GIG HARBOR

"THE MARITIME CITY"

PUBLIC WORKS DEPARTMENT

Findings, Conclusions and Decision
Public Works Variance EN-23-0010

Site: The Reserve Vault Location Variance
Parcel No. 0222323134

Applicant: Aaron Hulst, P.E.
City Engineer
City of Gig Harbor
3510 Grandview St
Gig Harbor, WA 98335

Re: **(EN-23-0010)** The Reserve Vault Location Variance - Public Works Variance Request

Dear Darton Riely-Gibbons:

The City of Gig Harbor Public Works Department has reviewed the submitted materials for the Reserve Vault Location Public Works Variance and has concluded the following:

I. Findings.

A. Facts. On 1/30/23, Darton Riely-Gibbons, P.E., of CPH Consultants, submitted an application to the City of Gig Harbor requesting a variance from 2018 City of Gig Harbor Public Works Standards (PWS) and certain setback criteria of Section 3.11.3 of the 2016 City of Gig Harbor Stormwater Management and Site Development Manual (Manual) for The Reserve project (City file no. PL-PPLAT-22-0001) PWS 3.010 specifies that "The City of Gig Harbor Stormwater and Site Development Manual (most current edition), is considered a part of this section and the Public Works Standards." The variance process outlined in PWS 1.035 is therefore the appropriate method to review and approve deviations to the recommended standards of the Manual. The variance proposed with this request would allow the storm drainage vault to be located a horizontal distance of 20 feet from slopes greater than 20 percent which would be a limited deviation to the following provision of Section 3.11.3 of the Manual:

> "All facilities must be a minimum of 50 feet from top of slopes steeper than 20 percent and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on a slope steeper than 20 percent. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical heigh of the slope.".

The Applicant's package included a letter addressing the variance criterion and a set of plans showing the proposed design.

The requested Variance is necessary to maintain the vault at the lower elevations of the improved area which minimizes the overall earthwork, extent of retaining walls, and impacts to natural open spaces over the existing steep topography of the site. It is supported by project-specific geotechnical analyses and sound engineering judgement and is proposed in accordance with the provisions of PWS 1.035.

The Applicant's submittal included the variance application, payment in the amount of $2,000.00, and letter and pertinent documents addressing the variance criterion (copy attached).

B. Application of Facts to Criteria for Approval. The City Engineer may grant variances from the Standards if the Applicant presents substantial evidence to demonstrate that all of the criteria in Section 1.035(C) of the Standards are satisfied. Following is the City Engineer's analysis of the facts to the criteria for approval based on information supplied by the applicant:

1. *"Strict compliance with the Public Works Standards is undesirable or impractical because of impracticality or undesirable conditions".*

The Applicant states:

Strict compliance of the setback requirement presented in the Manual would result in two potential alterations to the proposed plat. The first alteration would result in a change in the plat layout and lot locations. With 14 units being the minimum unit count making this project financially infeasible, strict compliance with this setback requirement could be resolved by relocating Lot 7 to the current SD100 location and placing SD100, associated vault and access road within Lot 7 current position. This relocation would result in a less effective stormwater management system and earthwork balance. Locating the vault further west would have two significant impacts to the project grading. The detention vault is currently acting as a retaining wall at the east end of the development to assist in reducing fill material and disturbance of the existing vegetation and on-site steep slopes. With this retaining wall no longer available, Lot 7 would require 10-20 feet tall MSE walls in lieu of the detention vault. In this scenario, the grade of SD100 will need to be significantly raised so that stormwater from the east boundary of the plat can gravity drain into the vault. This alteration would provide strict compliance with the PWS but would be undesirable and impractical for residential access, earthwork balance, limiting retaining walls, and stormwater management. See Exhibits 2, Site Plan, West for current site layout and lot orientation

The second alternative that was determined to be feasible and provide strict compliance with PWS, would be to grade out the area east of the detention vault into the critical area tract. This alternative looks at keeping the vault and residential lots in their current location but fills the 50 feet east of the detention vault exposed wall to provide a slope of less than 20 percent. This alternative would provide strict compliance to PWS by filling an approximate 7,200 additional

square feet that extends into the Critical Area Tract OS1. This would result in a reduction in OS1 area, removal of additional trees, increasing the earthwork imbalance by approximately 1,000 cubic yards and require an additional 160 feet of approximately 11' tall MSE retaining wall. This alteration would be undesirable or impractical as it would reduce the area set aside to protect the wetland, steep slopes, and existing vegetation on the east side of the project, increase fill required and the imbalance in earthwork, require additional retaining walls. Although this alternative would be supported by the PWS, it would result in an undesirable and impractical design given the existing topography of the site. This second alternative is shown on the enclosed Exhibit 7, Vault Variance Setback Alternative.

The City Engineer's analysis concurs with the Applicant's claim that strict compliance is impractical due to the reasons stated by the applicant.

2. *"The proposed variations are functionally equivalent to and are consistent with the intent of the Public Works Standards, and/or provide compensating benefits to the City and the public".*

   The Applicant states the following:

   The intent of the PWS is to provide guidance and minimum design standards to design a safe, functional, and limited environmentally impactful construction projects. The proposed project meets this intent by providing a residential subdivision in efforts of meeting the growing populations and housing needs of the City of Gig Harbor that also meets the intent of these standards. The project stormwater management has been designed in coordination with wetland ecologists to ensure a limited environmental impact to the existing hydrology of the site and the on-site wetland. Grading efforts that meet the PWS requirements have been designed, analyzed, and reviewed by the project civil and geotechnical engineer to provide an efficient design that both limits earthwork imbalance and does not create potential risk to the sites existing slopes. The site presents a challenging engineering problem due to its existing topography, but the resulting layout and design has been presented to the City that maximizes the developable area, while also preserving a maximum amount of native forest on the site, while still meeting the intent of the PWS requirements.

   The City Engineer's analysis concurs with the Applicant's assessment that the proposed variation is functionally equivalent to and consistent with the intent of the standards and provide compensating benefits to the City and the Public as stated by the Applicant.

3. *"The proposed variation(s) are based on sound engineering judgment".*

   The Applicant states:

   The proposed location of the detention vault has been analyzed by the project Geotechnical Engineer to assess slope stability. The geotechnical review shows that the proposed location does not result in a potential adverse impact to the stability of the slope. The analysis shows that no matter the location of the proposed detention vault, the resulting factor of safety, regarding slope stability,

is not impacted. The geotechnical report reviews the seismic and static existing and post-development conditions of the site. See table presented on page 5 and Figures provided in Appendix A of the Geotechnical Report. The results of the table show that there is no change in slope stability for seismic in existing or developed conditions, the factor of safety remains at 1.2 and 1.1 for sections A-A and B-B, respectively. This factor of safety meets the minimum requirement. The static – no cohesions, also results in a minor reduction in the factor of safety for Section A-A from 2.2 to 2.0 and Section B-B experiences no change in static factor of safety of 1.9. Both sections meet the minimum acceptable factor of safety for static conditions of 1.5. Based on this analysis and discussions with the project geotechnical engineer, these factor of safety for Section B-B, which looks at the area of the site the detention vault is located, cannot be increased by moving the vault further away from the top of the 20 percent slopes. There is no design alternative that will increase the stability of the existing slopes. Therefore, the proposed location of the vault is based and the request to adjust the vault setback from a 20 percent slope from 50 feet to 20 feet is based on sound engineering judgement, see Geotechnical slope analysis (Terra Associates; Revised January 12, 2023)

The requested variance appears to meet sound engineering practice as indicated.

4. *"The proposed variations have not been made necessary by actions of the Applicant or Property Owner".*

The Applicant states the following:

The proposed variance has been made necessary by the existing topographical conditions of the site and the limited developable area not by any actions of the applicant or property owner. The lots sizes have been reduced in size and compacted to limit the developments expansion eastwards towards the critical areas and steeps slopes. The location of the vault is chosen based on the topography of the site and the natural low point of the site being in the northeast corner. As part of the overall grading plan, see Exhibit 4, the site grading was completed based on trying to match existing grades as much as practical and reduce the necessity for retaining walls. This was accomplished by placing the vault in this location and using the vertical walls of the vault as retaining walls to limit additional fill material. The applicant and property owner have not made any land use entitlements or request from the City that resulted in the proposed vault location, the vault location was placed in its current location based on it being the most practical location to achieve its intended use of mitigation stormwater runoff.

The City Engineer's analysis concurs that the variance requested is not a result of actions by the Applicant and are pre-existing conditions of the site.

5. *"Safety, function, appearance, and economical maintenance requirements are met with the proposed variation".*

The Applicant states the following:

Allowance to reduce the vault setback from the adjacent slopes to 20 feet will not result in any reduction in the slope stability factor of safety from the standard 50-foot setback based on the slope stability analysis performed by the project geotechnical engineer (Terra Associates; Revised January 12, 2023). The location of the vault does not impact the slope stability in its current location, see Geotechnical Report Section B-B analysis, which shows the factor of safety in the static and seismic scenarios from existing to post-development conditions. Therefore, the safety of the vault is not impacted by its current location and a new location that meets the setback requirements would not provide an increase in the safety of the proposed design. The placement of a detention vault, not in the low point of the site, would result in a much less efficient and functional design, increase earthwork imbalance and the need for additional retaining walls. Reducing the minimum setback from top of steep slopes to 20 feet has no adverse or change in maintainability of the vault. The appearance of the proposed design is met with the proposed variance, as another intent of the current design is to place the vault in a location that reduces the development and adjacent properties visibility of the vaults exposed edge, access manholes, and maintenance access road. The appearance of placing the vault further westward away from the slope would be altered and create a very visible utility tract with asphalt access road that would break up the residential portion of the development. Additionally, lots 7 would require additional retaining walls to accommodate the new vault location. In summary, the proposed variance request would not impact the safety, function, appearance, and economical maintenance requirements but a denial of this variance would result in a decrease in most of these categories.

The City Engineer's analysis concludes appropriate safety and functional requirements are met. The proposed variation meets safety, function, appearance, and economical maintenance requirements.

I. Decision.

For The Reserve Vault Location Variance request, the Gig Harbor City Engineer concludes that the variance satisfies all the Criteria for Approval and therefore approves the variance request. Any modifications to the proposed development may nullify or require re-consideration of this approval, at the sole discretion of the City Engineer.

II. Appeal.

This decision shall be considered the Notice of Decision on the variance and any appeal shall be filed and processed as described in Title 19 GHMC for a Type II application, as provided in Section 1.035E of the City's Public Works Standards. An appeal may be filed with the City of Gig Harbor Engineering Department within fourteen (14) working days of issuance of this decision (GHMC 19.06.004). All other procedures for an appeal of a Type II application shall be followed in the appeal process (GHMC 19.06.005).

Aaron Hulst, P.E.
City Engineer

3/22/2023
Date

C|P|H
CONSULTANTS

Site Planning
Civil Engineering
Landscape Architecture
Project Management
Land Use Consulting

January 13, 2022

Mr. Jeff Langhelm, PE
Public Works Director
City of Gig Harbor
Public Works Department
3510 Grandview Street
Gig Harbor, WA 98335

RE: The Reserve — *City file no. PL-PPLAT-22-0001, CPH Project No. 0228-21-001*
Request for Public Works Standards Variance for Vault Location

Mr. Langhelm,

This letter and the attached supporting documents provide a complete application for a variance to the 2018 City of Gig Harbor Public Works Standards (PWS) and certain setback criteria of Section 3.11.3 of the 2016 City of Gig Harbor Stormwater Management and Site Development Manual (Manual) for *The Reserve* project (City file no. PL-PPLAT-22-0001). PWS 3.010 specifies that "*The City of Gig Harbor Stormwater and Site Development Manual (most current edition), is considered a part of this section and the Public Works Standards.*" The variance process outlined in PWS 1.035 is therefore the appropriate method to review and approve deviations to the recommended standards of the Manual. The variance proposed with this request would allow the storm drainage vault to be located a horizontal distance of 20 feet from slopes greater than 20 percent which would be a limited deviation to the following provision of Section 3.11.3 of the Manual:

> "*All facilities must be a minimum of 50 feet from top of slopes steeper than 20 percent and greater than 10 feet high. A geotechnical assessment and soils report must be prepared addressing the potential impact of the facility on a slope steeper than 20 percent. The geotechnical assessment may recommend a reduced setback, but in no case shall the setback be less than the vertical heigh of the slope.*"

The requested variance is necessary to maintain the vault at the lower elevations of the improved area which minimizes the overall earthwork, extent of retaining walls, and impacts to natural open spaces over the existing steep topography of the site. It is supported by project-specific geotechnical analyses and sound engineering judgement and is proposed in accordance with the provisions of PWS 1.035.

PROJECT DESCRIPTION

The Reserve proposes to subdivide the upper, west 4.1 acres of a currently vacant 9.9-acre property fronting Peacock Hill Avenue into 14 new single-family residential lots with associated roadway, storm drainage, and utility infrastructure improvements. The eastern approximately 5.8 acres of the project site contains steeper slopes, wetland and stream resources, and associated critical area buffers. This eastern portion of the site will be bound by a single tract and protective covenants and will remain mostly undisturbed except for the installation of a stormwater tightline and rock dispersion system for the controlled discharge of the controlled stormwater discharge for the project (see *Exhibit 2 and 3, Site Plan, West and East*, respectively).

The topography of the property generally slopes west to east from higher elevations that average approximately 290 feet at the west boundary along Peacock Hill Ave to a low elevation on the order 152 feet in the vicinity of the nearest western limit of the on-site wetland buffer (see Exhibit 1, *Existing Conditions*). These elevation ranges result in an average maximum grade of just over 19 percent over the improved areas of the site. The project has been designed with the maximum allowable road grade of 15 percent, the use of daylight and tuck under style homes, and terraced retaining walls to minimize earthwork efforts and to maximize tree retention for the proposed new 14-lot residential community. The proposed vault location is an important part of the grading design and native tree retention. The grading of the site is shown in the enclosed Exhibit 4, *Overall Grading Plan*. A plan and profile of the vault and the existing slope is shown in the enclosed *Exhibit 6, Vault Variance Setback*.

The proposed stormwater management plan for the project consists of a series of catch basin inlets connected by underground conveyance pipe systems that convey stormwater runoff to an underground detention vault. The detention vault provides control of the volume and release rate of stormwater per City standards. Controlled discharges from the site is treated per the Basic Water Quality requirements prior to being discharged to an HDPE tightline and a gabion basket and rock energy dissipator with rock dispersion trenches. The proposed storm drainage systems are shown on the enclosed Exhibit 5, *Overall Storm Drainage Plan*.

The project geotechnical engineer performed a global stability analysis on both the existing slope and the developed condition with the surcharge of the detention vault. That analysis confirmed an approximate 1.1 factor of safety for seismic and 2.2 for static conditions for the existing site. It yielded the same factor of safety for seismic and a small reduction to 2.0 in static for the developed for the condition. The project geotechnical engineer confirmed that locating the vault 50 feet from the top of the adjacent steep slopes will not improve nor will it reduce the stability of the slope.

VARIANCE JUSTIFICATION

This application for a PWS variance requests relief from the *Setback* provisions of section 3.11.3 of the Manual to allow the detention vault to be located within 20 feet of slopes greater than 20 percent with supporting geotechnical engineering analysis. The requested variance complies with the provisions and necessary approval criteria of PWS Section 1.035.C as follows:

1. ***Strict compliance with the public works standards is undesirable or impractical because of impracticality or undesirable conditions.***

   Strict compliance of the setback requirement presented in the Manual would result in two potential alterations to the proposed plat. The first alteration would result in a change in the plat layout and lot locations. With 14 units being the minimum unit count making this project financially infeasible, strict compliance with this setback requirement could be resolved by relocating Lot 7 to the current SD100 location and placing SD100, associated vault and access road within Lot 7 current position. This relocation would result in a less effective stormwater management system and earthwork balance. Locating the vault further west would have two significant impacts to the project grading. The detention vault is currently acting as a retaining wall at the east end of the development to assist in reducing fill material and disturbance of the existing vegetation and on-site steep slopes. With this retaining wall no longer available, Lot 7 would require 10-20 feet tall MSE walls in lieu of the detention vault. In this scenario, the grade of SD100 will need to be significantly raised so that stormwater from the east boundary of the plat can gravity drain into the vault. This alteration would provide strict compliance with the PWS but would be undesirable and impractical for residential access, earthwork balance, limiting retaining walls, and stormwater management. See Exhibits 2, Site Plan, West for current site layout and lot orientation.

The second alternative that was determined to be feasible and provide strict compliance with PWS, would be to grade out the area east of the detention vault into the critical area tract. This alternative looks at keeping the vault and residential lots in their current location but fills the 50 feet east of the detention vault exposed wall to provide a slope of less than 20 percent. This alternative would provide strict compliance to PWS by filling an approximate 7,200 additional square feet that extends into the Critical Area Tract OS1. This would result in a reduction in OS1 area, removal of additional trees, increasing the earthwork imbalance by approximately 1,000 cubic yards and require an additional 160 feet of approximately 11' tall MSE retaining wall. This alteration would be undesirable or impractical as it would reduce the area set aside to protect the wetland, steep slopes, and existing vegetation on the east side of the project, increase fill required and the imbalance in earthwork, require additional retaining walls. Although this alternative would be supported by the PWS, it would result in an undesirable and impractical design given the existing topography of the site. This second alternative is shown on the enclosed Exhibit 7, Vault Variance Setback Alternative.

2. ***The proposed variation is functionally equivalent to and is consistent with the intent of the Public Works Standards and/or provides compensating benefit to the city and the public.***

The intent of the PWS is to provide guidance and minimum design standards to design a safe, functional, and limited environmentally impactful construction projects. The proposed project meets this intent by providing a residential subdivision in efforts of meeting the growing populations and housing needs of the City of Gig Harbor that also meets the intent of these standards. The project stormwater management has been designed in coordination with wetland ecologists to ensure a limited environmental impact to the existing hydrology of the site and the on-site wetland. Grading efforts that meet the PWS requirements have been designed, analyzed, and reviewed by the project civil and geotechnical engineer to provide an efficient design that both limits earthwork imbalance and does not create potential risk to the sites existing slopes. The site presents a challenging engineering problem due to its existing topography, but the resulting layout and design has been presented to the City that maximizes the developable area, while also preserving a maximum amount of native forest on the site, while still meeting the intent of the PWS requirements.

3. ***The proposed variation is based on sound engineering judgment.***

The proposed location of the detention vault has been analyzed by the project Geotechnical Engineer to assess slope stability. The geotechnical review shows that the proposed location does not result in a potential adverse impact to the stability of the slope. The analysis shows that no matter the location of the proposed detention vault, the resulting factor of safety, regarding slope stability, is not impacted. The geotechnical report reviews the seismic and static existing and post-development conditions of the site. See table presented on page 5 and Figures provided in Appendix A of the Geotechnical Report. The results of the table show that there is no change in slope stability for seismic in existing or developed conditions, the factor of safety remains at 1.2 and 1.1 for sections A-A and B-B, respectively. This factor of safety meets the minimum requirement. The static – no cohesions, also results in a minor reduction in the factor of safety for Section A-A from 2.2 to 2.0 and Section B-B experiences no change in static factor of safety of 1.9. Both sections meet the minimum acceptable factor of safety for static conditions of 1.5. Based on this analysis and discussions with the project geotechnical engineer, these factor of safety for Section B-B, which looks at the area of the site the detention vault is located, cannot be increased by moving the vault further away from the top of the 20 percent slopes. There is no design alternative that will increase the stability of the existing slopes. Therefore, the proposed location of the vault is based and the request to adjust the vault setback from a 20 percent slope from 50 feet to 20 feet is based on sound engineering judgement, see Geotechnical slope anlaysis (Terra Associates; Revised January 12, 2023).

4. The proposed variation has not been made necessary by the actions of the applicant or property owner.

The proposed variance has been made necessary by the existing topographical conditions of the site and the limited developable area not by any actions of the applicant or property owner. The lots sizes have been reduced in size and compacted to limit the developments expansion eastwards towards the critical areas and steeps slopes. The location of the vault is chosen based on the topography of the site and the natural low point of the site being in the northeast corner. As part of the overall grading plan, see Exhibit 4, the site grading was completed based on trying to match existing grades as much as practical and reduce the necessity for retaining walls. This was accomplished by placing the vault in this location and using the vertical walls of the vault as retaining walls to limit additional fill material. The applicant and property owner have not made any land use entitlements or request from the City that resulted in the proposed vault location, the vault location was placed in its current location based on it being the most practical location to achieve its intended use of mitigation stormwater runoff.

5. Safety, function, appearance, and economical maintenance requirements are met with the proposed variation.

Allowance to reduce the vault setback from the adjacent slopes to 20 feet will not result in any reduction in the slope stability factor of safety from the standard 50-foot setback based on the slope stability analysis performed by the project geotechnical engineer (Terra Associates; Revised January 12, 2023). The location of the vault does not impact the slope stability in its current location, see Geotechnical Report Section B-B analysis, which shows the factor of safety in the static and seismic scenarios from existing to post-development conditions. Therefore, the safety of the vault is not impacted by its current location and a new location that meets the setback requirements would not provide an increase in the safety of the proposed design. The placement of a detention vault, not in the low point of the site, would result in a much less efficient and functional design, increase earthwork imbalance and the need for additional retaining walls. Reducing the minimum setback from top of steep slopes to 20 feet has no adverse or change in maintainability of the vault. The appearance of the proposed design is met with the proposed variance, as another intent of the current design is to place the vault in a location that reduces the development and adjacent properties visibility of the vaults exposed edge, access manholes, and maintenance access road. The appearance of placing the vault further westward away from the slope would be altered and create a very visible utility tract with asphalt access road that would break up the residential portion of the development. Additionally, lots 7 would require additional retaining walls to accommodate the new vault location. In summary, the proposed variance request would not impact the safety, function, appearance, and economical maintenance requirements but a denial of this variance would result in a decrease in most of these categories.

Please contact me directly at (425) 484-0949 or by e-mail at darton@cphconsultants.com if you have questions or need any additional information to complete your review and approval of the requested Variance. Your prompt response is appreciated. Thank you.

Sincerely,
CPH Consultants

1/13/23

Darton Riely-Gibbons, PE
Project Manager

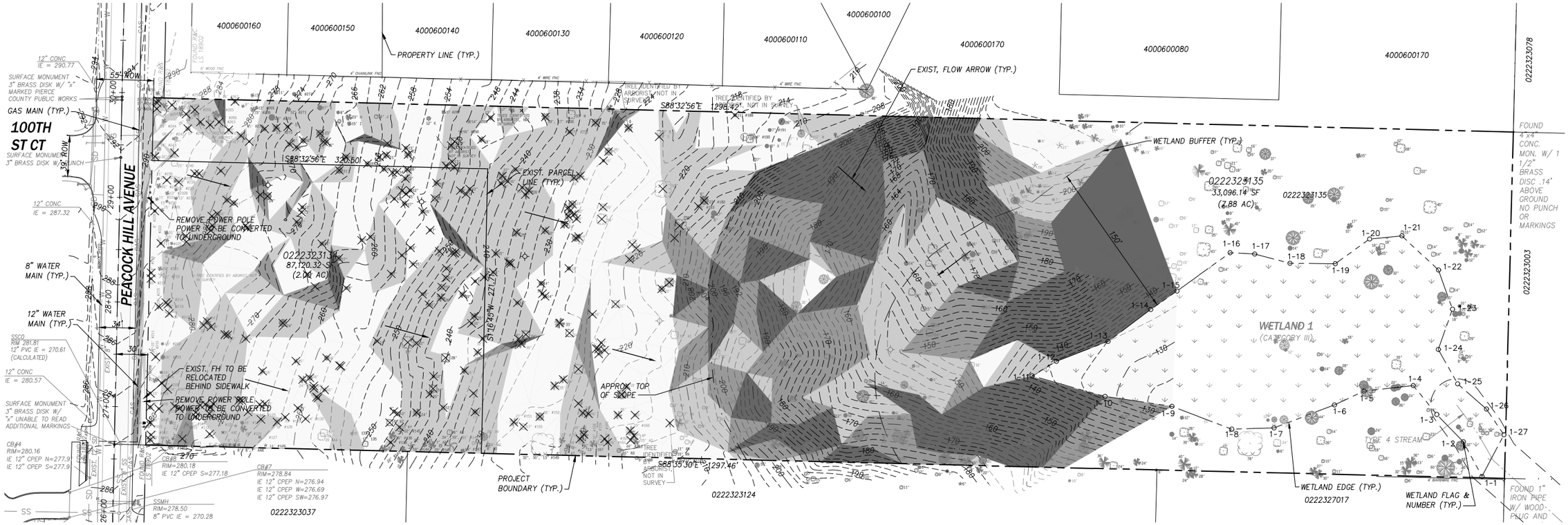
Enclosures:

Exhibit 1, Existing Conditions
Exhibit 2, Site Plan West
Exhibit 3, Site Plan East
Exhibit 4, Overall Grading Plan
Exhibit 5, Overall Drainage Plan
Exhibit 6, Vault Plan and Profile
Geotechnical Report (Terra Associates)

Cc: Prospect Development, LLC
copy to file

EXHIBIT 1 - EXISTING CONDITIONS

PTN. SEC. 32, TWP 22 N, R2E W.M.



SURVEY DATA

EXISTING BOUNDARY, TOPOGRAPHIC, AND PLANIMETRIC INFORMATION SHOWN ON THIS PLAN AND OTHERS IN THIS SET WERE USED AS A BASIS FOR DESIGN AND REPRESENT FIELD SURVEY DATA AND MAPPING PREPARED BY OTAK, INC. (OTAK JOB NO. 3005), AS PROVIDED BY THE PROJECT OWNER, AND DOES NOT REPRESENT WORK BY CPH CONSULTANTS. THE FOLLOWING SURVEY DATA WAS PROVIDED WITH THE TOPOGRAPHIC MAP BY OTAK, INC.:

HORIZONTAL DATUM

NAD 83/91 NOTE: DATUM WAS ESTABLISHED BY HOLDING SPC COORDINATES, WASHINGTON SOUTH ZONE, AT PIERCE COUNTY SURVEY CONTROL POINT #'s 401 AND 87 AS PUBLISHED BY SURVEY SECTION OF PIERCE COUNTY DEPARTMENT OF PUBLIC WORKS.

VERTICAL DATUM

N.G.V.D. 29 PROJECT BENCHMARK IS PIERCE COUNTY SURVEY CONTROL POINT #'s 401 AND 87 CONVERSION TO NAVD88=NGVD29+3.45

BASIS OF BEARING

NAD 83/91 (BEARING BETWEEN PIERCE COUNTY SURVEY CONTROL POINT #'s 401 AND 87 S 01°36'38" W MEASURED AND CALCULATED.

NOTES:

1. *ALL LOCATIONS, OF EXISTING UTILITIES SHOWN HAVE BEEN ESTABLISHED BY FIELD SURVEY OR OBTAINED FROM AVAILABLE RECORDS AND SHOULD THEREFORE BE CONSIDERED APPROXIMATE ONLY AND NOT NECESSARILY COMPLETE. IT IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO INDEPENDENTLY VERIFY THE ACCURACY OF ALL UTILITY LOCATIONS SHOWN AND TO FURTHER DISCOVER AND AVOID ANY OTHER UTILITIES NOT SHOWN HEREON WHICH MAY BE AFFECTED BY THE IMPLEMENTATION OF THIS PLAN.*

LEGAL DESCRIPTION

TAX PARCEL 0222323134

THE WEST 2.00 ACRES, AFTER EXCEPTIONS, OF THE FOLLOWING DESCRIBED PROPERTY:

THE SOUTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 22 NORTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON

EXCEPT THE NORTH 60 FEET THEREOF;

AND EXCEPT THE WEST 30 FEET FOR PEACOCK HILL AVENUE N.W.

TAX PARCEL 0222323135

THE SOUTH HALF OF THE SOUTH HALF OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 32, TOWNSHIP 22 NORTH, RANGE 2 EAST, WILLAMETTE MERIDIAN, IN PIERCE COUNTY, WASHINGTON

EXCEPT PEACOCK HILL AVENUE N.W. (PURDY GIG HARBOR ROAD)

ALSO EXCEPT THE WEST 2 ACRES OF THE ABOVE DESCRIBED PROPERTY AFTER EXCEPTING THE NORTH 60 FEET AND SAID ROAD.

SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON

SLOPES

- 0% - 15%
- 15% - 30%
- 30% - 40%
- GREATER THAN 40%

N

0 50 100

PLAN IN FEET

811 Know what's below. Call before you dig.

P:\project\0228_Prospect Development\21001_The Reserve\Dwg\Exhibits\Exhibit 1 - Existing Conditions.dwg
1/9/2023 11:14 AM MICKALA LOEFFELBEIN

NO.	DATE	REVISION	BY	CK.
1	1/9/23	PUBLIC WORKS STANDARD VARIANCE	MRL	DRG

DAVID RILEY-DAWSON STATE OF WASHINGTON 22014 REGISTERED PROFESSIONAL ENGINEER

THE RESERVE

PUBLIC WORKS STANDARD VARIANCE DETENTION VAULT SETBACK

EXISTING CONDITIONS

CITY OF GIG HARBOR

PIERCE COUNTY, WASHINGTON

CLIENT

PROSPECT DEVELOPMENT, LLC
2913 5TH AVE NE, SUITE 201
PUYALLUP, WA 98372
PHONE: (253) 405-8695
EMAIL:
JUSTIN@PROSPECTDEVELOP.COM

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Landscape Architecture • Land Use Consulting
11321-B NE 120th Street
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101 South Wenatchee Avenue, Suite C3
Wenatchee, WA 98801 • (509) 293-7731
www.cphconsultants.com

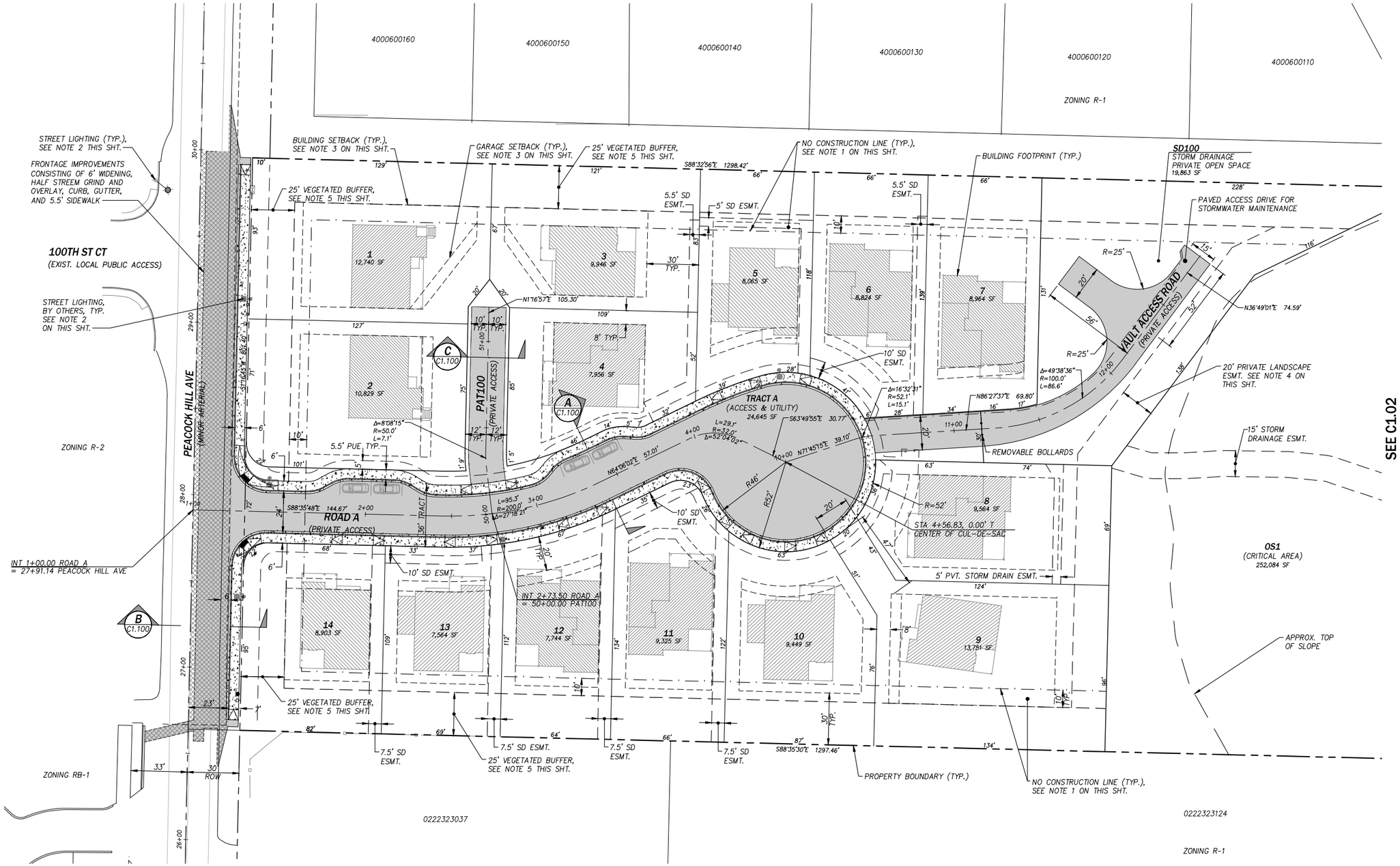
PROJECT NO.
0228-21-001

DRAWING
EXHIBIT 1

SHEET 1 OF 7

EXHIBIT 2 - SITE PLAN WEST

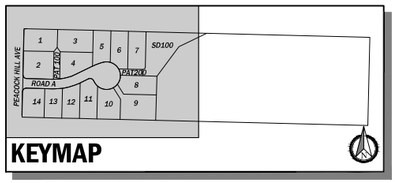
PTN. SEC. 32, TWP 22 N, R2E W.M.



SEE C1.02

NOTES:

1. THE CLEARING AND GRADING SHOWN WITH THIS CIVIL CONSTRUCTION PERMIT AND ANY OTHER IMPROVEMENTS THAT MAY BE PROPOSED WITHIN THE 10-FOOT NO CONSTRUCTION ZONE WITH SUBSEQUENT PERMITS WILL BE ALLOWED ONLY AFTER APPROVAL BY THE CITY OF A WRITTEN STATEMENT FROM A QUALIFIED ARBORIST ACKNOWLEDGING THAT THE PROPOSED CONSTRUCTION ACTIVITY WITHIN THE 10-FOOT SETBACK WILL NOT HARM EXISTING VEGETATION WITHIN THE DESIGNATED LANDSCAPE OR BUFFER AREA.
2. A STREET LIGHTING PLAN IS PROVIDED BY OTHERS BUT INCLUDED IN THIS PLAN SET.
3. THE BSBL AND GSBL FOR EACH LOT SHALL BE SHOWN ON THE FINAL PLAT AS DEPICTED ON THIS PLAN.
4. THE PRIVATE LANDSCAPE EASEMENT SHOWN OVER LOTS 8 AND 9 AND TRACT SD100 SHALL BE MAINTAINED BY THE HOA. A NOTE SPECIFYING MAINTENANCE RESPONSIBILITIES SHALL BE PROVIDED ON THE FACE OF THE FINAL PLAT AND ACCOMPANYING COVENANTS, CONDITIONS, AND RESTRICTIONS FOR THE PROJECT.
5. THE 25' VEGETATED BUFFER SHALL BE RECORDED AS A PRIVATE ESMT. AND SHALL BE MAINTAINED BY THE HOA, A NOTE SPECIFYING MAINTENANCE RESPONSIBILITIES SHALL BE PROVIDED ON THE FACE OF THE FINAL PLAT AND ACCOMPANYING A COVENANTS, CONDITIONS AND RESTRICTIONS FOR THE PROJECT.
6. A VARIANCE IS IN REVIEW WITH PUBLIC WORKS (EN-22-0014) FOR THE PROPOSED LENGTH OF THE ROAD A ACCESS LANDING.
7. A VARIANCE IS IN REVIEW WITH PUBLIC WORKS (EN-22-0015) FOR THE JOINT USE DRIVEWAY, PAT100.
8. A VARIANCE IS IN REVIEW WITH PUBLIC WORKS (EN-22-0049) FOR THE MINOR ARTERIAL ROADWAY SECTION FOR PEACOCK HILL AVE.
9. A VARIANCE IS IN REVIEW WITH PUBLIC WORKS (EN-22-0050) FOR THE CUL-DE-SACE AT THE EAST END OF ROAD A.



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THE RESERVE

PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

SITE PLAN - WEST

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EXHIBIT 3 - SITE PLAN EAST

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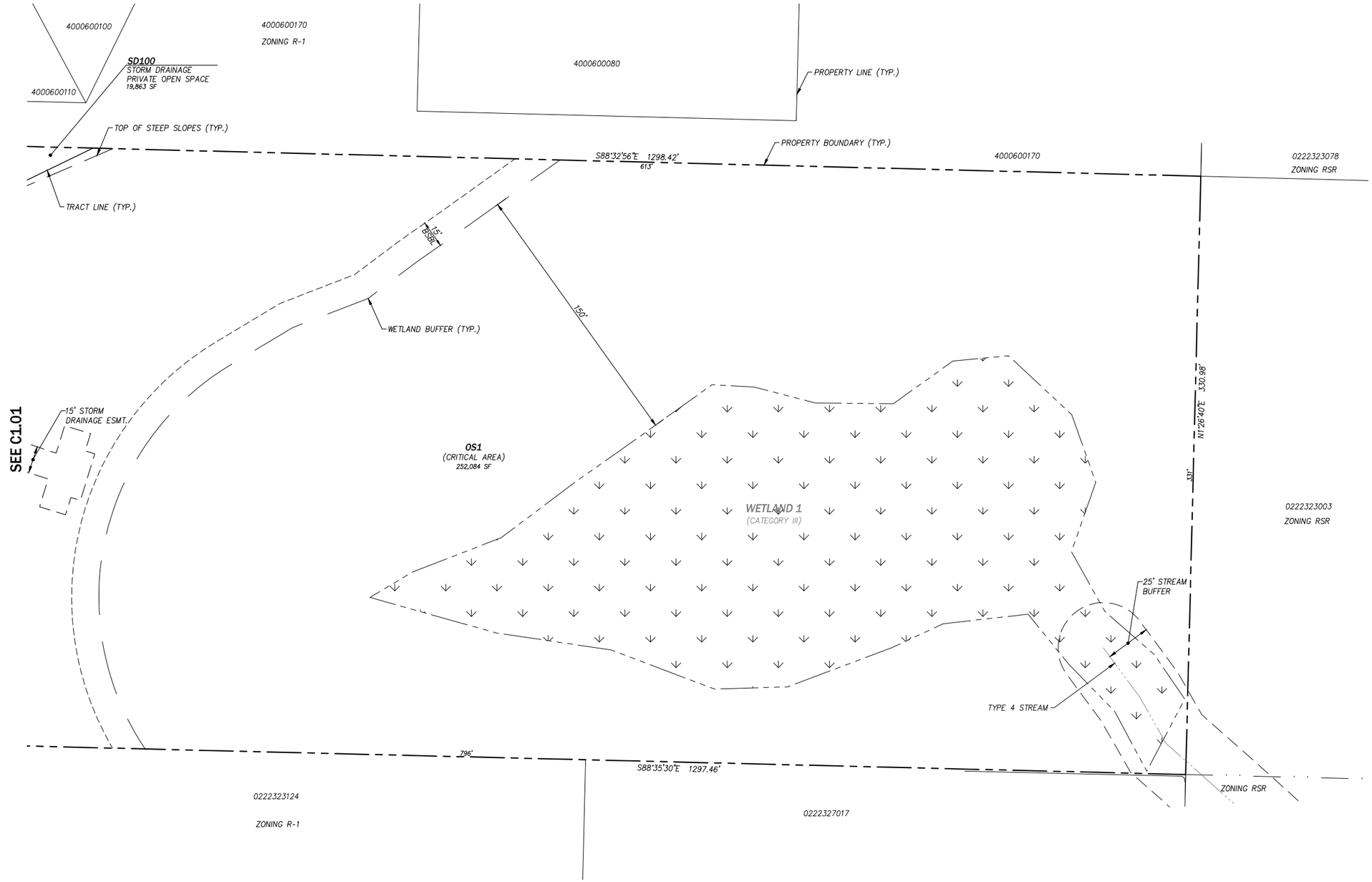

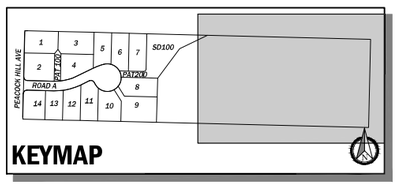

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THE RESERVE

PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

SITE PLAN - EAST

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EXHIBIT 4 - OVERALL GRADING PLAN

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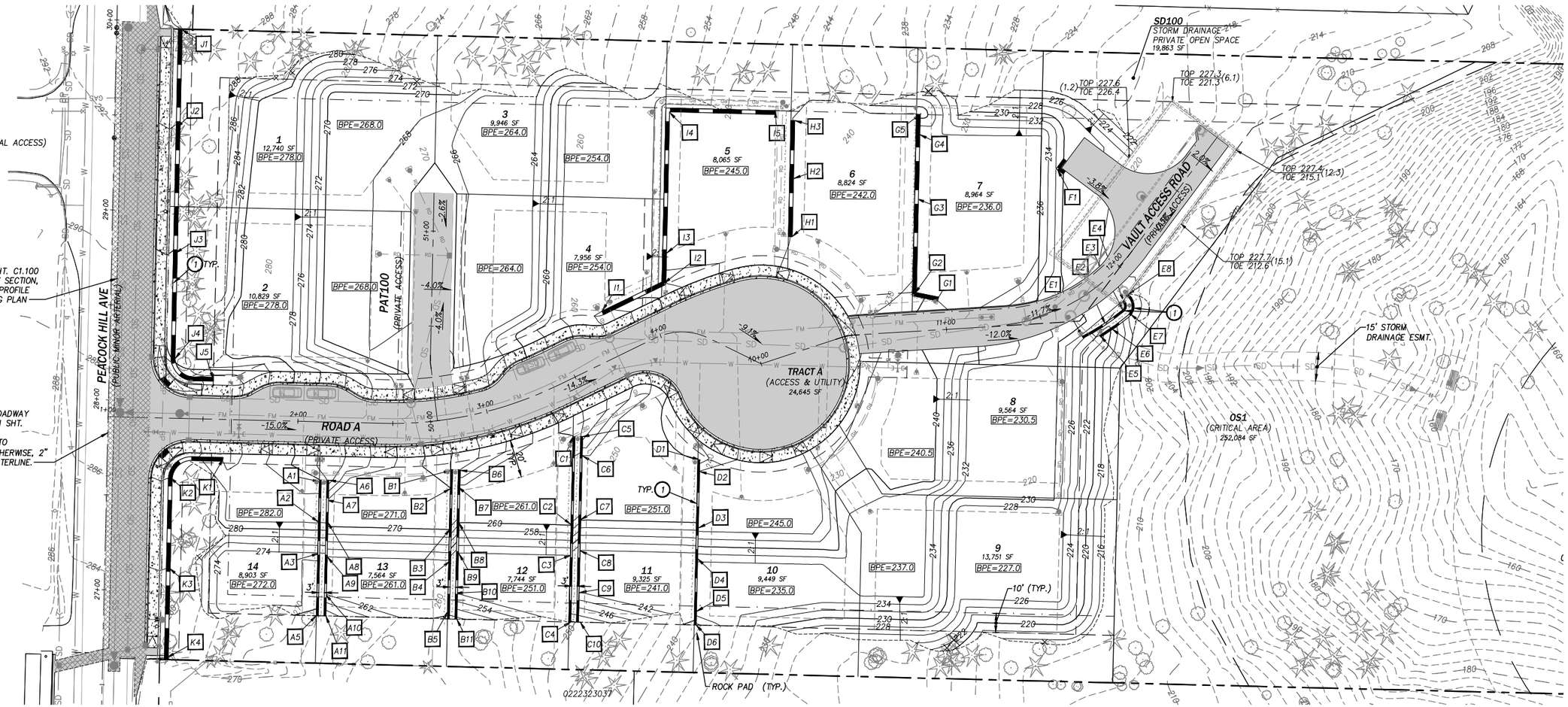

CONSTRUCTION NOTES

(1) MSE RETAINING WALL, SEE RETAINING WALL NOTE THIS SHEET

LEGEND

- HMA PVMT. OVERLAY
- AC PAVEMENT VALLEY, FLOWLINE
- MSE RETAINING WALL
- GRADE BREAK
- 100 EXISTING TOPOGRAPHIC CONTOUR
- 100 PROPOSED GRADING CONTOUR
- STORM DRAINAGE CATCH BASIN – TYPE I
- STORM DRAINAGE CATCH BASIN – TYPE II
- APPROX. SOIL TEST PIT LOCATION
- EXIST. TREE (TO REMAIN)

WALL SCHEDULE

WALL REFERENCE	TOP ELEV.	TOE ELEV.	EXPOSED HEIGHT
A1	280	279	1
A2	282	276	6
A3	274	268	6
A4	272	268	4
A5	269	268	1
A6	278	277	1
A7	276	272	4
A8	276	271	5
A9	267	262	5
A10	266	262	4
A11	268	267	1
B1	268	267	1
B2	270	266	4
B3	270	265	5
B4	261	258	3
B5	260	259	1
B6	267	266	1
B7	266	261	5
B8	264	260	4
B9	256	252	4
B10	256	252	4
B11	259	258	1
C1	260	259	1
C2	260	256	4
C3	252	247	5
C4	251	250	1
C5	258	257	1
C6	257	252	5
C7	254	250	4
C8	246	242	4
C9	246	242	4
C10	250	249	1
D1	250	249	1
D2	250	246	4
D3	248	245	3
D4	241	236	5
D5	241	236	5
D6	239	238	1
E1	228	227	1
E2	227	221	6
E3	227	221	6
E4	227	221	6
E5	224	223	1
E6	222	219	3
E7	220	214	6
E8	220	214	6
F1	232	229	3
G1	238	237	1
G2	241	236	5
G3	242	236	6
G4	242	236	6
G5	242	241	1
H1	245	243	2
H2	245	242	3
H3	245	243	2
I1	254	253	1
I2	251	248	3
I3	251	245	6
I4	251	245	6
I5	246	245	1
J1	293	291	2
J2	292	289	3
J3	290	287	3
J4	288	285	3
J5	285	284	1
K1	285	284	1
K2	286	283	3
K3	284	281	3
K5	282	280	2

APPROX. EARTHWORK QUANTITIES

EARTHWORK QUANTITIES WERE ESTIMATED USING A GRID VOLUME METHOD AND AUTODESK AUTOCAD CIVIL3D SOFTWARE. THE FOLLOWING VALUES ARE APPROXIMATE AND PROVIDED TO ILLUSTRATE GENERAL EARTHWORK EFFORTS BASED ON AVAILABLE SURVEY AND DESIGN DATA INCLUDING ESTIMATES OF ANY VAULT, FOUNDATION, AND PAVEMENT QUANTITIES:

FILL: 23,648.59 CY
CUT: 5,341.18 CY
NET: 18,307.42 CY (FILL)

THESE VALUES ARE NOT FOR CONSTRUCTION BID PURPOSES. THE CONTRACTOR SHALL USE THEIR OWN MEANS AND METHODS TO ESTIMATE EARTHWORK QUANTITIES. THE VALUES ASSUME 9 INCHES OF STRIPPING.

