 32	349.15398 ft	732.23095 ft	0 psf	2,953.6187 psf	1,570.4669 psf	250 psf	0 psf	Tp
Slice 33	355.29346 ft	736.28875 ft	0 psf	2,781.6195 psf	1,479.0133 psf	250 psf	0 psf	Tp
Slice 34	361.5751 ft	740.63 ft	0 psf	2,563.9156 psf	1,363.2581 psf	250 psf	0 psf	Tp
Slice 35	368.5781 ft	745.67167 ft	0 psf	2,274.3961 psf	1,209.3178 psf	250 psf	0 psf	Tp

Slice 36	376.6921 ft	751.83056 ft	0 psf	1,911.5747 psf	1,016.4023 psf	250 psf	0 psf	Tp
Slice 37	385.91711 ft	759.21552 ft	0 psf	1,468.5696 psf	780.85233 psf	250 psf	0 psf	Tp
Slice 38	396.06883 ft	767.90808 ft	0 psf	1,012.5258 psf	538.3695 psf	250 psf	0 psf	Tp
Slice 39	404.35658 ft	775.36164 ft	0 psf	633.26864 psf	336.71491 psf	250 psf	0 psf	Tp
Slice 40	410.3065 ft	781.04026 ft	0 psf	246.17383 psf	130.89295 psf	250 psf	0 psf	Tp
Slice 41	414.32055 ft	784.96648 ft	0 psf	-47.895206 psf	-25.466333 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz 08/24/2020 04:00:53 PM

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz

1 - Rotational Pseudotatic Global
Horz Seismic Coef.: 0.15



LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

1 - Rotational Pseudotatic Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 505
Date: 08/24/2020
Time: 04:00:53 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:01:46 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudotatic Global

- Kind: SLOPE/W
- Parent: 1 - Rotational Static Global
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Critical Slip Surfaces from Other
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Limits
Left Coordinate: (-0.20223, 641.52948) ft
Right Coordinate: (552.24099, 805.01893) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.11878 ft	629.93253 ft
Coordinate 2	52.13416 ft	630.8638 ft

Seismic Coefficients
Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.20223 ft	641.52948 ft
Point 2	15.04854 ft	630.31414 ft
Point 3	22.11915 ft	630.31414 ft
Point 4	33.36607 ft	639.1584 ft
Point 5	49.45717 ft	639.39887 ft
Point 6	90.34935 ft	667.81503 ft
Point 7	147.6961 ft	668.04326 ft
Point 8	147.86873 ft	673.22787 ft
Point 9	152.46017 ft	675.18661 ft
Point 10	164.38107 ft	679.73592 ft
Point 11	182.35278 ft	686.9324 ft
Point 12	202.92297 ft	696.40954 ft
Point 13	221.44051 ft	704.40178 ft
Point 14	242.8405 ft	715.23279 ft
Point 15	248.73642 ft	718.07157 ft
Point 16	256.42294 ft	721.04136 ft
Point 17	262.10049 ft	723.88013 ft
Point 18	265.52869 ft	725.23738 ft
Point 19	268.32989 ft	726.81701 ft
Point 20	272.62647 ft	728.27026 ft
Point 21	281.15644 ft	731.89286 ft
Point 22	287.64343 ft	735.1153 ft
Point 23	293.09839 ft	738.02181 ft
Point 24	296.0049 ft	739.454 ft
Point 25	300.42785 ft	741.30742 ft
Point 26	307.08333 ft	744.40349 ft
Point 27	312.07495 ft	746.53071 ft
Point 28	316.41365 ft	748.17352 ft
Point 29	321.25783 ft	750.91154 ft
Point 30	324.81725 ft	752.61753 ft
Point 31	329.53506 ft	754.61839 ft
Point 32	332.96811 ft	756.19801 ft
Point 33	339.79208 ft	758.74647 ft
Point 34	345.79465 ft	761.16856 ft
Point 35	352.51332 ft	763.88552 ft
Point 36	358.0736 ft	766.28655 ft
Point 37	372.0796 ft	770.96223 ft
Point 38	390.52961 ft	777.07011 ft
Point 39	401.60804 ft	782.31447 ft
Point 40	407.10513 ft	784.23108 ft
Point 41	413.50787 ft	785.51584 ft
Point 42	423.51216 ft	787.13758 ft
Point 43	429.87278 ft	788.16961 ft
Point 44	446.19135 ft	792.6549 ft
Point 45	457.47366 ft	795.26317 ft

Point 46	469.96911 ft	798.90262 ft
Point 47	484.79989 ft	802.39043 ft
Point 48	495.44529 ft	803.90687 ft
Point 49	502.95672 ft	804.53451 ft
Point 50	513.48755 ft	804.53451 ft
Point 51	532.63259 ft	805.01893 ft
Point 52	552.24099 ft	805.01893 ft
Point 53	552.24099 ft	600.04807 ft
Point 54	0.09626 ft	600.04807 ft
Point 55	146.56291 ft	668.02355 ft
Point 56	146.49218 ft	659.95505 ft
Point 57	119.00276 ft	660.00944 ft
Point 58	114.66406 ft	658.02964 ft
Point 59	106.0709 ft	654.72296 ft
Point 60	91.70685 ft	646.74059 ft
Point 61	75.34195 ft	638.40018 ft
Point 62	72.60393 ft	637.09436 ft
Point 63	59.06129 ft	632.92415 ft
Point 64	56.78129 ft	632.16593 ft
Point 65	49.58186 ft	630.09262 ft
Point 66	37.42002 ft	628.03026 ft
Point 67	22.013 ft	624.9064 ft
Point 68	-0.05751 ft	621.418 ft
Point 69	60.87673 ft	653.37987 ft
Point 70	58.80453 ft	653.34567 ft
Point 71	58.799 ft	649.61776 ft
Point 72	54.7561 ft	646.35467 ft
Point 73	52.65098 ft	646.32278 ft
Point 74	52.62793 ft	642.47786 ft
Point 75	52.62793 ft	639.42935 ft
Point 76	53.64237 ft	639.42935 ft
Point 77	53.66296 ft	646.33811 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	54,53,52,51,50,49,48,47,46,45,44,43,42,41,40,39,38,37,36,35,34,33,32,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,55,56,57,58,59,60,61,62,63,64,65,66,67,68	68,481 ft²
Region 2	Qal	64,5,4,3,2,1,68,67,66,65	545.85 ft²
Region 3	Fill Seismic	69,70,71,72,77,76,75,74,5,64,63,62,61,60,59,58,57,56,55,6	1,397.1 ft²
Region 4	Retaining Wall	74,75,76,77,73	7.0272 ft²

Slip Results

Slip Surfaces Analysed: 10 of 10 converged

Current Slip Surface

Slip Surface: 6

Factor of Safety: 1.37

Volume: 6,977.9096 ft³

Weight: 837,349.15 lbf

Resisting Moment: 2.3790955e+08 lbf·ft

Activating Moment: 1.7320708e+08 lbf·ft
Slip Rank: 1 of 10 slip surfaces
Exit: (147.69633, 668.05011) ft
Entry: (419.20654, 786.43962) ft
Radius: 404.25213 ft
Center: (133.10719, 1,072.0389) ft

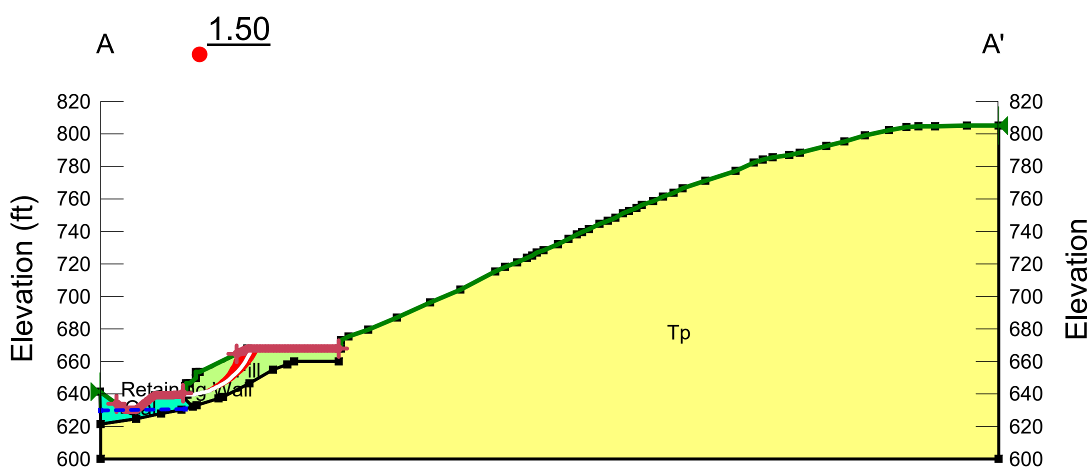
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	147.78253 ft	668.05324 ft	0 psf	294.19697 psf	169.8547 psf	500 psf	0 psf	Tp Seismic
Slice 2	150.16445 ft	668.15332 ft	0 psf	701.19691 psf	404.83623 psf	500 psf	0 psf	Tp Seismic
Slice 3	158.42062 ft	668.62428 ft	0 psf	1,015.3608 psf	586.21882 psf	500 psf	0 psf	Tp Seismic
Slice 4	168.874 ft	669.3974 ft	0 psf	1,380.3238 psf	796.93032 psf	500 psf	0 psf	Tp Seismic
Slice 5	177.85985 ft	670.297 ft	0 psf	1,672.3814 psf	965.54985 psf	500 psf	0 psf	Tp Seismic
Slice 6	187.49533 ft	671.49579 ft	0 psf	1,988.6962 psf	1,148.1743 psf	500 psf	0 psf	Tp Seismic
Slice 7	197.78042 ft	673.02759 ft	0 psf	2,324.085 psf	1,341.8111 psf	500 psf	0 psf	Tp Seismic
Slice 8	207.55236 ft	674.72854 ft	0 psf	2,593.9414 psf	1,497.6127 psf	500 psf	0 psf	Tp Seismic
Slice 9	216.81113 ft	676.57582 ft	0 psf	2,802.8323 psf	1,618.216 psf	500 psf	0 psf	Tp Seismic
Slice 10	226.79051 ft	678.83033 ft	0 psf	3,038.3115 psf	1,754.17 psf	500 psf	0 psf	Tp Seismic
Slice 11	237.4905 ft	681.53506 ft	0 psf	3,294.1794 psf	1,901.8954 psf	500 psf	0 psf	Tp Seismic
Slice 12	245.78846 ft	683.82079 ft	0 psf	3,460.2858 psf	1,997.7969 psf	500 psf	0 psf	Tp Seismic
Slice 13	252.57968 ft	685.86546 ft	0 psf	3,524.29 psf	2,034.7498 psf	500 psf	0 psf	Tp Seismic
Slice 14	259.26171 ft	687.98695 ft	0 psf	3,579.293 psf	2,066.5058 psf	500 psf	0 psf	Tp Seismic
Slice 15	263.81459 ft	689.50513 ft	0 psf	3,621.0146 psf	2,090.5938 psf	500 psf	0 psf	Tp Seismic
Slice 16	266.92929 ft	690.58218 ft	0 psf	3,648.639 psf	2,106.5427 psf	500 psf	0 psf	Tp Seismic
Slice 17	270.47818 ft	691.84976 ft	0 psf	3,658.9689 psf	2,112.5067 psf	500 psf	0 psf	Tp Seismic
Slice 18	276.89146 ft	694.24921 ft	0 psf	3,644.4061 psf	2,104.0989 psf	500 psf	0 psf	Tp Seismic
Slice 19	284.39994 ft	697.18151 ft	0 psf	3,661.0438 psf	2,113.7046 psf	500 psf	0 psf	Tp Seismic
Slice 20	290.37091 ft	699.64241 ft	0 psf	3,695.5779 psf	2,133.6429 psf	500 psf	0 psf	Tp Seismic
Slice 21	294.55165 ft	701.42729 ft	0 psf	3,715.2509 psf	2,145.0011 psf	500 psf	0 psf	Tp Seismic
Slice 22	298.21638 ft	703.04991 ft	0 psf	3,699.6196 psf	2,135.9764 psf	500 psf	0 psf	Tp Seismic
Slice 23	303.75559 ft	705.58913 ft	0 psf	3,666.088 psf	2,116.6169 psf	500 psf	0 psf	Tp Seismic
Slice 24	309.57914 ft	708.34982 ft	0 psf	3,622.4581 psf	2,091.4272 psf	500 psf	0 psf	Tp Seismic
Slice 25	314.2443 ft	710.64819 ft	0 psf	3,557.8151 psf	2,054.1055 psf	500 psf	0 psf	Tp Seismic
Slice 26	318.83574 ft	712.9884 ft	0 psf	3,520.1575 psf	2,032.3639 psf	500 psf	0 psf	Tp Seismic
Slice 27	323.03754 ft	715.18853 ft	0 psf	3,501.5109 psf	2,021.5983 psf	500 psf	0 psf	Tp Seismic
Slice 28	327.17615 ft	717.42672 ft	0 psf	3,442.5864 psf	1,987.5782 psf	500 psf	0 psf	Tp Seismic
Slice 29	331.25158 ft	719.68296 ft	0 psf	3,376.1406 psf	1,949.2157 psf	500 psf	0 psf	Tp Seismic
Slice 30	336.38009 ft	722.63321 ft	0 psf	3,263.3775 psf	1,884.1118 psf	500 psf	0 psf	Tp Seismic
Slice 31	342.79336 ft	726.43917 ft	0 psf	3,102.7475 psf	1,791.3721 psf	500 psf	0 psf	Tp Seismic
Slice 32	349.15398 ft	730.38443 ft	0 psf	2,938.4896 psf	1,696.5378 psf	500 psf	0 psf	Tp Seismic
Slice 33	355.29346 ft	734.33789 ft	0 psf	2,775.0502 psf	1,602.176 psf	500 psf	0 psf	Tp Seismic
Slice 34	361.5751 ft	738.56598 ft	0 psf	2,568.3083 psf	1,482.8135 psf	500 psf	0 psf	Tp Seismic
Slice 35	368.5781 ft	743.47432 ft	0 psf	2,293.6395 psf	1,324.2334 psf	500 psf	0 psf	Tp Seismic
Slice 36	376.6921 ft	749.46678 ft	0 psf	1,950.5629 psf	1,126.158 psf	500 psf	0 psf	Tp Seismic
Slice 37	385.91711 ft	756.6471 ft	0 psf	1,533.1953 psf	885.19072 psf	500 psf	0 psf	Tp Seismic
Slice 38	396.06883 ft	765.08978 ft	0 psf	1,106.9182 psf	639.0795 psf	500 psf	0 psf	Tp Seismic
Slice 39	404.35658 ft	772.32268 ft	0 psf	754.13335 psf	435.39909 psf	500 psf	0 psf	Tp Seismic
Slice 40	410.3065 ft	777.82642 ft	0 psf	392.78143 psf	226.77246 psf	500 psf	0 psf	Tp Seismic
Slice 41	416.35721 ft	783.64114 ft	0 psf	-32.280998 psf	-18.637443 psf	500 psf	0 psf	Tp Seismic

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz 08/24/2020 04:00:53 PM

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz

2 - Rotational Static Lower Slope
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

2 - Rotational Static Lower Slope

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 505
Date: 08/24/2020
Time: 04:00:53 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:01:58 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Static Lower Slope

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (9.83735, 634.14642) ft
Left-Zone Right Coordinate: (50.56119, 640.47093) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (83.63836, 664.52811) ft
Right-Zone Right Coordinate: (146.56291, 668.02355) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.20223, 641.52948) ft
Right Coordinate: (552.24099, 805.01893) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.11857 ft	629.90307 ft
Coordinate 2	52.15502 ft	630.89048 ft

Seismic Coefficients

Horz Seismic Coef.: 0

Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.20223 ft	641.52948 ft
Point 2	15.04854 ft	630.31414 ft
Point 3	22.11915 ft	630.31414 ft
Point 4	33.36607 ft	639.1584 ft
Point 5	49.45717 ft	639.39887 ft
Point 6	90.34935 ft	667.81503 ft
Point 7	147.6961 ft	668.04326 ft
Point 8	147.86873 ft	673.22787 ft
Point 9	152.46017 ft	675.18661 ft
Point 10	164.38107 ft	679.73592 ft
Point 11	182.35278 ft	686.9324 ft
Point 12	202.92297 ft	696.40954 ft
Point 13	221.44051 ft	704.40178 ft
Point 14	242.8405 ft	715.23279 ft
Point 15	248.73642 ft	718.07157 ft
Point 16	256.42294 ft	721.04136 ft
Point 17	262.10049 ft	723.88013 ft
Point 18	265.52869 ft	725.23738 ft
Point 19	268.32989 ft	726.81701 ft
Point 20	272.62647 ft	728.27026 ft
Point 21	281.15644 ft	731.89286 ft
Point 22	287.64343 ft	735.1153 ft
Point 23	293.09839 ft	738.02181 ft
Point 24	296.0049 ft	739.454 ft
Point 25	300.42785 ft	741.30742 ft
Point 26	307.08333 ft	744.40349 ft
Point 27	312.07495 ft	746.53071 ft
Point 28	316.41365 ft	748.17352 ft
Point 29	321.25783 ft	750.91154 ft
Point 30	324.81725 ft	752.61753 ft
Point 31	329.53506 ft	754.61839 ft
Point 32	332.96811 ft	756.19801 ft
Point 33	339.79208 ft	758.74647 ft
Point 34	345.79465 ft	761.16856 ft

Point 35	352.51332 ft	763.88552 ft
Point 36	358.0736 ft	766.28655 ft
Point 37	372.0796 ft	770.96223 ft
Point 38	390.52961 ft	777.07011 ft
Point 39	401.60804 ft	782.31447 ft
Point 40	407.10513 ft	784.23108 ft
Point 41	413.50787 ft	785.51584 ft
Point 42	423.51216 ft	787.13758 ft
Point 43	429.87278 ft	788.16961 ft
Point 44	446.19135 ft	792.6549 ft
Point 45	457.47366 ft	795.26317 ft
Point 46	469.96911 ft	798.90262 ft
Point 47	484.79989 ft	802.39043 ft
Point 48	495.44529 ft	803.90687 ft
Point 49	502.95672 ft	804.53451 ft
Point 50	513.48755 ft	804.53451 ft
Point 51	532.63259 ft	805.01893 ft
Point 52	552.24099 ft	805.01893 ft
Point 53	552.24099 ft	600.04807 ft
Point 54	0.09626 ft	600.04807 ft
Point 55	146.56291 ft	668.02355 ft
Point 56	146.49218 ft	659.95505 ft
Point 57	119.00276 ft	660.00944 ft
Point 58	114.66406 ft	658.02964 ft
Point 59	106.0709 ft	654.72296 ft
Point 60	91.70685 ft	646.74059 ft
Point 61	75.34195 ft	638.40018 ft
Point 62	72.60393 ft	637.09436 ft
Point 63	59.06129 ft	632.92415 ft
Point 64	56.78129 ft	632.16593 ft
Point 65	49.58186 ft	630.09262 ft
Point 66	37.42002 ft	628.03026 ft
Point 67	22.013 ft	624.9064 ft
Point 68	-0.05751 ft	621.418 ft
Point 69	60.87673 ft	653.37987 ft
Point 70	58.80453 ft	653.34567 ft
Point 71	58.799 ft	649.61776 ft
Point 72	54.7561 ft	646.35467 ft
Point 73	52.65098 ft	646.32278 ft
Point 74	52.62793 ft	642.47786 ft
Point 75	52.62793 ft	639.42935 ft
Point 76	53.64237 ft	639.42935 ft
Point 77	53.66296 ft	646.33811 ft

Regions

	Material	Points	Area
Region 1	Tp	54,53,52,51,50,49,48,47,46,45,44,43,42,41,40,39,38,37,36,35,34,33,32,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,55,56,57,58,59,60,61,62,63,64,65,66,67,68	68,481 ft²
Region 2	Qal	64,5,4,3,2,1,68,67,66,65	545.85 ft²
Region 3	Fill	69,70,71,72,77,76,75,74,5,64,63,62,61,60,59,58,57,56,55,6	1,397.1 ft²
Region 4	Retaining Wall	74,75,76,77,73	7.0272 ft²

Slip Results

Slip Surfaces Analysed: 120135 of 163216 converged

Current Slip Surface

Slip Surface: 155,402
Factor of Safety: 1.50
Volume: 459.50506 ft³
Weight: 55,353.569 lbf
Resisting Moment: 1,693,219.7 lbf·ft
Activating Moment: 1,126,441.4 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces
Exit: (49.176935, 639.39468) ft
Entry: (93.066496, 667.82511) ft
Radius: 44.94798 ft
Center: (51.244717, 684.29507) ft

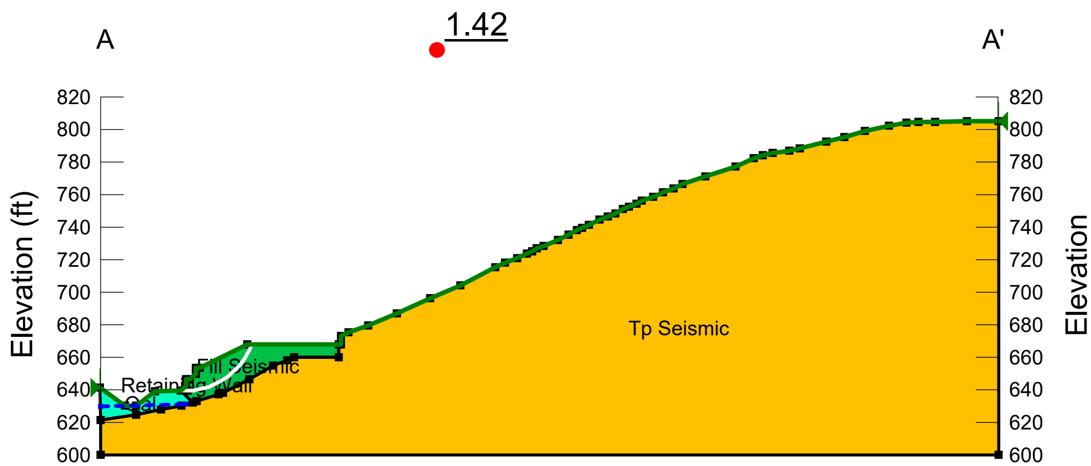
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	49.317052 ft	639.38867 ft	-533.63198 psf	7.7584309 psf	3.6178157 psf	250 psf	0 psf	Qal
Slice 2	50.13591 ft	639.3659 ft	-531.24624 psf	86.781554 psf	44.217411 psf	200 psf	0 psf	Fill
Slice 3	51.484835 ft	639.35273 ft	-528.83447 psf	240.74595 psf	122.66619 psf	200 psf	0 psf	Fill
Slice 4	52.391475 ft	639.36235 ft	0 psf	340.40336 psf	173.44418 psf	200 psf	0 psf	Fill
Slice 5	52.639455 ft	639.36874 ft	0 psf	741.80232 psf	377.96716 psf	200 psf	0 psf	Fill
Slice 6	53.15697 ft	639.39065 ft	0 psf	1,020.8096 psf	520.12848 psf	200 psf	0 psf	Fill
Slice 7	54.20953 ft	639.44833 ft	0 psf	802.822 psf	409.05824 psf	200 psf	0 psf	Fill
Slice 8	55.429917 ft	639.54748 ft	0 psf	845.57044 psf	430.83966 psf	200 psf	0 psf	Fill
Slice 9	56.77755 ft	639.69409 ft	0 psf	942.76555 psf	480.36304 psf	200 psf	0 psf	Fill
Slice 10	58.125183 ft	639.88207 ft	0 psf	1,033.2935 psf	526.48936 psf	200 psf	0 psf	Fill
Slice 11	58.801765 ft	639.98693 ft	0 psf	1,288.8499 psf	656.70182 psf	200 psf	0 psf	Fill
Slice 12	59.84063 ft	640.18933 ft	0 psf	1,466.4454 psf	747.19127 psf	200 psf	0 psf	Fill
Slice 13	61.613546 ft	640.56597 ft	0 psf	1,443.5438 psf	735.52228 psf	200 psf	0 psf	Fill
Slice 14	63.087176 ft	640.94195 ft	0 psf	1,462.5087 psf	745.1854 psf	200 psf	0 psf	Fill
Slice 15	64.560808 ft	641.3718 ft	0 psf	1,474.6431 psf	751.3682 psf	200 psf	0 psf	Fill
Slice 16	66.034438 ft	641.85716 ft	0 psf	1,479.8764 psf	754.03469 psf	200 psf	0 psf	Fill
Slice 17	67.50807 ft	642.39997 ft	0 psf	1,478.108 psf	753.13367 psf	200 psf	0 psf	Fill
Slice 18	68.981701 ft	643.00249 ft	0 psf	1,469.2052 psf	748.59747 psf	200 psf	0 psf	Fill
Slice 19	70.455331 ft	643.66739 ft	0 psf	1,452.9998 psf	740.34039 psf	200 psf	0 psf	Fill
Slice 20	71.928963 ft	644.39778 ft	0 psf	1,429.2841 psf	728.25661 psf	200 psf	0 psf	Fill
Slice 21	73.402593 ft	645.19735 ft	0 psf	1,397.8053 psf	712.21738 psf	200 psf	0 psf	Fill
Slice 22	74.876225 ft	646.07044 ft	0 psf	1,358.259 psf	692.06752 psf	200 psf	0 psf	Fill
Slice 23	76.349855 ft	647.02225 ft	0 psf	1,310.2795 psf	667.62074 psf	200 psf	0 psf	Fill
Slice 24	77.823487 ft	648.05897 ft	0 psf	1,253.4282 psf	638.65358 psf	200 psf	0 psf	Fill
Slice 25	79.297118 ft	649.18818 ft	0 psf	1,187.178 psf	604.89739 psf	200 psf	0 psf	Fill
Slice 26	80.770748 ft	650.41914 ft	0 psf	1,110.8915 psf	566.02747 psf	200 psf	0 psf	Fill
Slice 27	82.24438 ft	651.76346 ft	0 psf	1,023.7926 psf	521.64836 psf	200 psf	0 psf	Fill
Slice 28	83.71801 ft	653.23594 ft	0 psf	924.92564 psf	471.27315 psf	200 psf	0 psf	Fill
Slice 29	85.191642 ft	654.85594 ft	0 psf	813.09753 psf	414.29388 psf	200 psf	0 psf	Fill
Slice 30	86.665273 ft	656.64962 ft	0 psf	686.79153 psf	349.93776 psf	200 psf	0 psf	Fill
Slice 31	88.138903 ft	658.65384 ft	0 psf	544.03564 psf	277.20001 psf	200 psf	0 psf	Fill
Slice 32	89.612535 ft	660.92361 ft	0 psf	382.19151 psf	194.7363 psf	200 psf	0 psf	Fill
Slice 33	91.028636 ft	663.42831 ft	0 psf	181.33433 psf	92.394458 psf	200 psf	0 psf	Fill
Slice 34	92.387209 ft	666.27426 ft	0 psf	-56.424378 psf	-28.749657 psf	200 psf	0 psf	Fill

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz 08/24/2020 04:00:53 PM

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz

2 - Rotational Pseudotatic Lower Slope
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

2 - Rotational Pseudotatic Lower Slope

File Information

- File Version: 10.01
- Title: Slope Stability Analyses Cross-section
- Revision Number: 505
- Date: 08/24/2020
- Time: 04:00:53 PM
- Tool Version: 10.1.0.18696
- File Name: Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz
- Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
- Last Solved Date: 08/24/2020
- Last Solved Time: 04:01:58 PM

Project Settings

- Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Pseudotatic Lower Slope

- Kind: SLOPE/W
- Parent: 2 - Rotational Static Lower Slope
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Critical Slip Surfaces from Other
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Tp Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (-0.20223, 641.52948) ft
Right Coordinate: (552.24099, 805.01893) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.11836 ft	629.87412 ft
Coordinate 2	52.35854 ft	630.97412 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.20223 ft	641.52948 ft
Point 2	15.04854 ft	630.31414 ft
Point 3	22.11915 ft	630.31414 ft
Point 4	33.36607 ft	639.1584 ft
Point 5	49.45717 ft	639.39887 ft
Point 6	90.34935 ft	667.81503 ft
Point 7	147.6961 ft	668.04326 ft
Point 8	147.86873 ft	673.22787 ft
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Point 21	281.15644 ft	731.89286 ft
Point 22	287.64343 ft	735.1153 ft
Point 23	293.09839 ft	738.02181 ft
Point 24	296.0049 ft	739.454 ft
Point 25	300.42785 ft	741.30742 ft
Point 26	307.08333 ft	744.40349 ft
Point 27	312.07495 ft	746.53071 ft
Point 28	316.41365 ft	748.17352 ft
Point 29	321.25783 ft	750.91154 ft
Point 30	324.81725 ft	752.61753 ft
Point 31	329.53506 ft	754.61839 ft
Point 32	332.96811 ft	756.19801 ft
Point 33	339.79208 ft	758.74647 ft
Point 34	345.79465 ft	761.16856 ft
Point 35	352.51332 ft	763.88552 ft
Point 36	358.0736 ft	766.28655 ft
Point 37	372.0796 ft	770.96223 ft
Point 38	390.52961 ft	777.07011 ft
Point 39	401.60804 ft	782.31447 ft
Point 40	407.10513 ft	784.23108 ft
Point 41	413.50787 ft	785.51584 ft
Point 42	423.51216 ft	787.13758 ft
Point 43	429.87278 ft	788.16961 ft
Point 44	446.19135 ft	792.6549 ft
Point 45	457.47366 ft	795.26317 ft

Point 46	469.96911 ft	798.90262 ft
Point 47	484.79989 ft	802.39043 ft
Point 48	495.44529 ft	803.90687 ft
Point 49	502.95672 ft	804.53451 ft
Point 50	513.48755 ft	804.53451 ft
Point 51	532.63259 ft	805.01893 ft
Point 52	552.24099 ft	805.01893 ft
Point 53	552.24099 ft	600.04807 ft
Point 54	0.09626 ft	600.04807 ft
Point 55	146.56291 ft	668.02355 ft
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Point 59	106.0709 ft	654.72296 ft
Point 60	91.70685 ft	646.74059 ft
Point 61	75.34195 ft	638.40018 ft
Point 62	72.60393 ft	637.09436 ft
Point 63	59.06129 ft	632.92415 ft
Point 64	56.78129 ft	632.16593 ft
Point 65	49.58186 ft	630.09262 ft
Point 66	37.42002 ft	628.03026 ft
Point 67	22.013 ft	624.9064 ft
Point 68	-0.05751 ft	621.418 ft
Point 69	60.87673 ft	653.37987 ft
Point 70	58.80453 ft	653.34567 ft
Point 71	58.799 ft	649.61776 ft
Point 72	54.7561 ft	646.35467 ft
Point 73	52.65098 ft	646.32278 ft
Point 74	52.62793 ft	642.47786 ft
Point 75	52.62793 ft	639.42935 ft
Point 76	53.64237 ft	639.42935 ft
Point 77	53.66296 ft	646.33811 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	54,53,52,51,50,49,48,47,46,45,44,43,42,41,40,39,38,37,36,35,34,33,32,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,55,56,57,58,59,60,61,62,63,64,65,66,67,68	68,481 ft²
Region 2	Qal	64,5,4,3,2,1,68,67,66,65	545.85 ft²
Region 3	Fill Seismic	69,70,71,72,77,76,75,74,5,64,63,62,61,60,59,58,57,56,55,6	1,397.1 ft²
Region 4	Retaining Wall	74,75,76,77,73	7.0272 ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1

Factor of Safety: 1.42

Volume: 459.50506 ft³

Weight: 55,353.569 lbf

Resisting Moment: 1,979,150.1 lbf·ft

Activating Moment: 1,393,580.2 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (49.176935, 639.39468) ft
Entry: (93.066496, 667.82511) ft
Radius: 44.94798 ft
Center: (51.244717, 684.29507) ft

