Appendix H

Additional Geotechnical Studies

GEOTECHNICAL 3rd PARTY REVIEW OF DEVELOPMENT ALTERNATIVES PROPOSED WEST VILLAGE PROJECT TENTATIVE TRACT 71546 CITY OF CALABASAS, LOS ANGELES COUNTY, CALIFORNIA

Prepared for:

The New Home Company

85 Enterprise, Suite 450
Aliso Viejo, California 92656

Project No. 12558.001

March 5, 2020

(Revised March 31, 2020)

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

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The New Home Company
85 Enterprise, Suite 450
Aliso Viejo, California 92656

Attention: Mr. Matthew Blain, Project Manager

Subject: Geotechnical 3rd Party Review of Development Alternatives
Proposed West Village Project, Tentative Tract 71546
City of Calabasas, Los Angeles County, California

Leighton and Associates, Inc. (Leighton) is pleased to present our review of the subject site in its current condition absent of future development as well as evaluation some of the development alternatives under consideration for the subject site. The development currently proposed consists of fifteen (15) low-rise multi-family residential buildings and a small commercial center. Development of the site includes extensive remedial grading to mitigate the landslide.

Development of the subject site is significantly affected by the presence of a mapped landslide and the effect this landslide will have on future development. The landslide has failed previously at different times along rupture surfaces at different depths and locations where a portion or the entirety of the landslide mass has moved downhill. Mitigation of the landslide is necessary to stabilize the slope grossly and surficially so that the landslide does not impact development on the site and the potential for offsite impacts to Las Virgenes Road and developed areas to the west of said road along with The Colony residential development to the south.

The development alternatives under consideration of the proposed site have been presented in an Environmental Impact Report (EIR) prepared by the City of Calabasas. Alternatives 2 and 3 include stabilization of the hillside utilizing conventional grading methods and have been addressed in the referenced geotechnical reports for the site.

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The alternatives evaluated in this report do not involve substantial grading to stabilize the hillside and are summarized as follows:

- Alternative 1 – No project; the site remains idle
- Alternative 4 – Modified Landslide Mitigation/Reduced Footprint

Alternative 1 essentially proposes to leave the site in its current state. Without mitigation a number of different conditions could arise singularly or in combination including but not limited to saturation of landslide soils, development of groundwater pore pressure within the landslide, erosion, or seismic events that would cause the landslide to reactivate, and/or surficial failures could occur. If either event happened, the potential exists to obstruct drainage from the site and cause flooding and/or mud flow conditions within detention basins, roadways to the existing development, and across Las Virgenes Road.

In contrast to the currently proposed development, no remedial grading of the landslide is associated with Alternative 4. In this scenario, the area of development is reduced in size and shifted away from the landslide to provide a non-developed region to serve as a buffer zone should slope instability occur in the future.

Alternative 4 as currently contemplated includes no remedial grading of the landslide. Slope stability analysis indicates the slide mass in its current configuration is unstable in the long-term should groundwater pore pressures increase or if subjected to strong ground shaking as may occur during an earthquake occurring on any of a number of faults that exist in the region. Therefore, Alternative 4 presents a significant risk of damage to property and occupants that would comprise the development from the results of gross or surficial slope failure associated with this alternative should landslide stabilization measures not be implemented. The sole use of a buffer zone to improve safety is not considered to be prudent due to difficulty in predicting the extent of affected area should the landslide mobilize in the future and is not recommended.

Other mitigation methods were evaluated for stabilization of the landslide without remedial grading. An array of drilled caisson shafts made of concrete and steel in multiple rows embedded deeply in the underlying bedrock over the area of the landslide could improve long term gross and seismic stability. However, an array of drilled shafts would not mitigate surficial instability concerns (surficial failures, mudflows, erosion), only a remedial grading alternative could result in stable surficial stability of the landslide area. Construction of diversion walls and detention basins and other flood control improvements could mitigate surficial instability issues but these mitigation methods should be designed to accommodate the total surficially unstable soil volume from the

ascending slope and would also require committed, diligent and ongoing cleanout, maintenance and repair of the facilities as well as repair of the slope areas above and around the development. Additionally, without removal of compressible landslide and existing fill material under the building pad area, all buildings and other structures within the landslide area associated with Alternate 4 would have to be founded on deep caissons bearing on the bedrock underlying the landslide to mitigate settlement. Other development within the landslide area such as concrete flatwork, swimming pools, parking areas, etc. would also have to be designed to mitigate settlement and other adverse conditions or be subject to ongoing repair and maintenance as a result of leaving compressible landslide material in-place beneath the site development

One other alterative (Alternative 5) has been contemplated since preparation of the prior circulated EIR. In this development concept, a number of multi-family low-rise buildings and a small commercial center are planned in conjunction with remedial grading of the adjacent slope to mitigate the landslide. With proper design and construction of the remedial grading, Alternative 5 is considered to be feasible with regard to slope stabilization and other geotechnical aspects of the site.

We appreciate the opportunity to be of continued service on this project. Should you have any questions, please contact the undersigned at 949-250-1421.

Respectfully submitted,

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GEOTECHNICAL 3RD PARTY REVIEW OF DEVELOPMENT ALTERNATIVES
PROPOSED WEST VILLAGE PROJECT
TENTATIVE TRACT 71546
CALABASAS, LOS ANGELES COUNTY, CALIFORNIA

PROJECT DESCRIPTION

The project site consists of a vacant parcel located east of the terminus of Agoura Road where it intersects Las Virgenes Road in the City of Calabasas, California. Figure 1 depicts the current topography of the site along with geologic interpretation of the earth units identified within the site boundaries.

The prominent characteristic of the site is the presence of a large, mapped landslide that underlies the slope that ascends to the southeast. The toe of this slope generally coincides with a naturally occurring drainage course that gradually widens as it approaches the western boundary of the site. Within the mapped limits of the landslide, the slope rises on the order of 260 to 380 feet in elevation, and continues to higher elevation beyond the slide limits resulting in an overall height of approximately 500 to 600 feet.

The history of the site has been described in the referenced reports prepared by GeoLabs Westlake Village (GWV) and RJR Engineering. Geology of the site was investigated and analyzed extensively during the previous studies at the site. The geologic conditions of the site are discussed in the referenced reports. Based upon the level of review and scrutiny of the geologic conditions and engineering parameters that have been performed in conjunction with prior development concepts, the geologic conditions and parameters are considered to be established.

The development planned for the site has remained primarily residential in nature but has undergone several revisions. Based upon review of the referenced reports, development originally planned for the site consisted of a mixed-use residential and commercial development. The grading scheme for that originally proposed project included the removal of a significant portion of the landslide (GWV 2011) where the proposed building and improvement areas extended into the landslide area and where necessary to develop an earthen fill buttress for stability.

The original (2011) development was subsequently reduced in size to its currently planned layout as depicted in Figure 2 (and Plate 1 of the GWV geotechnical report, 2017). The currently proposed development (“Proposed Development”) shown in Figure

2 was reduced in size to lessen the effect of remedial grading on trees that naturally occur up slope from the development area. The current development includes fifteen multi-family homes to be distributed on three graded pads situated in a terraced configuration to conform to general site topography and one pad for construction of a commercial development. The terraced pads will be located between the proposed entry road to the west side and the ascending hillside and remnant landslide to the east. The graded pad for the commercial development will be located to the west of the access road.

In the interim between developing plans for the original (2011) project layout (in which a significant portion of the proposed development was planned to extend upslope into the landslide area and required substantial remedial grading to mitigate landslide potential) and the currently proposed (2017) project (Figure 2), the City of Calabasas commissioned the preparation of an Environmental Impact Report (EIR). Alternate development schemes that did not include remedial grading to mitigate the landslide were presented in the EIR (City and Rincon, 2019) as follows:

- Alternative 1 – No project; the site remains idle (Figure 1)
- Alternative 4 – Modified Landslide Mitigation/Reduced Footprint (Figure 3)

Alternatives 2 and 3 presented different site development concepts but included remedial grading of the landslide to stabilize the slope above the development areas associated with each. An additional alternate has been recently developed ("Alternative 5"; February 11, 2020) in which the development will be primarily residential in nature but will also include a commercial/retail component in the area along Las Virgenes Road north of the extension to Agoura Road that provides access to the development. A total of twenty-two (22) multi-family buildings are planned for Alternative 5 distributed throughout the development as well as public open space near the entry to the community. The development concept and proposed grading for Alternate 5 are shown in Plate 1.

SCOPE OF WORK

The primary purpose of our review was to perform geotechnical evaluations and provide conclusions with respect to the following:

- Stability of the landslide absent of any future development on the subject site;
- The geotechnical feasibility of the Proposed Project;
- The geotechnical feasibility of Alternative 4; and,
- The geotechnical feasibility of the newly developed Alternative 5.

The basis of our opinions and conclusions was review of analysis and evaluation conducted by GWV and independent analysis of select cross-sections based upon geotechnical design parameters developed by others.

The scope of work addressed in this report is summarized as follows:

- Evaluate the likelihood of failure of the existing landslide with the absence of any development of the site.
- Provide opinions on GWV's findings of the current development plan (GWV 2017) and their finding that this development scheme was viable based on geotechnical considerations.
- Provide an opinion regarding the finding of GWV that development of the site presented as Alternative 4 in the EIR report (GWV 2019a and 2019b) was not feasible with respect to mitigating the landslide and other geological hazards at the site.
- Evaluate the feasibility of Alternative 5 as a viable alternative for the site.

The primary factor that will influence feasibility of development with regard to geologic conditions is the presence of the landslide and the measures implemented to mitigate adverse effects to the development alternatives presented in the various scenarios. Evaluation of slope stability required analysis of select cross-sections that have been developed by others.

Slope stability analyses subsequently discussed have been based upon the input soil parameters (i.e., in-place density, shear strength, pore pressures, etc.) that have been scrutinized by prior reviews and were not subject to further review or revision as part of this scope of work. No field exploration was performed as part of this evaluation at this time. The typical slope stability criteria consist of a minimum calculated factor of safety of 1.5 for static, long-term conditions; and a minimum of 1.1 for short-term transient conditions associated earthquake ground shaking. Analysis under earthquake conditions is performed using an equivalent static procedure (i.e., "pseudostatic") in which the weight of the slide mass is increased by a factor (k_h) to represent the effect of seismic shaking. The value of k_h that results in a factor of safety of 1.0 is identified as the "yield acceleration" (k_y). Similar to the static analysis in which FS is 1.0, the k_y represents the equivalent shaking intensity at which instability and slope displacement is likely.

DISCUSSION OF FINDINGS

A. Alternative 1 – No Project

As described in the EIR, Alternative 1 consists of no development of the site. The site will remain idle and in its current condition as shown in Figure 1. As such, no mitigation will be performed to improve the stability of the mapped and documented landslide.

Evaluation of Alternative 1 included independent analysis of landslide stability based upon geotechnical cross-sections and relevant engineering parameters presented in the GWV report (2017). Slope stability analysis was conducted along Section 3-3' (Plate 3) and Section 4-4' (Plate 4) as developed by GWV. Analysis of these sections was considered to be representative of the slide mass to provide a preliminary assessment of the stability of the landslide mass as they represent the overall size and depth of the landslide. For purposes of this analysis, Section 2-2' and Section 5-5' were not analyzed as they represent lateral edge conditions of the landslide and would only be needed to detail specific, local mitigation design recommendations in that area of the landslide. Analysis indicated the calculated factor of safety was less than 1.5. Analysis under pseudostatic conditions indicated calculated factors of safety less than 1.1 corresponding to a coefficient of horizontal acceleration of 0.15. Analysis of yield acceleration indicated values of 0.09 at Section 3-3' and 0.06 at Section 4-4'. Based on the size/depth of the slide mass, displacement of the slide mass triggered by strong ground shaking is estimated to be on the order of several feet in a generally northwest (downslope) direction toward Las Virgenes Road and the adjacent residential development.

Analyses described above were based upon drained conditions, i.e., no groundwater accumulation and no pore pressure head acting upon the rupture surface of the landslide. The stability of the slide will be decreased should water levels and pore pressure head develop in the slide mass. Preliminary analysis indicated pore pressure head of 45 to 65 feet acting upon the slide plane at Section 3-3' and pressure heads of 30 to 40 feet at Section 4-4' result in a calculated factor of safety of 1.0. A factor of safety of 1.0 implies the slide mass is at a state of impending failure.

Based upon the analyses described above, Alternative 1 includes risk of mass movement particularly under seismic loading conditions or wet weather conditions. In view of the lack of new construction at the site, the effect of movement includes the potential for impacts even without development of the subject site. Slide movement is likely to alter the natural drainage pattern and possibly block the channel that

traverses the site. Additionally, in periods of heavy rain, surficial instability of near surface soils could result in mudflows that could potentially flow towards drainages affecting nearby detention basins and developed areas. The net result of block drainages or development areas including detention basins is adverse flooding impacting properties and roads (e.g., Las Virgenes Road) down-gradient from the slope failures.

B. Alternative 4

The development scheme that comprises Alternative 4 is shown in Figure 3 and includes reduction in both the number of buildings and scale of the developed area in plan view. The reduced size of the development area allows the buildings and new improvements to be shifted farther from the existing slope and landslide. This alternative includes no remedial grading or other means such as buttressing e.g., remedial grading to remove the slide mass or installation of structural elements to provide resistance to movement) to mitigate the potential for reactivation of the landslide mass. Instead, the additional clearance between developed area and slide mass will be used as a "buffer zone" to accommodate mass movements that may occur.

Slope stability considerations presented in conjunction with Alternative 1 ("No Project") also apply to Alternative 4. However, due to the proximity of residential development associated with this development alternative, should the slide remobilize, large-scale mass movement of the slide mass is expected to result in damage to structures, infrastructure and may also threaten the safety of occupants in proximity to the slide. Prediction of the size, location and extent the failed slope area and of a potentially impacted area downslope of the failed slope are difficult due to significant uncertainties in evaluating the potential slide location and runout. However, case history such as the La Conchita landslide provides guidance on the consequences of such slope instability. The following photographs depict the aftermath of the slide that occurred on January 10, 2005. The upper photograph is the view of the slide mass and the headscarp; the lower photograph is a view from near the top of the slide that illustrates the extent to which the slide engulfed the adjacent residential development.

Photographs of the landslide mass of the La Conchita landslide (Courtesy USGS).

The frequency, extent and potential effect to the proposed development attributed to surficial sloughing is difficult to predict. However, the potential for such occurrences is significant considering the relatively young age of the landslide, the disturbed nature of the slide mass, the likely presence of fissures that will allow accumulation of water, the existence of eroded drainage areas within the slide mass, and the variance in competency of the slide mass. The long term consequences could vary from regular maintenance/cleanup of surficial material that slides on to the developed property, to maintenance and repair of failed areas on the slope, to a potential surficial failure that could be large enough to threaten property damage and/or injury or death to living beings caught in a mudflow.

Reactivation of the slide mass is likely to result in blockage of the naturally occurring drainage course that traverses the parcel. Diversion of natural water flows could adversely affect the proposed development in the form of flooding and erosion. Although a buffer zone is intended to be part of this development alternative, the nature of landslides is such that predicting the limits of future movement and more significantly, the magnitude of landslide runout combined with other factors such as flooding and erosion (and thereby determine the size of a buffer zone) are difficult to predict. Consequently, the lack of landslide mitigation poses a significant risk of loss of life or injury and property damage. Due to these risks and uncertainty in predicting landslide behavior, development as described by Alternative 4 is not recommended without any measures to reduce the potential for slope instability.

Slope stability analysis presented herein for Cross-Sections 3-3’ and 4-4’ (Appendix A) were performed to develop a preliminary design concept to stabilize the slope and mitigate the potential for a catastrophic event due to increase in pore pressures due to groundwater buildup and/or seismic conditions. Cross-sections 3-3’ and 4-4’ were selected for analysis to provide a preliminary assessment of the load demand imposed upon a drilled shaft buttress system since these sections were located in the central region of the slide where the depth to the slide mass and the load demand are greatest. The analyses indicate multiple rows of drilled shafts (see Plate 2) extending up the slope well beyond the limits of development will be necessary to develop a mechanical buttress system and achieve the minimum required factors of safety for gross stability and seismic stability of the site. This method of mitigation will not prevent surficial failures from occurring and impacting the site. The load demand combined with the number of reinforcing elements that will be necessary is expected to reduce the feasibility of this alternative. Although we cannot estimate the cost of such a design, our experience suggests this type of design would likely be deemed not financially viable and is not free of risk from surficial instability.

A slope remediation concept was based upon preliminary evaluation at geotechnical Cross-Sections 3-3' and 4-4' (developed by Geolabs Westlake Village [GWV]) that did not involve remedial grading of the landslide as part of the stabilization concept. The analyses identified the relative locations of a series of drilled shafts to achieve the required minimum calculated factors of safety of 1.5 under static conditions and 1.1 under pseudostatic conditions (based upon a coefficient of horizontal acceleration [k_h] of 0.15). The size (diameter and length), spacing, and steel reinforcing and concrete requirements for the drilled shafts would need to be determined by a structural engineer. Based on prior experience, drilled shafts used for this purpose may be 5 to 6 feet in diameter (or larger) located at 10- to 12-foot on-center spacings.

A preliminary design concept of a drilled shaft mechanical buttress system is shown in Plate 2. In this scenario, no remedial earthwork grading is performed, exclusive of the earthwork required to establish access to the alignments of the drilled shafts. This earthwork is expected to include at least one central access roadway to the slope that connects the secondary access roadways, each located along the rows of the drilled shaft alignments. These access roads are anticipated to be on the order of 15 to 20 feet wide and will require temporary backcuts into the slope to develop level areas for vehicle travel and to serve as a working platform for drilled shaft construction (i.e., borehole drilling, setting of steel rebar cages, and concrete placement). In addition to the grading required for access, the size and number of the drilled shafts will generate substantial quantities of drill spoils that will require disposal, either by removal from the site transported by large dump trucks and/or placement on site.

Figures 4 and 5 (and Plates 5 and 6) are based upon the geologic Cross-Sections 3-3' and 4-4'. As discussed previously for Alternative 1, these sections were selected for analysis since they represent the greatest depths to the slide plane and, as a result, the greatest load demand on the buttress system. These figures and plates show the locations in which drilled shafts will be required to achieve the desired calculated factors of safety. The approximate limits of temporary cuts (i.e., benching and backcuts) to facilitate construction of the drilled shaft buttress system are shown based upon the preliminary design developed for these cross-sections. These figures are intended to provide a conceptual view of the temporary earthwork that is likely to be necessary for drilled shaft construction.

Upon completion of the drilled shaft installation, excavations created to allow access of construction equipment may be backfilled and continuity restored to the slope face. In time, vegetation is expected to be reestablished and will eventually cover the slope face.

The geotechnical design concept for landslide remediation associated with Alternative 4 consists solely of the installation of rows of drilled shafts at prescribed intervals along the slope as determined by slope stability analysis. Due to the presence of existing non-engineered fill and compressible landslide soils not considered to be suitable for foundation support, all buildings within the landslide area and underlain by existing uncontrolled fill associated with this development alternative will require the use of a deep foundation system (i.e., drilled shafts) extended to bear within the geologic formation bedrock that underlies the landslide at the site if remedial grading (i.e., overexcavation and recompaction of the non-engineered fill and compressible landslide soils) is not performed.

C. Alternative 5

The development concept and associated site grading for Alterative 5 is shown Plate 1. The grading depicted on the preliminary grading plan for this alternate appears to be essentially the same as the grading planned for the "Proposed Project". Discussion present above in conjunction with this other development scenarios (except Alternative 4) is considered to be generally applicable to Alternative 5. Therefore, the proposed Alternative 5 is expected to be a feasible development concept with regard to geotechnical considerations provided site grading include remedial earthwork activities to properly buttress the landslide and improve stability.

LIMITATIONS

Our professional services were performed in accordance with the prevailing standard of professional care as practiced by other geotechnical engineers in the area. We make no other warranty either express or implied. The report may not be used by others or for other projects without the written consent of our client and our firm.

Attachments

References

Figure 1 – Existing Site Topography and Mapped Geologic Earth Units
Figure 2 – Site Plan – Proposed Development
Figure 3 – Alternative 4
Figure 4 – Section 3 - 3’ – Preliminary Concept – Drilled Shaft Buttress System
Figure 5 – Section 4 - 4’ – Preliminary Concept – Drilled Shaft Buttress System

Plate 1 – Geotechnical Map – Alternative 5
Plate 2 – Geotechnical Map and Preliminary Drilled Shaft Buttress Locations
Plate 3 – Geotechnical Cross-Section 3 - 3’
Plate 4 – Geotechnical Cross-Section 4 - 4’
Plate 5 – Preliminary Design Concept Drilled Shaft Buttress System Cross-Section 3-3’
Plate 6 – Preliminary Design Concept Drilled Shaft Buttress System Cross-Section 4-4’

Appendix A – Slope Stability Analysis

REFERENCES

Bassenian Lagoni Architecture, 2019, Conceptual Site Plan: Alternative 5, West Village Calabasas, 752.19207, September 23, 2019.

City of Calabasas and Rincon Consultants, Inc., 2019, Final Environmental Impact Report, West Village at Calabasas Project, June 2019.

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Jobson, Randall W., 2005, Landslide Hazards at La Conchita, California, U.S. Geological Survey Open-File Report 2005-1067.

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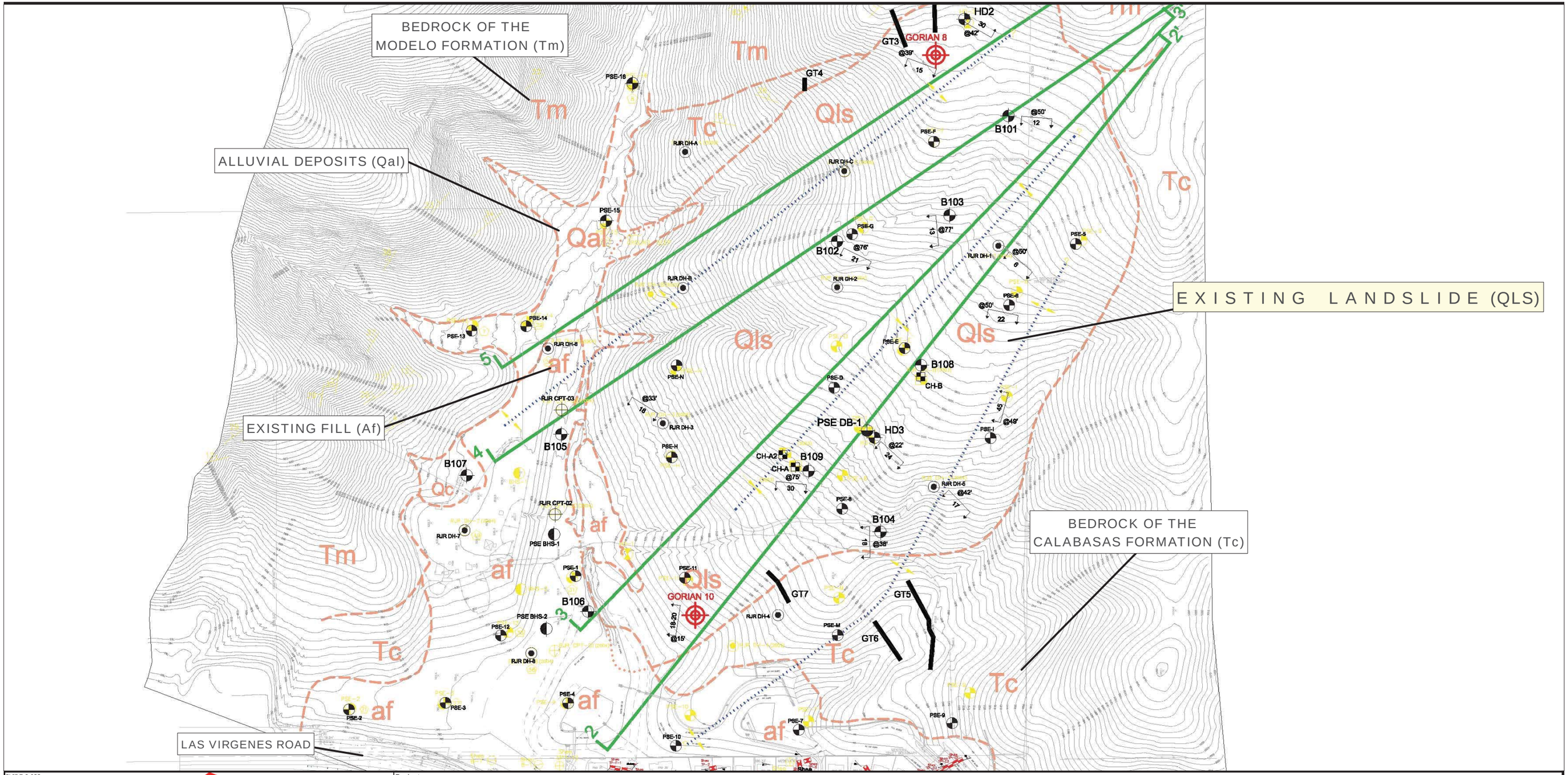
FIGURES

Figure 1

Existing Site Topography and Mapped Geologic Earth Units

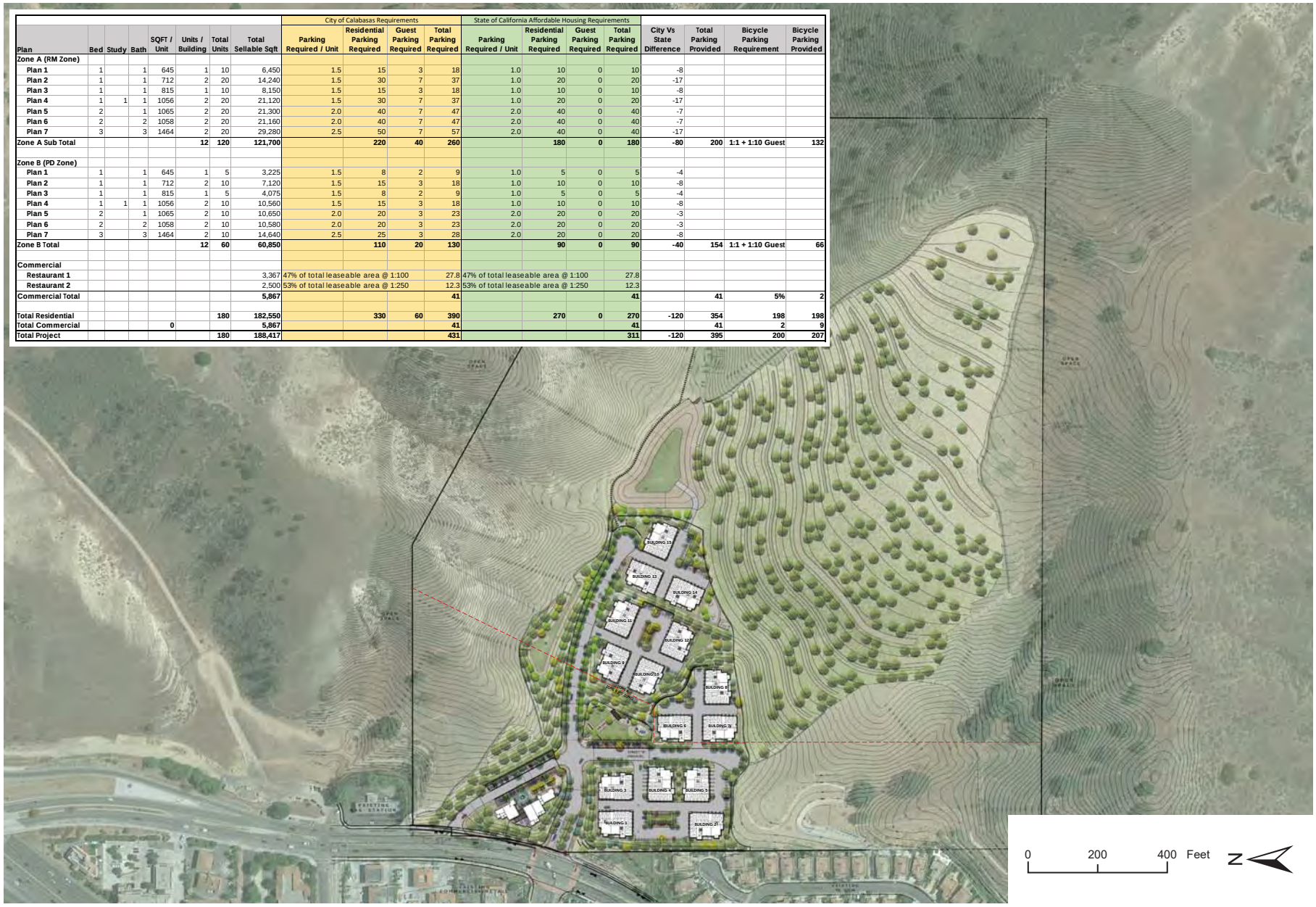
\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\SLIDE - Topography and Geology\Figure 1 - Topography and Geology.slim



SLIDE 8.022	*Project:* Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas, California				
Leighton and Associates, Inc. A LEIGHTON GROUP COMPANY	*Analyzed By:* JEH	*Units:* feet	*Scale:* Not to Scale	*Project No.:* 12558.001	*Analysis Scenario:* Figure 1 - Topography and Geology.slim
	Date: February 19, 2020	*Condition:* Site Plan			

FIGURE 2
Site Plan - Current Development

								City of Calabasas Requirements				State of California Affordable Housing Requirements							
Plan	Bed	Study	Bath	SQFT / Unit	Units / Building	Total Units	Total Sellable Sqft	Parking Required / Unit	Residential Parking Required	Guest Parking Required	Total Parking Required	Parking Required / Unit	Residential Parking Required	Guest Parking Required	Total Parking Required	City Vs State Difference	Total Parking Provided	Bicycle Parking Requirement	Bicycle Parking Provided
Zone A (RM Zone)																			
Plan 1	1		1	645	1	10	6,450	1.5	15	3	18	1.0	10	0	10	-8			
Plan 2	1		1	712	2	20	14,240	1.5	30	7	37	1.0	20	0	20	-17			
Plan 3	1		1	815	1	10	8,150	1.5	15	3	18	1.0	10	0	10	-8			
Plan 4	1	1	1	1056	2	20	21,120	1.5	30	7	37	1.0	20	0	20	-17			
Plan 5	2		1	1065	2	20	21,300	2.0	40	7	47	2.0	40	0	40	-7			
Plan 6	2		2	1058	2	20	21,160	2.0	40	7	47	2.0	40	0	40	-7			
Plan 7	3		3	1464	2	20	29,280	2.5	50	7	57	2.0	40	0	40	-17			
Zone A Sub Total					**12**	**120**	**121,700**		**220**	**40**	**260**		**180**	**0**	**180**	**-80**	**200**	**1:1 + 1:10 Guest**	**132**
Zone B (PD Zone)																			
Plan 1	1		1	645	1	5	3,225	1.5	8	2	9	1.0	5	0	5	-4			
Plan 2	1		1	712	2	10	7,120	1.5	15	3	18	1.0	10	0	10	-8			
Plan 3	1		1	815	1	5	4,075	1.5	8	2	9	1.0	5	0	5	-4			
Plan 4	1	1	1	1056	2	10	10,560	1.5	15	3	18	1.0	10	0	10	-8			
Plan 5	2		1	1065	2	10	10,650	2.0	20	3	23	2.0	20	0	20	-3			
Plan 6	2		2	1058	2	10	10,580	2.0	20	3	23	2.0	20	0	20	-3			
Plan 7	3		3	1464	2	10	14,640	2.5	25	3	28	2.0	20	0	20	-8			
Zone B Total					**12**	**60**	**60,850**		**110**	**20**	**130**		**90**	**0**	**90**	**-40**	**154**	**1:1 + 1:10 Guest**	**66**
Commercial																			
Restaurant 1							3,367	47% of total leaseable area @ 1:100			27.8	47% of total leaseable area @ 1:100			27.8				
Restaurant 2							2,500	53% of total leaseable area @ 1:250			12.3	53% of total leaseable area @ 1:250			12.3				
Commercial Total							**5,867**				**41**				**41**		**41**	**5%**	**2**
Total Residential						**180**	**182,550**		**330**	**60**	**390**		**270**	**0**	**270**	**-120**	**354**	**198**	**198**
Total Commercial				**0**			**5,867**				**41**				**41**		**41**	**2**	**9**
Total Project						**180**	**188,417**				**431**				**311**	**-120**	**395**	**200**	**207**

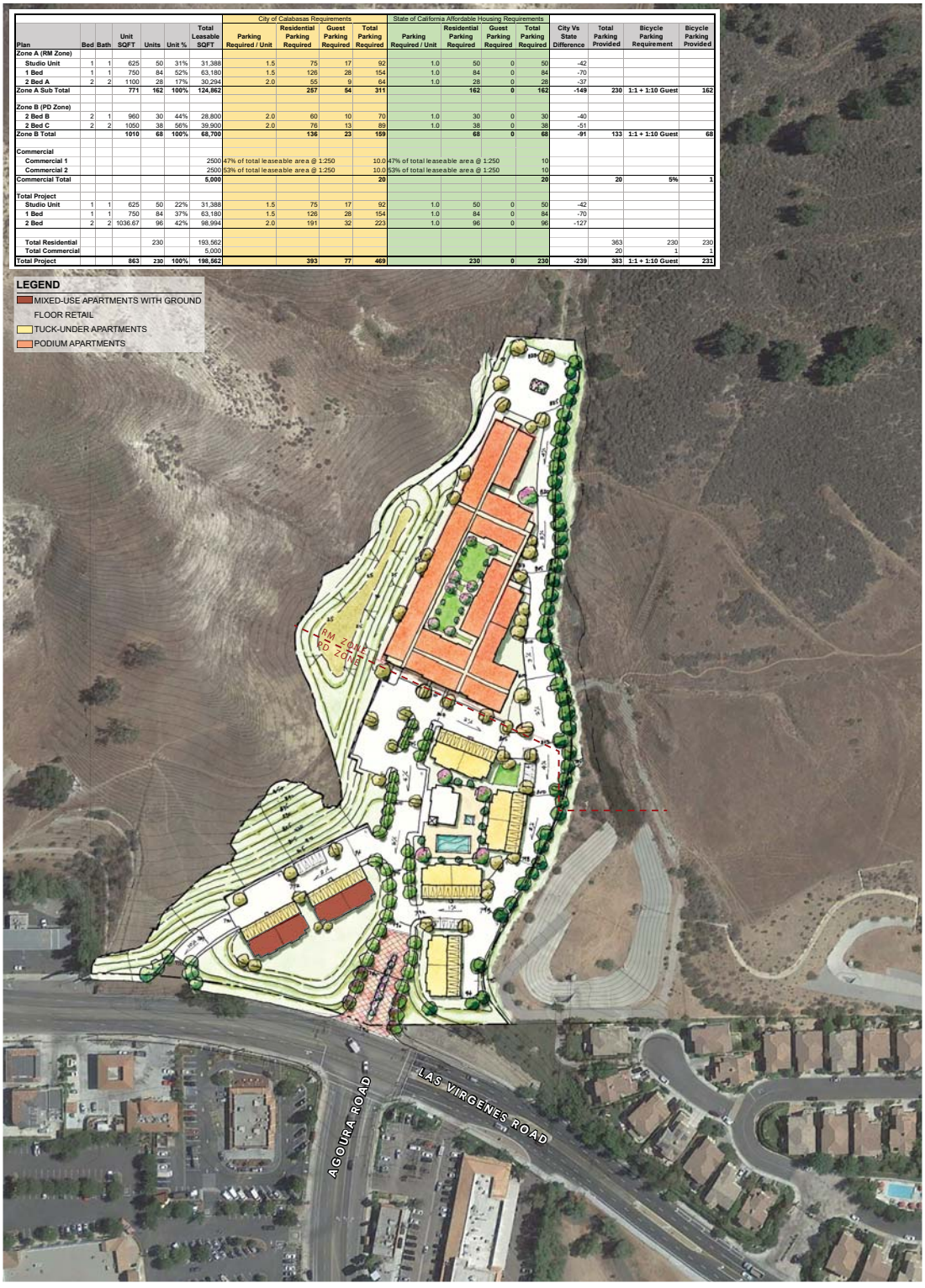


Site Plan

Source: JZMK Partners 2018

Figure 2-5

							City of Calabasas Requirements				State of California Affordable Housing Requirements							
Plan	Bed	Bath	Unit SQFT	Units	Unit %	Total Leasable SQFT	Parking Required / Unit	Residential Parking Required	Guest Parking Required	Total Parking Required	Parking Required / Unit	Residential Parking Required	Guest Parking Required	Total Parking Required	City Vs State Difference	Total Parking Provided	Bicycle Parking Requirement	Bicycle Parking Provided
Zone A (RM Zone)																		
Studio Unit	1	1	625	50	31%	31,388	1.5	75	17	92	1.0	50	0	50	-42			
1 Bed	1	1	750	84	52%	63,180	1.5	126	28	154	1.0	84	0	84	-70			
2 Bed A	2	2	1100	28	17%	30,294	2.0	55	9	64	1.0	28	0	28	-37			
Zone A Sub Total			**771**	**162**	**100%**	**124,862**		**257**	**54**	**311**		**162**	**0**	**162**	**-149**	**230**	**1:1 + 1:10 Guest**	**162**
Zone B (PD Zone)																		
2 Bed B	2	1	960	30	44%	28,800	2.0	60	10	70	1.0	30	0	30	-40			
2 Bed C	2	2	1050	38	56%	39,900	2.0	76	13	89	1.0	38	0	38	-51			
Zone B Total			**1010**	**68**	**100%**	**68,700**		**136**	**23**	**159**		**68**	**0**	**68**	**-91**	**133**	**1:1 + 1:10 Guest**	**68**
Commercial																		
Commercial 1						2500	47% of total leaseable area @ 1:250			10.0	47% of total leaseable area @ 1:250			10				
Commercial 2						2500	53% of total leaseable area @ 1:250			10.0	53% of total leaseable area @ 1:250			10				
Commercial Total						**5,000**				**20**				**20**		**20**	**5%**	**1**
Total Project																		
Studio Unit	1	1	625	50	22%	31,388	1.5	75	17	92	1.0	50	0	50	-42			
1 Bed	1	1	750	84	37%	63,180	1.5	126	28	154	1.0	84	0	84	-70			
2 Bed	2	2	1036.67	96	42%	98,994	2.0	191	32	223	1.0	96	0	96	-127			
Total Residential				230		193,562										363	230	230
Total Commercial						5,000										20	1	1
Total Project			**863**	**230**	**100%**	**198,562**		**393**	**77**	**469**		**230**	**0**	**230**	**-239**	**383**	**1:1 + 1:10 Guest**	**231**



0 120 240 Feet

N

Modified Landslide Mitigation with Reduced Footprint (Alternative 4)

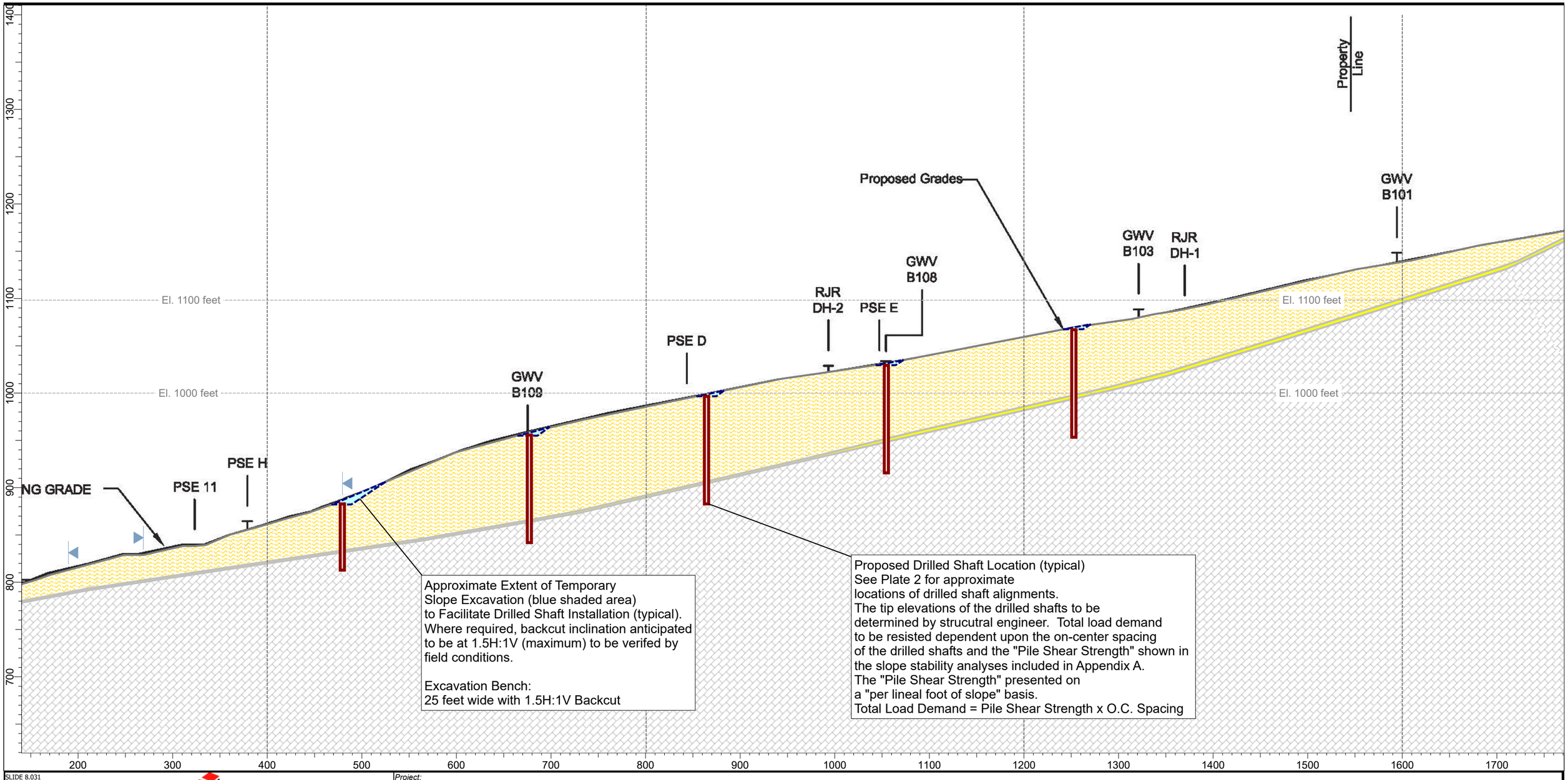
Figure 6-3

Source: JZMK Partners, April 2018

Figure 4 - Section 3 - 3' Preliminary Concept - Drilled Shaft Buttress System - Alternative 4

Temporary Excavation and Grading for Drilled Shaft Construction

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 3\Multi Pier\Sec 3_MP5_Temp Grading Section_Qls_Global 1100.slim



