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City of Temiskaming Shores  
Request for Tender  
CS-RFT-001-2025  
Mount Pleasant Cemetery  
Embankment Remediation

City of Temiskaming Shores  
P.O. Box 2050  
325 Farr Drive  
Haileybury, Ontario  
P0J 1K0

## 1. Objective

This Request for Tender describes the requirements of The Corporation of the City of Temiskaming Shores, to receive submissions from qualified Proponents for the remediation of an embankment near the rear southern flank at the Mount Pleasant Cemetery, located on Morissette Drive in Haileybury, according to the specifications outlined herein.

## 2. Background

Located at the head of Lake Temiskaming, Temiskaming Shores is located in North-eastern Ontario, near the Quebec border. Temiskaming Shores has a population of approximately 9,920, according to the 2016 census. The City of Temiskaming Shores is governed by a seven-member Council comprised of 6 Councillors and 1 Mayor. The City also has various Committees of Council, with members appointed by Council.

## 3. Definitions

- 3.1 **City:** means the Corporation of the City of Temiskaming Shores.
- 3.2 **Proponent(s)/ Bidder(s):** means all persons, partnerships or corporations who respond to the RFT and includes their heirs, successors and permitted assigns.
- 3.3 **Request for Tender;** means this Request for Tender (RFT) document including all schedules, parts and attachments, as issued by the City, including any addenda or amendments made to it after initial issue.
- 3.4 **Successful Proponent/ Bidder:** means the Proponent/Bidder whose RFT submission is/are accepted to who has/have agreed to supply the goods and/or services, as outlined herein.

## 4. Submission

Bids must be submitted electronically, using the **Electronic Bid Submissions Portal** on the City's website:

<https://www.temiskamingshores.ca/en/city-hall/bid-opportunities.aspx>

Submissions must be in a **pdf format** and can be no larger than 50 MB.

Subject Line: Mount Pleasant Cemetery Embankment Remediation

Addressed to: Logan Belanger, Clerk

Proponents will receive an automatic email response to indicate that the submission has been received, and to contact the Municipal Clerk for submission opening details. Contact the Clerk at 705-672-3363 ext. 4136 or at [clerk@temiskamingshores.ca](mailto:clerk@temiskamingshores.ca), should the Proponent not receive a confirmation email.

The City has no liability to the Proponent/ Bidder for any problems encountered, or failure of the Bidder to successfully submit a bid prior to the bid closing time and date. As such, allow sufficient

time for a Bid Submission and attachment(s) (if applicable), to resolve any issues that may arise. Bidders are cautioned that the timing of their Bid Submission is based on when the Bid is **received** by the City.

The closing date for the submission of Tenders will be at **2:00 p.m. local time on Tuesday, February 25, 2025.**

- Late Tenders will not be accepted;
- Tenders by fax will not be accepted;
- Tenders by mail will not be accepted;
- Partial Tenders are not accepted;
- Tenders emailed directly to City staff will not be accepted.
- The City reserves the right to accept or reject any or all Tenders;
- The lowest priced Tender will not necessarily be accepted;
- The City reserves the right to request clarification or supplementary information concerning a Tender from any Proponent;
- The City reserves the right to enter into negotiations with a Proponent and any changes to the Tender that are acceptable to both parties will be binding;
- The City reserves the right to confirm with the Proponent, a third party or references (whether provided in the Tender or not), confirmation of any information provided by the Proponent in their Proposal.
- The Tender shall be valid for 45 days from submission date.

The Form of Tender must be signed in the space provided on the form, with the signature of the Bidder or responsible official of the firm bidding. If a joint Bid is submitted, it must be signed and addressed on behalf of both of the Bidders. Any alterations or cross-outs must be initialed in ink by the Bidder. Failure to do so may result in the rejection of the Bidder's Tender by the City.

Line items and total contract price must be clearly indicated. The Bid must not be restricted by a statement added to the Tender form or by a covering letter, or by alterations to the Tender form, as supplied by the City of Temiskaming Shores unless otherwise provided herein.

H.S.T. Tax will be applicable to the supply of labour and equipment.

The City will not be held responsible for Proponent or third-party costs, claims, direct or indirect damages caused by the City exercising its rights reserved in this Section or otherwise expressed or implied in this RFT.

## **5. Questions**

Any questions with respect to the specifications are to be directed to:

**Logan Belanger**

Municipal Clerk

City of Temiskaming Shores

325 Farr Drive

Temiskaming Shores, ON P0J 1K0

Phone: 705) 672-3363 ext. 4136

Email: [lbelanger@temiskamingshores.ca](mailto:lbelanger@temiskamingshores.ca)

It will be the Proponent's responsibility to clarify any details in question not mentioned in this Tender before presenting the submission. Questions relating to this Tender must be received by **Thursday, February 13, 2025, at 2:00 p.m. local time.**

To ensure fairness to all Proponents, any and all questions that require clarification or that may materially alter this RFT document will be responded to and shared with other Proponents via an addendum, as described herein. Questions received after this date and time will not receive a response. Proponents are notified that any errors or omissions in the Tender may render the Tender invalid.

## 6. Scope of Work

The City is seeking remediation of an embankment near the rear southern flank at the Mount Pleasant Cemetery, located on Morissette Drive in Haileybury. The slope surface is vegetated with grass and low brush, underlain by silty clay soil. The area is bound by a tree line on top of a steep slope (grade of 0.40 Vertical to 1.00 Horizontal (0.4: 1), and a creek at the bottom. There are no terraces or berms at the toe of the slope.

It is assumed that due to erosion, part of the slope has washed out into the creek below, and the problem is unabated as more areas of the slope have eroded into the creek. The soil encountered at the slope is unstable; therefore, the City is seeking remediation work as soon as possible to prevent further loss.

Various options were available to stabilize the subject area; however, the City has selected **Option No. 1**, outlined in the Slope Assessment Report for the Mount Pleasant Cemetery, attached hereto as **Schedule A**. The design drawing (provided) will stabilize the slope with FOS of 2.267, as per the analysis within the attached Report.

Since the ephemeral creek at the bottom of the slope drains into Lake Temiskaming, the City contacted the Department of Fisheries and Oceans (DFO) for preliminary discussion, and it was advised that the Successful Bidder must follow the [Interim Code of Practice for municipal and agricultural drain maintenance](#).

Important: Given this is an active cemetery, it is essential to exercise caution. The City will establish access routes with the Successful Bidder within the cemetery, and mark areas where equipment should be kept clear.

## 7. Specifications

### Option No. 1

Price should include the estimation of labour, materials, and tools/ equipment to stabilize the embankment, per the Slope Assessment Report for the Mount Pleasant Cemetery, attached hereto as **Schedule A**. The work generally includes:

1. Complete locates, and stake or mark proposed layout of site at outset of project. Confirm that there is no interference to existing site features and/or utilities.
2. Site preparation.

3. Install silt migration countermeasures downstream of the work and throughout the perimeter of the work limits. Provide and install dewatering systems within the construction limits along the embankment and creek bed as necessary.
  - a) Sediment/ erosion control measures include:
    - Ensure that washout material does not migrate unabated into surrounding drainage courses.
    - Siltation control measures are to be implemented at sitework perimeters and inspected daily and logged. Ensure proper functioning and maintenance as necessary until construction areas are stabilized.
    - No remediation work shall commence until sediment and erosion control measures are effectively established.
    - Light duty silt fence barriers to be constructed along site construction perimeter, per OPSD 219.110.
    - Straw bale flow checks to be installed at existing ditches and swales downstream within the work limits as per OPSD 219.180.
    - Surface erosion protection shall be applied for all disturbed areas, subject to erosion, until vegetation is present.
    - Install additional sedimentation control measures if it is observed that construction activities are negatively impacting the surrounding area, drainage courses, or drainage structures not already protected.
4. Clean out any and all sediment deposits and loose soil within washout area.
5. Reinstate affected embankment as follows, bottom to top:
  - a) One layer of non-woven geotextile & geogrid ("Terrafix 36OR" or equivalent)
  - b) Mine rock fill as required to proposed grade
  - c) If slope is steeper than 3H:1V, 300mm R-50 riprap; otherwise, 75mm topsoil & seed
6. If required, install engineered gabion wall at bottom of affected embankment to maintain 3H:1V slope for practical topsoil & seed application.
7. Install 300mm R-50 riprap within limit of construction along the creek bed as indicated on the civil drawings.
8. Demobilize countermeasures and reinstate/ rehabilitate all disturbed areas within the limit of construction to existing conditions or better.

The Successful Bidder shall be responsible for managing off-site disposal of waste or unwanted site materials.

## **8. Term of Agreement/ Project Schedule**

The RFT process will be governed according to the following schedule. Although every attempt will be made to meet all dates, the City reserves the right to modify any or all dates at its sole discretion:

Release of RFT:	February 4, 2025
Deadline for Submitting Questions:	February 13, 2025, 2:00 p.m. local time
Deadline for Responding to Questions:	February 18, 2025
RFT Proposal Submission deadline:	February 25, 2025, 2:00 p.m. local time
Final Selection and Notification:	March 18, 2025
Last day for completion of work:	As soon as possible

## 9. Project Authority

The Project Authority for issuance of the RFT is the Municipal Clerk for the City of Temiskaming Shores, reporting to the Director of Corporate Services.

The awarding of the contract may be subject to the approval of City Council.

## 10. Tender Evaluation

Tenders that comply with the terms, conditions and specifications as outlined in the Tender, will be evaluated on the basis of:

- Price (within allocated budget)
- Availability to perform the work and/or supply goods
- Previous performance evaluations

## 11. Any or all Tenders Exceed Approved Budget

In the event that any or all Tenders exceed the approved budget, and staff are not prepared to seek additional funding, the City may, opt for one of the following:

- a) Approach the lowest Bidder to seek options to change the requirements and obtain a corresponding price change for the reduced requirements;
- b) Approach the top three Bidders to seek options to change the requirements and obtain a corresponding price change from each for the reduced requirements; or
- c) Advise all Bidders that the Bid solicitation process will be cancelled, and a review of the requirements will be undertaken and that a new Bid solicitation may be issued later.

## 12. Goods, Materials and Equipment Suitable for Use

The Bidder warrants that any goods, materials, articles or equipment to be supplied under or pursuant to any official order or Agreement based on this RFT, that is or are to be made or used for a particular purpose, will be fit and suitable for that purpose.

The Successful Bidder may be required to provide written documentation that all materials or equipment offered in a Bidder's Tender meet all applicable Municipal, Provincial and Federal Government standards, legislation and laws.

### **13. Amendments**

The City at its discretion reserves the right to revise this RFT up to the final date for the deadline for receipt of Tenders. The City will issue changes to the RFT Documents by addendum only. No other statement, whether oral or written, made by the City will amend the RFT Documents. The City will make every effort to issue all addenda no later than the seventh (7<sup>th</sup>) day prior to the closing date. If an addendum is issued within seven days of the closing date, the bid submission date will be moved accordingly.

The Proponent shall not rely on any information or instructions from the City or a City representative except the RFT Documents, and any addenda issued pursuant to this Section.

The Proponent is solely responsible to ensure that it has received all addenda issued by the City. The Proponent shall acknowledge receipt of all addenda on the Form of Tender. Failure to complete the acknowledgement may result in rejection of the Tender.

The City makes no promise or guarantee that addenda will be delivered by any means to any Proponent. By submitting a Tender submission in response to this RFT, the Proponent acknowledges and agrees that the addenda shall be posted on [www.temiskamingshores.ca](http://www.temiskamingshores.ca) and it is the sole responsibility of the proponent to check this web site for said addenda. The City reserves the right to withdraw or cancel this Request for Tender without notice.

### **14. Tender Withdrawal or Amendment**

Proponents may amend or withdraw their Tender, provided such withdrawal or amendment is received prior to the closing deadline. A Bidder who has already submitted a Tender may submit a further Tender at any time up to the official closing time; the last Tender received shall supersede and invalidate all Tenders previously submitted by the Bidder for this RFT. A bid may be withdrawn at any time up to the official closing time by letter on original letterhead bearing the same signature as in the bid submission.

### **15. Right to Accept or Reject Submissions**

The City does not bind itself to accept any Tender and may proceed as it, in its sole discretion, determines, following receipt of the Tenders. The City reserves the right to accept any Tender in whole or in part or to discuss with any respondent different or additional terms to those envisaged in this RFT or in such respondent's Tender.

The City reserves the right to:

1. accept or reject any or all of the proposals;
2. if only one proposal is received, elect to reject it;
3. reject as informal any proposal that is received late or is incomplete or otherwise fails to comply with the requirements of the RFT;
4. elect not to proceed with the projects as it so determines in its sole and absolute discretion; and/ or
5. to waive irregularities and formalities at its sole and absolute discretion.

## **16. Solicitation**

If any director, officer, employee, agent or other representative of a Proponent makes any representation or solicitation to any Mayor, Councillor, officer or employee of the City with respect to the RFT, whether before or after submission of the Tender, the City shall be entitled to reject or not accept the RFT submission.

## **17. Subcontracting**

The Successful Bidder hereby understands and agrees that any or all Subcontractors/ Carriers hired to perform within the scope of this Tender are subject to all terms and conditions stated within, including and not limited to insurance requirements, and the Successful Bidder shall be held accountable.

The Successful Bidder shall ensure that all Subcontractors/ Carriers selected have experience in the Subcontract work described within the Tender documents, and that they will execute their work with competence and within the required time frame.

The City reserves the right to reject a proposed Subcontractor/ Carrier for reasonable cause. Upon such rejection, the Bidder will be required to propose an alternate Subcontractor/ Carrier and to identify any resulting change to the Bid Price. This change can affect the status of the low Bid, and may result in a different Bid becoming low.

A list of Sub-Contractors that the Contractor proposes to employ in completing the required work outlined in this Proposal shall be included in the documents submitted. The Contractor shall not show "Own Forces" in their list of proposed Subcontractors, except where the Bidder's intent is to employ the Bidder's own qualified on-staff personnel to perform such work.

## **18. Independent Contractor Status of Proponent; Declaration of Conflicts**

The Proponent fully acknowledges that in providing a Tender, it provides such as an independent contractor and for the sole purpose of potentially providing services and/or goods to the City. The Proponent's attention is drawn to the provisions of the Occupational Health & Safety Act 2010.

Neither the Proponent nor any of its personnel are engaged as an employee, servant or agent of the City. Any potential conflicts of interest in which a Proponent may have with the City or any employee of the City will be identified and described in detail in the Tender of each proponent (Conflict of Interest Declaration).

## **19. Insurance (from the Successful Proponent only)**

The successful Proponent shall, at their own expense within 10 days of notification of acceptance and prior to the commencement of work, obtain, maintain and provide evidence of until the termination of the Agreement or otherwise stated, the following:



### Commercial General Liability

The Successful Proponent shall maintain and pay for Comprehensive General Liability Insurance with coverage limits of no less than Five Million Dollars (\$2,000,000.00) inclusive per occurrence for bodily injury, death and damage to property including loss of use.

### Automobile Liability Insurance (If Applicable)

The Successful Proponent shall maintain and pay for Automobile Liability Insurance with coverage limits of no less than Two Million Dollars (\$2,000,000.00) inclusive per occurrence for bodily injury, death and damage to property, in respect to licensed vehicles owned or leased by the Successful Proponent.

The policies shall include City of Temiskaming Shores as an additional insured, and containing a cross liability clause.

All insurance policies referenced in this Section shall be maintained in good standing throughout the duration of the Agreement, and cannot be cancelled or permitted to lapse unless the insurer notifies the City in writing at least 30 days prior to the effective date of cancellation or expiry. The City reserves the right to request such higher limits of insurance or other types of policies appropriate to the work as the City may reasonably require.

## **20. Workplace Safety and Insurance Board (WSIB) (from the successful Proponent only)**

The Successful Proponent shall, at their own expense within 10 days of notification of acceptance and prior to the commencement of work, obtain, maintain and provide evidence of until the termination of the Agreement or otherwise stated, a Certificate of good standing from the Workplace Safety & Insurance Board.

The onus is on the Successful Proponent to comply with all applicable local and territorial standards and regulations, in effect and applicable by law in Ontario, Canada.

## **21. AODA Compliance**

The Bidder shall comply with the provisions of the Accessibility for Ontarians with Disabilities Act, 2005, and the Regulations thereunder with regard to the provision of its goods or services contemplated herein to persons with disabilities. Without limitation, if applicable, pursuant to section 6 of Ontario Regulation 429/07, Accessibility Standards for Customer Service, made under the Accessibility for Ontarians with Disabilities Act, 2005, the Bidder shall ensure that all of its employees, agents, volunteers, or others for whom it is at law responsible, receive training about the provision of its goods and services to persons with disabilities. The Bidder acknowledges that pursuant to the Accessibility for Ontarians with Disabilities Act, 2005, the City of Temiskaming Shores must, in deciding to purchase goods or services through its procurement process, consider the accessibility for persons with disabilities to such goods or services.

## **22. Freedom of Information**

Upon submission, all Tenders become the property of the City and will not be returned to the proponents. Proponents must be aware that the City is a public body subject to the provisions of

the Municipal Freedom of Information and Protection of Privacy Act. The City may, at any time, make public the names and bid prices of all respondents. Tenders will be held in confidence by the City, subject to the provisions of the Municipal Freedom of Information and Protection of Privacy Act, or unless otherwise required by law.

Any proprietary or confidential information contained in the Tender should be clearly identified.

### **23. Nature of Request for Tender**

This RFT does not constitute an offer of any nature or kind whatsoever by the City to the Proponent.

### **24. Preparation of Tenders**

All costs and expenses incurred by the Proponent relating to its Tender will be borne by the Proponent. The City is not liable to pay for such costs and expenses, or to reimburse or to compensate the Proponent in any manner whatsoever for such costs and expenses under any circumstances, including the rejection of any or all Tenders or the cancellation of this RFT.

### **25. Finalizing Terms**

This RFT will not constitute a binding agreement, but will only form the basis for the finalization of the terms upon which the City and the Successful Proponent will enter into the contract documentation, and does not mean that the Successful Proponent's Tender is necessarily totally acceptable in the form submitted. After the selection of the Successful Proponent's Tender, the City has the right to negotiate with the Successful Proponent and, as part of that process, to negotiate changes, amendments or modifications to the Successful Proponent's Tender without offering the other proponents, the right to amend their Tenders.

### **26. Commitment to Negotiate**

The Successful Proponent shall execute any documentation, drafted in accordance with the terms of the Successful Proponent's Tender and any subsequent negotiations, within seven (7) days of the date of notification of the Successful Proponent's selection.

Proponents not initially selected as the Successful Proponent hereby commit themselves, subject to notification by the City to execute documentation as aforesaid up to forty-five (45) days following the date of submission of their Tenders.

### **27. Agreement**

A written agreement, prepared by the City shall be executed by the City and the Successful Proponent if the terms are mutually agreeable to all Parties. The award of a contract may be made in writing to the successful proponent by way of a By-law, Resolution or Purchase Order. There is no guarantee that City Council will enter into any Agreement.

Any agreement resulting from this Request for Tender shall be governed by and interpreted in accordance with the laws of the Province of Ontario.

## 28. Performance

Any undue delays in the execution of the work and/or costs incurred by the City due to inefficiencies in performance on behalf of the Successful Proponent shall be deemed to be the responsibility of that Proponent and as such, any and all costs, as deemed appropriate and reasonable compensation for the City, will be assessed to the Successful Proponent.

## 29. Conflict Resolution

This Agreement is based upon mutual obligation of good faith and fair dealing between the parties in its performance and enforcement. Accordingly, both parties, with a commitment to honesty and integrity, agree to the following:

- 1) That each will function within the laws and statutes that apply to its duties and responsibilities; that each will assist in the other's performance; that each will avoid hindering the other's performance; that each will work diligently to fulfil its obligations; and that each will cooperate in the common endeavour of the contract;
- 2) Both parties to this Agreement shall attempt to resolve all claims, disputes and other matters in question arising out of or relating to this Agreement or breach thereof first through negotiations between the Successful Proponent's representative and the City or representative by means of discussions built around mutual understanding and respect;
- 3) Failing resolution by negotiations, all claims, disputes and other matters in question shall attempt to be resolved through mediation, under the guidance of a qualified mediator;
- 4) Failing resolution by mediation, all claims, disputes and other matters in question shall be referred to arbitration;
- 5) No person shall be appointed to act as mediator or arbitrator who is in any way interested, financially or otherwise, in the conduct of the work on the Project or in the business or other affairs of either the City or the Successful Proponent;
- 6) The award of the arbitrator shall be final and binding upon the parties;
- 7) The provisions of the Arbitration Act, 1991 S.O. 1991, Chapter 17 shall apply.

## 30. Failure to Complete the Work

Should the Successful Bidder be unable to carry out the terms and requirements of the Agreement due to manufacturer's shortage, time delay or discrepancy of any kind, the Successful Bidder shall notify the City immediately at time of order or as it becomes known and the City retains the right to accept or not accept any back order, time delay, product change or discrepancy. The City retains the right to cancel the order in whole or in part and procure the requirements with any other Bidder without any liability to the City.

In the event that the Successful Bidder fails to carry out the terms and requirements of the Agreement in a manner satisfactory to the City, in its sole and absolute discretion, shall have the right to terminate the said work process at any time, upon written notice to the Successful Bidder. The Successful Bidder shall not be entitled to any damages whatsoever by reason of the termination of the work process as aforementioned, nor shall the Successful Bidder be entitled to make any

claim under the said work process, except for goods and/or services which shall have been satisfactorily completed at the time of termination.

The Successful Bidder agrees that the City may without liability terminate this entire agreement at any time on seven (7) days written notice to the Successful Bidder as a result of changes in the City's requirements or changes in the availability of funds.

### **31. Indemnification**

The Successful Proponent shall indemnify and hold harmless the City, its elected and other officials, officers, employees, agents, servants, representatives, and volunteers from and against any and all liability, loss, claims, demands, legal proceedings, expenses, including but not limited to legal expenses (hereinafter collectively referred to as the "Claims"), when the Claims arise wholly or in part, directly or indirectly, as a result of any wrongful, blameworthy, or negligent acts or omissions, or breach of any terms of this Agreement by the Successful Proponent, or its officers, directors, employees, sub-contractors, agents, representatives or volunteers in the course of providing services pursuant to this Agreement.

This indemnity shall survive the termination, completion, or expiry of this Agreement, and in particular any risk that further Claims against the City are made after the termination, completion, or expiry of this Agreement, such risk is assumed entirely by the Successful Proponent.

### **32. Unenforceable Provisions**

Should any provision of this document be deemed unenforceable by a court of law, all other provisions shall remain in effect.

### **33. Force Majeure**

It is understood and agreed that the Successful Proponent shall not be held liable for any losses resulting if the fulfillment of the terms of the Agreement shall be delayed or prevented by wars, acts of public enemies, strikes, fires, floods, acts of God, or for any other cause not within the control of the Successful Proponent and which by the exercise of reasonable diligence, the Successful Proponent is unable to prevent. Should the performance of any contract be delayed or prevented herein set forth, the Successful Proponent agrees to give immediate written notice and explanation of the cause and probable duration of any such delay and to provide written notice as to when Contract obligations resume. In any case, such delay shall not exceed the length of time of the interruption/disruption.

### **34. Errors & Omissions**

It is understood, acknowledged and agreed that while this Tender includes specific requirements and specifications, and while the City has used considerable efforts to ensure an accurate representation of information in this Tender, the information is not guaranteed by the City to be comprehensive or exhaustive. Nothing in the Tender is intended to relieve the Proponents from forming their own opinions and conclusions with respect to the matters addressed in the Tender. There will be no consideration of any claim, after submission of Tenders, that there is a misunderstanding with respect to the conditions imposed by the Tender and/or Agreement.

**City of Temiskaming Shores  
CS-RFT-001-2025  
Mount Pleasant Cemetery Embankment Remediation**

**Form of Tender**

Proponent's submission of bid to:

The Corporation of the City of Temiskaming Shores

Stipulated Bid Price

We/I,

\_\_\_\_\_ (Registered Company Name/Individuals Name)

Of,

\_\_\_\_\_ (Registered Address and Postal Code)

Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

I/We, the undersigned, have carefully examined the attached documents and conditions of the Tender. I/We understand and accept those specifications, conditions, and details as described herein, and, for these rates/prices offer to furnish all equipment, labour, apparatus and documentation as are required to satisfy this Tender. All prices must be CDN funds and without HST:

Lump Sum Price (excluding HST): \$ \_\_\_\_\_

Estimated Mobilization Date: \_\_\_\_\_

Estimated Completion Date: \_\_\_\_\_

**Acknowledgement of Addenda**

I/We have received and allowed for ADDENDA NUMBER \_\_\_\_\_ in preparing my/our Tender.

Bidder's Authorized Official: \_\_\_\_\_

Title: \_\_\_\_\_

Authorizing Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**Form 1 to be submitted.**

**City of Temiskaming Shores  
CS-RFT-001-2025  
Mount Pleasant Cemetery Embankment Remediation**

**Non-Collusion Affidavit**

I/ We \_\_\_\_\_ the undersigned am fully informed respecting the preparation and contents of the attached Tender and of all pertinent circumstances respecting such bid.

Such bid is genuine and is not a collusive or sham bid.

Neither the bidder nor any of its officers, partners, owners, agents, representatives, employees or parties of interest, including this affiant, has in any way colluded, conspired, connived or agreed directly or indirectly with any other Bidder, firm or person to submit a collective or sham bid in connection with the work for which the attached bid has been submitted nor has it in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other bidder, firm or person to fix the price or prices in the attached bid or of any other Bidder, or to fix any overhead, profit or cost element of the bid price or the price of any bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the City of Temiskaming Shores or any person interested in the proposed bid.

The price or prices proposed in the attached bid are fair and proper and not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employees, or parties in interest, including this affiant.

The bid, quotation or Tender of any person, company, corporation or organization that does attempt to influence the outcome of any City purchasing or disposal process will be disqualified, and the person, company, corporation or organization may be subject to exclusion or suspension.

Dated at: \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

Signed: \_\_\_\_\_

Title: \_\_\_\_\_

Company Name: \_\_\_\_\_

**Form 2 to be submitted.**

**City of Temiskaming Shores**  
**CS-RFT-001-2025**  
**Mount Pleasant Cemetery Embankment Remediation**  
**Conflict of Interest Declaration**

Please check appropriate response:

I/We hereby confirm that there is not nor was there any actual perceived conflict of interest in our Tender submission or performing/providing the Goods/Services required by the Agreement.

The following is a list of situations, each of which may be a conflict of interest, or appears as potentially a conflict of interest in our Company's Tender submission or the contractual obligations under the Agreement.

List Situations:


In making this Tender submission, our Company has / has no *(strike out inapplicable portion)* knowledge of or the ability to avail ourselves of confidential information of the City (other than confidential information which may have been disclosed by the City in the normal course of the RFT process) and the confidential information was relevant to the Work/Services, their pricing or quotation evaluation process.

Dated at: \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

Signature: \_\_\_\_\_

Bidder's Authorized Official: \_\_\_\_\_

Title: \_\_\_\_\_

Company Name: \_\_\_\_\_

**Form 3 to be submitted.**

**City of Temiskaming Shores  
CS-RFT-001-2025  
Mount Pleasant Cemetery Embankment Remediation**

**Accessibility for Ontarians with Disabilities Act, 2005 Compliance Agreement**

I/We, by our signature below, certify that we are in full compliance with Section 6 of Ontario Regulation 429/07, Accessibility Standards for Customer Service made under the *Accessibility for Ontarians with Disabilities Act, 2005*. If requested, we are able to provide written proof that all employees have been trained as required under the act.

This regulation establishes accessibility standards for customer service as it applies to every designated public sector organization and to every person or organization that provides goods or services to members of the public or other third parties and that have at least one employee in Ontario.

Name: \_\_\_\_\_ Company Name: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

I, \_\_\_\_\_, declare that I, or my company, are in **full compliance** with Section 6 of Ontario Regulation 429/07, Accessibility Standards for Customer Service under the Accessibility for Ontarians with Disabilities Act, 2005.

**OR**

I, \_\_\_\_\_, declare that I, or my company, are **NOT in full compliance** with Section 6 of Ontario Regulation 429/07, Accessibility Standards for Customer Service under the Accessibility for Ontarians with Disabilities Act, 2005, yet fully agree to meet the required compliance training standards on or before the delivery of the required goods and/or services. In an effort to assist non-compliant vendors, please visit: <https://www.ontario.ca/page/how-train-your-staff-accessibility>.

**Form 4 to be submitted.**



**City of Temiskaming Shores  
CS-RFT-001-2025  
Mount Pleasant Cemetery Embankment Remediation**

**List of Proposed Sub-Contractors**

A list of Sub-Contractors that the Contractor proposes to employ in completing the required work outlined in this Tender must be included in the Tender documents submitted.

Name	Address	Component

I / We verify that the information provided above is accurate and that the individuals are qualified, experienced operators capable of completing the work outlined in this Tender document.

Dated at: \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 2025.