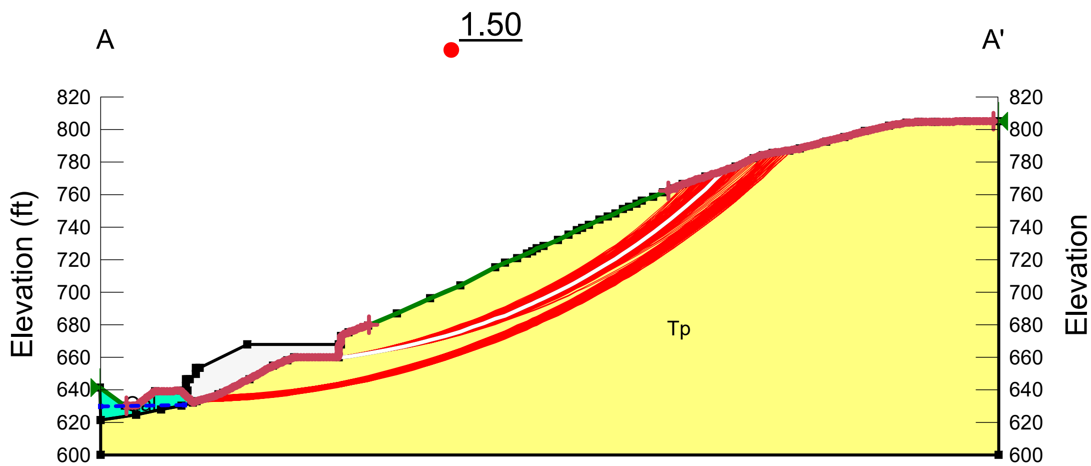
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	49.317052 ft	639.38867 ft	-529.04603 psf	8.283754 psf	3.8627779 psf	250 psf	0 psf	Qal
Slice 2	50.13591 ft	639.3659 ft	-526.55441 psf	87.310094 psf	58.891402 psf	200 psf	0 psf	Fill Seismic
Slice 3	51.484835 ft	639.35273 ft	-523.9682 psf	240.52283 psf	162.2347 psf	200 psf	0 psf	Fill Seismic
Slice 4	52.25678 ft	639.35891 ft	-523.34399 psf	323.89984 psf	218.4732 psf	200 psf	0 psf	Fill Seismic
Slice 5	52.493235 ft	639.36494 ft	0 psf	350.42441 psf	236.36425 psf	200 psf	0 psf	Fill Seismic
Slice 6	52.639455 ft	639.36874 ft	0 psf	738.45998 psf	498.09755 psf	200 psf	0 psf	Fill Seismic
Slice 7	53.15697 ft	639.39065 ft	0 psf	1,014.6823 psf	684.41183 psf	200 psf	0 psf	Fill Seismic
Slice 8	54.20953 ft	639.44833 ft	0 psf	795.2874 psf	536.42812 psf	200 psf	0 psf	Fill Seismic
Slice 9	55.429917 ft	639.54748 ft	0 psf	834.52168 psf	562.89198 psf	200 psf	0 psf	Fill Seismic
Slice 10	56.77755 ft	639.69409 ft	0 psf	926.76776 psf	625.11274 psf	200 psf	0 psf	Fill Seismic
Slice 11	58.125183 ft	639.88207 ft	0 psf	1,011.8133 psf	682.47669 psf	200 psf	0 psf	Fill Seismic
Slice 12	58.801765 ft	639.98693 ft	0 psf	1,259.9186 psf	849.82583 psf	200 psf	0 psf	Fill Seismic
Slice 13	59.84063 ft	640.18933 ft	0 psf	1,429.4444 psf	964.1724 psf	200 psf	0 psf	Fill Seismic
Slice 14	61.613546 ft	640.56597 ft	0 psf	1,399.9587 psf	944.28409 psf	200 psf	0 psf	Fill Seismic
Slice 15	63.087176 ft	640.94195 ft	0 psf	1,412.4032 psf	952.67801 psf	200 psf	0 psf	Fill Seismic
Slice 16	64.560807 ft	641.3718 ft	0 psf	1,418.1277 psf	956.53919 psf	200 psf	0 psf	Fill Seismic
Slice 17	66.034438 ft	641.85716 ft	0 psf	1,417.1222 psf	955.86097 psf	200 psf	0 psf	Fill Seismic
Slice 18	67.50807 ft	642.39997 ft	0 psf	1,409.3483 psf	950.61741 psf	200 psf	0 psf	Fill Seismic
Slice 19	68.981701 ft	643.00249 ft	0 psf	1,394.7378 psf	940.76254 psf	200 psf	0 psf	Fill Seismic
Slice 20	70.455331 ft	643.66739 ft	0 psf	1,373.1913 psf	926.22922 psf	200 psf	0 psf	Fill Seismic
Slice 21	71.928963 ft	644.39778 ft	0 psf	1,344.5752 psf	906.92739 psf	200 psf	0 psf	Fill Seismic
Slice 22	73.402593 ft	645.19735 ft	0 psf	1,308.7185 psf	882.74176 psf	200 psf	0 psf	Fill Seismic
Slice 23	74.876225 ft	646.07044 ft	0 psf	1,265.4083 psf	853.52871 psf	200 psf	0 psf	Fill Seismic
Slice 24	76.349855 ft	647.02225 ft	0 psf	1,214.3838 psf	819.11221 psf	200 psf	0 psf	Fill Seismic
Slice 25	77.823487 ft	648.05897 ft	0 psf	1,155.328 psf	779.27856 psf	200 psf	0 psf	Fill Seismic
Slice 26	79.297118 ft	649.18818 ft	0 psf	1,087.8579 psf	733.76939 psf	200 psf	0 psf	Fill Seismic
Slice 27	80.770748 ft	650.41914 ft	0 psf	1,011.5106 psf	682.27251 psf	200 psf	0 psf	Fill Seismic
Slice 28	82.24438 ft	651.76346 ft	0 psf	925.7253 psf	624.4096 psf	200 psf	0 psf	Fill Seismic
Slice 29	83.71801 ft	653.23594 ft	0 psf	829.8186 psf	559.71971 psf	200 psf	0 psf	Fill Seismic
Slice 30	85.191642 ft	654.85594 ft	0 psf	722.95095 psf	487.63657 psf	200 psf	0 psf	Fill Seismic
Slice 31	86.665273 ft	656.64962 ft	0 psf	604.08002 psf	407.45712 psf	200 psf	0 psf	Fill Seismic
Slice 32	88.138903 ft	658.65384 ft	0 psf	471.89553 psf	318.29755 psf	200 psf	0 psf	Fill Seismic
Slice 33	89.612535 ft	660.92361 ft	0 psf	324.72985 psf	219.03305 psf	200 psf	0 psf	Fill Seismic
Slice 34	91.028636 ft	663.42831 ft	0 psf	146.56818 psf	98.861485 psf	200 psf	0 psf	Fill Seismic
Slice 35	92.387209 ft	666.27426 ft	0 psf	-58.611808 psf	-39.534163 psf	200 psf	0 psf	Fill Seismic

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz 08/24/2020 04:00:53 PM

Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz

3 - Rotational Static Temporary
Horz Seismic Coef.: 0



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

3 - Rotational Static Temporary

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 505
Date: 08/24/2020
Time: 04:00:53 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section A-A SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:01:48 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

3 - Rotational Static Temporary

Kind: SLOPE/W
Method: Bishop
Settings
PWP Conditions from: Piezometric Line
Apply Phreatic Correction: No
Use Staged Rapid Drawdown: No
Unit Weight of Water: 62.4 pcf
Slip Surface
Direction of movement: Right to Left
Use Passive Mode: No
Slip Surface Option: Entry and Exit
Critical slip surfaces saved: 1
Optimize Critical Slip Surface Location: No
Tension Crack Option: (none)
Distribution
F of S Calculation Option: Constant
Advanced
Geometry Settings
Minimum Slip Surface Depth: 0.1 ft
Number of Slices: 30
Factor of Safety Convergence Settings
Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (15.98173, 630.31414) ft
Left-Zone Right Coordinate: (165.11962, 680.03166) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (349.14104, 762.52181) ft
Right-Zone Right Coordinate: (549.14843, 805.01893) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.20223, 641.52948) ft
Right Coordinate: (552.24099, 805.01893) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.1192 ft	629.9905 ft
Coordinate 2	51.60975 ft	630.73103 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	-0.20223 ft	641.52948 ft
Point 2	15.04854 ft	630.31414 ft
Point 3	22.11915 ft	630.31414 ft
Point 4	33.36607 ft	639.1584 ft
Point 5	49.45717 ft	639.39887 ft
Point 6	90.34935 ft	667.81503 ft
Point 7	147.6961 ft	668.04326 ft
Point 8	147.86873 ft	673.22787 ft
Point 9	152.46017 ft	675.18661 ft
Point 10	164.38107 ft	679.73592 ft
Point 11	182.35278 ft	686.9324 ft
Point 12	202.92297 ft	696.40954 ft
Point 13	221.44051 ft	704.40178 ft
Point 14	242.8405 ft	715.23279 ft
Point 15	248.73642 ft	718.07157 ft
Point 16	256.42294 ft	721.04136 ft
Point 17	262.10049 ft	723.88013 ft
Point 18	265.52869 ft	725.23738 ft
Point 19	268.32989 ft	726.81701 ft
Point 20	272.62647 ft	728.27026 ft
Point 21	281.15644 ft	731.89286 ft
Point 22	287.64343 ft	735.1153 ft
Point 23	293.09839 ft	738.02181 ft
Point 24	296.0049 ft	739.454 ft
Point 25	300.42785 ft	741.30742 ft
Point 26	307.08333 ft	744.40349 ft
Point 27	312.07495 ft	746.53071 ft
Point 28	316.41365 ft	748.17352 ft
Point 29	321.25783 ft	750.91154 ft
Point 30	324.81725 ft	752.61753 ft
Point 31	329.53506 ft	754.61839 ft
Point 32	332.96811 ft	756.19801 ft
Point 33	339.79208 ft	758.74647 ft
Point 34	345.79465 ft	761.16856 ft
Point 35	352.51332 ft	763.88552 ft
Point 36	358.0736 ft	766.28655 ft
Point 37	372.0796 ft	770.96223 ft
Point 38	390.52961 ft	777.07011 ft
Point 39	401.60804 ft	782.31447 ft
Point 40	407.10513 ft	784.23108 ft
Point 41	413.50787 ft	785.51584 ft
Point 42	423.51216 ft	787.13758 ft
Point 43	429.87278 ft	788.16961 ft
Point 44	446.19135 ft	792.6549 ft
Point 45	457.47366 ft	795.26317 ft
Point 46	469.96911 ft	798.90262 ft
Point 47	484.79989 ft	802.39043 ft
Point 48	495.44529 ft	803.90687 ft

Point 49	502.95672 ft	804.53451 ft
Point 50	513.48755 ft	804.53451 ft
Point 51	532.63259 ft	805.01893 ft
Point 52	552.24099 ft	805.01893 ft
Point 53	552.24099 ft	600.04807 ft
Point 54	0.09626 ft	600.04807 ft
Point 55	146.56291 ft	668.02355 ft
Point 56	146.49218 ft	659.95505 ft
Point 57	119.00276 ft	660.00944 ft
Point 58	114.66406 ft	658.02964 ft
Point 59	106.0709 ft	654.72296 ft
Point 60	91.70685 ft	646.74059 ft
Point 61	75.34195 ft	638.40018 ft
Point 62	72.60393 ft	637.09436 ft
Point 63	59.06129 ft	632.92415 ft
Point 64	56.78129 ft	632.16593 ft
Point 65	49.58186 ft	630.09262 ft
Point 66	37.42002 ft	628.03026 ft
Point 67	22.013 ft	624.9064 ft
Point 68	-0.05751 ft	621.418 ft
Point 69	60.87673 ft	653.37987 ft
Point 70	58.80453 ft	653.34567 ft
Point 71	58.799 ft	649.61776 ft
Point 72	54.7561 ft	646.35467 ft
Point 73	52.65098 ft	646.32278 ft
Point 74	52.62793 ft	642.47786 ft
Point 75	52.62793 ft	639.42935 ft
Point 76	53.64237 ft	639.42935 ft
Point 77	53.66296 ft	646.33811 ft

Regions

	Material	Points	Area
Region 1	Tp	54,53,52,51,50,49,48,47,46,45,44,43,42,41,40,39,38,37,36,35,34,33,32,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,12,11,10,9,8,7,55,56,57,58,59,60,61,62,63,64,65,66,67,68	68,481 ft²
Region 2	Qal	64,5,4,3,2,1,68,67,66,65	545.85 ft²
Region 3		69,70,71,72,77,76,75,74,5,64,63,62,61,60,59,58,57,56,55,6	1,397.1 ft²
Region 4		74,75,76,77,73	7.0272 ft²

Slip Results

Slip Surfaces Analysed: 162275 of 163216 converged

Current Slip Surface

Slip Surface: 100,485
Factor of Safety: 1.50
Volume: 5,685.7996 ft³
Weight: 682,295.95 lbf
Resisting Moment: 1.6487765e+08 lbf·ft
Activating Moment: 1.0975083e+08 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces
Exit: (146.4922, 659.9577) ft

Entry: (384.11564, 774.94676) ft
Radius: 401.87939 ft
Center: (99.959657, 1,059.1341) ft

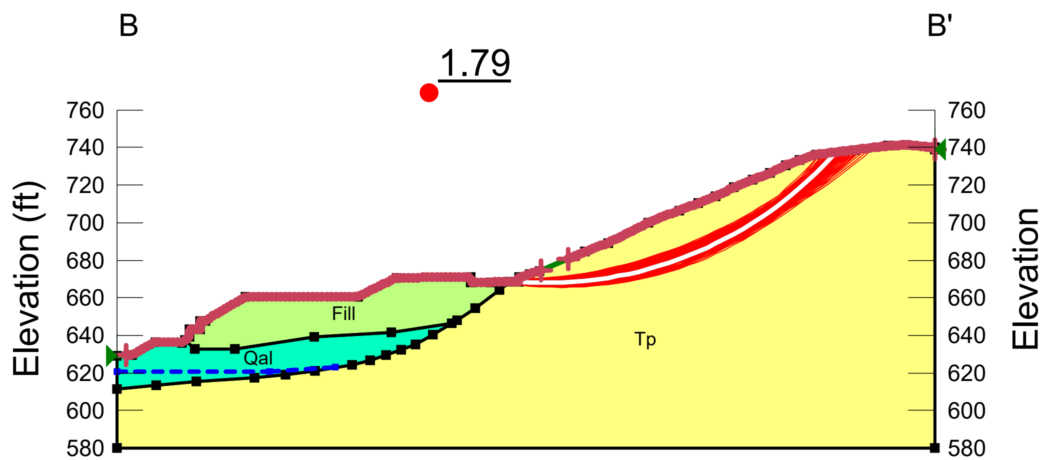
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	146.52756 ft	659.96183 ft	0 psf	449.14536 psf	238.81482 psf	250 psf	0 psf	Tp
Slice 2	147.1295 ft	660.03292 ft	0 psf	907.95056 psf	482.76588 psf	250 psf	0 psf	Tp
Slice 3	147.78241 ft	660.11023 ft	0 psf	1,199.0402 psf	637.54099 psf	250 psf	0 psf	Tp
Slice 4	150.16445 ft	660.40964 ft	0 psf	1,573.3946 psf	836.58876 psf	250 psf	0 psf	Tp
Slice 5	155.44039 ft	661.11412 ft	0 psf	1,727.1906 psf	918.36356 psf	250 psf	0 psf	Tp
Slice 6	161.40085 ft	661.9906 ft	0 psf	1,876.8001 psf	997.9123 psf	250 psf	0 psf	Tp
Slice 7	168.874 ft	663.23375 ft	0 psf	2,055.5068 psf	1,092.9323 psf	250 psf	0 psf	Tp
Slice 8	177.85985 ft	664.90364 ft	0 psf	2,255.2682 psf	1,199.1473 psf	250 psf	0 psf	Tp
Slice 9	185.78115 ft	666.54089 ft	0 psf	2,433.4626 psf	1,293.895 psf	250 psf	0 psf	Tp
Slice 10	192.63788 ft	668.10289 ft	0 psf	2,595.7067 psf	1,380.1617 psf	250 psf	0 psf	Tp
Slice 11	199.49461 ft	669.7919 ft	0 psf	2,741.8745 psf	1,457.8805 psf	250 psf	0 psf	Tp
Slice 12	207.55236 ft	671.95482 ft	0 psf	2,876.7884 psf	1,529.6155 psf	250 psf	0 psf	Tp
Slice 13	216.81113 ft	674.64821 ft	0 psf	2,993.8635 psf	1,591.8655 psf	250 psf	0 psf	Tp
Slice 14	225.00717 ft	677.22298 ft	0 psf	3,103.7192 psf	1,650.2768 psf	250 psf	0 psf	Tp
Slice 15	232.1405 ft	679.63307 ft	0 psf	3,211.8334 psf	1,707.7621 psf	250 psf	0 psf	Tp
Slice 16	239.27383 ft	682.19356 ft	0 psf	3,302.0681 psf	1,755.7408 psf	250 psf	0 psf	Tp
Slice 17	245.78846 ft	684.65977 ft	0 psf	3,361.7079 psf	1,787.4518 psf	250 psf	0 psf	Tp
Slice 18	252.57968 ft	687.38561 ft	0 psf	3,357.7467 psf	1,785.3456 psf	250 psf	0 psf	Tp
Slice 19	259.26171 ft	690.18917 ft	0 psf	3,345.5228 psf	1,778.846 psf	250 psf	0 psf	Tp
Slice 20	263.81459 ft	692.18028 ft	0 psf	3,340.9925 psf	1,776.4372 psf	250 psf	0 psf	Tp
Slice 21	266.92929 ft	693.58541 ft	0 psf	3,336.7302 psf	1,774.1709 psf	250 psf	0 psf	Tp
Slice 22	270.47818 ft	695.23181 ft	0 psf	3,310.6509 psf	1,760.3043 psf	250 psf	0 psf	Tp
Slice 23	276.89146 ft	698.32994 ft	0 psf	3,229.7522 psf	1,717.2897 psf	250 psf	0 psf	Tp
Slice 24	284.39994 ft	702.09695 ft	0 psf	3,167.6583 psf	1,684.2738 psf	250 psf	0 psf	Tp
Slice 25	290.37091 ft	705.24 ft	0 psf	3,138.3061 psf	1,668.667 psf	250 psf	0 psf	Tp
Slice 26	294.55165 ft	707.51176 ft	0 psf	3,112.7952 psf	1,655.1025 psf	250 psf	0 psf	Tp
Slice 27	298.21638 ft	709.57026 ft	0 psf	3,057.2398 psf	1,625.5632 psf	250 psf	0 psf	Tp
Slice 28	303.75559 ft	712.78257 ft	0 psf	2,962.5684 psf	1,575.2256 psf	250 psf	0 psf	Tp
Slice 29	309.57914 ft	716.26651 ft	0 psf	2,853.9244 psf	1,517.4585 psf	250 psf	0 psf	Tp
Slice 30	314.2443 ft	719.15971 ft	0 psf	2,736.4953 psf	1,455.0204 psf	250 psf	0 psf	Tp
Slice 31	318.83574 ft	722.09999 ft	0 psf	2,645.7483 psf	1,406.7693 psf	250 psf	0 psf	Tp
Slice 32	323.03754 ft	724.86064 ft	0 psf	2,577.7523 psf	1,370.6152 psf	250 psf	0 psf	Tp
Slice 33	327.17615 ft	727.66532 ft	0 psf	2,469.6312 psf	1,313.1262 psf	250 psf	0 psf	Tp
Slice 34	331.25158 ft	730.49036 ft	0 psf	2,354.2322 psf	1,251.7675 psf	250 psf	0 psf	Tp
Slice 35	336.38009 ft	734.18081 ft	0 psf	2,178.4864 psf	1,158.3217 psf	250 psf	0 psf	Tp
Slice 36	342.79336 ft	738.93936 ft	0 psf	1,937.9245 psf	1,030.4127 psf	250 psf	0 psf	Tp
Slice 37	349.15398 ft	743.87085 ft	0 psf	1,691.9952 psf	899.64983 psf	250 psf	0 psf	Tp
Slice 38	355.29346 ft	748.81369 ft	0 psf	1,447.8142 psf	769.81647 psf	250 psf	0 psf	Tp
Slice 39	361.5751 ft	754.10435 ft	0 psf	1,155.955 psf	614.63219 psf	250 psf	0 psf	Tp
Slice 40	368.5781 ft	760.25447 ft	0 psf	784.04399 psf	416.88359 psf	250 psf	0 psf	Tp
Slice 41	375.08861 ft	766.22783 ft	0 psf	420.12908 psf	223.38659 psf	250 psf	0 psf	Tp
Slice 42	381.10663 ft	772.00049 ft	0 psf	66.047248 psf	35.117945 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz 08/24/2020 04:26:05 PM

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz

1 - Rotational Static Global
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

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GEOTECHNICAL CONSULTING

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Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

1 - Rotational Static Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 511
Date: 08/24/2020
Time: 04:26:05 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:27:06 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Global

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 250 psf
- Phi': 28 °
- Phi-B: 0 °
- Pore Water Pressure

Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (4.88611, 629.33976) ft
Left-Zone Right Coordinate: (225.47323, 674.56249) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (240.06025, 680.7155) ft
Right-Zone Right Coordinate: (435.06947, 738.91155) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.06709, 629.21208) ft
Right Coordinate: (435.07501, 738.85315) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.06709 ft	620.54526 ft
Coordinate 2	81.08292 ft	620.56275 ft
Coordinate 3	116.1602 ft	623.24844 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	0.06709 ft	579.97276 ft
Point 2	0.06709 ft	611.3555 ft
Point 3	0.06709 ft	629.21208 ft
Point 4	8.01629 ft	629.42269 ft
Point 5	20.42582 ft	636.52047 ft
Point 6	34.39812 ft	636.14136 ft
Point 7	36.24962 ft	637.54587 ft
Point 8	128.24885 ft	660.67933 ft
Point 9	148.65818 ft	670.68037 ft
Point 10	188.21138 ft	670.91415 ft
Point 11	188.35881 ft	668.09115 ft
Point 12	209.10454 ft	668.64064 ft
Point 13	224.94288 ft	674.33878 ft
Point 14	249.07956 ft	684.51998 ft
Point 15	261.50594 ft	689.23779 ft
Point 16	282.61814 ft	699.89078 ft
Point 17	299.09678 ft	706.54741 ft
Point 18	309.10528 ft	710.21213 ft
Point 19	318.70939 ft	714.04421 ft
Point 20	328.26296 ft	718.65364 ft
Point 21	338.14509 ft	722.69748 ft
Point 22	347.39537 ft	726.32851 ft
Point 23	356.03065 ft	730.60403 ft
Point 24	363.23373 ft	733.17355 ft
Point 25	371.96674 ft	736.2039 ft
Point 26	392.48719 ft	738.71512 ft
Point 27	410.36971 ft	740.83999 ft
Point 28	420.07914 ft	741.28229 ft
Point 29	434.96857 ft	739.97532 ft
Point 30	435.07501 ft	738.85315 ft
Point 31	435.07501 ft	580.00239 ft
Point 32	203.51057 ft	664.01129 ft
Point 33	190.72193 ft	654.29651 ft
Point 34	180.89035 ft	648.03813 ft
Point 35	178.33768 ft	646.29422 ft
Point 36	158.77561 ft	635.24949 ft
Point 37	151.06705 ft	632.38396 ft
Point 38	143.28266 ft	629.50273 ft
Point 39	134.6895 ft	626.77314 ft
Point 40	125.21176 ft	624.33099 ft
Point 41	105.17452 ft	621.26694 ft
Point 42	89.82815 ft	619.08327 ft
Point 43	73.17765 ft	617.65782 ft
Point 44	42.36361 ft	615.3225 ft
Point 45	20.95149 ft	613.47245 ft
Point 46	145.805 ft	641.46743 ft
Point 47	41.3274 ft	632.57503 ft
Point 48	168.05117 ft	640.29472 ft
Point 49	38.43765 ft	639.34327 ft
Point 50	38.44617 ft	643.03388 ft
Point 51	44.04773 ft	643.05937 ft
Point 52	44.10754 ft	647.68429 ft
Point 53	46.84556 ft	647.70957 ft
Point 54	68.49694 ft	660.32129 ft
Point 55	199.16344 ft	668.28259 ft
Point 56	105.11591 ft	639.23523 ft

Point 57	62.65379 ft	632.68422 ft
Point 58	214.09615 ft	670.78893 ft
Point 59	219.74068 ft	672.66227 ft
Point 60	213.80129 ft	668.6617 ft

Regions

	Material	Points	Area
Region 1	Tp	1,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,59,58,60,12,32,33,34,35,48,36,37,38,39,40,41,42,43,44,45,2	39,862 ft²
Region 2	Qal	35,46,56,57,47,7,6,5,4,3,2,45,44,43,42,41,40,39,38,37,36,48	2,759.1 ft²
Region 3	Fill	7,47,57,56,46,35,34,33,32,12,55,11,10,9,8,54,53,52,51,50,49	3,590.5 ft²

Slip Results

Slip Surfaces Analysed: 140114 of 163216 converged

Current Slip Surface

Slip Surface: 153,094

Factor of Safety: 1.79

Volume: 3,024.7939 ft³

Weight: 362,975.26 lbf

Resisting Moment: 47,898,941 lbf·ft

Activating Moment: 26,710,660 lbf·ft

Slip Rank: 1 of 163,216 slip surfaces

Exit: (213.37415, 668.65978) ft

Entry: (382.31307, 737.47005) ft

Radius: 204.49412 ft

Center: (228.8023, 872.57109) ft

Slip Slices

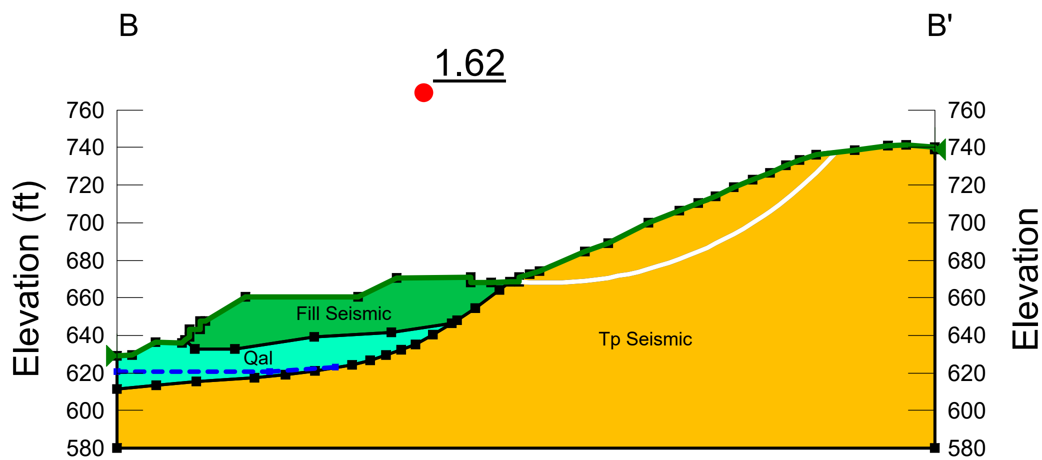
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	213.58772 ft	668.64385 ft	0 psf	11.771067 psf	6.2587874 psf	250 psf	0 psf	Tp
Slice 2	213.94872 ft	668.61718 ft	0 psf	145.11959 psf	77.161456 psf	250 psf	0 psf	Tp
Slice 3	216.91842 ft	668.44214 ft	0 psf	407.86791 psf	216.86722 psf	250 psf	0 psf	Tp
Slice 4	222.34178 ft	668.19561 ft	0 psf	646.1528 psf	343.56554 psf	250 psf	0 psf	Tp
Slice 5	227.95997 ft	668.10096 ft	0 psf	902.78971 psf	480.0218 psf	250 psf	0 psf	Tp
Slice 6	233.99413 ft	668.16516 ft	0 psf	1,187.5782 psf	631.44653 psf	250 psf	0 psf	Tp
Slice 7	240.0283 ft	668.40769 ft	0 psf	1,446.758 psf	769.25488 psf	250 psf	0 psf	Tp
Slice 8	246.06248 ft	668.82918 ft	0 psf	1,680.7983 psf	893.69628 psf	250 psf	0 psf	Tp
Slice 9	252.18616 ft	669.4424 ft	0 psf	1,877.6032 psf	998.33932 psf	250 psf	0 psf	Tp
Slice 10	258.39934 ft	670.25449 ft	0 psf	2,037.0666 psf	1,083.1275 psf	250 psf	0 psf	Tp
Slice 11	264.14497 ft	671.17207 ft	0 psf	2,200.6702 psf	1,170.1171 psf	250 psf	0 psf	Tp
Slice 12	269.42302 ft	672.1701 ft	0 psf	2,371.4219 psf	1,260.9074 psf	250 psf	0 psf	Tp
Slice 13	274.70107 ft	673.31292 ft	0 psf	2,523.1123 psf	1,341.5626 psf	250 psf	0 psf	Tp
Slice 14	279.97911 ft	674.60303 ft	0 psf	2,655.7531 psf	1,412.089 psf	250 psf	0 psf	Tp
Slice 15	285.36458 ft	676.07582 ft	0 psf	2,740.4782 psf	1,457.1381 psf	250 psf	0 psf	Tp
Slice 16	290.85746 ft	677.74117 ft	0 psf	2,777.0731 psf	1,476.596 psf	250 psf	0 psf	Tp
Slice 17	296.35034 ft	679.57719 ft	0 psf	2,793.7247 psf	1,485.4498 psf	250 psf	0 psf	Tp
Slice 18	301.59891 ft	681.4917 ft	0 psf	2,780.9777 psf	1,478.6721 psf	250 psf	0 psf	Tp
Slice 19	306.60316 ft	683.47441 ft	0 psf	2,740.6026 psf	1,457.2043 psf	250 psf	0 psf	Tp
Slice 20	311.50631 ft	685.56573 ft	0 psf	2,693.3894 psf	1,432.1005 psf	250 psf	0 psf	Tp
Slice 21	316.30836 ft	687.76449 ft	0 psf	2,639.5811 psf	1,403.4902 psf	250 psf	0 psf	Tp
Slice 22	321.09778 ft	690.10951 ft	0 psf	2,590.8546 psf	1,377.5818 psf	250 psf	0 psf	Tp
Slice 23	325.87457 ft	692.60593 ft	0 psf	2,546.4961 psf	1,353.996 psf	250 psf	0 psf	Tp
Slice 24	330.73349 ft	695.31489 ft	0 psf	2,464.6282 psf	1,310.4661 psf	250 psf	0 psf	Tp
Slice 25	335.67456 ft	698.2502 ft	0 psf	2,344.7024 psf	1,246.7004 psf	250 psf	0 psf	Tp
Slice 26	340.45766 ft	701.2722 ft	0 psf	2,207.0697 psf	1,173.5198 psf	250 psf	0 psf	Tp

Slice 27	345.0828 ft	704.37837 ft	0 psf	2,052.4707 psf	1,091.318 psf	250 psf	0 psf	Tp
Slice 28	349.55419 ft	707.55693 ft	0 psf	1,909.053 psf	1,015.0615 psf	250 psf	0 psf	Tp
Slice 29	353.87183 ft	710.80578 ft	0 psf	1,776.7558 psf	944.71784 psf	250 psf	0 psf	Tp
Slice 30	359.63219 ft	715.47424 ft	0 psf	1,520.4943 psf	808.46114 psf	250 psf	0 psf	Tp
Slice 31	365.41698 ft	720.43409 ft	0 psf	1,210.6364 psf	643.70679 psf	250 psf	0 psf	Tp
Slice 32	369.78349 ft	724.47292 ft	0 psf	950.35699 psf	505.31377 psf	250 psf	0 psf	Tp
Slice 33	374.55332 ft	729.18042 ft	0 psf	589.04089 psf	313.1986 psf	250 psf	0 psf	Tp
Slice 34	379.72649 ft	734.63981 ft	0 psf	125.12623 psf	66.530796 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz   08/24/2020   04:26:05 PM

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz

1 - Rotational Pseudotatic Global
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

1 - Rotational Pseudotatic Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 511
Date: 08/24/2020
Time: 04:26:05 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:27:34 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudotatic Global

Kind: SLOPE/W
Parent: 1 - Rotational Static Global
Method: Bishop
Settings
- PWP Conditions from: Piezometric Line
  - Apply Phreatic Correction: No
  - Use Staged Rapid Drawdown: No
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Right to Left
- Use Passive Mode: No
- Slip Surface Option: Critical Slip Surfaces from Other
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °

Pore Water Pressure
Piezometric Line: 1

Tp Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (0.06709, 629.21208) ft
Right Coordinate: (435.07501, 738.85315) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.06709 ft	620.56096 ft
Coordinate 2	81.16291 ft	620.60011 ft
Coordinate 3	116.06378 ft	623.23105 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	0.06709 ft	579.97276 ft
Point 2	0.06709 ft	611.3555 ft
Point 3	0.06709 ft	629.21208 ft
Point 4	8.01629 ft	629.42269 ft
Point 5	20.42582 ft	636.52047 ft
Point 6	34.39812 ft	636.14136 ft
Point 7	36.24962 ft	637.54587 ft

Point 8	128.24885 ft	660.67933 ft
Point 9	148.65818 ft	670.68037 ft
Point 10	188.21138 ft	670.91415 ft
Point 11	188.35881 ft	668.09115 ft
Point 12	209.10454 ft	668.64064 ft
Point 13	224.94288 ft	674.33878 ft
Point 14	249.07956 ft	684.51998 ft
Point 15	261.50594 ft	689.23779 ft
Point 16	282.61814 ft	699.89078 ft
Point 17	299.09678 ft	706.54741 ft
Point 18	309.10528 ft	710.21213 ft
Point 19	318.70939 ft	714.04421 ft
Point 20	328.26296 ft	718.65364 ft
Point 21	338.14509 ft	722.69748 ft
Point 22	347.39537 ft	726.32851 ft
Point 23	356.03065 ft	730.60403 ft
Point 24	363.23373 ft	733.17355 ft
Point 25	371.96674 ft	736.2039 ft
Point 26	392.48719 ft	738.71512 ft
Point 27	410.36971 ft	740.83999 ft
Point 28	420.07914 ft	741.28229 ft
Point 29	434.96857 ft	739.97532 ft
Point 30	435.07501 ft	738.85315 ft
Point 31	435.07501 ft	580.00239 ft
Point 32	203.51057 ft	664.01129 ft
Point 33	190.72193 ft	654.29651 ft
Point 34	180.89035 ft	648.03813 ft
Point 35	178.33768 ft	646.29422 ft
Point 36	158.77561 ft	635.24949 ft
Point 37	151.06705 ft	632.38396 ft
Point 38	143.28266 ft	629.50273 ft
Point 39	134.6895 ft	626.77314 ft
Point 40	125.21176 ft	624.33099 ft
Point 41	105.17452 ft	621.26694 ft
Point 42	89.82815 ft	619.08327 ft
Point 43	73.17765 ft	617.65782 ft
Point 44	42.36361 ft	615.3225 ft
Point 45	20.95149 ft	613.47245 ft
Point 46	145.805 ft	641.46743 ft
Point 47	41.3274 ft	632.57503 ft
Point 48	168.05117 ft	640.29472 ft
Point 49	38.43765 ft	639.34327 ft
Point 50	38.44617 ft	643.03388 ft
Point 51	44.04773 ft	643.05937 ft
Point 52	44.10754 ft	647.68429 ft
Point 53	46.84556 ft	647.70957 ft
Point 54	68.49694 ft	660.32129 ft
Point 55	199.16344 ft	668.28259 ft
Point 56	105.11591 ft	639.23523 ft
Point 57	62.65379 ft	632.68422 ft
Point 58	214.09615 ft	670.78893 ft
Point 59	219.74068 ft	672.66227 ft
Point 60	213.80129 ft	668.6617 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	1,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,59,58,60,12,32,33,34,35,48,36,37,38,39,40,41,42,43,44,45,2	39,862 ft²
Region 2	Qal	35,46,56,57,47,7,6,5,4,3,2,45,44,43,42,41,40,39,38,37,36,48	2,759.1 ft²
Region	Fill		3,590.5

