GEOTECHNICAL REPORT

Cheshire Short Plat
7615 East Mercer Way
Mercer Island, Washington

Project No. T-8264

Terra Associates, Inc.

Prepared for:

Long View Bella, LLC
Mercer Island, Washington

May 12, 2020
7th Revision November 22, 2023

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

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Mr. Derek Cheshire
Long View Bella, LLC
7615 East Mercer Way
Mercer Island, Washington 98040

Subject: Geotechnical Report
Cheshire Short Plat
7615 East Mercer Way
Mercer Island, Washington

Dear Mr. Cheshire:

As requested, we have conducted a geotechnical engineering study for the subject project. The attached report presents our findings and recommendations for the geotechnical aspects of project design and construction.

In general, the soil conditions observed in the test boring consists of approximately 4 feet of dense fill material overlying 7 to 13 feet of medium dense to dense silty sand over medium dense to dense silt to the termination of the test borings. An approximately four-foot layer of sand with gravel was observed at a depth of 15 feet in Test Boring B-2. Groundwater seepage and wet soils were observed at depths of 7.5 to 25 feet below current site grades.

In our opinion, the soil conditions observed at the site will be suitable for support of the proposed development, provided the recommendations presented in this report are incorporated into project design and construction.

We trust the information presented in this report is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

CAROLYN S. DECKER
STATE OF WASHINGTON
47016
REGISTERED
PROFESSIONAL ENGINEER

11-22-23

Carolyn S. Decker, P.E.
President

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Geotechnical Report
Cheshire Short Plat
7615 East Mercer Way
Mercer Island, Washington

1.0 PROJECT DESCRIPTION

The project consists of constructing a residential structure in the northeast corner of the existing tax parcel. The site is developed with a single-family residence and an accessory dwelling unit in the eastern portion of the site. The focus of this report is the northeast, undeveloped portion of the site. Based on the site plan prepared by CORE Design dated January 2020, the structure will be located in the approximate center of the new building lot with access from Southeast 76th Street. With a finished floor elevation of 109.5 feet, grading will consist of cuts and fills from 1 to 13 feet.

The structure constructed on the lot is expected to be a two- to three- story building framed over a crawl space. Foundation loads should be relatively light, in the range of 4 to 6 kips per foot for bearing walls and 50 to 75 kips for isolated columns.

The recommendations in the following sections of this report are based on the design discussed above. If actual features vary or changes are made, we should review the plans in order to modify our recommendations, as required. We should review final design drawings and specifications to verify that our recommendations have been properly interpreted and incorporated into the project design.

2.0 SCOPE OF WORK

On June 27, 2022, we observed soil and groundwater conditions at 2 test borings drilled to depths of 30 and 40 feet below current site grades. Using this data along with laboratory testing, we performed analyses to develop geotechnical recommendations for project design and construction. Specifically, this report addresses the following:

- Soil and groundwater conditions.
- Seismic criteria per the current International Building Code (IBC).
- Geologic hazards per the City of Mercer Island Municipal Code.
- Site preparation and grading.
- Relative slope stability.
- Excavations and Shoring.
- Foundation support.
- Floor slab-on-grade support.
- Lateral earth pressures on below-grade walls.
- Drainage.
- Utilities.

It should be noted that recommendations outlined in this report regarding drainage are associated with soil strength, design earth pressures, erosion, and stability. Design and performance issues with respect to moisture as it relates to the structure environment are beyond Terra Associates' purview. A building envelope specialist or contractor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The project site consists of a single tax parcel totaling approximately 2 acres located at 7615 East Mercer Way in Mercer Island, Washington. The approximate site location is shown on Figure 1.

The site is currently developed with a single-family residence, an accessory dwelling unit, and associated access and landscaping in the eastern half of the site. The western half of the site is a steep slope that is covered with a moderate forest and associated understory. The focus of our study is the northeast corner of the site where the new development is proposed. Site topography in this portion of the site consists of a slope that descends from the west to the east with an overall relief of approximately 26 feet.

3.2 Subsurface

In general, the soil conditions at the site consisted of approximately 4 feet of dense fill material overlying 7 to 13 feet of medium dense to dense silty sand over medium dense to dense silt to the termination of the test borings. An approximately four-foot layer of sand with gravel was observed at a depth of 15 feet in Test Boring B-2.

The *Preliminary Geologic Map of Seattle and Vicinity, Washington,* by H.H. Waldron, B.A. Leisch, D.R. Mullineaux, and D.R. Crandell (1961) maps the site as pre-fraser glacial drift (Qgpc). This mapped description is consistent with the native soils observed in the test borings.

The preceding discussion is intended to be a general review of the soil conditions encountered. For more detailed descriptions, please refer to the Test Boring Logs in Appendix A. The approximate location of the Test Borings is shown on Figure 2.

3.3 Groundwater

Groundwater seepage and wet soils were noted at approximately 7.5 to 25 feet below current site grades within the sandier soils.

3.4 Geologic Hazards/Critical Areas Report

We evaluated site conditions for the presence of geologic hazards including erosion hazard areas, landslide hazard areas, and seismic hazard areas. In addition, we have reviewed Section 19.07.110 of the Mercer Island Municipal Code, Critical Area Study. Our findings are presented below.

3.4.1 Erosion Hazard Areas

Section 19.16.010 of the Mercer Island Municipal Code (MIMC) defines an erosion hazard as "areas greater than 15 percent slope and subject to a severe risk of erosion due to wind, rain, water, slope, and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a "severe" or "very severe" rill and inter-rill erosion hazard."

The soils observed onsite are classified as Kitsap Silt Loam, 15 to 30 percent slopes (KpD) by the United States Department of Agriculture Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service. With the existing slope gradients, these soils will have a severe potential for erosion when exposed. Therefore, the site is categorized as an erosion hazard area per the MIMC.

Implementation of temporary and permanent Best Management Practices (BMPs) for preventing and controlling erosion will be required and will mitigate the erosion hazard. As a minimum, we recommend implementing the following erosion and sediment control BMPs prior to, during, and immediately following construction activities at the site.

Prevention

- Limit site clearing and grading activities to the relatively dry months (typically May through September).
- Limit disturbance to areas where construction is imminent.
- Locate temporary stockpiles of excavated soils no closer than ten feet from the crest of the slope.
- Provide temporary cover for cut slopes and soil stockpiles during periods of inactivity. Temporary cover may consist of durable plastic sheeting that is securely anchored to the ground surface or straw mulch.
- Establish permanent cover over exposed areas that will not be disturbed for a period of 30 days or more by seeding, in conjunction with a mulch cover or appropriate hydroseeding.

Containment

- Install a silt fence along site margins and downslope of areas that will be disturbed. The silt fence should be in place before clearing and grading is initiated.
- Intercept surface water flow and route the flow away from the slope to a stabilized discharge point. Surface water must not discharge at the top or onto the face of the steep slope.
- Provide onsite sediment retention for collected runoff.

The contractor should perform daily review and maintenance of all erosion and sedimentation control measures at the site.

3.4.2 Landslide Hazard Areas

Section 19.16.010 of the MIMC defines a landslide hazard as “areas subject to landslides based on a combination of geologic, topographic, and hydrologic factors, including:

1. Areas of historic failures.

2. Areas with all three of the following characteristics:

    a. Slopes steeper than 15 percent.

    b. Hillsides intersecting geologic contacts with relatively permeable sediment overlying a relatively impermeable sediment or bedrock.

    c. Springs or groundwater seepage.

3. Areas that have shown evidence of past movement or that are underlain or covered by mass wastage debris from past movements.

4. Areas potentially unstable because of rapid stream incision and stream bank erosion.

5. Steep Slope. Any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.”

None of these conditions exist on the site. Therefore, the site is not a landslide hazard as defined by the MIMC.

We completed a slope stability analysis throughout the site to determine if the proposed construction can alter the area without causing instability. Our analysis was completed at a location designated as Cross-Section A-A’ using the computer program Slide 2. The approximate cross-section location is shown on Figure 2.

Our analysis considered both static and the pseudostatic (seismic) conditions. A horizontal acceleration of 0.31g was used in the pseudostatic analysis to simulate slope performance under earthquake loading. This acceleration is equal to one-half of the peak horizontal ground acceleration with a two percent in 50-year probability of exceedance as defined by the 2018 International Building Code. A groundwater table was also modeled.

Based on our field exploration, laboratory testing, and previous experience with similar soil types, we chose the following parameters for our analysis:

Table 1 – Slope Stability Analysis Soil Parameters

Soil Type	Unit Weight (pcf)	Friction Angle (Degrees)	Cohesion (psf)
Medium Dense SM	120	34	100
Medium Dense SP-SM	120	28	75
Medium Stiff ML	110	28	700
Stiff ML	110	28	1500

The results of our slope stability analysis, as shown by the lowest safety factors for each condition, are presented in the following table:

Table 2 – Slope Stability Analysis Results

Cross Section	**Minimum Safety Factors**	
	Existing Conditions	***Post Construction***
A-A'	2.52 (Seismic FS = 1.07)	1.62 (Seismic FS = 1.11)

Based on our analysis, the proposed project will increase the overall stability of the site and thereby the development has been designed so that the risk to the site and adjacent property is mitigated such that the site is determined to be safe. Therefore, per Section 19.07.160.3.b of the MICI and our opinion, the site can be constructed, as proposed. The results of our analysis are attached in Appendix B.

Per Section 19.07.110.C. of the MIMC "the critical area study requirement may be waived or modified if the applicant demonstrates that the development proposed will not have an impact on the critical area or its buffer in a manner contrary to the purposed and requirements of this chapter". The purpose of the critical area study from a geotechnical perspective is to determine if and how proposed construction will impact a geologic hazard. The geologic hazard present at this proposed site is the blocky soils that have been outlined on the boring logs. The presence of landslide debris typically indicates past instability. Therefore, a slope stability analysis should be completed based on the proposed construction. Based on the analysis completed above, the proposed construction will increase the overall stability of the site. Therefore, the critical area study should be waived as the proposed developement will not have a negative impact on the critical area or its buffer.

Lateral Spread Analysis

In addition to the slope stability analysis, the City of Mercer Island has requested that a lateral spread analysis be completed for the project. We completed our analysis following the Federal Highway Administration (FHWA) method for calculating lateral spread (FHWA-NHI-11-032, GEC No. 3, August 2011). Per the FHWA lateral spread displacements are determined by "employing the Newmark sliding block approach on an assumed dominant failure plane at the base of a liquified zone…. In this type of analysis, the yield acceleration of the slide mass is evaluated using the post-earthquake undrained residual shear strength of the soil and then the lateral displacement is calculated using this yield acceleration in a conventional Newmark analysis."

Following this procedure, we completed the analysis using the same cross section for the slope stability analysis above. However, the post-construction slope stability analysis indicated the minimum factors of safety were located above the upslope retaining wall. The lateral spread would be expected to occur on the downslope portion of the property. Therefore, we have completed the analysis with the failure surfaces limited to the downslope section of the site.

In accordance with FHWA, the following table shows our post-earthquake undrained residual shear strengths for the site soils. The residual soil strengths were determined following FHWA Idress and Boulanger correlations (2007). The calculations are attached in Appendix C:

Table 3 – Lateral Spread Analysis Soil Parameters

Soil Type	Unit Weight (pcf)	Friction Angle (Degrees)	Cohesion (psf)
Medium Dense SM	120	0	243
Medium Dense SP-SM	120	0	158
Medium Stiff ML	110	0	675
Stiff ML	110	28	1500

The results of our slope stability and lateral spread analysis, as shown by the lowest safety factors for each condition, are presented in the following table:

Table 4 – Slope Stability Analysis Results

Cross Section	Minimum Safety Factors			
	Post Construction Residual Strength	***Lateral Spread Displacement (inches) Cape Mendocino***	***Lateral Spread Displacement (inches) Daly City***	***Lateral Spread Displacement (inches) Nahanni Canada***
A-A’	1.41	11.72 inches	0.05 inches	4.47 inches

Based on our analysis, the post construction, post-earthquake lateral spread resulting from a subduction zone event would result in a displacement of approximately 11.72 inches. The results of our analysis are attached in Appendix C.

The Cape Mendocino 1992 record was used in the lateral spread analysis because it represents the worst-case scenario that would be expected at the project site. The 1992 Cape Mendocino earthquake was a complex system that included 3 major faults, the Cascadia Subduction Zone, the San Andreas Fault, and the Mendocino Fracture. A subduction zone earthquake is the most powerful type of earthquake and results in the greatest amount of damage. Therefore, using a record that represents the accelerations, length, and force of the most powerful type of earthquake would be expected to result in the most amount of movement within a potential landslide mass. The Cascadia Subduction Zone is considered to be the greatest threat to any development within Western Washington and therefore is the most utilized type of earthquake when evaluating potential earthquake impacts.

The additional earthquakes used in the design included the Daly City 1957 earthquake and the Nahanni Canada 1995 earthquake. The Daly City 1957 earthquake was selected because the earthquake consisted of oblique movement on a steeply dipping thrust fault that resulted in a moderate amount of surface damage. The Nahanni Canada 1995 earthquake was selected because it occurred along a fault that was thought to be dormant, lasted several weeks, and consisted of a thrust type of event with shallow crustal depth and extensive aftershocks.

If the proposed project changes, these analyses should be reviewed to determine if any additional analysis is required for the project.

3.4.3 Seismic Hazard Areas

Section 19.16.010 of the MIMC defines a seismic hazard area as "areas subject to severe risk of damage as a result of earthquake induced ground shaking, slope failure, settlement, soil liquefaction or surface faulting."

Liquefaction is a phenomenon where there is a reduction or complete loss of soil strength due to an increase in water pressure induced by vibrations. Liquefaction mainly affects geologically recent deposits of fine-grained sand that is below the groundwater table. Soils of this nature derive their strength from intergranular friction. The generated water pressure or pore pressure essentially separates the soil grains and eliminates this intergranular friction; thus, eliminating the soil's strength.

We completed a liquefaction analysis using the computer program LiquefyPro published by CivilTech Corporation. The analysis was completed using a ground acceleration value of 0.62g, which is the ground acceleration for the maximum considered earthquake (MCE) for an earthquake with a 2,500 return-period. The value was determined using the U.S. Geological Survey (USGS) web-based Unified Hazard Tool.

The results of our analysis indicate soil liquefaction could occur during the design earthquake event, resulting in total settlements approaching approximately 2.8 inches, with one-half of that settlement likely being differential in nature. Results of the analysis are attached to Appendix D.

In our opinion, this amount of settlement would not structurally impact the building but would result in damage of a cosmetic nature. If the owner is not willing to accept the risk of cosmetic building damage requiring repair in the event of seismic-induced settlements occur, foundations would need to be supported on ground improved with stone columns or rammed aggregate piers. Based on our experience with similar sites and structures, structural design elements are also available to mitigate potential damage caused by the seismic-related soil settlements.

3.5 Seismic Design Parameters

Due to the site soils being subject to liquefaction, per the current International Building Code (IBC), the subsurface conditions would be assigned site class "F", which would require performing a site-specific seismic analysis to determine seismic forces for structural design. However, the current IBC allows for using code derived seismic values for the soil conditions indicated if the building's fundamental period is equal to or less than 0.5 seconds. We expect the single-family residence will fall into this category. In this case, based on soil conditions encountered and our knowledge of the area geology, site class "E" can be used to determine seismic design forces.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on our study, there are no geotechnical considerations that would preclude development of the site, as currently planned. Due to the loose layer of material observed approximately 25 feet below current site grades, we recommend the building be supported on small diameter pipe piles that are driven to refusal. The floor slab can be supported on competent inorganic native soils or on new structural fill placed and compacted above the competent soils.

The native soils encountered contain a sufficient amount of soil fines and will be difficult to compact as structural fill when too wet. The ability to use these native soils from site excavations as structural fill will depend upon its moisture content and the prevailing weather conditions at the time of construction. If grading activities take place during the winter, the owner should be prepared to import clean granular material for use as structural fill and backfill.

The following sections provide detailed recommendations regarding the preceding issues and other geotechnical design and construction considerations. These recommendations should be incorporated into the final design drawings and construction specifications.

4.2 Site Preparation and Grading

To prepare the site for construction, all vegetation and organic surface soils should be stripped and removed from below the new construction/remodeling areas. Soil containing organic material will not be suitable for use as structural fill but may be used for limited depths in nonstructural areas.

Once stripping operations are complete, cut and fill operations can be initiated to establish desired grades. Prior to placing fill, all exposed bearing surfaces should be observed by a representative of Terra Associates, Inc. to verify soil conditions are as expected and suitable for support of building foundations or placement of structural fill. If unsuitable yielding areas are observed, they should be cut to firm bearing soil and filled to grade with structural fill. If depth of excavation to remove unstable soils is excessive, use of geotextile fabric such as Mirafi 500X or equivalent in conjunction with structural fill can be considered in order to limit the depth of removal. Our experience has shown that, in general, a minimum of 18 inches of a clean, granular structural fill placed and compacted over the geotextile fabric should establish a stable bearing surface.

Our study indicates that the site soils contain a sufficient percentage of fines, silt size particles that will make them difficult to compact as structural fill if they are too wet or too dry. The ability to use the native soils as structural fill will depend upon their moisture content and the prevailing weather conditions when site grading activities take place. If wet soils are encountered, the contractor will need to dry the soils by aeration during dry weather conditions. Alternatively, the use of an additive such as Portland cement or lime to stabilize the soil moisture can be considered. If the soil is amended, additional Best Management Practices (BMPs) addressing the potential for elevated pH levels will need to be included in the Storm Water Pollution Prevention Program (SWPPP) prepared with the Temporary Erosion and Sedimentation Control (TESC) plan.

If grading activities are planned during the wet winter months, or if they are initiated during the summer and extend into fall and winter, the owner should be prepared to import wet weather structural fill. For this purpose, we recommend importing a granular soil that meets the following grading requirements:

U.S. Sieve Size	Percent Passing
6 inches	100
No. 4	75 maximum
No. 200	5 maximum*

* Based on the ¾-inch fraction.

Prior to use, Terra Associates, Inc. should examine and test all materials imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 6 inches and compacted to a minimum of 95 percent of the soil's maximum dry density, as determined by American Society for Testing and Materials (ASTM) Test Designation D-698 (Standard Proctor). The moisture content of the soil at the time of compaction should be within two percent of its optimum, as determined by this ASTM standard. In nonstructural areas, the degree of compaction can be reduced to 90 percent.

4.3 Excavations and Shoring

Open Cut

All excavations at the site associated with confined spaces, such as utility trenches, must be completed in accordance with local, state, and federal requirements. Based on regulations outlined in the Washington Industrial Safety and Health Act (WISHA), the onsite soils would be classified as Type C soil.

Accordingly, temporary excavations in Type C soils should have their slopes laid back at an inclination of 1.5:1 (Horizontal: Vertical) or flatter, from the toe to the crest of the slope. All exposed temporary slope faces that will remain open for an extended period of time should be covered with a durable reinforced plastic membrane during construction to prevent slope raveling and rutting during periods of precipitation.

Groundwater should be expected for excavations that extend ten feet below current site grades. The volume of water could be significant and may need to be dewatered depending upon the final configuration of the grades. The contractor should be prepared to implement active dewatering for any excavation that extends 15 feet below current site grades.

The above information is provided solely for the benefit of the owner and other design consultants and should not be construed to imply that Terra Associates, Inc. assumes responsibility for job site safety. It is understood that job site safety is the sole responsibility of the project general contractor.

Temporary/Permanent Shoring

In order to support the excavation adjacent to the existing driveway, temporary shoring will be required. For this location we recommend shoring the excavation using conventional soldier piles with timber lagging and tieback anchors.

Tieback anchors will extend outside the property lines. The design and construction of shoring must also take into consideration the presence of buried utilities surrounding the property.

Once the excavation has reached the foundation grade, protection of the bearing subgrade with a layer of rock or lean mix concrete will need to be considered to prevent disturbance from construction activities.

The final grading will require that a portion of the shoring wall remains as a permanent wall.

The following sections outline our recommendations for design of the temporary/permanent shoring:

Soldier Pile Shoring

Single tieback or cantilevered soldier pile walls should be designed to resist lateral loads imposed by the adjacent soils and surcharge loadings that will be imposed. Due to utility conflicts, it is possible that some tieback anchors will need to be inclined at a relatively steep angle. Therefore, the vertical component of the anchor load should be considered when designing the soldier piles. To support vertical loads, we recommend soldier piles be designed on the basis of end-bearing and pile shaft friction below the base of the excavation. Pile shaft friction above the base of the excavation should not be used to resist vertical downward loads.

With soldier piles extending a minimum depth of ten feet below the excavation grade, the following soil parameters can be used for design:

- Bearing materials: medium dense silt.
- Allowable end-bearing capacities for soldier piles: 15 kips per square foot (ksf).
- Skin friction below excavation base: 1.5 ksf.

We recommend soldier piles have a maximum center-to-center spacing of eight feet. A recommended design earth pressure diagram with adjacent traffic surcharge is presented on Figure 3. For pile spacing of 8 feet and less, the lateral soil pressure uniformly distributed over the width of the lagging can be reduced by 50 percent to account for soil arching between the soldier piles.

Unshored excavation heights should not exceed three feet during the excavation. No excavation should remain unsupported for more than 24 hours.

Drilling obstructions, such as boulders, may be encountered. Caving or collapse of opened drilled shafts may also occur particularly within the upper materials. The contractor must be prepared to case the drilled shafts, as needed, to prevent collapse and maintain a relatively clean, open hole. If the shafts are relied upon to carry large vertical components of the tieback anchor loading, the shaft bottoms must be relatively clean of loose soil debris prior to insertion of the soldier pile beams and pouring concrete.

Over-break or gaps between the excavated soil face and the back of the lagging must be filled following each excavation lift. Filling with crushed rock or grouting with control density fill (CDF) is recommended. This will be an important consideration in limiting movement of the adjacent ground.

Tieback Anchors

Tieback anchors should be installed in the soil behind the excavation to a sufficient distance to allow the desired lateral load resistance. The recommended configuration of the no load zone is shown on Figure 4. The minimum horizontal spacing between anchors should be four feet to ensure that group effects between adjacent ground anchors are minimized and that anchor intersection is avoided. Group effects will reduce the load-carrying capacity of individual ground anchors. For conventional drilled tieback anchors installed into the medium dense to dense soils can be designed for an anchor adhesion of 1.5 ksf. Higher anchor adhesion values will be developed if the anchors are constructed using pressure or secondary grouting techniques. The actual value should be based on the results of pullout tests conducted in the early phases of construction.

The contractor should note the presence of existing facilities adjacent to the subject site, including buried utilities, as they may affect the location or extent of the anchor holes.

Monitoring Program

A monitoring program must be implemented to verify the performance of the shoring system and possible excavation effects on adjacent properties. The first step of this program should consist of documenting the existing conditions of the adjacent properties and pavements. The documentation should include a visual survey and a pictorial record.

We recommend optical survey monitoring be conducted by the owner and include the measurement of horizontal and vertical movements of:

1. The surface of the adjacent streets.

2. The shoring system.

To monitor potential vertical and horizontal movements of the shoring, monitoring points should be established at the top of every other soldier pile. Surface reference points should be established and monitored for elevation at distances of 5 and 10 feet from the back of the shoring at a spacing of 25 feet at the excavation perimeter.

Optical monitoring of the shoring system should be performed twice a week as the excavation proceeds and then every other week upon completion of the excavation. A registered land surveyor should be retained to perform the monitoring. Monitoring should continue until the basement walls are adequately braced at the ground surface level. The monitoring data should be submitted within one day to the project shoring designer and Terra Associates for review.

4.4 Foundation Support

Due to the loose soil layer observed in the test borings, we recommend supporting the building on three- or four-inch diameter pipe piles. Piles used should consist of a pipe that is galvanized or otherwise coated to reduce corrosion impacts.

Three-inch pipe piles driven to refusal can be designed for an allowable vertical compressive axial load of 12 kips. Refusal would be considered as less than 1- inch of penetration following 30 seconds of driving using a hydraulic impact hammer weighting 125 pounds. Four-inch pipe piles driven to refusal can be designed for an allowable vertical compressive axial load of 20 kips. Refusal would be considered as less than 1-inch of penetration following 16 seconds of driving using a hydraulic impact hammer weighting 325 pounds. Based on soil conditions observed in the test borings, pile lengths of 30 to 40 feet should be expected.

If the piles are relied upon to resist lateral loading, they would need to be driven at a batter.

For designing grade beams to resist lateral loads, passive earth pressures acting on the side of the grade beam can be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pcf. We recommend not including the upper 12 inches of soil in this computation because they can be affected by weather or disturbed by future grading activity. This value assumes the grade beam will be constructed neat against competent native soil or backfilled with structural fill as described in Section 4.2 of this report. The value recommended includes a safety factor of 1.5.

Helical Anchors

Helical anchors will be used to offset the estimated lateral spread displacement from the subduction zone event. The anchors will extend through the potentially liquefiable soils into the stiff silt. Provided the anchors consist of, at a minimum, double 12-inch diameter, 4.5-inch shaft helical anchors, the individual allowable capacity would be 9,000 pounds.

4.5 Floor Slab-on-Grade

Slab-on-grade floors may be supported on a subgrade as recommended in Section 4.2. Immediately below the floor slab, we recommend placing a four-inch-thick capillary break layer composed of clean, coarse sand or fine gravel that has less than five percent passing the No. 200 sieve. This material will reduce the potential for upward capillary movement of water through the underlying soil and subsequent wetting of the floor slab.

The capillary break layer will not prevent moisture intrusion through the slab caused by water vapor transmission. Where moisture by vapor transmission is undesirable, such as covered floor areas, a common practice is to place a durable plastic membrane on the capillary break layer and then cover the membrane with a layer of clean sand or fine gravel to protect it from damage during construction, and to aid in uniform curing of the concrete slab. It should be noted that if the sand or gravel layer overlying the membrane is saturated prior to pouring the slab, it will not be effective in assisting uniform curing of the slab and can actually serve as a water supply for moisture bleeding through the slab, potentially affecting floor coverings.

Therefore, in our opinion, covering the membrane with a layer of sand or gravel should be avoided if floor slab construction occurs during the wet winter months and the layer cannot be effectively drained. We recommend floor designers and contractors refer to the current American Concrete Institute (ACI) Manual of Concrete Practice for further information regarding vapor barrier installation below slab-on-grade floors.

4.6 Lateral Earth Pressures on Below-Grade Walls

The magnitude of earth pressure development on retaining walls will partly depend upon the quality of the wall backfill. We recommend placing and compacting wall backfill as structural fill as described in Section 4.2 of this report. To guard against hydrostatic pressure development, drainage must be installed behind the wall. A typical wall drainage detail is shown on Figure 5.

With wall backfill placed and compacted as recommended, and drainage properly installed, we recommend designing unrestrained walls for an active earth pressure equivalent to a fluid weighing 40 pounds per cubic foot (pcf) where there is not a permanent soldier pile wall. For the lower-level walls that will also have a permanent soldier pile wall we recommend designing the unrestrained walls for an active earth pressure equivalent to a fluid weighing 70 pcf. For restrained walls, an additional uniform load of 100 psf should be added to the 40 pcf or 70 pcf. For evaluation of wall performance under seismic loading, a uniform pressure equivalent to 8H psf, where H is the height of the below-grade portion of the wall should be applied in addition to the static lateral earth pressure. These values assume a horizontal backfill condition and that no other surcharge loading, sloping embankments, or adjacent buildings will act on the wall. If such conditions exist, then the imposed loading must be included in the wall design. Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. The values for these parameters are provided in Section 4.4 of this report.

The space between the permanent lower-level building wall and the temporary shoring should be backfilled with a free draining material to allow any water that may develop behind the soldier pile wall to flow through the material and into the foundation drain for the building.

4.7 Infiltration Feasibility

Based upon our study, it is our opinion that subsurface conditions are generally not favorable for infiltration of site stormwater. The native soils observed at the site contain a high percentage of soil fines that would impede any downward migration of site stormwater. Even low impact development (LID) techniques would likely fill up and overtop during rain events and cause minor local flooding. Based upon these soil conditions, it is our opinion that stormwater should be managed using a conventional system.

4.8 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the site at all times. Water must not be allowed to pond or collect adjacent to foundations or within the immediate building areas. We recommend providing a positive drainage gradient away from the building perimeters. If this gradient cannot be provided, surface water should be collected adjacent to the structures and disposed to appropriate storm facilities.

Subsurface

We recommend installing perimeter foundation drains adjacent to exterior shallow foundations. The drains can be laid to grade at an invert elevation equivalent to the bottom of footing grade. The drains can consist of four-inch diameter perforated PVC pipe that is enveloped in washed pea gravel-sized drainage aggregate. The aggregate should extend six inches above and to the sides of the pipe. Roof and foundation drains should be tightlined separately to the storm drains. All drains should be provided with cleanouts at easily accessible locations.

For the permanent soldier pile wall, we recommend placing drain board such as Miradrain G100N against the temporary wood lagging and dove tail the drain board into the free draining material that will be used to backfill the space between the permanent lower-level wall for the building and the soldier pile wall. The drain board should extend approximately 12 to 18 inches into the free draining material.

4.9 Utilities

Utility pipes should be bedded and backfilled in accordance with American Public Works Association (APWA) or local jurisdictional requirements. At minimum, trench backfill should be placed and compacted as structural fill as described in Section 4.2 of this report. As noted, soils excavated onsite should generally be suitable for use as backfill material during dry weather. However, the site soils are fine grained and moisture sensitive. Therefore, moisture conditioning may be necessary to facilitate proper compaction. If utility construction takes place during the winter, it may be necessary to import suitable wet weather fill for utility trench backfilling.

5.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review the final design drawings and specifications in order to verify that earthwork and foundation recommendations have been properly interpreted and implemented in project design. We should also provide geotechnical service during construction to observe compliance with our design concepts, specifications, and recommendations. This will allow for design changes if subsurface conditions differ from those anticipated prior to the start of construction.

6.0 LIMITATIONS

We prepared this report in accordance with generally accepted geotechnical engineering practices. No other warranty, expressed or implied, is made. This report is the copyrighted property of Terra Associates, Inc. and is intended for specific application to the Cheshire Short Plat project in Mercer Island, Washington. This report is for the exclusive use of Long View Bella, LLC and their authorized representatives.

The analyses and recommendations presented in this report are based on data obtained from the subsurface explorations completed onsite. Variations in soil conditions can occur, the nature and extent of which may not become evident until construction. If variations appear evident, Terra Associates, Inc. should be requested to reevaluate the recommendations in this report prior to proceeding with construction.

REFERENCE: https://www.bing.com/maps

ACCESSED 5/12/2020

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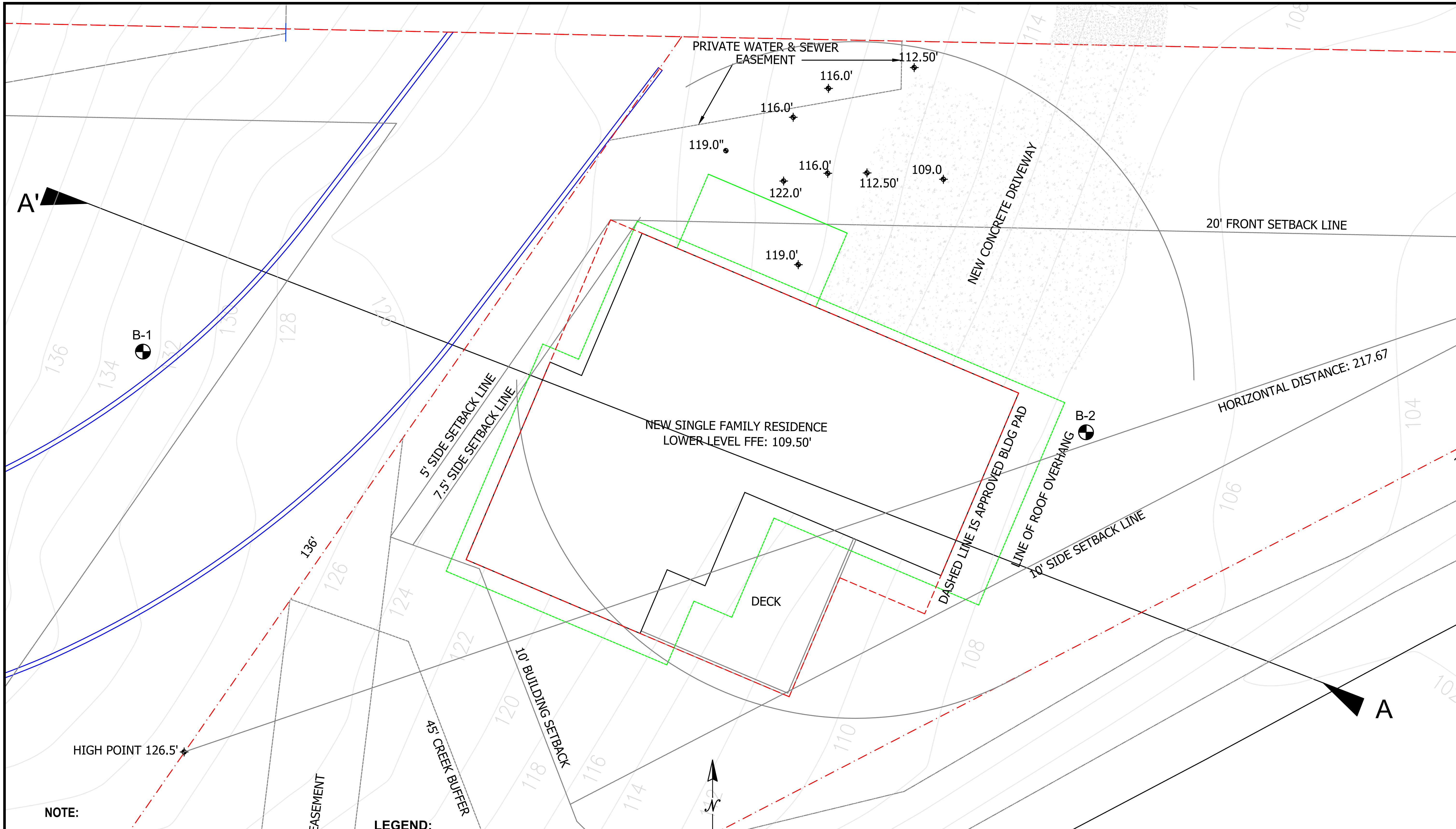
Geology and
Environmental Earth Sciences

VICINITY MAP
CHESHIRTE SHORT PLAT
MERCER ISLAND, WASHINGTON

Proj.No. T-8264	Date: NOV 2023	Figure 1



NOTE:

THIS SITE PLAN IS SCHEMATIC. ALL LOCATIONS AND DIMENSIONS ARE APPROXIMATE. IT IS INTENDED FOR REFERENCE ONLY AND SHOULD NOT BE USED FOR DESIGN OR CONSTRUCTION PURPOSES.