SLIDE 8.031

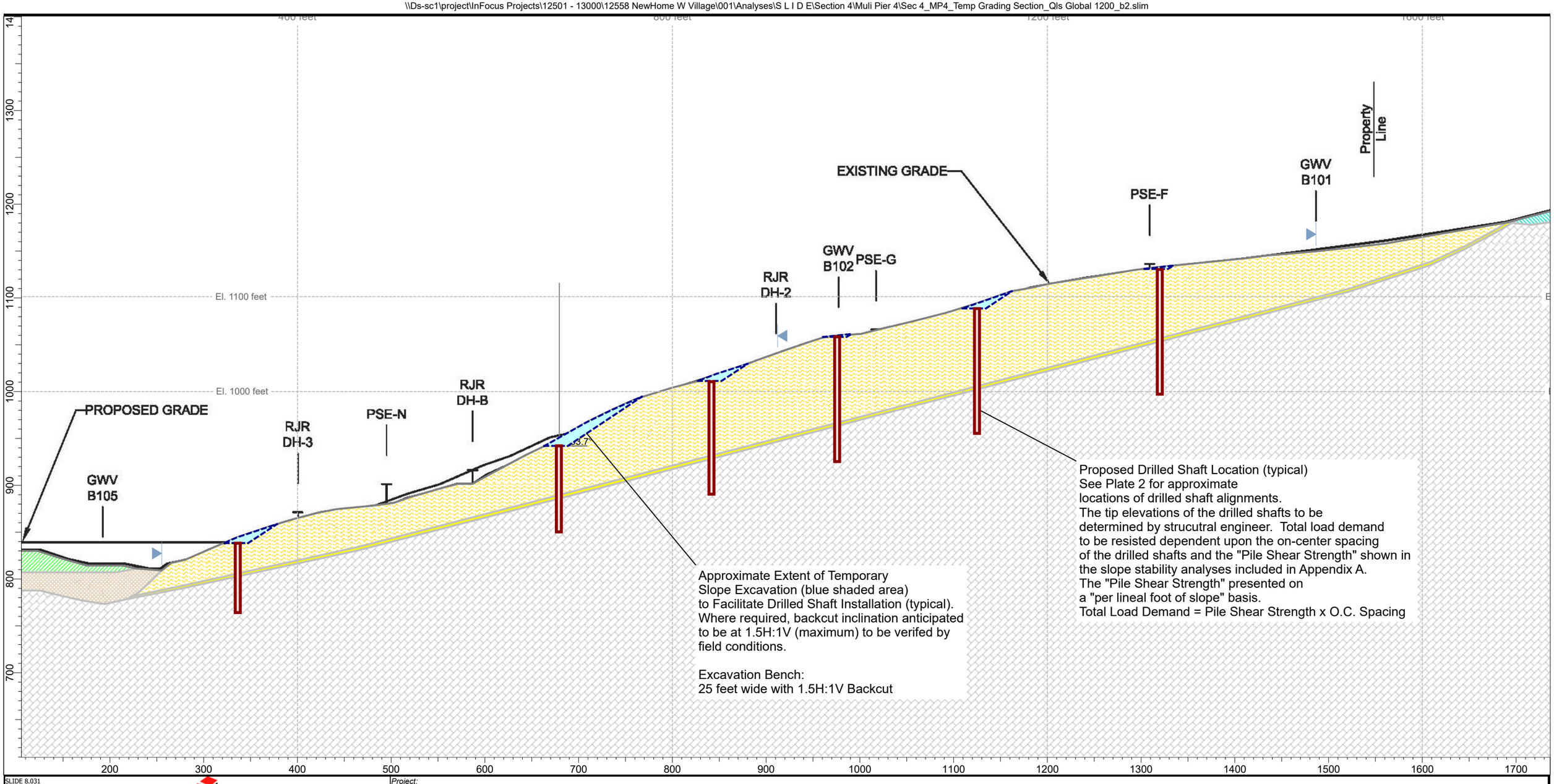
Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**				
Analyzed By: JEH	*Units:* feet	*Scale:* 1:1200	*Project No.:* **12558.001**	*Analysis Scenario:* Sec 3_MP5_Temp Grading Section_Qls_Global 1100.slim
Date: February 27, 2020	*Condition:* **Schematic**			

Figure 5 - Section 4 - 4' Preliminary Concept - Drilled Shaft Buttress System - Alternative 4

Temporary Excavation and Grading for Drilled Shaft Construction

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 4\Muli Pier 4\Sec 4_MP4_Temp Grading Section_Qls Global 1200_b2.slim



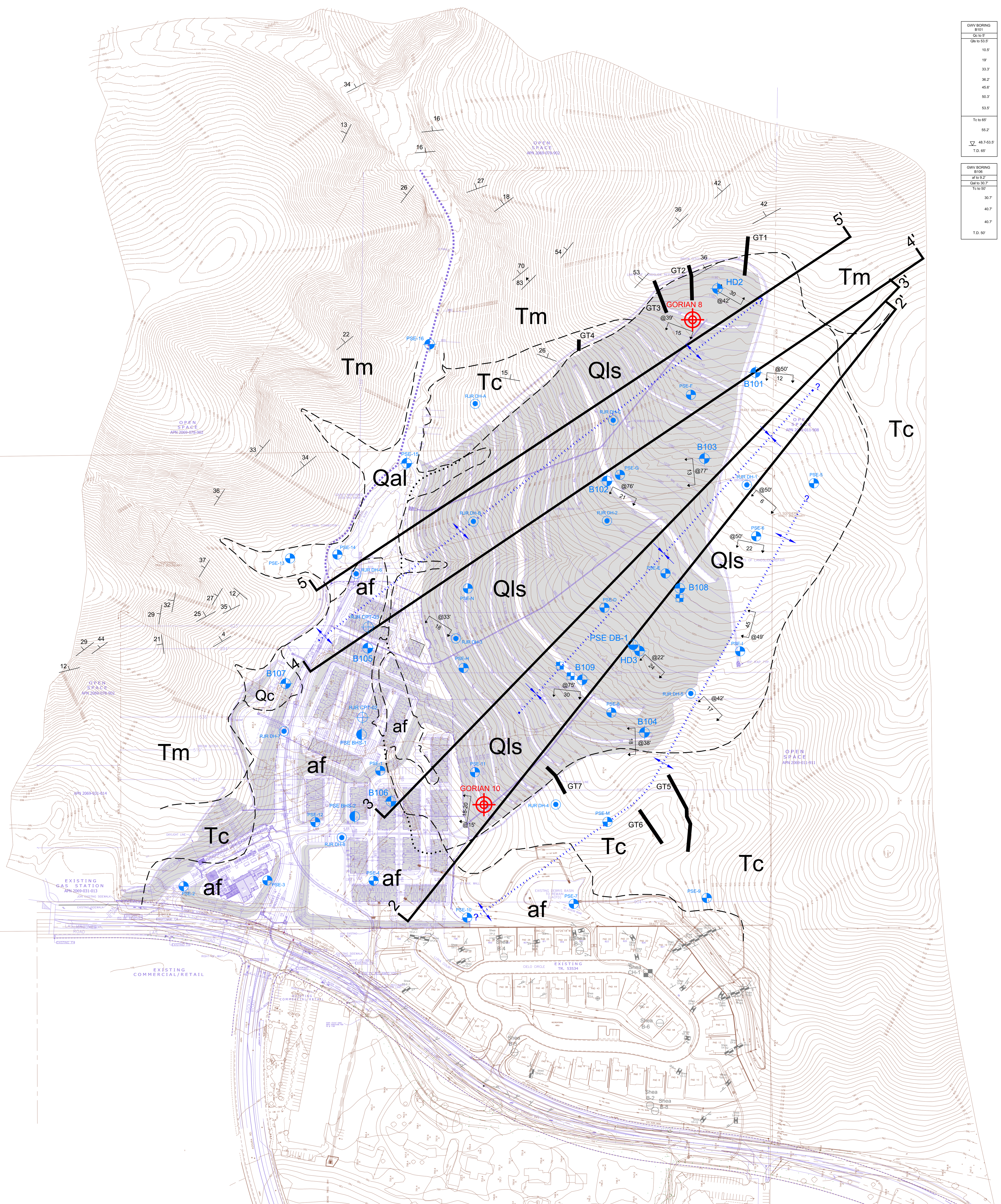
SLIDE 8.031

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**				
Analyzed By: JEH	*Units:* feet	*Scale:* 1:1200	*Project No.:* **12558.001**	*Analysis Scenario:* Sec 4_MP4_Temp Grading Section_Qls Global 1200_b2.slim
Date: February 27, 2020	*Condition:* **Schematic**			

PLATES

Leighton



GWV BORING B101
Qc to 5'
Qls to 53.5'
10.5'
19'
33.3'
36.2'
45.6'
50.3'
53.5'
Tc to 65'
55.2'
▽ 48.7-53.5'
T.D. 65'

GWV BORING B106
af to 9.2'
Qal to 30.7'
Tc to 50'
30.7'
40.7'
40.7'
T.D. 50'

GWV BORING B102
Qls to 77.5'
10.5'
15.6'
25.1'
27.6'
32.7'
34.6'
42.5'
47.5'
49.2'
49.4'
57.6'
58.8'
74.2'
74.4'
75.7'
76.3'
77.2'
Tc to 110'
92'
▽ 75.4'
T.D. 110'

GWV BORING B103
Qc to 3.3'
Qls to 76.8'
15.3'
20.1'
21.3'
24.4'
39.1'
43.6'
50.2'
56.6'
58.1'
64'
76.8'
Tc to 90'
81.4'
T.D. 90'

GWV BORING B107
af to 11.2'
Tm to 42.3'
24.3'
27'
27.6'
35.8'
38.8'
42.3'
Tc to 80'
48.8'
49.5'
53.6'
69.3'
71.8'
▽ 48'
T.D. 80'

GWV BORING B104
Qc to 2.5'
Qls to 37.8'
22'
34.3'
35.4'
37.7'
37.8'
Tc to 80'
44.2'
64.2'
▽ 64.2'
T.D. 80'

GWV BORING B108
Qc to 3.9'
Qls to 76'?
8.5'
17.3'
25.8'
37.4'
41.4'
41.9'
Tc? to 84'
▼ 58.3'
Caving below 63'
T.D. 84'

GWV BORING B105
af to 7'
Qal to 39'
31.2'
Tc to 67.5'
44.4'
50.6'
▼ 65.5'
T.D. 67.5'

GWV BORING B109
Qc to 3'
Qls to 75'
17.1'
21.7'
27.5'
33.4'
40.7'
40.8'
56'
62.7'
75'
Tc to 152'
78.8'
82.8'
89.7'
93'
97.5'
99'
104'
▽ 104-105'
Caving below 138'
T.D. 152'

EXPLANATION

af	Artificial Fill
Qc	Colluvium
Qls	Landslide Debris
Qal	Alluvial Deposits
Tm	Modelo Formation
Tc	Calabasas Formation
GT7	Exploratory Trench Location (GWV)
B109	Bucket Auger Boring (GWV)
5 5'	Cross Section (GWV)
?	Approximate Geologic Contact: Dotted where concealed, queried where uncertain
	Approximate Location of Synclinal Fold Axis
	Approximate Location of Anticlinal Fold Axis
	Attitude of Bedding
	Attitude of Shear
	Attitude of Fracture
	Attitude of Contact
@10'	Attitude of Observed Landslide Plane at Depth (depth indicated by @)
▼ ▽	Groundwater (solid) or Seep (hollow) Encountered in Boring
PSE-M PSE-16 HD-4	Bucket-Auger Boring by Pacific Soils Eng. Inc.
BHS-2	Hollow Stem Auger Boring by Pacific Soils Eng. Inc.
DB-1	Deep Boring by Pacific Soils Eng. Inc.
RJR DH-8 RJR DH-B	Bucket-Auger Boring by RJR
RJR CPT-03	Cone Penetration Test by RJR
Shea B-6	Boring by RJR for Project No. 544.10
CH-B	Core by RJR
Shea CH-1	Core by RJR for Project No. 544.10
TP-11	Test Pit by RJR
GORIAN 10	Bucket-Auger Boring by Gorian

Note: Geology is from Geolabs Westlake Village, Dated 04/27/2017

SCALE 0 100 200 FEET

GEOTECHNICAL MAP - DEVELOPMENT ALTERNATIVE 5
Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: March 2020

Plate-1

Leighton

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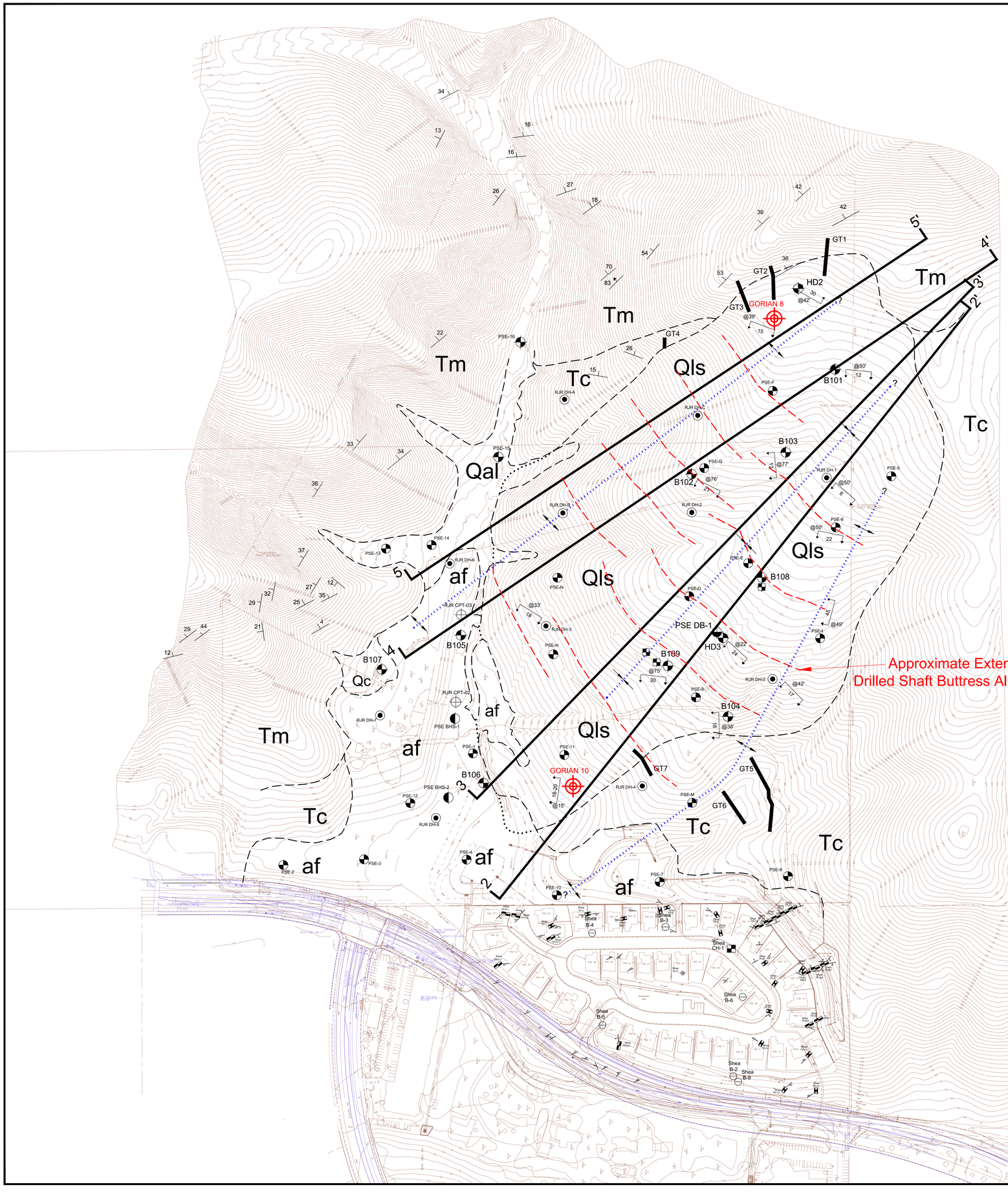


GW BORING B101
Qc to 5'
Qls to 53.5'
10.5'
19'
33.3'
36.2'
45.6'
50.3'
53.5'
Tc to 65'
55.2'
▽ 48.7-53.5'
T.D. 65'

GW BORING B102
Qls to 77.5'
10.5'
15.6'
25.1'
27.6'
32.7'
34.6'
42.5'
47.5'
49.2'
49.4'
57.6'
58.8'
74.2'
74.4'
75.7'
76.3'
77.2'
Tc to 110'
92'
▽ 75.4'
T.D. 110'

GW BORING B103
Qc to 3.3'
Qls to 76.8'
15.3'
20.1'
21.3'
24.4'
39.1'
43.6'
50.2'
56.6'
58.1'
64'
76.8'
Tc to 90'
81.4'
T.D. 90'

GW BORING B104
Qc to 2.5'
Qls to 37.8'
22'
34.3'
35.4'
37.7'
37.8'
Tc to 80'
44.2'
64.2'
▽ 64.2'
T.D. 80'

GW BORING B105
af to 3'
Qal to 39'
31.2'
Tc to 67.5'
44.4'
50.6'
▼ 65.5'
T.D. 67.5'

GW BORING B106
af to 9.2'
Qal to 30.7'
Tc to 50'
30.7'
40.7'
40.7'
T.D. 50'

GW BORING B107
af to 11.2'
Tm to 42.3'
24.3'
27'
27.6'
35.8'
38.8'
42.3'
Tc to 80'
48.8'
49.5'
53.6'
69.3'
71.8'
▽ 48'
T.D. 80'

GW BORING B108
Qc to 3.5'
Qls to 76'?
8.5'
17.3'
25.8'
37.4'
41.4'
41.9'
Tc? to 84'
▼ 58.3'
Caving below 63'
T.D. 84'

GW BORING B109
Qc to 3'
Qls to 75'
17.1'
21.7'
27.5'
33.4'
40.7'
40.8'
56'
62.7'
75'
Tc to 152'
78.8'
82.8'
89.7'
93'
97.5'
99'
104'
▽ 104-105'
Caving below 138'
T.D. 152'

EXPLANATION

- af — Artificial Fill
- Qc — Colluvium
- Qls — Landslide Debris
- Qal — Alluvial Deposits
- Tm — Modelo Formation
- Tc — Calabasas Formation
- GT7 — Exploratory Trench Location (GWV)
- B109 — Bucket Auger Boring (GWV)
- 5 5' — Cross Section (GWV)
- Approximate Geologic Contact: Dotted where concealed, queried where uncertain
- Approximate Location of Synclinal Fold Axis
- Approximate Location of Anticlinal Fold Axis
- Attitude of Bedding
- Attitude of Shear
- Attitude of Fracture
- Attitude of Contact
- @10' — Attitude of Observed Landslide Plane at Depth (depth indicated by @)
- Groundwater (solid) or Seep (hollow) Encountered in Boring
- PSE-M, PSE-16, HD-4 — Bucket-Auger Boring by Pacific Soils Eng. Inc.
- BHS-2 — Hollow Stem Auger Boring by Pacific Soils Eng. Inc.
- DB-1 — Deep Boring by Pacific Soils Eng. Inc.
- RJR DH-8, RJR DH-B — Bucket-Auger Boring by RJR
- RJR CPT-03 — Cone Penetration Test by RJR
- Shea B-6 — Boring by RJR for Project No. 544.10
- CH-B — Core by RJR
- Shea CH-1 — Core by RJR for Project No. 544.10
- TP-11 — Test Pit by RJR
- GORIAN 10 — Bucket-Auger Boring by Gorian
- Approximate Extent of Drilled Shaft Buttress alignments

Note: Geology is from Geolabs Westlake Village, Dated 04/27/2017

SCALE 0 100 200 FEET

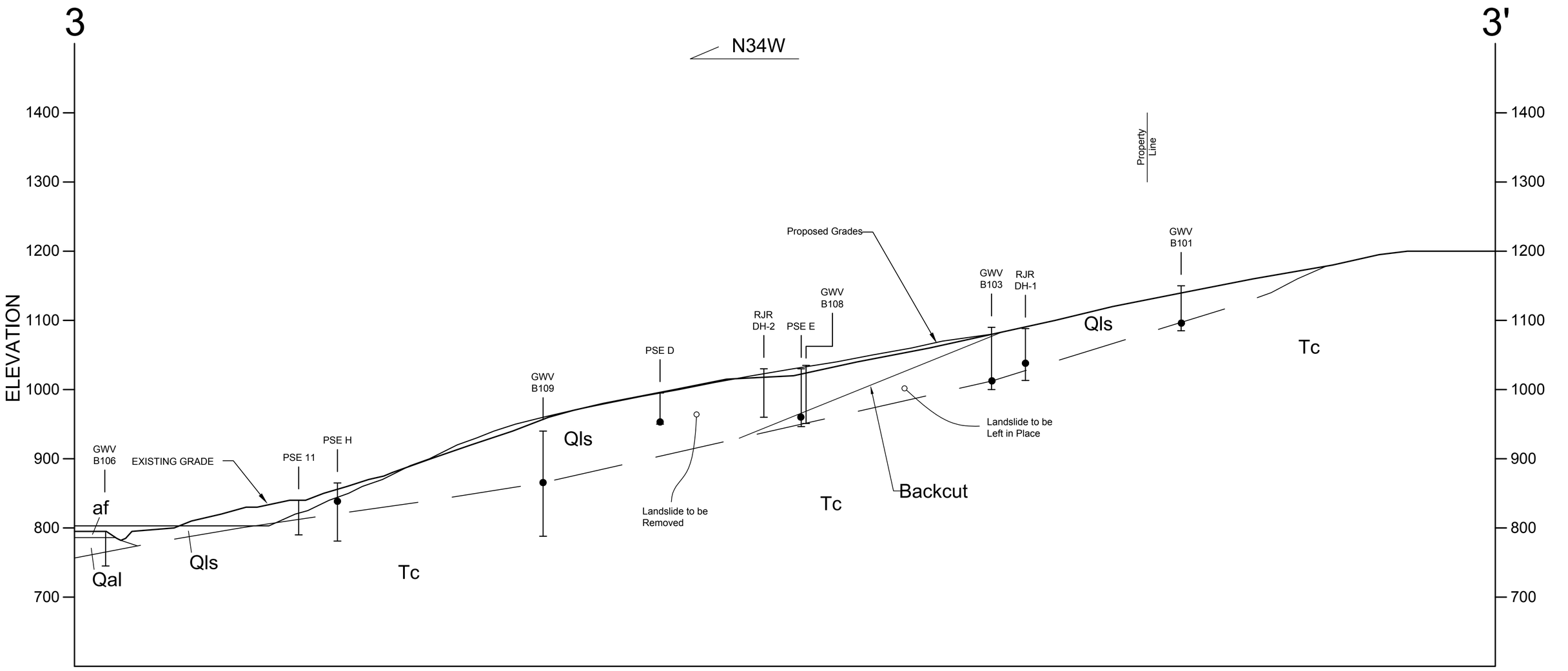
GEOTECHNICAL MAP AND PRELIMINARY DRILLED SHAFT BUTTRESS LOCATIONS

Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Plate-2

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: March 2020

Leighton



NOTE:

● OBSERVED SLIDING SURFACE

CROSS SECTION 3-3'	Geolabs - Westlake Village GEOLOGY AND SOIL ENGINEERING	DATE 4/27/2017 BY RMP SCALE 1"=100' W.O. 9222

CROSS SECTION 3-3'

Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: February 2020

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Plate-3

Leighton

4

4'

N34W

ELEVATION

1400
1300
1200
1100
1000
900
800
700

PROPOSED GRADE

EXISTING GRADE

GWV B105

RJR DH-3

PSE-N

RJR DH-B

RJR DH-2

GWV B102

PSE-G

PSE-F

GWV B101

Property Line

af

Qal

Qls

Qls

Tc

Tc

Tm

Tc

Backcut

NOTE:

● OBSERVED SLIDING SURFACE

CROSS SECTION 4-4'		Geolabs - Westlake Village GEOLOGY AND SOIL ENGINEERING DATE 4/27/2017 BY RMP SCALE 1"=100' W.O. 9222

CROSS SECTION 4-4'

Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: February 2020

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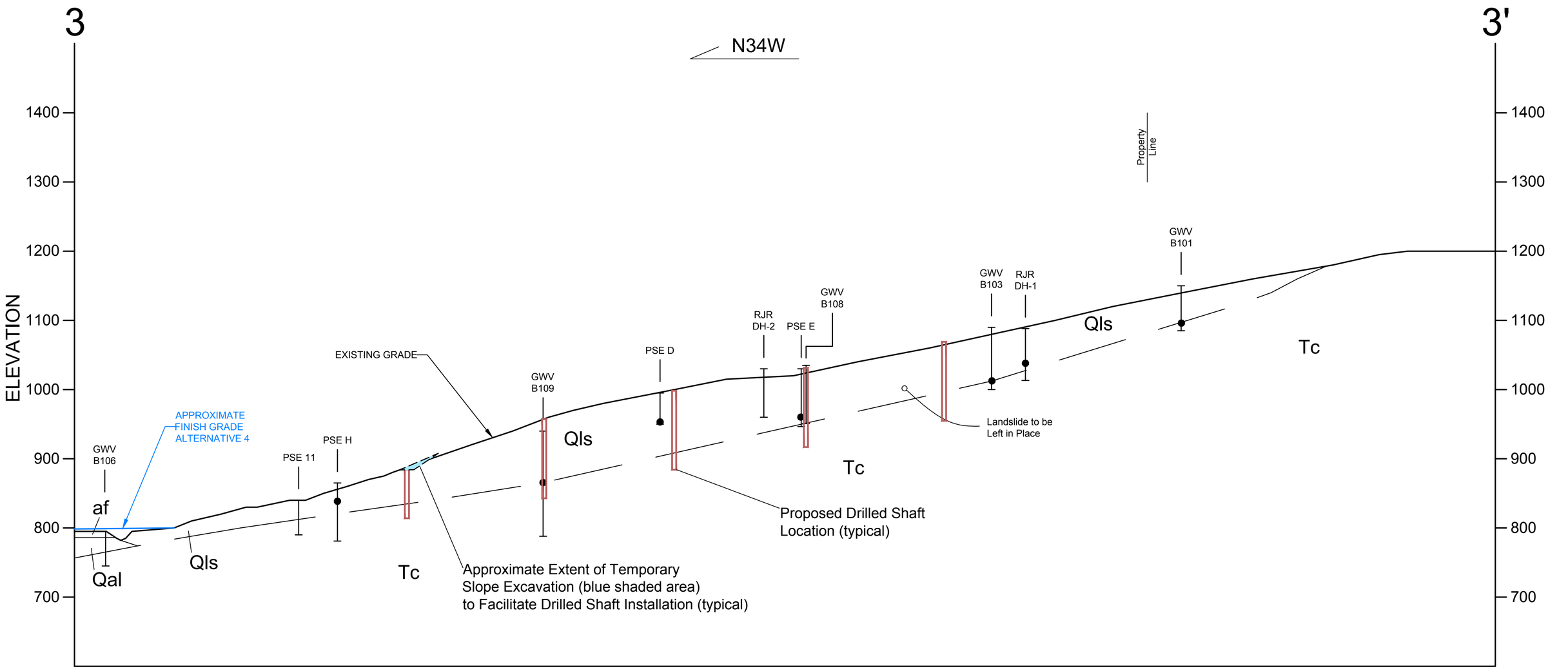
Plate-4

Leighton



NOTE:

● OBSERVED SLIDING SURFACE

CROSS SECTION 3-3'		Geolabs - Westlake Village GEOLOGY AND SOIL ENGINEERING DATE 4/27/2017 BY RMP SCALE 1"=100' W.O. 9222

PRELIMINARY DESIGN CONCEPT-
DRILLED SHAFT BUTTRESS SYSTEM
CROSS SECTION 3-3'
Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: February 2020

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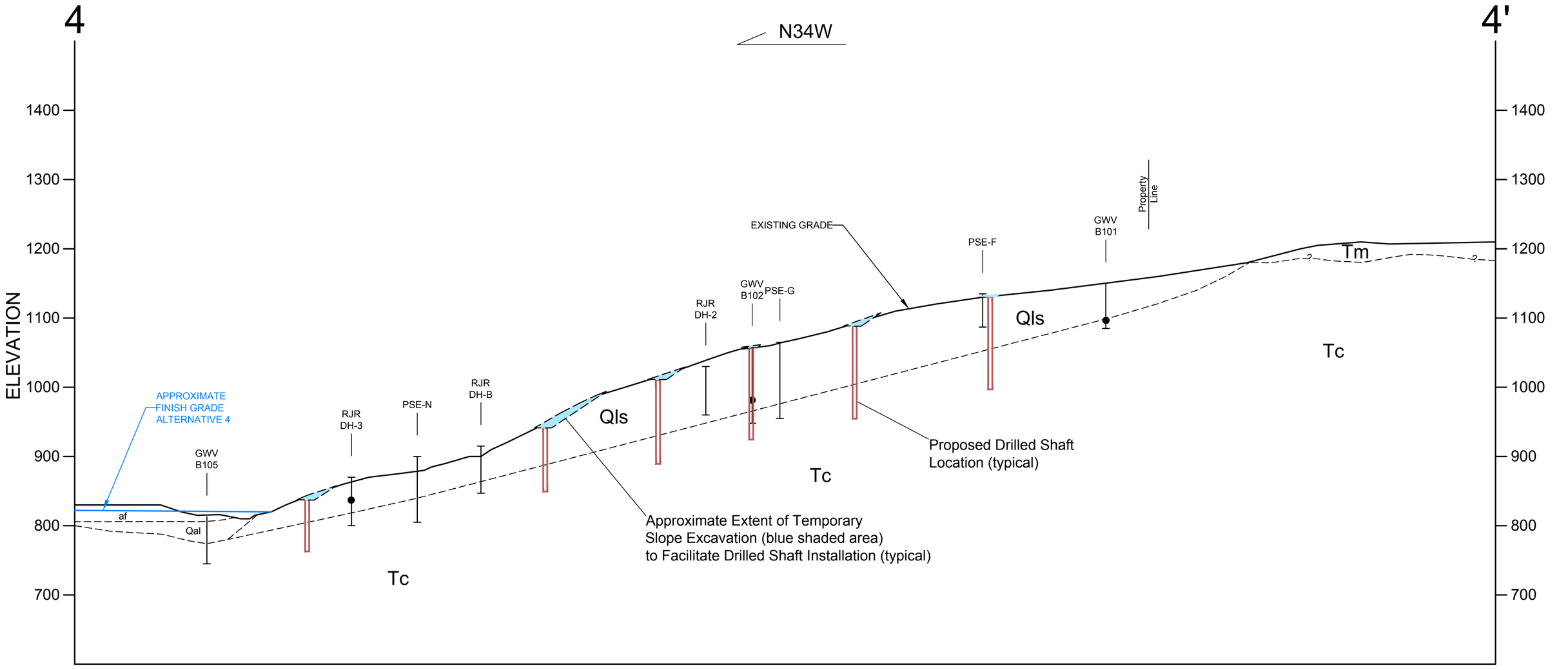
Plate-5

Leighton



NOTE:

● OBSERVED SLIDING SURFACE

CROSS SECTION 4-4'		Geolabs - Westlake Village GEOLOGY AND SOIL ENGINEERING DATE 4/27/2017 BY RMP SCALE 1"=100' W.O. 9222

PRELIMINARY DESIGN CONCEPT-
DRILLED SHAFT BUTTRESS SYSTEM
CROSS SECTION 4-4'
Proposed "West Village" Residential Development
Las Virgenes Road, Calabasas, California

Proj: 12558.001	Eng/Geol: JEH/AAP
Scale: 1"=100'	Date: February 2020

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Plate-6

Leighton

APPENDIX A – SLOPE STABILITY ANALYSIS

Leighton

Appendix A - Slope Stability Analysis

The stability of the landslide mapped within the slope adjacent to the site was evaluated by limit equilibrium slope stability analysis. Analysis was performed on the representative geotechnical cross-sections 3-3' and 4-4' as developed by others. The locations of the sections are shown in Figures 1 and 2.

Slope stability analyses were conducted using the computer program *SLIDE 2018 v8.022* (Rocscience, 2018). *SLIDE* performs stability calculations using two-dimensional (2D) limit equilibrium techniques based on vertical slice equilibrium. Algorithms programmed into the software include techniques for optimization of non-circular critical failure surfaces identified by search routines to refine location and shape of critical surfaces and increase the potential that the minimum factor-of-safety is detected/calculated.

Geologic Model: The model programmed into *SLIDE* was developed at referenced Cross-Section 3-3' and 4-4'. The stratigraphy and geologic structure depicted in the section was based upon the sections developed by GeoLabs Westlake Village (GWV); no field exploration or further scrutiny of the sections were performed by Leighton.

The stability analyses that follow provide color-coded cross-sections along with a summary table for each analysis that summarizes the relevant engineering properties and program input such as the limits and constraints of the search for the critical surface (i.e., surface with lowest calculated factor-of-safety) for the various analysis scenarios.

Material Strength Parameters: Shear strength parameters of the bedrock were adopted from prior geotechnical explorations and analyses performed by GWV as presented in prior geotechnical studies; no additional exploration or testing was performed by Leighton to scrutinized the shear strength parameters. The following table summarizes the values used in analysis.

Table A-1 Summary of Shear Strength Parameters for Slope Stability Analysis

Material Description	Static		PseudoStatic[1]	
	c (psf)	ø	c (psf)	ø
Tc – Capistrano Formation	500	30°	500	30°
Qls BRS – Landslide Rupture Surface	Note 2		Note 2	
Qls – Landslide Debris	500	30°	500	30°

Notes:

1) PseudoStatic analysis conducted using a coefficient of horizontal acceleration (k_h) of 0.15.
2) Shear Strength modeled by "Shear Normal Function" in which shear strength parameters dependent upon normal stress; see analyses for further details.

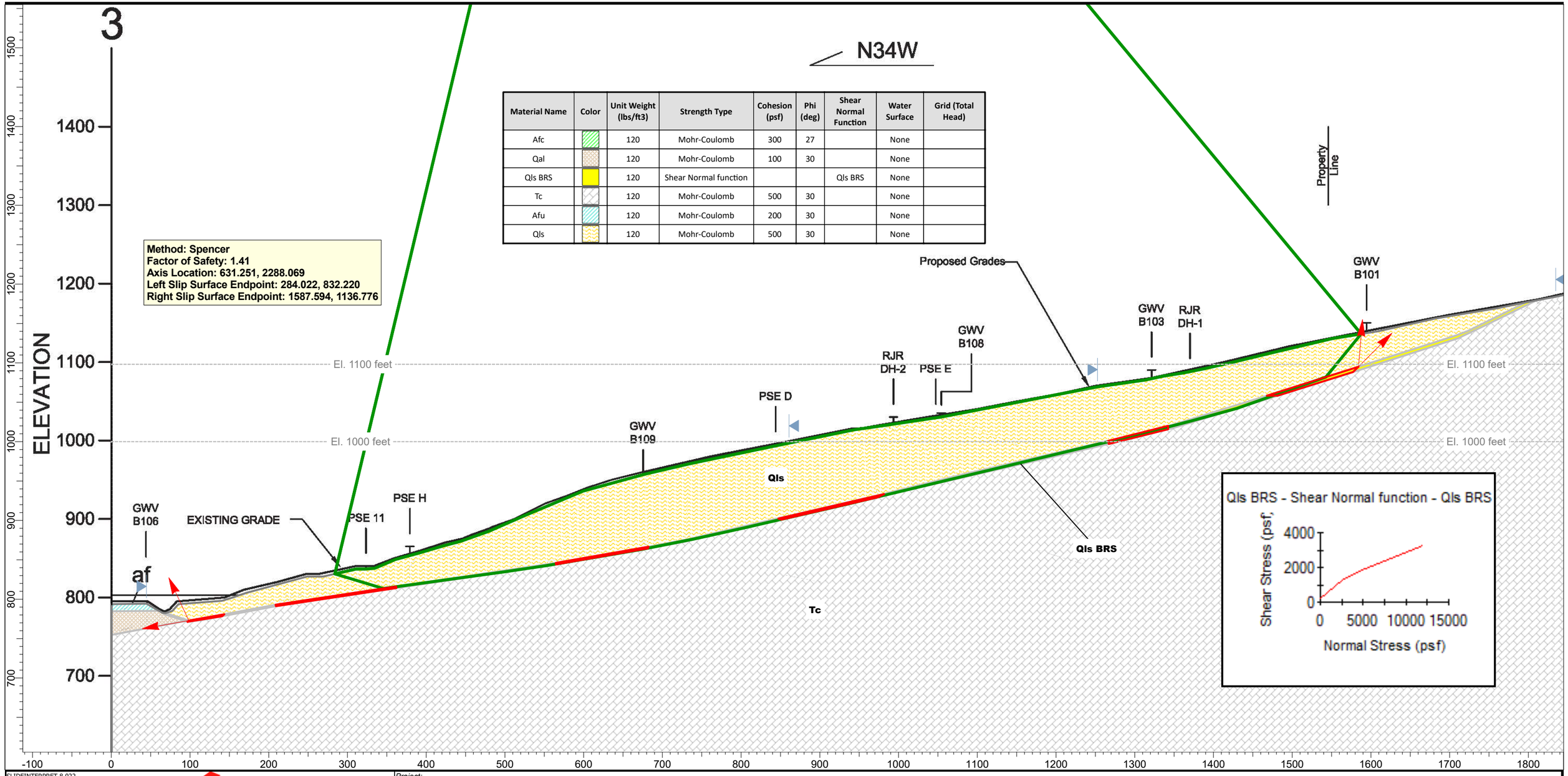
Stability Analysis Methodology: Slope stability analyses were conducted within prescribed ranges of the slope by generating several thousand trial surfaces based upon specific search parameters input to the program. The factor-of-safety for each surface was calculated using Janbu's method and Spencer's method of General Limit Equilibrium (GLE) for non-circular surfaces. Optimization algorithms programmed in the software were used to locate the critical surface with lowest factor of safety. Analysis criteria were a minimum factor of safety of 1.5 for static conditions, 1.1 for pseudostatic based upon a coefficient of horizontal acceleration (k_h) of 0.15. No increase in shear strength parameters was applied for seismic conditions.

The graphical output along with the associated output files are subsequently presented for the analyzed cross-section.