3	Seismic	7,47,57,56,46,35,34,33,32,12,55,11,10,9,8,54,53,52,51,50,49	ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.62
Volume: 3,024.7939 ft³
Weight: 362,975.26 lbf
Resisting Moment: 58,795,915 lbf·ft
Activating Moment: 36,270,857 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (213.37415, 668.65978) ft
Entry: (382.31307, 737.47005) ft
Radius: 204.49412 ft
Center: (228.8023, 872.57109) ft

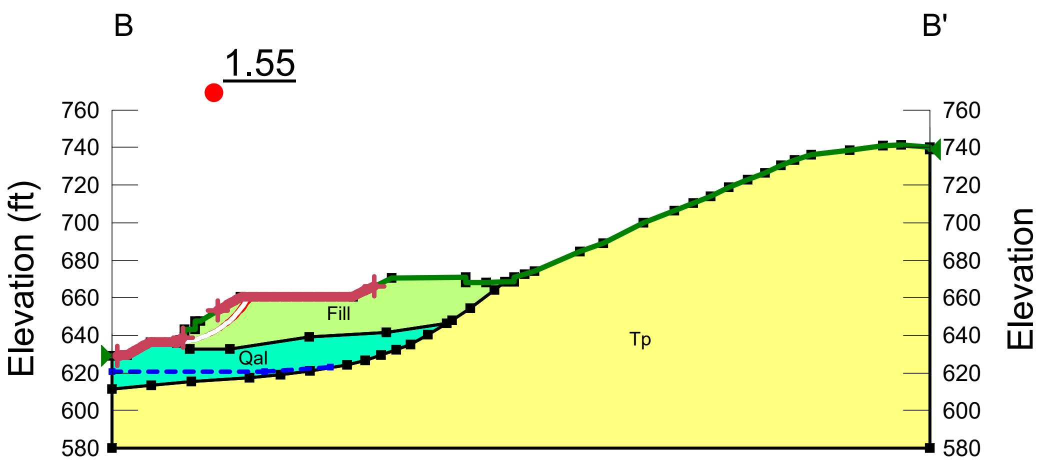
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	213.58772 ft	668.64385 ft	0 psf	23.606923 psf	13.629463 psf	500 psf	0 psf	Tp Seismic
Slice 2	213.94872 ft	668.61718 ft	0 psf	157.20479 psf	90.762225 psf	500 psf	0 psf	Tp Seismic
Slice 3	216.91842 ft	668.44214 ft	0 psf	418.32596 psf	241.52061 psf	500 psf	0 psf	Tp Seismic
Slice 4	222.34178 ft	668.19561 ft	0 psf	652.19373 psf	376.54423 psf	500 psf	0 psf	Tp Seismic
Slice 5	227.95997 ft	668.10096 ft	0 psf	903.62724 psf	521.70943 psf	500 psf	0 psf	Tp Seismic
Slice 6	233.99413 ft	668.16516 ft	0 psf	1,182.0751 psf	682.47137 psf	500 psf	0 psf	Tp Seismic
Slice 7	240.0283 ft	668.40769 ft	0 psf	1,434.1994 psf	828.0354 psf	500 psf	0 psf	Tp Seismic
Slice 8	246.06248 ft	668.82918 ft	0 psf	1,660.5866 psf	958.74011 psf	500 psf	0 psf	Tp Seismic
Slice 9	252.18616 ft	669.4424 ft	0 psf	1,849.2174 psf	1,067.6462 psf	500 psf	0 psf	Tp Seismic
Slice 10	258.39934 ft	670.25449 ft	0 psf	2,000.1377 psf	1,154.78 psf	500 psf	0 psf	Tp Seismic
Slice 11	264.14497 ft	671.17207 ft	0 psf	2,155.2989 psf	1,244.3624 psf	500 psf	0 psf	Tp Seismic
Slice 12	269.42302 ft	672.1701 ft	0 psf	2,317.6921 psf	1,338.1202 psf	500 psf	0 psf	Tp Seismic
Slice 13	274.70107 ft	673.31292 ft	0 psf	2,460.8037 psf	1,420.7457 psf	500 psf	0 psf	Tp Seismic
Slice 14	279.97911 ft	674.60303 ft	0 psf	2,584.7049 psf	1,492.2801 psf	500 psf	0 psf	Tp Seismic
Slice 15	285.36458 ft	676.07582 ft	0 psf	2,660.8476 psf	1,536.2411 psf	500 psf	0 psf	Tp Seismic
Slice 16	290.85746 ft	677.74117 ft	0 psf	2,689.1866 psf	1,552.6026 psf	500 psf	0 psf	Tp Seismic
Slice 17	296.35034 ft	679.57719 ft	0 psf	2,697.7532 psf	1,557.5485 psf	500 psf	0 psf	Tp Seismic
Slice 18	301.59891 ft	681.4917 ft	0 psf	2,677.6828 psf	1,545.9609 psf	500 psf	0 psf	Tp Seismic
Slice 19	306.60316 ft	683.47441 ft	0 psf	2,630.817 psf	1,518.9029 psf	500 psf	0 psf	Tp Seismic
Slice 20	311.50631 ft	685.56573 ft	0 psf	2,577.402 psf	1,488.0637 psf	500 psf	0 psf	Tp Seismic
Slice 21	316.30836 ft	687.76449 ft	0 psf	2,517.6877 psf	1,453.5876 psf	500 psf	0 psf	Tp Seismic
Slice 22	321.09778 ft	690.10951 ft	0 psf	2,462.9588 psf	1,421.9899 psf	500 psf	0 psf	Tp Seismic
Slice 23	325.87457 ft	692.60593 ft	0 psf	2,412.4832 psf	1,392.8478 psf	500 psf	0 psf	Tp Seismic
Slice 24	330.73349 ft	695.31489 ft	0 psf	2,325.2994 psf	1,342.5123 psf	500 psf	0 psf	Tp Seismic
Slice 25	335.67456 ft	698.2502 ft	0 psf	2,201.0102 psf	1,270.7538 psf	500 psf	0 psf	Tp Seismic
Slice 26	340.45766 ft	701.2722 ft	0 psf	2,059.8934 psf	1,189.28 psf	500 psf	0 psf	Tp Seismic
Slice 27	345.0828 ft	704.37837 ft	0 psf	1,902.7302 psf	1,098.5418 psf	500 psf	0 psf	Tp Seismic
Slice 28	349.55419 ft	707.55693 ft	0 psf	1,756.8314 psf	1,014.3071 psf	500 psf	0 psf	Tp Seismic
Slice 29	353.87183 ft	710.80578 ft	0 psf	1,622.0796 psf	936.50809 psf	500 psf	0 psf	Tp Seismic
Slice 30	359.63219 ft	715.47424 ft	0 psf	1,365.5205 psf	788.38365 psf	500 psf	0 psf	Tp Seismic
Slice 31	365.41698 ft	720.43409 ft	0 psf	1,057.9352 psf	610.79914 psf	500 psf	0 psf	Tp Seismic
Slice 32	369.78349 ft	724.47292 ft	0 psf	800.89066 psf	462.39444 psf	500 psf	0 psf	Tp Seismic
Slice 33	374.55332 ft	729.18042 ft	0 psf	446.90548 psf	258.021 psf	500 psf	0 psf	Tp Seismic
Slice 34	379.72649 ft	734.63981 ft	0 psf	-4.7563832 psf	-2.7460991 psf	500 psf	0 psf	Tp Seismic

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz 08/24/2020 04:26:05 PM

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz

2 - Rotational Static Lower Slope
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No:	203008-01
Engineer:	BIH/ACR
Date:	August 2020

2 - Rotational Static Lower Slope

File Information

- File Version: 10.01
- Title: Slope Stability Analyses Cross-section
- Revision Number: 511
- Date: 08/24/2020
- Time: 04:26:05 PM
- Tool Version: 10.1.0.18696
- File Name: Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz
- Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
- Last Solved Date: 08/24/2020
- Last Solved Time: 04:27:20 PM

Project Settings

- Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Static Lower Slope

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 250 psf
- Phi': 28 °
- Phi-B: 0 °
- Pore Water Pressure

Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (2.83642, 629.28545) ft
Left-Zone Right Coordinate: (37.94933, 638.94213) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (56.36783, 653.2562) ft
Right-Zone Right Coordinate: (139.50529, 666.19525) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.06709, 629.21208) ft
Right Coordinate: (435.07501, 738.85315) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.06709 ft	620.61993 ft
Coordinate 2	81.03424 ft	620.57214 ft
Coordinate 3	116.13341 ft	623.2436 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	0.06709 ft	579.97276 ft
Point 2	0.06709 ft	611.3555 ft
Point 3	0.06709 ft	629.21208 ft
Point 4	8.01629 ft	629.42269 ft
Point 5	20.42582 ft	636.52047 ft
Point 6	34.39812 ft	636.14136 ft
Point 7	36.24962 ft	637.54587 ft
Point 8	128.24885 ft	660.67933 ft
Point 9	148.65818 ft	670.68037 ft
Point 10	188.21138 ft	670.91415 ft
Point 11	188.35881 ft	668.09115 ft
Point 12	209.10454 ft	668.64064 ft
Point 13	224.94288 ft	674.33878 ft
Point 14	249.07956 ft	684.51998 ft
Point 15	261.50594 ft	689.23779 ft
Point 16	282.61814 ft	699.89078 ft
Point 17	299.09678 ft	706.54741 ft
Point 18	309.10528 ft	710.21213 ft
Point 19	318.70939 ft	714.04421 ft
Point 20	328.26296 ft	718.65364 ft
Point 21	338.14509 ft	722.69748 ft
Point 22	347.39537 ft	726.32851 ft
Point 23	356.03065 ft	730.60403 ft
Point 24	363.23373 ft	733.17355 ft
Point 25	371.96674 ft	736.2039 ft
Point 26	392.48719 ft	738.71512 ft
Point 27	410.36971 ft	740.83999 ft
Point 28	420.07914 ft	741.28229 ft
Point 29	434.96857 ft	739.97532 ft
Point 30	435.07501 ft	738.85315 ft
Point 31	435.07501 ft	580.00239 ft
Point 32	203.51057 ft	664.01129 ft
Point 33	190.72193 ft	654.29651 ft
Point 34	180.89035 ft	648.03813 ft
Point 35	178.33768 ft	646.29422 ft
Point 36	158.77561 ft	635.24949 ft
Point 37	151.06705 ft	632.38396 ft
Point 38	143.28266 ft	629.50273 ft
Point 39	134.6895 ft	626.77314 ft
Point 40	125.21176 ft	624.33099 ft
Point 41	105.17452 ft	621.26694 ft
Point 42	89.82815 ft	619.08327 ft
Point 43	73.17765 ft	617.65782 ft
Point 44	42.36361 ft	615.3225 ft
Point 45	20.95149 ft	613.47245 ft
Point 46	145.805 ft	641.46743 ft
Point 47	41.3274 ft	632.57503 ft
Point 48	168.05117 ft	640.29472 ft
Point 49	38.43765 ft	639.34327 ft
Point 50	38.44617 ft	643.03388 ft
Point 51	44.04773 ft	643.05937 ft
Point 52	44.10754 ft	647.68429 ft
Point 53	46.84556 ft	647.70957 ft
Point 54	68.49694 ft	660.32129 ft
Point 55	199.16344 ft	668.28259 ft
Point 56	105.11591 ft	639.23523 ft

Point 57	62.65379 ft	632.68422 ft
Point 58	214.09615 ft	670.78893 ft
Point 59	219.74068 ft	672.66227 ft
Point 60	213.80129 ft	668.6617 ft

Regions

	Material	Points	Area
Region 1	Tp	1,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,59,58,60,12,32,33,34,35,48,36,37,38,39,40,41,42,43,44,45,2	39,862 ft²
Region 2	Qal	35,46,56,57,47,7,6,5,4,3,2,45,44,43,42,41,40,39,38,37,36,48	2,759.1 ft²
Region 3	Fill	7,47,57,56,46,35,34,33,32,12,55,11,10,9,8,54,53,52,51,50,49	3,590.5 ft²

Slip Results

Slip Surfaces Analysed: 144821 of 163216 converged

Current Slip Surface

Slip Surface: 142,552
Factor of Safety: 1.55
Volume: 279.20687 ft³
Weight: 33,514.235 lbf
Resisting Moment: 1,179,391.8 lbf·ft
Activating Moment: 760,971.01 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces
Exit: (34.402266, 636.1445) ft
Entry: (72.588353, 660.34581) ft
Radius: 46.64803 ft
Center: (31.651566, 682.71136) ft

Slip Slices

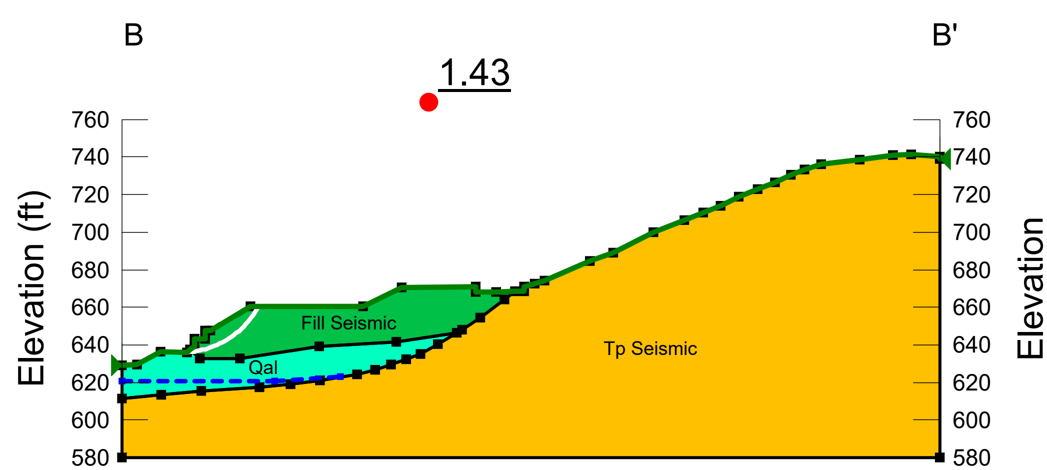
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	35.325943 ft	636.2175 ft	-974.58713 psf	65.355729 psf	30.475877 psf	250 psf	0 psf	Qal
Slice 2	36.82519 ft	636.35474 ft	-983.20575 psf	180.75474 psf	84.28732 psf	250 psf	0 psf	Qal
Slice 3	37.919205 ft	636.48927 ft	-991.64114 psf	264.53385 psf	134.78673 psf	200 psf	0 psf	Fill
Slice 4	38.44191 ft	636.5602 ft	-996.08624 psf	515.17357 psf	262.49404 psf	200 psf	0 psf	Fill
Slice 5	39.146365 ft	636.67482 ft	-1,003.2644 psf	709.4272 psf	361.47121 psf	200 psf	0 psf	Fill
Slice 6	40.546755 ft	636.92484 ft	-1,018.9174 psf	671.93532 psf	342.36815 psf	200 psf	0 psf	Fill
Slice 7	41.947145 ft	637.21934 ft	-1,037.3456 psf	629.94877 psf	320.97493 psf	200 psf	0 psf	Fill
Slice 8	43.347535 ft	637.55918 ft	-1,058.6032 psf	583.48104 psf	297.29844 psf	200 psf	0 psf	Fill
Slice 9	44.077635 ft	637.74882 ft	-1,070.4635 psf	814.29091 psf	414.90194 psf	200 psf	0 psf	Fill
Slice 10	44.792045 ft	637.95807 ft	-1,083.547 psf	1,041.1 psf	530.46696 psf	200 psf	0 psf	Fill
Slice 11	46.161055 ft	638.3831 ft	-1,110.1197 psf	982.8069 psf	500.76513 psf	200 psf	0 psf	Fill
Slice 12	47.482365 ft	638.83693 ft	-1,138.487 psf	962.00007 psf	490.16352 psf	200 psf	0 psf	Fill
Slice 13	48.755976 ft	639.31771 ft	-1,168.5346 psf	977.84194 psf	498.23536 psf	200 psf	0 psf	Fill
Slice 14	50.029586 ft	639.84171 ft	-1,201.2794 psf	988.37235 psf	503.60087 psf	200 psf	0 psf	Fill

Slice 15	51.303197 ft	640.41055 ft	-1,236.8216 psf	993.49626 psf	506.21163 psf	200 psf	0 psf	Fill
Slice 16	52.576808 ft	641.02605 ft	-1,275.276 psf	993.09899 psf	506.00921 psf	200 psf	0 psf	Fill
Slice 17	53.850418 ft	641.69033 ft	-1,316.7737 psf	987.04417 psf	502.92412 psf	200 psf	0 psf	Fill
Slice 18	55.124029 ft	642.40579 ft	-1,361.4656 psf	975.17121 psf	496.87455 psf	200 psf	0 psf	Fill
Slice 19	56.397639 ft	643.17523 ft	-1,409.5252 psf	957.29217 psf	487.76473 psf	200 psf	0 psf	Fill
Slice 20	57.67125 ft	644.00186 ft	-1,461.1538 psf	933.18788 psf	475.48297 psf	200 psf	0 psf	Fill
Slice 21	58.944861 ft	644.88944 ft	-1,516.5858 psf	902.60301 psf	459.89921 psf	200 psf	0 psf	Fill
Slice 22	60.218471 ft	645.84238 ft	-1,576.0966 psf	865.24001 psf	440.8618 psf	200 psf	0 psf	Fill
Slice 23	61.492082 ft	646.86592 ft	-1,640.0122 psf	820.75128 psf	418.19366 psf	200 psf	0 psf	Fill
Slice 24	62.765692 ft	647.9663 ft	-1,708.723 psf	768.72932 psf	391.68715 psf	200 psf	0 psf	Fill
Slice 25	64.039303 ft	649.15112 ft	-1,782.7024 psf	708.69383 psf	361.09754 psf	200 psf	0 psf	Fill
Slice 26	65.312914 ft	650.4297 ft	-1,862.5326 psf	640.07491 psf	326.13446 psf	200 psf	0 psf	Fill
Slice 27	66.586524 ft	651.81374 ft	-1,948.9434 psf	562.19073 psf	286.45049 psf	200 psf	0 psf	Fill
Slice 28	67.860135 ft	653.31821 ft	-2,042.8697 psf	474.21752 psf	241.6259 psf	200 psf	0 psf	Fill
Slice 29	69.178842 ft	655.02702 ft	-2,149.5479 psf	337.64247 psf	172.03743 psf	200 psf	0 psf	Fill
Slice 30	70.542646 ft	656.9821 ft	-2,271.5949 psf	153.53217 psf	78.22855 psf	200 psf	0 psf	Fill
Slice 31	71.906451 ft	659.17932 ft	-2,408.7516 psf	-41.433578 psf	-21.111463 psf	200 psf	0 psf	Fill

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz 08/24/2020 04:26:05 PM

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz

2 - Rotational Pseudotatic Lower Slope
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

2 - Rotational Pseudotatic Lower Slope

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 511
Date: 08/24/2020
Time: 04:26:05 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:27:34 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Pseudotatic Lower Slope

- Kind: SLOPE/W
- Parent: 2 - Rotational Static Lower Slope
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Critical Slip Surfaces from Other
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Qal

- Model: Mohr-Coulomb
- Unit Weight: 125 pcf
- Cohesion': 250 psf
- Phi': 25 °
- Phi-B: 0 °

Pore Water Pressure

Piezometric Line: 1

Tp Seismic

Model: Mohr-Coulomb

Unit Weight: 120 pcf

Cohesion': 500 psf

Phi': 30 °

Phi-B: 0 °

Pore Water Pressure

Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb

Unit Weight: 120 pcf

Cohesion': 200 psf

Phi': 34 °

Phi-B: 0 °

Pore Water Pressure

Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (0.06709, 629.21208) ft

Right Coordinate: (435.07501, 738.85315) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.06709 ft	620.50479 ft
Coordinate 2	81.0935 ft	620.58826 ft
Coordinate 3	116.15048 ft	623.24668 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15

Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	0.06709 ft	579.97276 ft
Point 2	0.06709 ft	611.3555 ft
Point 3	0.06709 ft	629.21208 ft
Point 4	8.01629 ft	629.42269 ft
Point 5	20.42582 ft	636.52047 ft
Point 6	34.39812 ft	636.14136 ft
Point 7	36.24962 ft	637.54587 ft

Point 8	128.24885 ft	660.67933 ft
Point 9	148.65818 ft	670.68037 ft
Point 10	188.21138 ft	670.91415 ft
Point 11	188.35881 ft	668.09115 ft
Point 12	209.10454 ft	668.64064 ft
Point 13	224.94288 ft	674.33878 ft
Point 14	249.07956 ft	684.51998 ft
Point 15	261.50594 ft	689.23779 ft
Point 16	282.61814 ft	699.89078 ft
Point 17	299.09678 ft	706.54741 ft
Point 18	309.10528 ft	710.21213 ft
Point 19	318.70939 ft	714.04421 ft
Point 20	328.26296 ft	718.65364 ft
Point 21	338.14509 ft	722.69748 ft
Point 22	347.39537 ft	726.32851 ft
Point 23	356.03065 ft	730.60403 ft
Point 24	363.23373 ft	733.17355 ft
Point 25	371.96674 ft	736.2039 ft
Point 26	392.48719 ft	738.71512 ft
Point 27	410.36971 ft	740.83999 ft
Point 28	420.07914 ft	741.28229 ft
Point 29	434.96857 ft	739.97532 ft
Point 30	435.07501 ft	738.85315 ft
Point 31	435.07501 ft	580.00239 ft
Point 32	203.51057 ft	664.01129 ft
Point 33	190.72193 ft	654.29651 ft
Point 34	180.89035 ft	648.03813 ft
Point 35	178.33768 ft	646.29422 ft
Point 36	158.77561 ft	635.24949 ft
Point 37	151.06705 ft	632.38396 ft
Point 38	143.28266 ft	629.50273 ft
Point 39	134.6895 ft	626.77314 ft
Point 40	125.21176 ft	624.33099 ft
Point 41	105.17452 ft	621.26694 ft
Point 42	89.82815 ft	619.08327 ft
Point 43	73.17765 ft	617.65782 ft
Point 44	42.36361 ft	615.3225 ft
Point 45	20.95149 ft	613.47245 ft
Point 46	145.805 ft	641.46743 ft
Point 47	41.3274 ft	632.57503 ft
Point 48	168.05117 ft	640.29472 ft
Point 49	38.43765 ft	639.34327 ft
Point 50	38.44617 ft	643.03388 ft
Point 51	44.04773 ft	643.05937 ft
Point 52	44.10754 ft	647.68429 ft
Point 53	46.84556 ft	647.70957 ft
Point 54	68.49694 ft	660.32129 ft
Point 55	199.16344 ft	668.28259 ft
Point 56	105.11591 ft	639.23523 ft
Point 57	62.65379 ft	632.68422 ft
Point 58	214.09615 ft	670.78893 ft
Point 59	219.74068 ft	672.66227 ft
Point 60	213.80129 ft	668.6617 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	1,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,59,58,60,12,32,33,34,35,48,36,37,38,39,40,41,42,43,44,45,2	39,862 ft²
Region 2	Qal	35,46,56,57,47,7,6,5,4,3,2,45,44,43,42,41,40,39,38,37,36,48	2,759.1 ft²
Region	Fill		3,590.5

3	Seismic	7,47,57,56,46,35,34,33,32,12,55,11,10,9,8,54,53,52,51,50,49	ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.43
Volume: 279.20687 ft³
Weight: 33,514.235 lbf
Resisting Moment: 1,344,682.2 lbf·ft
Activating Moment: 937,496.64 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (34.402266, 636.1445) ft
Entry: (72.588353, 660.34581) ft
Radius: 46.64803 ft
Center: (31.651566, 682.71136) ft

Slip Slices

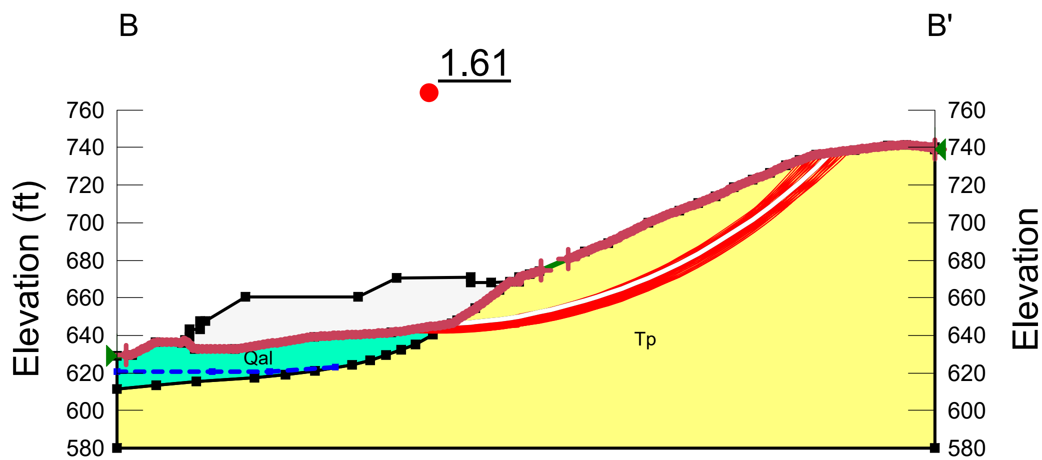
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	35.325943 ft	636.2175 ft	-978.20675 psf	64.11744 psf	29.898453 psf	250 psf	0 psf	Qal
Slice 2	36.82519 ft	636.35474 ft	-986.67378 psf	178.69039 psf	83.324697 psf	250 psf	0 psf	Qal
Slice 3	37.919205 ft	636.48927 ft	-994.99854 psf	258.46004 psf	174.3335 psf	200 psf	0 psf	Fill Seismic
Slice 4	38.44191 ft	636.5602 ft	-999.39079 psf	503.89798 psf	339.88348 psf	200 psf	0 psf	Fill Seismic
Slice 5	39.146365 ft	636.67482 ft	-1,006.4977 psf	693.01196 psf	467.44247 psf	200 psf	0 psf	Fill Seismic
Slice 6	40.546755 ft	636.92484 ft	-1,022.0092 psf	653.50892 psf	440.79733 psf	200 psf	0 psf	Fill Seismic
Slice 7	41.947145 ft	637.21934 ft	-1,040.2957 psf	609.93408 psf	411.40573 psf	200 psf	0 psf	Fill Seismic
Slice 8	43.347535 ft	637.55918 ft	-1,061.4117 psf	562.33904 psf	379.30247 psf	200 psf	0 psf	Fill Seismic
Slice 9	44.077635 ft	637.74882 ft	-1,073.1983 psf	784.14032 psf	528.90933 psf	200 psf	0 psf	Fill Seismic
Slice 10	44.792045 ft	637.95807 ft	-1,086.2095 psf	1,001.2476 psf	675.35003 psf	200 psf	0 psf	Fill Seismic
Slice 11	46.161055 ft	638.3831 ft	-1,112.6437 psf	941.22542 psf	634.86456 psf	200 psf	0 psf	Fill Seismic
Slice 12	47.482365 ft	638.83693 ft	-1,140.8774 psf	917.62543 psf	618.94617 psf	200 psf	0 psf	Fill Seismic
Slice 13	48.755976 ft	639.31771 ft	-1,170.7963 psf	929.24415 psf	626.78309 psf	200 psf	0 psf	Fill Seismic
Slice 14	50.029586 ft	639.84171 ft	-1,203.4123 psf	935.67231 psf	631.11894 psf	200 psf	0 psf	Fill Seismic
Slice 15	51.303197 ft	640.41055 ft	-1,238.8257 psf	936.86169 psf	631.92119 psf	200 psf	0 psf	Fill Seismic
Slice 16	52.576808 ft	641.02605 ft	-1,277.1513 psf	932.74687 psf	629.14571 psf	200 psf	0 psf	Fill Seismic
Slice 17	53.850418 ft	641.69033 ft	-1,318.5203 psf	923.24404 psf	622.73597 psf	200 psf	0 psf	Fill Seismic
Slice 18	55.124029 ft	642.40579 ft	-1,363.0834 psf	908.24949 psf	612.62202 psf	200 psf	0 psf	Fill Seismic
Slice 19	56.397639 ft	643.17523 ft	-1,411.0142 psf	887.63765 psf	598.71916 psf	200 psf	0 psf	Fill Seismic
Slice 20	57.67125 ft	644.00186 ft	-1,462.514 psf	861.25868 psf	580.92631 psf	200 psf	0 psf	Fill Seismic

Slice 21	58.944861 ft	644.88944 ft	-1,517.8173 psf	828.93542 psf	559.124 psf	200 psf	0 psf	Fill Seismic
Slice 22	60.218471 ft	645.84238 ft	-1,577.1993 psf	790.45968 psf	533.17179 psf	200 psf	0 psf	Fill Seismic
Slice 23	61.492082 ft	646.86592 ft	-1,640.9861 psf	745.58754 psf	502.90515 psf	200 psf	0 psf	Fill Seismic
Slice 24	62.765692 ft	647.9663 ft	-1,709.5682 psf	694.03358 psf	468.13156 psf	200 psf	0 psf	Fill Seismic
Slice 25	64.039303 ft	649.15112 ft	-1,783.4187 psf	635.46364 psf	428.62564 psf	200 psf	0 psf	Fill Seismic
Slice 26	65.312914 ft	650.4297 ft	-1,863.1202 psf	569.48587 psf	384.12307 psf	200 psf	0 psf	Fill Seismic
Slice 27	66.586524 ft	651.81374 ft	-1,949.4022 psf	495.63962 psf	334.31314 psf	200 psf	0 psf	Fill Seismic
Slice 28	67.860135 ft	653.31821 ft	-2,043.1997 psf	413.38204 psf	278.8297 psf	200 psf	0 psf	Fill Seismic
Slice 29	69.178842 ft	655.02702 ft	-2,149.7446 psf	288.79386 psf	194.79392 psf	200 psf	0 psf	Fill Seismic
Slice 30	70.542646 ft	656.9821 ft	-2,271.6537 psf	124.10445 psf	83.709507 psf	200 psf	0 psf	Fill Seismic
Slice 31	71.906451 ft	659.17932 ft	-2,408.6725 psf	-47.108931 psf	-31.775375 psf	200 psf	0 psf	Fill Seismic

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz 08/24/2020 04:26:05 PM

Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz

3 - Rotational Static Temporary
Horz Seismic Coef.: 0



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC	LGC Valley, Inc *GEOTECHNICAL CONSULTING* 28532 Constellation Road, Valencia, CA 91355 Phone 661-702-8474, Fax 661-702-8475	**Newbridge-Diamond Bar**	Project No: 203008-01 Engineer: BIH/ACR Date: August 2020

3 - Rotational Static Temporary

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 511
Date: 08/24/2020
Time: 04:26:05 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section B-B SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/24/2020
Last Solved Time: 04:27:36 PM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

3 - Rotational Static Temporary

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 250 psf
- Phi': 28 °
- Phi-B: 0 °
- Pore Water Pressure

Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (4.88611, 629.33976) ft
Left-Zone Right Coordinate: (225.47343, 674.56257) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (240.0865, 680.72658) ft
Right-Zone Right Coordinate: (435.06647, 738.9432) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.06709, 629.21208) ft
Right Coordinate: (435.07501, 738.85315) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.06709 ft	620.49356 ft
Coordinate 2	50.47 ft	620.58995 ft
Coordinate 3	81.25432 ft	620.58995 ft
Coordinate 4	116.20001 ft	623.25562 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	0.06709 ft	579.97276 ft
Point 2	0.06709 ft	611.3555 ft
Point 3	0.06709 ft	629.21208 ft
Point 4	8.01629 ft	629.42269 ft