REFERENCE:

SITE PLAN PROVIDED BY FORMWORKS DESIGN BUILD

LEGEND:

APPROXIMATE BORING LOCATION

APPROXIMATE CROSS SECTION LOCATION

0 20 40

APPROXIMATE SCALE IN FEET

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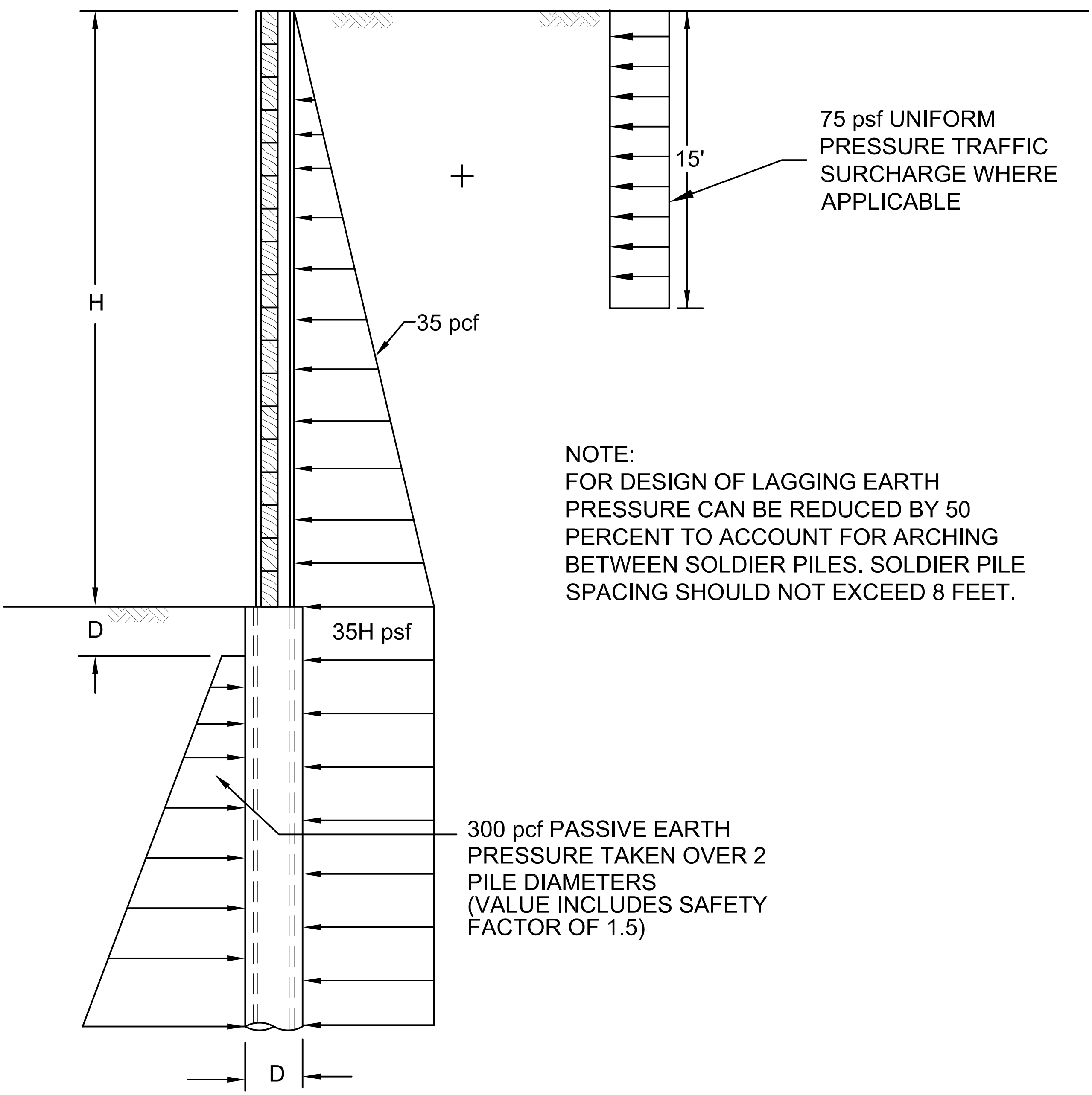
EXPLORATION LOCATION PLAN
CHESHIRE SHORT PLAT
MERCER ISLAND, WASHINGTON

Proj.No. T-8264	Date: NOV 2023	Figure 2

EARTH PRESSURE LOADING DIAGRAM
CANTILEVERED SOLDIER PILE SHORING



NOTE:
FOR DESIGN OF LAGGING EARTH PRESSURE CAN BE REDUCED BY 50 PERCENT TO ACCOUNT FOR ARCHING BETWEEN SOLDIER PILES. SOLDIER PILE SPACING SHOULD NOT EXCEED 8 FEET.

NOT TO SCALE

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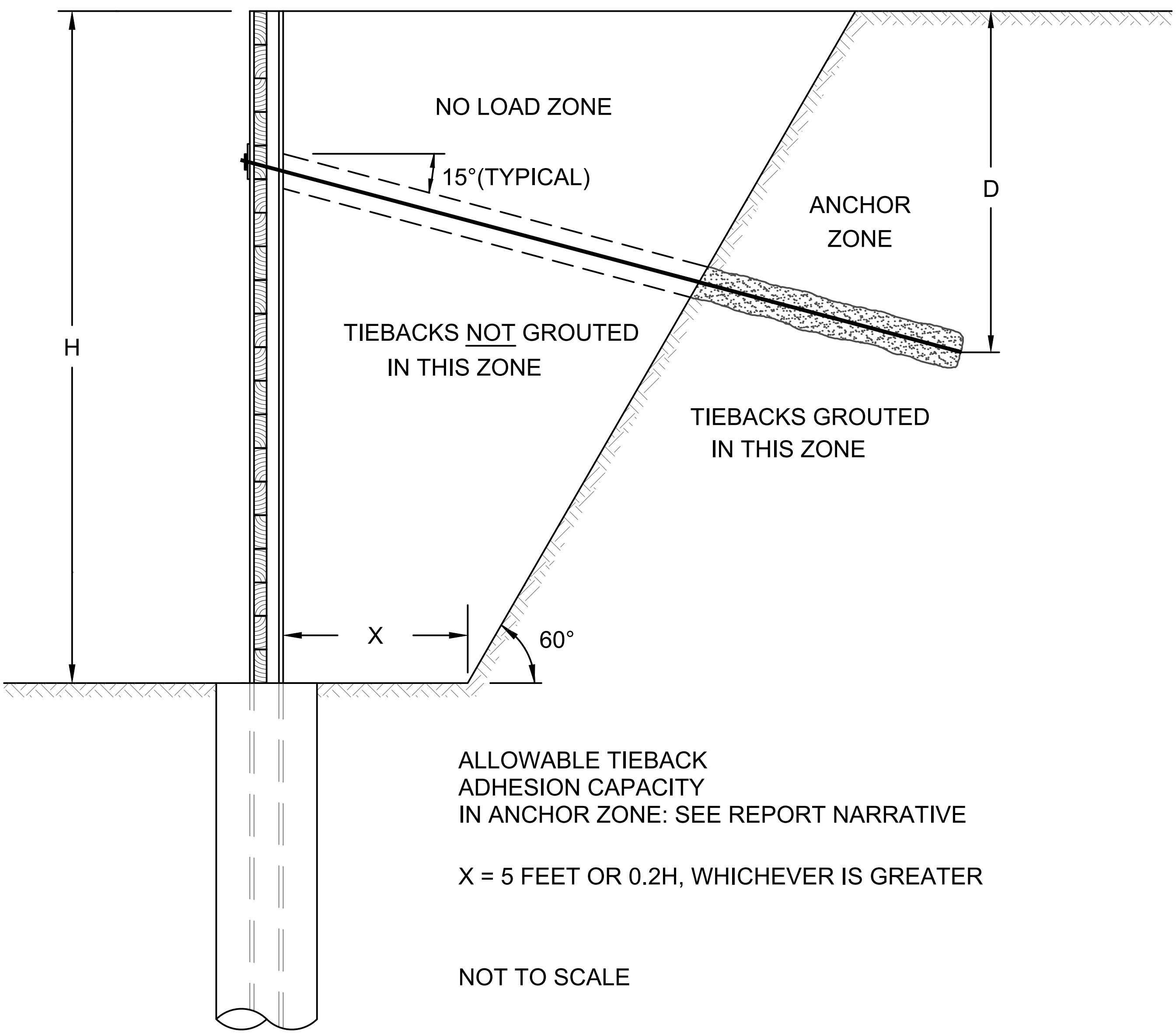
EARTH PRESSURE LOADING DIAGRAM CHESHIRE SHORT PLAT MERCER ISLAND, WASHINGTON		
Proj. No.T-8264	Date NOV 2023	Figure 3

SINGLE TIEBACK SOLDIER PILE/LAGGING SHORING WALL



ALLOWABLE TIEBACK
ADHESION CAPACITY
IN ANCHOR ZONE: SEE REPORT NARRATIVE

X = 5 FEET OR 0.2H, WHICHEVER IS GREATER

NOT TO SCALE

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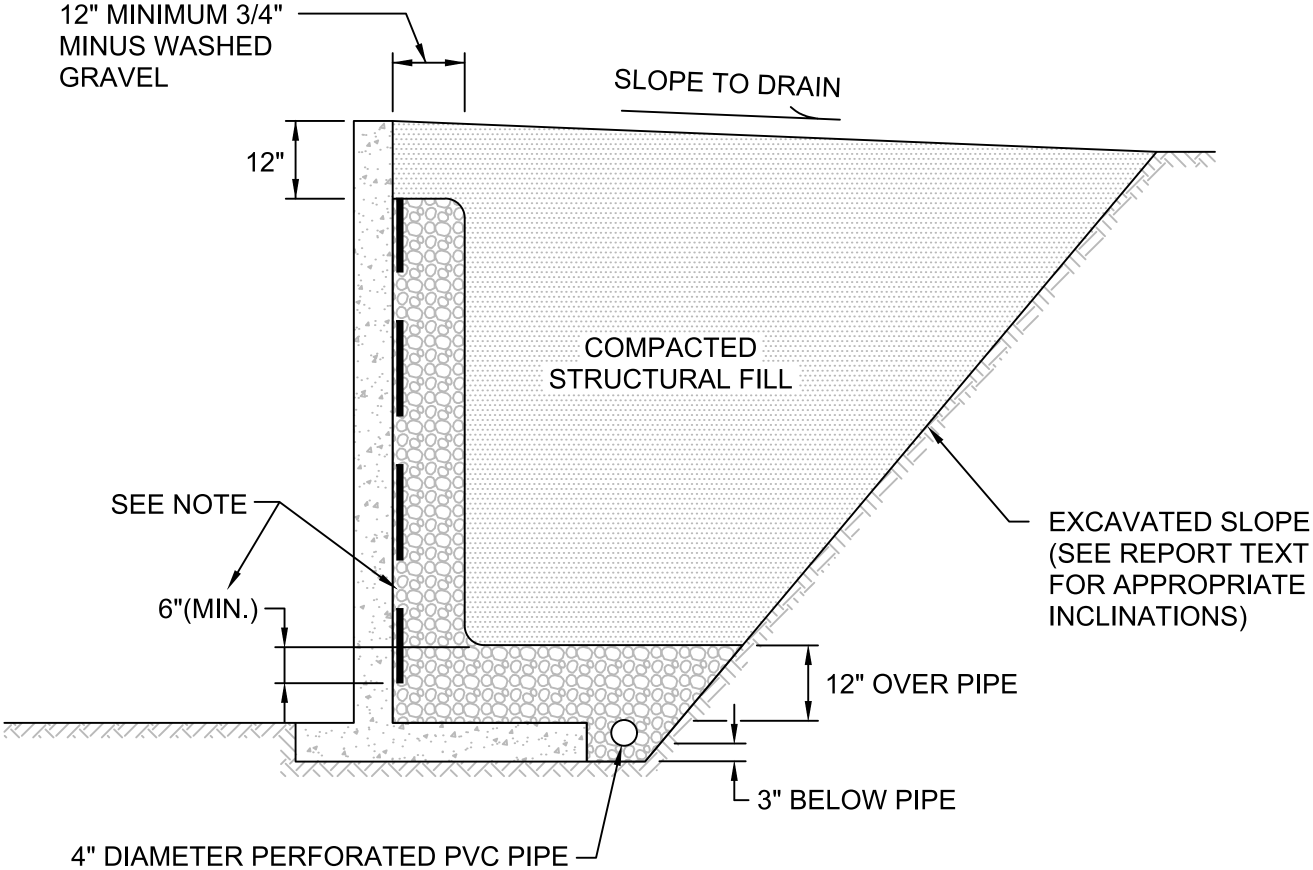
LOAD / NO LOAD ZONE DIAGRAM
CHESHIRE SHORT PLAT
MERCER ISLAND, WASHINGTON

Proj.No. T-8264	Date: OCT 2023	Figure 4



NOT TO SCALE

NOTE:

MIRADRAIN G100N PREFABRICATED DRAINAGE PANELS OR SIMILAR PRODUCT CAN BE SUBSTITUTED FOR THE 12-INCH WIDE GRAVEL DRAIN BEHIND WALL. DRAINAGE PANELS SHOULD EXTEND A MINIMUM OF SIX INCHES INTO 12-INCH THICK DRAINAGE GRAVEL LAYER OVER PERFORATED DRAIN PIPE.

Terra Associates, Inc. Consultants in Geotechnical Engineering Geology and Environmental Earth Sciences	TYPICAL WALL DRAINAGE DETAIL CHESHIRE SHORT PLAT MERCER ISLAND, WASHINGTON
Proj.No. T-8264 | Date: OCT 2023	Figure 5

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

Cheshire Short Plat
Mercer Island, Washington

On June 27, 2022, we completed our site exploration by observing soil conditions at 2 test borings drilled to depths of approximately 30 to 40 feet below existing site grades. Test boring locations were determined in the field by measuring from existing site features. The approximate location of the test borings is shown on the attached Exploration Location Plan, Figure 2. Test Boring Logs are presented on Figures A-2 and A-3.

An engineering geologist from our office conducted the field exploration. Our representative classified the soil conditions encountered, maintained a log of each test boring, obtained representative soil samples, and recorded water levels observed during drilling. During drilling, continuous soil samples were obtained during drilling in general accordance with ASTM Test Designation D-6914. Using this procedure, an eight-inch (outside diameter) hollow coring barrel is vibrated into the subsurface at five-foot intervals. A five-foot, continuous section of soil is then emptied into a sampling bag. In addition, Standard Penetration Test (SPT) soil samples were obtained every five-feet in general accordance with ASTM Test Designation D-1586. Using this procedure, a 2-inch (outside diameter) split-barrel sampler is driven into the ground 18 inches using a 140-pound hammer free falling from a height of 30 inches. The number of blows required to drive the sampler 12 inches after an initial 6-inch set is referred to as the Standard Penetration Resistance value or N value. This is an index related to the consistency of cohesive soils and relative density of cohesionless materials. N values obtained for each sampling interval are recorded on the Test Boring Logs, Figures A-2 and A-3. All soil samples were visually classified in accordance with the Unified Soil Classification System (USCS) described on Figure A-1.

Representative soil samples obtained from the test borings were placed in sealed plastic bags and taken to our laboratory for further examination and testing. The moisture content of selected samples was measured and is reported on the corresponding Test Boring Logs. Grain size analyses were also performed on select samples. The results are shown on Figure A-4.

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTION
COARSE GRAINED SOILS More than 50% material larger than No. 200 sieve size	**GRAVELS** More than 50% of coarse fraction is larger than No. 4 sieve	Clean Gravels (less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		Gravels with fines	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS More than 50% of coarse fraction is smaller than No. 4 sieve	Clean Sands (less than 5% fines)	SW	Well-graded sands, sands with gravel, little or no fines.
			SP	Poorly-graded sands, sands with gravel, little or no fines.
		Sands with fines	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS More than 50% material smaller than No. 200 sieve size	**SILTS AND CLAYS** Liquid Limit is less than 50%		ML	Inorganic silts, rock flour, clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity. (Lean clay)
			OL	Organic silts and organic clays of low plasticity.
	SILTS AND CLAYS Liquid Limit is greater than 50%		MH	Inorganic silts, elastic.
			CH	Inorganic clays of high plasticity. (Fat clay)
			OH	Organic clays of high plasticity.
HIGHLY ORGANIC SOILS			PT	Peat.

DEFINITION OF TERMS AND SYMBOLS

		Standard Penetration Resistance in Blows/Foot
COHESIONLESS	Density	
	Very Loose	0-4
	Loose	4-10
	Medium Dense	10-30
	Dense	30-50
	Very Dense	>50
COHESIVE	Consistancy	Standard Penetration Resistance in Blows/Foot
	Very Soft	0-2
	Soft	2-4
	Medium Stiff	4-8
	Stiff	8-16
	Very Stiff	16-32
	Hard	>32

- 2" OUTSIDE DIAMETER SPILT SPOON SAMPLER
- 2.4" INSIDE DIAMETER RING SAMPLER OR SHELBY TUBE SAMPLER
- WATER LEVEL (Date)
- Tr TORVANE READINGS, tsf
- Pp PENETROMETER READING, tsf
- DD DRY DENSITY, pounds per cubic foot
- LL LIQUID LIMIT, percent
- PI PLASTIC INDEX
- N STANDARD PENETRATION, blows per foot

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UNIFIED SOIL CLASSIFICATION SYSTEM
CHESHIRE SHORT PLAT
MERCER ISLAND, WASHINGTON

Proj.No. T-8264	Date: OCT 2023	Figure A-1

LOG OF BORING NO. 1

Figure No. A-2

Project: Cheshire Short Plat **Project No:** T-8264 **Date Drilled:** June 27, 2022

Client: Mr. Derek Cheshire **Driller:** Boretec **Logged By:** JCS

Location: Mercer Island, Washington **Depth to Groundwater:** 12.5 ft, 25 ft **Approx. Elev:** NA

Depth (ft)	Soil Description	Consistency/ Relative Density	SPT (N) Blows/foot	Moisture Content (%)
0–4.5	Fill: Brown silty GRAVEL with sand, fine to coarse gravel, fine to coarse sand, moist. (GM)	Dense	35	6.8
4.5–7.7	Gray-brown silty SAND with gravel, fine sand, fine to coarse gravel, moist. (SM) (Possible fill)	Dense	30	6.6
7.7–10.9	Brown to gray-brown silty SAND with gravel, fine sand, fine to coarse gravel, dry to moist. (SM/SP-SM)	Medium Dense	21	5.7
		Dense	39	5.0
10.9–14.2	Gray silty SAND with gravel, fine sand, fine to coarse gravel, moist (wet below 12.5 feet). (SM)	Dense	16	32.0
14.2–17.4	Gray clayey SILT, moist, scattered randomly-oriented, iron-oxide stained fractures. (ML) (Pp=4.5 tons/sf) (LL=49, PI=15)	Very Stiff	23	28.4
17.4–21.8	Gray SILT to SILT with sand, fine sand, trace of fine to coarse gravel, moist, nonplastic to low plasticity, trace of brown silty sand pockets, scattered blocky zones. (ML)	Medium Dense / Dense	37	28.3
21.8–41.5	Gray SILT, moist, nonplastic to low plasticity. (ML)	Medium Dense		
25	- Wet with scattered blocky zones below 25 feet.	Medium Dense	20	34.3
30	- Scattered high-angle sheared seams with hard, angular silt/clay clasts between 30 and 36.5 feet. (LL=30. PI=4)	Medium Dense	12	33.6
35		Medium Dense	14	33.5
40		Medium Dense	21	30.2

Boring terminated at 41.5 feet.
Groundwater encountered between 12.5 and 12.6 feet and below 25 feet.

NOTE: This borehole log has been prepared for geotechnical purposes. This information pertains only to this boring location and should not be interpeted as being indicative of other areas of the site

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LOG OF BORING NO. 2

Figure No. A-3

Project: Cheshire Short Plat **Project No:** T-8264 **Date Drilled:** June 27, 2022

Client: Mr. Derek Cheshire **Driller:** Boretec **Logged By:** JCS

Location: Mercer Island, Washington **Depth to Groundwater:** 7.5 ft **Approx. Elev:** NA

Depth (ft)	Soil Description	Consistency/ Relative Density	SPT (N) Blows/foot	Moisture Content (%)
2.5	No sample recovery at 2.5 feet.	Medium Dense	16	
5	Brown silty SAND with gravel, fine to medium sand, fine to coarse gravel, moist to wet (wet below 7.5 feet). (SM)	Medium Dense	14	13.0
7.5		Medium Dense	15	13.3
10	No sample recovery at 10 feet.	Medium Dense	19	
12.5	Gray silty SAND with gravel, fine sand, fine to coarse gravel, wet. (SM)	Medium Dense	12	17.8
15	Gray SAND with gravel, fine to coarse sand, fine to coarse gravel, wet. (SP)	Medium Dense	10	13.7
20	Gray SILT, moist to wet, nonplastic to low plasticity. (ML)	Medium Dense	19	30.5
25	- Wet with scattered blocky zones between 25 and 26.5 feet. (LL=29, PI=3)	Loose	9	32.5
30		Medium Dense	24	31.4
31.5	Boring terminated at 31.5 feet. Groundwater encountered below 7.5 feet			

NOTE: This borehole log has been prepared for geotechnical purposes. This information pertains only to this boring location and should not be interpeted as being indicative of other areas of the site

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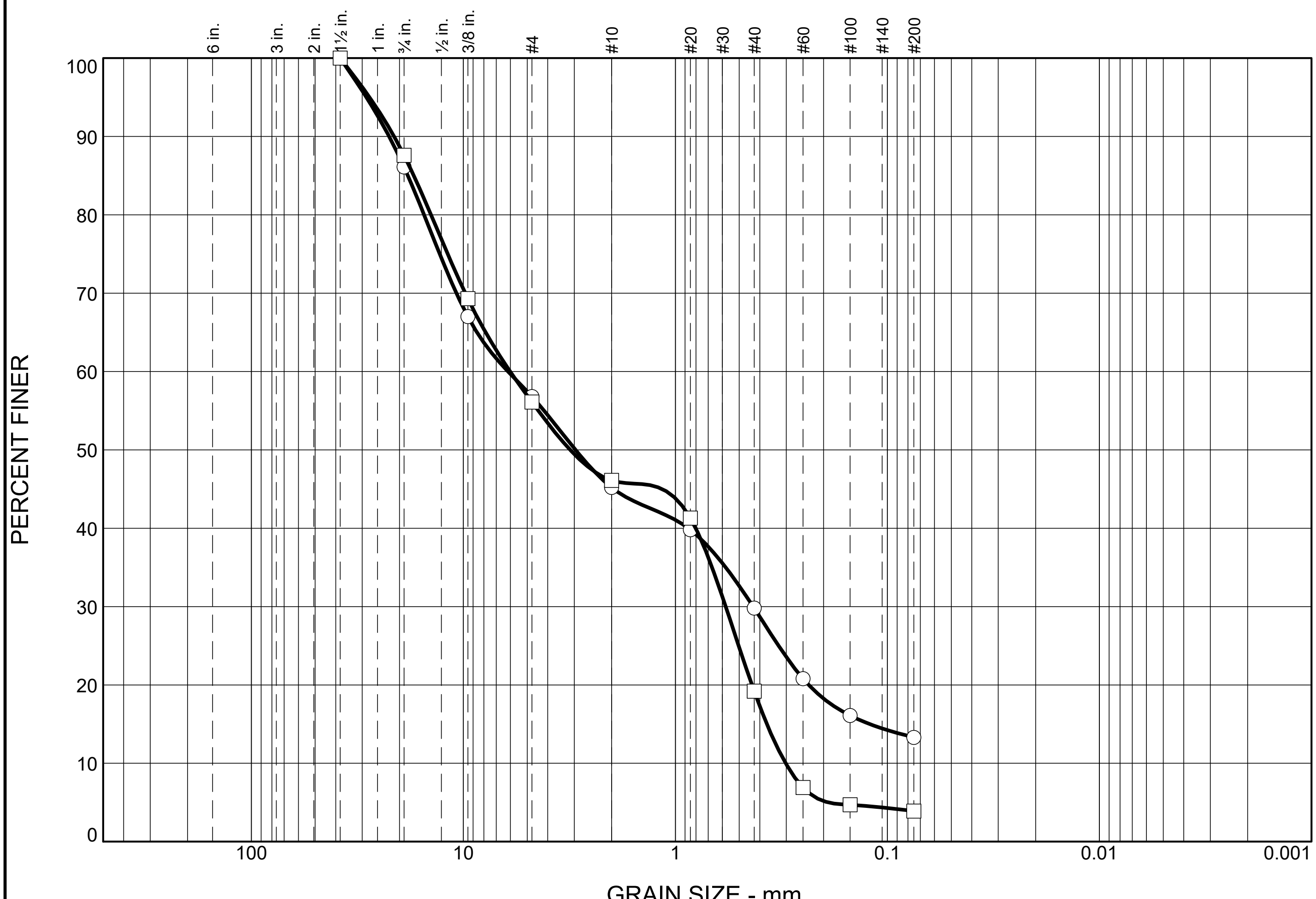
Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	13.9	29.3	11.6	15.4	16.5	13.3	
□	0.0	12.4	31.5	10.0	26.9	15.3	3.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			18.2740	6.1594	2.9592	0.4298	0.1212			
□			17.1334	6.0179	3.1361	0.5789	0.3702	0.3018	0.18	19.94

Material Description	USCS	AASHTO
○ silty SAND with gravel	SM	
□ SAND with gravel	SP	

Project No. T-8264 **Client:** Derek Cheshire
Project: Cheshire Short Plat
Mercer Island, Washington
○ **Location:** B-1 **Depth:** 7.5'
□ **Location:** B-2 **Depth:** 15'

Remarks:
○ Tested July 6, 2022
□ Tested July 6, 2022

Terra Associates, Inc.

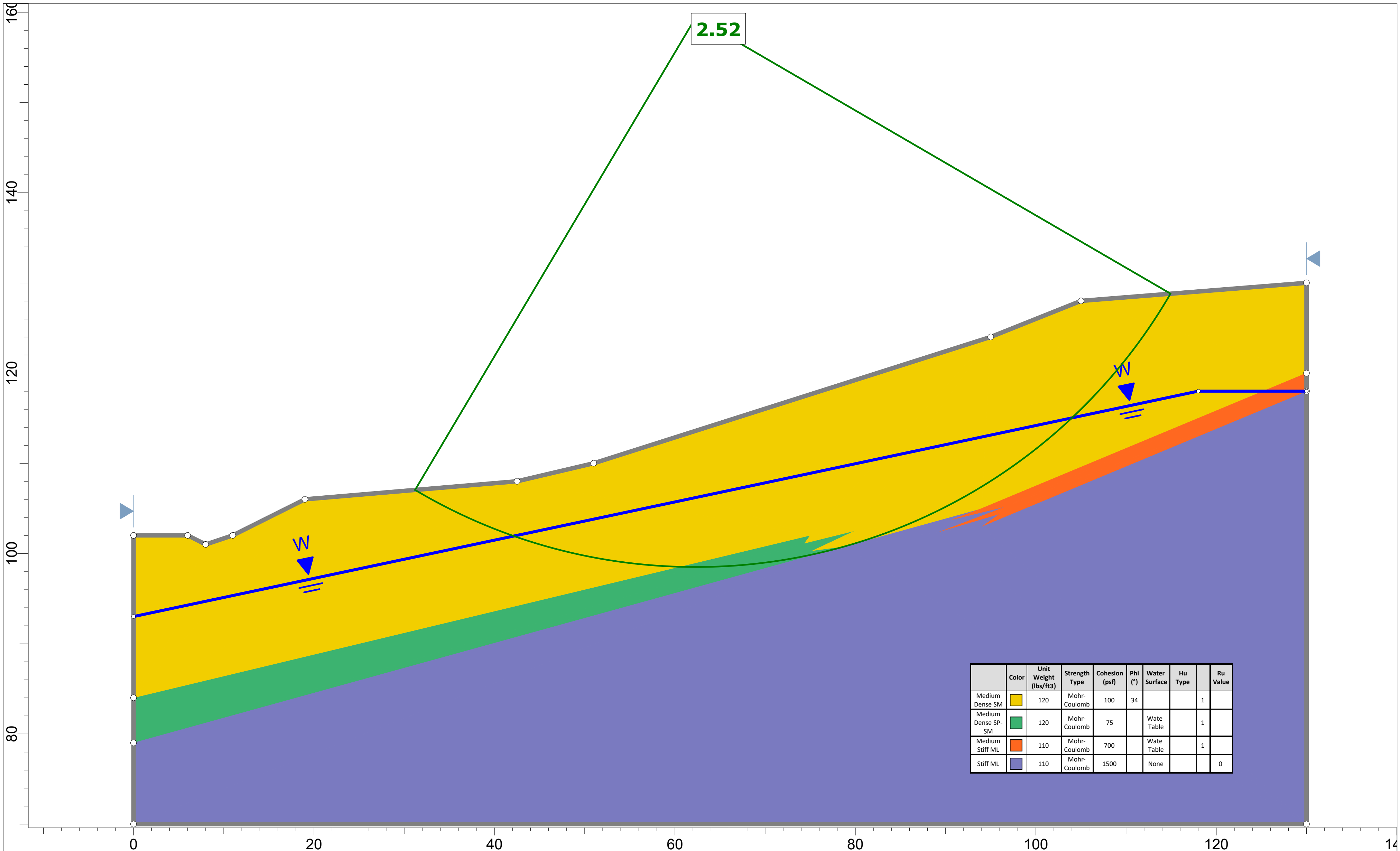
Kirkland, WA

Figure A-4

Tested By: KJ

APPENDIX B

RELATIVE SLOPE STABILITY RESULTS

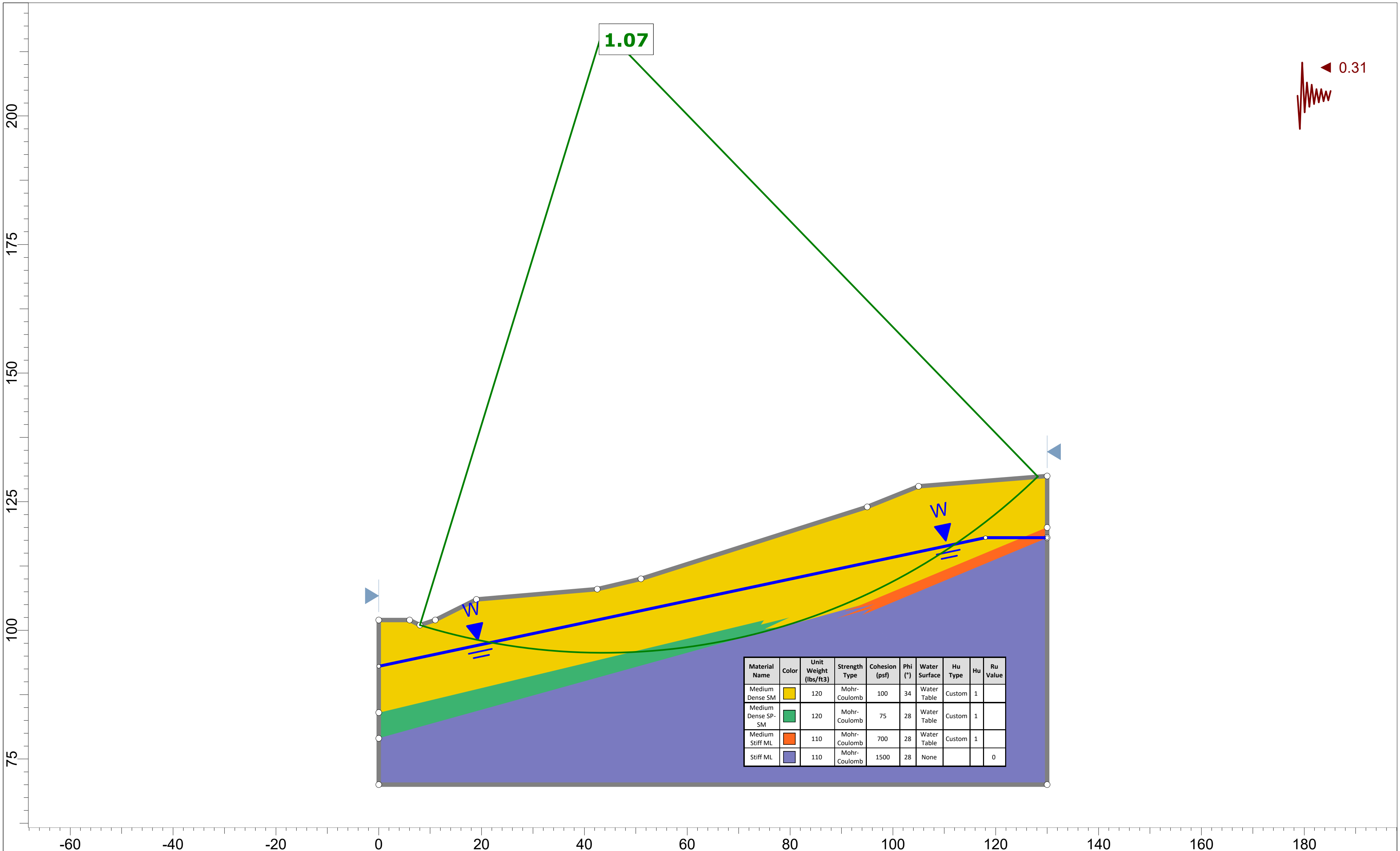


	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface	Hu Type		Ru Value
Medium Dense SM		120	Mohr-Coulomb	100	34			1	
Medium Dense SP-SM		120	Mohr-Coulomb	75		Wate Table		1	
Medium Stiff ML		110	Mohr-Coulomb	700		Wate Table		1	
Stiff ML		110	Mohr-Coulomb	1500		None			0

rocscience

SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Existing Conditions	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Slope Stability rv 10-26-23.slmd