RETAINING WALL NOTES:

1. *ALL WALLS OVER 4 FEET IN HEIGHT, FROM BOTTOM OF FOOTING, ARE TO BE CONSTRUCTED UNDER SEPARATE BUILDING PERMITS.*
2. *CONTRACTOR TO FOLLOW GEOTECHNICAL ENGINEER DESIGN AND CALCULATIONS*

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STATE OF WASHINGTON
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THE RESERVE

PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

OVERALL GRADING PLAN

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SHEET 4 OF 7

EXHIBIT 5 - OVERALL DRAINAGE PLAN

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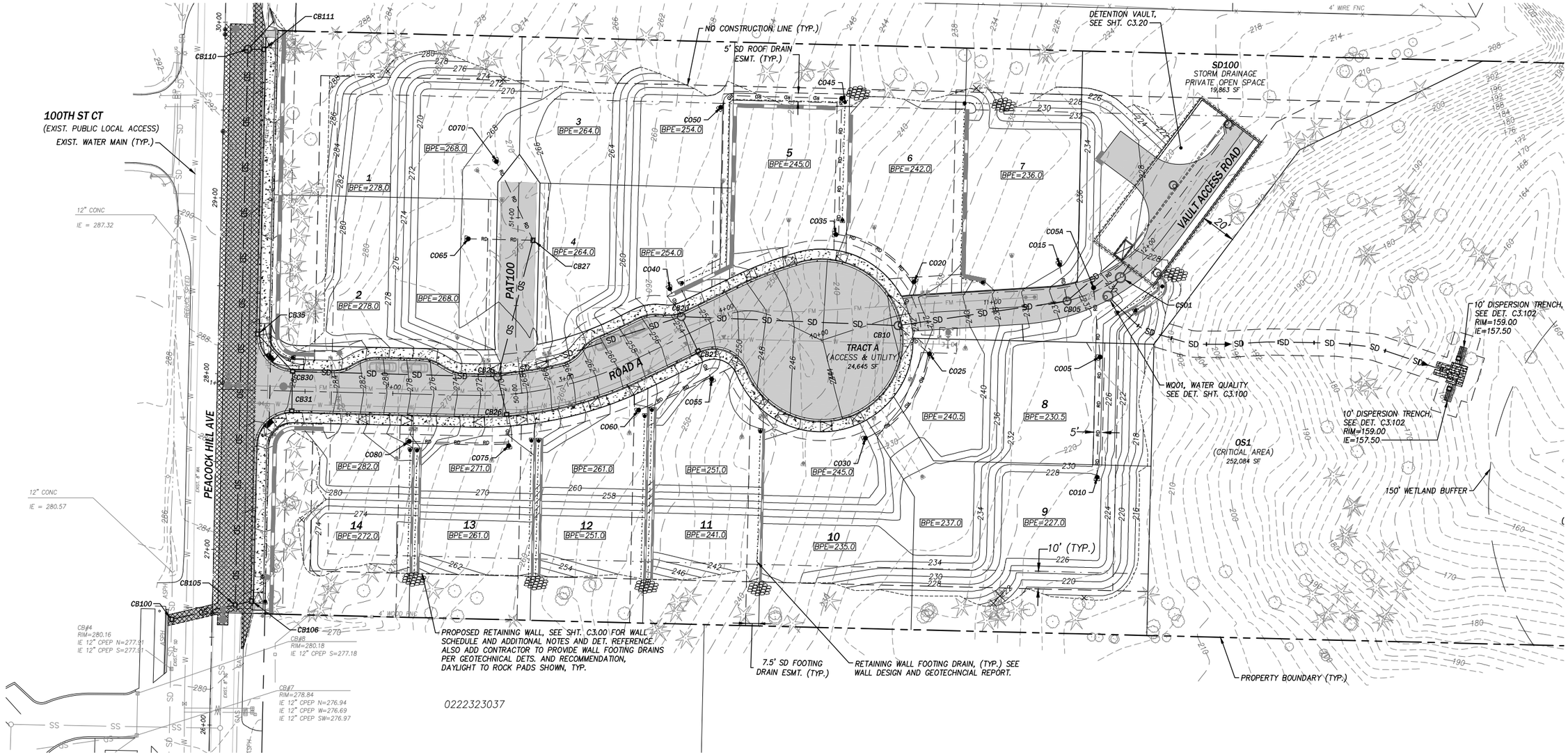

LEGEND

- SD — STORM DRAIN
- SD CATCH BASIN
- FM — FM — SANITARY SEWER FORCED MAIN
- SS — SANITARY SEWER MAIN
- STANDARD PRECAST MANHOLE
- SIDE SEWER SERVICE
- SIDE SEWER CLEANOUT
- W — WATER MAIN
- WATER SERVICE
- PUBLIC UTILITY ESMT.
- WATER METER (SIZE PER PLAN)
- FIRE HYDRANT (FH)
- TREE TO BE REMOVED

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PROFESSIONAL ENGINEER

THE RESERVE

PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

OVERALL STORMWATER PLAN

CITY OF GIG HARBOR

PIERCE COUNTY, WASHINGTON

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EXHIBIT 6 - VAULT VARIANCE SETBACK

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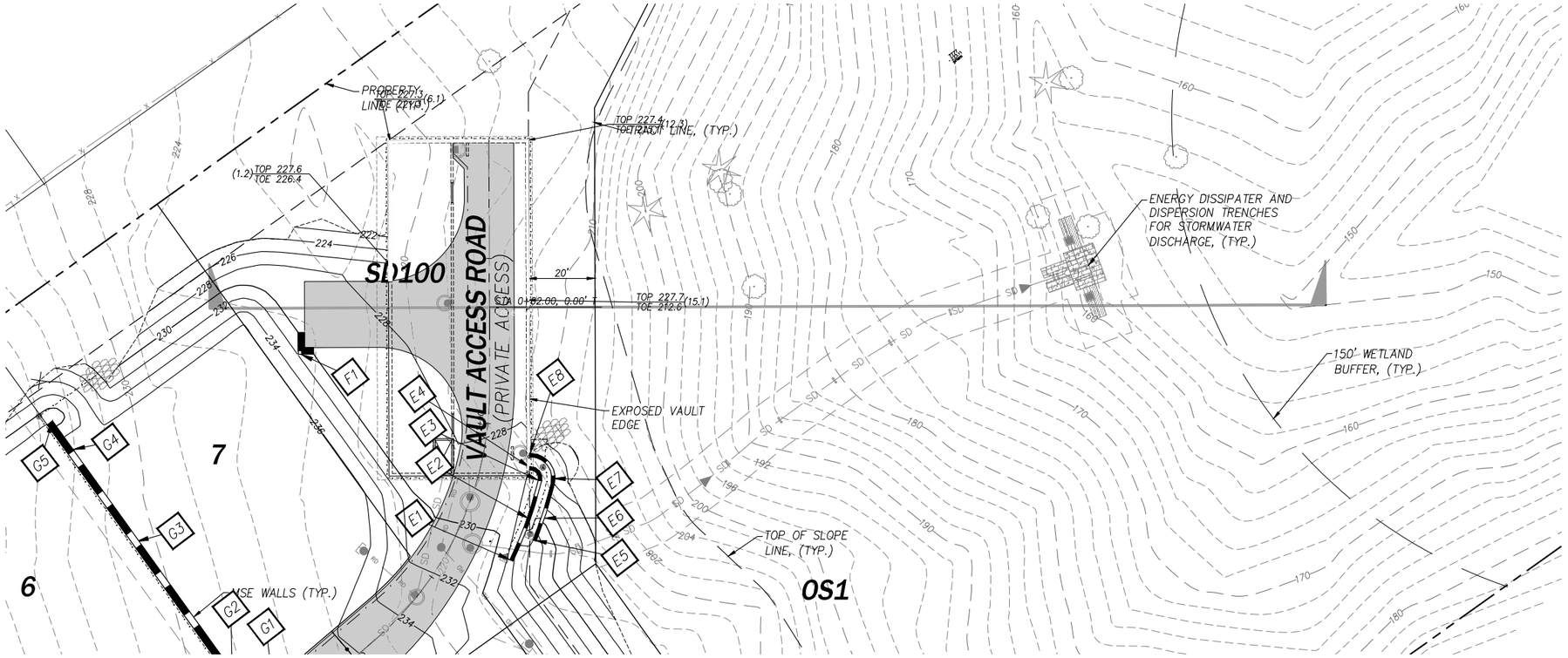

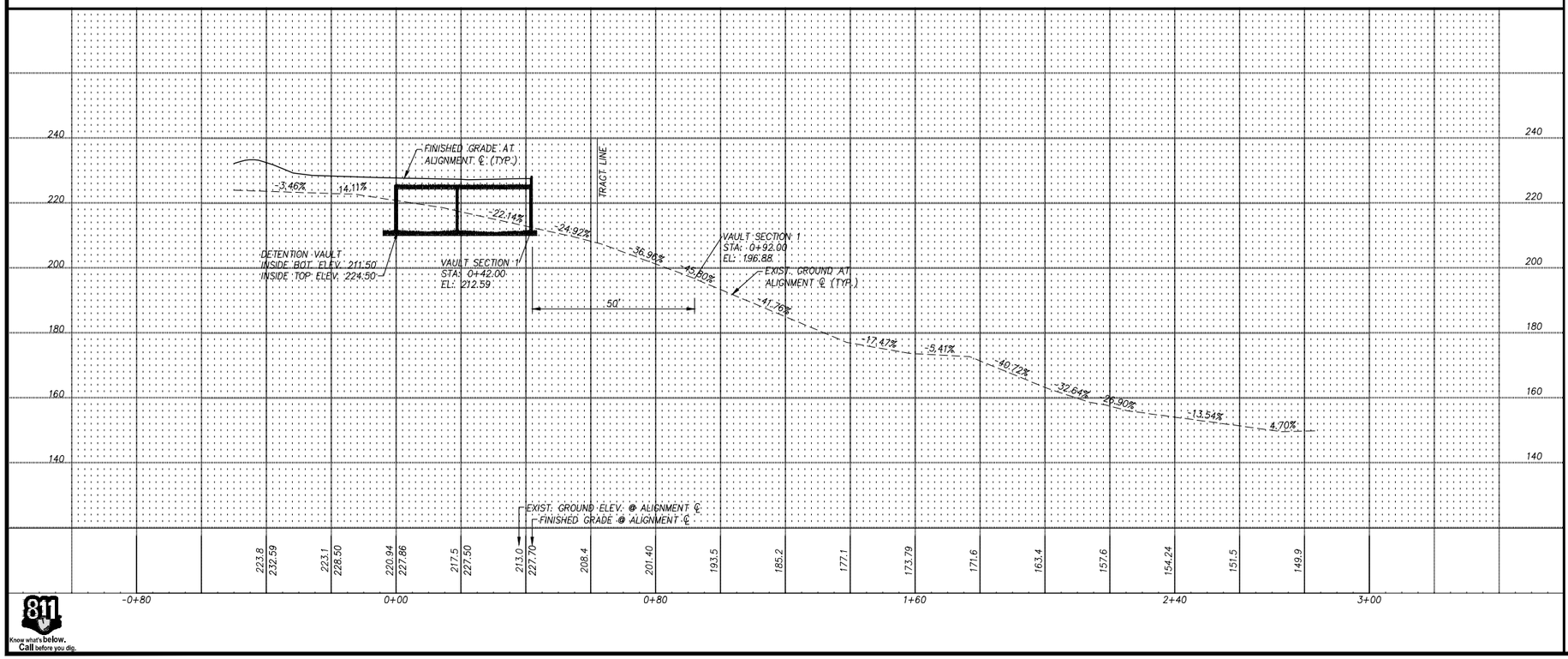

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PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

VAULT VARIANCE SETBACK

CITY OF GIG HARBOR — PIERCE COUNTY, WASHINGTON

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EXHIBIT 7 - VAULT VARIANCE SETBACK ALTERNATE

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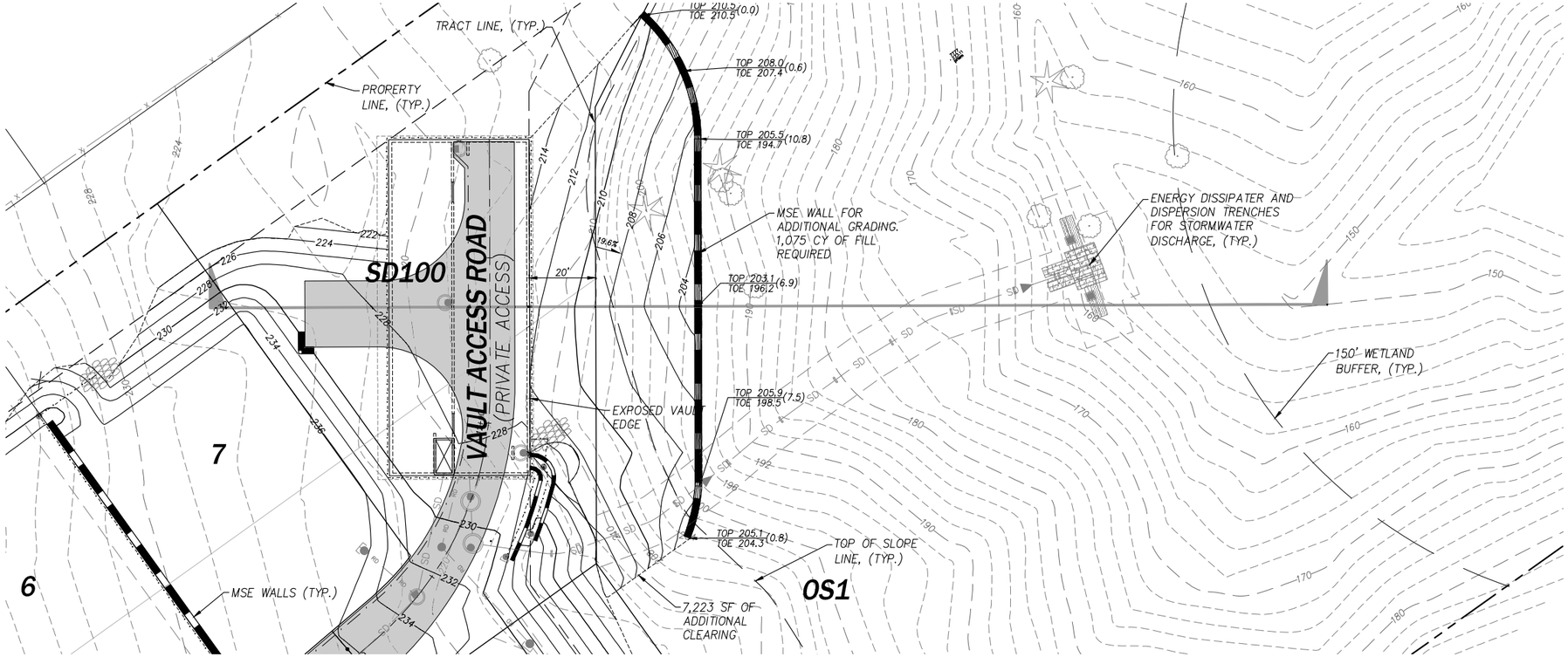

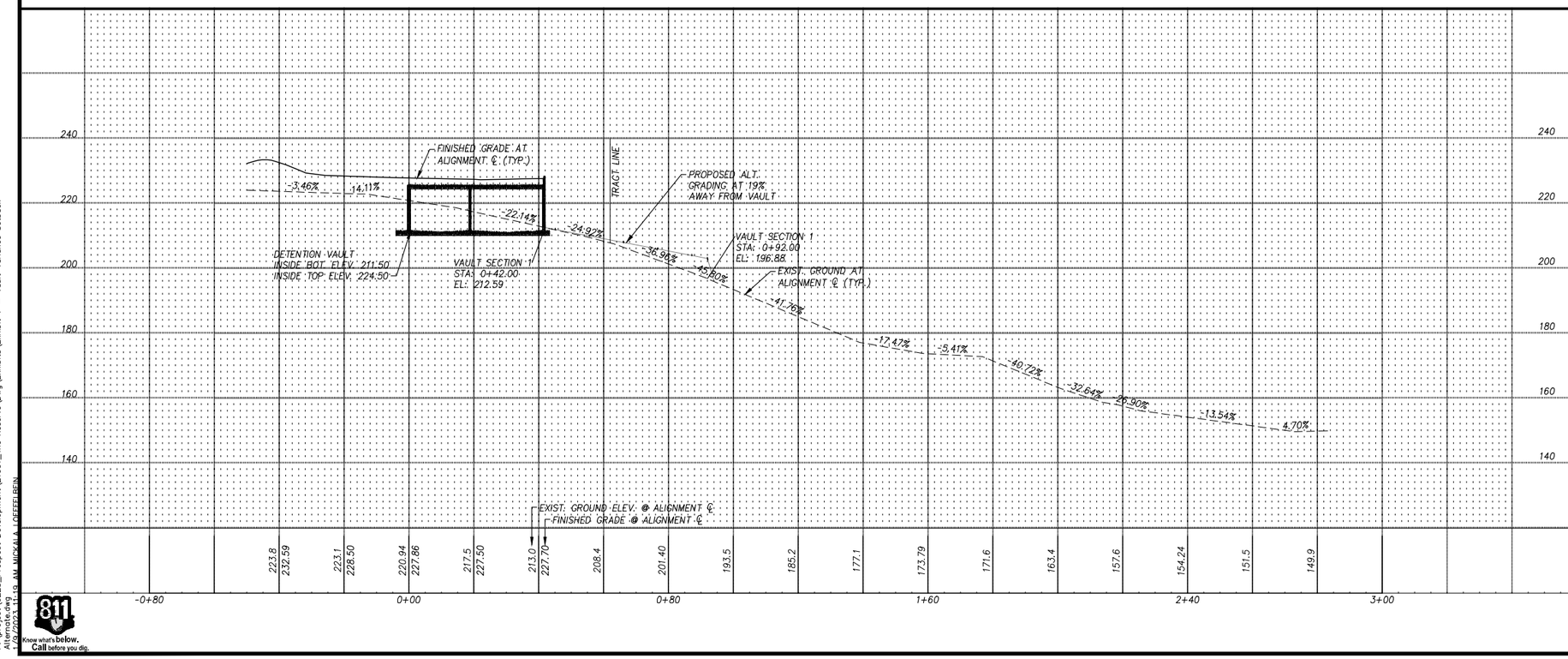

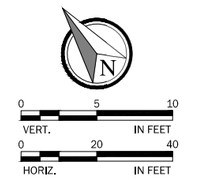

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PUBLIC WORKS STANDARD VARIANCE
DETENTION VAULT SETBACK

VAULT VARIANCE SETBACK ALTERNATE

CITY OF GIG HARBOR

PIERCE COUNTY, WASHINGTON

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10/20/23 11:19 AM MICHAEL J. OFFEDAL

GEOTECHNICAL REPORT

The Reserve
Peacock Hill Avenue and 100th Street Court
Gig Harbor, Washington

Project No. T-7311

Terra Associates, Inc.

Prepared for:

Prospect Development, LLC
Puyallup, Washington

December 3, 2015
Revised September 2, 2022
Revised January 12, 2023

TERRA ASSOCIATES, Inc.

Consultants in Geotechnical Engineering, Geology
and
Environmental Earth Sciences

December 3, 2015
Revised September 2, 2022
Revised January 12, 2023
Project No. T-7311

Mr. Justin Holland
Prospect Development, LLC
2913 – 5th Avenue Northeast, Suite 201
Puyallup, Washington 98371

Subject: Geotechnical Report
The Reserve
Peacock Hill Avenue and 100th Street Court
Gig Harbor, Washington

Dear Mr. Holland:

As requested, we 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.

Our field exploration indicates the site is generally underlain by weathered and unweathered horizons of glacial till and glacial till-like soils consisting of medium dense to very dense, silty sand with gravel, and medium dense to dense, outwash-like sand with silt. We did not observe groundwater seepage in any of the site explorations.

In our opinion, there are no geotechnical conditions that would preclude the planned development. Residences can be supported on conventional spread footings bearing on competent native soils underlying the surface organic soils or on structural fill placed on the competent native soils. Floor slabs and pavements can be similarly supported. Based on our study, it is our opinion that on-site infiltration is not a feasible alternative for management of site stormwater.

Detailed recommendations addressing these issues and other geotechnical design considerations are presented in the attached report. We trust the information presented is sufficient for your current needs. If you have any questions or require additional information, please call.

Sincerely yours,
TERRA ASSOCIATES, INC.

John C. Sadler

John C. Sadler, L.E.G., L.H.G.
Senior Engineering Geologist

1-12-23

Carolyn Decker, P.E.
President

CAROLYN S. DECKER
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47016
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PROFESSIONAL ENGINEER

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Test Pit Logs by Others ..... Appendix B
Slope Stability Analysis Output ..... Appendix C

Geotechnical Report
The Reserve
Peacock Hill Avenue and 100th Street Court
Gig Harbor, Washington

1.0 PROJECT DESCRIPTION

The proposed project is a residential development located in the western portion of the subject property. Roadway, Grading and Drainage Improvement plans by CPH Consultants (CPH), dated July 14, 2022, shows the development consisting of 14 residential lots with associated infrastructure improvements. Grading to achieve planned building lot and roadway elevations consists primarily of cuts. Maximum cut depths and fill thicknesses are generally about ten feet. Retaining walls and permanent 2:1 (Horizontal:Vertical) cut and fill slopes will be used to accomplish grade transitions within the site.

Site stormwater will be routed to a detention vault located in the northeastern portion of the planned development area. The plans show the interior bottom elevation of the vault at Elev. 211.5, which is about 0.5 to 11 feet below existing grade. Vault discharge will be conveyed to a gabion outfall structure at the toe of an adjacent east-facing slope using an above-grade, continuous HDPE pipe that is anchored to the slope face.

We expect that the residential structures will be one- or two-story wood-frame buildings with their main floors framed over a crawl space or daylight basement, or constructed at grade. Foundation loads should be relatively light, in the range of 2 to 3 kips per foot for bearing walls and 25 to 50 kips for isolated columns.

The recommendations contained in the following sections of this report are based on our understanding of these design features. We should review design drawings as they become available to verify that our recommendations have been properly interpreted and incorporated into project design and to amend or supplement our recommendations, if required.

2.0 SCOPE OF WORK

We explored subsurface conditions at the site by observing soil conditions in 7 test pits excavated to maximum depths ranging from about 8 to 10.5 feet below existing surface grades using a track-mounted excavator, and by reviewing the logs of test pits excavated previously at the site by others. Using the results of our field study, review, and laboratory testing, analyses were undertaken to develop geotechnical recommendations for project design and construction. Specifically, this report addresses the following:

- Soil and groundwater conditions.
- Geologic Hazards per the City of Gig Harbor Municipal Code.
- Seismic design parameters per the current International Building Code (IBC).
- Site preparation and grading.
- Excavations.

- Foundations.
- Slab-on-grade floors.
- Infiltration feasibility.
- Stormwater vault.
- Lateral earth pressures for wall design.
- Utilities.
- Pavements

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 contactor should be consulted to address these issues, as needed.

3.0 SITE CONDITIONS

3.1 Surface

The site is an undeveloped, approximately 9.88-acre assemblage of 2 tax parcels located east of and adjacent to Peacock Hill Avenue at the approximate right-of-way for 100th Street in Gig Harbor, Washington. The approximate location of the site is shown on Figure 1.

Site topography in the planned development area generally slopes down to the east. Topographic information on the CPH plans shows existing surface gradients in the planned development area generally sloping down to the east at inclinations ranging between about 10 and 20 percent. Slope gradients east of the planned development area drop down about 50 to 60 feet to the east at inclinations ranging between about 35 and 45 percent. A localized slope area in the north-central portion of the site, east of the planned development area, is shown having an inclination of about 79 percent over a vertical distance of about 44 feet.

We did not observe any indications of deep seated instability, persistent wet soil conditions, or groundwater seepage on the site slopes. A map detailing slope inclinations in the planned development area is attached as Figure 2.

The steep, east-facing slope, east of the planned development area, is the western sideslope of a relic, north-south oriented, post-glacial drainage/erosional feature. We did not observe a flow channel, or indications of wet surface conditions or recent surface water flow along the axis of the relic drainage. The ground surface along the axis of the relic drainage feature consists of a well-developed layer of forest duff/topsoil that typically supports a heavy growth of fern and other brush. A relatively small, stormwater detention pond discharges to the relic drainage feature approximately 200 feet upgradient (north) of the subject site. We did not observe wet soils or indications of significant flow downgradient from the pond discharge pipes.

Site vegetation generally consists of deciduous and coniferous trees with brush undergrowth. The site slopes typically support the growth of mature trees, including relatively straight conifers.

3.2 Soils

The site soils generally consist of about four to six inches of forest duff and topsoil overlying native glacial deposits comprised of medium dense to very dense till-like silty sand with gravel. We observed the dense to very dense till and till-like deposits below depths of about three to five feet in five of the seven test pits.

Test Pits TP-2, TP-3, and TP-6 terminated in outwash-like silty fine sand to fine sand with silt that was encountered below depths of 9 feet, 8 feet, and 4 feet, respectively. Test Pits TP-2, TP-3, and TP-6 were all excavated in the northeastern portion of the planned development area. The soils observed in our site explorations are generally consistent with test pits excavated previously at the site by others.

The *Geologic map of Washington-Northwest quadrant*, by J.D. Dragovich, et.al. (2002) shows the site underlain by Pleistocene till (Qgt). The dense to very dense silty sand with gravel that we observed in the test pits is generally consistent with this map unit.

Detailed descriptions of the subsurface conditions we observed in our site explorations are presented on the Test Pit Logs in Appendix A. Logs of the previous test pits excavated at the site are presented in Appendix B. The approximate test pit locations are shown on Figure 3.

3.3 Groundwater

We did not observe groundwater seepage in the test pits; however, some of the soils were mottled, indicating that they have been impacted by periodic fluctuations in soil moisture. We anticipate that a seasonal perched groundwater table develops at times above the relatively-impermeable, dense to very dense till soils. The occurrence of shallow perched groundwater is typical for sites underlain by till and other relatively impermeable materials. We expect that perched groundwater levels and flow rates will fluctuate seasonally and will typically reach their highest levels during and shortly following the wet winter months (October through May).

3.4 Geologic Hazards

We evaluated site conditions for the presence of geologically hazardous areas as defined by the Gig Harbor Municipal Code (GHMC). Chapter 18.08.030 (Critical Areas Definitions) of the GHMC defines geologically hazardous areas as "…those areas as designated in the City of Gig Harbor comprehensive plan as "landslide hazards," in the Washington Department of Ecology Coastal Zone Atlas, Volume 7, and "areas that because of their susceptibility to erosion, sliding, earthquake, or other geological events, are not suited to siting commercial, residential, or industrial development consistent with public health or safety concerns" (WAC 365-190-030[9])."

3.4.1 Erosion Hazard Areas

Chapter 18.08.030 of the GHMC defines erosion hazard areas as "…those areas which are vulnerable to erosion due to natural characteristics including vegetative cover, soil texture, slope, gradient or which have been induced by human activity. Those areas which are rated severe or very severe for building site development on slopes or cut banks, in accordance with the United States Department of Agriculture Soil Conservation Service Soil Survey for Pierce County Area (February 1979), are included within this definition."

The Soil Conservation Service (SCS) has mapped the site soils as *Harstine gravelly sandy loam, 0 to 6 percent slopes, Harstine gravelly sandy loam, 6 to 15 percent slopes,* and *Harstine gravelly sandy loam, 15 to 30 percent slopes,* which are described as formed a sandy glacial till with a slight, moderate, and moderate to severe erosion hazard, respectively. As discussed, surface gradients in the planned development area generally range between about 10 and 45 percent. In our opinion, the soils underlying slope areas steeper than 30 percent would be classified as *Harstine gravelly sandy loam, 30 to 45 percent slopes*, which are described as having a severe erosion hazard.

Therefore, per the criteria given above, slope areas at the site having inclinations of 15 percent or steeper would be classified as erosion hazard areas. We did not observe any indications of significant active erosion on the site slopes; however, the soils will be susceptible to erosion when exposed during site development.

In our opinion, the erosion potential of site soils in the planned development area would be adequately mitigated with proper implementation and maintenance of Best Management Practices (BMPs) for erosion prevention and sedimentation control. All BMPs for erosion prevention and sedimentation control will need to be in place prior to and during site grading activity, and should conform to City of Gig Harbor requirements.

3.4.2 Landslide Hazard Areas

Chapter 18.08.030 of the GHMC defines landslide hazard areas as "…those areas which are susceptible to risk of mass movement due to a combination of geologic, topographic and hydrologic factors."

We did not observe any indications of deep seated instability, significant active erosion, persistent wet soil conditions, or groundwater seepage on the slopes. Additionally, the soils underlying the slopes consist of dense to very dense till and outwash-like deposits that have been glacially overridden. Consequently they are highly consolidated and generally exhibit high shear strength characteristics.

Based on our observations, it is our opinion that site conditions do not exist that would typically be susceptible to the risk of mass movement, and therefore, do not meet the criteria given above defining a landslide hazard area. This is supported by the results of our stability analysis discussed below.

Stability Analysis

We performed stability analyses using the computer program Slide2 v.9.009, published by RocScience, Inc. to evaluate the relative stability of the steep slope located east of the planned development area. Our analyses were performed for both static and pseudostatic (seismic) loading of the existing site condition and a post-development condition with loading from planned grading and structures applied. The analyses were performed on slope sections identified on Figure 3 as Sections A-A' and B-B'. Soil parameters used for our analyses are estimates based on field data obtained from the onsite test pits, our experience with similar soil and slope conditions, and published data.

The post-development slope model for Section B-B' includes a 1,625 pounds per square foot (psf) load applied to the area of the proposed stormwater detention vault. This value includes a 375 psf load applied by a 3-foot thick soil cover over the top of the vault, a 750 psf load applied by a 12-foot high water column for a fully inundated vault condition, and a 500 psf load applied by vault service vehicles.

The pseudostatic analysis used a horizontal earthquake coefficient value of 0.382g to model ground motions expected from a severe earthquake. The seismic acceleration used is one-half of the site-modified peak ground acceleration (PGA_M) value for the ASCE 7-16 maximum considered earthquake (MCE) determined for the site (Latitude 47.34946996 and Longitude -122.58841707) using the Structural Engineers Association of California (SEAOC) U.S. Seismic Design Maps website (https://seismicmaps.org/) accessed on August 23, 2022.

The lowest factors of safety determined by our analyses are presented in the following table:

Section Analyzed	Minimum Safety Factors		
	Static	**Pseudostatic**	**Static – No Cohesion**
A-A' Existing	2.6	1.2	2.2
A-A' Proposed	2.6	1.2	2.0
B-B' Existing	2.3	1.1	1.9
B-B' Proposed	2.3	1.1	1.9
Minimum Acceptable Safety Factors	*1.5*	*1.1*	*1.5*

The results of the stability analyses indicate all conditions analyzed are stable under static and pseudostatic conditions. Safety factors determined by the analyses all meet or exceed the minimum values considered acceptable for stable slopes by local geotechnical engineering practice. Graphical output plots and the stability analysis summary report are presented in Appendix C.

Steep Slopes

Development of sites on or adjacent to slope areas steeper than 15 percent is regulated by the requirements of GHMC Chapter 18.08.190 (Hillsides, ravine sidewalls, and bluffs). Chapter 18.08.030 of the GHMC defines ravine sidewalls as "…a steep slope which abuts and rises from the valley floor of a stream and which was created by the normal erosive action of the stream." The GHMC defines a bluff as "…a steeply rising, near-vertical slope which abuts and rises from the Puget Sound shoreline."

Bluffs do not exist at the site. In our opinion, the east-facing slope in the eastern portion of the planned development area is not a ravine sidewall as defined above because there is no stream, stream channel, or indication of any surface water flow at the toe of the slope. Consequently, there is no risk of instability at the toe of the slope due to channel erosion.

Site slopes inclined at 15 percent or steeper meet the definition of a regulated hillside, which must be developed in accordance with the requirements of GHMC Chapter 18.08.190(A)(2). The requirements of this code chapter include addressing the following:

- Recommended maximum site ground disturbance.
- Estimate of storm drainage (gpm) for preconstruction, during construction, and post construction.
- Recommended methods to minimize erosion and stormwater runoff from site during construction and post construction.
- Seismic stability of site, preconstruction, during construction, and post construction.

Based on our study, we do not anticipate that unusual mitigation beyond the recommendations presented herein would be required for development on the hillside areas of the site. Project information provided on the CPH plans indicates the net area of the planned development is 4.09 acres, with 3.48 acres of ground disturbance within that area (approximately 85 percent). Provided BMPs for erosion prevention and sedimentation control are properly implemented and maintained for the duration of site development, it is our opinion that the 3.48 acres is an acceptable maximum area of ground disturbance for the 4.09-acre development area. Seismic site stability is addressed by our slope stability analyses and Section 3.4.3 of this report.

3.4.3 Seismic Hazard Areas

Chapter 18.08.030 of the GHMC defines seismic hazard areas as "…those areas which are susceptible to severe damage from earthquakes as a result of ground shaking, slope failure, settlement, or soil liquefaction."

Based on our study, it is our opinion that there is little to no risk for site damage resulting from soil liquefaction, slope failure, or settlement. Therefore, in our opinion, seismic hazard areas as defined above do not exist at the site. In our opinion, design in accordance with local building codes for determining seismic forces would adequately mitigate any impacts associated with ground shaking.

3.5 Seismic Site Class

Based on the site soil conditions and our knowledge of the area geology, per Chapter 16 of the current International Building Code (IBC), site class "C" should be used in structural design.

4.0 DISCUSSION AND RECOMMENDATIONS

4.1 General

Based on our study, there are no geotechnical conditions that would preclude the planned development. Residences can be supported on conventional spread footings bearing on competent native soils underlying the organic surface soils or on structural fill placed on a competent native soil subgrade. Floor slabs and pavements can be similarly supported.

The vast majority of site soils contain a sufficient amount of fines (silt- and clay-sized particles) such that they will be difficult to compact as structural fill when too wet or too dry. Accordingly, the ability to use the soils from site excavations as structural fill will depend on their moisture content and the prevailing weather conditions at the time of construction. If grading activities will take place during the winter season, the owner should be prepared to import free-draining granular material for use as structural fill and backfill.

Detailed recommendations regarding these issues and other geotechnical design considerations are provided in the following sections of this report. 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, organic surface soils, and other deleterious materials should be stripped and removed from the site. We expect surface stripping depths of about four to six inches will be required to remove the organic surficial soils. Stripped vegetation debris should be removed from the site. Organic soils will not be suitable for use as structural fill, but may be used for limited depths in nonstructural areas or for landscaping purposes. Once clearing and grubbing operations are complete, cut and fill operations to establish desired building and road grades can be initiated.

A representative of Terra Associates, Inc. should examine all bearing surfaces to verify that conditions encountered are as anticipated and are suitable for placement of structural fill or direct support of building and pavement elements. Our representative may request proofrolling exposed surfaces with a heavy rubber tired vehicle to determine if any isolated soft and yielding areas are present. If unstable yielding areas are observed, they should be cut to firm bearing soil and filled to grade with structural fill. If the 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. In general, our experience has shown that a minimum of 18 inches of clean, granular structural fill over the geotextile fabric should establish a stable bearing surface.

Our study indicates that the vast majority of the native site soils contain a significant amount of fines (silt- and clay-sized particles) that will make them difficult to compact as structural fill when too wet or too dry. Provided these soils are near optimum moisture when excavated, and are placed during dry weather conditions, we anticipate they will be suitable for direct use as structural fill. At the time our field work was completed, observations and laboratory test results indicated that the major portion of the upper weathered soils were dry of optimum, and would likely require moisture conditioning by the addition of water to facilitate adequate compaction. During or shortly following the normal wet winter season these soils will likely be wet of optimum. In order to use wet of optimum materials for structural fill, drying the soils by aeration during dry weather conditions or using soil amendments such as lime or Portland cement to reduce and stabilize the soil's moisture content will need to be considered. If soil amendment products are used, additional Temporary Erosion and Sedimentation Control (TESC) Best Management Practices (BMPs) will need to be implemented to mitigate potential impacts to stormwater runoff associated with possible elevated pH levels.

If grading activities are planned during the wet winter months, or if they 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 3/4-inch fraction.

We did not observe materials at the site that would meet this gradation requirement. Prior to use, Terra Associates, Inc. should examine and test all materials planned to be imported to the site for use as structural fill.

Structural fill should be placed in uniform loose layers not exceeding 12 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 may be reduced to 90 percent.

4.3 Slopes and Embankments

All permanent cut and fill slopes should be graded with a finished inclination of no greater than 2:1 (Horizontal:Vertical). Upon completion of grading, the slope face should be appropriately vegetated or provided with other physical means to guard against erosion. Final grades at the top of the slope must promote surface drainage away from the slope crest. Water must not be allowed to flow uncontrolled over the slope face. If surface runoff must be directed towards the top of a slope, it may be necessary to route collected water to an appropriate point of discharge beyond the toe in a closed system.

Embankment fills placed on slopes exceeding a grade of 20 percent must be keyed and benched into competent native soils. A generalized slope fill detail is shown on Figure 4. At a minimum, we recommend constructing a toe drain in the key trench for the fill embankment. The locations and extent of such toe drains will be best determined in the field at the time of construction. All fill placed for embankment construction should meet the structural fill requirements provided in Section 4.2 of this report.

4.4 Excavations

All excavations at the site associated with confined spaces, such as lower building level retaining walls, must be completed in accordance with local, state, and federal requirements. Based on the Washington State Safety and Health Administration (WSHA) regulations, the medium dense to dense weathered till soils and outwash-like fine sand with silt soils would typically be classified as Type C soils. The unweathered, dense to very dense till and till-like soils would typically be classified as Type A soils.

Accordingly, for temporary excavations of more than 4 feet and less than 20 feet in depth, the side slopes in Type C soils should be laid back at a slope inclination of 1.5:1 (Horizontal:Vertical) or flatter. Temporary excavations in Type A soils can be laid back at inclinations of 0.75:1 or flatter. For temporary excavation slopes less than 8 feet in height in Type A soils, the lower 3.5 feet can be cut to a vertical condition with a 0.75:1 slope graded above. For temporary excavation slopes greater than 8 feet in height up to a maximum height of 12 feet, the slope above the 3.5-foot high vertical portion should be laid back to an inclination of 1:1 or flatter. No vertical cut with a backslope immediately above is allowed for excavation depths that exceed 12 feet. In this case, a 4-foot high vertical cut with an equivalent horizontal bench to the cut slope toe is required. If there is insufficient room to complete the excavations in the manners discussed above, or if excavations greater than 20 feet deep are planned, you may need to use temporary shoring to support the excavations.

Although not observed, groundwater seepage should be anticipated within excavations extending to the upper contact of the dense to very dense till and till-like soils. Based on our experience, the volume of water and rate of flow into the excavation should be relatively minor and would not be expected to impact the stability of the excavations when completed, as described above. Conventional sump pumping procedures along with a system of collection trenches, if necessary, should be capable of maintaining a relatively dry excavation for construction purposes in these soils.

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 contractor.

4.5 Foundations

The residential structures may be supported on conventional spread footing foundations bearing on competent native soils or on structural fill placed above these native soils. Foundation subgrades should be prepared, as recommended in Section 4.2 of this report.

Perimeter foundations exposed to the weather should bear at a minimum depth of 1.5 feet below final exterior grades for frost protection. Interior foundations can be constructed at any convenient depth below the floor slab. We recommend designing foundations for a net allowable bearing capacity of 2,500 psf. For short-term loads, such as wind and seismic, a one-third increase in this allowable capacity can be used in design. With the anticipated loads and this bearing stress applied, building settlements should be less than one-half inch total and one-fourth inch differential.

For designing foundations to resist lateral loads, a base friction coefficient of 0.35 can be used. Passive earth pressure acting on the sides of the footings may also be considered. We recommend calculating this lateral resistance using an equivalent fluid weight of 300 pounds per cubic foot (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 foundations will be constructed neat against competent native soil or the excavations are backfilled with structural fill, as described in Section 4.2 of this report. The recommended passive and friction values include a safety factor of 1.5.

4.6 Slab-on-Grade Floors

Slab-on-grade floors may be supported on a subgrade prepared as recommended in Section 4.2 of this report. 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 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 be ineffective in assisting uniform curing of the slab and can actually serve as a water supply for moisture seeping through the slab and 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.

4.7 Lateral Earth Pressures for Below-Grade Walls

The magnitude of earth pressures developing on below-grade walls will depend on the quality and compaction of the wall backfill. We recommend placing and compacting wall backfill as structural fill, as described in Section 4.2 of this report. To prevent overstressing the walls during backfilling, heavy construction machinery should not be operated within five feet of the wall. Wall backfill in this zone should be compacted with hand-operated equipment. To prevent hydrostatic pressure development, wall drainage must also be installed. 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 35 pounds per cubic foot (pcf). For restrained walls, an additional uniform load of 100 psf should be added to the 35 pcf. To account for typical traffic surcharge loading, the walls can be designed for an additional imaginary height of two feet (two-foot soil surcharge). 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. Values for these parameters are provided in Section 4.5 of this report.

Gravity block or mechanically stabilized earth (MSE) walls can also be used to accommodate vertical breaks in grade that may be required to achieve desired site elevations. We can design or provide soil design parameters for a design build approach for these alternative wall systems, if requested.

4.8 Infiltration Feasibility

Based on our study, it is our opinion that on-site infiltration is not a feasible alternative for management of site stormwater due to the presence of relatively-impermeable glacially-consolidated till and till-like soils at relatively shallow depths beneath the ground surface. In our opinion, the outwash-like fine sand with silt observed at depth in Test Pits TP-2, TP-3, and TP-6 should not be considered for stormwater infiltration due to the presence of mottling and weakly- to moderately-cemented zones within the soil.

There may be opportunities to infiltrate limited amounts of site stormwater in the upper weathered till and till-like soils using Low Impact Development (LID) natural drainage practices (NDPs). The feasibility of using NDPs at the site should be based on field conditions observed at the time of site grading. In our opinion, NDPs should not be considered for Building Lots 6 through 10, which are located on or adjacent to the steep slope in the eastern portion of the planned development area.

4.9 Stormwater Detention Vault

As discussed, site stormwater will be routed to a detention vault located in the northeastern portion of the planned development area. Based on available topographic information and the interior bottom-of-vault elevation at Elev. 211.5, excavations to the vault foundation elevations would be about 2 to 12 feet below existing grade on the eastern and western sides of the vault, respectively. We expect that the bottom of the excavation would expose native, medium dense to dense silty fine sand to fine sand with silt. Vault foundations supported by these native soils may be designed for an allowable bearing capacity of 3,000 psf. For short-term loads, such as seismic, a one-third increase in this allowable capacity can be used. Friction at the base of foundations and passive earth pressure will provide resistance to these lateral loads. Values for these parameters are provided in Section 4.5.

The magnitude of earth pressures developing on the vault walls will depend in part on the quality and compaction of the wall backfill. We recommend placing and compacting wall backfill as structural fill, as recommended in the Section 4.2 of this report. Lateral earth pressures recommended in Section 4.7 can be used in designing the below-grade vault walls. If it is not possible to discharge collected water at the footing elevation, we recommend setting the invert elevation of the wall drainpipe equivalent to the outfall invert and connecting the drain to the outfall pipe for discharge. For any portion of the wall that falls below the invert elevation of the wall drain, an earth pressure equivalent to a fluid weighing 85 pcf should be used. For evaluating walls under seismic loading, an additional uniform earth pressure equivalent to 8H psf, where H is the height of the below-grade wall in feet, can be used. These values assume a horizontal backfill condition. Where applicable, a uniform horizontal traffic surcharge value of 75 psf should be included in design of vault walls.

Slope Setback

The Roadway, Grading and Drainage Improvement plan shows the proposed detention vault set back 20 feet from the crest of an approximately 50-foot high slope with surface gradients generally ranging between about 35 and 45 percent. As discussed in Section 3.4.2, the results of our stability analyses indicate that the slope adjacent to the proposed detention vault is stable for all cases under static and pseudostatic conditions. Additionally, there is no change in the safety factors determined for the existing and post-development slope conditions. Accordingly, the 20-foot wide slope setback provides adequate mitigation of potential hazards associated with the steep slope. Provided the recommendations for grading and drainage presented herein are followed, the presence of the proposed vault would have no adverse impact on the steep slope area.

However, Section 3.11.3 (Detention Vaults) of Volume III (Hydrologic Analysis and Flow Control BMPs) of the City of Gig Harbor Stormwater Management and Site Development Manual (SMSDM), states that detention vaults must be set back at least 50 feet from slopes that are steeper than 20 percent and more than 10 feet high. It further states that the vault setback can be reduced if the results of geotechnical analyses indicate that the reduction will not result in potential adverse impacts to the slope; however, the reduced setback cannot be less than the height of the slope. This requirement results in a minimum reduced vault setback distance of about 50 feet. As indicated by the stability analyses, increasing the vault setback distance from 20 feet to 50 feet would have no beneficial impact on slope stability.

4.10 Drainage

Surface

Final exterior grades should promote free and positive drainage away from the building areas. If a positive gradient cannot be provided, provisions for collection and disposal of surface water adjacent to the structure should be provided.

Surface water from developed areas must not be allowed to flow in an uncontrolled and concentrated manner over the crests of site slopes and embankments. Surface water should be directed away from the slope crests to a point of collection and controlled discharge. If site grades do not allow for directing surface water away from the slopes, then the water should be collected and tightlined to an approved point of controlled discharge.

Subsurface

In addition to wall drainage as discussed in Section 4.7, we recommend installing a continuous drain along the outside lower edge of shallow perimeter building foundations. Wall and foundation drains should be tightlined to an approved point of controlled discharge independent of the roof drain system. Subsurface drains must be laid with a gradient sufficient to promote positive flow to the point of discharge. All drains should be provided with cleanouts at easily accessible locations. These cleanouts should be serviced at least once every year.

4.11 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 on-site should generally be suitable for use as backfill material. However, the vast majority of 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.