Point 5	20.42582 ft	636.52047 ft
Point 6	34.39812 ft	636.14136 ft
Point 7	36.24962 ft	637.54587 ft
Point 8	128.24885 ft	660.67933 ft
Point 9	148.65818 ft	670.68037 ft
Point 10	188.21138 ft	670.91415 ft
Point 11	188.35881 ft	668.09115 ft
Point 12	209.10454 ft	668.64064 ft
Point 13	224.94288 ft	674.33878 ft
Point 14	249.07956 ft	684.51998 ft
Point 15	261.50594 ft	689.23779 ft
Point 16	282.61814 ft	699.89078 ft
Point 17	299.09678 ft	706.54741 ft
Point 18	309.10528 ft	710.21213 ft
Point 19	318.70939 ft	714.04421 ft
Point 20	328.26296 ft	718.65364 ft
Point 21	338.14509 ft	722.69748 ft
Point 22	347.39537 ft	726.32851 ft
Point 23	356.03065 ft	730.60403 ft
Point 24	363.23373 ft	733.17355 ft
Point 25	371.96674 ft	736.2039 ft
Point 26	392.48719 ft	738.71512 ft
Point 27	410.36971 ft	740.83999 ft
Point 28	420.07914 ft	741.28229 ft
Point 29	434.96857 ft	739.97532 ft
Point 30	435.07501 ft	738.85315 ft
Point 31	435.07501 ft	580.00239 ft
Point 32	203.51057 ft	664.01129 ft
Point 33	190.72193 ft	654.29651 ft
Point 34	180.89035 ft	648.03813 ft
Point 35	178.33768 ft	646.29422 ft
Point 36	158.77561 ft	635.24949 ft
Point 37	151.06705 ft	632.38396 ft
Point 38	143.28266 ft	629.50273 ft
Point 39	134.6895 ft	626.77314 ft
Point 40	125.21176 ft	624.33099 ft
Point 41	105.17452 ft	621.26694 ft
Point 42	89.82815 ft	619.08327 ft
Point 43	73.17765 ft	617.65782 ft
Point 44	42.36361 ft	615.3225 ft
Point 45	20.95149 ft	613.47245 ft
Point 46	145.805 ft	641.46743 ft
Point 47	41.3274 ft	632.57503 ft
Point 48	168.05117 ft	640.29472 ft
Point 49	38.43765 ft	639.34327 ft
Point 50	38.44617 ft	643.03388 ft
Point 51	44.04773 ft	643.05937 ft
Point 52	44.10754 ft	647.68429 ft
Point 53	46.84556 ft	647.70957 ft
Point 54	68.49694 ft	660.32129 ft
Point 55	199.16344 ft	668.28259 ft
Point 56	105.11591 ft	639.23523 ft
Point 57	62.65379 ft	632.68422 ft
Point 58	214.09615 ft	670.78893 ft
Point 59	219.74068 ft	672.66227 ft
Point 60	213.80129 ft	668.6617 ft

Regions

	Material	Points	Area
Region 1	Tp	1,31,30,29,28,27,26,25,24,23,22,21,20,19,18,17,16,15,14,13,59,58,60,12,32,33,34,35,48,36,37,38,39,40,41,42,43,44,45,2	39,862 ft²

Region 2	Qal	35,46,56,57,47,7,6,5,4,3,2,45,44,43,42,41,40,39,38,37,36,48	2,759.1 ft²
Region 3		7,47,57,56,46,35,34,33,32,12,55,11,10,9,8,54,53,52,51,50,49	3,590.5 ft²

Slip Results

Slip Surfaces Analysed: 155381 of 163216 converged

Current Slip Surface

Slip Surface: 122,373

Factor of Safety: 1.61

Volume: 4,115.704 ft³

Weight: 493,885.26 lbf

Resisting Moment: 94,531,595 lbf·ft

Activating Moment: 58,646,847 lbf·ft

Slip Rank: 1 of 163,216 slip surfaces

Exit: (176.34355, 645.99836) ft

Entry: (380.23639, 737.21591) ft

Radius: 307.5923 ft

Center: (161.2496, 953.22009) ft

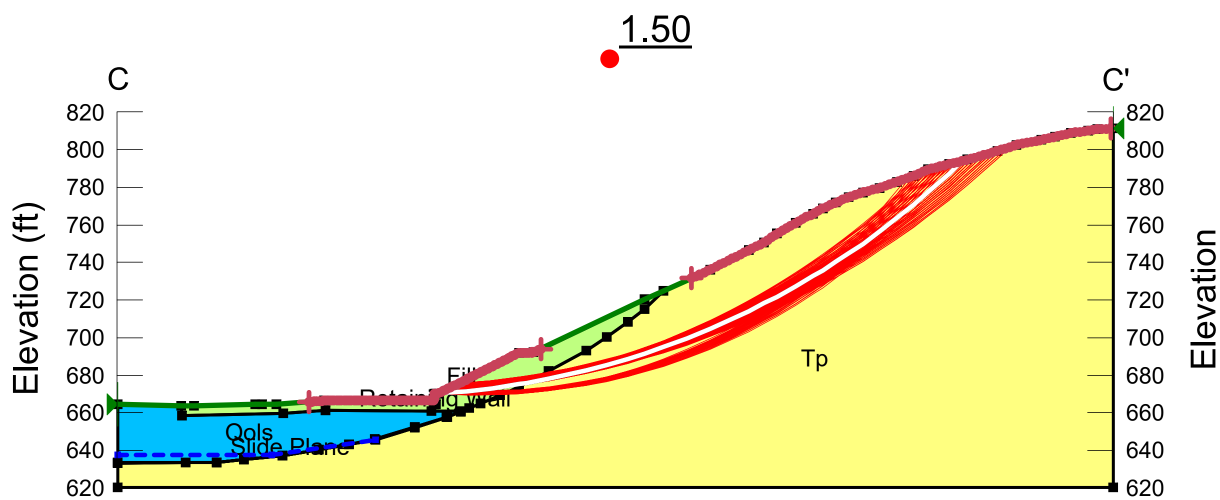
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	177.15943 ft	646.04061 ft	0 psf	2.5451184 psf	1.1868082 psf	250 psf	0 psf	Qal
Slice 2	178.15649 ft	646.09284 ft	0 psf	13.386864 psf	7.1179217 psf	250 psf	0 psf	Tp
Slice 3	179.61401 ft	646.17916 ft	0 psf	108.11699 psf	57.486826 psf	250 psf	0 psf	Tp
Slice 4	184.62458 ft	646.54012 ft	0 psf	444.20389 psf	236.1874 psf	250 psf	0 psf	Tp
Slice 5	189.54037 ft	646.93388 ft	0 psf	759.3584 psf	403.75802 psf	250 psf	0 psf	Tp
Slice 6	194.94269 ft	647.50819 ft	0 psf	1,146.1721 psf	609.43049 psf	250 psf	0 psf	Tp
Slice 7	201.33701 ft	648.25908 ft	0 psf	1,610.4841 psf	856.30957 psf	250 psf	0 psf	Tp
Slice 8	206.30756 ft	648.95901 ft	0 psf	1,975.9016 psf	1,050.6055 psf	250 psf	0 psf	Tp
Slice 9	211.45291 ft	649.76172 ft	0 psf	2,137.9317 psf	1,136.7585 psf	250 psf	0 psf	Tp
Slice 10	213.94872 ft	650.17587 ft	0 psf	2,206.9601 psf	1,173.4615 psf	250 psf	0 psf	Tp
Slice 11	216.91842 ft	650.72088 ft	0 psf	2,364.8239 psf	1,257.3992 psf	250 psf	0 psf	Tp
Slice 12	222.34178 ft	651.7674 ft	0 psf	2,432.3799 psf	1,293.3193 psf	250 psf	0 psf	Tp
Slice 13	227.95997 ft	652.96487 ft	0 psf	2,519.3136 psf	1,339.5428 psf	250 psf	0 psf	Tp
Slice 14	233.99413 ft	654.36961 ft	0 psf	2,629.2429 psf	1,397.9933 psf	250 psf	0 psf	Tp
Slice 15	240.0283 ft	655.90343 ft	0 psf	2,723.245 psf	1,447.9751 psf	250 psf	0 psf	Tp
Slice 16	246.06248 ft	657.56836 ft	0 psf	2,801.3249 psf	1,489.4908 psf	250 psf	0 psf	Tp
Slice 17	252.18616 ft	659.39533 ft	0 psf	2,849.7696 psf	1,515.2494 psf	250 psf	0 psf	Tp
Slice 18	258.39934 ft	661.39098 ft	0 psf	2,868.3192 psf	1,525.1124 psf	250 psf	0 psf	Tp
Slice 19	265.02464 ft	663.68634 ft	0 psf	2,916.8435 psf	1,550.9132 psf	250 psf	0 psf	Tp
Slice 20	272.06204 ft	666.30652 ft	0 psf	2,991.7919 psf	1,590.764 psf	250 psf	0 psf	Tp
Slice 21	279.09944 ft	669.12517 ft	0 psf	3,043.6876 psf	1,618.3574 psf	250 psf	0 psf	Tp
Slice 22	286.7378 ft	672.42591 ft	0 psf	3,028.707 psf	1,610.3921 psf	250 psf	0 psf	Tp
Slice 23	294.97712 ft	676.25611 ft	0 psf	2,943.268 psf	1,564.9634 psf	250 psf	0 psf	Tp
Slice 24	304.10103 ft	680.87002 ft	0 psf	2,790.6123 psf	1,483.7949 psf	250 psf	0 psf	Tp
Slice 25	313.90733 ft	686.24062 ft	0 psf	2,585.018 psf	1,374.4784 psf	250 psf	0 psf	Tp
Slice 26	323.48618 ft	691.9526 ft	0 psf	2,396.2271 psf	1,274.0966 psf	250 psf	0 psf	Tp
Slice 27	333.20403 ft	698.25111 ft	0 psf	2,161.1834 psf	1,149.1216 psf	250 psf	0 psf	Tp
Slice 28	342.77023 ft	704.96527 ft	0 psf	1,841.2191 psf	978.99358 psf	250 psf	0 psf	Tp
Slice 29	351.71301 ft	711.75276 ft	0 psf	1,533.7704 psf	815.5202 psf	250 psf	0 psf	Tp
Slice 30	359.63219 ft	718.19848 ft	0 psf	1,217.5649 psf	647.39072 psf	250 psf	0 psf	Tp
Slice 31	367.60023 ft	725.18992 ft	0 psf	797.43213 psf	424.00218 psf	250 psf	0 psf	Tp
Slice 32	376.10157 ft	733.1786 ft	0 psf	222.00321 psf	118.0412 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz 08/24/2020 04:50:24 PM

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz

1 - Rotational Static Global
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

1 - Rotational Static Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 656
Date: 08/24/2020
Time: 04:50:24 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:13:35 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Global

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 1 ft
    - Number of Slices: 20
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.25

Materials

Tp

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 250 psf
- Phi': 28 °
- Phi-B: 0 °
- Pore Water Pressure
  - Piezometric Line: 1

Fill

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 200 psf

Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (102.27423, 665.77595) ft
Left-Zone Right Coordinate: (225.54842, 693.96325) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (305.78937, 731.72268) ft
Right-Zone Right Coordinate: (528.88067, 811.23341) ft
Right-Zone Increment: 100
Radius Increments: 8

Slip Surface Limits

Left Coordinate: (0.169, 664.37119) ft
Right Coordinate: (530.08562, 811.28399) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.169 ft	637.37778 ft
Coordinate 2	82.24271 ft	637.37778 ft
Coordinate 3	137.35457 ft	645.754 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	0.169 ft	664.37119 ft
Point 2	41.034 ft	663.70986 ft
Point 3	73.4858 ft	664.43775 ft
Point 4	290.87236 ft	725.03019 ft
Point 5	280.77089 ft	715.23846 ft
Point 6	271.77225 ft	708.52628 ft
Point 7	260.53553 ft	700.17112 ft
Point 8	249.80916 ft	693.03779 ft
Point 9	229.62535 ft	682.08969 ft
Point 10	214.02035 ft	673.77455 ft
Point 11	203.97458 ft	669.2575 ft
Point 12	193.2879 ft	664.77136 ft
Point 13	187.19687 ft	662.34506 ft
Point 14	183.10248 ft	660.74859 ft
Point 15	107.21989 ft	640.3385 ft
Point 16	87.95263 ft	637.02659 ft
Point 17	67.53529 ft	635.17047 ft
Point 18	53.15945 ft	633.53272 ft
Point 19	36.70911 ft	633.53272 ft
Point 20	0.169 ft	633.31435 ft
Point 21	77.31481 ft	664.39225 ft
Point 22	84.66532 ft	664.39225 ft
Point 23	110.12826 ft	666.39311 ft
Point 24	214.12253 ft	691.91283 ft
Point 25	221.63494 ft	692.0823 ft
Point 26	280.83297 ft	720.53485 ft
Point 27	315.76984 ft	736.20041 ft
Point 28	336.21422 ft	746.49058 ft
Point 29	344.42865 ft	750.58279 ft
Point 30	350.98493 ft	755.29436 ft
Point 31	361.09453 ft	760.93888 ft
Point 32	370.4459 ft	765.99368 ft
Point 33	375.5564 ft	768.68957 ft
Point 34	382.57741 ft	771.78563 ft
Point 35	389.48564 ft	774.83957 ft
Point 36	396.77297 ft	777.34608 ft
Point 37	405.99797 ft	779.55755 ft
Point 38	415.15979 ft	782.94848 ft
Point 39	423.9425 ft	786.04033 ft
Point 40	431.67213 ft	789.5829 ft
Point 41	442.62419 ft	792.27879 ft
Point 42	452.59558 ft	794.65876 ft
Point 43	468.39182 ft	799.23335 ft
Point 44	478.57643 ft	802.51458 ft
Point 45	491.70796 ft	805.13297 ft
Point 46	499.25477 ft	806.86171 ft
Point 47	507.41485 ft	808.75726 ft
Point 48	516.618 ft	810.1726 ft
Point 49	521.67279 ft	810.93082 ft
Point 50	530.08562 ft	811.28399 ft
Point 51	530.08562 ft	620.1998 ft
Point 52	0.17628 ft	620.1998 ft
Point 53	34.23549 ft	663.81415 ft
Point 54	34.52823 ft	658.65506 ft
Point 55	123.56041 ft	643.20307 ft
Point 56	137.35457 ft	645.754 ft
Point 57	167.17987 ft	660.98027 ft
Point 58	137.28359 ft	645.90746 ft
Point 59	123.53987 ft	643.37669 ft
Point 60	107.20948 ft	640.47016 ft
Point 61	87.94727 ft	637.13465 ft

Point 62	67.51593 ft	635.29693 ft
Point 63	53.14995 ft	633.63583 ft
Point 64	0.169 ft	633.60886 ft
Point 65	111.07162 ft	661.1277 ft
Point 66	88.45141 ft	659.61126 ft
Point 67	175.58347 ft	657.63146 ft
Point 68	175.51007 ft	657.79835 ft
Point 69	158.46035 ft	652.23968 ft
Point 70	158.42535 ft	652.42205 ft
Point 71	182.84614 ft	660.70103 ft
Point 72	168.8547 ft	670.29903 ft
Point 73	168.84816 ft	666.44027 ft
Point 74	171.27836 ft	670.35022 ft
Point 75	168.84816 ft	664.42179 ft
Point 76	169.84415 ft	664.42179 ft
Point 77	169.84446 ft	670.32069 ft

Regions

	Material	Points	Area
Region 1	Fill	23,22,21,3,2,53,54,66,65,57,14,13,12,11,10,9,8,7,6,5,4,26,25,24,74,77,76,75,73	2,202.7 ft²
Region 2	Tp	4,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,20,19,18,17,16,15,55,56,69,67,14,13,12,11,10,9,8,7,6,5	48,521 ft²
Region 3	Qols	53,1,64,63,62,61,60,59,58,70,68,71,14,57,65,66,54	3,657.1 ft²
Region 4	Slide Plane	14,71,68,70,58,59,60,61,62,63,64,20,19,18,17,16,15,55,56,69,67	28.181 ft²
Region 5	Retaining Wall	73,75,76,77,72	5.8527 ft²

Slip Results

Slip Surfaces Analysed: 70425 of 91809 converged

Current Slip Surface

Slip Surface: 50,592
Factor of Safety: 1.50
Volume: 6,310.1952 ft³
Weight: 757,223.42 lbf
Resisting Moment: 2.0005795e+08 lbf·ft
Activating Moment: 1.3380805e+08 lbf·ft
Slip Rank: 1 of 91,809 slip surfaces
Exit: (171.372, 670.39735) ft
Entry: (449.7453, 793.97846) ft
Radius: 439.47563 ft
Center: (143.28782, 1,108.9747) ft

Slip Slices

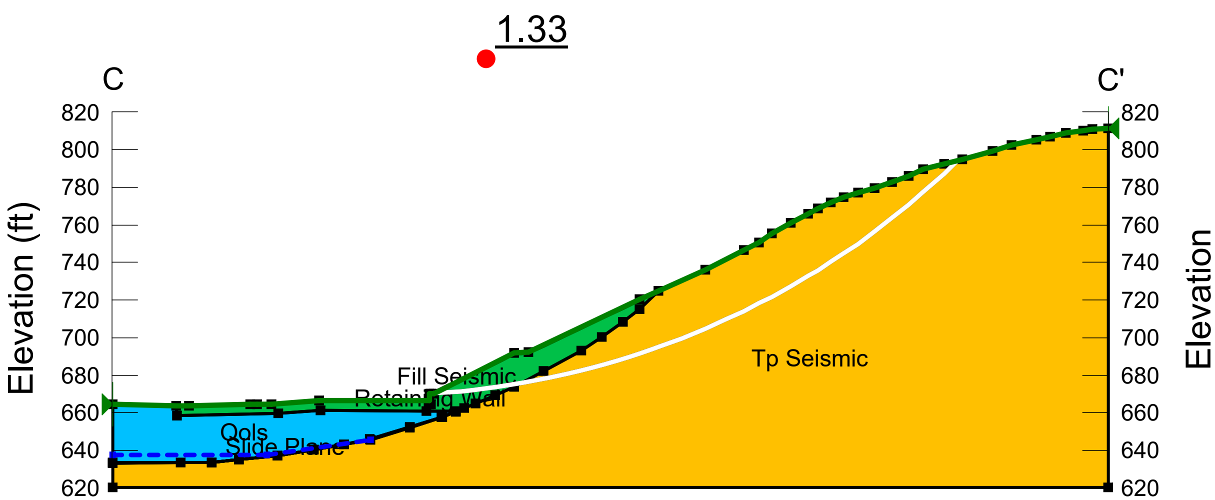
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	178.49709 ft	670.9701 ft	0 psf	343.32824 psf	174.93447 psf	200 psf	0 psf	Fill
Slice 2	192.74726 ft	672.34996 ft	0 psf	1,007.677 psf	513.43708 psf	200 psf	0 psf	Fill
Slice 3	206.99744 ft	674.20115 ft	0 psf	1,604.7891 psf	817.68088 psf	200 psf	0 psf	Fill
Slice 4	216.0629 ft	675.57104 ft	0 psf	1,850.0801 psf	942.66291 psf	200 psf	0 psf	Fill
Slice 5	219.81911 ft	676.21798 ft	0 psf	1,771.1789 psf	941.75254 psf	250 psf	0 psf	Tp
Slice 6	225.63014 ft	677.30119 ft	0 psf	1,860.9856 psf	989.50358 psf	250 psf	0 psf	Tp
Slice 7	239.71725 ft	680.33361 ft	0 psf	2,255.3384 psf	1,199.1847 psf	250 psf	0 psf	Tp
Slice 8	255.17235 ft	684.01598 ft	0 psf	2,638.7168 psf	1,403.0306 psf	250 psf	0 psf	Tp
Slice 9	266.15389 ft	687.06416 ft	0 psf	2,857.8062 psf	1,519.5225 psf	250 psf	0 psf	Tp
Slice 10	276.30261 ft	690.13906 ft	0 psf	3,028.4511 psf	1,610.256 psf	250 psf	0 psf	Tp
Slice 11	285.85267 ft	693.29944 ft	0 psf	3,139.3702 psf	1,669.2328 psf	250 psf	0 psf	Tp
Slice 12	297.09673 ft	697.34685 ft	0 psf	3,213.8779 psf	1,708.8492 psf	250 psf	0 psf	Tp
Slice 13	309.54547 ft	702.21679 ft	0 psf	3,252.9473 psf	1,729.6227 psf	250 psf	0 psf	Tp
Slice 14	325.99203 ft	709.43541 ft	0 psf	3,277.4274 psf	1,742.6391 psf	250 psf	0 psf	Tp
Slice 15	340.32144 ft	716.17009 ft	0 psf	3,278.5485 psf	1,743.2352 psf	250 psf	0 psf	Tp
Slice 16	347.70679 ft	719.95286 ft	0 psf	3,317.4583 psf	1,763.9239 psf	250 psf	0 psf	Tp
Slice 17	356.03973 ft	724.47233 ft	0 psf	3,355.7104 psf	1,784.2628 psf	250 psf	0 psf	Tp

Slice 18	365.77022 ft	730.01427 ft	0 psf	3,301.3204 psf	1,755.3432 psf	250 psf	0 psf	Tp
Slice 19	373.00115 ft	734.32604 ft	0 psf	3,231.159 psf	1,718.0377 psf	250 psf	0 psf	Tp
Slice 20	379.06691 ft	738.12468 ft	0 psf	3,118.8515 psf	1,658.3227 psf	250 psf	0 psf	Tp
Slice 21	386.03152 ft	742.64542 ft	0 psf	2,950.2898 psf	1,568.6969 psf	250 psf	0 psf	Tp
Slice 22	393.1293 ft	747.45231 ft	0 psf	2,725.7309 psf	1,449.2968 psf	250 psf	0 psf	Tp
Slice 23	401.38547 ft	753.31764 ft	0 psf	2,355.7938 psf	1,252.5978 psf	250 psf	0 psf	Tp
Slice 24	410.57888 ft	760.17533 ft	0 psf	1,935.7025 psf	1,029.2313 psf	250 psf	0 psf	Tp
Slice 25	419.55115 ft	767.23575 ft	0 psf	1,546.1993 psf	822.12874 psf	250 psf	0 psf	Tp
Slice 26	427.80732 ft	774.0691 ft	0 psf	1,193.9121 psf	634.81434 psf	250 psf	0 psf	Tp
Slice 27	437.14816 ft	782.27809 ft	0 psf	699.55641 psf	371.96074 psf	250 psf	0 psf	Tp
Slice 28	446.18475 ft	790.59109 ft	0 psf	122.8492 psf	65.32008 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz 08/24/2020 04:50:24 PM

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz

1 - Rotational Pseudotatic Global
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Retaining Wall
Model: High Strength
Unit Weight: 150 pcf
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

1 - Rotational Pseudotatic Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 656
Date: 08/24/2020
Time: 04:50:24 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:13:35 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudotatic Global

Kind: SLOPE/W
Parent: 1 - Rotational Static Global
Method: Bishop
Settings
- PWP Conditions from: Piezometric Line
  - Apply Phreatic Correction: No
  - Use Staged Rapid Drawdown: No
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Right to Left
- Use Passive Mode: No
- Slip Surface Option: Critical Slip Surfaces from Other
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100
  - Tolerable difference in F of S: 0.2

Materials

Tp Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
- Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf

Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Retaining Wall

Model: High Strength
Unit Weight: 150 pcf
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (0.169, 664.37119) ft
Right Coordinate: (530.08562, 811.28399) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.169 ft	637.39672 ft
Coordinate 2	82.28199 ft	637.39672 ft
Coordinate 3	137.35457 ft	645.754 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	0.169 ft	664.37119 ft
Point 2	41.034 ft	663.70986 ft
Point 3	73.4858 ft	664.43775 ft
Point 4	290.87236 ft	725.03019 ft
Point 5	280.77089 ft	715.23846 ft

Point 6	271.77225 ft	708.52628 ft
Point 7	260.53553 ft	700.17112 ft
Point 8	249.80916 ft	693.03779 ft
Point 9	229.62535 ft	682.08969 ft
Point 10	214.02035 ft	673.77455 ft
Point 11	203.97458 ft	669.2575 ft
Point 12	193.2879 ft	664.77136 ft
Point 13	187.19687 ft	662.34506 ft
Point 14	183.10248 ft	660.74859 ft
Point 15	107.21989 ft	640.3385 ft
Point 16	87.95263 ft	637.02659 ft
Point 17	67.53529 ft	635.17047 ft
Point 18	53.15945 ft	633.53272 ft
Point 19	36.70911 ft	633.53272 ft
Point 20	0.169 ft	633.31435 ft
Point 21	77.31481 ft	664.39225 ft
Point 22	84.66532 ft	664.39225 ft
Point 23	110.12826 ft	666.39311 ft
Point 24	214.12253 ft	691.91283 ft
Point 25	221.63494 ft	692.0823 ft
Point 26	280.83297 ft	720.53485 ft
Point 27	315.76984 ft	736.20041 ft
Point 28	336.21422 ft	746.49058 ft
Point 29	344.42865 ft	750.58279 ft
Point 30	350.98493 ft	755.29436 ft
Point 31	361.09453 ft	760.93888 ft
Point 32	370.4459 ft	765.99368 ft
Point 33	375.5564 ft	768.68957 ft
Point 34	382.57741 ft	771.78563 ft
Point 35	389.48564 ft	774.83957 ft
Point 36	396.77297 ft	777.34608 ft
Point 37	405.99797 ft	779.55755 ft
Point 38	415.15979 ft	782.94848 ft
Point 39	423.9425 ft	786.04033 ft
Point 40	431.67213 ft	789.5829 ft
Point 41	442.62419 ft	792.27879 ft
Point 42	452.59558 ft	794.65876 ft
Point 43	468.39182 ft	799.23335 ft
Point 44	478.57643 ft	802.51458 ft
Point 45	491.70796 ft	805.13297 ft
Point 46	499.25477 ft	806.86171 ft
Point 47	507.41485 ft	808.75726 ft
Point 48	516.618 ft	810.1726 ft
Point 49	521.67279 ft	810.93082 ft
Point 50	530.08562 ft	811.28399 ft
Point 51	530.08562 ft	620.1998 ft
Point 52	0.17628 ft	620.1998 ft
Point 53	34.23549 ft	663.81415 ft
Point 54	34.52823 ft	658.65506 ft
Point 55	123.56041 ft	643.20307 ft
Point 56	137.35457 ft	645.754 ft
Point 57	167.17987 ft	660.98027 ft
Point 58	137.28359 ft	645.90746 ft
Point 59	123.53987 ft	643.37669 ft
Point 60	107.20948 ft	640.47016 ft
Point 61	87.94727 ft	637.13465 ft
Point 62	67.51593 ft	635.29693 ft
Point 63	53.14995 ft	633.63583 ft
Point 64	0.169 ft	633.60886 ft
Point 65	111.07162 ft	661.1277 ft
Point 66	88.45141 ft	659.61126 ft
Point 67	175.58347 ft	657.63146 ft
Point 68	175.51007 ft	657.79835 ft
Point 69	158.46035 ft	652.23968 ft
Point 70	158.42535 ft	652.42205 ft
Point 71	182.84614 ft	660.70103 ft
Point 72	168.8547 ft	670.29903 ft

Point 73	168.84816 ft	666.44027 ft
Point 74	171.27836 ft	670.35022 ft
Point 75	168.84816 ft	664.42179 ft
Point 76	169.84415 ft	664.42179 ft
Point 77	169.84446 ft	670.32069 ft

Regions

	Material	Points	Area
Region 1	Fill Seismic	23,22,21,3,2,53,54,66,65,57,14,13,12,11,10,9,8,7,6,5,4,26,25,24,74,77,76,75,73	2,202.7 ft²
Region 2	Tp Seismic	4,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,20,19,18,17,16,15,55,56,69,67,14,13,12,11,10,9,8,7,6,5	48,521 ft²
Region 3	Qols	53,1,64,63,62,61,60,59,58,70,68,71,14,57,65,66,54	3,657.1 ft²
Region 4	Slide Plane	14,71,68,70,58,59,60,61,62,63,64,20,19,18,17,16,15,55,56,69,67	28.181 ft²
Region 5	Retaining Wall	73,75,76,77,72	5.8527 ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.33
Volume: 6,310.1952 ft³
Weight: 757,223.42 lbf
Resisting Moment: 2.354451e+08 lbf·ft
Activating Moment: 1.7728674e+08 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (171.372, 670.39735) ft
Entry: (449.7453, 793.97846) ft
Radius: 439.47563 ft
Center: (143.28782, 1,108.9747) ft

Slip Slices

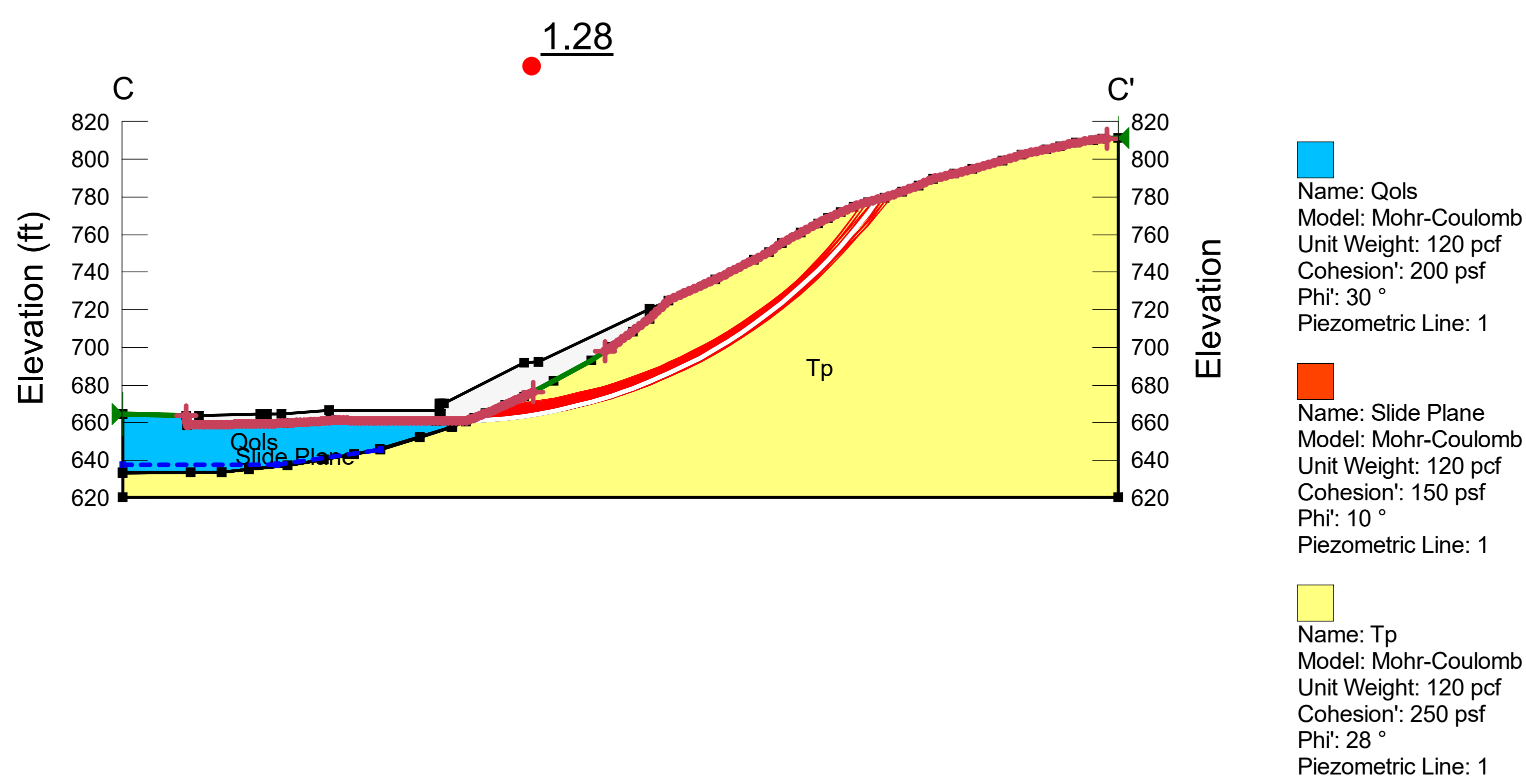
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	174.93454 ft	670.68372 ft	0 psf	163.75966 psf	110.45728 psf	200 psf	0 psf	Fill Seismic
Slice 2	182.05963 ft	671.25648 ft	0 psf	512.43782 psf	345.64367 psf	200 psf	0 psf	Fill Seismic
Slice 3	189.18472 ft	671.94641 ft	0 psf	831.09469 psf	560.58045 psf	200 psf	0 psf	Fill Seismic
Slice 4	196.30981 ft	672.75352 ft	0 psf	1,148.0271 psf	774.35404 psf	200 psf	0 psf	Fill Seismic
Slice 5	203.4349 ft	673.67911 ft	0 psf	1,426.3787 psf	962.10458 psf	200 psf	0 psf	Fill Seismic
Slice 6	210.55999 ft	674.72318 ft	0 psf	1,712.1265 psf	1,154.8439 psf	200 psf	0 psf	Fill Seismic
Slice 7	216.0629 ft	675.57104 ft	0 psf	1,803.9294 psf	1,216.7658 psf	200 psf	0 psf	Fill Seismic
Slice 8	219.81911 ft	676.21798 ft	0 psf	1,718.7152 psf	992.3007 psf	500 psf	0 psf	Tp Seismic
Slice 9	225.63014 ft	677.30119 ft	0 psf	1,803.5378 psf	1,041.273 psf	500 psf	0 psf	Tp Seismic
Slice 10	234.6713 ft	679.19845 ft	0 psf	2,040.3513 psf	1,177.9974 psf	500 psf	0 psf	Tp Seismic
Slice 11	244.76321 ft	681.46878 ft	0 psf	2,324.7645 psf	1,342.2034 psf	500 psf	0 psf	Tp Seismic
Slice 12	255.17235 ft	684.01598 ft	0 psf	2,548.1203 psf	1,471.1579 psf	500 psf	0 psf	Tp Seismic
Slice 13	266.15389 ft	687.06416 ft	0 psf	2,754.467 psf	1,590.2923 psf	500 psf	0 psf	Tp Seismic
Slice 14	276.30261 ft	690.13906 ft	0 psf	2,913.3272 psf	1,682.0102 psf	500 psf	0 psf	Tp Seismic
Slice 15	285.85267 ft	693.29944 ft	0 psf	3,013.7253 psf	1,739.9751 psf	500 psf	0 psf	Tp Seismic
Slice 16	297.09673 ft	697.34685 ft	0 psf	3,076.6858 psf	1,776.3254 psf	500 psf	0 psf	Tp Seismic
Slice 17	309.54547 ft	702.21679 ft	0 psf	3,103.6719 psf	1,791.9058 psf	500 psf	0 psf	Tp Seismic
Slice 18	320.88094 ft	707.09817 ft	0 psf	3,088.5194 psf	1,783.1575 psf	500 psf	0 psf	Tp Seismic
Slice 19	331.10312 ft	711.77265 ft	0 psf	3,136.3714 psf	1,810.7849 psf	500 psf	0 psf	Tp Seismic
Slice 20	340.32144 ft	716.17009 ft	0 psf	3,100.1812 psf	1,789.8905 psf	500 psf	0 psf	Tp Seismic
Slice 21	347.70679 ft	719.95286 ft	0 psf	3,130.8417 psf	1,807.5923 psf	500 psf	0 psf	Tp Seismic
Slice 22	356.03973 ft	724.47233 ft	0 psf	3,159.7225 psf	1,824.2666 psf	500 psf	0 psf	Tp Seismic
Slice 23	365.77022 ft	730.01427 ft	0 psf	3,097.4856 psf	1,788.3341 psf	500 psf	0 psf	Tp Seismic
Slice 24	373.00115 ft	734.32604 ft	0 psf	3,022.5321 psf	1,745.0597 psf	500 psf	0 psf	Tp Seismic
Slice 25	379.06691 ft	738.12468 ft	0 psf	2,908.1763 psf	1,679.0364 psf	500 psf	0 psf	Tp Seismic
Slice 26	386.03152 ft	742.64542 ft	0 psf	2,738.9346 psf	1,581.3246 psf	500 psf	0 psf	Tp Seismic
Slice 27	393.1293 ft	747.45231 ft	0 psf	2,516.0273 psf	1,452.629 psf	500 psf	0 psf	Tp Seismic
Slice 28	401.38547 ft	753.31764 ft	0 psf	2,152.9546 psf	1,243.0089 psf	500 psf	0 psf	Tp Seismic