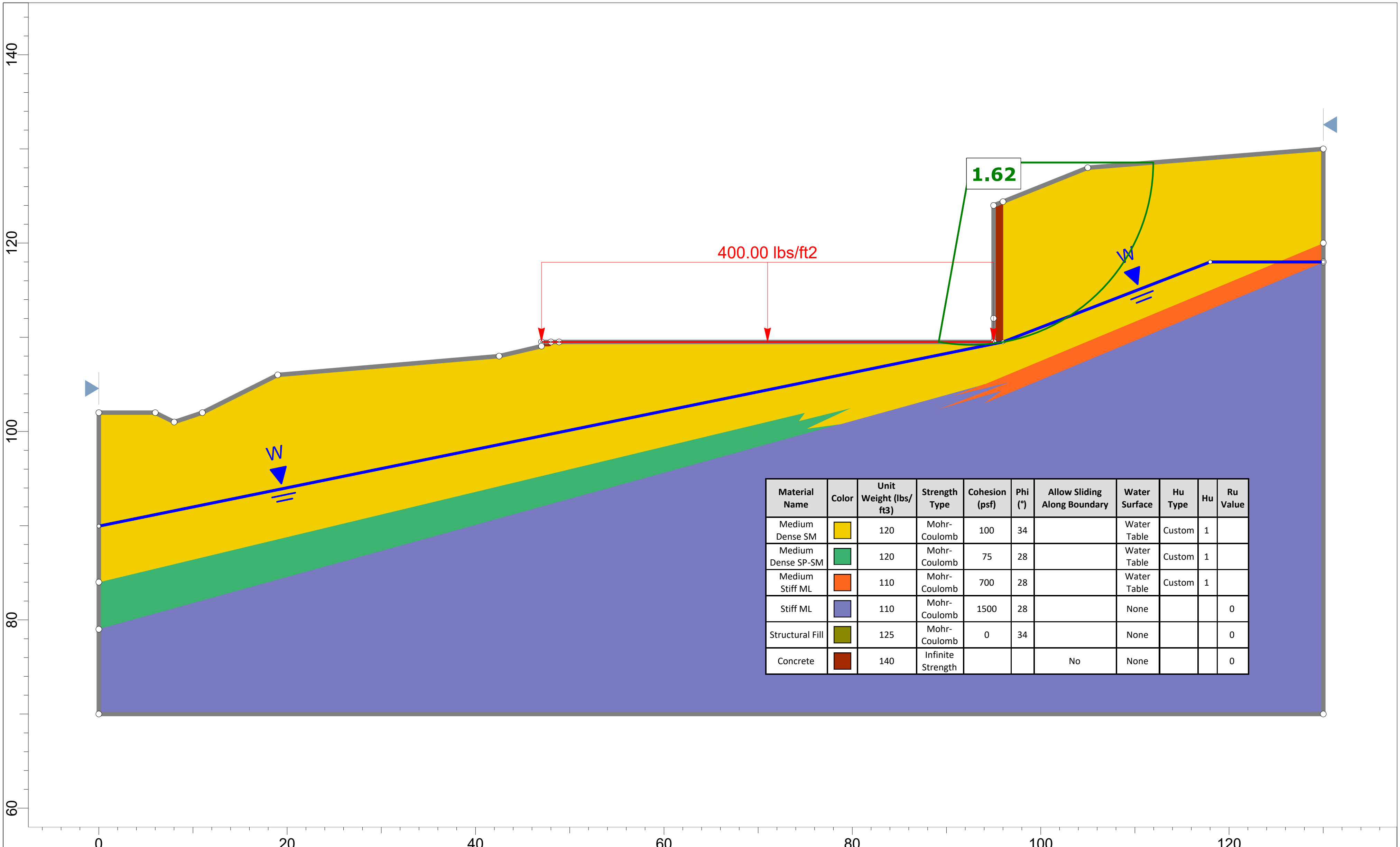


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Water Surface	Hu Type	Hu	Ru Value
Medium Dense SM		120	Mohr-Coulomb	100	34	Water Table	Custom	1	
Medium Dense SP-SM		120	Mohr-Coulomb	75	28	Water Table	Custom	1	
Medium Stiff ML		110	Mohr-Coulomb	700	28	Water Table	Custom	1	
Stiff ML		110	Mohr-Coulomb	1500	28	None			0

rocscience

SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Existing Conditions	*Scenario*	Seismic
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Slope Stability rv 10-26-23.slmd

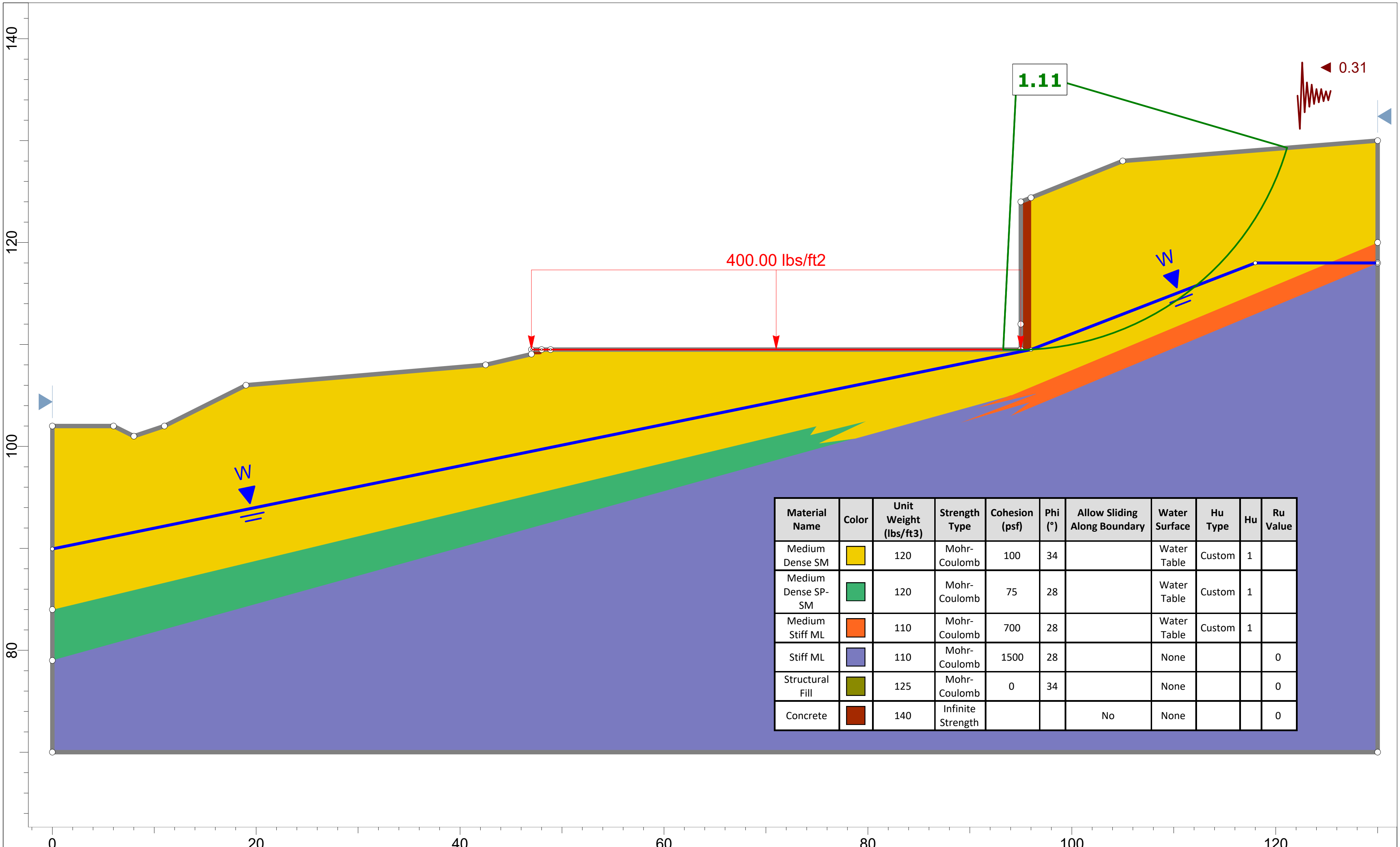


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type	Hu	Ru Value
Medium Dense SM		120	Mohr-Coulomb	100	34		Water Table	Custom	1	
Medium Dense SP-SM		120	Mohr-Coulomb	75	28		Water Table	Custom	1	
Medium Stiff ML		110	Mohr-Coulomb	700	28		Water Table	Custom	1	
Stiff ML		110	Mohr-Coulomb	1500	28		None			0
Structural Fill		125	Mohr-Coulomb	0	34		None			0
Concrete		140	Infinite Strength			No	None			0

rocscience

SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Post Construction	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Slope Stability rv 10-26-23.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type	Hu	Ru Value
Medium Dense SM		120	Mohr-Coulomb	100	34		Water Table	Custom	1	
Medium Dense SP-SM		120	Mohr-Coulomb	75	28		Water Table	Custom	1	
Medium Stiff ML		110	Mohr-Coulomb	700	28		Water Table	Custom	1	
Stiff ML		110	Mohr-Coulomb	1500	28		None			0
Structural Fill		125	Mohr-Coulomb	0	34		None			0
Concrete		140	Infinite Strength			No	None			0

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SLIDEINTERPRET 9.029

Project	Cheshire Short Plat
Group	Post Construction
Scenario	Seismic
Drawn By	C. Decker
Company	Terra Associates, Inc.
Date	October 26, 2023
File Name	Cross Section A-A' Slope Stability rv 10-26-23.slmd

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Cross Section A-A' Slope Stability rv 10-26-23
Cheshire Short Plat
Terra Associates, Inc.
Date Created: October 26, 2023
Software Version: 9.029

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Slide2 Analysis Information

Cross Section A-A' Slope Stability rv 10-26-23

Project Summary

File Name:	Cross Section A-A' Slope Stability rv 10-26-23.slmd
Slide2 Modeler Version:	9.029
Project Title:	Cheshire Short Plat
Analysis:	Cross Section A-A'
Author:	C. Decker
Company:	Terra Associates, Inc.
Date Created:	October 26, 2023

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Existing Conditions	Master Scenario	Bishop Simplified: 2.522100 Janbu Simplified: 2.270230	00h:00m:00.773s
	Seismic	Bishop Simplified: 1.074090 Janbu Simplified: 0.998559	00h:00m:00.707s
Post Construction	Master Scenario	Bishop Simplified: 1.621950 Janbu Simplified: 1.441260	00h:00m:00.308s
	Seismic	Bishop Simplified: 1.112030 Janbu Simplified: 0.847592	00h:00m:00.377s

General Settings

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

Analysis Options

All Open Scenarios

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

Existing Conditions

Surface Type:	Circular
Search Method:	Auto Refine Search
Divisions along slope:	20
Circles per division:	10
Number of iterations:	10
Divisions to use in next iteration:	50%
Composite Surfaces:	Disabled
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Post Construction

Surface Type:	Circular
Search Method:	Auto Refine Search
Divisions along slope:	20
Circles per division:	10
Number of iterations:	10
Divisions to use in next iteration:	50%
Composite Surfaces:	Disabled
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Existing Conditions - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Existing Conditions - Seismic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.31

Post Construction - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Post Construction - Seismic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.31

Loading

Post Construction

Distribution:	Constant
Magnitude [psf]:	400
Orientation:	Normal to boundary

Materials

Medium Dense SM	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	100 psf
Phi	34 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Medium Dense SP-SM	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Cohesion	75 psf
Phi	28 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Medium Stiff ML	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	110 lbs/ft3
Cohesion	700 psf
Phi	28 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Stiff ML	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	110 lbs/ft3
Cohesion	1500 psf
Phi	28 °
Water Surface	Assigned per scenario
Ru Value	0

Structural Fill	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	125 lbs/ft3
Cohesion	0 psf
Phi	34 °
Water Surface	Assigned per scenario
Ru Value	0

Concrete	
Color	
Strength Type	Infinite Strength
Unit Weight	140 lbs/ft3
Allow Sliding Along Boundary	No
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material	Existing Conditions	Seismic	Post Construction	Seismic
Medium Dense SM	✓	✓	✓	✓
Medium Dense SP-SM	✓	✓	✓	✓
Medium Stiff ML	✓	✓	✓	✓
Stiff ML	✓	✓	✓	✓
Structural Fill	✗	✗	✓	✓
Concrete	✗	✗	✓	✓

Global Minimums

Existing Conditions - Master Scenario

Method: bishop simplified

FS	2.522100
Center:	62.288, 159.410
Radius:	60.908
Left Slip Surface Endpoint:	31.193, 107.038
Right Slip Surface Endpoint:	114.943, 128.795
Resisting Moment:	4.51622e+06 lb-ft
Driving Moment:	1.79066e+06 lb-ft
Total Slice Area:	1026.64 ft2
Surface Horizontal Width:	83.75 ft
Surface Average Height:	12.2584 ft

Method: janbu simplified

FS	2.270230
Center:	62.288, 159.410
Radius:	60.908
Left Slip Surface Endpoint:	31.193, 107.038
Right Slip Surface Endpoint:	114.943, 128.795
Resisting Horizontal Force:	65852.6 lb
Driving Horizontal Force:	29007 lb
Total Slice Area:	1026.64 ft2
Surface Horizontal Width:	83.75 ft
Surface Average Height:	12.2584 ft

Existing Conditions - Seismic

Method: bishop simplified

FS	1.074090
Center:	43.706, 217.049
Radius:	121.417
Left Slip Surface Endpoint:	8.002, 101.001
Right Slip Surface Endpoint:	128.201, 129.856
Resisting Moment:	1.18774e+07 lb-ft
Driving Moment:	1.10581e+07 lb-ft
Total Slice Area:	1515.6 ft2
Surface Horizontal Width:	120.198 ft
Surface Average Height:	12.6092 ft

Method: janbu simplified

FS	0.998559
Center:	42.326, 182.980
Radius:	88.827
Left Slip Surface Endpoint:	8.072, 101.024
Right Slip Surface Endpoint:	112.566, 128.605
Resisting Horizontal Force:	76140.7 lb
Driving Horizontal Force:	76250.5 lb
Total Slice Area:	1301.18 ft2
Surface Horizontal Width:	104.493 ft
Surface Average Height:	12.4522 ft

Post Construction - Master Scenario

Method: bishop simplified

FS	1.621950
Center:	92.588, 128.556
Radius:	19.359
Left Slip Surface Endpoint:	89.176, 109.500
Right Slip Surface Endpoint:	111.947, 128.556
Resisting Moment:	421888 lb-ft
Driving Moment:	260112 lb-ft
Total Slice Area:	221.182 ft2
Surface Horizontal Width:	22.7708 ft
Surface Average Height:	9.71343 ft

Method: janbu simplified

FS	1.441260
Center:	92.377, 128.541
Radius:	19.382
Left Slip Surface Endpoint:	88.754, 109.500
Right Slip Surface Endpoint:	111.760, 128.541
Resisting Horizontal Force:	17149.4 lb
Driving Horizontal Force:	11898.9 lb
Total Slice Area:	218.304 ft2
Surface Horizontal Width:	23.0059 ft
Surface Average Height:	9.48904 ft

Post Construction - Seismic

Method: bishop simplified

FS	1.112030
Center:	94.635, 137.078
Radius:	27.612
Left Slip Surface Endpoint:	93.269, 109.500
Right Slip Surface Endpoint:	121.126, 129.290
Resisting Moment:	745723 lb-ft
Driving Moment:	670594 lb-ft
Total Slice Area:	336.072 ft2
Surface Horizontal Width:	27.8575 ft
Surface Average Height:	12.064 ft

Method: janbu simplified

FS	0.847592
Center:	94.619, 128.711
Radius:	19.266
Left Slip Surface Endpoint:	93.167, 109.500
Right Slip Surface Endpoint:	113.885, 128.711
Resisting Horizontal Force:	16328.4 lb
Driving Horizontal Force:	19264.5 lb
Total Slice Area:	253.645 ft2
Surface Horizontal Width:	20.7182 ft
Surface Average Height:	12.2426 ft

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Existing Conditions - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	15128
Number of Invalid Surfaces:	79

Error Codes

Error Code -112 reported for 79 surfaces

Method: janbu simplified

Number of Valid Surfaces:	14977
Number of Invalid Surfaces:	230

Error Codes

Error Code -108 reported for 139 surfaces
Error Code -111 reported for 91 surfaces

Existing Conditions - Seismic

Method: bishop simplified

Number of Valid Surfaces:	13116
Number of Invalid Surfaces:	2

Error Codes

Error Code -108 reported for 2 surfaces

Method: janbu simplified

Number of Valid Surfaces:	12928
Number of Invalid Surfaces:	190

Error Codes

Error Code -108 reported for 43 surfaces
Error Code -111 reported for 18 surfaces
Error Code -112 reported for 129 surfaces

Post Construction - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	1312
Number of Invalid Surfaces:	20

Error Codes

Error Code -112 reported for 20 surfaces

Method: janbu simplified

Number of Valid Surfaces:	1327
Number of Invalid Surfaces:	5

Error Codes

Error Code -108 reported for 2 surfaces
Error Code -111 reported for 1 surface
Error Code -112 reported for 2 surfaces

Post Construction - Seismic

Method: bishop simplified

Number of Valid Surfaces:	2607
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	2570
Number of Invalid Surfaces:	37

Error Codes
Error Code -112 reported for 37 surfaces

Error Code Descriptions

The following errors were encountered during the computation:

-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).

-111 = Safety factor equation did not converge

-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

Slice Data

Existing Conditions - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.5221

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.56467	96.7985	-29.8504	Medium Dense SM	100	34	66.3798	167.417	99.949	0	99.949	61.8553	61.8553
2	1.56467	284.752	-28.167	Medium Dense SM	100	34	103.078	259.972	237.168	0	237.168	181.975	181.975
3	1.56467	461.677	-26.5098	Medium Dense SM	100	34	136.806	345.039	363.285	0	363.285	295.047	295.047
4	1.56467	628.058	-24.8761	Medium Dense SM	100	34	167.803	423.216	479.187	0	479.187	401.381	401.381
5	1.56467	784.323	-23.2638	Medium Dense SM	100	34	196.27	495.012	585.63	0	585.63	501.25	501.25
6	1.56467	930.845	-21.6708	Medium Dense SM	100	34	222.379	560.863	683.258	0	683.258	594.894	594.894
7	1.56467	1067.96	-20.0952	Medium Dense SM	100	34	246.28	621.142	772.627	0	772.627	682.525	682.525
8	1.67141	1297.5	-18.4826	Medium Dense SM	100	34	263.163	663.723	864.233	28.478	835.755	776.269	747.791
9	1.67141	1481.99	-16.8323	Medium Dense SM	100	34	276.759	698.013	970.371	83.7821	886.589	886.642	802.86
10	1.67141	1657.1	-15.1963	Medium Dense SM	100	34	289.5	730.148	1070.06	135.82	934.236	991.42	855.6
11	1.67141	1821.98	-13.5729	Medium Dense SM	100	34	301.237	759.749	1162.79	184.671	978.118	1090.06	905.393
12	1.67141	1976.83	-11.9605	Medium Dense SM	100	34	312.011	786.922	1248.81	230.404	1018.41	1182.72	952.312
13	1.67141	2128.71	-10.3577	Medium Dense SM	100	34	323.013	814.67	1332.62	273.079	1059.54	1273.58	1000.51
14	1.67141	2290.62	-8.76303	Medium Dense SM	100	34	336.39	848.41	1422.31	312.746	1109.56	1370.45	1057.71
15	1.67141	2444.22	-7.17521	Medium Dense SM	100	34	349.037	880.307	1506.3	349.446	1156.85	1462.36	1112.91
16	1.67141	2588.41	-5.5929	Medium Dense SM	100	34	360.774	909.908	1583.95	383.214	1200.74	1548.62	1165.41
17	1.67141	2723.25	-4.01487	Medium Dense SM	100	34	371.624	937.273	1655.38	414.077	1241.31	1629.3	1215.22
18	1.67141	2848.82	-2.43988	Medium Dense SM	100	34	381.607	962.452	1720.69	442.056	1278.64	1704.43	1262.38
19	1.67793	2976.93	-0.863679	Medium Dense SP-SM	75	28	306.244	772.379	1778.78	467.207	1311.58	1774.17	1306.96
20	1.67793	3084.87	0.714937	Medium Dense SP-SM	75	28	313.304	790.183	1834.59	489.526	1345.07	1838.5	1348.97
21	1.67793	3183.49	2.2941	Medium Dense SP-SM	75	28	319.723	806.373	1884.47	508.958	1375.51	1897.28	1388.32
22	1.67793	3272.78	3.875	Medium Dense SP-SM	75	28	325.507	820.961	1928.45	525.498	1402.95	1950.5	1425
23	1.67793	3352.69	5.45887	Medium Dense SP-SM	75	28	330.66	833.958	1966.53	539.131	1427.39	1998.13	1458.99
24	1.67793	3423.17	7.04694	Medium Dense SP-SM	75	28	335.184	845.368	1998.69	549.84	1448.85	2040.13	1490.29
25	1.67793	3484.11	8.64047	Medium Dense SP-SM	75	28	339.08	855.193	2024.92	557.596	1467.33	2076.45	1518.85

26	1.67793	3535.42	10.2408	Medium Dense SP-SM	75	28	342.345	863.429	2045.18	562.365	1482.82	2107.03	1544.67
27	1.67793	3576.96	11.8492	Medium Dense SP-SM	75	28	344.978	870.068	2059.41	564.106	1495.31	2131.79	1567.69
28	1.67793	3608.56	13.4672	Medium Dense SP-SM	75	28	346.973	875.1	2067.54	562.769	1504.77	2150.63	1587.86
29	2.42295	5244.67	15.4612	Medium Dense SP-SM	75	28	348.453	878.834	2068.22	556.43	1511.79	2164.6	1608.17
30	1.73405	3764.5	17.4989	Medium Dense SM	100	34	437.366	1103.08	2033.07	545.942	1487.13	2170.96	1625.02
31	1.73405	3759.54	19.2179	Medium Dense SM	100	34	436.279	1100.34	2016.02	532.95	1483.07	2168.1	1635.15
32	1.73405	3742.37	20.9551	Medium Dense SM	100	34	434.281	1095.3	1991.89	516.296	1475.59	2158.2	1641.91
33	1.73405	3712.57	22.7127	Medium Dense SM	100	34	431.346	1087.9	1960.47	495.855	1464.62	2141.02	1645.17
34	1.73405	3669.67	24.4932	Medium Dense SM	100	34	427.452	1078.08	1921.54	471.486	1450.06	2116.28	1644.8
35	1.73405	3613.12	26.2993	Medium Dense SM	100	34	422.572	1065.77	1874.83	443.025	1431.81	2083.68	1640.65
36	1.73405	3542.29	28.1341	Medium Dense SM	100	34	416.673	1050.89	1820.04	410.282	1409.75	2042.84	1632.56
37	1.73405	3456.46	30.0008	Medium Dense SM	100	34	409.718	1033.35	1756.79	373.04	1383.75	1993.35	1620.31
38	1.73405	3355.36	31.9034	Medium Dense SM	100	34	401.737	1013.22	1684.95	331.047	1353.9	1935.04	1604
39	1.73405	3256.85	33.8463	Medium Dense SM	100	34	395.141	996.584	1613.25	284.01	1329.24	1878.24	1594.23
40	1.73405	3149.91	35.8344	Medium Dense SM	100	34	388.506	979.85	1536.01	231.584	1304.43	1816.57	1584.98
41	1.73405	3023.64	37.8738	Medium Dense SM	100	34	380.492	959.639	1447.83	173.361	1274.47	1743.75	1570.39
42	1.73405	2876.42	39.9715	Medium Dense SM	100	34	371.008	935.72	1347.86	108.856	1239.01	1658.86	1550
43	1.73405	2706.29	42.1357	Medium Dense SM	100	34	359.943	907.813	1235.11	37.483	1197.63	1560.75	1523.27
44	1.56182	2265.11	44.2614	Medium Dense SM	100	34	339.147	855.362	1119.87	0	1119.87	1450.38	1450.38
45	1.56182	2011.28	46.3515	Medium Dense SM	100	34	299.971	756.557	973.384	0	973.384	1287.85	1287.85
46	1.56182	1715.69	48.5251	Medium Dense SM	100	34	256.002	645.662	808.977	0	808.977	1098.59	1098.59
47	1.56182	1394.1	50.7967	Medium Dense SM	100	34	209.648	528.754	635.654	0	635.654	892.678	892.678
48	1.56182	1042.56	53.1849	Medium Dense SM	100	34	160.751	405.429	452.818	0	452.818	667.58	667.58
49	1.56182	655.766	55.7151	Medium Dense SM	100	34	109.138	275.258	259.831	0	259.831	419.912	419.912
50	1.56182	226.4	58.4223	Medium Dense SM	100	34	54.6466	137.824	56.0769	0	56.0769	144.981	144.981

Global Minimum Query (janbu simplified) - Safety Factor: 2.27023

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.56467	96.7985	-29.8504	Medium Dense SM	100	34	75.2608	170.859	105.053	0	105.053	61.8629	61.8629
2	1.56467	284.752	-28.167	Medium Dense SM	100	34	116.681	264.892	244.463	0	244.463	181.986	181.986
3	1.56467	461.677	-26.5098	Medium Dense SM	100	34	154.629	351.044	372.188	0	372.188	295.06	295.06
4	1.56467	628.058	-24.8761	Medium Dense SM	100	34	189.4	429.981	489.217	0	489.217	401.396	401.396
5	1.56467	784.323	-23.2638	Medium Dense SM	100	34	221.239	502.264	596.381	0	596.381	501.266	501.266
6	1.56467	930.845	-21.6708	Medium Dense SM	100	34	250.36	568.374	694.395	0	694.395	594.912	594.912
7	1.56467	1067.96	-20.0952	Medium Dense SM	100	34	276.941	628.72	783.857	0	783.857	682.537	682.537
8	1.67141	1297.5	-18.4826	Medium Dense SM	100	34	295.584	671.044	875.088	28.478	846.61	776.287	747.809
9	1.67141	1481.99	-16.8323	Medium Dense SM	100	34	310.502	704.91	980.599	83.7821	896.817	886.662	802.88
10	1.67141	1657.1	-15.1963	Medium Dense SM	100	34	324.443	736.561	1079.56	135.82	943.739	991.433	855.613
11	1.67141	1821.98	-13.5729	Medium Dense SM	100	34	337.244	765.622	1171.5	184.671	986.825	1090.08	905.406
12	1.67141	1976.83	-11.9605	Medium Dense SM	100	34	348.956	792.21	1256.65	230.404	1026.24	1182.73	952.323
13	1.67141	2128.71	-10.3577	Medium Dense SM	100	34	360.911	819.35	1339.56	273.079	1066.48	1273.6	1000.52
14	1.67141	2290.62	-8.76303	Medium Dense SM	100	34	375.506	852.484	1428.35	312.746	1115.6	1370.47	1057.72
15	1.67141	2444.22	-7.17521	Medium Dense SM	100	34	389.268	883.729	1511.37	349.446	1161.93	1462.37	1112.92
16	1.67141	2588.41	-5.5929	Medium Dense SM	100	34	402.002	912.636	1588	383.214	1204.78	1548.63	1165.42
17	1.67141	2723.25	-4.01487	Medium Dense SM	100	34	413.733	939.27	1658.34	414.077	1244.27	1629.31	1215.23
18	1.67141	2848.82	-2.43988	Medium Dense SM	100	34	424.489	963.687	1722.53	442.056	1280.47	1704.44	1262.38
19	1.67793	2976.93	-0.863679	Medium Dense SP-SM	75	28	340.341	772.653	1779.3	467.207	1312.1	1774.17	1306.97
20	1.67793	3084.87	0.714937	Medium Dense SP-SM	75	28	347.962	789.953	1834.16	489.526	1344.63	1838.5	1348.97
21	1.67793	3183.49	2.2941	Medium Dense SP-SM	75	28	354.864	805.623	1883.06	508.958	1374.1	1897.28	1388.32
22	1.67793	3272.78	3.875	Medium Dense SP-SM	75	28	361.055	819.679	1926.03	525.498	1400.54	1950.49	1424.99
23	1.67793	3352.69	5.45887	Medium Dense SP-SM	75	28	366.541	832.132	1963.09	539.131	1423.96	1998.12	1458.99
24	1.67793	3423.17	7.04694	Medium Dense SP-SM	75	28	371.323	842.989	1994.22	549.84	1444.38	2040.12	1490.28
25	1.67793	3484.11	8.64047	Medium Dense SP-SM	75	28	375.404	852.253	2019.4	557.596	1461.8	2076.44	1518.85
26	1.67793	3535.42	10.2408	Medium Dense SP-SM	75	28	378.782	859.922	2038.59	562.365	1476.22	2107.02	1544.66
27	1.67793	3576.96	11.8492	Medium Dense SP-SM	75	28	381.455	865.991	2051.74	564.106	1487.64	2131.77	1567.67
28	1.67793	3608.56	13.4672	Medium Dense SP-SM	75	28	383.42	870.451	2058.79	562.769	1496.03	2150.61	1587.84

29	2.42295	5244.67	15.4612	Medium Dense SP-SM	75	28	384.756	873.485	2058.16	556.43	1501.73	2164.58	1608.15
30	1.73405	3764.5	17.4989	Medium Dense SM	100	34	481.726	1093.63	2019.06	545.942	1473.11	2170.93	1624.99
31	1.73405	3759.54	19.2179	Medium Dense SM	100	34	480.133	1090.01	2000.7	532.95	1467.75	2168.07	1635.12
32	1.73405	3742.37	20.9551	Medium Dense SM	100	34	477.531	1084.11	1975.29	516.296	1459	2158.17	1641.87
33	1.73405	3712.57	22.7127	Medium Dense SM	100	34	473.899	1075.86	1942.63	495.855	1446.77	2140.99	1645.13
34	1.73405	3669.67	24.4932	Medium Dense SM	100	34	469.211	1065.22	1902.48	471.486	1431	2116.25	1644.76
35	1.73405	3613.12	26.2993	Medium Dense SM	100	34	463.441	1052.12	1854.59	443.025	1411.57	2083.63	1640.61
36	1.73405	3542.29	28.1341	Medium Dense SM	100	34	456.552	1036.48	1798.67	410.282	1388.38	2042.79	1632.51
37	1.73405	3456.46	30.0008	Medium Dense SM	100	34	448.506	1018.21	1734.34	373.04	1361.3	1993.3	1620.26
38	1.73405	3355.36	31.9034	Medium Dense SM	100	34	439.337	997.397	1661.49	331.047	1330.44	1934.99	1603.94
39	1.73405	3256.85	33.8463	Medium Dense SM	100	34	431.683	980.019	1588.69	284.01	1304.68	1878.18	1594.17
40	1.73405	3149.91	35.8344	Medium Dense SM	100	34	423.98	962.533	1510.34	231.584	1278.76	1816.51	1584.93
41	1.73405	3023.64	37.8738	Medium Dense SM	100	34	414.768	941.619	1421.11	173.361	1247.75	1743.7	1570.34
42	1.73405	2876.42	39.9715	Medium Dense SM	100	34	403.948	917.054	1320.19	108.856	1211.33	1658.8	1549.94
43	1.73405	2706.29	42.1357	Medium Dense SM	100	34	391.402	888.572	1206.59	37.483	1169.11	1560.69	1523.21
44	1.56182	2265.11	44.2614	Medium Dense SM	100	34	368.309	836.147	1091.38	0	1091.38	1450.32	1450.32
45	1.56182	2011.28	46.3515	Medium Dense SM	100	34	325.333	738.581	946.735	0	946.735	1287.79	1287.79
46	1.56182	1715.69	48.5251	Medium Dense SM	100	34	277.246	629.412	784.886	0	784.886	1098.53	1098.53
47	1.56182	1394.1	50.7967	Medium Dense SM	100	34	226.686	514.63	614.715	0	614.715	892.627	892.627
48	1.56182	1042.56	53.1849	Medium Dense SM	100	34	173.508	393.903	435.729	0	435.729	667.535	667.535
49	1.56182	655.766	55.7151	Medium Dense SM	100	34	117.565	266.899	247.439	0	247.439	419.88	419.88
50	1.56182	226.4	58.4223	Medium Dense SM	100	34	58.7303	133.331	49.4155	0	49.4155	144.963	144.963

Existing Conditions - Seismic

Global Minimum Query (bishop simplified) - Safety Factor: 1.07409

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	2.30233	200.432	-16.5345	Medium Dense SM	100	34	181.631	195.089	140.974	0	140.974	87.0539	87.0539
2	2.30233	620.329	-15.4043	Medium Dense SM	100	34	317.181	340.681	356.824	0	356.824	269.432	269.432
3	2.30233	1102.12	-14.2803	Medium Dense SM	100	34	468.615	503.335	597.969	0	597.969	478.693	478.693
4	2.30233	1575.49	-13.1618	Medium Dense SM	100	34	612.82	658.224	827.599	0	827.599	684.294	684.294
5	2.30233	2029.21	-12.0485	Medium Dense SM	100	34	746.665	801.985	1040.74	0	1040.74	881.367	881.367
6	2.30233	2292.33	-10.9397	Medium Dense SM	100	34	817.591	878.166	1153.68	0	1153.68	995.647	995.647
7	2.46573	2643.87	-9.796	Medium Dense SM	100	34	838.824	900.972	1217.07	29.5804	1187.49	1072.24	1042.66
8	2.46573	2824.23	-8.61716	Medium Dense SM	100	34	837.363	899.403	1272.28	87.1192	1185.16	1145.39	1058.27
9	2.46573	2989.25	-7.44199	Medium Dense SM	100	34	834.014	895.806	1321.25	141.424	1179.83	1212.31	1070.89
10	2.46573	3139.07	-6.26997	Medium Dense SM	100	34	828.857	890.267	1364.14	192.523	1171.62	1273.08	1080.55
11	2.46573	3273.8	-5.10057	Medium Dense SM	100	34	821.966	882.865	1401.08	240.44	1160.64	1327.72	1087.28
12	2.46573	3393.54	-3.9333	Medium Dense SM	100	34	813.404	873.669	1432.21	285.194	1147.01	1376.28	1091.08
13	2.46573	3498.34	-2.76767	Medium Dense SM	100	34	803.233	862.744	1457.61	326.8	1130.81	1418.78	1091.98
14	2.46573	3588.28	-1.60318	Medium Dense SM	100	34	791.506	850.149	1477.41	365.27	1112.14	1455.26	1089.99
15	2.46573	3683.87	-0.439347	Medium Dense SM	100	34	783.519	841.57	1500.03	400.611	1099.42	1494.03	1093.42
16	2.46573	3845.45	0.724299	Medium Dense SM	100	34	794.363	853.217	1549.51	432.826	1116.69	1559.56	1126.73
17	2.46573	4000.48	1.88824	Medium Dense SM	100	34	805.214	864.872	1595.89	461.915	1133.97	1622.43	1160.52
18	2.53129	4253.57	3.06847	Medium Dense SP-SM	75	28	642.951	690.587	1645.93	488.177	1157.75	1680.39	1192.22
19	2.53129	4427.82	4.26551	Medium Dense SP-SM	75	28	658.233	707.001	1700.14	511.517	1188.62	1749.23	1237.71
20	2.53129	4607.01	5.46442	Medium Dense SP-SM	75	28	675.673	725.734	1755.39	531.536	1223.85	1820.02	1288.49
21	2.53129	4769.96	6.66574	Medium Dense SP-SM	75	28	691.287	742.504	1803.61	548.216	1255.39	1884.39	1336.18
22	2.53129	4916.53	7.87001	Medium Dense SP-SM	75	28	705.104	757.345	1844.84	561.534	1283.3	1942.3	1380.77
23	2.53129	5046.61	9.07778	Medium Dense SP-SM	75	28	717.153	770.287	1879.11	571.463	1307.65	1993.69	1422.23
24	2.53129	5160.04	10.2896	Medium Dense SP-SM	75	28	727.46	781.358	1906.44	577.972	1328.47	2038.51	1460.53
25	2.53129	5256.64	11.5062	Medium Dense SP-SM	75	28	736.046	790.58	1926.83	581.022	1345.81	2076.67	1495.64
26	2.53129	5336.19	12.728	Medium Dense SP-SM	75	28	742.929	797.973	1940.28	580.571	1359.71	2108.09	1527.52
27	2.53129	5398.46	13.9557	Medium Dense SP-SM	75	28	748.124	803.553	1946.78	576.57	1370.21	2132.7	1556.13