4.12 Pavements

Pavements should be constructed on subgrades prepared as recommended in Section 4.2 of this report. Regardless of the degree of relative compaction achieved, the subgrade must be firm and relatively unyielding before paving. Proofrolling the subgrade with heavy construction equipment should be completed to verify this condition.

The pavement design section is dependent upon the supporting capability of the subgrade soils and the traffic conditions to which it will be subjected. As we understand, traffic will mainly consist of light passenger and commercial vehicles with only occasional heavy traffic in the form of moving trucks and trash removal vehicles. Based on this information, with a stable subgrade prepared as recommended, we recommend the following pavement sections:

- Two inches of asphalt concrete (AC) over four inches of crushed rock base (CRB)
- Four inches full depth HMA

The paving materials used should conform to the Washington State Department of Transportation (WSDOT) specifications for ½-inch class HMA and CRB.

Long-term pavement performance will depend on surface drainage. A poorly-drained pavement section will be subject to premature failure as a result of surface water infiltrating into the subgrade soils and reducing their supporting capability. For optimum performance, we recommend surface drainage gradients of at least two percent. Some degree of longitudinal and transverse cracking of the pavement surface should be expected over time. Regular maintenance should be planned to seal cracks when they occur.

5.0 ADDITIONAL SERVICES

Terra Associates, Inc. should review the final designs 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 services during construction in order 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 Reserve project in Gig Harbor, Washington. This report is for the exclusive use of Prospect Development, LLC, and its authorized representatives. No other warranty, expressed or implied, is made.

The analyses and recommendations presented in this report are based on data obtained from our on-site test pits. 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: WSDOT GEOPORTAL

NOT TO SCALE

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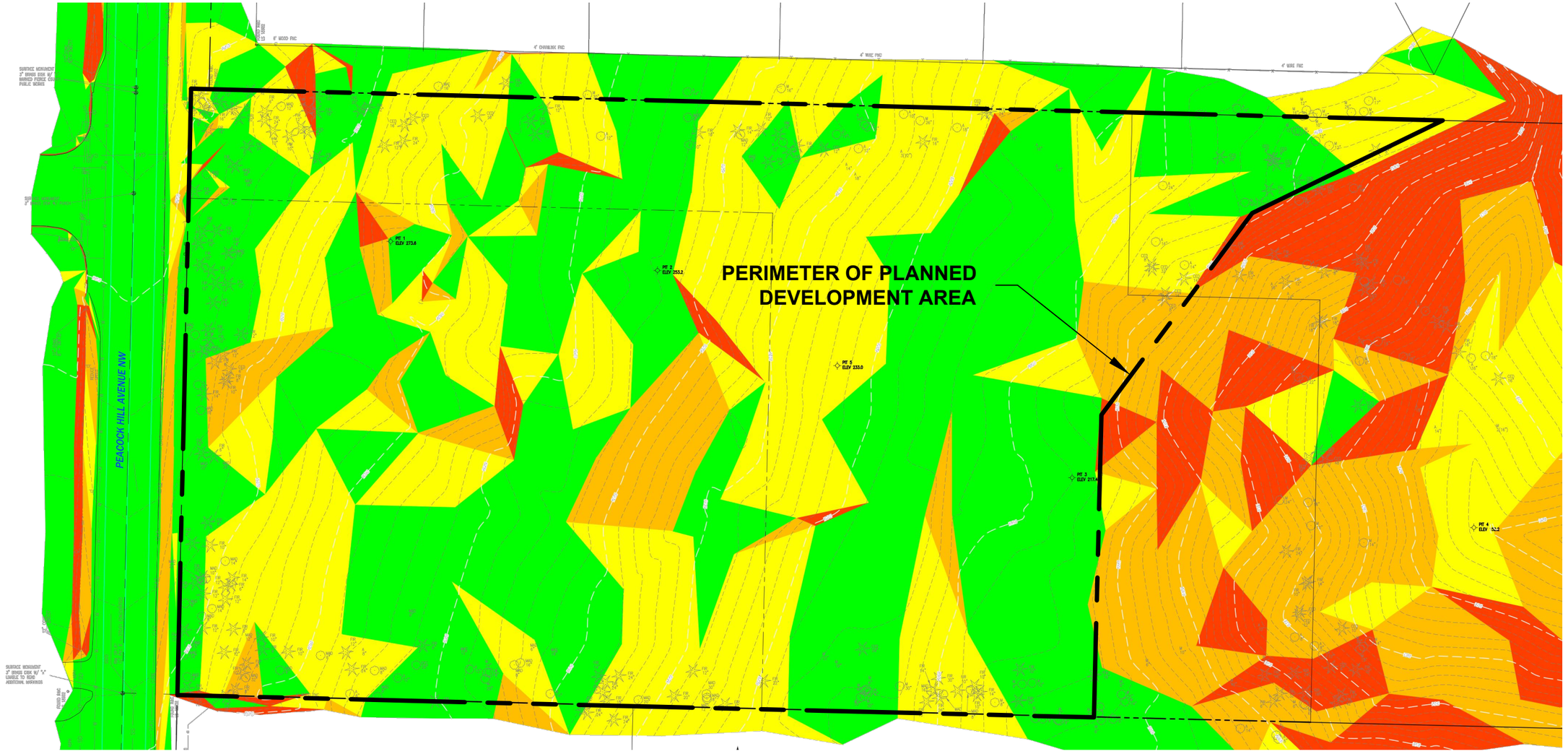
Geology and
Environmental Earth Sciences

VICINITY MAP
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311	Date JAN 2023	Figure 1



REFERENCE:

CPH CONSULTANTS

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.

Slopes Table

Number	Minimum Slope	Maximum Slope	Area	Color
1	0.08%	15.00%	160275.67	
2	15.00%	25.00%	109143.08	
3	25.00%	40.00%	68010.77	
4	40.00%	7581.52%	57566.45	

0 60 120

APPROXIMATE SCALE IN FEET

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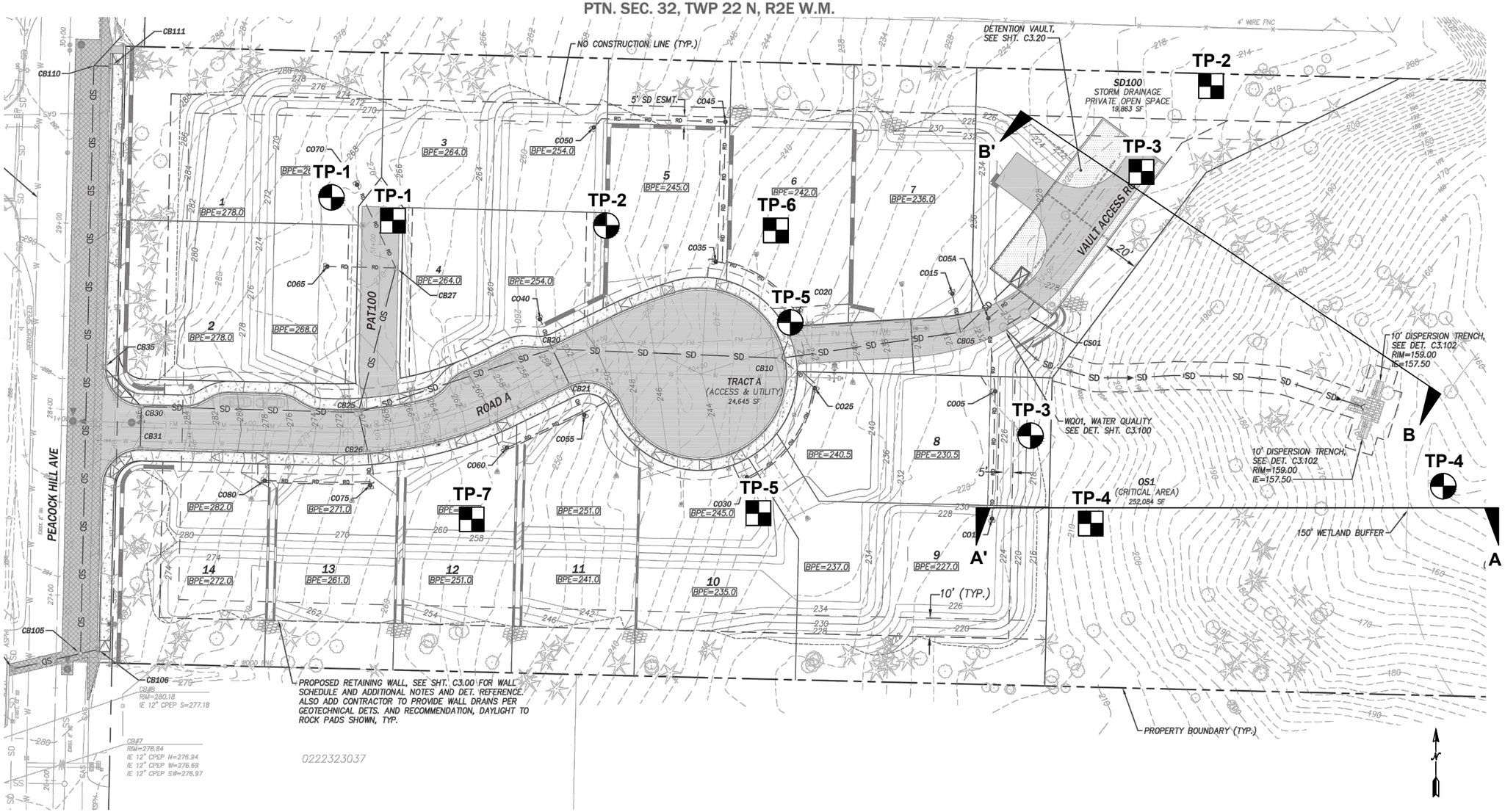
SLOPE MAP
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311 | Date JAN 2023 | Figure 2

PTN. SEC. 32, TWP 22 N, R2E W.M.



0 60 120

APPROXIMATE SCALE IN FEET

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:

CPH CONSULTANTS

LEGEND:

- APPROXIMATE TEST PIT LOCATION (TERRA 2015)
- APPROXIMATE TEST PIT LOCATION (KRAZAN 2005)
- GEOLOGIC SECTION

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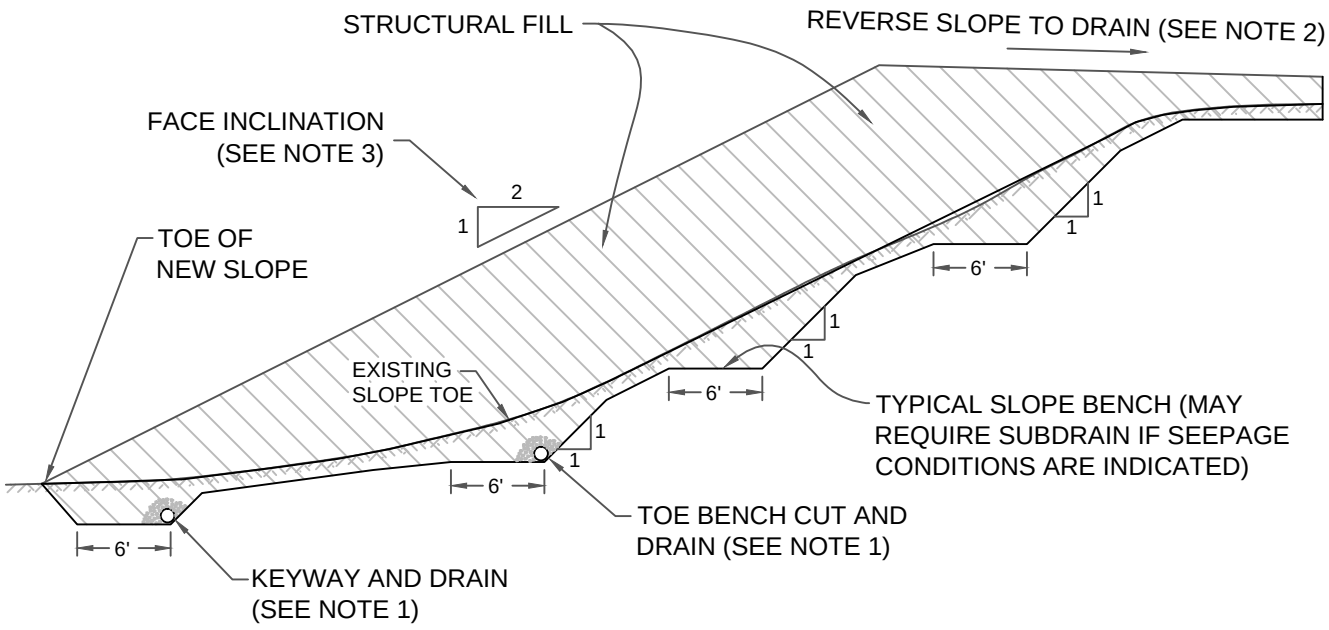
Environmental Earth Sciences

EXPLORATION LOCATION PLAN
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311	Date JAN 2023	Figure 3



NOT TO SCALE

NOTES:

1) DRAINS SHALL CONSIST OF 6" DIAMETER PERFORATED PVC PIPE ENVELOPED IN 1 cu. ft. OF WASHED 3/4" MINUS DRAINAGE GRAVEL.
2) RECOMMENDED PRIOR TO ESTABLISHMENT OF PERMANENT EROSION CONTROL MEASURES AND SITE DRAINAGE.
3) PERMANENT FACE INCLINATION TO BE ESTABLISHED AT 2:1 (H:V) OR AS RECOMMENDED BY THE GEOTECHNICAL ENGINEER

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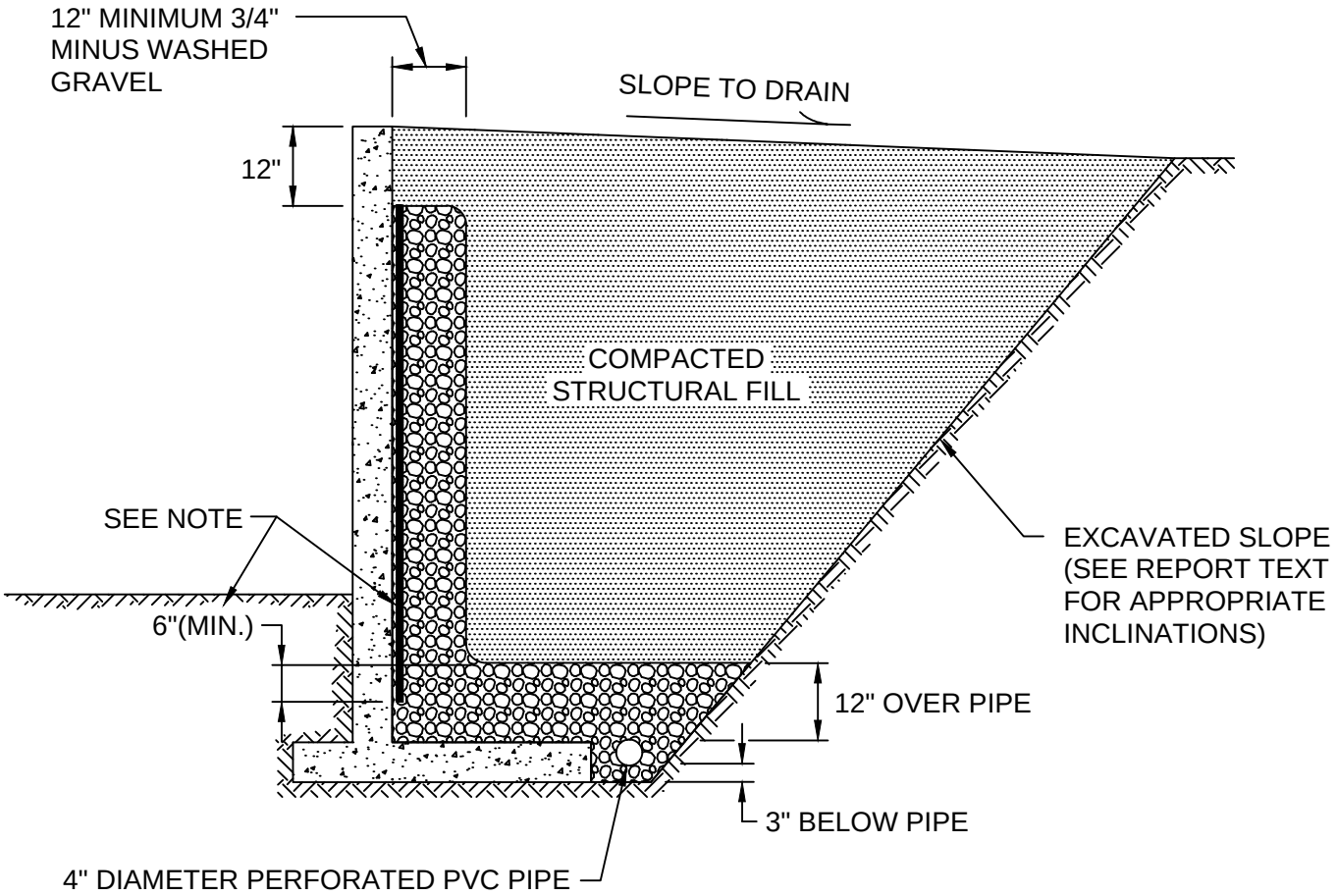
GENERALIZED SLOPE FILL DETAIL
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311	Date JAN 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.

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TYPICAL WALL DRAINAGE DETAIL
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311	Date JAN 2023	Figure 5

APPENDIX A
FIELD EXPLORATION AND LABORATORY TESTING

The Reserve
Gig Harbor, Washington

On October 23, 2015, we investigated subsurface conditions at the site by observing conditions in 7 test pits excavated to maximum depths of about 8 to 10.5 feet using a track-mounted excavator. The test pit locations are shown on Figure 2. The test pit locations were approximately determined in the field by measuring and pacing from existing surface features and using GPS coordinates obtained using handheld equipment. The Test Pit Logs are presented on Figures A-2 through A-8.

An engineering geologist from our office maintained a log of each test pit as it was excavated, classified the soil conditions encountered, and obtained representative soil samples. All soil samples were visually classified in the field in accordance with the Unified Soil Classification System. A copy of this classification is presented as Figure A-1.

Representative soil samples obtained from the test pits were placed in sealed plastic bags and taken to our laboratory for further examination and laboratory testing. Laboratory testing consisted of determining the moisture content of all the collected soil samples, and grain size analyses of four select samples. The moisture test results are reported on the Test Pit Logs. The results of the grain size analyses are presented on Figures A-9 and A-10.

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

COHESIONLESS

Density	Standard Penetration Resistance in Blows/Foot
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

I	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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Geology and
Environmental Earth Sciences

UNIFIED SOIL CLASSIFICATION SYSTEM
THE RESERVE
GIG HARBOR, WASHINGTON

Proj. No.T-7311	Date JAN 2023	Figure A-1

LOG OF TEST PIT NO. 1

FIGURE A-2

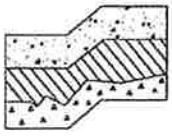
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 272 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(6 inches DUFF and TOPSOIL) Gray-brown silty SAND with gravel, moist, numerous light gray-brown, weakly cemented, fine to medium sand layers. (SM)	Medium Dense	9.6		
2						
3		Gray-brown silty SAND with gravel, moist, scattered mottling. (SM) (Weathered till)	Dense			
4		Gray-brown to gray silty SAND with gravel, moist. (SM) (Till)	Very Dense	3.9		
5						
6						
7		Gray-brown silty SAND with gravel to SAND with silt and gravel, moist, numerous light gray, weakly cemented, fine to medium sand layers. (SM/SP-SM)				
8						
9		Test pit terminated at 9 feet. No groundwater seepage.				
10						
11						
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. 2

FIGURE A-3

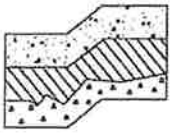
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 214 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(4 inches DUFF and TOPSOIL) FILL: brown silty sand, trace of gravel, dry, numerous fine roots. (SM)	Medium Dense			
2		Light brown silty fine SAND, moist, scattered mottling. (SM)	Medium Dense to Dense			
3						
4						
5		Light gray-brown silty fine SAND, moist, scattered faint mottling. (SM)				
6				6.0		
7						
8						
9						
10		Gray fine SAND with silt to fine SAND, moist. (SP-SM/SP)		10.5		
11		Test pit terminated at 10.5 feet. No groundwater seepage.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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Geology and
Environmental Earth Sciences

LOG OF TEST PIT NO. 3

FIGURE A-4

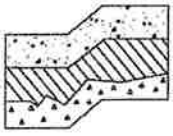
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 216 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(5 inches DUFF and TOPSOIL) Light red-brown silty SAND with gravel, dry to moist, numerous fine roots.	Medium Dense			
2		Gray-brown silty SAND with gravel, dry to moist, scattered mottling. (SM) (Weathered till)	Medium Dense to Dense			
3						
4		Gray-brown silty SAND with gravel, moist. (SM) (Till)	Very Dense	10.4		
5						
6						
7						
8		Light gray-brown silty fine SAND to fine SAND with silt, moist, scattered faint mottling. (SM/SP-SM)	Medium Dense to Dense			
9						
10				11.1		
11		Test pit terminated at 10 feet. No groundwater seepage.				
12						
13						
14						
15						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. 4

FIGURE A-5

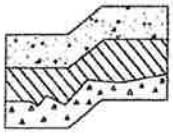
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 208 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(6 inches DUFF and TOPSOIL) Light brown silty fine SAND to silty fine SAND with gravel, dry to moist, numerous fine roots. (SM)	Medium Dense to Dense	7.0		
5		Gray-brown silty fine to medium SAND with gravel, moist, weakly to moderately cemented, appears reworked. (SM) (Till-like)	Very Dense	5.3		
8		Test pit terminated at 8 feet. No groundwater seepage.				
10						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. 5

FIGURE A-6

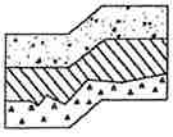
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 230 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(6 inches DUFF and TOPSOIL) Light brown silty SAND with gravel, dry, numerous fine roots. (SM)	Medium Dense			
2		Light gray-brown silty fine SAND to silty fine SAND with gravel, dry to moist, scattered faint mottling. (SM) (Weathered till)	Medium Dense to Dense			
4		Gray-brown silty SAND with gravel, dry to moist. (SM) (Till)	Very Dense			
8		Test pit terminated at 8 feet. No groundwater seepage.				
10						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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LOG OF TEST PIT NO. 6

FIGURE A-7

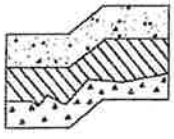
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 237 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(6 inches DUFF and TOPSOIL) Light brown silty fine SAND, dry to moist, numerous fine roots. (SM)	Medium Dense			
3		Gray-brown silty fine SAND to fine SAND with silt, moist, scattered faint mottling. (SM/SP-SM)	Medium Dense to Dense	9.9		
5		Gray-brown fine SAND, dry to moist, weakly to moderately cemented, trace of faint mottling. (SP)	Dense	6.1		
8		Test pit terminated at 8 feet. No groundwater seepage.				

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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Environmental Earth Sciences

LOG OF TEST PIT NO. 7

FIGURE A-8

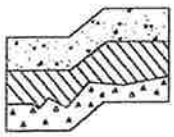
PROJECT NAME: The Reserve **PROJ. NO:** T-7311 **LOGGED BY:** JCS

LOCATION: Gig Harbor, Washington **SURFACE CONDS:** Forest Duff **APPROX. ELEV:** 256 Feet

DATE LOGGED: October 23, 2015 **DEPTH TO GROUNDWATER:** N/A **DEPTH TO CAVING:** N/A

DEPTH (FT.)	SOIL SAMPLE	DESCRIPTION	CONSISTENCY/ RELATIVE DENSITY	W (%)	POCKET PEN. (TSF)	USDA TEXTURAL CLASSIFICATION
1		(6 inches DUFF and TOPSOIL) Light brown silty SAND with gravel, moist, numerous fine roots. (SM)				
2		Brown to gray-brown silty SAND with gravel, moist. (SM) (Weathered till)	Medium Dense			
3						
4		Gray to gray-brown silty SAND with gravel, moist, scattered fine sand layers, trace of cobbles. (SM) (Till)				
5			Very Dense			
6				13.7		
7						
8		Test pit terminated at 8 feet. No groundwater seepage.				
9						
10						
11						

NOTE: This subsurface information pertains only to this test pit location and should not be interpreted as being indicative of other locations at the site.



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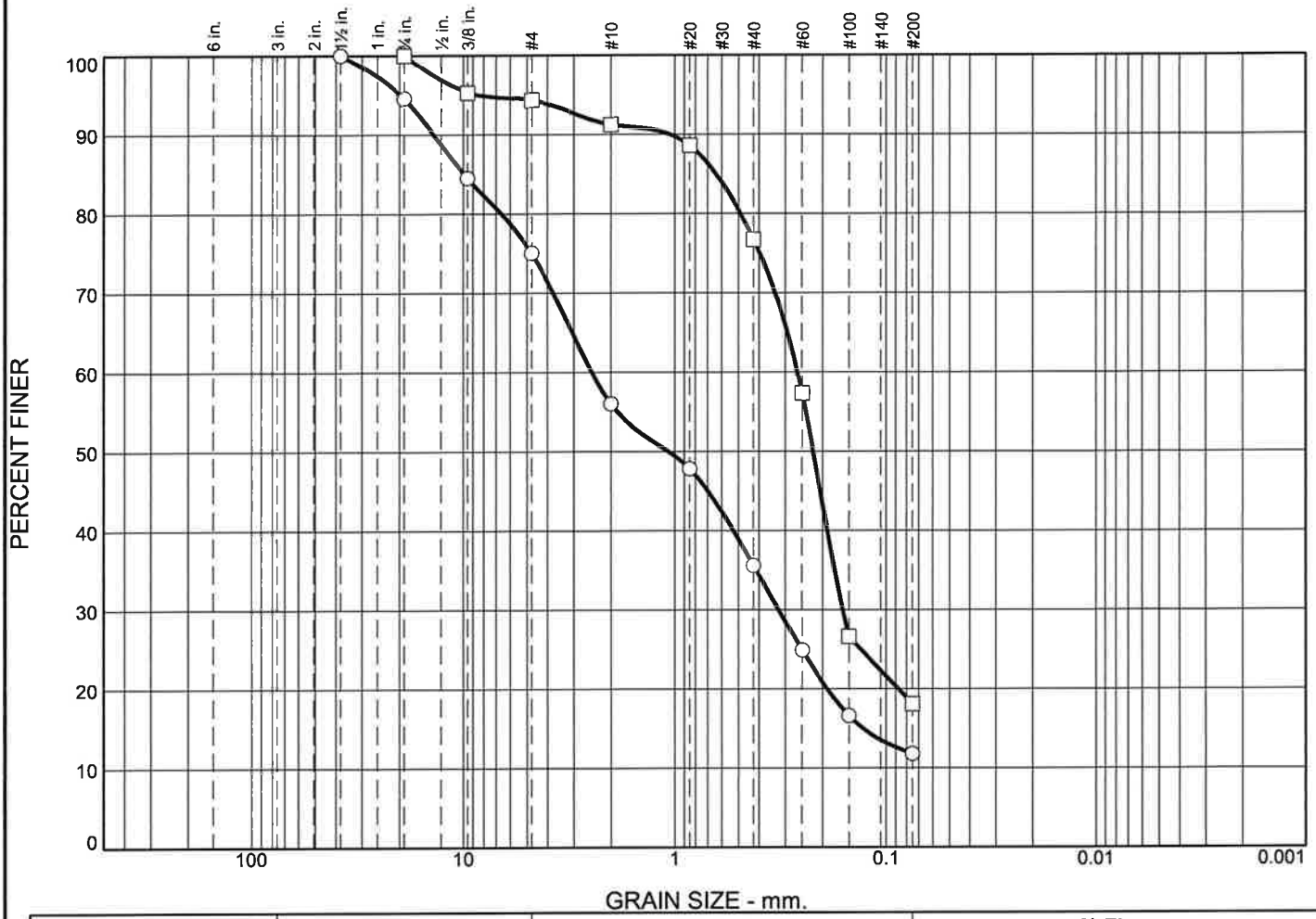
Environmental Earth Sciences

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	5.5	19.5	19.0	20.4	23.8	11.8	
□	0.0	0.0	5.7	3.1	14.5	58.6	18.1	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			9.8812	2.4654	1.0725	0.3235	0.1287			
□			0.6382	0.2631	0.2215	0.1608				

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

Project No. T-7311 **Client:** Resource Properties, LLC

Project: The Reserve

○ **Location:** TP-1 **Depth:** 6'

□ **Location:** TP-2 **Depth:** 6.5

Remarks:

○ Tested 11-10-15

□ Tested 11-10-15

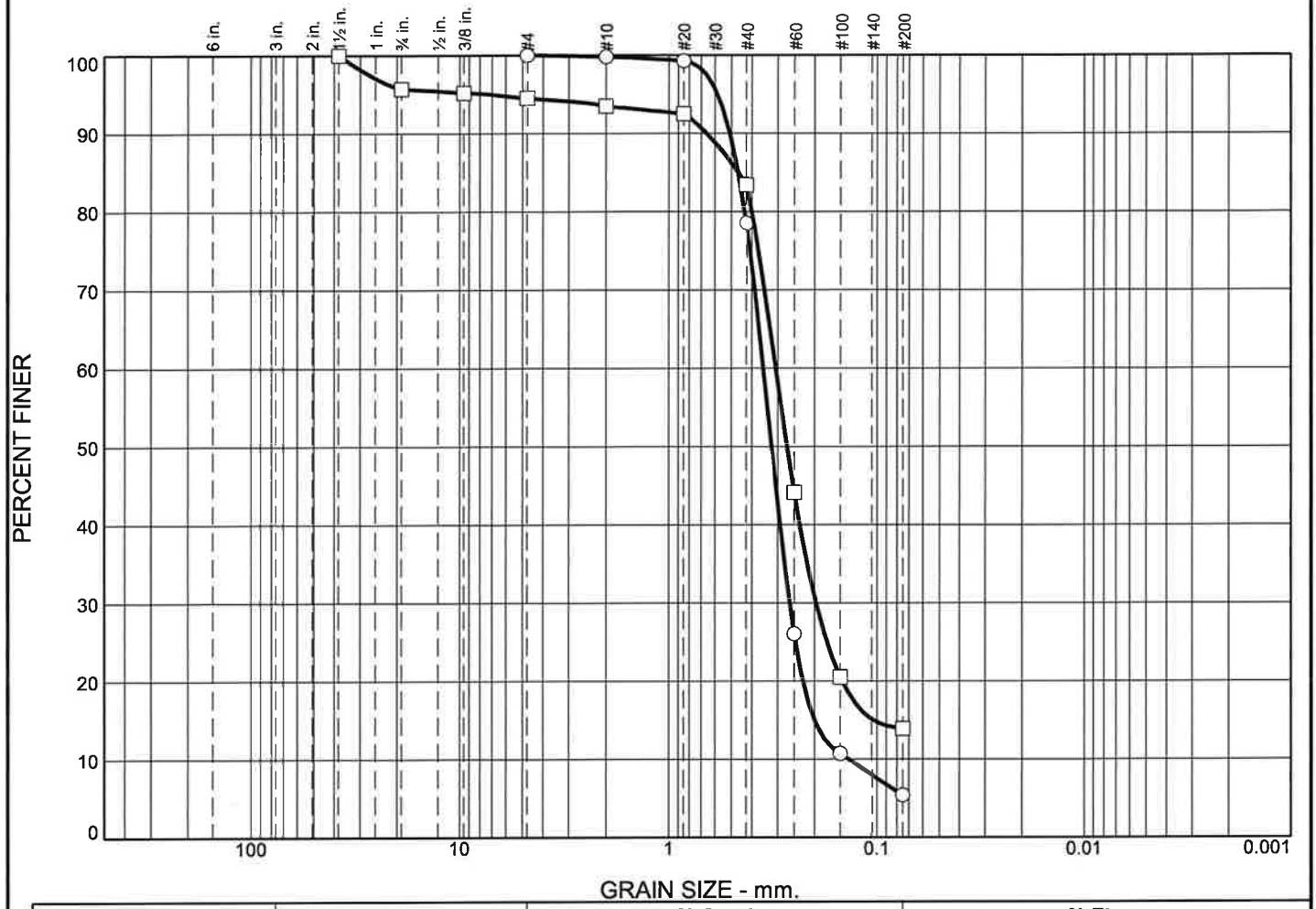
Terra Associates, Inc.

Kirkland, WA

Figure A-9

Tested By: FQ

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	0.0	0.2	21.3	73.1	5.4	
□	0.0	4.3	1.2	1.0	10.1	69.5	13.9	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			0.4648	0.3518	0.3210	0.2629	0.1998	0.1373	1.43	2.56
□			0.4650	0.3066	0.2707	0.1962	0.1039			

Material Description	USCS	AASHTO
○ SAND with silt	SP-SM	
□ silty SAND	SM	

Project No. T-7311 **Client:** Resource Properties, LLC

Project: The Reserve

○ **Location:** TP-2 **Depth:** 10'

□ **Location:** TP-3 **Depth:** 10'

Remarks:

○ Tested 11-10-15

□ Tested 11-10-15

Terra Associates, Inc.

Kirkland, WA

Figure A-10

Tested By: FQ

APPENDIX B

TEST PIT LOGS BY OTHERS

Project: Residential Dev. - Gig Harbor

Log of Test Pit TP-1

Project No: 092-05118

Client: Resource Partners

Surface Elevation:

Figure No: A-1

Location: Gig Harbor, Washington

Datum:

Logged By: CM

Depth to Water

Initial: Not Encountered

At Completion:

Depth	Symbol	Description	Sample Number	Type	Density Gauge (pcf)	Pocket Penetrometer (tsf)	Dynamic Cone Penetration Test (Blows/1-3/4 in) 20 40 60 80	Water Content (%) Wp |---0---| Wl 20 40 60 80
0		Ground Surface						
		TOPSOIL Forest ground cover	S-1	Grab				
		WELL GRADED SAND WITH SILT (SW) Medium dense, fine to coarse grained sand, yellowish brown to olive brown, moist. Some iron oxide staining.	S-2	Grab				
5		- Gravel interbed at 2.5 feet. - Interbeds of fine silty sand between 3 and 6 feet. - Increase in fine sand at 5 feet. - Increase in density at 5 feet. - Root clusters at 7 feet. - Very compacted pieces of coarse grained till at 7.75 feet.	S-3	Grab				
			S-4	Grab				
			S-5	Grab				
10		End of Test Pit						
15								
20								
25								

Excavation Method: Deere 120 Trackhoe

Contractor: Client Supplied

Krazan and Associates
19501 144th Ave. NE #F-300
Woodinville, WA 98072

Test Pit Date: 27 September 05

Sample Method: Grab

Sheet: 1 of 1

Project: Residential Dev. - Gig Harbor

Log of Test Pit TP-2

Project No: 092-05118

Client: Resource Partners

Surface Elevation:

Figure No: A-2

Location: Gig Harbor, Washington

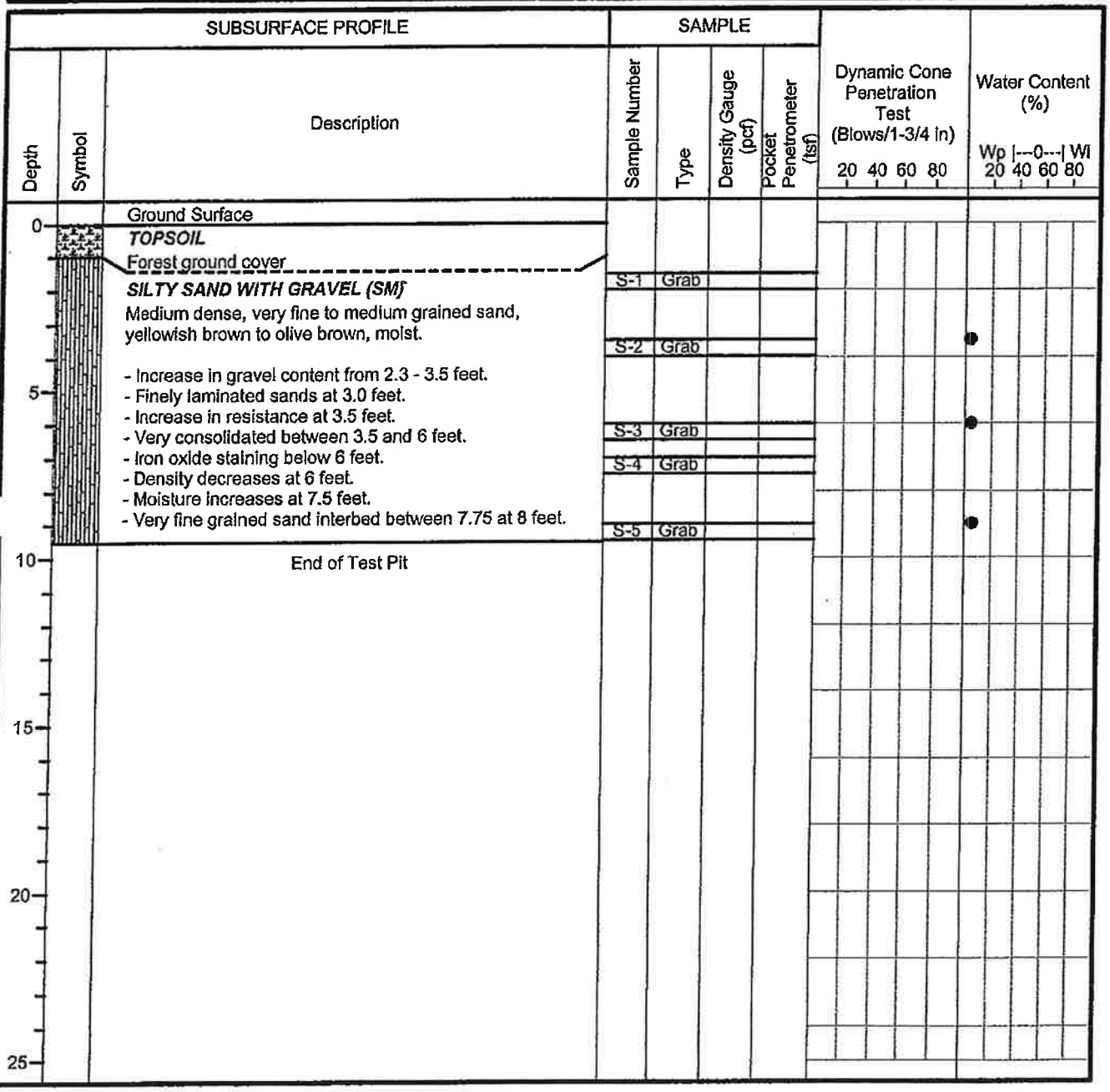
Datum:

Logged By: CM

Depth to Water

Initial: Not Encountered

At Completion:



Excavation Method: Deere 120 Trackhoe

Contractor: Client Supplied

Krazan and Associates
19501 144th Ave. NE #F-300
Woodinville, WA 98072

Test Pit Date: 27 September 05

Sample Method: Grab

Sheet: 1 of 1

Project: Residential Dev. - Gig Harbor

Log of Test Pit TP-3

Project No: 092-05118

Client: Resource Partners

Surface Elevation:

Figure No: A-3

Location: Gig Harbor, Washington

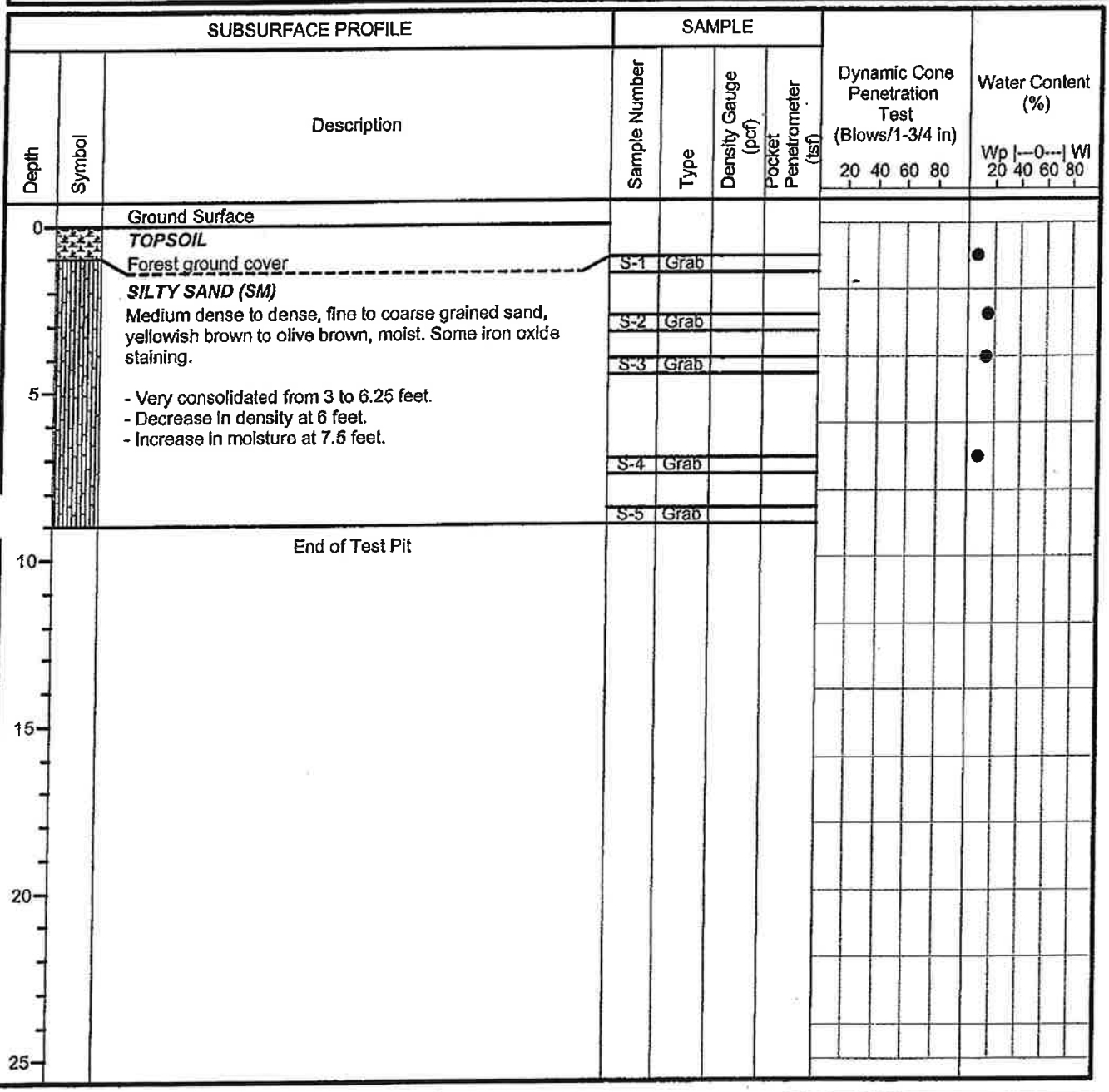
Datum:

Logged By: CM

Depth to Water

Initial: Not Encountered

At Completion:



Excavation Method: Deere 120 Trackhoe

Contractor: Client Supplied

Krazan and Associates
19501 144th Ave. NE #F-300
Woodinville, WA 98072

Test Pit Date: 27 September 05

Sample Method: Grab

Sheet: 1 of 1

Project: Residential Dev. - Gig Harbor

Log of Test Pit TP-4

Project No: 092-05118

Client: Resource Partners

Surface Elevation:

Figure No: A-4

Location: Gig Harbor, Washington

Datum:

Logged By: CM

Depth to Water

Initial: Not Encountered

At Completion:

SUBSURFACE PROFILE			SAMPLE					
Depth	Symbol	Description	Sample Number	Type	Density Gauge (pcf)	Pocket Penetrometer (tsf)	Dynamic Cone Penetration Test (Blows/1-3/4 in) 20 40 60 80	Water Content (%) Wp |---0---| Wl 20 40 60 80
0		Ground Surface						
		TOPSOIL	S-1	Grab				
		Forest ground cover						
		POORLY GRADED SAND WITH SILT (SP)	S-2	Grab				
		Loose to medium dense, very fine to medium grained sand, yellowish brown, moist. Some rootlets.						
		- Iron oxide staining below 5 feet.						
5		- Increase in gravel content at 6 feet.						
		- Decrease in silt content at 6 feet.						
		- Very consolidated at 7 feet.	S-3	Grab				
		- Increase in moisture at 8 feet.						
			S-4	Grab				
			S-5	Grab				
		End of Test Pit						
10								
15								
20								
25								

Excavation Method: Deere 120 Trackhoe

Contractor: Client Supplied

Krazan and Associates
19501 144th Ave. NE #F-300
Woodinville, WA 98072

Test Pit Date: 27 September 05

Sample Method: Grab

Sheet: 1 of 1

Project: Residential Dev. - Gig Harbor

Log of Test Pit TP-5

Project No: 092-05118

Client: Resource Partners

Surface Elevation:

Figure No: A-4

Location: Gig Harbor, Washington

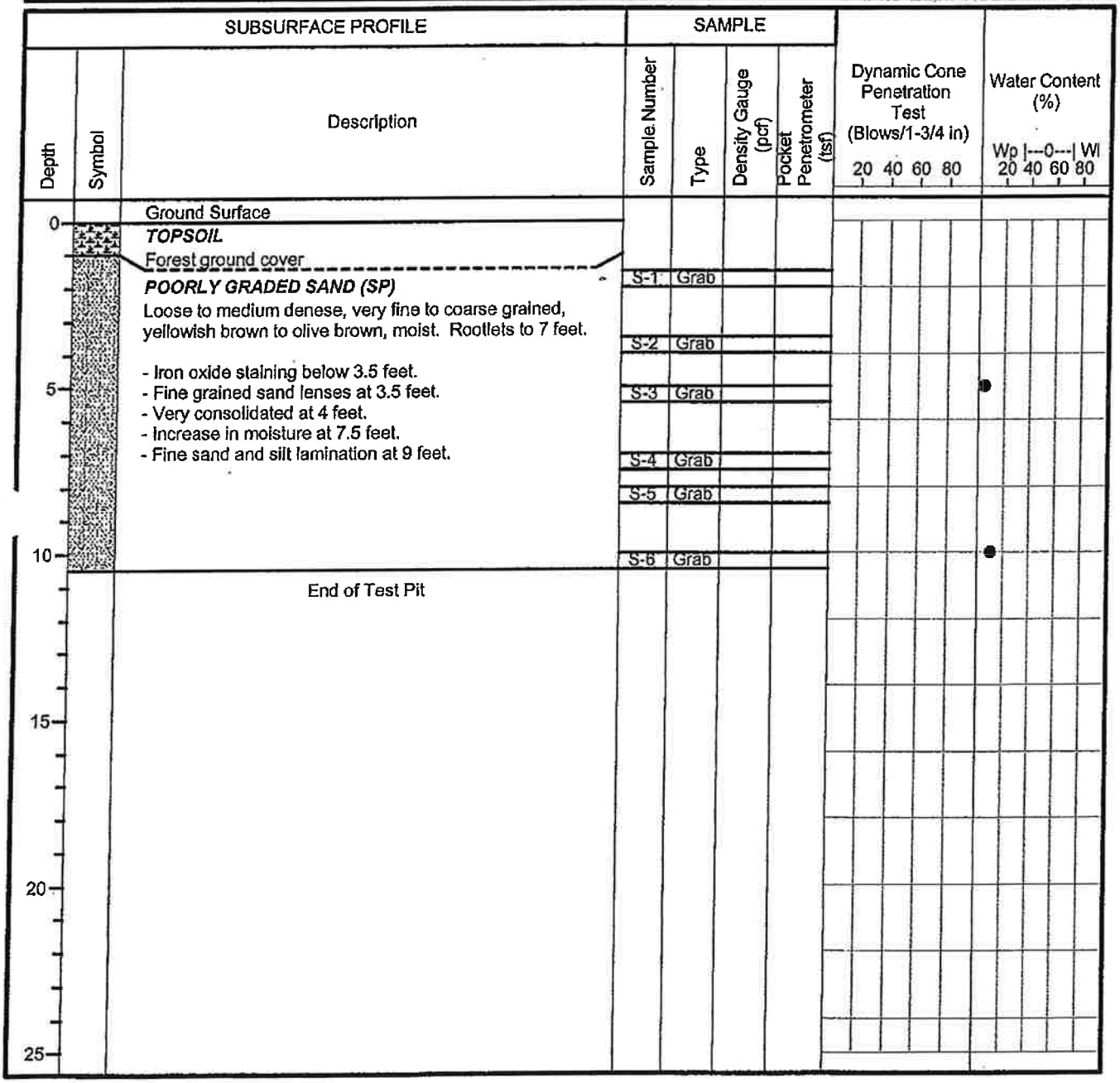
Datum:

Logged By: CM

Depth to Water

Initial: Not Encountered

At Completion:



Excavation Method: Deere 120 Trackhoe

Contractor: Client Supplied

Krazan and Associates
19501 144th Ave. NE #F-300
Woodinville, WA 98072

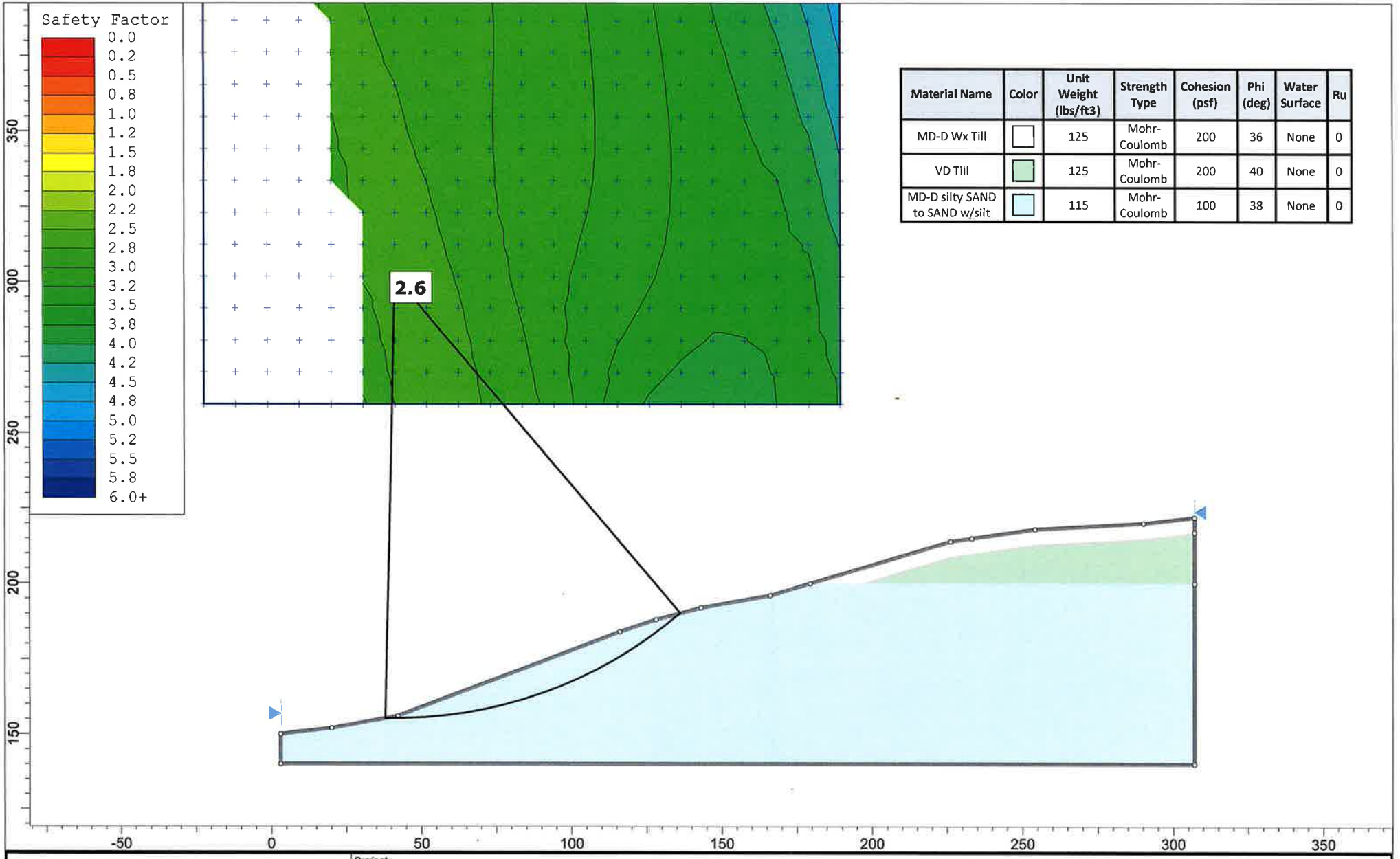
Test Pit Date: 27 September 05

Sample Method: Grab

Sheet: 1 of 1

APPENDIX C

SLOPE STABILITY ANALYSIS OUTPUT

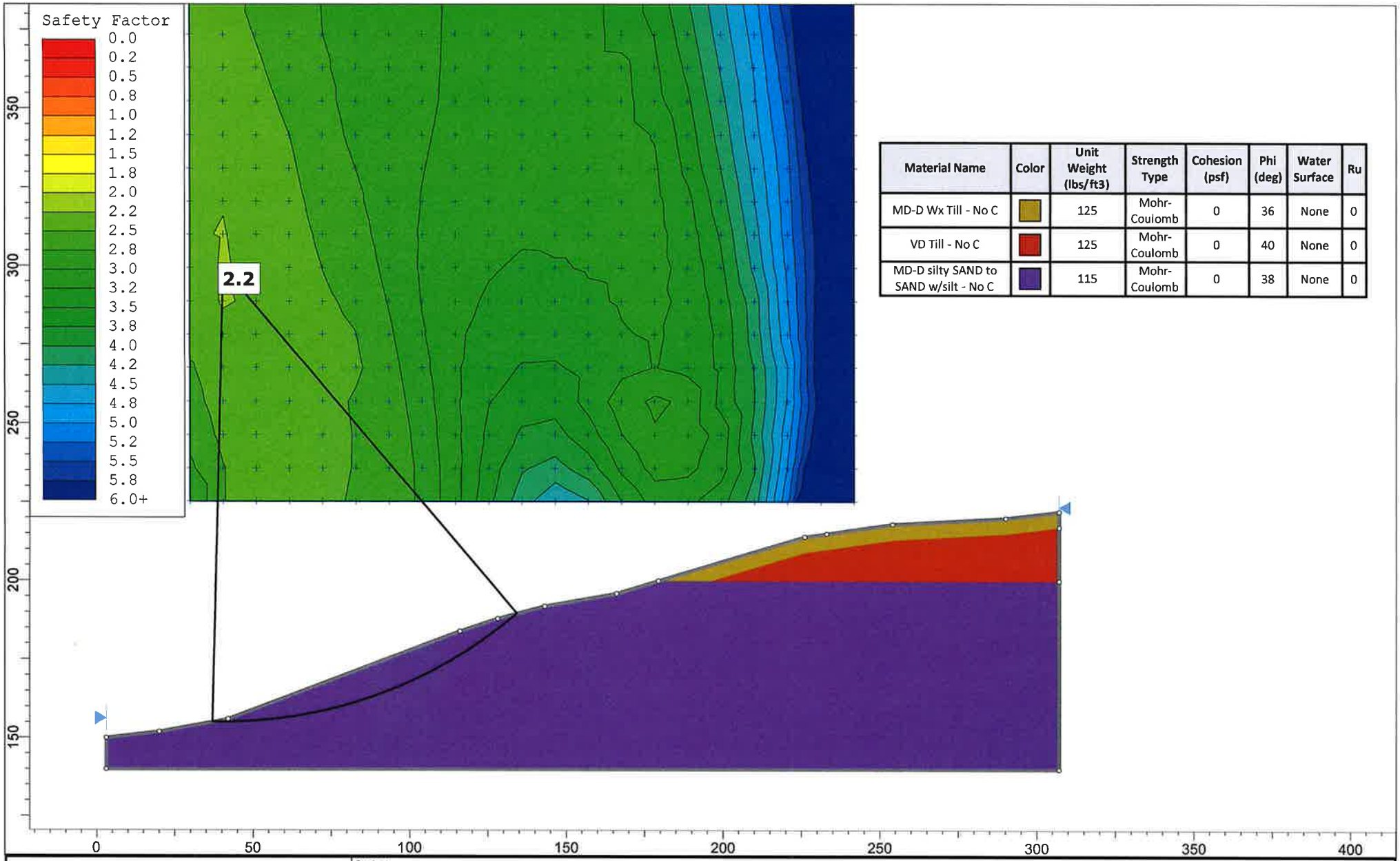


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0

rocscience

SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Static		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	9/1/2022	*File Name*	The Reserve.slmd

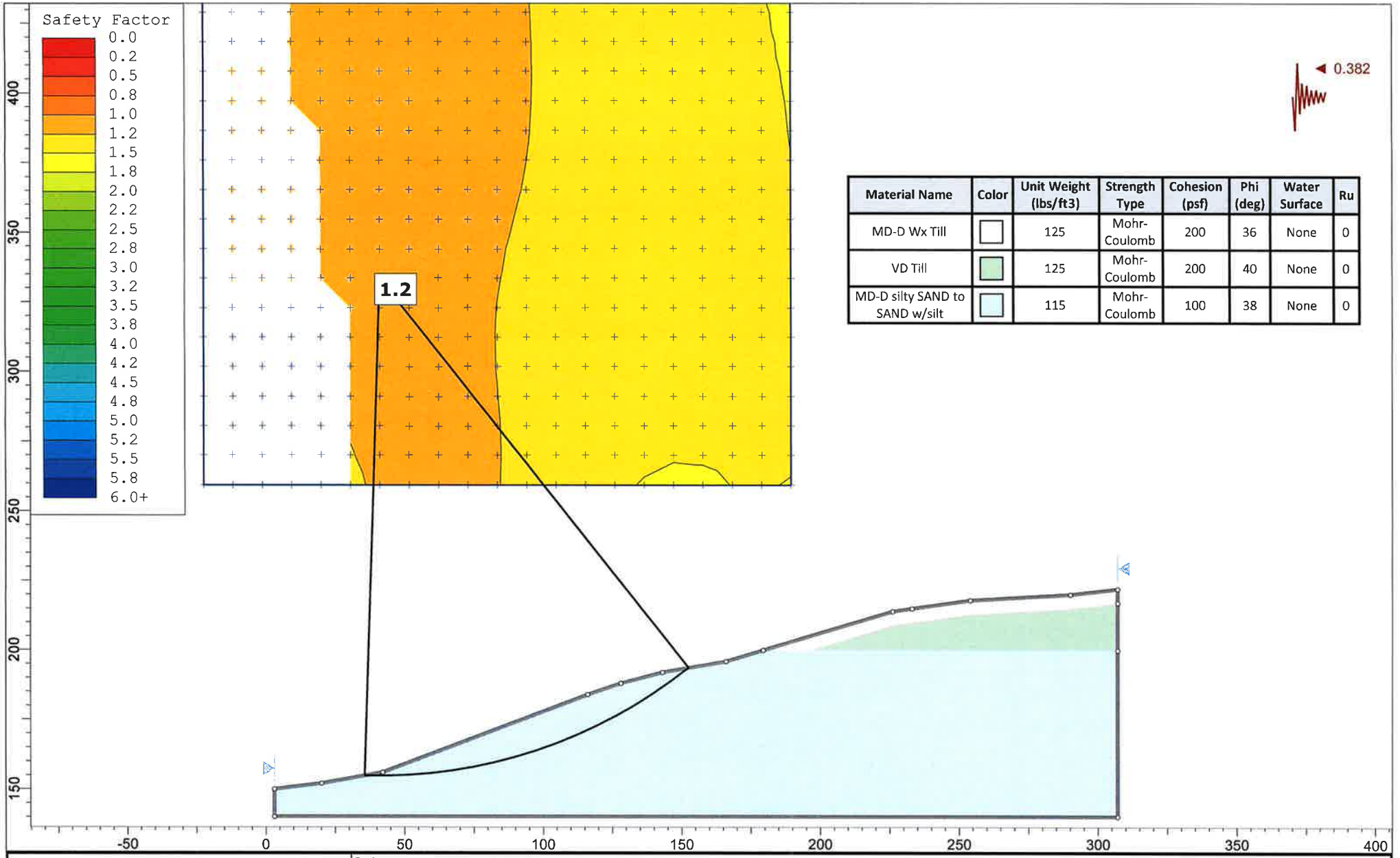


Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till - No C		125	Mohr-Coulomb	0	36	None	0
VD Till - No C		125	Mohr-Coulomb	0	40	None	0
MD-D silty SAND to SAND w/silt - No C		115	Mohr-Coulomb	0	38	None	0

rocscience

SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Static - No Cohesion		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0

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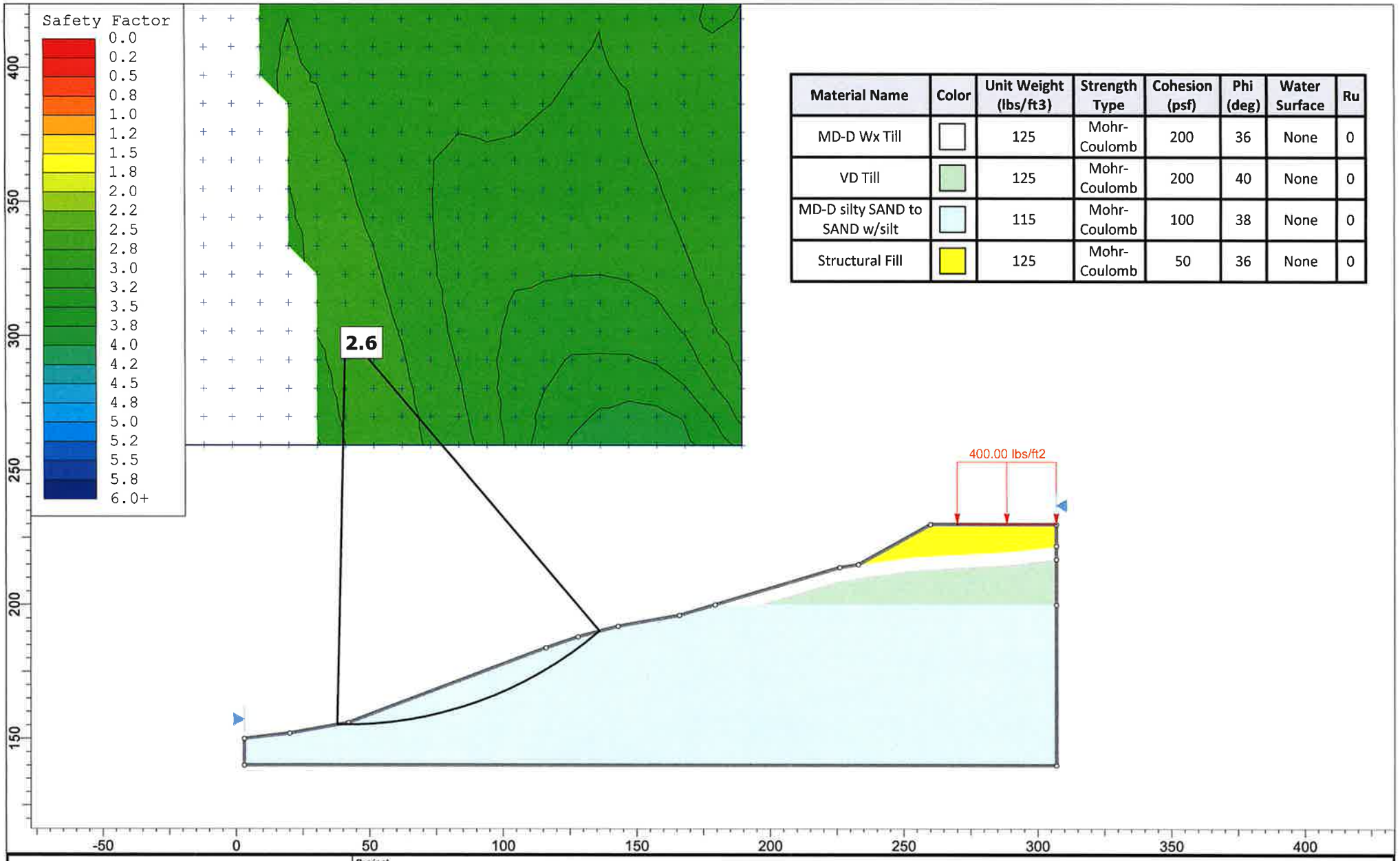
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Pseudostatic		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	9/1/2022	*File Name*	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0
Structural Fill		125	Mohr-Coulomb	50	36	None	0

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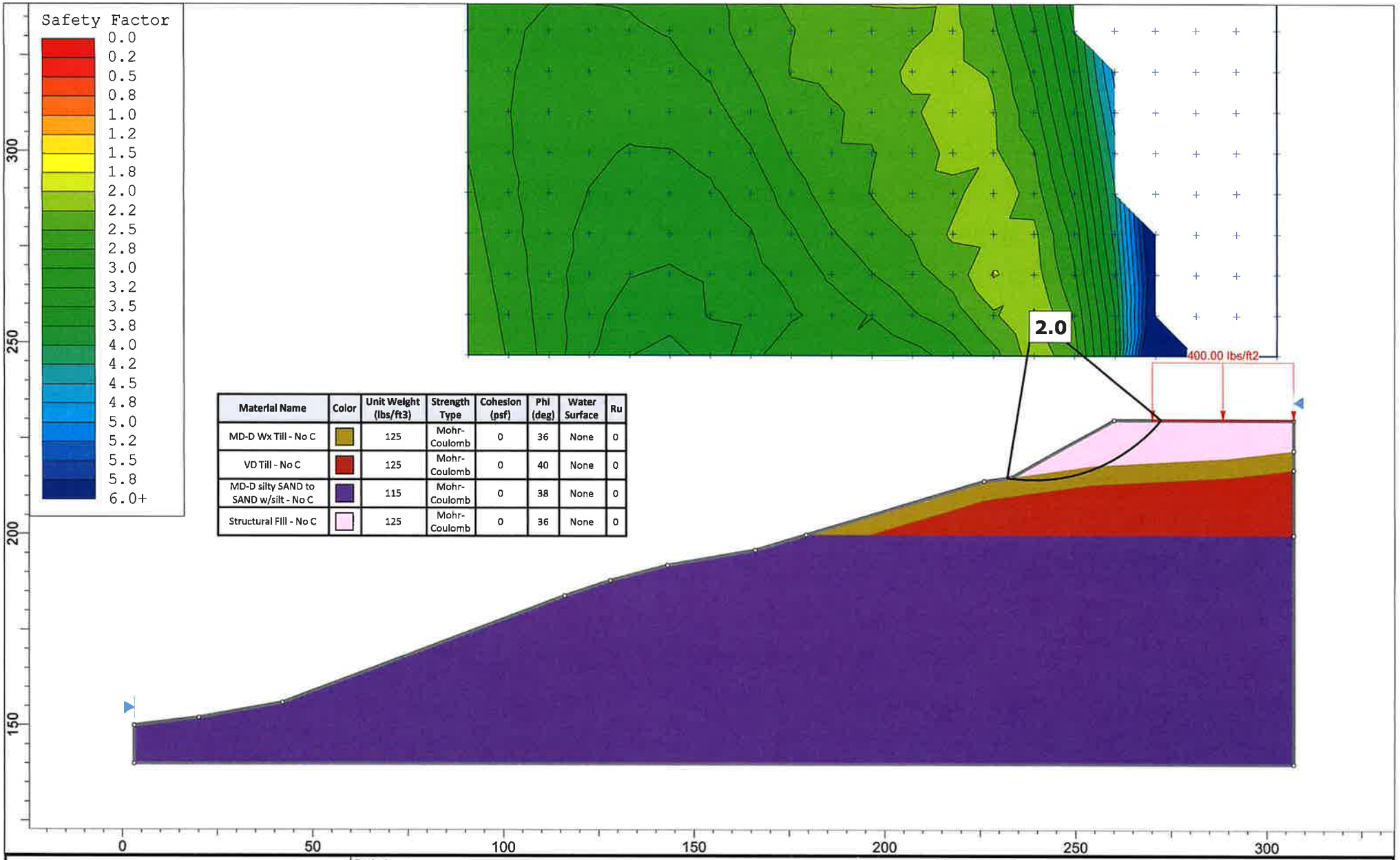
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Post Const Static		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till - No C		125	Mohr-Coulomb	0	36	None	0
VD Till - No C		125	Mohr-Coulomb	0	40	None	0
MD-D silty SAND to SAND w/silt - No C		115	Mohr-Coulomb	0	38	None	0
Structural Fill - No C		125	Mohr-Coulomb	0	36	None	0

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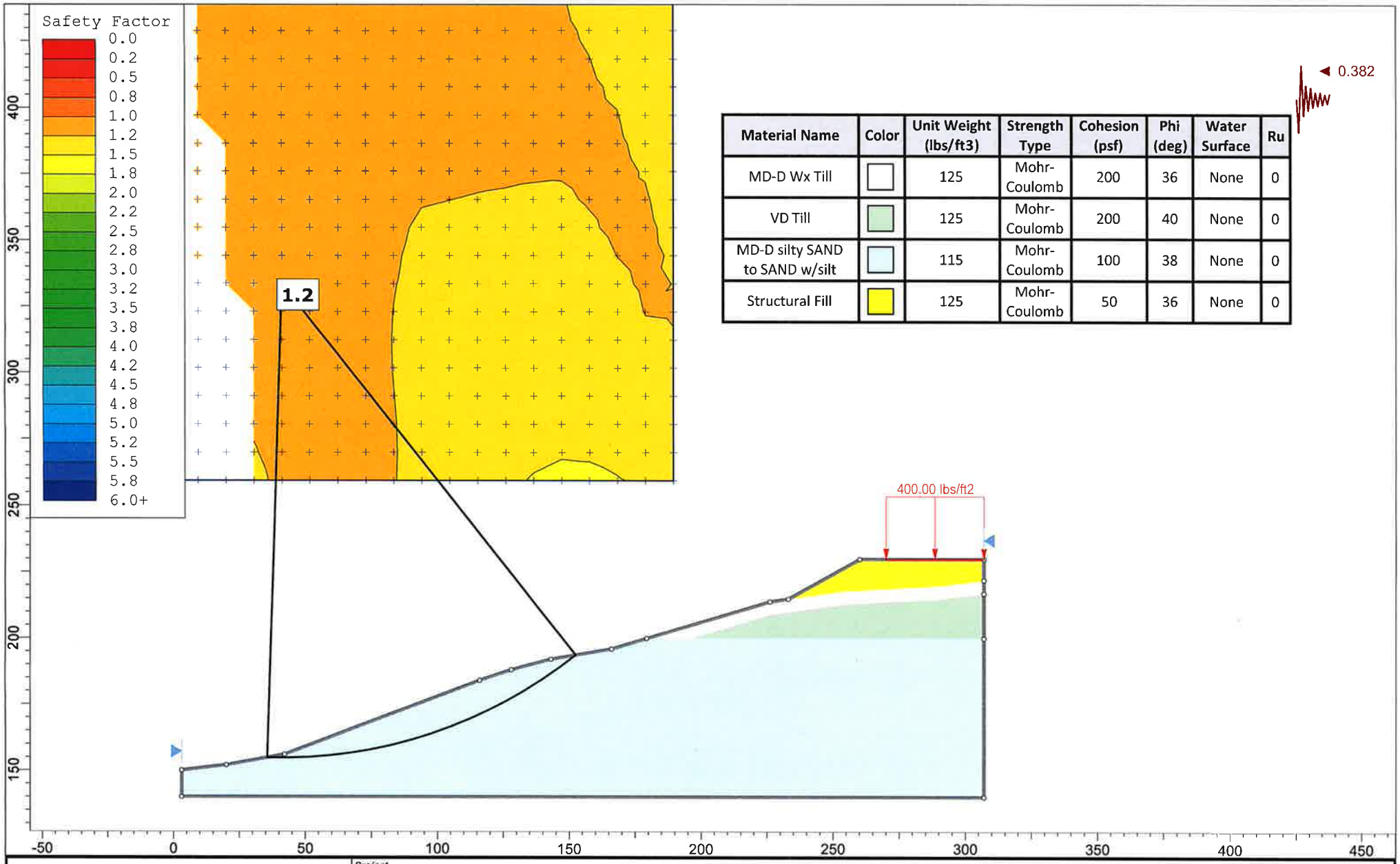
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Post Const Static - No Cohesion		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0
Structural Fill		125	Mohr-Coulomb	50	36	None	0

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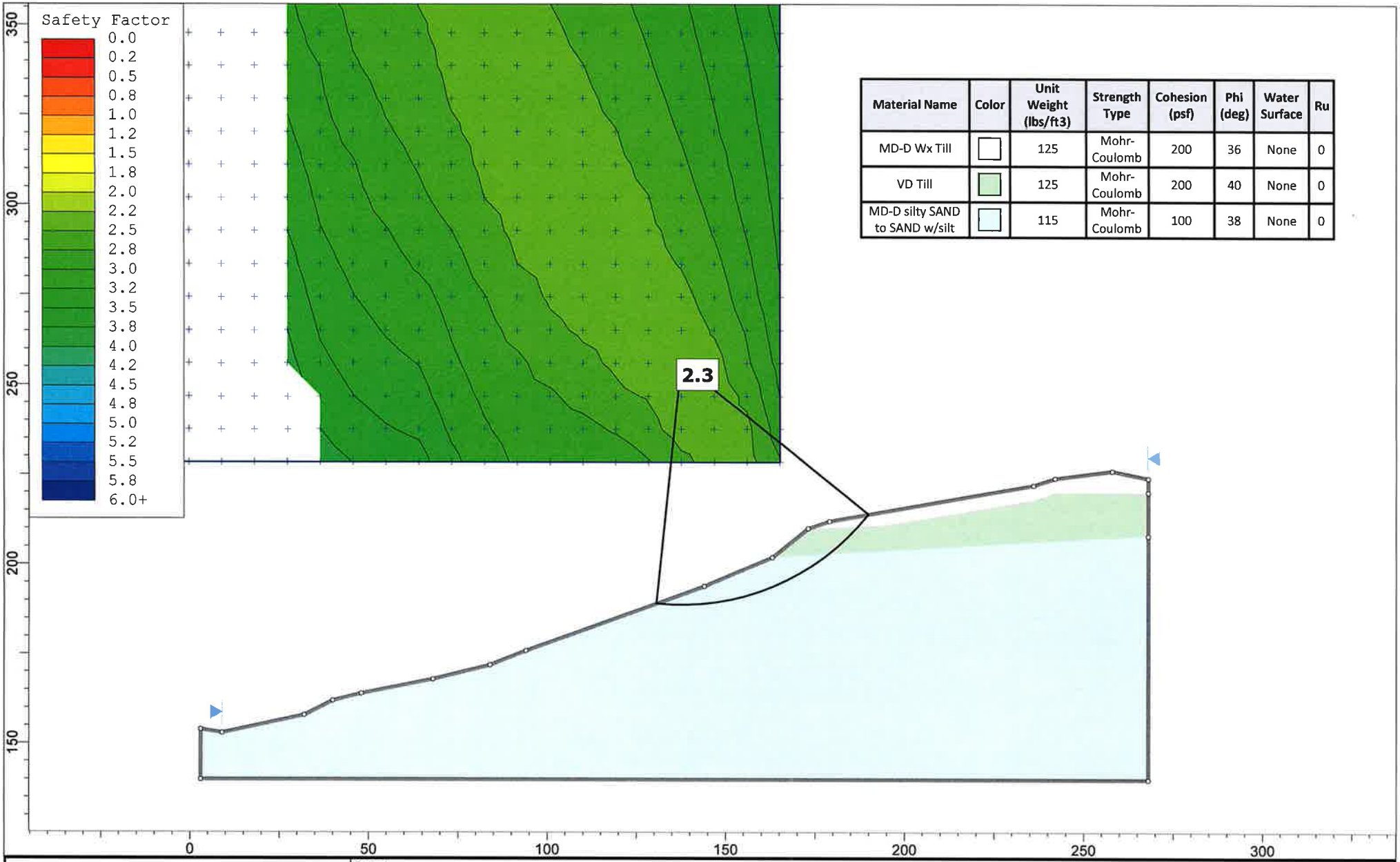
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	A-A' Post Const Pseudostatic		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0

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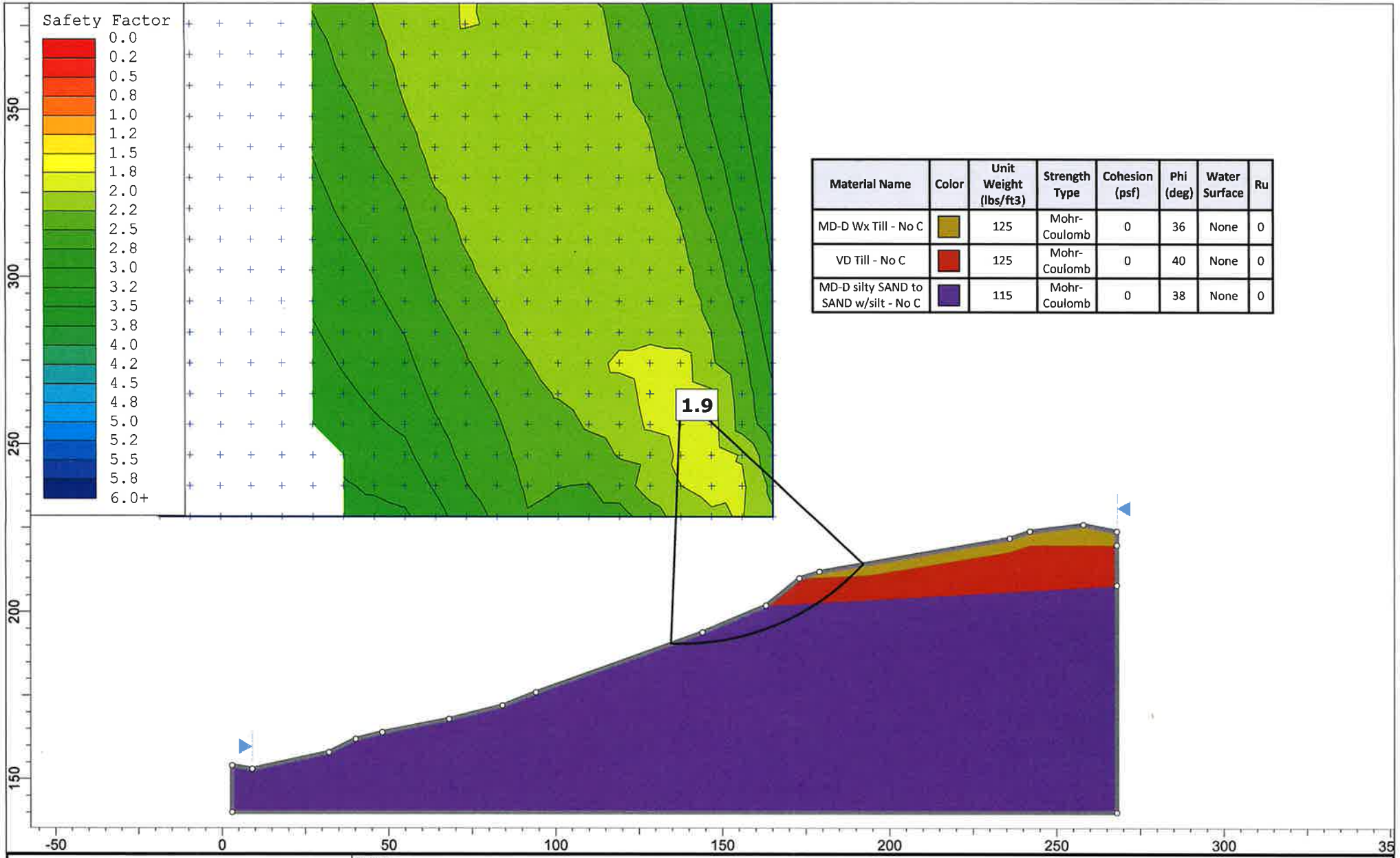
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Static		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till - No C		125	Mohr-Coulomb	0	36	None	0
VD Till - No C		125	Mohr-Coulomb	0	40	None	0
MD-D silty SAND to SAND w/silt - No C		115	Mohr-Coulomb	0	38	None	0

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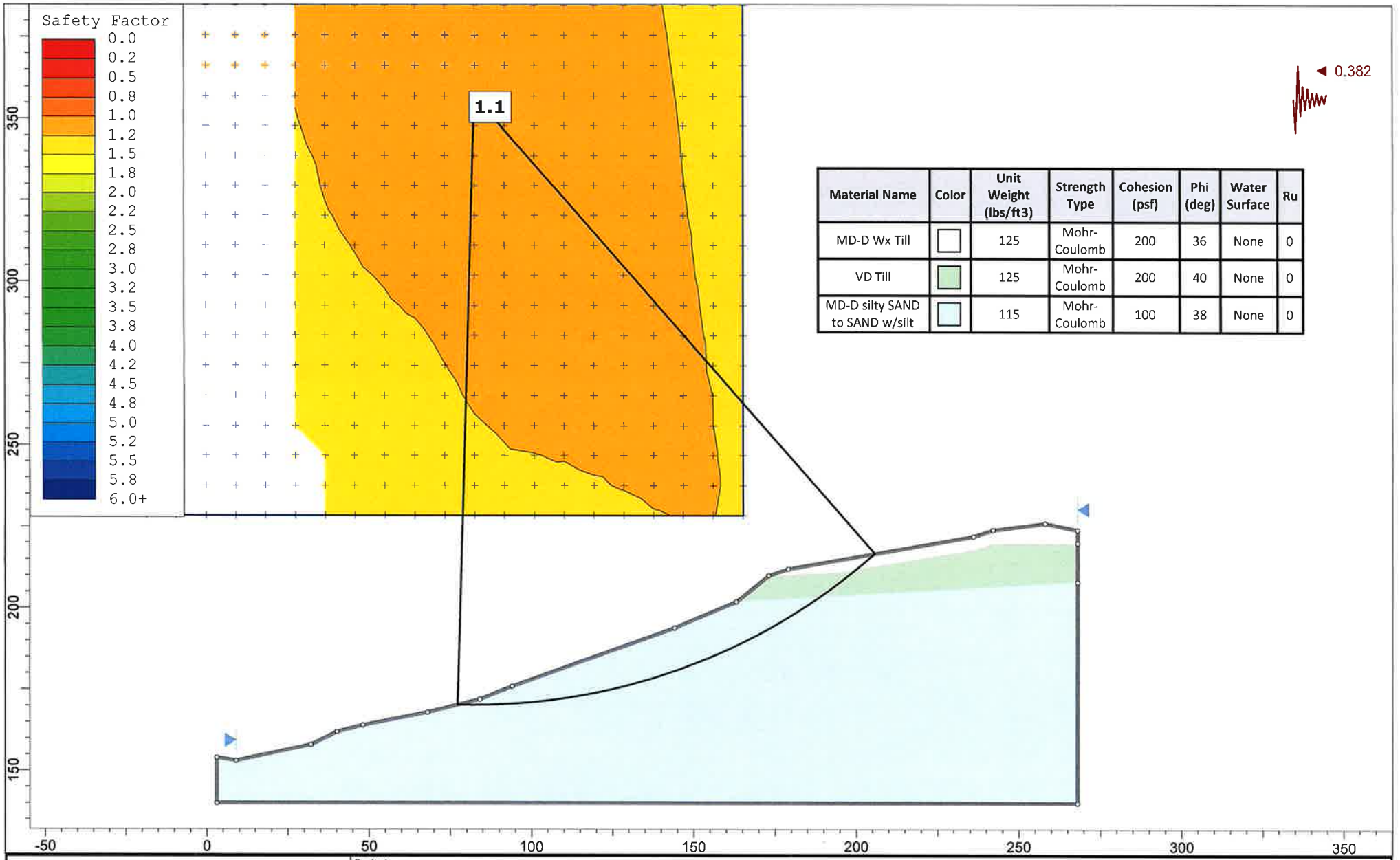
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Static - No Cohesion		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	8/24/2022	*File Name*	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36	None	0
VD Till		125	Mohr-Coulomb	200	40	None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38	None	0

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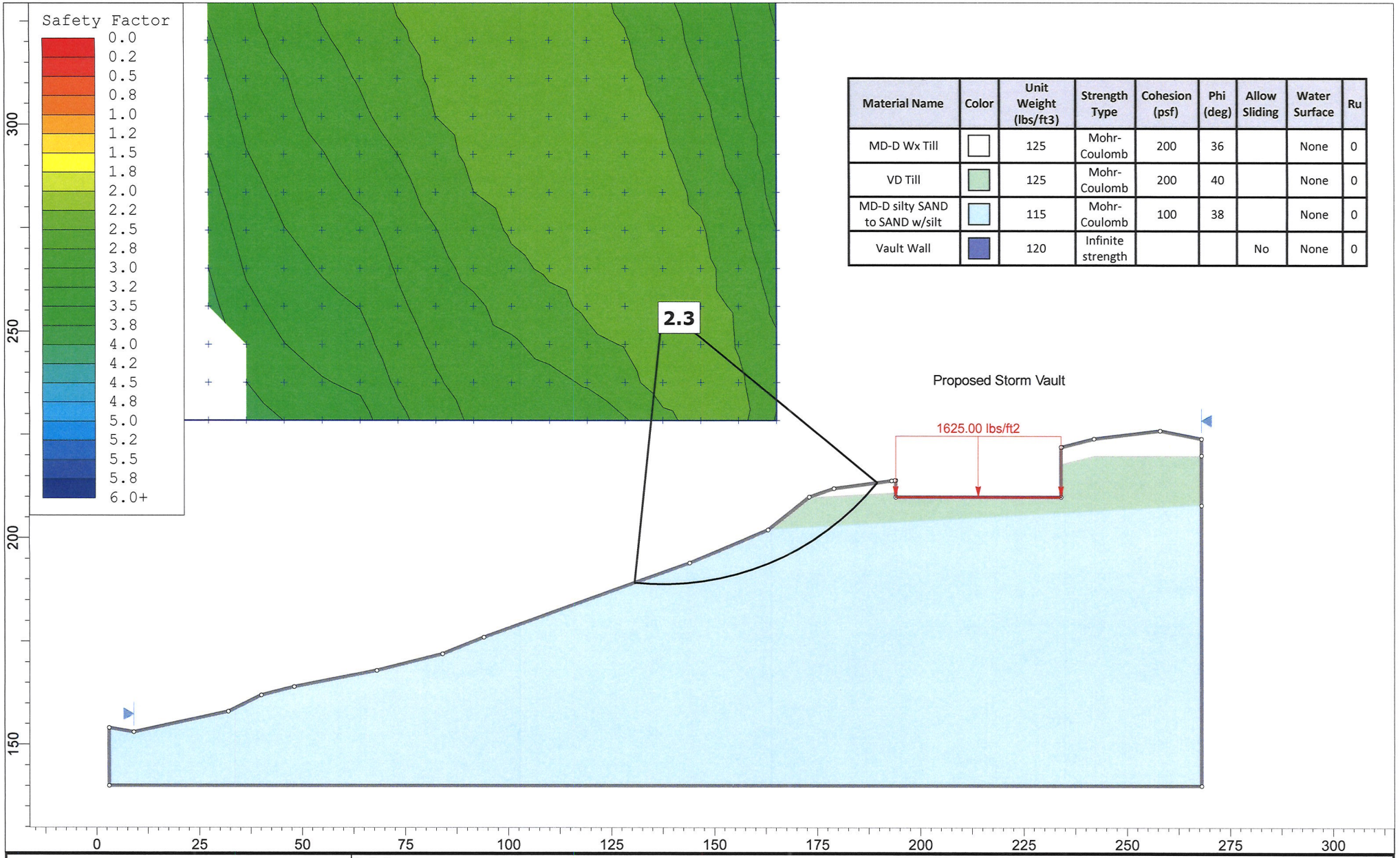
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Pseudostatic		
Drawn By	JCS	Company	Terra Associates, Inc.
Date	8/24/2022	File Name	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36		None	0
VD Till		125	Mohr-Coulomb	200	40		None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38		None	0
Vault Wall		120	Infinite strength			No	None	0

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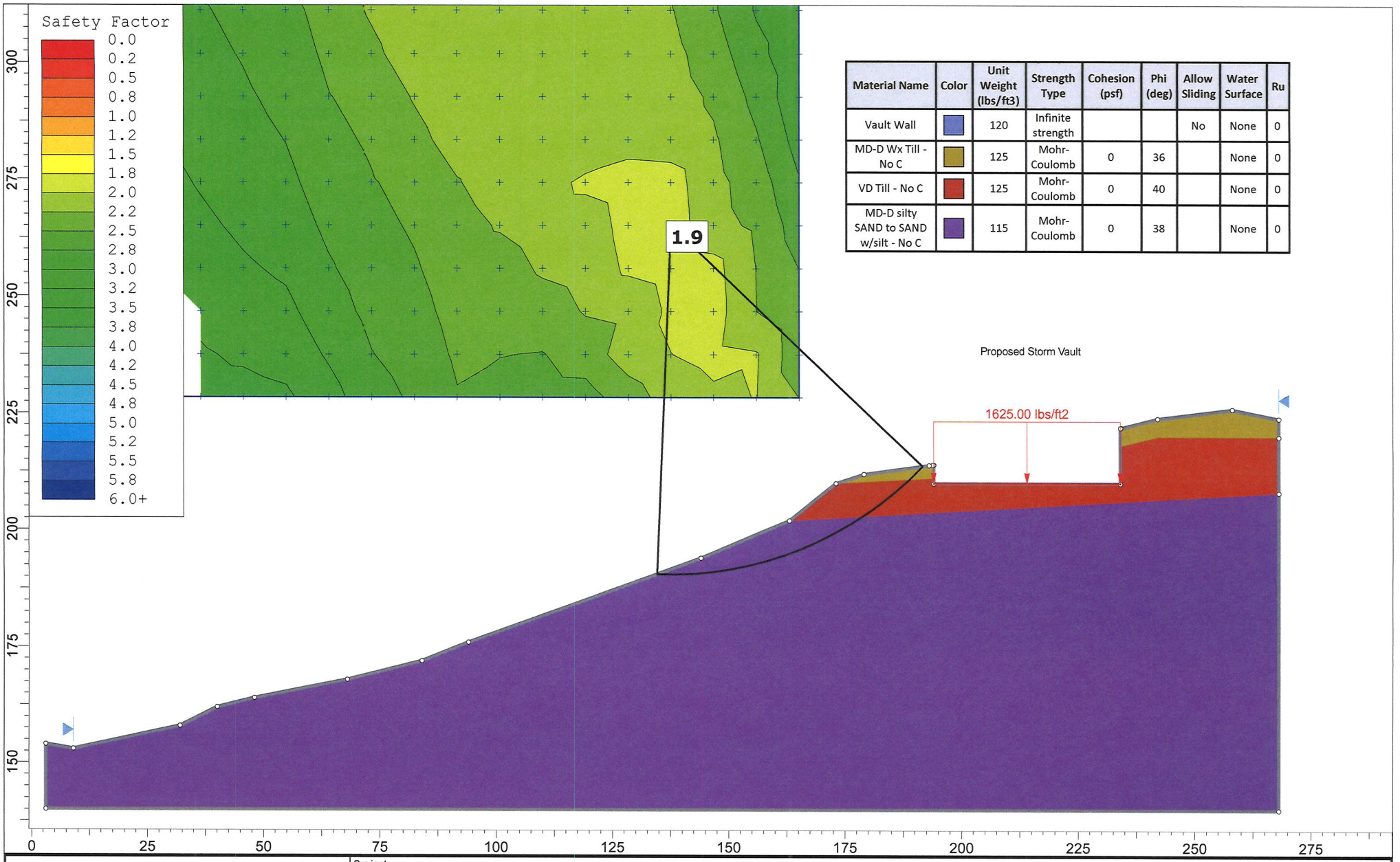
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Post Const Static		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	1/11/2023	*File Name*	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	Water Surface	Ru
Vault Wall		120	Infinite strength			No	None	0
MD-D Wx Till - No C		125	Mohr-Coulomb	0	36		None	0
VD Till - No C		125	Mohr-Coulomb	0	40		None	0
MD-D silty SAND to SAND w/silt - No C		115	Mohr-Coulomb	0	38		None	0