Section 3 - 3' Stability of Existing Southern Landslide

Global Stability

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 3\Multi Pier\Sec 3_MP_Qls_Blk SrfAlt_Global_a3.slim



SLIDEINTERPRET 8.022

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**				
Analyzed By: JEH	Units: feet	Scale: 1:1440	Project No.: **12558.001**	File Name: Sec 3_MP_Qls_Blk SrfAlt_Global_a3.slim
Date: December 10, 2019	Condition: **Static**			

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version: 8.022

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Janbu corrected
Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	No
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	115
Left Projection Angle (End Angle) [°]:	190
Right Projection Angle (Start Angle) [°]:	45
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Materials

Property	Qal	Qls BRS	Qls	Tc	Afu
Color					
Strength Type	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120
Cohesion [psf]	100		500	500	200
Friction Angle [°]	30		30	30	30
Water Surface	None	None	None	None	None
Ru Value	0	0	0	0	0
Unsat. Shear Strength Phi b [°]	0	0	0	0	0
Unsat. Shear Strength Air Entry Value [psf]	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Global Minimums

Method: janbu corrected

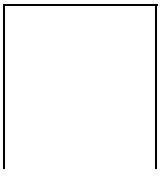
FS	1.415850
Axis Location:	657.571, 2266.124
Left Slip Surface Endpoint:	318.477, 838.336
Right Slip Surface Endpoint:	1596.345, 1138.177
Resisting Horizontal Force:	3.28994e+06 lb
Driving Horizontal Force:	2.32365e+06 lb
Total Slice Area:	91502 ft2
Surface Horizontal Width:	1277.87 ft
Surface Average Height:	71.6052 ft

Method: spencer

FS	1.410450
Axis Location:	631.251, 2288.069
Left Slip Surface Endpoint:	284.022, 832.220
Right Slip Surface Endpoint:	1587.594, 1136.776
Resisting Moment:	4.76974e+09 lb-ft
Driving Moment:	3.38172e+09 lb-ft
Resisting Horizontal Force:	3.25301e+06 lb
Driving Horizontal Force:	2.30636e+06 lb
Total Slice Area:	91169.3 ft2
Surface Horizontal Width:	1303.57 ft
Surface Average Height:	69.9381 ft

Global Minimum Coordinates

Method: janbu corrected



X	Y
318.477	838.336
358.838	814.988
395.766	819.851
432.694	824.713
467.466	829.823
502.239	834.933
549.962	842.086
584.9	847.715
630.82	855.745
676.744	863.919
721.283	873.318
767.711	883.249
814.139	893.305
860.566	903.71
906.994	914.327
953.421	925.02
986.093	932.966
1018.76	940.913
1084.11	956.035
1149.45	971.565
1182.18	979.147
1214.91	986.729
1273.89	1000.76
1333	1015
1380.28	1028.36
1426.97	1041.42
1478.89	1058.38
1529.95	1075.27
1562.41	1087.88
1579.38	1111.88
1596.34	1138.18

Method: spencer

X	Y
284.022	832.22
345.581	813.617
396.295	820.589
447.01	827.561
500.065	834.868
553.554	842.81
612.773	852.895
672.259	863.025
738.814	876.191
772.116	883.537
805.419	890.884
838.722	898.569
872.024	906.254
905.327	913.938
938.629	921.623
1001.24	936.586
1063.85	951.55
1126.47	966.513
1189.08	981.477
1250.68	996.199
1312.28	1010.92
1370.95	1026.12
1429.62	1042.16
1486.21	1062.07
1542.79	1081.98
1565.19	1109.38
1587.59	1136.78

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 4018
Number of Invalid Surfaces: 998

Error Codes:

Error Code -112 reported for 156 surfaces
Error Code -124 reported for 837 surfaces
Error Code -1000 reported for 5 surfaces

Method: spencer

Number of Valid Surfaces: 4003
Number of Invalid Surfaces: 1013

Error Codes:

Error Code -111 reported for 11 surfaces
Error Code -112 reported for 156 surfaces
Error Code -124 reported for 837 surfaces
Error Code -1000 reported for 9 surfaces

Error Codes

The following errors were encountered during the computation:

-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.41585

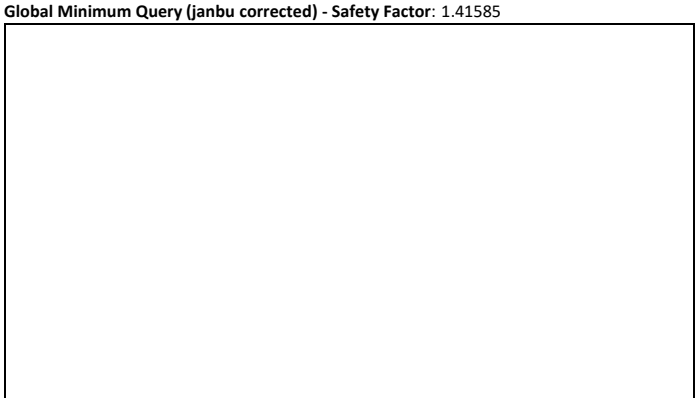
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	19.6606	14812.5	-30.0483	Qls	500	30	870.036	1231.84	1267.58	0	1267.58	764.291	764.291
2	19.6606	55760.5	-30.0483	Qls	500	30	1988.98	2816.1	4011.6	0	4011.6	2861.02	2861.02
3	1.03966	4240.35	-30.0483	Qls BRS	640.909	13.6925	1285.2	1819.65	4838.12	0	4838.12	4094.67	4094.67
4	36.9282	166032	7.50098	Qls BRS	640.909	13.6925	1198.6	1697.04	4334.86	0	4334.86	4492.68	4492.68
5	36.9282	191226	7.50098	Qls BRS	640.909	13.6925	1313.34	1859.49	5001.65	0	5001.65	5174.58	5174.58
6	34.7721	202957	8.36018	Qls BRS	885.556	11.1466	1408.31	1993.96	5625.35	0	5625.35	5832.31	5832.31
7	34.7721	235031	8.36018	Qls BRS	885.556	11.1466	1534.05	2171.99	6528.87	0	6528.87	6754.31	6754.31
8	23.8616	184937	8.524	Qls BRS	885.556	11.1466	1668.49	2362.33	7494.9	0	7494.9	7744.97	7744.97
9	23.8616	203905	8.524	Qls BRS	885.556	11.1466	1776.81	2515.7	8273.24	0	8273.24	8539.55	8539.55
10	34.9383	331122	9.15219	Qls BRS	885.556	11.1466	1900.83	2691.3	9164.47	0	9164.47	9470.71	9470.71
11	22.9601	237233	9.91957	Qls BRS	885.556	11.1466	2013.31	2850.55	9972.69	0	9972.69	10324.8	10324.8
12	22.9601	245306	9.91957	Qls BRS	885.556	11.1466	2061.06	2918.15	10315.8	0	10315.8	10676.2	10676.2
13	22.962	251452	10.0928	Qls BRS	885.556	11.1466	2096.37	2968.15	10569.6	0	10569.6	10942.7	10942.7
14	22.962	257479	10.0928	Qls BRS	885.556	11.1466	2132	3018.6	10825.6	0	10825.6	11205.1	11205.1
15	22.2691	253303	11.916	Qls BRS	885.556	11.1466	2144.09	3035.71	10912.5	0	10912.5	11364.9	11364.9
16	22.2691	254524	11.916	Qls BRS	885.556	11.1466	2151.5	3046.2	10965.6	0	10965.6	11419.6	11419.6
17	23.214	266424	12.074	Qls BRS	885.556	11.1466	2157.04	3054.05	11005.5	0	11005.5	11466.9	11466.9
18	23.214	266358	12.074	Qls BRS	885.556	11.1466	2156.65	3053.5	11002.7	0	11002.7	11464	11464
19	23.214	265911	12.2206	Qls BRS	885.556	11.1466	2153.25	3048.69	10978.3	0	10978.3	11444.7	11444.7
20	23.214	265377	12.2206	Qls BRS	885.556	11.1466	2150.15	3044.3	10956	0	10956	11421.7	11421.7
21	23.2138	264598	12.6316	Qls BRS	885.556	11.1466	2143.42	3034.76	10907.6	0	10907.6	11387.9	11387.9
22	23.2138	263534	12.6316	Qls BRS	885.556	11.1466	2137.24	3026.01	10863.2	0	10863.2	11342.2	11342.2
23	23.2138	262150	12.8816	Qls BRS	885.556	11.1466	2127.85	3012.72	10795.7	0	10795.7	11282.4	11282.4
24	23.2138	260600	12.8816	Qls BRS	885.556	11.1466	2118.84	2999.97	10731.1	0	10731.1	11215.6	11215.6
25	22.9879	256485	12.9698	Qls BRS	885.556	11.1466	2109.12	2986.2	10661.1	0	10661.1	11146.9	11146.9
26	22.9879	254549	12.9698	Qls BRS	885.556	11.1466	2097.77	2970.13	10579.6	0	10579.6	11062.7	11062.7
27	0.451878	4961.94	12.9698	Qls BRS	885.556	11.1466	2085.31	2952.49	10490.1	0	10490.1	10970.3	10970.3
28	32.6713	352229	13.6699	Qls BRS	885.556	11.1466	2054.75	2909.22	10270.4	0	10270.4	10770.2	10770.2
29	32.6713	339785	13.6699	Qls BRS	885.556	11.1466	2003.51	2836.68	9902.3	0	9902.3	10389.6	10389.6
30	65.3425	648721	13.0305	Qls BRS	885.556	11.1466	1943.15	2751.22	9468.59	0	9468.59	9918.3	9918.3
31	32.6713	314896	13.3695	Qls BRS	885.556	11.1466	1902.49	2693.64	9176.35	0	9176.35	9628.52	9628.52
32	32.6713	309153	13.3695	Qls BRS	885.556	11.1466	1878.83	2660.14	9006.32	0	9006.32	9452.86	9452.86
33	32.7286	304322	13.0437	Qls BRS	885.556	11.1466	1858.26	2631.02	8858.53	0	8858.53	9289.04	9289.04
34	32.7286	299329	13.0437	Qls BRS	885.556	11.1466	1837.71	2601.92	8710.86	0	8710.86	9136.61	9136.61
35	29.4909	265120	13.379	Qls BRS	885.556	11.1466	1815.16	2570	8548.84	0	8548.84	8980.57	8980.57
36	29.4909	259062	13.379	Qls BRS	885.556	11.1466	1787.5	2530.84	8350.12	0	8350.12	8775.27	8775.27
37	29.5543	249666	13.5434	Qls BRS	885.556	11.1466	1741.45	2465.63	8019.15	0	8019.15	8438.63	8438.63
38	29.5543	241004	13.5434	Qls BRS	885.556	11.1466	1702.01	2409.8	7735.79	0	7735.79	8145.77	8145.77
39	23.6417	187859	15.7844	Qls BRS	885.556	11.1466	1664.39	2356.53	7465.46	0	7465.46	7935.94	7935.94
40	23.6417	180325	15.7844	Qls BRS	885.556	11.1466	1621.75	2296.16	7159.09	0	7159.09	7617.52	7617.52
41	23.3435	173008	15.6271	Qls BRS	885.556	11.1466	1593.5	2256.16	6956.03	0	6956.03	7401.75	7401.75
42	23.3435	169573	15.6271	Qls BRS	885.556	11.1466	1573.8	2228.27	6814.48	0	6814.48	7254.7	7254.7
43	25.96	183363	18.0887	Qls BRS	885.556	11.1466	1537.05	2176.23	6550.38	0	6550.38	7052.43	7052.43
44	25.96	176501	18.0887	Qls BRS	885.556	11.1466	1501.89	2126.46	6297.8	0	6297.8	6788.36	6788.36
45	25.5333	166396	18.3032	Qls BRS	885.556	11.1466	1463.55	2072.17	6022.25	0	6022.25	6506.36	6506.36
46	25.5333	158926	18.3032	Qls BRS	885.556	11.1466	1424.66	2017.11	5742.82	0	5742.82	6214.06	6214.06
47	32.4533	187036	21.2375	Qls BRS	640.909	13.6925	1352.02	1914.26	5226.45	0	5226.45	5751.88	5751.88
48	0.288054	1544.49	54.7296	Qls BRS	640.909	13.6925	1101.52	1559.59	3770.7	0	3770.7	5328.13	5328.13
49	16.6809	68144.3	54.7296	Qls	500	30	1270.59	1798.96	2249.86	0	2249.86	4046.34	4046.34
50	16.969	24012.8	57.1696	Qls	500	30	565.235	800.288	520.115	0	520.115	1396.17	1396.17

Global Minimum Query (spencer) - Safety Factor: 1.41045

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	20.4287	13282.5	-16.8143	Qls	500	30	820.473	1157.24	1138.37	0	1138.37	890.428	890.428
2	20.4287	37156.6	-16.8143	Qls	500	30	1476.22	2082.13	2740.33	0	2740.33	2294.23	2294.23
3	20.4287	57598.4	-16.8143	Qls	500	30	2037.69	2874.06	4111.99	0	4111.99	3496.22	3496.22
4	0.272304	986.442	-16.8143	Qls BRS	640.909	13.6925	1237.71	1745.73	4534.71	0	4534.71	4160.68	4160.68
5	25.3572	102241	7.82742	Qls BRS	640.909	13.6925	1144.91	1614.84	3997.47	0	3997.47	4154.86	4154.86
6	25.3572	115010	7.82742	Qls BRS	640.909	13.6925	1230.49	1735.54	4492.9	0	4492.9	4662.06	4662.06
7	25.3572	126590	7.82742	Qls BRS	640.909	13.6925	1308.09	1845	4942.16	0	4942.16	5121.98	5121.98
8	25.3572	137607	7.82742	Qls BRS	885.556	11.1466	1377.93	1943.51	5369.3	0	5369.3	5558.73	5558.73
9	26.5276	159093	7.84217	Qls BRS	885.556	11.1466	1456.08	2053.73	5928.66	0	5928.66	6129.21	6129.21
10	26.5276	179537	7.84217	Qls BRS	885.556	11.1466	1561.75	2202.77	6685.07	0	6685.07	6900.17	6900.17
11	26.7448	205833	8.44505	Qls BRS	885.556	11.1466	1684.25	2375.55	7561.95	0	7561.95	7812.02	7812.02
12	26.7448	229756	8.44505	Qls BRS	885.556	11.1466	1806.45	2547.91	8436.76	0	8436.76	8704.97	8704.97
13	29.6093	280473	9.66477	Qls BRS	885.556	11.1466	1915.53	2701.77	9217.6	0	9217.6	9543.82	9543.82
14	29.6093	305227	9.66477	Qls BRS	885.556	11.1466	2028.91	2861.68	10029.2	0	10029.2	10374.7	10374.7
15	29.7429	319841	9.66477	Qls BRS	885.556	11.1466	2089.26	2946.8	10461.2	0	10461.2	10817	10817
16	29.7429	330771	9.66477	Qls BRS	885.556	11.1466	2139.1	3017.1	10817.9	0	10817.9	11182.2	11182.2
17	22.185	252288	11.1896	Qls BRS	885.556	11.1466	2156.66	3041.87	10943.7	0	10943.7	11370.3	11370.3
18	22.185	254342	11.1896	Qls BRS	885.556	11.1466	2169.11	3059.42	11032.8	0	11032.8	11461.8	11461.8
19	22.185	256320	11.1896	Qls BRS	885.556	11.1466	2181.09	3076.32	11118.5	0	11118.5	11550	11550
20	33.3025	385188	12.4403	Qls BRS	885.556	11.1466	2169.17	3059.51	11033.2	0	11033.2	11511.7	11511.7
21	33.3025	383556	12.4403	Qls BRS	885.556	11.1466	2162.63	3050.29	10986.4	0	10986.4	11463.5	11463.5
22	33.3025	381248	12.9939	Qls BRS	885.556	11.1466	2147.44	3028.86	10877.6	0	10877.6	11373.2	11373.2
23	33.3025	378121	12.9939	Qls BRS	885.556	11.1466	2134.96	3011.26	10788.3	0	10788.3	11281	11281
24	33.3025	374669	12.9939	Qls BRS	885.556	11.1466	2121.18	2991.82	10689.7	0	10689.7	11179.2	11179.2
25	33.3025	371204	12.9939	Qls BRS	885.556	11.1466	2107.35	2972.32	10590.7	0	10590.7	11077	11077
26	31.3063	342761	13.4407	Qls BRS	885.556	11.1466	2076.46	2928.74	10369.5	0	10369.5	10865.7	10865.7
27	31.3063	331627	13.4407	Qls BRS	885.556	11.1466	2029.31	2862.24	10032	0	10032	10517	10517
28	20.8709	215148	13.4407	Qls BRS	885.556	11.1466	1991.6	2809.06	9762.11	0	9762.11	10238.1	10238.1
29	20.8709	210440	13.4407	Qls BRS	885.556	11.1466	1961.7	2766.89	9548.11	0	9548.11	10016.9	10016.9
30	20.8709	205981	13.4407	Qls BRS	885.556	11.1466	1933.38	2726.94	9345.35	0	9345.35	9807.4	9807.4
31	31.3063	303955	13.4407	Qls BRS	885.556	11.1466	1912.14	2696.98	9193.31	0	9193.31	9650.28	9650.28
32	31.3063	298527	13.4407	Qls BRS	885.556	11.1466	1889.15	2664.56	9028.77	0	9028.77	9480.25	9480.25
33	20.8709	196002	13.4407	Qls BRS	885.556	11.1466	1870	2637.55	8891.69	0	8891.69	9338.59	9338.59
34	20.8709	193590	13.4407	Qls BRS	885.556	11.1466	1854.68	2615.94	8781.99	0	8781.99	9225.23	9225.23
35	20.8709	191178	13.4407	Qls BRS	885.556	11.1466	1839.36	2594.33	8672.33	0	8672.33	9111.91	9111.91
36	30.801	277731	13.4407	Qls BRS	885.556	11.1466	1820.39	2567.58	8536.56	0	8536.56	8971.61	8971.61
37	30.801	272477	13.4407	Qls BRS	885.556	11.1466	1797.79	2535.69	8374.7	0	8374.7	8804.34	8804.34
38	20.534	177694	13.4407	Qls BRS	885.556	11.1466	1772.23	2499.65	8191.84	0	8191.84	8615.37	8615.37
39	20.534	172814	13.4407	Qls BRS	885.556	11.1466	1740.74	2455.23	7966.33	0	7966.33	8382.34	8382.34
40	20.534	167923	13.4407	Qls BRS	885.556	11.1466	1709.16	2410.69	7740.3	0	7740.3	8148.76	8148.76
41	29.3353	233798	14.5284	Qls BRS	885.556	11.1466	1673	2359.69	7481.48	0	7481.48	7915.03	7915.03
42	29.3353	225677	14.5284	Qls BRS	885.556	11.1466	1636.55	2308.27	7220.5	0	7220.5	7644.6	7644.6
43	29.3353	217970	15.2822	Qls BRS	885.556	11.1466	1596.33	2251.55	6932.65	0	6932.65	7368.82	7368.82
44	29.3353	212865	15.2822	Qls BRS	885.556	11.1466	1573.52	2219.37	6769.35	0	6769.35	7199.29	7199.29
45	28.2914	197968	19.3892	Qls BRS	885.556	11.1466	1510.56	2130.58	6318.7	0	6318.7	6850.34	6850.34
46	28.2914	187337	19.3892	Qls BRS	885.556	11.1466	1462.53	2062.83	5974.85	0	5974.85	6489.58	6489.58
47	28.2914	176227	19.3892	Qls BRS	885.556	11.1466	1412.34	1992.04	5615.59	0	5615.59	6112.66	6112.66
48	28.2914	165023	19.3892	Qls BRS	885.556	11.1466	1361.72	1920.64	5253.23	0	5253.23	5732.48	5732.48
49	22.4018	95664.3	50.7273	Qls	500	30	1313.76	1852.99	2343.45	0	2343.45	3950.11	3950.11
50	22.4018	32005.8	50.7273	Qls	500	30	616.603	869.688	640.318	0	640.318	1394.39	1394.39

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.41585



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	318.477	838.336	0	0	0
2	338.138	826.963	31891.4	0	0
3	357.798	815.59	117465	0	0
4	358.838	814.988	121740	0	0
5	395.766	819.851	145881	0	0
6	432.694	824.713	171109	0	0
7	467.466	829.823	192391	0	0
8	502.239	834.933	213524	0	0
9	526.1	838.509	227392	0	0
10	549.962	842.086	241118	0	0
11	584.9	847.715	257379	0	0
12	607.86	851.73	264561	0	0
13	630.82	855.745	271485	0	0
14	653.782	859.832	277463	0	0
15	676.744	863.919	283230	0	0
16	699.013	868.619	280727	0	0
17	721.283	873.318	278143	0	0
18	744.497	878.284	274649	0	0
19	767.711	883.249	271160	0	0
20	790.925	888.277	267029	0	0
21	814.139	893.305	262937	0	0
22	837.352	898.507	257024	0	0
23	860.566	903.71	251195	0	0
24	883.78	909.019	244345	0	0
25	906.994	914.327	237625	0	0
26	929.982	919.622	230712	0	0
27	952.97	924.916	223965	0	0
28	953.421	925.02	223836	0	0
29	986.093	932.966	210807	0	0
30	1018.76	940.913	198993	0	0
31	1084.11	956.035	185522	0	0
32	1116.78	963.8	177767	0	0
33	1149.45	971.565	170542	0	0
34	1182.18	979.147	165507	0	0
35	1214.91	986.729	160904	0	0
36	1244.4	993.744	155627	0	0
37	1273.89	1000.76	150911	0	0
38	1303.44	1007.88	146402	0	0
39	1333	1015	142719	0	0
40	1356.64	1021.68	133027	0	0
41	1380.28	1028.36	124352	0	0
42	1403.62	1034.89	116934	0	0
43	1426.97	1041.42	109971	0	0
44	1452.93	1049.9	95191.4	0	0
45	1478.89	1058.38	81621.7	0	0
46	1504.42	1066.83	68935	0	0
47	1529.95	1075.27	57594.1	0	0
48	1562.41	1087.88	36502.7	0	0
49	1562.69	1088.29	35291.1	0	0
50	1579.38	1111.88	3880.32	0	0
51	1596.34	1138.18	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.41045

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	284.022	832.22	0	0	0
2	304.451	826.046	23788.9	4908.16	11.6578
3	324.88	819.873	70863.4	14620.7	11.6578
4	345.308	813.699	137876	28446.8	11.6578
5	345.581	813.617	138586	28593.3	11.6578
6	370.938	817.103	153683	31708.2	11.6578
7	396.295	820.589	169224	34914.5	11.6578
8	421.652	824.075	185166	38203.7	11.6578
9	447.01	827.561	201390	41551.1	11.6578
10	473.537	831.214	218355	45051.3	11.6578
11	500.065	834.868	235359	48559.7	11.6578
12	526.81	838.839	250377	51658.2	11.6578
13	553.554	842.81	265190	54714.4	11.6578
14	583.164	847.852	275428	56826.8	11.6578
15	612.773	852.895	284931	58787.5	11.6578
16	642.516	857.96	294084	60675.9	11.6578
17	672.259	863.025	302912	62497.4	11.6578
18	694.444	867.414	302731	62460	11.6578
19	716.629	871.802	302435	62398.9	11.6578
20	738.814	876.191	302028	62315	11.6578
21	772.116	883.537	293211	60495.9	11.6578
22	805.419	890.884	284521	58702.8	11.6578
23	838.722	898.569	272444	56211.1	11.6578
24	872.024	906.254	260638	53775.4	11.6578
25	905.327	913.938	249132	51401.3	11.6578
26	938.629	921.623	237925	49089.2	11.6578
27	969.935	929.105	225350	46494.6	11.6578
28	1001.24	936.586	213824	44116.5	11.6578
29	1022.11	941.574	206699	42646.5	11.6578
30	1042.98	946.562	200018	41268	11.6578
31	1063.85	951.55	193756	39976.1	11.6578
32	1095.16	959.032	184837	38135.9	11.6578
33	1126.47	966.513	176429	36401.2	11.6578
34	1147.34	971.501	171108	35303.3	11.6578
35	1168.21	976.489	166014	34252.3	11.6578
36	1189.08	981.477	161147	33248.2	11.6578
37	1219.88	988.838	154380	31852	11.6578
38	1250.68	996.199	148108	30558	11.6578
39	1271.22	1001.11	144300	29772.2	11.6578
40	1291.75	1006.01	140951	29081.3	11.6578
41	1312.28	1010.92	138063	28485.4	11.6578
42	1341.62	1018.52	130266	26876.8	11.6578
43	1370.95	1026.12	123384	25456.8	11.6578
44	1400.29	1034.14	114645	23653.7	11.6578
45	1429.62	1042.16	106545	21982.6	11.6578
46	1457.92	1052.11	86366.5	17819.3	11.6578
47	1486.21	1062.07	68252.4	14082	11.6578
48	1514.5	1072.03	52295.6	10789.7	11.6578
49	1542.79	1081.98	38514.5	7946.37	11.6578
50	1565.19	1109.38	3743.27	772.318	11.6578
51	1587.59	1136.78	0	0	0

Entity Information

Block Search Window

X	Y
564.89	844.188
681.563	864.526
682.489	866.716
564.575	846.124

Block Search Window

X	Y
362.051	814.217
361.91	816.212
208.664	793.019
209.253	791.204

Block Search Window

X	Y
96.862	771.402
140.691	778.434
143.638	780.881
98.553	772.861

Block Search Window

X	Y
851.287	901.082
973.292	929.293
981.695	933.532
847.266	902.394

Block Search Window

X	Y
1481.53	1058.34
1577.24	1088.39
1584.2	1095.08
1467.82	1058.34

Block Search Window

X	Y
1267.24	997.235
1342.43	1015.81
1342.43	1020.11
1265.93	1000.91

External Boundary

X	Y
0.598119	793.788
0.609603	784.718
0.64749	754.796
0.845	598.805
2048.18	598.805
2048.18	1199.33
1915.41	1199.33
1880.87	1193.95
1834.83	1183.98
1810.31	1179.42
1801.82	1177.84
1797.19	1176.89
1760.38	1169.39
1682.1	1156.35
1609.19	1140.23
1551.63	1131.02
1473.35	1112.6
1425.77	1101.09
1388.93	1092.65
1362.07	1087.28
1337.51	1083.44
1313.64	1078.27
1252.71	1069.6
1054.16	1031.31
984.283	1020.9
943.8	1015.13
846.332	995.181
735.818	972.157
677.304	958.61
599.357	937.31
525.036	906.041
479.485	886.201
444.053	873.593
422.436	867.883
391.846	858.91
360.849	850.345
334.746	839.333
323.054	838.336
310.818	838.336
269.125	828.819
248.732	828.819
171.239	807.973
153.111	801.78
140.42	797.996
85.414	793.833
77.683	785.211
68.858	782.398
65.117	782.706
60.5591	785.32
44.7233	794.401

Material Boundary

X	Y
962.384	927.094
1081.74	954.571
1187.42	978.816
1292.48	1003.06
1350.91	1017.98
1446.02	1047.2
1584.65	1090.71
1710.22	1131.12
1743.17	1146.66
1810.31	1179.42

Material Boundary

X	Y
973.68	931.878
974.126	931.988
1082.37	958.638
1187.1	982.754
1291.82	1006.87
1352.41	1022.72
1439.6	1049.45
1456.46	1054.75
1584.2	1095.08
1707.76	1134.72
1722.95	1140.34
1742.12	1149.92
1797.19	1176.89

Material Boundary

X	Y
0.64749	754.796
94.0915	772.325
94.478	772.398

Material Boundary

X	Y
65.117	782.706
68.496	780.768
92.848	772.74
94.0915	772.325
96.862	771.402
115.861	773.81
209.253	791.204
362.051	814.217
564.89	844.188
681.563	864.526
728.928	873.089
962.384	927.094

Material Boundary

X	Y
68.858	782.398
98.553	772.861
143.638	780.881
208.664	793.019
361.91	816.212
564.575	846.124
682.489	866.716
728.875	875.386
973.68	931.878

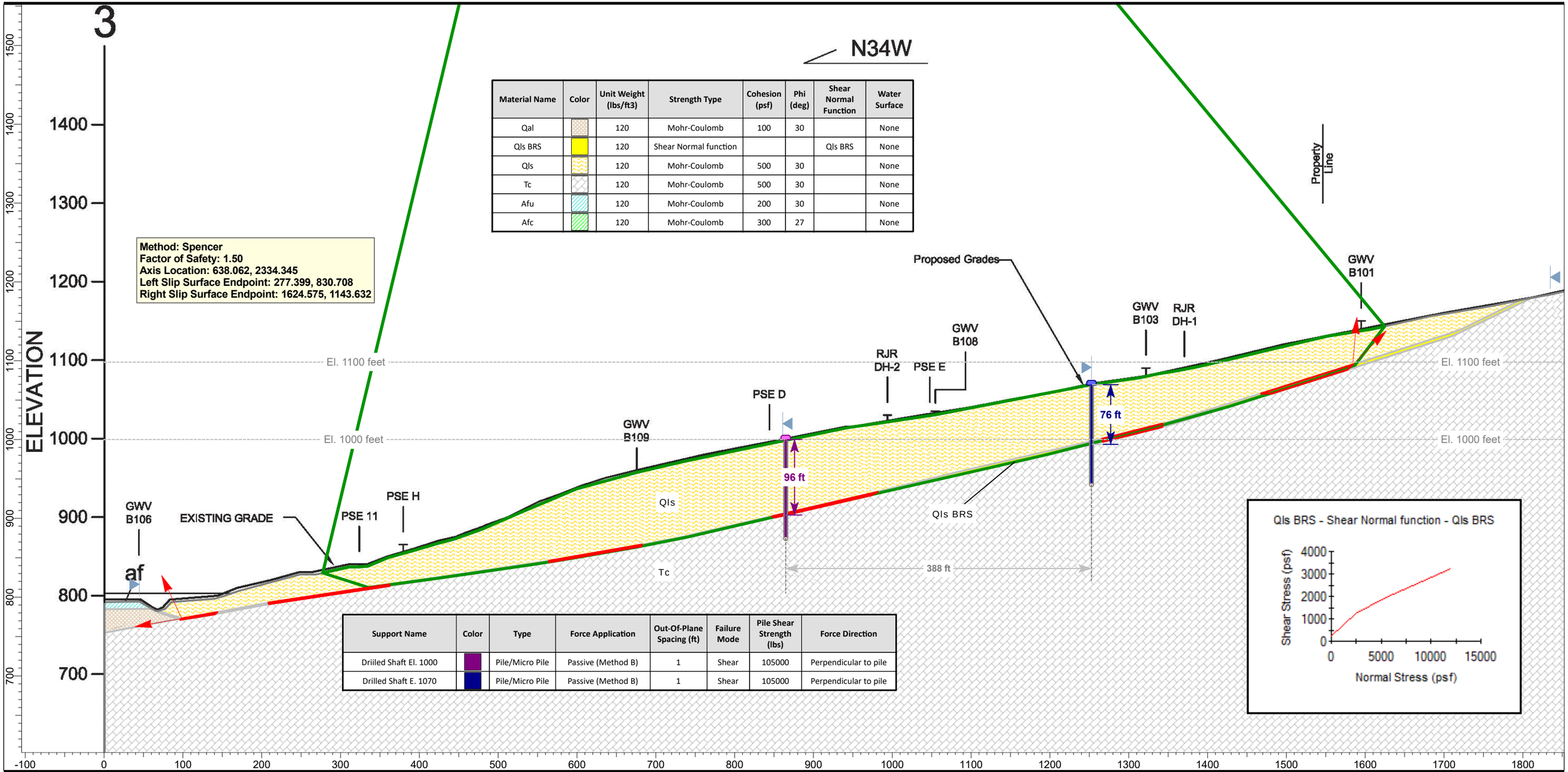
Material Boundary

X	Y
0.609603	784.718
60.5591	785.32

Section 3 - 3' Stability of Existing Southern Landslide

Global Stability

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 3\Multi Pier\Sec 3_MP2_Qls_Blk SrfAlt_Global_x1.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
Qal		120	Mohr-Coulomb	100	30		None
Qls BRS		120	Shear Normal function			Qls BRS	None
Qls		120	Mohr-Coulomb	500	30		None
Tc		120	Mohr-Coulomb	500	30		None
Afu		120	Mohr-Coulomb	200	30		None
Afc		120	Mohr-Coulomb	300	27		None

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Failure Mode	Pile Shear Strength (lbs)	Force Direction
Driiled Shaft El. 1000		Pile/Micro Pile	Passive (Method B)	1	Shear	105000	Perpendicular to pile
Drilled Shaft E. 1070		Pile/Micro Pile	Passive (Method B)	1	Shear	105000	Perpendicular to pile

SLIDEINTERPRET 8.022

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA				
Analyzed By: JEH	Units: feet	Scale: 1:1440	Project No.: 12558.001	File Name: Sec 3_MP2_Qls_Blk SrfAlt_Global_x1.slim
Date: December 10, 2019	Condition: Static			

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version:	8.022
Compute Time:	00h:00m:06.484s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Janbu corrected
Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	No
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	115
Left Projection Angle (End Angle) [°]:	190
Right Projection Angle (Start Angle) [°]:	45
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Materials

Property	Qal	Qls BRS	Qls	Tc	Afu
Color					
Strength Type	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120
Cohesion [psf]	100		500	500	200
Friction Angle [°]	30		30	30	30
Water Surface	None	None	None	None	None
Ru Value	0	0	0	0	0
Unsat. Shear Strength Phi b [°]	0	0	0	0	0
Unsat. Shear Strength Air Entry Value [psf]	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Support

Driiled Shaft El. 1000

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 105000 lb
Force Direction: Perpendicular to pile

Drilled Shaft E. 1070

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 105000 lb
Force Direction: Perpendicular to pile

Global Minimums

Method: janbu corrected

FS	1.508340
Axis Location:	638.062, 2334.345
Left Slip Surface Endpoint:	277.399, 830.708
Right Slip Surface Endpoint:	1624.575, 1143.632
Resisting Horizontal Force:	3.61904e+06 lb
Driving Horizontal Force:	2.39936e+06 lb
Passive Horizontal Support Force:	210000 lb
Maximum Single Support Force:	105000 lb
Total Support Force:	210000 lb
Total Slice Area:	93763.1 ft2
Surface Horizontal Width:	1347.18 ft
Surface Average Height:	69.5998 ft

Method: spencer

FS	1.496940
Axis Location:	638.062, 2334.345
Left Slip Surface Endpoint:	277.399, 830.708
Right Slip Surface Endpoint:	1624.575, 1143.632
Resisting Moment:	5.34305e+09 lb-ft
Driving Moment:	3.5693e+09 lb-ft
Resisting Horizontal Force:	3.55797e+06 lb
Driving Horizontal Force:	2.37682e+06 lb
Passive Support Moment:	2.90681e+08 lb-ft
Passive Horizontal Support Force:	210000 lb
Maximum Single Support Force:	105000 lb
Total Support Force:	210000 lb
Total Slice Area:	93763.1 ft2
Surface Horizontal Width:	1347.18 ft
Surface Average Height:	69.5998 ft

Global Minimum Coordinates

Method: janbu corrected

X	Y
277.399	830.708
335.628	812.229
378.524	817.97
421.42	823.731
458.094	828.966
494.767	834.201
531.479	839.627
568.199	845.202
621.384	854.141
674.731	863.341
741.622	876.588
808.863	892.273
876.338	907.814
943.813	923.339
1007.12	937.706
1070.43	952.061
1133.75	966.548
1197.06	981.052
1260.04	996.986
1323.02	1012.9
1375.09	1027.3
1427.1	1041.9
1488.37	1061.31
1549.65	1080.7
1587.11	1094.35
1624.57	1143.63

Method: spencer

X	Y
277.399	830.708
335.628	812.229
378.524	817.97
421.42	823.731
458.094	828.966
494.767	834.201
531.479	839.627
568.199	845.202
621.384	854.141
674.731	863.341
741.622	876.588
808.863	892.273
876.338	907.814
943.813	923.339
1007.12	937.706
1070.43	952.061
1133.75	966.548
1197.06	981.052
1260.04	996.986
1323.02	1012.9
1375.09	1027.3
1427.1	1041.9
1488.37	1061.31
1549.65	1080.7
1587.11	1094.35
1624.57	1143.63

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 4052
Number of Invalid Surfaces: 962

Error Codes:

Error Code -112 reported for 119 surfaces
Error Code -124 reported for 837 surfaces
Error Code -1000 reported for 6 surfaces

Method: spencer

Number of Valid Surfaces: 4036
Number of Invalid Surfaces: 978

Error Codes:

Error Code -111 reported for 17 surfaces
Error Code -112 reported for 118 surfaces
Error Code -124 reported for 837 surfaces
Error Code -1000 reported for 6 surfaces

Error Codes

The following errors were encountered during the computation:

-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.50834

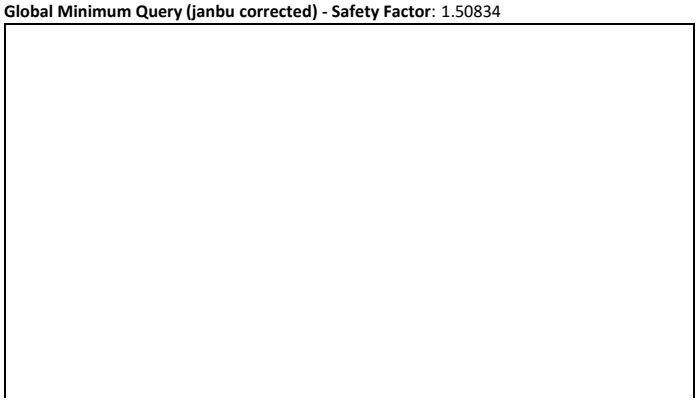
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	29.1141	27748.4	-17.6065	Qls	500	30	794.878	1198.95	1210.61	0	1210.61	958.361	958.361
2	29.1141	75639.7	-17.6065	Qls	500	30	1513.65	2283.1	3088.43	0	3088.43	2608.08	2608.08
3	21.4482	78666.4	7.62223	Qls BRS	640.909	13.6925	995.38	1501.37	3531.75	0	3531.75	3664.96	3664.96
4	21.4482	91839	7.62223	Qls BRS	640.909	13.6925	1092.44	1647.77	4132.65	0	4132.65	4278.84	4278.84
5	21.4482	99883.9	7.64859	Qls BRS	640.909	13.6925	1151.63	1737.05	4499.1	0	4499.1	4653.75	4653.75
6	21.4482	108482	7.64859	Qls BRS	640.909	13.6925	1214.98	1832.61	4891.29	0	4891.29	5054.45	5054.45
7	36.6732	204003	8.12436	Qls BRS	885.556	11.1466	1289.23	1944.6	5374.82	0	5374.82	5558.87	5558.87
8	36.6732	236693	8.12436	Qls BRS	885.556	11.1466	1403.5	2116.96	6249.57	0	6249.57	6449.93	6449.93
9	36.7127	281644	8.40663	Qls BRS	885.556	11.1466	1558.55	2350.82	7436.45	0	7436.45	7666.78	7666.78
10	36.7196	326343	8.6341	Qls BRS	885.556	11.1466	1713.39	2584.38	8621.82	0	8621.82	8881.98	8881.98
11	26.5927	262815	9.53973	Qls BRS	885.556	11.1466	1836.96	2770.77	9567.81	0	9567.81	9876.52	9876.52
12	26.5927	279964	9.53973	Qls BRS	885.556	11.1466	1919.36	2895.05	10198.5	0	10198.5	10521.1	10521.1
13	26.6733	289778	9.78525	Qls BRS	885.556	11.1466	1961.18	2958.13	10518.7	0	10518.7	10856.9	10856.9
14	26.6733	298383	9.78525	Qls BRS	885.556	11.1466	2002.38	3020.27	10834.1	0	10834.1	11179.4	11179.4
15	22.2969	254293	11.2016	Qls BRS	885.556	11.1466	2023.5	3052.13	10995.8	0	10995.8	11396.5	11396.5
16	22.2969	256307	11.2016	Qls BRS	885.556	11.1466	2035	3069.47	11083.8	0	11083.8	11486.8	11486.8
17	22.2969	258258	11.2016	Qls BRS	885.556	11.1466	2046.13	3086.27	11169	0	11169	11574.2	11574.2
18	22.4136	259547	13.131	Qls BRS	885.556	11.1466	2036.45	3071.66	11094.9	0	11094.9	11569.9	11569.9
19	22.4136	258043	13.131	Qls BRS	885.556	11.1466	2027.96	3058.85	11029.8	0	11029.8	11502.9	11502.9
20	22.4136	256540	13.131	Qls BRS	885.556	11.1466	2019.46	3046.03	10964.8	0	10964.8	11435.9	11435.9
21	33.7377	383520	12.9697	Qls BRS	885.556	11.1466	2010.34	3032.28	10895	0	10895	11358	11358
22	33.7377	380323	12.9697	Qls BRS	885.556	11.1466	1998.33	3014.16	10803.1	0	10803.1	11263.3	11263.3
23	22.4918	251616	12.9572	Qls BRS	885.556	11.1466	1987.5	2997.83	10720.1	0	10720.1	11177.4	11177.4
24	22.4918	250076	12.9572	Qls BRS	885.556	11.1466	1978.82	2984.74	10653.8	0	10653.8	11109	11109
25	22.4918	248537	12.9572	Qls BRS	885.556	11.1466	1970.15	2971.66	10587.3	0	10587.3	11040.6	11040.6
26	21.1035	230216	12.7863	Qls BRS	885.556	11.1466	1953.05	2945.86	10456.4	0	10456.4	10899.6	10899.6
27	21.1035	225706	12.7863	Qls BRS	885.556	11.1466	1925.95	2904.99	10249	0	10249	10686	10686
28	21.1035	221393	12.7863	Qls BRS	885.556	11.1466	1900.03	2865.9	10050.6	0	10050.6	10481.8	10481.8
29	31.6553	324284	12.7747	Qls BRS	885.556	11.1466	1868.82	2818.82	9811.66	0	9811.66	10235.4	10235.4
30	31.6553	315627	12.7747	Qls BRS	885.556	11.1466	1834.15	2766.52	9546.22	0	9546.22	9962.07	9962.07
31	31.6553	310802	12.8886	Qls BRS	885.556	11.1466	1814.33	2736.63	9394.51	0	9394.51	9809.67	9809.67
32	31.6553	306475	12.8886	Qls BRS	885.556	11.1466	1797	2710.49	9261.85	0	9261.85	9673.04	9673.04
33	21.1035	201905	12.9039	Qls BRS	885.556	11.1466	1782.45	2688.54	9150.46	0	9150.46	9558.83	9558.83
34	21.1035	199967	12.9039	Qls BRS	885.556	11.1466	1770.8	2670.98	9061.37	0	9061.37	9467.06	9467.06
35	21.1035	198028	12.9039	Qls BRS	885.556	11.1466	1759.16	2653.42	8972.22	0	8972.22	9375.25	9375.25
36	31.4901	290466	14.1978	Qls BRS	885.556	11.1466	1733.57	2614.82	8776.31	0	8776.31	9214.9	9214.9
37	31.4901	283144	14.1978	Qls BRS	885.556	11.1466	1704.19	2570.5	8551.38	0	8551.38	8982.54	8982.54
38	31.4901	271762	14.1799	Qls BRS	885.556	11.1466	1658.58	2501.71	8202.27	0	8202.27	8621.34	8621.34
39	31.4901	259022	14.1799	Qls BRS	885.556	11.1466	1607.45	2424.59	7810.85	0	7810.85	8217	8217
40	26.0351	207654	15.4593	Qls BRS	885.556	11.1466	1571.07	2369.71	7532.34	0	7532.34	7966.83	7966.83
41	26.0351	199075	15.4593	Qls BRS	885.556	11.1466	1529.55	2307.09	7214.56	0	7214.56	7637.57	7637.57
42	26.007	192288	15.6804	Qls BRS	885.556	11.1466	1496.92	2257.87	6964.73	0	6964.73	7384.94	7384.94
43	26.007	187770	15.6804	Qls BRS	885.556	11.1466	1475.04	2224.87	6797.25	0	6797.25	7211.32	7211.32
44	30.6364	214579	17.5743	Qls BRS	885.556	11.1466	1441.18	2173.8	6538.04	0	6538.04	6994.5	6994.5
45	30.6364	206066	17.5743	Qls BRS	885.556	11.1466	1406.35	2121.26	6271.43	0	6271.43	6716.86	6716.86
46	30.6364	197008	17.5588	Qls BRS	885.556	11.1466	1369.35	2065.45	5988.15	0	5988.15	6421.45	6421.45
47	30.6364	187870	17.5588	Qls BRS	885.556	11.1466	1331.96	2009.06	5701.94	0	5701.94	6123.41	6123.41
48	37.465	207585	20.0286	Qls BRS	640.909	13.6925	1245.05	1877.96	5077.43	0	5077.43	5531.3	5531.3
49	1.66995	8292.52	52.7566	Qls BRS	640.909	13.6925	1008.3	1520.86	3611.73	0	3611.73	4938.03	4938.03
50	35.794	85650	52.7566	Qls	500	30	823.911	1242.74	1286.46	0	1286.46	2370.22	2370.22

Global Minimum Query (spencer) - Safety Factor: 1.49694

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	29.1141	27748.4	-17.6065	Qls	500	30	929.247	1391.03	1543.3	0	1543.3	1248.41	1248.41
2	29.1141	75639.7	-17.6065	Qls	500	30	1796.81	2689.71	3792.67	0	3792.67	3222.47	3222.47
3	21.4482	78666.4	7.62223	Qls BRS	640.909	13.6925	1020.93	1528.27	3642.16	0	3642.16	3778.78	3778.78
4	21.4482	91839	7.62223	Qls BRS	640.909	13.6925	1119.34	1675.58	4246.79	0	4246.79	4396.59	4396.59
5	21.4482	99883.9	7.64859	Qls BRS	640.909	13.6925	1179.28	1765.31	4615.07	0	4615.07	4773.44	4773.44
6	21.4482	108482	7.64859	Qls BRS	640.909	13.6925	1243.5	1861.45	5009.68	0	5009.68	5176.67	5176.67
7	36.6732	204003	8.12436	Qls BRS	885.556	11.1466	1313.63	1966.43	5485.61	0	5485.61	5673.13	5673.13
8	36.6732	236693	8.12436	Qls BRS	885.556	11.1466	1428.54	2138.44	6358.57	0	6358.57	6562.5	6562.5
9	36.7127	281644	8.40663	Qls BRS	885.556	11.1466	1583.43	2370.31	7535.36	0	7535.36	7769.37	7769.37
10	36.7196	326343	8.6341	Qls BRS	885.556	11.1466	1738.04	2601.75	8709.99	0	8709.99	8973.91	8973.91
11	26.5927	262815	9.53973	Qls BRS	885.556	11.1466	1857.95	2781.24	9620.92	0	9620.92	9933.15	9933.15
12	26.5927	279964	9.53973	Qls BRS	885.556	11.1466	1940.38	2904.64	10247.2	0	10247.2	10573.3	10573.3
13	26.6733	289778	9.78525	Qls BRS	885.556	11.1466	1980.99	2965.43	10555.7	0	10555.7	10897.4	10897.4
14	26.6733	298383	9.78525	Qls BRS	885.556	11.1466	2022.17	3027.07	10868.6	0	10868.6	11217.4	11217.4
15	22.2969	254293	11.2016	Qls BRS	885.556	11.1466	2035.93	3047.67	10973.1	0	10973.1	11376.3	11376.3
16	22.2969	256307	11.2016	Qls BRS	885.556	11.1466	2047.37	3064.79	11060	0	11060	11465.5	11465.5
17	22.2969	258258	11.2016	Qls BRS	885.556	11.1466	2058.44	3081.36	11144.1	0	11144.1	11551.8	11551.8
18	22.4136	259547	13.131	Qls BRS	885.556	11.1466	2038.78	3051.94	10994.8	0	10994.8	11470.4	11470.4
19	22.4136	258043	13.131	Qls BRS	885.556	11.1466	2030.39	3039.37	10931	0	10931	11404.7	11404.7
20	22.4136	256540	13.131	Qls BRS	885.556	11.1466	2022	3026.81	10867.2	0	10867.2	11338.9	11338.9
21	33.7377	383520	12.9697	Qls BRS	885.556	11.1466	2013.81	3014.56	10805.1	0	10805.1	11268.9	11268.9
22	33.7377	380323	12.9697	Qls BRS	885.556	11.1466	2056.15	3077.93	11126.7	0	11126.7	11600.2	11600.2
23	22.4918	251616	12.9572	Qls BRS	885.556	11.1466	1991.3	2980.86	10634	0	10634	11092.2	11092.2
24	22.4918	250076	12.9572	Qls BRS	885.556	11.1466	1982.73	2968.03	10568.9	0	10568.9	11025.1	11025.1
25	22.4918	248537	12.9572	Qls BRS	885.556	11.1466	1974.15	2955.19	10503.8	0	10503.8	10958	10958
26	21.1035	230216	12.7863	Qls BRS	885.556	11.1466	1958.09	2931.14	10381.7	0	10381.7	10826.1	10826.1
27	21.1035	225706	12.7863	Qls BRS	885.556	11.1466	1931.28	2891.02	10178.1	0	10178.1	10616.4	10616.4
28	21.1035	221393	12.7863	Qls BRS	885.556	11.1466	1905.66	2852.66	9983.39	0	9983.39	10415.9	10415.9
29	31.6553	324284	12.7747	Qls BRS	885.556	11.1466	1874.84	2806.53	9749.3	0	9749.3	10174.4	10174.4
30	31.6553	315627	12.7747	Qls BRS	885.556	11.1466	1840.55	2755.19	9488.76	0	9488.76	9906.07	9906.07
31	31.6553	310802	12.8886	Qls BRS	885.556	11.1466	1820.45	2725.11	9336.04	0	9336.04	9752.59	9752.59
32	31.6553	306475	12.8886	Qls BRS	885.556	11.1466	1803.32	2699.46	9205.9	0	9205.9	9618.53	9618.53
33	21.1035	201905	12.9039	Qls BRS	885.556	11.1466	1788.87	2677.83	9096.1	0	9096.1	9505.93	9505.93
34	21.1035	199967	12.9039	Qls BRS	885.556	11.1466	1777.36	2660.6	9008.66	0	9008.66	9415.86	9415.86
35	21.1035	198028	12.9039	Qls BRS	885.556	11.1466	1765.85	2643.37	8921.23	0	8921.23	9325.79	9325.79
36	31.4901	290466	14.1978	Qls BRS	885.556	11.1466	1735.24	2597.55	8688.69	0	8688.69	9127.7	9127.7
37	31.4901	283144	14.1978	Qls BRS	885.556	11.1466	1763.98	2640.57	8906.99	0	8906.99	9353.27	9353.27
38	31.4901	271762	14.1799	Qls BRS	885.556	11.1466	1661.52	2487.2	8128.62	0	8128.62	8548.43	8548.43
39	31.4901	259022	14.1799	Qls BRS	885.556	11.1466	1611.2	2411.88	7746.38	0	7746.38	8153.48	8153.48
40	26.0351	207654	15.4593	Qls BRS	885.556	11.1466	1570.9	2351.55	7440.16	0	7440.16	7874.61	7874.61
41	26.0351	199075	15.4593	Qls BRS	885.556	11.1466	1530.23	2290.67	7131.19	0	7131.19	7554.39	7554.39
42	26.007	192288	15.6804	Qls BRS	885.556	11.1466	1497.55	2241.74	6882.88	0	6882.88	7303.26	7303.26
43	26.007	187770	15.6804	Qls BRS	885.556	11.1466	1476.14	2209.69	6720.17	0	6720.17	7134.55	7134.55
44	30.6364	214579	17.5743	Qls BRS	885.556	11.1466	1437.21	2151.42	6424.47	0	6424.47	6879.67	6879.67
45	30.6364	206066	17.5743	Qls BRS	885.556	11.1466	1403.35	2100.73	6167.22	0	6167.22	6611.69	6611.69
46	30.6364	197008	17.5588	Qls BRS	885.556	11.1466	1367.41	2046.94	5894.23	0	5894.23	6326.92	6326.92
47	30.6364	187870	17.5588	Qls BRS	885.556	11.1466	1331.07	1992.53	5618.07	0	5618.07	6039.26	6039.26
48	37.465	207585	20.0286	Qls BRS	640.909	13.6925	1237.08	1851.83	4970.2	0	4970.2	5421.16	5421.16
49	1.66995	8292.52	52.7566	Qls BRS	640.909	13.6925	930.908	1393.51	3089.05	0	3089.05	4313.55	4313.55
50	35.794	85650	52.7566	Qls	500	30	792.766	1186.72	1189.44	0	1189.44	2232.23	2232.23