28	3.63557	7825	15.4612	Medium Dense SP-SM	75	28	751.99	807.705	1944.35	566.334	1378.02	2152.35	1586.01
29	0.763978	1652.01	16.5393	Medium Dense SP-SM	75	28	753.76	809.606	1938.56	556.963	1381.6	2162.4	1605.43
30	2.39243	5177.86	17.3186	Medium Dense SM	100	34	926.92	995.595	1875.25	547.474	1327.77	2164.28	1616.81
31	2.39243	5174.38	18.5052	Medium Dense SM	100	34	923.79	992.234	1853.64	530.844	1322.79	2162.83	1631.98
32	2.39243	5155.01	19.7001	Medium Dense SM	100	34	918.874	986.953	1825.72	510.763	1314.96	2154.73	1643.97
33	2.39243	5119.42	20.9039	Medium Dense SM	100	34	912.179	979.762	1791.46	487.156	1304.3	2139.86	1652.7
34	2.39243	5067.22	22.1176	Medium Dense SM	100	34	903.712	970.668	1750.76	459.939	1290.82	2118.04	1658.1
35	2.39243	4998	23.3417	Medium Dense SM	100	34	893.477	959.675	1703.54	429.02	1274.52	2089.1	1660.08
36	2.39243	4912.05	24.5773	Medium Dense SM	100	34	881.635	946.955	1649.96	394.299	1255.66	2053.18	1658.88
37	2.39243	4844.01	25.8251	Medium Dense SM	100	34	875.248	940.095	1601.16	355.664	1245.49	2024.74	1669.08
38	2.39243	4776.91	27.0863	Medium Dense SM	100	34	870.773	935.289	1551.36	312.994	1238.37	1996.7	1683.7
39	2.39243	4690.62	28.3618	Medium Dense SM	100	34	864.224	928.254	1494.09	266.152	1227.94	1960.63	1694.48
40	2.39243	4584.46	29.6529	Medium Dense SM	100	34	855.584	918.974	1429.17	214.991	1214.18	1916.26	1701.26
41	2.39243	4350.64	30.9607	Medium Dense SM	100	34	824.434	885.516	1323.92	159.344	1164.57	1818.52	1659.18
42	2.39243	3982.58	32.2868	Medium Dense SM	100	34	770.554	827.644	1177.8	99.0279	1078.78	1664.68	1565.65
43	2.39243	3592.09	33.6325	Medium Dense SM	100	34	715.743	768.772	1025.33	33.8387	991.495	1501.46	1467.62
44	2.29355	3055.45	34.9709	Medium Dense SM	100	34	645.967	693.827	880.385	0	880.385	1332.21	1332.21
45	2.29355	2653.31	36.3028	Medium Dense SM	100	34	560.851	602.404	744.844	0	744.844	1156.87	1156.87
46	2.29355	2228.37	37.6579	Medium Dense SM	100	34	473.686	508.781	606.042	0	606.042	971.592	971.592
47	2.29355	1779.36	39.0382	Medium Dense SM	100	34	384.506	412.994	464.031	0	464.031	775.822	775.822
48	2.29355	1304.88	40.4461	Medium Dense SM	100	34	293.35	315.084	318.875	0	318.875	568.942	568.942
49	2.29355	803.289	41.8841	Medium Dense SM	100	34	200.269	215.107	170.653	0	170.653	350.244	350.244
50	2.29355	272.753	43.3552	Medium Dense SM	100	34	105.331	113.135	19.474	0	19.474	118.925	118.925

Global Minimum Query (janbu simplified) - Safety Factor: 0.998559

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	2.28778	230.843	-21.8877	Medium Dense SM	100	34	230.862	230.529	193.517	0	193.517	100.768	100.768
2	2.28778	709.718	-20.3057	Medium Dense SM	100	34	412.696	412.101	462.708	0	462.708	310	310
3	2.28778	1242.4	-18.7398	Medium Dense SM	100	34	605.536	604.663	748.195	0	748.195	542.764	542.764
4	2.28778	1760.11	-17.1883	Medium Dense SM	100	34	783.249	782.12	1011.29	0	1011.29	769.006	769.006
5	2.28778	2252.76	-15.6496	Medium Dense SM	100	34	943.582	942.222	1248.64	0	1248.64	984.31	984.31
6	2.07234	2302.79	-14.1939	Medium Dense SM	100	34	1001.26	999.818	1364.08	30.0507	1334.03	1110.84	1080.79
7	2.07234	2470.46	-12.8191	Medium Dense SM	100	34	998.919	997.48	1419.08	88.5135	1330.57	1191.78	1103.27
8	2.07234	2625.15	-11.4516	Medium Dense SM	100	34	994.64	993.207	1467.95	143.721	1324.23	1266.47	1122.75
9	2.07234	2767.06	-10.0908	Medium Dense SM	100	34	988.525	987.101	1510.9	195.722	1315.18	1334.98	1139.26
10	2.07234	2896.37	-8.73572	Medium Dense SM	100	34	980.666	979.253	1548.11	244.561	1303.55	1397.42	1152.86
11	2.07234	3013.23	-7.38553	Medium Dense SM	100	34	971.142	969.743	1579.72	290.274	1289.45	1453.84	1163.56
12	2.07234	3117.75	-6.03946	Medium Dense SM	100	34	960.027	958.644	1605.88	332.892	1272.99	1504.31	1171.42
13	2.07234	3210.04	-4.69673	Medium Dense SM	100	34	947.384	946.019	1626.72	372.442	1254.28	1548.88	1176.44
14	2.07234	3290.18	-3.35658	Medium Dense SM	100	34	933.271	931.926	1642.32	408.943	1233.38	1587.59	1178.64
15	2.07234	3358.24	-2.01827	Medium Dense SM	100	34	917.74	916.418	1652.8	442.411	1210.39	1620.46	1178.05
16	2.07234	3414.24	-0.681059	Medium Dense SM	100	34	900.838	899.54	1658.22	472.855	1185.37	1647.51	1174.66
17	2.08073	3504.38	0.658487	Medium Dense SP-SM	75	28	701.212	700.202	1676.16	500.33	1175.83	1684.22	1183.89
18	2.08073	3614.23	2.0011	Medium Dense SP-SM	75	28	707.422	706.403	1712.32	524.824	1187.5	1737.04	1212.22
19	2.08073	3712.21	3.34482	Medium Dense SP-SM	75	28	712.092	711.066	1742.54	546.269	1196.27	1784.15	1237.88
20	2.08073	3797.96	4.69038	Medium Dense SP-SM	75	28	715.175	714.144	1766.71	564.657	1202.06	1825.39	1260.73
21	2.08073	3885.96	6.03854	Medium Dense SP-SM	75	28	720.23	719.192	1791.52	579.971	1211.55	1867.71	1287.74
22	2.08073	3989.42	7.39006	Medium Dense SP-SM	75	28	730.34	729.288	1822.73	592.191	1230.54	1917.45	1325.26
23	2.08073	4081.07	8.74574	Medium Dense SP-SM	75	28	738.878	737.813	1847.86	601.292	1246.57	1961.53	1360.24
24	2.08073	4160.11	10.1064	Medium Dense SP-SM	75	28	745.703	744.628	1866.63	607.242	1259.39	1999.54	1392.3
25	2.08073	4226.39	11.4728	Medium Dense SP-SM	75	28	750.841	749.759	1879.04	610.003	1269.04	2031.43	1421.42
26	2.08073	4279.74	12.8459	Medium Dense SP-SM	75	28	754.311	753.224	1885.09	609.531	1275.55	2057.1	1447.56
27	2.08073	4319.95	14.2265	Medium Dense SP-SM	75	28	756.131	755.041	1884.75	605.777	1278.97	2076.45	1470.67
28	2.08073	4346.79	15.6156	Medium Dense SP-SM	75	28	756.311	755.221	1877.99	598.681	1279.31	2089.38	1490.7

29	2.08073	4360.01	17.0142	Medium Dense SP-SM	75	28	754.862	753.774	1864.77	588.179	1276.59	2095.76	1507.58
30	2.08073	4359.29	18.4233	Medium Dense SP-SM	75	28	751.789	750.706	1845.01	574.197	1270.82	2095.44	1521.24
31	2.08073	4344.32	19.8441	Medium Dense SP-SM	75	28	747.096	746.019	1818.65	556.651	1262	2088.27	1531.62
32	2.08073	4314.72	21.2777	Medium Dense SP-SM	75	28	740.778	739.711	1785.59	535.449	1250.14	2074.07	1538.62
33	2.08073	4270.06	22.7255	Medium Dense SP-SM	75	28	732.834	731.778	1745.7	510.485	1235.22	2052.64	1542.15
34	2.08073	4209.89	24.1887	Medium Dense SP-SM	75	28	723.255	722.213	1698.87	481.643	1217.23	2023.74	1542.1
35	2.02607	4026.27	25.6493	Medium Dense SM	100	34	860.351	859.111	1574.7	449.275	1125.43	1987.82	1538.55
36	2.02607	3938.66	27.1083	Medium Dense SM	100	34	842.991	841.776	1513.07	413.347	1099.73	1944.61	1531.26
37	2.02607	3835.1	28.5865	Medium Dense SM	100	34	823.788	822.601	1444.63	373.328	1071.3	1893.52	1520.19
38	2.02607	3714.93	30.0859	Medium Dense SM	100	34	802.731	801.574	1369.17	329.044	1040.13	1834.23	1505.19
39	2.02607	3577.4	31.6084	Medium Dense SM	100	34	779.798	778.674	1286.48	280.305	1006.18	1766.37	1486.07
40	2.02607	3421.66	33.1562	Medium Dense SM	100	34	754.969	753.881	1196.31	226.892	969.419	1689.52	1462.63
41	2.02607	3246.74	34.7319	Medium Dense SM	100	34	728.214	727.165	1098.37	168.557	929.813	1603.21	1434.65
42	2.02607	3056.16	36.3382	Medium Dense SM	100	34	700.53	699.521	993.844	105.02	888.824	1509.15	1404.13
43	2.02607	2874.25	37.9784	Medium Dense SM	100	34	677.409	676.433	890.554	35.9556	854.598	1419.39	1383.44
44	2.08156	2744.95	39.6798	Medium Dense SM	100	34	635.361	634.445	792.348	0	792.348	1319.46	1319.46
45	2.08156	2507.66	41.4478	Medium Dense SM	100	34	572.74	571.915	699.642	0	699.642	1205.43	1205.43
46	2.08156	2241.37	43.2654	Medium Dense SM	100	34	506.151	505.422	601.062	0	601.062	1077.46	1077.46
47	2.08156	1909.92	45.1391	Medium Dense SM	100	34	429.091	428.473	486.982	0	486.982	918.163	918.163
48	2.08156	1421.85	47.0767	Medium Dense SM	100	34	325.482	325.013	333.596	0	333.596	683.571	683.571
49	2.08156	883.913	49.0877	Medium Dense SM	100	34	217.608	217.294	173.896	0	173.896	425.001	425.001
50	2.08156	302.359	51.1839	Medium Dense SM	100	34	107.843	107.687	11.3968	0	11.3968	145.449	145.449

Post Construction - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.62195

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	0.454925	2.07102	-9.46885	Medium Dense SM	100	34	246.988	400.602	445.661	0	445.661	404.468	404.468
2	0.454925	5.91069	-8.10629	Medium Dense SM	100	34	248.066	402.35	448.252	0	448.252	412.919	412.919
3	0.454925	9.14867	-6.74834	Medium Dense SM	100	34	248.569	403.166	449.462	0	449.462	420.049	420.049
4	0.454925	11.7905	-5.39419	Medium Dense SM	100	34	248.516	403.081	449.335	0	449.335	425.869	425.869
5	0.454925	13.8407	-4.04305	Medium Dense SM	100	34	247.924	402.12	447.913	0	447.913	430.389	430.389
6	0.454925	15.3027	-2.69416	Medium Dense SM	100	34	246.808	400.31	445.227	0	445.227	433.613	433.613
7	0.454925	16.179	-1.34677	Medium Dense SM	100	34	245.181	397.672	441.316	0	441.316	435.552	435.552
8	0.454925	16.4709	-0.000125449	Medium Dense SM	100	34	243.056	394.225	436.206	0	436.206	436.206	436.206
9	0.454925	16.1791	1.34652	Medium Dense SM	100	34	240.444	389.988	429.924	0	429.924	435.575	435.575
10	0.454925	15.303	2.69391	Medium Dense SM	100	34	237.353	384.975	422.492	0	422.492	433.66	433.66
11	0.454925	13.8411	4.0428	Medium Dense SM	100	34	233.795	379.203	413.935	0	413.935	430.459	430.459
12	0.454925	11.791	5.39393	Medium Dense SM	100	34	229.774	372.682	404.267	0	404.267	425.962	425.962
13	0.454925	192.382	6.74809	Medium Dense SM	100	34	353.537	573.42	701.875	0	701.875	743.707	743.707
14	0.454925	937.5	8.10604	Medium Dense SM	100	34	867.388	1406.86	1937.49	0	1937.49	2061.04	2061.04
15	0.454925	945.25	9.46859	Medium Dense SM	100	34	865.816	1404.31	1933.71	0	1933.71	2078.11	2078.11
16	0.458328	822.12	10.8417	Medium Dense SM	100	34	747.064	1211.7	1650.96	2.78604	1648.17	1794.03	1791.24
17	0.458328	827.058	12.2263	Medium Dense SM	100	34	742.027	1203.53	1644.05	7.99867	1636.05	1804.84	1796.84
18	0.458328	831.357	13.6182	Medium Dense SM	100	34	736.718	1194.92	1635.78	12.4856	1623.29	1814.25	1801.77
19	0.458328	835.005	15.0184	Medium Dense SM	100	34	731.132	1185.86	1626.09	16.2347	1609.86	1822.25	1806.02
20	0.458328	837.99	16.4278	Medium Dense SM	100	34	725.263	1176.34	1614.97	19.2318	1595.73	1828.8	1809.57
21	0.458328	840.299	17.8475	Medium Dense SM	100	34	719.085	1166.32	1602.35	21.4612	1580.88	1833.88	1812.41
22	0.458328	841.915	19.2786	Medium Dense SM	100	34	712.599	1155.8	1588.19	22.9051	1565.29	1837.44	1814.54
23	0.458328	842.822	20.7223	Medium Dense SM	100	34	705.786	1144.75	1572.45	23.5434	1548.9	1839.45	1815.91
24	0.458328	842.998	22.18	Medium Dense SM	100	34	698.628	1133.14	1555.05	23.3537	1531.7	1839.87	1816.52
25	0.458328	842.422	23.6529	Medium Dense SM	100	34	691.119	1120.96	1535.95	22.3105	1513.64	1838.65	1816.34
26	0.458328	841.07	25.1427	Medium Dense SM	100	34	683.239	1108.18	1515.07	20.3857	1494.68	1835.74	1815.36
27	0.458328	838.912	26.6508	Medium Dense SM	100	34	674.96	1094.75	1492.33	17.5473	1474.78	1831.07	1813.52
28	0.458328	835.917	28.1792	Medium Dense SM	100	34	666.267	1080.65	1467.64	13.7597	1453.88	1824.57	1810.81
29	0.458328	832.05	29.7298	Medium Dense SM	100	34	657.135	1065.84	1440.9	8.98239	1431.92	1816.18	1807.19
30	0.458328	827.271	31.3047	Medium Dense SM	100	34	647.536	1050.27	1412	3.16989	1408.83	1805.78	1802.61
31	0.453599	813.09	32.898	Medium Dense SM	100	34	636.285	1032.02	1381.78	0	1381.78	1793.38	1793.38
32	0.453599	806.492	34.5121	Medium Dense SM	100	34	623.215	1010.82	1350.35	0	1350.35	1778.87	1778.87

33	0.453599	798.859	36.1582	Medium Dense SM	100	34	609.276	988.215	1316.83	0		1316.83	1762.07	1762.07
34	0.453599	790.124	37.8396	Medium Dense SM	100	34	594.421	964.121	1281.11	0		1281.11	1742.85	1742.85
35	0.453599	779.82	39.5604	Medium Dense SM	100	34	578.325	938.015	1242.41	0		1242.41	1720.17	1720.17
36	0.453599	762.595	41.3249	Medium Dense SM	100	34	557.403	904.08	1192.1	0		1192.1	1682.22	1682.22
37	0.453599	742.147	43.1388	Medium Dense SM	100	34	534.285	866.584	1136.51	0		1136.51	1637.16	1637.16
38	0.453599	720.205	45.0082	Medium Dense SM	100	34	510.162	827.458	1078.5	0		1078.5	1588.81	1588.81
39	0.453599	696.621	46.9409	Medium Dense SM	100	34	484.947	786.559	1017.87	0		1017.87	1536.83	1536.83
40	0.453599	671.21	48.9462	Medium Dense SM	100	34	458.532	743.716	954.348	0		954.348	1480.83	1480.83
41	0.453599	643.746	51.0358	Medium Dense SM	100	34	430.788	698.717	887.635	0		887.635	1420.29	1420.29
42	0.453599	613.94	53.2246	Medium Dense SM	100	34	401.556	651.304	817.342	0		817.342	1354.59	1354.59
43	0.453599	581.415	55.5321	Medium Dense SM	100	34	370.63	601.144	742.976	0		742.976	1282.89	1282.89
44	0.453599	545.662	57.9845	Medium Dense SM	100	34	337.744	547.804	663.896	0		663.896	1204.07	1204.07
45	0.453599	505.967	60.6191	Medium Dense SM	100	34	302.533	490.694	579.228	0		579.228	1116.56	1116.56
46	0.453599	461.264	63.4915	Medium Dense SM	100	34	264.48	428.974	487.723	0		487.723	1017.99	1017.99
47	0.453599	409.834	66.6924	Medium Dense SM	100	34	222.787	361.349	387.466	0		387.466	904.581	904.581
48	0.453599	348.505	70.3895	Medium Dense SM	100	34	176.074	285.584	275.14	0		275.14	769.329	769.329
49	0.453599	269.819	74.9812	Medium Dense SM	100	34	121.339	196.806	143.521	0		143.521	595.772	595.772
50	0.453599	112.397	83.7862	Medium Dense SM	100	34	34.2295	55.5186	-65.9464	0		-65.9464	248.437	248.437

Global Minimum Query (janbu simplified) - Safety Factor: 1.44126

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	0.452168	2.18415	-10.0955	Medium Dense SM	100	34	282.41	407.026	455.185	0	455.185	404.904	404.904
2	0.452168	6.25432	-8.74045	Medium Dense SM	100	34	283.484	408.574	457.48	0	457.48	413.896	413.896
3	0.452168	9.7315	-7.39033	Medium Dense SM	100	34	283.915	409.195	458.4	0	458.4	421.575	421.575
4	0.452168	12.6216	-6.04433	Medium Dense SM	100	34	283.727	408.925	458.001	0	458.001	427.958	427.958
5	0.452168	14.9295	-4.70167	Medium Dense SM	100	34	282.942	407.793	456.323	0	456.323	433.052	433.052
6	0.452168	16.6589	-3.3616	Medium Dense SM	100	34	281.577	405.826	453.406	0	453.406	436.867	436.867
7	0.452168	17.8129	-2.02336	Medium Dense SM	100	34	279.65	403.049	449.29	0	449.29	439.41	439.41
8	0.452168	18.3932	-0.686234	Medium Dense SM	100	34	277.177	399.484	444.002	0	444.002	440.683	440.683
9	0.452168	18.4009	0.650523	Medium Dense SM	100	34	274.17	395.15	437.577	0	437.577	440.69	440.69
10	0.452168	17.8358	1.98763	Medium Dense SM	100	34	270.642	390.065	430.039	0	430.039	439.432	439.432
11	0.452168	16.6972	3.32583	Medium Dense SM	100	34	266.604	384.246	421.411	0	421.411	436.904	436.904
12	0.452168	14.9832	4.66584	Medium Dense SM	100	34	262.067	377.706	411.717	0	411.717	433.105	433.105
13	0.452168	12.6908	6.00842	Medium Dense SM	100	34	257.039	370.46	400.974	0	400.974	428.028	428.028
14	0.452168	181.352	7.35432	Medium Dense SM	100	34	385.993	556.316	676.516	0	676.516	726.335	726.335
15	0.452168	932.117	8.70432	Medium Dense SM	100	34	964.899	1390.67	1913.5	0	1913.5	2061.23	2061.23
16	0.452168	939.513	10.0592	Medium Dense SM	100	34	961.825	1386.24	1906.93	0	1906.93	2077.55	2077.55
17	0.465017	837.247	11.4392	Medium Dense SM	100	34	831.918	1199.01	1631.89	2.54023	1629.35	1800.22	1797.68
18	0.465017	838.687	12.8455	Medium Dense SM	100	34	822.079	1184.83	1615.83	7.50723	1608.33	1803.29	1795.78
19	0.465017	842.811	14.2596	Medium Dense SM	100	34	815.03	1174.67	1604.99	11.7227	1593.27	1812.13	1800.41
20	0.465017	846.25	15.6827	Medium Dense SM	100	34	807.682	1164.08	1592.73	15.1731	1577.56	1819.5	1804.32
21	0.465017	848.991	17.1158	Medium Dense SM	100	34	800.008	1153.02	1579.01	17.8431	1561.17	1825.36	1807.52
22	0.465017	851.019	18.56	Medium Dense SM	100	34	792.001	1141.48	1563.77	19.715	1544.06	1829.7	1809.98
23	0.465017	852.316	20.0165	Medium Dense SM	100	34	783.648	1129.44	1546.98	20.7694	1526.21	1832.46	1811.69
24	0.465017	852.862	21.4867	Medium Dense SM	100	34	774.926	1116.87	1528.56	20.9839	1507.57	1833.6	1812.62
25	0.465017	852.634	22.9719	Medium Dense SM	100	34	765.823	1103.75	1508.45	20.3338	1488.12	1833.08	1812.75
26	0.465017	851.608	24.4736	Medium Dense SM	100	34	756.316	1090.05	1486.6	18.791	1467.81	1830.85	1812.06
27	0.465017	849.756	25.9935	Medium Dense SM	100	34	746.384	1075.73	1462.91	16.324	1446.58	1826.84	1810.51
28	0.465017	847.046	27.5333	Medium Dense SM	100	34	736.003	1060.77	1437.3	12.8976	1424.4	1820.98	1808.08
29	0.465017	843.442	29.095	Medium Dense SM	100	34	725.145	1045.12	1409.67	8.47164	1401.2	1813.2	1804.73
30	0.465017	838.904	30.6808	Medium Dense SM	100	34	713.782	1028.75	1379.92	3.00116	1376.92	1803.41	1800.41
31	0.463047	829.869	32.2896	Medium Dense SM	100	34	700.625	1009.78	1348.81	0	1348.81	1791.55	1791.55
32	0.463047	823.379	33.924	Medium Dense SM	100	34	685.486	987.964	1316.46	0	1316.46	1777.51	1777.51
33	0.463047	815.811	35.5905	Medium Dense SM	100	34	669.39	964.765	1282.07	0	1282.07	1761.14	1761.14

34	0.463047	807.098	37.2924	Medium Dense SM	100	34	652.286	940.114	1245.52	0	1245.52	1742.29	1742.29
35	0.463047	797.162	39.0339	Medium Dense SM	100	34	634.115	913.925	1206.69	0	1206.69	1720.81	1720.81
36	0.463047	784.436	40.8194	Medium Dense SM	100	34	613.746	884.567	1163.17	0	1163.17	1693.3	1693.3
37	0.463047	764.192	42.6544	Medium Dense SM	100	34	587.897	847.313	1107.94	0	1107.94	1649.57	1649.57
38	0.463047	741.736	44.5454	Medium Dense SM	100	34	560.496	807.82	1049.39	0	1049.39	1601.06	1601.06
39	0.463047	717.576	46.5	Medium Dense SM	100	34	531.924	766.641	988.336	0	988.336	1548.87	1548.87
40	0.463047	691.522	48.5278	Medium Dense SM	100	34	502.071	723.615	924.548	0	924.548	1492.59	1492.59
41	0.463047	663.341	50.6405	Medium Dense SM	100	34	470.801	678.547	857.732	0	857.732	1431.72	1431.72
42	0.463047	632.733	52.8532	Medium Dense SM	100	34	437.947	631.195	787.528	0	787.528	1365.62	1365.62
43	0.463047	599.31	55.1855	Medium Dense SM	100	34	403.293	581.25	713.483	0	713.483	1293.43	1293.43
44	0.463047	562.547	57.664	Medium Dense SM	100	34	366.563	528.313	635	0	635	1214.04	1214.04
45	0.463047	521.705	60.3262	Medium Dense SM	100	34	327.38	471.84	551.275	0	551.275	1125.84	1125.84
46	0.463047	475.686	63.2284	Medium Dense SM	100	34	285.207	411.058	461.163	0	461.163	1026.47	1026.47
47	0.463047	422.712	66.462	Medium Dense SM	100	34	239.225	344.786	362.91	0	362.91	912.094	912.094
48	0.463047	359.51	70.1965	Medium Dense SM	100	34	188.02	270.986	253.497	0	253.497	775.643	775.643
49	0.463047	278.381	74.8339	Medium Dense SM	100	34	128.521	185.232	126.361	0	126.361	600.505	600.505
50	0.463047	115.975	83.7254	Medium Dense SM	100	34	35.4576	51.1036	-72.492	0	-72.492	249.991	249.991

Post Construction - Seismic

Global Minimum Query (bishop simplified) - Safety Factor: 1.11203

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	0.546209	0.709425	-2.26951	Medium Dense SM	100	34	341.543	379.806	414.829	0	414.829	401.293	401.293
2	0.546209	1.77367	-1.13554	Medium Dense SM	100	34	338.587	376.519	409.957	0	409.957	403.245	403.245
3	0.546209	2.12912	-0.00201688	Medium Dense SM	100	34	334.92	372.441	403.909	0	403.909	403.898	403.898
4	0.546209	928.738	1.13151	Medium Dense SM	100	34	1148.57	1277.24	1745.34	0	1745.34	1768.02	1768.02
5	0.546209	1131.75	2.26548	Medium Dense SM	100	34	1315.17	1462.51	2020.01	0	2020.01	2072.04	2072.04
6	0.557523	1003.21	3.4121	Medium Dense SM	100	34	1136.81	1264.17	1731.65	5.68835	1725.96	1799.43	1793.74
7	0.557523	1015.52	4.57187	Medium Dense SM	100	34	1129.85	1256.43	1731.18	16.7017	1714.48	1821.53	1804.82
8	0.557523	1027.08	5.73352	Medium Dense SM	100	34	1122.61	1248.38	1729.55	27.0056	1702.54	1842.26	1815.26
9	0.557523	1037.87	6.89754	Medium Dense SM	100	34	1115.09	1240.01	1726.74	36.5962	1690.14	1861.63	1825.03
10	0.557523	1047.89	8.06443	Medium Dense SM	100	34	1107.27	1231.32	1722.72	45.4687	1677.26	1879.61	1834.14
11	0.557523	1057.14	9.23469	Medium Dense SM	100	34	1099.16	1222.3	1717.5	53.6174	1663.88	1896.2	1842.59
12	0.557523	1065.6	10.4089	Medium Dense SM	100	34	1090.73	1212.93	1711.03	61.0353	1649.99	1911.39	1850.35
13	0.557523	1073.27	11.5875	Medium Dense SM	100	34	1082	1203.22	1703.3	67.7147	1635.58	1925.16	1857.44
14	0.557523	1080.14	12.7711	Medium Dense SM	100	34	1072.94	1193.14	1694.29	73.6467	1620.64	1937.49	1863.84
15	0.557523	1086.19	13.9602	Medium Dense SM	100	34	1063.54	1182.69	1683.97	78.8211	1605.15	1948.36	1869.54
16	0.557523	1091.43	15.1556	Medium Dense SM	100	34	1053.79	1171.85	1672.32	83.2268	1589.09	1957.75	1874.52
17	0.557523	1095.82	16.3577	Medium Dense SM	100	34	1043.7	1160.63	1659.3	86.851	1572.45	1965.64	1878.79
18	0.557523	1099.36	17.5673	Medium Dense SM	100	34	1033.25	1149	1644.88	89.6797	1555.2	1972	1882.32
19	0.557523	1102.03	18.7851	Medium Dense SM	100	34	1022.41	1136.95	1629.04	91.6975	1537.34	1976.8	1885.1
20	0.557523	1103.82	20.0117	Medium Dense SM	100	34	1011.19	1124.47	1611.73	92.8871	1518.85	1980.01	1887.12
21	0.557523	1104.69	21.2479	Medium Dense SM	100	34	999.568	1111.55	1592.92	93.2296	1499.69	1981.59	1888.36
22	0.557523	1100.25	22.4947	Medium Dense SM	100	34	983.725	1093.93	1566.27	92.704	1473.56	1973.63	1880.93
23	0.557523	1087.43	23.7527	Medium Dense SM	100	34	961.166	1068.85	1527.66	91.2873	1436.37	1950.64	1859.35
24	0.557523	1073.5	25.0231	Medium Dense SM	100	34	938.316	1043.44	1487.65	88.954	1398.7	1925.66	1836.71
25	0.557523	1058.56	26.3067	Medium Dense SM	100	34	915.268	1017.8	1446.38	85.676	1360.7	1898.87	1813.19
26	0.557523	1042.57	27.6048	Medium Dense SM	100	34	892.004	991.935	1403.77	81.4223	1322.35	1870.19	1788.77
27	0.557523	1025.5	28.9184	Medium Dense SM	100	34	868.51	965.809	1359.77	76.1584	1283.61	1839.58	1763.42
28	0.557523	1007.3	30.2488	Medium Dense SM	100	34	844.768	939.407	1314.32	69.8463	1244.47	1806.95	1737.1
29	0.557523	987.94	31.5976	Medium Dense SM	100	34	820.759	912.709	1267.33	62.4435	1204.89	1772.22	1709.78
30	0.557523	967.356	32.9662	Medium Dense SM	100	34	796.466	885.694	1218.74	53.9029	1164.84	1735.3	1681.4
31	0.557523	945.495	34.3563	Medium Dense SM	100	34	771.867	858.339	1168.45	44.1717	1124.28	1696.1	1651.93
32	0.557523	922.294	35.77	Medium Dense SM	100	34	746.938	830.618	1116.38	33.1905	1083.19	1654.49	1621.3

33	0.557523	897.682	37.2092	Medium Dense SM	100	34	721.657	802.504	1062.4	20.8926	1041.5	1610.35	1589.45
34	0.557523	871.576	38.6764	Medium Dense SM	100	34	695.995	773.967	1006.4	7.20216	999.197	1563.53	1556.32
35	0.559892	847.408	40.1777	Medium Dense SM	100	34	666.655	741.34	950.826	0	950.826	1513.75	1513.75
36	0.559892	817.768	41.7163	Medium Dense SM	100	34	633.459	704.425	896.097	0	896.097	1460.81	1460.81
37	0.559892	786.29	43.2926	Medium Dense SM	100	34	599.378	666.526	839.91	0	839.91	1404.59	1404.59
38	0.559892	752.829	44.911	Medium Dense SM	100	34	564.374	627.601	782.201	0	782.201	1344.82	1344.82
39	0.559892	717.215	46.5763	Medium Dense SM	100	34	528.407	587.604	722.901	0	722.901	1281.21	1281.21
40	0.559892	679.244	48.2946	Medium Dense SM	100	34	491.426	546.48	661.934	0	661.934	1213.39	1213.39
41	0.559892	638.674	50.0729	Medium Dense SM	100	34	453.381	504.173	599.212	0	599.212	1140.93	1140.93
42	0.559892	595.205	51.9199	Medium Dense SM	100	34	414.215	460.619	534.64	0	534.64	1063.29	1063.29
43	0.559892	548.467	53.8465	Medium Dense SM	100	34	373.862	415.746	468.113	0	468.113	979.802	979.802
44	0.559892	497.988	55.8665	Medium Dense SM	100	34	332.254	369.476	399.516	0	399.516	889.634	889.634
45	0.559892	443.154	57.998	Medium Dense SM	100	34	289.315	321.727	328.723	0	328.723	791.687	791.687
46	0.559892	383.136	60.2655	Medium Dense SM	100	34	244.966	272.41	255.608	0	255.608	684.479	684.479
47	0.559892	316.77	62.7035	Medium Dense SM	100	34	199.136	221.445	180.05	0	180.05	565.926	565.926
48	0.559892	242.319	65.364	Medium Dense SM	100	34	151.777	168.78	101.971	0	101.971	432.93	432.93
49	0.559892	156.976	68.331	Medium Dense SM	100	34	102.923	114.454	21.4289	0	21.4289	280.473	280.473
50	0.559892	55.5706	71.7608	Medium Dense SM	100	34	52.8647	58.7871	-61.101	0	-61.101	99.3174	99.3174