Slice 29	410.57888 ft	760.17533 ft	0 psf	1,741.945 psf	1,005.7124 psf	500 psf	0 psf	Tp Seismic
Slice 30	419.55115 ft	767.23575 ft	0 psf	1,361.5656 psf	786.10029 psf	500 psf	0 psf	Tp Seismic
Slice 31	427.80732 ft	774.0691 ft	0 psf	1,018.3825 psf	587.9634 psf	500 psf	0 psf	Tp Seismic
Slice 32	437.14816 ft	782.27809 ft	0 psf	540.0476 psf	311.79663 psf	500 psf	0 psf	Tp Seismic
Slice 33	446.18475 ft	790.59109 ft	0 psf	-14.61624 psf	-8.4386902 psf	500 psf	0 psf	Tp Seismic

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz 08/24/2020 04:50:24 PM

Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz

2 - Rotational Static Temporary
Horz Seismic Coef.: 0



LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

2 - Rotational Static Temporary

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 656
Date: 08/24/2020
Time: 04:50:24 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section C-C SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:13:21 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Static Temporary

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100
    - Tolerable difference in F of S: 0.2

Materials

Tp

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 250 psf
- Phi': 28 °
- Phi-B: 0 °
- Pore Water Pressure
  - Piezometric Line: 1

Qols

- Model: Mohr-Coulomb
- Unit Weight: 120 pcf
- Cohesion': 200 psf

Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (34.23549, 663.81415) ft
Left-Zone Right Coordinate: (218.65723, 676.24532) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (256.95513, 697.79006) ft
Right-Zone Right Coordinate: (524.23136, 811.03823) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (0.169, 664.37119) ft
Right Coordinate: (530.08562, 811.28399) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	0.169 ft	637.40081 ft
Coordinate 2	82.23389 ft	637.40081 ft
Coordinate 3	137.35457 ft	645.754 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	0.169 ft	664.37119 ft
Point 2	41.034 ft	663.70986 ft
Point 3	73.4858 ft	664.43775 ft
Point 4	290.87236 ft	725.03019 ft
Point 5	280.77089 ft	715.23846 ft
Point 6	271.77225 ft	708.52628 ft
Point 7	260.53553 ft	700.17112 ft
Point 8	249.80916 ft	693.03779 ft

Point 9	229.62535 ft	682.08969 ft
Point 10	214.02035 ft	673.77455 ft
Point 11	203.97458 ft	669.2575 ft
Point 12	193.2879 ft	664.77136 ft
Point 13	187.19687 ft	662.34506 ft
Point 14	183.10248 ft	660.74859 ft
Point 15	107.21989 ft	640.3385 ft
Point 16	87.95263 ft	637.02659 ft
Point 17	67.53529 ft	635.17047 ft
Point 18	53.15945 ft	633.53272 ft
Point 19	36.70911 ft	633.53272 ft
Point 20	0.169 ft	633.31435 ft
Point 21	77.31481 ft	664.39225 ft
Point 22	84.66532 ft	664.39225 ft
Point 23	110.12826 ft	666.39311 ft
Point 24	214.12253 ft	691.91283 ft
Point 25	221.63494 ft	692.0823 ft
Point 26	280.83297 ft	720.53485 ft
Point 27	315.76984 ft	736.20041 ft
Point 28	336.21422 ft	746.49058 ft
Point 29	344.42865 ft	750.58279 ft
Point 30	350.98493 ft	755.29436 ft
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Point 33	375.5564 ft	768.68957 ft
Point 34	382.57741 ft	771.78563 ft
Point 35	389.48564 ft	774.83957 ft
Point 36	396.77297 ft	777.34608 ft
Point 37	405.99797 ft	779.55755 ft
Point 38	415.15979 ft	782.94848 ft
Point 39	423.9425 ft	786.04033 ft
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Point 42	452.59558 ft	794.65876 ft
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Point 44	478.57643 ft	802.51458 ft
Point 45	491.70796 ft	805.13297 ft
Point 46	499.25477 ft	806.86171 ft
Point 47	507.41485 ft	808.75726 ft
Point 48	516.618 ft	810.1726 ft
Point 49	521.67279 ft	810.93082 ft
Point 50	530.08562 ft	811.28399 ft
Point 51	530.08562 ft	620.1998 ft
Point 52	0.17628 ft	620.1998 ft
Point 53	34.23549 ft	663.81415 ft
Point 54	34.52823 ft	658.65506 ft
Point 55	123.56041 ft	643.20307 ft
Point 56	137.35457 ft	645.754 ft
Point 57	167.17987 ft	660.98027 ft
Point 58	137.28359 ft	645.90746 ft
Point 59	123.53987 ft	643.37669 ft
Point 60	107.20948 ft	640.47016 ft
Point 61	87.94727 ft	637.13465 ft
Point 62	67.51593 ft	635.29693 ft
Point 63	53.14995 ft	633.63583 ft
Point 64	0.169 ft	633.60886 ft
Point 65	111.07162 ft	661.1277 ft
Point 66	88.45141 ft	659.61126 ft
Point 67	175.58347 ft	657.63146 ft
Point 68	175.51007 ft	657.79835 ft
Point 69	158.46035 ft	652.23968 ft
Point 70	158.42535 ft	652.42205 ft
Point 71	182.84614 ft	660.70103 ft
Point 72	168.8547 ft	670.29903 ft
Point 73	168.84816 ft	666.44027 ft
Point 74	171.27836 ft	670.35022 ft
Point 75	168.84816 ft	664.42179 ft

Point 76	169.84415 ft	664.42179 ft
Point 77	169.84446 ft	670.32069 ft

Regions

	Points	Area	Material
Region 1	23,22,21,3,2,53,54,66,65,57,14,13,12,11,10,9,8,7,6,5,4,26,25,24,74,77,76,75,73	2,202.7 ft²	
Region 2	4,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47,48,49,50,51,52,20,19,18,17,16,15,55,56,69,67,14,13,12,11,10,9,8,7,6,5	48,521 ft²	Tp
Region 3	53,1,64,63,62,61,60,59,58,70,68,71,14,57,65,66,54	3,657.1 ft²	Qols
Region 4	14,71,68,70,58,59,60,61,62,63,64,20,19,18,17,16,15,55,56,69,67	28.181 ft²	Slide Plane
Region 5	73,75,76,77,72	5.8527 ft²	

Slip Results

Slip Surfaces Analysed: 130093 of 163216 converged

Current Slip Surface

Slip Surface: 110,807
Factor of Safety: 1.28
Volume: 5,147.9298 ft³
Weight: 617,751.57 lbf
Resisting Moment: 1.0310941e+08 lbf·ft
Activating Moment: 80,756,430 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces
Exit: (183.23007, 660.79834) ft
Entry: (402.35484, 778.6842) ft
Radius: 279.54848 ft
Center: (174.18864, 940.20056) ft

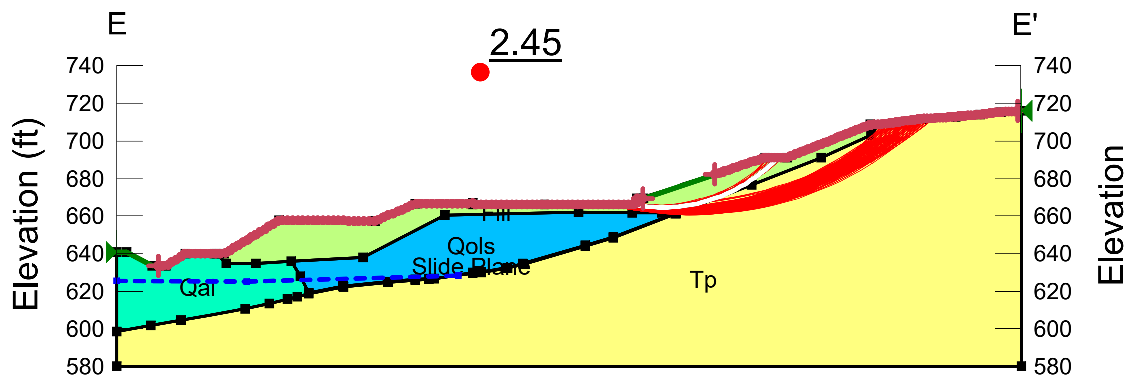
Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	185.21347 ft	660.87662 ft	0 psf	75.137469 psf	39.951301 psf	250 psf	0 psf	Tp
Slice 2	190.24239 ft	661.1301 ft	0 psf	274.90083 psf	146.16737 psf	250 psf	0 psf	Tp
Slice 3	198.63124 ft	661.77438 ft	0 psf	592.93848 psf	315.27098 psf	250 psf	0 psf	Tp
Slice 4	208.99747 ft	662.87392 ft	0 psf	967.69489 psf	514.5325 psf	250 psf	0 psf	Tp
Slice 5	217.82764 ft	664.10614 ft	0 psf	1,296.3513 psf	689.28221 psf	250 psf	0 psf	Tp
Slice 6	225.63014 ft	665.45595 ft	0 psf	1,592.1882 psf	846.58146 psf	250 psf	0 psf	Tp
Slice 7	232.98932 ft	666.92782 ft	0 psf	1,846.7907 psf	981.95602 psf	250 psf	0 psf	Tp
Slice 8	239.71725 ft	668.46287 ft	0 psf	2,057.8239 psf	1,094.1644 psf	250 psf	0 psf	Tp
Slice 9	246.44519 ft	670.17424 ft	0 psf	2,245.4016 psf	1,193.9012 psf	250 psf	0 psf	Tp
Slice 10	255.17235 ft	672.69806 ft	0 psf	2,520.7836 psf	1,340.3244 psf	250 psf	0 psf	Tp
Slice 11	263.34471 ft	675.26706 ft	0 psf	2,814.3592 psf	1,496.4214 psf	250 psf	0 psf	Tp
Slice 12	268.96307 ft	677.22482 ft	0 psf	3,021.8674 psf	1,606.7554 psf	250 psf	0 psf	Tp
Slice 13	276.27157 ft	680.00244 ft	0 psf	3,262.7609 psf	1,734.8407 psf	250 psf	0 psf	Tp
Slice 14	285.82162 ft	683.9681 ft	0 psf	3,650.0857 psf	1,940.785 psf	250 psf	0 psf	Tp
Slice 15	295.02194 ft	688.15793 ft	0 psf	3,851.784 psf	2,048.0299 psf	250 psf	0 psf	Tp
Slice 16	303.3211 ft	692.30892 ft	0 psf	3,751.5911 psf	1,994.7564 psf	250 psf	0 psf	Tp
Slice 17	311.62026 ft	696.81365 ft	0 psf	3,616.2384 psf	1,922.788 psf	250 psf	0 psf	Tp
Slice 18	319.17724 ft	701.22405 ft	0 psf	3,481.5705 psf	1,851.1839 psf	250 psf	0 psf	Tp
Slice 19	325.99203 ft	705.49519 ft	0 psf	3,351.9874 psf	1,782.2833 psf	250 psf	0 psf	Tp
Slice 20	332.80682 ft	710.04736 ft	0 psf	3,196.2876 psf	1,699.4963 psf	250 psf	0 psf	Tp
Slice 21	340.32144 ft	715.43144 ft	0 psf	2,989.8137 psf	1,589.7122 psf	250 psf	0 psf	Tp
Slice 22	347.70679 ft	721.06289 ft	0 psf	2,822.9675 psf	1,500.9985 psf	250 psf	0 psf	Tp
Slice 23	356.03973 ft	727.99025 ft	0 psf	2,603.0622 psf	1,384.0727 psf	250 psf	0 psf	Tp
Slice 24	365.77022 ft	736.72426 ft	0 psf	2,231.4733 psf	1,186.4954 psf	250 psf	0 psf	Tp
Slice 25	373.00115 ft	743.71208 ft	0 psf	1,910.0043 psf	1,015.5673 psf	250 psf	0 psf	Tp
Slice 26	379.06691 ft	750.08057 ft	0 psf	1,572.7756 psf	836.25962 psf	250 psf	0 psf	Tp
Slice 27	386.03152 ft	757.87694 ft	0 psf	1,135.36 psf	603.6816 psf	250 psf	0 psf	Tp
Slice 28	393.1293 ft	766.48248 ft	0 psf	623.51092 psf	331.52664 psf	250 psf	0 psf	Tp
Slice 29	399.5639 ft	774.87944 ft	0 psf	85.275444 psf	45.341758 psf	250 psf	0 psf	Tp

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz 08/24/2020 05:00:25 PM

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz

1 - Rotational Static Global
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

1 - Rotational Static Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 529
Date: 08/24/2020
Time: 05:00:25 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:15:35 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Static Global

Kind: SLOPE/W
Method: Bishop
Settings
- PWP Conditions from: Piezometric Line
  - Apply Phreatic Correction: No
  - Use Staged Rapid Drawdown: No
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Right to Left
- Use Passive Mode: No
- Slip Surface Option: Entry and Exit
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings
  - Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (21.89352, 633.44837) ft
Left-Zone Right Coordinate: (279.90574, 669.51215) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (318.14338, 682.14013) ft
Right-Zone Right Coordinate: (479.44159, 715.8625) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.02847, 640.60933) ft
Right Coordinate: (481.38265, 715.97043) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.01066 ft	625.33909 ft
Coordinate 2	69.1715 ft	625.29714 ft
Coordinate 3	181.7769 ft	628.41458 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	481.38265 ft	715.97043 ft
Point 2	481.38265 ft	580.00815 ft
Point 3	0.06487 ft	580.00815 ft
Point 4	0.06487 ft	598.56606 ft

Point 5	17.88303 ft	601.67476 ft
Point 6	34.05838 ft	604.4549 ft
Point 7	68.26318 ft	610.75216 ft
Point 8	81.14685 ft	613.45992 ft
Point 9	91.05668 ft	616.05394 ft
Point 10	96.25469 ft	617.12808 ft
Point 11	102.19408 ft	618.5687 ft
Point 12	144.39449 ft	624.58815 ft
Point 13	159.01296 ft	625.86196 ft
Point 14	168.71817 ft	626.58985 ft
Point 15	193.67876 ft	630.07766 ft
Point 16	208.02428 ft	632.20068 ft
Point 17	216.15239 ft	634.53599 ft
Point 18	249.35112 ft	644.20629 ft
Point 19	297.43983 ft	661.48393 ft
Point 20	308.12651 ft	665.45194 ft
Point 21	337.7729 ft	676.7659 ft
Point 22	375.03097 ft	691.12994 ft
Point 23	401.44228 ft	703.21933 ft
Point 24	401.67396 ft	708.4005 ft
Point 25	410.23638 ft	709.35707 ft
Point 26	428.78031 ft	711.77916 ft
Point 27	446.53528 ft	712.87437 ft
Point 28	459.17228 ft	714.03276 ft
Point 29	470.39814 ft	715.35964 ft
Point 30	401.16848 ft	708.72522 ft
Point 31	356.70733 ft	691.08782 ft
Point 32	344.90016 ft	691.06255 ft
Point 33	276.87537 ft	669.38958 ft
Point 34	276.86259 ft	666.00339 ft
Point 35	227.75329 ft	666.19159 ft
Point 36	189.32938 ft	665.9321 ft
Point 37	189.32938 ft	666.74474 ft
Point 38	158.93923 ft	666.43258 ft
Point 39	137.62107 ft	657.4547 ft
Point 40	86.26866 ft	657.55464 ft
Point 41	57.06317 ft	639.88694 ft
Point 42	53.12652 ft	639.8442 ft
Point 43	52.40854 ft	640.14847 ft
Point 44	36.63336 ft	639.97998 ft
Point 45	26.05074 ft	633.44837 ft
Point 46	18.9319 ft	633.44837 ft
Point 47	5.05227 ft	640.60933 ft
Point 48	-0.02847 ft	640.60933 ft
Point 49	58.4743 ft	634.90412 ft
Point 50	93.00446 ft	636.16445 ft
Point 51	189.33923 ft	629.47129 ft
Point 52	166.16875 ft	626.39864 ft
Point 53	97.72058 ft	627.85436 ft

Point 54	174.62932 ft	660.51509 ft
Point 55	274.35626 ft	661.71561 ft
Point 56	102.18675 ft	619.07818 ft
Point 57	144.28851 ft	624.90843 ft
Point 58	158.99592 ft	626.15775 ft
Point 59	166.12616 ft	626.75702 ft
Point 60	168.71231 ft	626.89423 ft
Point 61	189.30737 ft	629.76266 ft
Point 62	193.65233 ft	630.35515 ft
Point 63	207.98505 ft	632.52763 ft
Point 64	216.02605 ft	634.82002 ft
Point 65	249.2801 ft	644.50342 ft
Point 66	264.25806 ft	648.88333 ft
Point 67	297.21983 ft	661.48293 ft
Point 68	120.45875 ft	622.37291 ft
Point 69	120.3745 ft	622.79156 ft
Point 70	131.12531 ft	638.05211 ft
Point 71	245.72504 ft	661.96413 ft
Point 72	289.79445 ft	661.54711 ft
Point 73	264.37376 ft	648.61404 ft
Point 74	74.14115 ft	634.90849 ft
Point 75	280.32513 ft	669.52911 ft

Regions

	Material	Points	Area
Region 1	Tp	1,2,3,4,5,6,7,8,9,10,11,68,12,13,52,14,51,15,16,17,18,73,19,20,21,22,23,24,25,26,27,28,29	34,712 ft^2
Region 2	Fill	24,30,31,32,75,33,34,35,36,37,38,39,40,41,42,49,74,50,70,54,71,55,72,19,20,21,22,23	3,632.1 ft^2
Region 3	Qal	42,43,44,45,46,47,48,4,5,6,7,8,9,10,11,56,53,50,74,49	2,872.6 ft^2
Region 4	Qols	50,53,56,69,57,58,59,60,61,62,63,64,65,66,67,19,72,55,71,54,70	3,978.2 ft^2
Region 5	Slide Plane	11,68,12,13,52,14,51,15,16,17,18,73,19,67,66,65,64,63,62,61,60,59,58,57,69,56	61.823 ft^2

Slip Results

Slip Surfaces Analysed: 145969 of 163216 converged

Current Slip Surface

Slip Surface: 157,094
Factor of Safety: 2.45
Volume: 699.81291 ft^3
Weight: 83,977.549 lbf
Resisting Moment: 4,979,377.3 lbf·ft
Activating Moment: 2,028,278.4 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces

Exit: (275.15582, 666.00993) ft
Entry: (351.68137, 691.07706) ft
Radius: 84.473836 ft
Center: (290.30186, 749.11484) ft

Slip Slices

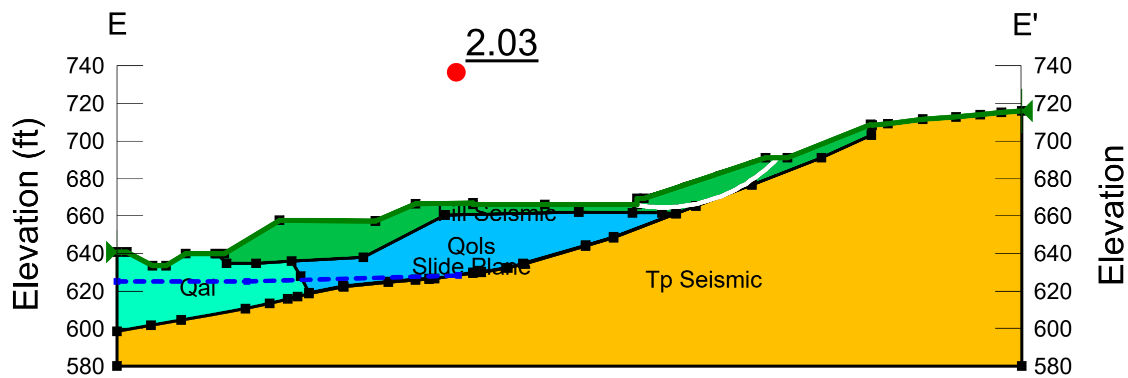
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	276.0092 ft	665.86342 ft	0 psf	32.239498 psf	16.426845 psf	200 psf	0 psf	Fill
Slice 2	276.86898 ft	665.71588 ft	0 psf	259.34232 psf	132.14151 psf	200 psf	0 psf	Fill
Slice 3	278.60025 ft	665.47354 ft	0 psf	504.18906 psf	256.89716 psf	200 psf	0 psf	Fill
Slice 4	281.61663 ft	665.09871 ft	0 psf	604.60234 psf	308.06028 psf	200 psf	0 psf	Fill
Slice 5	284.19963 ft	664.87165 ft	0 psf	730.72836 psf	372.3247 psf	200 psf	0 psf	Fill
Slice 6	286.78263 ft	664.72424 ft	0 psf	845.64184 psf	430.87604 psf	200 psf	0 psf	Fill
Slice 7	289.36563 ft	664.65607 ft	0 psf	949.59707 psf	483.84387 psf	200 psf	0 psf	Fill
Slice 8	291.94864 ft	664.66694 ft	0 psf	1,042.8059 psf	531.33617 psf	200 psf	0 psf	Fill
Slice 9	294.53164 ft	664.75688 ft	0 psf	1,125.4414 psf	573.44103 psf	200 psf	0 psf	Fill
Slice 10	297.11464 ft	664.92615 ft	0 psf	1,197.64 psf	610.22805 psf	200 psf	0 psf	Fill
Slice 11	299.69764 ft	665.17523 ft	0 psf	1,259.5041 psf	641.74937 psf	200 psf	0 psf	Fill
Slice 12	302.28064 ft	665.50482 ft	0 psf	1,311.1031 psf	668.04041 psf	200 psf	0 psf	Fill
Slice 13	304.86364 ft	665.9159 ft	0 psf	1,352.4749 psf	689.12037 psf	200 psf	0 psf	Fill
Slice 14	307.44664 ft	666.40967 ft	0 psf	1,383.6256 psf	704.99247 psf	200 psf	0 psf	Fill
Slice 15	310.02964 ft	666.98763 ft	0 psf	1,404.5303 psf	715.64395 psf	200 psf	0 psf	Fill
Slice 16	312.61264 ft	667.65157 ft	0 psf	1,415.1322 psf	721.04587 psf	200 psf	0 psf	Fill
Slice 17	315.19565 ft	668.40362 ft	0 psf	1,415.3417 psf	721.1526 psf	200 psf	0 psf	Fill
Slice 18	317.77865 ft	669.24627 ft	0 psf	1,405.035 psf	715.9011 psf	200 psf	0 psf	Fill
Slice 19	320.36165 ft	670.18242 ft	0 psf	1,384.0523 psf	705.20988 psf	200 psf	0 psf	Fill
Slice 20	322.94465 ft	671.21545 ft	0 psf	1,352.1947 psf	688.97761 psf	200 psf	0 psf	Fill
Slice 21	325.52765 ft	672.34927 ft	0 psf	1,309.221 psf	667.08144 psf	200 psf	0 psf	Fill
Slice 22	328.11065 ft	673.58844 ft	0 psf	1,254.8436 psf	639.37474 psf	200 psf	0 psf	Fill

Slice 23	330.69365 ft	674.93824 ft	0 psf	1,188.7226 psf	605.68441 psf	200 psf	0 psf	Fill
Slice 24	333.27665 ft	676.40484 ft	0 psf	1,110.4597 psf	565.80749 psf	200 psf	0 psf	Fill
Slice 25	335.85966 ft	677.99548 ft	0 psf	1,019.5898 psf	519.50693 psf	200 psf	0 psf	Fill
Slice 26	338.44266 ft	679.71872 ft	0 psf	915.57052 psf	466.50648 psf	200 psf	0 psf	Fill
Slice 27	341.02566 ft	681.58473 ft	0 psf	797.7702 psf	406.48422 psf	200 psf	0 psf	Fill
Slice 28	343.60866 ft	683.60575 ft	0 psf	665.45176 psf	339.0646 psf	200 psf	0 psf	Fill
Slice 29	346.03036 ft	685.6491 ft	0 psf	489.96996 psf	249.65216 psf	200 psf	0 psf	Fill
Slice 30	348.29077 ft	687.70883 ft	0 psf	273.50457 psf	139.35754 psf	200 psf	0 psf	Fill
Slice 31	350.55117 ft	689.9266 ft	0 psf	45.698765 psf	23.284684 psf	200 psf	0 psf	Fill

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz 08/24/2020 05:00:25 PM

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz

1 - Rotational Pseudotatic Global
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

1 - Rotational Pseudotatic Global

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 529
Date: 08/24/2020
Time: 05:00:25 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:16:01 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

1 - Rotational Pseudotatic Global

Kind: SLOPE/W
Parent: 1 - Rotational Static Global
Method: Bishop
Settings
- PWP Conditions from: Piezometric Line
  - Apply Phreatic Correction: No
  - Use Staged Rapid Drawdown: No
- Unit Weight of Water: 62.4 pcf

Slip Surface
- Direction of movement: Right to Left
- Use Passive Mode: No
- Slip Surface Option: Critical Slip Surfaces from Other
- Critical slip surfaces saved: 1
- Optimize Critical Slip Surface Location: No
- Tension Crack Option: (none)

Distribution
- F of S Calculation Option: Constant

Advanced
- Geometry Settings
  - Minimum Slip Surface Depth: 0.1 ft
  - Number of Slices: 30
- Factor of Safety Convergence Settings

Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Tp Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure

Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (-0.02847, 640.60933) ft
Right Coordinate: (481.38265, 715.97043) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.01066 ft	625.03338 ft
Coordinate 2	69.06285 ft	625.25539 ft
Coordinate 3	181.72394 ft	628.40718 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	481.38265 ft	715.97043 ft
Point 2	481.38265 ft	580.00815 ft
Point 3	0.06487 ft	580.00815 ft
Point 4	0.06487 ft	598.56606 ft
Point 5	17.88303 ft	601.67476 ft
Point 6	34.05838 ft	604.4549 ft
Point 7	68.26318 ft	610.75216 ft
Point 8	81.14685 ft	613.45992 ft
Point 9	91.05668 ft	616.05394 ft
Point 10	96.25469 ft	617.12808 ft
Point 11	102.19408 ft	618.5687 ft
Point 12	144.39449 ft	624.58815 ft
Point 13	159.01296 ft	625.86196 ft
Point 14	168.71817 ft	626.58985 ft
Point 15	193.67876 ft	630.07766 ft

Point 16	208.02428 ft	632.20068 ft
Point 17	216.15239 ft	634.53599 ft
Point 18	249.35112 ft	644.20629 ft
Point 19	297.43983 ft	661.48393 ft
Point 20	308.12651 ft	665.45194 ft
Point 21	337.7729 ft	676.7659 ft
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Point 24	401.67396 ft	708.4005 ft
Point 25	410.23638 ft	709.35707 ft
Point 26	428.78031 ft	711.77916 ft
Point 27	446.53528 ft	712.87437 ft
Point 28	459.17228 ft	714.03276 ft
Point 29	470.39814 ft	715.35964 ft
Point 30	401.16848 ft	708.72522 ft
Point 31	356.70733 ft	691.08782 ft
Point 32	344.90016 ft	691.06255 ft
Point 33	276.87537 ft	669.38958 ft
Point 34	276.86259 ft	666.00339 ft
Point 35	227.75329 ft	666.19159 ft
Point 36	189.32938 ft	665.9321 ft
Point 37	189.32938 ft	666.74474 ft
Point 38	158.93923 ft	666.43258 ft
Point 39	137.62107 ft	657.4547 ft
Point 40	86.26866 ft	657.55464 ft
Point 41	57.06317 ft	639.88694 ft
Point 42	53.12652 ft	639.8442 ft
Point 43	52.40854 ft	640.14847 ft
Point 44	36.63336 ft	639.97998 ft
Point 45	26.05074 ft	633.44837 ft
Point 46	18.9319 ft	633.44837 ft
Point 47	5.05227 ft	640.60933 ft
Point 48	-0.02847 ft	640.60933 ft
Point 49	58.4743 ft	634.90412 ft
Point 50	93.00446 ft	636.16445 ft
Point 51	189.33923 ft	629.47129 ft
Point 52	166.16875 ft	626.39864 ft
Point 53	97.72058 ft	627.85436 ft
Point 54	174.62932 ft	660.51509 ft
Point 55	274.35626 ft	661.71561 ft
Point 56	102.18675 ft	619.07818 ft
Point 57	144.28851 ft	624.90843 ft
Point 58	158.99592 ft	626.15775 ft
Point 59	166.12616 ft	626.75702 ft
Point 60	168.71231 ft	626.89423 ft
Point 61	189.30737 ft	629.76266 ft
Point 62	193.65233 ft	630.35515 ft
Point 63	207.98505 ft	632.52763 ft
Point 64	216.02605 ft	634.82002 ft

Point 65	249.2801 ft	644.50342 ft
Point 66	264.25806 ft	648.88333 ft
Point 67	297.21983 ft	661.48293 ft
Point 68	120.45875 ft	622.37291 ft
Point 69	120.3745 ft	622.79156 ft
Point 70	131.12531 ft	638.05211 ft
Point 71	245.72504 ft	661.96413 ft
Point 72	289.79445 ft	661.54711 ft
Point 73	264.37376 ft	648.61404 ft
Point 74	74.14115 ft	634.90849 ft
Point 75	280.32513 ft	669.52911 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	1,2,3,4,5,6,7,8,9,10,11,68,12,13,52,14,51,15,16,17,18,73,19,20,21,22,23,24,25,26,27,28,29	34,712 ft²
Region 2	Fill Seismic	24,30,31,32,75,33,34,35,36,37,38,39,40,41,42,49,74,50,70,54,71,55,72,19,20,21,22,23	3,632.1 ft²
Region 3	Qal	42,43,44,45,46,47,48,4,5,6,7,8,9,10,11,56,53,50,74,49	2,872.6 ft²
Region 4	Qols	50,53,56,69,57,58,59,60,61,62,63,64,65,66,67,19,72,55,71,54,70	3,978.2 ft²
Region 5	Slide Plane	11,68,12,13,52,14,51,15,16,17,18,73,19,67,66,65,64,63,62,61,60,59,58,57,69,56	61.823 ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 2.03
Volume: 699.81291 ft³
Weight: 83,977.549 lbf
Resisting Moment: 5,988,182.4 lbf·ft
Activating Moment: 2,953,401.1 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (275.15582, 666.00993) ft
Entry: (351.68137, 691.07706) ft
Radius: 84.473836 ft
Center: (290.30186, 749.11484) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	276.0092 ft	665.86342 ft	0 psf	34.558606 psf	23.310074 psf	200 psf	0 psf	Fill Seismic
Slice 2	276.86898 ft	665.71588 ft	0 psf	265.32748 psf	178.96564 psf	200 psf	0 psf	Fill Seismic