Signature: \_\_\_\_\_

Bidder's Authorized Official: \_\_\_\_\_

Title: \_\_\_\_\_

Company Name: \_\_\_\_\_

**Form 5 to be submitted.**

**City of Temiskaming Shores**  
**CS-RFT-001-2025**  
**Mount Pleasant Cemetery Embankment Remediation**

**Schedule A:**

Slope Assessment Report, Mount Pleasant Cemetery



**Slope Assessment Report**  
**Mount Pleasant Cemetery**  
Temiskaming Shores, Ontario

Our Project Number: STS 2024-0189

**Submitted To:**  
City of Temiskaming Shores, The

**Submitted By:**  
Shaba Testing Services Ltd.  
Kirkland Lake, Ontario

November 2024  
Revision -02- January 24, 2025.

©

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### APPENDICES

APPENDIX A – Photo Gallery of Site.

APPENDIX B – Drawings –Existing Slope Dwg#1.

APPENDIX C –Option I- Preliminary Design Slope Dwg #2.

APPENDIX D – Existing Slope Analysis Results.

APPENDIX E – Washout Quantity.

## **1.0 INTRODUCTION**

Shaba Testing Services Ltd. was retained to assess the slope failure at Haileybury Cemetery in Temiskaming Shores, Ontario. The slope is situated at the rear- southern flank of the cemetery. It is bound by a tree line on top of the slope, and a creek at the bottom of the slope. It is very steep, with a grade of 0.40 Vertical to 1.00 Horizontal (0.4: 1). There are no terraces or berms at the toe of the slope. The slope surface is vegetated with grass and low brush, underlain by silty clay soil.

We surmise that due to erosion, part of the slope has washed out into the creek below and the problem is unabated as more areas of the slope have eroded into the creek.

The site plan of the slope with the existing geometry is presented in Appendix B of this report. It shows a steep slope with a creek down below the toe of the slope. Site photos of the existing terrain are presented below.



Photo #1-Looking north- The top of the slope with tree line and the wash out.

The scope of work for this report is to assess the slope instability and subsequent failure and provide options or design for remediation. Our approach will be as follows:

- Undertaking a site reconnaissance to review existing conditions of slope instability and/or erosion.
- Establishing the extent of the slope failure.
- Undertaking a preliminary survey of the existing slope terrain and the creek.
- Reviewing the drainage pattern of the sub catchment area on top of the slope.
- Investigating any buried, abandoned municipal utilities in the proximity of the top of the slope.
- Carrying out one test pit excavation and associated laboratory testing to assess the subsurface conditions at the site, including the type/composition of the in-situ soil and other soil parameters. [Bearing Capacity shall be ascertained, if client wishes to incorporate Option #2 remediation measures as detailed in Section 8.3 of this Report.]
- Carry out analyses by using Slope Stability software Rockscience Slice 2® , to assess the Factor of Safety (FOS) against instability of the in-situ slope condition. If initial analyses suggest inadequate and unacceptable FOS, carry out additional analyses with the aim of improving FOS to an acceptable level.
- Presentation of report with engineering recommendations for mitigation options.

We will do this by investigating the soil strata of the site (and other parameters) and using the Bishop simplified and GLE /Morgenstein-Price slope analysis (including Limited Generalized Limit Equilibrium (GLE check) to establish the maximum allowable Factor of Safety (FOS).

This report only addresses the geotechnical parameters with respect to slope instability.

The geo-environmental aspects, including possible surface and/or subsurface contamination resulting from previous site activities or uses of the site and /or introduction of backfill materials from other sites, are not within the scope of our work, and not part of this report.

## **2.0 SITE VISITS**

Shaba Testing Services Ltd.'s Engineer and crew first visit was on November 18, 2024. The visit was to gather site information visually, and to assess the nature of the soil and the extent of the slope failure. A topographical survey of the site was conducted along with a test pit to retrieve the in-situ soil. See photos #1, #2, & #3 herein.



Photo #2 - The silty clay wash out and a gully- August 2024.



Photo #3 - The toe of the slope.

### **3.0 REVIEW OF THE TOPOGRAPHICAL DRAWING**

A review of the draft topographical drawings indicates that the slope is steep with a ratio of 0.4 V: 1.0 H, hence erosion of the saturated silty clay. It also confirms the extent of the washout and the accumulation of the washout soil in the creek's bed , thereby reducing the hydraulic capacity of the creek. See Photo #4, #5 and #6 below.



Photo #4 - The Slope with the Creek at the bottom.





Photo #5- Current Condition of the eroded surface -November 2024.



Photo #8- Narrowing of the Creek- November 2024.

#### **4.0 FIELD SOIL INVESTIGATION**

The second site visit was the Geotechnical Investigation. One test pit at mid-point of the exposed clay surface of the slope was hand-excavated to 1.0 m depth. One soil stratum was encountered: brown silty clay; the sample was desiccated at the time of its retrieval. Visual and tactile examination of the sample was conducted on site. Part of the sample was transported to our laboratory for further analysis. The sample was subsequently tested for moisture content, grain-size distribution (via Hydrometer method), and density.

#### **5.0 LABORATORY TESTING RESULTS**

The test results of the silty clay are summarized below:

Gravel (greater than 4.75 mm size)	0 %
Sand (0.075 mm to 4.75 mm) size	20 %
Silt (0.002 mm to 0.075 mm size)	69% -72 %
Clay (less than 0.002 mm size)	8%-11 %
Density	1248 kg/m <sup>3</sup>
Moisture Content	40.6 % - 41.1 %

#### **6.0 SUBSURFACE CONDITIONS**

In general, the stratigraphy encountered during the Geotechnical Investigation consisted of a surficial layer of silty clay covered by the grass. The silty clay extended throughout the depth of the soil stratum.

##### **6.1 The Grass and Shrubs**

The slope, at the unexposed part of it, is covered with grass/topsoil, and shrubs as shown below in Photo #7.



Photo #7 - The slope soil strata: The grass and the eroded silty clay underlay.

## 6.2 The Silty Clay

A stratum of silty clay deposit was encountered underlying the grass. The silty clay deposit consisted of traces of sand. Moisture content was in the range of 15% to 19%. Atterberg's Limit test carried out yielded a Liquid limit of 28.0%, Plasticity limit of 12.5% and Plasticity index of 15.5%.

The correlation between clay consistency and shear strength is tabulated below in Table 1.0.

**Table 1.0-Clay Consistency and Shear Correlation.**

Clay Consistency	Cohesion (Shear Strength)	
	Soft	<24 kpa
Medium to Stiff	25 - 100 kpa	500 to 2000 psf
Very stiff to hard	> 100 kpa	> 2000 psf

## **7.0 GROUNDWATER CONDITIONS**

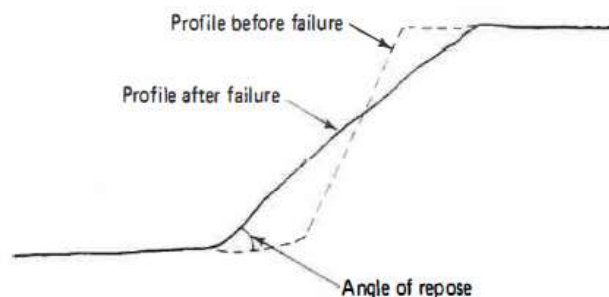
Groundwater was not encountered at this test pit. Although, fluctuation in groundwater level should be expected due to seasonal variations, precipitation events and changes in lake water level. The creek had an ample flow of water during our two visits.

## **8.0 DISCUSSION AND RECOMMENDATIONS**

The existing embankment with respect to the original **grade** that led to the wash-out was reviewed. The topographical survey data was inputted into our software, and the slope was found to be steep and unstable. The storm water management analysis of the slope, up to 10 m behind the tree line, was also reviewed and found to be satisfactory. The catchment area leading to the top of the slope was relatively flat. Further testing and analysis regarding the geotechnical assessment was carried out and the recommendation would be to remove the existing silty clay and replace it with rock fill.

### **8.1 Slope Stability Analysis**

The nature of soil slope failure is dependent on the classification of the soil. Typical slope failure for Cohesionless soil is shown in Figure 1 below, which usually comprises of sand and gravel. The material from the upper part of the slope breaks away and falls to the toe of the slope until the face of the embankment reaches the natural angle of repose for the soil.



*Figure 1- Cohesionless soil typical slope failure*

Typical slope failure for Cohesive soil is shown in Figure 2 below, which is usually comprised of silt and clay. The large mass of soil has moved along a surface, which is called a slip plane. The

natural shape of the failure resembles an arc of an ellipse, but it is usually considered to be circular in soil stability analyses.

A stability analysis involves making an estimate of both the failure model and the shear strength. The equation for moment equilibrium is indicated below:

$$FOS = \Sigma \text{ Moments resisting sliding} / \Sigma \text{ Moments causing the slide}$$

FOS = Factor of Safety. Note: That of Force equilibrium should be checked as well, hence the use of Bishop Modified and Morgenstern-Price analysis method. The guidelines are presented in Table 2 below.

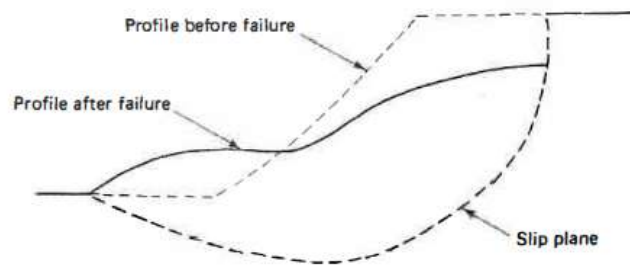


Figure 2- Cohesive soil typical slope failure

Table 2 – Guidelines for Equilibrium Slope

Factor Of Safety ( FOS)	Guidelines For Limit Equilibrium Slope
<1.0	Unsafe
1.0 – 1.25	Questionable Safety
1.25 – 1.4	Satisfactory for routine cuts and fills, but questionable for dams
>1.4	Satisfactory for Dams.

## 8.2 Slope Assessment Results

The slope topography survey is shown in Dwg #1 of Appendix B. The slope is steep with 0.4 V: to 1.0 Horizontal. The estimated accumulated washout results in the amount of 491.53 m<sup>3</sup> of silty clay. It did appear that there is drainage or runoff issue from the Cemetery down the slope. No buried utilities were evident during our site visit. The soil retrieved from the existing slope was analyzed

in our laboratory. The tests involved the moisture content determination, density, gradation and classification based on the Unified Soil Classification System. The soil in the existing lot was exposed, with an average density of 1703 kg/m<sup>3</sup>.

Since the soil is cohesive, the Bishop Simplified and GLE/Morgenstern-Price Methods were used for the stability analysis. The results showed a factor of safety of 0.379. Full analysis is in Appendix D of this report.

Hand calculations using the above methods also yielded similar results, with a factor of safety less than 1.0.

The materials' properties have a role in the strength to prevent instability. For the undrained shear strength, the Coulomb equation is  $S_u = c + \sigma \tan \phi$ , where;

- Normal stress is  $\sigma$ , in kPa.,
- Cohesion is  $c$ , in kPa, and
- Angle of Internal Friction is  $\phi$ , in degrees

(There is similar longer one for drained shear strength. For this site, undrained shear strength will be assumed.) Other soil parameters are as follows:

The silty clay at the bottom:  $\gamma = 20^\circ$ ,  $c = 28^\circ$ ,  $\phi = 28^\circ$

The soil beneath the grass is silty clay – the theoretical failure planes are shown below.

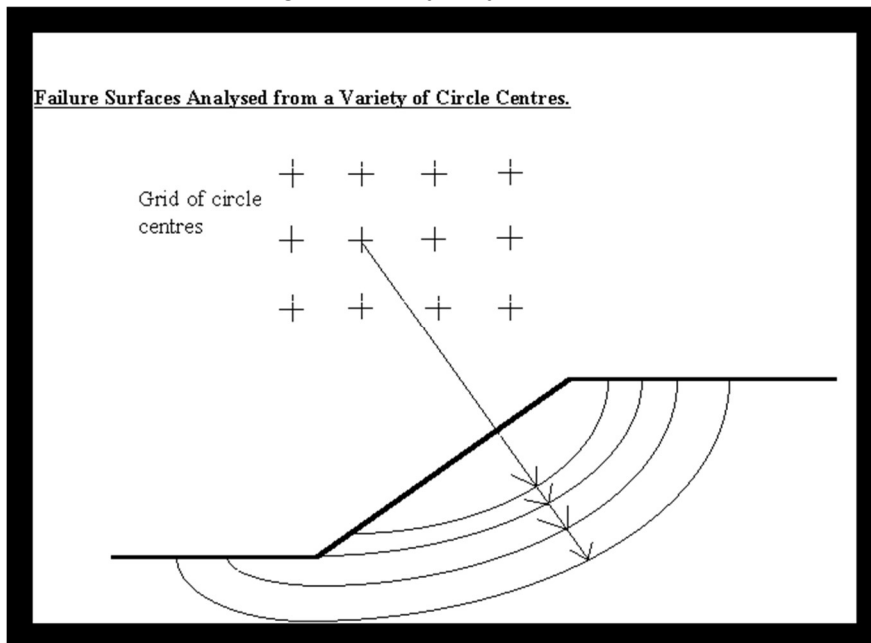


Figure 3 - Theoretical Failure Surfaces

### **8.3 Recommendations for Remediation**

The soil encountered at the slope is unstable. Various options are available to stabilize this slope. They are listed below:

**Option- I** - The use of rock fill with geosynthetics - Paralink® or Terramesh Green - for reinforced soil slopes (RSS) with or without a toe berm. The provided design drawing will stabilize the slope with FOS of 2.267 as per the attached analysis.

This option will be the simplest of all three. However, the final slope will have to be adjusted to achieve a factor of safety of 1.0 or more. The creek hydraulic geometry will have to be factored into the final design. A local contractor can easily carry out this work with regular equipment. A drawing set illustrating this proposed design is provided at DWG #2 in Appendix C of this report.

**Option II** – Building a retaining wall at the toe of the slope.

This will involve a design that may encroach on the hydraulic properties of the creek on site. The wall can be concrete or built of gabion baskets.

**Option III** – Use of Mechanically Stabilized Earth Walls, (MSEW) or Terramesh Green for reinforced soil slopes (RSS) by Maccaferri.

This is a proprietary product, hence Maccaferri will have to be consulted for the final design with the geotechnical parameters that we have provided herein.

### **8.4 Tension Cracks**

Tension cracks at the head of any slope will suggest strictly that instability is imminent. Tensions cracks were not evident during our site investigation of the existing slope. We do not expect tension cracks to develop on the new slope post construction, but it should be monitored.

### **8.5 Drainage Methods**

Drainage is best used as a short-term and long-term stabilizing method. It helps to reduce surface water infiltration and thereby reduce the pore water pressures. By covering the slope with either sod or hydro seeding, the amount of surface infiltration from rainwater into the underlying soil is immediately reduced to mitigate potential of slope washouts. Therefore, grassing over the slope is highly recommended.

## **9.0 CONCLUSION**

The site was reviewed for slope instability using the Rockscience Slice 2- program. Two methods were used, and both resulted in the same Factor of safety that is less than 1.0. The existing slope is unsafe, hence the washout as encountered during site reconnaissance.

Three options have been presented herein for remediation. Option 1's proposed design drawing has been presented herein for review. Since the ephemeral creek at the bottom of the slope drains into Lake Temiskaming, Department of Fisheries and Oceans (DFO), may have to be contacted about the possible change to the hydraulic characteristics of the said creek once an option is chosen. The two other options can be considered or investigated by the client.

The retaining wall in both options #2 & 3 will provide enhanced FOS, but it should be reviewed post construction.

The flattened embankment slope in area I (top to bottom of slope) is recommended to be constructed of rock fill, minus 8 inches in size, materials meeting the requirements of Ontario Provincial Standard Specifications (OPSS) granular B Type 1 or Type 2 materials. A layer of both geotextile and geosynthetic – Paralink may be utilized to cover the underlying in-situ soil prior to backfill. Backfill should be placed in maximum lift of 200 mm thick and compacted to 98 % of the materials' Standard Proctor maximum dry density (SPMDD).

The slope face should be covered with either hydro seed or sod and vegetation and should be established on the new slope face as quickly as practical to provide additional protection against erosion.

During construction, all efforts should be made to minimize silt migration to the creek. The use of commercially available silt curtains will be recommended.

## **10.0 CLOSURE**

This report has been prepared in accordance with generally accepted geotechnical engineering practices for the exclusive use of the Client. Information collected herein was obtained while conducting an authorized geotechnical investigation at the property designated as the Haileybury Cemetery, Temiskaming Shores, Ontario. It is important to note that the data collected, and subsurface conditions analyzed from this specific location may vary at other locations. In addition, groundwater table seasonal fluctuation may impact the characteristics of the native soil.



The recommendations and comments presented in this report are based on the subsoil conditions encountered during our site visit(s). The recommendations/comments are intended for the guidance of our clients. Although we consider this report to be representative of the subsurface conditions, there may well be a slight differentiation in soil material property that would become obvious during excavation.

Any use and/ or interpretation of the data presented in this report, any decisions made on it by the third party are the responsibility of the third party. Shaba Testing Services responsibilities are limited to the accurate interpretation of the soil conditions prevailing in the locations investigated and accept no responsibility for the loss of time and damages, if any, suffered by the third party, because of the decisions or actions based on this report.

This report and all portions thereof shall be treated as confidential and shall not be used in any manner or for any purpose or be provided to any third party without the express written consent of the client or their Consultants.

Shaba Testing Services trusts that the information contained herein is adequate. Any person(s) in receipt of this report should contact this office to address any questions or concerns with the contents of this document at their earliest convenience.

Respectfully Submitted,

Lad Shaba, B. Sc, M.A(Ed); CET; P.Eng.  
Shaba Testing Services Ltd.  
Senior Structural/Geotechnical Engineer



**Appendix A - Photo Gallery of Site**

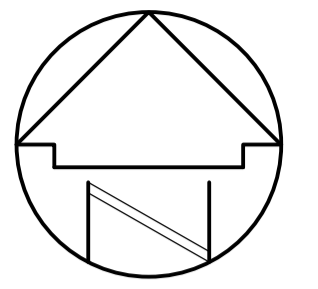


The Site.

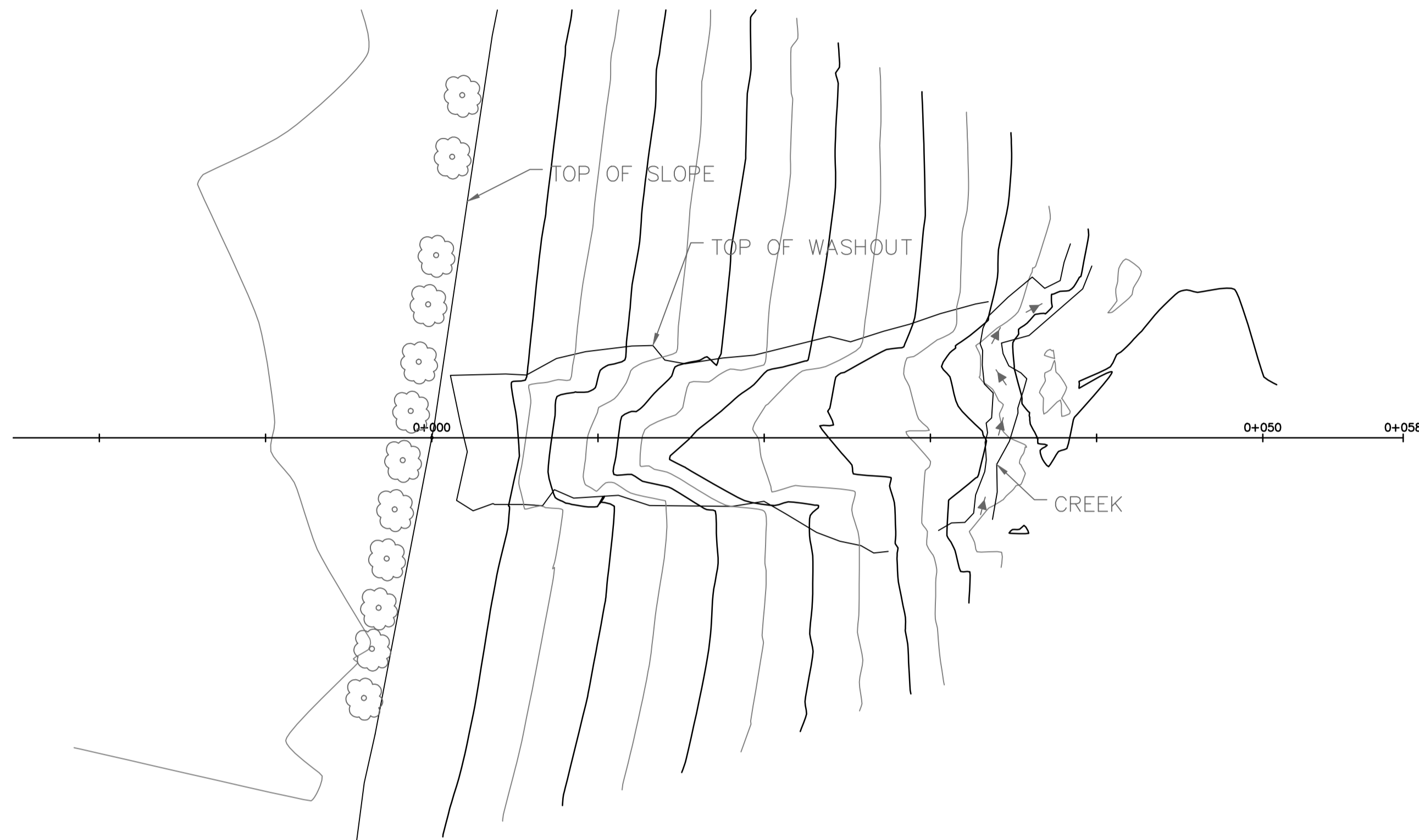


The Washout.

**Appendix B – Drawing of Existing Slope- DWG #1**



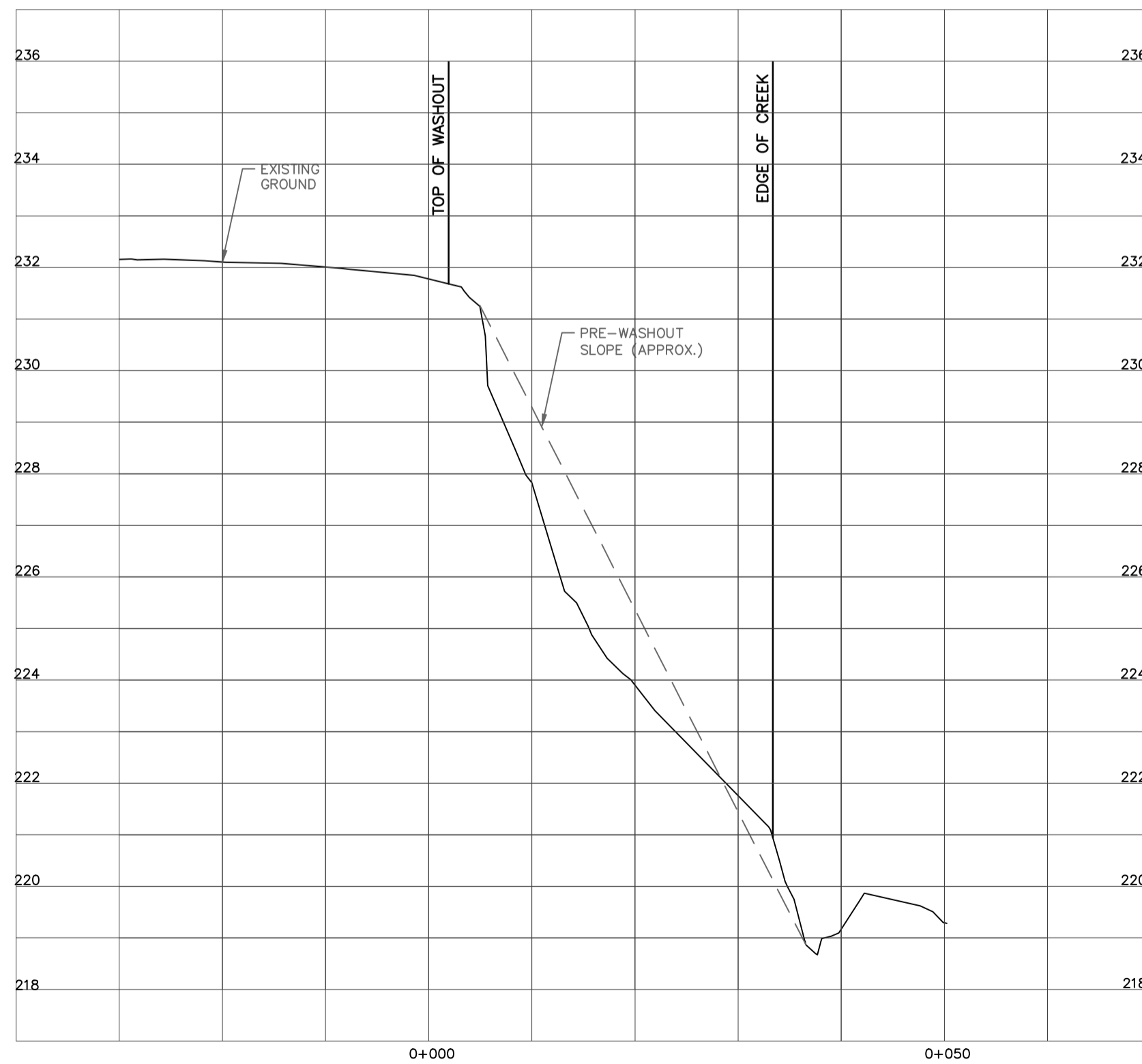
PLAN  
Scale: 1:250



NOTWITHSTANDING THOSE UTILITIES AND STRUCTURES SPECIFICALLY DESIGNATED FOR REMOVALS OR RELOCATION, THE LOCATION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION AND MATERIAL TYPE AS NECESSARILY OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

PROFILE  
Scale: As Noted



No	DATE	REVISION	BY
1	01/24/25	Issued as Part of Appendix B	JM

**MOUNT PLEASANT CEMETERY SLOPE WASHOUT**

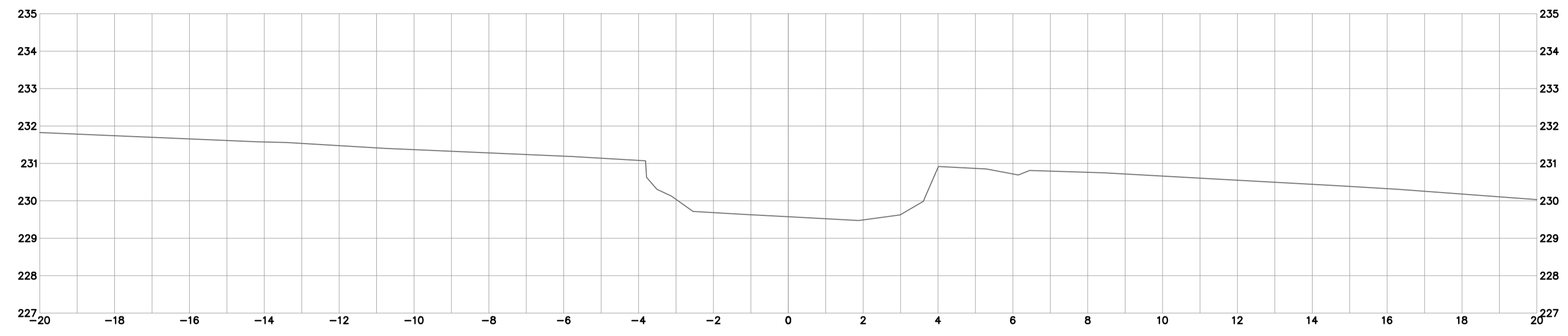
PROJECT No **STS 2024-0189**

DRAWING TITLE

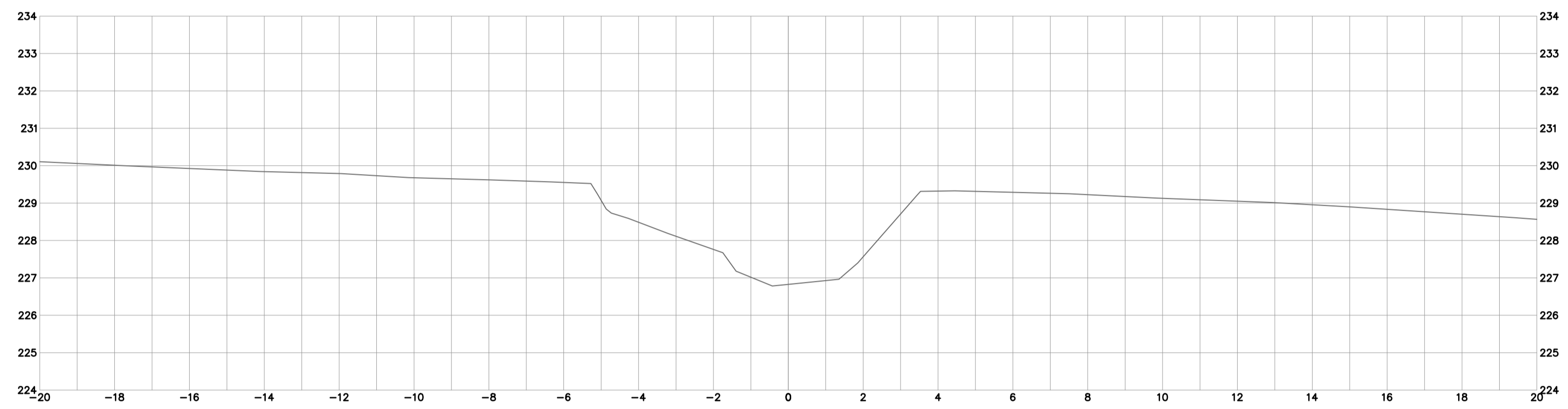
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"AS-IS" CONDITION, NOVEMBER 2024