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.50834



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	277.399	830.708	0	0	0
2	306.514	821.469	34810.7	0	0
3	335.628	812.229	108335	0	0
4	357.076	815.1	119993	0	0
5	378.524	817.97	132051	0	0
6	399.972	820.85	144309	0	0
7	421.42	823.731	156824	0	0
8	458.094	828.966	176954	0	0
9	494.767	834.201	196782	0	0
10	531.479	839.627	214848	0	0
11	568.199	845.202	231006	0	0
12	594.792	849.671	238117	0	0
13	621.384	854.141	244647	0	0
14	648.058	858.741	249663	0	0
15	674.731	863.341	254350	0	0
16	697.028	867.756	251858	0	0
17	719.325	872.172	249239	0	0
18	741.622	876.588	246497	0	0
19	764.035	881.816	235085	0	0
20	786.449	887.045	223818	0	0
21	808.863	892.273	212697	0	0
22	842.6	900.044	197282	0	0
23	876.338	907.814	253235	0	0
24	898.83	912.989	243395	0	0
25	921.322	918.164	233700	0	0
26	943.813	923.339	224149	0	0
27	964.917	928.128	216148	0	0
28	986.02	932.917	208556	0	0
29	1007.12	937.706	201356	0	0
30	1038.78	944.884	191330	0	0
31	1070.43	952.061	182088	0	0
32	1102.09	959.304	172673	0	0
33	1133.75	966.548	163659	0	0
34	1154.85	971.383	157820	0	0
35	1175.95	976.217	152161	0	0
36	1197.06	981.052	146681	0	0
37	1228.55	989.019	132492	0	0
38	1260.04	996.986	190218	0	0
39	1291.53	1004.94	178277	0	0
40	1323.02	1012.9	167807	0	0
41	1349.05	1020.1	155329	0	0
42	1375.09	1027.3	144037	0	0
43	1401.09	1034.6	132934	0	0
44	1427.1	1041.9	122472	0	0
45	1457.74	1051.6	104107	0	0
46	1488.37	1061.31	87239.4	0	0
47	1519.01	1071	72017.7	0	0
48	1549.65	1080.7	58401.2	0	0
49	1587.11	1094.35	36677.4	0	0
50	1588.78	1096.55	30462.8	0	0
51	1624.57	1143.63	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.49694

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	277.399	830.708	0	0	0
2	306.514	821.469	41313.1	8598.82	11.7576
3	335.628	812.229	128667	26780.4	11.7575
4	357.076	815.1	140110	29162.2	11.7576
5	378.524	817.97	151929	31622.1	11.7575
6	399.972	820.85	163929	34119.8	11.7575
7	421.42	823.731	176171	36667.8	11.7575
8	458.094	828.966	195627	40717.4	11.7576
9	494.767	834.201	214727	44692.9	11.7576
10	531.479	839.627	231976	48282.9	11.7575
11	568.199	845.202	247232	51458.3	11.7575
12	594.792	849.671	253644	52792.8	11.7575
13	621.384	854.141	259449	54001.1	11.7575
14	648.058	858.741	263730	54892.1	11.7575
15	674.731	863.341	267670	55712.3	11.7576
16	697.028	867.756	264613	55075.9	11.7575
17	719.325	872.172	261427	54412.8	11.7575
18	741.622	876.588	258116	53723.7	11.7576
19	764.035	881.816	246326	51269.7	11.7575
20	786.449	887.045	234681	48845.9	11.7575
21	808.863	892.273	223181	46452.3	11.7575
22	842.6	900.044	207165	43118.8	11.7575
23	876.338	907.814	260221	54161.8	11.7575
24	898.83	912.989	249978	52029.9	11.7576
25	921.322	918.164	239880	49928.1	11.7576
26	943.813	923.339	229926	47856.3	11.7576
27	964.917	928.128	221528	46108.3	11.7575
28	986.02	932.917	213539	44445.5	11.7575
29	1007.12	937.706	205942	42864.3	11.7575
30	1038.78	944.884	195318	40653.1	11.7576
31	1070.43	952.061	185479	38605.1	11.7575
32	1102.09	959.304	175481	36524.2	11.7575
33	1133.75	966.548	165884	34526.7	11.7575
34	1154.85	971.383	159657	33230.6	11.7575
35	1175.95	976.217	153610	31972	11.7575
36	1197.06	981.052	147743	30750.9	11.7576
37	1228.55	989.019	133164	27716.4	11.7575
38	1260.04	996.986	187893	39107.7	11.7576
39	1291.53	1004.94	175540	36536.5	11.7575
40	1323.02	1012.9	164643	34268.5	11.7576
41	1349.05	1020.1	151971	31630.8	11.7575
42	1375.09	1027.3	140464	29235.9	11.7576
43	1401.09	1034.6	129161	26883.4	11.7576
44	1427.1	1041.9	118490	24662.2	11.7575
45	1457.74	1051.6	100182	20851.7	11.7576
46	1488.37	1061.31	83333.5	17344.9	11.7576
47	1519.01	1071	68086.7	14171.4	11.7575
48	1549.65	1080.7	54403.2	11323.4	11.7576
49	1587.11	1094.35	32870.8	6841.66	11.7576
50	1588.78	1096.55	27639.9	5752.91	11.7576
51	1624.57	1143.63	0	0	0

Entity Information

Block Search Window

X	Y
564.89	844.188
681.563	864.526
682.489	866.716
564.575	846.124

Block Search Window

X	Y
362.051	814.217
361.91	816.212
208.664	793.019
209.253	791.204

Block Search Window

X	Y
96.862	771.402
140.691	778.434
143.638	780.881
98.553	772.861

Block Search Window

X	Y
851.287	901.082
973.292	929.293
981.695	933.532
847.266	902.394

Block Search Window

X	Y
1481.53	1058.34
1577.24	1088.39
1584.2	1095.08
1467.82	1058.34

Block Search Window

X	Y
1267.24	997.235
1342.43	1015.81
1342.43	1020.11
1265.93	1000.91

External Boundary

X	Y
0.598119	793.788
0.609603	784.718
0.64749	754.796
0.845	598.805
2048.18	598.805
2048.18	1199.33
1915.41	1199.33
1880.87	1193.95
1834.83	1183.98
1810.31	1179.42
1801.82	1177.84
1797.19	1176.89
1760.38	1169.39
1682.1	1156.35
1609.19	1140.23
1551.63	1131.02
1473.35	1112.6
1425.77	1101.09
1388.93	1092.65
1362.07	1087.28
1337.51	1083.44
1313.64	1078.27
1252.71	1069.6
1054.16	1031.31
984.283	1020.9
943.8	1015.13
846.332	995.181
735.818	972.157
677.304	958.61
599.357	937.31
525.036	906.041
479.485	886.201
444.053	873.593
422.436	867.883
391.846	858.91
360.849	850.345
334.746	839.333
323.054	838.336
310.818	838.336
269.125	828.819
248.732	828.819
171.239	807.973
153.111	801.78
140.42	797.996
85.414	793.833
77.683	785.211
68.858	782.398
65.117	782.706
60.5591	785.32
44.7233	794.401

Material Boundary

X	Y
962.384	927.094
1081.74	954.571
1187.42	978.816
1292.48	1003.06
1350.91	1017.98
1446.02	1047.2
1584.65	1090.71
1710.22	1131.12
1743.17	1146.66
1810.31	1179.42

Material Boundary

X	Y
973.68	931.878
974.126	931.988
1082.37	958.638
1187.1	982.754
1291.82	1006.87
1352.41	1022.72
1439.6	1049.45
1456.46	1054.75
1584.2	1095.08
1707.76	1134.72
1722.95	1140.34
1742.12	1149.92
1797.19	1176.89

Material Boundary

X	Y
0.64749	754.796
94.0915	772.325
94.478	772.398

Material Boundary

X	Y
65.117	782.706
68.496	780.768
92.848	772.74
94.0915	772.325
96.862	771.402
115.861	773.81
209.253	791.204
362.051	814.217
564.89	844.188
681.563	864.526
728.928	873.089
962.384	927.094

Material Boundary

X	Y
68.858	782.398
98.553	772.861
143.638	780.881
208.664	793.019
361.91	816.212
564.575	846.124
682.489	866.716
728.875	875.386
973.68	931.878

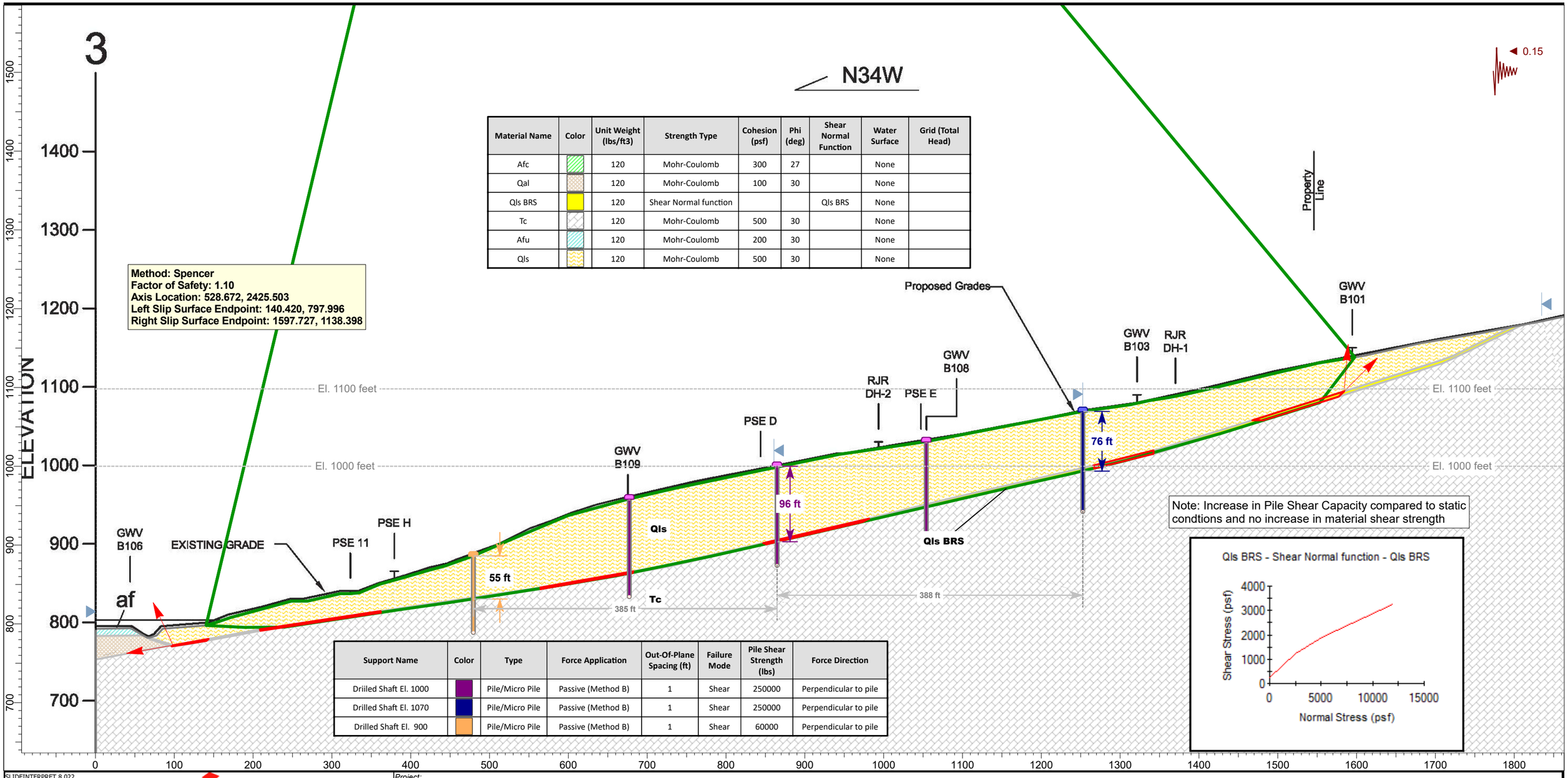
Material Boundary

X	Y
0.609603	784.718
60.5591	785.32

Section 3 - 3' Stability of Existing Southern Landslide

Global Stability

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 3\Multi Pier\Sec 3_MP5_Qls_Blk SrfAlt_Global_x3_k015.slim



SLIDEINTERPRET 8.022

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**			
Analyzed By: JEH	Units: feet	Scale: 1:1440	Project No.: **12558.001**
Date: December 10, 2019	Condition: **PseudoStatic**		File Name: Sec 3_MP5_Qls_Blk SrfAlt_Global_x3_k015.slim

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version:	8.022
Compute Time:	00h:00m:10.744s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Janbu corrected
Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	No
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	115
Left Projection Angle (End Angle) [°]:	190
Right Projection Angle (Start Angle) [°]:	45
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Seismic Load Coefficient (Horizontal): 0.15

Materials

Property	Qal	Qls BRS	Qls	Tc	Afu
Color					
Strength Type	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120
Cohesion [psf]	100		500	500	200
Friction Angle [°]	30		30	30	30
Water Surface	None	None	None	None	None
Ru Value	0	0	0	0	0
Unsat. Shear Strength Phi b [°]	0	0	0	0	0
Unsat. Shear Strength Air Entry Value [psf]	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Support

Driiled Shaft El. 1000

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 250000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 1070

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 250000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 900

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear

Pile Shear Strength: 60000 lb
Force Direction: Perpendicular to pile

Global Minimums

Method: janbu corrected

FS	1.103180
Axis Location:	603.118, 2470.394
Left Slip Surface Endpoint:	201.941, 816.232
Right Slip Surface Endpoint:	1685.742, 1156.955
Resisting Horizontal Force:	4.6592e+06 lb
Driving Horizontal Force:	4.22341e+06 lb
Passive Horizontal Support Force:	1.06e+06 lb
Maximum Single Support Force:	250000 lb
Total Support Force:	1.06e+06 lb
Total Slice Area:	98562.2 ft2
Surface Horizontal Width:	1483.8 ft
Surface Average Height:	66.4255 ft

Method: spencer

FS	1.099630
Axis Location:	528.672, 2425.503
Left Slip Surface Endpoint:	140.420, 797.996
Right Slip Surface Endpoint:	1597.727, 1138.398
Resisting Moment:	7.21967e+09 lb-ft
Driving Moment:	6.56552e+09 lb-ft
Resisting Horizontal Force:	4.53232e+06 lb
Driving Horizontal Force:	4.12167e+06 lb
Passive Support Moment:	1.59323e+09 lb-ft
Passive Horizontal Support Force:	1.06e+06 lb
Maximum Single Support Force:	250000 lb
Total Support Force:	1.06e+06 lb
Total Slice Area:	96597.8 ft2
Surface Horizontal Width:	1457.31 ft
Surface Average Height:	66.2852 ft

Global Minimum Coordinates

Method: janbu corrected

X	Y
201.941	816.232
236.472	796.963
274.116	800.992
340.301	811.256
406.485	821.52
473.95	831.982
541.425	842.446
609.019	852.928
676.614	863.678
743.545	876.726
812.996	892.661
882.447	908.637
951.899	924.919
1017.19	940.312
1082.49	955.704
1147.78	971.096
1213.08	986.488
1279.01	1002.03
1339.91	1016.39
1395.32	1031.65
1451.27	1049.15
1504.24	1065.76
1540.35	1077.09
1576.46	1088.43
1617.98	1101.74
1646.52	1114.36
1685.74	1156.95

Method: spencer

X	Y
140.42	797.996
189.163	795.545
239.709	795.813
310.485	806.517
381.26	817.3
451.118	827.378
520.975	838.158
590.769	849.123
660.176	860.805
720.577	873.273
780.979	885.797
841.38	899.437
901.782	913.085
969.399	928.735
1037.02	944.405
1104.63	960.138
1172.23	975.864
1240.07	991.03
1307.94	1007.62
1367.98	1024.66
1428.14	1041.7
1488.84	1060.65
1553.56	1080.96
1597.73	1138.4

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 3676
Number of Invalid Surfaces: 1341

Error Codes:

Error Code -112 reported for 501 surfaces
Error Code -124 reported for 834 surfaces
Error Code -1000 reported for 6 surfaces

Method: spencer

Number of Valid Surfaces: 3630
Number of Invalid Surfaces: 1387

Error Codes:

Error Code -111 reported for 43 surfaces
Error Code -112 reported for 501 surfaces
Error Code -124 reported for 834 surfaces
Error Code -1000 reported for 9 surfaces

Error Codes

The following errors were encountered during the computation:

-111 = safety factor equation did not converge
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.
-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.10318

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	34.1574	57895.6	-29.1629	Qls	500	30	1908.36	2105.27	2780.41	0	2780.41	1715.48	1715.48
2	0.373643	1273.55	-29.1629	Qls BRS	640.909	13.6925	1525.33	1682.71	4276.06	0	4276.06	3424.88	3424.88
3	37.6444	132719	6.11045	Qls BRS	640.909	13.6925	1327.6	1464.58	3380.74	0	3380.74	3522.86	3522.86
4	33.0922	119834	8.81501	Qls BRS	640.909	13.6925	1334.13	1471.79	3410.32	0	3410.32	3617.22	3617.22
5	33.0922	119692	8.81501	Qls BRS	640.909	13.6925	1333.22	1470.78	3406.17	0	3406.17	3612.92	3612.92
6	33.0923	136957	8.81501	Qls BRS	640.909	13.6925	1444.55	1593.6	3910.28	0	3910.28	4134.3	4134.3
7	33.0923	156795	8.81501	Qls BRS	640.909	13.6925	1572.48	1734.73	4489.56	0	4489.56	4733.42	4733.42
8	33.7324	177619	8.81501	Qls BRS	640.909	13.6925	1685.03	1858.89	4999.17	0	4999.17	5260.48	5260.48
9	33.7324	197875	8.81501	Qls BRS	885.556	11.1466	1799.64	1985.33	5581.56	0	5581.56	5860.64	5860.64
10	33.7373	229046	8.81501	Qls BRS	885.556	11.1466	1959.98	2162.22	6479.27	0	6479.27	6783.22	6783.22
11	33.7373	266969	8.81501	Qls BRS	885.556	11.1466	2155.24	2377.62	7572.51	0	7572.51	7906.74	7906.74
12	33.7972	304092	8.81501	Qls BRS	885.556	11.1466	2343.6	2585.42	8627.1	0	8627.1	8990.54	8990.54
13	33.7972	339679	8.81501	Qls BRS	885.556	11.1466	2526.51	2787.2	9651.16	0	9651.16	10043	10043
14	22.5315	238768	9.03678	Qls BRS	885.556	11.1466	2619.61	2889.9	10172.4	0	10172.4	10589	10589
15	22.5315	245726	9.03678	Qls BRS	885.556	11.1466	2673.21	2949.04	10472.6	0	10472.6	10897.7	10897.7
16	22.5315	252684	9.03678	Qls BRS	885.556	11.1466	2726.82	3008.18	10772.7	0	10772.7	11206.4	11206.4
17	33.4657	383049	11.0305	Qls BRS	885.556	11.1466	2749.51	3033.21	10899.7	0	10899.7	11435.7	11435.7
18	33.4657	387884	11.0305	Qls BRS	885.556	11.1466	2774.43	3060.7	11039.3	0	11039.3	11580.1	11580.1
19	23.1504	268907	12.9226	Qls BRS	885.556	11.1466	2762	3046.99	10969.7	0	10969.7	11603.4	11603.4
20	23.1504	267549	12.9226	Qls BRS	885.556	11.1466	2751.95	3035.9	10913.4	0	10913.4	11544.8	11544.8
21	23.1504	266191	12.9226	Qls BRS	885.556	11.1466	2741.9	3024.81	10857.1	0	10857.1	11486.2	11486.2
22	34.7256	396698	12.9546	Qls BRS	885.556	11.1466	2728.83	3010.4	10784	0	10784	11411.7	11411.7
23	34.7256	393277	12.9546	Qls BRS	885.556	11.1466	2711.95	2991.77	10689.4	0	10689.4	11313.2	11313.2
24	23.1504	260008	13.1944	Qls BRS	885.556	11.1466	2693.75	2971.7	10587.5	0	10587.5	11219.1	11219.1
25	23.1504	258096	13.1944	Qls BRS	885.556	11.1466	2679.6	2956.09	10508.4	0	10508.4	11136.6	11136.6
26	23.1504	255940	13.1944	Qls BRS	885.556	11.1466	2663.65	2938.49	10419	0	10419	11043.5	11043.5
27	32.6471	351995	13.2645	Qls BRS	885.556	11.1466	2616.18	2886.12	10153.2	0	10153.2	10769.9	10769.9
28	32.6471	340489	13.2645	Qls BRS	885.556	11.1466	2555.82	2819.53	9815.29	0	9815.29	10417.8	10417.8
29	32.6471	329387	13.2645	Qls BRS	885.556	11.1466	2497.58	2755.28	9489.19	0	9489.19	10078	10078
30	32.6471	320398	13.2645	Qls BRS	885.556	11.1466	2450.43	2703.27	9225.19	0	9225.19	9802.84	9802.84
31	32.6471	314862	13.2645	Qls BRS	885.556	11.1466	2421.39	2671.23	9062.59	0	9062.59	9633.39	9633.39
32	32.6471	309375	13.2645	Qls BRS	885.556	11.1466	2392.6	2639.47	8901.45	0	8901.45	9465.47	9465.47
33	32.6471	303887	13.2645	Qls BRS	885.556	11.1466	2363.82	2607.72	8740.27	0	8740.27	9297.51	9297.51
34	32.6471	298400	13.2645	Qls BRS	885.556	11.1466	2335.03	2575.96	8579.1	0	8579.1	9129.55	9129.55
35	32.9649	295737	13.2645	Qls BRS	885.556	11.1466	2306.1	2544.05	8417.16	0	8417.16	8960.79	8960.79
36	32.9649	288046	13.2645	Qls BRS	885.556	11.1466	2266.15	2499.97	8193.44	0	8193.44	8727.65	8727.65
37	30.4524	255390	13.2645	Qls BRS	885.556	11.1466	2205.96	2433.58	7856.5	0	7856.5	8376.53	8376.53
38	30.4524	248048	13.2645	Qls BRS	885.556	11.1466	2164.67	2388.03	7625.32	0	7625.32	8135.61	8135.61
39	27.7064	218774	15.3953	Qls BRS	885.556	11.1466	2107.4	2324.85	7304.69	0	7304.69	7884.98	7884.98
40	27.7064	210615	15.3953	Qls BRS	885.556	11.1466	2057.32	2269.6	7024.25	0	7024.25	7590.75	7590.75
41	27.9714	205752	17.3706	Qls BRS	885.556	11.1466	2002.5	2209.12	6717.33	0	6717.33	7343.75	7343.75
42	27.9714	198397	17.3706	Qls BRS	885.556	11.1466	1958.06	2160.1	6468.53	0	6468.53	7081.04	7081.04
43	26.4883	181700	17.4081	Qls BRS	885.556	11.1466	1918.41	2116.36	6246.53	0	6246.53	6848.02	6848.02
44	26.4883	175306	17.4081	Qls BRS	885.556	11.1466	1877.63	2071.37	6018.22	0	6018.22	6606.92	6606.92
45	36.1091	228339	17.4273	Qls BRS	885.556	11.1466	1827.73	2016.32	5738.82	0	5738.82	6312.55	6312.55
46	36.1091	213255	17.4273	Qls BRS	885.556	11.1466	1757.14	1938.45	5343.64	0	5343.64	5895.21	5895.21
47	41.5189	215691	17.7776	Qls BRS	640.909	13.6925	1611.93	1778.25	4668.21	0	4668.21	5185.05	5185.05
48	28.5361	127663	23.856	Qls BRS	640.909	13.6925	1426.94	1574.17	3830.55	0	3830.55	4461.57	4461.57
49	0.937485	3793.42	47.3597	Qls BRS	640.909	13.6925	1184.94	1307.2	2734.79	0	2734.79	4021.59	4021.59
50	38.2887	76945.7	47.3597	Qls	500	30	952.942	1051.27	954.823	0	954.823	1989.68	1989.68

Global Minimum Query (spencer) - Safety Factor: 1.09963

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	24.3716	12774.1	-2.87885	Qls	500	30	971.49	1068.28	984.29	0	984.29	935.436	935.436
2	24.3716	38888.5	-2.87885	Qls	500	30	1699.2	1868.49	2370.29	0	2370.29	2284.84	2284.84
3	37.5067	99895.3	0.304417	Qls	500	30	2272.21	2498.59	3461.65	0	3461.65	3473.72	3473.72
4	13.039	45155.3	0.304417	Qls BRS	640.909	13.6925	1435.29	1578.29	3847.46	0	3847.46	3855.09	3855.09
5	35.3879	127971	8.59976	Qls BRS	640.909	13.6925	1366.32	1502.45	3536.18	0	3536.18	3742.81	3742.81
6	35.3879	129010	8.59976	Qls BRS	640.909	13.6925	1372.38	1509.12	3563.54	0	3563.54	3771.08	3771.08
7	23.5919	85613.2	8.66262	Qls BRS	640.909	13.6925	1368.22	1504.53	3544.72	0	3544.72	3753.17	3753.17
8	23.5919	90937.6	8.66262	Qls BRS	640.909	13.6925	1414.78	1555.73	3754.86	0	3754.86	3970.41	3970.41
9	23.5919	105291	8.66262	Qls BRS	640.909	13.6925	1540.29	1693.75	4321.33	0	4321.33	4556	4556
10	23.2858	112558	8.20942	Qls BRS	640.909	13.6925	1623.35	1785.08	4696.21	0	4696.21	4930.41	4930.41
11	23.2858	122092	8.20942	Qls BRS	640.909	13.6925	1708.26	1878.45	5079.47	0	5079.47	5325.92	5325.92
12	23.2858	130727	8.20942	Qls BRS	885.556	11.1466	1777.29	1954.37	5424.4	0	5424.4	5680.81	5680.81
13	34.9286	219201	8.77202	Qls BRS	885.556	11.1466	1999.41	2198.62	6664.05	0	6664.05	6972.57	6972.57
14	34.9286	256527	8.77202	Qls BRS	885.556	11.1466	2054.86	2259.59	6973.45	0	6973.45	7290.53	7290.53
15	23.2645	193289	8.92889	Qls BRS	885.556	11.1466	2210.79	2431.06	7843.72	0	7843.72	8191.06	8191.06
16	23.2645	210425	8.92889	Qls BRS	885.556	11.1466	2331.87	2564.2	8519.43	0	8519.43	8885.8	8885.8
17	23.2645	227547	8.92889	Qls BRS	885.556	11.1466	2452.85	2697.23	9194.59	0	9194.59	9579.97	9579.97
18	34.7037	364407	9.55417	Qls BRS	885.556	11.1466	2557.67	2812.5	9779.55	0	9779.55	10210	10210
19	34.7037	380227	9.55417	Qls BRS	885.556	11.1466	2632.1	2894.34	10194.9	0	10194.9	10638	10638
20	30.2003	340716	11.6627	Qls BRS	885.556	11.1466	3200.85	3519.76	13369.1	0	13369.1	14029.7	14029.7
21	30.2003	344198	11.6627	Qls BRS	885.556	11.1466	2656.28	2920.93	10329.9	0	10329.9	10878.2	10878.2
22	30.2009	346590	11.714	Qls BRS	885.556	11.1466	2667.74	2933.53	10393.8	0	10393.8	10947	10947
23	30.2009	347022	11.714	Qls BRS	885.556	11.1466	2670.01	2936.03	10406.5	0	10406.5	10960.1	10960.1
24	30.2009	346119	12.725	Qls BRS	885.556	11.1466	2642.75	2906.05	10254.4	0	10254.4	10851.2	10851.2
25	30.2009	344206	12.725	Qls BRS	885.556	11.1466	2632.75	2895.06	10198.6	0	10198.6	10793.1	10793.1
26	30.2009	342146	12.7326	Qls BRS	885.556	11.1466	3178.39	3495.06	13243.7	0	13243.7	13961.9	13961.9
27	30.2009	339828	12.7326	Qls BRS	885.556	11.1466	2609.71	2869.72	10070	0	10070	10659.7	10659.7
28	33.8085	377287	13.0318	Qls BRS	885.556	11.1466	2588.64	2846.55	9952.38	0	9952.38	10551.5	10551.5
29	33.8085	371175	13.0318	Qls BRS	885.556	11.1466	2560.2	2815.28	9793.69	0	9793.69	10386.3	10386.3
30	33.8085	359348	13.0473	Qls BRS	885.556	11.1466	2504.86	2754.42	9484.81	0	9484.81	10065.3	10065.3
31	33.8085	347904	13.0473	Qls BRS	885.556	11.1466	2451.62	2695.88	9187.71	0	9187.71	9755.84	9755.84
32	33.8085	337213	13.0985	Qls BRS	885.556	11.1466	2896.13	3184.68	11668.5	0	11668.5	12342.3	12342.3
33	33.8085	330974	13.0985	Qls BRS	885.556	11.1466	2371.89	2608.2	8742.69	0	8742.69	9294.58	9294.58
34	33.7972	325401	13.0977	Qls BRS	885.556	11.1466	2346.49	2580.28	8601.03	0	8601.03	9146.98	9146.98
35	33.7972	319942	13.0977	Qls BRS	885.556	11.1466	2321.1	2552.36	8459.33	0	8459.33	8999.37	8999.37
36	33.9189	316233	12.6018	Qls BRS	885.556	11.1466	2307.74	2537.66	8384.7	0	8384.7	8900.62	8900.62
37	33.9189	311991	12.6018	Qls BRS	885.556	11.1466	2287.98	2515.93	8274.42	0	8274.42	8785.92	8785.92
38	22.6242	204800	13.734	Qls BRS	885.556	11.1466	2979.68	3276.55	12134.7	0	12134.7	12862.9	12862.9
39	22.6242	199013	13.734	Qls BRS	885.556	11.1466	2204.68	2424.34	7809.59	0	7809.59	8348.43	8348.43
40	22.6242	192742	13.734	Qls BRS	885.556	11.1466	2161.41	2376.75	7568.08	0	7568.08	8096.33	8096.33
41	30.0231	246599	15.8431	Qls BRS	885.556	11.1466	2079.51	2286.7	7111.04	0	7111.04	7701.18	7701.18
42	30.0231	235918	15.8431	Qls BRS	885.556	11.1466	2025.2	2226.98	6807.92	0	6807.92	7382.65	7382.65
43	30.078	225904	15.8198	Qls BRS	885.556	11.1466	1972.53	2169.06	6514	0	6514	7072.9	7072.9
44	30.078	219258	15.8198	Qls BRS	885.556	11.1466	1938.79	2131.96	6325.68	0	6325.68	6875.03	6875.03
45	30.3522	214516	17.3339	Qls BRS	885.556	11.1466	1883.63	2071.3	6017.87	0	6017.87	6605.78	6605.78
46	30.3522	206662	17.3339	Qls BRS	885.556	11.1466	1844.74	2028.54	5800.87	0	5800.87	6376.64	6376.64
47	32.36	210963	17.4253	Qls BRS	885.556	11.1466	1800.05	1979.39	5551.36	0	5551.36	6116.34	6116.34
48	32.36	201072	17.4253	Qls BRS	885.556	11.1466	1754.16	1928.93	5295.29	0	5295.29	5845.87	5845.87
49	4.51349	25886	52.4424	Qls BRS	640.909	13.6925	1197.86	1317.21	2775.86	0	2775.86	4333.7	4333.7
50	39.6488	107575	52.4424	Qls	500	30	1011.22	1111.96	1059.95	0	1059.95	2375.06	2375.06

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.10318

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	201.941	816.232	0	0	0
2	236.098	797.171	110754	0	0
3	236.472	796.963	112035	0	0
4	274.116	800.992	129443	0	0
5	307.208	806.124	138967	0	0
6	340.301	811.256	148502	0	0
7	373.393	816.388	156616	0	0
8	406.485	821.52	163097	0	0
9	440.218	826.751	168238	0	0
10	473.95	831.982	171235	0	0
11	507.687	837.214	225815	0	0
12	541.425	842.446	220265	0	0
13	575.222	847.687	210168	0	0
14	609.019	852.928	195667	0	0
15	631.551	856.512	183561	0	0
16	654.082	860.095	170566	0	0
17	676.614	863.678	156683	0	0
18	710.079	870.202	352893	0	0
19	743.545	876.726	317333	0	0
20	766.695	882.037	283902	0	0
21	789.846	887.349	250737	0	0
22	812.996	892.661	217837	0	0
23	847.722	900.649	168775	0	0
24	882.447	908.637	351370	0	0
25	905.598	914.065	318468	0	0
26	928.748	919.492	285949	0	0
27	951.899	924.919	253862	0	0
28	984.546	932.616	209979	0	0
29	1017.19	940.312	168415	0	0
30	1049.84	948.008	129087	0	0
31	1082.49	955.704	322556	0	0
32	1115.13	963.4	286154	0	0
33	1147.78	971.096	250858	0	0
34	1180.43	978.792	216668	0	0
35	1213.08	986.488	183583	0	0
36	1246.04	994.259	151298	0	0
37	1279.01	1002.03	351548	0	0
38	1309.46	1009.21	325312	0	0
39	1339.91	1016.39	300554	0	0
40	1367.62	1024.02	271523	0	0
41	1395.32	1031.65	244441	0	0
42	1423.29	1040.4	211894	0	0
43	1451.27	1049.15	181360	0	0
44	1477.75	1057.45	154022	0	0
45	1504.24	1065.76	128439	0	0
46	1540.35	1077.09	96409	0	0
47	1576.46	1088.43	68523.4	0	0
48	1617.98	1101.74	42240.3	0	0
49	1646.52	1114.36	16256.2	0	0
50	1647.45	1115.38	14035.3	0	0
51	1685.74	1156.95	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.09963

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	140.42	797.996	0	0	0
2	164.792	796.77	22966.8	10054.3	23.6426
3	189.163	795.545	61450.2	26901.4	23.6426
4	226.67	795.744	130998	57348	23.6427
5	239.709	795.813	142673	62458.9	23.6427
6	275.097	801.165	152904	66937.6	23.6426
7	310.485	806.517	163046	71377.8	23.6427
8	334.077	810.111	169742	74309	23.6427
9	357.668	813.706	175982	77040.8	23.6427
10	381.26	817.3	180994	79235	23.6427
11	404.546	820.659	186134	81485.2	23.6427
12	427.832	824.019	190534	83411.4	23.6427
13	451.118	827.378	194088	84966.9	23.6426
14	486.046	832.768	249690	109308	23.6426
15	520.975	838.158	245398	107429	23.6426
16	544.24	841.813	239167	104702	23.6427
17	567.504	845.468	230713	101001	23.6427
18	590.769	849.123	220038	96327.3	23.6426
19	625.472	854.964	197013	86247.5	23.6426
20	660.176	860.805	171771	75197.5	23.6427
21	690.376	867.039	361340	158186	23.6427
22	720.577	873.273	325537	142512	23.6426
23	750.778	879.535	289029	126530	23.6427
24	780.979	885.797	252446	110515	23.6427
25	811.179	892.617	210407	92111.4	23.6427
26	841.38	899.437	168734	73867.7	23.6427
27	871.581	906.261	350373	153385	23.6427
28	901.782	913.085	309495	135489	23.6426
29	935.591	920.91	262541	114934	23.6426
30	969.399	928.735	216785	94903.1	23.6426
31	1003.21	936.57	173256	75847.4	23.6427
32	1037.02	944.405	131972	57774.3	23.6427
33	1070.82	952.271	314861	137839	23.6427
34	1104.63	960.138	276629	121102	23.6427
35	1138.43	968.001	239489	104843	23.6427
36	1172.23	975.864	203425	89054.7	23.6427
37	1206.15	983.447	170685	74721.7	23.6426
38	1240.07	991.03	138747	60740	23.6426
39	1262.69	996.56	335690	146957	23.6426
40	1285.31	1002.09	312534	136820	23.6427
41	1307.94	1007.62	290675	127251	23.6427
42	1337.96	1016.14	255531	111866	23.6428
43	1367.98	1024.66	222942	97598.6	23.6426
44	1398.06	1033.18	192870	84434	23.6427
45	1428.14	1041.7	164386	71964.1	23.6426
46	1458.49	1051.18	132370	57948.6	23.6427
47	1488.84	1060.65	102409	44832.2	23.6426
48	1521.2	1070.81	72629.6	31795.5	23.6427
49	1553.56	1080.96	45449.9	19896.9	23.6427
50	1558.08	1086.83	30679.6	13430.8	23.6427
51	1597.73	1138.4	0	0	0

Entity Information

Block Search Window

X	Y
564.89	844.188
681.563	864.526
682.489	866.716
564.575	846.124

Block Search Window

X	Y
362.051	814.217
361.91	816.212
208.664	793.019
209.253	791.204

Block Search Window

X	Y
96.862	771.402
140.691	778.434
143.638	780.881
98.553	772.861

Block Search Window

X	Y
851.287	901.082
973.292	929.293
981.695	933.532
847.266	902.394

Block Search Window

X	Y
1481.53	1058.34
1577.24	1088.39
1584.2	1095.08
1467.82	1058.34

Block Search Window

X	Y
1267.24	997.235
1342.43	1015.81
1342.43	1020.11
1265.93	1000.91

External Boundary

X	Y
0.598119	793.788
0.609603	784.718
0.64749	754.796
0.845	598.805
2048.18	598.805
2048.18	1199.33
1915.41	1199.33
1880.87	1193.95
1834.83	1183.98
1810.31	1179.42
1801.82	1177.84
1797.19	1176.89
1760.38	1169.39
1682.1	1156.35
1609.19	1140.23
1551.63	1131.02
1473.35	1112.6
1425.77	1101.09
1388.93	1092.65
1362.07	1087.28
1337.51	1083.44
1313.64	1078.27
1252.71	1069.6
1054.16	1031.31
984.283	1020.9
943.8	1015.13
846.332	995.181
735.818	972.157
677.304	958.61
599.357	937.31
525.036	906.041
479.485	886.201
444.053	873.593
422.436	867.883
391.846	858.91
360.849	850.345
334.746	839.333
323.054	838.336
310.818	838.336
269.125	828.819
248.732	828.819
171.239	807.973
153.111	801.78
140.42	797.996
85.414	793.833
77.683	785.211
68.858	782.398
65.117	782.706
60.5591	785.32
44.7233	794.401

Material Boundary

X	Y
962.384	927.094
1081.74	954.571
1187.42	978.816
1292.48	1003.06
1350.91	1017.98
1446.02	1047.2
1584.65	1090.71
1710.22	1131.12
1743.17	1146.66
1810.31	1179.42

Material Boundary

X	Y
973.68	931.878
974.126	931.988
1082.37	958.638
1187.1	982.754
1291.82	1006.87
1352.41	1022.72
1439.6	1049.45
1456.46	1054.75
1584.2	1095.08
1707.76	1134.72
1722.95	1140.34
1742.12	1149.92
1797.19	1176.89

Material Boundary

X	Y
0.64749	754.796
94.0915	772.325
94.478	772.398

Material Boundary

X	Y
65.117	782.706
68.496	780.768
92.848	772.74
94.0915	772.325
96.862	771.402
115.861	773.81
209.253	791.204
362.051	814.217
564.89	844.188
681.563	864.526
728.928	873.089
962.384	927.094

Material Boundary

X	Y
68.858	782.398
98.553	772.861
143.638	780.881
208.664	793.019
361.91	816.212
564.575	846.124
682.489	866.716
728.875	875.386
973.68	931.878