Global Minimum Query (janbu simplified) - Safety Factor: 0.847592

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	0.399081	0.62286	-3.72929	Medium Dense SM	100	34	461.569	391.222	431.755	0	431.755	401.67	401.67
2	0.399081	1.66972	-2.54056	Medium Dense SM	100	34	455.779	386.315	424.481	0	424.481	404.258	404.258
3	0.399081	2.31941	-1.35293	Medium Dense SM	100	34	449.4	380.908	416.464	0	416.464	405.85	405.85
4	0.399081	2.57276	-0.165878	Medium Dense SM	100	34	442.452	375.019	407.733	0	407.733	406.452	406.452
5	0.399081	332.104	1.0211	Medium Dense SM	100	34	955.686	810.032	1052.67	0	1052.67	1069.7	1069.7
6	0.399081	820.106	2.20852	Medium Dense SM	100	34	1700.94	1441.7	1989.16	0	1989.16	2054.75	2054.75
7	0.399081	828.089	3.39689	Medium Dense SM	100	34	1689.17	1431.73	1974.37	0	1974.37	2074.63	2074.63
8	0.422809	770.864	4.62216	Medium Dense SM	100	34	1471.04	1246.84	1703.84	3.5755	1700.26	1822.76	1819.19
9	0.422809	765.618	5.885	Medium Dense SM	100	34	1432.08	1213.82	1662.64	11.3428	1651.3	1810.26	1798.91
10	0.422809	771.748	7.15071	Medium Dense SM	100	34	1414.1	1198.58	1647.24	18.5217	1628.72	1824.64	1806.12
11	0.422809	777.395	8.41995	Medium Dense SM	100	34	1396.13	1183.35	1631.24	25.1076	1606.13	1837.9	1812.79
12	0.422809	782.556	9.69336	Medium Dense SM	100	34	1378.13	1168.09	1614.6	31.0951	1583.5	1850	1818.9
13	0.422809	787.225	10.9716	Medium Dense SM	100	34	1360.05	1152.77	1597.27	36.4779	1560.8	1860.94	1824.46
14	0.422809	791.397	12.2555	Medium Dense SM	100	34	1341.9	1137.38	1579.22	41.2486	1537.97	1870.71	1829.46
15	0.422809	795.064	13.5456	Medium Dense SM	100	34	1323.61	1121.88	1560.4	45.3985	1515	1879.28	1833.88
16	0.422809	798.218	14.8427	Medium Dense SM	100	34	1305.18	1106.26	1540.76	48.918	1491.84	1886.64	1837.73
17	0.422809	800.851	16.1477	Medium Dense SM	100	34	1286.58	1090.49	1520.26	51.7962	1468.47	1892.78	1840.98
18	0.422809	802.952	17.4614	Medium Dense SM	100	34	1267.78	1074.56	1498.86	54.0207	1444.84	1897.65	1843.63
19	0.422809	804.511	18.7846	Medium Dense SM	100	34	1248.75	1058.43	1476.51	55.5779	1420.93	1901.24	1845.66
20	0.422809	805.514	20.1182	Medium Dense SM	100	34	1229.47	1042.09	1453.16	56.4524	1396.71	1903.52	1847.07
21	0.422809	805.949	21.4634	Medium Dense SM	100	34	1209.91	1025.51	1428.76	56.6271	1372.13	1904.46	1847.83
22	0.422809	805.799	22.8211	Medium Dense SM	100	34	1190.05	1008.67	1403.25	56.0831	1347.17	1904.02	1847.93
23	0.422809	805.048	24.1925	Medium Dense SM	100	34	1169.85	991.554	1376.58	54.7991	1321.78	1902.15	1847.35
24	0.422809	803.675	25.5788	Medium Dense SM	100	34	1149.28	974.123	1348.69	52.7518	1295.94	1898.81	1846.06
25	0.422809	801.661	26.9814	Medium Dense SM	100	34	1128.32	956.357	1319.52	49.9149	1269.6	1893.96	1844.05
26	0.422809	798.981	28.4017	Medium Dense SM	100	34	1106.93	938.226	1288.98	46.2591	1242.72	1887.54	1841.28
27	0.422809	795.609	29.8413	Medium Dense SM	100	34	1085.08	919.701	1257.01	41.7519	1215.26	1879.48	1837.72
28	0.422809	791.515	31.302	Medium Dense SM	100	34	1062.72	900.749	1223.52	36.3566	1187.16	1869.71	1833.35
29	0.422809	785.347	32.7857	Medium Dense SM	100	34	1038.17	879.946	1186.35	30.0321	1156.32	1855.04	1825.01
30	0.422809	773.335	34.2946	Medium Dense SM	100	34	1006.95	853.479	1139.81	22.732	1117.08	1826.56	1803.83
31	0.422809	759.992	35.8311	Medium Dense SM	100	34	974.8	826.233	1091.09	14.4036	1076.69	1794.94	1780.54
32	0.422809	745.763	37.3981	Medium Dense SM	100	34	942.302	798.688	1040.84	4.98708	1035.85	1761.23	1756.24
33	0.408577	706.263	38.971	Medium Dense SM	100	34	907.361	769.072	991.941	0	991.941	1725.95	1725.95

34	0.408577	691.193	40.5521	Medium Dense SM	100	34	869.817	737.25	944.762	0	944.762	1689.02	1689.02
35	0.408577	675.152	42.1715	Medium Dense SM	100	34	831.461	704.74	896.563	0	896.563	1649.73	1649.73
36	0.408577	658.065	43.8335	Medium Dense SM	100	34	792.234	671.491	847.27	0	847.27	1607.89	1607.89
37	0.408577	639.844	45.5433	Medium Dense SM	100	34	752.068	637.447	796.798	0	796.798	1563.27	1563.27
38	0.408577	620.381	47.3068	Medium Dense SM	100	34	710.888	602.543	745.051	0	745.051	1515.62	1515.62
39	0.408577	599.551	49.1314	Medium Dense SM	100	34	668.604	566.703	691.915	0	691.915	1464.63	1464.63
40	0.408577	577.198	51.026	Medium Dense SM	100	34	625.107	529.836	637.258	0	637.258	1409.92	1409.92
41	0.408577	553.127	53.0016	Medium Dense SM	100	34	580.273	491.835	580.919	0	580.919	1351.01	1351.01
42	0.408577	527.094	55.0724	Medium Dense SM	100	34	533.948	452.57	522.706	0	522.706	1287.32	1287.32
43	0.408577	498.778	57.257	Medium Dense SM	100	34	485.934	411.874	462.373	0	462.373	1218.04	1218.04
44	0.408577	467.746	59.5803	Medium Dense SM	100	34	435.985	369.537	399.606	0	399.606	1142.14	1142.14
45	0.408577	433.391	62.0779	Medium Dense SM	100	34	383.767	325.278	333.988	0	333.988	1058.12	1058.12
46	0.408577	394.806	64.8026	Medium Dense SM	100	34	328.812	278.698	264.931	0	264.931	963.775	963.775
47	0.408577	350.527	67.8408	Medium Dense SM	100	34	270.413	229.2	191.547	0	191.547	855.526	855.526
48	0.408577	297.855	71.3523	Medium Dense SM	100	34	207.363	175.759	112.318	0	112.318	726.791	726.791
49	0.408577	230.437	75.7159	Medium Dense SM	100	34	137.013	116.131	23.9149	0	23.9149	562.059	562.059
50	0.408577	95.9492	84.0895	Medium Dense SM	100	34	34.9828	29.6511	-104.297	0	-104.297	233.619	233.619

Interslice Data

Existing Conditions - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.5221

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	31.193	107.038	0	0	0
2	32.7577	106.14	193.583	0	0
3	34.3223	105.302	553.526	0	0
4	35.887	104.522	1051.05	0	0
5	37.4517	103.796	1661.19	0	0
6	39.0163	103.123	2362.16	0	0
7	40.581	102.502	3134.82	0	0
8	42.1457	101.929	3962.35	0	0
9	43.8171	101.37	4884.92	0	0
10	45.4885	100.865	5838.06	0	0
11	47.1599	100.411	6807.61	0	0
12	48.8313	100.007	7780.19	0	0
13	50.5027	99.6532	8743.71	0	0
14	52.1742	99.3478	9690.56	0	0
15	53.8456	99.0901	10619.1	0	0
16	55.517	98.8797	11519.3	0	0
17	57.1884	98.716	12381.4	0	0
18	58.8598	98.5987	13196.6	0	0
19	60.5312	98.5275	13956.8	0	0
20	62.2092	98.5022	14515.5	0	0
21	63.8871	98.5231	15002.7	0	0
22	65.565	98.5904	15412.3	0	0
23	67.2429	98.704	15739.2	0	0
24	68.9209	98.8644	15978.5	0	0
25	70.5988	99.0718	16126.2	0	0
26	72.2767	99.3268	16178.8	0	0
27	73.9546	99.6299	16133.1	0	0
28	75.6326	99.9819	15986.8	0	0
29	77.3105	100.384	15738	0	0
30	79.7334	101.054	15196	0	0
31	81.4675	101.601	14842.8	0	0
32	83.2016	102.205	14380.5	0	0
33	84.9356	102.869	13810.6	0	0
34	86.6697	103.595	13135.4	0	0
35	88.4037	104.385	12358.4	0	0
36	90.1378	105.242	11484.3	0	0
37	91.8718	106.169	10519	0	0
38	93.6059	107.17	9470.45	0	0
39	95.3399	108.25	8348.01	0	0
40	97.074	109.413	7157.01	0	0
41	98.808	110.665	5907.1	0	0
42	100.542	112.014	4614.11	0	0
43	102.276	113.467	3298.08	0	0
44	104.01	115.036	1984.43	0	0
45	105.572	116.558	809.466	0	0
46	107.134	118.195	-315.879	0	0
47	108.696	119.962	-1345.52	0	0
48	110.258	121.877	-2235.29	0	0
49	111.819	123.964	-2929.13	0	0
50	113.381	126.255	-3353.95	0	0
51	114.943	128.795	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 2.27023

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	31.193	107.038	0	0	0
2	32.7577	106.14	212.082	0	0
3	34.3223	105.302	599.453	0	0
4	35.887	104.522	1131.86	0	0
5	37.4517	103.796	1783.12	0	0
6	39.0163	103.123	2530.44	0	0
7	40.581	102.502	3353.88	0	0
8	42.1457	101.929	4235.89	0	0
9	43.8171	101.37	5218.8	0	0
10	45.4885	100.865	6233.6	0	0
11	47.1599	100.411	7265.97	0	0
12	48.8313	100.007	8302.34	0	0
13	50.5027	99.6532	9330.5	0	0
14	52.1742	99.3478	10342.9	0	0
15	53.8456	99.0901	11338.5	0	0
16	55.517	98.8797	12307.1	0	0
17	57.1884	98.716	13238.9	0	0
18	58.8598	98.5987	14125	0	0
19	60.5312	98.5275	14957.1	0	0
20	62.2092	98.5022	15573.1	0	0
21	63.8871	98.5231	16118.6	0	0
22	65.565	98.5904	16587.4	0	0
23	67.2429	98.704	16974.3	0	0
24	68.9209	98.8644	17274.5	0	0
25	70.5988	99.0718	17483.9	0	0
26	72.2767	99.3268	17598.9	0	0
27	73.9546	99.6299	17616.4	0	0
28	75.6326	99.9819	17534.1	0	0
29	77.3105	100.384	17350.2	0	0
30	79.7334	101.054	16903.1	0	0
31	81.4675	101.601	16634.5	0	0
32	83.2016	102.205	16257.7	0	0
33	84.9356	102.869	15774	0	0
34	86.6697	103.595	15185.7	0	0
35	88.4037	104.385	14496.3	0	0
36	90.1378	105.242	13710.5	0	0
37	91.8718	106.169	12834.4	0	0
38	93.6059	107.17	11875.7	0	0
39	95.3399	108.25	10843.9	0	0
40	97.074	109.413	9744.97	0	0
41	98.808	110.665	8588.85	0	0
42	100.542	112.014	7391.46	0	0
43	102.276	113.467	6172.9	0	0
44	104.01	115.036	4958.68	0	0
45	105.572	116.558	3872.73	0	0
46	107.134	118.195	2830.72	0	0
47	108.696	119.962	1876.91	0	0
48	110.258	121.877	1053.91	0	0
49	111.819	123.964	415.693	0	0
50	113.381	126.255	32.4554	0	0
51	114.943	128.795	0	0	0

Existing Conditions - Seismic

Global Minimum Query (bishop simplified) - Safety Factor: 1.07409

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	8.00226	101.001	0	0	0
2	10.3046	100.317	452.382	0	0
3	12.6069	99.6829	1216.66	0	0
4	14.9093	99.0969	2304.29	0	0
5	17.2116	98.5585	3672.33	0	0
6	19.5139	98.0671	5273.71	0	0
7	21.8163	97.6221	6958.79	0	0
8	24.282	97.1964	8725.58	0	0
9	26.7477	96.8227	10390.1	0	0
10	29.2134	96.5006	11945.4	0	0
11	31.6792	96.2297	13385.5	0	0
12	34.1449	96.0096	14705.6	0	0
13	36.6106	95.8401	15902	0	0
14	39.0764	95.7209	16971.8	0	0
15	41.5421	95.6519	17912.9	0	0
16	44.0078	95.633	18731.2	0	0
17	46.4736	95.6641	19449.4	0	0
18	48.9393	95.7454	20064.9	0	0
19	51.4706	95.8811	20150.4	0	0
20	54.0019	96.0699	20122.9	0	0
21	56.5332	96.3121	19979.9	0	0
22	59.0645	96.6079	19717.5	0	0
23	61.5958	96.9578	19332.6	0	0
24	64.1271	97.3622	18823.4	0	0
25	66.6583	97.8218	18189.1	0	0
26	69.1896	98.3371	17429.8	0	0
27	71.7209	98.9088	16546.7	0	0
28	74.2522	99.5379	15542.2	0	0
29	77.8878	100.543	13895.1	0	0
30	78.6518	100.77	13519	0	0
31	81.0442	101.516	12732.4	0	0
32	83.4366	102.317	11854.1	0	0
33	85.8291	103.174	10890.3	0	0
34	88.2215	104.087	9848.6	0	0
35	90.6139	105.06	8737.46	0	0
36	93.0063	106.092	7566.84	0	0
37	95.3988	107.186	6347.9	0	0
38	97.7912	108.344	5086.27	0	0
39	100.184	109.568	3790.46	0	0
40	102.576	110.859	2474.24	0	0
41	104.968	112.221	1153.36	0	0
42	107.361	113.657	-123.208	0	0
43	109.753	115.168	-1294.82	0	0
44	112.146	116.76	-2327.86	0	0
45	114.439	118.364	-3205.88	0	0
46	116.733	120.049	-3997.14	0	0
47	119.026	121.819	-4674.23	0	0
48	121.32	123.679	-5206.99	0	0
49	123.614	125.634	-5562.16	0	0
50	125.907	127.691	-5702.86	0	0
51	128.201	129.856	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 0.998559

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	8.07223	101.024	0	0	0
2	10.36	100.105	633.701	0	0
3	12.6478	99.2584	1748.18	0	0
4	14.9356	98.4823	3327.08	0	0
5	17.2234	97.7746	5286.43	0	0
6	19.5111	97.1337	7543.92	0	0
7	21.5835	96.6096	9617	0	0
8	23.6558	96.138	11587.4	0	0
9	25.7282	95.7182	13448.2	0	0
10	27.8005	95.3494	15193.2	0	0
11	29.8728	95.031	16817.6	0	0
12	31.9452	94.7624	18317.5	0	0
13	34.0175	94.5431	19689.7	0	0
14	36.0899	94.3729	20932.1	0	0
15	38.1622	94.2513	22043	0	0
16	40.2345	94.1783	23021.8	0	0
17	42.3069	94.1536	23868.3	0	0
18	44.3876	94.1776	24198.8	0	0
19	46.4683	94.2503	24423.8	0	0
20	48.5491	94.3719	24540.6	0	0
21	50.6298	94.5426	24547.6	0	0
22	52.7105	94.7627	24445	0	0
23	54.7912	95.0326	24233.9	0	0
24	56.872	95.3527	23912.4	0	0
25	58.9527	95.7235	23479.9	0	0
26	61.0334	96.1458	22936.2	0	0
27	63.1141	96.6203	22282.3	0	0
28	65.1949	97.1478	21519.9	0	0
29	67.2756	97.7294	20651.7	0	0
30	69.3563	98.3661	19681.1	0	0
31	71.4371	99.0592	18613	0	0
32	73.5178	99.8101	17452.8	0	0
33	75.5985	100.62	16207.5	0	0
34	77.6792	101.492	14885.1	0	0
35	79.76	102.427	13495	0	0
36	81.786	103.399	12455.5	0	0
37	83.8121	104.437	11370.7	0	0
38	85.8382	105.541	10253.5	0	0
39	87.8643	106.714	9118.8	0	0
40	89.8903	107.961	7983.4	0	0
41	91.9164	109.285	6866.65	0	0
42	93.9425	110.689	5790.7	0	0
43	95.9685	112.18	4779.36	0	0
44	97.9946	113.762	3850.25	0	0
45	100.076	115.488	2951.64	0	0
46	102.158	117.327	2078.64	0	0
47	104.239	119.286	1258.28	0	0
48	106.321	121.378	539.482	0	0
49	108.402	123.616	28.5887	0	0
50	110.484	126.018	-210.808	0	0
51	112.566	128.605	0	0	0

Post Construction - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.62195

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	89.1761	109.5	0	0	0
2	89.6311	109.424	145.944	0	0
3	90.086	109.359	287.607	0	0
4	90.5409	109.305	424.649	0	0
5	90.9958	109.263	556.774	0	0
6	91.4508	109.23	683.731	0	0
7	91.9057	109.209	805.31	0	0
8	92.3606	109.198	921.339	0	0
9	92.8155	109.198	1031.68	0	0
10	93.2705	109.209	1136.24	0	0
11	93.7254	109.23	1234.96	0	0
12	94.1803	109.263	1327.79	0	0
13	94.6352	109.305	1414.74	0	0
14	95.0902	109.359	1537.46	0	0
15	95.5451	109.424	1805.7	0	0
16	96	109.5	2052.05	0	0
17	96.4583	109.588	2248.83	0	0
18	96.9167	109.687	2424.95	0	0
19	97.375	109.798	2580.28	0	0
20	97.8333	109.921	2714.74	0	0
21	98.2916	110.056	2828.22	0	0
22	98.75	110.204	2920.66	0	0
23	99.2083	110.364	2991.98	0	0
24	99.6666	110.537	3042.15	0	0
25	100.125	110.724	3071.12	0	0
26	100.583	110.925	3078.9	0	0
27	101.042	111.14	3065.49	0	0
28	101.5	111.37	3030.94	0	0
29	101.958	111.616	2975.31	0	0
30	102.417	111.878	2898.73	0	0
31	102.875	112.156	2801.35	0	0
32	103.329	112.45	2683.93	0	0
33	103.782	112.762	2544.87	0	0
34	104.236	113.093	2384.17	0	0
35	104.689	113.445	2201.84	0	0
36	105.143	113.82	1998.07	0	0
37	105.597	114.219	1774.92	0	0
38	106.05	114.644	1533.71	0	0
39	106.504	115.098	1275.29	0	0
40	106.957	115.583	1000.72	0	0
41	107.411	116.104	711.24	0	0
42	107.865	116.665	408.399	0	0
43	108.318	117.272	94.1395	0	0
44	108.772	117.932	-229.035	0	0
45	109.225	118.658	-557.79	0	0
46	109.679	119.464	-887.49	0	0
47	110.133	120.373	-1211.33	0	0
48	110.586	121.426	-1518.42	0	0
49	111.04	122.699	-1789.01	0	0
50	111.493	124.39	-1976.72	0	0
51	111.947	128.556	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.44126

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	88.7541	109.5	0	0	0
2	89.2062	109.419	164.528	0	0
3	89.6584	109.35	324.699	0	0
4	90.1106	109.291	480.147	0	0
5	90.5627	109.243	630.555	0	0
6	91.0149	109.206	775.647	0	0
7	91.4671	109.18	915.195	0	0
8	91.9192	109.164	1049	0	0
9	92.3714	109.158	1176.92	0	0
10	92.8236	109.163	1298.83	0	0
11	93.2757	109.179	1414.63	0	0
12	93.7279	109.205	1524.28	0	0
13	94.1801	109.242	1627.76	0	0
14	94.6322	109.29	1725.07	0	0
15	95.0844	109.348	1860.38	0	0
16	95.5366	109.417	2164.84	0	0
17	95.9887	109.498	2447.42	0	0
18	96.4538	109.592	2681.29	0	0
19	96.9188	109.698	2892.78	0	0
20	97.3838	109.816	3082.66	0	0
21	97.8488	109.947	3250.84	0	0
22	98.3138	110.09	3397.29	0	0
23	98.7788	110.246	3521.96	0	0
24	99.2439	110.415	3624.84	0	0
25	99.7089	110.598	3705.91	0	0
26	100.174	110.795	3765.2	0	0
27	100.639	111.007	3802.76	0	0
28	101.104	111.234	3818.65	0	0
29	101.569	111.476	3812.97	0	0
30	102.034	111.735	3785.88	0	0
31	102.499	112.011	3737.57	0	0
32	102.962	112.304	3667.79	0	0
33	103.425	112.615	3575.67	0	0
34	103.888	112.946	3461.21	0	0
35	104.351	113.299	3324.46	0	0
36	104.814	113.674	3165.49	0	0
37	105.277	114.074	2984.87	0	0
38	105.74	114.501	2784.84	0	0
39	106.203	114.957	2566.49	0	0
40	106.666	115.445	2330.89	0	0
41	107.129	115.969	2079.35	0	0
42	107.592	116.533	1813.45	0	0
43	108.056	117.144	1535.18	0	0
44	108.519	117.81	1247.1	0	0
45	108.982	118.542	952.615	0	0
46	109.445	119.354	656.422	0	0
47	109.908	120.272	365.42	0	0
48	110.371	121.335	90.5781	0	0
49	110.834	122.621	-148.209	0	0
50	111.297	124.329	-304.473	0	0
51	111.76	128.541	0	0	0

Post Construction - Seismic

Global Minimum Query (bishop simplified) - Safety Factor: 1.11203

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	93.269	109.5	0	0	0
2	93.8152	109.478	195.238	0	0
3	94.3614	109.468	383.991	0	0
4	94.9076	109.468	566.2	0	0
5	95.4538	109.478	886.567	0	0
6	96	109.5	1210.14	0	0
7	96.5575	109.533	1475.13	0	0
8	97.115	109.578	1712.8	0	0
9	97.6726	109.634	1923.22	0	0
10	98.2301	109.701	2106.46	0	0
11	98.7876	109.78	2262.61	0	0
12	99.3451	109.871	2391.77	0	0
13	99.9027	109.973	2494.07	0	0
14	100.46	110.088	2569.64	0	0
15	101.018	110.214	2618.63	0	0
16	101.575	110.352	2641.22	0	0
17	102.133	110.503	2637.62	0	0
18	102.69	110.667	2608.04	0	0
19	103.248	110.844	2552.73	0	0
20	103.805	111.033	2471.96	0	0
21	104.363	111.236	2366.05	0	0
22	104.92	111.453	2235.33	0	0
23	105.478	111.684	2080.87	0	0
24	106.035	111.929	1904.61	0	0
25	106.593	112.19	1707.58	0	0
26	107.15	112.465	1490.85	0	0
27	107.708	112.757	1255.53	0	0
28	108.266	113.065	1002.83	0	0
29	108.823	113.39	734.033	0	0
30	109.381	113.733	450.536	0	0
31	109.938	114.094	153.836	0	0
32	110.496	114.476	-154.431	0	0
33	111.053	114.877	-472.473	0	0
34	111.611	115.301	-798.316	0	0
35	112.168	115.747	-1129.77	0	0
36	112.728	116.22	-1468.89	0	0
37	113.288	116.719	-1815.14	0	0
38	113.848	117.246	-2166.47	0	0
39	114.408	117.804	-2520.58	0	0
40	114.968	118.396	-2874.84	0	0
41	115.528	119.024	-3226.26	0	0
42	116.087	119.693	-3571.37	0	0
43	116.647	120.408	-3906.1	0	0
44	117.207	121.174	-4225.6	0	0
45	117.767	122	-4523.99	0	0
46	118.327	122.896	-4793.96	0	0
47	118.887	123.876	-5026.19	0	0
48	119.447	124.961	-5208.28	0	0
49	120.007	126.182	-5322.95	0	0
50	120.567	127.591	-5344.21	0	0
51	121.126	129.29	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 0.847592

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	93.1666	109.5	0	0	0
2	93.5657	109.474	195.906	0	0
3	93.9648	109.456	385.453	0	0
4	94.3639	109.447	568.654	0	0
5	94.763	109.446	745.538	0	0
6	95.162	109.453	1017.87	0	0
7	95.5611	109.468	1414.28	0	0
8	95.9602	109.492	1787.35	0	0
9	96.383	109.526	2114.36	0	0
10	96.8058	109.57	2412.23	0	0
11	97.2286	109.623	2685.67	0	0
12	97.6514	109.685	2935.01	0	0
13	98.0742	109.758	3160.59	0	0
14	98.4971	109.839	3362.74	0	0
15	98.9199	109.931	3541.78	0	0
16	99.3427	110.033	3698.01	0	0
17	99.7655	110.145	3831.76	0	0
18	100.188	110.268	3943.33	0	0
19	100.611	110.401	4033.03	0	0
20	101.034	110.544	4101.18	0	0
21	101.457	110.699	4148.11	0	0
22	101.88	110.866	4174.16	0	0
23	102.302	111.043	4179.68	0	0
24	102.725	111.233	4165.04	0	0
25	103.148	111.436	4130.63	0	0
26	103.571	111.651	4076.86	0	0
27	103.994	111.88	4004.19	0	0
28	104.416	112.122	3913.1	0	0
29	104.839	112.379	3804.12	0	0
30	105.262	112.652	3678.11	0	0
31	105.685	112.94	3536.98	0	0
32	106.108	113.245	3381.93	0	0
33	106.53	113.569	3214.15	0	0
34	106.939	113.899	3039.42	0	0
35	107.348	114.249	2851.53	0	0
36	107.756	114.619	2651.35	0	0
37	108.165	115.011	2439.85	0	0
38	108.573	115.427	2218.1	0	0
39	108.982	115.87	1987.31	0	0
40	109.39	116.343	1748.89	0	0
41	109.799	116.848	1504.46	0	0
42	110.208	117.39	1255.94	0	0
43	110.616	117.975	1005.66	0	0
44	111.025	118.61	756.519	0	0
45	111.433	119.306	512.226	0	0
46	111.842	120.077	277.751	0	0
47	112.251	120.945	60.1316	0	0
48	112.659	121.949	-129.814	0	0
49	113.068	123.159	-273.106	0	0
50	113.476	124.764	-326.737	0	0
51	113.885	128.711	0	0	0

Discharge Sections

Entity Information

Existing Conditions

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 95, 124 51, 110 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Seismic
Water Table	0, 93 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML

Post Construction

Shared Entities

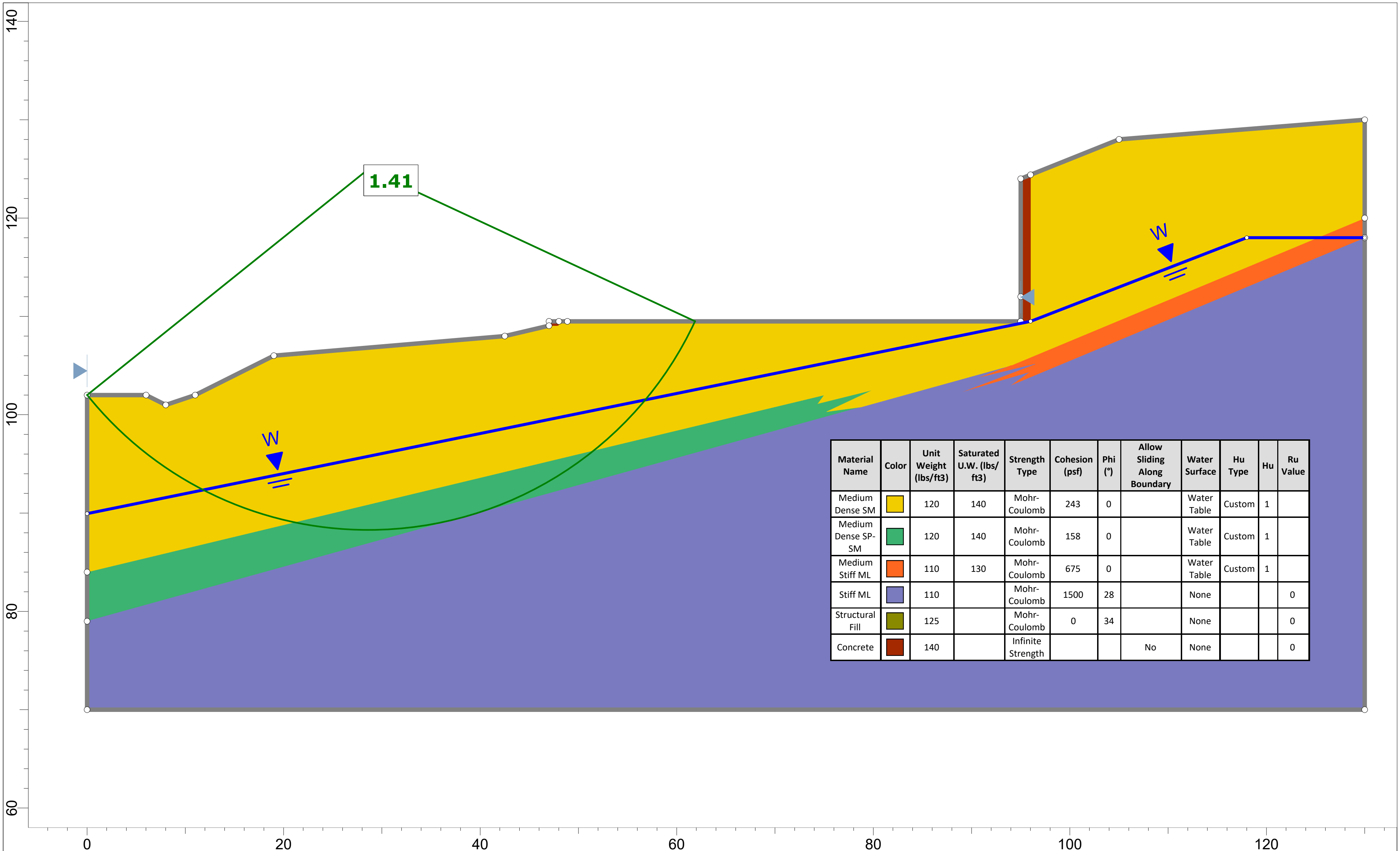
Type	Coordinates (x,y)
External Boundary	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5 47, 109.059 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79 0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 96, 124.4 95, 124 95, 112
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785
Material Boundary	47, 109.059 48, 109.294 48.875, 109.5
Material Boundary	95, 109.5 96, 109.5 96, 124.4
Material Boundary	47, 109.059 48, 109.059 48, 109.294 48, 109.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Seismic
Water Table	0, 89.9411 96, 109.5 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML
Distributed Load	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No

APPENDIX C

LATERAL SPREAD SLOPE STABILITY RESULTS



Material Name	Color	Unit Weight (lbs/ft3)	Saturated U.W. (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type	Hu	Ru Value
Medium Dense SM		120	140	Mohr-Coulomb	243	0		Water Table	Custom	1	
Medium Dense SP-SM		120	140	Mohr-Coulomb	158	0		Water Table	Custom	1	
Medium Stiff ML		110	130	Mohr-Coulomb	675	0		Water Table	Custom	1	
Stiff ML		110		Mohr-Coulomb	1500	28		None			0
Structural Fill		125		Mohr-Coulomb	0	34		None			0
Concrete		140		Infinite Strength			No	None			0

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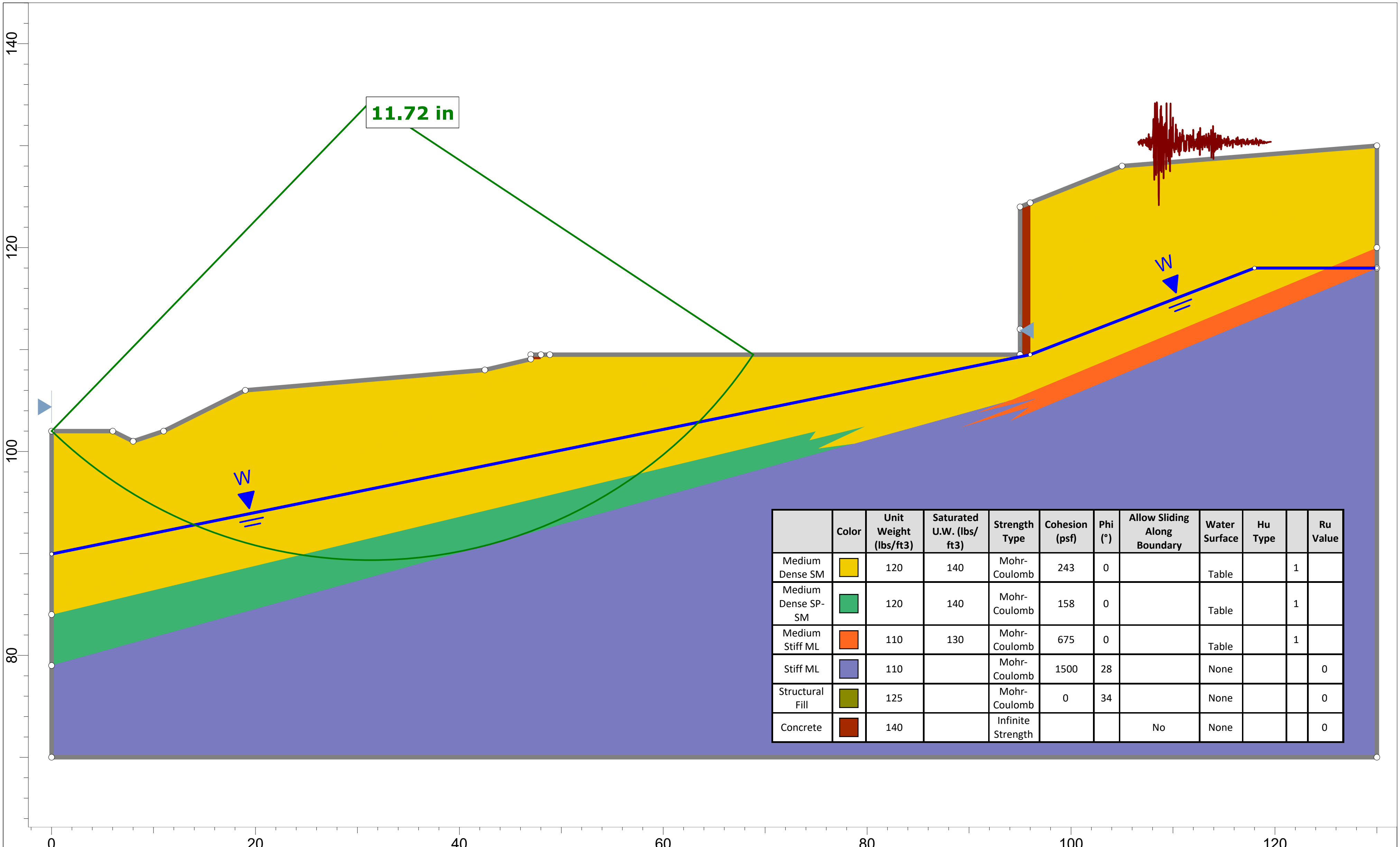
SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Post Construction	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Lateral Spread rv 10-26-23.slmd