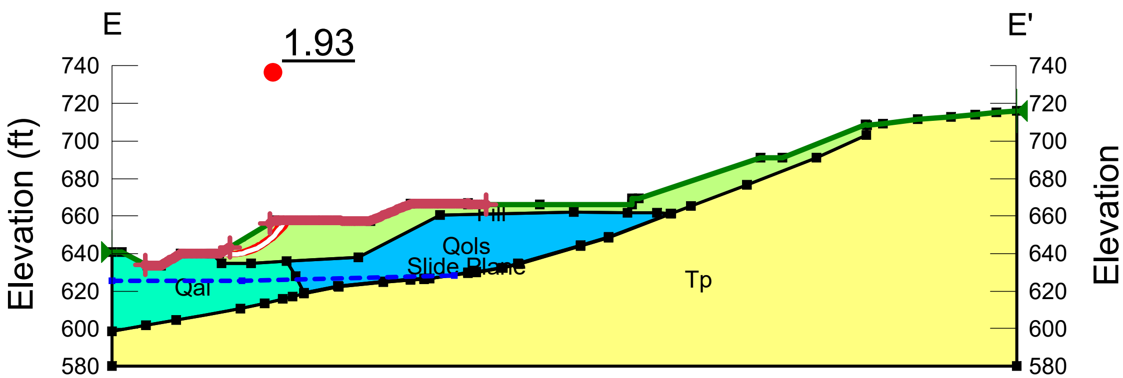
Slice 3	278.60025 ft	665.47354 ft	0 psf	512.90276 psf	345.95728 psf	200 psf	0 psf	Fill Seismic
Slice 4	281.61663 ft	665.09871 ft	0 psf	612.03021 psf	412.81959 psf	200 psf	0 psf	Fill Seismic
Slice 5	284.19963 ft	664.87165 ft	0 psf	736.80968 psf	496.9844 psf	200 psf	0 psf	Fill Seismic
Slice 6	286.78263 ft	664.72424 ft	0 psf	849.59113 psf	573.05645 psf	200 psf	0 psf	Fill Seismic
Slice 7	289.36563 ft	664.65607 ft	0 psf	950.75171 psf	641.29013 psf	200 psf	0 psf	Fill Seismic
Slice 8	291.94864 ft	664.66694 ft	0 psf	1,040.6143 psf	701.90323 psf	200 psf	0 psf	Fill Seismic
Slice 9	294.53164 ft	664.75688 ft	0 psf	1,119.4533 psf	755.08078 psf	200 psf	0 psf	Fill Seismic
Slice 10	297.11464 ft	664.92615 ft	0 psf	1,187.4988 psf	800.97807 psf	200 psf	0 psf	Fill Seismic
Slice 11	299.69764 ft	665.17523 ft	0 psf	1,244.9408 psf	839.72314 psf	200 psf	0 psf	Fill Seismic
Slice 12	302.28064 ft	665.50482 ft	0 psf	1,291.9314 psf	871.41873 psf	200 psf	0 psf	Fill Seismic
Slice 13	304.86364 ft	665.9159 ft	0 psf	1,328.5878 psf	896.14379 psf	200 psf	0 psf	Fill Seismic
Slice 14	307.44664 ft	666.40967 ft	0 psf	1,354.9934 psf	913.95462 psf	200 psf	0 psf	Fill Seismic
Slice 15	310.02964 ft	666.98763 ft	0 psf	1,371.1994 psf	924.88566 psf	200 psf	0 psf	Fill Seismic
Slice 16	312.61264 ft	667.65157 ft	0 psf	1,377.2249 psf	928.94992 psf	200 psf	0 psf	Fill Seismic
Slice 17	315.19565 ft	668.40362 ft	0 psf	1,373.0577 psf	926.13912 psf	200 psf	0 psf	Fill Seismic
Slice 18	317.77865 ft	669.24627 ft	0 psf	1,358.6538 psf	916.42355 psf	200 psf	0 psf	Fill Seismic
Slice 19	320.36165 ft	670.18242 ft	0 psf	1,333.9365 psf	899.75155 psf	200 psf	0 psf	Fill Seismic
Slice 20	322.94465 ft	671.21545 ft	0 psf	1,298.7957 psf	876.04874 psf	200 psf	0 psf	Fill Seismic
Slice 21	325.52765 ft	672.34927 ft	0 psf	1,253.0856 psf	845.21689 psf	200 psf	0 psf	Fill Seismic
Slice 22	328.11065 ft	673.58844 ft	0 psf	1,196.623 psf	807.13237 psf	200 psf	0 psf	Fill Seismic
Slice 23	330.69365 ft	674.93824 ft	0 psf	1,129.184 psf	761.64424 psf	200 psf	0 psf	Fill Seismic
Slice 24	333.27665 ft	676.40484 ft	0 psf	1,050.501 psf	708.57186 psf	200 psf	0 psf	Fill Seismic
Slice 25	335.85966 ft	677.99548 ft	0 psf	960.25781 psf	647.70207 psf	200 psf	0 psf	Fill Seismic
Slice 26	338.44266 ft	679.71872 ft	0 psf	858.08515 psf	578.78574 psf	200 psf	0 psf	Fill Seismic
Slice 27	341.02566 ft	681.58473 ft	0 psf	743.55456 psf	501.53388 psf	200 psf	0 psf	Fill Seismic
Slice 28	343.60866 ft	683.60575 ft	0 psf	616.17208 psf	415.61332 psf	200 psf	0 psf	Fill Seismic
Slice	346.03036	685.6491	0		303.30634			

29	ft	ft	psf	449.67014 psf	psf	200 psf	0 psf	Fill Seismic
Slice 30	348.29077 ft	687.70883 ft	0 psf	246.58297 psf	166.32232 psf	200 psf	0 psf	Fill Seismic
Slice 31	350.55117 ft	689.9266 ft	0 psf	34.724428 psf	23.421922 psf	200 psf	0 psf	Fill Seismic

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz   08/24/2020   05:00:25 PM

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz

2 - Rotational Static Lower Slope
Horz Seismic Coef.: 0



Name: Fill
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

2 - Rotational Static Lower Slope

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 529
Date: 08/24/2020
Time: 05:00:25 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:15:50 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Static Lower Slope

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 27 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (17.75607, 634.05502) ft
Left-Zone Right Coordinate: (62.71423, 643.30552) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (83.97718, 656.16842) ft
Right-Zone Right Coordinate: (199.07501, 665.99792) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.02847, 640.60933) ft
Right Coordinate: (481.38265, 715.97043) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.01077 ft	625.33909 ft
Coordinate 2	69.03758 ft	625.35648 ft
Coordinate 3	182.13129 ft	628.4641 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	481.38265 ft	715.97043 ft
Point 2	481.38265 ft	580.00815 ft
Point 3	0.06487 ft	580.00815 ft
Point 4	0.06487 ft	598.56606 ft

Point 5	17.88303 ft	601.67476 ft
Point 6	34.05838 ft	604.4549 ft
Point 7	68.26318 ft	610.75216 ft
Point 8	81.14685 ft	613.45992 ft
Point 9	91.05668 ft	616.05394 ft
Point 10	96.25469 ft	617.12808 ft
Point 11	102.19408 ft	618.5687 ft
Point 12	144.39449 ft	624.58815 ft
Point 13	159.01296 ft	625.86196 ft
Point 14	168.71817 ft	626.58985 ft
Point 15	193.67876 ft	630.07766 ft
Point 16	208.02428 ft	632.20068 ft
Point 17	216.15239 ft	634.53599 ft
Point 18	249.35112 ft	644.20629 ft
Point 19	297.43983 ft	661.48393 ft
Point 20	308.12651 ft	665.45194 ft
Point 21	337.7729 ft	676.7659 ft
Point 22	375.03097 ft	691.12994 ft
Point 23	401.44228 ft	703.21933 ft
Point 24	401.67396 ft	708.4005 ft
Point 25	410.23638 ft	709.35707 ft
Point 26	428.78031 ft	711.77916 ft
Point 27	446.53528 ft	712.87437 ft
Point 28	459.17228 ft	714.03276 ft
Point 29	470.39814 ft	715.35964 ft
Point 30	401.16848 ft	708.72522 ft
Point 31	356.70733 ft	691.08782 ft
Point 32	344.90016 ft	691.06255 ft
Point 33	276.87537 ft	669.38958 ft
Point 34	276.86259 ft	666.00339 ft
Point 35	227.75329 ft	666.19159 ft
Point 36	189.32938 ft	665.9321 ft
Point 37	189.32938 ft	666.74474 ft
Point 38	158.93923 ft	666.43258 ft
Point 39	137.62107 ft	657.4547 ft
Point 40	86.26866 ft	657.55464 ft
Point 41	57.06317 ft	639.88694 ft
Point 42	53.12652 ft	639.8442 ft
Point 43	52.40854 ft	640.14847 ft
Point 44	36.63336 ft	639.97998 ft
Point 45	26.05074 ft	633.44837 ft
Point 46	18.9319 ft	633.44837 ft
Point 47	5.05227 ft	640.60933 ft
Point 48	-0.02847 ft	640.60933 ft
Point 49	58.4743 ft	634.90412 ft
Point 50	93.00446 ft	636.16445 ft
Point 51	189.33923 ft	629.47129 ft
Point 52	166.16875 ft	626.39864 ft
Point 53	97.72058 ft	627.85436 ft

Point 54	174.62932 ft	660.51509 ft
Point 55	274.35626 ft	661.71561 ft
Point 56	102.18675 ft	619.07818 ft
Point 57	144.28851 ft	624.90843 ft
Point 58	158.99592 ft	626.15775 ft
Point 59	166.12616 ft	626.75702 ft
Point 60	168.71231 ft	626.89423 ft
Point 61	189.30737 ft	629.76266 ft
Point 62	193.65233 ft	630.35515 ft
Point 63	207.98505 ft	632.52763 ft
Point 64	216.02605 ft	634.82002 ft
Point 65	249.2801 ft	644.50342 ft
Point 66	264.25806 ft	648.88333 ft
Point 67	297.21983 ft	661.48293 ft
Point 68	120.45875 ft	622.37291 ft
Point 69	120.3745 ft	622.79156 ft
Point 70	131.12531 ft	638.05211 ft
Point 71	245.72504 ft	661.96413 ft
Point 72	289.79445 ft	661.54711 ft
Point 73	264.37376 ft	648.61404 ft
Point 74	74.14115 ft	634.90849 ft
Point 75	280.32513 ft	669.52911 ft

Regions

	Material	Points	Area
Region 1	Tp	1,2,3,4,5,6,7,8,9,10,11,68,12,13,52,14,51,15,16,17,18,73,19,20,21,22,23,24,25,26,27,28,29	34,712 ft²
Region 2	Fill	24,30,31,32,75,33,34,35,36,37,38,39,40,41,42,49,74,50,70,54,71,55,72,19,20,21,22,23	3,632.1 ft²
Region 3	Qal	42,43,44,45,46,47,48,4,5,6,7,8,9,10,11,56,53,50,74,49	2,872.6 ft²
Region 4	Qols	50,53,56,69,57,58,59,60,61,62,63,64,65,66,67,19,72,55,71,54,70	3,978.2 ft²
Region 5	Slide Plane	11,68,12,13,52,14,51,15,16,17,18,73,19,67,66,65,64,63,62,61,60,59,58,57,69,56	61.823 ft²

Slip Results

Slip Surfaces Analysed: 153489 of 163216 converged

Current Slip Surface

Slip Surface: 139,097

Factor of Safety: 1.93

Volume: 218.03451 ft³

Weight: 26,164.141 lbf

Resisting Moment: 703,815.02 lbf·ft

Activating Moment: 364,688.45 lbf·ft

Slip Rank: 1 of 163,216 slip surfaces

Exit: (56.951265, 639.88573) ft
Entry: (91.858368, 657.54376) ft
Radius: 33.200091 ft
Center: (62.295531, 672.65286) ft

Slip Slices

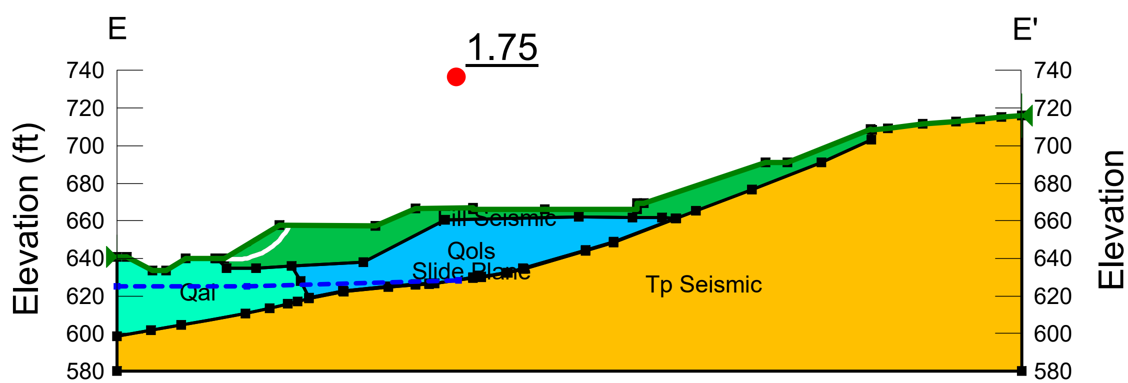
	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	57.007217 ft	639.8767 ft	-906.25062 psf	17.313729 psf	8.8217855 psf	200 psf	0 psf	Fill
Slice 2	57.66189 ft	639.78327 ft	-900.41032 psf	71.901118 psf	36.63545 psf	200 psf	0 psf	Fill
Slice 3	58.859332 ft	639.63655 ft	-891.23654 psf	174.86469 psf	89.098008 psf	200 psf	0 psf	Fill
Slice 4	60.056773 ft	639.53377 ft	-884.80399 psf	270.64977 psf	137.90295 psf	200 psf	0 psf	Fill
Slice 5	61.254214 ft	639.47451 ft	-881.08716 psf	359.50108 psf	183.17495 psf	200 psf	0 psf	Fill
Slice 6	62.451654 ft	639.45853 ft	-880.07149 psf	441.61852 psf	225.01587 psf	200 psf	0 psf	Fill
Slice 7	63.649096 ft	639.48578 ft	-881.75307 psf	517.16212 psf	263.50726 psf	200 psf	0 psf	Fill
Slice 8	64.846536 ft	639.55636 ft	-886.13858 psf	586.2558 psf	298.71225 psf	200 psf	0 psf	Fill
Slice 9	66.043978 ft	639.67056 ft	-893.24539 psf	648.9901 psf	330.67697 psf	200 psf	0 psf	Fill
Slice 10	67.241419 ft	639.82882 ft	-903.10195 psf	705.42408 psf	359.43152 psf	200 psf	0 psf	Fill
Slice 11	68.43886 ft	640.03178 ft	-915.74833 psf	755.58651 psf	384.99056 psf	200 psf	0 psf	Fill
Slice 12	69.611949 ft	640.27432 ft	-929.88863 psf	798.69997 psf	406.95796 psf	200 psf	0 psf	Fill
Slice 13	70.760688 ft	640.55559 ft	-945.4701 psf	835.00536 psf	425.45648 psf	200 psf	0 psf	Fill
Slice 14	71.909427 ft	640.88087 ft	-963.79787 psf	865.45665 psf	440.97219 psf	200 psf	0 psf	Fill
Slice 15	73.058165 ft	641.25153 ft	-984.95742 psf	889.97231 psf	453.46354 psf	200 psf	0 psf	Fill
Slice	74.206904	641.66921	-1,009.0505	908.44108	462.87385	200 psf	0 psf	Fill

16	ft	ft	psf	psf	psf			
Slice 17	75.355643 ft	642.13582 ft	-1,036.1979 psf	920.71907 psf	469.1298 psf	200 psf	0 psf	Fill
Slice 18	76.504381 ft	642.65368 ft	-1,066.5422 psf	926.62587 psf	472.13947 psf	200 psf	0 psf	Fill
Slice 19	77.65312 ft	643.22547 ft	-1,100.2527 psf	925.93948 psf	471.78973 psf	200 psf	0 psf	Fill
Slice 20	78.801859 ft	643.85444 ft	-1,137.5303 psf	918.38952 psf	467.94283 psf	200 psf	0 psf	Fill
Slice 21	79.950597 ft	644.54441 ft	-1,178.615 psf	903.64836 psf	460.43184 psf	200 psf	0 psf	Fill
Slice 22	81.099336 ft	645.30003 ft	-1,223.7958 psf	881.3194 psf	449.05466 psf	200 psf	0 psf	Fill
Slice 23	82.248075 ft	646.12692 ft	-1,273.4239 psf	850.92112 psf	433.56597 psf	200 psf	0 psf	Fill
Slice 24	83.396813 ft	647.032 ft	-1,327.9315 psf	811.86554 psf	413.66616 psf	200 psf	0 psf	Fill
Slice 25	84.545552 ft	648.02394 ft	-1,387.8589 psf	763.42794 psf	388.98596 psf	200 psf	0 psf	Fill
Slice 26	85.694291 ft	649.11378 ft	-1,453.895 psf	704.70366 psf	359.06445 psf	200 psf	0 psf	Fill
Slice 27	86.827631 ft	650.29814 ft	-1,525.8559 psf	603.55579 psf	307.52704 psf	200 psf	0 psf	Fill
Slice 28	87.945572 ft	651.59234 ft	-1,604.6969 psf	461.06312 psf	234.92339 psf	200 psf	0 psf	Fill
Slice 29	89.063514 ft	653.03585 ft	-1,692.8553 psf	308.027 psf	156.9476 psf	200 psf	0 psf	Fill
Slice 30	90.181455 ft	654.66514 ft	-1,792.6062 psf	142.97707 psf	72.850458 psf	200 psf	0 psf	Fill
Slice 31	91.299397 ft	656.53773 ft	-1,907.5389 psf	-35.954228 psf	-18.319594 psf	200 psf	0 psf	Fill

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz 08/24/2020 05:00:25 PM

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz

2 - Rotational Pseudotatic Lower Slope
Horz Seismic Coef.: 0.15



Name: Fill Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Piezometric Line: 1

Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp Seismic
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Piezometric Line: 1

LGC

LGC Valley, Inc

GEOTECHNICAL CONSULTING

28532 Constellation Road, Valencia, CA 91355
Phone 661-702-8474, Fax 661-702-8475

Newbridge-Diamond Bar

Project No: 203008-01
Engineer: BIH/ACR
Date: August 2020

2 - Rotational Pseudotatic Lower Slope

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 529
Date: 08/24/2020
Time: 05:00:25 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:16:01 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

2 - Rotational Pseudotatic Lower Slope

- Kind: SLOPE/W
- Parent: 2 - Rotational Static Lower Slope
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Critical Slip Surfaces from Other
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings

Maximum Number of Iterations: 100
Tolerable difference in F of S: 0.2

Materials

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Tp Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 500 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Fill Seismic

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 34 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure

Piezometric Line: 1

Slip Surface Limits

Left Coordinate: (-0.02847, 640.60933) ft

Right Coordinate: (481.38265, 715.97043) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.01063 ft	625.29542 ft
Coordinate 2	69.21213 ft	625.29714 ft
Coordinate 3	181.70192 ft	628.40411 ft

Seismic Coefficients

Horz Seismic Coef.: 0.15

Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D

Element Thickness: 1 ft

Points

	X	Y
Point 1	481.38265 ft	715.97043 ft
Point 2	481.38265 ft	580.00815 ft
Point 3	0.06487 ft	580.00815 ft
Point 4	0.06487 ft	598.56606 ft
Point 5	17.88303 ft	601.67476 ft
Point 6	34.05838 ft	604.4549 ft
Point 7	68.26318 ft	610.75216 ft
Point 8	81.14685 ft	613.45992 ft
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Point 11	102.19408 ft	618.5687 ft
Point 12	144.39449 ft	624.58815 ft
Point 13	159.01296 ft	625.86196 ft
Point 14	168.71817 ft	626.58985 ft
Point 15	193.67876 ft	630.07766 ft

Point 16	208.02428 ft	632.20068 ft
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Point 24	401.67396 ft	708.4005 ft
Point 25	410.23638 ft	709.35707 ft
Point 26	428.78031 ft	711.77916 ft
Point 27	446.53528 ft	712.87437 ft
Point 28	459.17228 ft	714.03276 ft
Point 29	470.39814 ft	715.35964 ft
Point 30	401.16848 ft	708.72522 ft
Point 31	356.70733 ft	691.08782 ft
Point 32	344.90016 ft	691.06255 ft
Point 33	276.87537 ft	669.38958 ft
Point 34	276.86259 ft	666.00339 ft
Point 35	227.75329 ft	666.19159 ft
Point 36	189.32938 ft	665.9321 ft
Point 37	189.32938 ft	666.74474 ft
Point 38	158.93923 ft	666.43258 ft
Point 39	137.62107 ft	657.4547 ft
Point 40	86.26866 ft	657.55464 ft
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Point 45	26.05074 ft	633.44837 ft
Point 46	18.9319 ft	633.44837 ft
Point 47	5.05227 ft	640.60933 ft
Point 48	-0.02847 ft	640.60933 ft
Point 49	58.4743 ft	634.90412 ft
Point 50	93.00446 ft	636.16445 ft
Point 51	189.33923 ft	629.47129 ft
Point 52	166.16875 ft	626.39864 ft
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Point 57	144.28851 ft	624.90843 ft
Point 58	158.99592 ft	626.15775 ft
Point 59	166.12616 ft	626.75702 ft
Point 60	168.71231 ft	626.89423 ft
Point 61	189.30737 ft	629.76266 ft
Point 62	193.65233 ft	630.35515 ft
Point 63	207.98505 ft	632.52763 ft
Point 64	216.02605 ft	634.82002 ft

Point 65	249.2801 ft	644.50342 ft
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Point 72	289.79445 ft	661.54711 ft
Point 73	264.37376 ft	648.61404 ft
Point 74	74.14115 ft	634.90849 ft
Point 75	280.32513 ft	669.52911 ft

Regions

	Material	Points	Area
Region 1	Tp Seismic	1,2,3,4,5,6,7,8,9,10,11,68,12,13,52,14,51,15,16,17,18,73,19,20,21,22,23,24,25,26,27,28,29	34,712 ft²
Region 2	Fill Seismic	24,30,31,32,75,33,34,35,36,37,38,39,40,41,42,49,74,50,70,54,71,55,72,19,20,21,22,23	3,632.1 ft²
Region 3	Qal	42,43,44,45,46,47,48,4,5,6,7,8,9,10,11,56,53,50,74,49	2,872.6 ft²
Region 4	Qols	50,53,56,69,57,58,59,60,61,62,63,64,65,66,67,19,72,55,71,54,70	3,978.2 ft²
Region 5	Slide Plane	11,68,12,13,52,14,51,15,16,17,18,73,19,67,66,65,64,63,62,61,60,59,58,57,69,56	61.823 ft²

Slip Results

Slip Surfaces Analysed: 1 of 1 converged

Current Slip Surface

Slip Surface: 1
Factor of Safety: 1.75
Volume: 218.03451 ft³
Weight: 26,164.141 lbf
Resisting Moment: 809,268.21 lbf·ft
Activating Moment: 462,955.65 lbf·ft
Slip Rank: 1 of 1 slip surfaces
Exit: (56.951265, 639.88573) ft
Entry: (91.858368, 657.54376) ft
Radius: 33.200091 ft
Center: (62.295531, 672.65286) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material
Slice 1	57.007217 ft	639.8767 ft	-909.7833 psf	19.66028 psf	13.261026 psf	200 psf	0 psf	Fill Seismic
Slice	57.66189	639.78327	-903.95227	74.895445	50.517616	200 psf	0 psf	Fill

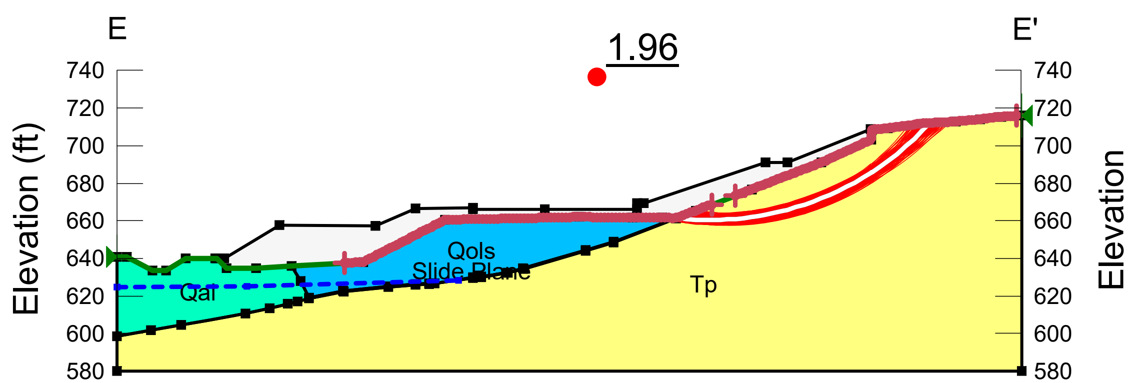
2	ft	ft	psf	psf	psf			Seismic
Slice 3	58.859332 ft	639.63655 ft	-894.79545 psf	178.36297 psf	120.30734 psf	200 psf	0 psf	Fill Seismic
Slice 4	60.056773 ft	639.53377 ft	-888.37986 psf	273.67687 psf	184.59738 psf	200 psf	0 psf	Fill Seismic
Slice 5	61.254213 ft	639.47451 ft	-884.67999 psf	361.22183 psf	243.6472 psf	200 psf	0 psf	Fill Seismic
Slice 6	62.451654 ft	639.45853 ft	-883.68129 psf	441.31838 psf	297.67301 psf	200 psf	0 psf	Fill Seismic
Slice 7	63.649096 ft	639.48578 ft	-885.37983 psf	514.23178 psf	346.85371 psf	200 psf	0 psf	Fill Seismic
Slice 8	64.846536 ft	639.55636 ft	-889.7823 psf	580.17884 psf	391.33557 psf	200 psf	0 psf	Fill Seismic
Slice 9	66.043978 ft	639.67056 ft	-896.90608 psf	639.33323 psf	431.23571 psf	200 psf	0 psf	Fill Seismic
Slice 10	67.241419 ft	639.82882 ft	-906.77959 psf	691.82945 psf	466.64485 psf	200 psf	0 psf	Fill Seismic
Slice 11	68.43886 ft	640.03178 ft	-919.44293 psf	737.76577 psf	497.6293 psf	200 psf	0 psf	Fill Seismic
Slice 12	69.124855 ft	640.16426 ft	-927.70828 psf	756.04748 psf	509.96047 psf	200 psf	0 psf	Fill Seismic
Slice 13	69.699224 ft	640.29405 ft	-934.96738 psf	780.18959 psf	526.24452 psf	200 psf	0 psf	Fill Seismic
Slice 14	70.760688 ft	640.55559 ft	-949.45851 psf	808.4086 psf	545.27849 psf	200 psf	0 psf	Fill Seismic
Slice 15	71.909427 ft	640.88087 ft	-967.77612 psf	834.34602 psf	562.7735 psf	200 psf	0 psf	Fill Seismic
Slice 16	73.058165 ft	641.25153 ft	-988.92551 psf	854.30501 psf	576.23601 psf	200 psf	0 psf	Fill Seismic
Slice 17	74.206904 ft	641.66921 ft	-1,013.0085 psf	868.22809 psf	585.62724 psf	200 psf	0 psf	Fill Seismic
Slice 18	75.355643 ft	642.13582 ft	-1,040.1456 psf	876.027 psf	590.88767 psf	200 psf	0 psf	Fill Seismic
Slice 19	76.504381 ft	642.65368 ft	-1,070.4798 psf	877.58021 psf	591.93532 psf	200 psf	0 psf	Fill Seismic
Slice 20	77.65312 ft	643.22547 ft	-1,104.1801 psf	872.72934 psf	588.66337 psf	200 psf	0 psf	Fill Seismic

Slice 21	78.801859 ft	643.85444 ft	-1,141.4476 psf	861.2744 psf	580.93692 psf	200 psf	0 psf	Fill Seismic
Slice 22	79.950597 ft	644.54441 ft	-1,182.5221 psf	842.96736 psf	568.58867 psf	200 psf	0 psf	Fill Seismic
Slice 23	81.099336 ft	645.30003 ft	-1,227.6928 psf	817.50367 psf	551.41319 psf	200 psf	0 psf	Fill Seismic
Slice 24	82.248075 ft	646.12692 ft	-1,277.3107 psf	784.5108 psf	529.15922 psf	200 psf	0 psf	Fill Seismic
Slice 25	83.396813 ft	647.032 ft	-1,331.8081 psf	743.5329 psf	501.51927 psf	200 psf	0 psf	Fill Seismic
Slice 26	84.545552 ft	648.02394 ft	-1,391.7254 psf	694.00954 psf	468.11534 psf	200 psf	0 psf	Fill Seismic
Slice 27	85.694291 ft	649.11378 ft	-1,457.7513 psf	635.24606 psf	428.47888 psf	200 psf	0 psf	Fill Seismic
Slice 28	86.827631 ft	650.29814 ft	-1,529.7022 psf	538.33138 psf	363.1091 psf	200 psf	0 psf	Fill Seismic
Slice 29	87.945572 ft	651.59234 ft	-1,608.5333 psf	405.12021 psf	273.25703 psf	200 psf	0 psf	Fill Seismic
Slice 30	89.063514 ft	653.03585 ft	-1,696.6818 psf	264.11592 psf	178.14844 psf	200 psf	0 psf	Fill Seismic
Slice 31	90.181455 ft	654.66514 ft	-1,796.4228 psf	114.62858 psf	77.317951 psf	200 psf	0 psf	Fill Seismic
Slice 32	91.299397 ft	656.53773 ft	-1,911.3457 psf	-43.997254 psf	-29.676522 psf	200 psf	0 psf	Fill Seismic

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz 08/24/2020 05:00:25 PM

Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz

3 - Rotational Static Temporary
Horz Seismic Coef.: 0



Name: Qal
Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Piezometric Line: 1

Name: Qols
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Piezometric Line: 1

Name: Slide Plane
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Piezometric Line: 1

Name: Tp
Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Piezometric Line: 1

LGC	LGC Valley, Inc *GEOTECHNICAL CONSULTING* 28532 Constellation Road, Valencia, CA 91355 Phone 661-702-8474, Fax 661-702-8475	**Newbridge-Diamond Bar**	Project No: 203008-01 Engineer: BIH/ACR Date: August 2020

3 - Rotational Static Temporary

File Information

File Version: 10.01
Title: Slope Stability Analyses Cross-section
Revision Number: 529
Date: 08/24/2020
Time: 05:00:25 PM
Tool Version: 10.1.0.18696
File Name: Newbridge Diamond Bar Section E-E SSA (08-24-2020).gsz
Directory: C:\Users\ARich\Desktop\Newbridge Diamond Bar\
Last Solved Date: 08/25/2020
Last Solved Time: 06:16:02 AM

Project Settings

Unit System: U.S. Customary Units

Analysis Settings

3 - Rotational Static Temporary

- Kind: SLOPE/W
- Method: Bishop
- Settings
  - PWP Conditions from: Piezometric Line
    - Apply Phreatic Correction: No
    - Use Staged Rapid Drawdown: No
  - Unit Weight of Water: 62.4 pcf
- Slip Surface
  - Direction of movement: Right to Left
  - Use Passive Mode: No
  - Slip Surface Option: Entry and Exit
  - Critical slip surfaces saved: 1
  - Optimize Critical Slip Surface Location: No
  - Tension Crack Option: (none)
- Distribution
  - F of S Calculation Option: Constant
- Advanced
  - Geometry Settings
    - Minimum Slip Surface Depth: 0.1 ft
    - Number of Slices: 30
  - Factor of Safety Convergence Settings
    - Maximum Number of Iterations: 100

Tolerable difference in F of S: 0.2

Materials

Tp

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 250 psf
Phi': 28 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qal

Model: Mohr-Coulomb
Unit Weight: 125 pcf
Cohesion': 250 psf
Phi': 25 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Qols

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 200 psf
Phi': 30 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slide Plane

Model: Mohr-Coulomb
Unit Weight: 120 pcf
Cohesion': 150 psf
Phi': 10 °
Phi-B: 0 °
Pore Water Pressure
Piezometric Line: 1

Slip Surface Entry and Exit

Left Type: Range
Left-Zone Left Coordinate: (121.18225, 637.55975) ft
Left-Zone Right Coordinate: (316.55616, 668.66895) ft
Left-Zone Increment: 100
Right Type: Range
Right-Zone Left Coordinate: (329.01379, 673.42316) ft

Right-Zone Right Coordinate: (478.77525, 715.82545) ft
Right-Zone Increment: 100
Radius Increments: 15

Slip Surface Limits

Left Coordinate: (-0.02847, 640.60933) ft
Right Coordinate: (481.38265, 715.97043) ft

Piezometric Lines

Piezometric Line 1

Coordinates

	X	Y
Coordinate 1	-0.0106 ft	624.81501 ft
Coordinate 2	69.21821 ft	625.28228 ft
Coordinate 3	181.7889 ft	628.41626 ft