Material Boundary

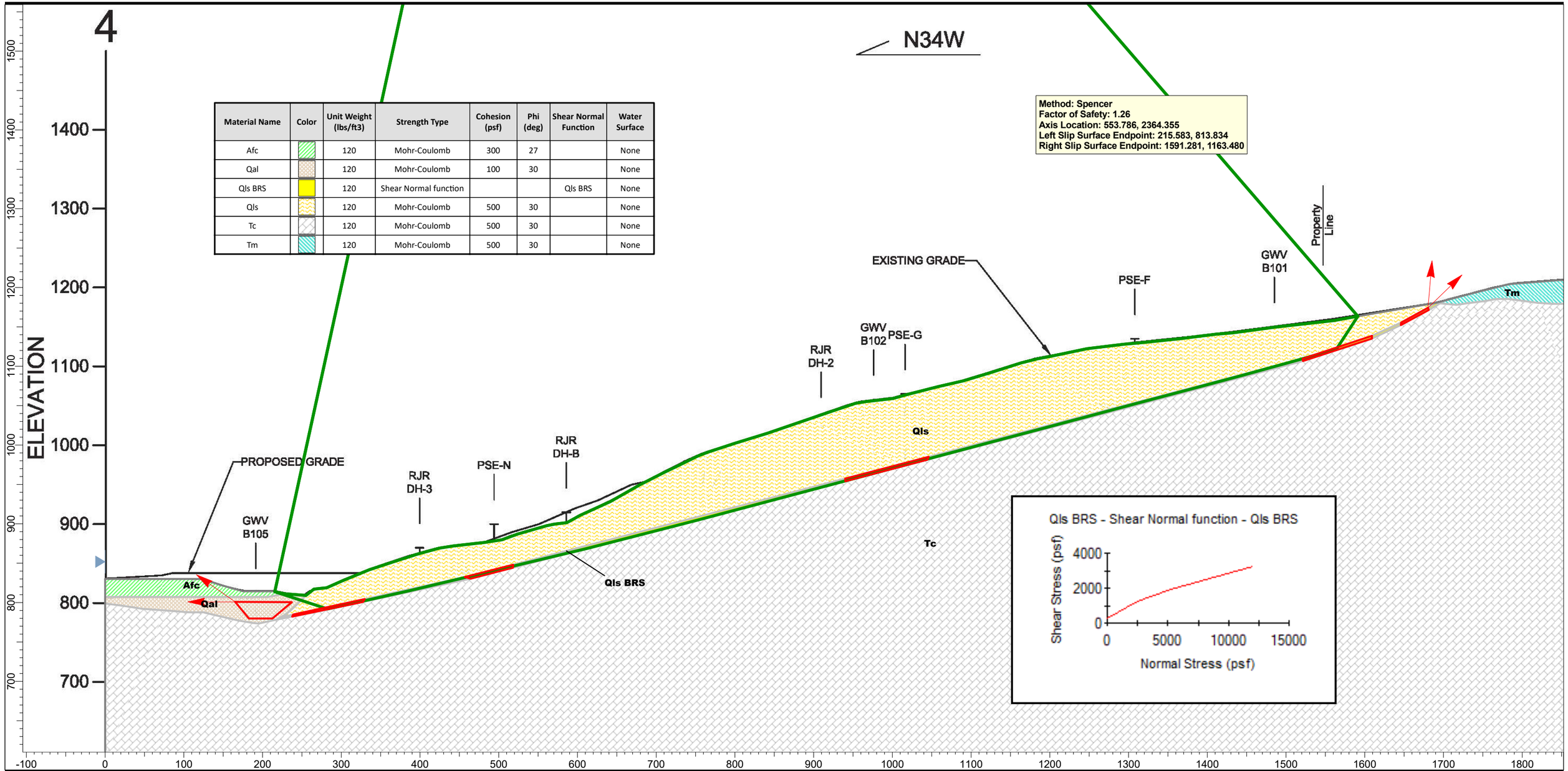
X	Y
0.609603	784.718
60.5591	785.32

Section 4 - 4'

Stability of Existing Southern Landslide

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 4\Section 4_Qls_blk SrfAlt_a1.slim

Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
Afc		120	Mohr-Coulomb	300	27		None
Qal		120	Mohr-Coulomb	100	30		None
Qls BRS		120	Shear Normal function			Qls BRS	None
Qls		120	Mohr-Coulomb	500	30		None
Tc		120	Mohr-Coulomb	500	30		None
Tm		120	Mohr-Coulomb	500	30		None



SLIDEINTERPRET 8.022

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA			
Analyzed By: JEH	Units: feet	Scale: 1:1440	Project No.: 12558.001
Date: October 10, 2019	Condition: Static		File Name: Section 4_Qls_blk SrfAlt_a1.slim

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version: 8.022

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Janbu corrected
Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	145
Left Projection Angle (End Angle) [°]:	180
Right Projection Angle (Start Angle) [°]:	44
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Materials

Property	Afc	Qal	Qls BRS	Qls	Tc	Tm
Color						
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120	120
Cohesion [psf]	300	100		500	500	500
Friction Angle [°]	27	30		30	30	30
Water Surface	None	None	None	None	None	None
Ru Value	0	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Global Minimums

Method: janbu corrected

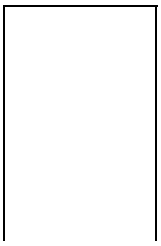
FS	1.260630
Axis Location:	553.851, 2365.854
Left Slip Surface Endpoint:	214.967, 813.966
Right Slip Surface Endpoint:	1592.031, 1163.614
Resisting Horizontal Force:	3.18087e+06 lb
Driving Horizontal Force:	2.52324e+06 lb
Total Slice Area:	87017 ft2
Surface Horizontal Width:	1377.06 ft
Surface Average Height:	63.1902 ft

Method: spencer

FS	1.258200
Axis Location:	553.786, 2364.355
Left Slip Surface Endpoint:	215.583, 813.834
Right Slip Surface Endpoint:	1591.281, 1163.480
Resisting Moment:	4.79159e+09 lb-ft
Driving Moment:	3.8083e+09 lb-ft
Resisting Horizontal Force:	3.13601e+06 lb
Driving Horizontal Force:	2.49246e+06 lb
Total Slice Area:	86589.7 ft2
Surface Horizontal Width:	1375.7 ft
Surface Average Height:	62.9423 ft

Global Minimum Coordinates

Method: janbu corrected



X	Y
214.967	813.966
277.004	789.976
326.747	801.224
376.489	812.472
426.232	823.72
475.974	834.967
538.656	850.524
601.485	866.103
643.428	876.799
683.515	887.014
723.599	897.552
763.682	907.762
827.337	924.417
890.991	941.513
954.646	958.161
1018.3	974.561
1066.17	987.323
1114.05	1000.08
1165.91	1013.93
1231.96	1031.65
1292.82	1048.13
1354.86	1064.74
1423.15	1083.16
1491.31	1101.56
1559.47	1119.95
1592.03	1163.61

Method: spencer

X	Y
215.583	813.834
282.363	792.03
335.911	803.761
389.459	815.842
441.684	828.15
494.244	840.638
552.832	854.559
611.573	868.571
646.73	877.573
681.886	886.581
717.331	895.7
752.776	904.819
820.259	922.705
887.742	940.625
956.35	958.844
1024.96	977.063
1076.56	990.765
1128.15	1004.47
1179.64	1018.14
1245.81	1035.71
1311.84	1053.24
1378.11	1070.84
1443.86	1088.3
1503.84	1104.78
1563.82	1121.45
1591.28	1163.48

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 4159
Number of Invalid Surfaces: 855

Error Codes:

Error Code -124 reported for 850 surfaces
Error Code -1000 reported for 5 surfaces

Method: spencer

Number of Valid Surfaces: 4157
Number of Invalid Surfaces: 857

Error Codes:

Error Code -124 reported for 850 surfaces
Error Code -1000 reported for 7 surfaces

Error Codes

The following errors were encountered during the computation:

-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.26063

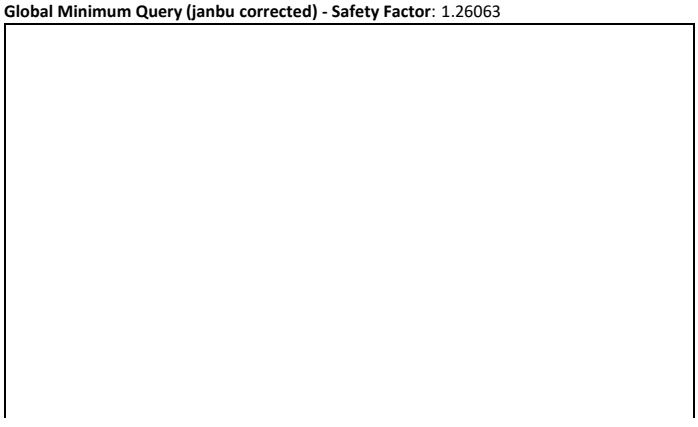
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	9.05841	848.609	-21.1413	Afc	300	27	327.852	413.3	222.363	0	222.363	95.5841	95.5841
2	23.4218	13219.7	-21.1413	Qal	100	30	411.854	519.196	726.067	0	726.067	566.805	566.805
3	24.8886	49528.1	-21.1413	Qls	500	30	1594.67	2010.29	2615.9	0	2615.9	1999.24	1999.24
4	4.66879	15227	-21.1413	Qls BRS	640.909	13.6925	1232.2	1553.35	3745.09	0	3745.09	3268.6	3268.6
5	24.8712	88508.2	12.7415	Qls BRS	640.909	13.6925	1145.36	1443.88	3295.78	0	3295.78	3554.77	3554.77
6	24.8712	102994	12.7415	Qls BRS	640.909	13.6925	1253.15	1579.76	3853.48	0	3853.48	4136.85	4136.85
7	24.8712	115382	12.7415	Qls BRS	640.909	13.6925	1345.33	1695.96	4330.42	0	4330.42	4634.63	4634.63
8	24.8712	123306	12.7415	Qls BRS	640.909	13.6925	1404.28	1770.28	4635.45	0	4635.45	4952.99	4952.99
9	24.8712	130390	12.7415	Qls BRS	640.909	13.6925	1456.99	1836.73	4908.21	0	4908.21	5237.66	5237.66
10	24.8712	135018	12.7415	Qls BRS	640.909	13.6925	1491.43	1880.14	5086.41	0	5086.41	5423.65	5423.65
11	24.8712	133339	12.7415	Qls BRS	640.909	13.6925	1478.93	1864.39	5021.74	0	5021.74	5356.16	5356.16
12	24.8712	125698	12.7415	Qls BRS	640.909	13.6925	1422.08	1792.72	4727.57	0	4727.57	5049.14	5049.14
13	31.3407	146840	13.9379	Qls BRS	640.909	13.6925	1348.27	1699.67	4345.67	0	4345.67	4680.28	4680.28
14	31.3407	149256	13.9379	Qls BRS	640.909	13.6925	1362.48	1717.58	4419.16	0	4419.16	4757.29	4757.29
15	31.4147	155108	13.9267	Qls BRS	640.909	13.6925	1394.79	1758.32	4586.39	0	4586.39	4932.26	4932.26
16	31.4147	153388	13.9267	Qls BRS	640.909	13.6925	1384.7	1745.59	4534.15	0	4534.15	4877.51	4877.51
17	41.943	241387	14.3058	Qls BRS	885.556	11.1466	1539.71	1941.01	5356.6	0	5356.6	5749.23	5749.23
18	40.0874	281827	14.2958	Qls BRS	885.556	11.1466	1731.32	2182.56	6582.51	0	6582.51	7023.68	7023.68
19	40.0834	334289	14.7298	Qls BRS	885.556	11.1466	1925.68	2427.57	7825.99	0	7825.99	8332.25	8332.25
20	40.0834	378437	14.2904	Qls BRS	885.556	11.1466	2093.54	2639.18	8899.96	0	8899.96	9433.22	9433.22
21	31.8273	319316	14.6624	Qls BRS	885.556	11.1466	2180.11	2748.31	9453.82	0	9453.82	10024.2	10024.2
22	31.8273	326401	14.6624	Qls BRS	885.556	11.1466	2213.51	2790.42	9667.54	0	9667.54	10246.7	10246.7
23	31.8273	332173	15.0339	Qls BRS	885.556	11.1466	2238.36	2821.75	9826.5	0	9826.5	10427.7	10427.7
24	31.8273	340898	15.0339	Qls BRS	885.556	11.1466	2279.46	2873.56	10089.5	0	10089.5	10701.7	10701.7
25	31.8273	350228	14.6563	Qls BRS	885.556	11.1466	2325.9	2932.1	10386.6	0	10386.6	10994.9	10994.9
26	31.8273	359368	14.6563	Qls BRS	885.556	11.1466	2368.99	2986.43	10662.3	0	10662.3	11281.9	11281.9
27	31.8273	356107	14.4478	Qls BRS	885.556	11.1466	2355.02	2968.81	10572.9	0	10572.9	11179.6	11179.6
28	31.8273	342283	14.4478	Qls BRS	885.556	11.1466	2289.8	2886.59	10155.6	0	10155.6	10745.5	10745.5
29	23.9367	256553	14.9265	Qls BRS	885.556	11.1466	2281.22	2875.78	10100.8	0	10100.8	10708.9	10708.9
30	23.9367	255564	14.9265	Qls BRS	885.556	11.1466	2275.03	2867.97	10061.1	0	10061.1	10667.5	10667.5
31	23.9367	253314	14.9265	Qls BRS	885.556	11.1466	2260.93	2850.2	9970.94	0	9970.94	10573.6	10573.6
32	23.9367	253164	14.9265	Qls BRS	885.556	11.1466	2259.99	2849.02	9964.93	0	9964.93	10567.4	10567.4
33	25.9305	277174	14.943	Qls BRS	885.556	11.1466	2276.79	2870.19	10072.4	0	10072.4	10680	10680
34	25.9305	281218	14.943	Qls BRS	885.556	11.1466	2300.17	2899.67	10222	0	10222	10835.9	10835.9
35	33.0265	358328	15.0242	Qls BRS	885.556	11.1466	2300.34	2899.88	10223	0	10223	10840.4	10840.4
36	33.0265	350187	15.0242	Qls BRS	885.556	11.1466	2263.38	2853.29	9986.62	0	9986.62	10594.1	10594.1
37	30.4318	314531	15.1506	Qls BRS	885.556	11.1466	2222.46	2801.71	9724.8	0	9724.8	10326.6	10326.6
38	30.4318	299095	15.1506	Qls BRS	885.556	11.1466	2146.45	2705.88	9238.47	0	9238.47	9819.66	9819.66
39	31.0179	286263	14.9841	Qls BRS	885.556	11.1466	2057.6	2593.87	8669.99	0	8669.99	9220.71	9220.71
40	31.0179	266910	14.9841	Qls BRS	885.556	11.1466	1964.05	2475.94	8071.45	0	8071.45	8597.13	8597.13
41	22.7626	183989	15.0955	Qls BRS	885.556	11.1466	1885.17	2376.51	7566.84	0	7566.84	8075.34	8075.34
42	22.7626	174829	15.0955	Qls BRS	885.556	11.1466	1824.85	2300.47	7180.94	0	7180.94	7673.17	7673.17
43	22.7626	165428	15.0955	Qls BRS	885.556	11.1466	1762.95	2222.43	6784.86	0	6784.86	7260.39	7260.39
44	22.7208	154209	15.1051	Qls BRS	885.556	11.1466	1690.9	2131.6	6323.91	0	6323.91	6780.31	6780.31
45	22.7208	145513	15.1051	Qls BRS	885.556	11.1466	1633.53	2059.28	5956.86	0	5956.86	6397.78	6397.78
46	22.7208	137066	15.1051	Qls BRS	885.556	11.1466	1577.81	1989.04	5600.36	0	5600.36	6026.23	6026.23
47	34.0811	187964	15.1051	Qls BRS	640.909	13.6925	1495.13	1884.81	5105.58	0	5105.58	5509.14	5509.14
48	34.0811	166062	15.1051	Qls BRS	640.909	13.6925	1377.18	1736.12	4495.25	0	4495.25	4866.98	4866.98
49	2.26723	9942.76	53.2875	Qls BRS	640.909	13.6925	1073.55	1353.35	2924.21	0	2924.21	4363.83	4363.83
50	30.2905	63971.6	53.2875	Qls	500	30	840.143	1059.11	968.405	0	968.405	2095.03	2095.03

Global Minimum Query (spencer) - Safety Factor: 1.2582

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	9.6293	624.103	-18.0823	Afc	300	27	356.513	448.565	291.576	0	291.576	175.171	175.171
2	23.7733	10559.6	-18.0823	Qal	100	30	420.712	529.34	743.64	0	743.64	606.274	606.274
3	29.8579	58728	-18.0823	Qls	500	30	1926.54	2423.97	3332.4	0	3332.4	2703.37	2703.37
4	3.51964	11026.6	-18.0823	Qls BRS	640.909	13.6925	1328.15	1671.08	4228.3	0	4228.3	3794.65	3794.65
5	26.7739	96749.3	12.357	Qls BRS	640.909	13.6925	1179.03	1483.46	3458.22	0	3458.22	3716.52	3716.52
6	26.7739	113926	12.357	Qls BRS	640.909	13.6925	1297.5	1632.51	4070.03	0	4070.03	4354.28	4354.28
7	26.7739	126467	12.7141	Qls BRS	640.909	13.6925	1381	1737.57	4501.23	0	4501.23	4812.81	4812.81
8	26.7739	135080	12.7141	Qls BRS	640.909	13.6925	1440.24	1812.11	4807.13	0	4807.13	5132.08	5132.08
9	26.1129	138237	13.2605	Qls BRS	640.909	13.6925	1481.01	1863.41	5017.7	0	5017.7	5366.72	5366.72
10	26.1129	139296	13.2605	Qls BRS	640.909	13.6925	1488.45	1872.77	5056.13	0	5056.13	5406.91	5406.91
11	26.2799	132462	13.3658	Qls BRS	640.909	13.6925	1433.62	1803.78	4773	0	4773	5113.63	5113.63
12	26.2799	122587	13.3658	Qls BRS	640.909	13.6925	1364.77	1717.15	4417.41	0	4417.41	4741.68	4741.68
13	29.2939	132525	13.3658	Qls BRS	640.909	13.6925	1338.98	1684.71	4284.28	0	4284.28	4602.42	4602.42
14	29.2939	140415	13.3658	Qls BRS	640.909	13.6925	1388.34	1746.81	4539.15	0	4539.15	4869.02	4869.02
15	29.3704	143029	13.4171	Qls BRS	640.909	13.6925	1401.92	1763.9	4609.28	0	4609.28	4943.7	4943.7
16	29.3704	148341	13.4171	Qls BRS	640.909	13.6925	1435.05	1805.58	4780.37	0	4780.37	5122.7	5122.7
17	35.1568	208535	14.3619	Qls BRS	885.556	11.1466	1575.32	1982.07	5564.97	0	5564.97	5968.33	5968.33
18	35.1568	248474	14.371	Qls BRS	885.556	11.1466	1742.37	2192.26	6631.72	0	6631.72	7078.15	7078.15
19	35.4449	292084	14.4275	Qls BRS	885.556	11.1466	1914.34	2408.63	7729.86	0	7729.86	8222.36	8222.36
20	35.4449	327637	14.428	Qls BRS	885.556	11.1466	2061.85	2594.22	8671.75	0	8671.75	9202.22	9202.22
21	33.7415	335380	14.8448	Qls BRS	885.556	11.1466	2159.15	2716.65	9293.16	0	9293.16	9865.44	9865.44
22	33.7415	344036	14.8448	Qls BRS	885.556	11.1466	2196.77	2763.98	9533.34	0	9533.34	10115.6	10115.6
23	22.4943	232650	14.8717	Qls BRS	885.556	11.1466	2217.9	2790.56	9668.25	0	9668.25	10257.2	10257.2
24	22.4943	236403	14.8717	Qls BRS	885.556	11.1466	2242.36	2821.34	9824.47	0	9824.47	10419.9	10419.9
25	22.4943	241172	14.8717	Qls BRS	885.556	11.1466	2273.44	2860.44	10022.9	0	10022.9	10626.6	10626.6
26	22.8692	249985	14.8717	Qls BRS	885.556	11.1466	2304.17	2899.11	10219.2	0	10219.2	10831	10831
27	22.8692	254579	14.8717	Qls BRS	885.556	11.1466	2333.62	2936.16	10407.2	0	10407.2	11026.9	11026.9
28	22.8692	258839	14.8717	Qls BRS	885.556	11.1466	2360.93	2970.53	10581.6	0	10581.6	11208.6	11208.6
29	34.3038	380672	14.8717	Qls BRS	885.556	11.1466	2328.51	2929.73	10374.6	0	10374.6	10992.9	10992.9
30	34.3038	365525	14.8717	Qls BRS	885.556	11.1466	2263.77	2848.28	9961.18	0	9961.18	10562.3	10562.3
31	25.7992	273999	14.8717	Qls BRS	885.556	11.1466	2258.63	2841.81	9928.35	0	9928.35	10528.1	10528.1
32	25.7992	272535	14.8717	Qls BRS	885.556	11.1466	2250.31	2831.34	9875.22	0	9875.22	10472.8	10472.8
33	25.7992	270276	14.8717	Qls BRS	885.556	11.1466	2237.47	2815.19	9793.26	0	9793.26	10387.4	10387.4
34	25.7992	272334	14.8717	Qls BRS	885.556	11.1466	2249.17	2829.91	9867.96	0	9867.96	10465.2	10465.2
35	25.7442	275446	14.8717	Qls BRS	885.556	11.1466	2270.19	2856.36	10002.2	0	10002.2	10605	10605
36	25.7442	278678	14.8717	Qls BRS	885.556	11.1466	2288.6	2879.52	10119.7	0	10119.7	10727.5	10727.5
37	33.0832	353943	14.8717	Qls BRS	885.556	11.1466	2270.08	2856.22	10001.5	0	10001.5	10604.3	10604.3
38	33.0832	346032	14.8717	Qls BRS	885.556	11.1466	2235.02	2812.11	9777.61	0	9777.61	10371.1	10371.1
39	33.016	332714	14.8717	Qls BRS	885.556	11.1466	2179.01	2741.64	9419.93	0	9419.93	9998.56	9998.56
40	33.016	313168	14.8717	Qls BRS	885.556	11.1466	2092.22	2632.44	8865.71	0	8865.71	9421.3	9421.3
41	33.1336	292298	14.8717	Qls BRS	885.556	11.1466	1994.94	2510.04	8244.55	0	8244.55	8774.31	8774.31
42	33.1336	271234	14.8717	Qls BRS	885.556	11.1466	1901.75	2392.78	7649.43	0	7649.43	8154.43	8154.43
43	32.8781	250287	14.8717	Qls BRS	885.556	11.1466	1817.66	2286.99	7112.53	0	7112.53	7595.21	7595.21
44	32.8781	229525	14.8717	Qls BRS	885.556	11.1466	1725.09	2170.51	6521.36	0	6521.36	6979.46	6979.46
45	29.9898	192618	15.3589	Qls BRS	885.556	11.1466	1639.09	2062.31	5972.24	0	5972.24	6422.45	6422.45
46	29.9898	177057	15.3589	Qls BRS	885.556	11.1466	1563.29	1966.93	5488.16	0	5488.16	5917.56	5917.56
47	29.9898	159615	15.5309	Qls BRS	640.909	13.6925	1465.54	1843.94	4937.81	0	4937.81	5345.09	5345.09
48	29.9898	141828	15.5309	Qls BRS	640.909	13.6925	1358.65	1709.45	4385.8	0	4385.8	4763.37	4763.37
49	1.85831	7997.32	56.8455	Qls BRS	250	21.8014	920.463	1158.13	2270.32	0	2270.32	3679.37	3679.37
50	25.5993	53154.6	56.8455	Qls	500	30	763.017	960.028	796.791	0	796.791	1964.83	1964.83

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.26063



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	214.967	813.966	0	0	0
2	224.025	810.463	3793.28	0	0
3	247.447	801.406	20160.5	0	0
4	272.336	791.782	85621.4	0	0
5	277.004	789.976	98222	0	0
6	301.876	795.6	108601	0	0
7	326.747	801.224	118564	0	0
8	351.618	806.848	128173	0	0
9	376.489	812.472	137553	0	0
10	401.36	818.096	146731	0	0
11	426.232	823.72	155776	0	0
12	451.103	829.344	164869	0	0
13	475.974	834.967	174181	0	0
14	507.315	842.746	183270	0	0
15	538.656	850.524	192240	0	0
16	570.07	858.313	200987	0	0
17	601.485	866.103	209819	0	0
18	643.428	876.799	218076	0	0
19	683.515	887.014	221281	0	0
20	723.599	897.552	217157	0	0
21	763.682	907.762	211463	0	0
22	795.51	916.089	203166	0	0
23	827.337	924.417	194167	0	0
24	859.164	932.965	182477	0	0
25	890.991	941.513	169867	0	0
26	922.819	949.837	158550	0	0
27	954.646	958.161	146329	0	0
28	986.473	966.361	135708	0	0
29	1018.3	974.561	126402	0	0
30	1042.24	980.942	117375	0	0
31	1066.17	987.323	108449	0	0
32	1090.11	993.704	99757.3	0	0
33	1114.05	1000.08	91080.5	0	0
34	1139.98	1007.01	81299.8	0	0
35	1165.91	1013.93	71099.2	0	0
36	1198.93	1022.79	57590.7	0	0
37	1231.96	1031.65	44939.1	0	0
38	1262.39	1039.89	33455.6	0	0
39	1292.82	1048.13	23631.6	0	0
40	1323.84	1056.44	16433.1	0	0
41	1354.86	1064.74	11258.3	0	0
42	1377.62	1070.88	8354.05	0	0
43	1400.39	1077.02	6425.6	0	0
44	1423.15	1083.16	5498.65	0	0
45	1445.87	1089.29	5711.14	0	0
46	1468.59	1095.42	6851.52	0	0
47	1491.31	1101.56	8893.16	0	0
48	1525.39	1110.76	13647.3	0	0
49	1559.47	1119.95	19935.6	0	0
50	1561.74	1122.99	13515.5	0	0
51	1592.03	1163.61	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.2582

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	215.583	813.834	0	0	0
2	225.212	810.69	4349.73	1062.71	13.7293
3	248.985	802.928	20123.8	4916.58	13.7294
4	278.843	793.179	110134	26907.5	13.7293
5	282.363	792.03	119668	29236.8	13.7293
6	309.137	797.895	130951	31993.4	13.7293
7	335.911	803.761	141817	34648.3	13.7294
8	362.685	809.802	151602	37038.8	13.7293
9	389.459	815.842	161124	39365.2	13.7293
10	415.572	821.996	168920	41269.8	13.7293
11	441.684	828.15	176673	43164.1	13.7293
12	467.964	834.394	184545	45087.4	13.7294
13	494.244	840.638	192828	47111.1	13.7294
14	523.538	847.599	202233	49408.8	13.7293
15	552.832	854.559	211309	51626.3	13.7294
16	582.202	861.565	220191	53796.2	13.7293
17	611.573	868.571	228846	55910.9	13.7294
18	646.73	877.573	234135	57203	13.7293
19	681.886	886.581	235654	57574.2	13.7294
20	717.331	895.7	233021	56930.8	13.7293
21	752.776	904.819	227024	55465.8	13.7294
22	786.518	913.762	216768	52960	13.7294
23	820.259	922.705	205633	50239.5	13.7293
24	842.753	928.679	197771	48318.8	13.7294
25	865.248	934.652	189527	46304.6	13.7294
26	887.742	940.625	180796	44171.5	13.7294
27	910.611	946.698	171431	41883.5	13.7294
28	933.48	952.771	161598	39480.9	13.7293
29	956.35	958.844	151329	36972.3	13.7294
30	990.653	967.954	136701	33398.3	13.7293
31	1024.96	977.063	123617	30201.8	13.7294
32	1050.76	983.914	113870	27820.3	13.7293
33	1076.56	990.765	104272	25475.2	13.7293
34	1102.35	997.616	94903.7	23186.5	13.7293
35	1128.15	1004.47	85325.9	20846.5	13.7293
36	1153.9	1011.3	75391.9	18419.5	13.7294
37	1179.64	1018.14	65128.3	15911.9	13.7293
38	1212.73	1026.92	52365.1	12793.7	13.7294
39	1245.81	1035.71	40408.7	9872.51	13.7293
40	1278.83	1044.48	29763.2	7271.63	13.7293
41	1311.84	1053.24	21111.1	5157.8	13.7294
42	1344.97	1062.04	14670.5	3584.25	13.7294
43	1378.11	1070.84	10378.3	2535.59	13.7294
44	1410.99	1079.57	8042.25	1964.85	13.7293
45	1443.86	1088.3	7823.73	1911.47	13.7294
46	1473.85	1096.54	7784.3	1901.83	13.7293
47	1503.84	1104.78	9458.96	2310.98	13.7294
48	1533.83	1113.11	12257.1	2994.61	13.7293
49	1563.82	1121.45	16450.3	4019.08	13.7294
50	1565.68	1124.29	11702.4	2859.09	13.7294
51	1591.28	1163.48	0	0	0

Entity Information

Block Search Window

X	Y
1680.3	1174.17
1646.19	1155.47
1645.86	1152.31
1681.31	1171.46

Block Search Window

X	Y
1609.15	1138.6
1521.14	1109.63
1521.58	1106.67
1609.19	1135.19

Block Search Window

X	Y
940.354	954.082
1044.5	981.365
1046.15	985.115
940.045	957.441

Block Search Window

X	Y
464.196	830.405
517.99	844.27
518.331	848.113
456.884	832.514

Block Search Window

X	Y
237.724	782.33
327.682	800.92
329.842	804.446
238.98	784.859

Block Search Window

X	Y
165.259	800.899
182.752	779.776
212.457	779.776
237.211	800.569

External Boundary

X	Y
0	830
0	807.172
0	798.919
0	600
2045	600
2045	1183.61
2045	1209
1959.41	1208.9
1897.37	1208.35
1871.1	1208.35
1848.74	1209.46
1814.09	1206.67
1783.9	1204.43
1739.19	1193.25
1701.51	1183.41
1690	1180.4
1613.98	1167.54
1560.88	1158.04
1486.54	1149.66
1432.33	1142.39
1411.09	1140.71
1366.37	1135.12
1318.3	1130.09
1293.71	1127.86
1247.31	1122.27
1202.04	1112.77
1184.15	1109.41
1164.03	1104.38
1125.46	1092.08
1090.25	1081.46
1058.39	1074.2
1018.71	1064.14
1000.82	1059.11
976.785	1056.31
966.724	1055.19
953.309	1052.96
928.156	1044.57
893.502	1032.84
841.52	1014.95
799.599	1002.09
765.503	990.915
752.648	985.885
727.495	973.588
709.05	964.645
679.426	949.553
641.976	928.313
603.968	910.986
586.641	901.484
572.108	899.807
560.929	897.571
524.039	886.951
503.917	879.685
481.559	876.331
442.433	871.86
424.547	869.065
397.717	861.799
369.77	852.856
335.674	841.677
301.579	827.703
281.457	818.76
265.247	817.083
255.222	809.096
227.877	811.199
213.152	814.355
175.289	814.355
148.995	821.717
122.701	830

Material Boundary

X	Y
0	807.172
186.812	807.172
206.795	807.172
227.877	811.199

Material Boundary

X	Y
0	798.919
23.804	795.814
47.404	792.087
75.351	790.224
106.404	787.74
125.035	787.74
137.456	784.635
169.751	777.182
188.382	774.077
195.214	773.456
217.572	778.424
223.388	781.623
229.993	785.256
241.793	795.814
255.222	809.096

Material Boundary

X	Y
217.572	778.424
275.537	789.658
464.196	830.405
753.501	904.973
1007.76	971.798
1272.21	1040.66
1521.58	1106.67
1609.19	1135.19
1645.86	1152.31
1681.31	1171.46
1695.58	1179.9
1701.51	1183.41

Material Boundary

X	Y
223.388	781.623
275.377	792.413
464.607	834.22
752.485	908.665
1007.73	975.042
1272.13	1044.35
1521.14	1109.63
1609.15	1138.6
1646.19	1155.47
1680.3	1174.17
1690	1180.4

Material Boundary

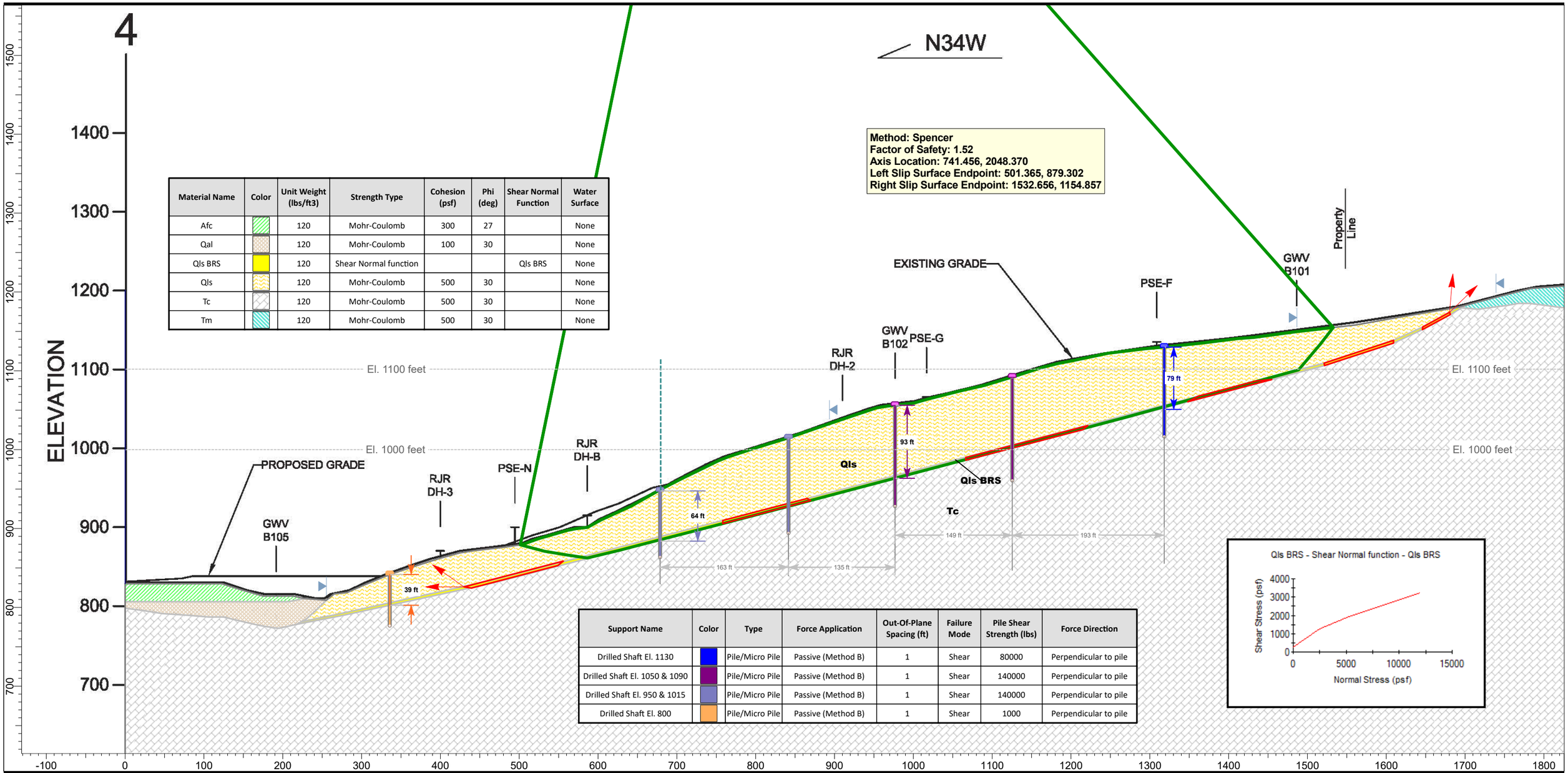
X	Y

X	Y
1690	1180.4
1695.58	1179.9
1716.53	1178.02
1729.57	1179.88
1753.79	1182.99
1767.45	1185.47
1781.74	1185.47
1801.61	1182.99
1819.62	1180.51
1837.63	1179.26
1855.02	1179.26
1869.31	1182.37
1893.53	1187.34
1914.64	1189.82
1924.58	1190.44
1943.21	1189.82
1969.3	1189.2
1997.24	1185.47
2023.95	1183.61
2045	1183.61

Section 4 - 4' Drilled Shaft Buttress System - Multi-Row Configuration

Stability of Landslide - Global to Elevation 1200 feet

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 4\Muli Pier 4\Sec 4_MP4_blk SrfAlt_ Qls Global 1200_a1.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
Afc		120	Mohr-Coulomb	300	27		None
Qal		120	Mohr-Coulomb	100	30		None
Qls BRS		120	Shear Normal function			Qls BRS	None
Qls		120	Mohr-Coulomb	500	30		None
Tc		120	Mohr-Coulomb	500	30		None
Tm		120	Mohr-Coulomb	500	30		None

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Failure Mode	Pile Shear Strength (lbs)	Force Direction
Drilled Shaft El. 1130		Pile/Micro Pile	Passive (Method B)	1	Shear	80000	Perpendicular to pile
Drilled Shaft El. 1050 & 1090		Pile/Micro Pile	Passive (Method B)	1	Shear	140000	Perpendicular to pile
Drilled Shaft El. 950 & 1015		Pile/Micro Pile	Passive (Method B)	1	Shear	140000	Perpendicular to pile
Drilled Shaft El. 800		Pile/Micro Pile	Passive (Method B)	1	Shear	1000	Perpendicular to pile

SLIDEINTERPRET 8.022

Leighton Consulting, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**			
Analyzed By: JEH	Units: feet	Scale: 1:1440	Project No.: **12558.001**
Date: December 9, 2019	Condition: **Static**		File Name: Sec 4_MP4_blk SrfAlt_ Qls Global 1200_a1.slim

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version:	8.022
Compute Time:	00h:00m:19.660s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used	
	Janbu corrected
	Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	145
Left Projection Angle (End Angle) [°]:	180
Right Projection Angle (Start Angle) [°]:	44
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Materials

Property	Afc	Qal	Qls BRS	Qls	Tc	Tm
Color						
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120	120
Cohesion [psf]	300	100		500	500	500
Friction Angle [°]	27	30		30	30	30
Water Surface	None	None	None	None	None	None
Ru Value	0	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Support

Drilled Shaft El. 1130

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 80000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 1050 & 1090

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 140000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 950 & 1015

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 140000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 800

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 1000 lb
Force Direction: Perpendicular to pile

Global Minimums

Method: janbu corrected

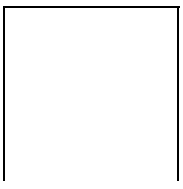
FS	1.521320
Axis Location:	714.765, 2017.557
Left Slip Surface Endpoint:	485.798, 876.967
Right Slip Surface Endpoint:	1489.857, 1150.030
Resisting Horizontal Force:	3.26473e+06 lb
Driving Horizontal Force:	2.14599e+06 lb
Passive Horizontal Support Force:	640000 lb
Maximum Single Support Force:	140000 lb
Total Support Force:	640000 lb
Total Slice Area:	71952.6 ft2
Surface Horizontal Width:	1004.06 ft
Surface Average Height:	71.6618 ft

Method: spencer

FS	1.524820
Axis Location:	741.456, 2048.370
Left Slip Surface Endpoint:	501.365, 879.302
Right Slip Surface Endpoint:	1532.656, 1154.857
Resisting Moment:	3.78508e+09 lb-ft
Driving Moment:	2.48232e+09 lb-ft
Resisting Horizontal Force:	3.27985e+06 lb
Driving Horizontal Force:	2.15098e+06 lb
Passive Support Moment:	6.97304e+08 lb-ft
Passive Horizontal Support Force:	640000 lb
Maximum Single Support Force:	140000 lb
Total Support Force:	640000 lb
Total Slice Area:	73423.7 ft2
Surface Horizontal Width:	1031.29 ft
Surface Average Height:	71.1959 ft

Global Minimum Coordinates

Method: janbu corrected



X	Y
485.798	876.967
513.466	863.567
543.106	853.872
588.081	863.155
631.024	873.409
679.006	885.863
704.831	892.567
730.652	899.269
758.064	906.385
785.476	913.5
813.313	920.749
841.342	928.063
878.093	937.725
914.844	947.389
956.193	958.261
1003.42	970.679
1051.24	983.254
1099.07	995.829
1128.28	1003.68
1157.49	1011.55
1186.69	1019.43
1216.12	1027.36
1245.55	1035.32
1274.98	1043.3
1314.17	1053.92
1353.46	1064.57
1376.68	1070.89
1414.83	1081.31
1438.37	1087.73
1469.15	1124.85
1489.86	1150.03

Method: spencer

X	Y
501.365	879.302
531.864	871.17
559.054	866.633
586.245	862.597
627.051	872.383
663.978	881.926
710.744	894.012
757.942	906.211
788.383	914.141
819.138	922.235
850.017	930.378
880.923	938.53
926.05	950.431
960.998	959.648
995.947	968.866
1030.9	978.083
1070.54	988.538
1110.18	998.993
1149.82	1009.45
1189.47	1019.9
1229.11	1030.36
1268.73	1040.89
1304.71	1050.74
1329.04	1057.39
1353.33	1064.04
1400.95	1077.08
1427.81	1084.44
1451.29	1090.87
1488.68	1101.12
1516.51	1134.05
1532.66	1154.86

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 4323
Number of Invalid Surfaces: 702

Error Codes:

Error Code -124 reported for 692 surfaces
Error Code -1000 reported for 10 surfaces

Method: spencer

Number of Valid Surfaces: 4320
Number of Invalid Surfaces: 705

Error Codes:

Error Code -124 reported for 692 surfaces
Error Code -1000 reported for 13 surfaces

Error Codes

The following errors were encountered during the computation:

-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.52132

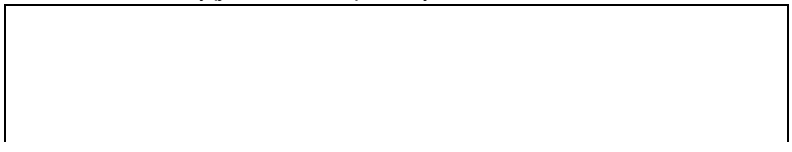
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	27.6674	30289.6	-25.8424	Qls	500	30	916.052	1393.61	1547.77	0	1547.77	1104.1	1104.1
2	28.5342	99198.6	-18.1121	Qls	500	30	1887.19	2871.02	4106.72	0	4106.72	3489.46	3489.46
3	1.10632	5075.09	-18.1121	Qls BRS	640.909	13.6925	1221.26	1857.93	4995.21	0	4995.21	4595.76	4595.76
4	22.4876	106434	11.662	Qls BRS	640.909	13.6925	1140.77	1735.48	4492.64	0	4492.64	4728.09	4728.09
5	22.4876	106480	11.662	Qls BRS	640.909	13.6925	1141.09	1735.96	4494.6	0	4494.6	4730.12	4730.12
6	21.4713	109184	13.4303	Qls BRS	640.909	13.6925	1189.22	1809.18	4795.16	0	4795.16	5079.14	5079.14
7	21.4713	122594	13.4303	Qls BRS	885.556	11.1466	1281.14	1949.03	5397.33	0	5397.33	5703.26	5703.26
8	15.9941	98977.2	14.5504	Qls BRS	885.556	11.1466	1337.68	2035.04	5833.85	0	5833.85	6181.05	6181.05
9	15.9941	107619	14.5504	Qls BRS	885.556	11.1466	1405.34	2137.97	6356.23	0	6356.23	6720.99	6720.99
10	15.9941	117061	14.5504	Qls BRS	885.556	11.1466	1479.27	2250.44	6927.03	0	6927.03	7310.98	7310.98
11	25.8244	206705	14.5516	Qls BRS	885.556	11.1466	1565.07	2380.97	7589.46	0	7589.46	7995.72	7995.72
12	25.821	225985	14.5516	Qls BRS	885.556	11.1466	1658.7	2523.41	8312.37	0	8312.37	8742.93	8742.93
13	27.4119	259710	14.5516	Qls BRS	885.556	11.1466	1749.14	2661.01	9010.75	0	9010.75	9464.79	9464.79
14	27.4119	272901	14.5516	Qls BRS	885.556	11.1466	1809.4	2752.68	9475.99	0	9475.99	9945.68	9945.68
15	27.8378	283380	14.595	Qls BRS	885.556	11.1466	1837.28	2795.09	9691.22	0	9691.22	10169.6	10169.6
16	28.0281	289894	14.6255	Qls BRS	885.556	11.1466	1857.59	2825.99	9848.05	0	9848.05	10332.8	10332.8
17	18.3756	193101	14.73	Qls BRS	885.556	11.1466	1877.85	2856.81	10004.5	0	10004.5	10498.2	10498.2
18	18.3756	196390	14.73	Qls BRS	885.556	11.1466	1900.26	2890.9	10177.5	0	10177.5	10677.1	10677.1
19	18.3756	199675	14.7321	Qls BRS	885.556	11.1466	1922.62	2924.93	10350.2	0	10350.2	10855.8	10855.8
20	18.3756	202822	14.7321	Qls BRS	885.556	11.1466	1944.06	2957.54	10515.7	0	10515.7	11026.9	11026.9
21	20.6745	231850	14.7321	Qls BRS	885.556	11.1466	1966.17	2991.18	10686.4	0	10686.4	11203.4	11203.4
22	20.6745	235434	14.7321	Qls BRS	885.556	11.1466	1987.87	3024.19	10853.9	0	10853.9	11376.6	11376.6
23	23.6128	265901	14.7321	Qls BRS	885.556	11.1466	1972	3000.05	10731.5	0	10731.5	11250	11250
24	23.6128	256394	14.7321	Qls BRS	885.556	11.1466	1921.61	2923.39	10342.4	0	10342.4	10847.6	10847.6
25	15.9416	170839	14.7321	Qls BRS	885.556	11.1466	1903.87	2896.4	10205.4	0	10205.4	10706	10706
26	15.9416	170940	14.7321	Qls BRS	885.556	11.1466	1904.67	2897.61	10211.5	0	10211.5	10712.3	10712.3
27	15.9416	170653	14.7321	Qls BRS	885.556	11.1466	1902.4	2894.17	10194.1	0	10194.1	10694.3	10694.3
28	23.9125	255011	14.7321	Qls BRS	885.556	11.1466	1897.34	2886.46	10155	0	10155	10653.9	10653.9
29	23.9125	253038	14.7321	Qls BRS	885.556	11.1466	1887.02	2870.76	10075.3	0	10075.3	10571.4	10571.4
30	29.2087	311160	15.0459	Qls BRS	885.556	11.1466	1894.5	2882.14	10133	0	10133	10642.3	10642.3
31	14.6043	157133	15.0782	Qls BRS	885.556	11.1466	1907.65	2902.15	10234.5	0	10234.5	10748.5	10748.5
32	14.6043	158398	15.0782	Qls BRS	885.556	11.1466	1918.48	2918.63	10318.2	0	10318.2	10835.1	10835.1
33	14.6043	159392	15.0886	Qls BRS	885.556	11.1466	1926.96	2931.52	10383.6	0	10383.6	10903.1	10903.1
34	14.6043	159044	15.0886	Qls BRS	885.556	11.1466	1923.97	2926.98	10360.6	0	10360.6	10879.3	10879.3
35	29.4271	315447	15.0886	Qls BRS	885.556	11.1466	1902.64	2894.53	10195.9	0	10195.9	10708.8	10708.8
36	29.4271	308867	15.1466	Qls BRS	885.556	11.1466	1874.42	2851.59	9977.97	0	9977.97	10485.4	10485.4
37	14.7135	151160	15.1649	Qls BRS	885.556	11.1466	1846.51	2809.14	9762.54	0	9762.54	10263	10263
38	14.7135	147266	15.1649	Qls BRS	885.556	11.1466	1813.42	2758.8	9507.04	0	9507.04	9998.54	9998.54
39	19.5958	190057	15.1649	Qls BRS	885.556	11.1466	1774.67	2699.84	9207.82	0	9207.82	9688.81	9688.81
40	19.5958	182380	15.1649	Qls BRS	885.556	11.1466	1725.68	2625.31	8829.59	0	8829.59	9297.31	9297.31
41	19.6463	174717	15.1649	Qls BRS	885.556	11.1466	1673.91	2546.56	8429.92	0	8429.92	8883.61	8883.61
42	19.6463	166996	15.1649	Qls BRS	885.556	11.1466	1624.78	2471.81	8050.51	0	8050.51	8490.88	8490.88
43	23.2236	187558	15.2231	Qls BRS	885.556	11.1466	1571.55	2390.83	7639.56	0	7639.56	8067.22	8067.22
44	19.0718	146721	15.2714	Qls BRS	885.556	11.1466	1523.48	2317.7	7268.36	0	7268.36	7684.32	7684.32
45	19.0718	140221	15.2714	Qls BRS	885.556	11.1466	1480.88	2252.89	6939.43	0	6939.43	7343.75	7343.75
46	23.5422	162327	15.2714	Qls BRS	885.556	11.1466	1423.73	2165.96	6498.25	0	6498.25	6886.97	6886.97
47	0.209446	1391.21	50.3322	Qls BRS	640.909	13.6925	1240.45	1887.12	5115.04	0	5115.04	6610.88	6610.88
48	15.2838	86291.1	50.3322	Qls	500	30	1684.32	2562.39	3572.16	0	3572.16	5603.25	5603.25
49	15.2838	56245.9	50.3322	Qls	500	30	1175.85	1788.85	2232.36	0	2232.36	3650.3	3650.3
50	20.7104	28003.6	50.5652	Qls	500	30	572.214	870.521	641.762	0	641.762	1337.53	1337.53

Global Minimum Query (spencer) - Safety Factor: 1.52482

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	15.2496	7855.38	-14.9302	Qls	500	30	676.539	1031.6	920.756	0	920.756	740.361	740.361
2	15.2496	25021.6	-14.9302	Qls	500	30	1251.42	1908.19	2439.06	0	2439.06	2105.38	2105.38
3	27.1907	79014.3	-9.47233	Qls	500	30	1760.69	2684.73	3784.07	0	3784.07	3490.31	3490.31
4	19.6279	79802.7	-8.44256	Qls	500	30	2276.54	3471.31	5146.48	0	5146.48	4808.58	4808.58
5	7.56285	34344.5	-8.44256	Qls BRS	640.909	13.6925	1254.93	1913.54	5223.48	0	5223.48	5037.22	5037.22
6	20.4032	102350	13.485	Qls BRS	640.909	13.6925	1178.28	1796.66	4743.77	0	4743.77	5026.32	5026.32
7	20.4032	114884	13.485	Qls BRS	885.556	11.1466	1268.78	1934.67	5324.47	0	5324.47	5628.72	5628.72
8	18.4632	112966	14.4907	Qls BRS	885.556	11.1466	1322.15	2016.05	5737.48	0	5737.48	6079.19	6079.19
9	18.4632	124107	14.4907	Qls BRS	885.556	11.1466	1395.38	2127.7	6304.09	0	6304.09	6664.71	6664.71
10	23.3829	175083	14.4907	Qls BRS	885.556	11.1466	1604.69	2446.87	7923.91	0	7923.91	8338.64	8338.64
11	23.3829	192374	14.4907	Qls BRS	885.556	11.1466	1578.02	2406.2	7717.5	0	7717.5	8125.34	8125.34
12	47.1986	435022	14.4915	Qls BRS	885.556	11.1466	1698.1	2589.3	8646.82	0	8646.82	9085.71	9085.71
13	30.4407	303884	14.6015	Qls BRS	885.556	11.1466	1790.03	2729.48	9358.25	0	9358.25	9824.57	9824.57
14	15.3775	156410	14.743	Qls BRS	885.556	11.1466	1811.56	2762.3	9524.84	0	9524.84	10001.5	10001.5
15	15.3775	157805	14.743	Qls BRS	885.556	11.1466	1822.55	2779.06	9609.87	0	9609.87	10089.5	10089.5
16	30.8785	320734	14.7746	Qls BRS	885.556	11.1466	1925.37	2935.84	10405.5	0	10405.5	10913.3	10913.3
17	15.4532	163401	14.7746	Qls BRS	885.556	11.1466	1860.03	2836.21	9899.92	0	9899.92	10390.5	10390.5
18	15.4532	165703	14.7746	Qls BRS	885.556	11.1466	1878.07	2863.72	10039.5	0	10039.5	10534.8	10534.8
19	22.5634	246048	14.7746	Qls BRS	885.556	11.1466	1900.09	2897.3	10210	0	10210	10711.1	10711.1
20	22.5634	250680	14.7746	Qls BRS	885.556	11.1466	1924.95	2935.21	10402.4	0	10402.4	10910.1	10910.1
21	17.4742	197210	14.7746	Qls BRS	885.556	11.1466	1946.24	2967.67	10567.1	0	10567.1	11080.4	11080.4
22	17.4742	199170	14.7746	Qls BRS	885.556	11.1466	1959.82	2988.38	10672.2	0	10672.2	11189.1	11189.1
23	17.4742	196112	14.7746	Qls BRS	885.556	11.1466	2094.09	3193.12	11711.3	0	11711.3	12263.6	12263.6
24	17.4742	190741	14.7746	Qls BRS	885.556	11.1466	1901.4	2899.3	10220.1	0	10220.1	10721.6	10721.6
25	17.4742	186910	14.7746	Qls BRS	885.556	11.1466	1874.85	2858.81	10014.6	0	10014.6	10509.1	10509.1
26	17.4742	187069	14.7746	Qls BRS	885.556	11.1466	1875.95	2860.49	10023.2	0	10023.2	10517.9	10517.9
27	19.8214	211795	14.7746	Qls BRS	885.556	11.1466	1873.5	2856.76	10004.2	0	10004.2	10498.3	10498.3
28	19.8214	211088	14.7746	Qls BRS	885.556	11.1466	1869.18	2850.17	9970.75	0	9970.75	10463.7	10463.7
29	19.8214	209496	14.7746	Qls BRS	885.556	11.1466	1859.46	2835.34	9895.48	0	9895.48	10385.9	10385.9
30	19.8214	209567	14.7746	Qls BRS	885.556	11.1466	1859.88	2835.99	9898.8	0	9898.8	10389.3	10389.3
31	19.8214	211373	14.7746	Qls BRS	885.556	11.1466	2007.98	3061.81	11044.8	0	11044.8	11574.4	11574.4
32	19.8214	213729	14.7746	Qls BRS	885.556	11.1466	1885.32	2874.78	10095.6	0	10095.6	10592.9	10592.9
33	19.8214	216197	14.7753	Qls BRS	885.556	11.1466	1900.39	2897.76	10212.3	0	10212.3	10713.5	10713.5
34	19.8214	216278	14.7753	Qls BRS	885.556	11.1466	1900.88	2898.51	10216.1	0	10216.1	10717.4	10717.4
35	19.8214	213539	14.7813	Qls BRS	885.556	11.1466	1884.09	2872.9	10086.1	0	10086.1	10583.2	10583.2
36	19.8214	210781	14.7813	Qls BRS	885.556	11.1466	1867.24	2847.21	9955.71	0	9955.71	10448.4	10448.4
37	19.8128	208088	14.8809	Qls BRS	885.556	11.1466	1850.38	2821.5	9825.25	0	9825.25	10316.9	10316.9
38	19.8128	203025	14.8809	Qls BRS	885.556	11.1466	1819.44	2774.33	9585.89	0	9585.89	10069.4	10069.4
39	17.9888	178256	15.2998	Qls BRS	885.556	11.1466	1774.73	2706.15	9239.8	0	9239.8	9725.31	9725.31
40	17.9888	172097	15.2998	Qls BRS	885.556	11.1466	1733.41	2643.14	8920.01	0	8920.01	9394.21	9394.21
41	24.3325	221714	15.2998	Qls BRS	885.556	11.1466	1742.06	2656.33	8986.99	0	8986.99	9463.56	9463.56
42	24.288	209177	15.3155	Qls BRS	885.556	11.1466	1618.07	2467.27	8027.44	0	8027.44	8470.57	8470.57
43	23.8072	193553	15.3155	Qls BRS	885.556	11.1466	1559.85	2378.5	7576.94	0	7576.94	8004.12	8004.12
44	23.8072	183221	15.3155	Qls BRS	885.556	11.1466	1507.48	2298.64	7171.65	0	7171.65	7584.49	7584.49
45	26.8653	193825	15.3155	Qls BRS	885.556	11.1466	1449.39	2210.06	6722.1	0	6722.1	7119.03	7119.03
46	23.4761	156986	15.3155	Qls BRS	885.556	11.1466	1385.72	2112.97	6229.32	0	6229.32	6608.81	6608.81
47	18.6951	118343	15.3264	Qls BRS	885.556	11.1466	1342.58	2047.19	5895.47	0	5895.47	6263.43	6263.43
48	18.6951	112465	15.3264	Qls BRS	885.556	11.1466	1304.62	1989.32	5601.84	0	5601.84	5959.39	5959.39
49	27.8304	113157	49.7985	Qls	500	30	1193.11	1819.28	2285.06	0	2285.06	3696.84	3696.84
50	16.146	18393.6	52.1898	Qls	500	30	504.301	768.968	465.868	0	465.868	1115.77	1115.77

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.52132



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	485.798	876.967	0	0	0
2	513.466	863.567	46617.9	0	0
3	542	854.234	139927	0	0
4	543.106	853.872	143114	0	0
5	565.594	858.513	148455	0	0
6	588.081	863.155	153793	0	0
7	609.553	868.282	155278	0	0
8	631.024	873.409	155691	0	0
9	647.018	877.56	153317	0	0
10	663.012	881.712	149880	0	0
11	679.006	885.863	239239	0	0
12	704.831	892.567	229630	0	0
13	730.652	899.269	217645	0	0
14	758.064	906.385	202483	0	0
15	785.476	913.5	185698	0	0
16	813.313	920.749	167671	0	0
17	841.342	928.063	148800	0	0
18	859.717	932.894	229660	0	0
19	878.093	937.725	216145	0	0
20	896.468	942.557	202207	0	0
21	914.844	947.389	187872	0	0
22	935.518	952.825	171282	0	0
23	956.193	958.261	154239	0	0
24	979.806	964.47	229112	0	0
25	1003.42	970.679	211226	0	0
26	1019.36	974.871	199436	0	0
27	1035.3	979.062	187634	0	0
28	1051.24	983.254	175868	0	0
29	1075.16	989.542	158341	0	0
30	1099.07	995.829	141063	0	0
31	1128.28	1003.68	211961	0	0
32	1142.88	1007.62	200138	0	0
33	1157.49	1011.55	188147	0	0
34	1172.09	1015.49	175995	0	0
35	1186.69	1019.43	163890	0	0
36	1216.12	1027.36	140165	0	0
37	1245.55	1035.32	117001	0	0
38	1260.26	1039.31	105809	0	0
39	1274.98	1043.3	95138.5	0	0
40	1294.57	1048.61	81741.4	0	0
41	1314.17	1053.92	69372.9	0	0
42	1333.81	1059.25	111754	0	0
43	1353.46	1064.57	101478	0	0
44	1376.68	1070.89	90461.8	0	0
45	1395.76	1076.1	82279.9	0	0
46	1414.83	1081.31	74981.3	0	0
47	1438.37	1087.73	67434.2	0	0
48	1438.58	1087.99	66407.6	0	0
49	1453.86	1106.42	26855.1	0	0
50	1469.15	1124.85	4061	0	0
51	1489.86	1150.03	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.52482

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	501.365	879.302	0	0	0
2	516.614	875.236	14061	3435.19	13.7288
3	531.864	871.17	43062.4	10520.4	13.7288
4	559.054	866.633	108104	26410.6	13.7289
5	578.682	863.72	167781	40990.1	13.7288
6	586.245	862.597	183136	44741.3	13.7288
7	606.648	867.49	183966	44944.3	13.7289
8	627.051	872.383	183803	44904.3	13.7288
9	645.515	877.154	180837	44179.7	13.7288
10	663.978	881.926	176519	43124.7	13.7288
11	687.361	887.969	257969	63023.8	13.7289
12	710.744	894.012	248230	60644.3	13.7288
13	757.942	906.211	222897	54455.3	13.7288
14	788.383	914.141	203175	49637.2	13.7289
15	803.76	918.188	192490	47026.7	13.7288
16	819.138	922.235	181630	44373.5	13.7288
17	850.017	930.378	248156	60626.3	13.7288
18	865.47	934.454	236552	57791.3	13.7288
19	880.923	938.53	224657	54885.4	13.7289
20	903.486	944.48	206773	50516.1	13.7288
21	926.05	950.431	188304	46004.1	13.7289
22	943.524	955.04	173614	42415.1	13.7288
23	960.998	959.648	158677	38765.8	13.7288
24	978.473	964.257	233111	56950.7	13.7288
25	995.947	968.866	219237	53561.1	13.7288
26	1013.42	973.474	205845	50289.4	13.7288
27	1030.9	978.083	192433	47012.8	13.7289
28	1050.72	983.31	177271	43308.5	13.7288
29	1070.54	988.538	162197	39626	13.7289
30	1090.36	993.766	147325	35992.5	13.7288
31	1110.18	998.993	132443	32356.8	13.7289
32	1130	1004.22	206320	50405.5	13.7289
33	1149.82	1009.45	190914	46641.6	13.7288
34	1169.65	1014.68	175194	42801	13.7288
35	1189.47	1019.9	159463	38958	13.7289
36	1209.29	1025.13	144057	35194.3	13.7289
37	1229.11	1030.36	128999	31515.5	13.7289
38	1248.92	1035.63	113934	27834.9	13.7288
39	1268.73	1040.89	99515.8	24312.4	13.7288
40	1286.72	1045.81	85970.9	21003.3	13.7288
41	1304.71	1050.74	73256.5	17897.1	13.7289
42	1329.04	1057.39	108288	26455.6	13.7289
43	1353.33	1064.04	94193.5	23012.1	13.7288
44	1377.14	1070.56	81928.9	20015.8	13.7288
45	1400.95	1077.08	71060	17360.5	13.7289
46	1427.81	1084.44	60541.8	14790.8	13.7289
47	1451.29	1090.87	53023.7	12954.1	13.7289
48	1469.98	1095.99	47916.9	11706.4	13.7288
49	1488.68	1101.12	43605.3	10653.1	13.7289
50	1516.51	1134.05	1560.75	381.301	13.7288
51	1532.66	1154.86	0	0	0

Entity Information

Block Search Window

X	Y
1435.36	1087.14
1361.25	1067.72
1348.11	1060.75
1454.68	1088.96

Block Search Window

X	Y
1221.15	1030.48
1066.43	989.918
1066.43	986.65
1215.02	1025.34

Block Search Window

X	Y
758.235	906.217
869.572	935.479
865.499	938.055
758.235	910.16

Block Search Window

X	Y
439.272	824.43
549.045	853.1
555.865	858.625
429.985	825.952

Block Search Window

X	Y
1680.3	1174.17
1646.19	1155.47
1645.86	1152.31
1681.31	1171.46

Block Search Window

X	Y
1609.15	1138.6
1521.14	1109.63
1521.58	1106.67
1609.19	1135.19

External Boundary

X	Y
0	830
0	807.172
0	798.919
0	600
2045	600
2045	1183.61
2045	1209
1959.41	1208.9
1897.37	1208.35
1871.1	1208.35
1848.74	1209.46
1814.09	1206.67
1783.9	1204.43

1739.19	1193.25
1701.51	1183.41
1690	1180.4
1613.98	1167.54
1560.88	1158.04
1486.54	1149.66
1432.33	1142.39
1411.09	1140.71
1366.37	1135.12
1318.3	1130.09
1293.71	1127.86
1247.31	1122.27
1202.04	1112.77
1184.15	1109.41
1164.03	1104.38
1125.46	1092.08
1090.25	1081.46
1058.39	1074.2
1018.71	1064.14
1000.82	1059.11
976.785	1056.31
966.724	1055.19
953.309	1052.96
928.156	1044.57
893.502	1032.84
841.52	1014.95
799.599	1002.09
765.503	990.915
752.648	985.885
727.495	973.588
709.05	964.645
679.426	949.553
641.976	928.313
603.968	910.986
586.641	901.484
572.108	899.807
560.929	897.571
524.039	886.951
503.917	879.685
481.559	876.331
442.433	871.86
424.547	869.065
397.717	861.799
369.77	852.856
335.674	841.677
301.579	827.703
281.457	818.76
265.247	817.083
255.222	809.096
227.877	811.199
213.152	814.355
175.289	814.355
148.995	821.717
122.701	830

Material Boundary

X	Y
0	807.172
186.812	807.172
206.795	807.172
227.877	811.199

Material Boundary

X	Y
0	798.919
23.804	795.814
47.404	792.087
75.351	790.224
106.404	787.74
125.035	787.74
137.456	784.635
169.751	777.182
188.382	774.077
195.214	773.456
217.572	778.424
223.388	781.623
229.993	785.256
241.793	795.814
255.222	809.096

Material Boundary

X	Y
217.572	778.424
275.537	789.658
464.196	830.405
753.501	904.973
1007.76	971.798
1272.21	1040.66
1521.58	1106.67
1609.19	1135.19
1645.86	1152.31
1681.31	1171.46
1695.58	1179.9
1701.51	1183.41

Material Boundary

X	Y
223.388	781.623
275.377	792.413
464.607	834.22
752.485	908.665
1007.73	975.042
1272.13	1044.35
1521.14	1109.63
1609.15	1138.6
1646.19	1155.47
1680.3	1174.17
1690	1180.4

Material Boundary

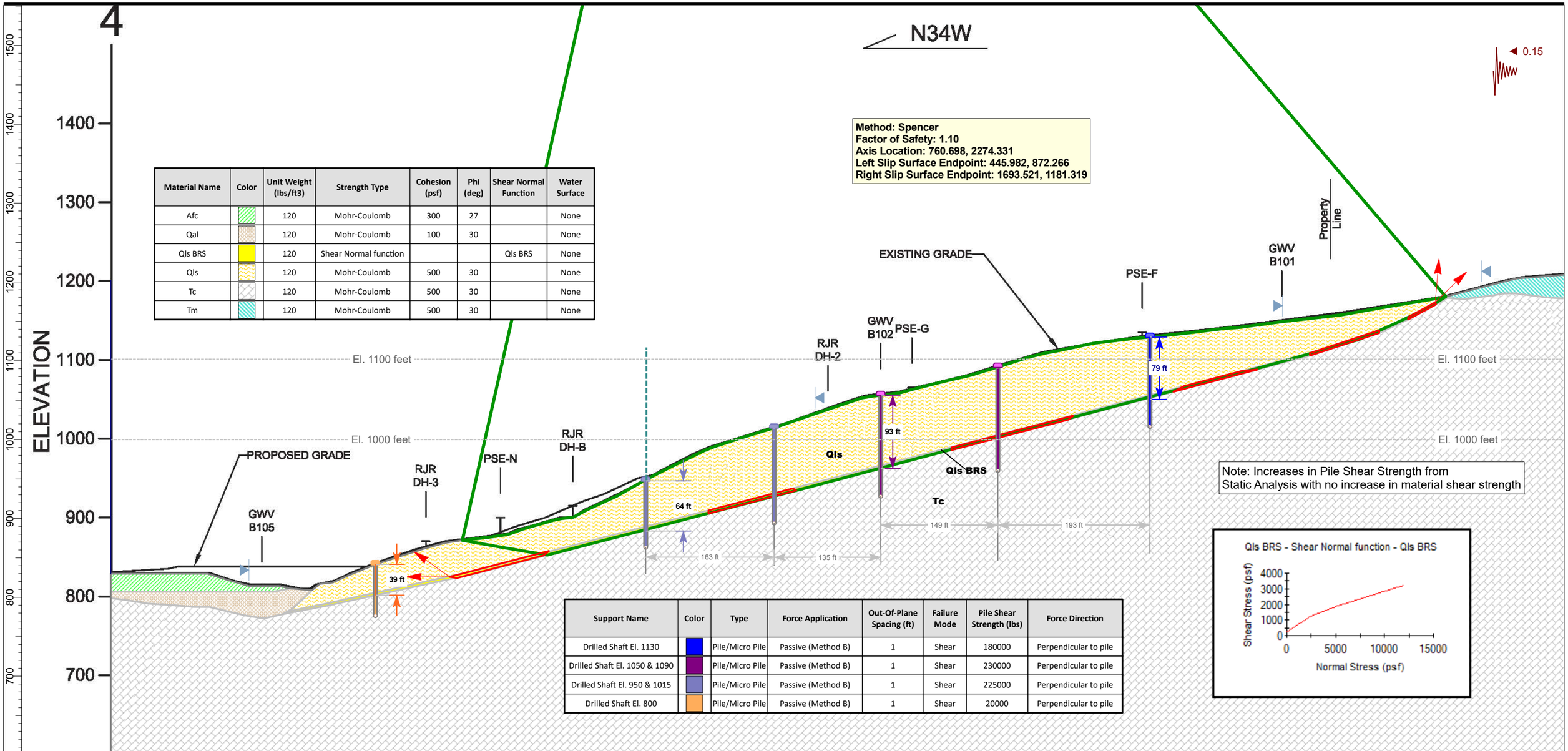
X	Y

X	Y
1690	1180.4
1695.58	1179.9
1716.53	1178.02
1729.57	1179.88
1753.79	1182.99
1767.45	1185.47
1781.74	1185.47
1801.61	1182.99
1819.62	1180.51
1837.63	1179.26
1855.02	1179.26
1869.31	1182.37
1893.53	1187.34
1914.64	1189.82
1924.58	1190.44
1943.21	1189.82
1969.3	1189.2
1997.24	1185.47
2023.95	1183.61
2045	1183.61

Section 4 - 4' Drilled Shaft Buttress System - Multi-Row Configuration

Stability of Landslide - Global to Elevation 1200 feet

\\Ds-sc1\project\InFocus Projects\12501 - 13000\12558 NewHome W Village\001\Analyses\S L I D E\Section 4\Muli Pier 4\Sec 4_MP4_blk SrfAlt_ Qls Global 1200_a3_K015.slim



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Shear Normal Function	Water Surface
Afc		120	Mohr-Coulomb	300	27		None
Qal		120	Mohr-Coulomb	100	30		None
Qls BRS		120	Shear Normal function			Qls BRS	None
Qls		120	Mohr-Coulomb	500	30		None
Tc		120	Mohr-Coulomb	500	30		None
Tm		120	Mohr-Coulomb	500	30		None

Support Name	Color	Type	Force Application	Out-Of-Plane Spacing (ft)	Failure Mode	Pile Shear Strength (lbs)	Force Direction
Drilled Shaft El. 1130		Pile/Micro Pile	Passive (Method B)	1	Shear	180000	Perpendicular to pile
Drilled Shaft El. 1050 & 1090		Pile/Micro Pile	Passive (Method B)	1	Shear	230000	Perpendicular to pile
Drilled Shaft El. 950 & 1015		Pile/Micro Pile	Passive (Method B)	1	Shear	225000	Perpendicular to pile
Drilled Shaft El. 800		Pile/Micro Pile	Passive (Method B)	1	Shear	20000	Perpendicular to pile

SLIDEINTERPRET 8.022

Leighton and Associates, Inc.
A LEIGHTON GROUP COMPANY

Project: **Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA**

Analyzed By:	*Units:*	*Scale:*	*Project No.:*	*File Name:*
JEH	feet	1:1440	**12558.001**	Sec 4_MP4_blk SrfAlt_ Qls Global 1200_a3_K015.slim

Date: December 9, 2019 *Condition:* **PseudoStatic**

Slide Analysis Information

Proposed "West Village" Residential Development, Las Virgenes Road, Calabasas CA

Project Summary

Slide Modeler Version:	8.022
Compute Time:	00h:00m:14.125s

General Settings

Units of Measurement:	Imperial Units
Time Units:	days
Permeability Units:	feet/second
Data Output:	Standard
Failure Direction:	Right to Left

Analysis Options

Slices Type:	Vertical

Analysis Methods Used
Janbu corrected
Spencer

Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Check tensile effective normal stresses in the first:	95%
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
Advanced Groundwater Method:	None

Random Numbers

Pseudo-random Seed:	10116
Random Number Generation Method:	Park and Miller v.3

Surface Options

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [°]:	145
Left Projection Angle (End Angle) [°]:	180
Right Projection Angle (Start Angle) [°]:	44
Right Projection Angle (End Angle) [°]:	85
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Advanced seismic analysis: No
Staged pseudostatic analysis: No

Seismic Load Coefficient (Horizontal): 0.15

Materials

Property	Afc	Qal	Qls BRS	Qls	Tc	Tm
Color						
Strength Type	Mohr-Coulomb	Mohr-Coulomb	Shear Normal function	Mohr-Coulomb	Mohr-Coulomb	Mohr-Coulomb
Unit Weight [lbs/ft3]	120	120	120	120	120	120
Cohesion [psf]	300	100		500	500	500
Friction Angle [°]	27	30		30	30	30
Water Surface	None	None	None	None	None	None
Ru Value	0	0	0	0	0	0

Shear Normal Functions

Name: Qls BRS

Normal (psf)	Shear (psf)
0	250
2500	1250
5250	1920
12000	3250

Support

Drilled Shaft El. 1130

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 180000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 1050 & 1090

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 230000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 950 & 1015

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 225000 lb
Force Direction: Perpendicular to pile

Drilled Shaft El. 800

Support Type: Pile/Micro Pile
Force Application: Passive
Out-of-Plane Spacing: 1 ft
Failure Mode: Shear
Pile Shear Strength: 20000 lb
Force Direction: Perpendicular to pile

Global Minimums

Method: janbu corrected

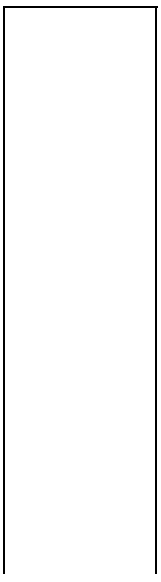
FS	1.081420
Axis Location:	766.035, 2198.976
Left Slip Surface Endpoint:	476.973, 875.807
Right Slip Surface Endpoint:	1651.133, 1173.825
Resisting Horizontal Force:	3.97453e+06 lb
Driving Horizontal Force:	3.67529e+06 lb
Passive Horizontal Support Force:	1.09e+06 lb
Maximum Single Support Force:	230000 lb
Total Support Force:	1.09e+06 lb
Total Slice Area:	79448.3 ft2
Surface Horizontal Width:	1174.16 ft
Surface Average Height:	67.6639 ft

Method: spencer

FS	1.095430
Axis Location:	760.698, 2274.331
Left Slip Surface Endpoint:	445.982, 872.266
Right Slip Surface Endpoint:	1693.521, 1181.319
Resisting Moment:	5.48659e+09 lb-ft
Driving Moment:	5.00864e+09 lb-ft
Resisting Horizontal Force:	4.0244e+06 lb
Driving Horizontal Force:	3.67382e+06 lb
Passive Support Moment:	1.42866e+09 lb-ft
Passive Horizontal Support Force:	1.09e+06 lb
Maximum Single Support Force:	230000 lb
Total Support Force:	1.09e+06 lb
Total Slice Area:	79988 ft2
Surface Horizontal Width:	1247.54 ft
Surface Average Height:	64.1167 ft

Global Minimum Coordinates

Method: janbu corrected



X	Y
476.973	875.807
505.98	862.534
534.986	849.261
569.846	857.95
604.706	866.638
639.566	875.705
674.434	884.623
723.399	897.214
772.639	910.029
828.734	924.796
885.092	939.597
927.829	950.866
970.566	962.135
1013.3	973.404
1056.04	984.924
1098.78	996.445
1141.51	1007.61
1190.54	1020.64
1239.57	1033.32
1288.61	1046
1337.45	1058.63
1385.67	1071.05
1433.82	1083.44
1477.61	1096.38
1521.43	1109.32
1565.42	1121.35
1609.41	1135.26
1651.13	1173.82

Method: spencer

X	Y
445.982	872.266
499.82	862.798
553.848	853.585
600.298	865.641
646.747	877.696
689.041	888.673
731.504	899.694
773.966	910.715
828.831	924.954
883.695	939.195
932.646	952.114
981.597	965.076
1030.55	978.038
1079.5	991
1128.45	1003.96
1177.4	1016.92
1222.47	1028.86
1267.53	1040.79
1309.99	1052.03
1352.44	1063.27
1397.85	1075.3
1443.27	1087.32
1478.37	1096.82
1513.48	1106.87
1548.46	1116.89
1583.44	1126.9
1626.75	1146.01
1670.07	1166.46
1693.52	1181.32

Valid/Invalid Surfaces

Method: janbu corrected

Number of Valid Surfaces: 4317
Number of Invalid Surfaces: 699

Error Codes:

Error Code -124 reported for 692 surfaces
Error Code -1000 reported for 7 surfaces

Method: spencer

Number of Valid Surfaces: 4287
Number of Invalid Surfaces: 729

Error Codes:

Error Code -111 reported for 30 surfaces
Error Code -124 reported for 692 surfaces
Error Code -1000 reported for 7 surfaces

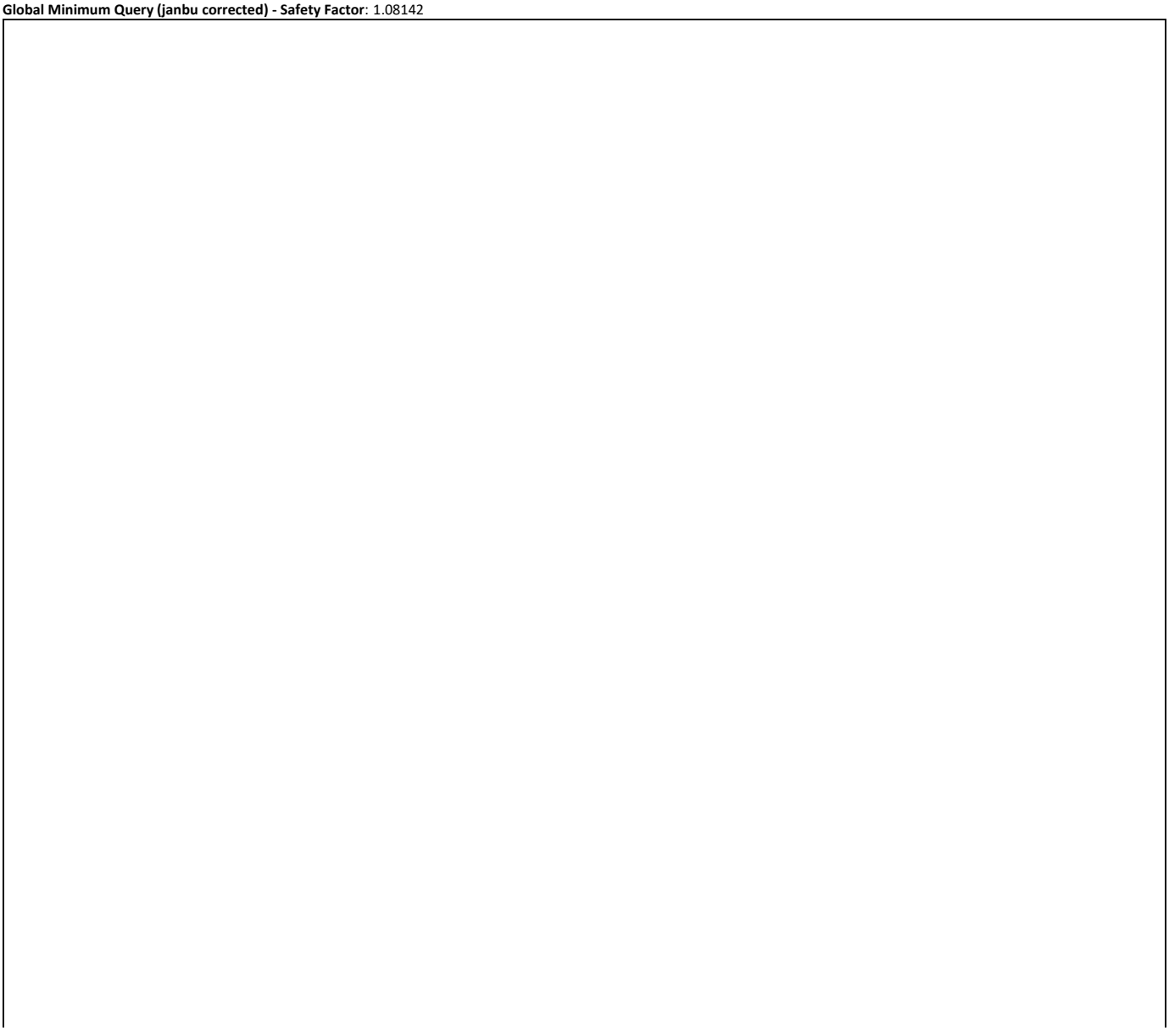
Error Codes

The following errors were encountered during the computation:

-111 = safety factor equation did not converge
-124 = A slice has a width less than the minimum acceptable value.
-1000 = No valid slip surface is generated

Slice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.08142



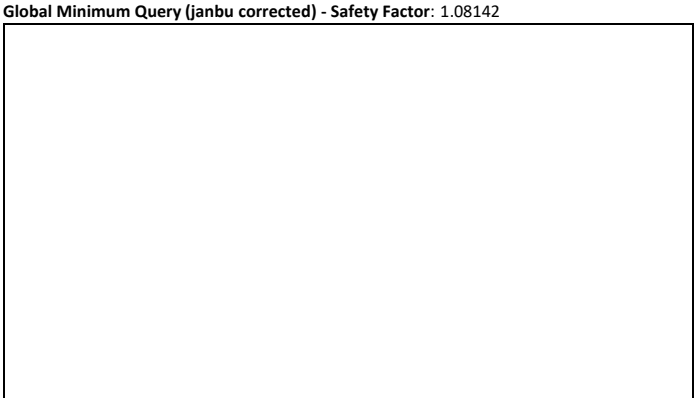
Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	29.0062	30201.2	-24.5882	Qls	500	30	1354.34	1464.61	1670.75	0	1670.75	1051.02	1051.02
2	24.5959	82347.7	-24.5882	Qls	500	30	2992.44	3236.08	4739.02	0	4739.02	3369.73	3369.73
3	4.41035	20744.8	-24.5882	Qls BRS	885.556	11.1466	1830.98	1980.06	5554.79	0	5554.79	4716.96	4716.96
4	34.8602	173246	13.9952	Qls BRS	640.909	13.6925	1619.9	1751.79	4559.6	0	4559.6	4963.34	4963.34
5	34.8602	172696	13.9952	Qls BRS	640.909	13.6925	1616.54	1748.16	4544.68	0	4544.68	4947.59	4947.59
6	34.8601	201199	14.5788	Qls BRS	885.556	11.1466	1784.58	1929.88	5300.11	0	5300.11	5764.25	5764.25
7	17.4338	112917	14.3472	Qls BRS	885.556	11.1466	1908.63	2064.03	5980.97	0	5980.97	6469.15	6469.15
8	17.4338	124235	14.3472	Qls BRS	885.556	11.1466	2021.57	2186.17	6600.86	0	6600.86	7117.93	7117.93
9	24.4827	192275	14.4208	Qls BRS	885.556	11.1466	2147.59	2322.45	7292.52	0	7292.52	7844.76	7844.76
10	24.4827	210205	14.4208	Qls BRS	885.556	11.1466	2274.97	2460.2	7991.6	0	7991.6	8576.59	8576.59
11	24.6199	228041	14.5878	Qls BRS	885.556	11.1466	2391.33	2586.04	8630.24	0	8630.24	9252.59	9252.59
12	24.6199	242133	14.5878	Qls BRS	885.556	11.1466	2490.83	2693.64	9176.35	0	9176.35	9824.59	9824.59
13	28.0476	283162	14.7482	Qls BRS	885.556	11.1466	2534.85	2741.24	9417.92	0	9417.92	10085.2	10085.2
14	28.0476	288186	14.7482	Qls BRS	885.556	11.1466	2565.97	2774.89	9588.7	0	9588.7	10264.2	10264.2
15	28.1789	294225	14.7151	Qls BRS	885.556	11.1466	2595.17	2806.47	9748.94	0	9748.94	10430.5	10430.5
16	28.1789	301619	14.7151	Qls BRS	885.556	11.1466	2640.76	2855.77	9999.2	0	9999.2	10692.7	10692.7
17	21.3684	233813	14.7717	Qls BRS	885.556	11.1466	2681.66	2900	10223.7	0	10223.7	10930.8	10930.8
18	21.3684	237948	14.7717	Qls BRS	885.556	11.1466	2715.27	2936.35	10408.2	0	10408.2	11124.1	11124.1
19	21.3684	241916	14.7717	Qls BRS	885.556	11.1466	2747.53	2971.24	10585.2	0	10585.2	11309.7	11309.7
20	21.3684	242705	14.7717	Qls BRS	885.556	11.1466	2753.95	2978.18	10620.4	0	10620.4	11346.6	11346.6
21	21.3684	235610	14.7717	Qls BRS	885.556	11.1466	2696.27	2915.8	10303.9	0	10303.9	11014.8	11014.8
22	21.3684	229064	14.7717	Qls BRS	885.556	11.1466	2643.05	2858.25	10011.8	0	10011.8	10708.7	10708.7
23	21.3684	228658	15.0866	Qls BRS	885.556	11.1466	2637.01	2851.72	9978.64	0	9978.64	10689.5	10689.5
24	21.3684	227827	15.0866	Qls BRS	885.556	11.1466	2630.26	2844.42	9941.59	0	9941.59	10650.6	10650.6
25	21.3684	226396	15.0866	Qls BRS	885.556	11.1466	2618.64	2831.85	9877.78	0	9877.78	10583.7	10583.7
26	21.3684	224450	15.0866	Qls BRS	885.556	11.1466	2602.83	2814.76	9791.07	0	9791.07	10492.7	10492.7
27	21.3684	225702	14.6478	Qls BRS	885.556	11.1466	2616.79	2829.85	9867.6	0	9867.6	10551.5	10551.5
28	21.3684	228172	14.6478	Qls BRS	885.556	11.1466	2636.88	2851.58	9977.89	0	9977.89	10667.1	10667.1
29	24.5155	265448	14.8822	Qls BRS	885.556	11.1466	2660.85	2877.5	10109.4	0	10109.4	10816.6	10816.6
30	24.5155	266255	14.8822	Qls BRS	885.556	11.1466	2666.56	2883.68	10140.8	0	10140.8	10849.5	10849.5
31	24.5155	262327	14.4991	Qls BRS	885.556	11.1466	2642.07	2857.19	10006.4	0	10006.4	10689.7	10689.7
32	24.5155	258636	14.4991	Qls BRS	885.556	11.1466	2615.89	2828.88	9862.71	0	9862.71	10539.2	10539.2
33	24.5155	253612	14.4991	Qls BRS	885.556	11.1466	2580.26	2790.35	9667.15	0	9667.15	10334.4	10334.4
34	24.5155	243973	14.4991	Qls BRS	885.556	11.1466	2511.89	2716.41	9291.94	0	9291.94	9941.52	9941.52
35	24.4207	232469	14.4932	Qls BRS	885.556	11.1466	2436.75	2635.15	8879.47	0	8879.47	9509.35	9509.35
36	24.4207	220824	14.4932	Qls BRS	885.556	11.1466	2353.83	2545.48	8424.42	0	8424.42	9032.86	9032.86
37	24.1104	207230	14.4399	Qls BRS	885.556	11.1466	2276.42	2461.77	7999.57	0	7999.57	8585.75	8585.75
38	24.1104	197022	14.4399	Qls BRS	885.556	11.1466	2202.79	2382.14	7595.43	0	7595.43	8162.64	8162.64
39	24.0739	187478	14.4332	Qls BRS	885.556	11.1466	2136.05	2309.97	7229.14	0	7229.14	7778.9	7778.9
40	24.0739	176851	14.4332	Qls BRS	885.556	11.1466	2059.28	2226.95	6807.79	0	6807.79	7337.8	7337.8
41	21.8949	150768	16.4649	Qls BRS	885.556	11.1466	1965.98	2126.05	6295.75	0	6295.75	6876.79	6876.79
42	21.8949	141477	16.4649	Qls BRS	885.556	11.1466	1892.67	2046.78	5893.41	0	5893.41	6452.78	6452.78
43	21.9133	132085	16.4535	Qls BRS	885.556	11.1466	1817.75	1965.76	5482.25	0	5482.25	6019.09	6019.09
44	21.9133	121667	16.4535	Qls BRS	640.909	13.6925	1726.81	1867.41	5034.13	0	5034.13	5544.11	5544.11
45	21.9952	112179	15.2936	Qls BRS	640.909	13.6925	1639.1	1772.56	4644.83	0	4644.83	5093.05	5093.05
46	21.9952	102933	15.2936	Qls BRS	640.909	13.6925	1549.97	1676.17	4249.22	0	4249.22	4673.06	4673.06
47	21.9952	94993.9	17.5505	Qls BRS	640.909	13.6925	1459.98	1578.85	3849.77	0	3849.77	4311.52	4311.52
48	21.9952	87021.6	17.5505	Qls BRS	640.909	13.6925	1383.83	1496.51	3511.78	0	3511.78	3949.44	3949.44
49	7.36915	25386.6	42.7462	Qls BRS	250	21.8014	1117.37	1208.35	2395.86	0	2395.86	3428.61	3428.61
50	34.3507	53462.9	42.7462	Qls	500	30	861.455	931.595	747.545	0	747.545	1543.76	1543.76