	Color	Unit Weight (lbs/ft3)	Saturated U.W. (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type		Ru Value
Medium Dense SM		120	140	Mohr-Coulomb	243	0		Table		1	
Medium Dense SP-SM		120	140	Mohr-Coulomb	158	0		Table		1	
Medium Stiff ML		110	130	Mohr-Coulomb	675	0		Table		1	
Stiff ML		110		Mohr-Coulomb	1500	28		None			0
Structural Fill		125		Mohr-Coulomb	0	34		None			0
Concrete		140		Infinite Strength			No	None			0

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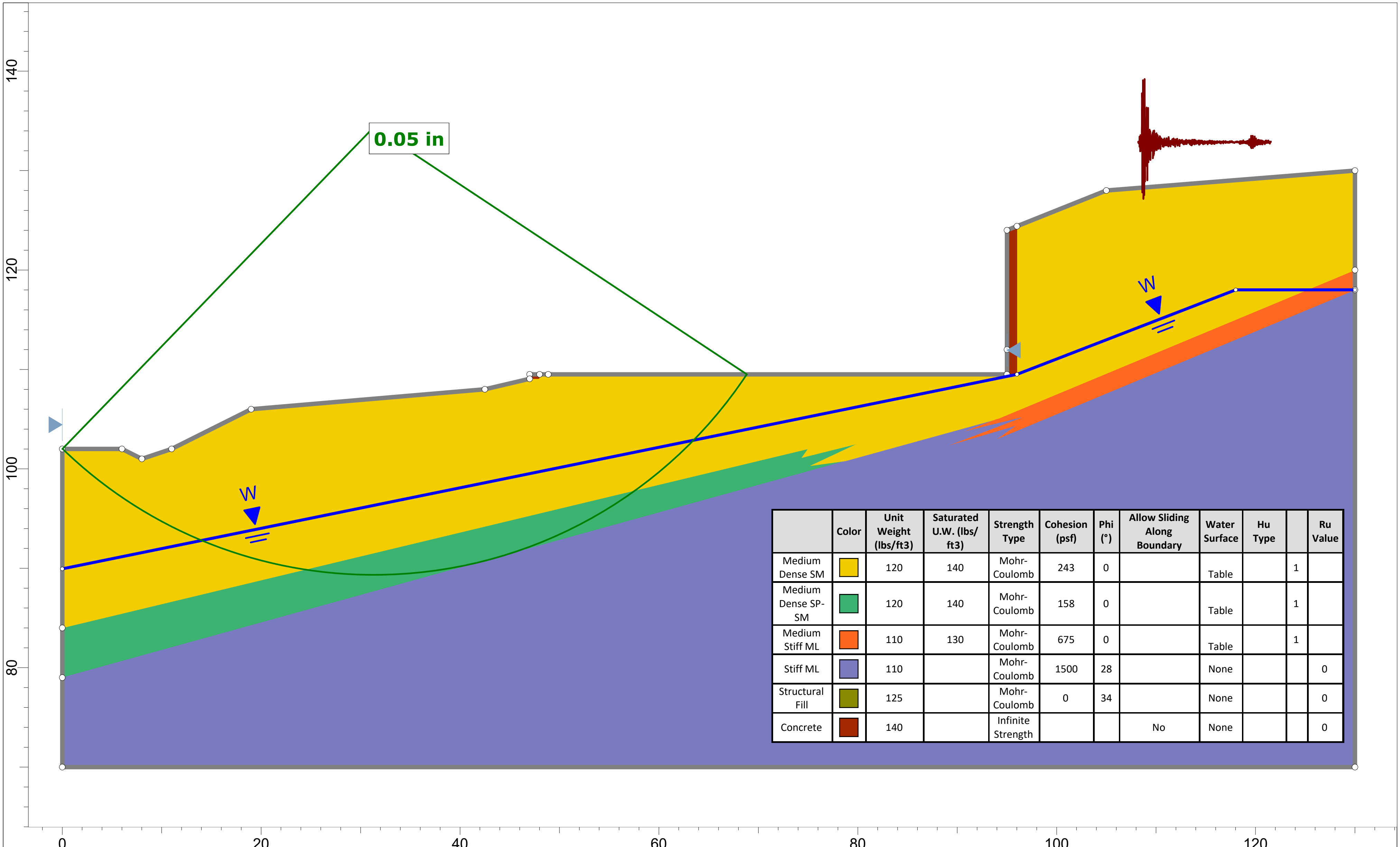
SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Lateral Spread Analysis Cape Mendocino	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Lateral Spread rv 10-26-23.slmd



	Color	Unit Weight (lbs/ft3)	Saturated U.W. (lbs/ ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type		Ru Value
Medium Dense SM		120	140	Mohr-Coulomb	243	0		Table		1	
Medium Dense SP-SM		120	140	Mohr-Coulomb	158	0		Table		1	
Medium Stiff ML		110	130	Mohr-Coulomb	675	0		Table		1	
Stiff ML		110		Mohr-Coulomb	1500	28		None			0
Structural Fill		125		Mohr-Coulomb	0	34		None			0
Concrete		140		Infinite Strength			No	None			0

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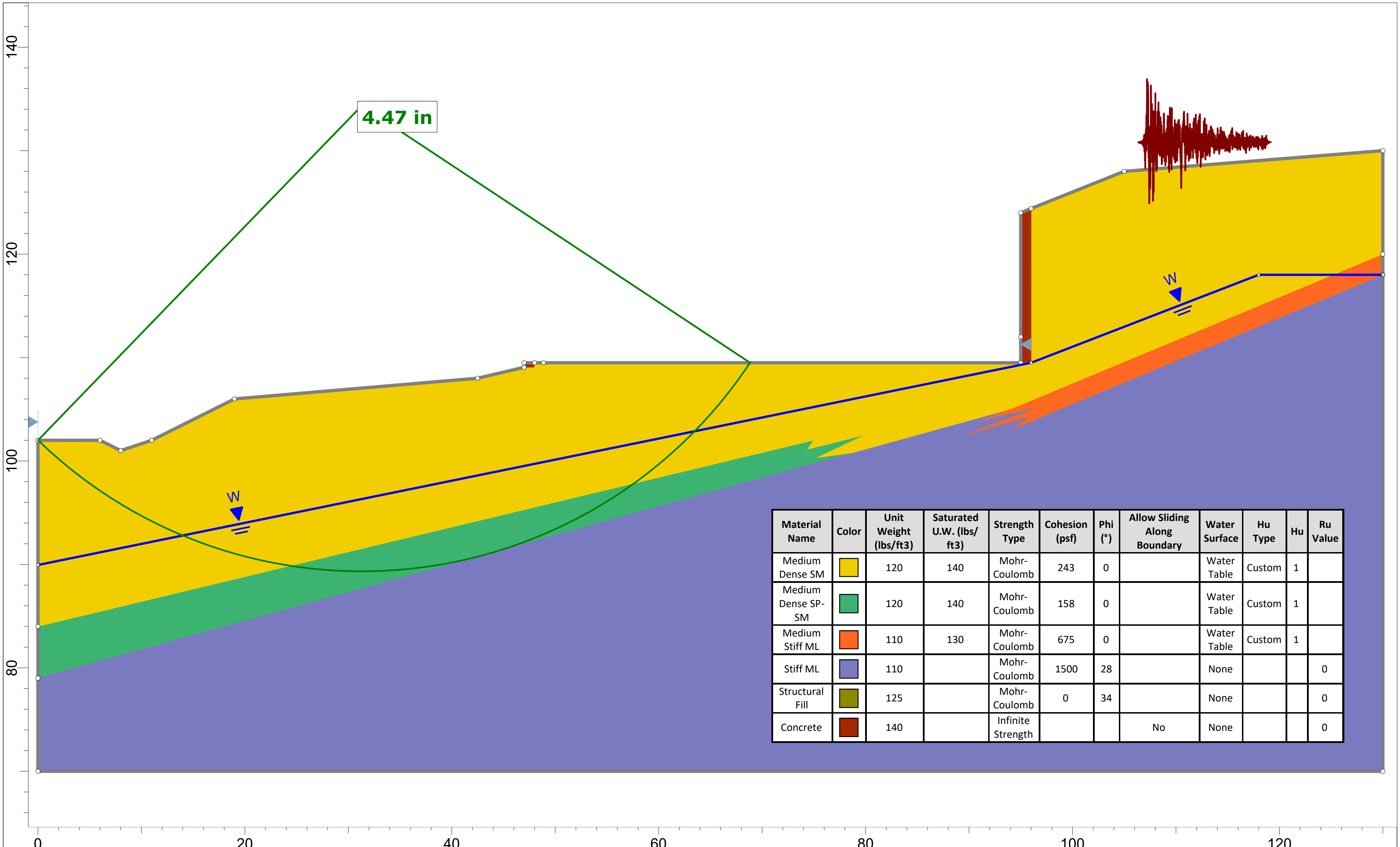
SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Lateral Spread Analysis Daly City	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Lateral Spread rv 10-26-23.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Saturated U.W. (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (°)	Allow Sliding Along Boundary	Water Surface	Hu Type	Hu	Ru Value
Medium Dense SM		120	140	Mohr-Coulomb	243	0		Water Table	Custom	1	
Medium Dense SP-SM		120	140	Mohr-Coulomb	158	0		Water Table	Custom	1	
Medium Stiff ML		110	130	Mohr-Coulomb	675	0		Water Table	Custom	1	
Stiff ML		110		Mohr-Coulomb	1500	28		None			0
Structural Fill		125		Mohr-Coulomb	0	34		None			0
Concrete		140		Infinite Strength			No	None			0

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SLIDEINTERPRET 9.029

Project	Cheshire Short Plat		
Group	Lateral Spread Analysis Nahanni Canada	*Scenario*	Master Scenario
Drawn By	C. Decker	*Company*	Terra Associates, Inc.
Date	October 26, 2023	*File Name*	Cross Section A-A' Lateral Spread rv 10-26-23.slmd

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Cross Section A-A' Lateral Spread rv 10-26-23
Cheshire Short Plat
Terra Associates, Inc.
Date Created: October 26, 2023
Software Version: 9.029

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Slide2 Analysis Information

Cross Section A-A' Lateral Spread rv 10-26-23

Project Summary

File Name:	Cross Section A-A' Lateral Spread rv 10-26-23.slmd
Slide2 Modeler Version:	9.029
Project Title:	Cheshire Short Plat
Analysis:	Cross Section A-A'
Author:	C. Decker
Company:	Terra Associates, Inc.
Date Created:	October 26, 2023

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Post Construction	Master Scenario	Bishop Simplified: 1.413960 Janbu Simplified: 1.343160	00h:00m:00.592s
Lateral Spread Analysis Cape Mendocino	Master Scenario	Bishop Simplified: 11.719700 Janbu Simplified: 14.458000	00h:00m:04.216s
Lateral Spread Analysis Daly City	Master Scenario	Bishop Simplified: 0.051473 Janbu Simplified: 0.098612	00h:00m:04.380s
Lateral Spread Analysis Nahanni Canada	Master Scenario	Bishop Simplified: 4.473110 Janbu Simplified: 5.796260	00h:00m:04.148s

General Settings

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

Analysis Options

All Open Scenarios

Slices Type:	Vertical
Analysis Methods Used	
	Bishop simplified
	Janbu simplified
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [lbs/ft3]:	62.4
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

All Open Scenarios

Surface Type:	Circular
Search Method:	Auto Refine Search
Divisions along slope:	20
Circles per division:	10
Number of iterations:	10
Divisions to use in next iteration:	50%
Composite Surfaces:	Disabled
Minimum Elevation:	Not Defined
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Post Construction

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Lateral Spread Analysis Cape Mendocino

Advanced seismic analysis:	Yes
Locate surface with minimum critical horizontal seismic acceleration (Ky):	No
Using Newmark analysis:	Yes
Seismic record used:	Cape Mendocino 1992: RIO-270
Scaling records:	No Scaling
Displacement computed using:	Maximum positive/negative
Analysis type	Rigid
Displacement direction:	Downslope only
Staged pseudostatic analysis:	No

Lateral Spread Analysis Daly City

Advanced seismic analysis:	Yes
Locate surface with minimum critical horizontal seismic acceleration (Ky):	No
Using Newmark analysis:	Yes
Seismic record used:	Daly City 1957: GGP-100
Scaling records:	No Scaling
Displacement computed using:	Maximum positive/negative
Analysis type	Rigid
Displacement direction:	Downslope only
Staged pseudostatic analysis:	No

Lateral Spread Analysis Nahanni Canada

Advanced seismic analysis:	Yes
Locate surface with minimum critical horizontal seismic acceleration (Ky):	No
Using Newmark analysis:	Yes
Seismic record used:	Nahanni, Canada 1985: NS2-330
Scaling records:	No Scaling
Displacement computed using:	Maximum positive/negative
Analysis type	Rigid
Displacement direction:	Downslope only
Staged pseudostatic analysis:	No

Materials

Medium Dense SM	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Saturated U.W.	140 lbs/ft3
Cohesion	243 psf
Phi	0 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Medium Dense SP-SM	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	120 lbs/ft3
Saturated U.W.	140 lbs/ft3
Cohesion	158 psf
Phi	0 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Medium Stiff ML	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	110 lbs/ft3
Saturated U.W.	130 lbs/ft3
Cohesion	675 psf
Phi	0 °
Water Surface	Assigned per scenario
Hu Type	Custom
Hu	1
Specify alternate strength type above water surface	No

Stiff ML	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	110 lbs/ft3
Cohesion	1500 psf
Phi	28 °
Water Surface	Assigned per scenario
Ru Value	0

Structural Fill	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	125 lbs/ft3
Cohesion	0 psf
Phi	34 °
Water Surface	Assigned per scenario
Ru Value	0

Concrete	
Color	
Strength Type	Infinite Strength
Unit Weight	140 lbs/ft3
Allow Sliding Along Boundary	No
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material		Post Construction	Lateral Spread Analysis Cape Mendocino	Lateral Spread Analysis Daly City	Lateral Spread Analysis Nahanni Canada
Medium Dense SM		✓	✓	✓	✓
Medium Dense SP-SM		✓	✓	✓	✓
Medium Stiff ML		✓	✓	✓	✓
Stiff ML		✓	✓	✓	✓
Structural Fill		✓	✓	✓	✓
Concrete		✓	✓	✓	✓

Global Minimums

Post Construction

Method: bishop simplified

FS	1.413960
Center:	28.611, 124.959
Radius:	36.680
Left Slip Surface Endpoint:	0.005, 102.000
Right Slip Surface Endpoint:	61.874, 109.500
Resisting Moment:	562553 lb-ft
Driving Moment:	397858 lb-ft
Total Slice Area:	802.282 ft2
Surface Horizontal Width:	61.8691 ft
Surface Average Height:	12.9674 ft

Method: janbu simplified

FS	1.343160
Center:	28.611, 124.959
Radius:	36.680
Left Slip Surface Endpoint:	0.005, 102.000
Right Slip Surface Endpoint:	61.874, 109.500
Resisting Horizontal Force:	12439.2 lb
Driving Horizontal Force:	9261.14 lb
Total Slice Area:	802.282 ft2
Surface Horizontal Width:	61.8691 ft
Surface Average Height:	12.9674 ft

Lateral Spread Analysis Cape Mendocino

Method: bishop simplified

Newmark Displacement (in)	11.719700
Center:	31.305, 134.354
Radius:	45.016
Left Slip Surface Endpoint:	0.006, 102.000
Right Slip Surface Endpoint:	68.838, 109.500
Resisting Moment:	730100 lb-ft
Driving Moment:	730100 lb-ft
Total Slice Area:	847.431 ft2
Surface Horizontal Width:	68.8318 ft
Surface Average Height:	12.3116 ft

Method: janbu simplified

Newmark Displacement (in)	14.458000
Center:	28.690, 124.938
Radius:	36.634
Left Slip Surface Endpoint:	0.126, 102.000
Right Slip Surface Endpoint:	61.912, 109.500
Resisting Horizontal Force:	12428 lb
Driving Horizontal Force:	12428 lb
Total Slice Area:	800.739 ft2
Surface Horizontal Width:	61.7854 ft
Surface Average Height:	12.96 ft

Lateral Spread Analysis Daly City

Method: bishop simplified

Newmark Displacement (in)	0.051473
Center:	31.310, 134.353
Radius:	45.014
Left Slip Surface Endpoint:	0.013, 102.000
Right Slip Surface Endpoint:	68.841, 109.500
Resisting Moment:	730021 lb-ft
Driving Moment:	730021 lb-ft
Total Slice Area:	847.383 ft2
Surface Horizontal Width:	68.8283 ft
Surface Average Height:	12.3116 ft

Method: janbu simplified

Newmark Displacement (in)	0.098612
Center:	31.310, 134.353
Radius:	45.014
Left Slip Surface Endpoint:	0.013, 102.000
Right Slip Surface Endpoint:	68.841, 109.500
Resisting Horizontal Force:	13909.8 lb
Driving Horizontal Force:	13909.8 lb
Total Slice Area:	847.383 ft2
Surface Horizontal Width:	68.8283 ft
Surface Average Height:	12.3116 ft

Lateral Spread Analysis Nahanni Canada

Method: bishop simplified

Newmark Displacement (in)	4.473110
Center:	31.305, 134.354
Radius:	45.016
Left Slip Surface Endpoint:	0.006, 102.000
Right Slip Surface Endpoint:	68.838, 109.500
Resisting Moment:	730100 lb-ft
Driving Moment:	730100 lb-ft
Total Slice Area:	847.431 ft2
Surface Horizontal Width:	68.8318 ft
Surface Average Height:	12.3116 ft

Method: janbu simplified

Newmark Displacement (in)	**5.796260**
Center:	28.690, 124.938
Radius:	36.634
Left Slip Surface Endpoint:	0.126, 102.000
Right Slip Surface Endpoint:	61.912, 109.500
Resisting Horizontal Force:	12428 lb
Driving Horizontal Force:	12428 lb
Total Slice Area:	800.739 ft2
Surface Horizontal Width:	61.7854 ft
Surface Average Height:	12.96 ft

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Post Construction

Method: bishop simplified

Number of Valid Surfaces:	5067
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	5005
Number of Invalid Surfaces:	62

Error Codes
Error Code -108 reported for 10 surfaces
Error Code -111 reported for 52 surfaces

Lateral Spread Analysis Cape Mendocino

Method: bishop simplified

Number of Valid Surfaces:	5147
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	5147
Number of Invalid Surfaces:	0

Lateral Spread Analysis Daly City

Method: bishop simplified

Number of Valid Surfaces:	4965
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	4965
Number of Invalid Surfaces:	0

Lateral Spread Analysis Nahanni Canada

Method: bishop simplified

Number of Valid Surfaces:	5147
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	5147
Number of Invalid Surfaces:	0

Slice Data

Post Construction

Global Minimum Query (bishop simplified) - Safety Factor: 1.41396

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.18132	99.1509	-49.8196	Medium Dense SM	243	0	171.858	243	287.441	0	287.441	83.933	83.933
2	1.18132	288.204	-47.0356	Medium Dense SM	243	0	171.858	243	428.493	0	428.493	243.969	243.969
3	1.18132	460.074	-44.3905	Medium Dense SM	243	0	171.858	243	557.698	0	557.698	389.459	389.459
4	1.18132	617.065	-41.8603	Medium Dense SM	243	0	171.858	243	676.339	0	676.339	522.355	522.355
5	1.18132	760.93	-39.4268	Medium Dense SM	243	0	171.858	243	785.436	0	785.436	644.136	644.136
6	1.18132	857.226	-37.0758	Medium Dense SM	243	0	171.858	243	855.511	0	855.511	725.65	725.65
7	1.18132	898.939	-34.7957	Medium Dense SM	243	0	171.858	243	880.385	0	880.385	760.96	760.96
8	1.18132	1025.28	-32.5771	Medium Dense SM	243	0	171.858	243	977.723	0	977.723	867.912	867.912
9	1.18132	1183.75	-30.4122	Medium Dense SM	243	0	171.858	243	1102.94	0	1102.94	1002.06	1002.06
10	1.18132	1340.48	-28.2944	Medium Dense SM	243	0	171.858	243	1227.25	0	1227.25	1134.74	1134.74
11	1.1581	1487.31	-26.2381	Medium Dense SM	243	0	171.858	243	1368.98	25.1697	1343.81	1284.27	1259.1
12	1.1581	1661.79	-24.2377	Medium Dense SM	243	0	171.858	243	1512.3	73.9694	1438.33	1434.93	1360.96
13	1.1581	1828.44	-22.2682	Medium Dense SM	243	0	171.858	243	1649.2	119.756	1529.45	1578.83	1459.07
14	1.1581	1987.59	-20.3262	Medium Dense SM	243	0	171.858	243	1779.92	162.659	1617.26	1716.26	1553.6
15	1.1581	2139.55	-18.4082	Medium Dense SM	243	0	171.858	243	1904.67	202.792	1701.88	1847.47	1644.68
16	1.1581	2284.56	-16.5115	Medium Dense SM	243	0	171.858	243	2023.63	240.252	1783.38	1972.69	1732.44
17	1.1581	2401.56	-14.6331	Medium Dense SM	243	0	171.858	243	2118.59	275.12	1843.47	2073.71	1798.59
18	1.1581	2467.87	-12.7708	Medium Dense SM	243	0	171.858	243	2169.93	307.467	1862.46	2130.98	1823.51
19	1.26326	2758.43	-10.8387	Medium Dense SP-SM	158	0	111.743	158	2204.97	338.595	1866.38	2183.58	1844.98
20	1.26326	2819.98	-8.83554	Medium Dense SP-SM	158	0	111.743	158	2249.67	368.328	1881.34	2232.3	1863.97
21	1.26326	2873.55	-6.84323	Medium Dense SP-SM	158	0	111.743	158	2288.12	395.245	1892.87	2274.71	1879.46
22	1.26326	2919.25	-4.85921	Medium Dense SP-SM	158	0	111.743	158	2320.39	419.386	1901	2310.89	1891.5
23	1.26326	2957.17	-2.88103	Medium Dense SP-SM	158	0	111.743	158	2346.53	440.78	1905.75	2340.9	1900.12
24	1.26326	2987.36	-0.906282	Medium Dense SP-SM	158	0	111.743	158	2366.57	459.447	1907.12	2364.8	1905.35
25	1.26326	3009.85	1.06739	Medium Dense SP-SM	158	0	111.743	158	2380.52	475.397	1905.12	2382.6	1907.2

26	1.26326	3024.63	3.04233	Medium Dense SP-SM	158	0	111.743	158	2388.37	488.628	1899.74	2394.31	1905.68
27	1.26326	3031.68	5.0209	Medium Dense SP-SM	158	0	111.743	158	2390.07	499.13	1890.94	2399.88	1900.75
28	1.26326	3030.94	7.0055	Medium Dense SP-SM	158	0	111.743	158	2385.57	506.885	1878.68	2399.3	1892.41
29	1.26326	3022.32	8.99859	Medium Dense SP-SM	158	0	111.743	158	2374.78	511.86	1862.92	2392.47	1880.61
30	1.26326	3005.71	11.0027	Medium Dense SP-SM	158	0	111.743	158	2357.6	514.015	1843.59	2379.33	1865.31
31	1.26326	2980.96	13.0206	Medium Dense SP-SM	158	0	111.743	158	2333.89	513.298	1820.59	2359.73	1846.43
32	1.76184	4099.41	15.4612	Medium Dense SP-SM	158	0	111.743	158	2295.88	508.209	1787.67	2326.79	1818.58
33	1.23449	2822.23	17.9023	Medium Dense SP-SM	158	0	111.743	158	2250.07	499.609	1750.46	2286.17	1786.56
34	1.23449	2770.84	19.9413	Medium Dense SP-SM	158	0	111.743	158	2203.99	488.888	1715.1	2244.53	1755.64
35	1.23449	2712.79	22.007	Medium Dense SP-SM	158	0	111.743	158	2152.34	475.041	1677.3	2197.51	1722.47
36	1.23449	2665.93	24.1034	Medium Dense SP-SM	158	0	111.743	158	2109.55	457.937	1651.61	2159.54	1701.61
37	1.23449	2614.87	26.2346	Medium Dense SP-SM	158	0	111.743	158	2063.12	437.418	1625.7	2118.19	1680.77
38	1.23449	2553.84	28.4058	Medium Dense SP-SM	158	0	111.743	158	2008.32	413.301	1595.02	2068.75	1655.45
39	1.23449	2526.7	30.6225	Medium Dense SP-SM	158	0	111.743	158	1980.62	385.366	1595.25	2046.76	1661.39
40	1.23449	2412.79	32.8913	Medium Dense SP-SM	158	0	111.743	158	1882.22	353.353	1528.87	1954.49	1601.13
41	1.23449	2273.44	35.2198	Medium Dense SP-SM	158	0	111.743	158	1762.72	316.949	1445.77	1841.61	1524.66
42	1.23449	2122.14	37.6175	Medium Dense SP-SM	158	0	111.743	158	1632.94	275.773	1357.17	1719.05	1443.27
43	1.30285	2059.35	40.1665	Medium Dense SM	243	0	171.858	243	1435.59	227.912	1207.68	1580.65	1352.73
44	1.30285	1855.61	42.8871	Medium Dense SM	243	0	171.858	243	1264.64	172.409	1092.23	1424.27	1251.86
45	1.30285	1630.26	45.734	Medium Dense SM	243	0	171.858	243	1074.98	109.512	965.47	1251.3	1141.79
46	1.30285	1379.86	48.7351	Medium Dense SM	243	0	171.858	243	863.241	38.044	825.197	1059.1	1021.06
47	1.26265	1087.51	51.8756	Medium Dense SM	243	0	171.858	243	642.299	0	642.299	861.286	861.286
48	1.26265	827.974	55.2015	Medium Dense SM	243	0	171.858	243	408.455	0	408.455	655.74	655.74
49	1.26265	532.16	58.8358	Medium Dense SM	243	0	171.858	243	137.289	0	137.289	421.46	421.46
50	1.26265	186.994	62.9077	Medium Dense SM	243	0	171.858	243	-187.856	0	-187.856	148.095	148.095

Global Minimum Query (janbu simplified) - Safety Factor: 1.34316

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.18132	99.1509	-49.8196	Medium Dense SM	243	0	180.917	243	297.96	0	297.96	83.7255	83.7255
2	1.18132	288.204	-47.0356	Medium Dense SM	243	0	180.917	243	438.032	0	438.032	243.78	243.78
3	1.18132	460.074	-44.3905	Medium Dense SM	243	0	180.917	243	566.395	0	566.395	389.287	389.287
4	1.18132	617.065	-41.8603	Medium Dense SM	243	0	180.917	243	684.295	0	684.295	522.194	522.194
5	1.18132	760.93	-39.4268	Medium Dense SM	243	0	180.917	243	792.74	0	792.74	643.992	643.992
6	1.18132	857.226	-37.0758	Medium Dense SM	243	0	180.917	243	862.224	0	862.224	725.518	725.518
7	1.18132	898.939	-34.7957	Medium Dense SM	243	0	180.917	243	886.558	0	886.558	760.838	760.838
8	1.18132	1025.28	-32.5771	Medium Dense SM	243	0	180.917	243	983.401	0	983.401	867.802	867.802
9	1.18132	1183.75	-30.4122	Medium Dense SM	243	0	180.917	243	1108.15	0	1108.15	1001.96	1001.96
10	1.18132	1340.48	-28.2944	Medium Dense SM	243	0	180.917	243	1232.04	0	1232.04	1134.64	1134.64
11	1.1581	1487.31	-26.2381	Medium Dense SM	243	0	180.917	243	1373.36	25.1697	1348.19	1284.18	1259.02
12	1.1581	1661.79	-24.2377	Medium Dense SM	243	0	180.917	243	1516.3	73.9694	1442.33	1434.85	1360.88
13	1.1581	1828.44	-22.2682	Medium Dense SM	243	0	180.917	243	1652.84	119.756	1533.08	1578.76	1459
14	1.1581	1987.59	-20.3262	Medium Dense SM	243	0	180.917	243	1783.21	162.659	1620.55	1716.19	1553.53
15	1.1581	2139.55	-18.4082	Medium Dense SM	243	0	180.917	243	1907.63	202.792	1704.84	1847.42	1644.63
16	1.1581	2284.56	-16.5115	Medium Dense SM	243	0	180.917	243	2026.26	240.252	1786.01	1972.64	1732.38
17	1.1581	2401.56	-14.6331	Medium Dense SM	243	0	180.917	243	2120.91	275.12	1845.79	2073.67	1798.55
18	1.1581	2467.87	-12.7708	Medium Dense SM	243	0	180.917	243	2171.94	307.467	1864.47	2130.93	1823.47
19	1.26326	2758.43	-10.8387	Medium Dense SP-SM	158	0	117.633	158	2206.08	338.595	1867.48	2183.55	1844.96
20	1.26326	2819.98	-8.83554	Medium Dense SP-SM	158	0	117.633	158	2250.57	368.328	1882.24	2232.28	1863.96
21	1.26326	2873.55	-6.84323	Medium Dense SP-SM	158	0	117.633	158	2288.81	395.245	1893.56	2274.69	1879.45
22	1.26326	2919.25	-4.85921	Medium Dense SP-SM	158	0	117.633	158	2320.88	419.386	1901.49	2310.88	1891.49
23	1.26326	2957.17	-2.88103	Medium Dense SP-SM	158	0	117.633	158	2346.81	440.78	1906.03	2340.89	1900.11
24	1.26326	2987.36	-0.906282	Medium Dense SP-SM	158	0	117.633	158	2366.66	459.447	1907.21	2364.8	1905.35
25	1.26326	3009.85	1.06739	Medium Dense SP-SM	158	0	117.633	158	2380.41	475.397	1905.01	2382.6	1907.2
26	1.26326	3024.63	3.04233	Medium Dense SP-SM	158	0	117.633	158	2388.06	488.628	1899.43	2394.31	1905.68
27	1.26326	3031.68	5.0209	Medium Dense SP-SM	158	0	117.633	158	2389.55	499.13	1890.42	2399.89	1900.76
28	1.26326	3030.94	7.0055	Medium Dense SP-SM	158	0	117.633	158	2384.86	506.885	1877.97	2399.31	1892.43

29	1.26326	3022.32	8.99859	Medium Dense SP-SM	158	0	117.633	158	2373.86	511.86	1862	2392.49	1880.63
30	1.26326	3005.71	11.0027	Medium Dense SP-SM	158	0	117.633	158	2356.48	514.015	1842.46	2379.35	1865.33
31	1.26326	2980.96	13.0206	Medium Dense SP-SM	158	0	117.633	158	2332.56	513.298	1819.26	2359.76	1846.46
32	1.76184	4099.41	15.4612	Medium Dense SP-SM	158	0	117.633	158	2294.28	508.209	1786.07	2326.82	1818.61
33	1.23449	2822.23	17.9023	Medium Dense SP-SM	158	0	117.633	158	2248.2	499.609	1748.59	2286.2	1786.59
34	1.23449	2770.84	19.9413	Medium Dense SP-SM	158	0	117.633	158	2201.89	488.888	1713.01	2244.57	1755.69
35	1.23449	2712.79	22.007	Medium Dense SP-SM	158	0	117.633	158	2150.01	475.041	1674.97	2197.55	1722.51
36	1.23449	2665.93	24.1034	Medium Dense SP-SM	158	0	117.633	158	2106.97	457.937	1649.03	2159.6	1701.66
37	1.23449	2614.87	26.2346	Medium Dense SP-SM	158	0	117.633	158	2060.27	437.418	1622.85	2118.24	1680.82
38	1.23449	2553.84	28.4058	Medium Dense SP-SM	158	0	117.633	158	2005.19	413.301	1591.89	2068.81	1655.51
39	1.23449	2526.7	30.6225	Medium Dense SP-SM	158	0	117.633	158	1977.2	385.366	1591.83	2046.83	1661.46
40	1.23449	2412.79	32.8913	Medium Dense SP-SM	158	0	117.633	158	1878.49	353.353	1525.13	1954.56	1601.21
41	1.23449	2273.44	35.2198	Medium Dense SP-SM	158	0	117.633	158	1758.65	316.949	1441.7	1841.69	1524.74
42	1.23449	2122.14	37.6175	Medium Dense SP-SM	158	0	117.633	158	1628.49	275.773	1352.71	1719.13	1443.36
43	1.30285	2059.35	40.1665	Medium Dense SM	243	0	180.917	243	1428.09	227.912	1200.18	1580.8	1352.88
44	1.30285	1855.61	42.8871	Medium Dense SM	243	0	180.917	243	1256.39	172.409	1083.98	1424.43	1252.02
45	1.30285	1630.26	45.734	Medium Dense SM	243	0	180.917	243	1065.87	109.512	956.357	1251.48	1141.97
46	1.30285	1379.86	48.7351	Medium Dense SM	243	0	180.917	243	853.116	38.044	815.072	1059.3	1021.26
47	1.26265	1087.51	51.8756	Medium Dense SM	243	0	180.917	243	630.98	0	630.98	861.51	861.51
48	1.26265	827.974	55.2015	Medium Dense SM	243	0	180.917	243	395.673	0	395.673	655.992	655.992
49	1.26265	532.16	58.8358	Medium Dense SM	243	0	180.917	243	122.6	0	122.6	421.75	421.75
50	1.26265	186.994	62.9077	Medium Dense SM	243	0	180.917	243	-205.222	0	-205.222	148.437	148.437