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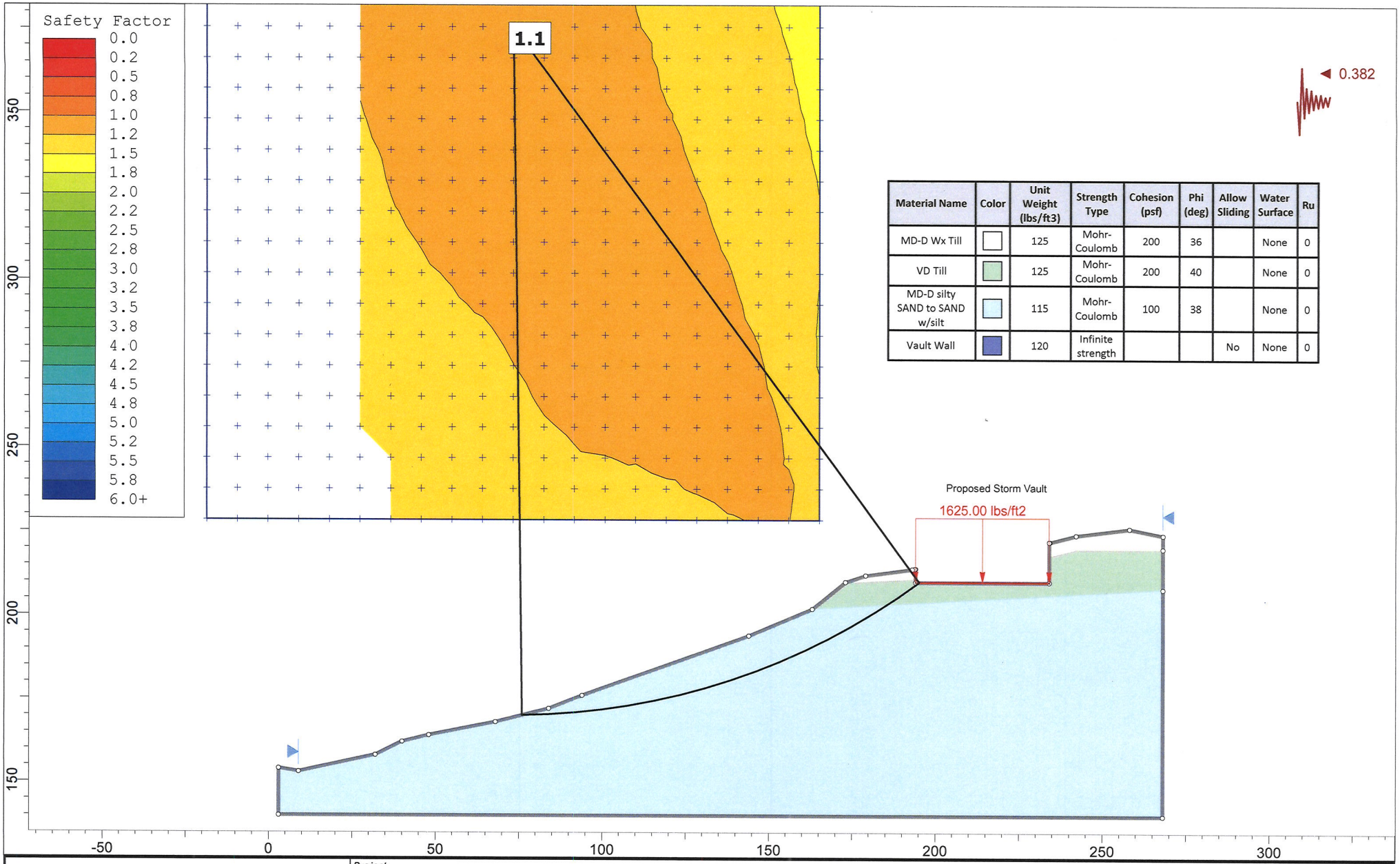
SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Post Const Static - No Cohesion		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	1/11/2023	*File Name*	The Reserve.slmd



Material Name	Color	Unit Weight (lbs/ft3)	Strength Type	Cohesion (psf)	Phi (deg)	Allow Sliding	Water Surface	Ru
MD-D Wx Till		125	Mohr-Coulomb	200	36		None	0
VD Till		125	Mohr-Coulomb	200	40		None	0
MD-D silty SAND to SAND w/silt		115	Mohr-Coulomb	100	38		None	0
Vault Wall		120	Infinite strength			No	None	0

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SLIDEINTERPRET 9.009

Project	The Reserve.slmd		
Analysis Description	B-B' Post Const Pseudostatic		
Drawn By	JCS	*Company*	Terra Associates, Inc.
Date	1/11/2023	*File Name*	The Reserve.slmd

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The Reserve
SLIDE - An Interactive Slope Stability Program
Date Created: 8/24/2022, 7:18:31 AM
Software Version: 9.009

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Slide Analysis Information

The Reserve

Project Summary

File Name:	The Reserve.slmd
Slide Modeler Version:	9.009
Project Title:	SLIDE - An Interactive Slope Stability Program
Date Created:	8/24/2022, 7:18:31 AM

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
B-B'	Master Scenario	Bishop Simplified: 2.326200	00h:00m:00.135s
	Static	Bishop Simplified: 2.326200	00h:00m:00.184s
	Pseudostatic	Bishop Simplified: 1.087630	00h:00m:00.118s
	Static - No Cohesion	Bishop Simplified: 1.854300	00h:00m:00.123s
B-B' Post Const	Master Scenario	Bishop Simplified: 2.336450	00h:00m:00.115s
	Static	Bishop Simplified: 2.336450	00h:00m:00.185s
	Pseudostatic	Bishop Simplified: 1.089930	00h:00m:00.117s
	Static - No Cohesion	Bishop Simplified: 1.870190	00h:00m:00.112s
A-A'	Master Scenario	Bishop Simplified: 2.640690	00h:00m:00.115s
	Static	Bishop Simplified: 2.640690	00h:00m:00.114s
	Pseudostatic	Bishop Simplified: 1.151350	00h:00m:00.111s
	Static - No Cohesion	Bishop Simplified: 2.232180	00h:00m:00.118s
A-A' Post Const	Master Scenario	Bishop Simplified: 2.640690	00h:00m:00.115s
	Static	Bishop Simplified: 2.640690	00h:00m:00.115s
	Pseudostatic	Bishop Simplified: 1.151350	00h:00m:00.182s
	Static - No Cohesion	Bishop Simplified: 1.973880	00h:00m:00.113s

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
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
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [psf]:	0
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:	Grid Search
Radius Increment:	10
Composite Surfaces:	Disabled
Reverse Curvature:	Invalid Surfaces
Minimum Elevation [ft]:	141
Minimum Depth [ft]:	10
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

B-B' - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

B-B' - Static

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

B-B' - Pseudostatic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.382

B-B' - Static - No Cohesion

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

B-B' Post Const - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

B-B' Post Const - Static

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

B-B' Post Const - Pseudostatic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.382

B-B' Post Const - Static - No Cohesion

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' - Static

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' - Pseudostatic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.382

A-A' - Static - No Cohesion

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' Post Const - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' Post Const - Static

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

A-A' Post Const - Pseudostatic

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.382

A-A' Post Const - Static - No Cohesion

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

B-B' Post Const

Distribution:	Constant
Magnitude [psf]:	1625
Orientation:	Normal to boundary

A-A' Post Const

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

Materials

MD-D Wx Till	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	200
Friction Angle [deg]	36
Water Surface	Assigned per scenario
Ru Value	0
VD Till	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	200
Friction Angle [deg]	40
Water Surface	Assigned per scenario
Ru Value	0
MD-D silty SAND to SAND w/silt	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	115
Cohesion [psf]	100
Friction Angle [deg]	38
Water Surface	Assigned per scenario
Ru Value	0
Vault Wall	
Color	
Strength Type	Infinite strength
Unit Weight [lbs/ft3]	120
Allow Sliding Along Boundary	No
Water Surface	Assigned per scenario
Ru Value	0
MD-D Wx Till - No C	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	0
Friction Angle [deg]	36
Water Surface	Assigned per scenario
Ru Value	0
VD Till - No C	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	0
Friction Angle [deg]	40

Water Surface	Assigned per scenario
Ru Value	0
MD-D silty SAND to SAND w/silt - No C	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	115
Cohesion [psf]	0
Friction Angle [deg]	38
Water Surface	Assigned per scenario
Ru Value	0
Structural Fill	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	50
Friction Angle [deg]	36
Water Surface	Assigned per scenario
Ru Value	0
Structural Fill - No C	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [lbs/ft3]	125
Cohesion [psf]	0
Friction Angle [deg]	36
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material	B-B'	Static	Pseudostatic	Static - No Cohesion	B-B' Post Const	Static	Pseudostatic	Static - No Cohesion	A-A'	Static	Pseudostatic	Static - No Cohesion	A-A' Post Const	Static	Pseudostatic	Static - No Cohesion
MD-D	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗
VD Til	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗
MD-D SAND w/silt	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗	✓	✓	✓	✗
Vault '	✗	✗	✗	✗	✓	✓	✓	✓	✗	✗	✗	✗	✗	✗	✗	✗
MD-D No C	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
VD Til	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
MD-D SAND w/silt	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓	✗	✗	✗	✓
Struct	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓	✓	✓	✗
Struct No C	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✗	✓

Global Minimums

B-B' - Master Scenario

Method: bishop simplified

FS	2.326200
Center:	137.560, 255.961
Radius:	67.162
Left Slip Surface Endpoint:	130.567, 189.164
Right Slip Surface Endpoint:	189.935, 213.918
Resisting Moment:	2.80972e+06 lb-ft
Driving Moment:	1.20786e+06 lb-ft
Total Slice Area:	381.175 ft2
Surface Horizontal Width:	59.3685 ft
Surface Average Height:	6.42049 ft

B-B' - Static

Method: bishop simplified

FS	2.326200
Center:	137.560, 255.961
Radius:	67.162
Left Slip Surface Endpoint:	130.567, 189.164
Right Slip Surface Endpoint:	189.935, 213.918
Resisting Moment:	2.80972e+06 lb-ft
Driving Moment:	1.20786e+06 lb-ft
Total Slice Area:	381.175 ft2
Surface Horizontal Width:	59.3685 ft
Surface Average Height:	6.42049 ft

B-B' - Pseudostatic

Method: bishop simplified

FS	1.087630
Center:	82.421, 357.048
Radius:	186.835
Left Slip Surface Endpoint:	77.152, 170.288
Right Slip Surface Endpoint:	205.738, 216.691
Resisting Moment:	2.12282e+07 lb-ft
Driving Moment:	1.95178e+07 lb-ft
Total Slice Area:	1289.39 ft2
Surface Horizontal Width:	128.586 ft
Surface Average Height:	10.0275 ft

B-B' - Static - No Cohesion

Method: bishop simplified

FS	1.854300
Center:	137.560, 265.151
Radius:	74.621
Left Slip Surface Endpoint:	134.532, 190.592
Right Slip Surface Endpoint:	192.184, 214.313
Resisting Moment:	2.20188e+06 lb-ft
Driving Moment:	1.18745e+06 lb-ft
Total Slice Area:	333.233 ft2
Surface Horizontal Width:	57.6512 ft
Surface Average Height:	5.78015 ft

B-B' Post Const - Master Scenario

Method: bishop simplified

FS	2.336450
Center:	137.560, 255.961
Radius:	67.162
Left Slip Surface Endpoint:	130.567, 189.164
Right Slip Surface Endpoint:	189.517, 213.402
Resisting Moment:	2.78785e+06 lb-ft
Driving Moment:	1.1932e+06 lb-ft
Total Slice Area:	378.763 ft2
Surface Horizontal Width:	58.9499 ft
Surface Average Height:	6.42517 ft

B-B' Post Const - Static

Method: bishop simplified

FS	2.336450
Center:	137.560, 255.961
Radius:	67.162
Left Slip Surface Endpoint:	130.567, 189.164
Right Slip Surface Endpoint:	189.517, 213.402
Resisting Moment:	2.78785e+06 lb-ft
Driving Moment:	1.1932e+06 lb-ft
Total Slice Area:	378.763 ft2
Surface Horizontal Width:	58.9499 ft
Surface Average Height:	6.42517 ft

B-B' Post Const - Pseudostatic

Method: bishop simplified

FS	1.089930
Center:	73.232, 375.428
Radius:	205.450
Left Slip Surface Endpoint:	75.983, 169.996
Right Slip Surface Endpoint:	195.066, 210.000
Resisting Moment:	1.96763e+07 lb-ft
Driving Moment:	1.80528e+07 lb-ft
Total Slice Area:	1069.73 ft2
Surface Horizontal Width:	119.082 ft
Surface Average Height:	8.98315 ft

B-B' Post Const - Static - No Cohesion

Method: bishop simplified

FS	1.870190
Center:	137.560, 265.151
Radius:	74.621
Left Slip Surface Endpoint:	134.532, 190.592
Right Slip Surface Endpoint:	191.586, 213.678
Resisting Moment:	2.17995e+06 lb-ft
Driving Moment:	1.16563e+06 lb-ft
Total Slice Area:	329.746 ft2
Surface Horizontal Width:	57.0534 ft
Surface Average Height:	5.7796 ft

A-A' - Master Scenario

Method: bishop simplified

FS	2.640690
Center:	41.083, 301.770
Radius:	146.569
Left Slip Surface Endpoint:	37.811, 155.238
Right Slip Surface Endpoint:	136.079, 190.154
Resisting Moment:	1.02778e+07 lb-ft
Driving Moment:	3.89208e+06 lb-ft
Total Slice Area:	691.786 ft2
Surface Horizontal Width:	98.2677 ft
Surface Average Height:	7.03981 ft

A-A' - Static

Method: bishop simplified

FS	2.640690
Center:	41.083, 301.770
Radius:	146.569
Left Slip Surface Endpoint:	37.811, 155.238
Right Slip Surface Endpoint:	136.079, 190.154
Resisting Moment:	1.02778e+07 lb-ft
Driving Moment:	3.89208e+06 lb-ft
Total Slice Area:	691.786 ft2
Surface Horizontal Width:	98.2677 ft
Surface Average Height:	7.03981 ft

A-A' - Pseudostatic

Method: bishop simplified

FS	1.151350
Center:	41.083, 333.561
Radius:	178.829
Left Slip Surface Endpoint:	35.504, 154.819
Right Slip Surface Endpoint:	152.452, 193.644
Resisting Moment:	1.61405e+07 lb-ft
Driving Moment:	1.40188e+07 lb-ft
Total Slice Area:	1022.8 ft2
Surface Horizontal Width:	116.948 ft
Surface Average Height:	8.74579 ft

A-A' - Static - No Cohesion

Method: bishop simplified

FS	2.232180
Center:	40.418, 299.368
Radius:	144.317
Left Slip Surface Endpoint:	37.004, 155.092
Right Slip Surface Endpoint:	134.161, 189.643
Resisting Moment:	8.24275e+06 lb-ft
Driving Moment:	3.69269e+06 lb-ft
Total Slice Area:	664.662 ft2
Surface Horizontal Width:	97.1567 ft
Surface Average Height:	6.84114 ft

A-A' Post Const - Master Scenario

Method: bishop simplified

FS	2.640690
Center:	41.083, 301.770
Radius:	146.569
Left Slip Surface Endpoint:	37.811, 155.238
Right Slip Surface Endpoint:	136.079, 190.154
Resisting Moment:	1.02778e+07 lb-ft
Driving Moment:	3.89208e+06 lb-ft
Total Slice Area:	691.786 ft2
Surface Horizontal Width:	98.2677 ft
Surface Average Height:	7.03981 ft

A-A' Post Const - Static

Method: bishop simplified

FS	2.640690
Center:	41.083, 301.770
Radius:	146.569
Left Slip Surface Endpoint:	37.811, 155.238
Right Slip Surface Endpoint:	136.079, 190.154
Resisting Moment:	1.02778e+07 lb-ft
Driving Moment:	3.89208e+06 lb-ft
Total Slice Area:	691.786 ft2
Surface Horizontal Width:	98.2677 ft
Surface Average Height:	7.03981 ft

A-A' Post Const - Pseudostatic

Method: bishop simplified

FS	1.151350
Center:	41.083, 333.561
Radius:	178.829
Left Slip Surface Endpoint:	35.504, 154.819
Right Slip Surface Endpoint:	152.452, 193.644
Resisting Moment:	1.61405e+07 lb-ft
Driving Moment:	1.40188e+07 lb-ft
Total Slice Area:	1022.8 ft2
Surface Horizontal Width:	116.948 ft
Surface Average Height:	8.74579 ft

A-A' Post Const - Static - No Cohesion

Method: bishop simplified

FS	1.973880
Center:	239.088, 257.350
Radius:	43.068
Left Slip Surface Endpoint:	232.038, 214.863
Right Slip Surface Endpoint:	272.357, 230.000
Resisting Moment:	995803 lb-ft
Driving Moment:	504489 lb-ft
Total Slice Area:	256.104 ft2
Surface Horizontal Width:	40.319 ft
Surface Average Height:	6.35194 ft

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

B-B' - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	4694
Number of Invalid Surfaces:	4567
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 4362 surfaces	
Error Code -1000 reported for 168 surfaces	

B-B' - Static

Method: bishop simplified

Number of Valid Surfaces:	4694
Number of Invalid Surfaces:	4567
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 4362 surfaces	
Error Code -1000 reported for 168 surfaces	

B-B' - Pseudostatic

Method: bishop simplified

Number of Valid Surfaces:	4694
Number of Invalid Surfaces:	4567
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 4362 surfaces	
Error Code -1000 reported for 168 surfaces	

B-B' - Static - No Cohesion

Method: bishop simplified

Number of Valid Surfaces:	4694
Number of Invalid Surfaces:	4567
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 4362 surfaces	
Error Code -1000 reported for 168 surfaces	

B-B' Post Const

Method: bishop simplified

Number of Valid Surfaces:	3672
Number of Invalid Surfaces:	5589
Error Codes	
Error Code -99 reported for 1388 surfaces	
Error Code -106 reported for 45 surfaces	
Error Code -115 reported for 3988 surfaces	
Error Code -1000 reported for 168 surfaces	

A-A' - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	5230
Number of Invalid Surfaces:	4031
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3721 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' - Static

Method: bishop simplified

Number of Valid Surfaces:	5230
Number of Invalid Surfaces:	4031
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3721 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' - Pseudostatic

Method: bishop simplified

Number of Valid Surfaces:	5140
Number of Invalid Surfaces:	4121
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3811 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' - Static - No Cohesion

Method: bishop simplified

Number of Valid Surfaces:	6412
Number of Invalid Surfaces:	2849
Error Codes	
Error Code -112 reported for 18 surfaces	
Error Code -115 reported for 2831 surfaces	

A-A' Post Const - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	5064
Number of Invalid Surfaces:	4197
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3887 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' Post Const - Static

Method: bishop simplified

Number of Valid Surfaces:	5064
Number of Invalid Surfaces:	4197
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3887 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' Post Const - Pseudostatic

Method: bishop simplified

Number of Valid Surfaces:	5064
Number of Invalid Surfaces:	4197
Error Codes	
Error Code -106 reported for 37 surfaces	
Error Code -115 reported for 3887 surfaces	
Error Code -1000 reported for 273 surfaces	

A-A' Post Const - Static - No Cohesion

Method: bishop simplified

Number of Valid Surfaces:	4665
Number of Invalid Surfaces:	4596
Error Codes	
Error Code -115 reported for 4596 surfaces	

Error Code Descriptions

The following errors were encountered during the computation:
-99 = Slip surface intersects an infinite strength material. If infinite strength regions are defined for a model, a large number of potential slip surfaces may show this error code. This is Normal.
-106 = Average slice width is less than 0.0001 * (maximum horizontal extent of soil region). This limitation is imposed to avoid numerical errors which may result from too many slices, or too small a slip region.
-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.
-115 = Surface too shallow, below the minimum depth.
-1000 = No valid slip surface is generated

Slice Data

B-B' - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.3262

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	1.17477	36.1715	-5.47326	MD-D silty SAND to SAND w/silt	100	38	55.1032	128.181	36.0701	0	36.0701	30.7902	30.7902
2	1.17477	107.111	-4.46724	MD-D silty SAND to SAND w/silt	100	38	75.5947	175.848	97.0814	0	97.0814	91.1754	91.1754
3	1.17477	175.248	-3.46259	MD-D silty SAND to SAND w/silt	100	38	95.0224	221.041	154.926	0	154.926	149.176	149.176
4	1.17477	240.593	-2.45901	MD-D silty SAND to SAND w/silt	100	38	113.409	263.812	209.67	0	209.67	204.799	204.799
5	1.17477	303.153	-1.45618	MD-D silty SAND to SAND w/silt	100	38	130.776	304.21	261.377	0	261.377	258.053	258.053
6	1.17477	362.935	-0.453797	MD-D silty SAND to SAND w/silt	100	38	147.142	342.281	310.106	0	310.106	308.94	308.94
7	1.17477	419.939	0.548446	MD-D silty SAND to SAND w/silt	100	38	162.526	378.067	355.909	0	355.909	357.465	357.465
8	1.17477	474.167	1.55086	MD-D silty SAND to SAND w/silt	100	38	176.942	411.603	398.834	0	398.834	403.625	403.625
9	1.17477	525.615	2.55374	MD-D silty SAND to SAND w/silt	100	38	190.408	442.927	438.926	0	438.926	447.419	447.419
10	1.17477	574.278	3.55741	MD-D silty SAND to SAND w/silt	100	38	202.936	472.069	476.226	0	476.226	488.842	488.842
11	1.17477	620.148	4.56218	MD-D silty SAND to SAND w/silt	100	38	214.537	499.057	510.77	0	510.77	527.888	527.888
12	1.17477	664.763	5.56835	MD-D silty SAND to SAND w/silt	100	38	225.653	524.915	543.866	0	543.866	565.866	565.866

13	1.17477	713.787	6.57625	MD-D silty SAND to SAND w/silt	100	38	237.848	553.283	580.176	0	580.176	607.596	607.596
14	1.17477	760.895	7.5862	MD-D silty SAND to SAND w/silt	100	38	249.372	580.088	614.484	0	614.484	647.696	647.696
15	1.17477	805.152	8.59852	MD-D silty SAND to SAND w/silt	100	38	259.976	604.756	646.058	0	646.058	685.369	685.369
16	1.17477	846.537	9.61356	MD-D silty SAND to SAND w/silt	100	38	269.67	627.306	674.921	0	674.921	720.597	720.597
17	1.17477	885.025	10.6317	MD-D silty SAND to SAND w/silt	100	38	278.458	647.75	701.088	0	701.088	753.359	753.359
18	1.17477	920.588	11.6532	MD-D silty SAND to SAND w/silt	100	38	286.347	666.101	724.576	0	724.576	783.632	783.632
19	1.17477	953.195	12.6784	MD-D silty SAND to SAND w/silt	100	38	293.34	682.368	745.398	0	745.398	811.389	811.389
20	1.17477	982.812	13.7079	MD-D silty SAND to SAND w/silt	100	38	299.441	696.559	763.56	0	763.56	836.599	836.599
21	1.17477	1009.4	14.7418	MD-D silty SAND to SAND w/silt	100	38	304.65	708.677	779.071	0	779.071	859.233	859.233
22	1.17477	1032.92	15.7807	MD-D silty SAND to SAND w/silt	100	38	308.971	718.728	791.935	0	791.935	879.252	879.252
23	1.17477	1053.32	16.8249	MD-D silty SAND to SAND w/silt	100	38	312.402	726.71	802.152	0	802.152	896.62	896.62
24	1.17477	1070.56	17.875	MD-D silty SAND to SAND w/silt	100	38	314.944	732.622	809.72	0	809.72	911.292	911.292
25	1.17477	1084.57	18.9312	MD-D silty SAND to SAND w/silt	100	38	316.594	736.462	814.638	0	814.638	923.225	923.225
26	1.17477	1095.31	19.9942	MD-D silty SAND to SAND w/silt	100	38	317.351	738.223	816.889	0	816.889	932.36	932.36
27	1.17477	1102.69	21.0645	MD-D silty SAND to SAND w/silt	100	38	317.212	737.898	816.47	0	816.47	938.646	938.646

28	1.17477	1112.07	22.1425	MD-D silty SAND to SAND w/silt	100	38	317.529	738.636	817.418	0	817.418	946.628	946.628
29	1.17477	1169.92	23.2288	MD-D silty SAND to SAND w/silt	100	38	329.908	767.432	854.277	0	854.277	995.872	995.872
30	1.17477	1237.21	24.324	MD-D silty SAND to SAND w/silt	100	38	344.414	801.177	897.469	0	897.469	1053.15	1053.15
31	1.17477	1300.83	25.4288	MD-D silty SAND to SAND w/silt	100	38	357.762	832.226	937.205	0	937.205	1107.3	1107.3
32	1.17477	1360.68	26.5438	MD-D silty SAND to SAND w/silt	100	38	369.936	860.546	973.453	0	973.453	1158.25	1158.25
33	1.17477	1416.65	27.6697	MD-D silty SAND to SAND w/silt	100	38	380.922	886.101	1006.16	0	1006.16	1205.89	1205.89
34	1.17477	1468.62	28.8074	MD-D silty SAND to SAND w/silt	100	38	390.701	908.849	1035.28	0	1035.28	1250.14	1250.14
35	1.17477	1516.46	29.9577	MD-D silty SAND to SAND w/silt	100	38	399.254	928.745	1060.75	0	1060.75	1290.86	1290.86
36	1.17477	1560.04	31.1214	MD-D silty SAND to SAND w/silt	100	38	406.558	945.736	1082.49	0	1082.49	1327.95	1327.95
37	1.17477	1568.05	32.2996	MD-D silty SAND to SAND w/silt	100	38	405.247	942.685	1078.59	0	1078.59	1334.77	1334.77
38	1.17477	1522.67	33.4933	MD-D silty SAND to SAND w/silt	100	38	391.342	910.339	1037.19	0	1037.19	1296.15	1296.15
39	1.17477	1471.92	34.7037	MD-D silty SAND to SAND w/silt	100	38	376.284	875.313	992.353	0	992.353	1252.94	1252.94
40	1.17477	1416.17	35.9321	MD-D silty SAND to SAND w/silt	100	38	360.192	837.879	944.439	0	944.439	1205.48	1205.48
41	1.17477	1355.18	37.18	MD-D silty SAND to SAND w/silt	100	38	343.041	797.983	893.378	0	893.378	1153.57	1153.57
42	1.20349	1305.31	38.4645	VD Till	200	40	370.923	862.84	789.943	0	789.943	1084.61	1084.61
43	1.20349	1190.48	39.7882	VD Till	200	40	340.504	792.081	705.614	0	705.614	989.193	989.193
44	1.20349	1067.78	41.1379	VD Till	200	40	308.737	718.185	617.549	0	617.549	887.238	887.238
45	1.20349	937.469	42.516	VD Till	200	40	275.762	641.477	526.131	0	526.131	778.963	778.963
46	1.20349	799.045	43.9253	VD Till	200	40	241.55	561.894	431.289	0	431.289	663.943	663.943
47	1.20349	651.92	45.3687	VD Till	200	40	206.077	479.376	332.948	0	332.948	541.695	541.695
48	1.20349	495.419	46.8501	VD Till	200	40	169.316	393.862	231.036	0	231.036	411.655	411.655

49	1.38923	363.588	48.4949	MD-D Wx Till	200	36	123.965	288.368	121.629	0	121.629	261.721	261.721
50	1.38923	124.218	50.3172	MD-D Wx Till	200	36	82.7533	192.501	-10.3218	0	-10.3218	89.416	89.416

B-B' - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.3262

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	1.17477	36.1715	-5.47326	MD-D silty SAND to SAND w/silt	100	38	55.1032	128.181	36.0701	0	36.0701	30.7902	30.7902
2	1.17477	107.111	-4.46724	MD-D silty SAND to SAND w/silt	100	38	75.5947	175.848	97.0814	0	97.0814	91.1754	91.1754
3	1.17477	175.248	-3.46259	MD-D silty SAND to SAND w/silt	100	38	95.0224	221.041	154.926	0	154.926	149.176	149.176
4	1.17477	240.593	-2.45901	MD-D silty SAND to SAND w/silt	100	38	113.409	263.812	209.67	0	209.67	204.799	204.799
5	1.17477	303.153	-1.45618	MD-D silty SAND to SAND w/silt	100	38	130.776	304.21	261.377	0	261.377	258.053	258.053
6	1.17477	362.935	-0.453797	MD-D silty SAND to SAND w/silt	100	38	147.142	342.281	310.106	0	310.106	308.94	308.94
7	1.17477	419.939	0.548446	MD-D silty SAND to SAND w/silt	100	38	162.526	378.067	355.909	0	355.909	357.465	357.465
8	1.17477	474.167	1.55086	MD-D silty SAND to SAND w/silt	100	38	176.942	411.603	398.834	0	398.834	403.625	403.625
9	1.17477	525.615	2.55374	MD-D silty SAND to SAND w/silt	100	38	190.408	442.927	438.926	0	438.926	447.419	447.419
10	1.17477	574.278	3.55741	MD-D silty SAND to SAND w/silt	100	38	202.936	472.069	476.226	0	476.226	488.842	488.842
11	1.17477	620.148	4.56218	MD-D silty SAND to SAND w/silt	100	38	214.537	499.057	510.77	0	510.77	527.888	527.888
12	1.17477	664.763	5.56835	MD-D silty SAND to SAND w/silt	100	38	225.653	524.915	543.866	0	543.866	565.866	565.866
13	1.17477	713.787	6.57625	MD-D silty SAND to SAND w/silt	100	38	237.848	553.283	580.176	0	580.176	607.596	607.596

14	1.17477	760.895	7.5862	MD-D silty SAND to SAND w/silt	100	38	249.372	580.088	614.484	0	614.484	647.696	647.696
15	1.17477	805.152	8.59852	MD-D silty SAND to SAND w/silt	100	38	259.976	604.756	646.058	0	646.058	685.369	685.369
16	1.17477	846.537	9.61356	MD-D silty SAND to SAND w/silt	100	38	269.67	627.306	674.921	0	674.921	720.597	720.597
17	1.17477	885.025	10.6317	MD-D silty SAND to SAND w/silt	100	38	278.458	647.75	701.088	0	701.088	753.359	753.359
18	1.17477	920.588	11.6532	MD-D silty SAND to SAND w/silt	100	38	286.347	666.101	724.576	0	724.576	783.632	783.632
19	1.17477	953.195	12.6784	MD-D silty SAND to SAND w/silt	100	38	293.34	682.368	745.398	0	745.398	811.389	811.389
20	1.17477	982.812	13.7079	MD-D silty SAND to SAND w/silt	100	38	299.441	696.559	763.56	0	763.56	836.599	836.599
21	1.17477	1009.4	14.7418	MD-D silty SAND to SAND w/silt	100	38	304.65	708.677	779.071	0	779.071	859.233	859.233
22	1.17477	1032.92	15.7807	MD-D silty SAND to SAND w/silt	100	38	308.971	718.728	791.935	0	791.935	879.252	879.252
23	1.17477	1053.32	16.8249	MD-D silty SAND to SAND w/silt	100	38	312.402	726.71	802.152	0	802.152	896.62	896.62
24	1.17477	1070.56	17.875	MD-D silty SAND to SAND w/silt	100	38	314.944	732.622	809.72	0	809.72	911.292	911.292
25	1.17477	1084.57	18.9312	MD-D silty SAND to SAND w/silt	100	38	316.594	736.462	814.638	0	814.638	923.225	923.225
26	1.17477	1095.31	19.9942	MD-D silty SAND to SAND w/silt	100	38	317.351	738.223	816.889	0	816.889	932.36	932.36
27	1.17477	1102.69	21.0645	MD-D silty SAND to SAND w/silt	100	38	317.212	737.898	816.47	0	816.47	938.646	938.646
28	1.17477	1112.07	22.1425	MD-D silty SAND to SAND w/silt	100	38	317.529	738.636	817.418	0	817.418	946.628	946.628

29	1.17477	1169.92	23.2288	MD-D silty SAND to SAND w/silt	100	38	329.908	767.432	854.277	0	854.277	995.872	995.872
30	1.17477	1237.21	24.324	MD-D silty SAND to SAND w/silt	100	38	344.414	801.177	897.469	0	897.469	1053.15	1053.15
31	1.17477	1300.83	25.4288	MD-D silty SAND to SAND w/silt	100	38	357.762	832.226	937.205	0	937.205	1107.3	1107.3
32	1.17477	1360.68	26.5438	MD-D silty SAND to SAND w/silt	100	38	369.936	860.546	973.453	0	973.453	1158.25	1158.25
33	1.17477	1416.65	27.6697	MD-D silty SAND to SAND w/silt	100	38	380.922	886.101	1006.16	0	1006.16	1205.89	1205.89
34	1.17477	1468.62	28.8074	MD-D silty SAND to SAND w/silt	100	38	390.701	908.849	1035.28	0	1035.28	1250.14	1250.14
35	1.17477	1516.46	29.9577	MD-D silty SAND to SAND w/silt	100	38	399.254	928.745	1060.75	0	1060.75	1290.86	1290.86
36	1.17477	1560.04	31.1214	MD-D silty SAND to SAND w/silt	100	38	406.558	945.736	1082.49	0	1082.49	1327.95	1327.95
37	1.17477	1568.05	32.2996	MD-D silty SAND to SAND w/silt	100	38	405.247	942.685	1078.59	0	1078.59	1334.77	1334.77
38	1.17477	1522.67	33.4933	MD-D silty SAND to SAND w/silt	100	38	391.342	910.339	1037.19	0	1037.19	1296.15	1296.15
39	1.17477	1471.92	34.7037	MD-D silty SAND to SAND w/silt	100	38	376.284	875.313	992.353	0	992.353	1252.94	1252.94
40	1.17477	1416.17	35.9321	MD-D silty SAND to SAND w/silt	100	38	360.192	837.879	944.439	0	944.439	1205.48	1205.48
41	1.17477	1355.18	37.18	MD-D silty SAND to SAND w/silt	100	38	343.041	797.983	893.378	0	893.378	1153.57	1153.57
42	1.20349	1305.31	38.4645	VD Till	200	40	370.923	862.84	789.943	0	789.943	1084.61	1084.61
43	1.20349	1190.48	39.7882	VD Till	200	40	340.504	792.081	705.614	0	705.614	989.193	989.193
44	1.20349	1067.78	41.1379	VD Till	200	40	308.737	718.185	617.549	0	617.549	887.238	887.238
45	1.20349	937.469	42.516	VD Till	200	40	275.762	641.477	526.131	0	526.131	778.963	778.963
46	1.20349	799.045	43.9253	VD Till	200	40	241.55	561.894	431.289	0	431.289	663.943	663.943
47	1.20349	651.92	45.3687	VD Till	200	40	206.077	479.376	332.948	0	332.948	541.695	541.695
48	1.20349	495.419	46.8501	VD Till	200	40	169.316	393.862	231.036	0	231.036	411.655	411.655
49	1.38923	363.588	48.4949	MD-D Wx Till	200	36	123.965	288.368	121.629	0	121.629	261.721	261.721
50	1.38923	124.218	50.3172	MD-D Wx Till	200	36	82.7533	192.501	-10.3218	0	-10.3218	89.416	89.416

B-B' - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.08763

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	2.53812	100.537	-1.22681	MD-D silty SAND to SAND w/silt	100	38	122.278	132.993	42.2287	0	42.2287	39.6101	39.6101
2	2.53812	296.577	-0.44835	MD-D silty SAND to SAND w/silt	100	38	176.874	192.374	118.233	0	118.233	116.849	116.849
3	2.53812	487.62	0.330029	MD-D silty SAND to SAND w/silt	100	38	229.002	249.069	190.8	0	190.8	192.119	192.119
4	2.53812	747.586	1.10847	MD-D silty SAND to SAND w/silt	100	38	299.365	325.598	288.752	0	288.752	294.545	294.545
5	2.53812	1024.55	1.88711	MD-D silty SAND to SAND w/silt	100	38	373.083	405.776	391.375	0	391.375	403.668	403.668
6	2.53812	1291.43	2.66611	MD-D silty SAND to SAND w/silt	100	38	442.64	481.429	488.207	0	488.207	508.819	508.819
7	2.53812	1546.27	3.44559	MD-D silty SAND to SAND w/silt	100	38	507.618	552.101	578.661	0	578.661	609.224	609.224
8	2.53812	1769.33	4.22572	MD-D silty SAND to SAND w/silt	100	38	562.832	612.153	655.526	0	655.526	697.112	697.112
9	2.53812	1976.21	5.00663	MD-D silty SAND to SAND w/silt	100	38	612.701	666.392	724.947	0	724.947	778.623	778.623
10	2.53812	2172.91	5.78848	MD-D silty SAND to SAND w/silt	100	38	658.946	716.689	789.325	0	789.325	856.125	856.125
11	2.53812	2359.39	6.57141	MD-D silty SAND to SAND w/silt	100	38	701.648	763.133	848.771	0	848.771	929.6	929.6
12	2.53812	2535.6	7.35557	MD-D silty SAND to SAND w/silt	100	38	740.882	805.806	903.391	0	903.391	999.031	999.031
13	2.53812	2701.5	8.14112	MD-D silty SAND to SAND w/silt	100	38	776.722	844.786	953.284	0	953.284	1064.4	1064.4

14	2.53812	2857.01	8.92822	MD-D silty SAND to SAND w/silt	100	38	809.233	880.146	998.54	0	998.54	1125.67	1125.67
15	2.53812	3002.09	9.71702	MD-D silty SAND to SAND w/silt	100	38	838.48	911.956	1039.26	0	1039.26	1182.84	1182.84
16	2.53812	3136.66	10.5077	MD-D silty SAND to SAND w/silt	100	38	864.522	940.28	1075.51	0	1075.51	1235.86	1235.86
17	2.53812	3260.64	11.3004	MD-D silty SAND to SAND w/silt	100	38	887.416	965.18	1107.38	0	1107.38	1284.71	1284.71
18	2.53812	3373.94	12.0953	MD-D silty SAND to SAND w/silt	100	38	907.215	986.714	1134.94	0	1134.94	1329.35	1329.35
19	2.53812	3476.48	12.8925	MD-D silty SAND to SAND w/silt	100	38	923.97	1004.94	1158.27	0	1158.27	1369.76	1369.76
20	2.53812	3568.14	13.6923	MD-D silty SAND to SAND w/silt	100	38	937.726	1019.9	1177.42	0	1177.42	1405.88	1405.88
21	2.53812	3648.84	14.4949	MD-D silty SAND to SAND w/silt	100	38	948.53	1031.65	1192.46	0	1192.46	1437.68	1437.68
22	2.53812	3718.44	15.3003	MD-D silty SAND to SAND w/silt	100	38	956.425	1040.24	1203.45	0	1203.45	1465.1	1465.1
23	2.53812	3776.83	16.1089	MD-D silty SAND to SAND w/silt	100	38	961.447	1045.7	1210.44	0	1210.44	1488.11	1488.11
24	2.53812	3823.86	16.9208	MD-D silty SAND to SAND w/silt	100	38	963.637	1048.08	1213.49	0	1213.49	1506.64	1506.64
25	2.53812	3859.4	17.7362	MD-D silty SAND to SAND w/silt	100	38	963.027	1047.42	1212.64	0	1212.64	1520.65	1520.65
26	2.53812	3883.29	18.5553	MD-D silty SAND to SAND w/silt	100	38	959.652	1043.75	1207.94	0	1207.94	1530.07	1530.07
27	2.53812	3905.29	19.3784	MD-D silty SAND to SAND w/silt	100	38	955.786	1039.54	1202.56	0	1202.56	1538.74	1538.74
28	2.53812	3948.03	20.2056	MD-D silty SAND to SAND w/silt	100	38	956.498	1040.32	1203.55	0	1203.55	1555.58	1555.58

29	2.53812	3981.17	21.0373	MD-D silty SAND to SAND w/silt	100	38	954.928	1038.61	1201.36	0	1201.36	1568.64	1568.64
30	2.53812	4001.92	21.8736	MD-D silty SAND to SAND w/silt	100	38	950.516	1033.81	1195.22	0	1195.22	1576.82	1576.82
31	2.53812	4010.08	22.7149	MD-D silty SAND to SAND w/silt	100	38	943.29	1025.95	1185.16	0	1185.16	1580.04	1580.04
32	2.53812	4005.41	23.5614	MD-D silty SAND to SAND w/silt	100	38	933.271	1015.05	1171.21	0	1171.21	1578.2	1578.2
33	2.53812	3987.68	24.4134	MD-D silty SAND to SAND w/silt	100	38	920.48	1001.14	1153.41	0	1153.41	1571.22	1571.22
34	2.53812	3961.73	25.2711	MD-D silty SAND to SAND w/silt	100	38	906.021	985.416	1133.28	0	1133.28	1561	1561
35	2.53812	4134.26	26.135	MD-D silty SAND to SAND w/silt	100	38	933.192	1014.97	1171.11	0	1171.11	1628.98	1628.98
36	2.53812	4404.26	27.0053	MD-D silty SAND to SAND w/silt	100	38	979.816	1065.68	1236.01	0	1236.01	1735.36	1735.36
37	2.53812	4660.02	27.8824	MD-D silty SAND to SAND w/silt	100	38	1022.36	1111.95	1295.23	0	1295.23	1836.15	1836.15
38	2.53812	4890.68	28.7667	MD-D silty SAND to SAND w/silt	100	38	1058.69	1151.46	1345.81	0	1345.81	1927.03	1927.03
39	2.53812	4850.6	29.6585	MD-D silty SAND to SAND w/silt	100	38	1039.61	1130.71	1319.25	0	1319.25	1911.24	1911.24
40	2.53812	4685.71	30.5583	MD-D silty SAND to SAND w/silt	100	38	995.839	1083.1	1258.31	0	1258.31	1846.27	1846.27
41	2.53812	4456.62	31.4666	MD-D silty SAND to SAND w/silt	100	38	940.077	1022.46	1180.69	0	1180.69	1756.02	1756.02
42	2.53812	4133.62	32.3837	MD-D silty SAND to SAND w/silt	100	38	866.961	942.933	1078.9	0	1078.9	1628.75	1628.75
43	2.53812	3792.87	33.3102	MD-D silty SAND to SAND w/silt	100	38	791.751	861.132	974.204	0	974.204	1494.49	1494.49

44	2.53812	3434.87	34.2467	MD-D silty SAND to SAND w/silt	100	38	714.666	777.292	866.892	0	866.892	1353.43	1353.43
45	2.85064	3381.98	35.2528	VD Till	200	40	711.369	773.706	683.715	0	683.715	1186.51	1186.51
46	2.85064	2827.71	36.3307	VD Till	200	40	605.643	658.716	546.678	0	546.678	992.066	992.066
47	2.85064	2243.78	37.4236	VD Till	200	40	497.507	541.103	406.509	0	406.509	787.207	787.207
48	2.85064	1628.88	38.5328	VD Till	200	40	387.008	420.921	263.283	0	263.283	571.484	571.484
49	2.75285	959.175	39.6397	MD-D Wx Till	200	36	268.234	291.739	126.268	0	126.268	348.484	348.484
50	2.75285	324.945	40.745	MD-D Wx Till	200	36	166.78	181.395	-25.6072	0	-25.6072	118.074	118.074

B-B' - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.8543

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	1.16238	30.5167	-1.87873	MD-D silty SAND to SAND w/silt - No C	0	38	11.2163	20.7983	26.6207	0	26.6207	26.2528	26.2528
2	1.16238	90.3386	-0.985905	MD-D silty SAND to SAND w/silt - No C	0	38	32.9844	61.1629	78.285	0	78.285	77.7173	77.7173
3	1.16238	147.739	-0.0933241	MD-D silty SAND to SAND w/silt - No C	0	38	53.5887	99.3696	127.187	0	127.187	127.1	127.1
4	1.16238	202.718	0.799234	MD-D silty SAND to SAND w/silt - No C	0	38	73.0524	135.461	173.383	0	173.383	174.402	174.402
5	1.16238	255.276	1.69199	MD-D silty SAND to SAND w/silt - No C	0	38	91.3973	169.478	216.921	0	216.921	219.621	219.621
6	1.16238	305.41	2.58515	MD-D silty SAND to SAND w/silt - No C	0	38	108.643	201.456	257.852	0	257.852	262.757	262.757
7	1.16238	353.116	3.47894	MD-D silty SAND to SAND w/silt - No C	0	38	124.807	231.43	296.217	0	296.217	303.804	303.804
8	1.16238	398.388	4.37359	MD-D silty SAND to SAND w/silt - No C	0	38	139.909	259.433	332.059	0	332.059	342.76	342.76
9	1.16238	444.684	5.2693	MD-D silty SAND to SAND w/silt - No C	0	38	155.172	287.736	368.285	0	368.285	382.596	382.596
10	1.16238	494.448	6.1663	MD-D silty SAND to SAND w/silt - No C	0	38	171.44	317.902	406.897	0	406.897	425.419	425.419
11	1.16238	541.849	7.06483	MD-D silty SAND to SAND w/silt - No C	0	38	186.683	346.166	443.073	0	443.073	466.209	466.209

12	1.16238	586.773	7.9651	MD-D silty SAND to SAND w/silt - No C	0	38	200.878	372.488	476.762	0	476.762	504.869	504.869
13	1.16238	629.206	8.86736	MD-D silty SAND to SAND w/silt - No C	0	38	214.037	396.888	507.993	0	507.993	541.386	541.386
14	1.16238	669.128	9.77185	MD-D silty SAND to SAND w/silt - No C	0	38	226.171	419.388	536.792	0	536.792	575.744	575.744
15	1.16238	706.521	10.6788	MD-D silty SAND to SAND w/silt - No C	0	38	237.29	440.006	563.182	0	563.182	607.927	607.927
16	1.16238	741.363	11.5885	MD-D silty SAND to SAND w/silt - No C	0	38	247.402	458.758	587.183	0	587.183	637.916	637.916
17	1.16238	773.63	12.5011	MD-D silty SAND to SAND w/silt - No C	0	38	256.517	475.659	608.816	0	608.816	665.689	665.689
18	1.16238	803.295	13.417	MD-D silty SAND to SAND w/silt - No C	0	38	264.64	490.722	628.096	0	628.096	691.225	691.225
19	1.16238	830.33	14.3364	MD-D silty SAND to SAND w/silt - No C	0	38	271.779	503.96	645.039	0	645.039	714.498	714.498
20	1.16238	854.703	15.2595	MD-D silty SAND to SAND w/silt - No C	0	38	277.938	515.38	659.657	0	659.657	735.481	735.481
21	1.16238	876.38	16.1868	MD-D silty SAND to SAND w/silt - No C	0	38	283.122	524.993	671.961	0	671.961	754.145	754.145
22	1.16238	895.324	17.1184	MD-D silty SAND to SAND w/silt - No C	0	38	287.335	532.805	681.96	0	681.96	770.457	770.457
23	1.16238	911.494	18.0547	MD-D silty SAND to SAND w/silt - No C	0	38	290.58	538.822	689.661	0	689.661	784.383	784.383
24	1.16238	924.847	18.996	MD-D silty SAND to SAND w/silt - No C	0	38	292.858	543.047	695.068	0	695.068	795.885	795.885