Global Minimum Query (spencer) - Safety Factor: 1.09543

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [degrees]	Base Material	Base Cohesion [psf]	Base Friction Angle [degrees]	Shear Stress [psf]	Shear Strength [psf]	Base Normal Stress [psf]	Pore Pressure [psf]	Effective Normal Stress [psf]	Base Vertical Stress [psf]	Effective Vertical Stress [psf]
1	26.9194	12613.9	-9.97301	Qls	500	30	1098.33	1203.14	1217.87	0	1217.87	1024.74	1024.74
2	26.9194	38556.8	-9.97301	Qls	500	30	1897.87	2078.98	2734.88	0	2734.88	2401.15	2401.15
3	22.6884	58580.2	-9.67724	Qls	500	30	2828.75	3098.7	4501.1	0	4501.1	4018.73	4018.73
4	22.6884	89240.3	-9.67724	Qls	500	30	3940.17	4316.18	6609.81	0	6609.81	5937.92	5937.92
5	8.65106	41488.1	-9.67724	Qls BRS	885.556	11.1466	1909.53	2091.76	6121.69	0	6121.69	5796.07	5796.07
6	23.2246	116323	14.5495	Qls BRS	640.909	13.6925	1575.12	1725.43	4451.39	0	4451.39	4860.19	4860.19
7	23.2246	113796	14.5495	Qls BRS	640.909	13.6925	1554.1	1702.41	4356.91	0	4356.91	4760.26	4760.26
8	23.2246	127991	14.5495	Qls BRS	640.909	13.6925	1672.14	1831.71	4887.62	0	4887.62	5321.61	5321.61
9	23.2246	140926	14.5495	Qls BRS	885.556	11.1466	1774.38	1943.71	5370.28	0	5370.28	5830.8	5830.8
10	21.147	143568	14.5495	Qls BRS	885.556	11.1466	1886.16	2066.16	5991.77	0	5991.77	6481.3	6481.3
11	21.147	159755	14.5495	Qls BRS	885.556	11.1466	2727.58	2987.88	10669.7	0	10669.7	11377.6	11377.6
12	21.2314	174345	14.5495	Qls BRS	885.556	11.1466	2106.69	2307.74	7217.87	0	7217.87	7764.64	7764.64
13	21.2314	187127	14.5495	Qls BRS	885.556	11.1466	2200.03	2409.98	7736.73	0	7736.73	8307.72	8307.72
14	21.2314	199462	14.5495	Qls BRS	885.556	11.1466	2290.09	2508.64	8237.44	0	8237.44	8831.8	8831.8
15	21.2314	208934	14.5495	Qls BRS	885.556	11.1466	2359.25	2584.4	8621.94	0	8621.94	9234.26	9234.26
16	54.8644	557541	14.5495	Qls BRS	885.556	11.1466	2409.08	2638.98	8898.93	0	8898.93	9524.18	9524.18
17	27.4322	286059	14.5508	Qls BRS	885.556	11.1466	3007.39	3294.39	12225.3	0	12225.3	13005.9	13005.9
18	27.4322	293330	14.5508	Qls BRS	885.556	11.1466	2491.33	2729.08	9356.19	0	9356.19	10002.9	10002.9
19	24.4754	267930	14.7849	Qls BRS	885.556	11.1466	2525.76	2766.8	9547.66	0	9547.66	10214.3	10214.3
20	24.4754	273331	14.7849	Qls BRS	885.556	11.1466	2559.89	2804.18	9737.36	0	9737.36	10413	10413
21	24.4754	278272	14.8312	Qls BRS	885.556	11.1466	2590.09	2837.27	9905.31	0	9905.31	10591.2	10591.2
22	24.4754	274757	14.8312	Qls BRS	885.556	11.1466	3204.31	3510.1	13320	0	13320	14168.5	14168.5
23	48.9508	526377	14.8312	Qls BRS	885.556	11.1466	2494.85	2732.94	9375.79	0	9375.79	10036.4	10036.4
24	24.4754	261289	14.8312	Qls BRS	885.556	11.1466	2482.86	2719.8	9309.08	0	9309.08	9966.52	9966.52
25	24.4754	259798	14.8312	Qls BRS	885.556	11.1466	2473.44	2709.48	9256.74	0	9256.74	9911.7	9911.7
26	48.9508	518155	14.8312	Qls BRS	885.556	11.1466	2787.09	3053.07	11000.5	0	11000.5	11738.5	11738.5
27	24.4754	263557	14.8312	Qls BRS	885.556	11.1466	2497.18	2735.49	9388.74	0	9388.74	10050	10050
28	24.4754	266705	14.8312	Qls BRS	885.556	11.1466	2517.05	2757.26	9499.21	0	9499.21	10165.7	10165.7
29	22.5329	244133	14.8312	Qls BRS	885.556	11.1466	2507.42	2746.71	9445.65	0	9445.65	10109.6	10109.6
30	22.5329	240153	14.8312	Qls BRS	885.556	11.1466	2480.13	2716.81	9293.91	0	9293.91	9950.63	9950.63
31	22.5329	236801	14.8312	Qls BRS	885.556	11.1466	2457.13	2691.62	9166.11	0	9166.11	9816.74	9816.74
32	22.5329	231263	14.8312	Qls BRS	885.556	11.1466	2419.15	2650.01	8954.91	0	8954.91	9595.48	9595.48
33	21.2269	209844	14.8312	Qls BRS	885.556	11.1466	2360.79	2586.08	8630.47	0	8630.47	9255.6	9255.6
34	21.2269	201571	14.8312	Qls BRS	885.556	11.1466	2300.55	2520.1	8295.61	0	8295.61	8904.79	8904.79
35	21.2269	192350	14.8312	Qls BRS	885.556	11.1466	2807.7	3075.64	11115.1	0	11115.1	11858.5	11858.5
36	21.2269	183634	14.8312	Qls BRS	885.556	11.1466	2169.96	2377.04	7569.52	0	7569.52	8144.11	8144.11
37	22.7072	186948	14.8312	Qls BRS	885.556	11.1466	2105.34	2306.26	7210.32	0	7210.32	7767.8	7767.8
38	22.7072	178062	14.8312	Qls BRS	885.556	11.1466	2044.86	2240.01	6874.08	0	6874.08	7415.55	7415.55
39	22.7072	169165	14.8312	Qls BRS	885.556	11.1466	1984.3	2173.67	6537.43	0	6537.43	7062.86	7062.86
40	22.7072	158544	14.8312	Qls BRS	885.556	11.1466	1912.01	2094.48	6135.51	0	6135.51	6641.8	6641.8
41	35.1059	228051	15.1422	Qls BRS	885.556	11.1466	1832.68	2007.58	5694.45	0	5694.45	6190.4	6190.4
42	35.1059	205770	15.9739	Qls BRS	640.909	13.6925	1717.7	1881.62	5092.45	0	5092.45	5584.14	5584.14
43	34.978	179586	15.9767	Qls BRS	640.909	13.6925	1579.53	1730.27	4471.25	0	4471.25	4923.48	4923.48
44	34.978	156124	15.9804	Qls BRS	640.909	13.6925	1452.08	1590.65	3898.19	0	3898.19	4314.03	4314.03
45	21.6576	84032.3	23.7957	Qls BRS	640.909	13.6925	1258.93	1379.07	3029.78	0	3029.78	3584.92	3584.92
46	21.6576	69188.2	23.7957	Qls BRS	250	21.8014	1139.34	1248.06	2495.16	0	2495.16	2997.56	2997.56
47	21.6576	53056	25.2746	Qls BRS	250	21.8014	910.358	997.233	1868.08	0	1868.08	2297.91	2297.91
48	21.6576	35999.4	25.2746	Qls BRS	250	21.8014	690.527	756.424	1266.06	0	1266.06	1592.1	1592.1
49	21.7454	14421.3	32.3602	Qls BRS	250	21.8014	383.896	420.531	426.327	0	426.327	669.581	669.581
50	1.70903	65.2404	32.3602	Afc	300	27	268.77	294.419	-10.9529	0	-10.9529	159.352	159.352

Interslice Data

Global Minimum Query (janbu corrected) - Safety Factor: 1.08142



Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	476.973	875.807	0	0	0
2	505.98	862.534	57552.5	0	0
3	530.576	851.279	173306	0	0
4	534.986	849.261	189607	0	0
5	569.846	857.95	181370	0	0
6	604.706	866.638	173225	0	0
7	639.566	875.705	158188	0	0
8	657	880.164	148383	0	0
9	674.434	884.623	136116	0	0
10	698.917	890.919	326137	0	0
11	723.399	897.214	300876	0	0
12	748.019	903.622	271180	0	0
13	772.639	910.029	238360	0	0
14	800.687	917.412	198574	0	0
15	828.734	924.796	157659	0	0
16	856.913	932.196	327027	0	0
17	885.092	939.597	283378	0	0
18	906.46	945.231	248912	0	0
19	927.829	950.866	213517	0	0
20	949.197	956.5	177229	0	0
21	970.566	962.135	140763	0	0
22	991.934	967.769	321950	0	0
23	1013.3	973.404	288553	0	0
24	1034.67	979.164	254017	0	0
25	1056.04	984.924	219672	0	0
26	1077.41	990.685	185657	0	0
27	1098.78	996.445	152091	0	0
28	1120.14	1002.03	119928	0	0
29	1141.51	1007.61	303271	0	0
30	1166.03	1014.13	263858	0	0
31	1190.54	1020.64	224262	0	0
32	1215.06	1026.98	187273	0	0
33	1239.57	1033.32	151098	0	0
34	1264.09	1039.66	116029	0	0
35	1288.61	1046	83081.1	0	0
36	1313.03	1052.32	52609.5	0	0
37	1337.45	1058.63	193788	0	0
38	1361.56	1064.84	168795	0	0
39	1385.67	1071.05	146038	0	0
40	1409.74	1077.24	125363	0	0
41	1433.82	1083.44	107015	0	0
42	1455.71	1089.91	87388.2	0	0
43	1477.61	1096.38	70127.6	0	0
44	1499.52	1102.85	55300.5	0	0
45	1521.43	1109.32	42911.3	0	0
46	1543.43	1115.34	34772	0	0
47	1565.42	1121.35	28407.4	0	0
48	1587.42	1128.31	19999.6	0	0
49	1609.41	1135.26	13437.4	0	0
50	1616.78	1142.08	1675.65	0	0
51	1651.13	1173.82	0	0	0

Global Minimum Query (spencer) - Safety Factor: 1.09543

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [degrees]
1	445.982	872.266	0	0	0
2	472.901	867.532	33439.3	14972.7	24.1208
3	499.82	862.798	91691.4	41055.6	24.1209
4	522.509	858.929	164499	73655.9	24.1209
5	545.197	855.061	266083	119141	24.1209
6	553.848	853.585	285410	127795	24.1209
7	577.073	859.613	277712	124348	24.1209
8	600.298	865.641	270475	121107	24.1208
9	623.522	871.668	260650	116708	24.1208
10	646.747	877.696	248350	111201	24.1209
11	667.894	883.185	233816	104693	24.1208
12	689.041	888.673	414373	185539	24.1209
13	710.272	894.183	393177	176048	24.1208
14	731.504	899.694	369186	165306	24.1208
15	752.735	905.204	342498	153356	24.1208
16	773.966	910.715	313738	140479	24.1209
17	828.831	924.954	235565	105476	24.1208
18	856.263	932.074	393507	176196	24.1208
19	883.695	939.195	351231	157267	24.1209
20	908.171	945.655	311186	139336	24.1208
21	932.646	952.114	269939	120868	24.1209
22	957.122	958.595	227397	101819	24.1209
23	981.597	965.076	388249	173842	24.1209
24	1030.55	978.038	309890	138756	24.1209
25	1055.02	984.519	271135	121403	24.1209
26	1079.5	991	232711	104198	24.1208
27	1128.45	1003.96	358796	160654	24.1209
28	1152.92	1010.44	319535	143074	24.1208
29	1177.4	1016.92	279572	125181	24.1209
30	1199.93	1022.89	243093	108847	24.1209
31	1222.47	1028.86	207502	92910.9	24.1209
32	1245	1034.82	172659	77309.4	24.1208
33	1267.53	1040.79	139050	62260.8	24.1208
34	1288.76	1046.41	109176	48884.6	24.1209
35	1309.99	1052.03	81147.2	36334.3	24.1208
36	1331.21	1057.65	213738	95703.1	24.1209
37	1352.44	1063.27	189709	84943.6	24.1208
38	1375.15	1069.29	166120	74381.4	24.1208
39	1397.85	1075.3	144512	64706.3	24.1208
40	1420.56	1081.31	124888	55919.5	24.1208
41	1443.27	1087.32	107632	48193.1	24.1208
42	1478.37	1096.82	83665.4	37461.9	24.1209
43	1513.48	1106.87	61926.9	27728.3	24.1209
44	1548.46	1116.89	45461.6	20355.8	24.1208
45	1583.44	1126.9	33786.7	15128.3	24.1209
46	1605.09	1136.46	19512.6	8736.92	24.1208
47	1626.75	1146.01	9980.61	4468.9	24.1208
48	1648.41	1156.23	2636.05	1180.31	24.1208
49	1670.07	1166.46	-754.948	-338.034	24.1208
50	1691.81	1180.24	-444.404	-198.986	24.1209
51	1693.52	1181.32	0	0	0

Entity Information

Block Search Window

X	Y
1435.36	1087.14
1361.25	1067.72
1348.11	1060.75
1454.68	1088.96

Block Search Window

X	Y
1221.15	1030.48
1066.43	989.918
1066.43	986.65
1215.02	1025.34

Block Search Window

X	Y
758.235	906.217
869.572	935.479
865.499	938.055
758.235	910.16

Block Search Window

X	Y
439.272	824.43
549.045	853.1
555.865	858.625
429.985	825.952

Block Search Window

X	Y
1680.3	1174.17
1646.19	1155.47
1645.86	1152.31
1681.31	1171.46

Block Search Window

X	Y
1609.15	1138.6
1521.14	1109.63
1521.58	1106.67
1609.19	1135.19

External Boundary

X	Y
0	830
0	807.172
0	798.919
0	600
2045	600
2045	1183.61
2045	1209
1959.41	1208.9
1897.37	1208.35
1871.1	1208.35
1848.74	1209.46
1814.09	1206.67
1783.9	1204.43
1739.19	1193.25
1701.51	1183.41
1690	1180.4
1613.98	1167.54
1560.88	1158.04
1486.54	1149.66
1432.33	1142.39
1411.09	1140.71
1366.37	1135.12
1318.3	1130.09
1293.71	1127.86
1247.31	1122.27
1202.04	1112.77
1184.15	1109.41
1164.03	1104.38
1125.46	1092.08
1090.25	1081.46
1058.39	1074.2
1018.71	1064.14
1000.82	1059.11
976.785	1056.31
966.724	1055.19
953.309	1052.96
928.156	1044.57
893.502	1032.84
841.52	1014.95
799.599	1002.09
765.503	990.915
752.648	985.885
727.495	973.588
709.05	964.645
679.426	949.553
641.976	928.313
603.968	910.986
586.641	901.484
572.108	899.807
560.929	897.571
524.039	886.951
503.917	879.685
481.559	876.331
442.433	871.86
424.547	869.065
397.717	861.799
369.77	852.856
335.674	841.677
301.579	827.703
281.457	818.76
265.247	817.083
255.222	809.096
227.877	811.199
213.152	814.355
175.289	814.355
148.995	821.717
122.701	830

Material Boundary

X	Y
0	807.172
186.812	807.172
206.795	807.172
227.877	811.199

Material Boundary

X	Y
0	798.919
23.804	795.814
47.404	792.087
75.351	790.224
106.404	787.74
125.035	787.74
137.456	784.635
169.751	777.182
188.382	774.077
195.214	773.456
217.572	778.424
223.388	781.623
229.993	785.256
241.793	795.814
255.222	809.096

Material Boundary

X	Y
217.572	778.424
275.537	789.658
464.196	830.405
753.501	904.973
1007.76	971.798
1272.21	1040.66
1521.58	1106.67
1609.19	1135.19
1645.86	1152.31
1681.31	1171.46
1695.58	1179.9
1701.51	1183.41

Material Boundary

X	Y
223.388	781.623
275.377	792.413
464.607	834.22
752.485	908.665
1007.73	975.042
1272.13	1044.35
1521.14	1109.63
1609.15	1138.6
1646.19	1155.47
1680.3	1174.17
1690	1180.4

Material Boundary

X	Y

X	Y
1690	1180.4
1695.58	1179.9
1716.53	1178.02
1729.57	1179.88
1753.79	1182.99
1767.45	1185.47
1781.74	1185.47
1801.61	1182.99
1819.62	1180.51
1837.63	1179.26
1855.02	1179.26
1869.31	1182.37
1893.53	1187.34
1914.64	1189.82
1924.58	1190.44
1943.21	1189.82
1969.3	1189.2
1997.24	1185.47
2023.95	1183.61
2045	1183.61

GEOLABS-WESTLAKE VILLAGE
Foundation and Soils Engineering, Geology
31119 Via Colinas, Suite 502 • Westlake Village, CA 91362
Voice: (818) 889-2562 (805) 495-2197
Fax: (818) 889-2995 (805) 379-2603
a dba of
R & R Services
Corporation

February 14, 2020
W.O. 9222

The New Home Company
29219 Canwood Street, Suite 107
Agoura Hills, California 91301

Attention: Mr. Matthew Blain

Subject: Geotechnical Review of Alternative 5,
West Village Project (formerly Canyon Oaks), Tentative Tract 71546,
City of Calabasas, California

Mr. Blain:

In accordance with your request, Geolabs–Westlake Village (GWV) presents our geotechnical review of grading plan Alternative 5 for the subject site. This review is based on the tentative grading plans prepared by United Civil and sent to our office on February 11, 2020. The purpose of this review is to assess the geotechnical feasibility of the revised project grading. Recommendations provided in the underlying reports (RJR, 2015; GWV, 2011 & 2017) remain applicable.

From a geotechnical perspective, Alternative 5 and the previous grading plan (hereafter referred to as the 2017 Plan) are similar. The minor modifications to the grading plan do not warrant any new or revised geotechnical recommendations. Furthermore, our geotechnical review of the 2017 Plan (GWV, 2017) was approved by Wildan, the reviewer for the City of Calabasas, in their letter dated May 15, 2017. Accordingly, the existing body of geotechnical recommendations is considered applicable to and appropriate for Alternative 5. No new recommendations are presented and the grading plan for Alternative 5 is considered to be feasible from a geotechnical perspective.

Work for the present study focused on identifying plan revisions to evaluate whether modification of the geotechnical design criteria is warranted. Work included comparison of the current and previous plans, review of previous work which was judged both pertinent to our purpose and readily available to our office, soil engineering analysis of the assembled data, and preparation of this report.

Alternative 5 was used as the base map for the enclosed Geologic Map (see Plate 1). Cross sections, logs of exploratory excavations, and laboratory test results can be found in the referenced reports.

SITE DESCRIPTION

Site topography and use remain as described in the underlying reports (RJR, 2015). Onsite

vegetation was burned in the Woolsey Fire in November of 2018. Aerial photos (Google Earth) taken after the fire show evidence of shallow, recent, erosional scours in the west-flowing ephemeral canyon that bisects the site, as well as in the north-flowing natural swale that runs down the center of the landslide. These scours are anticipated to be removed by previously recommended remedial grading for the canyon alluvium and landslide, as such they do not affect the existing body of geotechnical recommendations. New vegetation has begun to grow throughout the site, mostly in the form of grasses.

PROPOSED PROJECT

Like the 2017 Plan, Alternative 5 essentially consists of four building pads, two basins, perimeter and interior slopes, and associated streets. The building pads can be divided into the commercial site pad, located in the north, and three residential pads – lower, middle, and upper – located in the center of the ephemeral canyon. The commercial site pad, two basins, perimeter slopes, and streets, are the same in Alternative 5 and the 2017 Plan.

MODIFICATIONS TO THE GRADING PLAN

The grading plans for Alternative 5 and the 2017 Plan were overlain to identify changes. As stated in the introduction, the two plans are similar from a geotechnical perspective, and new or revised geotechnical recommendations are not warranted. Minor differences in the plans are described below.

The lower residential pad was raised approximately two feet from elevation 801 to 803. The middle residential pad was lowered approximately seven feet from elevation 825 to 818. The upper residential pad was lowered approximately one foot from elevation 839 to 838. Differences between plans along the cross section lines are insignificant; therefore, cross sections and slope stability analyses presented in our report addressing the 2017 Plan (GWV, 2017) may be considered representative of Alternative 5.

Retaining walls have been reconfigured to accommodate the new site plan. Notably:

- The maximum retaining wall height was reduced to 11 feet (down from 15 feet). It is located at the toe of the slope that separates the middle and upper residential pads.
- The 10-foot-tall wall along the south side of the lower residential pad was moved approximately 10 feet farther south. Its maximum height remains the same.
- The 15-foot-tall wall along the toe of the slope that separates the lower and middle residential pads was moved toward the north and reduced to 10 feet in height.
- The 6-foot-tall wall along the toe of the slope that separates the middle and upper residential pads was lengthened and increased to 11 feet in height to accommodate the grade change of the middle pad.
- The 4-foot and 6-foot-tall retaining walls at the toe of the perimeter slope that ascends

from the south side of the upper residential pad were combined into one 6-foot-tall wall.

- A 6-foot-tall wall was added to the toe of the perimeter slope that ascends from the south side of the middle residential pad to create space for the corner of a proposed residential structure.

Interior slopes surrounding the middle residential pad were redesigned to accommodate the grade change of the pad. Maximum slope heights and gradients remain the same.

CLOSURE

This geotechnical report has been prepared in accordance with generally accepted engineering practices at this time and location. No other warranties, either express or implied, are made as to the professional advice provided under the terms of our agreement and included in this report.

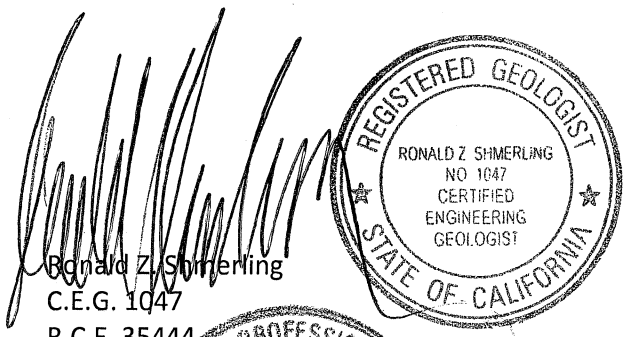
Thank you for this opportunity to be of service. Please do not hesitate to call if you have any questions regarding this report.

Respectfully submitted,
GEOLABS-WESTLAKE VILLAGE

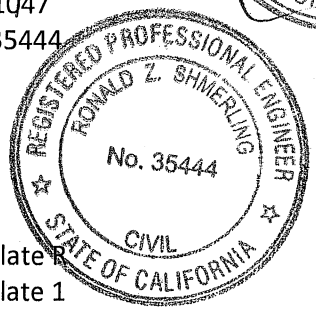
C.E.G. 2625

RMP:af

XC: (4) Addressee



Ronald Z. Shmerling
C.E.G. 1047
R.C.E. 35444



ENCLOSURE LIST:

Reference List..... Plate R
Geologic Map..... Plate 1

REFERENCE LIST:

Geolabs Westlake Village, May 27, 2011; Supplemental Landslide Evaluation, Tentative Tract 62443, City of Calabasas, California.

...January 15, 2016; Change in Geotechnical Consultants, Tentative Tract 71546, City of Calabasas, California.

...May 6, 2016; Stability Evaluation, Slopes East of Proposed Hotel Site and Landslide Slope South of Development, Canyon Oaks Project, Tentative Tract 71546, City of Calabasas, California.

..., April 27, 2017; Geotechnical Review of Modified Tentative Tract Grading, West Village Project (formerly Canyon Oaks), Tentative Tract 71546, City of Calabasas, California.

Los Angeles County Department of Public Works, July 1, 2013; Manual for Preparation of Geotechnical Reports.

RJR Engineering, January 15, 2015; Addendum 7 & Updated Geotechnical Feasibility Studies, Environmental Impact Geotechnical Assessment, and Tentative Tract Submittal, Vesting Tentative Tract 71546 – Canyon Oaks Development, 69 Lot Residential Development and Commercial Site East of the Intersection of Agoura Road and Las Virgenes Road, City of Calabasas, California.

Wildan Geotechnical, January 23, 2015; City of Calabasas – Department of Community Development, Engineering Geology and Geotechnical Engineering Review, Vesting Tentative Tract 71546 (Canyon Oaks Development), 4790 Las Virgenes Road, Calabasas, California.

..., May 15, 2017; City of Calabasas – Department of Community Development, Engineering Geology and Geotechnical Engineering Review, West Village Project, Tentative Tract 71546, 4790 Las Virgenes Road, Calabasas, California.

GEOLOGIC MAP

Vesting Tentative Tract 71546
Las Virgenes Road,
City of Calabasas, Califronia

EXPLANATION

af	Artificial Fill
Qc	Colluvium
Qls	Landslide Debris
Qal	Alluvial Deposits
Tm	Modelo Formation
Tc	Calabasas Formation
	Spring
GT7	Exploratory Trench Location (GWV)
B109	Bucket Auger Boring (GWV)
5 5'	Cross Section (GWV)
	Approximate Geologic Contact: Dotted where concealed, queried where uncertain
	Approximate Location of Synclinal Fold Axis
	Approximate Location of Anticlinal Fold Axis
	Attitude of Bedding
	Attitude of Shear
	Attitude of Fracture
	Attitude of Contact
@10'	Attitude of Observed Landslide Plane at Depth (depth indicated by @)
	Groundwater (solid) or Seep (hollow) Encountered in Boring
PSE-M PSE-16 HD-4	Bucket-Auger Boring by Pacific Soils Eng. Inc.
BHS-2	Hollow Stem Auger Boring by Pacific Soils Eng. Inc.
DB-1	Deep Boring by Pacific Soils Eng. Inc.
RJR DH-8 RJR DH-B	Bucket-Auger Boring by RJR
RJR CPT-03	Cone Penetration Test by RJR
Shea B-6	Boring by RJR for Project No. 544.10
CH-B	Core by RJR
Shea CH-1	Core by RJR for Project No. 544.10
TP-11	Test Pit by RJR
GORIAN 10	Bucket-Auger Boring by Gorian

GRAPHIC SCALE
0 1" 2" 3"
0 50 100 200 300
1" = 100'

BORING PSE-1: Af to 11'; Qal to 31'; Tc to 37'; 29'; T.D. 37'

BORING PSE-2: Af to 21'; Tc to 35.5'; 22', 26', 28', 32'; T.D. 35.5'

BORING PSE-3: Af to 18'; Qal to 26.5'; Tc to 40'; 28', 30', 33', 37'; T.D. 40'

BORING PSE-4: Af to 9.5'; Qal to 33'; Tc to 40'; 33'; T.D. 40'

BORING PSE-5: Qcol to 3'; Tc to 95'; 7', 11', 15', 15', 21', 24', 30', 33', 36', 39', 41', 48', 60'; 31',40'; T.D. 95'

BORING PSE-6: Qcol to 3.5'; Qls to 50'; S.P. 50'; Tc to 95'; 12', 15', 18', 22', 25', 30', 35', 39', 43', 53', 56', 65', 67'; T.D. 95'

BORING PSE-7: Qal to 9'; Tc to 20'; 16', 9'; T.D. 20'

BORING PSE-8: Qls to 10'; S.P. 10'; Tc to 90'; 7', 14', 18', 20', 25', 28', 30', 30', 30', 35', 40', 47', 52', 55', 60'; 64',76'; T.D. 90'

BORING PSE-9: Tc to 64.5'; 4', 9', 14', 20', 25', 29', 34', 40', 47', 53', 58', 52'; T.D. 64.5'

BORING PSE-10: Tc to 95'; 5', 9', 14', 16', 20', 25', 32', 41', 45', 57', 61', 65', 70', 75', 80', 85', 90'; 27', 60', 83', 87'; T.D. 95'

BORING PSE-11: Tc to 50'; 10', 15', 20', 25', 30', 40'; 30',34', 38',40'; T.D. 50'

BORING PSE-12: Af to 12'; Qal to 35'; Tc to 52'; 35'; T.D. 52'

BORING PSE-13: Qal to 6.5'; Tc to 36'; 26', 28', 21'; T.D. 36'

BORING PSE-14: Qal to 29'; Tc to 40'; 35', 37', 36'; T.D. 40'

BORING PSE-15: Qal to 6'; Tc to 22'; 5'; T.D. 22'

BORING PSE-16: Qal to 8'; Tc to 19'; 16'; T.D. 19'

BORING PSE-D: Soil to 3'; Qls to 42'; Tc to 45'; 6.8', 17', 22', 23', 29.4', 29.4', 29.4'; 42',45'; refusal; T.D. 45'

BORING PSE-E: Qls to 70'; Tc to 83.5'; 14', 20', 32', 36', 38', 40', 45', 51', 55', 57', 66'; 57',66'; refusal; T.D. 83.5'

BORING PSE-F: Soil to 5'; Tc to 48'; 7', 8', 13', 17', 19', 19', 23', 27', 32', 43'; T.D. 48'

BORING PSE-G: Tc to 110'; 5', 24', 28', 34', 34.5', 37', 40', 43', 47', 52', 59', 63', 68', 72', 76', 78', 82', 87', 91', 96', 101', 107'; 58',73'; T.D. 85'

BORING PSE-H: Soil to 3'; Qcol to 26'; Tc to 84'; 30', 34', 41', 45', 50', 51', 60', 63', 65', 69', 73', 75'; 51',66'; T.D. 84'

BORING PSE-I: Soil to 3'; Qcol to 10'; Qls to 49'; S.P. 49'; Tc to 85'; 24', 29', 36', 41', 60', 61', 63', 64', 66', 69', 73'; 58',73'; T.D. 85'

BORING PSE-M: Soil to 2'; Tc to 85'; 4', 8', 10', 15', 27', 29', 30', 37', 40', 45', 50', 54', 58', 62', 65', 69', 70', 74', 75', 78'; 57',65',75'; T.D. 85'

BORING PSE-N: Soil to 2'; Tc to 95'; 6', 8', 16', 17', 18', 26', 28', 29', 34', 37', 38', 43', 48', 49', 56', 59', 60', 65', 76', 83', 85', 88', 89'; T.D. 95'

BORING BHS-1: Af to 20'; Qal to 45'; Tc to 66'; T.D. 66'

BORING BHS-2: Af to 30'; Qal to 55'; Tc to 80'; 56'; T.D. 80'

BORING DB-1: Qls to 28'; Tc to 260'; Approx. Dip; 31', 35', 42', 50', 60', 70', 80', 90', 100', 120', 130', 135', 140', 146', 151', 155', 162', 170', 180', 190', 200', 210', 225', 240', 250'; T.D. 36'; 21'

RJR BORING CH-A: 19', 20.1', 32.1', 46.9', 71.2', 79', 102.1', 109', 122.2', 135.2', 135.8', 137.3', 137.7', 138.0', 138.7', 139.1', 140.6', 141.7', 142.2', 142.7', 148.4', 150.3', 150.6', 158.9', 106.0', 167.7', 168.9', 169.2', 169.5', 193.8', 213.7', 225', 238.9', 247', 275.2', 282.2'; T.D. 302'

RJR BORING CH-B: 32.4', 38.4', 39.0', 43.3', 46.1', 64.5', 69.4', 73.2', 74.1', 74.7', 77.5', 79.3', 80.7', 80.9', 81.3', 81.7', 82.3', 82.9', 83.3', 84.5', 84.8', 85.4', 86.3', 86.5', 91.4', 96.9', 97.2', 98.8', 101.5', 114.6', 123.5', 129.4', 130.6'; T.D. 150'

RJR DRILL HOLE DH-1: 7', 10.5', 17', 22', 25', 27.5', 30', 32', 33.5', 34', 34', 41', 42.5', 43', 45', 46', 47.5', 49.5', 53', 56.5'; 38.5'; T.D. 75'

RJR DRILL HOLE DH-2: 5', 6', 9', 12', 13.5', 13.5', 17', 19', 28', 33', 37.5', 42.5', 46.5', 50', 54', 57.5', 59.5', 63'; T.D. 70'

RJR DRILL HOLE DH-3: 14', 14.5', 21', 22', 23', 25.5', 26', 27.5', 29.5', 33', 38', 47', 51.5', 56', 59'; 33',41'; 65'; T.D. 70'

RJR DRILL HOLE DH-4: 3', 4', 6', 6', 10', 13', 15', 19', 21', 24', 28', 29', 32', 33', 33', 36', 41', 46', 51.5', 56', 63'; T.D. 68'

RJR DRILL HOLE DH-5: 4.5', 12', 17', 19', 23.5', 24', 29', 31', 39', 42', 45'; 65'; T.D. 80'

RJR DRILL HOLE DH-6: 25.5', 30', 36', 41', 45.5', 50', 45.5'; T.D. 59'

RJR DRILL HOLE DH-7: 49', 49', 54', 56', 59', 61', 63', 68', 69'; 54'; T.D. 75'

RJR DRILL HOLE DH-A: 1.5', 4.5', 6.5', 9', 15', 24.5', 28', 40', 42.5', 46', 47', 49.5', 54', 53', 57', 60', 62'; T.D. 70'

RJR DRILL HOLE DH-B: 5', 9', 9.75', 10.5', 19', 20', 21', 26.5', 26.75', 28-29', 29', 30.25', 30.75', 33', 33', 36', 41', 46', 51.5', 56', 63'; T.D. 68'

RJR DRILL HOLE DH-C: 6', 9', 12.75', 13', 13.5', 15-15.75', 19', 25', 35', 41', 51', 55', 61', 63'; T.D. 68'

GWV BORING B101: Qc to 5'; Qls to 53.5'; 10.5', 19', 33.3', 36.2', 45.6', 50.3', 53.5'; Tc to 65'; 55.2'; 48.7-53.5'; T.D. 65'

GWV BORING B102: Qls to 77.5'; 10.5', 15.6', 25.1', 27.6', 32.7', 34.6', 42.5', 47.5', 49.2', 49.4', 57.6', 58.8', 74.2', 74.4', 75.7', 76.3', 77.2'; Tc to 110'; 92'; 75.4'; T.D. 110'

GWV BORING B103: Qc to 3.3'; Qls to 76.8'; 15.3', 20.1', 21.3', 24.4', 39.1', 43.6', 50.2', 56.6', 58.1', 64', 76.8'; Tc to 90'; 81.4'; T.D. 90'

GWV BORING B104: Qc to 2.5'; Qls to 37.8'; 22', 34.3', 35.4', 37.7', 37.8'; Tc to 80'; 44.2', 64.2', 64.2'; T.D. 80'

GWV BORING B105: af to 7'; Qal to 39'; 31.2'; Tc to 67.5'; 44.4', 50.6'; T.D. 67.5'

GWV BORING B106: af to 9.2'; Qal to 30.7'; Tc to 50'; 30.7', 40.7', 40.7'; T.D. 50'

GWV BORING B107: af to 11.2'; Tm to 42.3'; 24.3', 27', 27.6', 35.8', 38.8', 42.3'; Tc to 80'; 48.8', 49.5', 53.6', 69.3', 71.8'; 48'; T.D. 80'

GWV BORING B108: Qc to 3.9'; Qls to 76'?; 8.5', 17.3', 25.8', 37.4', 41.4', 41.9'; Tc? to 84'; 58.3'; Caving below 63'; T.D. 84'

GWV BORING B109: Qc to 3'; Qls to 75'; 17.1', 21.7', 27.5', 33.4', 40.7', 40.8', 56', 62.7', 75'; Tc to 152'; 78.8', 82.8', 89.7', 93', 97.5', 99', 104'; 104-105'; Caving below 138'; T.D. 152'

SHEA BORING 2: Fill/Qal 4'; 38'; T.D. 100'

SHEA BORING 3: 14'; 19'; T.D. 22'

SHEA BORING 4: Fill/Qal 6'; 40'; Qal/Tc 48'; T.D. 100'

SHEA BORING 5: 5', 10', 15', 20', 25', 34', 38', 40', 44'; T.D. 50'

SHEA BORING 6: 17', 20', 22', 24', 26'; T.D. 30'

SHEA BORING 8: Fill/Qal 6'; 40'; Qal/Tc 48'; T.D. 100'

SHEA CH-1: 52', 60', 80', 100', 120', 140', 160', 180', 200', 220', 240'; T.D. 264'

PLATE	1
Geolabs - Westlake Village	GEOLOGY AND SOIL ENGINEERING
DATE	2/14/2020
SCALE	1"=100'
BY	RMP
W.O.	9222

P:\9222\Messenger.dwg (Layout: Plate 1 2020-02-14)

LGC Valley, Inc.

Geotechnical Consulting

May 8, 2020 Project No. 193020-01

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

Subject: ***FINAL - Third-Party Geotechnical Review of Appendix D of the Final Environmental Impact Report prepared by the City of Calabasas, West Village at Calabasas Project, City of Calabasas, California.***

INTRODUCTION

LGC Valley, Inc. (LGC) is pleased to present this geotechnical peer review for the proposed West Village development located in the city of Calabasas. Our firm was tasked with reviewing all the geotechnical data and analysis submitted to date on the West Village at Calabasas Project and rendering independent analysis of the feasibility of the subject project and all proposed alternatives (Alternatives 1 through 4) analyzed in the Final Environmental Impact Report (FEIR) dated June 2019 as well as the recently submitted project alternative (Alternative 5). Specifically, our analysis and conclusions are based on the following reports (referred to collectively as the "West Village geotechnical reports"):

- *Addendum Letter #6 and Update Geotechnical Studies – Environmental Impact Report Technical Assessment and Tentative Map Submittal* prepared by RJR Engineering (RJR) in November 2014
- *Addendum 8 – Eastern Retaining Wall at Commercial Site Geotechnical Studies – Environmental Impact Report Technical Assessment and Tentative Map Submittal Vesting Tentative Tract 71546 – Canyon Oaks Development 69 Lot Residential Development and Commercial Site East of the Intersection of Agoura Road and Las Virgenes Road, City of Calabasas, California* prepared by RJR in March 2015
- *Stability Evaluation, Slopes East of Proposed Hotel Site and Landslide Slope South of Development, Canyon Oaks Project, Tentative Tract 71546, City of Calabasas, California* prepared by Geolabs-Westlake Village (GWV) in May 2016
- *Geotechnical Review of Modified Tentative Tract Grading, West Village Project (formerly Canyon Oaks), Tentative Tract 71546, City of Calabasas, California*. Prepared by GWV in April 2017
- *City of Calabasas – Department of Community Development Engineering Geology and Geotechnical Engineering Review* prepared by Willdan Geotechnical in May 2017
- *Grading Plan TT 71546, 4790 Las Virgenes Road, City of Calabasas, California* prepared by GWV in August 2017
- *Geotechnical Review of Alternative 5, West Village Project (formerly Canyon Oaks, Tentative Tract 71546, City of Calabasas, California*. Prepared by GWV in February 2020
- *Geotechnical 3rd Party Review of Development Alternatives, Proposed West Village Project, Tentative Tract 71546, City of Calabasas, Los Angeles County, California, Project No. 12559.001*. Prepared by Leighton and Associates (Leighton) in March 2020.

To further our understanding of the site, we also reviewed geologic and geotechnical reports, maps and other similar documents associated with the site and surrounding areas that are readily available within our office and performed a site reconnaissance visit on April 16, 2020.

Our interpretations, conclusions and recommendations are provided for your consideration. A glossary of technical terms and firm qualifications are included at the end of this report.

SUMMARY

Our review focused on the feasibility of the subject project from a geologic and geotechnical perspective. Based on our review, the main geotechnical hazard at the site is the large landslide complex located within the north-facing slope that ascends from the valley floor. Based on the geological interpretations reviewed in the referenced reports, the subject project and Alternatives 2, 3, and 5 appear feasible and are the best options available for site development. However, we do not recommend Alternative 4 as originally designed or with the proposed "drilled shaft buttress" system as presented by Leighton.

The West Village geotechnical reports prepared for the subject project and the corresponding alternatives are sufficiently comprehensive and accurate for the purposes of evaluating the geotechnical feasibility and the environmental impacts of the subject project and its alternatives at the current stage of the planning process and under the California Environmental Quality Act. These reports are sufficient to recognize and conclude that the proposed project and Alternatives 2, 3, and 5 are feasible from a geotechnical standpoint.

Based on a review of the plans and on the interpreted geologic conditions, both the originally proposed Alternative 4 design and the subsequently proposed modification to Alternative 4 (i.e., the drilled shaft buttress system) are not favorable options because they do not mitigate all the potential landslide hazards that may impact the proposed development and do not provide the same level of assurance that neither the project site nor nearby development would be adversely impacted by the landslide hazard as the subject project and Alternatives 2, 3, and 5. Therefore, we do not recommend Alternative 4 for the subject site because the landslide hazard mitigation proposed for the subject project and Alternatives 2, 3 and 5 includes known, reliable mitigation options that are more comprehensive in their mitigation of the landslide hazard.

SITE LOCATION

The site is located on the east side of Las Virgenes Road at its intersection with Agoura Road, just south of the U.S. 101 Freeway in the city of Calabasas, California. The site is situated at the mouth of an east-west trending tributary canyon of Las Virgenes Canyon with ascending hillside terrain to the north and south.

PROPOSED DEVELOPMENT

We understand that the proposed project would consist of 15 low-rise multi-family residential buildings, a commercial center, a park, and open space. Potential alternative designs include no project (Alternative 1), modifying building heights (Alternative 2), changing the distribution of residential and commercial

space (Alternative 3), reducing the development footprint to leave the existing landslide in its current location and provide a buffer zone (Alternative 4), and reducing residential density (Alternative 5). All designs include parking areas, streets and open space except for Alternative 1, which consists of no development. The subject project design shows that manufactured slopes are planned to heights up to approximately 300 feet for the north-facing southern slope. Retaining walls up to approximately 30 feet are designed to create level pads. The southern, roughly 450-foot-high ascending slope is the primary geotechnical hazard at the site and the geologic conditions within this slope are the focus of this review.

SITE GEOLOGY

Site geologic structure is defined by the presence of two sedimentary formations: the sandstone-rich Upper Topanga formation (referred to as the "Calabasas formation" in the geotechnical reports) and the siltstone-rich Modelo formation. Based on recent field review, these two formations are in angular unconformity where the contact mimics the bedding orientation of the stratigraphically higher Modelo formation rock. Based on our review, the Modelo formation dips primarily to the northeast while the Calabasas formation dips to the north and northwest. Using the bedding strike and dip of the Modelo formation as a guide for the formational contact, the contact between the two formations appears to ring the site along the lower portions of the northern south-facing slopes, which then transect across the tributary to the east and up the steep slopes along the southeastern portion of the site in roughly the orientation depicted on the geologic maps contained in the West Village geotechnical reports. Both formations are dense to hard with local clay beds. Shears/joints/fractures were frequently noted in most borings which likely depicted the broken nature of the landslide material. Fractures noted below the landslide material likely reflect the internal adjust of bedrock during regional uplift.