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	DRAWN J.D.	FIELD NOTES N/A
	CHECKED L.S.	DATE NOV 2024

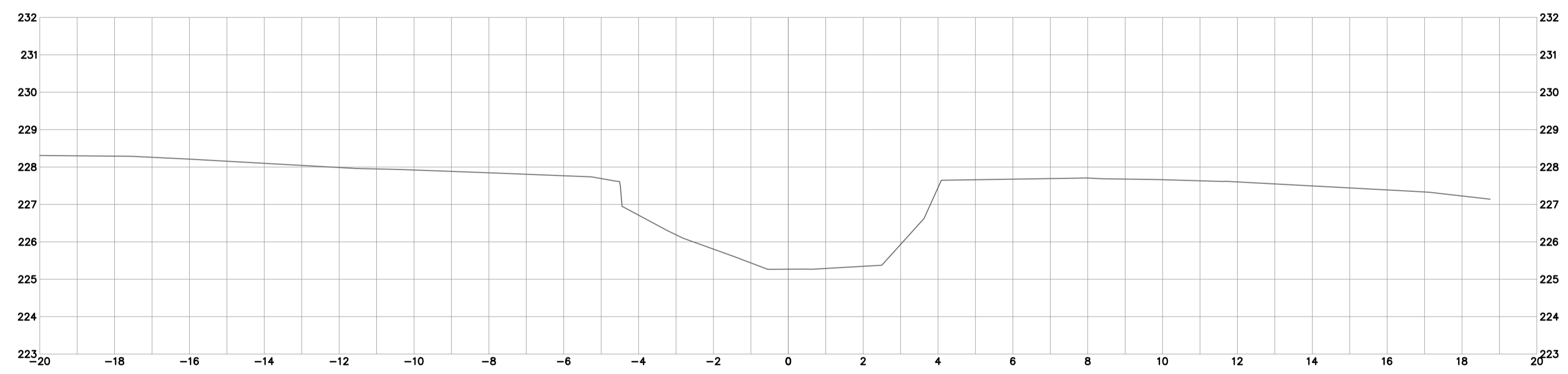
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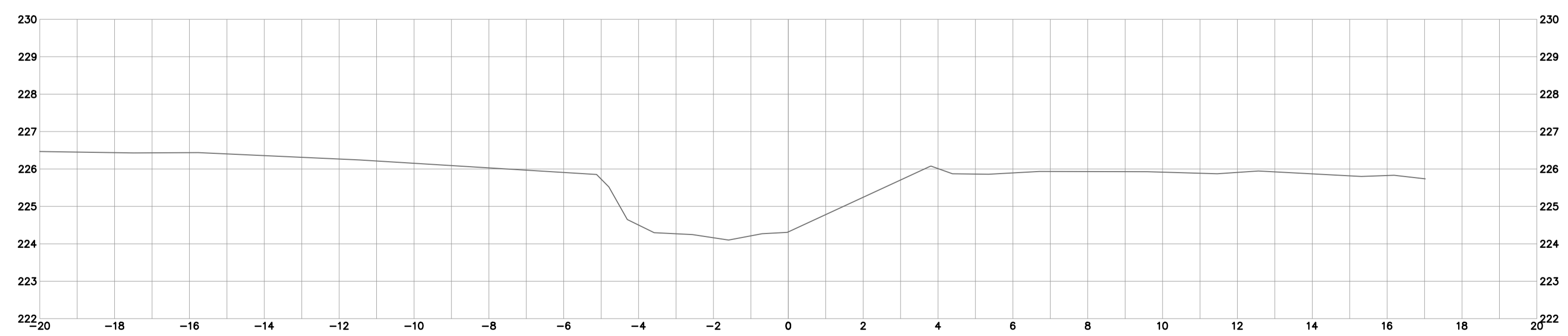
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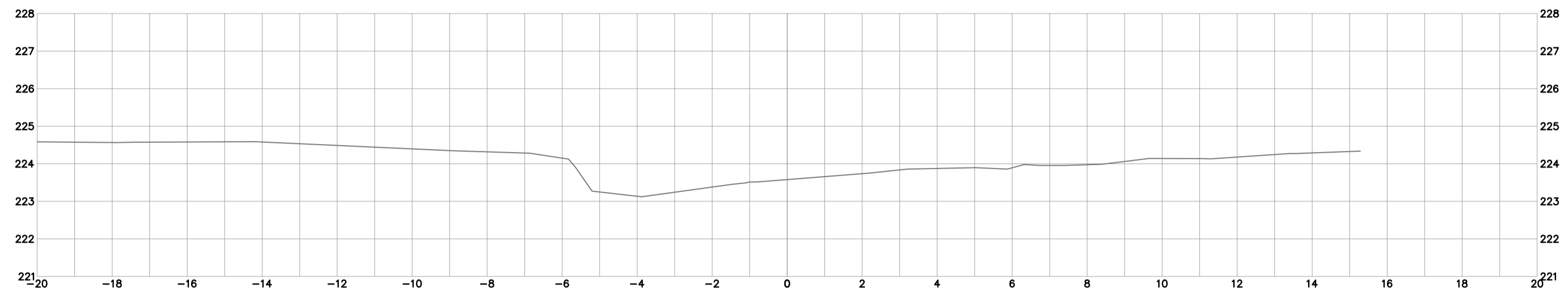
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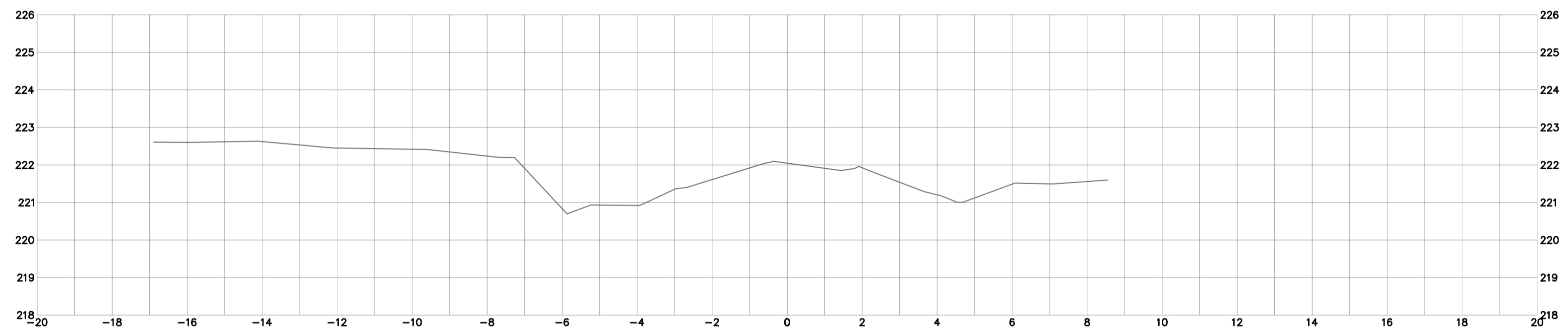
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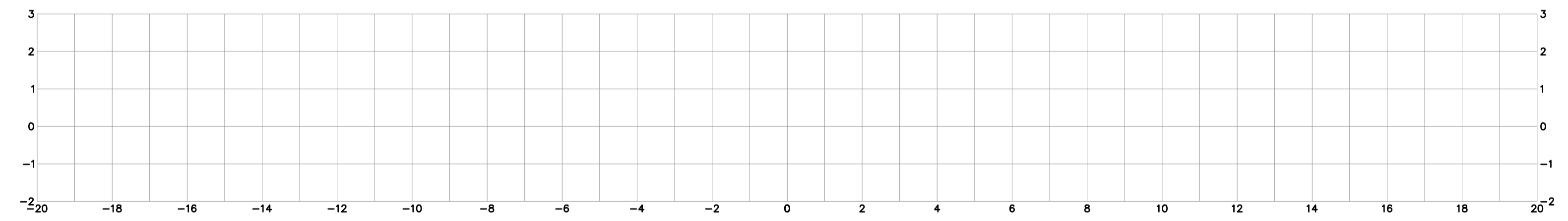
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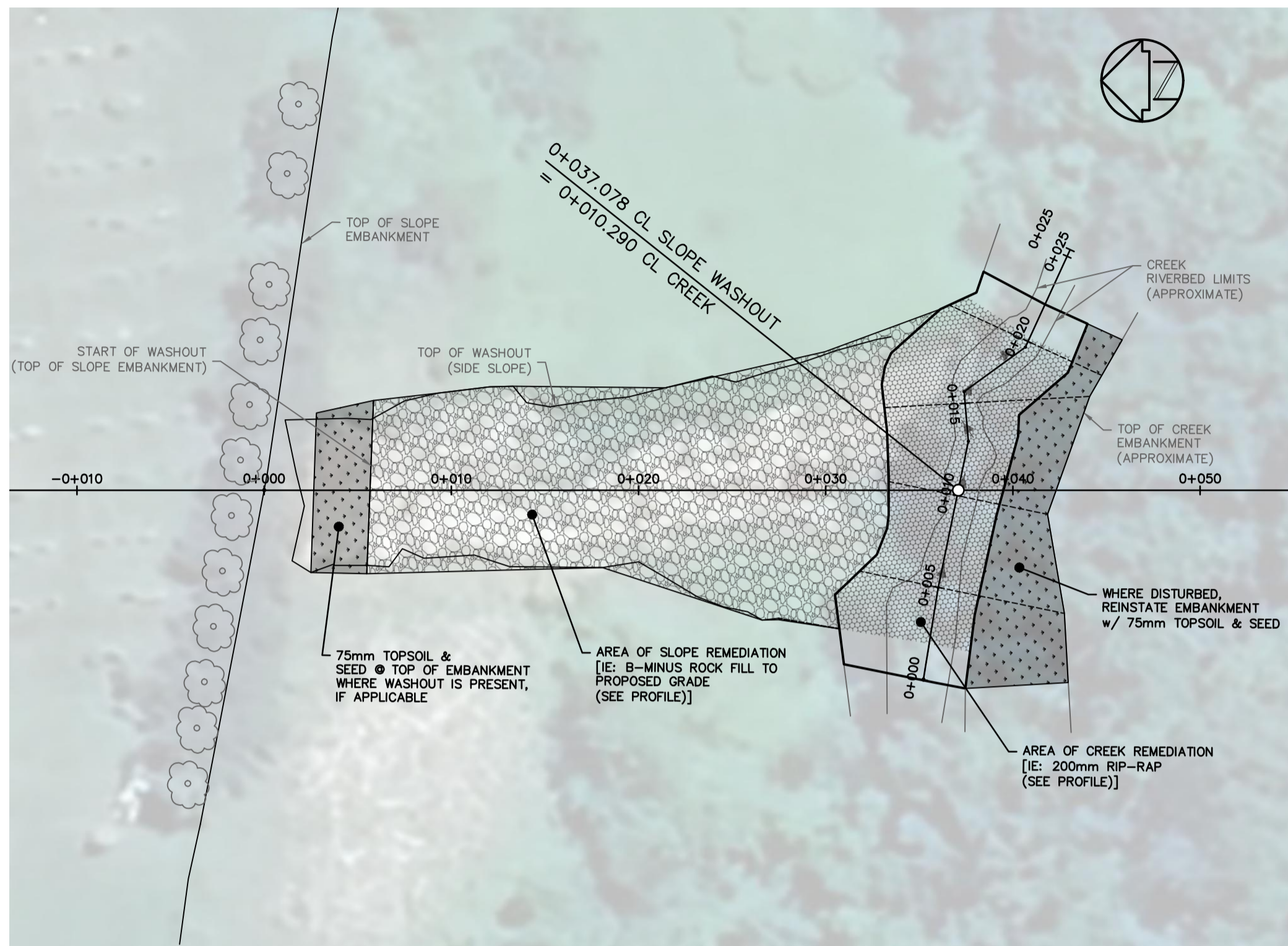
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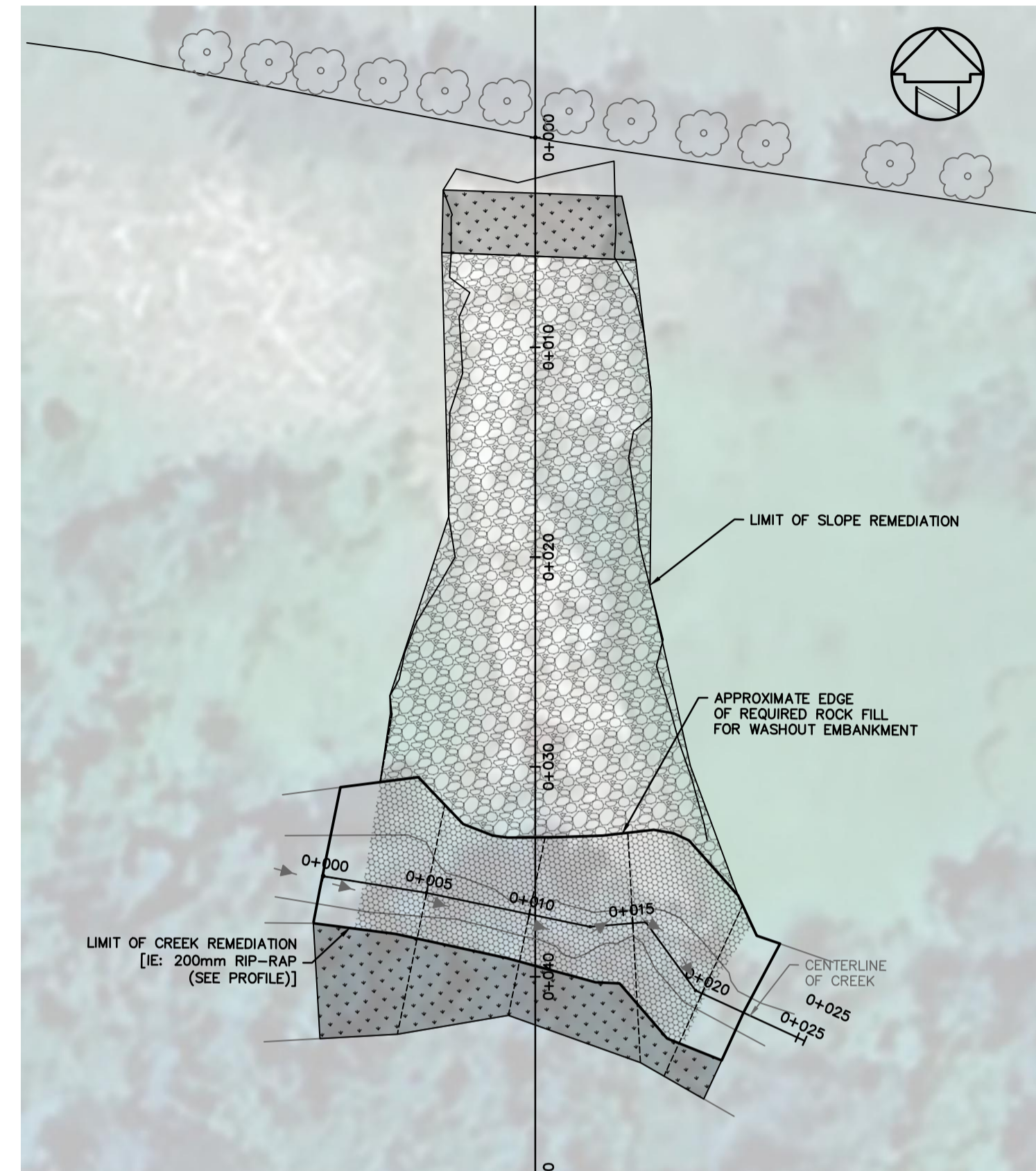
**Appendix C** – Drawing of Proposed Slope Option #1 - DWG #2.



**CL PROFILE of SLOPE WASHOUT**



**CL PROFILE of CREEK**



NOTWITHSTANDING THOSE UTILITIES AND STRUCTURES SPECIFICALLY DESIGNATED FOR REMOVALS OR RELOCATION, THE LOCATION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION AND MATERIAL TYPE AS NECESSARILY OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

**REHABILITATION PROCEDURE AS FOLLOWS:**

1. INSTALL SILT MIGRATION COUNTERMEASURES DOWNSTREAM OF THE WORK AND THROUGHOUT THE PERIMETER OF THE WORK LIMITS. PROVIDE AND INSTALL DEWATERING SYSTEMS WITHIN THE CONSTRUCTION LIMITS ALONG THE EMBANKMENT AND CREEK BED AS NECESSARY.
2. CLEAN OUT ANY AND ALL SEDIMENT DEPOSITS AND LOOSE SOIL WITHIN WASHOUT AREA.
3. REINSTATE AFFECTED EMBANKMENT AS FOLLOWS, BOTTOM TO TOP:
  - 3.1. ONE LAYER OF NON-WOVEN GEOTEXTILE & GEOGRID ("Terrafix 360R" OR EQUIVALENT)
  - 3.2. MINE ROCK FILL AS REQUIRED TO PROPOSED GRADE
  - 3.3. IF SLOPE IS STEEPER THAN 3H:1V, 300mm R-50 RIPRAP; OTHERWISE, 75mm TOPSOIL & SEED
4. IF REQUIRED, INSTALL ENGINEERED GABION WALL AT BOTTOM OF AFFECTED EMBANKMENT TO MAINTAIN 3H:1V SLOPE FOR PRACTICAL TOPSOIL & SEED APPLICATION.
5. INSTALL 300mm R-50 RIPRAP WITHIN LIMIT OF CONSTRUCTION ALONG THE CREEK BED AS INDICATED ON THE CIVIL DRAWINGS.
6. DEMOBILIZE COUNTERMEASURES AND REINSTATE ALL DISTURBED AREAS WITHIN THE LIMIT OF CONSTRUCTION.

No	DATE	REVISION	BY
1	01/09/25	Issued for Review / Approval	JM
2	01/24/25	Issued as Part of Appendix C	JM

Corporation of the City of Temiskaming Shores

**MOUNT PLEASANT CEMETERY SLOPE WASHOUT**

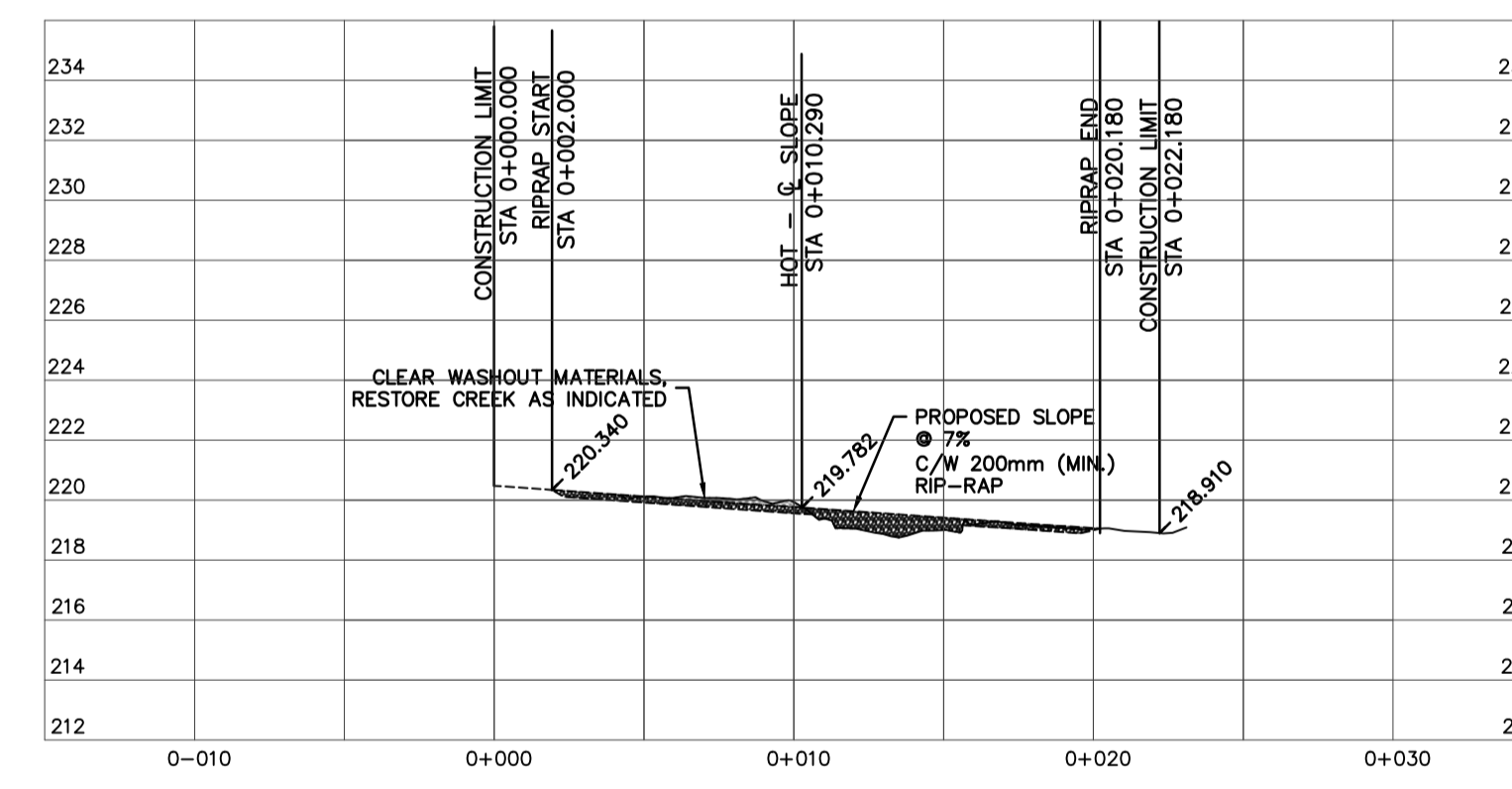
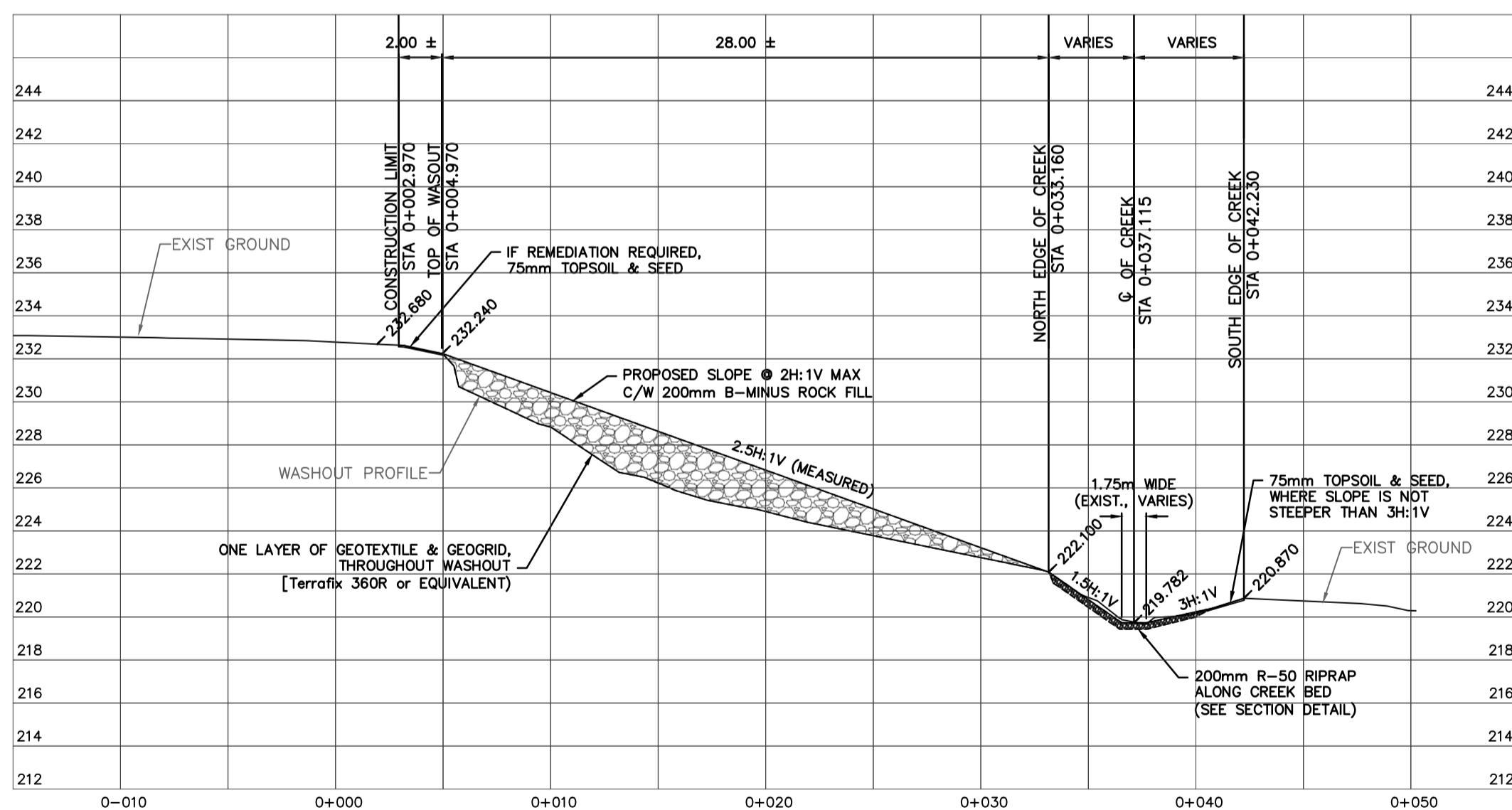
PROJECT No **STS 2024-0189**  
DRAWING TITLE

**SLOPE DESIGN AND REHABILITATION PLAN & PROFILE**

ENGINEERS SEAL	SCALES	SHEET No
	HOR. 1:250 VER. 1:250	1
	DESIGN	PLAN No
	L.S.	N/A
	DRAWN	FIELD NOTES
J.M. / J.D.	N/A	
CHECKED	DATE	
L.S.	DEC 2024	

**STS SHABA TESTING SERVICES LTD.**  
Consulting Engineers, Engineering Services, Materials Testing, Quality Control and Inspections