Lateral Spread Analysis Cape Mendocino

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 11.7197

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.40004	109.04	-42.8353	Medium Dense SM	243	0	243	243	303.182	0	303.182	77.8831	77.8831
2	1.40004	318.345	-40.4493	Medium Dense SM	243	0	243	243	434.553	0	434.553	227.383	227.383
3	1.40004	510.977	-38.1454	Medium Dense SM	243	0	243	243	555.82	0	555.82	364.973	364.973
4	1.40004	688.514	-35.9123	Medium Dense SM	243	0	243	243	667.763	0	667.763	491.781	491.781
5	1.40004	821.848	-33.7406	Medium Dense SM	243	0	243	243	749.328	0	749.328	587.018	587.018
6	1.40004	868.122	-31.6227	Medium Dense SM	243	0	243	243	769.697	0	769.697	620.07	620.07
7	1.40004	1036.27	-29.552	Medium Dense SM	243	0	243	243	877.949	0	877.949	740.175	740.175
8	1.40004	1243.07	-27.523	Medium Dense SM	243	0	243	243	1014.5	0	1014.5	887.878	887.878
9	1.40004	1463.88	-25.5308	Medium Dense SM	243	0	243	243	1161.67	0	1161.67	1045.6	1045.6
10	1.40004	1688.98	-23.5712	Medium Dense SM	243	0	243	243	1312.4	0	1312.4	1206.38	1206.38
11	1.30395	1777.46	-21.7059	Medium Dense SM	243	0	243	243	1459.87	24.4821	1435.38	1363.13	1338.65
12	1.30395	1976.93	-19.93	Medium Dense SM	243	0	243	243	1604.22	72.0054	1532.22	1516.11	1444.11
13	1.30395	2168.1	-18.1738	Medium Dense SM	243	0	243	243	1742.5	116.689	1625.81	1662.73	1546.04
14	1.30395	2350	-16.4352	Medium Dense SM	243	0	243	243	1873.9	158.623	1715.28	1802.22	1643.6
15	1.30395	2469.76	-14.712	Medium Dense SM	243	0	243	243	1957.88	197.883	1759.99	1894.07	1696.19
16	1.30395	2552.79	-13.0023	Medium Dense SM	243	0	243	243	2013.85	234.537	1779.31	1957.74	1723.2
17	1.30395	2628.36	-11.3044	Medium Dense SM	243	0	243	243	2064.27	268.641	1795.63	2015.7	1747.06
18	1.30395	2696.61	-9.61641	Medium Dense SM	243	0	243	243	2109.21	300.244	1808.96	2068.04	1767.79
19	1.3791	2918.24	-7.88866	Medium Dense SP-SM	158	0	158	158	2137.94	330.154	1807.79	2116.05	1785.89
20	1.3791	2978.13	-6.11987	Medium Dense SP-SM	158	0	158	158	2176.42	358.263	1818.15	2159.48	1801.21
21	1.3791	3029.72	-4.35692	Medium Dense SP-SM	158	0	158	158	2208.92	383.687	1825.23	2196.88	1813.2
22	1.3791	3073.08	-2.5981	Medium Dense SP-SM	158	0	158	158	2235.49	406.451	1829.04	2228.32	1821.87
23	1.3791	3108.25	-0.841726	Medium Dense SP-SM	158	0	158	158	2256.15	426.568	1829.58	2253.83	1827.26
24	1.3791	3135.26	0.913854	Medium Dense SP-SM	158	0	158	158	2270.89	444.047	1826.84	2273.41	1829.36
25	1.3791	3154.1	2.67029	Medium Dense SP-SM	158	0	158	158	2279.7	458.887	1820.81	2287.07	1828.18
26	1.3791	3164.75	4.42925	Medium Dense SP-SM	158	0	158	158	2282.55	471.08	1811.47	2294.79	1823.71
27	1.3791	3167.17	6.19241	Medium Dense SP-SM	158	0	158	158	2279.4	480.611	1798.79	2296.54	1815.93
28	1.3791	3161.28	7.96147	Medium Dense SP-SM	158	0	158	158	2270.18	487.458	1782.72	2292.27	1804.82

29	1.3791	3146.98	9.73822	Medium Dense SP-SM	158	0	158	158	2254.8	491.589	1763.21	2281.91	1790.32
30	1.3791	3124.16	11.5245	Medium Dense SP-SM	158	0	158	158	2233.15	492.964	1740.18	2265.36	1772.4
31	1.3791	3092.66	13.3222	Medium Dense SP-SM	158	0	158	158	2205.11	491.535	1713.57	2242.52	1750.99
32	1.87336	4161.09	15.4612	Medium Dense SP-SM	158	0	158	158	2177.49	485.854	1691.63	2221.19	1735.34
33	1.33763	2952.18	17.5913	Medium Dense SP-SM	158	0	158	158	2156.93	476.866	1680.06	2207.02	1730.15
34	1.33763	2926.21	19.3869	Medium Dense SP-SM	158	0	158	158	2132	465.954	1666.05	2187.6	1721.65
35	1.33763	2944.57	21.2025	Medium Dense SP-SM	158	0	158	158	2140.04	452.084	1687.95	2201.33	1749.24
36	1.33763	2845.78	23.0407	Medium Dense SP-SM	158	0	158	158	2060.28	435.15	1625.13	2127.48	1692.33
37	1.33763	2741.42	24.9043	Medium Dense SP-SM	158	0	158	158	1976.1	415.029	1561.07	2049.46	1634.43
38	1.33763	2627.31	26.7966	Medium Dense SP-SM	158	0	158	158	1884.35	391.58	1492.77	1964.15	1572.57
39	1.33763	2502.71	28.7211	Medium Dense SP-SM	158	0	158	158	1784.42	364.639	1419.78	1871	1506.36
40	1.33763	2367.05	30.6817	Medium Dense SP-SM	158	0	158	158	1675.84	334.014	1341.82	1769.58	1435.57
41	1.33763	2219.68	32.683	Medium Dense SP-SM	158	0	158	158	1558.03	299.482	1258.55	1659.4	1359.92
42	1.33763	2059.79	34.7303	Medium Dense SP-SM	158	0	158	158	1430.34	260.782	1169.56	1539.87	1279.09
43	1.46715	2059.1	36.9344	Medium Dense SM	243	0	243	243	1220.79	215.268	1005.53	1403.47	1188.2
44	1.46715	1831.23	39.3094	Medium Dense SM	243	0	243	243	1049.2	162.03	887.165	1248.15	1086.12
45	1.46715	1582.06	41.7681	Medium Dense SM	243	0	243	243	861.302	102.321	758.981	1078.33	976.005
46	1.46715	1309.09	44.3253	Medium Dense SM	243	0	243	243	654.927	35.3822	619.544	892.27	856.888
47	1.3383	949.139	46.8766	Medium Dense SM	243	0	243	243	449.749	0	449.749	709.212	709.212
48	1.3383	708.873	49.4324	Medium Dense SM	243	0	243	243	245.844	0	245.844	529.682	529.682
49	1.3383	445.161	52.1296	Medium Dense SM	243	0	243	243	20.1513	0	20.1513	332.632	332.632
50	1.3383	153.486	55.0023	Medium Dense SM	243	0	243	243	-232.382	0	-232.382	114.687	114.687

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 14.458

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.17914	98.7349	-49.8051	Medium Dense SM	243	0	243	243	371.339	0	371.339	83.7347	83.7347
2	1.17914	287.003	-47.0235	Medium Dense SM	243	0	243	243	504.199	0	504.199	243.4	243.4
3	1.17914	458.173	-44.3804	Medium Dense SM	243	0	243	243	626.368	0	626.368	388.568	388.568
4	1.17914	614.535	-41.8521	Medium Dense SM	243	0	243	243	738.837	0	738.837	521.172	521.172
5	1.17914	757.818	-39.4203	Medium Dense SM	243	0	243	243	842.432	0	842.432	642.685	642.685
6	1.17914	846.164	-37.0708	Medium Dense SM	243	0	243	243	901.198	0	901.198	717.613	717.613
7	1.17914	890.961	-34.7922	Medium Dense SM	243	0	243	243	924.443	0	924.443	755.603	755.603
8	1.17914	1025.93	-32.575	Medium Dense SM	243	0	243	243	1025.32	0	1025.32	870.064	870.064
9	1.17914	1183.81	-30.4114	Medium Dense SM	243	0	243	243	1146.59	0	1146.59	1003.96	1003.96
10	1.17914	1341.72	-28.2948	Medium Dense SM	243	0	243	243	1268.69	0	1268.69	1137.88	1137.88
11	1.15752	1490.63	-26.2383	Medium Dense SM	243	0	243	243	1407.56	25.1573	1382.4	1287.78	1262.63
12	1.15752	1664.93	-24.2363	Medium Dense SM	243	0	243	243	1547.75	73.9317	1473.82	1438.36	1364.43
13	1.15752	1831.4	-22.2654	Medium Dense SM	243	0	243	243	1681.67	119.692	1561.98	1582.18	1462.49
14	1.15752	1990.38	-20.3219	Medium Dense SM	243	0	243	243	1809.52	162.569	1646.95	1719.53	1556.96
15	1.15752	2142.17	-18.4026	Medium Dense SM	243	0	243	243	1931.51	202.675	1728.84	1850.66	1647.99
16	1.15752	2287.02	-16.5045	Medium Dense SM	243	0	243	243	2047.8	240.107	1807.69	1975.8	1735.69
17	1.15752	2399.22	-14.6248	Medium Dense SM	243	0	243	243	2136.14	274.947	1861.19	2072.73	1797.78
18	1.15752	2464.54	-12.7611	Medium Dense SM	243	0	243	243	2184.2	307.266	1876.94	2129.17	1821.9
19	1.27762	2787.76	-10.8157	Medium Dense SP-SM	158	0	158	158	2212.18	338.54	1873.64	2181.99	1843.45
20	1.27762	2850.58	-8.78741	Medium Dense SP-SM	158	0	158	158	2255.59	368.56	1887.03	2231.16	1862.6
21	1.27762	2905.13	-6.77019	Medium Dense SP-SM	158	0	158	158	2292.62	395.697	1896.92	2273.86	1878.16
22	1.27762	2951.53	-4.76138	Medium Dense SP-SM	158	0	158	158	2323.34	419.992	1903.34	2310.18	1890.18
23	1.27762	2989.87	-2.75843	Medium Dense SP-SM	158	0	158	158	2347.8	441.476	1906.33	2340.19	1898.71
24	1.27762	3020.21	-0.75885	Medium Dense SP-SM	158	0	158	158	2366.03	460.167	1905.86	2363.93	1903.77
25	1.27762	3042.58	1.2398	Medium Dense SP-SM	158	0	158	158	2378.02	476.075	1901.95	2381.44	1905.37
26	1.27762	3056.96	3.23997	Medium Dense SP-SM	158	0	158	158	2383.75	489.199	1894.56	2392.7	1903.5
27	1.27762	3063.32	5.2441	Medium Dense SP-SM	158	0	158	158	2383.17	499.526	1883.65	2397.68	1898.15
28	1.27762	3061.61	7.2547	Medium Dense SP-SM	158	0	158	158	2376.23	507.036	1869.19	2396.34	1889.31

29	1.27762	3051.73	9.27433	Medium Dense SP-SM	158	0	158	158	2362.8	511.695	1851.11	2388.6	1876.91
30	1.27762	3033.55	11.3057	Medium Dense SP-SM	158	0	158	158	2342.78	513.459	1829.32	2374.37	1860.91
31	1.27762	3006.91	13.3515	Medium Dense SP-SM	158	0	158	158	2316.03	512.272	1803.75	2353.52	1841.25
32	1.3344	3102.63	15.4612	Medium Dense SP-SM	158	0	158	158	2281.42	507.899	1773.52	2325.12	1817.22
33	1.25354	2870.59	17.5723	Medium Dense SP-SM	158	0	158	158	2239.94	500.449	1739.49	2289.98	1789.53
34	1.25354	2818.95	19.6415	Medium Dense SP-SM	158	0	158	158	2192.4	490.041	1702.35	2248.79	1758.75
35	1.25354	2759.6	21.7378	Medium Dense SP-SM	158	0	158	158	2138.45	476.425	1662.02	2201.44	1725.02
36	1.25354	2711	23.8652	Medium Dense SP-SM	158	0	158	158	2092.77	459.465	1633.31	2162.67	1703.21
37	1.25354	2659.4	26.0282	Medium Dense SP-SM	158	0	158	158	2044.35	438.999	1605.35	2121.5	1682.5
38	1.25354	2597.39	28.2319	Medium Dense SP-SM	158	0	158	158	1987.21	414.838	1572.37	2072.04	1657.21
39	1.25354	2568.37	30.4822	Medium Dense SP-SM	158	0	158	158	1955.88	386.754	1569.13	2048.89	1662.13
40	1.25354	2453.37	32.7859	Medium Dense SP-SM	158	0	158	158	1855.38	354.478	1500.9	1957.15	1602.67
41	1.25354	2310.1	35.151	Medium Dense SP-SM	158	0	158	158	1731.6	317.684	1413.92	1842.86	1525.17
42	1.25354	2154.38	37.5872	Medium Dense SP-SM	158	0	158	158	1597.02	275.976	1321.04	1718.64	1442.66
43	1.3026	2057.28	40.1573	Medium Dense SM	243	0	243	243	1374.32	227.826	1146.5	1579.36	1351.54
44	1.3026	1853.68	42.8806	Medium Dense SM	243	0	243	243	1197.4	172.353	1025.05	1423.06	1250.7
45	1.3026	1628.45	45.7303	Medium Dense SM	243	0	243	243	1000.88	109.483	891.394	1250.15	1140.67
46	1.3026	1378.16	48.7344	Medium Dense SM	243	0	243	243	781.074	38.0356	743.039	1058.01	1019.97
47	1.26115	1084.99	51.8768	Medium Dense SM	243	0	243	243	550.674	0	550.674	860.324	860.324
48	1.26115	826.069	55.203	Medium Dense SM	243	0	243	243	305.344	0	305.344	655.014	655.014
49	1.26115	530.942	58.8377	Medium Dense SM	243	0	243	243	19.162	0	19.162	420.999	420.999
50	1.26115	186.567	62.9101	Medium Dense SM	243	0	243	243	-327.136	0	-327.136	147.934	147.934

Lateral Spread Analysis Daly City

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 0.0514728

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.39988	109.014	-42.8349	Medium Dense SM	243	0	243	243	303.169	0	303.169	77.8736	77.8736
2	1.39988	318.27	-40.4491	Medium Dense SM	243	0	243	243	434.523	0	434.523	227.355	227.355
3	1.39988	510.858	-38.1453	Medium Dense SM	243	0	243	243	555.775	0	555.775	364.929	364.929
4	1.39988	688.355	-35.9123	Medium Dense SM	243	0	243	243	667.704	0	667.704	491.722	491.722
5	1.39988	821.318	-33.7408	Medium Dense SM	243	0	243	243	749.018	0	749.018	586.707	586.707
6	1.39988	867.673	-31.623	Medium Dense SM	243	0	243	243	769.446	0	769.446	619.817	619.817
7	1.39988	1036.32	-29.5524	Medium Dense SM	243	0	243	243	878.068	0	878.068	740.291	740.291
8	1.39988	1243.09	-27.5235	Medium Dense SM	243	0	243	243	1014.63	0	1014.63	888.002	888.002
9	1.39988	1463.99	-25.5315	Medium Dense SM	243	0	243	243	1161.86	0	1161.86	1045.8	1045.8
10	1.39988	1689.03	-23.572	Medium Dense SM	243	0	243	243	1312.57	0	1312.57	1206.55	1206.55
11	1.30386	1777.55	-21.7068	Medium Dense SM	243	0	243	243	1460.04	24.4812	1435.56	1363.3	1338.82
12	1.30386	1977.01	-19.9309	Medium Dense SM	243	0	243	243	1604.38	72.0027	1532.38	1516.27	1444.27
13	1.30386	2168.16	-18.1747	Medium Dense SM	243	0	243	243	1742.66	116.685	1625.97	1662.88	1546.19
14	1.30386	2349.98	-16.4361	Medium Dense SM	243	0	243	243	1874.01	158.617	1715.39	1802.32	1643.71
15	1.30386	2469.5	-14.713	Medium Dense SM	243	0	243	243	1957.8	197.877	1759.93	1893.99	1696.12
16	1.30386	2552.52	-13.0033	Medium Dense SM	243	0	243	243	2013.78	234.53	1779.25	1957.67	1723.14
17	1.30386	2628.08	-11.3054	Medium Dense SM	243	0	243	243	2064.2	268.633	1795.56	2015.62	1746.98
18	1.30386	2696.33	-9.61743	Medium Dense SM	243	0	243	243	2109.14	300.235	1808.9	2067.96	1767.73
19	1.37811	2916.02	-7.89028	Medium Dense SP-SM	158	0	158	158	2137.85	330.136	1807.71	2115.95	1785.81
20	1.37811	2975.84	-6.12266	Medium Dense SP-SM	158	0	158	158	2176.31	358.227	1818.08	2159.36	1801.13
21	1.37811	3027.37	-4.36088	Medium Dense SP-SM	158	0	158	158	2208.8	383.639	1825.16	2196.75	1813.11
22	1.37811	3070.69	-2.60323	Medium Dense SP-SM	158	0	158	158	2235.37	406.393	1828.98	2228.19	1821.79
23	1.37811	3105.83	-0.848031	Medium Dense SP-SM	158	0	158	158	2256.03	426.505	1829.52	2253.69	1827.19
24	1.37811	3132.83	0.906374	Medium Dense SP-SM	158	0	158	158	2270.78	443.981	1826.8	2273.28	1829.3
25	1.37811	3151.68	2.66163	Medium Dense SP-SM	158	0	158	158	2279.62	458.822	1820.8	2286.96	1828.14
26	1.37811	3162.36	4.41939	Medium Dense SP-SM	158	0	158	158	2282.5	471.021	1811.48	2294.71	1823.69
27	1.37811	3164.83	6.18134	Medium Dense SP-SM	158	0	158	158	2279.38	480.561	1798.82	2296.49	1815.93
28	1.37811	3159	7.94917	Medium Dense SP-SM	158	0	158	158	2270.21	487.421	1782.78	2292.27	1804.85

29	1.37811	3144.79	9.72467	Medium Dense SP-SM	158	0	158	158	2254.87	491.569	1763.31	2281.95	1790.38
30	1.37811	3122.07	11.5097	Medium Dense SP-SM	158	0	158	158	2233.3	492.965	1740.33	2265.47	1772.5
31	1.37811	3090.69	13.3061	Medium Dense SP-SM	158	0	158	158	2205.33	491.561	1713.77	2242.7	1751.14
32	1.89871	4217.38	15.4612	Medium Dense SP-SM	158	0	158	158	2177.47	485.836	1691.64	2221.18	1735.34
33	1.33637	2949.23	17.6074	Medium Dense SP-SM	158	0	158	158	2156.75	476.783	1679.96	2206.89	1730.11
34	1.33637	2923.23	19.4015	Medium Dense SP-SM	158	0	158	158	2131.79	465.856	1665.93	2187.43	1721.58
35	1.33637	2941.82	21.2156	Medium Dense SP-SM	158	0	158	158	2140.01	451.976	1688.04	2201.35	1749.37
36	1.33637	2842.35	23.0523	Medium Dense SP-SM	158	0	158	158	2059.67	435.037	1624.64	2126.91	1691.88
37	1.33637	2738.14	24.9145	Medium Dense SP-SM	158	0	158	158	1975.55	414.916	1560.63	2048.94	1634.02
38	1.33637	2624.19	26.8053	Medium Dense SP-SM	158	0	158	158	1883.83	391.472	1492.36	1963.66	1572.19
39	1.33637	2499.78	28.7281	Medium Dense SP-SM	158	0	158	158	1783.97	364.542	1419.43	1870.57	1506.03
40	1.33637	2364.35	30.6871	Medium Dense SP-SM	158	0	158	158	1675.46	333.934	1341.53	1769.23	1435.3
41	1.33637	2217.22	32.6867	Medium Dense SP-SM	158	0	158	158	1557.75	299.426	1258.33	1659.13	1359.71
42	1.33637	2057.61	34.7323	Medium Dense SP-SM	158	0	158	158	1430.16	260.756	1169.41	1539.7	1278.94
43	1.46703	2058.77	36.9354	Medium Dense SM	243	0	243	243	1220.67	215.26	1005.41	1403.36	1188.1
44	1.46703	1830.93	39.3103	Medium Dense SM	243	0	243	243	1049.08	162.023	887.058	1248.05	1086.02
45	1.46703	1581.79	41.769	Medium Dense SM	243	0	243	243	861.196	102.317	758.879	1078.23	975.91
46	1.46703	1308.86	44.3262	Medium Dense SM	243	0	243	243	654.833	35.3807	619.452	892.184	856.803
47	1.33813	948.919	46.8774	Medium Dense SM	243	0	243	243	449.665	0	449.665	709.136	709.136
48	1.33813	708.707	49.433	Medium Dense SM	243	0	243	243	245.779	0	245.779	529.623	529.623
49	1.33813	445.055	52.1301	Medium Dense SM	243	0	243	243	20.1087	0	20.1087	332.594	332.594
50	1.33813	153.449	55.0025	Medium Dense SM	243	0	243	243	-232.398	0	-232.398	114.674	114.674

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 0.0986116

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.39988	109.014	-42.8349	Medium Dense SM	243	0	243	243	303.169	0	303.169	77.8736	77.8736
2	1.39988	318.27	-40.4491	Medium Dense SM	243	0	243	243	434.523	0	434.523	227.355	227.355
3	1.39988	510.858	-38.1453	Medium Dense SM	243	0	243	243	555.775	0	555.775	364.929	364.929
4	1.39988	688.355	-35.9123	Medium Dense SM	243	0	243	243	667.704	0	667.704	491.722	491.722
5	1.39988	821.318	-33.7408	Medium Dense SM	243	0	243	243	749.018	0	749.018	586.707	586.707
6	1.39988	867.673	-31.623	Medium Dense SM	243	0	243	243	769.446	0	769.446	619.817	619.817
7	1.39988	1036.32	-29.5524	Medium Dense SM	243	0	243	243	878.068	0	878.068	740.291	740.291
8	1.39988	1243.09	-27.5235	Medium Dense SM	243	0	243	243	1014.63	0	1014.63	888.002	888.002
9	1.39988	1463.99	-25.5315	Medium Dense SM	243	0	243	243	1161.86	0	1161.86	1045.8	1045.8
10	1.39988	1689.03	-23.572	Medium Dense SM	243	0	243	243	1312.57	0	1312.57	1206.55	1206.55
11	1.30386	1777.55	-21.7068	Medium Dense SM	243	0	243	243	1460.04	24.4812	1435.56	1363.3	1338.82
12	1.30386	1977.01	-19.9309	Medium Dense SM	243	0	243	243	1604.38	72.0027	1532.38	1516.27	1444.27
13	1.30386	2168.16	-18.1747	Medium Dense SM	243	0	243	243	1742.66	116.685	1625.97	1662.88	1546.19
14	1.30386	2349.98	-16.4361	Medium Dense SM	243	0	243	243	1874.01	158.617	1715.39	1802.32	1643.71
15	1.30386	2469.5	-14.713	Medium Dense SM	243	0	243	243	1957.8	197.877	1759.93	1893.99	1696.12
16	1.30386	2552.52	-13.0033	Medium Dense SM	243	0	243	243	2013.78	234.53	1779.25	1957.67	1723.14
17	1.30386	2628.08	-11.3054	Medium Dense SM	243	0	243	243	2064.2	268.633	1795.56	2015.62	1746.98
18	1.30386	2696.33	-9.61743	Medium Dense SM	243	0	243	243	2109.14	300.235	1808.9	2067.96	1767.73
19	1.37811	2916.02	-7.89028	Medium Dense SP-SM	158	0	158	158	2137.85	330.136	1807.71	2115.95	1785.81
20	1.37811	2975.84	-6.12266	Medium Dense SP-SM	158	0	158	158	2176.31	358.227	1818.08	2159.36	1801.13
21	1.37811	3027.37	-4.36088	Medium Dense SP-SM	158	0	158	158	2208.8	383.639	1825.16	2196.75	1813.11
22	1.37811	3070.69	-2.60323	Medium Dense SP-SM	158	0	158	158	2235.37	406.393	1828.98	2228.19	1821.79
23	1.37811	3105.83	-0.848031	Medium Dense SP-SM	158	0	158	158	2256.03	426.505	1829.52	2253.69	1827.19
24	1.37811	3132.83	0.906374	Medium Dense SP-SM	158	0	158	158	2270.78	443.981	1826.8	2273.28	1829.3
25	1.37811	3151.68	2.66163	Medium Dense SP-SM	158	0	158	158	2279.62	458.822	1820.8	2286.96	1828.14
26	1.37811	3162.36	4.41939	Medium Dense SP-SM	158	0	158	158	2282.5	471.021	1811.48	2294.71	1823.69
27	1.37811	3164.83	6.18134	Medium Dense SP-SM	158	0	158	158	2279.38	480.561	1798.82	2296.49	1815.93
28	1.37811	3159	7.94917	Medium Dense SP-SM	158	0	158	158	2270.21	487.421	1782.78	2292.27	1804.85

29	1.37811	3144.79	9.72467	Medium Dense SP-SM	158	0	158	158	2254.87	491.569	1763.31	2281.95	1790.38
30	1.37811	3122.07	11.5097	Medium Dense SP-SM	158	0	158	158	2233.3	492.965	1740.33	2265.47	1772.5
31	1.37811	3090.69	13.3061	Medium Dense SP-SM	158	0	158	158	2205.33	491.561	1713.77	2242.7	1751.14
32	1.89871	4217.38	15.4612	Medium Dense SP-SM	158	0	158	158	2177.47	485.836	1691.64	2221.18	1735.34
33	1.33637	2949.23	17.6074	Medium Dense SP-SM	158	0	158	158	2156.75	476.783	1679.96	2206.89	1730.11
34	1.33637	2923.23	19.4015	Medium Dense SP-SM	158	0	158	158	2131.79	465.856	1665.93	2187.43	1721.58
35	1.33637	2941.82	21.2156	Medium Dense SP-SM	158	0	158	158	2140.01	451.976	1688.04	2201.35	1749.37
36	1.33637	2842.35	23.0523	Medium Dense SP-SM	158	0	158	158	2059.67	435.037	1624.64	2126.91	1691.88
37	1.33637	2738.14	24.9145	Medium Dense SP-SM	158	0	158	158	1975.55	414.916	1560.63	2048.94	1634.02
38	1.33637	2624.19	26.8053	Medium Dense SP-SM	158	0	158	158	1883.83	391.472	1492.36	1963.66	1572.19
39	1.33637	2499.78	28.7281	Medium Dense SP-SM	158	0	158	158	1783.97	364.542	1419.43	1870.57	1506.03
40	1.33637	2364.35	30.6871	Medium Dense SP-SM	158	0	158	158	1675.46	333.934	1341.53	1769.23	1435.3
41	1.33637	2217.22	32.6867	Medium Dense SP-SM	158	0	158	158	1557.75	299.426	1258.33	1659.13	1359.71
42	1.33637	2057.61	34.7323	Medium Dense SP-SM	158	0	158	158	1430.16	260.756	1169.41	1539.7	1278.94
43	1.46703	2058.77	36.9354	Medium Dense SM	243	0	243	243	1220.67	215.26	1005.41	1403.36	1188.1
44	1.46703	1830.93	39.3103	Medium Dense SM	243	0	243	243	1049.08	162.023	887.058	1248.05	1086.02
45	1.46703	1581.79	41.769	Medium Dense SM	243	0	243	243	861.196	102.317	758.879	1078.23	975.91
46	1.46703	1308.86	44.3262	Medium Dense SM	243	0	243	243	654.833	35.3807	619.452	892.184	856.803
47	1.33813	948.919	46.8774	Medium Dense SM	243	0	243	243	449.665	0	449.665	709.136	709.136
48	1.33813	708.707	49.433	Medium Dense SM	243	0	243	243	245.779	0	245.779	529.623	529.623
49	1.33813	445.055	52.1301	Medium Dense SM	243	0	243	243	20.1087	0	20.1087	332.594	332.594
50	1.33813	153.449	55.0025	Medium Dense SM	243	0	243	243	-232.398	0	-232.398	114.674	114.674

Lateral Spread Analysis Nahanni Canada

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 4.47311

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.40004	109.04	-42.8353	Medium Dense SM	243	0	243	243	303.182	0	303.182	77.8831	77.8831
2	1.40004	318.345	-40.4493	Medium Dense SM	243	0	243	243	434.553	0	434.553	227.383	227.383
3	1.40004	510.977	-38.1454	Medium Dense SM	243	0	243	243	555.82	0	555.82	364.973	364.973
4	1.40004	688.514	-35.9123	Medium Dense SM	243	0	243	243	667.763	0	667.763	491.781	491.781
5	1.40004	821.848	-33.7406	Medium Dense SM	243	0	243	243	749.328	0	749.328	587.018	587.018
6	1.40004	868.122	-31.6227	Medium Dense SM	243	0	243	243	769.697	0	769.697	620.07	620.07
7	1.40004	1036.27	-29.552	Medium Dense SM	243	0	243	243	877.949	0	877.949	740.175	740.175
8	1.40004	1243.07	-27.523	Medium Dense SM	243	0	243	243	1014.5	0	1014.5	887.878	887.878
9	1.40004	1463.88	-25.5308	Medium Dense SM	243	0	243	243	1161.67	0	1161.67	1045.6	1045.6
10	1.40004	1688.98	-23.5712	Medium Dense SM	243	0	243	243	1312.4	0	1312.4	1206.38	1206.38
11	1.30395	1777.46	-21.7059	Medium Dense SM	243	0	243	243	1459.87	24.4821	1435.38	1363.13	1338.65
12	1.30395	1976.93	-19.93	Medium Dense SM	243	0	243	243	1604.22	72.0054	1532.22	1516.11	1444.11
13	1.30395	2168.1	-18.1738	Medium Dense SM	243	0	243	243	1742.5	116.689	1625.81	1662.73	1546.04
14	1.30395	2350	-16.4352	Medium Dense SM	243	0	243	243	1873.9	158.623	1715.28	1802.22	1643.6
15	1.30395	2469.76	-14.712	Medium Dense SM	243	0	243	243	1957.88	197.883	1759.99	1894.07	1696.19
16	1.30395	2552.79	-13.0023	Medium Dense SM	243	0	243	243	2013.85	234.537	1779.31	1957.74	1723.2
17	1.30395	2628.36	-11.3044	Medium Dense SM	243	0	243	243	2064.27	268.641	1795.63	2015.7	1747.06
18	1.30395	2696.61	-9.61641	Medium Dense SM	243	0	243	243	2109.21	300.244	1808.96	2068.04	1767.79
19	1.3791	2918.24	-7.88866	Medium Dense SP-SM	158	0	158	158	2137.94	330.154	1807.79	2116.05	1785.89
20	1.3791	2978.13	-6.11987	Medium Dense SP-SM	158	0	158	158	2176.42	358.263	1818.15	2159.48	1801.21
21	1.3791	3029.72	-4.35692	Medium Dense SP-SM	158	0	158	158	2208.92	383.687	1825.23	2196.88	1813.2
22	1.3791	3073.08	-2.5981	Medium Dense SP-SM	158	0	158	158	2235.49	406.451	1829.04	2228.32	1821.87
23	1.3791	3108.25	-0.841726	Medium Dense SP-SM	158	0	158	158	2256.15	426.568	1829.58	2253.83	1827.26
24	1.3791	3135.26	0.913854	Medium Dense SP-SM	158	0	158	158	2270.89	444.047	1826.84	2273.41	1829.36
25	1.3791	3154.1	2.67029	Medium Dense SP-SM	158	0	158	158	2279.7	458.887	1820.81	2287.07	1828.18
26	1.3791	3164.75	4.42925	Medium Dense SP-SM	158	0	158	158	2282.55	471.08	1811.47	2294.79	1823.71
27	1.3791	3167.17	6.19241	Medium Dense SP-SM	158	0	158	158	2279.4	480.611	1798.79	2296.54	1815.93
28	1.3791	3161.28	7.96147	Medium Dense SP-SM	158	0	158	158	2270.18	487.458	1782.72	2292.27	1804.82

29	1.3791	3146.98	9.73822	Medium Dense SP-SM	158	0	158	158	2254.8	491.589	1763.21	2281.91	1790.32
30	1.3791	3124.16	11.5245	Medium Dense SP-SM	158	0	158	158	2233.15	492.964	1740.18	2265.36	1772.4
31	1.3791	3092.66	13.3222	Medium Dense SP-SM	158	0	158	158	2205.11	491.535	1713.57	2242.52	1750.99
32	1.87336	4161.09	15.4612	Medium Dense SP-SM	158	0	158	158	2177.49	485.854	1691.63	2221.19	1735.34
33	1.33763	2952.18	17.5913	Medium Dense SP-SM	158	0	158	158	2156.93	476.866	1680.06	2207.02	1730.15
34	1.33763	2926.21	19.3869	Medium Dense SP-SM	158	0	158	158	2132	465.954	1666.05	2187.6	1721.65
35	1.33763	2944.57	21.2025	Medium Dense SP-SM	158	0	158	158	2140.04	452.084	1687.95	2201.33	1749.24
36	1.33763	2845.78	23.0407	Medium Dense SP-SM	158	0	158	158	2060.28	435.15	1625.13	2127.48	1692.33
37	1.33763	2741.42	24.9043	Medium Dense SP-SM	158	0	158	158	1976.1	415.029	1561.07	2049.46	1634.43
38	1.33763	2627.31	26.7966	Medium Dense SP-SM	158	0	158	158	1884.35	391.58	1492.77	1964.15	1572.57
39	1.33763	2502.71	28.7211	Medium Dense SP-SM	158	0	158	158	1784.42	364.639	1419.78	1871	1506.36
40	1.33763	2367.05	30.6817	Medium Dense SP-SM	158	0	158	158	1675.84	334.014	1341.82	1769.58	1435.57
41	1.33763	2219.68	32.683	Medium Dense SP-SM	158	0	158	158	1558.03	299.482	1258.55	1659.4	1359.92
42	1.33763	2059.79	34.7303	Medium Dense SP-SM	158	0	158	158	1430.34	260.782	1169.56	1539.87	1279.09
43	1.46715	2059.1	36.9344	Medium Dense SM	243	0	243	243	1220.79	215.268	1005.53	1403.47	1188.2
44	1.46715	1831.23	39.3094	Medium Dense SM	243	0	243	243	1049.2	162.03	887.165	1248.15	1086.12
45	1.46715	1582.06	41.7681	Medium Dense SM	243	0	243	243	861.302	102.321	758.981	1078.33	976.005
46	1.46715	1309.09	44.3253	Medium Dense SM	243	0	243	243	654.927	35.3822	619.544	892.27	856.888
47	1.3383	949.139	46.8766	Medium Dense SM	243	0	243	243	449.749	0	449.749	709.212	709.212
48	1.3383	708.873	49.4324	Medium Dense SM	243	0	243	243	245.844	0	245.844	529.682	529.682
49	1.3383	445.161	52.1296	Medium Dense SM	243	0	243	243	20.1513	0	20.1513	332.632	332.632
50	1.3383	153.486	55.0023	Medium Dense SM	243	0	243	243	-232.382	0	-232.382	114.687	114.687