Seismic Coefficients

Horz Seismic Coef.: 0
Vert Seismic Coef.: 0

Geometry

Name: Default Geometry

Settings

View: 2D
Element Thickness: 1 ft

Points

	X	Y
Point 1	481.38265 ft	715.97043 ft
Point 2	481.38265 ft	580.00815 ft
Point 3	0.06487 ft	580.00815 ft
Point 4	0.06487 ft	598.56606 ft
Point 5	17.88303 ft	601.67476 ft
Point 6	34.05838 ft	604.4549 ft
Point 7	68.26318 ft	610.75216 ft
Point 8	81.14685 ft	613.45992 ft
Point 9	91.05668 ft	616.05394 ft
Point 10	96.25469 ft	617.12808 ft
Point 11	102.19408 ft	618.5687 ft
Point 12	144.39449 ft	624.58815 ft

Point 13	159.01296 ft	625.86196 ft
Point 14	168.71817 ft	626.58985 ft
Point 15	193.67876 ft	630.07766 ft
Point 16	208.02428 ft	632.20068 ft
Point 17	216.15239 ft	634.53599 ft
Point 18	249.35112 ft	644.20629 ft
Point 19	297.43983 ft	661.48393 ft
Point 20	308.12651 ft	665.45194 ft
Point 21	337.7729 ft	676.7659 ft
Point 22	375.03097 ft	691.12994 ft
Point 23	401.44228 ft	703.21933 ft
Point 24	401.67396 ft	708.4005 ft
Point 25	410.23638 ft	709.35707 ft
Point 26	428.78031 ft	711.77916 ft
Point 27	446.53528 ft	712.87437 ft
Point 28	459.17228 ft	714.03276 ft
Point 29	470.39814 ft	715.35964 ft
Point 30	401.16848 ft	708.72522 ft
Point 31	356.70733 ft	691.08782 ft
Point 32	344.90016 ft	691.06255 ft
Point 33	276.87537 ft	669.38958 ft
Point 34	276.86259 ft	666.00339 ft
Point 35	227.75329 ft	666.19159 ft
Point 36	189.32938 ft	665.9321 ft
Point 37	189.32938 ft	666.74474 ft
Point 38	158.93923 ft	666.43258 ft
Point 39	137.62107 ft	657.4547 ft
Point 40	86.26866 ft	657.55464 ft
Point 41	57.06317 ft	639.88694 ft
Point 42	53.12652 ft	639.8442 ft
Point 43	52.40854 ft	640.14847 ft
Point 44	36.63336 ft	639.97998 ft
Point 45	26.05074 ft	633.44837 ft
Point 46	18.9319 ft	633.44837 ft
Point 47	5.05227 ft	640.60933 ft
Point 48	-0.02847 ft	640.60933 ft
Point 49	58.4743 ft	634.90412 ft
Point 50	93.00446 ft	636.16445 ft
Point 51	189.33923 ft	629.47129 ft
Point 52	166.16875 ft	626.39864 ft
Point 53	97.72058 ft	627.85436 ft
Point 54	174.62932 ft	660.51509 ft
Point 55	274.35626 ft	661.71561 ft
Point 56	102.18675 ft	619.07818 ft
Point 57	144.28851 ft	624.90843 ft
Point 58	158.99592 ft	626.15775 ft
Point 59	166.12616 ft	626.75702 ft
Point 60	168.71231 ft	626.89423 ft
Point 61	189.30737 ft	629.76266 ft

Point 62	193.65233 ft	630.35515 ft
Point 63	207.98505 ft	632.52763 ft
Point 64	216.02605 ft	634.82002 ft
Point 65	249.2801 ft	644.50342 ft
Point 66	264.25806 ft	648.88333 ft
Point 67	297.21983 ft	661.48293 ft
Point 68	120.45875 ft	622.37291 ft
Point 69	120.3745 ft	622.79156 ft
Point 70	131.12531 ft	638.05211 ft
Point 71	245.72504 ft	661.96413 ft
Point 72	289.79445 ft	661.54711 ft
Point 73	264.37376 ft	648.61404 ft
Point 74	74.14115 ft	634.90849 ft
Point 75	280.32513 ft	669.52911 ft

Regions

	Material	Points	Area
Region 1	Tp	1,2,3,4,5,6,7,8,9,10,11,68,12,13,52,14,51,15,16,17,18,73,19,20,21,22,23,24,25,26,27,28,29	34,712 ft²
Region 2		24,30,31,32,75,33,34,35,36,37,38,39,40,41,42,49,74,50,70,54,71,55,72,19,20,21,22,23	3,632.1 ft²
Region 3	Qal	42,43,44,45,46,47,48,4,5,6,7,8,9,10,11,56,53,50,74,49	2,872.6 ft²
Region 4	Qols	50,53,56,69,57,58,59,60,61,62,63,64,65,66,67,19,72,55,71,54,70	3,978.2 ft²
Region 5	Slide Plane	11,68,12,13,52,14,51,15,16,17,18,73,19,67,66,65,64,63,62,61,60,59,58,57,69,56	61.823 ft²

Slip Results

Slip Surfaces Analysed: 130090 of 163216 converged

Current Slip Surface

Slip Surface: 146,582
Factor of Safety: 1.96
Volume: 1,871.6107 ft³
Weight: 224,593.28 lbf
Resisting Moment: 24,116,819 lbf·ft
Activating Moment: 12,298,827 lbf·ft
Slip Rank: 1 of 163,216 slip surfaces
Exit: (297.63259, 661.5555) ft
Entry: (432.24799, 711.99306) ft
Radius: 156.84448 ft
Center: (316.02851, 817.31744) ft

Slip Slices

	X	Y	PWP	Base Normal Stress	Frictional Strength	Cohesive Strength	Suction Strength	Base Material

Slice 1	300.25607 ft	661.2903 ft	0 psf	164.62338 psf	87.531803 psf	250 psf	0 psf	Tp
Slice 2	305.50303 ft	660.84862 ft	0 psf	450.86275 psf	239.72797 psf	250 psf	0 psf	Tp
Slice 3	310.24411 ft	660.59398 ft	0 psf	690.5505 psf	367.17222 psf	250 psf	0 psf	Tp
Slice 4	314.47931 ft	660.49491 ft	0 psf	889.10275 psf	472.74432 psf	250 psf	0 psf	Tp
Slice 5	318.71451 ft	660.51026 ft	0 psf	1,071.3405 psf	569.64185 psf	250 psf	0 psf	Tp
Slice 6	322.9497 ft	660.64008 ft	0 psf	1,237.562 psf	658.02338 psf	250 psf	0 psf	Tp
Slice 7	327.1849 ft	660.88464 ft	0 psf	1,388.0186 psf	738.02256 psf	250 psf	0 psf	Tp
Slice 8	331.4201 ft	661.2445 ft	0 psf	1,522.9177 psf	809.74972 psf	250 psf	0 psf	Tp
Slice 9	335.6553 ft	661.72044 ft	0 psf	1,642.4255 psf	873.29316 psf	250 psf	0 psf	Tp
Slice 10	339.55471 ft	662.2579 ft	0 psf	1,740.2636 psf	925.31456 psf	250 psf	0 psf	Tp
Slice 11	343.11834 ft	662.84071 ft	0 psf	1,818.8238 psf	967.08577 psf	250 psf	0 psf	Tp
Slice 12	346.86802 ft	663.54785 ft	0 psf	1,889.6275 psf	1,004.7328 psf	250 psf	0 psf	Tp
Slice 13	350.80374 ft	664.39 ft	0 psf	1,951.4642 psf	1,037.6119 psf	250 psf	0 psf	Tp
Slice 14	354.73947 ft	665.33873 ft	0 psf	2,000.2222 psf	1,063.537 psf	250 psf	0 psf	Tp
Slice 15	358.99779 ft	666.49251 ft	0 psf	2,037.6484 psf	1,083.4369 psf	250 psf	0 psf	Tp
Slice 16	363.57869 ft	667.87383 ft	0 psf	2,061.2647 psf	1,095.9939 psf	250 psf	0 psf	Tp
Slice 17	368.1596 ft	669.40989 ft	0 psf	2,066.8686 psf	1,098.9735 psf	250 psf	0 psf	Tp
Slice 18	372.74052 ft	671.10559 ft	0 psf	2,054.253 psf	1,092.2657 psf	250 psf	0 psf	Tp
Slice 19	377.2091 ft	672.91685 ft	0 psf	2,041.4446 psf	1,085.4553 psf	250 psf	0 psf	Tp
Slice 20	381.56535 ft	674.8416 ft	0 psf	2,028.62 psf	1,078.6364 psf	250 psf	0 psf	Tp
Slice 21	385.9216 ft	676.92788 ft	0 psf	1,997.8863 psf	1,062.295 psf	250 psf	0 psf	Tp
Slice 22	390.27785 ft	679.18304 ft	0 psf	1,948.821 psf	1,036.2065 psf	250 psf	0 psf	Tp
Slice 23	394.6341 ft	681.6155 ft	0 psf	1,880.9298 psf	1,000.1081 psf	250 psf	0 psf	Tp
Slice 24	398.99035 ft	684.235 ft	0 psf	1,793.6388 psf	953.69467 psf	250 psf	0 psf	Tp
Slice 25	401.30538 ft	685.6815 ft	0 psf	1,741.8264 psf	926.14554 psf	250 psf	0 psf	Tp
Slice 26	401.55812 ft	685.84555 ft	0 psf	1,997.7631 psf	1,062.2295 psf	250 psf	0 psf	Tp
Slice	403.81457	687.36696	0	2,119.1537				

27	ft	ft	psf	psf	1,126.774 psf	250 psf	0 psf	Tp
Slice 28	408.09578 ft	690.36541 ft	0 psf	1,835.7871 psf	976.10532 psf	250 psf	0 psf	Tp
Slice 29	412.55437 ft	693.72821 ft	0 psf	1,525.458 psf	811.10039 psf	250 psf	0 psf	Tp
Slice 30	417.19035 ft	697.49562 ft	0 psf	1,185.8209 psf	630.51216 psf	250 psf	0 psf	Tp
Slice 31	421.82634 ft	701.57139 ft	0 psf	822.95908 psf	437.57511 psf	250 psf	0 psf	Tp
Slice 32	426.46232 ft	705.98952 ft	0 psf	435.69106 psf	231.66104 psf	250 psf	0 psf	Tp
Slice 33	430.51415 ft	710.14098 ft	0 psf	67.146093 psf	35.702211 psf	250 psf	0 psf	Tp

APPENDIX E

LGC VALLEY, INC.

<u>General Earthwork and Grading Specifications For Rough Grading</u>

1.0 ***<u>General</u>***

1.1 ***<u>Intent</u>:*** These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 ***<u>The Geotechnical Consultant of Record</u>:*** Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 ***The Earthwork Contractor:*** The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. . The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 ***Clearing and Grubbing:*** Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). No fill lift shall contain more than 10 percent of organic matter. Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 ***Processing:*** Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be overexcavated as specified in the following section. Scarification shall continue until soils are broken down and free from oversize material and the working surface is reasonably uniform, flat, and free from uneven features that would inhibit uniform compaction.

2.3 ***Overexcavation:*** In addition to removals and overexcavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be overexcavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 ***Benching:*** Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise overexcavated to provide a flat subgrade for the fill.

2.5 ***Evaluation/Acceptance of Fill Areas:*** All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 ***General:*** Material to be used as fill shall be essentially free from organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 ***Oversize:*** Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 ***Import:*** If importing of fill material is required for grading, proposed import material shall meet the requirements of Section 3.1. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 ***Fill Layers:*** Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 ***Fill Moisture Conditioning:*** Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557-12).

4.3 ***Compaction of Fill:*** After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557-12). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 ***Compaction of Fill Slopes:*** In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepsfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557-12.

4.5 ***Compaction Testing:*** Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 ***Frequency of Compaction Testing:*** Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 ***Compaction Test Locations:*** The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

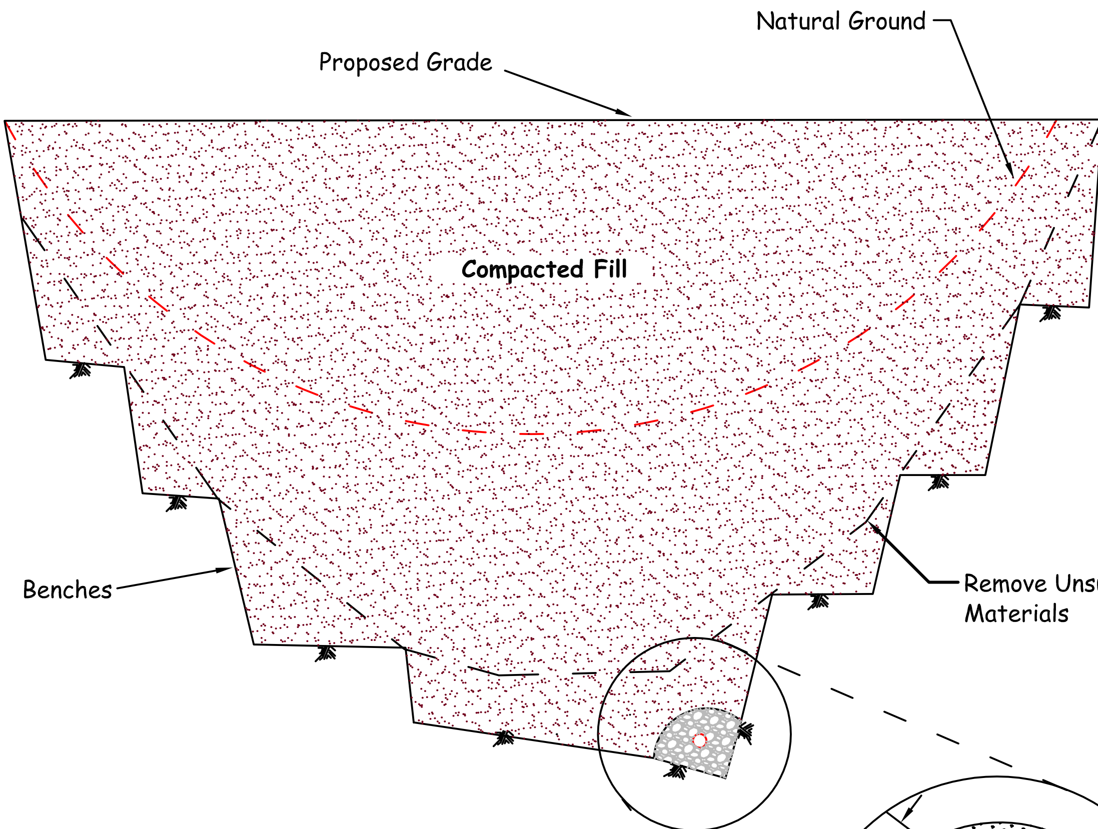
7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

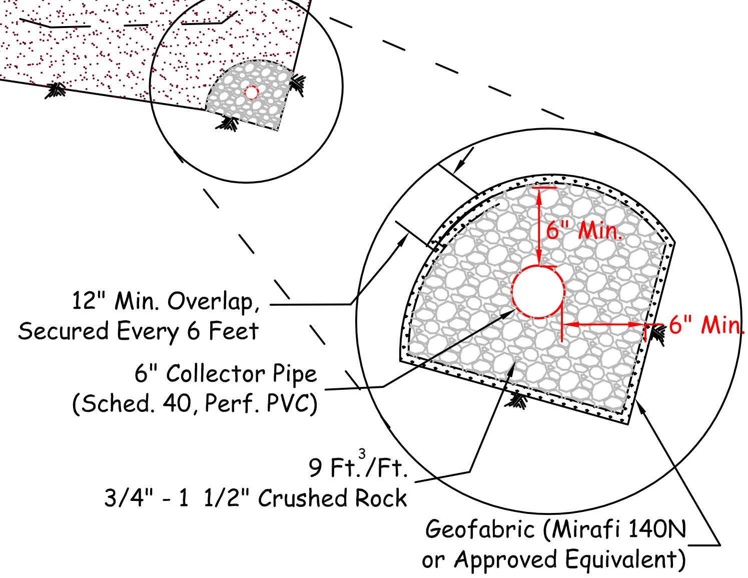
7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

7.3 The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.

7.4 The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.

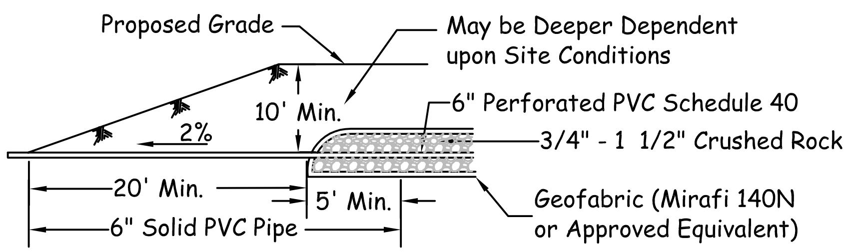
7.5 Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.





Notes:
1) Continuous Runs in Excess of 500' Shall Use 8" Diameter Pipe.
2) Final 20' of Pipe at Outlet Shall be Solid and Backfilled with Fine-grained Material.

Proposed Outlet Detail



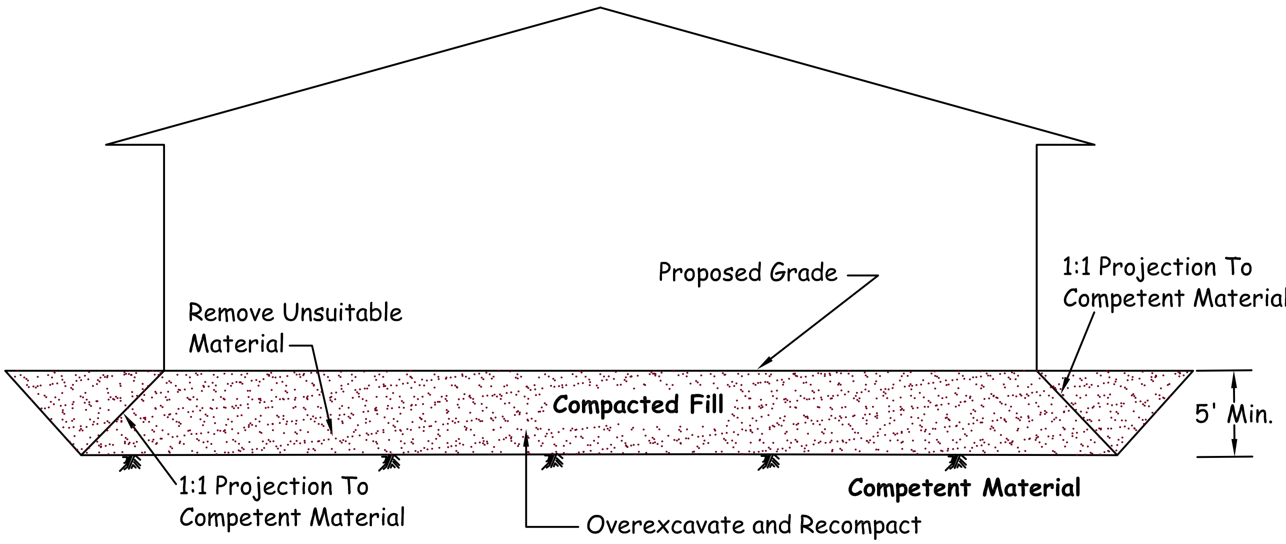
LGC

CANYON SUBDRAINS

11/26/02

Cut Lot

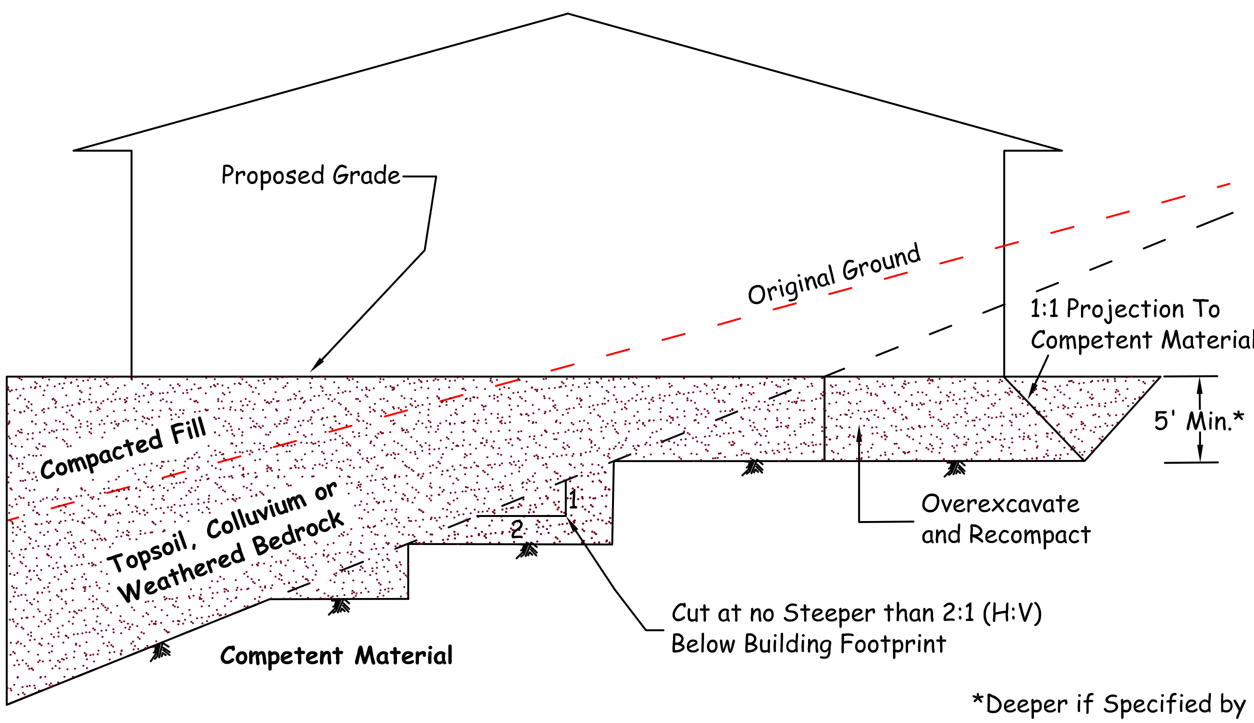
(Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

Cut/Fill Transition Lot



*Deeper if Specified by Soils Engineer

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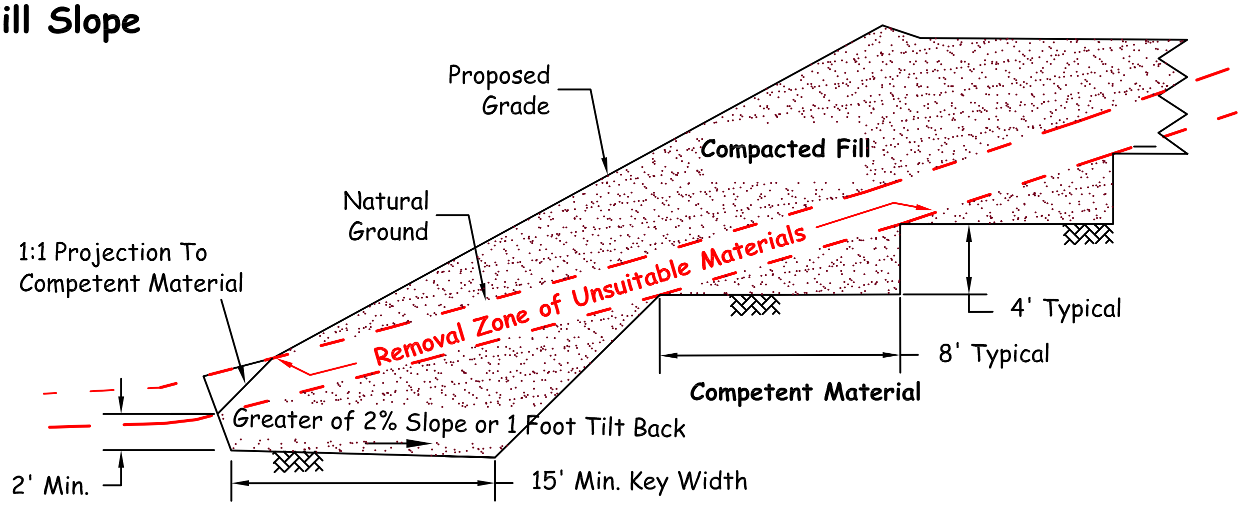
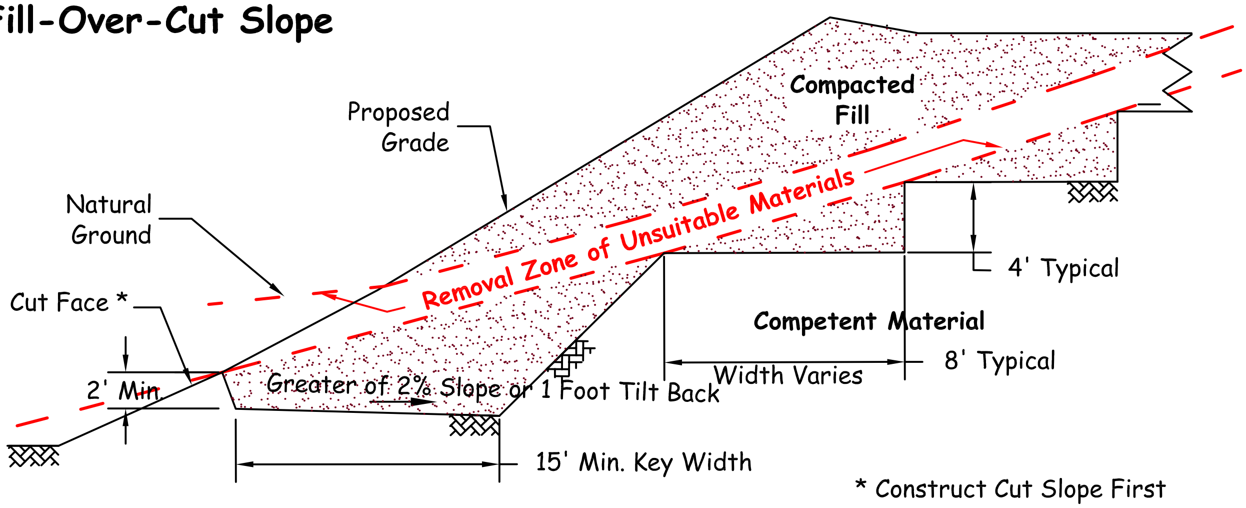
CUT AND TRANSITION LOT OVEREXCAVATION DETAIL

11/26/02

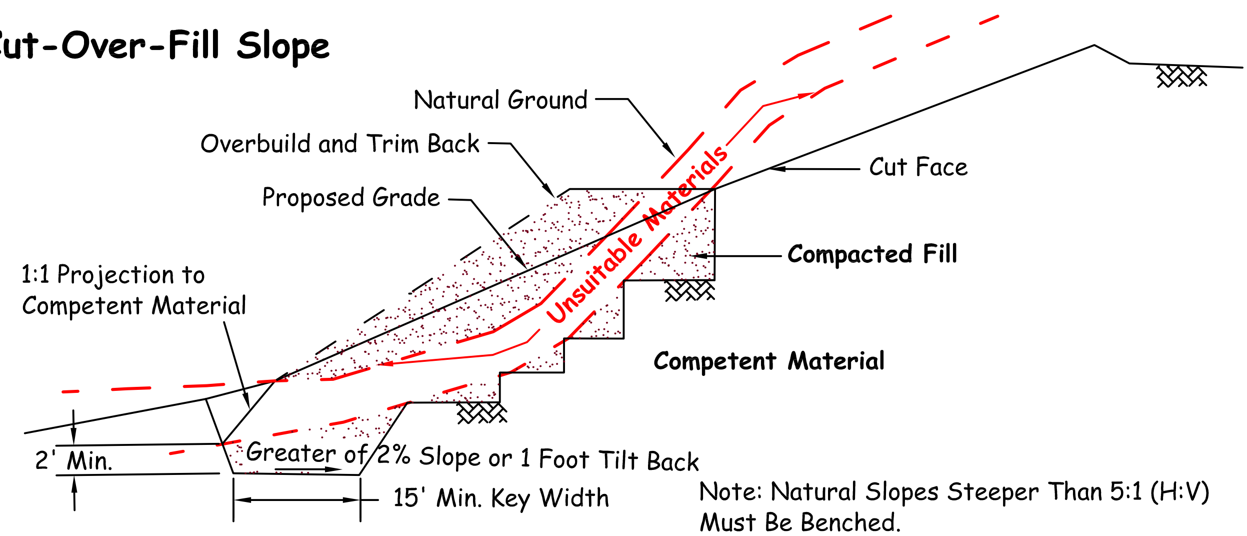
Fill Slope



Fill-Over-Cut Slope



Cut-Over-Fill Slope



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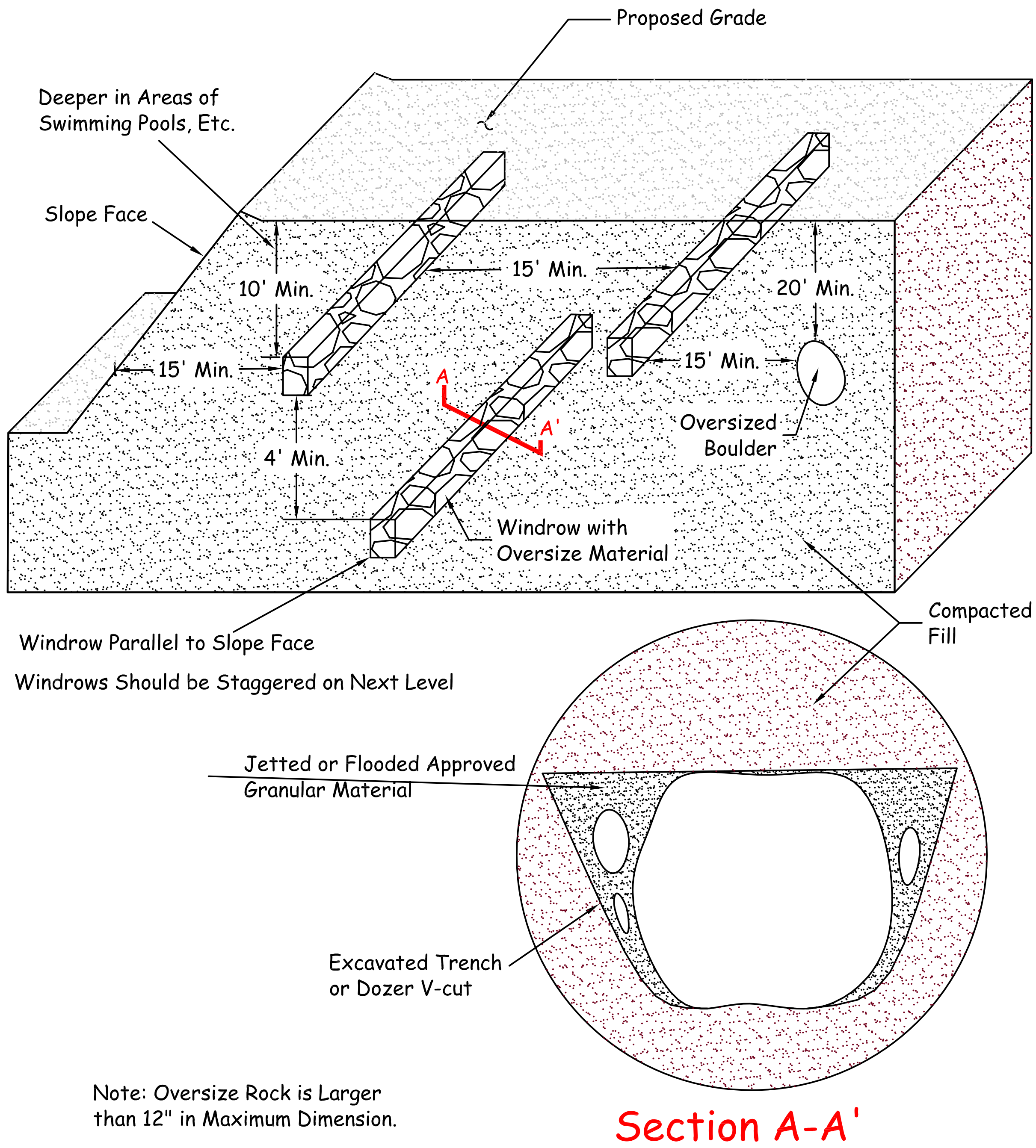
KEYING AND BENCHING