36 LAKESHORE ROAD, P.O. BOX 2524, NEW LISKEARD, ONT. P0J 1P0  
TELEPHONE 1-(705)-647-8871 FAX 1-(705)-567-4171



**GENERAL NOTES:**

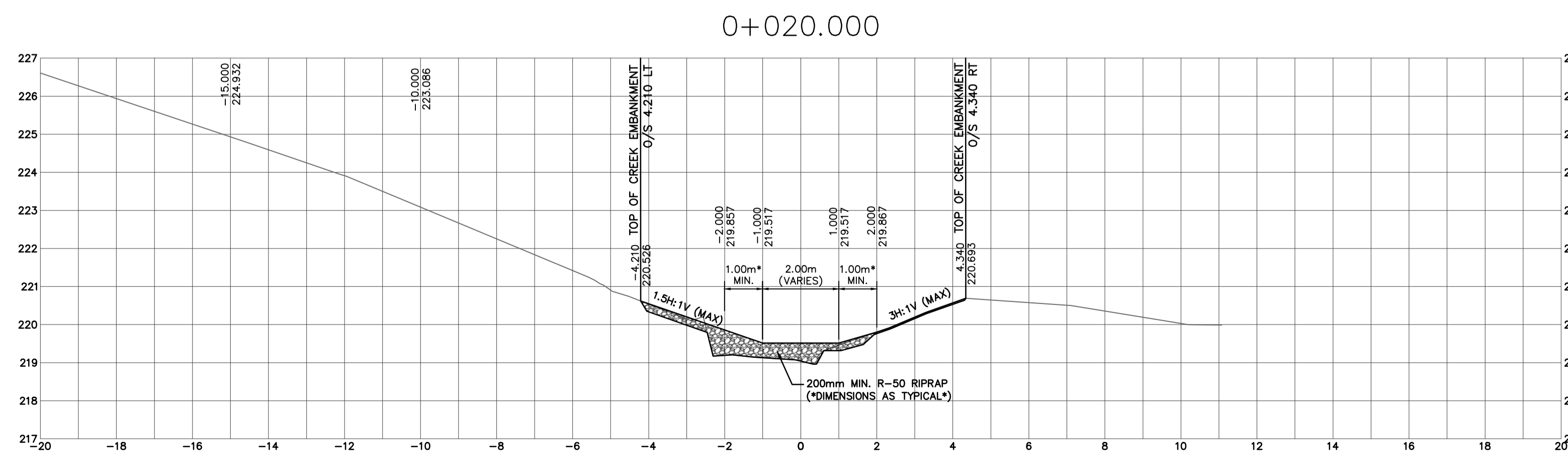
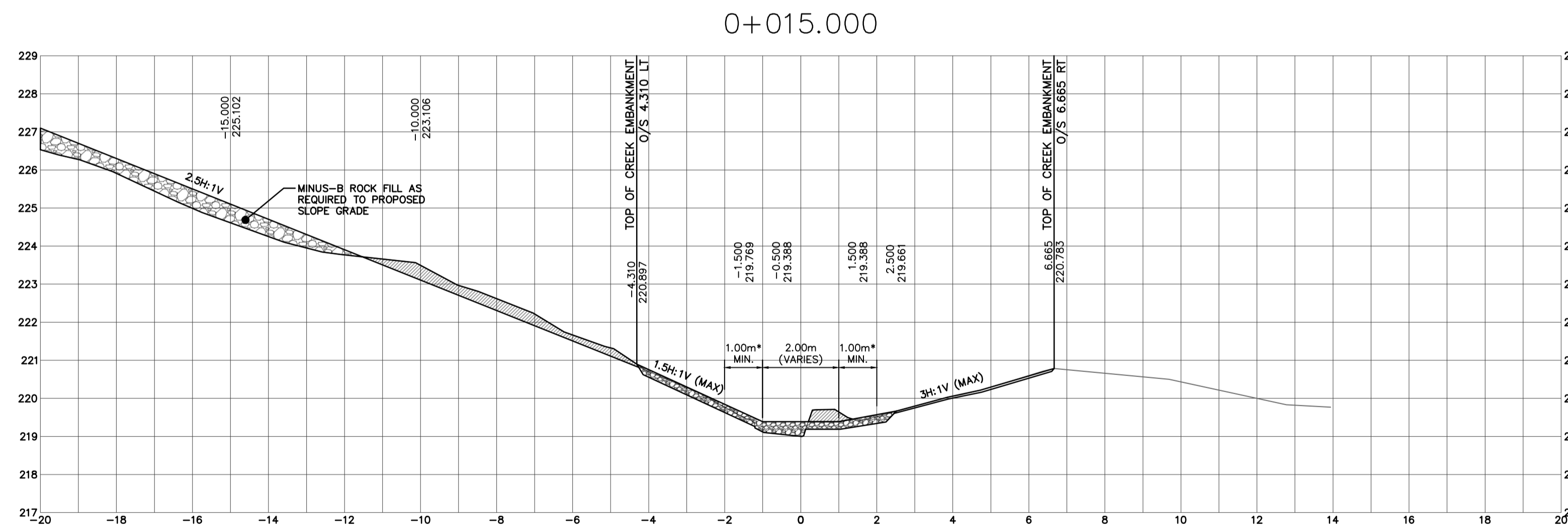
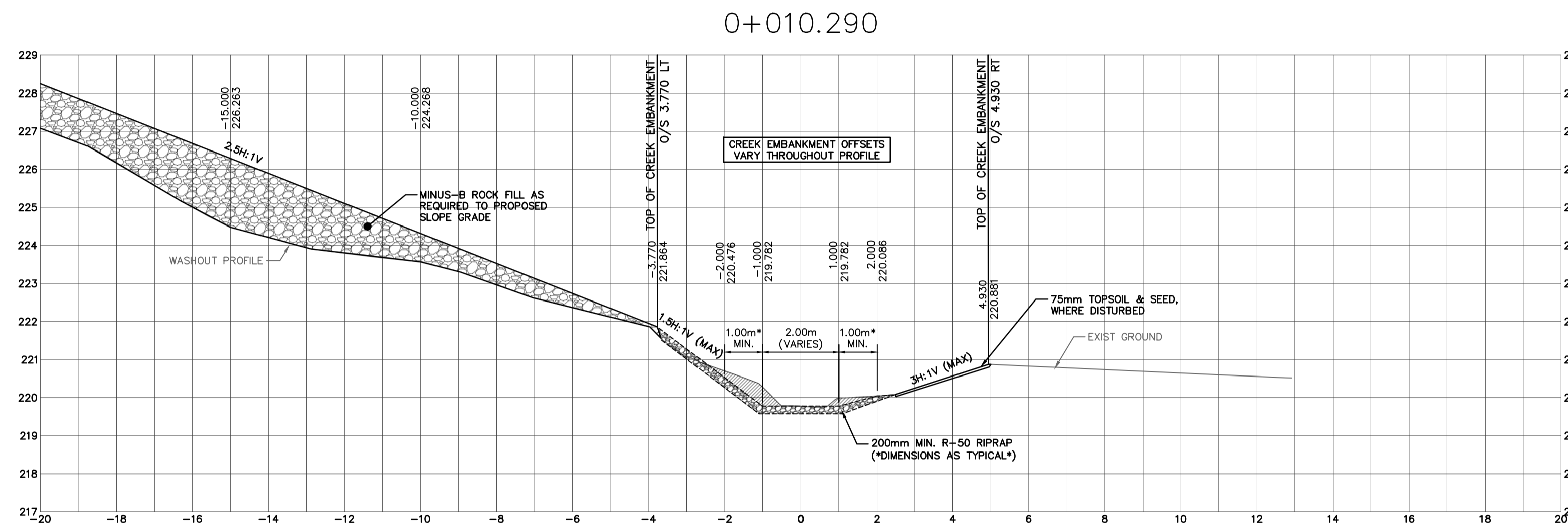
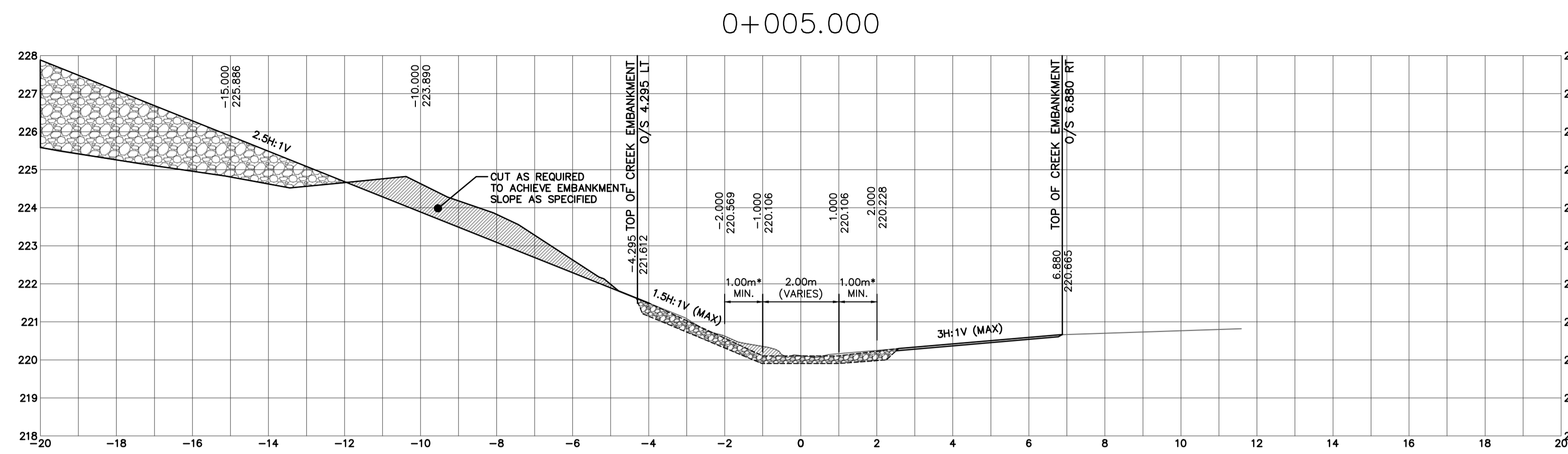
1. EXISTING SITE TOPOGRAPHY, DETAILS AND SERVICING INFORMATION BY STS SHABA TESTING SERVICES AND BASED ON TOPOGRAPHICAL SURVEY CONDUCTED IN NOVEMBER 2024.
2. ALL WORK TO BE IN ACCORDANCE WITH THE ONTARIO BUILDING CODE (LATEST REVISION AND INCLUDING SUPPLEMENTARY GUIDELINES) AND ALL OTHER APPLICABLE CODES HAVING JURISDICTIONS. DIMENSIONS IN METRIC UNLESS WHERE NOTED OTHERWISE.
3. ALL AREAS OF EXISTING SITE DISTURBED BY CONSTRUCTION ARE TO BE REHABILITATED TO EXISTING CONDITIONS OR BETTER.
4. FINISHED ELEVATIONS OF NEW BUILDINGS/STRUCTURES SHALL BE FIELD SET; ENSURE POSITIVE DRAINAGE TOWARDS DITCHES, SWALES, CULVERTS, OR OTHER DRAINAGE COURSES. ALL CONSTRUCTION ACTIVITY TO ADHERE TO LOCAL NOISE BYLAWS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MANAGING OFF-SITE DISPOSAL OF WASTE OR UNWANTED SITE MATERIALS. THE CA SHALL FIELD-DETERMINE MATERIAL FOR RE-USE WITHIN THE PROJECT.
6. STAKE OR MARK PROPOSED LAYOUT OF SITE AT OUTSET OF PROJECT AND CONFIRM THAT THERE'S NO INTERFERENCE TO EXISTING SITE FEATURES AND/OR UTILITIES.

**SEDIMENT / EROSION CONTROL MEASURES:**

1. ENSURE THAT WASHOUT MATERIAL DOES NOT MIGRATE UNABATED INTO SURROUNDING DRAINAGE COURSES.
2. SILTATION CONTROL MEASURES ARE TO BE IMPLEMENTED AT SITEWORK PERIMETERS AND INSPECTED DAILY AND LOGGED. ENSURE PROPER FUNCTIONING AND MAINTENANCE AS NECESSARY UNTIL CONSTRUCTION AREAS ARE STABILIZED.
3. NO REMEDIATION WORK SHALL COMMENCE UNTIL SEDIMENT AND EROSION CONTROL MEASURES ARE EFFECTIVELY ESTABLISHED.
4. LIGHT DUTY SILT FENCE BARRIERS TO BE CONSTRUCTED ALONG SITE CONSTRUCTION PERIMETER, PER OPSD 219.110.
5. STRAW BALE FLOW CHECKS TO BE INSTALLED AT EXISTING DITCHES AND SWALES DOWNSTREAM WITHIN THE WORK LIMITS AS PER OPSD 219.180.
6. WHERE APPLICABLE, STREET SWEEPING, CATCH BASIN CLEANING, AND DUST CONTROL ARE THE RESPONSIBILITIES OF THE CONTRACTOR AND SHALL BE IMPLEMENTED ON ALL ROADWAYS WITHIN THE CONSTRUCTION ZONE.
7. SURFACE EROSION PROTECTION SHALL BE APPLIED FOR ALL DISTURBED AREAS, SUBJECT TO EROSION, UNTIL VEGETATION IS PRESENT.
8. INSTALL ADDITIONAL SEDIMENTATION CONTROL MEASURES IF IT IS OBSERVED THAT CONSTRUCTION ACTIVITIES ARE NEGATIVELY IMPACTING THE SURROUNDING AREA, DRAINAGE COURSES, OR DRAINAGE STRUCTURES NOT ALREADY PROTECTED.

NOTWITHSTANDING THOSE UTILITIES AND STRUCTURES SPECIFICALLY DESIGNATED FOR REMOVALS OR RELOCATION, THE LOCATION OF POLE LINES, CONDUITS, WATERMANS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWING, AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED.

BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION AND MATERIAL TYPE AS NECESSARILY OF ALL SUCH UTILITIES AND STRUCTURES, AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.



No	DATE	REVISION	BY
1	01/09/25	Issued for Review / Approval	JM
2	01/24/25	Issued as Part of Appendix C	JM



PROJECT No **STS 2024-0189**

DRAWING TITLE

### SLOPE DESIGN AND REHABILITATION CROSS-SECTIONS

ENGINEERS SEAL	SCALES	SHEET No
	HR. 1:100	2
	VER. 1:100	
	DESIGN L.S.	PLAN No N/A
	DRAWN J.M. / J.D.	FIELD NOTES N/A
CHECKED L.S.	DATE NOV 2024	

**Appendix D – Slope Stability Analysis Results- Initial and Final Results.**



Haileybury Cemetery Slope Design and Rehabilitation  
Slide2 - An Interactive Slope Stability Program  
Date Created: 2024-12-09, 8:04:36 AM  
Software Version: 9.036

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## Slide2 Analysis Information

# Haileybury Cemetery Slope Design and Rehabilitation

## General Settings

---

Units of Measurement:

Time Units:

Permeability Units:

Data Output:

Failure Direction:

Metric Units

days

meters/second

Standard

Left to Right

# Analysis Options

---

## All Open Scenarios

Slices Type:	Vertical
<b>Analysis Methods Used</b>	
	Bishop simplified
	GLE/Morgenstern-Price with interslice force function (Half Sine)
	Janbu simplified
Number of slices:	50
Tolerance:	0.005
Maximum number of iterations:	75
Check malpha < 0.2:	Yes
Create Interslice boundaries at intersections with water tables and piezos:	Yes
Initial trial value of FS:	1
Steffensen Iteration:	Yes



# Random Numbers

---

## All Open Scenarios

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


# Surface Options


---

## All Open Scenarios











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

# Materials

Clay	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	18 kN/m <sup>3</sup>
Cohesion	25 kPa
Phi	28 °
Water Surface	Assigned per scenario
Ru Value	0

Rock fill	
Color	
Strength Type	Mohr-Coulomb
Unit Weight	20 kN/m <sup>3</sup>
Cohesion	5 kPa
Phi	30 °
Water Surface	Assigned per scenario
Ru Value	0

## Materials In Use

Material		Pre	Post	Pre - 1:1	Post - 1:1
Clay	 				
Rock fill	 				

## Global Minimums

### ◆ **Pre**

#### Method: bishop simplified

FS	0.629749
Center:	603397.371, 5254554.309
Radius:	101.531
Left Slip Surface Endpoint:	603298.785, 5254530.030
Right Slip Surface Endpoint:	603339.628, 5254470.796
Left Slope Intercept:	603298.785 5254530.030
Right Slope Intercept:	603339.631 5254470.792
Resisting Moment:	531144 kN-m
Driving Moment:	843421 kN-m
Total Slice Area:	579.216 m <sup>2</sup>
Surface Horizontal Width:	40.8434 m
Surface Average Height:	14.1814 m

#### Method: janbu simplified

FS	0.609236
Center:	603386.776, 5254545.587
Radius:	88.412
Left Slip Surface Endpoint:	603299.760, 5254529.938
Right Slip Surface Endpoint:	603339.628, 5254470.796
Left Slope Intercept:	603299.760 5254529.938
Right Slope Intercept:	603339.631 5254470.792
Resisting Horizontal Force:	3062.77 kN
Driving Horizontal Force:	5027.23 kN
Total Slice Area:	594.44 m <sup>2</sup>
Surface Horizontal Width:	39.8683 m
Surface Average Height:	14.9101 m

#### Method: gle/morgenstern-price

FS	0.622772
Center:	603397.520, 5254554.283
Radius:	101.595
Left Slip Surface Endpoint:	603298.864, 5254530.023
Right Slip Surface Endpoint:	603339.628, 5254470.796
Left Slope Intercept:	603298.864 5254530.023
Right Slope Intercept:	603339.631 5254470.792
Resisting Moment:	523159 kN-m
Driving Moment:	840049 kN-m
Resisting Horizontal Force:	3051.26 kN
Driving Horizontal Force:	4899.49 kN
Total Slice Area:	576.104 m <sup>2</sup>
Surface Horizontal Width:	40.7643 m
Surface Average Height:	14.1325 m

### ◆ **Post**

**Method: bishop simplified**

FS	0.463064
Center:	603398.984, 5254543.340
Radius:	90.522
Left Slip Surface Endpoint:	603310.178, 5254525.800
Right Slip Surface Endpoint:	603334.629, 5254479.680
Resisting Moment:	96747.3 kN-m
Driving Moment:	208928 kN-m
Total Slice Area:	134.015 m <sup>2</sup>
Surface Horizontal Width:	24.4511 m
Surface Average Height:	5.48092 m

**Method: janbu simplified**

FS	0.445041
Center:	603398.984, 5254543.340
Radius:	90.522
Left Slip Surface Endpoint:	603310.178, 5254525.800
Right Slip Surface Endpoint:	603334.629, 5254479.680
Resisting Horizontal Force:	507.694 kN
Driving Horizontal Force:	1140.78 kN
Total Slice Area:	134.015 m <sup>2</sup>
Surface Horizontal Width:	24.4511 m
Surface Average Height:	5.48092 m

**Method: gle/morgenstern-price**

FS	0.456166
Center:	603398.984, 5254543.340
Radius:	90.522
Left Slip Surface Endpoint:	603310.178, 5254525.800
Right Slip Surface Endpoint:	603334.629, 5254479.680
Resisting Moment:	95306.2 kN-m
Driving Moment:	208928 kN-m
Resisting Horizontal Force:	528.298 kN
Driving Horizontal Force:	1158.13 kN
Total Slice Area:	134.015 m <sup>2</sup>
Surface Horizontal Width:	24.4511 m
Surface Average Height:	5.48092 m

**◆ Pre - 1:1****Method: bishop simplified**

FS	2.869390
Center:	44.619, 20.176
Radius:	15.377
Left Slip Surface Endpoint:	30.946, 13.139
Right Slip Surface Endpoint:	49.610, 5.632
Resisting Moment:	16874.6 kN-m
Driving Moment:	5880.9 kN-m
Total Slice Area:	58.3927 m <sup>2</sup>
Surface Horizontal Width:	18.6635 m
Surface Average Height:	3.12872 m

**Method: janbu simplified**

FS	2.621750
Center:	44.437, 17.966
Radius:	13.890
Left Slip Surface Endpoint:	31.421, 13.116
Right Slip Surface Endpoint:	50.485, 5.461
Resisting Horizontal Force:	1045.72 kN
Driving Horizontal Force:	398.862 kN
Total Slice Area:	68.0205 m <sup>2</sup>
Surface Horizontal Width:	19.0636 m
Surface Average Height:	3.56809 m

**Method: gle/morgenstern-price**

FS	2.866360
Center:	44.619, 20.176
Radius:	15.377
Left Slip Surface Endpoint:	30.946, 13.139
Right Slip Surface Endpoint:	49.610, 5.632
Resisting Moment:	16856.8 kN-m
Driving Moment:	5880.9 kN-m
Resisting Horizontal Force:	957.755 kN
Driving Horizontal Force:	334.137 kN
Total Slice Area:	58.3927 m <sup>2</sup>
Surface Horizontal Width:	18.6635 m
Surface Average Height:	3.12872 m

◆ **Post - 1:1****Method: bishop simplified**

FS	2.267110
Center:	57.828, 35.655
Radius:	31.014
Left Slip Surface Endpoint:	37.534, 12.203
Right Slip Surface Endpoint:	58.500, 4.649
Resisting Moment:	14168.5 kN-m
Driving Moment:	6249.56 kN-m
Total Slice Area:	30.9613 m <sup>2</sup>
Surface Horizontal Width:	20.9652 m
Surface Average Height:	1.4768 m

**Method: janbu simplified**

FS	2.208530
Center:	57.828, 35.655
Radius:	31.014
Left Slip Surface Endpoint:	37.534, 12.203
Right Slip Surface Endpoint:	58.500, 4.649
Resisting Horizontal Force:	423.509 kN
Driving Horizontal Force:	191.76 kN
Total Slice Area:	30.9613 m <sup>2</sup>
Surface Horizontal Width:	20.9652 m
Surface Average Height:	1.4768 m

**Method: gle/morgenstern-price**

<b>FS</b>	<b>2.266060</b>
Center:	57.828, 35.655
Radius:	31.014
Left Slip Surface Endpoint:	37.534, 12.203
Right Slip Surface Endpoint:	58.500, 4.649
Resisting Moment:	14161.9 kN-m
Driving Moment:	6249.56 kN-m
Resisting Horizontal Force:	425.124 kN
Driving Horizontal Force:	187.605 kN
Total Slice Area:	30.9613 m <sup>2</sup>
Surface Horizontal Width:	20.9652 m
Surface Average Height:	1.4768 m

# Slice Data

## ◆ Pre

### Global Minimum Query (bishop simplified) - Safety Factor: 0.629749

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.816868	22.2583	-75.2593	Clay	25	28	14.8999	9.3832	-29.371	0	-29.371	27.26	27.26
2	0.816868	64.2788	-73.5399	Clay	25	28	27.5173	17.329	-14.4271	0	-14.4271	78.7081	78.7081
3	0.816868	101.931	-71.9813	Clay	25	28	40.3475	25.4088	0.768792	0	0.768792	124.808	124.808
4	0.816868	136.261	-70.5442	Clay	25	28	53.2616	33.5415	16.0642	0	16.0642	166.84	166.84
5	0.816868	167.941	-69.203	Clay	25	28	66.1838	41.6792	31.3691	0	31.3691	205.627	205.627
6	0.816868	197.301	-67.9401	Clay	25	28	79.0218	49.7639	46.5742	0	46.5742	241.573	241.573
7	0.816868	223.497	-66.7427	Clay	25	28	91.3277	57.5135	61.149	0	61.149	273.645	273.645
8	0.816868	247.759	-65.601	Clay	25	28	103.385	65.1063	75.4288	0	75.4288	303.349	303.349
9	0.816868	270.65	-64.5075	Clay	25	28	115.306	72.6141	89.5493	0	89.5493	331.376	331.376
10	0.816868	292.32	-63.4562	Clay	25	28	127.085	80.0317	103.5	0	103.5	357.906	357.906
11	0.816868	312.948	-62.4422	Clay	25	28	138.738	87.3703	117.301	0	117.301	383.16	383.16
12	0.816868	328.733	-61.4616	Clay	25	28	148.684	93.6337	129.081	0	129.081	402.486	402.486
13	0.816868	335.597	-60.5109	Clay	25	28	155.083	97.6632	136.659	0	136.659	410.889	410.889
14	0.816868	344.18	-59.5874	Clay	25	28	162.194	102.142	145.082	0	145.082	421.396	421.396
15	0.816868	344.101	-58.6885	Clay	25	28	165.579	104.273	149.091	0	149.091	421.298	421.298
16	0.816868	340.857	-57.8123	Clay	25	28	167.445	105.448	151.302	0	151.302	417.327	417.327
17	0.816868	336.955	-56.9569	Clay	25	28	168.852	106.334	152.967	0	152.967	412.548	412.548
18	0.816868	332.464	-56.1208	Clay	25	28	169.827	106.948	154.122	0	154.122	407.049	407.049
19	0.816868	327.419	-55.3024	Clay	25	28	170.385	107.3	154.783	0	154.783	400.872	400.872
20	0.816868	321.847	-54.5006	Clay	25	28	170.536	107.395	154.962	0	154.962	394.049	394.049
21	0.816868	315.778	-53.7142	Clay	25	28	170.292	107.241	154.673	0	154.673	386.618	386.618
22	0.816868	309.248	-52.9423	Clay	25	28	169.669	106.849	153.935	0	153.935	378.622	378.622
23	0.816868	302.269	-52.1839	Clay	25	28	168.672	106.221	152.754	0	152.754	370.078	370.078
24	0.816868	294.869	-51.4382	Clay	25	28	167.311	105.364	151.143	0	151.143	361.017	361.017
25	0.816868	287.077	-50.7045	Clay	25	28	165.602	104.288	149.119	0	149.119	351.477	351.477
26	0.816868	278.903	-49.9821	Clay	25	28	163.547	102.994	146.685	0	146.685	341.469	341.469
27	0.816868	270.365	-49.2704	Clay	25	28	161.155	101.487	143.851	0	143.851	331.015	331.015
28	0.816868	261.475	-48.5689	Clay	25	28	158.43	99.7709	140.624	0	140.624	320.13	320.13
29	0.816868	252.255	-47.8769	Clay	25	28	155.383	97.8523	137.015	0	137.015	308.842	308.842
30	0.816868	242.714	-47.1941	Clay	25	28	152.018	95.7334	133.03	0	133.03	297.161	297.161
31	0.816868	232.862	-46.5199	Clay	25	28	148.339	93.4164	128.672	0	128.672	285.098	285.098
32	0.816868	222.715	-45.854	Clay	25	28	144.354	90.9066	123.952	0	123.952	272.675	272.675
33	0.816868	212.287	-45.196	Clay	25	28	140.069	88.208	118.877	0	118.877	259.907	259.907
34	0.816868	201.573	-44.5455	Clay	25	28	135.48	85.3183	113.442	0	113.442	246.79	246.79
35	0.816868	190.604	-43.9022	Clay	25	28	130.604	82.2478	107.667	0	107.667	233.36	233.36
36	0.816868	179.363	-43.2658	Clay	25	28	125.43	78.9894	101.539	0	101.539	219.597	219.597
37	0.816868	167.884	-42.636	Clay	25	28	119.977	75.5552	95.0808	0	95.0808	205.544	205.544
38	0.816868	156.151	-42.0125	Clay	25	28	114.233	71.9381	88.2778	0	88.2778	191.179	191.179
39	0.816868	144.185	-41.395	Clay	25	28	108.21	68.1454	81.1446	0	81.1446	176.528	176.528
40	0.816868	131.999	-40.7834	Clay	25	28	101.916	64.1812	73.6891	0	73.6891	161.609	161.609
41	0.816868	119.58	-40.1773	Clay	25	28	95.3396	60.04	65.9006	0	65.9006	146.404	146.404
42	0.816868	106.95	-39.5766	Clay	25	28	88.4943	55.7292	57.7932	0	57.7932	130.941	130.941
43	0.816868	94.1089	-38.9811	Clay	25	28	81.3786	51.2481	49.3655	0	49.3655	115.22	115.22
44	0.816868	81.1714	-38.3905	Clay	25	28	74.062	46.6405	40.6999	0	40.6999	99.3808	99.3808
45	0.816868	74.584	-37.8047	Clay	25	28	70.5714	44.4423	36.5657	0	36.5657	91.3158	91.3158
46	0.816868	71.5298	-37.2236	Clay	25	28	69.2333	43.5996	34.9807	0	34.9807	87.5765	87.5765
47	0.816868	67.4561	-36.6468	Clay	25	28	67.2125	42.327	32.5873	0	32.5873	82.589	82.589
48	0.816868	60.8818	-36.0744	Clay	25	28	63.5461	40.0181	28.2449	0	28.2449	74.5401	74.5401
49	0.816868	37.3228	-35.5061	Clay	25	28	48.8531	30.7652	10.8427	0	10.8427	45.6971	45.6971
50	0.81924	8.4375	-35.0498	Clay	25	28	30.3781	19.1305	-11.0174	0	-11.0174	10.293	10.293