The major geologic feature at the site is the large landslide complex on the north-facing slope south of the various proposed developments. The landslide is on the order of 400 feet in height and up to approximately 60 to 70 feet in depth and covers the entire south slope up to where the creek narrows to the east. The landslide appears to be composed mostly of Calabasas formation rock with minor amounts of Modelo rock. It is likely broken into several large blocks and becomes more chaotic and broken near the toe of slope. It is possible the landslide is composed of several over-lapping landslides.

There is no groundwater table at the site though there is minor groundwater deep down along the alluvium-bedrock contact as noted in borings excavated within the alluvium near the creek. Perched water was noted in several borings excavated on slopes within the landslide complex and seepage was mapped near the toe of the landslide. Seasonally, water flows in the east-to-west trending creek and into the detention basin located along the western margin of the site where it is filtered and directed into storm drains that extend below Las Virgenes Road.

DISCUSSION

There are several alternative designs for developing the subject site, including the proposed project and five alternatives. The suitability of the project site for development was reviewed geotechnically by the geotechnical engineer-of-record RJR. Additional analysis and review for Alternatives 4 and 5 was prepared by Leighton. Analyses were also performed by Geolabs-Westlake Village (Geolabs) and Willdan Engineering at various stages of site review.

All consultants used and carried the overall geologic interpretation of the site, which has not changed much since the earliest of site investigation reports. The landslide shape is reasonable and the depths to the basal rupture surface are also reasonable. Soil strengths have been provided, peer reviewed and accepted by the various consultants. Mitigation measures have been provided that address the landslide complex. We are in favor of the subject project and Alternatives 2, 3, and 5; however, we are not in favor of Alternative 4 as originally designed or with the proposed "drilled shaft buttress" system as presented by Leighton.

Evaluation of Alternatives

Proposed Project and Alternatives 2, 3, and 5

Although the build-out concepts for the subject project and Alternatives 2, 3, and 5 vary in building layout and overall site usage with some modification to the locations of the tops and toes of slopes, the geotechnical mitigation proposed for the southern north-facing landslide complex, which is the major geotechnical hazard at the site, is the same - removing most of the landslide material, installing a subdrain system, and buttressing the exposed slope with engineered fill to design grades. The slope stability analyses performed for the subject project and these alternatives are based on a reasonable interpretation of the site geology, agreed-upon soil strengths, and a reasonable method of analysis. Thus, the West Village geotechnical reports prepared for the proposed project and Alternatives 2, 3, and 5 are sufficiently comprehensive and accurate for the purposes of evaluating the geotechnical feasibility and environmental impacts of the proposed project and its alternatives at the current stage of the planning process and under the California Environmental Quality Act.

In our opinion, the proposed project and Alternatives 2, 3 and 5 are the most favorable of the options reviewed because they rely on a tried-and-true geotechnical methodology that is standard in the industry: removal of the unsuitable soil and buttressing the slope with engineered fill. This method is used throughout southern California and the world and has proven to be effective and reliable for long-term conditions for both potential deep-seated failure and shallow landslide failures.

Alternative 1

Alternative 1 considers a scenario in which the site remains in its current undeveloped condition and no remedial earthwork is performed to stabilize site slopes or remedial removal of alluvium and existing fill. Alternative 1 reviews the site from a perspective of no development. As such, a developmental review does not apply.

With regard to this alternative, we are in agreement with those findings as presented in the 2020 Leighton report and conclude that the west-flowing tributary, at some future time, will become blocked due to at least shallow surficial failures from the adjacent slopes. If debris flow conditions occur under high rainfall events, the existing detention basin could also become inundated with debris that could clog outlets. If the slope is left in its current condition, the risk to adjacent off-site improvements would be higher than if the landslide is mitigated in accordance with the proposed project or Alternatives 2, 3, or 5.Nevertheless, at this time, we generally conclude that the potential for on-site landslides to impact the adjacent Las Virgenes Road and/or the adjacent Shea Homes property under existing conditions is slight.

Alternative 4

Alternative 4 reduces the footprint of the development and places buildings "away" from the southern landslide complex. In addition, a preliminary design concept consisting of a drilled shaft buttress system is proposed by Leighton in their 2020 report to supplement Alternative 4.

Leighton reviewed and discussed the original Alternative 4 design (i.e., buffer zone only) in their report and we are in general agreement with their conclusion: "The sole use of a buffer zone to improve safety is not considered to be prudent due to difficulty in predicting the extent of affected area should the landslide mobilize in the future and is not recommended." We would further add that sole reliance on a buffer zone does not improve safety but rather attempts to avoid a condition that at this time is not fully understood. Therefore, it is unknown what the "safe" distance from site slopes is. Furthermore, a common-sense approach of placing buildings so close to a known, complex natural hazard that has a high risk of impacting those sites is risky and generally unworthy of serious consideration.

To address Alternative 4 with a more comprehensive geotechnical mitigation approach, Leighton developed a design concept of a drilled shaft buttress system that proposes eleven staggered rows of shear pins that effectively break the landslide complex into pieces by intercepting the rupture surface at depth and providing resisting forces through the construction of reinforced concrete piers that presumably are connected near the ground surface by a grade beam. Because the landslide is theoretically separated into individual blocks, those blocks can be individually buttressed by the drilled shaft buttress system. In theory and in combination, these series of shear pins provide the same buttressing effect as a shear key for the overall landslide. Thus, the shear key and landslide removal are not necessary.

However, as indicated in Leighton's report, the drilled shaft buttress system would not effectively address the potential for surficial failures and the amount of reinforcing elements is likely considerable in terms of both materials and cost. Further, this system of supporting slopes is not common. Long-term evaluation of this type of mitigation is not as available for peer review and scrutiny as it is for the very common earth buttress system proposed for the subject project and Alternatives 2, 3, and 5.

Each segment of the system is designed to support that area above it. Together, all segments, in theory, will hold the entire landslide mass in place. We conclude that the existing data set is insufficient to support a review of each individual segment of this mitigation approach and preparation of such an analysis would likely be so overwhelming in scope as to be infeasible. Finally, as mentioned above, this method does not control the potential negative effects from surficial failures to as great a degree as the mitigation for the subject project and Alternatives 2, 3, and 5 intrinsically does. In total, Alternative 4 is not ideal, and in light of the other options available, is not supported with our review.

Other Topics

Other various geotechnical items reviewed in the West Village geotechnical reports such as retaining walls, alluvium removal, undocumented fill removal, compaction criteria, settlement, seismic conditions, anticipated expansion and corrosion potential, potential debris flow impact, slope creep and other such factors appear to be reasonably addressed for the subject project and Alternatives 2, 3, and 5 and are suitable for the proposed development provided they meet the current CBC Guidelines for review of projects.

Additional studies of the subject site will be necessary during future review of the geology and design elements during the 40-scale grading plan stage. During those reviews, we recommend that the consultant-of-record evaluate the stratigraphic column both within and below the basal rupture surface and present a more comprehensive geologic interpretation of the anticipated conditions below the landslide complex. In addition, the consultant should choose and formulate a de-watering system to handle perched water for both short-term and long-term review conditions under those interpretations. Finally, it is our opinion that a shear key with definitive limits with regard to length, width and depth that is shown on the geotechnical map as dipping in-to-slope to "lock-in" engineered fill is an easier approach during site grading than a catch-all statement to simply "remove" landslide debris because it gives the field geologist reference and the opportunity to make in-grading modifications to the design if necessary, and as commonly happens in landslide remediation projects. Implementation of these recommendations will require refinements during the 40-scale grading plan stage, but they are not expected to trigger the need for substantive re-design of the overall site plan, layout, or remediation strategy. These recommendations focus on ensuring that the final design of the proposed landslide remediation is protective of the development as proposed under the subject project and Alternatives 2, 3, and 5.

CONCLUSION

We conclude that the subject project and Alternatives 2, 3, and 5 are the best options for site development under the conditions reviewed. The West Village geotechnical reports prepared for the proposed project and its alternatives are sufficiently comprehensive and accurate for the purposes of evaluating the geotechnical feasibility and the environmental impacts of the subject project and its alternatives at the current stage of the planning process and under the California Environmental Quality Act.

We conclude that Alternative 1 poses a low risk to adjacent improvements, though long-term maintenance would be necessary. For the original design of Alternative 4 and its modified design as presented by Leighton, we do not recommend reliance on a buffer zone coupled with the proposed drilled shaft buttress system due to the lack of sufficient data for each proposed elemental segment and in consideration of an unnecessarily high risk mitigation option so close to a known complex landslide hazard. The proposed system is uncommon and relatively untested and does not address all potential landslide conditions.

LIMITATIONS

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

CLOSURE

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

Respectfully submitted,

LGC Valley, Inc.

Matthew Hawley

Matthew Hawley, CEG 2122
President

BIH/SMB/MCH

Distribution: (1) Addressee, via email

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GLOSSARY OF TERMS

Basal Rupture Surface (Slide Plane): The plane of weakness that separates failed material from in situ (in place) material below; it is the surface of failure and is commonly the soil with the weakest strength in the soil column.

Bedding: Stratum of sedimentary rock exhibiting surfaces of separation (bedding planes) between layers of the same or different materials such as sandstone, siltstone, etc.

Bedrock: Rock of relatively great thickness and extent, in situ (in place). May be overlain by soil, alluvium, colluvium or exposed at the surface.

Buttress (Buttress Fill): An engineered fill usually designed based on a slope stability analysis built to support a weak or unstable slope or other soil mass. It is commonly a soil mass placed in front of another marginally stable soil mass to increase the original soil mass' resistance to sliding.

Caisson: A cylindrical shaft drilled into competent material, the bottom of which may be reamed into a bell shape (belled caisson) to provide a larger base for foundation support. The shaft may then be reinforced with steel and filled with concrete.

Engineered Fill: Earthen materials (soil) that have been placed mechanically under controlled conditions and in accordance with specific engineering standards and recommendations.

Footing (Foundation): The lower portion of a structure that transmits the load directly to the earth (soil).

Geogrid: A synthetic grid typically composed of woven or welded yarns that are often coated with polymers, polyvinyl chloride (PVC), or other synthetics. May be of uniaxial or biaxial design depending on usage.

Grade Beam: A horizontal part of a foundation system that transfers vertical loads to individual foundation elements or gives lateral support to vertical members. A grade beam is typically cast on the surface.

Grading: The act of moving earthen material (soil) during the construction process.

Groundwater: Water that is present below the water table (the upper limit or surface) within the zone of saturation.

Keyway: An excavated notch/trench in the ground.

Landslide: The failure of a sloped bank of soil and/or rock in which the movement has taken place along a slide plane. This is a broad term, and there are numerous types of landslides such as translational, rotational, slump, topple, etc.

Perched Water Table: A subsurface concentration of water (usually of limited area) located above the normal groundwater elevation separated from groundwater by the presence of an intervening, relatively impermeable confining strata such as a clay.

Pile: A structural element that is driven, drilled or otherwise introduced vertically into the soil or rock formation for structural support.

Seepage: The slow movement of water through soil or rock. Also refers to the water that emerges from within the ground and onto the ground surface.

Shear Key: A large trench (keyway) excavated through creep, landslide or potentially unstable hillside to buttress the disturbed zones. The keyway is backfilled with compacted material (soil/engineered fill) to prevent sliding along a pre-existing surface (i.e., a rupture surface, clay bed or other weak pre-existing feature[s]).

Stability or Stabilization Fill: An engineered fill placed to support or protect a natural slope against surficial failure or the forces of erosion. These fills are not always based on a slope stability analysis as they are intended to help support the outer portion of slopes against surficial instability.

FIRM QUALIFICATIONS

LGC Valley, Inc. (LGC) is a southern California-based geotechnical consulting firm providing professional services with offices in San Diego and Los Angeles counties. We typically work on medium- to large-scale grading projects with a focus on landslide identification and remediation along with geological hazard assessments from small (less than one acre) to large (hundreds to thousands of acres) sites.

LGC provides a complete range of geotechnical and field testing services. Our major categories of services include subsurface geotechnical investigations, feasibility investigations, landslide investigation and stabilization, settlement analysis, geotechnical instrumentation, construction observation and testing, geologic mapping and geologic hazard evaluations. Our clients include individuals, residential developers, architects, school districts, insurance companies, lawyers, commercial developers, design professionals, local governments, municipalities, utility companies, and public agencies. The majority of our work comes from referrals and repeat business.

Our staff includes educated and licensed professionals who combine their technical knowledge and extensive field experience to provide straightforward, cost-effective engineering solutions to complex engineering problems. Our senior and management level personnel have a long history within the industry and over the years have gained the respect of our clients and as professional members of the geotechnical community.

More information can be found at: www.lgcvalley.com

THE NEW
HOME
COMPANY

June 3, 2020

Mr. Glenn Michitsch, Senior Planner
City of Calabasas
100 Civic Center Way
Calabasas, California 90321

Reference: West Village Project | Alternate 4 Partial Stabilization Cost Estimates

Dear Glenn,

As part of our Alternate 4 analysis, we have obtained a cost estimate specific to the Leighton & Associates alternate conceptual design included in their March 31, 2020 report. This design provides partial stabilization of the landslide through the installation of a significant number of deep-drilled shafts (caissons) by providing gross stability to achieve acceptable safety factors.

Below is a summary of the costs for grading and installation of the caissons per plan:

Cost Estimate Breakdown:

- *D.J.Scheffler Foundation Drilling & Shoring*
  Drill Shafts, Furnish and Install Rebar Cages, Concrete (454 Caissons)*: $109,996,800
  *Assumes No Tie-Backs Needed as Part of Final Design
- *Earth Construction & Mining*
  Mobilization, Clear and Grub, Water, Excavation, Access Road, Platforms, Backfill, Export, Finish Grade, Backdrains, Outlet Pipes, Terrace Drains, Concrete Down Drain, Hydromulch, and Fiber Rolls: $ 3,678,370

Total Estimate : $113,675,170

Based on the extremely high site development costs for the modified Alternative 4 design of over one-hundred and ten million dollars, the project is infeasible from a cost standpoint.

It should be noted that this Alternative 4 does not address surficial stability or shallow slope failures (just gross stability). Therefore, the alternate studied does not fully mitigate all of the landslide risks. As previously stated at our project hearings, without full mitigation of the landslide, the homes would not be insurable in accordance with insurance industry standards and responsible lender underwriting practices.

Please acknowledge receipt of this cost estimate letter and include this request as part of the project development application.

Sincerely,

Matthew Blain
Project Manager

Attachments: West Village Alt 4 Exhibit
Supporting Cost Estimates

2500 W. Pomona Blvd. Pomona, California 91768-3218
Phone: (800) 244-4653 or (909) 595-2924 Fax: (909) 598-8639
www.djscheffler.com | License No. 582912

BUDGETARY PROPOSAL

TO: The New Home Company
85 Enterprise - Suite 450
Aliso Viejo, CA 92656
Attn: Matthew Blain

Date: 6/3/2020
Job#: 20223

Job Title: West Village Caisson Construction Project Calabasas
Location: Las Virgenes Road & Agoura Road, Calabasas, CA

1) DESCRIPTION OF WORK: We propose to furnish equipment, materials, and labor necessary to complete the following work described below subject to the UNIT PRICES and CONDITIONS herein:

CAST-IN-DRILLED HOLE PILES

2) SPECIFIC INCLUSIONS: The following items are specifically included as part of this proposal/contract and shall define the entire scope of the work described above. Any work items not listed here shall be specifically excluded.

A) Drill Shafts
B) Furnish & Set Rebar Cages
C) Furnish & Place Concrete

3) PROPOSED BUDGET PRICE: All of the work described above, to be completed in a diligent, workmanlike manner for the sum of **$109,996,800.00.** See breakdown below. Price is based on good drilling conditions, straight shafts, no belling. Clear access to the shafts and continuous drilling spoils removal to be provided by others as required.

CIDH Piles
(454) 72" Diameter Piles totaling 64,704 LF Additional Footage at $1,700.00 Per / LF

This proposal constitutes a Contract upon acceptance by both parties. Work to commence within ten (10) working days after signing of the Contract, unless otherwise, delayed through no fault of D.J. Scheffler & Nye, Inc. Contract price is good for one (1) mobilization. Extra cost of **$15,000.00** for each additional mobilization. Contract includes 67,759 cubic yards of concrete, additional concrete required shall be extra to Contract at $250.00 per cubic yard.

4) TERMS OF PAYMENT: Weekly as work progresses. No retention. Any payment not made when due shall bear interest at the rate of 1 ½ percent per month on the amount which is past due.

5) SPECIFIC EXCLUSIONS: The following items are specifically excluded from the proposal/contract and shall define the entire scope of the work described above.

A) Removal or relocation of excavated spoils, dust control, safety fence, and hand rails.
B) Drilling in water, Rock drilling, sono tube, shoring, debris wall to catch drilling spoils.
C) Engineering, inspections, utilities, survey, furnish and install embeds, anchors and templates.
D) Erosion control – S.W.P.P.P. – Plastic, Sandbags, labor to install.

Note: D.J. Scheffler & Nye is not responsible for damages and increases in costs to others arising from or related to delays or disruption caused by unforeseen events or circumstances not the fault of D.J. Scheffler & Nye, including but not limited to, government ordered work suspensions, acts of God, disease outbreaks of any kind, national or international emergencies, and national disasters of any type or cause. This exclusion applies to, but is not limited to, damages and increases in costs to the owner, lenders, insurers, higher tier contractors, design professionals, and any other contractor or supplier.

THE ABOVE TERMS OF CONTRACT PREVAIL OVER GENERAL CONDITIONS ON THE FOLLOWING PAGE.

CONDITIONS OF CONTRACT

THIS PROPOSAL is based upon the following which specifically does not include costs for the below listed which are to be furnished (provided) by others at no cost to D. J. SCHEFFLER & NYE, INC.
MODIFICATIONS to these conditions or exclusions must be specifically described and initialed by an authorized representative of D. J. SCHEFFLER & NYE, INC.

1) All required on-site licenses, permits, inspections, observations, monitoring, materials design, surveys, easements, laboratory or field testing and inspection reports; and all required erosion control and down hole entry of any personnel.
2) ALL required field engineering, surveying and layout, including clearly marked center lines, grades, offset stakes, and elevations at each hole location and maintenance of same.
3) REMOVAL, relocation or protection of any existing utilities, either above or below ground, which may interfere with the installation of our work. Power lines closer than legally permissible are to be removed or de-energized by others. When you request D. J. SCHEFFLER & NYE, INC. to commence work on the above referenced project, that request will constitute your representation to us that you have located and outlined excavation area with white paint pursuant to Section 4216 of the Government Code, all above or below ground utilities and that you have taken all necessary and appropriate action to ensure that the work to be performed, can be performed safely without any threat of injury to persons or property from said utilities.
4) DRILLING access must be provided prior to beam or cap excavation or agreed to in writing.
5) SAFE access for all equipment, material and concrete trucks moving under their own power to and from each work location. D. J. Scheffler & Nye, Inc., Inc. assumes no responsibility for any damage to flatwork concrete, walls, pavements, or to underground utilities or subsurface installations. Advance preparation and protection to be provided by others.
6) Prime Contractor or owner of the project to provide water, sanitary facilities and electrical power within 200 feet of each work location.
7) JOB SITE security to avoid vandalism and/or theft of our equipment and material will be furnished by others.
8) TRAFFIC control and protection including all labor and equipment will be furnished by others.
9) SITE dewatering, where required, is to be performed prior to the start of work.
10) CONTINUOUS removal and disposal of all dirt, spoils and contaminated materials so as not to interfere with or delay the progress of D. J. SCHEFFLER & NYE, INC. Should hazardous substances be encountered the prime contractor or owner shall be responsible for notifying the proper governmental agency and any costs incurred for the clean-up.
11) THE use of drilling mud is excluded from this proposal unless mentioned under paragraph "specific inclusions". If specified Prime Contractor or owner of the project will provide min. 2" water main source within 100-ft. of work locations. Offsite disposal of drilling mud is not included, if required is Extra Work.
12) THE use of temporary casing for shoring or down-shaft inspection is excluded from this proposal unless specifically included above.
13) ALL concrete shall be placed per ACI 336.1. Top of pile elevations and proper orientation of rebar shall be as directed and shall be the responsibility of the general contractor/owner. Concrete waste allowance is 2" over shaft diameter to accommodate normal over break. Additional over break due to unforeseen soil stability constitutes price increase. An increase of 1,000 psi is usually required if groundwater in encountered, this additional cost is $10.00 per cubic yard.
14) All delays caused D. J. SCHEFFLER & NYE, INC., through no fault of their own, or the removal of any obstruction as defined by the International Association of Foundation Drilling Contractors and the U.S. Department of Transportation will be extra work. Obstructions are defined as: "Any material which cannot be drilled with a conventional earth auger and/or under reaming tool and which requires the use of special rock augers, core barrels, air tools, blasting and/or other methods such as hand excavation. All earth seams, rock fragments and voids included in the rock excavation area will be considered rock for the full volume of the shaft from initial contact with the rock for pay purposes." Extra work as defined by the above shall be charged at the hourly rate of the equipment involved on the project. In addition to hourly rates, teeth and pilot bits will be charged as follows: Hillside Unit teeth, $20.00 each; Truck and Crane Mount Unit teeth, $22.00; Auger Carbide Bits, $40.00; Pilot bits, $50.00 each; Carbide pilot bits, $150.00 each; and Core Barrel teeth, $20.00 each. D. J. SCHEFFLER & NYE, INC. assumes no liability for down time caused to others due to mechanical breakdowns of D. J SCHEFFLER & NYE, INC. equipment.
15) THE work may be changed by "Field Order", " Change Order", "Extra Work Order", or otherwise authorized in writing by the contractor/owner or his agents. Such changes may include changes in scope, method, scheduling or other performance requirements. In such event, the contract price and the completion date will be equitably adjusted. Additional length of reinforcing steel cages is billable for actual weight of steel used, including lap splice length at $1.00 / lb., plus $150.00 per butt weld or mechanical butt splice. Testing and inspection for welded butt splices is billable as extra work if required.
16) UNLESS specified otherwise only conventional auger tools will be supplied. Work items such as rock drilling, coring, dewatering or hand excavation will be EXTRA WORK. EXTRA WORK will be charged at the hourly rate of the specific equipment on job site. All extra work must be approved and signed for daily.
17) It shall be the responsibility of the Contractor or responsible representative to Acknowledge or Dispute work tickets on a daily basis. Failure to do so constitute acceptance of all time as listed on daily work tickets. Contractor relinquishes all rights to challenge work tickets not signed on a daily basis.
18) If the progress payment is not made as agreed upon in this contract, D. J. Scheffler & Nye, Inc., reserves the right to stop the work for nonpayment at any time and will not be responsible for any damages due to delay in the work. Interest will be charged on all past due accounts at the maximum rate allowable by law. Full payment for the work is to be made upon completion. There is to be no retention withheld from this final payment.
19) Overtime work will be performed only upon request by owner/builder at additional costs. Other than normal working hours shifts charged 8 hours minimum.
20) All disputes and controversies between the parties arising out of or in connection with this Construction Agreement as to the existence, construction, validity, interpretation or meaning, performance, nonperformance, enforcement, operation, breach, continuance, or termination thereof shall be submitted to arbitration before the American Arbitration Association under its Construction Industry Arbitration Rules.

21) D. J. Scheffler & Nye, Inc. is not responsible for flood control permits or sandbagging, nor are we responsible for any damages caused by earthquake.
22) In the event action must be instituted to enforce payment and any other rights under this agreement Contractor or Owner agrees to pay D. J. Scheffler & Nye, Inc. for reasonable attorney's fees and costs, if Scheffler prevails.
23) EXTRA work and items of work specifically excluded but performed, or delays resulting from interference or nonperformance of others shall be invoiced as extra work and/or delay based on the following rates of equipment (see Schedule 'A' attached). All equipment priced with operator or tradesman. All other equipment needed is to be rented at rental bluebook market rate plus transportation costs. Add 15% for prevailing wage jobs. D. J. Scheffler & Nye, Inc. is non-union.
24) D. J. Scheffler & Nye, Inc. proposes to furnish for this work property damage and bodily injury liability insurance in the limits of $1,000,000.00, and automobile liability in the amount of $1,000,000.00, Employer's liability (worker's compensation) in the amount of $1,000,000. Owner and Contractor hereby accepts the amounts, terms and conditions of insurance currently enforced at the time of this contract proposal. Any coverage beyond these will be provided at our invoice cost plus 10% if available.
25) THIS PROPOSAL shall be made part of any contract covering this work. If contractor/owner signs this proposal, or otherwise indicates its consent, such as verbally requesting us to commence work, then this proposal will represent the entire agreement of the parties regarding performance of the work. If contractor/owner subsequently requests D. J. SCHEFFLER & NYE, INC. to sign its own form of contract, this proposal will be deemed to be part of the contract and will supersede any other conflicting terms of that contract unless this proposal and or paragraph or part thereof is expressly excluded by the parties.
26) This proposal offers to the contractor/owner the terms and conditions upon which D. J. SCHEFFLER & NYE, INC., will perform the work. It may be changed by D. J. Scheffler & Nye, Inc. at any time prior to acceptance by notice to the contractor/owner and will be deemed to be withdrawn if not accepted by the contractor/owner within thirty (30) days from the date appearing on the face thereof.
27) Owner/Contractor shall indemnify, defend and hold D. J. SCHEFFLER & NYE, INC. harmless from any claim, liability, loss, damage, cost, expense, award, fine or judgment with respect to or arising out of the work, including without limitation any such claims, liability, loss damage, cost, expense award, fine or judgment arising by reason of death or bodily injury to persons, damage to property, defects in workmanship or materials or design defects (if the design originated with D. J. SCHEFFLER & NYE, INC.) or arising by reason of D. J. SCHEFFLER & NYE, INC's alleged or negligent act or omission, regardless of whether such act or omission is active or passive.
28) Subsidence Exclusion Endorsement: D. J. SCHEFFLER & NYE, INC.'s General Liability Insurance does not apply to "bodily injury" or "property damage" or "personal injury" or "advertising injury" directly or indirectly arising out of, caused by, resulting from, contributed to or aggravated by the subsidence, settling, sinking, slipping, falling away, caving in, shifting, eroding, mud flow, rising, tilting, or any other movement of land or earth.

Respectfully submitted,

MARK NYE, VICE PRESIDENT / 6/3/2020
Contractor's License # 582912

ACCEPTANCE

You are hereby authorized to furnish all material and labor required to complete the work mentioned in this proposal, for which I/we agree to pay the contract price mentioned in this proposal, and according to the terms thereof. I/we have read and agree to the provisions contained herein, and in any attachments hereto, which are made a part hereof.

_____ _____
Print Name Signature

_____ _____
Title Date

_____
Contractors State License

NOTICE: Under Mechanics "Lien Law", any contractor, subcontractor, labor, material, man or other person who helps to improve your property and is not paid for his labor, services or materials has a right to enforce his claim against your property. You may protect yourself against such claims by filing, before commencing such work or improvement an original contract for work of improvement or modification in the office of the county recorder where property is situated. Section 7019 Contractors License Law.

Schedule “A” – Equipment List
(Rates are subject to change without notification)

CAT 120 LoDril LMP	$295.00 per hour	LAD	$275.00 per hour
CAT 312B LoDril LMP30	$295.00 per hour	Klemm 806-2	$350.00 per hour
CAT 320 LoDril LMFB	$310.00 per hour	Chemgrout Plant/Power Pack	$115.00 per hour
CAT 325 LoDrill LLM	$335.00 per hour	All-Terrain 30-Ton Crane	$160.00 per hour
CAT 330 LoDril LLMHTFB	$335.00 per hour	All-Terrain 40-Ton Crane	$195.00 per hour
TEI Rock Drill HEM	$250.00 per hour	All-Terrain 50-Ton Crane	$245.00 per hour
Hillside 007	$295.00 per hour	CAT 248 Skid Steer Loader	$ 95.00 per hour
Hillside 007-2	$295.00 per hour	CAT 289C Multi-Terrain Loader	$105.00 per hour
Hillside 007-70	$295.00 per hour	CAT 315 Excavator	$150.00 per hour
Soilmec R208 HD	$325.00 per hour	CAT 320 Excavator	$150.00 per hour
Soilmec R312 HD	$350.00 per hour	CAT 420D Backhoe Loader	$140.00 per hour
Soilmec R516 HD	$475.00 per hour	10,000 Gradall/Skytrack	$110.00 per hour
Soilmec R312 & CFA Equp	$525.00 per hour	Concrete Pump SCH1000	$150.00 per hour
Soilmec R516 & CFA Equp	$585.00 per hour	Concrete Pump SCH750-18	$150.00 per hour
Soilmec R930 & CFA Equip	$800.00 per hour	Oberman DP101 3F Grout Plant	$125.00 per hour
Soilmec R516 HD & Oscillator	$600.00 per hour	750 CFM Compressor	$130.00 per hour
Tescar 2.5	$295.00 per hour	900 CFM Compressor	$140.00 per hour
Watson Truckmount 1100	$315.00 per hour	Portable Generator	$ 75.00 per day
Watson Truckmount 2000	$315.00 per hour	Welder	$130.00 per hour
Bauer BG 24	$575.00 per hour	Acetylene Torches & Tasks	$ 95.00 per hour
Futuro	$275.00 per hour	Support Vehicles	$ 18.00 per hour
		¾ Ton Pick-Up Truck	$ 15.00 per hour

(Rev 8/14/18)

EARTH CONSTRUCTION & MINING

GENERAL ENGINEERING CONTRACTOR
License Number 651848

Telephone (714) 897-4326
Facsimile (714) 897-2016

11542 Knott Avenue Suite 10 Garden Grove, CA 92841

PROPOSAL AND CONSTRUCTION CONTRACT

TO Mr. Matthew Blain
The New Home Company
85 Enterprise Suite 450
Aliso Viejo, Ca
"owner" or "contractor"

via email
Date 6/3/20
No. 200603

EARTH CONSTRUCTION & MINING (ECM) proposes to furnish labor, equipment and materials for the project known as
West Village Caisson Installation Earthwork
located at **Calabasas, Ca.**

DESCRIPTION OF WORK:

A Unit Price proposal to perform rough grading , export & backfill per the Westvillage Alternate 4 Partial Stabilization Grading Impacts Exhibit dated 5/19/20 prepared by United Civil, Inc.

Stipulations/ Clarifications :

1.Attached is our Bid Qualification Sheet, which will be made a part of any contract.
2. The removal or installation of any storm drain pipe, risers or structures is not included.
3. The installation, review or oversight of any slide or adjacent to existing utility lines or power poles this procedure is excluded.
4. The construction of any concrete caissons is excluded
5. Only Two move in is included in the base bid . Any additionl move ins will be $29,500 each
6. The duration to complete the initial rough grading is 200 working days
7. The removal, relocation or installation of any fencing is excluded.
8. We have included the installation of up to 1 stabilized entrances and permanet fiber rolls and hydroseeding. But all other temporary erosion control and SWPPP implementation & maintenance is not included. No sandbagging or other erosion control measures are included in this proposal.
9. Any work associated with the the lower tract grading is not included.

Total Bid Breakdown:

Item	Description	Quantity	UOM	Unit Price	Total Amount
1	Mobilization	2	EA	$ 32,500.00	$ 65,000.00
2	Clear & Grub Site Prep	9	AC	$ 2,980.00	$ 26,760.40
3	Develop & Purchase Construction Water	127,055	CY	$ 0.26	$ 33,034.30
4	Excavate for Caisson Platforms & stockpile	71,200	CY	$ 2.90	$ 206,480.00
5	Construct Access Roads	3,800	LF	$ 10.50	$ 39,900.00
6	Export Caisson Spoils	67,800	CY	$ 33.20	$ 2,250,960.00
7	Backfill Caisson Platforms	71,200	CY	$ 4.45	$ 316,840.00
8	Finiish grade restored site.	1	LS	$ 116,700.00	$ 116,700.00
9	Install 6" PVC backdrains	5,100	LF	$ 26.50	$ 135,150.00
10	Install 6" PVC Outlet pipes	900	LF	$ 23.00	$ 20,700.00
11	Construct Concrete 8' X 1' Terrace Drain	5,100	LF	$ 39.50	$ 201,450.00
12	Install Concrete Down drain	3,400	LF	$ 47.00	$ 159,800.00
13	Install hydromulch on disturbed areas	456,000	SF	$ 0.12	$ 54,720.00
14	Install fiber rolls on disturbed areas	18,500	LF	$ 2.75	$ 50,875.00
	Total Base Bid Amount				$ 3,678,369.70

TERMS AND CONDITIONS: the terms and conditions on the reverse side are expressly incorporated into this offer

This proposal, when signed by ECM's authorized representative,constitutes an offer. ECM reserves the right to modify this proposal if it is not accepted within 10 days after the date above.

ACCEPTED:

The New Home Company (Owner or Contractor)	Earth Construction & Mining
By:	By Charles W. Poss III
Title	Title President

EARTH CONSTRUCTION & MINING
11542 KNOTT STREET UNIT 10
GARDEN GROVE, CA. 92841
(714) 897-4326

BID QUALIFICATION FOR PROPOSAL NO. **200603**
PROJECT DESCRIPTION: **West Village Caisson Installation Earthwork**
SUBMITTED TO: **The New Home Company**
DATE: **June 3, 2020**

ITEM	INCLUDED YES	INCLUDED NO	DESCRIPTION
1		X	Surveying and engineering layout
2		X	Testing
3		X	Permit fees
4	X		Clearing
5		X	Demolition
6		X	Removal of buried debris, piping or unsuitable material not useable in fills
7	X		Compaction of original ground to a depth of 6" in fill areas
8	X		Onsite excavation and compaction
9			Over excavation and recompaction
10		X	Import of earth from specified borrow
11	X		Export of earth
12		X	Structural excavation and backfil
13		X	Utility excavation and backfill
14		X	Utility modification
15	X		Disposal of the spoil from others (caisson spoils)
16	X		Cost of water - customer to furnish suitable source
17		X	Cost of bond
18		X	Finish Areas to tolerances shown below:
		X	A. Building pad subgrade +/- 010'
		X	B. Rough Grade Street Section subgrade +/- 0.3'
	X		C. Slopes & benches +/- 0.50'
		X	D. Planting 0.50'
		X	E. Roadway concrete such as curb, gutter and cross gutter 0.10'
	X		F. Contour Areas +/- 0.50'
19	X		Grid Roll
20	X		Overfilling and trimming of fill slopes
21		X	Shoring
22		X	Dewatering, water control and erosion control (see proposal front page)
23		X	Traffic Control
24		X	Pavement subgrade preparation and compaction

A. The number of move-ins included in the base bid is Two.
B. Prices for the following items may be revised after the dates shown. Start by 1/15/21
C. E.C.M. shall be advised of any corrective measures required at the time the rough grading operation nears completion and while the grading equipment is still on the job. Corrective work shall be accomplished and both parties shall agree, in writing, that the work has been satisfactorily completed.
D. E.C.M. shall be paid, in full, no retainer, within 35 days after completion of work under this agreement. Retention shall not be withheld
E. The excavation of hazardous and toxic wastes which require special handling is not included in this proposal. Prices for work of this nature shall be negotiated.
F. Rock excavation for concrete ditches shall be done at a negotiated or Time & material price
G. the Excavation Of Rock Or Unstable Ground which appreciably limts production is Excluded From This Proposal

EARTH CONSTRUCTION & MINING

GENERAL ENGINEERING CONTRACTOR
License Number 651848

Telephone (714) 897-4326
Facsimile (714) 897-2016

11542 Knott Street Suite No. 10 **Garden Grove, CA 92841**

PROPOSAL AND CONSTRUCTION CONTRACT

Mr Matt Blain
TO **The New Home Company**
15231 Laguna Canyon Rd Suite 250
Irvine, Ca. 92618
"Owner" or "Contractor"

Date **February 26, 2021**
No. **212026**

EARTH CONSTRUCTION & MINING (ECM) proposes to furnish labor, equipment and materials for the project known as
West Village at Calabasas 180 Unit Development
located at **Calabasas, Ca**

DESCRIPTION OF WORK:

A unit price preliminary budget proposal to rough grade the site per VTTM No. 75021 Conceptual Grading lan dated 4/27/2017 prepared by United Civil, Inc and the West Village Project Geotechnical Review Soils Report dated 2/14/2020 prepared by Geolabs Westlake Village

Stipulations/ Clarifications

1.Please see attached proposal for pricing.
2.Attached is our Bid Qualification Sheet, which will be made a part of any contract.
3.Control of surface water runoff associated with the landslide remsdiation is included. Any dewatering wells or pumping systems associated with subsurface water removal is not anticipated nor included.
4. Pricing for both interim and rough grading plan Erosion Control/ SWPPP measures are included in the attached pricing. However these items are included on an allowance basis until updated erosion control & SWPPP plans can be designed
5. Only One move in is included. If a remobilization is required to complete rough grading the added cost will be $105,000.
6 .No excavation or special handling of rock or oversize materials is included. It is asssumed that any amounts of oversize rock encountered can be placed productively in available fill areas.
7. Other than as stated in the attached pricing, The removal of existing utilities is excluded. If special removal procedures are required around or adjacent to existing utilitiy lines this procedure is excluded from the bid pricing.
8. The construction of any retaining walls, retaining wall subdrains, waterproofing or footing excavation is excluded from this proposal.
9. The attached pricing is based upon a start date of no later than 9/1/17. Prices are based upon Diesel fuel at or below the price of $2.90/ gallon (plus tax). If the actual price for diesel fuel during construction exceeds this amount additional charges may apply
10. The estimated duration to perform the intial rough grading work is 290 Working Days. This duration contains no provisions for delays or shutdowns for storm drain installation.
11. Toploading, discing, aerating, stockpiling and the handling of wet material is excluded.
12. Any special Tree protection measures are not included
13. The attached pricing assumes that The New Home Company will supply a metered construction water source of sufficient pressure and volume adjacent to the site. We estimate that a total of 68,000 ccf will be needed for the rough grading operations for an estimated additional cost of $580,000 for Domestic water and $480,000 for utilizing reclaimed water
14. Any special Tree protection measures are not included
15. No import or export is included. It is assumed grades will be adjusted onsite to balance earthwork onsite. Based upon the current design we estimate that the project is 50,000 cy short of material
16. No slotting or section of the landslide removal is included. Other than the unloading of the designed cut slopes at the top of the slide, no other special grading techniques are included.
17. Concrete Ditches are assumed to be 3" thick and Davis Omaha Tan (or equivalent) in color
18. No storm drain installation, area drain installation riprap pads, basin lining, inlet or outlet structures are included.
19. The attached pricing is based upon the assumption that there are no fill drainage blankets or hydroaugers within the landslide removal area

TERMS AND CONDITIONS: the terms and conditions on the reverse side are expressly incorporated into this offer

This proposal, when signed by ECM's authorized representative,constitutes an offer. ECM reserves the right to modify this proposal if it is not accepted within 10 days after the date above.

ACCEPTED:

The New Home Company
(Owner or Contractor)

By:
Title

Earth Construction & Mining

By **Charles W. Poss III**
Title President

Quantity and Unit Price Breakdown -

The New Home Company

Proposal No. 212026

26-Feb-21

Item	Description	Quantity	UOM	Unit Price	Amount
1	Mobilization & Develop Water	1	LS	239,500.00	$239,500.00
2	Clearing, Grubbing & Tree removal	1	LS	195,000.00	$195,000.00
3	Remove existing Detention Basin & Structure	1	LS	79,000.00	$79,000.00
4	Alluvial & undocumented Fill removal	452,900	CY	2.75	$1,245,475.00
5	Mass Excavation	224,000	CY	2.75	$616,000.00
6	Landslide Removal/ Slope Stabilization	1,755,000	CY	2.99	$5,247,450.00
7	Adjust Slope and Pad Grades onsite Balance	50,000	CY	2.48	$124,000.00
8	Lot Overexcavation	0	CY	2.99	$0.00
9	Street Overexcavation	0	CY	3.60	$0.00
10	Additional Compaction 93% 40' To 60' depth	561,000	CY	0.19	$106,590.00
11	Additional Compaction 95% for Fills deeper than 60'	310,000	CY	0.30	$93,000.00
12	8" Canyon subdrain	1,900	LF	35.50	$67,450.00
13	6" Stabilization backdrain	7,600	LF	23.50	$178,600.00
14	6" Stabilization outlet drain	3,200	LF	19.80	$63,360.00
15	Construct Concrete 8' X 1' Terrace Drain	7,860	LF	59.00	$463,740.00
16	Construct Concrete 3.0 ' Toe Drain w/ Slough Wall	1,265	LF	99.00	$125,235.00
17	Construct Concrete 3.0 ' Brow Ditch/Down Drain	2,540	LF	56.00	$142,240.00
18	Construct Terrace Drain to Down Drain Intersections	19	EA	1,860.00	$35,340.00
19	Construct Splashwall	500	LF	29.00	$14,500.00
20	Int. Erosion Control, SWPPP & H20 diversion	1	LS	248,000.00	$248,000.00
21	Install Erosion Control per plan (Allowance)	1	LS	97,600.00	$97,600.00
22	Finish Building, Park & Retail Pads	1	LS	87,000.00	$87,000.00
23	Rough Grade Streets	1	LS	27,500.00	$27,500.00
24	Finish Landslide Slopes	1	LS	316,000.00	$316,000.00
25	Finish Tract slopes & Basin	1	LS	119,800.00	$119,800.00
	TOTAL BID PRICE				***$9,932,380.00***

EARTH CONSTRUCTION & MINING
11542 KNOTT STREET SUITE NO. 10
GARDEN GROVE, CA. 92841
(714) 897-4326

BID QUALIFICATION FOR PROPOSAL NO. **212026**
PROJECT DESCRIPTION: **West Village at Calabasas 180 Unit Development**
SUBMITTED TO: **The New Home Company**
DATE: **2/26/21**

ITEM	INCLUDED YES	INCLUDED NO	DESCRIPTION
1		X	Surveying and engineering layout
2		X	Testing
3		X	Permit fees
4	X		Clearing
5	X		Demolition
6		X	Removal of buried debris, piping or unsuitable material not useable in fills
7	X		Compaction of original ground to a depth of 6" in fill areas
8	X		Onsite excavation and compaction
9	X		Over excavation and recompaction
10		X	Import of earth
11		X	Export of earth
12		X	Structural excavation and backfill
13		X	Utility excavation and backfill
14		X	Utility modification
15		X	Disposal of the spoil from others
16		X	Cost of water - customer to furnish suitable source adjacent to property Line
17		X	Cost of bond
18			Finish Areas to tolerances shown below:
	X		A. Building pad +/- 010'
	X		B. Rough grade street section +/- 0.25'
	X		C. Slopes +/- 0.50'
		X	D. Planting
		X	E. Roadway concrete such as curb, gutter and cross gutter
		X	F. Sidewalk
19	X		Grid Roll
20	X		Overfilling and trimming of fill slopes
21		X	Shoring
22		X	Dewatering, water control and erosion control
23		X	Traffic Control
24		X	Pavement subgrade preparation and compaction

A. The number of move-ins included is One.

B. Prices for the following items may be revised after the dates shown: Start by 8/1/21

C. E.C.M. shall be advised of any corrective measures required at the time the rough grading operation nears completion and while the grading equipment is still on the job. Corrective work shall be accomplished and both parties shall agree, in writing, that the work has been satisfactorily completed.

D. E.C.M. shall be paid, in full, no retainer, within 35 days after completion of work under this agreement. Retenttion, if any, shall be 5% maximum.

E. The excavation of hazardous and toxic wastes which require special handling is not included in this proposal. Prices for work of this nature shall be negotiated.

F. Rock excavation for concrete ditches shall be done at a negotiated or Time & material price

G. The excavation of rock, wet material, or unstable ground that appreciably limits production is excluded.

H. The Prices included in this proposal are based upon diesel fuel at the current price of $2.60 (plus applicable taxes). If the price at the time of construction increases beyond this amount the additional cost will be submitted for reimbursement.