11/26/02



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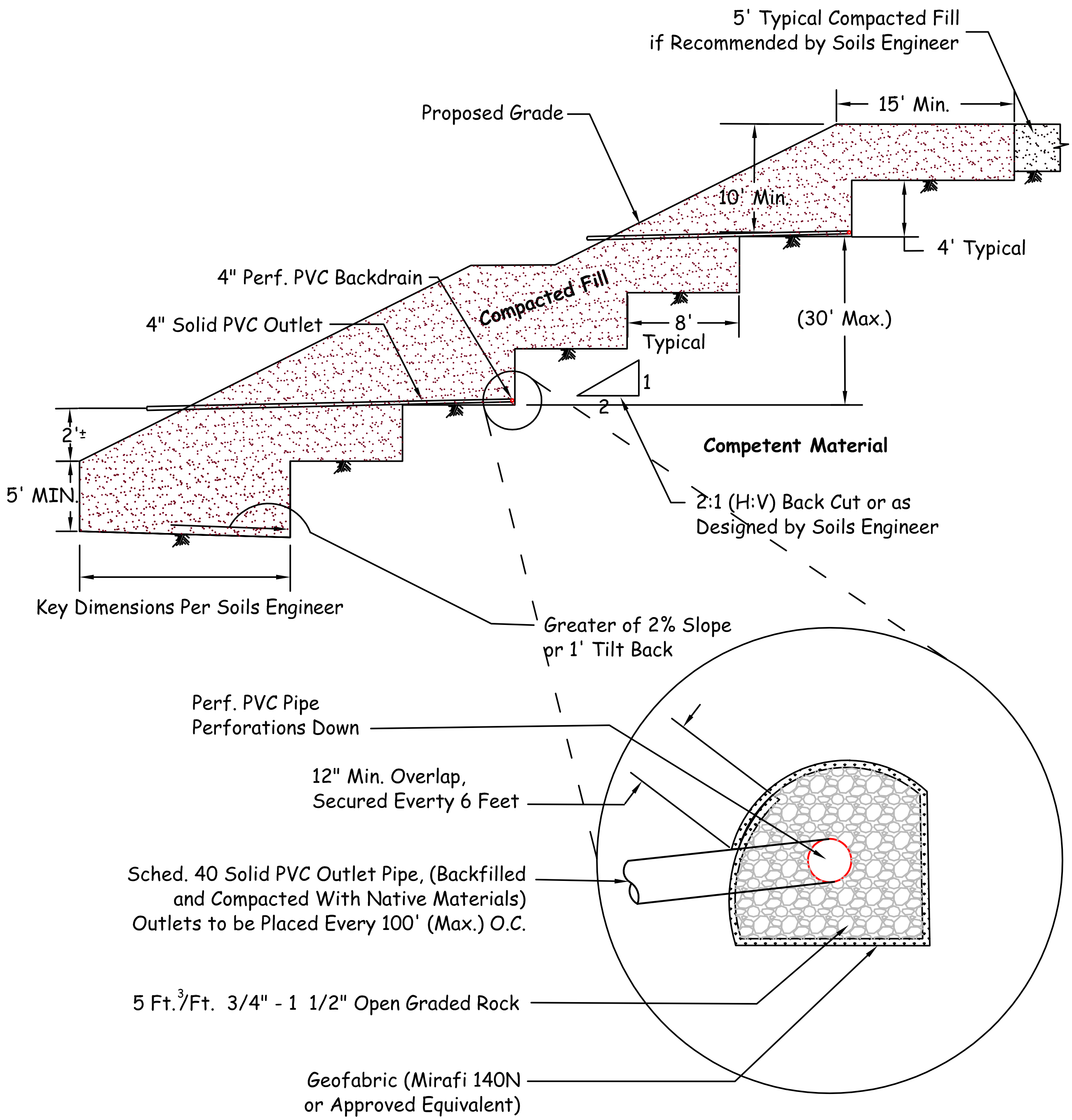
OVERSIZE ROCK DISPOSAL DETAIL

11/26/02



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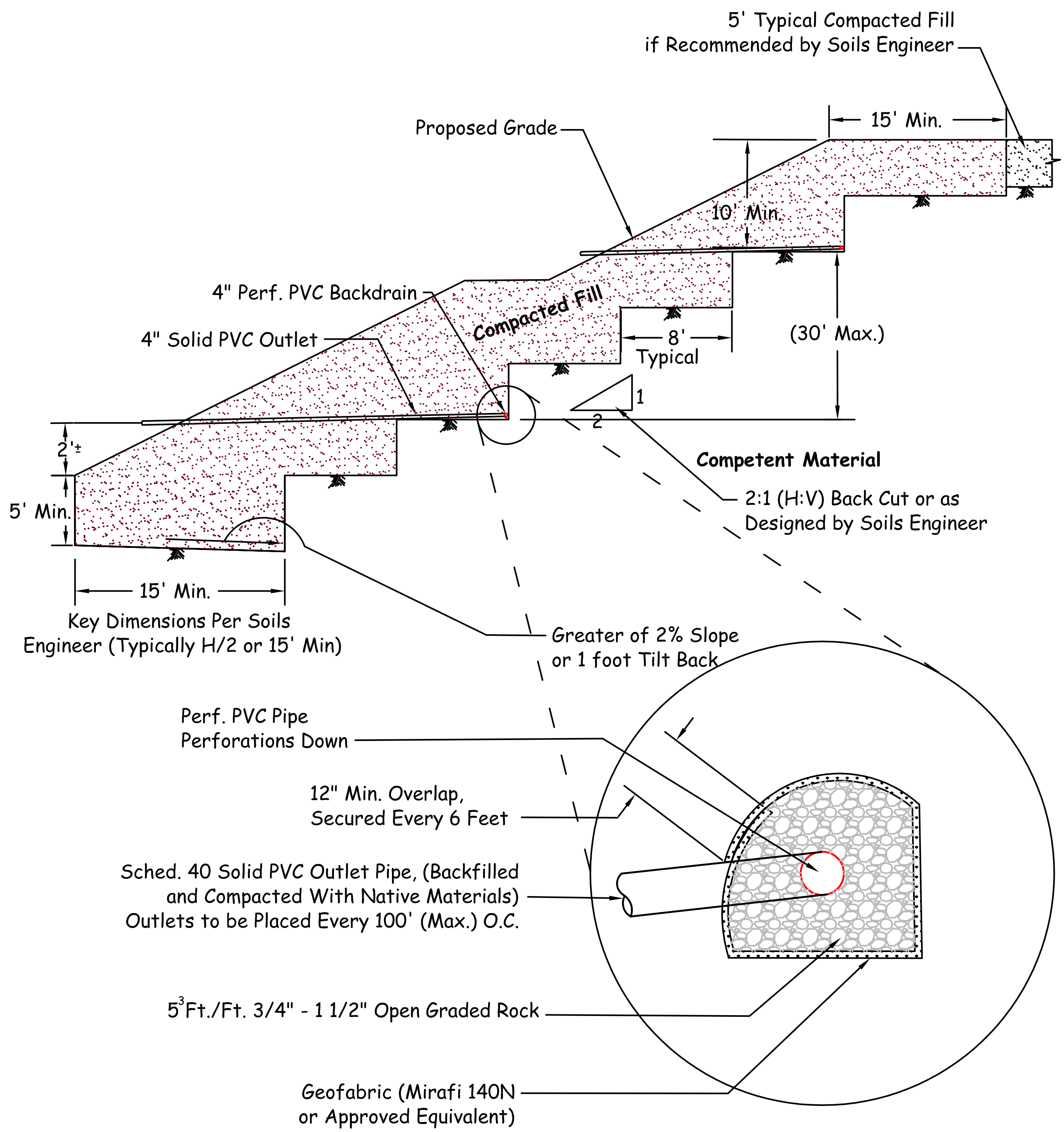
TYPICAL BUTTRESS DETAIL

11/26/02



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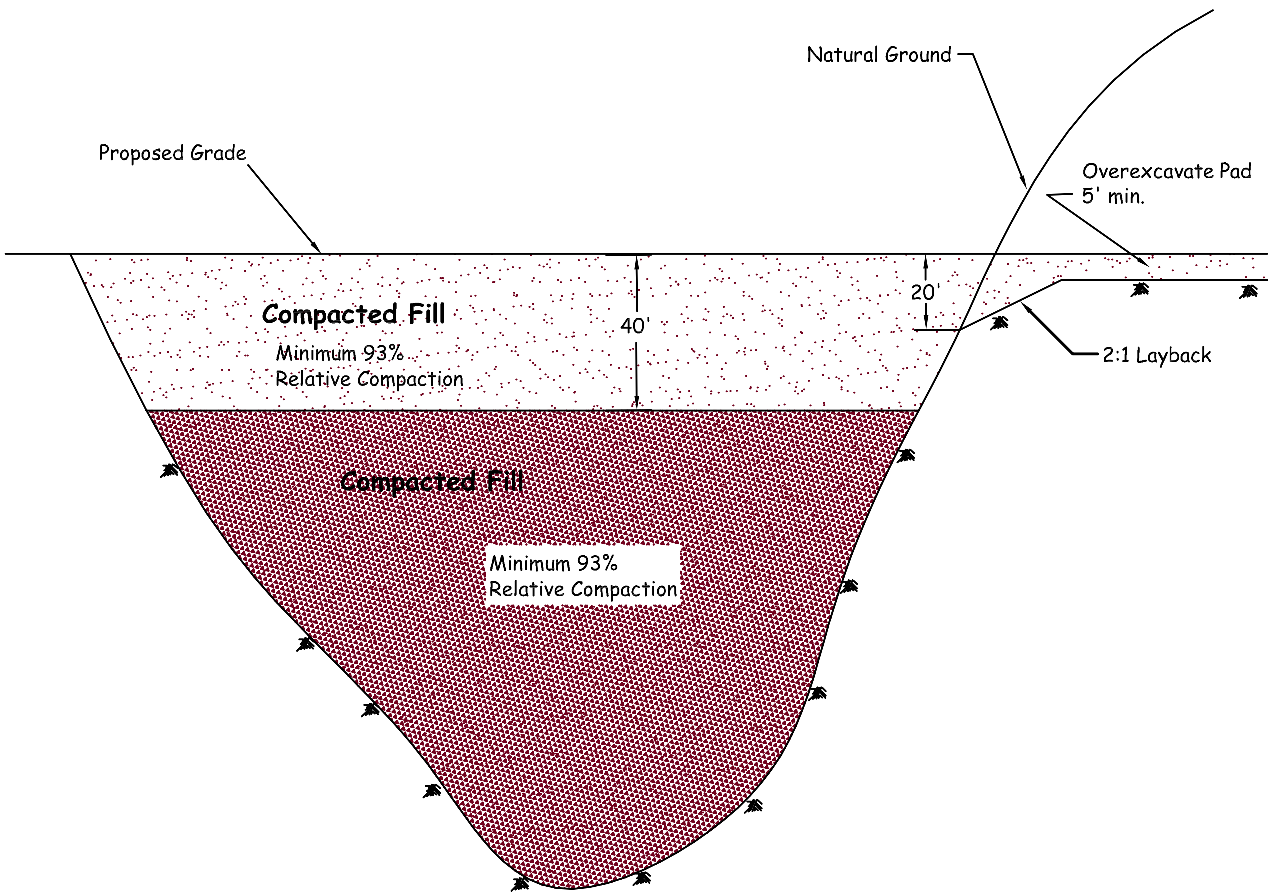
TYPICAL STABILIZATION FILL DETAIL

11/26/02



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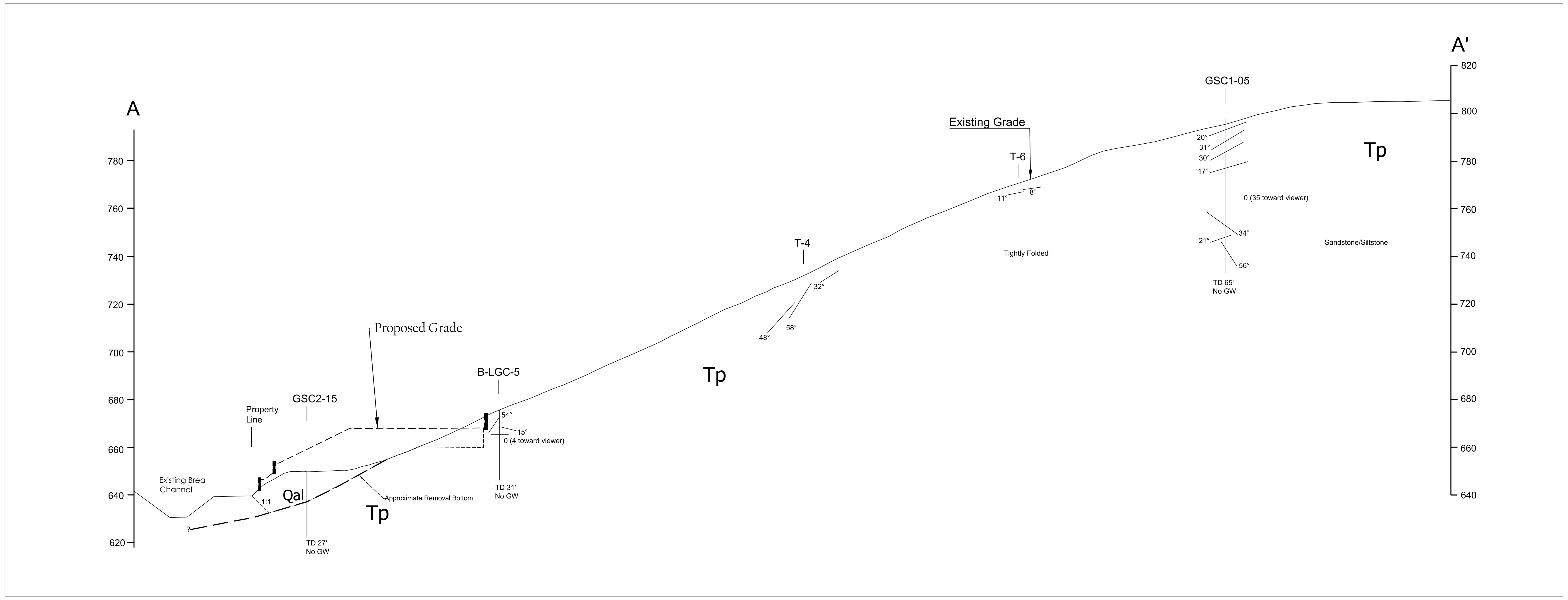
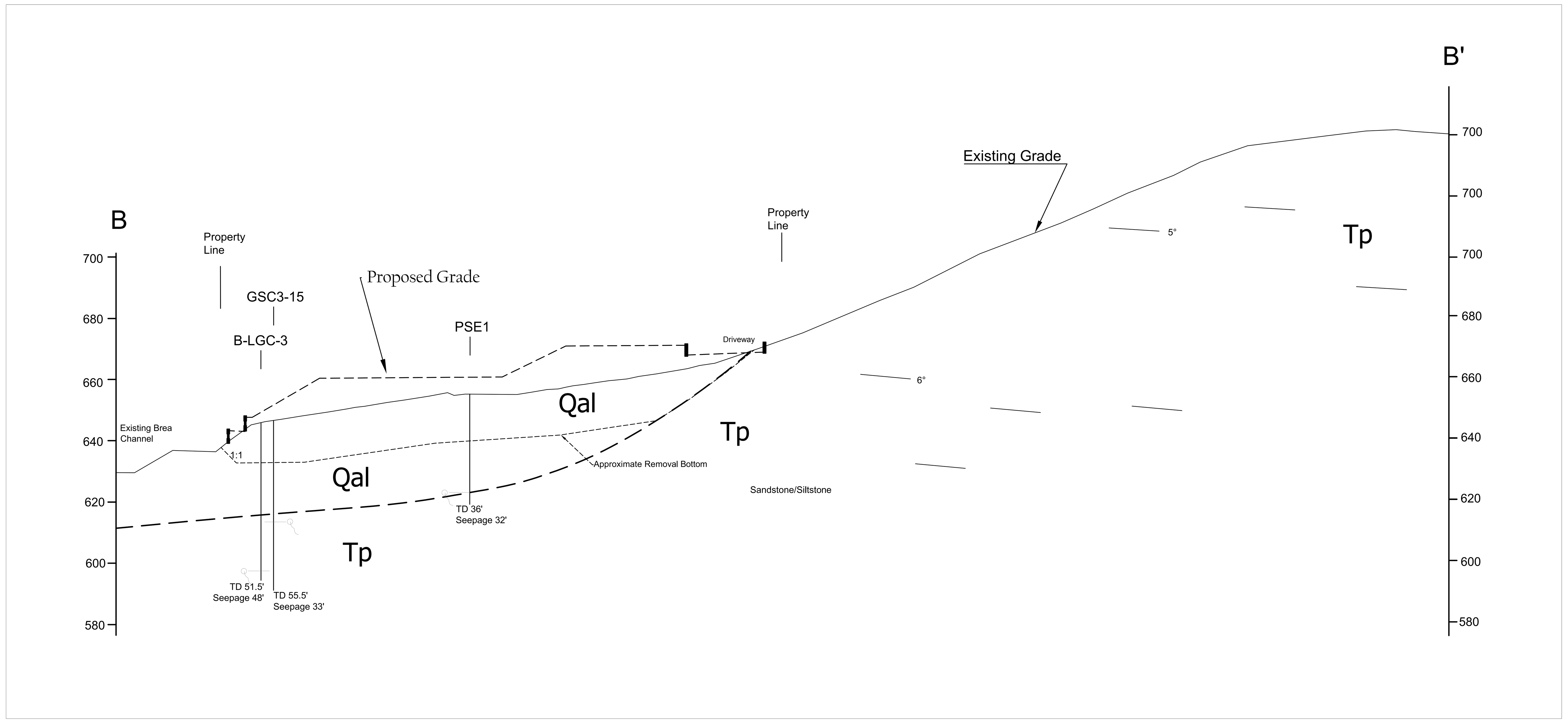
DETAIL FOR DEEP FILLS AND 2:1 LAYBACK OF STEEP NATIVE SLOPE AT PAD GRADE TRANSITION

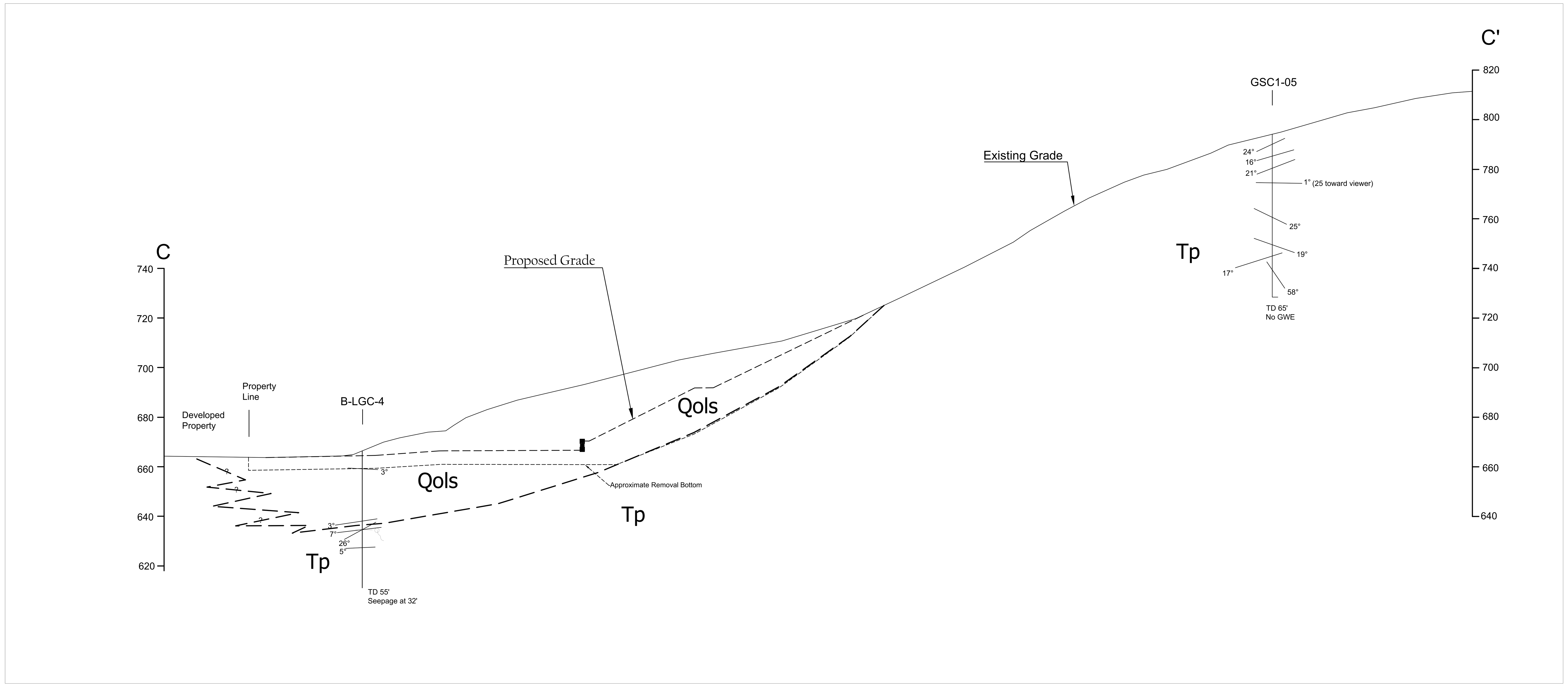

SECTION A-A
SECTION D-D
SECTION C-C
SECTION B-B
SECTION E-E
EXISTING GRADE
JOIN EXISTING
RETAINING WALL VARIES FROM 2'-16' EXPOSED HEIGHT
EXISTING BREA CANYON CHANNEL
PILE RETAINING WALLS VARIES FROM 0'-6' EXPOSED HEIGHT
V-DITCH
BREA CANYON CHANNEL
CASTLE ROCK ROAD
CROOKED CREEK DRIVE (PRIVATE)
2:1 SLOPE
POOL
Qal
Qols
Tp
A
B
C
D
D'
E'
F
GSC3-07
GSC5-11
PSE2
GSC1-15
GSC2-15
GSC3-15
GSC4-11
PSE1
GSC1-05
GSC1-07
GSC3-11
B-LGC-1
B-LGC-2
B-LGC-3
B-LGC-4
B-LGC-5
T-1
T-2
T-3
T-4
T-5
T-6
T-7
T-8
T-9
TD55' Seepage 28-30'
TD31' No GWE
Michael Baker INTERNATIONAL
3536 CONCOURS ST., SUITE 100 ONTARIO, CA 91764 PHONE: (909) 974-4900 MBAKERINTL.COM
CITY OF DIAMOND BAR
CROOKED CREEK
PRELIMINARY GRADING EXHIBIT

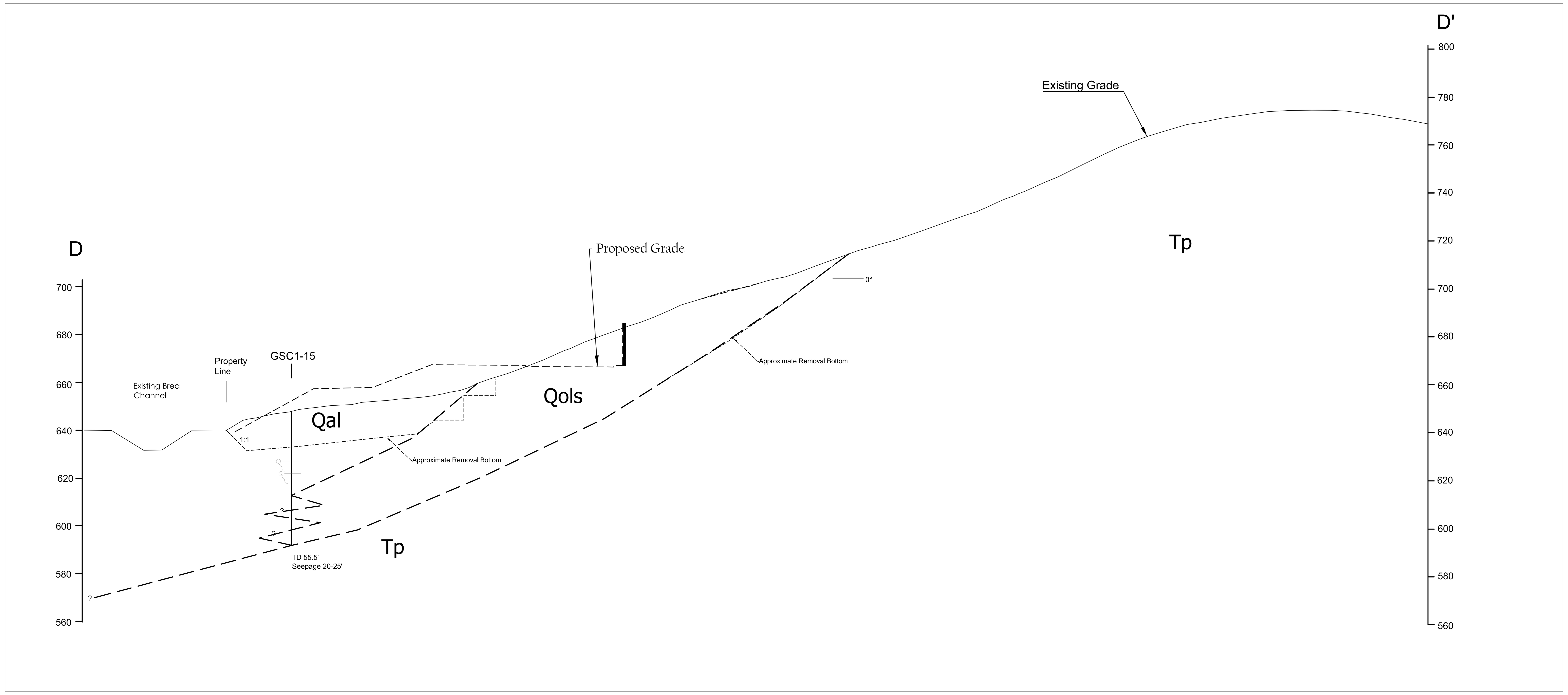




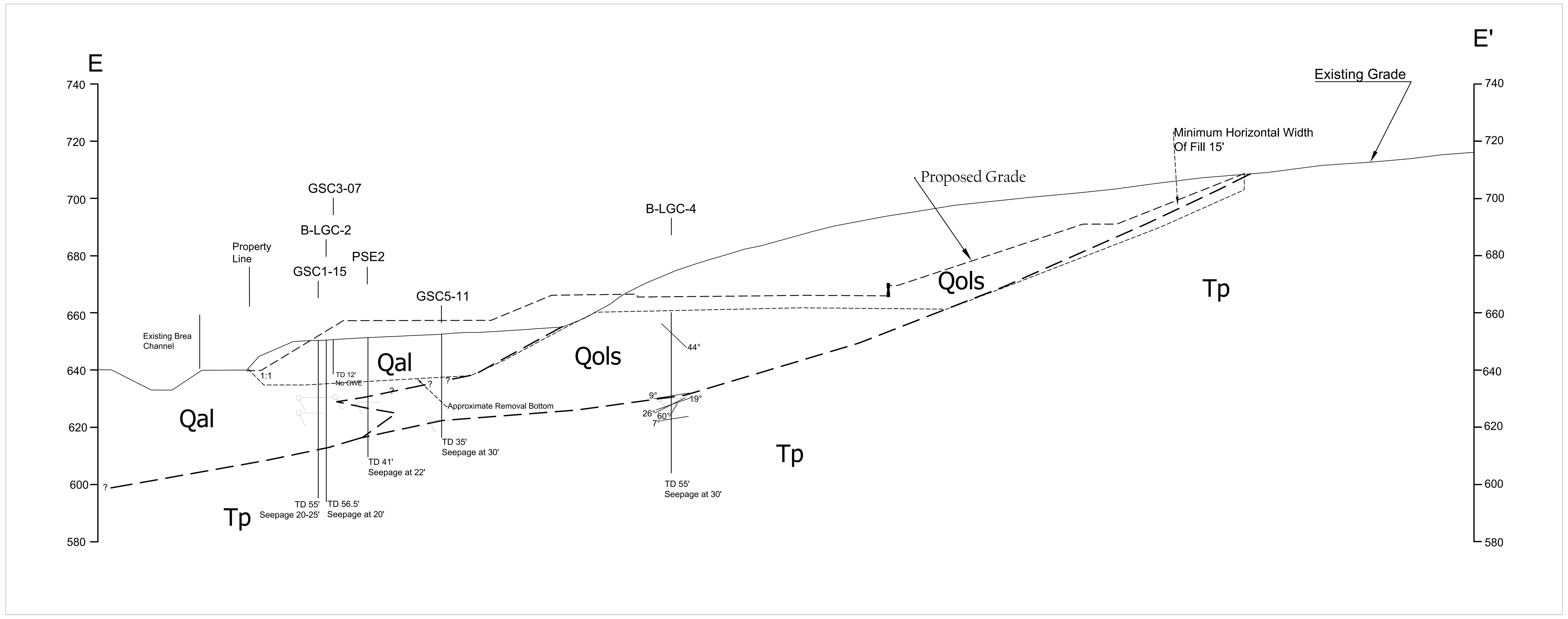
LGC	**LGC Valley, Inc.** 28532 Constellation Road Valencia, CA 91355 TEL. (661) 702-8474 FAX (661) 702-8475	***Geologic Cross Section A-A' and B-B'***	*CLIENT:* Newbridge Homes	*CIVIL ENGINEER:* Michael Baker International	*PROJECT NAME*	*Diamond Bar*
					PROJECT NO.	*203008-01*
					ENG. / GEOL.	*BIH /SMB/ NLK*
					SCALE	*1"=20'*
					DATE	*August 2020*

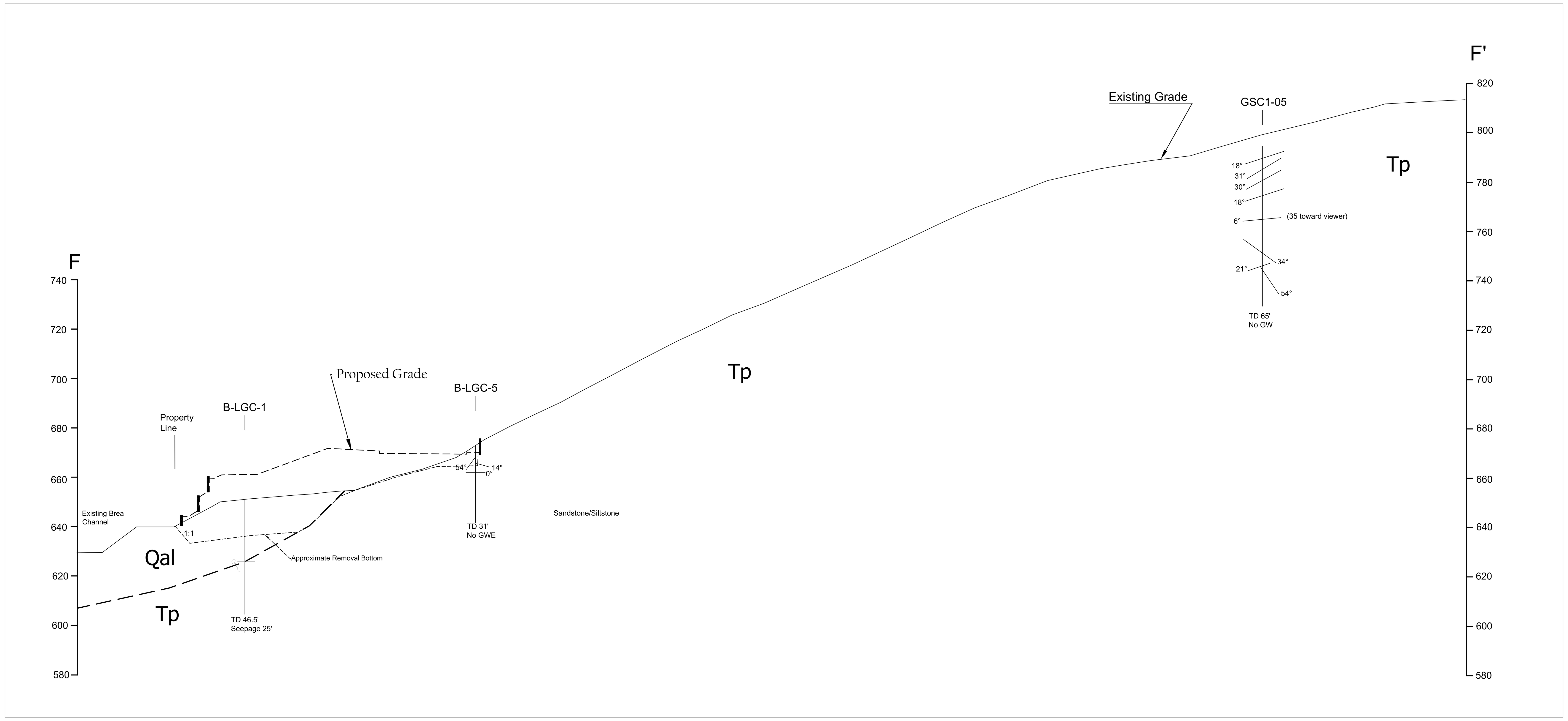
PLATE 2A





LGC	**LGC Valley, Inc.** 28532 Constellation Road Valencia, CA 91355 TEL. (661) 702-8474 FAX (661) 702-8475	***Geologic Cross Section C-C' and D-D'***	CLIENT: Newbridge Homes	CIVIL ENGINEER: Michael Baker International	PROJECT NAME: *Diamond Bar* PROJECT NO.: *203008-01* ENG. / GEOL.: *BIH / SMB/ NLK* SCALE: *1"=20'* DATE: *August 2020* ***PLATE 2B***





LGC
LGC Valley, Inc.
28532 Constellation Road
Valencia, CA 91355
TEL. (661) 702-8474 FAX (661) 702-8475

Geologic Cross Section E-E' and F-F'

CLIENT:
Newbridge Homes

CIVIL ENGINEER:
Michael Baker International

PROJECT NAME	Diamond Bar
PROJECT NO.	203008-01
ENG. / GEOL.	BIH / SMB/ NLK
SCALE	1"=20'
DATE	August 2020

PLATE 2C