**Global Minimum Query (janbu simplified) - Safety Factor: 0.609236**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.797366	27.6064	-78.5078	Clay	25	28	13.4628	8.202	-31.5925	0	-31.5925	34.6253	34.6253
2	0.797366	77.8447	-76.1328	Clay	25	28	27.8359	16.9586	-15.1237	0	-15.1237	97.6329	97.6329
3	0.797366	120.05	-74.111	Clay	25	28	42.41	25.8377	1.57546	0	1.57546	150.565	150.565
4	0.797366	157.021	-72.3166	Clay	25	28	56.9666	34.7061	18.2545	0	18.2545	196.933	196.933
5	0.797366	190.024	-70.6849	Clay	25	28	71.3546	43.4718	34.7404	0	34.7404	238.325	238.325
6	0.797366	218.834	-69.1769	Clay	25	28	85.1563	51.8803	50.5546	0	50.5546	274.458	274.458
7	0.797366	245.074	-67.7672	Clay	25	28	98.6532	60.1031	66.0194	0	66.0194	307.367	307.367
8	0.797366	269.38	-66.438	Clay	25	28	111.918	68.1842	81.2176	0	81.2176	337.85	337.85
9	0.797366	292.065	-65.1762	Clay	25	28	124.958	76.1292	96.1599	0	96.1599	366.3	366.3
10	0.797366	313.383	-63.972	Clay	25	28	137.794	83.9491	110.867	0	110.867	393.036	393.036
11	0.797366	330.284	-62.8176	Clay	25	28	149.124	90.8519	123.849	0	123.849	414.233	414.233
12	0.797366	337.944	-61.7069	Clay	25	28	156.767	95.5083	132.607	0	132.607	423.84	423.84
13	0.797366	347.172	-60.6349	Clay	25	28	165.044	100.551	142.09	0	142.09	435.413	435.413
14	0.797366	348.768	-59.5975	Clay	25	28	169.971	103.552	147.735	0	147.735	437.414	437.414
15	0.797366	346.298	-58.5911	Clay	25	28	172.924	105.352	151.119	0	151.119	434.316	434.316
16	0.797366	343.094	-57.613	Clay	25	28	175.333	106.819	153.879	0	153.879	430.298	430.298
17	0.797366	339.205	-56.6605	Clay	25	28	177.217	107.967	156.038	0	156.038	425.42	425.42
18	0.797366	334.709	-55.7316	Clay	25	28	178.612	108.817	157.636	0	157.636	419.782	419.782
19	0.797366	329.629	-54.8242	Clay	25	28	179.527	109.375	158.686	0	158.686	413.411	413.411
20	0.797366	324.004	-53.9368	Clay	25	28	179.981	109.651	159.206	0	159.206	406.355	406.355
21	0.797366	317.892	-53.0679	Clay	25	28	180.002	109.663	159.229	0	159.229	398.689	398.689
22	0.797366	311.282	-52.2162	Clay	25	28	179.582	109.408	158.748	0	158.748	390.399	390.399
23	0.797366	304.229	-51.3806	Clay	25	28	178.749	108.9	157.794	0	157.794	381.554	381.554
24	0.797366	296.745	-50.5599	Clay	25	28	177.509	108.145	156.372	0	156.372	372.167	372.167
25	0.797366	288.87	-49.7533	Clay	25	28	175.881	107.153	154.508	0	154.508	362.291	362.291
26	0.797366	280.6	-48.9599	Clay	25	28	173.863	105.923	152.195	0	152.195	351.918	351.918
27	0.797366	271.978	-48.1789	Clay	25	28	171.476	104.47	149.461	0	149.461	341.105	341.105
28	0.797366	262.995	-47.4096	Clay	25	28	168.717	102.788	146.299	0	146.299	329.839	329.839
29	0.797366	253.688	-46.6515	Clay	25	28	165.603	100.891	142.73	0	142.73	318.165	318.165
30	0.797366	244.055	-45.9038	Clay	25	28	162.133	98.777	138.754	0	138.754	306.084	306.084
31	0.797366	234.119	-45.166	Clay	25	28	158.318	96.4533	134.384	0	134.384	293.623	293.623
32	0.797366	223.893	-44.4377	Clay	25	28	154.167	93.9241	129.627	0	129.627	280.798	280.798
33	0.797366	213.368	-43.7184	Clay	25	28	149.672	91.1853	124.476	0	124.476	267.597	267.597
34	0.797366	202.588	-43.0076	Clay	25	28	144.857	88.2524	118.961	0	118.961	254.078	254.078
35	0.797366	191.54	-42.3049	Clay	25	28	139.716	85.1198	113.069	0	113.069	240.222	240.222
36	0.797366	180.237	-41.61	Clay	25	28	134.253	81.7917	106.81	0	106.81	226.047	226.047
37	0.797366	168.667	-40.9225	Clay	25	28	128.46	78.2622	100.172	0	100.172	211.535	211.535
38	0.797366	156.889	-40.2421	Clay	25	28	122.373	74.5539	93.1973	0	93.1973	196.764	196.764
39	0.797366	144.857	-39.5684	Clay	25	28	115.961	70.6475	85.8505	0	85.8505	181.674	181.674
40	0.797366	132.601	-38.9013	Clay	25	28	109.242	66.554	78.1517	0	78.1517	166.303	166.303
41	0.797366	120.138	-38.2403	Clay	25	28	102.225	62.2794	70.1123	0	70.1123	150.672	150.672
42	0.797366	107.455	-37.5853	Clay	25	28	94.9016	57.8175	61.7208	0	61.7208	134.766	134.766
43	0.797366	94.5527	-36.936	Clay	25	28	87.2691	53.1675	52.9753	0	52.9753	118.585	118.585
44	0.797366	81.9229	-36.2922	Clay	25	28	79.6539	48.528	44.2498	0	44.2498	102.745	102.745
45	0.797366	76.1089	-35.6537	Clay	25	28	76.4677	46.5869	40.5991	0	40.5991	95.4531	95.4531
46	0.797366	72.5317	-35.0202	Clay	25	28	74.7262	45.5259	38.6036	0	38.6036	90.9668	90.9668
47	0.797366	68.7261	-34.3916	Clay	25	28	72.7813	44.341	36.3751	0	36.3751	86.1939	86.1939
48	0.797366	60.3545	-33.7677	Clay	25	28	67.6314	41.2035	30.4744	0	30.4744	75.6946	75.6946
49	0.797366	36.3779	-33.1484	Clay	25	28	51.4995	31.3753	11.9903	0	11.9903	45.6243	45.6243
50	0.799737	8.2793	-32.6577	Clay	25	28	32.0925	19.5519	-10.2249	0	-10.2249	10.3447	10.3447

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 0.622772**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.815287	22.21	-75.2798	Clay	25	28	16.3309	10.1704	-27.8905	0	-27.8905	34.2696	34.2696
2	0.815287	64.1206	-73.5625	Clay	25	28	30.7585	19.1555	-10.9918	0	-10.9918	93.2648	93.2648
3	0.815287	101.689	-72.0058	Clay	25	28	44.0575	27.4378	4.58481	0	4.58481	140.227	140.227
4	0.815287	135.936	-70.5705	Clay	25	28	56.3956	35.1216	19.0359	0	19.0359	178.917	178.917
5	0.815287	167.542	-69.231	Clay	25	28	67.9587	42.3228	32.5795	0	32.5795	211.775	211.775
6	0.815287	196.778	-67.9698	Clay	25	28	78.8611	49.1125	45.3491	0	45.3491	240.241	240.241
7	0.815287	222.82	-66.7739	Clay	25	28	88.9014	55.3653	57.1089	0	57.1089	264.271	264.271
8	0.815287	247.025	-65.6337	Clay	25	28	98.5155	61.3527	68.3696	0	68.3696	285.886	285.886
9	0.815287	269.868	-64.5417	Clay	25	28	107.886	67.1884	79.3449	0	79.3449	305.956	305.956
10	0.815287	291.494	-63.4917	Clay	25	28	117.091	72.9207	90.1257	0	90.1257	324.888	324.888
11	0.815287	312.082	-62.4791	Clay	25	28	126.212	78.6015	100.81	0	100.81	343.046	343.046
12	0.815287	327.054	-61.4998	Clay	25	28	133.746	83.2933	109.634	0	109.634	355.961	355.961
13	0.815287	333.918	-60.5504	Clay	25	28	138.774	86.4246	115.523	0	115.523	361.309	361.309
14	0.815287	342.374	-59.6281	Clay	25	28	144.54	90.0156	122.277	0	122.277	368.917	368.917
15	0.815287	341.815	-58.7305	Clay	25	28	147.325	91.7497	125.538	0	125.538	368.135	368.135
16	0.815287	338.603	-57.8555	Clay	25	28	149.269	92.9605	127.815	0	127.815	365.36	365.36
17	0.815287	334.758	-57.0013	Clay	25	28	151.073	94.0841	129.928	0	129.928	362.572	362.572
18	0.815287	330.324	-56.1662	Clay	25	28	152.744	95.1247	131.885	0	131.885	359.761	359.761
19	0.815287	325.323	-55.349	Clay	25	28	154.28	96.081	133.684	0	133.684	356.9	356.9
20	0.815287	319.799	-54.5483	Clay	25	28	155.685	96.9563	135.33	0	135.33	353.982	353.982
21	0.815287	313.778	-53.763	Clay	25	28	156.957	97.7485	136.82	0	136.82	350.985	350.985
22	0.815287	307.305	-52.9922	Clay	25	28	158.097	98.4583	138.155	0	138.155	347.897	347.897
23	0.815287	300.379	-52.2349	Clay	25	28	159.084	99.0728	139.311	0	139.311	344.658	344.658
24	0.815287	293.045	-51.4902	Clay	25	28	159.911	99.5879	140.279	0	140.279	341.244	341.244
25	0.815287	285.302	-50.7576	Clay	25	28	160.549	99.9854	141.027	0	141.027	337.582	337.582
26	0.815287	277.189	-50.0363	Clay	25	28	160.981	100.254	141.533	0	141.533	333.629	333.629
27	0.815287	268.712	-49.3256	Clay	25	28	161.169	100.371	141.753	0	141.753	329.298	329.298
28	0.815287	259.879	-48.6251	Clay	25	28	161.073	100.312	141.641	0	141.641	324.503	324.503
29	0.815287	250.726	-47.9341	Clay	25	28	160.662	100.056	141.159	0	141.159	319.18	319.18
30	0.815287	241.251	-47.2523	Clay	25	28	159.885	99.5718	140.249	0	140.249	313.225	313.225
31	0.815287	231.46	-46.5791	Clay	25	28	158.691	98.8285	138.851	0	138.851	306.54	306.54
32	0.815287	221.383	-45.9142	Clay	25	28	157.043	97.8022	136.921	0	136.921	299.058	299.058
33	0.815287	211.017	-45.2572	Clay	25	28	154.887	96.4592	134.396	0	134.396	290.679	290.679
34	0.815287	200.373	-44.6077	Clay	25	28	152.179	94.7727	131.224	0	131.224	281.333	281.333
35	0.815287	189.461	-43.9654	Clay	25	28	148.878	92.7172	127.358	0	127.358	270.954	270.954
36	0.815287	178.295	-43.3299	Clay	25	28	144.953	90.2725	122.76	0	122.76	259.499	259.499
37	0.815287	166.882	-42.701	Clay	25	28	140.374	87.4213	117.397	0	117.397	246.936	246.936
38	0.815287	155.224	-42.0785	Clay	25	28	135.119	84.1483	111.242	0	111.242	233.239	233.239
39	0.815287	143.332	-41.462	Clay	25	28	129.179	80.4491	104.285	0	104.285	218.42	218.42
40	0.815287	131.212	-40.8513	Clay	25	28	122.553	76.3226	96.5239	0	96.5239	202.5	202.5
41	0.815287	118.872	-40.2461	Clay	25	28	115.252	71.7759	87.9727	0	87.9727	185.528	185.528
42	0.815287	106.312	-39.6464	Clay	25	28	107.294	66.8199	78.6518	0	78.6518	167.56	167.56
43	0.815287	93.5508	-39.0518	Clay	25	28	98.7183	61.479	68.6071	0	68.6071	148.695	148.695
44	0.815287	80.7144	-38.4621	Clay	25	28	89.6436	55.8275	57.9781	0	57.9781	129.187	129.187
45	0.815287	74.2676	-37.8773	Clay	25	28	84.2427	52.464	51.6523	0	51.6523	117.18	117.18
46	0.815287	71.2485	-37.297	Clay	25	28	80.7602	50.2952	47.5733	0	47.5733	109.089	109.089
47	0.815287	67.021	-36.7212	Clay	25	28	76.277	47.5032	42.3223	0	42.3223	99.2214	99.2214
48	0.815287	60.6313	-36.1497	Clay	25	28	70.1986	43.7177	35.2029	0	35.2029	86.4859	86.4859
49	0.815287	37.125	-35.5823	Clay	25	28	52.78	32.8699	14.8011	0	14.8011	52.5632	52.5632
50	0.817662	8.38037	-35.1268	Clay	25	28	31.7319	19.7617	-9.83262	0	-9.83262	12.4911	12.4911



### Global Minimum Query (bishop simplified) - Safety Factor: 0.463064

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.484494	6.69434	-78.0851	Rock fill	5	30	4.06592	1.88278	-5.39918	0	-5.39918	13.8701	13.8701
2	0.484494	18.8721	-76.677	Rock fill	5	30	9.49744	4.39792	-1.04283	0	-1.04283	39.0623	39.0623
3	0.484494	28.9453	-75.4032	Rock fill	5	30	14.7694	6.83919	3.18557	0	3.18557	59.8993	59.8993
4	0.484494	37.4072	-74.2306	Rock fill	5	30	19.8154	9.1758	7.23267	0	7.23267	77.4017	77.4017
5	0.484494	44.6045	-73.1378	Rock fill	5	30	24.6138	11.3978	11.0813	0	11.0813	92.2872	92.2872
6	0.484494	50.7617	-72.11	Rock fill	5	30	29.1493	13.498	14.7189	0	14.7189	105.021	105.021
7	0.484494	56.04	-71.1366	Rock fill	5	30	33.4135	15.4726	18.1391	0	18.1391	115.936	115.936
8	0.484494	60.5713	-70.2095	Rock fill	5	30	37.4091	17.3228	21.3437	0	21.3437	125.305	125.305
9	0.484494	64.4629	-69.3224	Rock fill	5	30	41.1438	19.0522	24.3391	0	24.3391	133.352	133.352
10	0.484494	67.7637	-68.4703	Rock fill	5	30	44.6038	20.6544	27.1142	0	27.1142	140.176	140.176
11	0.484494	70.5762	-67.6493	Rock fill	5	30	47.8174	22.1425	29.6917	0	29.6917	145.989	145.989
12	0.484494	72.9102	-66.856	Rock fill	5	30	50.763	23.5065	32.0542	0	32.0542	150.813	150.813
13	0.484494	74.8291	-66.0876	Rock fill	5	30	53.4576	24.7543	34.2156	0	34.2156	154.779	154.779
14	0.484494	76.3867	-65.3418	Rock fill	5	30	55.9182	25.8937	36.1889	0	36.1889	157.998	157.998
15	0.484494	77.5781	-64.6166	Rock fill	5	30	58.1241	26.9152	37.9582	0	37.9582	160.459	160.459
16	0.484494	78.4668	-63.9102	Rock fill	5	30	60.1055	27.8327	39.5474	0	39.5474	162.294	162.294
17	0.484494	79.0479	-63.2213	Rock fill	5	30	61.8465	28.6389	40.9438	0	40.9438	163.492	163.492
18	0.484494	79.3604	-62.5483	Rock fill	5	30	63.3649	29.342	42.1616	0	42.1616	164.135	164.135
19	0.484494	79.4092	-61.8903	Rock fill	5	30	64.6546	29.9392	43.1959	0	43.1959	164.234	164.234
20	0.484494	79.2236	-61.2461	Rock fill	5	30	65.7294	30.4369	44.058	0	44.058	163.847	163.847
21	0.484494	78.8086	-60.6149	Rock fill	5	30	66.5854	30.8333	44.7446	0	44.7446	162.986	162.986
22	0.484494	78.1787	-59.9958	Rock fill	5	30	67.2276	31.1307	45.2597	0	45.2597	161.681	161.681
23	0.484494	77.3633	-59.388	Rock fill	5	30	67.6736	31.3372	45.6174	0	45.6174	159.993	159.993
24	0.484494	76.333	-58.791	Rock fill	5	30	67.8936	31.4391	45.7939	0	45.7939	157.86	157.86
25	0.484494	75.1416	-58.2041	Rock fill	5	30	67.9273	31.4547	45.8209	0	45.8209	155.394	155.394
26	0.484494	73.7695	-57.6267	Rock fill	5	30	67.7537	31.3743	45.6816	0	45.6816	152.554	152.554
27	0.484494	72.2363	-57.0584	Rock fill	5	30	67.3853	31.2037	45.3861	0	45.3861	149.382	149.382
28	0.484494	70.542	-56.4986	Rock fill	5	30	66.818	30.941	44.9311	0	44.9311	145.877	145.877
29	0.484494	68.7061	-55.947	Rock fill	5	30	66.0656	30.5926	44.3276	0	44.3276	142.079	142.079
30	0.484494	66.7236	-55.4031	Rock fill	5	30	65.1202	30.1548	43.5695	0	43.5695	137.978	137.978
31	0.484494	64.6045	-54.8666	Rock fill	5	30	63.9879	29.6305	42.6612	0	42.6612	133.594	133.594
32	0.484494	62.3486	-54.3372	Rock fill	5	30	62.6654	29.0181	41.6005	0	41.6005	128.928	128.928
33	0.484494	59.9707	-53.8145	Rock fill	5	30	61.1637	28.3227	40.396	0	40.396	124.01	124.01
34	0.484494	57.4609	-53.2982	Rock fill	5	30	59.4706	27.5387	39.0383	0	39.0383	118.819	118.819
35	0.484494	54.8438	-52.7881	Rock fill	5	30	57.6076	26.676	37.5439	0	37.5439	113.406	113.406
36	0.484494	52.1191	-52.2839	Rock fill	5	30	55.5722	25.7335	35.9114	0	35.9114	107.772	107.772
37	0.484494	49.2773	-51.7854	Rock fill	5	30	53.3527	24.7057	34.1313	0	34.1313	101.895	101.895
38	0.484494	46.3184	-51.2924	Rock fill	5	30	50.9467	23.5916	32.2016	0	32.2016	95.7762	95.7762
39	0.484494	43.2715	-50.8046	Rock fill	5	30	48.3816	22.4038	30.1443	0	30.1443	89.4758	89.4758
40	0.484494	40.1172	-50.3218	Rock fill	5	30	45.636	21.1324	27.9421	0	27.9421	82.9535	82.9535
41	0.484494	36.875	-49.8439	Rock fill	5	30	42.7278	19.7857	25.6095	0	25.6095	76.2496	76.2496
42	0.484494	33.5303	-49.3706	Rock fill	5	30	39.6399	18.3558	23.133	0	23.133	69.3337	69.3337
43	0.484494	30.1025	-48.9019	Rock fill	5	30	36.3915	16.8516	20.5275	0	20.5275	62.2466	62.2466
44	0.484494	26.5723	-48.4375	Rock fill	5	30	32.9598	15.2625	17.7751	0	17.7751	54.9476	54.9476
45	0.484494	22.9639	-47.9774	Rock fill	5	30	29.3692	13.5998	14.8954	0	14.8954	47.4872	47.4872
46	0.484494	19.2773	-47.5213	Rock fill	5	30	25.6184	11.863	11.887	0	11.887	39.8655	39.8655
47	0.484494	15.5078	-47.0691	Rock fill	5	30	21.7007	10.0488	8.74483	0	8.74483	32.0724	32.0724
48	0.484494	11.6455	-46.6207	Rock fill	5	30	17.6037	8.15162	5.45877	0	5.45877	24.0876	24.0876
49	0.484494	7.72461	-46.176	Rock fill	5	30	13.3637	6.18823	2.05808	0	2.05808	15.9819	15.9819
50	0.710882	4.04785	-45.6329	Rock fill	5	30	7.88019	3.64903	-2.33995	0	-2.33995	5.71627	5.71627

**Global Minimum Query (janbu simplified) - Safety Factor: 0.445041**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.484494	6.69434	-78.0851	Rock fill	5	30	4.05385	1.80413	-5.53541	0	-5.53541	13.6767	13.6767
2	0.484494	18.8721	-76.677	Rock fill	5	30	9.47617	4.21729	-1.3557	0	-1.3557	38.6597	38.6597
3	0.484494	28.9453	-75.4032	Rock fill	5	30	14.7459	6.56251	2.70635	0	2.70635	59.3295	59.3295
4	0.484494	37.4072	-74.2306	Rock fill	5	30	19.7953	8.80973	6.59866	0	6.59866	76.6965	76.6965
5	0.484494	44.6045	-73.1378	Rock fill	5	30	24.602	10.9489	10.3038	0	10.3038	91.4708	91.4708
6	0.484494	50.7617	-72.11	Rock fill	5	30	29.1497	12.9728	13.8093	0	13.8093	104.113	104.113
7	0.484494	56.04	-71.1366	Rock fill	5	30	33.4295	14.8775	17.1084	0	17.1084	114.952	114.952
8	0.484494	60.5713	-70.2095	Rock fill	5	30	37.4433	16.6638	20.2023	0	20.2023	124.259	124.259
9	0.484494	64.4629	-69.3224	Rock fill	5	30	41.1985	18.335	23.0968	0	23.0968	132.254	132.254
10	0.484494	67.7637	-68.4703	Rock fill	5	30	44.6804	19.8846	25.781	0	25.781	139.037	139.037
11	0.484494	70.5762	-67.6493	Rock fill	5	30	47.9178	21.3254	28.2763	0	28.2763	144.818	144.818
12	0.484494	72.9102	-66.856	Rock fill	5	30	50.8879	22.6472	30.5658	0	30.5658	149.617	149.617
13	0.484494	74.8291	-66.0876	Rock fill	5	30	53.6076	23.8576	32.6624	0	32.6624	153.564	153.564
14	0.484494	76.3867	-65.3418	Rock fill	5	30	56.0937	24.964	34.5787	0	34.5787	156.77	156.77
15	0.484494	77.5781	-64.6166	Rock fill	5	30	58.3254	25.9572	36.2989	0	36.2989	159.224	159.224
16	0.484494	78.4668	-63.9102	Rock fill	5	30	60.3324	26.8504	37.846	0	37.846	161.055	161.055
17	0.484494	79.0479	-63.2213	Rock fill	5	30	62.099	27.6366	39.2077	0	39.2077	162.256	162.256
18	0.484494	79.3604	-62.5483	Rock fill	5	30	63.6422	28.3234	40.3973	0	40.3973	162.905	162.905
19	0.484494	79.4092	-61.8903	Rock fill	5	30	64.956	28.9081	41.4101	0	41.4101	163.012	163.012
20	0.484494	79.2236	-61.2461	Rock fill	5	30	66.0544	29.3969	42.2567	0	42.2567	162.639	162.639
21	0.484494	78.8086	-60.6149	Rock fill	5	30	66.9329	29.7879	42.9339	0	42.9339	161.793	161.793
22	0.484494	78.1787	-59.9958	Rock fill	5	30	67.5965	30.0832	43.4454	0	43.4454	160.506	160.506
23	0.484494	77.3633	-59.388	Rock fill	5	30	68.0627	30.2907	43.8048	0	43.8048	158.838	158.838
24	0.484494	76.333	-58.791	Rock fill	5	30	68.3013	30.3969	43.9888	0	43.9888	156.728	156.728
25	0.484494	75.1416	-58.2041	Rock fill	5	30	68.3526	30.4197	44.0282	0	44.0282	154.287	154.287
26	0.484494	73.7695	-57.6267	Rock fill	5	30	68.1946	30.3494	43.9065	0	43.9065	151.475	151.475
27	0.484494	72.2363	-57.0584	Rock fill	5	30	67.84	30.1916	43.6332	0	43.6332	148.331	148.331
28	0.484494	70.542	-56.4986	Rock fill	5	30	67.285	29.9446	43.2053	0	43.2053	144.856	144.856
29	0.484494	68.7061	-55.947	Rock fill	5	30	66.5429	29.6143	42.6331	0	42.6331	141.09	141.09
30	0.484494	66.7236	-55.4031	Rock fill	5	30	65.6059	29.1973	41.9108	0	41.9108	137.023	137.023
31	0.484494	64.6045	-54.8666	Rock fill	5	30	64.4797	28.6961	41.0428	0	41.0428	132.675	132.675
32	0.484494	62.3486	-54.3372	Rock fill	5	30	63.1609	28.1092	40.0264	0	40.0264	128.045	128.045
33	0.484494	59.9707	-53.8145	Rock fill	5	30	61.6611	27.4417	38.8701	0	38.8701	123.164	123.164
34	0.484494	57.4609	-53.2982	Rock fill	5	30	59.9675	26.688	37.5647	0	37.5647	118.012	118.012
35	0.484494	54.8438	-52.7881	Rock fill	5	30	58.1012	25.8574	36.1261	0	36.1261	112.639	112.639
36	0.484494	52.1191	-52.2839	Rock fill	5	30	56.0602	24.9491	34.5529	0	34.5529	107.044	107.044
37	0.484494	49.2773	-51.7854	Rock fill	5	30	53.8326	23.9577	32.8358	0	32.8358	101.209	101.209
38	0.484494	46.3184	-51.2924	Rock fill	5	30	51.4157	22.8821	30.9727	0	30.9727	95.1326	95.1326
39	0.484494	43.2715	-50.8046	Rock fill	5	30	48.8371	21.7345	28.985	0	28.985	88.8749	88.8749
40	0.484494	40.1172	-50.3218	Rock fill	5	30	46.0749	20.5052	26.8558	0	26.8558	82.3962	82.3962
41	0.484494	36.875	-49.8439	Rock fill	5	30	43.1473	19.2023	24.5991	0	24.5991	75.7364	75.7364
42	0.484494	33.5303	-49.3706	Rock fill	5	30	40.0372	17.8182	22.2018	0	22.2018	68.8655	68.8655
43	0.484494	30.1025	-48.9019	Rock fill	5	30	36.7636	16.3613	19.6783	0	19.6783	61.824	61.824
44	0.484494	26.5723	-48.4375	Rock fill	5	30	33.3032	14.8213	17.011	0	17.011	54.5709	54.5709
45	0.484494	22.9639	-47.9774	Rock fill	5	30	29.6811	13.2093	14.2189	0	14.2189	47.1569	47.1569
46	0.484494	19.2773	-47.5213	Rock fill	5	30	25.8955	11.5246	11.3009	0	11.3009	39.5819	39.5819
47	0.484494	15.5078	-47.0691	Rock fill	5	30	21.9396	9.76404	8.25155	0	8.25155	31.8359	31.8359
48	0.484494	11.6455	-46.6207	Rock fill	5	30	17.8008	7.9221	5.06124	0	5.06124	23.8987	23.8987
49	0.484494	7.72461	-46.176	Rock fill	5	30	13.5159	6.01513	1.75826	0	1.75826	15.8407	15.8407
50	0.710882	4.04785	-45.6329	Rock fill	5	30	7.9718	3.54778	-2.51532	0	-2.51532	5.63457	5.63457

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 0.456166**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.484494	6.69434	-78.0851	Rock fill	5	30	4.50292	2.05408	-5.10246	0	-5.10246	16.2379	16.2379
2	0.484494	18.8721	-76.677	Rock fill	5	30	10.3742	4.73234	-0.4636	0	-0.4636	43.3437	43.3437
3	0.484494	28.9453	-75.4032	Rock fill	5	30	15.5284	7.08353	3.60879	0	3.60879	63.2369	63.2369
4	0.484494	37.4072	-74.2306	Rock fill	5	30	20.0666	9.15372	7.19447	0	7.19447	78.2531	78.2531
5	0.484494	44.6045	-73.1378	Rock fill	5	30	24.102	10.9945	10.3828	0	10.3828	89.9	89.9
6	0.484494	50.7617	-72.11	Rock fill	5	30	27.7251	12.6473	13.2454	0	13.2454	99.1353	99.1353
7	0.484494	56.04	-71.1366	Rock fill	5	30	31.0094	14.1454	15.8403	0	15.8403	106.6	106.6
8	0.484494	60.5713	-70.2095	Rock fill	5	30	34.0174	15.5176	18.217	0	18.217	112.753	112.753
9	0.484494	64.4629	-69.3224	Rock fill	5	30	36.8004	16.7871	20.4158	0	20.4158	117.92	117.92
10	0.484494	67.7637	-68.4703	Rock fill	5	30	39.3795	17.9636	22.4536	0	22.4536	122.273	122.273
11	0.484494	70.5762	-67.6493	Rock fill	5	30	41.8017	19.0685	24.3674	0	24.3674	126.034	126.034
12	0.484494	72.9102	-66.856	Rock fill	5	30	44.066	20.1014	26.1565	0	26.1565	129.248	129.248
13	0.484494	74.8291	-66.0876	Rock fill	5	30	46.1992	21.0745	27.8418	0	27.8418	132.035	132.035
14	0.484494	76.3867	-65.3418	Rock fill	5	30	48.2237	21.998	29.4414	0	29.4414	134.489	134.489
15	0.484494	77.5781	-64.6166	Rock fill	5	30	50.1309	22.868	30.9483	0	30.9483	136.603	136.603
16	0.484494	78.4668	-63.9102	Rock fill	5	30	51.9513	23.6984	32.3865	0	32.3865	138.48	138.48
17	0.484494	79.0479	-63.2213	Rock fill	5	30	53.6772	24.4857	33.7502	0	33.7502	140.111	140.111
18	0.484494	79.3604	-62.5483	Rock fill	5	30	55.3272	25.2384	35.054	0	35.054	141.556	141.556
19	0.484494	79.4092	-61.8903	Rock fill	5	30	56.9001	25.9559	36.2967	0	36.2967	142.818	142.818
20	0.484494	79.2236	-61.2461	Rock fill	5	30	58.4086	26.644	37.4884	0	37.4884	143.936	143.936
21	0.484494	78.8086	-60.6149	Rock fill	5	30	59.8493	27.3012	38.6267	0	38.6267	144.907	144.907
22	0.484494	78.1787	-59.9958	Rock fill	5	30	61.2233	27.928	39.7125	0	39.7125	145.736	145.736
23	0.484494	77.3633	-59.388	Rock fill	5	30	62.5402	28.5287	40.7529	0	40.7529	146.452	146.452
24	0.484494	76.333	-58.791	Rock fill	5	30	63.7656	29.0877	41.7212	0	41.7212	146.973	146.973
25	0.484494	75.1416	-58.2041	Rock fill	5	30	64.9207	29.6146	42.6338	0	42.6338	147.357	147.357
26	0.484494	73.7695	-57.6267	Rock fill	5	30	65.9712	30.0938	43.4637	0	43.4637	147.525	147.525
27	0.484494	72.2363	-57.0584	Rock fill	5	30	66.9074	30.5209	44.2035	0	44.2035	147.462	147.462
28	0.484494	70.542	-56.4986	Rock fill	5	30	67.7025	30.8836	44.8317	0	44.8317	147.114	147.114
29	0.484494	68.7061	-55.947	Rock fill	5	30	68.342	31.1753	45.3369	0	45.3369	146.456	146.456
30	0.484494	66.7236	-55.4031	Rock fill	5	30	68.7897	31.3795	45.6906	0	45.6906	145.418	145.418
31	0.484494	64.6045	-54.8666	Rock fill	5	30	69.0196	31.4844	45.8723	0	45.8723	143.956	143.956
32	0.484494	62.3486	-54.3372	Rock fill	5	30	68.9973	31.4742	45.8547	0	45.8547	142.006	142.006
33	0.484494	59.9707	-53.8145	Rock fill	5	30	68.7011	31.3391	45.6207	0	45.6207	139.539	139.539
34	0.484494	57.4609	-53.2982	Rock fill	5	30	68.0892	31.06	45.1372	0	45.1372	136.48	136.48
35	0.484494	54.8438	-52.7881	Rock fill	5	30	67.1536	30.6332	44.3979	0	44.3979	132.832	132.832
36	0.484494	52.1191	-52.2839	Rock fill	5	30	65.8677	30.0466	43.382	0	43.382	128.556	128.556
37	0.484494	49.2773	-51.7854	Rock fill	5	30	64.1997	29.2857	42.064	0	42.064	123.605	123.605
38	0.484494	46.3184	-51.2924	Rock fill	5	30	62.1315	28.3423	40.43	0	40.43	117.962	117.962
39	0.484494	43.2715	-50.8046	Rock fill	5	30	59.682	27.2249	38.4946	0	38.4946	111.684	111.684
40	0.484494	40.1172	-50.3218	Rock fill	5	30	56.8267	25.9224	36.2387	0	36.2387	104.74	104.74
41	0.484494	36.875	-49.8439	Rock fill	5	30	53.5888	24.4454	33.6803	0	33.6803	97.1927	97.1927
42	0.484494	33.5303	-49.3706	Rock fill	5	30	49.9623	22.7911	30.8151	0	30.8151	89.0467	89.0467
43	0.484494	30.1025	-48.9019	Rock fill	5	30	45.9848	20.9767	27.6725	0	27.6725	80.3894	80.3894
44	0.484494	26.5723	-48.4375	Rock fill	5	30	41.6583	19.0031	24.2541	0	24.2541	71.2369	71.2369
45	0.484494	22.9639	-47.9774	Rock fill	5	30	37.0387	16.8958	20.6041	0	20.6041	61.7071	61.7071
46	0.484494	19.2773	-47.5213	Rock fill	5	30	32.1605	14.6705	16.7499	0	16.7499	51.873	51.873
47	0.484494	15.5078	-47.0691	Rock fill	5	30	27.0563	12.3422	12.717	0	12.717	41.8016	41.8016
48	0.484494	11.6455	-46.6207	Rock fill	5	30	21.7561	9.92438	8.52927	0	8.52927	31.5523	31.5523
49	0.484494	7.72461	-46.176	Rock fill	5	30	16.3411	7.45425	4.25087	0	4.25087	21.277	21.277
50	0.710882	4.04785	-45.6329	Rock fill	5	30	9.51779	4.34169	-1.14022	0	-1.14022	8.59019	8.59019