25	1.16238	944.268	19.9427	MD-D silty SAND to SAND w/silt - No C	0	38	296.981	550.691	704.853	0	704.853	812.609	812.609
26	1.16238	1012.46	20.8951	MD-D silty SAND to SAND w/silt - No C	0	38	316.244	586.411	750.572	0	750.572	871.303	871.303
27	1.16238	1085.98	21.8536	MD-D silty SAND to SAND w/silt - No C	0	38	336.855	624.63	799.487	0	799.487	934.585	934.585
28	1.16238	1156.48	22.8186	MD-D silty SAND to SAND w/silt - No C	0	38	356.199	660.5	845.398	0	845.398	995.266	995.266
29	1.16238	1223.88	23.7904	MD-D silty SAND to SAND w/silt - No C	0	38	374.271	694.011	888.294	0	888.294	1053.29	1053.29
30	1.16238	1288.12	24.7696	MD-D silty SAND to SAND w/silt - No C	0	38	391.065	725.152	928.154	0	928.154	1108.6	1108.6
31	1.16238	1349.13	25.7565	MD-D silty SAND to SAND w/silt - No C	0	38	406.572	753.906	964.953	0	964.953	1161.12	1161.12
32	1.16238	1406.83	26.7518	MD-D silty SAND to SAND w/silt - No C	0	38	420.783	780.257	998.681	0	998.681	1210.79	1210.79
33	1.16238	1461.12	27.7558	MD-D silty SAND to SAND w/silt - No C	0	38	433.687	804.185	1029.31	0	1029.31	1257.54	1257.54
34	1.16238	1479.57	28.7692	MD-D silty SAND to SAND w/silt - No C	0	38	435.742	807.997	1034.19	0	1034.19	1273.44	1273.44
35	1.16238	1448.3	29.7925	MD-D silty SAND to SAND w/silt - No C	0	38	423.142	784.632	1004.29	0	1004.29	1246.55	1246.55
36	1.16238	1412.99	30.8264	MD-D silty SAND to SAND w/silt - No C	0	38	409.465	759.271	971.822	0	971.822	1216.17	1216.17
37	1.16238	1373.85	31.8716	MD-D silty SAND to SAND w/silt - No C	0	38	394.804	732.085	937.023	0	937.023	1182.5	1182.5

38	1.16238	1330.75	32.9287	MD-D silty SAND to SAND w/silt - No C	0	38	379.15	703.057	899.874	0	899.874	1145.43	1145.43
39	1.10304	1209.12	33.971	VD Till - No C	0	40	380.341	705.267	840.502	0	840.502	1096.77	1096.77
40	1.10304	1132.2	34.9986	VD Till - No C	0	40	352.919	654.417	779.904	0	779.904	1027.01	1027.01
41	1.10304	1050.31	36.0393	VD Till - No C	0	40	324.342	601.428	716.754	0	716.754	952.742	952.742
42	1.10304	964.16	37.0939	VD Till - No C	0	40	294.881	546.797	651.647	0	651.647	874.614	874.614
43	1.10304	873.582	38.1634	VD Till - No C	0	40	264.528	490.514	584.572	0	584.572	792.462	792.462
44	1.10304	778.375	39.2489	VD Till - No C	0	40	233.28	432.571	515.518	0	515.518	706.108	706.108
45	1.10304	678.323	40.3514	VD Till - No C	0	40	201.131	372.958	444.474	0	444.474	615.356	615.356
46	1.10304	573.186	41.4722	VD Till - No C	0	40	168.078	311.667	371.431	0	371.431	519.988	519.988
47	1.10304	462.699	42.6128	VD Till - No C	0	40	134.117	248.693	296.382	0	296.382	419.764	419.764
48	1.18448	367.306	43.8185	MD-D Wx Till - No C	0	36	88.3579	163.842	225.51	0	225.51	310.297	310.297
49	1.18448	225.958	45.0929	MD-D Wx Till - No C	0	36	53.6895	99.5564	137.028	0	137.028	190.892	190.892
50	1.18448	76.6852	46.3964	MD-D Wx Till - No C	0	36	17.985	33.3496	45.9018	0	45.9018	64.7856	64.7856

B-B' Post Const - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.33645

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	1.17477	36.1715	-5.47326	MD-D silty SAND to SAND w/silt	100	38	54.8534	128.162	36.0461	0	36.0461	30.7902	30.7902
2	1.17477	107.111	-4.46724	MD-D silty SAND to SAND w/silt	100	38	75.2542	175.828	97.0551	0	97.0551	91.1757	91.1757
3	1.17477	175.248	-3.46259	MD-D silty SAND to SAND w/silt	100	38	94.5969	221.021	154.899	0	154.899	149.175	149.175
4	1.17477	240.593	-2.45901	MD-D silty SAND to SAND w/silt	100	38	112.904	263.795	209.648	0	209.648	204.8	204.8
5	1.17477	303.153	-1.45618	MD-D silty SAND to SAND w/silt	100	38	130.197	304.199	261.363	0	261.363	258.053	258.053
6	1.17477	362.935	-0.453797	MD-D silty SAND to SAND w/silt	100	38	146.494	342.277	310.101	0	310.101	308.94	308.94
7	1.17477	419.939	0.548446	MD-D silty SAND to SAND w/silt	100	38	161.815	378.072	355.916	0	355.916	357.465	357.465
8	1.17477	474.167	1.55086	MD-D silty SAND to SAND w/silt	100	38	176.173	411.62	398.855	0	398.855	403.624	403.624
9	1.17477	525.615	2.55374	MD-D silty SAND to SAND w/silt	100	38	189.585	442.956	438.963	0	438.963	447.419	447.419
10	1.17477	574.278	3.55741	MD-D silty SAND to SAND w/silt	100	38	202.063	472.111	476.28	0	476.28	488.842	488.842
11	1.17477	620.148	4.56218	MD-D silty SAND to SAND w/silt	100	38	213.621	499.114	510.843	0	510.843	527.888	527.888
12	1.17477	664.763	5.56835	MD-D silty SAND to SAND w/silt	100	38	224.695	524.988	543.959	0	543.959	565.866	565.866
13	1.17477	713.787	6.57625	MD-D silty SAND to SAND w/silt	100	38	236.844	553.374	580.292	0	580.292	607.596	607.596

14	1.17477	760.895	7.5862	MD-D silty SAND to SAND w/silt	100	38	248.324	580.197	614.624	0	614.624	647.696	647.696
15	1.17477	805.152	8.59852	MD-D silty SAND to SAND w/silt	100	38	258.891	604.885	646.223	0	646.223	685.369	685.369
16	1.17477	846.537	9.61356	MD-D silty SAND to SAND w/silt	100	38	268.55	627.454	675.11	0	675.11	720.597	720.597
17	1.17477	885.025	10.6317	MD-D silty SAND to SAND w/silt	100	38	277.309	647.919	701.304	0	701.304	753.359	753.359
18	1.17477	920.588	11.6532	MD-D silty SAND to SAND w/silt	100	38	285.172	666.291	724.819	0	724.819	783.632	783.632
19	1.17477	953.195	12.6784	MD-D silty SAND to SAND w/silt	100	38	292.144	682.579	745.667	0	745.667	811.388	811.388
20	1.17477	982.812	13.7079	MD-D silty SAND to SAND w/silt	100	38	298.226	696.79	763.856	0	763.856	836.599	836.599
21	1.17477	1009.4	14.7418	MD-D silty SAND to SAND w/silt	100	38	303.422	708.93	779.395	0	779.395	859.233	859.233
22	1.17477	1032.92	15.7807	MD-D silty SAND to SAND w/silt	100	38	307.732	719.001	792.285	0	792.285	879.253	879.253
23	1.17477	1053.32	16.8249	MD-D silty SAND to SAND w/silt	100	38	311.158	727.004	802.528	0	802.528	896.62	896.62
24	1.17477	1070.56	17.875	MD-D silty SAND to SAND w/silt	100	38	313.697	732.937	810.122	0	810.122	911.292	911.292
25	1.17477	1084.57	18.9312	MD-D silty SAND to SAND w/silt	100	38	315.348	736.796	815.065	0	815.065	923.225	923.225
26	1.17477	1095.31	19.9942	MD-D silty SAND to SAND w/silt	100	38	316.11	738.576	817.337	0	817.337	932.356	932.356
27	1.17477	1102.69	21.0645	MD-D silty SAND to SAND w/silt	100	38	315.979	738.269	816.946	0	816.946	938.647	938.647
28	1.17477	1112.07	22.1425	MD-D silty SAND to SAND w/silt	100	38	316.303	739.025	817.915	0	817.915	946.625	946.625

29	1.17477	1169.92	23.2288	MD-D silty SAND to SAND w/silt	100	38	328.642	767.856	854.817	0	854.817	995.868	995.868
30	1.17477	1237.21	24.324	MD-D silty SAND to SAND w/silt	100	38	343.102	801.641	898.059	0	898.059	1053.15	1053.15
31	1.17477	1300.83	25.4288	MD-D silty SAND to SAND w/silt	100	38	356.408	832.729	937.851	0	937.851	1107.31	1107.31
32	1.17477	1360.68	26.5438	MD-D silty SAND to SAND w/silt	100	38	368.546	861.089	974.146	0	974.146	1158.25	1158.25
33	1.17477	1416.65	27.6697	MD-D silty SAND to SAND w/silt	100	38	379.5	886.683	1006.91	0	1006.91	1205.89	1205.89
34	1.17477	1468.62	28.8074	MD-D silty SAND to SAND w/silt	100	38	389.253	909.471	1036.08	0	1036.08	1250.14	1250.14
35	1.17477	1516.46	29.9577	MD-D silty SAND to SAND w/silt	100	38	397.786	929.406	1061.59	0	1061.59	1290.86	1290.86
36	1.17477	1560.04	31.1214	MD-D silty SAND to SAND w/silt	100	38	405.074	946.436	1083.39	0	1083.39	1327.95	1327.95
37	1.17477	1568.05	32.2996	MD-D silty SAND to SAND w/silt	100	38	403.779	943.409	1079.52	0	1079.52	1334.77	1334.77
38	1.17477	1522.67	33.4933	MD-D silty SAND to SAND w/silt	100	38	389.936	911.065	1038.12	0	1038.12	1296.15	1296.15
39	1.17477	1471.92	34.7037	MD-D silty SAND to SAND w/silt	100	38	374.944	876.038	993.284	0	993.284	1252.94	1252.94
40	1.17477	1416.17	35.9321	MD-D silty SAND to SAND w/silt	100	38	358.92	838.599	945.363	0	945.363	1205.48	1205.48
41	1.17477	1355.18	37.18	MD-D silty SAND to SAND w/silt	100	38	341.841	798.695	894.287	0	894.287	1153.57	1153.57
42	1.21397	1313.82	38.4703	VD Till	200	40	368.982	862.108	789.071	0	789.071	1082.26	1082.26
43	1.21397	1189.34	39.8058	VD Till	200	40	336.685	786.648	699.141	0	699.141	979.714	979.714
44	1.21397	1056.6	41.1677	VD Till	200	40	303.02	707.99	605.399	0	605.399	870.371	870.371
45	1.21397	916.046	42.5586	VD Till	200	40	268.168	626.56	508.355	0	508.355	754.59	754.59
46	1.21397	767.144	43.9812	VD Till	200	40	232.105	542.301	407.939	0	407.939	631.933	631.933
47	1.21397	609.287	45.4389	VD Till	200	40	194.807	455.157	304.084	0	304.084	501.899	501.899
48	1.21397	441.77	46.9352	VD Till	200	40	156.252	365.074	196.728	0	196.728	363.908	363.908
49	1.14324	253.582	48.4285	MD-D Wx Till	200	36	114.449	267.405	92.7746	0	92.7746	221.811	221.811
50	1.14324	86.1871	49.9209	MD-D Wx Till	200	36	79.6196	186.027	-19.2318	0	-19.2318	75.3895	75.3895

B-B' Post Const - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.33645

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	1.17477	36.1715	-5.47326	MD-D silty SAND to SAND w/silt	100	38	54.8534	128.162	36.0461	0	36.0461	30.7902	30.7902
2	1.17477	107.111	-4.46724	MD-D silty SAND to SAND w/silt	100	38	75.2542	175.828	97.0551	0	97.0551	91.1757	91.1757
3	1.17477	175.248	-3.46259	MD-D silty SAND to SAND w/silt	100	38	94.5969	221.021	154.899	0	154.899	149.175	149.175
4	1.17477	240.593	-2.45901	MD-D silty SAND to SAND w/silt	100	38	112.904	263.795	209.648	0	209.648	204.8	204.8
5	1.17477	303.153	-1.45618	MD-D silty SAND to SAND w/silt	100	38	130.197	304.199	261.363	0	261.363	258.053	258.053
6	1.17477	362.935	-0.453797	MD-D silty SAND to SAND w/silt	100	38	146.494	342.277	310.101	0	310.101	308.94	308.94
7	1.17477	419.939	0.548446	MD-D silty SAND to SAND w/silt	100	38	161.815	378.072	355.916	0	355.916	357.465	357.465
8	1.17477	474.167	1.55086	MD-D silty SAND to SAND w/silt	100	38	176.173	411.62	398.855	0	398.855	403.624	403.624
9	1.17477	525.615	2.55374	MD-D silty SAND to SAND w/silt	100	38	189.585	442.956	438.963	0	438.963	447.419	447.419
10	1.17477	574.278	3.55741	MD-D silty SAND to SAND w/silt	100	38	202.063	472.111	476.28	0	476.28	488.842	488.842
11	1.17477	620.148	4.56218	MD-D silty SAND to SAND w/silt	100	38	213.621	499.114	510.843	0	510.843	527.888	527.888
12	1.17477	664.763	5.56835	MD-D silty SAND to SAND w/silt	100	38	224.695	524.988	543.959	0	543.959	565.866	565.866
13	1.17477	713.787	6.57625	MD-D silty SAND to SAND w/silt	100	38	236.844	553.374	580.292	0	580.292	607.596	607.596

14	1.17477	760.895	7.5862	MD-D silty SAND to SAND w/silt	100	38	248.324	580.197	614.624	0	614.624	647.696	647.696
15	1.17477	805.152	8.59852	MD-D silty SAND to SAND w/silt	100	38	258.891	604.885	646.223	0	646.223	685.369	685.369
16	1.17477	846.537	9.61356	MD-D silty SAND to SAND w/silt	100	38	268.55	627.454	675.11	0	675.11	720.597	720.597
17	1.17477	885.025	10.6317	MD-D silty SAND to SAND w/silt	100	38	277.309	647.919	701.304	0	701.304	753.359	753.359
18	1.17477	920.588	11.6532	MD-D silty SAND to SAND w/silt	100	38	285.172	666.291	724.819	0	724.819	783.632	783.632
19	1.17477	953.195	12.6784	MD-D silty SAND to SAND w/silt	100	38	292.144	682.579	745.667	0	745.667	811.388	811.388
20	1.17477	982.812	13.7079	MD-D silty SAND to SAND w/silt	100	38	298.226	696.79	763.856	0	763.856	836.599	836.599
21	1.17477	1009.4	14.7418	MD-D silty SAND to SAND w/silt	100	38	303.422	708.93	779.395	0	779.395	859.233	859.233
22	1.17477	1032.92	15.7807	MD-D silty SAND to SAND w/silt	100	38	307.732	719.001	792.285	0	792.285	879.253	879.253
23	1.17477	1053.32	16.8249	MD-D silty SAND to SAND w/silt	100	38	311.158	727.004	802.528	0	802.528	896.62	896.62
24	1.17477	1070.56	17.875	MD-D silty SAND to SAND w/silt	100	38	313.697	732.937	810.122	0	810.122	911.292	911.292
25	1.17477	1084.57	18.9312	MD-D silty SAND to SAND w/silt	100	38	315.348	736.796	815.065	0	815.065	923.225	923.225
26	1.17477	1095.31	19.9942	MD-D silty SAND to SAND w/silt	100	38	316.11	738.576	817.337	0	817.337	932.356	932.356
27	1.17477	1102.69	21.0645	MD-D silty SAND to SAND w/silt	100	38	315.979	738.269	816.946	0	816.946	938.647	938.647
28	1.17477	1112.07	22.1425	MD-D silty SAND to SAND w/silt	100	38	316.303	739.025	817.915	0	817.915	946.625	946.625

29	1.17477	1169.92	23.2288	MD-D silty SAND to SAND w/silt	100	38	328.642	767.856	854.817	0	854.817	995.868	995.868
30	1.17477	1237.21	24.324	MD-D silty SAND to SAND w/silt	100	38	343.102	801.641	898.059	0	898.059	1053.15	1053.15
31	1.17477	1300.83	25.4288	MD-D silty SAND to SAND w/silt	100	38	356.408	832.729	937.851	0	937.851	1107.31	1107.31
32	1.17477	1360.68	26.5438	MD-D silty SAND to SAND w/silt	100	38	368.546	861.089	974.146	0	974.146	1158.25	1158.25
33	1.17477	1416.65	27.6697	MD-D silty SAND to SAND w/silt	100	38	379.5	886.683	1006.91	0	1006.91	1205.89	1205.89
34	1.17477	1468.62	28.8074	MD-D silty SAND to SAND w/silt	100	38	389.253	909.471	1036.08	0	1036.08	1250.14	1250.14
35	1.17477	1516.46	29.9577	MD-D silty SAND to SAND w/silt	100	38	397.786	929.406	1061.59	0	1061.59	1290.86	1290.86
36	1.17477	1560.04	31.1214	MD-D silty SAND to SAND w/silt	100	38	405.074	946.436	1083.39	0	1083.39	1327.95	1327.95
37	1.17477	1568.05	32.2996	MD-D silty SAND to SAND w/silt	100	38	403.779	943.409	1079.52	0	1079.52	1334.77	1334.77
38	1.17477	1522.67	33.4933	MD-D silty SAND to SAND w/silt	100	38	389.936	911.065	1038.12	0	1038.12	1296.15	1296.15
39	1.17477	1471.92	34.7037	MD-D silty SAND to SAND w/silt	100	38	374.944	876.038	993.284	0	993.284	1252.94	1252.94
40	1.17477	1416.17	35.9321	MD-D silty SAND to SAND w/silt	100	38	358.92	838.599	945.363	0	945.363	1205.48	1205.48
41	1.17477	1355.18	37.18	MD-D silty SAND to SAND w/silt	100	38	341.841	798.695	894.287	0	894.287	1153.57	1153.57
42	1.21397	1313.82	38.4703	VD Till	200	40	368.982	862.108	789.071	0	789.071	1082.26	1082.26
43	1.21397	1189.34	39.8058	VD Till	200	40	336.685	786.648	699.141	0	699.141	979.714	979.714
44	1.21397	1056.6	41.1677	VD Till	200	40	303.02	707.99	605.399	0	605.399	870.371	870.371
45	1.21397	916.046	42.5586	VD Till	200	40	268.168	626.56	508.355	0	508.355	754.59	754.59
46	1.21397	767.144	43.9812	VD Till	200	40	232.105	542.301	407.939	0	407.939	631.933	631.933
47	1.21397	609.287	45.4389	VD Till	200	40	194.807	455.157	304.084	0	304.084	501.899	501.899
48	1.21397	441.77	46.9352	VD Till	200	40	156.252	365.074	196.728	0	196.728	363.908	363.908
49	1.14324	253.582	48.4285	MD-D Wx Till	200	36	114.449	267.405	92.7746	0	92.7746	221.811	221.811
50	1.14324	86.1871	49.9209	MD-D Wx Till	200	36	79.6196	186.027	-19.2318	0	-19.2318	75.3895	75.3895

B-B' Post Const - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.08993

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	2.37791	75.0453	1.09904	MD-D silty SAND to SAND w/silt	100	38	112.82	122.966	29.3956	0	29.3956	31.56	31.56
2	2.37791	221.369	1.76241	MD-D silty SAND to SAND w/silt	100	38	155.062	169.006	88.3241	0	88.3241	93.0953	93.0953
3	2.37791	360.156	2.42601	MD-D silty SAND to SAND w/silt	100	38	194.415	211.899	143.224	0	143.224	151.461	151.461
4	2.37791	510.67	3.08995	MD-D silty SAND to SAND w/silt	100	38	236.54	257.812	201.99	0	201.99	214.759	214.759
5	2.37791	725.164	3.75429	MD-D silty SAND to SAND w/silt	100	38	296.412	323.068	285.514	0	285.514	304.964	304.964
6	2.37791	938.807	4.41915	MD-D silty SAND to SAND w/silt	100	38	355.087	387.02	367.369	0	367.369	394.811	394.811
7	2.37791	1144.86	5.0846	MD-D silty SAND to SAND w/silt	100	38	410.681	447.613	444.925	0	444.925	481.466	481.466
8	2.37791	1340.96	5.75074	MD-D silty SAND to SAND w/silt	100	38	462.596	504.197	517.349	0	517.349	563.935	563.935
9	2.37791	1510.06	6.41766	MD-D silty SAND to SAND w/silt	100	38	506.159	551.678	578.122	0	578.122	635.055	635.055
10	2.37791	1667.17	7.08545	MD-D silty SAND to SAND w/silt	100	38	545.709	594.785	633.297	0	633.297	701.128	701.128
11	2.37791	1816.58	7.75422	MD-D silty SAND to SAND w/silt	100	38	582.515	634.901	684.642	0	684.642	763.963	763.963
12	2.37791	1958.25	8.42405	MD-D silty SAND to SAND w/silt	100	38	616.623	672.076	732.223	0	732.223	823.543	823.543
13	2.37791	2092.15	9.09504	MD-D silty SAND to SAND w/silt	100	38	648.079	706.361	776.107	0	776.107	879.855	879.855

14	2.37791	2218.22	9.76729	MD-D silty SAND to SAND w/silt	100	38	676.927	737.803	816.351	0	816.351	932.879	932.879
15	2.37791	2336.44	10.4409	MD-D silty SAND to SAND w/silt	100	38	703.207	766.446	853.014	0	853.014	982.596	982.596
16	2.37791	2446.74	11.116	MD-D silty SAND to SAND w/silt	100	38	726.96	792.335	886.149	0	886.149	1028.98	1028.98
17	2.37791	2549.07	11.7926	MD-D silty SAND to SAND w/silt	100	38	748.221	815.509	915.811	0	915.811	1072.02	1072.02
18	2.37791	2643.38	12.4709	MD-D silty SAND to SAND w/silt	100	38	767.028	836.007	942.046	0	942.046	1111.68	1111.68
19	2.37791	2729.6	13.151	MD-D silty SAND to SAND w/silt	100	38	783.415	853.867	964.905	0	964.905	1147.95	1147.95
20	2.37791	2807.67	13.833	MD-D silty SAND to SAND w/silt	100	38	797.412	869.123	984.432	0	984.432	1180.78	1180.78
21	2.37791	2877.52	14.517	MD-D silty SAND to SAND w/silt	100	38	809.05	881.808	1000.67	0	1000.67	1210.16	1210.16
22	2.37791	2939.07	15.2031	MD-D silty SAND to SAND w/silt	100	38	818.36	891.955	1013.66	0	1013.66	1236.05	1236.05
23	2.37791	2992.24	15.8915	MD-D silty SAND to SAND w/silt	100	38	825.369	899.594	1023.44	0	1023.44	1258.42	1258.42
24	2.37791	3036.96	16.5822	MD-D silty SAND to SAND w/silt	100	38	830.103	904.754	1030.04	0	1030.04	1277.22	1277.22
25	2.37791	3073.12	17.2754	MD-D silty SAND to SAND w/silt	100	38	832.586	907.461	1033.5	0	1033.5	1292.43	1292.43
26	2.37791	3100.64	17.9712	MD-D silty SAND to SAND w/silt	100	38	832.845	907.743	1033.86	0	1033.86	1304.01	1304.01
27	2.37791	3119.42	18.6698	MD-D silty SAND to SAND w/silt	100	38	830.9	905.623	1031.15	0	1031.15	1311.91	1311.91
28	2.37791	3129.34	19.3713	MD-D silty SAND to SAND w/silt	100	38	826.774	901.126	1025.39	0	1025.39	1316.08	1316.08

29	2.37791	3133.41	20.0758	MD-D silty SAND to SAND w/silt	100	38	821.233	895.086	1017.66	0	1017.66	1317.8	1317.8
30	2.37791	3157.75	20.7834	MD-D silty SAND to SAND w/silt	100	38	820.493	894.28	1016.63	0	1016.63	1328.03	1328.03
31	2.37791	3180.11	21.4945	MD-D silty SAND to SAND w/silt	100	38	819.208	892.879	1014.84	0	1014.84	1337.44	1337.44
32	2.37791	3193.13	22.209	MD-D silty SAND to SAND w/silt	100	38	815.669	889.022	1009.9	0	1009.9	1342.92	1342.92
33	2.37791	3196.66	22.9271	MD-D silty SAND to SAND w/silt	100	38	809.891	882.725	1001.84	0	1001.84	1344.41	1344.41
34	2.37791	3190.55	23.6491	MD-D silty SAND to SAND w/silt	100	38	801.892	874.006	990.683	0	990.683	1341.84	1341.84
35	2.37791	3174.65	24.3751	MD-D silty SAND to SAND w/silt	100	38	791.687	862.883	976.446	0	976.446	1335.16	1335.16
36	2.37791	3148.79	25.1053	MD-D silty SAND to SAND w/silt	100	38	779.288	849.369	959.148	0	959.148	1324.28	1324.28
37	2.37791	3136.59	25.8399	MD-D silty SAND to SAND w/silt	100	38	770.035	839.284	946.241	0	946.241	1319.15	1319.15
38	2.37791	3327.83	26.5791	MD-D silty SAND to SAND w/silt	100	38	805.961	878.441	996.36	0	996.36	1399.59	1399.59
39	2.37791	3559.41	27.323	MD-D silty SAND to SAND w/silt	100	38	850.018	926.46	1057.82	0	1057.82	1496.98	1496.98
40	2.37791	3780.24	28.072	MD-D silty SAND to SAND w/silt	100	38	890.832	970.944	1114.76	0	1114.76	1589.86	1589.86
41	2.37791	3983.47	28.8263	MD-D silty SAND to SAND w/silt	100	38	926.97	1010.33	1165.17	0	1165.17	1675.33	1675.33
42	2.37791	3957.64	29.5861	MD-D silty SAND to SAND w/silt	100	38	913.217	995.343	1145.99	0	1145.99	1664.47	1664.47
43	2.37791	3815.03	30.3516	MD-D silty SAND to SAND w/silt	100	38	874.728	953.392	1092.29	0	1092.29	1604.5	1604.5

44	2.37791	3628.26	31.1232	MD-D silty SAND to SAND w/silt	100	38	827.453	901.866	1026.34	0	1026.34	1525.95	1525.95
45	2.37791	3327.92	31.9011	MD-D silty SAND to SAND w/silt	100	38	757.184	825.278	928.314	0	928.314	1399.64	1399.64
46	2.37791	3007.93	32.6856	MD-D silty SAND to SAND w/silt	100	38	683.984	745.495	826.194	0	826.194	1265.06	1265.06
47	2.42463	2706.65	33.4849	VD Till	200	40	691.064	753.211	659.292	0	659.292	1116.44	1116.44
48	2.42463	2310.93	34.2996	VD Till	200	40	601.476	655.567	542.923	0	542.923	953.215	953.215
49	2.42463	1899.83	35.1222	VD Till	200	40	510.409	556.31	424.635	0	424.635	783.652	783.652
50	2.42463	926.635	35.9532	VD Till	200	40	659.421	718.723	618.19	0	618.19	1096.46	1096.46

B-B' Post Const - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.87019

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	1.16238	30.5167	-1.87873	MD-D silty SAND to SAND w/silt - No C	0	38	11.1197	20.7959	26.6175	0	26.6175	26.2528	26.2528
2	1.16238	90.3386	-0.985905	MD-D silty SAND to SAND w/silt - No C	0	38	32.7021	61.1591	78.2801	0	78.2801	77.7174	77.7174
3	1.16238	147.739	-0.0933241	MD-D silty SAND to SAND w/silt - No C	0	38	53.1331	99.369	127.186	0	127.186	127.1	127.1
4	1.16238	202.718	0.799234	MD-D silty SAND to SAND w/silt - No C	0	38	72.4354	135.468	173.391	0	173.391	174.402	174.402
5	1.16238	255.276	1.69199	MD-D silty SAND to SAND w/silt - No C	0	38	90.6298	169.495	216.944	0	216.944	219.621	219.621
6	1.16238	305.41	2.58515	MD-D silty SAND to SAND w/silt - No C	0	38	107.737	201.488	257.892	0	257.892	262.757	262.757
7	1.16238	353.116	3.47894	MD-D silty SAND to SAND w/silt - No C	0	38	123.773	231.479	296.28	0	296.28	303.804	303.804
8	1.16238	398.388	4.37359	MD-D silty SAND to SAND w/silt - No C	0	38	138.756	259.501	332.147	0	332.147	342.759	342.759
9	1.16238	444.684	5.2693	MD-D silty SAND to SAND w/silt - No C	0	38	153.903	287.827	368.403	0	368.403	382.597	382.597
10	1.16238	494.448	6.1663	MD-D silty SAND to SAND w/silt - No C	0	38	170.047	318.02	407.047	0	407.047	425.418	425.418
11	1.16238	541.849	7.06483	MD-D silty SAND to SAND w/silt - No C	0	38	185.175	346.312	443.259	0	443.259	466.208	466.208

12	1.16238	586.773	7.9651	MD-D silty SAND to SAND w/silt - No C	0	38	199.265	372.663	476.987	0	476.987	504.868	504.868
13	1.16238	629.206	8.86736	MD-D silty SAND to SAND w/silt - No C	0	38	212.329	397.095	508.259	0	508.259	541.385	541.385
14	1.16238	669.128	9.77185	MD-D silty SAND to SAND w/silt - No C	0	38	224.377	419.628	537.1	0	537.1	575.743	575.743
15	1.16238	706.521	10.6788	MD-D silty SAND to SAND w/silt - No C	0	38	235.42	440.28	563.533	0	563.533	607.926	607.926
16	1.16238	741.363	11.5885	MD-D silty SAND to SAND w/silt - No C	0	38	245.465	459.067	587.579	0	587.579	637.915	637.915
17	1.16238	773.63	12.5011	MD-D silty SAND to SAND w/silt - No C	0	38	254.521	476.003	609.257	0	609.257	665.688	665.688
18	1.16238	803.295	13.417	MD-D silty SAND to SAND w/silt - No C	0	38	262.595	491.102	628.582	0	628.582	691.223	691.223
19	1.16238	830.33	14.3364	MD-D silty SAND to SAND w/silt - No C	0	38	269.692	504.375	645.57	0	645.57	714.496	714.496
20	1.16238	854.703	15.2595	MD-D silty SAND to SAND w/silt - No C	0	38	275.817	515.831	660.234	0	660.234	735.479	735.479
21	1.16238	876.38	16.1868	MD-D silty SAND to SAND w/silt - No C	0	38	280.976	525.478	672.582	0	672.582	754.142	754.142
22	1.16238	895.324	17.1184	MD-D silty SAND to SAND w/silt - No C	0	38	285.171	533.324	682.624	0	682.624	770.454	770.454
23	1.16238	911.494	18.0547	MD-D silty SAND to SAND w/silt - No C	0	38	288.406	539.374	690.367	0	690.367	784.38	784.38
24	1.16238	924.847	18.996	MD-D silty SAND to SAND w/silt - No C	0	38	290.682	543.63	695.815	0	695.815	795.882	795.882

25	1.16238	944.268	19.9427	MD-D silty SAND to SAND w/silt - No C	0	38	294.789	551.311	705.645	0	705.645	812.606	812.606
26	1.16238	1012.46	20.8951	MD-D silty SAND to SAND w/silt - No C	0	38	313.925	587.1	751.454	0	751.454	871.299	871.299
27	1.16238	1085.98	21.8536	MD-D silty SAND to SAND w/silt - No C	0	38	334.402	625.396	800.469	0	800.469	934.584	934.584
28	1.16238	1156.48	22.8186	MD-D silty SAND to SAND w/silt - No C	0	38	353.624	661.344	846.485	0	846.485	995.269	995.269
29	1.16238	1223.88	23.7904	MD-D silty SAND to SAND w/silt - No C	0	38	371.585	694.934	889.475	0	889.475	1053.29	1053.29
30	1.16238	1288.12	24.7696	MD-D silty SAND to SAND w/silt - No C	0	38	388.278	726.153	929.436	0	929.436	1108.59	1108.59
31	1.16238	1349.13	25.7565	MD-D silty SAND to SAND w/silt - No C	0	38	403.695	754.987	966.339	0	966.339	1161.12	1161.12
32	1.16238	1406.83	26.7518	MD-D silty SAND to SAND w/silt - No C	0	38	417.828	781.417	1000.17	0	1000.17	1210.79	1210.79
33	1.16238	1461.12	27.7558	MD-D silty SAND to SAND w/silt - No C	0	38	430.664	805.423	1030.89	0	1030.89	1257.53	1257.53
34	1.16238	1479.57	28.7692	MD-D silty SAND to SAND w/silt - No C	0	38	432.729	809.285	1035.83	0	1035.83	1273.43	1273.43
35	1.16238	1448.3	29.7925	MD-D silty SAND to SAND w/silt - No C	0	38	420.239	785.926	1005.94	0	1005.94	1246.54	1246.54
36	1.16238	1412.99	30.8264	MD-D silty SAND to SAND w/silt - No C	0	38	406.678	760.565	973.477	0	973.477	1216.16	1216.16
37	1.16238	1373.85	31.8716	MD-D silty SAND to SAND w/silt - No C	0	38	392.139	733.375	938.674	0	938.674	1182.49	1182.49

38	1.16238	1330.75	32.9287	MD-D silty SAND to SAND w/silt - No C	0	38	376.612	704.336	901.506	0	901.506	1145.41	1145.41
39	1.11363	1218.6	33.976	VD Till - No C	0	40	377.185	705.407	840.675	0	840.675	1094.86	1094.86
40	1.11363	1133.84	35.0135	VD Till - No C	0	40	347.761	650.379	775.09	0	775.09	1018.72	1018.72
41	1.11363	1043.77	36.0645	VD Till - No C	0	40	317.139	593.11	706.842	0	706.842	937.802	937.802
42	1.11363	949.303	37.1296	VD Till - No C	0	40	285.656	534.231	636.672	0	636.672	852.944	852.944
43	1.11363	850.273	38.21	VD Till - No C	0	40	253.308	473.734	564.573	0	564.573	763.979	763.979
44	1.11363	746.469	39.3067	VD Till - No C	0	40	220.09	411.61	490.538	0	490.538	670.722	670.722
45	1.11363	637.667	40.4208	VD Till - No C	0	40	185.999	347.854	414.556	0	414.556	572.971	572.971
46	1.11363	523.616	41.5537	VD Till - No C	0	40	151.034	282.462	336.625	0	336.625	470.501	470.501
47	1.11363	404.039	42.7069	VD Till - No C	0	40	115.192	215.43	256.739	0	256.739	363.061	363.061
48	0.95346	246.622	43.7958	MD-D Wx Till - No C	0	36	73.2605	137.011	188.579	0	188.579	258.823	258.823
49	0.95346	150.835	44.819	MD-D Wx Till - No C	0	36	44.369	82.9784	114.21	0	114.21	158.299	158.299
50	0.95346	50.9753	45.8607	MD-D Wx Till - No C	0	36	14.8419	27.7571	38.2044	0	38.2044	53.499	53.499

A-A' - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

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	1.96535	43.8513	-0.894948	MD-D silty SAND to SAND w/silt	100	38	44.6767	117.977	23.0101	0	23.0101	22.3122	22.3122
2	1.96535	128.575	-0.126609	MD-D silty SAND to SAND w/silt	100	38	57.262	151.211	65.5473	0	65.5473	65.4208	65.4208
3	1.96535	240.29	0.641707	MD-D silty SAND to SAND w/silt	100	38	73.7976	194.877	121.437	0	121.437	122.263	122.263
4	1.96535	399.659	1.41014	MD-D silty SAND to SAND w/silt	100	38	97.3249	257.005	200.956	0	200.956	203.352	203.352
5	1.96535	553.818	2.17882	MD-D silty SAND to SAND w/silt	100	38	119.891	316.595	277.229	0	277.229	281.79	281.79
6	1.96535	702.007	2.9479	MD-D silty SAND to SAND w/silt	100	38	141.394	373.379	349.91	0	349.91	357.191	357.191
7	1.96535	844.214	3.71751	MD-D silty SAND to SAND w/silt	100	38	161.846	427.384	419.033	0	419.033	429.549	429.549
8	1.96535	980.427	4.48779	MD-D silty SAND to SAND w/silt	100	38	181.253	478.634	484.629	0	484.629	498.855	498.855
9	1.96535	1110.63	5.25889	MD-D silty SAND to SAND w/silt	100	38	199.627	527.152	546.73	0	546.73	565.104	565.104
10	1.96535	1234.8	6.03094	MD-D silty SAND to SAND w/silt	100	38	216.973	572.958	605.361	0	605.361	628.284	628.284
11	1.96535	1352.91	6.8041	MD-D silty SAND to SAND w/silt	100	38	233.3	616.072	660.544	0	660.544	688.38	688.38
12	1.96535	1464.93	7.5785	MD-D silty SAND to SAND w/silt	100	38	248.613	656.511	712.301	0	712.301	745.379	745.379
13	1.96535	1570.84	8.3543	MD-D silty SAND to SAND w/silt	100	38	262.92	694.291	760.66	0	760.66	799.271	799.271

14	1.96535	1670.6	9.13164	MD-D silty SAND to SAND w/silt	100	38	276.225	729.424	805.629	0	805.629	850.029	850.029
15	1.96535	1764.17	9.91068	MD-D silty SAND to SAND w/silt	100	38	288.532	761.924	847.225	0	847.225	897.637	897.637
16	1.96535	1851.51	10.6916	MD-D silty SAND to SAND w/silt	100	38	299.846	791.801	885.467	0	885.467	942.078	942.078
17	1.96535	1932.57	11.4745	MD-D silty SAND to SAND w/silt	100	38	310.17	819.063	920.359	0	920.359	983.32	983.32
18	1.96535	2007.3	12.2596	MD-D silty SAND to SAND w/silt	100	38	319.507	843.719	951.916	0	951.916	1021.34	1021.34
19	1.96535	2075.65	13.047	MD-D silty SAND to SAND w/silt	100	38	327.859	865.773	980.146	0	980.146	1056.12	1056.12
20	1.96535	2137.55	13.837	MD-D silty SAND to SAND w/silt	100	38	335.227	885.23	1005.05	0	1005.05	1087.62	1087.62
21	1.96535	2192.95	14.6296	MD-D silty SAND to SAND w/silt	100	38	341.612	902.092	1026.63	0	1026.63	1115.8	1115.8
22	1.96535	2241.77	15.4251	MD-D silty SAND to SAND w/silt	100	38	347.016	916.361	1044.89	0	1044.89	1140.64	1140.64
23	1.96535	2283.93	16.2237	MD-D silty SAND to SAND w/silt	100	38	351.437	928.037	1059.84	0	1059.84	1162.1	1162.1
24	1.96535	2319.37	17.0255	MD-D silty SAND to SAND w/silt	100	38	354.876	937.117	1071.46	0	1071.46	1180.13	1180.13
25	1.96535	2348	17.8308	MD-D silty SAND to SAND w/silt	100	38	357.33	943.599	1079.76	0	1079.76	1194.69	1194.69
26	1.96535	2369.72	18.6398	MD-D silty SAND to SAND w/silt	100	38	358.799	947.476	1084.72	0	1084.72	1205.75	1205.75
27	1.96535	2384.43	19.4526	MD-D silty SAND to SAND w/silt	100	38	359.278	948.743	1086.34	0	1086.34	1213.24	1213.24
28	1.96535	2392.04	20.2695	MD-D silty SAND to SAND w/silt	100	38	358.766	947.391	1084.61	0	1084.61	1217.1	1217.1

29	1.96535	2392.44	21.0907	MD-D silty SAND to SAND w/silt	100	38	357.26	943.412	1079.52	0	1079.52	1217.31	1217.31
30	1.96535	2385.49	21.9165	MD-D silty SAND to SAND w/silt	100	38	354.753	936.792	1071.04	0	1071.04	1213.77	1213.77
31	1.96535	2371.09	22.7471	MD-D silty SAND to SAND w/silt	100	38	351.242	927.52	1059.18	0	1059.18	1206.45	1206.45
32	1.96535	2349.09	23.5828	MD-D silty SAND to SAND w/silt	100	38	346.721	915.582	1043.9	0	1043.9	1195.25	1195.25
33	1.96535	2319.35	24.4239	MD-D silty SAND to SAND w/silt	100	38	341.183	900.959	1025.18	0	1025.18	1180.12	1180.12
34	1.96535	2281.72	25.2706	MD-D silty SAND to SAND w/silt	100	38	334.623	883.635	1003.01	0	1003.01	1160.97	1160.97
35	1.96535	2236.03	26.1232	MD-D silty SAND to SAND w/silt	100	38	327.032	863.589	977.351	0	977.351	1137.73	1137.73
36	1.96535	2182.11	26.9821	MD-D silty SAND to SAND w/silt	100	38	318.402	840.8	948.183	0	948.183	1110.29	1110.29
37	1.96535	2119.77	27.8477	MD-D silty SAND to SAND w/silt	100	38	308.724	815.244	915.472	0	915.472	1078.57	1078.57
38	1.96535	2048.81	28.7202	MD-D silty SAND to SAND w/silt	100	38	297.988	786.895	879.184	0	879.184	1042.46	1042.46
39	1.96535	1969.02	29.6	MD-D silty SAND to SAND w/silt	100	38	286.185	755.726	839.29	0	839.29	1001.87	1001.87
40	1.96535	1879.7	30.4876	MD-D silty SAND to SAND w/silt	100	38	273.242	721.547	795.542	0	795.542	956.414	956.414
41	1.96535	1767.66	31.3834	MD-D silty SAND to SAND w/silt	100	38	257.499	679.976	742.335	0	742.335	899.411	899.411
42	1.96535	1639.9	32.2877	MD-D silty SAND to SAND w/silt	100	38	239.893	633.482	682.825	0	682.825	834.407	834.407
43	1.96535	1502.29	33.2012	MD-D silty SAND to SAND w/silt	100	38	221.196	584.11	619.63	0	619.63	764.384	764.384

44	1.96535	1354.5	34.1244	MD-D silty SAND to SAND w/silt	100	38	201.395	531.823	552.709	0	552.709	689.189	689.189
45	1.96535	1196.2	35.0577	MD-D silty SAND to SAND w/silt	100	38	180.477	476.583	482.005	0	482.005	608.648	608.648
46	1.96535	1026.86	36.0018	MD-D silty SAND to SAND w/silt	100	38	158.401	418.288	407.39	0	407.39	522.483	522.483
47	1.96535	828.543	36.9574	MD-D silty SAND to SAND w/silt	100	38	132.993	351.193	321.512	0	321.512	421.575	421.575
48	1.96535	606.834	37.9252	MD-D silty SAND to SAND w/silt	100	38	105.013	277.306	226.942	0	226.942	308.766	308.766
49	1.96535	372.981	38.9058	MD-D silty SAND to SAND w/silt	100	38	75.8949	200.415	128.526	0	128.526	189.778	189.778
50	1.96535	126.479	39.9002	MD-D silty SAND to SAND w/silt	100	38	45.6228	120.476	26.2077	0	26.2077	64.3545	64.3545

A-A' - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

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	1.96535	43.8513	-0.894948	MD-D silty SAND to SAND w/silt	100	38	44.6767	117.977	23.0101	0	23.0101	22.3122	22.3122
2	1.96535	128.575	-0.126609	MD-D silty SAND to SAND w/silt	100	38	57.262	151.211	65.5473	0	65.5473	65.4208	65.4208
3	1.96535	240.29	0.641707	MD-D silty SAND to SAND w/silt	100	38	73.7976	194.877	121.437	0	121.437	122.263	122.263
4	1.96535	399.659	1.41014	MD-D silty SAND to SAND w/silt	100	38	97.3249	257.005	200.956	0	200.956	203.352	203.352
5	1.96535	553.818	2.17882	MD-D silty SAND to SAND w/silt	100	38	119.891	316.595	277.229	0	277.229	281.79	281.79
6	1.96535	702.007	2.9479	MD-D silty SAND to SAND w/silt	100	38	141.394	373.379	349.91	0	349.91	357.191	357.191
7	1.96535	844.214	3.71751	MD-D silty SAND to SAND w/silt	100	38	161.846	427.384	419.033	0	419.033	429.549	429.549
8	1.96535	980.427	4.48779	MD-D silty SAND to SAND w/silt	100	38	181.253	478.634	484.629	0	484.629	498.855	498.855
9	1.96535	1110.63	5.25889	MD-D silty SAND to SAND w/silt	100	38	199.627	527.152	546.73	0	546.73	565.104	565.104
10	1.96535	1234.8	6.03094	MD-D silty SAND to SAND w/silt	100	38	216.973	572.958	605.361	0	605.361	628.284	628.284
11	1.96535	1352.91	6.8041	MD-D silty SAND to SAND w/silt	100	38	233.3	616.072	660.544	0	660.544	688.38	688.38
12	1.96535	1464.93	7.5785	MD-D silty SAND to SAND w/silt	100	38	248.613	656.511	712.301	0	712.301	745.379	745.379
13	1.96535	1570.84	8.3543	MD-D silty SAND to SAND w/silt	100	38	262.92	694.291	760.66	0	760.66	799.271	799.271

14	1.96535	1670.6	9.13164	MD-D silty SAND to SAND w/silt	100	38	276.225	729.424	805.629	0	805.629	850.029	850.029
15	1.96535	1764.17	9.91068	MD-D silty SAND to SAND w/silt	100	38	288.532	761.924	847.225	0	847.225	897.637	897.637
16	1.96535	1851.51	10.6916	MD-D silty SAND to SAND w/silt	100	38	299.846	791.801	885.467	0	885.467	942.078	942.078
17	1.96535	1932.57	11.4745	MD-D silty SAND to SAND w/silt	100	38	310.17	819.063	920.359	0	920.359	983.32	983.32
18	1.96535	2007.3	12.2596	MD-D silty SAND to SAND w/silt	100	38	319.507	843.719	951.916	0	951.916	1021.34	1021.34
19	1.96535	2075.65	13.047	MD-D silty SAND to SAND w/silt	100	38	327.859	865.773	980.146	0	980.146	1056.12	1056.12
20	1.96535	2137.55	13.837	MD-D silty SAND to SAND w/silt	100	38	335.227	885.23	1005.05	0	1005.05	1087.62	1087.62
21	1.96535	2192.95	14.6296	MD-D silty SAND to SAND w/silt	100	38	341.612	902.092	1026.63	0	1026.63	1115.8	1115.8
22	1.96535	2241.77	15.4251	MD-D silty SAND to SAND w/silt	100	38	347.016	916.361	1044.89	0	1044.89	1140.64	1140.64
23	1.96535	2283.93	16.2237	MD-D silty SAND to SAND w/silt	100	38	351.437	928.037	1059.84	0	1059.84	1162.1	1162.1
24	1.96535	2319.37	17.0255	MD-D silty SAND to SAND w/silt	100	38	354.876	937.117	1071.46	0	1071.46	1180.13	1180.13
25	1.96535	2348	17.8308	MD-D silty SAND to SAND w/silt	100	38	357.33	943.599	1079.76	0	1079.76	1194.69	1194.69
26	1.96535	2369.72	18.6398	MD-D silty SAND to SAND w/silt	100	38	358.799	947.476	1084.72	0	1084.72	1205.75	1205.75
27	1.96535	2384.43	19.4526	MD-D silty SAND to SAND w/silt	100	38	359.278	948.743	1086.34	0	1086.34	1213.24	1213.24
28	1.96535	2392.04	20.2695	MD-D silty SAND to SAND w/silt	100	38	358.766	947.391	1084.61	0	1084.61	1217.1	1217.1