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 5.79626

Slice Number	Width [ft]	Weight [lbs]	Angle of Slice Base [deg]	Base Material	Base Cohesion [psf]	Base Friction Angle [deg]	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	1.17914	98.7349	-49.8051	Medium Dense SM	243	0	243	243	371.339	0	371.339	83.7347	83.7347
2	1.17914	287.003	-47.0235	Medium Dense SM	243	0	243	243	504.199	0	504.199	243.4	243.4
3	1.17914	458.173	-44.3804	Medium Dense SM	243	0	243	243	626.368	0	626.368	388.568	388.568
4	1.17914	614.535	-41.8521	Medium Dense SM	243	0	243	243	738.837	0	738.837	521.172	521.172
5	1.17914	757.818	-39.4203	Medium Dense SM	243	0	243	243	842.432	0	842.432	642.685	642.685
6	1.17914	846.164	-37.0708	Medium Dense SM	243	0	243	243	901.198	0	901.198	717.613	717.613
7	1.17914	890.961	-34.7922	Medium Dense SM	243	0	243	243	924.443	0	924.443	755.603	755.603
8	1.17914	1025.93	-32.575	Medium Dense SM	243	0	243	243	1025.32	0	1025.32	870.064	870.064
9	1.17914	1183.81	-30.4114	Medium Dense SM	243	0	243	243	1146.59	0	1146.59	1003.96	1003.96
10	1.17914	1341.72	-28.2948	Medium Dense SM	243	0	243	243	1268.69	0	1268.69	1137.88	1137.88
11	1.15752	1490.63	-26.2383	Medium Dense SM	243	0	243	243	1407.56	25.1573	1382.4	1287.78	1262.63
12	1.15752	1664.93	-24.2363	Medium Dense SM	243	0	243	243	1547.75	73.9317	1473.82	1438.36	1364.43
13	1.15752	1831.4	-22.2654	Medium Dense SM	243	0	243	243	1681.67	119.692	1561.98	1582.18	1462.49
14	1.15752	1990.38	-20.3219	Medium Dense SM	243	0	243	243	1809.52	162.569	1646.95	1719.53	1556.96
15	1.15752	2142.17	-18.4026	Medium Dense SM	243	0	243	243	1931.51	202.675	1728.84	1850.66	1647.99
16	1.15752	2287.02	-16.5045	Medium Dense SM	243	0	243	243	2047.8	240.107	1807.69	1975.8	1735.69
17	1.15752	2399.22	-14.6248	Medium Dense SM	243	0	243	243	2136.14	274.947	1861.19	2072.73	1797.78
18	1.15752	2464.54	-12.7611	Medium Dense SM	243	0	243	243	2184.2	307.266	1876.94	2129.17	1821.9
19	1.27762	2787.76	-10.8157	Medium Dense SP-SM	158	0	158	158	2212.18	338.54	1873.64	2181.99	1843.45
20	1.27762	2850.58	-8.78741	Medium Dense SP-SM	158	0	158	158	2255.59	368.56	1887.03	2231.16	1862.6
21	1.27762	2905.13	-6.77019	Medium Dense SP-SM	158	0	158	158	2292.62	395.697	1896.92	2273.86	1878.16
22	1.27762	2951.53	-4.76138	Medium Dense SP-SM	158	0	158	158	2323.34	419.992	1903.34	2310.18	1890.18
23	1.27762	2989.87	-2.75843	Medium Dense SP-SM	158	0	158	158	2347.8	441.476	1906.33	2340.19	1898.71
24	1.27762	3020.21	-0.75885	Medium Dense SP-SM	158	0	158	158	2366.03	460.167	1905.86	2363.93	1903.77
25	1.27762	3042.58	1.2398	Medium Dense SP-SM	158	0	158	158	2378.02	476.075	1901.95	2381.44	1905.37
26	1.27762	3056.96	3.23997	Medium Dense SP-SM	158	0	158	158	2383.75	489.199	1894.56	2392.7	1903.5
27	1.27762	3063.32	5.2441	Medium Dense SP-SM	158	0	158	158	2383.17	499.526	1883.65	2397.68	1898.15
28	1.27762	3061.61	7.2547	Medium Dense SP-SM	158	0	158	158	2376.23	507.036	1869.19	2396.34	1889.31

29	1.27762	3051.73	9.27433	Medium Dense SP-SM	158	0	158	158	2362.8	511.695	1851.11	2388.6	1876.91
30	1.27762	3033.55	11.3057	Medium Dense SP-SM	158	0	158	158	2342.78	513.459	1829.32	2374.37	1860.91
31	1.27762	3006.91	13.3515	Medium Dense SP-SM	158	0	158	158	2316.03	512.272	1803.75	2353.52	1841.25
32	1.3344	3102.63	15.4612	Medium Dense SP-SM	158	0	158	158	2281.42	507.899	1773.52	2325.12	1817.22
33	1.25354	2870.59	17.5723	Medium Dense SP-SM	158	0	158	158	2239.94	500.449	1739.49	2289.98	1789.53
34	1.25354	2818.95	19.6415	Medium Dense SP-SM	158	0	158	158	2192.4	490.041	1702.35	2248.79	1758.75
35	1.25354	2759.6	21.7378	Medium Dense SP-SM	158	0	158	158	2138.45	476.425	1662.02	2201.44	1725.02
36	1.25354	2711	23.8652	Medium Dense SP-SM	158	0	158	158	2092.77	459.465	1633.31	2162.67	1703.21
37	1.25354	2659.4	26.0282	Medium Dense SP-SM	158	0	158	158	2044.35	438.999	1605.35	2121.5	1682.5
38	1.25354	2597.39	28.2319	Medium Dense SP-SM	158	0	158	158	1987.21	414.838	1572.37	2072.04	1657.21
39	1.25354	2568.37	30.4822	Medium Dense SP-SM	158	0	158	158	1955.88	386.754	1569.13	2048.89	1662.13
40	1.25354	2453.37	32.7859	Medium Dense SP-SM	158	0	158	158	1855.38	354.478	1500.9	1957.15	1602.67
41	1.25354	2310.1	35.151	Medium Dense SP-SM	158	0	158	158	1731.6	317.684	1413.92	1842.86	1525.17
42	1.25354	2154.38	37.5872	Medium Dense SP-SM	158	0	158	158	1597.02	275.976	1321.04	1718.64	1442.66
43	1.3026	2057.28	40.1573	Medium Dense SM	243	0	243	243	1374.32	227.826	1146.5	1579.36	1351.54
44	1.3026	1853.68	42.8806	Medium Dense SM	243	0	243	243	1197.4	172.353	1025.05	1423.06	1250.7
45	1.3026	1628.45	45.7303	Medium Dense SM	243	0	243	243	1000.88	109.483	891.394	1250.15	1140.67
46	1.3026	1378.16	48.7344	Medium Dense SM	243	0	243	243	781.074	38.0356	743.039	1058.01	1019.97
47	1.26115	1084.99	51.8768	Medium Dense SM	243	0	243	243	550.674	0	550.674	860.324	860.324
48	1.26115	826.069	55.203	Medium Dense SM	243	0	243	243	305.344	0	305.344	655.014	655.014
49	1.26115	530.942	58.8377	Medium Dense SM	243	0	243	243	19.162	0	19.162	420.999	420.999
50	1.26115	186.567	62.9101	Medium Dense SM	243	0	243	243	-327.136	0	-327.136	147.934	147.934

Interslice Data

Post Construction

Global Minimum Query (bishop simplified) - Safety Factor: 1.41396

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.00473592	102	0	0	0
2	1.18605	100.601	605.112	0	0
3	2.36737	99.3327	1351.63	0	0
4	3.54869	98.1763	2199.6	0	0
5	4.73001	97.1178	3118.49	0	0
6	5.91133	96.1466	4084.38	0	0
7	7.09264	95.2539	5051.07	0	0
8	8.27396	94.433	5976.8	0	0
9	9.45528	93.6782	6917.83	0	0
10	10.6366	92.9848	7885.64	0	0
11	11.8179	92.3489	8869.1	0	0
12	12.976	91.778	9849.56	0	0
13	14.1341	91.2567	10837.1	0	0
14	15.2922	90.7824	11818.2	0	0
15	16.4503	90.3534	12780.8	0	0
16	17.6084	89.968	13713.9	0	0
17	18.7665	89.6247	14607.7	0	0
18	19.9246	89.3223	15447.3	0	0
19	21.0827	89.0598	16215.9	0	0
20	22.346	88.818	16890.4	0	0
21	23.6092	88.6216	17473.3	0	0
22	24.8725	88.47	17961.4	0	0
23	26.1357	88.3626	18351.7	0	0
24	27.399	88.299	18642.1	0	0
25	28.6623	88.2791	18830.5	0	0
26	29.9255	88.3026	18915.6	0	0
27	31.1888	88.3697	18896.4	0	0
28	32.452	88.4807	18772.3	0	0
29	33.7153	88.636	18543.2	0	0
30	34.9786	88.836	18209.3	0	0
31	36.2418	89.0816	17771.4	0	0
32	37.5051	89.3737	17230.7	0	0
33	39.2669	89.8611	16308.8	0	0
34	40.5014	90.2598	15549.5	0	0
35	41.7359	90.7077	14700.3	0	0
36	42.9704	91.2067	13764.3	0	0
37	44.2049	91.759	12737.2	0	0
38	45.4394	92.3673	11620	0	0
39	46.6738	93.035	10417.1	0	0
40	47.9083	93.7657	9107.73	0	0
41	49.1428	94.5641	7742.99	0	0
42	50.3773	95.4355	6344.76	0	0
43	51.6118	96.3868	4929.32	0	0
44	52.9146	97.4865	3574.52	0	0
45	54.2175	98.6967	2268.04	0	0
46	55.5203	100.033	1055.05	0	0
47	56.8232	101.518	-2.81944	0	0
48	58.0859	103.127	-819.223	0	0
49	59.3485	104.944	-1344.32	0	0
50	60.6112	107.032	-1413.96	0	0
51	61.8738	109.5	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.34316

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.00473592	102	0	0	0
2	1.18605	100.601	630.322	0	0
3	2.36737	99.3327	1399.43	0	0
4	3.54869	98.1763	2267.95	0	0
5	4.73001	97.1178	3205.76	0	0
6	5.91133	96.1466	4189.25	0	0
7	7.09264	95.2539	5172.42	0	0
8	8.27396	94.433	6113.71	0	0
9	9.45528	93.6782	7069.52	0	0
10	10.6366	92.9848	8051.44	0	0
11	11.8179	92.3489	9048.43	0	0
12	12.976	91.778	10041.7	0	0
13	14.1341	91.2567	11041.6	0	0
14	15.2922	90.7824	12034.7	0	0
15	16.4503	90.3534	13009	0	0
16	17.6084	89.968	13953.6	0	0
17	18.7665	89.6247	14858.5	0	0
18	19.9246	89.3223	15709.1	0	0
19	21.0827	89.0598	16488.6	0	0
20	22.346	88.818	17170.6	0	0
21	23.6092	88.6216	17761	0	0
22	24.8725	88.47	18256.4	0	0
23	26.1357	88.3626	18654.1	0	0
24	27.399	88.299	18951.8	0	0
25	28.6623	88.2791	19147.5	0	0
26	29.9255	88.3026	19240	0	0
27	31.1888	88.3697	19228.1	0	0
28	32.452	88.4807	19111.3	0	0
29	33.7153	88.636	18889.6	0	0
30	34.9786	88.836	18563.2	0	0
31	36.2418	89.0816	18132.8	0	0
32	37.5051	89.3737	17599.9	0	0
33	39.2669	89.8611	16688.9	0	0
34	40.5014	90.2598	15937.4	0	0
35	41.7359	90.7077	15096.3	0	0
36	42.9704	91.2067	14168.7	0	0
37	44.2049	91.759	13150.1	0	0
38	45.4394	92.3673	12041.7	0	0
39	46.6738	93.035	10848.1	0	0
40	47.9083	93.7657	9548.34	0	0
41	49.1428	94.5641	8193.71	0	0
42	50.3773	95.4355	6806.17	0	0
43	51.6118	96.3868	5402.1	0	0
44	52.9146	97.4865	4067.12	0	0
45	54.2175	98.6967	2782.19	0	0
46	55.5203	100.033	1592.96	0	0
47	56.8232	101.518	561.697	0	0
48	58.0859	103.127	-225.278	0	0
49	59.3485	104.944	-715.931	0	0
50	60.6112	107.032	-743.684	0	0
51	61.8738	109.5	0	0	0

Lateral Spread Analysis Cape Mendocino

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 11.7197

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.00631456	102	0	0	0
2	1.40635	100.702	727.078	0	0
3	2.80639	99.5083	1566.47	0	0
4	4.20643	98.4088	2486.54	0	0
5	5.60647	97.3949	3461.63	0	0
6	7.00651	96.4597	4452.23	0	0
7	8.40655	95.5976	5402.8	0	0
8	9.80659	94.8039	6376.43	0	0
9	11.2066	94.0743	7380.61	0	0
10	12.6067	93.4056	8407.96	0	0
11	14.0067	92.7948	9446.36	0	0
12	15.3107	92.2757	10412.1	0	0
13	16.6146	91.8029	11366.3	0	0
14	17.9185	91.3749	12296.3	0	0
15	19.2225	90.9902	13190	0	0
16	20.5264	90.6479	14025.9	0	0
17	21.8304	90.3468	14792.7	0	0
18	23.1343	90.0861	15486.6	0	0
19	24.4383	89.8652	16104.3	0	0
20	25.8174	89.6741	16552	0	0
21	27.1965	89.5262	16909.3	0	0
22	28.5756	89.4212	17173.7	0	0
23	29.9547	89.3586	17343.2	0	0
24	31.3338	89.3383	17416.5	0	0
25	32.7129	89.3603	17392.4	0	0
26	34.092	89.4246	17270.4	0	0
27	35.4711	89.5315	17050.6	0	0
28	36.8502	89.6811	16733.4	0	0
29	38.2293	89.874	16319.8	0	0
30	39.6084	90.1106	15811.3	0	0
31	40.9875	90.3918	15209.9	0	0
32	42.3666	90.7184	14518.2	0	0
33	44.2399	91.2366	13431	0	0
34	45.5776	91.6607	12546.8	0	0
35	46.9152	92.1314	11575.3	0	0
36	48.2528	92.6503	10495.9	0	0
37	49.5905	93.2192	9360.77	0	0
38	50.9281	93.8402	8176.97	0	0
39	52.2657	94.5158	6954.34	0	0
40	53.6034	95.2488	5704.45	0	0
41	54.941	96.0425	4440.78	0	0
42	56.2786	96.9006	3179.07	0	0
43	57.6163	97.8279	1937.93	0	0
44	59.0834	98.9309	821.854	0	0
45	60.5506	100.132	-194.145	0	0
46	62.0177	101.442	-1063.11	0	0
47	63.4849	102.875	-1725.29	0	0
48	64.8232	104.304	-2100.9	0	0
49	66.1615	105.868	-2203.42	0	0
50	67.4998	107.589	-1940.16	0	0
51	68.8381	109.5	0	0	0

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 14.458

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.126291	102	0	0	0
2	1.30543	100.604	799.805	0	0
3	2.48457	99.3389	1709.99	0	0
4	3.66371	98.185	2696.29	0	0
5	4.84285	97.1288	3732.32	0	0
6	6.02199	96.1595	4797.33	0	0
7	7.20113	95.2687	5844.18	0	0
8	8.38027	94.4494	6843.35	0	0
9	9.55941	93.6961	7850.8	0	0
10	10.7386	93.0039	8871.46	0	0
11	11.9177	92.3692	9895.93	0	0
12	13.0752	91.7987	10905.4	0	0
13	14.2327	91.2776	11909.6	0	0
14	15.3902	90.8036	12895.9	0	0
15	16.5478	90.375	13852.9	0	0
16	17.7053	89.9898	14770.5	0	0
17	18.8628	89.6469	15639.2	0	0
18	20.0203	89.3448	16445.2	0	0
19	21.1778	89.0827	17175.3	0	0
20	22.4554	88.8386	17777.1	0	0
21	23.7331	88.6411	18281.3	0	0
22	25.0107	88.4894	18685	0	0
23	26.2883	88.383	18985.9	0	0
24	27.5659	88.3215	19182.2	0	0
25	28.8435	88.3045	19272.4	0	0
26	30.1212	88.3322	19255.7	0	0
27	31.3988	88.4045	19131.7	0	0
28	32.6764	88.5218	18900.2	0	0
29	33.954	88.6844	18561.9	0	0
30	35.2316	88.893	18117.5	0	0
31	36.5093	89.1485	17568.7	0	0
32	37.7869	89.4517	16917.2	0	0
33	39.1213	89.8208	16130.2	0	0
34	40.3748	90.2178	15294.9	0	0
35	41.6284	90.6652	14370.5	0	0
36	42.8819	91.165	13361.2	0	0
37	44.1355	91.7195	12262.5	0	0
38	45.389	92.3317	11075.6	0	0
39	46.6425	93.0047	9805.71	0	0
40	47.8961	93.7426	8431.61	0	0
41	49.1496	94.55	7008.4	0	0
42	50.4032	95.4327	5562.01	0	0
43	51.6567	96.3976	4110.9	0	0
44	52.9593	97.4967	2813.58	0	0
45	54.2619	98.7064	1588.61	0	0
46	55.5645	100.043	485.952	0	0
47	56.8671	101.527	-426.239	0	0
48	58.1283	103.134	-1059.23	0	0
49	59.3894	104.949	-1348.38	0	0
50	60.6506	107.034	-1108.54	0	0
51	61.9117	109.5	0	0	0

Lateral Spread Analysis Daly City

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 0.0514728

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.0126291	102	0	0	0
2	1.41251	100.702	726.974	0	0
3	2.8124	99.5086	1566.23	0	0
4	4.21228	98.4092	2486.15	0	0
5	5.61216	97.3954	3461.08	0	0
6	7.01205	96.4604	4451.3	0	0
7	8.41193	95.5984	5401.57	0	0
8	9.81181	94.8047	6375.18	0	0
9	11.2117	94.0752	7379.33	0	0
10	12.6116	93.4065	8406.7	0	0
11	14.0115	92.7958	9445.09	0	0
12	15.3153	92.2767	10410.9	0	0
13	16.6192	91.8039	11365.1	0	0
14	17.923	91.3759	12295.1	0	0
15	19.2269	90.9912	13188.8	0	0
16	20.5308	90.6489	14024.6	0	0
17	21.8346	90.3478	14791.4	0	0
18	23.1385	90.0871	15485.3	0	0
19	24.4423	89.8662	16103	0	0
20	25.8205	89.6752	16550.4	0	0
21	27.1986	89.5273	16907.6	0	0
22	28.5767	89.4222	17172	0	0
23	29.9548	89.3596	17341.7	0	0
24	31.3329	89.3392	17415.1	0	0
25	32.711	89.361	17391.5	0	0
26	34.0891	89.4251	17270.1	0	0
27	35.4672	89.5316	17051	0	0
28	36.8453	89.6808	16734.6	0	0
29	38.2235	89.8733	16322	0	0
30	39.6016	90.1094	15814.5	0	0
31	40.9797	90.3901	15214.3	0	0
32	42.3578	90.716	14523.9	0	0
33	44.2565	91.2412	13422	0	0
34	45.5929	91.6653	12537.8	0	0
35	46.9292	92.1359	11566.5	0	0
36	48.2656	92.6547	10487.3	0	0
37	49.602	93.2234	9352.94	0	0
38	50.9384	93.8441	8170.05	0	0
39	52.2747	94.5193	6948.46	0	0
40	53.6111	95.2518	5699.72	0	0
41	54.9475	96.0449	4437.26	0	0
42	56.2839	96.9024	3176.81	0	0
43	57.6202	97.8289	1936.91	0	0
44	59.0873	98.9317	820.998	0	0
45	60.5543	100.133	-194.83	0	0
46	62.0213	101.443	-1063.63	0	0
47	63.4883	102.876	-1725.65	0	0
48	64.8265	104.305	-2101.11	0	0
49	66.1646	105.868	-2203.52	0	0
50	67.5028	107.589	-1940.22	0	0
51	68.8409	109.5	0	0	0

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 0.0986116

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.0126291	102	0	0	0
2	1.41251	100.702	728.171	0	0
3	2.8124	99.5086	1570.93	0	0
4	4.21228	98.4092	2496.46	0	0
5	5.61216	97.3954	3478.95	0	0
6	7.01205	96.4604	4478.19	0	0
7	8.41193	95.5984	5437.99	0	0
8	9.81181	94.8047	6423	0	0
9	11.2117	94.0752	7440.8	0	0
10	12.6116	93.4065	8484.26	0	0
11	14.0115	92.7958	9541.21	0	0
12	15.3153	92.2767	10526.5	0	0
13	16.6192	91.8039	11502.5	0	0
14	17.923	91.3759	12456.3	0	0
15	19.2269	90.9912	13375.8	0	0
16	20.5308	90.6489	14238.8	0	0
17	21.8346	90.3478	15033.6	0	0
18	23.1385	90.0871	15756.4	0	0
19	24.4423	89.8662	16403.7	0	0
20	25.8205	89.6752	16883.1	0	0
21	27.1986	89.5273	17273	0	0
22	28.5767	89.4222	17570.7	0	0
23	29.9548	89.3596	17774.1	0	0
24	31.3329	89.3392	17881.7	0	0
25	32.711	89.361	17892.4	0	0
26	34.0891	89.4251	17805.7	0	0
27	35.4672	89.5316	17621.3	0	0
28	36.8453	89.6808	17339.8	0	0
29	38.2235	89.8733	16961.8	0	0
30	39.6016	90.1094	16488.9	0	0
31	40.9797	90.3901	15923	0	0
32	42.3578	90.716	15266.6	0	0
33	44.2565	91.2412	14211	0	0
34	45.5929	91.6653	13359.1	0	0
35	46.9292	92.1359	12420	0	0
36	48.2656	92.6547	11373.1	0	0
37	49.602	93.2234	10270	0	0
38	50.9384	93.8441	9117.2	0	0
39	52.2747	94.5193	7924.45	0	0
40	53.6111	95.2518	6703.17	0	0
41	54.9475	96.0449	5466.69	0	0
42	56.2839	96.9024	4230.6	0	0
43	57.6202	97.8289	3013.3	0	0
44	59.0873	98.9317	1920.01	0	0
45	60.5543	100.133	924.304	0	0
46	62.0213	101.443	72.8869	0	0
47	63.4883	102.876	-574.751	0	0
48	64.8265	104.305	-939.787	0	0
49	66.1646	105.868	-1034.41	0	0
50	67.5028	107.589	-766.226	0	0
51	68.8409	109.5	0	0	0

Lateral Spread Analysis Nahanni Canada

Global Minimum Query (bishop simplified) - Newmark Displacement (in): 4.47311

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.00631456	102	0	0	0
2	1.40635	100.702	727.078	0	0
3	2.80639	99.5083	1566.47	0	0
4	4.20643	98.4088	2486.54	0	0
5	5.60647	97.3949	3461.63	0	0
6	7.00651	96.4597	4452.23	0	0
7	8.40655	95.5976	5402.8	0	0
8	9.80659	94.8039	6376.43	0	0
9	11.2066	94.0743	7380.61	0	0
10	12.6067	93.4056	8407.96	0	0
11	14.0067	92.7948	9446.36	0	0
12	15.3107	92.2757	10412.1	0	0
13	16.6146	91.8029	11366.3	0	0
14	17.9185	91.3749	12296.3	0	0
15	19.2225	90.9902	13190	0	0
16	20.5264	90.6479	14025.9	0	0
17	21.8304	90.3468	14792.7	0	0
18	23.1343	90.0861	15486.6	0	0
19	24.4383	89.8652	16104.3	0	0
20	25.8174	89.6741	16552	0	0
21	27.1965	89.5262	16909.3	0	0
22	28.5756	89.4212	17173.7	0	0
23	29.9547	89.3586	17343.2	0	0
24	31.3338	89.3383	17416.5	0	0
25	32.7129	89.3603	17392.4	0	0
26	34.092	89.4246	17270.4	0	0
27	35.4711	89.5315	17050.6	0	0
28	36.8502	89.6811	16733.4	0	0
29	38.2293	89.874	16319.8	0	0
30	39.6084	90.1106	15811.3	0	0
31	40.9875	90.3918	15209.9	0	0
32	42.3666	90.7184	14518.2	0	0
33	44.2399	91.2366	13431	0	0
34	45.5776	91.6607	12546.8	0	0
35	46.9152	92.1314	11575.3	0	0
36	48.2528	92.6503	10495.9	0	0
37	49.5905	93.2192	9360.77	0	0
38	50.9281	93.8402	8176.97	0	0
39	52.2657	94.5158	6954.34	0	0
40	53.6034	95.2488	5704.45	0	0
41	54.941	96.0425	4440.78	0	0
42	56.2786	96.9006	3179.07	0	0
43	57.6163	97.8279	1937.93	0	0
44	59.0834	98.9309	821.854	0	0
45	60.5506	100.132	-194.145	0	0
46	62.0177	101.442	-1063.11	0	0
47	63.4849	102.875	-1725.29	0	0
48	64.8232	104.304	-2100.9	0	0
49	66.1615	105.868	-2203.42	0	0
50	67.4998	107.589	-1940.16	0	0
51	68.8381	109.5	0	0	0

Global Minimum Query (janbu simplified) - Newmark Displacement (in): 5.79626

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	0.126291	102	0	0	0
2	1.30543	100.604	799.805	0	0
3	2.48457	99.3389	1709.99	0	0
4	3.66371	98.185	2696.29	0	0
5	4.84285	97.1288	3732.32	0	0
6	6.02199	96.1595	4797.33	0	0
7	7.20113	95.2687	5844.18	0	0
8	8.38027	94.4494	6843.35	0	0
9	9.55941	93.6961	7850.8	0	0
10	10.7386	93.0039	8871.46	0	0
11	11.9177	92.3692	9895.93	0	0
12	13.0752	91.7987	10905.4	0	0
13	14.2327	91.2776	11909.6	0	0
14	15.3902	90.8036	12895.9	0	0
15	16.5478	90.375	13852.9	0	0
16	17.7053	89.9898	14770.5	0	0
17	18.8628	89.6469	15639.2	0	0
18	20.0203	89.3448	16445.2	0	0
19	21.1778	89.0827	17175.3	0	0
20	22.4554	88.8386	17777.1	0	0
21	23.7331	88.6411	18281.3	0	0
22	25.0107	88.4894	18685	0	0
23	26.2883	88.383	18985.9	0	0
24	27.5659	88.3215	19182.2	0	0
25	28.8435	88.3045	19272.4	0	0
26	30.1212	88.3322	19255.7	0	0
27	31.3988	88.4045	19131.7	0	0
28	32.6764	88.5218	18900.2	0	0
29	33.954	88.6844	18561.9	0	0
30	35.2316	88.893	18117.5	0	0
31	36.5093	89.1485	17568.7	0	0
32	37.7869	89.4517	16917.2	0	0
33	39.1213	89.8208	16130.2	0	0
34	40.3748	90.2178	15294.9	0	0
35	41.6284	90.6652	14370.5	0	0
36	42.8819	91.165	13361.2	0	0
37	44.1355	91.7195	12262.5	0	0
38	45.389	92.3317	11075.6	0	0
39	46.6425	93.0047	9805.71	0	0
40	47.8961	93.7426	8431.61	0	0
41	49.1496	94.55	7008.4	0	0
42	50.4032	95.4327	5562.01	0	0
43	51.6567	96.3976	4110.9	0	0
44	52.9593	97.4967	2813.58	0	0
45	54.2619	98.7064	1588.61	0	0
46	55.5645	100.043	485.952	0	0
47	56.8671	101.527	-426.239	0	0
48	58.1283	103.134	-1059.23	0	0
49	59.3894	104.949	-1348.38	0	0
50	60.6506	107.034	-1108.54	0	0
51	61.9117	109.5	0	0	0

Discharge Sections

Entity Information

Post Construction

Shared Entities

Type	Coordinates (x,y)
External Boundary	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5 47, 109.059 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79 0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 96, 124.4 95, 124 95, 112
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785
Material Boundary	47, 109.059 48, 109.294 48.875, 109.5
Material Boundary	95, 109.5 96, 109.5 96, 124.4
Material Boundary	47, 109.059 48, 109.059 48, 109.294 48, 109.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	0, 89.9411 96, 109.5 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML

Lateral Spread Analysis Cape Mendocino

Shared Entities

Type	Coordinates (x,y)
External Boundary	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5 47, 109.059 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79 0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 96, 124.4 95, 124 95, 112
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785
Material Boundary	47, 109.059 48, 109.294 48.875, 109.5
Material Boundary	95, 109.5 96, 109.5 96, 124.4
Material Boundary	47, 109.059 48, 109.059 48, 109.294 48, 109.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	0, 89.9411 96, 109.5 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML

Lateral Spread Analysis Daly City

Shared Entities

Type	Coordinates (x,y)
External Boundary	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5 47, 109.059 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79 0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 96, 124.4 95, 124 95, 112
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785
Material Boundary	47, 109.059 48, 109.294 48.875, 109.5
Material Boundary	95, 109.5 96, 109.5 96, 124.4
Material Boundary	47, 109.059 48, 109.059 48, 109.294 48, 109.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	0, 89.9411 96, 109.5 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML

Lateral Spread Analysis Nahanni Canada

Shared Entities

Type	Coordinates (x,y)
External Boundary	95, 109.5 48.875, 109.5 48, 109.5 47, 109.5 47, 109.059 42.5, 108 19, 106 11, 102 8, 101 6, 102 0, 102 0, 84 0, 79 0, 70 130, 70 130, 118 130, 120 130, 130 105, 128 96, 124.4 95, 124 95, 112
Material Boundary	0, 84 75, 102
Material Boundary	0, 79 78.7617, 100.785 94, 105 130, 120
Material Boundary	94, 103 130, 118
Material Boundary	94, 103 95.866, 104.343 89.141, 102.356 96.443, 105.148 90.765, 103.766 94, 105
Material Boundary	75, 102 74.342, 101.083 79.786, 102.433 75.265, 100.313 78.7617, 100.785
Material Boundary	47, 109.059 48, 109.294 48.875, 109.5
Material Boundary	95, 109.5 96, 109.5 96, 124.4
Material Boundary	47, 109.059 48, 109.059 48, 109.294 48, 109.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario
Water Table	0, 89.9411 96, 109.5 118, 118 130, 118	Assigned to: Medium Dense SM Medium Dense SP-SM Medium Stiff ML

APPENDIX D

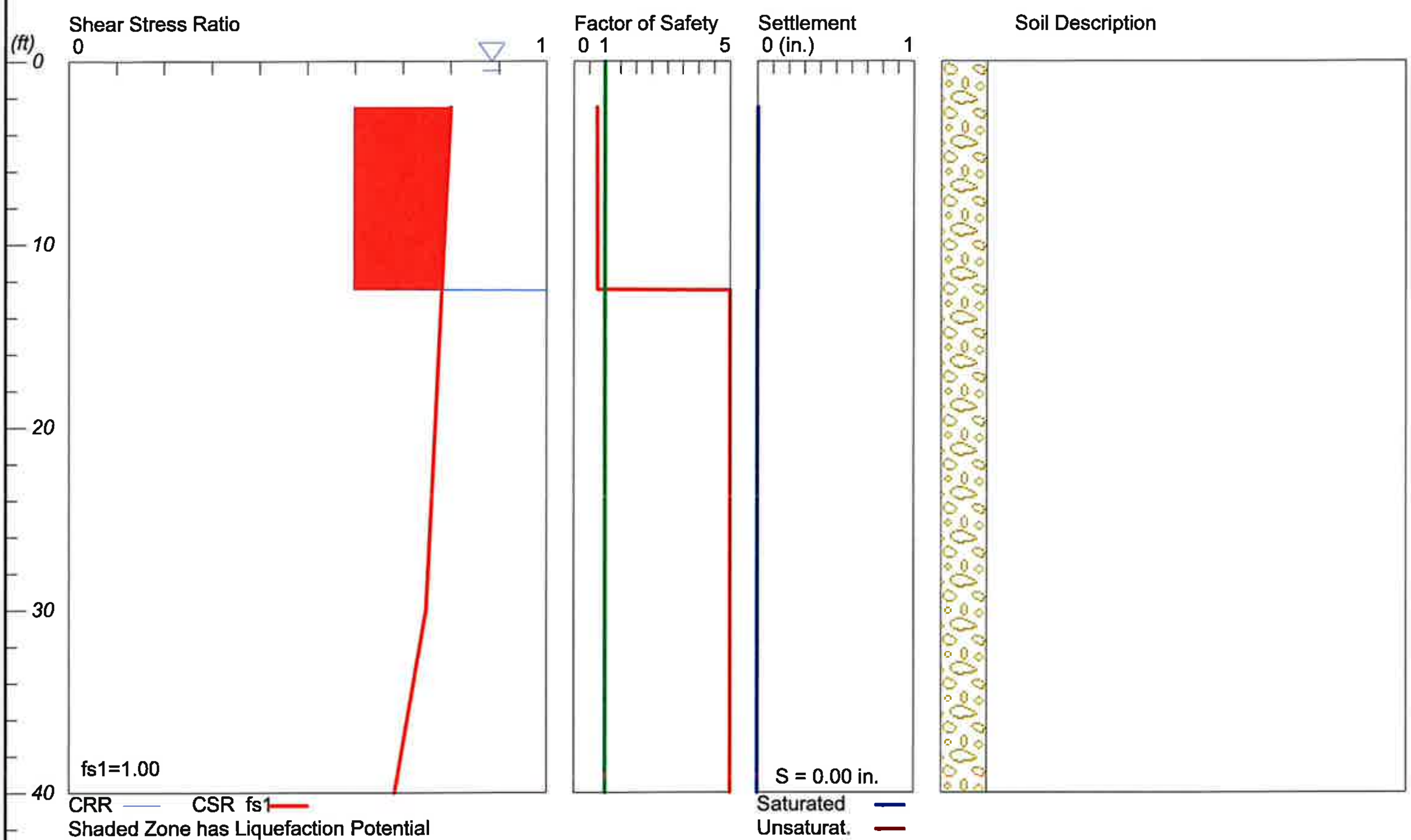
LIQUEFACTION RESULTS

LIQUEFACTION ANALYSIS

Mercer Island Short Plat

Hole No.=B-1

Magnitude=7
Acceleration=0.62g



LIQUEFACTION ANALYSIS

Mercer Island Short Plat

Hole No.=B-2   Water Depth=5 ft

Magnitude=7
Acceleration=0.62g