**Pre - 1:1**

**Global Minimum Query (bishop simplified) - Safety Factor: 2.86939**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.373269	2.23057	-61.3161	Clay	25	28	7.33725	21.0534	-7.42242	0	-7.42242	5.98831	5.98831
2	0.373269	6.44885	-58.5348	Clay	25	28	9.14696	26.2462	2.34376	0	2.34376	17.2906	17.2906
3	0.373269	10.2315	-55.96	Clay	25	28	10.8252	31.0617	11.4005	0	11.4005	27.4254	27.4254
4	0.373269	13.6626	-53.5472	Clay	25	28	12.39	35.5518	19.845	0	19.845	36.618	36.618
5	0.373269	16.8006	-51.2653	Clay	25	28	13.8553	39.7564	27.7527	0	27.7527	45.0255	45.0255
6	0.373269	19.6883	-49.0918	Clay	25	28	15.2322	43.707	35.1826	0	35.1826	52.7621	52.7621
7	0.373269	22.3579	-47.0099	Clay	25	28	16.5293	47.4289	42.1825	0	42.1825	59.9141	59.9141
8	0.373269	24.8346	-45.0064	Clay	25	28	17.7539	50.9429	48.7914	0	48.7914	66.5493	66.5493
9	0.373269	27.1383	-43.0708	Clay	25	28	18.9121	54.2661	55.0415	0	55.0415	72.7211	72.7211
10	0.373269	29.2854	-41.1947	Clay	25	28	20.0087	57.4129	60.9598	0	60.9598	78.4729	78.4729
11	0.373269	31.2339	-39.3709	Clay	25	28	21.0244	60.3273	66.4411	0	66.4411	83.6929	83.6929
12	0.373269	32.6558	-37.5936	Clay	25	28	21.8147	62.595	70.7061	0	70.7061	87.5018	87.5018
13	0.373269	33.8933	-35.8579	Clay	25	28	22.5246	64.6318	74.5366	0	74.5366	90.8165	90.8165
14	0.373269	35.1789	-34.1594	Clay	25	28	23.2553	66.7286	78.4799	0	78.4799	94.2602	94.2602
15	0.373269	36.3999	-32.4945	Clay	25	28	23.9578	68.7444	82.2713	0	82.2713	97.5309	97.5309
16	0.373269	37.0608	-30.8599	Clay	25	28	24.4106	70.0435	84.7144	0	84.7144	99.3006	99.3006
17	0.373269	35.7663	-29.2527	Clay	25	28	23.9817	68.8128	82.3998	0	82.3998	95.8316	95.8316
18	0.373269	30.639	-27.6704	Clay	25	28	21.8061	62.5703	70.6594	0	70.6594	82.0935	82.0935
19	0.373269	30.0235	-26.1107	Clay	25	28	21.6527	62.13	69.8314	0	69.8314	80.444	80.444
20	0.373269	30.0407	-24.5715	Clay	25	28	21.7821	62.5013	70.5297	0	70.5297	80.4892	80.4892
21	0.373269	29.9769	-23.0511	Clay	25	28	21.8713	62.7572	71.0109	0	71.0109	80.3178	80.3178
22	0.373269	29.8349	-21.5477	Clay	25	28	21.9212	62.9005	71.2804	0	71.2804	79.9365	79.9365
23	0.373269	29.6171	-20.0597	Clay	25	28	21.933	62.9342	71.3438	0	71.3438	79.3526	79.3526
24	0.373269	29.3259	-18.5856	Clay	25	28	21.9073	62.8606	71.2055	0	71.2055	78.572	78.572
25	0.373269	28.9631	-17.1243	Clay	25	28	21.845	62.6817	70.8689	0	70.8689	77.5994	77.5994
26	0.373269	28.5306	-15.6743	Clay	25	28	21.7465	62.3993	70.3378	0	70.3378	76.44	76.44
27	0.373269	28.0298	-14.2346	Clay	25	28	21.6126	62.015	69.6149	0	69.6149	75.0976	75.0976
28	0.373269	27.577	-12.804	Clay	25	28	21.4983	61.6871	68.9986	0	68.9986	73.8844	73.8844
29	0.373269	27.4312	-11.3814	Clay	25	28	21.5282	61.7728	69.1596	0	69.1596	73.4932	73.4932
30	0.373269	26.612	-9.966	Clay	25	28	21.2331	60.926	67.5668	0	67.5668	71.2978	71.2978
31	0.373269	25.3408	-8.55668	Clay	25	28	20.7157	59.4414	64.7748	0	64.7748	67.8917	67.8917
32	0.373269	24.0067	-7.15255	Clay	25	28	20.162	57.8527	61.7868	0	61.7868	64.3169	64.3169
33	0.373269	22.6102	-5.75274	Clay	25	28	19.5721	56.16	58.6035	0	58.6035	60.5752	60.5752
34	0.373269	21.1518	-4.35636	Clay	25	28	18.946	54.3634	55.2244	0	55.2244	56.6677	56.6677
35	0.373269	19.6574	-2.96258	Clay	25	28	18.296	52.4983	51.7167	0	51.7167	52.6636	52.6636
36	0.373269	18.1255	-1.57054	Clay	25	28	17.6213	50.5625	48.0759	0	48.0759	48.559	48.559
37	0.373269	16.5326	-0.179438	Clay	25	28	16.9102	48.522	44.2384	0	44.2384	44.2913	44.2913
38	0.373269	15.0997	1.21156	Clay	25	28	16.2724	46.6919	40.7965	0	40.7965	40.4524	40.4524
39	0.373269	14.4465	2.60328	Clay	25	28	16.0192	45.9654	39.4302	0	39.4302	38.7019	38.7019
40	0.373269	13.814	3.99653	Clay	25	28	15.7744	45.263	38.1093	0	38.1093	37.0072	37.0072
41	0.373269	13.0468	5.39216	Clay	25	28	15.4597	44.3598	36.4104	0	36.4104	34.9512	34.9512
42	0.373269	11.8159	6.791	Clay	25	28	14.9071	42.7744	33.4288	0	33.4288	31.6536	31.6536
43	0.373269	10.462	8.19393	Clay	25	28	14.2872	40.9956	30.0833	0	30.0833	28.0261	28.0261
44	0.373269	9.022	9.60182	Clay	25	28	13.618	39.0753	26.4718	0	26.4718	24.168	24.168
45	0.373269	7.47795	11.0156	Clay	25	28	12.8895	36.985	22.5404	0	22.5404	20.0313	20.0313
46	0.373269	6.16272	12.4362	Clay	25	28	12.2731	35.2163	19.2142	0	19.2142	16.5076	16.5076
47	0.373269	4.81324	13.8646	Clay	25	28	11.6337	33.3816	15.7636	0	15.7636	12.8922	12.8922
48	0.373269	3.39721	15.3019	Clay	25	28	10.954	31.4313	12.0955	0	12.0955	9.09841	9.09841
49	0.373269	1.95927	16.7491	Clay	25	28	10.2568	29.4306	8.33283	0	8.33283	5.24607	5.24607
50	0.373269	0.656627	18.2074	Clay	25	28	9.62472	27.6171	4.92198	0	4.92198	1.75616	1.75616

**Global Minimum Query (janbu simplified) - Safety Factor: 2.62175**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.381272	3.09563	-67.5072	Clay	25	28	7.50412	19.6739	-10.0169	0	-10.0169	8.10611	8.10611
2	0.381272	8.7718	-63.6777	Clay	25	28	10.0703	26.4017	2.63627	0	2.63627	22.992	22.992
3	0.381272	13.5835	-60.316	Clay	25	28	12.3602	32.4053	13.9274	0	13.9274	35.6111	35.6111
4	0.381272	17.7864	-57.2732	Clay	25	28	14.4372	37.8508	24.1688	0	24.1688	46.634	46.634
5	0.381272	21.526	-54.4655	Clay	25	28	16.3419	42.8445	33.5605	0	33.5605	56.4419	56.4419
6	0.381272	24.8947	-51.8396	Clay	25	28	18.1023	47.4597	42.2406	0	42.2406	65.2773	65.2773
7	0.381272	27.9558	-49.3594	Clay	25	28	19.7387	51.75	50.3093	0	50.3093	73.3059	73.3059
8	0.381272	30.7549	-46.9989	Clay	25	28	21.2666	55.7556	57.8428	0	57.8428	80.6475	80.6475
9	0.381272	33.3262	-44.7388	Clay	25	28	22.6978	59.5079	64.9	0	64.9	87.3917	87.3917
10	0.381272	35.4611	-42.564	Clay	25	28	23.9366	62.7558	71.0083	0	71.0083	92.9914	92.9914
11	0.381272	37.1019	-40.4627	Clay	25	28	24.9516	65.4168	76.0129	0	76.0129	97.2954	97.2954
12	0.381272	38.6685	-38.4253	Clay	25	28	25.9295	67.9806	80.8348	0	80.8348	101.405	101.405
13	0.381272	40.2238	-36.444	Clay	25	28	26.9	70.5252	85.6205	0	85.6205	105.485	105.485
14	0.381272	41.5944	-34.5121	Clay	25	28	27.7835	72.8413	89.9764	0	89.9764	109.08	109.08
15	0.381272	41.2561	-32.624	Clay	25	28	27.8611	73.0448	90.359	0	90.359	108.193	108.193
16	0.381272	37.5203	-30.7751	Clay	25	28	26.3131	68.9865	82.7265	0	82.7265	98.3968	98.3968
17	0.381272	34.927	-28.961	Clay	25	28	25.2752	66.2653	77.6087	0	77.6087	91.5965	91.5965
18	0.381272	35.1013	-27.1783	Clay	25	28	25.5448	66.9722	78.9383	0	78.9383	92.0543	92.0543
19	0.381272	35.1735	-25.4236	Clay	25	28	25.76	67.5364	79.9993	0	79.9993	92.2441	92.2441
20	0.381272	35.148	-23.6942	Clay	25	28	25.9228	67.9631	80.8019	0	80.8019	92.178	92.178
21	0.381272	35.0289	-21.9873	Clay	25	28	26.0348	68.2567	81.354	0	81.354	91.8661	91.8661
22	0.381272	34.8196	-20.3008	Clay	25	28	26.0976	68.4213	81.6637	0	81.6637	91.3179	91.3179
23	0.381272	34.5232	-18.6325	Clay	25	28	26.1124	68.4602	81.7369	0	81.7369	90.5412	90.5412
24	0.381272	34.1423	-16.9804	Clay	25	28	26.0804	68.3762	81.5788	0	81.5788	89.5427	89.5427
25	0.381272	33.6792	-15.3428	Clay	25	28	26.0024	68.1719	81.1944	0	81.1944	88.3287	88.3287
26	0.381272	33.1993	-13.7179	Clay	25	28	25.9114	67.9332	80.7457	0	80.7457	87.0708	87.0708
27	0.381272	33.0535	-12.1042	Clay	25	28	25.9865	68.13	81.1156	0	81.1156	86.6886	86.6886
28	0.381272	32.3795	-10.5002	Clay	25	28	25.7889	67.6121	80.1418	0	80.1418	84.9216	84.9216
29	0.381272	31.0741	-8.90443	Clay	25	28	25.2614	66.229	77.5403	0	77.5403	81.4982	81.4982
30	0.381272	29.694	-7.31565	Clay	25	28	24.6873	64.7239	74.7098	0	74.7098	77.8791	77.8791
31	0.381272	28.2403	-5.7325	Clay	25	28	24.0669	63.0975	71.651	0	71.651	74.067	74.067
32	0.381272	26.7136	-4.15374	Clay	25	28	23.4003	61.3497	68.364	0	68.364	70.0634	70.0634
33	0.381272	25.1389	-2.57813	Clay	25	28	22.7001	59.514	64.9112	0	64.9112	65.9334	65.9334
34	0.381272	23.5188	-1.00447	Clay	25	28	21.9677	57.5937	61.2999	0	61.2999	61.685	61.685
35	0.381272	21.8269	0.568424	Clay	25	28	21.1885	55.551	57.458	0	57.458	57.2478	57.2478
36	0.381272	20.3164	2.14175	Clay	25	28	20.4979	53.7405	54.053	0	54.053	53.2864	53.2864
37	0.381272	19.6011	3.7167	Clay	25	28	20.2285	53.0342	52.7247	0	52.7247	51.4106	51.4106
38	0.381272	18.8858	5.29446	Clay	25	28	19.9567	52.3216	51.3845	0	51.3845	49.5351	49.5351
39	0.381272	17.9909	6.87627	Clay	25	28	19.5847	51.3462	49.55	0	49.55	47.1882	47.1882
40	0.381272	16.6107	8.46336	Clay	25	28	18.9433	49.6646	46.3873	0	46.3873	43.5686	43.5686
41	0.381272	15.1156	10.057	Clay	25	28	18.2322	47.8003	42.8811	0	42.8811	39.6476	39.6476
42	0.381272	13.5046	11.6586	Clay	25	28	17.4498	45.7489	39.023	0	39.023	35.4225	35.4225
43	0.381272	11.8358	13.2695	Clay	25	28	16.6272	43.5923	34.9669	0	34.9669	31.0457	31.0457
44	0.381272	10.3734	14.8911	Clay	25	28	15.9122	41.7178	31.4416	0	31.4416	27.2104	27.2104
45	0.381272	8.84081	16.5251	Clay	25	28	15.1505	39.7209	27.686	0	27.686	23.191	23.191
46	0.381272	7.22665	18.173	Clay	25	28	14.3346	37.5818	23.663	0	23.663	18.9575	18.9575
47	0.381272	5.62994	19.8366	Clay	25	28	13.5202	35.4465	19.6471	0	19.6471	14.7697	14.7697
48	0.381272	4.12898	21.5179	Clay	25	28	12.7523	33.4334	15.861	0	15.861	10.8331	10.8331
49	0.381272	2.5424	23.2189	Clay	25	28	11.9263	31.2679	11.7882	0	11.7882	6.67191	6.67191
50	0.381272	0.863203	24.9418	Clay	25	28	11.0365	28.9349	7.40047	0	7.40047	2.26772	2.26772

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.86636**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.373269	2.23057	-61.3161	Clay	25	28	7.40652	21.2298	-7.0908	0	-7.0908	6.44655	6.44655
2	0.373269	6.44885	-58.5348	Clay	25	28	9.24744	26.5065	2.83329	0	2.83329	17.9443	17.9443
3	0.373269	10.2315	-55.96	Clay	25	28	10.8515	31.1042	11.4804	0	11.4804	27.5442	27.5442
4	0.373269	13.6626	-53.5472	Clay	25	28	12.276	35.1875	19.1599	0	19.1599	35.7786	35.7786
5	0.373269	16.8006	-51.2653	Clay	25	28	13.5617	38.8726	26.0905	0	26.0905	42.9972	42.9972
6	0.373269	19.6883	-49.0918	Clay	25	28	14.7381	42.2447	32.4327	0	32.4327	49.4419	49.4419
7	0.373269	22.3579	-47.0099	Clay	25	28	15.8278	45.3682	38.3071	0	38.3071	55.2862	55.2862
8	0.373269	24.8346	-45.0064	Clay	25	28	16.8481	48.2927	43.8071	0	43.8071	60.659	60.659
9	0.373269	27.1383	-43.0708	Clay	25	28	17.8125	51.0569	49.0059	0	49.0059	65.6575	65.6575
10	0.373269	29.2854	-41.1947	Clay	25	28	18.7319	53.6923	53.9624	0	53.9624	70.3579	70.3579
11	0.373269	31.2339	-39.3709	Clay	25	28	19.5939	56.1633	58.6097	0	58.6097	74.6876	74.6876
12	0.373269	32.6558	-37.5936	Clay	25	28	20.2742	58.1132	62.2768	0	62.2768	77.8865	77.8865
13	0.373269	33.8933	-35.8579	Clay	25	28	20.9055	59.9227	65.6802	0	65.6802	80.7898	80.7898
14	0.373269	35.1789	-34.1594	Clay	25	28	21.5802	61.8565	69.3171	0	69.3171	83.9606	83.9606
15	0.373269	36.3999	-32.4945	Clay	25	28	22.2555	63.7923	72.9576	0	72.9576	87.1329	87.1329
16	0.373269	37.0608	-30.8599	Clay	25	28	22.7331	65.1613	75.5324	0	75.5324	89.1163	89.1163
17	0.373269	35.7663	-29.2527	Clay	25	28	22.4395	64.3197	73.9494	0	73.9494	86.5175	86.5175
18	0.373269	30.639	-27.6704	Clay	25	28	20.5761	58.9785	63.9042	0	63.9042	74.6934	74.6934
19	0.373269	30.0235	-26.1107	Clay	25	28	20.5666	58.9513	63.8532	0	63.8532	73.9334	73.9334
20	0.373269	30.0407	-24.5715	Clay	25	28	20.8331	59.7151	65.2896	0	65.2896	74.8152	74.8152
21	0.373269	29.9769	-23.0511	Clay	25	28	21.0786	60.4189	66.6131	0	66.6131	75.5827	75.5827
22	0.373269	29.8349	-21.5477	Clay	25	28	21.302	61.0591	67.8173	0	67.8173	76.2289	76.2289
23	0.373269	29.6171	-20.0597	Clay	25	28	21.5013	61.6306	68.892	0	68.892	76.7432	76.7432
24	0.373269	29.3259	-18.5856	Clay	25	28	21.6745	62.127	69.8256	0	69.8256	77.1138	77.1138
25	0.373269	28.9631	-17.1243	Clay	25	28	21.8189	62.5407	70.6037	0	70.6037	77.3262	77.3262
26	0.373269	28.5306	-15.6743	Clay	25	28	21.9313	62.8629	71.2097	0	71.2097	77.3637	77.3637
27	0.373269	28.0298	-14.2346	Clay	25	28	22.0084	63.0839	71.6254	0	71.6254	77.2085	77.2085
28	0.373269	27.577	-12.804	Clay	25	28	22.1006	63.3484	72.1228	0	72.1228	77.1455	77.1455
29	0.373269	27.4312	-11.3814	Clay	25	28	22.3293	64.0037	73.3552	0	73.3552	77.8501	77.8501
30	0.373269	26.612	-9.966	Clay	25	28	22.2235	63.7006	72.7852	0	72.7852	76.6902	76.6902
31	0.373269	25.3408	-8.55668	Clay	25	28	21.876	62.7046	70.912	0	70.912	74.2035	74.2035
32	0.373269	24.0067	-7.15255	Clay	25	28	21.4683	61.5358	68.714	0	68.714	71.4081	71.4081
33	0.373269	22.6102	-5.75274	Clay	25	28	20.9973	60.1859	66.1749	0	66.1749	68.2903	68.2903
34	0.373269	21.1518	-4.35636	Clay	25	28	20.4607	58.6477	63.2821	0	63.2821	64.8408	64.8408
35	0.373269	19.6574	-2.96258	Clay	25	28	19.8696	56.9533	60.0954	0	60.0954	61.1237	61.1237
36	0.373269	18.1255	-1.57054	Clay	25	28	19.2224	55.0983	56.6068	0	56.6068	57.1338	57.1338
37	0.373269	16.5326	-0.179438	Clay	25	28	18.5069	53.0475	52.7496	0	52.7496	52.8076	52.8076
38	0.373269	15.0997	1.21156	Clay	25	28	17.8398	51.1352	49.1533	0	49.1533	48.776	48.776
39	0.373269	14.4465	2.60328	Clay	25	28	17.5525	50.3117	47.6044	0	47.6044	46.8063	46.8063
40	0.373269	13.814	3.99653	Clay	25	28	17.2489	49.4417	45.9681	0	45.9681	44.763	44.763
41	0.373269	13.0468	5.39216	Clay	25	28	16.8472	48.29	43.8022	0	43.8022	42.212	42.212
42	0.373269	11.8159	6.791	Clay	25	28	16.1717	46.3538	40.1608	0	40.1608	38.235	38.235
43	0.373269	10.462	8.19393	Clay	25	28	15.4078	44.1643	36.043	0	36.043	33.8244	33.8244
44	0.373269	9.022	9.60182	Clay	25	28	14.5799	41.7913	31.5799	0	31.5799	29.1134	29.1134
45	0.373269	7.47795	11.0156	Clay	25	28	13.6835	39.2218	26.7474	0	26.7474	24.0838	24.0838
46	0.373269	6.16272	12.4362	Clay	25	28	12.9039	36.9872	22.5446	0	22.5446	19.699	19.699
47	0.373269	4.81324	13.8646	Clay	25	28	12.1036	34.6932	18.2303	0	18.2303	15.2429	15.2429
48	0.373269	3.39721	15.3019	Clay	25	28	11.271	32.3066	13.7418	0	13.7418	10.658	10.658
49	0.373269	1.95927	16.7491	Clay	25	28	10.436	29.9133	9.24059	0	9.24059	6.09989	6.09989
50	0.373269	0.656627	18.2074	Clay	25	28	9.68742	27.7676	5.20513	0	5.20513	2.01868	2.01868



 **Post - 1:1**
**Global Minimum Query (bishop simplified) - Safety Factor: 2.26711**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.419303	0.860812	-40.3624	Rock fill	5	30	2.24312	5.0854	0.147916	0	0.147916	2.05443	2.05443
2	0.419303	2.52988	-39.3532	Rock fill	5	30	3.09593	7.01881	3.49668	0	3.49668	6.03547	6.03547
3	0.419303	4.09604	-38.3584	Rock fill	5	30	3.90647	8.85639	6.67946	0	6.67946	9.77107	9.77107
4	0.419303	5.56354	-37.377	Rock fill	5	30	4.67556	10.6	9.69951	0	9.69951	13.2713	13.2713
5	0.419303	6.93623	-36.4084	Rock fill	5	30	5.40401	12.2515	12.56	0	12.56	16.5454	16.5454
6	0.419303	8.21768	-35.4516	Rock fill	5	30	6.09256	13.8125	15.2637	0	15.2637	19.6017	19.6017
7	0.419303	9.41113	-34.5061	Rock fill	5	30	6.74193	15.2847	17.8136	0	17.8136	22.4483	22.4483
8	0.419303	10.5196	-33.5713	Rock fill	5	30	7.35275	16.6695	20.2122	0	20.2122	25.0921	25.0921
9	0.419303	11.5458	-32.6464	Rock fill	5	30	7.92569	17.9684	22.4619	0	22.4619	27.5397	27.5397
10	0.419303	12.4924	-31.731	Rock fill	5	30	8.46126	19.1826	24.5651	0	24.5651	29.7972	29.7972
11	0.419303	13.3616	-30.8246	Rock fill	5	30	8.96009	20.3135	26.5239	0	26.5239	31.8704	31.8704
12	0.419303	14.1558	-29.9267	Rock fill	5	30	9.4227	21.3623	28.3403	0	28.3403	33.7644	33.7644
13	0.419303	14.8769	-29.0368	Rock fill	5	30	9.8495	22.3299	30.0163	0	30.0163	35.4842	35.4842
14	0.419303	15.5268	-28.1545	Rock fill	5	30	10.241	23.2174	31.5535	0	31.5535	37.0341	37.0341
15	0.419303	16.1073	-27.2794	Rock fill	5	30	10.5976	24.0259	32.9538	0	32.9538	38.4188	38.4188
16	0.419303	16.6202	-26.4111	Rock fill	5	30	10.9197	24.7561	34.2185	0	34.2185	39.6417	39.6417
17	0.419303	17.0668	-25.5494	Rock fill	5	30	11.2076	25.4089	35.3492	0	35.3492	40.7068	40.7068
18	0.419303	17.4486	-24.6938	Rock fill	5	30	11.4618	25.9851	36.3473	0	36.3473	41.6176	41.6176
19	0.419303	17.7671	-23.844	Rock fill	5	30	11.6824	26.4853	37.2137	0	37.2137	42.377	42.377
20	0.419303	18.0234	-22.9998	Rock fill	5	30	11.8699	26.9103	37.9497	0	37.9497	42.9881	42.9881
21	0.419303	18.2188	-22.1608	Rock fill	5	30	12.0244	27.2606	38.5565	0	38.5565	43.454	43.454
22	0.419303	18.3543	-21.3268	Rock fill	5	30	12.1462	27.5367	39.0347	0	39.0347	43.7769	43.7769
23	0.419303	18.4309	-20.4975	Rock fill	5	30	12.2355	27.7393	39.3855	0	39.3855	43.9595	43.9595
24	0.419303	18.4498	-19.6726	Rock fill	5	30	12.2926	27.8686	39.6095	0	39.6095	44.0043	44.0043
25	0.419303	18.4116	-18.852	Rock fill	5	30	12.3175	27.9251	39.7076	0	39.7076	43.9133	43.9133
26	0.419303	18.3174	-18.0354	Rock fill	5	30	12.3105	27.9092	39.68	0	39.68	43.6883	43.6883
27	0.419303	18.1678	-17.2226	Rock fill	5	30	12.2717	27.8212	39.5274	0	39.5274	43.3314	43.3314
28	0.419303	17.9637	-16.4133	Rock fill	5	30	12.2011	27.6613	39.2504	0	39.2504	42.8445	42.8445
29	0.419303	17.7057	-15.6074	Rock fill	5	30	12.099	27.4297	38.8494	0	38.8494	42.2291	42.2291
30	0.419303	17.3945	-14.8046	Rock fill	5	30	11.9653	27.1266	38.3243	0	38.3243	41.4867	41.4867
31	0.419303	17.0307	-14.0048	Rock fill	5	30	11.8001	26.7521	37.6757	0	37.6757	40.6188	40.6188
32	0.419303	16.6148	-13.2078	Rock fill	5	30	11.6035	26.3063	36.9035	0	36.9035	39.6267	39.6267
33	0.419303	16.1474	-12.4134	Rock fill	5	30	11.3754	25.7893	36.008	0	36.008	38.5119	38.5119
34	0.419303	15.6289	-11.6213	Rock fill	5	30	11.116	25.2011	34.9893	0	34.9893	37.2754	37.2754
35	0.419303	15.0599	-10.8316	Rock fill	5	30	10.825	24.5415	33.8468	0	33.8468	35.9179	35.9179
36	0.419303	14.4407	-10.0439	Rock fill	5	30	10.5026	23.8106	32.5809	0	32.5809	34.4411	34.4411
37	0.419303	13.7716	-9.25809	Rock fill	5	30	10.1487	23.0082	31.191	0	31.191	32.8453	32.8453
38	0.419303	13.0532	-8.47406	Rock fill	5	30	9.76313	22.1341	29.6772	0	29.6772	31.1318	31.1318
39	0.419303	12.2855	-7.69163	Rock fill	5	30	9.34586	21.1881	28.0386	0	28.0386	29.3008	29.3008
40	0.419303	11.4691	-6.91064	Rock fill	5	30	8.89679	20.17	26.2752	0	26.2752	27.3535	27.3535
41	0.419303	10.604	-6.13093	Rock fill	5	30	8.41574	19.0794	24.3864	0	24.3864	25.2903	25.2903
42	0.419303	9.69055	-5.35237	Rock fill	5	30	7.90262	17.9161	22.3713	0	22.3713	23.1116	23.1116
43	0.419303	8.72894	-4.5748	Rock fill	5	30	7.35716	16.6795	20.2295	0	20.2295	20.8182	20.8182
44	0.419303	7.71932	-3.79806	Rock fill	5	30	6.77925	15.3693	17.9602	0	17.9602	18.4102	18.4102
45	0.419303	6.66184	-3.02203	Rock fill	5	30	6.16865	13.985	15.5625	0	15.5625	15.8881	15.8881
46	0.419303	5.55662	-2.24656	Rock fill	5	30	5.5251	12.526	13.0354	0	13.0354	13.2522	13.2522
47	0.419303	4.40374	-1.47149	Rock fill	5	30	4.84837	10.9918	10.3781	0	10.3781	10.5026	10.5026
48	0.419303	3.20327	-0.696694	Rock fill	5	30	4.13815	9.38164	7.58922	0	7.58922	7.63954	7.63954
49	0.419303	1.95525	0.0779751	Rock fill	5	30	3.39414	7.6949	4.66769	0	4.66769	4.66307	4.66307
50	0.419303	0.659673	0.852658	Rock fill	5	30	2.61601	5.93078	1.61216	0	1.61216	1.57323	1.57323