29	1.96535	2392.44	21.0907	MD-D silty SAND to SAND w/silt	100	38	357.26	943.412	1079.52	0	1079.52	1217.31	1217.31
30	1.96535	2385.49	21.9165	MD-D silty SAND to SAND w/silt	100	38	354.753	936.792	1071.04	0	1071.04	1213.77	1213.77
31	1.96535	2371.09	22.7471	MD-D silty SAND to SAND w/silt	100	38	351.242	927.52	1059.18	0	1059.18	1206.45	1206.45
32	1.96535	2349.09	23.5828	MD-D silty SAND to SAND w/silt	100	38	346.721	915.582	1043.9	0	1043.9	1195.25	1195.25
33	1.96535	2319.35	24.4239	MD-D silty SAND to SAND w/silt	100	38	341.183	900.959	1025.18	0	1025.18	1180.12	1180.12
34	1.96535	2281.72	25.2706	MD-D silty SAND to SAND w/silt	100	38	334.623	883.635	1003.01	0	1003.01	1160.97	1160.97
35	1.96535	2236.03	26.1232	MD-D silty SAND to SAND w/silt	100	38	327.032	863.589	977.351	0	977.351	1137.73	1137.73
36	1.96535	2182.11	26.9821	MD-D silty SAND to SAND w/silt	100	38	318.402	840.8	948.183	0	948.183	1110.29	1110.29
37	1.96535	2119.77	27.8477	MD-D silty SAND to SAND w/silt	100	38	308.724	815.244	915.472	0	915.472	1078.57	1078.57
38	1.96535	2048.81	28.7202	MD-D silty SAND to SAND w/silt	100	38	297.988	786.895	879.184	0	879.184	1042.46	1042.46
39	1.96535	1969.02	29.6	MD-D silty SAND to SAND w/silt	100	38	286.185	755.726	839.29	0	839.29	1001.87	1001.87
40	1.96535	1879.7	30.4876	MD-D silty SAND to SAND w/silt	100	38	273.242	721.547	795.542	0	795.542	956.414	956.414
41	1.96535	1767.66	31.3834	MD-D silty SAND to SAND w/silt	100	38	257.499	679.976	742.335	0	742.335	899.411	899.411
42	1.96535	1639.9	32.2877	MD-D silty SAND to SAND w/silt	100	38	239.893	633.482	682.825	0	682.825	834.407	834.407
43	1.96535	1502.29	33.2012	MD-D silty SAND to SAND w/silt	100	38	221.196	584.11	619.63	0	619.63	764.384	764.384

44	1.96535	1354.5	34.1244	MD-D silty SAND to SAND w/silt	100	38	201.395	531.823	552.709	0	552.709	689.189	689.189
45	1.96535	1196.2	35.0577	MD-D silty SAND to SAND w/silt	100	38	180.477	476.583	482.005	0	482.005	608.648	608.648
46	1.96535	1026.86	36.0018	MD-D silty SAND to SAND w/silt	100	38	158.401	418.288	407.39	0	407.39	522.483	522.483
47	1.96535	828.543	36.9574	MD-D silty SAND to SAND w/silt	100	38	132.993	351.193	321.512	0	321.512	421.575	421.575
48	1.96535	606.834	37.9252	MD-D silty SAND to SAND w/silt	100	38	105.013	277.306	226.942	0	226.942	308.766	308.766
49	1.96535	372.981	38.9058	MD-D silty SAND to SAND w/silt	100	38	75.8949	200.415	128.526	0	128.526	189.778	189.778
50	1.96535	126.479	39.9002	MD-D silty SAND to SAND w/silt	100	38	45.6228	120.476	26.2077	0	26.2077	64.3545	64.3545

A-A' - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.15135

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	2.33896	64.9535	-1.41303	MD-D silty SAND to SAND w/silt	100	38	107.497	123.767	30.4204	0	30.4204	27.7687	27.7687
2	2.33896	190.744	-0.663494	MD-D silty SAND to SAND w/silt	100	38	143.319	165.01	83.2096	0	83.2096	81.5498	81.5498
3	2.33896	311.37	0.0859272	MD-D silty SAND to SAND w/silt	100	38	177.01	203.8	132.858	0	132.858	133.123	133.123
4	2.33896	507.005	0.835364	MD-D silty SAND to SAND w/silt	100	38	231.657	266.718	213.389	0	213.389	216.767	216.767
5	2.33896	731.766	1.58494	MD-D silty SAND to SAND w/silt	100	38	293.645	338.088	304.739	0	304.739	312.864	312.864
6	2.33896	948.287	2.33479	MD-D silty SAND to SAND w/silt	100	38	352.233	405.543	391.077	0	391.077	405.439	405.439
7	2.33896	1156.56	3.08504	MD-D silty SAND to SAND w/silt	100	38	407.502	469.177	472.524	0	472.524	494.487	494.487
8	2.33896	1356.56	3.83583	MD-D silty SAND to SAND w/silt	100	38	459.528	529.077	549.195	0	549.195	580.006	580.006
9	2.33896	1548.29	4.58727	MD-D silty SAND to SAND w/silt	100	38	508.381	585.325	621.186	0	621.186	661.976	661.976
10	2.33896	1731.7	5.3395	MD-D silty SAND to SAND w/silt	100	38	554.132	638	688.609	0	688.609	740.4	740.4
11	2.33896	1906.77	6.09266	MD-D silty SAND to SAND w/silt	100	38	596.844	687.176	751.549	0	751.549	815.256	815.256
12	2.33896	2073.47	6.84687	MD-D silty SAND to SAND w/silt	100	38	636.575	732.921	810.103	0	810.103	886.538	886.538
13	2.33896	2231.77	7.60228	MD-D silty SAND to SAND w/silt	100	38	673.384	775.301	864.346	0	864.346	954.222	954.222

14	2.33896	2381.61	8.35903	MD-D silty SAND to SAND w/silt	100	38	707.325	814.379	914.362	0	914.362	1018.29	1018.29
15	2.33896	2522.96	9.11724	MD-D silty SAND to SAND w/silt	100	38	738.447	850.211	960.226	0	960.226	1078.73	1078.73
16	2.33896	2655.76	9.87707	MD-D silty SAND to SAND w/silt	100	38	766.799	882.854	1002.01	0	1002.01	1135.52	1135.52
17	2.33896	2779.95	10.6387	MD-D silty SAND to SAND w/silt	100	38	792.425	912.359	1039.77	0	1039.77	1188.62	1188.62
18	2.33896	2895.47	11.4021	MD-D silty SAND to SAND w/silt	100	38	815.37	938.776	1073.58	0	1073.58	1238.02	1238.02
19	2.33896	3002.25	12.1677	MD-D silty SAND to SAND w/silt	100	38	835.671	962.15	1103.5	0	1103.5	1283.69	1283.69
20	2.33896	3100.23	12.9355	MD-D silty SAND to SAND w/silt	100	38	853.368	982.525	1129.58	0	1129.58	1325.58	1325.58
21	2.33896	3189.31	13.7056	MD-D silty SAND to SAND w/silt	100	38	868.496	999.943	1151.87	0	1151.87	1363.68	1363.68
22	2.33896	3269.42	14.4783	MD-D silty SAND to SAND w/silt	100	38	881.088	1014.44	1170.43	0	1170.43	1397.94	1397.94
23	2.33896	3340.47	15.2536	MD-D silty SAND to SAND w/silt	100	38	891.177	1026.06	1185.3	0	1185.3	1428.32	1428.32
24	2.33896	3402.35	16.0319	MD-D silty SAND to SAND w/silt	100	38	898.792	1034.82	1196.52	0	1196.52	1454.79	1454.79
25	2.33896	3454.95	16.8132	MD-D silty SAND to SAND w/silt	100	38	903.961	1040.78	1204.14	0	1204.14	1477.29	1477.29
26	2.33896	3498.18	17.5977	MD-D silty SAND to SAND w/silt	100	38	906.711	1043.94	1208.19	0	1208.19	1495.78	1495.78
27	2.33896	3531.9	18.3856	MD-D silty SAND to SAND w/silt	100	38	907.066	1044.35	1208.71	0	1208.71	1510.2	1510.2
28	2.33896	3555.99	19.1772	MD-D silty SAND to SAND w/silt	100	38	905.05	1042.03	1205.74	0	1205.74	1520.51	1520.51

29	2.33896	3570.32	19.9726	MD-D silty SAND to SAND w/silt	100	38	900.684	1037	1199.31	0	1199.31	1526.64	1526.64
30	2.33896	3574.73	20.772	MD-D silty SAND to SAND w/silt	100	38	893.987	1029.29	1189.44	0	1189.44	1528.53	1528.53
31	2.33896	3569.07	21.5757	MD-D silty SAND to SAND w/silt	100	38	884.98	1018.92	1176.17	0	1176.17	1526.12	1526.12
32	2.33896	3553.18	22.3839	MD-D silty SAND to SAND w/silt	100	38	873.68	1005.91	1159.52	0	1159.52	1519.33	1519.33
33	2.33896	3526.88	23.1967	MD-D silty SAND to SAND w/silt	100	38	860.104	990.281	1139.51	0	1139.51	1508.09	1508.09
34	2.33896	3489.97	24.0146	MD-D silty SAND to SAND w/silt	100	38	844.267	972.047	1116.17	0	1116.17	1492.32	1492.32
35	2.33896	3437.43	24.8377	MD-D silty SAND to SAND w/silt	100	38	825.112	949.993	1087.94	0	1087.94	1469.86	1469.86
36	2.33896	3352.82	25.6663	MD-D silty SAND to SAND w/silt	100	38	799.138	920.087	1049.66	0	1049.66	1433.68	1433.68
37	2.33896	3254.52	26.5007	MD-D silty SAND to SAND w/silt	100	38	770.514	887.131	1007.48	0	1007.48	1391.66	1391.66
38	2.33896	3144.75	27.3412	MD-D silty SAND to SAND w/silt	100	38	739.795	851.763	962.21	0	962.21	1344.72	1344.72
39	2.33896	3023.22	28.1882	MD-D silty SAND to SAND w/silt	100	38	706.99	813.993	913.869	0	913.869	1292.77	1292.77
40	2.33896	2885.36	29.0419	MD-D silty SAND to SAND w/silt	100	38	671.198	772.784	861.126	0	861.126	1233.82	1233.82
41	2.33896	2703.8	29.9027	MD-D silty SAND to SAND w/silt	100	38	626.813	721.681	795.713	0	795.713	1156.19	1156.19
42	2.33896	2503.36	30.771	MD-D silty SAND to SAND w/silt	100	38	579.228	666.894	725.591	0	725.591	1070.48	1070.48
43	2.33896	2289.94	31.6473	MD-D silty SAND to SAND w/silt	100	38	529.771	609.952	652.709	0	652.709	979.229	979.229

44	2.33896	2063.18	32.5319	MD-D silty SAND to SAND w/silt	100	38	478.454	550.868	577.083	0	577.083	882.266	882.266
45	2.33896	1822.69	33.4253	MD-D silty SAND to SAND w/silt	100	38	425.289	489.656	498.738	0	498.738	779.433	779.433
46	2.33896	1567.98	34.3279	MD-D silty SAND to SAND w/silt	100	38	370.277	426.318	417.667	0	417.667	670.518	670.518
47	2.33896	1267.18	35.2404	MD-D silty SAND to SAND w/silt	100	38	307.268	353.773	324.814	0	324.814	541.893	541.893
48	2.33896	924.437	36.1633	MD-D silty SAND to SAND w/silt	100	38	237.383	273.311	221.828	0	221.828	395.333	395.333
49	2.33896	566.051	37.0972	MD-D silty SAND to SAND w/silt	100	38	165.962	191.08	116.577	0	116.577	242.081	242.081
50	2.33896	191.438	38.0428	MD-D silty SAND to SAND w/silt	100	38	93.0271	107.107	9.09625	0	9.09625	81.8889	81.8889

A-A' - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 2.23218

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	1.94313	43.1487	-0.969694	MD-D silty SAND to SAND w/silt - No C	0	38	7.81846	17.4522	22.3378	0	22.3378	22.2055	22.2055
2	1.94313	126.522	-0.198179	MD-D silty SAND to SAND w/silt - No C	0	38	22.8176	50.933	65.1912	0	65.1912	65.1123	65.1123
3	1.94313	211.902	0.5733	MD-D silty SAND to SAND w/silt - No C	0	38	38.0362	84.9036	108.672	0	108.672	109.052	109.052
4	1.94313	355.015	1.34488	MD-D silty SAND to SAND w/silt - No C	0	38	63.4272	141.581	181.216	0	181.216	182.705	182.705
5	1.94313	506.19	2.11671	MD-D silty SAND to SAND w/silt - No C	0	38	90.016	200.932	257.181	0	257.181	260.508	260.508
6	1.94313	651.507	2.88892	MD-D silty SAND to SAND w/silt - No C	0	38	115.32	257.416	329.477	0	329.477	335.297	335.297
7	1.94313	790.954	3.66166	MD-D silty SAND to SAND w/silt - No C	0	38	139.356	311.068	398.148	0	398.148	407.066	407.066
8	1.94313	924.518	4.43506	MD-D silty SAND to SAND w/silt - No C	0	38	162.137	361.918	463.233	0	463.233	475.809	475.809
9	1.94313	1052.18	5.20928	MD-D silty SAND to SAND w/silt - No C	0	38	183.675	409.996	524.771	0	524.771	541.517	541.517
10	1.94313	1173.93	5.98445	MD-D silty SAND to SAND w/silt - No C	0	38	203.984	455.329	582.793	0	582.793	604.177	604.177
11	1.94313	1289.73	6.76072	MD-D silty SAND to SAND w/silt - No C	0	38	223.074	497.942	637.336	0	637.336	663.781	663.781

12	1.94313	1399.56	7.53824	MD-D silty SAND to SAND w/silt - No C	0	38	240.956	537.858	688.428	0	688.428	720.314	720.314
13	1.94313	1503.38	8.31716	MD-D silty SAND to SAND w/silt - No C	0	38	257.64	575.098	736.093	0	736.093	773.757	773.757
14	1.94313	1601.18	9.09764	MD-D silty SAND to SAND w/silt - No C	0	38	273.133	609.682	780.359	0	780.359	824.096	824.096
15	1.94313	1692.9	9.87981	MD-D silty SAND to SAND w/silt - No C	0	38	287.444	641.626	821.245	0	821.245	871.307	871.307
16	1.94313	1778.5	10.6639	MD-D silty SAND to SAND w/silt - No C	0	38	300.58	670.948	858.775	0	858.775	915.374	915.374
17	1.94313	1857.94	11.4499	MD-D silty SAND to SAND w/silt - No C	0	38	312.546	697.66	892.963	0	892.963	956.267	956.267
18	1.94313	1931.17	12.2382	MD-D silty SAND to SAND w/silt - No C	0	38	323.35	721.776	923.831	0	923.831	993.967	993.967
19	1.94313	1998.14	13.0288	MD-D silty SAND to SAND w/silt - No C	0	38	332.996	743.307	951.387	0	951.387	1028.44	1028.44
20	1.94313	2058.79	13.822	MD-D silty SAND to SAND w/silt - No C	0	38	341.487	762.261	975.649	0	975.649	1059.66	1059.66
21	1.94313	2113.04	14.6178	MD-D silty SAND to SAND w/silt - No C	0	38	348.828	778.646	996.621	0	996.621	1087.6	1087.6
22	1.94313	2160.85	15.4166	MD-D silty SAND to SAND w/silt - No C	0	38	355.021	792.47	1014.31	0	1014.31	1112.21	1112.21
23	1.94313	2202.12	16.2184	MD-D silty SAND to SAND w/silt - No C	0	38	360.067	803.735	1028.74	0	1028.74	1133.47	1133.47
24	1.94313	2236.8	17.0235	MD-D silty SAND to SAND w/silt - No C	0	38	363.97	812.446	1039.88	0	1039.88	1151.32	1151.32

25	1.94313	2264.78	17.8321	MD-D silty SAND to SAND w/silt - No C	0	38	366.729	818.605	1047.77	0	1047.77	1165.74	1165.74
26	1.94313	2285.99	18.6444	MD-D silty SAND to SAND w/silt - No C	0	38	368.344	822.21	1052.38	0	1052.38	1176.66	1176.66
27	1.94313	2300.32	19.4606	MD-D silty SAND to SAND w/silt - No C	0	38	368.815	823.262	1053.73	0	1053.73	1184.05	1184.05
28	1.94313	2307.67	20.2809	MD-D silty SAND to SAND w/silt - No C	0	38	368.141	821.757	1051.8	0	1051.8	1187.84	1187.84
29	1.94313	2307.94	21.1056	MD-D silty SAND to SAND w/silt - No C	0	38	366.32	817.692	1046.6	0	1046.6	1187.99	1187.99
30	1.94313	2301.01	21.9349	MD-D silty SAND to SAND w/silt - No C	0	38	363.348	811.059	1038.11	0	1038.11	1184.43	1184.43
31	1.94313	2286.75	22.7691	MD-D silty SAND to SAND w/silt - No C	0	38	359.224	801.853	1026.32	0	1026.32	1177.1	1177.1
32	1.94313	2265.03	23.6084	MD-D silty SAND to SAND w/silt - No C	0	38	353.943	790.064	1011.24	0	1011.24	1165.93	1165.93
33	1.94313	2235.71	24.4531	MD-D silty SAND to SAND w/silt - No C	0	38	347.5	775.682	992.829	0	992.829	1150.85	1150.85
34	1.94313	2198.64	25.3035	MD-D silty SAND to SAND w/silt - No C	0	38	339.89	758.695	971.084	0	971.084	1131.77	1131.77
35	1.94313	2153.66	26.1599	MD-D silty SAND to SAND w/silt - No C	0	38	331.106	739.089	945.988	0	945.988	1108.63	1108.63
36	1.94313	2100.58	27.0227	MD-D silty SAND to SAND w/silt - No C	0	38	321.143	716.849	917.525	0	917.525	1081.32	1081.32
37	1.94313	2039.24	27.8921	MD-D silty SAND to SAND w/silt - No C	0	38	309.992	691.959	885.666	0	885.666	1049.74	1049.74

38	1.94313	1969.42	28.7686	MD-D silty SAND to SAND w/silt - No C	0	38	297.647	664.401	850.396	0	850.396	1013.82	1013.82
39	1.94313	1890.92	29.6525	MD-D silty SAND to SAND w/silt - No C	0	38	284.096	634.153	811.678	0	811.678	973.411	973.411
40	1.94313	1803.51	30.5442	MD-D silty SAND to SAND w/silt - No C	0	38	269.331	601.195	769.494	0	769.494	928.421	928.421
41	1.94313	1705.77	31.4442	MD-D silty SAND to SAND w/silt - No C	0	38	253.167	565.115	723.313	0	723.313	878.115	878.115
42	1.94313	1584.41	32.3529	MD-D silty SAND to SAND w/silt - No C	0	38	233.674	521.603	667.621	0	667.621	815.646	815.646
43	1.94313	1449.16	33.2709	MD-D silty SAND to SAND w/silt - No C	0	38	212.35	474.003	606.695	0	606.695	746.029	746.029
44	1.94313	1303.9	34.1986	MD-D silty SAND to SAND w/silt - No C	0	38	189.802	423.672	542.273	0	542.273	671.256	671.256
45	1.94313	1148.31	35.1367	MD-D silty SAND to SAND w/silt - No C	0	38	166.018	370.583	474.323	0	474.323	591.161	591.161
46	1.94313	982.023	36.0856	MD-D silty SAND to SAND w/silt - No C	0	38	140.986	314.707	402.806	0	402.806	505.561	505.561
47	1.94313	804.229	37.0462	MD-D silty SAND to SAND w/silt - No C	0	38	114.631	255.878	327.508	0	327.508	414.035	414.035
48	1.94313	596.361	38.0191	MD-D silty SAND to SAND w/silt - No C	0	38	84.3727	188.335	241.058	0	241.058	307.023	307.023
49	1.94313	366.571	39.0051	MD-D silty SAND to SAND w/silt - No C	0	38	51.4649	114.879	147.039	0	147.039	188.722	188.722
50	1.94313	124.312	40.0051	MD-D silty SAND to SAND w/silt - No C	0	38	17.3147	38.6495	49.4692	0	49.4692	64.0006	64.0006

A-A' Post Const - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

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	1.96535	43.8513	-0.894948	MD-D silty SAND to SAND w/silt	100	38	44.6767	117.977	23.0101	0	23.0101	22.3122	22.3122
2	1.96535	128.575	-0.126609	MD-D silty SAND to SAND w/silt	100	38	57.262	151.211	65.5473	0	65.5473	65.4208	65.4208
3	1.96535	240.29	0.641707	MD-D silty SAND to SAND w/silt	100	38	73.7976	194.877	121.437	0	121.437	122.263	122.263
4	1.96535	399.659	1.41014	MD-D silty SAND to SAND w/silt	100	38	97.3249	257.005	200.956	0	200.956	203.352	203.352
5	1.96535	553.818	2.17882	MD-D silty SAND to SAND w/silt	100	38	119.891	316.595	277.229	0	277.229	281.79	281.79
6	1.96535	702.007	2.9479	MD-D silty SAND to SAND w/silt	100	38	141.394	373.379	349.91	0	349.91	357.191	357.191
7	1.96535	844.214	3.71751	MD-D silty SAND to SAND w/silt	100	38	161.846	427.384	419.033	0	419.033	429.549	429.549
8	1.96535	980.427	4.48779	MD-D silty SAND to SAND w/silt	100	38	181.253	478.634	484.629	0	484.629	498.855	498.855
9	1.96535	1110.63	5.25889	MD-D silty SAND to SAND w/silt	100	38	199.627	527.152	546.73	0	546.73	565.104	565.104
10	1.96535	1234.8	6.03094	MD-D silty SAND to SAND w/silt	100	38	216.973	572.958	605.361	0	605.361	628.284	628.284
11	1.96535	1352.91	6.8041	MD-D silty SAND to SAND w/silt	100	38	233.3	616.072	660.544	0	660.544	688.38	688.38
12	1.96535	1464.93	7.5785	MD-D silty SAND to SAND w/silt	100	38	248.613	656.511	712.301	0	712.301	745.379	745.379
13	1.96535	1570.84	8.3543	MD-D silty SAND to SAND w/silt	100	38	262.92	694.291	760.66	0	760.66	799.271	799.271

14	1.96535	1670.6	9.13164	MD-D silty SAND to SAND w/silt	100	38	276.225	729.424	805.629	0	805.629	850.029	850.029
15	1.96535	1764.17	9.91068	MD-D silty SAND to SAND w/silt	100	38	288.532	761.924	847.225	0	847.225	897.637	897.637
16	1.96535	1851.51	10.6916	MD-D silty SAND to SAND w/silt	100	38	299.846	791.801	885.467	0	885.467	942.078	942.078
17	1.96535	1932.57	11.4745	MD-D silty SAND to SAND w/silt	100	38	310.17	819.063	920.359	0	920.359	983.32	983.32
18	1.96535	2007.3	12.2596	MD-D silty SAND to SAND w/silt	100	38	319.507	843.719	951.916	0	951.916	1021.34	1021.34
19	1.96535	2075.65	13.047	MD-D silty SAND to SAND w/silt	100	38	327.859	865.773	980.146	0	980.146	1056.12	1056.12
20	1.96535	2137.55	13.837	MD-D silty SAND to SAND w/silt	100	38	335.227	885.23	1005.05	0	1005.05	1087.62	1087.62
21	1.96535	2192.95	14.6296	MD-D silty SAND to SAND w/silt	100	38	341.612	902.092	1026.63	0	1026.63	1115.8	1115.8
22	1.96535	2241.77	15.4251	MD-D silty SAND to SAND w/silt	100	38	347.016	916.361	1044.89	0	1044.89	1140.64	1140.64
23	1.96535	2283.93	16.2237	MD-D silty SAND to SAND w/silt	100	38	351.437	928.037	1059.84	0	1059.84	1162.1	1162.1
24	1.96535	2319.37	17.0255	MD-D silty SAND to SAND w/silt	100	38	354.876	937.117	1071.46	0	1071.46	1180.13	1180.13
25	1.96535	2348	17.8308	MD-D silty SAND to SAND w/silt	100	38	357.33	943.599	1079.76	0	1079.76	1194.69	1194.69
26	1.96535	2369.72	18.6398	MD-D silty SAND to SAND w/silt	100	38	358.799	947.476	1084.72	0	1084.72	1205.75	1205.75
27	1.96535	2384.43	19.4526	MD-D silty SAND to SAND w/silt	100	38	359.278	948.743	1086.34	0	1086.34	1213.24	1213.24
28	1.96535	2392.04	20.2695	MD-D silty SAND to SAND w/silt	100	38	358.766	947.391	1084.61	0	1084.61	1217.1	1217.1

29	1.96535	2392.44	21.0907	MD-D silty SAND to SAND w/silt	100	38	357.26	943.412	1079.52	0	1079.52	1217.31	1217.31
30	1.96535	2385.49	21.9165	MD-D silty SAND to SAND w/silt	100	38	354.753	936.792	1071.04	0	1071.04	1213.77	1213.77
31	1.96535	2371.09	22.7471	MD-D silty SAND to SAND w/silt	100	38	351.242	927.52	1059.18	0	1059.18	1206.45	1206.45
32	1.96535	2349.09	23.5828	MD-D silty SAND to SAND w/silt	100	38	346.721	915.582	1043.9	0	1043.9	1195.25	1195.25
33	1.96535	2319.35	24.4239	MD-D silty SAND to SAND w/silt	100	38	341.183	900.959	1025.18	0	1025.18	1180.12	1180.12
34	1.96535	2281.72	25.2706	MD-D silty SAND to SAND w/silt	100	38	334.623	883.635	1003.01	0	1003.01	1160.97	1160.97
35	1.96535	2236.03	26.1232	MD-D silty SAND to SAND w/silt	100	38	327.032	863.589	977.351	0	977.351	1137.73	1137.73
36	1.96535	2182.11	26.9821	MD-D silty SAND to SAND w/silt	100	38	318.402	840.8	948.183	0	948.183	1110.29	1110.29
37	1.96535	2119.77	27.8477	MD-D silty SAND to SAND w/silt	100	38	308.724	815.244	915.472	0	915.472	1078.57	1078.57
38	1.96535	2048.81	28.7202	MD-D silty SAND to SAND w/silt	100	38	297.988	786.895	879.184	0	879.184	1042.46	1042.46
39	1.96535	1969.02	29.6	MD-D silty SAND to SAND w/silt	100	38	286.185	755.726	839.29	0	839.29	1001.87	1001.87
40	1.96535	1879.7	30.4876	MD-D silty SAND to SAND w/silt	100	38	273.242	721.547	795.542	0	795.542	956.414	956.414
41	1.96535	1767.66	31.3834	MD-D silty SAND to SAND w/silt	100	38	257.499	679.976	742.335	0	742.335	899.411	899.411
42	1.96535	1639.9	32.2877	MD-D silty SAND to SAND w/silt	100	38	239.893	633.482	682.825	0	682.825	834.407	834.407
43	1.96535	1502.29	33.2012	MD-D silty SAND to SAND w/silt	100	38	221.196	584.11	619.63	0	619.63	764.384	764.384

44	1.96535	1354.5	34.1244	MD-D silty SAND to SAND w/silt	100	38	201.395	531.823	552.709	0	552.709	689.189	689.189
45	1.96535	1196.2	35.0577	MD-D silty SAND to SAND w/silt	100	38	180.477	476.583	482.005	0	482.005	608.648	608.648
46	1.96535	1026.86	36.0018	MD-D silty SAND to SAND w/silt	100	38	158.401	418.288	407.39	0	407.39	522.483	522.483
47	1.96535	828.543	36.9574	MD-D silty SAND to SAND w/silt	100	38	132.993	351.193	321.512	0	321.512	421.575	421.575
48	1.96535	606.834	37.9252	MD-D silty SAND to SAND w/silt	100	38	105.013	277.306	226.942	0	226.942	308.766	308.766
49	1.96535	372.981	38.9058	MD-D silty SAND to SAND w/silt	100	38	75.8949	200.415	128.526	0	128.526	189.778	189.778
50	1.96535	126.479	39.9002	MD-D silty SAND to SAND w/silt	100	38	45.6228	120.476	26.2077	0	26.2077	64.3545	64.3545

A-A' Post Const - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

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	1.96535	43.8513	-0.894948	MD-D silty SAND to SAND w/silt	100	38	44.6767	117.977	23.0101	0	23.0101	22.3122	22.3122
2	1.96535	128.575	-0.126609	MD-D silty SAND to SAND w/silt	100	38	57.262	151.211	65.5473	0	65.5473	65.4208	65.4208
3	1.96535	240.29	0.641707	MD-D silty SAND to SAND w/silt	100	38	73.7976	194.877	121.437	0	121.437	122.263	122.263
4	1.96535	399.659	1.41014	MD-D silty SAND to SAND w/silt	100	38	97.3249	257.005	200.956	0	200.956	203.352	203.352
5	1.96535	553.818	2.17882	MD-D silty SAND to SAND w/silt	100	38	119.891	316.595	277.229	0	277.229	281.79	281.79
6	1.96535	702.007	2.9479	MD-D silty SAND to SAND w/silt	100	38	141.394	373.379	349.91	0	349.91	357.191	357.191
7	1.96535	844.214	3.71751	MD-D silty SAND to SAND w/silt	100	38	161.846	427.384	419.033	0	419.033	429.549	429.549
8	1.96535	980.427	4.48779	MD-D silty SAND to SAND w/silt	100	38	181.253	478.634	484.629	0	484.629	498.855	498.855
9	1.96535	1110.63	5.25889	MD-D silty SAND to SAND w/silt	100	38	199.627	527.152	546.73	0	546.73	565.104	565.104
10	1.96535	1234.8	6.03094	MD-D silty SAND to SAND w/silt	100	38	216.973	572.958	605.361	0	605.361	628.284	628.284
11	1.96535	1352.91	6.8041	MD-D silty SAND to SAND w/silt	100	38	233.3	616.072	660.544	0	660.544	688.38	688.38
12	1.96535	1464.93	7.5785	MD-D silty SAND to SAND w/silt	100	38	248.613	656.511	712.301	0	712.301	745.379	745.379
13	1.96535	1570.84	8.3543	MD-D silty SAND to SAND w/silt	100	38	262.92	694.291	760.66	0	760.66	799.271	799.271

14	1.96535	1670.6	9.13164	MD-D silty SAND to SAND w/silt	100	38	276.225	729.424	805.629	0	805.629	850.029	850.029
15	1.96535	1764.17	9.91068	MD-D silty SAND to SAND w/silt	100	38	288.532	761.924	847.225	0	847.225	897.637	897.637
16	1.96535	1851.51	10.6916	MD-D silty SAND to SAND w/silt	100	38	299.846	791.801	885.467	0	885.467	942.078	942.078
17	1.96535	1932.57	11.4745	MD-D silty SAND to SAND w/silt	100	38	310.17	819.063	920.359	0	920.359	983.32	983.32
18	1.96535	2007.3	12.2596	MD-D silty SAND to SAND w/silt	100	38	319.507	843.719	951.916	0	951.916	1021.34	1021.34
19	1.96535	2075.65	13.047	MD-D silty SAND to SAND w/silt	100	38	327.859	865.773	980.146	0	980.146	1056.12	1056.12
20	1.96535	2137.55	13.837	MD-D silty SAND to SAND w/silt	100	38	335.227	885.23	1005.05	0	1005.05	1087.62	1087.62
21	1.96535	2192.95	14.6296	MD-D silty SAND to SAND w/silt	100	38	341.612	902.092	1026.63	0	1026.63	1115.8	1115.8
22	1.96535	2241.77	15.4251	MD-D silty SAND to SAND w/silt	100	38	347.016	916.361	1044.89	0	1044.89	1140.64	1140.64
23	1.96535	2283.93	16.2237	MD-D silty SAND to SAND w/silt	100	38	351.437	928.037	1059.84	0	1059.84	1162.1	1162.1
24	1.96535	2319.37	17.0255	MD-D silty SAND to SAND w/silt	100	38	354.876	937.117	1071.46	0	1071.46	1180.13	1180.13
25	1.96535	2348	17.8308	MD-D silty SAND to SAND w/silt	100	38	357.33	943.599	1079.76	0	1079.76	1194.69	1194.69
26	1.96535	2369.72	18.6398	MD-D silty SAND to SAND w/silt	100	38	358.799	947.476	1084.72	0	1084.72	1205.75	1205.75
27	1.96535	2384.43	19.4526	MD-D silty SAND to SAND w/silt	100	38	359.278	948.743	1086.34	0	1086.34	1213.24	1213.24
28	1.96535	2392.04	20.2695	MD-D silty SAND to SAND w/silt	100	38	358.766	947.391	1084.61	0	1084.61	1217.1	1217.1

29	1.96535	2392.44	21.0907	MD-D silty SAND to SAND w/silt	100	38	357.26	943.412	1079.52	0	1079.52	1217.31	1217.31
30	1.96535	2385.49	21.9165	MD-D silty SAND to SAND w/silt	100	38	354.753	936.792	1071.04	0	1071.04	1213.77	1213.77
31	1.96535	2371.09	22.7471	MD-D silty SAND to SAND w/silt	100	38	351.242	927.52	1059.18	0	1059.18	1206.45	1206.45
32	1.96535	2349.09	23.5828	MD-D silty SAND to SAND w/silt	100	38	346.721	915.582	1043.9	0	1043.9	1195.25	1195.25
33	1.96535	2319.35	24.4239	MD-D silty SAND to SAND w/silt	100	38	341.183	900.959	1025.18	0	1025.18	1180.12	1180.12
34	1.96535	2281.72	25.2706	MD-D silty SAND to SAND w/silt	100	38	334.623	883.635	1003.01	0	1003.01	1160.97	1160.97
35	1.96535	2236.03	26.1232	MD-D silty SAND to SAND w/silt	100	38	327.032	863.589	977.351	0	977.351	1137.73	1137.73
36	1.96535	2182.11	26.9821	MD-D silty SAND to SAND w/silt	100	38	318.402	840.8	948.183	0	948.183	1110.29	1110.29
37	1.96535	2119.77	27.8477	MD-D silty SAND to SAND w/silt	100	38	308.724	815.244	915.472	0	915.472	1078.57	1078.57
38	1.96535	2048.81	28.7202	MD-D silty SAND to SAND w/silt	100	38	297.988	786.895	879.184	0	879.184	1042.46	1042.46
39	1.96535	1969.02	29.6	MD-D silty SAND to SAND w/silt	100	38	286.185	755.726	839.29	0	839.29	1001.87	1001.87
40	1.96535	1879.7	30.4876	MD-D silty SAND to SAND w/silt	100	38	273.242	721.547	795.542	0	795.542	956.414	956.414
41	1.96535	1767.66	31.3834	MD-D silty SAND to SAND w/silt	100	38	257.499	679.976	742.335	0	742.335	899.411	899.411
42	1.96535	1639.9	32.2877	MD-D silty SAND to SAND w/silt	100	38	239.893	633.482	682.825	0	682.825	834.407	834.407
43	1.96535	1502.29	33.2012	MD-D silty SAND to SAND w/silt	100	38	221.196	584.11	619.63	0	619.63	764.384	764.384

44	1.96535	1354.5	34.1244	MD-D silty SAND to SAND w/silt	100	38	201.395	531.823	552.709	0	552.709	689.189	689.189
45	1.96535	1196.2	35.0577	MD-D silty SAND to SAND w/silt	100	38	180.477	476.583	482.005	0	482.005	608.648	608.648
46	1.96535	1026.86	36.0018	MD-D silty SAND to SAND w/silt	100	38	158.401	418.288	407.39	0	407.39	522.483	522.483
47	1.96535	828.543	36.9574	MD-D silty SAND to SAND w/silt	100	38	132.993	351.193	321.512	0	321.512	421.575	421.575
48	1.96535	606.834	37.9252	MD-D silty SAND to SAND w/silt	100	38	105.013	277.306	226.942	0	226.942	308.766	308.766
49	1.96535	372.981	38.9058	MD-D silty SAND to SAND w/silt	100	38	75.8949	200.415	128.526	0	128.526	189.778	189.778
50	1.96535	126.479	39.9002	MD-D silty SAND to SAND w/silt	100	38	45.6228	120.476	26.2077	0	26.2077	64.3545	64.3545

A-A' Post Const - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.15135

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	2.33896	64.9535	-1.41303	MD-D silty SAND to SAND w/silt	100	38	107.497	123.767	30.4204	0	30.4204	27.7687	27.7687
2	2.33896	190.744	-0.663494	MD-D silty SAND to SAND w/silt	100	38	143.319	165.01	83.2096	0	83.2096	81.5498	81.5498
3	2.33896	311.37	0.0859272	MD-D silty SAND to SAND w/silt	100	38	177.01	203.8	132.858	0	132.858	133.123	133.123
4	2.33896	507.005	0.835364	MD-D silty SAND to SAND w/silt	100	38	231.657	266.718	213.389	0	213.389	216.767	216.767
5	2.33896	731.766	1.58494	MD-D silty SAND to SAND w/silt	100	38	293.645	338.088	304.739	0	304.739	312.864	312.864
6	2.33896	948.287	2.33479	MD-D silty SAND to SAND w/silt	100	38	352.233	405.543	391.077	0	391.077	405.439	405.439
7	2.33896	1156.56	3.08504	MD-D silty SAND to SAND w/silt	100	38	407.502	469.177	472.524	0	472.524	494.487	494.487
8	2.33896	1356.56	3.83583	MD-D silty SAND to SAND w/silt	100	38	459.528	529.077	549.195	0	549.195	580.006	580.006
9	2.33896	1548.29	4.58727	MD-D silty SAND to SAND w/silt	100	38	508.381	585.325	621.186	0	621.186	661.976	661.976
10	2.33896	1731.7	5.3395	MD-D silty SAND to SAND w/silt	100	38	554.132	638	688.609	0	688.609	740.4	740.4
11	2.33896	1906.77	6.09266	MD-D silty SAND to SAND w/silt	100	38	596.844	687.176	751.549	0	751.549	815.256	815.256
12	2.33896	2073.47	6.84687	MD-D silty SAND to SAND w/silt	100	38	636.575	732.921	810.103	0	810.103	886.538	886.538
13	2.33896	2231.77	7.60228	MD-D silty SAND to SAND w/silt	100	38	673.384	775.301	864.346	0	864.346	954.222	954.222

14	2.33896	2381.61	8.35903	MD-D silty SAND to SAND w/silt	100	38	707.325	814.379	914.362	0	914.362	1018.29	1018.29
15	2.33896	2522.96	9.11724	MD-D silty SAND to SAND w/silt	100	38	738.447	850.211	960.226	0	960.226	1078.73	1078.73
16	2.33896	2655.76	9.87707	MD-D silty SAND to SAND w/silt	100	38	766.799	882.854	1002.01	0	1002.01	1135.52	1135.52
17	2.33896	2779.95	10.6387	MD-D silty SAND to SAND w/silt	100	38	792.425	912.359	1039.77	0	1039.77	1188.62	1188.62
18	2.33896	2895.47	11.4021	MD-D silty SAND to SAND w/silt	100	38	815.37	938.776	1073.58	0	1073.58	1238.02	1238.02
19	2.33896	3002.25	12.1677	MD-D silty SAND to SAND w/silt	100	38	835.671	962.15	1103.5	0	1103.5	1283.69	1283.69
20	2.33896	3100.23	12.9355	MD-D silty SAND to SAND w/silt	100	38	853.368	982.525	1129.58	0	1129.58	1325.58	1325.58
21	2.33896	3189.31	13.7056	MD-D silty SAND to SAND w/silt	100	38	868.496	999.943	1151.87	0	1151.87	1363.68	1363.68
22	2.33896	3269.42	14.4783	MD-D silty SAND to SAND w/silt	100	38	881.088	1014.44	1170.43	0	1170.43	1397.94	1397.94
23	2.33896	3340.47	15.2536	MD-D silty SAND to SAND w/silt	100	38	891.177	1026.06	1185.3	0	1185.3	1428.32	1428.32
24	2.33896	3402.35	16.0319	MD-D silty SAND to SAND w/silt	100	38	898.792	1034.82	1196.52	0	1196.52	1454.79	1454.79
25	2.33896	3454.95	16.8132	MD-D silty SAND to SAND w/silt	100	38	903.961	1040.78	1204.14	0	1204.14	1477.29	1477.29
26	2.33896	3498.18	17.5977	MD-D silty SAND to SAND w/silt	100	38	906.711	1043.94	1208.19	0	1208.19	1495.78	1495.78
27	2.33896	3531.9	18.3856	MD-D silty SAND to SAND w/silt	100	38	907.066	1044.35	1208.71	0	1208.71	1510.2	1510.2
28	2.33896	3555.99	19.1772	MD-D silty SAND to SAND w/silt	100	38	905.05	1042.03	1205.74	0	1205.74	1520.51	1520.51

29	2.33896	3570.32	19.9726	MD-D silty SAND to SAND w/silt	100	38	900.684	1037	1199.31	0	1199.31	1526.64	1526.64
30	2.33896	3574.73	20.772	MD-D silty SAND to SAND w/silt	100	38	893.987	1029.29	1189.44	0	1189.44	1528.53	1528.53
31	2.33896	3569.07	21.5757	MD-D silty SAND to SAND w/silt	100	38	884.98	1018.92	1176.17	0	1176.17	1526.12	1526.12
32	2.33896	3553.18	22.3839	MD-D silty SAND to SAND w/silt	100	38	873.68	1005.91	1159.52	0	1159.52	1519.33	1519.33
33	2.33896	3526.88	23.1967	MD-D silty SAND to SAND w/silt	100	38	860.104	990.281	1139.51	0	1139.51	1508.09	1508.09
34	2.33896	3489.97	24.0146	MD-D silty SAND to SAND w/silt	100	38	844.267	972.047	1116.17	0	1116.17	1492.32	1492.32
35	2.33896	3437.43	24.8377	MD-D silty SAND to SAND w/silt	100	38	825.112	949.993	1087.94	0	1087.94	1469.86	1469.86
36	2.33896	3352.82	25.6663	MD-D silty SAND to SAND w/silt	100	38	799.138	920.087	1049.66	0	1049.66	1433.68	1433.68
37	2.33896	3254.52	26.5007	MD-D silty SAND to SAND w/silt	100	38	770.514	887.131	1007.48	0	1007.48	1391.66	1391.66
38	2.33896	3144.75	27.3412	MD-D silty SAND to SAND w/silt	100	38	739.795	851.763	962.21	0	962.21	1344.72	1344.72
39	2.33896	3023.22	28.1882	MD-D silty SAND to SAND w/silt	100	38	706.99	813.993	913.869	0	913.869	1292.77	1292.77
40	2.33896	2885.36	29.0419	MD-D silty SAND to SAND w/silt	100	38	671.198	772.784	861.126	0	861.126	1233.82	1233.82
41	2.33896	2703.8	29.9027	MD-D silty SAND to SAND w/silt	100	38	626.813	721.681	795.713	0	795.713	1156.19	1156.19
42	2.33896	2503.36	30.771	MD-D silty SAND to SAND w/silt	100	38	579.228	666.894	725.591	0	725.591	1070.48	1070.48
43	2.33896	2289.94	31.6473	MD-D silty SAND to SAND w/silt	100	38	529.771	609.952	652.709	0	652.709	979.229	979.229

44	2.33896	2063.18	32.5319	MD-D silty SAND to SAND w/silt	100	38	478.454	550.868	577.083	0	577.083	882.266	882.266
45	2.33896	1822.69	33.4253	MD-D silty SAND to SAND w/silt	100	38	425.289	489.656	498.738	0	498.738	779.433	779.433
46	2.33896	1567.98	34.3279	MD-D silty SAND to SAND w/silt	100	38	370.277	426.318	417.667	0	417.667	670.518	670.518
47	2.33896	1267.18	35.2404	MD-D silty SAND to SAND w/silt	100	38	307.268	353.773	324.814	0	324.814	541.893	541.893
48	2.33896	924.437	36.1633	MD-D silty SAND to SAND w/silt	100	38	237.383	273.311	221.828	0	221.828	395.333	395.333
49	2.33896	566.051	37.0972	MD-D silty SAND to SAND w/silt	100	38	165.962	191.08	116.577	0	116.577	242.081	242.081
50	2.33896	191.438	38.0428	MD-D silty SAND to SAND w/silt	100	38	93.0271	107.107	9.09625	0	9.09625	81.8889	81.8889