**Global Minimum Query (janbu simplified) - Safety Factor: 2.20853**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.419303	0.860812	-40.3624	Rock fill	5	30	2.29136	5.06054	0.10486	0	0.10486	2.05237	2.05237
2	0.419303	2.52988	-39.3532	Rock fill	5	30	3.16296	6.9855	3.43898	0	3.43898	6.03274	6.03274
3	0.419303	4.09604	-38.3584	Rock fill	5	30	3.9916	8.81556	6.60875	0	6.60875	9.76774	9.76774
4	0.419303	5.56354	-37.377	Rock fill	5	30	4.7781	10.5526	9.61733	0	9.61733	13.2674	13.2674
5	0.419303	6.93623	-36.4084	Rock fill	5	30	5.52324	12.1982	12.4677	0	12.4677	16.5411	16.5411
6	0.419303	8.21768	-35.4516	Rock fill	5	30	6.22778	13.7542	15.1628	0	15.1628	19.5971	19.5971
7	0.419303	9.41113	-34.5061	Rock fill	5	30	6.89241	15.2221	17.7051	0	17.7051	22.4433	22.4433
8	0.419303	10.5196	-33.5713	Rock fill	5	30	7.51776	16.6032	20.0974	0	20.0974	25.0867	25.0867
9	0.419303	11.5458	-32.6464	Rock fill	5	30	8.10453	17.8991	22.3419	0	22.3419	27.5342	27.5342
10	0.419303	12.4924	-31.731	Rock fill	5	30	8.65322	19.1109	24.4407	0	24.4407	29.7915	29.7915
11	0.419303	13.3616	-30.8246	Rock fill	5	30	9.16438	20.2398	26.3963	0	26.3963	31.8647	31.8647
12	0.419303	14.1558	-29.9267	Rock fill	5	30	9.63858	21.2871	28.2101	0	28.2101	33.7585	33.7585
13	0.419303	14.8769	-29.0368	Rock fill	5	30	10.0763	22.2538	29.8845	0	29.8845	35.4783	35.4783
14	0.419303	15.5268	-28.1545	Rock fill	5	30	10.4779	23.1408	31.4208	0	31.4208	37.0283	37.0283
15	0.419303	16.1073	-27.2794	Rock fill	5	30	10.8439	23.9491	32.8209	0	32.8209	38.4129	38.4129
16	0.419303	16.6202	-26.4111	Rock fill	5	30	11.1747	24.6796	34.086	0	34.086	39.6359	39.6359
17	0.419303	17.0668	-25.5494	Rock fill	5	30	11.4705	25.333	35.2177	0	35.2177	40.701	40.701
18	0.419303	17.4486	-24.6938	Rock fill	5	30	11.7318	25.9101	36.2173	0	36.2173	41.6118	41.6118
19	0.419303	17.7671	-23.844	Rock fill	5	30	11.9589	26.4115	37.0859	0	37.0859	42.3713	42.3713
20	0.419303	18.0234	-22.9998	Rock fill	5	30	12.152	26.838	37.8245	0	37.8245	42.9827	42.9827
21	0.419303	18.2188	-22.1608	Rock fill	5	30	12.3114	27.19	38.4344	0	38.4344	43.4487	43.4487
22	0.419303	18.3543	-21.3268	Rock fill	5	30	12.4373	27.4682	38.9161	0	38.9161	43.7719	43.7719
23	0.419303	18.4309	-20.4975	Rock fill	5	30	12.53	27.6729	39.2706	0	39.2706	43.9548	43.9548
24	0.419303	18.4498	-19.6726	Rock fill	5	30	12.5896	27.8046	39.4986	0	39.4986	43.9995	43.9995
25	0.419303	18.4116	-18.852	Rock fill	5	30	12.6164	27.8636	39.6008	0	39.6008	43.9086	43.9086
26	0.419303	18.3174	-18.0354	Rock fill	5	30	12.6104	27.8504	39.5779	0	39.5779	43.6839	43.6839
27	0.419303	18.1678	-17.2226	Rock fill	5	30	12.5718	27.7651	39.4303	0	39.4303	43.3274	43.3274
28	0.419303	17.9637	-16.4133	Rock fill	5	30	12.5007	27.6081	39.1584	0	39.1584	42.8407	42.8407
29	0.419303	17.7057	-15.6074	Rock fill	5	30	12.3972	27.3795	38.7623	0	38.7623	42.2254	42.2254
30	0.419303	17.3945	-14.8046	Rock fill	5	30	12.2613	27.0794	38.2427	0	38.2427	41.4833	41.4833
31	0.419303	17.0307	-14.0048	Rock fill	5	30	12.0931	26.708	37.5995	0	37.5995	40.6158	40.6158
32	0.419303	16.6148	-13.2078	Rock fill	5	30	11.8927	26.2654	36.8327	0	36.8327	39.6238	39.6238
33	0.419303	16.1474	-12.4134	Rock fill	5	30	11.6601	25.7516	35.9428	0	35.9428	38.5093	38.5093
34	0.419303	15.6289	-11.6213	Rock fill	5	30	11.3951	25.1665	34.9293	0	34.9293	37.2728	37.2728
35	0.419303	15.0599	-10.8316	Rock fill	5	30	11.0979	24.5101	33.7924	0	33.7924	35.9158	35.9158
36	0.419303	14.4407	-10.0439	Rock fill	5	30	10.7684	23.7823	32.5318	0	32.5318	34.4391	34.4391
37	0.419303	13.7716	-9.25809	Rock fill	5	30	10.4064	22.9829	31.1472	0	31.1472	32.8435	32.8435
38	0.419303	13.0532	-8.47406	Rock fill	5	30	10.012	22.1118	29.6385	0	29.6385	31.1302	31.1302
39	0.419303	12.2855	-7.69163	Rock fill	5	30	9.58497	21.1687	28.005	0	28.005	29.2995	29.2995
40	0.419303	11.4691	-6.91064	Rock fill	5	30	9.12521	20.1533	26.2463	0	26.2463	27.3523	27.3523
41	0.419303	10.604	-6.13093	Rock fill	5	30	8.63262	19.0654	24.3619	0	24.3619	25.2892	25.2892
42	0.419303	9.69055	-5.35237	Rock fill	5	30	8.10698	17.9045	22.3513	0	22.3513	23.1108	23.1108
43	0.419303	8.72894	-4.5748	Rock fill	5	30	7.54814	16.6703	20.2136	0	20.2136	20.8175	20.8175
44	0.419303	7.71932	-3.79806	Rock fill	5	30	6.95589	15.3623	17.948	0	17.948	18.4097	18.4097
45	0.419303	6.66184	-3.02203	Rock fill	5	30	6.32995	13.9799	15.5536	0	15.5536	15.8878	15.8878
46	0.419303	5.55662	-2.24656	Rock fill	5	30	5.67011	12.5226	13.0295	0	13.0295	13.252	13.252
47	0.419303	4.40374	-1.47149	Rock fill	5	30	4.97607	10.9898	10.3746	0	10.3746	10.5025	10.5025
48	0.419303	3.20327	-0.696694	Rock fill	5	30	4.24755	9.38084	7.58784	0	7.58784	7.63949	7.63949
49	0.419303	1.95525	0.0779751	Rock fill	5	30	3.4842	7.69497	4.66783	0	4.66783	4.66309	4.66309
50	0.419303	0.659673	0.852658	Rock fill	5	30	2.68568	5.93141	1.61324	0	1.61324	1.57327	1.57327

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.26606**

Slice Number	Width [m]	Weight [kN]	Angle of Slice Base [deg]	Base Material	Base Cohesion [kPa]	Base Friction Angle [deg]	Shear Stress [kPa]	Shear Strength [kPa]	Base Normal Stress [kPa]	Pore Pressure [kPa]	Effective Normal Stress [kPa]	Base Vertical Stress [kPa]	Effective Vertical Stress [kPa]
1	0.419303	0.860812	-40.3624	Rock fill	5	30	2.25425	5.10825	0.187504	0	0.187504	2.10347	2.10347
2	0.419303	2.52988	-39.3532	Rock fill	5	30	3.10926	7.04577	3.54339	0	3.54339	6.09312	6.09312
3	0.419303	4.09604	-38.3584	Rock fill	5	30	3.89819	8.83354	6.63987	0	6.63987	9.72493	9.72493
4	0.419303	5.56354	-37.377	Rock fill	5	30	4.62771	10.4867	9.50317	0	9.50317	13.0384	13.0384
5	0.419303	6.93623	-36.4084	Rock fill	5	30	5.30374	12.0186	12.1566	0	12.1566	16.068	16.068
6	0.419303	8.21768	-35.4516	Rock fill	5	30	5.93157	13.4413	14.6208	0	14.6208	18.8442	18.8442
7	0.419303	9.41113	-34.5061	Rock fill	5	30	6.51584	14.7653	16.914	0	16.914	21.3932	21.3932
8	0.419303	10.5196	-33.5713	Rock fill	5	30	7.06058	15.9997	19.0521	0	19.0521	23.738	23.738
9	0.419303	11.5458	-32.6464	Rock fill	5	30	7.56939	17.1527	21.049	0	21.049	25.8985	25.8985
10	0.419303	12.4924	-31.731	Rock fill	5	30	8.04529	18.2311	22.917	0	22.917	27.8919	27.8919
11	0.419303	13.3616	-30.8246	Rock fill	5	30	8.49086	19.2408	24.6657	0	24.6657	29.7322	29.7322
12	0.419303	14.1558	-29.9267	Rock fill	5	30	8.90837	20.1869	26.3044	0	26.3044	31.4325	31.4325
13	0.419303	14.8769	-29.0368	Rock fill	5	30	9.29962	21.0735	27.84	0	27.84	33.0027	33.0027
14	0.419303	15.5268	-28.1545	Rock fill	5	30	9.66612	21.904	29.2785	0	29.2785	34.4516	34.4516
15	0.419303	16.1073	-27.2794	Rock fill	5	30	10.009	22.6811	30.6247	0	30.6247	35.7862	35.7862
16	0.419303	16.6202	-26.4111	Rock fill	5	30	10.3293	23.4068	31.8815	0	31.8815	37.0115	37.0115
17	0.419303	17.0668	-25.5494	Rock fill	5	30	10.6274	24.0823	33.0516	0	33.0516	38.1318	38.1318
18	0.419303	17.4486	-24.6938	Rock fill	5	30	10.9036	24.7083	34.1358	0	34.1358	39.1495	39.1495
19	0.419303	17.7671	-23.844	Rock fill	5	30	11.158	25.2848	35.1344	0	35.1344	40.066	40.066
20	0.419303	18.0234	-22.9998	Rock fill	5	30	11.3904	25.8114	36.0463	0	36.0463	40.8812	40.8812
21	0.419303	18.2188	-22.1608	Rock fill	5	30	11.6002	26.2867	36.8697	0	36.8697	41.5944	41.5944
22	0.419303	18.3543	-21.3268	Rock fill	5	30	11.7866	26.7092	37.6016	0	37.6016	42.2033	42.2033
23	0.419303	18.4309	-20.4975	Rock fill	5	30	11.9488	27.0767	38.2379	0	38.2379	42.7048	42.7048
24	0.419303	18.4498	-19.6726	Rock fill	5	30	12.0854	27.3863	38.7743	0	38.7743	43.095	43.095
25	0.419303	18.4116	-18.852	Rock fill	5	30	12.1952	27.6351	39.2052	0	39.2052	43.3691	43.3691
26	0.419303	18.3174	-18.0354	Rock fill	5	30	12.2766	27.8194	39.5244	0	39.5244	43.5217	43.5217
27	0.419303	18.1678	-17.2226	Rock fill	5	30	12.3278	27.9355	39.7253	0	39.7253	43.5468	43.5468
28	0.419303	17.9637	-16.4133	Rock fill	5	30	12.3471	27.9793	39.8013	0	39.8013	43.4384	43.4384
29	0.419303	17.7057	-15.6074	Rock fill	5	30	12.3326	27.9465	39.7445	0	39.7445	43.1895	43.1895
30	0.419303	17.3945	-14.8046	Rock fill	5	30	12.2826	27.8331	39.5482	0	39.5482	42.7945	42.7945
31	0.419303	17.0307	-14.0048	Rock fill	5	30	12.1951	27.6349	39.2048	0	39.2048	42.2465	42.2465
32	0.419303	16.6148	-13.2078	Rock fill	5	30	12.0684	27.3478	38.7076	0	38.7076	41.5399	41.5399
33	0.419303	16.1474	-12.4134	Rock fill	5	30	11.901	26.9683	38.0502	0	38.0502	40.6697	40.6697
34	0.419303	15.6289	-11.6213	Rock fill	5	30	11.6912	26.493	37.227	0	37.227	39.6314	39.6314
35	0.419303	15.0599	-10.8316	Rock fill	5	30	11.438	25.9193	36.2332	0	36.2332	38.4217	38.4217
36	0.419303	14.4407	-10.0439	Rock fill	5	30	11.1405	25.2451	35.0657	0	35.0657	37.0389	37.0389
37	0.419303	13.7716	-9.25809	Rock fill	5	30	10.798	24.469	33.7214	0	33.7214	35.4815	35.4815
38	0.419303	13.0532	-8.47406	Rock fill	5	30	10.4104	23.5905	32.1995	0	32.1995	33.7506	33.7506
39	0.419303	12.2855	-7.69163	Rock fill	5	30	9.97749	22.6096	30.5008	0	30.5008	31.8483	31.8483
40	0.419303	11.4691	-6.91064	Rock fill	5	30	9.50006	21.5277	28.6269	0	28.6269	29.7783	29.7783
41	0.419303	10.604	-6.13093	Rock fill	5	30	8.97889	20.3467	26.5812	0	26.5812	27.5457	27.5457
42	0.419303	9.69055	-5.35237	Rock fill	5	30	8.41527	19.0695	24.3691	0	24.3691	25.1575	25.1575
43	0.419303	8.72894	-4.5748	Rock fill	5	30	7.81087	17.6999	21.9969	0	21.9969	22.6219	22.6219
44	0.419303	7.71932	-3.79806	Rock fill	5	30	7.16773	16.2425	19.4725	0	19.4725	19.9483	19.9483
45	0.419303	6.66184	-3.02203	Rock fill	5	30	6.48807	14.7023	16.805	0	16.805	17.1475	17.1475
46	0.419303	5.55662	-2.24656	Rock fill	5	30	5.77452	13.0854	14.0044	0	14.0044	14.2309	14.2309
47	0.419303	4.40374	-1.47149	Rock fill	5	30	5.02984	11.3979	11.0815	0	11.0815	11.2107	11.2107
48	0.419303	3.20327	-0.696694	Rock fill	5	30	4.25693	9.64647	8.04792	0	8.04792	8.09969	8.09969
49	0.419303	1.95525	0.0779751	Rock fill	5	30	3.45874	7.83772	4.91508	0	4.91508	4.91037	4.91037
50	0.419303	0.659673	0.852658	Rock fill	5	30	2.63822	5.97838	1.6946	0	1.6946	1.65533	1.65533

## Interslice Data

### ◆ Pre

**Global Minimum Query (bishop simplified) - Safety Factor: 0.629749**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603299	5.25453e+06	0	0	0
2	603300	5.25453e+06	-103.358	0	0
3	603300	5.25452e+06	-165.719	0	0
4	603301	5.25452e+06	-196.74	0	0
5	603302	5.25452e+06	-203.092	0	0
6	603303	5.25452e+06	-189.677	0	0
7	603304	5.25452e+06	-160.332	0	0
8	603305	5.25451e+06	-118.697	0	0
9	603305	5.25451e+06	-67.2948	0	0
10	603306	5.25451e+06	-8.05242	0	0
11	603307	5.25451e+06	57.4047	0	0
12	603308	5.25451e+06	127.713	0	0
13	603309	5.25451e+06	200.172	0	0
14	603309	5.2545e+06	270.914	0	0
15	603310	5.2545e+06	340.348	0	0
16	603311	5.2545e+06	405.335	0	0
17	603312	5.2545e+06	464.938	0	0
18	603313	5.2545e+06	519.133	0	0
19	603313	5.2545e+06	567.937	0	0
20	603314	5.2545e+06	611.398	0	0
21	603315	5.25449e+06	649.588	0	0
22	603316	5.25449e+06	682.601	0	0
23	603317	5.25449e+06	710.551	0	0
24	603318	5.25449e+06	733.568	0	0
25	603318	5.25449e+06	751.797	0	0
26	603319	5.25449e+06	765.396	0	0
27	603320	5.25449e+06	774.534	0	0
28	603321	5.25449e+06	779.391	0	0
29	603322	5.25449e+06	780.154	0	0
30	603322	5.25449e+06	777.02	0	0
31	603323	5.25448e+06	770.192	0	0
32	603324	5.25448e+06	759.882	0	0
33	603325	5.25448e+06	746.305	0	0
34	603326	5.25448e+06	729.684	0	0
35	603327	5.25448e+06	710.246	0	0
36	603327	5.25448e+06	688.224	0	0
37	603328	5.25448e+06	663.854	0	0
38	603329	5.25448e+06	637.379	0	0
39	603330	5.25448e+06	609.042	0	0
40	603331	5.25448e+06	579.093	0	0
41	603331	5.25448e+06	547.787	0	0
42	603332	5.25448e+06	515.378	0	0
43	603333	5.25448e+06	482.127	0	0
44	603334	5.25448e+06	448.297	0	0
45	603335	5.25447e+06	414.152	0	0
46	603336	5.25447e+06	379.689	0	0
47	603336	5.25447e+06	344.854	0	0
48	603337	5.25447e+06	309.764	0	0
49	603338	5.25447e+06	274.675	0	0
50	603339	5.25447e+06	241.096	0	0
51	603340	5.25447e+06	0	0	0

**Global Minimum Query (janbu simplified) - Safety Factor: 0.609236**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603300	5.25453e+06	0	0	0
2	603301	5.25453e+06	-134.637	0	0
3	603301	5.25452e+06	-205.68	0	0
4	603302	5.25452e+06	-235.081	0	0
5	603303	5.25452e+06	-234.848	0	0
6	603304	5.25452e+06	-212.707	0	0
7	603305	5.25451e+06	-174.615	0	0
8	603305	5.25451e+06	-124.491	0	0
9	603306	5.25451e+06	-65.2273	0	0
10	603307	5.25451e+06	0.898579	0	0
11	603308	5.25451e+06	72.0572	0	0
12	603309	5.2545e+06	145.455	0	0
13	603309	5.2545e+06	216.89	0	0
14	603310	5.2545e+06	286.654	0	0
15	603311	5.2545e+06	351.895	0	0
16	603312	5.2545e+06	411.356	0	0
17	603313	5.2545e+06	464.997	0	0
18	603313	5.2545e+06	512.824	0	0
19	603314	5.2545e+06	554.89	0	0
20	603315	5.25449e+06	591.277	0	0
21	603316	5.25449e+06	622.094	0	0
22	603317	5.25449e+06	647.476	0	0
23	603317	5.25449e+06	667.573	0	0
24	603318	5.25449e+06	682.553	0	0
25	603319	5.25449e+06	692.599	0	0
26	603320	5.25449e+06	697.91	0	0
27	603320	5.25449e+06	698.69	0	0
28	603321	5.25449e+06	695.158	0	0
29	603322	5.25449e+06	687.538	0	0
30	603323	5.25448e+06	676.065	0	0
31	603324	5.25448e+06	660.977	0	0
32	603324	5.25448e+06	642.521	0	0
33	603325	5.25448e+06	620.951	0	0
34	603326	5.25448e+06	596.523	0	0
35	603327	5.25448e+06	569.502	0	0
36	603328	5.25448e+06	540.154	0	0
37	603328	5.25448e+06	508.751	0	0
38	603329	5.25448e+06	475.57	0	0
39	603330	5.25448e+06	440.892	0	0
40	603331	5.25448e+06	405	0	0
41	603332	5.25448e+06	368.183	0	0
42	603332	5.25448e+06	330.733	0	0
43	603333	5.25448e+06	292.945	0	0
44	603334	5.25447e+06	255.119	0	0
45	603335	5.25447e+06	217.52	0	0
46	603336	5.25447e+06	179.772	0	0
47	603336	5.25447e+06	141.761	0	0
48	603337	5.25447e+06	103.584	0	0
49	603338	5.25447e+06	65.9064	0	0
50	603339	5.25447e+06	31.0885	0	0
51	603340	5.25447e+06	0	0	0

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 0.622772**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603299	5.25453e+06	0	0	0
2	603300	5.25453e+06	-99.8386	-5.6417	3.23424
3	603300	5.25452e+06	-155.242	-17.5102	6.43536
4	603301	5.25452e+06	-179.583	-30.2836	9.5719
5	603302	5.25452e+06	-181.473	-40.6151	12.6154
6	603303	5.25452e+06	-166.732	-46.368	15.5412
7	603304	5.25452e+06	-139.529	-46.225	18.3297
8	603305	5.25451e+06	-103.371	-39.6096	20.9658
9	603305	5.25451e+06	-60.4592	-26.2124	23.4394
10	603306	5.25451e+06	-12.3679	-5.96403	25.7442
11	603307	5.25451e+06	39.6783	20.989	27.8779
12	603308	5.25451e+06	94.7235	54.3385	29.8409
13	603309	5.25451e+06	150.517	92.7281	31.6357
14	603309	5.2545e+06	204.41	134.102	33.2666
15	603310	5.2545e+06	256.909	178.149	34.7387
16	603311	5.2545e+06	305.569	222.481	36.0579
17	603312	5.2545e+06	349.943	265.91	37.23
18	603313	5.2545e+06	390.141	307.684	38.261
19	603314	5.2545e+06	426.268	347.118	39.1566
20	603314	5.2545e+06	458.423	383.597	39.9218
21	603315	5.25449e+06	486.701	416.582	40.5612
22	603316	5.25449e+06	511.191	445.609	41.0789
23	603317	5.25449e+06	531.979	470.294	41.4782
24	603318	5.25449e+06	549.143	490.326	41.7614
25	603318	5.25449e+06	562.755	505.477	41.9308
26	603319	5.25449e+06	572.882	515.594	41.9872
27	603320	5.25449e+06	579.586	520.602	41.9312
28	603321	5.25449e+06	582.928	520.505	41.7621
29	603322	5.25449e+06	582.965	515.385	41.4791
30	603323	5.25449e+06	579.756	505.401	41.0802
31	603323	5.25448e+06	573.365	490.79	40.5629
32	603324	5.25448e+06	563.861	471.86	39.9239
33	603325	5.25448e+06	551.327	448.995	39.159
34	603326	5.25448e+06	535.856	422.645	38.2639
35	603327	5.25448e+06	517.56	393.322	37.2332
36	603327	5.25448e+06	496.568	361.592	36.0614
37	603328	5.25448e+06	473.035	328.067	34.7427
38	603329	5.25448e+06	447.138	293.392	33.2711
39	603330	5.25448e+06	419.079	258.23	31.6407
40	603331	5.25448e+06	389.088	223.251	29.8464
41	603331	5.25448e+06	357.418	189.115	27.884
42	603332	5.25448e+06	324.348	156.452	25.7507
43	603333	5.25448e+06	290.179	125.851	23.4464
44	603334	5.25448e+06	255.232	97.8378	20.9733
45	603335	5.25447e+06	219.838	72.8646	18.3376
46	603336	5.25447e+06	184.046	51.2121	15.5496
47	603336	5.25447e+06	147.876	33.1196	12.6241
48	603337	5.25447e+06	111.55	18.8291	9.58094
49	603338	5.25447e+06	75.3967	8.51657	6.44463
50	603339	5.25447e+06	41.0838	2.32832	3.24362
51	603340	5.25447e+06	0	0	0

 **Post**
**Global Minimum Query (bishop simplified) - Safety Factor: 0.463064**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603310	5.25453e+06	0	0	0
2	603311	5.25452e+06	-14.3617	0	0
3	603311	5.25452e+06	-21.0841	0	0
4	603312	5.25452e+06	-22.2936	0	0
5	603312	5.25452e+06	-19.4588	0	0
6	603313	5.25452e+06	-13.6385	0	0
7	603313	5.25451e+06	-5.63035	0	0
8	603314	5.25451e+06	3.94758	0	0
9	603314	5.25451e+06	14.6108	0	0
10	603315	5.25451e+06	25.9756	0	0
11	603315	5.25451e+06	37.7236	0	0
12	603316	5.25451e+06	49.6072	0	0
13	603316	5.25451e+06	61.4129	0	0
14	603316	5.25451e+06	72.9709	0	0
15	603317	5.25451e+06	84.1469	0	0
16	603317	5.2545e+06	94.8228	0	0
17	603318	5.2545e+06	104.911	0	0
18	603318	5.2545e+06	114.336	0	0
19	603319	5.2545e+06	123.042	0	0
20	603319	5.2545e+06	130.982	0	0
21	603320	5.2545e+06	138.126	0	0
22	603320	5.2545e+06	144.451	0	0
23	603321	5.2545e+06	149.943	0	0
24	603321	5.2545e+06	154.599	0	0
25	603322	5.2545e+06	158.418	0	0
26	603322	5.2545e+06	161.408	0	0
27	603323	5.25449e+06	163.583	0	0
28	603323	5.25449e+06	164.962	0	0
29	603324	5.25449e+06	165.565	0	0
30	603324	5.25449e+06	165.421	0	0
31	603325	5.25449e+06	164.561	0	0
32	603325	5.25449e+06	163.017	0	0
33	603326	5.25449e+06	160.827	0	0
34	603326	5.25449e+06	158.03	0	0
35	603327	5.25449e+06	154.67	0	0
36	603327	5.25449e+06	150.79	0	0
37	603328	5.25449e+06	146.438	0	0
38	603328	5.25449e+06	141.663	0	0
39	603329	5.25449e+06	136.516	0	0
40	603329	5.25449e+06	131.05	0	0
41	603330	5.25449e+06	125.319	0	0
42	603330	5.25448e+06	119.38	0	0
43	603331	5.25448e+06	113.29	0	0
44	603331	5.25448e+06	107.109	0	0
45	603331	5.25448e+06	100.897	0	0
46	603332	5.25448e+06	94.715	0	0
47	603332	5.25448e+06	88.6269	0	0
48	603333	5.25448e+06	82.6963	0	0
49	603333	5.25448e+06	76.9897	0	0
50	603334	5.25448e+06	71.5718	0	0
51	603335	5.25448e+06	0	0	0