A-A' Post Const - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.97388

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	0.803883	12.0801	-8.87975	MD-D Wx Till - No C	0	36	5.86814	11.583	15.9425	0	15.9425	15.0257	15.0257
2	0.803883	46.2225	-7.79881	MD-D Wx Till - No C	0	36	22.286	43.9899	60.547	0	60.547	57.4947	57.4947
3	0.803883	100.747	-6.72065	MD-D Wx Till - No C	0	36	48.2179	95.1763	130.998	0	130.998	125.316	125.316
4	0.803883	154.375	-5.64488	MD-D Wx Till - No C	0	36	73.3494	144.783	199.277	0	199.277	192.027	192.027
5	0.803883	206.474	-4.5711	MD-D Wx Till - No C	0	36	97.4016	192.259	264.621	0	264.621	256.834	256.834
6	0.803883	257.049	-3.49893	MD-D Wx Till - No C	0	36	120.402	237.66	327.111	0	327.111	319.749	319.749
7	0.803883	306.108	-2.42798	MD-D Wx Till - No C	0	36	142.378	281.038	386.816	0	386.816	380.779	380.779
8	0.803883	353.655	-1.35789	MD-D Wx Till - No C	0	36	163.353	322.44	443.799	0	443.799	439.927	439.927
9	0.803883	399.693	-0.288263	MD-D Wx Till - No C	0	36	183.349	361.908	498.123	0	498.123	497.201	497.201
10	0.803883	444.222	0.781259	MD-D Wx Till - No C	0	36	202.384	399.482	549.84	0	549.84	552.6	552.6
11	0.803883	487.243	1.85105	MD-D Wx Till - No C	0	36	220.478	435.197	598.997	0	598.997	606.123	606.123
12	0.803883	528.753	2.92149	MD-D Wx Till - No C	0	36	237.646	469.084	645.638	0	645.638	657.766	657.766
13	0.803883	568.75	3.99296	MD-D Wx Till - No C	0	36	253.902	501.173	689.805	0	689.805	707.529	707.529
14	0.803883	607.227	5.06582	MD-D Wx Till - No C	0	36	269.262	531.49	731.533	0	731.533	755.402	755.402
15	0.803883	644.178	6.14047	MD-D Wx Till - No C	0	36	283.734	560.057	770.853	0	770.853	801.378	801.378
16	0.803883	679.595	7.21729	MD-D Wx Till - No C	0	36	297.331	586.896	807.793	0	807.793	845.446	845.446
17	0.803883	713.468	8.29668	MD-D Wx Till - No C	0	36	310.061	612.024	842.379	0	842.379	887.593	887.593
18	0.803883	745.784	9.37905	MD-D Wx Till - No C	0	36	321.932	635.456	874.629	0	874.629	927.804	927.804
19	0.803883	776.529	10.4648	MD-D Wx Till - No C	0	36	332.951	657.205	904.566	0	904.566	966.063	966.063
20	0.803883	805.689	11.5544	MD-D Wx Till - No C	0	36	343.123	677.283	932.2	0	932.2	1002.35	1002.35
21	0.803883	833.245	12.6482	MD-D Wx Till - No C	0	36	352.452	695.698	957.547	0	957.547	1036.64	1036.64
22	0.803883	859.177	13.7467	MD-D Wx Till - No C	0	36	360.942	712.457	980.613	0	980.613	1068.91	1068.91
23	0.803883	883.464	14.8505	MD-D Wx Till - No C	0	36	368.595	727.563	1001.4	0	1001.4	1099.14	1099.14
24	0.803883	906.081	15.9598	MD-D Wx Till - No C	0	36	375.412	741.018	1019.92	0	1019.92	1127.29	1127.29
25	0.803883	927.001	17.0754	MD-D Wx Till - No C	0	36	381.392	752.823	1036.17	0	1036.17	1153.32	1153.32
26	0.803883	946.194	18.1977	MD-D Wx Till - No C	0	36	386.536	762.975	1050.15	0	1050.15	1177.22	1177.22
27	0.803883	963.628	19.3272	MD-D Wx Till - No C	0	36	390.839	771.47	1061.84	0	1061.84	1198.92	1198.92
28	0.803883	979.266	20.4647	MD-D Wx Till - No C	0	36	394.3	778.301	1071.24	0	1071.24	1218.38	1218.38
29	0.803883	993.071	21.6106	MD-D Wx Till - No C	0	36	396.913	783.459	1078.34	0	1078.34	1235.57	1235.57
30	0.803883	1005	22.7657	MD-D Wx Till - No C	0	36	398.673	786.932	1083.12	0	1083.12	1250.42	1250.42
31	0.803883	1015	23.9306	MD-D Wx Till - No C	0	36	399.572	788.707	1085.56	0	1085.56	1262.88	1262.88
32	0.810453	1031.42	25.111	Structural Fill - No C	0	36	399.599	788.76	1085.64	0	1085.64	1272.91	1272.91

33	0.810453	1037.49	26.3078	Structural Fill - No C	0	36	398.736	787.058	1083.29	0	1083.29	1280.43	1280.43
34	0.810453	1041.42	27.517	Structural Fill - No C	0	36	396.97	783.571	1078.49	0	1078.49	1285.29	1285.29
35	0.810453	1041.75	28.7397	Structural Fill - No C	0	36	393.759	777.234	1069.77	0	1069.77	1285.7	1285.7
36	0.810453	1008.48	29.977	Structural Fill - No C	0	36	377.899	745.928	1026.68	0	1026.68	1244.66	1244.66
37	0.810453	959.91	31.2298	Structural Fill - No C	0	36	356.508	703.704	968.564	0	968.564	1184.73	1184.73
38	0.810453	908.866	32.4995	Structural Fill - No C	0	36	334.462	660.187	908.67	0	908.67	1121.74	1121.74
39	0.810453	855.245	33.7873	Structural Fill - No C	0	36	311.752	615.361	846.971	0	846.971	1055.57	1055.57
40	0.810453	798.93	35.0949	Structural Fill - No C	0	36	288.37	569.207	783.446	0	783.446	986.077	986.077
41	0.810453	739.791	36.4238	Structural Fill - No C	0	36	264.304	521.704	718.065	0	718.065	913.096	913.096
42	0.810453	677.682	37.7758	Structural Fill - No C	0	36	239.545	472.834	650.8	0	650.8	836.449	836.449
43	0.810453	612.441	39.1531	Structural Fill - No C	0	36	214.082	422.573	581.622	0	581.622	755.932	755.932
44	0.810453	543.882	40.5579	Structural Fill - No C	0	36	187.906	370.903	510.504	0	510.504	671.319	671.319
45	0.810453	471.795	41.9928	Structural Fill - No C	0	36	161.004	317.802	437.417	0	437.417	582.349	582.349
46	0.810453	395.936	43.4609	Structural Fill - No C	0	36	133.367	263.251	362.334	0	362.334	488.722	488.722
47	0.810453	316.03	44.9656	Structural Fill - No C	0	36	104.988	207.234	285.233	0	285.233	390.095	390.095
48	0.810453	231.75	46.5109	Structural Fill - No C	0	36	172.255	340.011	467.985	0	467.985	649.574	649.574
49	0.810453	142.718	48.1016	Structural Fill - No C	0	36	150.426	296.923	408.679	0	408.679	576.341	576.341
50	0.810453	48.481	49.7431	Structural Fill - No C	0	36	118.022	232.961	320.643	0	320.643	460.023	460.023

Interslice Data

B-B' - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.3262

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	130.567	189.164	0	0	0
2	131.741	189.051	68.7931	0	0
3	132.916	188.96	166.509	0	0
4	134.091	188.889	289.149	0	0
5	135.266	188.838	432.955	0	0
6	136.44	188.808	594.39	0	0
7	137.615	188.799	770.132	0	0
8	138.79	188.81	957.057	0	0
9	139.965	188.842	1152.24	0	0
10	141.14	188.894	1352.92	0	0
11	142.314	188.967	1556.54	0	0
12	143.489	189.061	1760.69	0	0
13	144.664	189.176	1963.49	0	0
14	145.839	189.311	2164.33	0	0
15	147.013	189.468	2361.14	0	0
16	148.188	189.645	2551.78	0	0
17	149.363	189.844	2734.28	0	0
18	150.538	190.065	2906.79	0	0
19	151.713	190.307	3067.63	0	0
20	152.887	190.571	3215.24	0	0
21	154.062	190.858	3348.21	0	0
22	155.237	191.167	3465.28	0	0
23	156.412	191.499	3565.33	0	0
24	157.586	191.854	3647.36	0	0
25	158.761	192.233	3710.56	0	0
26	159.936	192.636	3754.24	0	0
27	161.111	193.063	3777.88	0	0
28	162.285	193.516	3781.1	0	0
29	163.46	193.994	3763.36	0	0
30	164.635	194.498	3720.19	0	0
31	165.81	195.029	3648.22	0	0
32	166.985	195.588	3545.03	0	0
33	168.159	196.175	3408.35	0	0
34	169.334	196.791	3236.07	0	0
35	170.509	197.437	3026.22	0	0
36	171.684	198.114	2777.02	0	0
37	172.858	198.823	2486.85	0	0
38	174.033	199.566	2161.9	0	0
39	175.208	200.343	1815.36	0	0
40	176.383	201.157	1450.06	0	0
41	177.558	202.008	1069.1	0	0
42	178.732	202.899	676.044	0	0
43	179.936	203.855	367.19	0	0
44	181.139	204.857	69.7463	0	0
45	182.343	205.909	-207.91	0	0
46	183.546	207.012	-456.579	0	0
47	184.75	208.171	-665.815	0	0
48	185.953	209.39	-823.697	0	0
49	187.157	210.674	-916.541	0	0
50	188.546	212.244	-935.279	0	0
51	189.935	213.918	0	0	0

B-B' - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.3262

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	130.567	189.164	0	0	0
2	131.741	189.051	68.7931	0	0
3	132.916	188.96	166.509	0	0
4	134.091	188.889	289.149	0	0
5	135.266	188.838	432.955	0	0
6	136.44	188.808	594.39	0	0
7	137.615	188.799	770.132	0	0
8	138.79	188.81	957.057	0	0
9	139.965	188.842	1152.24	0	0
10	141.14	188.894	1352.92	0	0
11	142.314	188.967	1556.54	0	0
12	143.489	189.061	1760.69	0	0
13	144.664	189.176	1963.49	0	0
14	145.839	189.311	2164.33	0	0
15	147.013	189.468	2361.14	0	0
16	148.188	189.645	2551.78	0	0
17	149.363	189.844	2734.28	0	0
18	150.538	190.065	2906.79	0	0
19	151.713	190.307	3067.63	0	0
20	152.887	190.571	3215.24	0	0
21	154.062	190.858	3348.21	0	0
22	155.237	191.167	3465.28	0	0
23	156.412	191.499	3565.33	0	0
24	157.586	191.854	3647.36	0	0
25	158.761	192.233	3710.56	0	0
26	159.936	192.636	3754.24	0	0
27	161.111	193.063	3777.88	0	0
28	162.285	193.516	3781.1	0	0
29	163.46	193.994	3763.36	0	0
30	164.635	194.498	3720.19	0	0
31	165.81	195.029	3648.22	0	0
32	166.985	195.588	3545.03	0	0
33	168.159	196.175	3408.35	0	0
34	169.334	196.791	3236.07	0	0
35	170.509	197.437	3026.22	0	0
36	171.684	198.114	2777.02	0	0
37	172.858	198.823	2486.85	0	0
38	174.033	199.566	2161.9	0	0
39	175.208	200.343	1815.36	0	0
40	176.383	201.157	1450.06	0	0
41	177.558	202.008	1069.1	0	0
42	178.732	202.899	676.044	0	0
43	179.936	203.855	367.19	0	0
44	181.139	204.857	69.7463	0	0
45	182.343	205.909	-207.91	0	0
46	183.546	207.012	-456.579	0	0
47	184.75	208.171	-665.815	0	0
48	185.953	209.39	-823.697	0	0
49	187.157	210.674	-916.541	0	0
50	188.546	212.244	-935.279	0	0
51	189.935	213.918	0	0	0

B-B' - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.08763

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	77.1522	170.288	0	0	0
2	79.6904	170.234	274.17	0	0
3	82.2285	170.214	612.044	0	0
4	84.7666	170.228	1004.08	0	0
5	87.3047	170.278	1463.96	0	0
6	89.8428	170.361	1986.55	0	0
7	92.381	170.479	2558.72	0	0
8	94.9191	170.632	3167.69	0	0
9	97.4572	170.82	3797.07	0	0
10	99.9953	171.042	4435.69	0	0
11	102.533	171.299	5074.62	0	0
12	105.072	171.592	5705.6	0	0
13	107.61	171.919	6321	0	0
14	110.148	172.283	6913.84	0	0
15	112.686	172.681	7477.73	0	0
16	115.224	173.116	8006.89	0	0
17	117.762	173.587	8496.1	0	0
18	120.3	174.094	8940.71	0	0
19	122.838	174.638	9336.62	0	0
20	125.377	175.219	9680.28	0	0
21	127.915	175.837	9968.65	0	0
22	130.453	176.493	10199.2	0	0
23	132.991	177.188	10370.1	0	0
24	135.529	177.921	10479.8	0	0
25	138.067	178.693	10527.3	0	0
26	140.605	179.505	10512.3	0	0
27	143.143	180.356	10434.8	0	0
28	145.681	181.249	10294.8	0	0
29	148.22	182.183	10089.5	0	0
30	150.758	183.16	9819.03	0	0
31	153.296	184.179	9484.34	0	0
32	155.834	185.241	9086.86	0	0
33	158.372	186.348	8628.62	0	0
34	160.91	187.5	8112.25	0	0
35	163.448	188.698	7540.01	0	0
36	165.986	189.943	6870.28	0	0
37	168.525	191.237	6075.31	0	0
38	171.063	192.58	5150.09	0	0
39	173.601	193.973	4093	0	0
40	176.139	195.419	2971.39	0	0
41	178.677	196.917	1822.75	0	0
42	181.215	198.47	671.767	0	0
43	183.753	200.08	-444.104	0	0
44	186.291	201.748	-1508.77	0	0
45	188.83	203.476	-2505.36	0	0
46	191.68	205.491	-3147.5	0	0
47	194.531	207.587	-3647.66	0	0
48	197.381	209.769	-3973.66	0	0
49	200.232	212.039	-4090.64	0	0
50	202.985	214.319	-4006.78	0	0
51	205.738	216.691	0	0	0

B-B' - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.8543

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	134.532	190.592	0	0	0
2	135.695	190.554	14.0222	0	0
3	136.857	190.533	53.8394	0	0
4	138.019	190.532	116.226	0	0
5	139.182	190.548	198.131	0	0
6	140.344	190.582	296.674	0	0
7	141.507	190.635	409.132	0	0
8	142.669	190.705	532.935	0	0
9	143.831	190.794	665.664	0	0
10	144.994	190.901	806.132	0	0
11	146.156	191.027	953.848	0	0
12	147.318	191.171	1106.51	0	0
13	148.481	191.334	1261.92	0	0
14	149.643	191.515	1418.01	0	0
15	150.806	191.715	1572.84	0	0
16	151.968	191.934	1724.57	0	0
17	153.13	192.173	1871.52	0	0
18	154.293	192.43	2012.09	0	0
19	155.455	192.708	2144.83	0	0
20	156.618	193.005	2268.38	0	0
21	157.78	193.322	2381.52	0	0
22	158.942	193.659	2483.12	0	0
23	160.105	194.017	2572.19	0	0
24	161.267	194.396	2647.85	0	0
25	162.429	194.796	2709.34	0	0
26	163.592	195.218	2756.47	0	0
27	164.754	195.662	2790.14	0	0
28	165.917	196.128	2808.07	0	0
29	167.079	196.617	2807.69	0	0
30	168.241	197.13	2786.53	0	0
31	169.404	197.666	2742.23	0	0
32	170.566	198.227	2672.55	0	0
33	171.728	198.813	2575.36	0	0
34	172.891	199.424	2448.66	0	0
35	174.053	200.063	2293.95	0	0
36	175.216	200.728	2116.3	0	0
37	176.378	201.422	1917.05	0	0
38	177.54	202.144	1697.69	0	0
39	178.703	202.897	1459.95	0	0
40	179.806	203.64	1253.85	0	0
41	180.909	204.413	1039.89	0	0
42	182.012	205.215	821.584	0	0
43	183.115	206.049	602.595	0	0
44	184.218	206.916	386.955	0	0
45	185.321	207.817	179.097	0	0
46	186.424	208.755	-16.1008	0	0
47	187.527	209.73	-193.256	0	0
48	188.63	210.744	-346.417	0	0
49	189.815	211.881	-498.318	0	0
50	190.999	213.069	-597.706	0	0
51	192.184	214.313	0	0	0

B-B' Post Const - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.33645

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	130.567	189.164	0	0	0
2	131.741	189.051	68.497	0	0
3	132.916	188.96	165.81	0	0
4	134.091	188.889	287.949	0	0
5	135.266	188.838	431.161	0	0
6	136.44	188.808	591.916	0	0
7	137.615	188.799	766.897	0	0
8	138.79	188.81	952.987	0	0
9	139.965	188.842	1147.26	0	0
10	141.14	188.894	1346.98	0	0
11	142.314	188.967	1549.57	0	0
12	143.489	189.061	1752.64	0	0
13	144.664	189.176	1954.3	0	0
14	145.839	189.311	2153.94	0	0
15	147.013	189.468	2349.5	0	0
16	148.188	189.645	2538.84	0	0
17	149.363	189.844	2719.98	0	0
18	150.538	190.065	2891.1	0	0
19	151.713	190.307	3050.5	0	0
20	152.887	190.571	3196.63	0	0
21	154.062	190.858	3328.09	0	0
22	155.237	191.167	3443.62	0	0
23	156.412	191.499	3542.09	0	0
24	157.586	191.854	3622.53	0	0
25	158.761	192.233	3684.11	0	0
26	159.936	192.636	3726.16	0	0
27	161.111	193.063	3748.14	0	0
28	162.285	193.516	3749.7	0	0
29	163.46	193.994	3730.28	0	0
30	164.635	194.498	3685.35	0	0
31	165.81	195.029	3611.52	0	0
32	166.985	195.588	3506.38	0	0
33	168.159	196.175	3367.66	0	0
34	169.334	196.791	3193.25	0	0
35	170.509	197.437	2981.19	0	0
36	171.684	198.114	2729.69	0	0
37	172.858	198.823	2437.14	0	0
38	174.033	199.566	2109.78	0	0
39	175.208	200.343	1760.86	0	0
40	176.383	201.157	1393.23	0	0
41	177.558	202.008	1010	0	0
42	178.732	202.899	614.717	0	0
43	179.946	203.864	301.502	0	0
44	181.16	204.875	2.93893	0	0
45	182.374	205.937	-271.866	0	0
46	183.588	207.051	-512.977	0	0
47	184.802	208.223	-709.133	0	0
48	186.016	209.456	-847.494	0	0
49	187.23	210.755	-913.337	0	0
50	188.373	212.044	-902.078	0	0
51	189.517	213.402	0	0	0

B-B' Post Const - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.33645

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	130.567	189.164	0	0	0
2	131.741	189.051	68.497	0	0
3	132.916	188.96	165.81	0	0
4	134.091	188.889	287.949	0	0
5	135.266	188.838	431.161	0	0
6	136.44	188.808	591.916	0	0
7	137.615	188.799	766.897	0	0
8	138.79	188.81	952.987	0	0
9	139.965	188.842	1147.26	0	0
10	141.14	188.894	1346.98	0	0
11	142.314	188.967	1549.57	0	0
12	143.489	189.061	1752.64	0	0
13	144.664	189.176	1954.3	0	0
14	145.839	189.311	2153.94	0	0
15	147.013	189.468	2349.5	0	0
16	148.188	189.645	2538.84	0	0
17	149.363	189.844	2719.98	0	0
18	150.538	190.065	2891.1	0	0
19	151.713	190.307	3050.5	0	0
20	152.887	190.571	3196.63	0	0
21	154.062	190.858	3328.09	0	0
22	155.237	191.167	3443.62	0	0
23	156.412	191.499	3542.09	0	0
24	157.586	191.854	3622.53	0	0
25	158.761	192.233	3684.11	0	0
26	159.936	192.636	3726.16	0	0
27	161.111	193.063	3748.14	0	0
28	162.285	193.516	3749.7	0	0
29	163.46	193.994	3730.28	0	0
30	164.635	194.498	3685.35	0	0
31	165.81	195.029	3611.52	0	0
32	166.985	195.588	3506.38	0	0
33	168.159	196.175	3367.66	0	0
34	169.334	196.791	3193.25	0	0
35	170.509	197.437	2981.19	0	0
36	171.684	198.114	2729.69	0	0
37	172.858	198.823	2437.14	0	0
38	174.033	199.566	2109.78	0	0
39	175.208	200.343	1760.86	0	0
40	176.383	201.157	1393.23	0	0
41	177.558	202.008	1010	0	0
42	178.732	202.899	614.717	0	0
43	179.946	203.864	301.502	0	0
44	181.16	204.875	2.93893	0	0
45	182.374	205.937	-271.866	0	0
46	183.588	207.051	-512.977	0	0
47	184.802	208.223	-709.133	0	0
48	186.016	209.456	-847.494	0	0
49	187.23	210.755	-913.337	0	0
50	188.373	212.044	-902.078	0	0
51	189.517	213.402	0	0	0

B-B' Post Const - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.08993

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	75.9833	169.996	0	0	0
2	78.3612	170.041	238.198	0	0
3	80.7391	170.115	515.798	0	0
4	83.117	170.215	825.969	0	0
5	85.4949	170.344	1167.29	0	0
6	87.8728	170.5	1550.38	0	0
7	90.2507	170.684	1968.39	0	0
8	92.6287	170.895	2413.22	0	0
9	95.0066	171.135	2876.8	0	0
10	97.3845	171.402	3348.61	0	0
11	99.7624	171.698	3821.87	0	0
12	102.14	172.021	4291.05	0	0
13	104.518	172.374	4751.03	0	0
14	106.896	172.754	5197.06	0	0
15	109.274	173.164	5624.78	0	0
16	111.652	173.602	6030.21	0	0
17	114.03	174.069	6409.72	0	0
18	116.408	174.565	6760.05	0	0
19	118.786	175.091	7078.3	0	0
20	121.164	175.647	7361.9	0	0
21	123.541	176.232	7608.63	0	0
22	125.919	176.848	7816.63	0	0
23	128.297	177.494	7984.35	0	0
24	130.675	178.171	8110.6	0	0
25	133.053	178.879	8194.52	0	0
26	135.431	179.619	8235.59	0	0
27	137.809	180.39	8233.62	0	0
28	140.187	181.194	8188.78	0	0
29	142.565	182.03	8101.57	0	0
30	144.943	182.899	7972.5	0	0
31	147.321	183.801	7799.28	0	0
32	149.698	184.738	7581.65	0	0
33	152.076	185.709	7320.5	0	0
34	154.454	186.714	7017.07	0	0
35	156.832	187.756	6672.99	0	0
36	159.21	188.833	6290.29	0	0
37	161.588	189.947	5871.39	0	0
38	163.966	191.099	5414.14	0	0
39	166.344	192.289	4873.56	0	0
40	168.722	193.517	4235.02	0	0
41	171.1	194.785	3495	0	0
42	173.478	196.094	2652.14	0	0
43	175.855	197.444	1764.13	0	0
44	178.233	198.836	865.34	0	0
45	180.611	200.272	-27.1419	0	0
46	182.989	201.752	-872.435	0	0
47	185.367	203.278	-1656	0	0
48	187.792	204.882	-2072.26	0	0
49	190.216	206.536	-2395.02	0	0
50	192.641	208.241	-2607.73	0	0
51	195.066	210	0	0	0

B-B' Post Const - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.87019

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	134.532	190.592	0	0	0
2	135.695	190.554	13.9102	0	0
3	136.857	190.533	53.4002	0	0
4	138.019	190.532	115.259	0	0
5	139.182	190.548	196.449	0	0
6	140.344	190.582	294.103	0	0
7	141.507	190.635	405.509	0	0
8	142.669	190.705	528.11	0	0
9	143.831	190.794	659.496	0	0
10	144.994	190.901	798.481	0	0
11	146.156	191.027	944.564	0	0
12	147.318	191.171	1095.45	0	0
13	148.481	191.334	1248.96	0	0
14	149.643	191.515	1403.03	0	0
15	150.806	191.715	1555.71	0	0
16	151.968	191.934	1705.2	0	0
17	153.13	192.173	1849.81	0	0
18	154.293	192.43	1987.96	0	0
19	155.455	192.708	2118.2	0	0
20	156.618	193.005	2239.17	0	0
21	157.78	193.322	2349.67	0	0
22	158.942	193.659	2448.58	0	0
23	160.105	194.017	2534.9	0	0
24	161.267	194.396	2607.78	0	0
25	162.429	194.796	2666.45	0	0
26	163.592	195.218	2710.7	0	0
27	164.754	195.662	2741.29	0	0
28	165.917	196.128	2755.93	0	0
29	167.079	196.617	2752.04	0	0
30	168.241	197.13	2727.16	0	0
31	169.404	197.666	2678.94	0	0
32	170.566	198.227	2605.15	0	0
33	171.728	198.813	2503.67	0	0
34	172.891	199.424	2372.5	0	0
35	174.053	200.063	2213.25	0	0
36	175.216	200.728	2031.14	0	0
37	176.378	201.422	1827.51	0	0
38	177.54	202.144	1603.87	0	0
39	178.703	202.897	1361.97	0	0
40	179.816	203.648	1150.14	0	0
41	180.93	204.428	931.818	0	0
42	182.044	205.239	710.916	0	0
43	183.157	206.082	491.493	0	0
44	184.271	206.959	277.995	0	0
45	185.384	207.87	75.2975	0	0
46	186.498	208.819	-111.242	0	0
47	187.612	209.806	-275.725	0	0
48	188.725	210.834	-411.637	0	0
49	189.679	211.748	-514.347	0	0
50	190.632	212.696	-580.35	0	0
51	191.586	213.678	0	0	0

A-A' - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	37.8113	155.238	0	0	0
2	39.7767	155.208	88.5118	0	0
3	41.742	155.203	201.336	0	0
4	43.7074	155.225	343.701	0	0
5	45.6727	155.274	525.256	0	0
6	47.6381	155.349	740.154	0	0
7	49.6035	155.45	982.63	0	0
8	51.5688	155.577	1247.2	0	0
9	53.5342	155.732	1528.67	0	0
10	55.4995	155.913	1822.11	0	0
11	57.4649	156.12	2122.84	0	0
12	59.4302	156.355	2426.46	0	0
13	61.3956	156.616	2728.81	0	0
14	63.3609	156.905	3026.01	0	0
15	65.3263	157.221	3314.38	0	0
16	67.2916	157.564	3590.52	0	0
17	69.257	157.935	3851.26	0	0
18	71.2223	158.334	4093.68	0	0
19	73.1877	158.761	4315.1	0	0
20	75.1531	159.217	4513.06	0	0
21	77.1184	159.701	4685.37	0	0
22	79.0838	160.214	4830.07	0	0
23	81.0491	160.756	4945.46	0	0
24	83.0145	161.328	5030.07	0	0
25	84.9798	161.93	5082.69	0	0
26	86.9452	162.562	5102.37	0	0
27	88.9105	163.225	5088.44	0	0
28	90.8759	163.919	5040.48	0	0
29	92.8412	164.645	4958.35	0	0
30	94.8066	165.403	4842.21	0	0
31	96.7719	166.194	4692.52	0	0
32	98.7373	167.018	4510.05	0	0
33	100.703	167.875	4295.87	0	0
34	102.668	168.768	4051.43	0	0
35	104.633	169.696	3778.51	0	0
36	106.599	170.66	3479.26	0	0
37	108.564	171.66	3156.26	0	0
38	110.529	172.699	2812.47	0	0
39	112.495	173.775	2451.33	0	0
40	114.46	174.892	2076.73	0	0
41	116.425	176.049	1693.22	0	0
42	118.391	177.248	1309.33	0	0
43	120.356	178.49	932.83	0	0
44	122.322	179.776	570.615	0	0
45	124.287	181.108	230.295	0	0
46	126.252	182.487	-79.7405	0	0
47	128.218	183.915	-350.184	0	0
48	130.183	185.394	-564.231	0	0
49	132.148	186.925	-705.376	0	0
50	134.114	188.511	-760.08	0	0
51	136.079	190.154	0	0	0

A-A' - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	37.8113	155.238	0	0	0
2	39.7767	155.208	88.5118	0	0
3	41.742	155.203	201.336	0	0
4	43.7074	155.225	343.701	0	0
5	45.6727	155.274	525.256	0	0
6	47.6381	155.349	740.154	0	0
7	49.6035	155.45	982.63	0	0
8	51.5688	155.577	1247.2	0	0
9	53.5342	155.732	1528.67	0	0
10	55.4995	155.913	1822.11	0	0
11	57.4649	156.12	2122.84	0	0
12	59.4302	156.355	2426.46	0	0
13	61.3956	156.616	2728.81	0	0
14	63.3609	156.905	3026.01	0	0
15	65.3263	157.221	3314.38	0	0
16	67.2916	157.564	3590.52	0	0
17	69.257	157.935	3851.26	0	0
18	71.2223	158.334	4093.68	0	0
19	73.1877	158.761	4315.1	0	0
20	75.1531	159.217	4513.06	0	0
21	77.1184	159.701	4685.37	0	0
22	79.0838	160.214	4830.07	0	0
23	81.0491	160.756	4945.46	0	0
24	83.0145	161.328	5030.07	0	0
25	84.9798	161.93	5082.69	0	0
26	86.9452	162.562	5102.37	0	0
27	88.9105	163.225	5088.44	0	0
28	90.8759	163.919	5040.48	0	0
29	92.8412	164.645	4958.35	0	0
30	94.8066	165.403	4842.21	0	0
31	96.7719	166.194	4692.52	0	0
32	98.7373	167.018	4510.05	0	0
33	100.703	167.875	4295.87	0	0
34	102.668	168.768	4051.43	0	0
35	104.633	169.696	3778.51	0	0
36	106.599	170.66	3479.26	0	0
37	108.564	171.66	3156.26	0	0
38	110.529	172.699	2812.47	0	0
39	112.495	173.775	2451.33	0	0
40	114.46	174.892	2076.73	0	0
41	116.425	176.049	1693.22	0	0
42	118.391	177.248	1309.33	0	0
43	120.356	178.49	932.83	0	0
44	122.322	179.776	570.615	0	0
45	124.287	181.108	230.295	0	0
46	126.252	182.487	-79.7405	0	0
47	128.218	183.915	-350.184	0	0
48	130.183	185.394	-564.231	0	0
49	132.148	186.925	-705.376	0	0
50	134.114	188.511	-760.08	0	0
51	136.079	190.154	0	0	0

A-A' - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.15135

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	35.504	154.819	0	0	0
2	37.843	154.761	228.232	0	0
3	40.1819	154.734	492.649	0	0
4	42.5209	154.738	787.022	0	0
5	44.8599	154.772	1127.6	0	0
6	47.1988	154.836	1514.77	0	0
7	49.5378	154.932	1938.62	0	0
8	51.8767	155.058	2389.84	0	0
9	54.2157	155.215	2859.71	0	0
10	56.5547	155.402	3340.1	0	0
11	58.8936	155.621	3823.41	0	0
12	61.2326	155.871	4302.6	0	0
13	63.5716	156.151	4771.09	0	0
14	65.9105	156.464	5222.85	0	0
15	68.2495	156.807	5652.29	0	0
16	70.5884	157.183	6054.31	0	0
17	72.9274	157.59	6424.23	0	0
18	75.2664	158.029	6757.86	0	0
19	77.6053	158.501	7051.4	0	0
20	79.9443	159.005	7301.51	0	0
21	82.2832	159.543	7505.26	0	0
22	84.6222	160.113	7660.11	0	0
23	86.9612	160.717	7763.97	0	0
24	89.3001	161.355	7815.13	0	0
25	91.6391	162.027	7812.3	0	0
26	93.978	162.734	7754.6	0	0
27	96.317	163.475	7641.55	0	0
28	98.656	164.253	7473.07	0	0
29	100.995	165.066	7249.52	0	0
30	103.334	165.916	6971.65	0	0
31	105.673	166.804	6640.67	0	0
32	108.012	167.729	6258.19	0	0
33	110.351	168.692	5826.28	0	0
34	112.69	169.694	5347.47	0	0
35	115.029	170.736	4824.74	0	0
36	117.368	171.819	4262.62	0	0
37	119.707	172.943	3670.14	0	0
38	122.046	174.109	3053.16	0	0
39	124.385	175.318	2417.58	0	0
40	126.723	176.572	1769.83	0	0
41	129.062	177.871	1118.26	0	0
42	131.401	179.216	480.346	0	0
43	133.74	180.608	-132.446	0	0
44	136.079	182.05	-709.74	0	0
45	138.418	183.542	-1240.39	0	0
46	140.757	185.086	-1712.41	0	0
47	143.096	186.683	-2112.91	0	0
48	145.435	188.335	-2415.42	0	0
49	147.774	190.045	-2592.87	0	0
50	150.113	191.814	-2627.34	0	0
51	152.452	193.644	0	0	0

A-A' - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 2.23218

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	37.0042	155.092	0	0	0
2	38.9473	155.059	15.9003	0	0
3	40.8904	155.052	60.5984	0	0
4	42.8336	155.071	132.265	0	0
5	44.7767	155.117	247.03	0	0
6	46.7198	155.189	403.165	0	0
7	48.663	155.287	594.547	0	0
8	50.6061	155.411	815.349	0	0
9	52.5492	155.562	1060.03	0	0
10	54.4924	155.739	1323.35	0	0
11	56.4355	155.943	1600.31	0	0
12	58.3786	156.173	1886.2	0	0
13	60.3218	156.43	2176.56	0	0
14	62.2649	156.714	2467.21	0	0
15	64.208	157.026	2754.2	0	0
16	66.1512	157.364	3033.84	0	0
17	68.0943	157.73	3302.66	0	0
18	70.0374	158.124	3557.47	0	0
19	71.9806	158.545	3795.31	0	0
20	73.9237	158.995	4013.45	0	0
21	75.8668	159.473	4209.42	0	0
22	77.81	159.979	4380.96	0	0
23	79.7531	160.515	4526.1	0	0
24	81.6962	161.081	4643.08	0	0
25	83.6394	161.675	4730.41	0	0
26	85.5825	162.301	4786.83	0	0
27	87.5256	162.956	4811.36	0	0
28	89.4688	163.643	4803.27	0	0
29	91.4119	164.361	4762.12	0	0
30	93.355	165.111	4687.71	0	0
31	95.2982	165.893	4580.18	0	0
32	97.2413	166.709	4439.92	0	0
33	99.1844	167.558	4267.66	0	0
34	101.128	168.442	4064.43	0	0
35	103.071	169.36	3831.63	0	0
36	105.014	170.315	3570.98	0	0
37	106.957	171.306	3284.6	0	0
38	108.9	172.334	2975	0	0
39	110.843	173.401	2645.1	0	0
40	112.786	174.508	2298.28	0	0
41	114.73	175.654	1938.4	0	0
42	116.673	176.842	1570.07	0	0
43	118.616	178.073	1201.55	0	0
44	120.559	179.348	839.918	0	0
45	122.502	180.669	492.016	0	0
46	124.445	182.036	165.4	0	0
47	126.388	183.452	-131.585	0	0
48	128.331	184.919	-389.593	0	0
49	130.275	186.438	-592.146	0	0
50	132.218	188.012	-723.729	0	0
51	134.161	189.643	0	0	0

A-A' Post Const - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	37.8113	155.238	0	0	0
2	39.7767	155.208	88.5118	0	0
3	41.742	155.203	201.336	0	0
4	43.7074	155.225	343.701	0	0
5	45.6727	155.274	525.256	0	0
6	47.6381	155.349	740.154	0	0
7	49.6035	155.45	982.63	0	0
8	51.5688	155.577	1247.2	0	0
9	53.5342	155.732	1528.67	0	0
10	55.4995	155.913	1822.11	0	0
11	57.4649	156.12	2122.84	0	0
12	59.4302	156.355	2426.46	0	0
13	61.3956	156.616	2728.81	0	0
14	63.3609	156.905	3026.01	0	0
15	65.3263	157.221	3314.38	0	0
16	67.2916	157.564	3590.52	0	0
17	69.257	157.935	3851.26	0	0
18	71.2223	158.334	4093.68	0	0
19	73.1877	158.761	4315.1	0	0
20	75.1531	159.217	4513.06	0	0
21	77.1184	159.701	4685.37	0	0
22	79.0838	160.214	4830.07	0	0
23	81.0491	160.756	4945.46	0	0
24	83.0145	161.328	5030.07	0	0
25	84.9798	161.93	5082.69	0	0
26	86.9452	162.562	5102.37	0	0
27	88.9105	163.225	5088.44	0	0
28	90.8759	163.919	5040.48	0	0
29	92.8412	164.645	4958.35	0	0
30	94.8066	165.403	4842.21	0	0
31	96.7719	166.194	4692.52	0	0
32	98.7373	167.018	4510.05	0	0
33	100.703	167.875	4295.87	0	0
34	102.668	168.768	4051.43	0	0
35	104.633	169.696	3778.51	0	0
36	106.599	170.66	3479.26	0	0
37	108.564	171.66	3156.26	0	0
38	110.529	172.699	2812.47	0	0
39	112.495	173.775	2451.33	0	0
40	114.46	174.892	2076.73	0	0
41	116.425	176.049	1693.22	0	0
42	118.391	177.248	1309.33	0	0
43	120.356	178.49	932.83	0	0
44	122.322	179.776	570.615	0	0
45	124.287	181.108	230.295	0	0
46	126.252	182.487	-79.7405	0	0
47	128.218	183.915	-350.184	0	0
48	130.183	185.394	-564.231	0	0
49	132.148	186.925	-705.376	0	0
50	134.114	188.511	-760.08	0	0
51	136.079	190.154	0	0	0

A-A' Post Const - Static

Global Minimum Query (bishop simplified) - Safety Factor: 2.64069

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	37.8113	155.238	0	0	0
2	39.7767	155.208	88.5118	0	0
3	41.742	155.203	201.336	0	0
4	43.7074	155.225	343.701	0	0
5	45.6727	155.274	525.256	0	0
6	47.6381	155.349	740.154	0	0
7	49.6035	155.45	982.63	0	0
8	51.5688	155.577	1247.2	0	0
9	53.5342	155.732	1528.67	0	0
10	55.4995	155.913	1822.11	0	0
11	57.4649	156.12	2122.84	0	0
12	59.4302	156.355	2426.46	0	0
13	61.3956	156.616	2728.81	0	0
14	63.3609	156.905	3026.01	0	0
15	65.3263	157.221	3314.38	0	0
16	67.2916	157.564	3590.52	0	0
17	69.257	157.935	3851.26	0	0
18	71.2223	158.334	4093.68	0	0
19	73.1877	158.761	4315.1	0	0
20	75.1531	159.217	4513.06	0	0
21	77.1184	159.701	4685.37	0	0
22	79.0838	160.214	4830.07	0	0
23	81.0491	160.756	4945.46	0	0
24	83.0145	161.328	5030.07	0	0
25	84.9798	161.93	5082.69	0	0
26	86.9452	162.562	5102.37	0	0
27	88.9105	163.225	5088.44	0	0
28	90.8759	163.919	5040.48	0	0
29	92.8412	164.645	4958.35	0	0
30	94.8066	165.403	4842.21	0	0
31	96.7719	166.194	4692.52	0	0
32	98.7373	167.018	4510.05	0	0
33	100.703	167.875	4295.87	0	0
34	102.668	168.768	4051.43	0	0
35	104.633	169.696	3778.51	0	0
36	106.599	170.66	3479.26	0	0
37	108.564	171.66	3156.26	0	0
38	110.529	172.699	2812.47	0	0
39	112.495	173.775	2451.33	0	0
40	114.46	174.892	2076.73	0	0
41	116.425	176.049	1693.22	0	0
42	118.391	177.248	1309.33	0	0
43	120.356	178.49	932.83	0	0
44	122.322	179.776	570.615	0	0
45	124.287	181.108	230.295	0	0
46	126.252	182.487	-79.7405	0	0
47	128.218	183.915	-350.184	0	0
48	130.183	185.394	-564.231	0	0
49	132.148	186.925	-705.376	0	0
50	134.114	188.511	-760.08	0	0
51	136.079	190.154	0	0	0

A-A' Post Const - Pseudostatic

Global Minimum Query (bishop simplified) - Safety Factor: 1.15135

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	35.504	154.819	0	0	0
2	37.843	154.761	228.232	0	0
3	40.1819	154.734	492.649	0	0
4	42.5209	154.738	787.022	0	0
5	44.8599	154.772	1127.6	0	0
6	47.1988	154.836	1514.77	0	0
7	49.5378	154.932	1938.62	0	0
8	51.8767	155.058	2389.84	0	0
9	54.2157	155.215	2859.71	0	0
10	56.5547	155.402	3340.1	0	0
11	58.8936	155.621	3823.41	0	0
12	61.2326	155.871	4302.6	0	0
13	63.5716	156.151	4771.09	0	0
14	65.9105	156.464	5222.85	0	0
15	68.2495	156.807	5652.29	0	0
16	70.5884	157.183	6054.31	0	0
17	72.9274	157.59	6424.23	0	0
18	75.2664	158.029	6757.86	0	0
19	77.6053	158.501	7051.4	0	0
20	79.9443	159.005	7301.51	0	0
21	82.2832	159.543	7505.26	0	0
22	84.6222	160.113	7660.11	0	0
23	86.9612	160.717	7763.97	0	0
24	89.3001	161.355	7815.13	0	0
25	91.6391	162.027	7812.3	0	0
26	93.978	162.734	7754.6	0	0
27	96.317	163.475	7641.55	0	0
28	98.656	164.253	7473.07	0	0
29	100.995	165.066	7249.52	0	0
30	103.334	165.916	6971.65	0	0
31	105.673	166.804	6640.67	0	0
32	108.012	167.729	6258.19	0	0
33	110.351	168.692	5826.28	0	0
34	112.69	169.694	5347.47	0	0
35	115.029	170.736	4824.74	0	0
36	117.368	171.819	4262.62	0	0
37	119.707	172.943	3670.14	0	0
38	122.046	174.109	3053.16	0	0
39	124.385	175.318	2417.58	0	0
40	126.723	176.572	1769.83	0	0
41	129.062	177.871	1118.26	0	0
42	131.401	179.216	480.346	0	0
43	133.74	180.608	-132.446	0	0
44	136.079	182.05	-709.74	0	0
45	138.418	183.542	-1240.39	0	0
46	140.757	185.086	-1712.41	0	0
47	143.096	186.683	-2112.91	0	0
48	145.435	188.335	-2415.42	0	0
49	147.774	190.045	-2592.87	0	0
50	150.113	191.814	-2627.34	0	0
51	152.452	193.644	0	0	0

A-A' Post Const - Static - No Cohesion

Global Minimum Query (bishop simplified) - Safety Factor: 1.97388

Slice Number	X coordinate [ft]	Y coordinate - Bottom [ft]	Interslice Normal Force [lbs]	Interslice Shear Force [lbs]	Interslice Force Angle [deg]
1	232.038	214.863	0	0	0
2	232.842	214.737	6.71269	0	0
3	233.646	214.627	31.2682	0	0
4	234.45	214.532	82.3824	0	0
5	235.254	214.453	157.095	0	0
6	236.058	214.388	252.287	0	0
7	236.861	214.339	365.013	0	0
8	237.665	214.305	492.487	0	0
9	238.469	214.286	632.069	0	0
10	239.273	214.282	781.259	0	0
11	240.077	214.293	937.687	0	0
12	240.881	214.319	1099.1	0	0
13	241.685	214.36	1263.38	0	0
14	242.489	214.416	1428.48	0	0
15	243.292	214.487	1592.49	0	0
16	244.096	214.574	1753.58	0	0
17	244.9	214.676	1910.01	0	0
18	245.704	214.793	2060.15	0	0
19	246.508	214.926	2202.44	0	0
20	247.312	215.074	2335.39	0	0
21	248.116	215.239	2457.62	0	0
22	248.92	215.419	2567.79	0	0
23	249.724	215.616	2664.68	0	0
24	250.527	215.829	2747.1	0	0
25	251.331	216.059	2813.97	0	0
26	252.135	216.306	2864.25	0	0
27	252.939	216.57	2897.01	0	0
28	253.743	216.852	2911.36	0	0
29	254.547	217.152	2906.5	0	0
30	255.351	217.47	2881.71	0	0
31	256.155	217.808	2836.33	0	0
32	256.959	218.164	2769.8	0	0
33	257.769	218.544	2680.83	0	0
34	258.579	218.945	2569.45	0	0
35	259.39	219.367	2435.37	0	0
36	260.2	219.812	2278.57	0	0
37	261.011	220.279	2104.44	0	0
38	261.821	220.77	1917	0	0
39	262.632	221.287	1718.51	0	0
40	263.442	221.829	1511.5	0	0
41	264.253	222.398	1298.71	0	0
42	265.063	222.997	1083.17	0	0
43	265.873	223.625	868.258	0	0
44	266.684	224.285	657.705	0	0
45	267.494	224.978	455.68	0	0
46	268.305	225.708	266.858	0	0
47	269.115	226.476	96.5004	0	0
48	269.926	227.285	-49.4266	0	0
49	270.736	228.14	-309.856	0	0
50	271.547	229.043	-557.287	0	0
51	272.357	230	0	0	0

Entity Information

B-B'

Shared Entities

Type	Coordinates (x,y)
External Boundary	3, 140 268, 140 268, 208 268, 220 268, 224 258, 226 242, 224 236, 222 179, 212 173, 210 163, 202 144, 194 94, 176 84, 172 68, 168 48, 164 40, 162 32, 158 9, 153 3, 154
Material Boundary	163, 202 268, 208
Material Boundary	173, 210 194, 211 236, 218 242, 220 268, 220

B-B' Post Const

Shared Entities

Type	Coordinates (x,y)
External Boundary	3, 140 268, 140 268, 208 268, 220 268, 224 258, 226 242, 224 234.2, 222.05 234, 222 234, 210 194, 210 194, 214 193.8, 213.973 193, 213.867 179, 212 173, 210 163, 202 144, 194 94, 176 84, 172 68, 168 48, 164 40, 162 32, 158 9, 153 3, 154
Material Boundary	173, 210 193.8, 211.103
Material Boundary	234.2, 218.05 242, 220 268, 220
Material Boundary	163, 202 268, 208
Material Boundary	193.8, 213.973 193.8, 211.103 193.8, 210 194, 210
Material Boundary	234, 210 234.2, 210 234.2, 218.05 234.2, 222.05

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Static	Pseudostatic	Static - No Cohesion
Distributed Load	234, 210 194, 210	Constant DistributionOrientation: Normal to boundaryMagnitude: 1625 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 1625 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 1625 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 1625 lbs/ft2Creates Excess Pore Pressure: No

A-A'

Shared Entities

Type	Coordinates (x,y)
External Boundary	3, 140 307, 140 307, 200 307, 217 307, 222 290, 220 254, 218 233, 215 226, 214 179.333, 200 166, 196 143, 192 128, 188 116, 184 42, 156 20, 152 3, 150
Material Boundary	196, 200 226, 209 254, 213 290, 215 307, 217
Material Boundary	179.333, 200 196, 200 307, 200

A-A' Post Const

Shared Entities

Type	Coordinates (x,y)
External Boundary	3, 140 307, 140 307, 200 307, 217 307, 222 307, 230 260, 230 233, 215 226, 214 179.333, 200 166, 196 143, 192 128, 188 116, 184 42, 156 20, 152 3, 150
Material Boundary	196, 200 226, 209 254, 213 290, 215 307, 217
Material Boundary	179.333, 200 196, 200 307, 200
Material Boundary	233, 215 254, 218 290, 220 307, 222

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Static	Pseudostatic	Static - No Cohesion
Distributed Load	307, 230 270, 230	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 400 lbs/ft2Creates Excess Pore Pressure: No