**Global Minimum Query (janbu simplified) - Safety Factor: 0.445041**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603310	5.25453e+06	0	0	0
2	603311	5.25452e+06	-14.6884	0	0
3	603311	5.25452e+06	-22.0868	0	0
4	603312	5.25452e+06	-24.2483	0	0
5	603312	5.25452e+06	-22.5881	0	0
6	603313	5.25452e+06	-18.1247	0	0
7	603313	5.25451e+06	-11.624	0	0
8	603314	5.25451e+06	-3.67835	0	0
9	603314	5.25451e+06	5.24908	0	0
10	603315	5.25451e+06	14.7921	0	0
11	603315	5.25451e+06	24.648	0	0
12	603316	5.25451e+06	34.5818	0	0
13	603316	5.25451e+06	44.3921	0	0
14	603316	5.25451e+06	53.9193	0	0
15	603317	5.25451e+06	63.0377	0	0
16	603317	5.2545e+06	71.6378	0	0
17	603318	5.2545e+06	79.6392	0	0
18	603318	5.2545e+06	86.973	0	0
19	603319	5.2545e+06	93.5889	0	0
20	603319	5.2545e+06	99.4473	0	0
21	603320	5.2545e+06	104.522	0	0
22	603320	5.2545e+06	108.795	0	0
23	603321	5.2545e+06	112.257	0	0
24	603321	5.2545e+06	114.91	0	0
25	603322	5.2545e+06	116.755	0	0
26	603322	5.2545e+06	117.806	0	0
27	603323	5.25449e+06	118.079	0	0
28	603323	5.25449e+06	117.596	0	0
29	603324	5.25449e+06	116.383	0	0
30	603324	5.25449e+06	114.47	0	0
31	603325	5.25449e+06	111.89	0	0
32	603325	5.25449e+06	108.68	0	0
33	603326	5.25449e+06	104.88	0	0
34	603326	5.25449e+06	100.532	0	0
35	603327	5.25449e+06	95.681	0	0
36	603327	5.25449e+06	90.3748	0	0
37	603328	5.25449e+06	84.6628	0	0
38	603328	5.25449e+06	78.5964	0	0
39	603329	5.25449e+06	72.2293	0	0
40	603329	5.25449e+06	65.6164	0	0
41	603330	5.25449e+06	58.8148	0	0
42	603330	5.25448e+06	51.8826	0	0
43	603331	5.25448e+06	44.88	0	0
44	603331	5.25448e+06	37.8679	0	0
45	603331	5.25448e+06	30.9099	0	0
46	603332	5.25448e+06	24.0694	0	0
47	603332	5.25448e+06	17.4111	0	0
48	603333	5.25448e+06	11.0013	0	0
49	603333	5.25448e+06	4.90878	0	0
50	603334	5.25448e+06	-0.799881	0	0
51	603335	5.25448e+06	0	0	0



**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 0.456166**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	603310	5.25453e+06	0	0	0
2	603311	5.25452e+06	-13.9039	-1.21094	4.97753
3	603311	5.25452e+06	-19.8931	-3.45842	9.86231
4	603312	5.25452e+06	-20.7243	-5.38695	14.5707
5	603312	5.25452e+06	-18.1314	-6.25549	19.0349
6	603313	5.25452e+06	-13.246	-5.67922	23.2072
7	603313	5.25451e+06	-6.83711	-3.49259	27.0592
8	603314	5.25451e+06	0.558023	0.329751	30.58
9	603314	5.25451e+06	8.55719	5.72252	33.7722
10	603315	5.25451e+06	16.8838	12.5609	36.6478
11	603315	5.25451e+06	25.3248	20.6725	39.2246
12	603316	5.25451e+06	33.7269	29.8643	41.5241
13	603316	5.25451e+06	41.9631	39.916	43.5678
14	603316	5.25451e+06	49.9376	50.6007	45.3779
15	603317	5.25451e+06	57.5783	61.6902	46.9745
16	603317	5.2545e+06	64.8215	72.9501	48.3766
17	603318	5.2545e+06	71.6228	84.1586	49.6007
18	603318	5.2545e+06	77.9424	95.0974	50.6617
19	603319	5.2545e+06	83.7515	105.564	51.5725
20	603319	5.2545e+06	89.0255	115.369	52.3441
21	603320	5.2545e+06	93.7466	124.341	52.9856
22	603320	5.2545e+06	97.8993	132.327	53.5049
23	603321	5.2545e+06	101.471	139.191	53.9077
24	603321	5.2545e+06	104.454	144.824	54.1991
25	603322	5.2545e+06	106.835	149.129	54.3824
26	603322	5.2545e+06	108.61	152.039	54.4596
27	603323	5.25449e+06	109.772	153.506	54.4315
28	603323	5.25449e+06	110.314	153.507	54.298
29	603324	5.25449e+06	110.232	152.043	54.0577
30	603324	5.25449e+06	109.526	149.141	53.7072
31	603325	5.25449e+06	108.194	144.854	53.2433
32	603325	5.25449e+06	106.242	139.259	52.6596
33	603326	5.25449e+06	103.676	132.461	51.95
34	603326	5.25449e+06	100.511	124.588	51.1052
35	603327	5.25449e+06	96.7642	115.794	50.1159
36	603327	5.25449e+06	92.4617	106.252	48.9698
37	603328	5.25449e+06	87.6359	96.1514	47.6528
38	603328	5.25449e+06	82.3263	85.6973	46.1494
39	603329	5.25449e+06	76.5804	75.1017	44.4415
40	603329	5.25449e+06	70.4528	64.5795	42.5095
41	603330	5.25449e+06	64.0055	54.3426	40.3323
42	603330	5.25448e+06	57.3068	44.5925	37.8878
43	603331	5.25448e+06	50.4313	35.515	35.1542
44	603331	5.25448e+06	43.4575	27.2735	32.112
45	603331	5.25448e+06	36.469	20.004	28.7457
46	603332	5.25448e+06	29.5501	13.8096	25.048
47	603332	5.25448e+06	22.7864	8.75735	21.0229
48	603333	5.25448e+06	16.2631	4.87619	16.6904
49	603333	5.25448e+06	10.065	2.15571	12.0889
50	603334	5.25448e+06	4.27087	0.545367	7.27698
51	603335	5.25448e+06	0	0	0

 **Pre - 1:1**
**Global Minimum Query (bishop simplified) - Safety Factor: 2.86939**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	30.9465	13.1392	0	0	0
2	31.3197	12.457	-7.80014	0	0
3	31.693	11.847	-9.78164	0	0
4	32.0663	11.2945	-7.51911	0	0
5	32.4395	10.7892	-2.11163	0	0
6	32.8128	10.3238	5.63581	0	0
7	33.1861	9.89303	15.1117	0	0
8	33.5593	9.4926	25.8385	0	0
9	33.9326	9.11925	37.4341	0	0
10	34.3059	8.77031	49.5877	0	0
11	34.6791	8.4436	62.0423	0	0
12	35.0524	8.13731	74.552	0	0
13	35.4257	7.84992	86.737	0	0
14	35.799	7.58013	98.4459	0	0
15	36.1722	7.32685	109.651	0	0
16	36.5455	7.0891	120.277	0	0
17	36.9188	6.86606	130.069	0	0
18	37.292	6.65699	138.352	0	0
19	37.6653	6.46127	144.05	0	0
20	38.0386	6.27832	148.751	0	0
21	38.4118	6.10765	152.665	0	0
22	38.7851	5.94881	155.788	0	0
23	39.1584	5.80142	158.12	0	0
24	39.5316	5.66512	159.664	0	0
25	39.9049	5.5396	160.432	0	0
26	40.2782	5.4246	160.436	0	0
27	40.6515	5.31986	159.693	0	0
28	41.0247	5.22517	158.226	0	0
29	41.398	5.14033	156.062	0	0
30	41.7713	5.0652	153.23	0	0
31	42.1445	4.99961	149.743	0	0
32	42.5178	4.94344	145.656	0	0
33	42.8911	4.8966	141.031	0	0
34	43.2643	4.859	135.936	0	0
35	43.6376	4.83056	130.441	0	0
36	44.0109	4.81125	124.617	0	0
37	44.3841	4.80101	118.538	0	0
38	44.7574	4.79984	112.284	0	0
39	45.1307	4.80774	105.893	0	0
40	45.504	4.82471	99.2501	0	0
41	45.8772	4.85079	92.3736	0	0
42	46.2505	4.88602	85.3255	0	0
43	46.6238	4.93047	78.2804	0	0
44	46.997	4.98422	71.3355	0	0
45	47.3703	5.04736	64.5855	0	0
46	47.7436	5.12003	58.1409	0	0
47	48.1168	5.20234	51.9824	0	0
48	48.4901	5.29447	46.1916	0	0
49	48.8634	5.3966	40.8714	0	0
50	49.2366	5.50894	36.1103	0	0
51	49.6099	5.63171	0	0	0

**Global Minimum Query (janbu simplified) - Safety Factor: 2.62175**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	31.4213	13.116	0	0	0
2	31.8026	12.1952	-12.0867	0	0
3	32.1839	11.4245	-13.8973	0	0
4	32.5651	10.7556	-9.29762	0	0
5	32.9464	10.1623	-0.467178	0	0
6	33.3277	9.6285	11.2136	0	0
7	33.7089	9.1433	24.8019	0	0
8	34.0902	8.6991	39.618	0	0
9	34.4715	8.29025	55.1528	0	0
10	34.8528	7.91244	71.0124	0	0
11	35.234	7.56228	86.7434	0	0
12	35.6153	7.23707	101.943	0	0
13	35.9966	6.93461	116.5	0	0
14	36.3778	6.65306	130.342	0	0
15	36.7591	6.3909	143.33	0	0
16	37.1404	6.14684	154.752	0	0
17	37.5217	5.91978	163.496	0	0
18	37.9029	5.70878	170.228	0	0
19	38.2842	5.51301	175.935	0	0
20	38.6655	5.33178	180.605	0	0
21	39.0467	5.16446	184.234	0	0
22	39.428	5.01051	186.825	0	0
23	39.8093	4.86947	188.385	0	0
24	40.1906	4.74092	188.93	0	0
25	40.5718	4.62449	188.477	0	0
26	40.9531	4.51988	187.049	0	0
27	41.3344	4.42681	184.678	0	0
28	41.7156	4.34505	181.395	0	0
29	42.0969	4.27438	177.219	0	0
30	42.4782	4.21464	172.212	0	0
31	42.8595	4.1657	166.45	0	0
32	43.2407	4.12742	160.01	0	0
33	43.622	4.09973	152.974	0	0
34	44.0033	4.08256	145.427	0	0
35	44.3845	4.07588	137.455	0	0
36	44.7658	4.07966	129.154	0	0
37	45.1471	4.09392	120.562	0	0
38	45.5284	4.11869	111.538	0	0
39	45.9096	4.15402	102.108	0	0
40	46.2909	4.2	92.3573	0	0
41	46.6722	4.25673	82.4978	0	0
42	47.0535	4.32435	72.6418	0	0
43	47.4347	4.40302	62.9139	0	0
44	47.816	4.49294	53.4258	0	0
45	48.1973	4.59432	44.1668	0	0
46	48.5785	4.70744	35.2543	0	0
47	48.9598	4.8326	26.8234	0	0
48	49.3411	4.97014	18.9625	0	0
49	49.7224	5.12046	11.7126	0	0
50	50.1036	5.28403	5.23403	0	0
51	50.4849	5.46134	0	0	0

**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.86636**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	30.9465	13.1392	0	0	0
2	31.3197	12.457	-7.59911	-0.170533	1.28557
3	31.693	11.847	-9.31875	-0.417423	2.56479
4	32.0663	11.2945	-7.02098	-0.470193	3.83136
5	32.4395	10.7892	-1.91621	-0.170315	5.07917
6	32.8128	10.3238	5.16837	0.570806	6.30233
7	33.1861	9.89303	13.6451	1.79524	7.49516
8	33.5593	9.4926	23.0828	3.51257	8.65247
9	33.9326	9.11925	33.1567	5.70885	9.76928
10	34.3059	8.77031	43.6158	8.35258	10.8411
11	34.6791	8.4436	54.2619	11.399	11.8638
12	35.0524	8.13731	64.908	14.787	12.8338
13	35.4257	7.84992	75.2467	18.4096	13.7477
14	35.799	7.58013	85.1718	22.19	14.6028
15	36.1722	7.32685	94.6829	26.0738	15.3965
16	36.5455	7.0891	103.731	29.9929	16.1268
17	36.9188	6.86606	112.102	33.828	16.7918
18	37.292	6.65699	119.196	37.331	17.39
19	37.6653	6.46127	124.032	40.1099	17.9204
20	38.0386	6.27832	128.046	42.5496	18.3816
21	38.4118	6.10765	131.421	44.6709	18.7732
22	38.7851	5.94881	134.143	46.4363	19.0943
23	39.1584	5.80142	136.197	47.8142	19.3445
24	39.5316	5.66512	137.57	48.7796	19.5235
25	39.9049	5.5396	138.253	49.3139	19.631
26	40.2782	5.4246	138.238	49.406	19.6668
27	40.6515	5.31986	137.52	49.0523	19.6309
28	41.0247	5.22517	136.096	48.2571	19.5236
29	41.398	5.14033	133.975	47.0342	19.3445
30	41.7713	5.0652	131.161	45.4041	19.0944
31	42.1445	4.99961	127.649	43.3888	18.7733
32	42.5178	4.94344	123.476	41.0311	18.3817
33	42.8911	4.8966	118.69	38.3825	17.9204
34	43.2643	4.859	113.35	35.5002	17.3901
35	43.6376	4.83056	107.521	32.4457	16.7918
36	44.0109	4.81125	101.274	29.2824	16.1267
37	44.3841	4.80101	94.6862	26.0747	15.3965
38	44.7574	4.79984	87.8478	22.8872	14.6028
39	45.1307	4.80774	80.8084	19.7703	13.7477
40	45.504	4.82471	73.4562	16.7344	12.8338
41	45.8772	4.85079	65.8264	13.8284	11.8638
42	46.2505	4.88602	58.0018	11.1076	10.8411
43	46.6238	4.93047	50.1872	8.64113	9.76928
44	46.997	4.98422	42.5053	6.46816	8.65249
45	47.3703	5.04736	35.0752	4.61475	7.4952
46	47.7436	5.12003	28.03	3.09569	6.30232
47	48.1168	5.20234	21.3631	1.89878	5.07918
48	48.4901	5.29447	15.1709	1.01599	3.83136
49	48.8634	5.3966	9.56521	0.428463	2.56479
50	49.2366	5.50894	4.63622	0.104043	1.28558
51	49.6099	5.63171	0	0	0

 **Post - 1:1**
**Global Minimum Query (bishop simplified) - Safety Factor: 2.26711**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	37.5345	12.203	0	0	0
2	37.9538	11.8466	-0.887109	0	0
3	38.3731	11.5027	-0.98192	0	0
4	38.7924	11.1709	-0.402142	0	0
5	39.2117	10.8506	0.745788	0	0
6	39.631	10.5413	2.36554	0	0
7	40.0503	10.2428	4.3699	0	0
8	40.4696	9.95454	6.67985	0	0
9	40.8889	9.67626	9.22386	0	0
10	41.3082	9.40763	11.9372	0	0
11	41.7275	9.14835	14.7613	0	0
12	42.1468	8.89815	17.6434	0	0
13	42.5661	8.65678	20.536	0	0
14	42.9854	8.424	23.3963	0	0
15	43.4047	8.1996	26.1861	0	0
16	43.824	7.98337	28.8714	0	0
17	44.2433	7.77513	31.4222	0	0
18	44.6626	7.57469	33.8118	0	0
19	45.0819	7.38189	36.0174	0	0
20	45.5012	7.19657	38.0191	0	0
21	45.9205	7.01858	39.8002	0	0
22	46.3398	6.8478	41.3469	0	0
23	46.7591	6.6841	42.6481	0	0
24	47.1784	6.52735	43.6953	0	0
25	47.5978	6.37744	44.4827	0	0
26	48.0171	6.23428	45.0068	0	0
27	48.4364	6.09775	45.2663	0	0
28	48.8557	5.96777	45.2624	0	0
29	49.275	5.84426	44.9983	0	0
30	49.6943	5.72713	44.4795	0	0
31	50.1136	5.61631	43.7134	0	0
32	50.5329	5.51173	42.7096	0	0
33	50.9522	5.41332	41.4795	0	0
34	51.3715	5.32103	40.0367	0	0
35	51.7908	5.23479	38.3966	0	0
36	52.2101	5.15457	36.5765	0	0
37	52.6294	5.0803	34.5958	0	0
38	53.0487	5.01195	32.4755	0	0
39	53.468	4.94948	30.2389	0	0
40	53.8873	4.89285	27.911	0	0
41	54.3066	4.84203	25.5187	0	0
42	54.7259	4.79699	23.0911	0	0
43	55.1452	4.75771	20.6589	0	0
44	55.5645	4.72416	18.2551	0	0
45	55.9838	4.69632	15.9146	0	0
46	56.4031	4.67419	13.6746	0	0
47	56.8224	4.65774	11.5741	0	0
48	57.2417	4.64697	9.6545	0	0
49	57.661	4.64187	7.95939	0	0
50	58.0803	4.64244	6.53465	0	0
51	58.4996	4.64868	0	0	0

**Global Minimum Query (janbu simplified) - Safety Factor: 2.20853**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	37.5345	12.203	0	0	0
2	37.9538	11.8466	-0.923695	0	0
3	38.3731	11.5027	-1.06785	0	0
4	38.7924	11.1709	-0.548997	0	0
5	39.2117	10.8506	0.527506	0	0
6	39.631	10.5413	2.06631	0	0
7	40.0503	10.2428	3.98108	0	0
8	40.4696	9.95454	6.19363	0	0
9	40.8889	9.67626	8.63318	0	0
10	41.3082	9.40763	11.2357	0	0
11	41.7275	9.14835	13.9433	0	0
12	42.1468	8.89815	16.7038	0	0
13	42.5661	8.65678	19.4701	0	0
14	42.9854	8.424	22.2002	0	0
15	43.4047	8.1996	24.8563	0	0
16	43.824	7.98337	27.4048	0	0
17	44.2433	7.77513	29.816	0	0
18	44.6626	7.57469	32.0641	0	0
19	45.0819	7.38189	34.1262	0	0
20	45.5012	7.19657	35.983	0	0
21	45.9205	7.01858	37.6182	0	0
22	46.3398	6.8478	39.0182	0	0
23	46.7591	6.6841	40.1724	0	0
24	47.1784	6.52735	41.0726	0	0
25	47.5978	6.37744	41.7133	0	0
26	48.0171	6.23428	42.0912	0	0
27	48.4364	6.09775	42.2054	0	0
28	48.8557	5.96777	42.0575	0	0
29	49.275	5.84426	41.651	0	0
30	49.6943	5.72713	40.9915	0	0
31	50.1136	5.61631	40.0868	0	0
32	50.5329	5.51173	38.9468	0	0
33	50.9522	5.41332	37.5832	0	0
34	51.3715	5.32103	36.0099	0	0
35	51.7908	5.23479	34.2425	0	0
36	52.2101	5.15457	32.2988	0	0
37	52.6294	5.0803	30.1982	0	0
38	53.0487	5.01195	27.9623	0	0
39	53.468	4.94948	25.6145	0	0
40	53.8873	4.89285	23.1802	0	0
41	54.3066	4.84203	20.6867	0	0
42	54.7259	4.79699	18.1632	0	0
43	55.1452	4.75771	15.6409	0	0
44	55.5645	4.72416	13.1532	0	0
45	55.9838	4.69632	10.7353	0	0
46	56.4031	4.67419	8.42461	0	0
47	56.8224	4.65774	6.26073	0	0
48	57.2417	4.64697	4.28536	0	0
49	57.661	4.64187	2.5425	0	0
50	58.0803	4.64244	1.07846	0	0
51	58.4996	4.64868	0	0	0

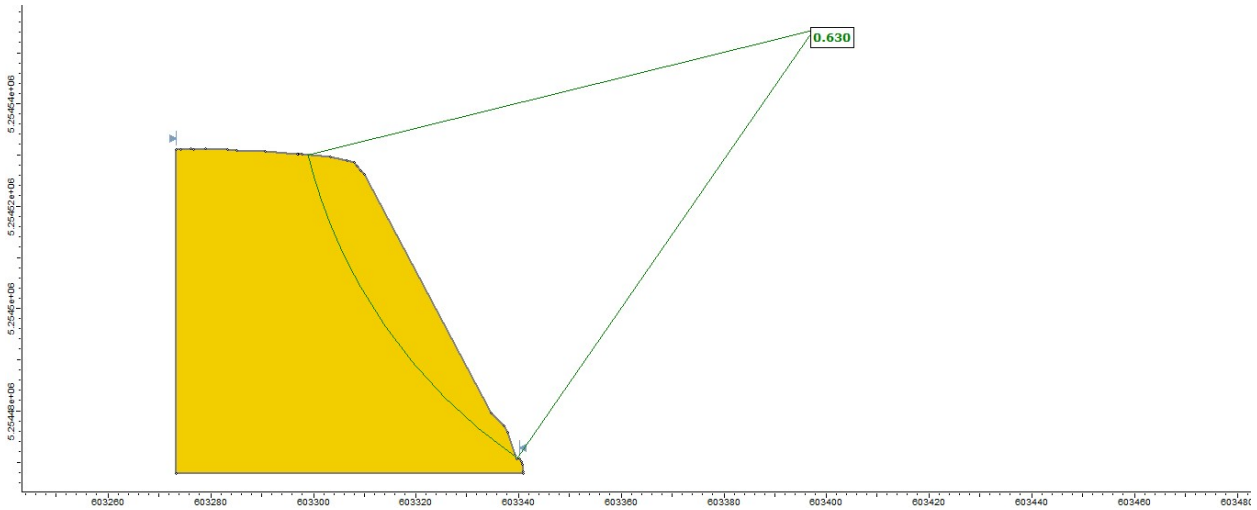
**Global Minimum Query (gle/morgenstern-price) - Safety Factor: 2.26606**

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	37.5345	12.203	0	0	0
2	37.9538	11.8466	-0.878198	-0.0210852	1.37539
3	38.3731	11.5027	-0.963277	-0.0461645	2.74377
4	38.7924	11.1709	-0.394093	-0.0282368	4.09824
5	39.2117	10.8506	0.709898	0.0675063	5.43209
6	39.631	10.5413	2.24567	0.26535	6.73886
7	40.0503	10.2428	4.1241	0.580517	8.01243
8	40.4696	9.95454	6.26792	1.02047	9.2471
9	40.8889	9.67626	8.60983	1.58603	10.4375
10	41.3082	9.40763	11.0911	2.27243	11.579
11	41.7275	9.14835	13.6603	3.07022	12.667
12	42.1468	8.89815	16.2721	3.9661	13.698
13	42.5661	8.65678	18.8867	4.94367	14.6683
14	42.9854	8.424	21.4686	5.98416	15.5753
15	43.4047	8.1996	23.9865	7.06704	16.4163
16	43.824	7.98337	26.4124	8.17064	17.1894
17	44.2433	7.77513	28.7213	9.27271	17.8927
18	44.6626	7.57469	30.891	10.3509	18.5249
19	45.0819	7.38189	32.9015	11.3834	19.0848
20	45.5012	7.19657	34.7349	12.3491	19.5715
21	45.9205	7.01858	36.3754	13.2283	19.9843
22	46.3398	6.8478	37.809	14.0031	20.3228
23	46.7591	6.6841	39.0234	14.6573	20.5863
24	47.1784	6.52735	40.008	15.1775	20.7748
25	47.5978	6.37744	40.7541	15.5526	20.8879
26	48.0171	6.23428	41.2545	15.7747	20.9256
27	48.4364	6.09775	41.5041	15.8389	20.888
28	48.8557	5.96777	41.4995	15.7433	20.7748
29	49.275	5.84426	41.2393	15.4896	20.5863
30	49.6943	5.72713	40.7245	15.0829	20.3228
31	50.1136	5.61631	39.9582	14.5313	19.9844
32	50.5329	5.51173	38.9459	13.8462	19.5715
33	50.9522	5.41332	37.6956	13.0421	19.0848
34	51.3715	5.32103	36.2183	12.136	18.5249
35	51.7908	5.23479	34.5273	11.1472	17.8928
36	52.2101	5.15457	32.6391	10.0969	17.1894
37	52.6294	5.0803	30.573	9.00759	16.4163
38	53.0487	5.01195	28.351	7.90257	15.5753
39	53.468	4.94948	25.9984	6.80519	14.6683
40	53.8873	4.89285	23.5429	5.73824	13.6979
41	54.3066	4.84203	21.0151	4.72325	12.667
42	54.7259	4.79699	18.4482	3.7798	11.5789
43	55.1452	4.75771	15.8777	2.92484	10.4375
44	55.5645	4.72416	13.3412	2.17206	9.2471
45	55.9838	4.69632	10.8784	1.53127	8.01245
46	56.4031	4.67419	8.5305	1.00797	6.73886
47	56.8224	4.65774	6.34008	0.602898	5.4321
48	57.2417	4.64697	4.35084	0.311738	4.09824
49	57.661	4.64187	2.60729	0.124953	2.74377
50	58.0803	4.64244	1.15451	0.0277194	1.37539
51	58.4996	4.64868	0	0	0

# Discharge Sections

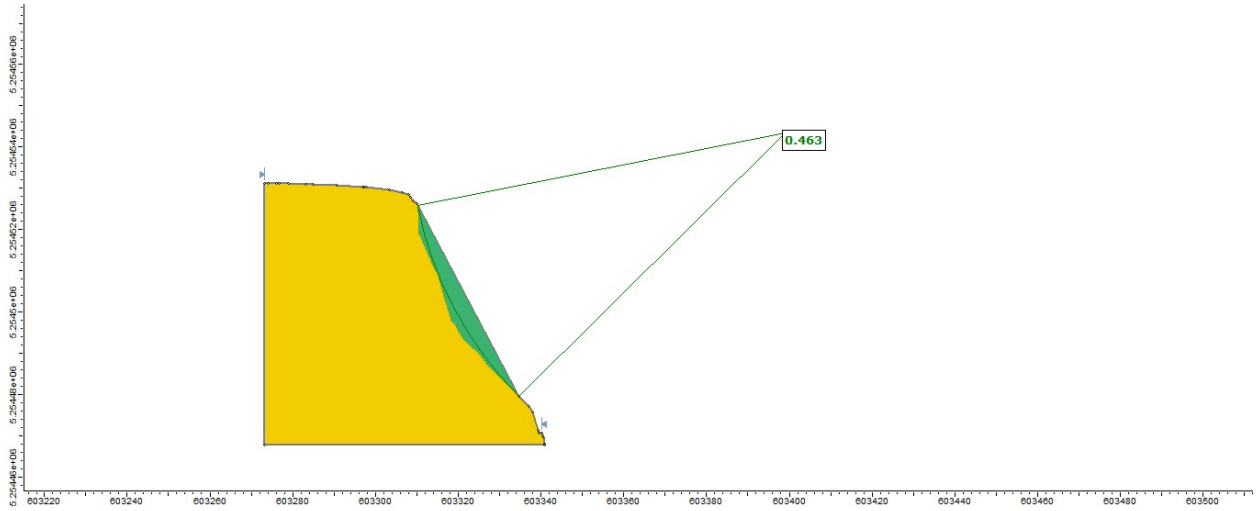
## Report Views

### 1: Master Scenario - Bishop simplified method

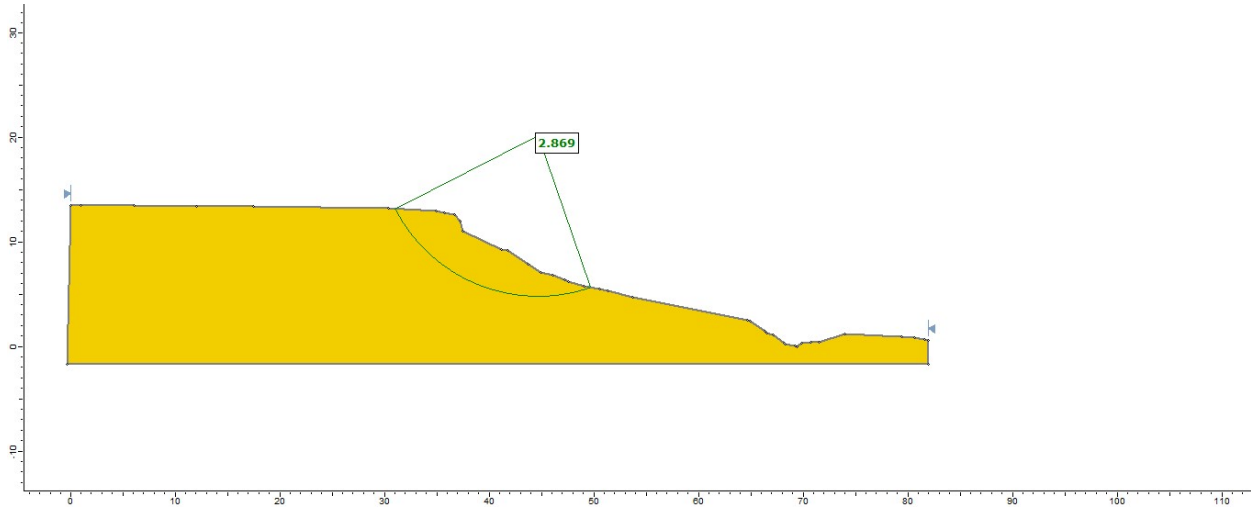




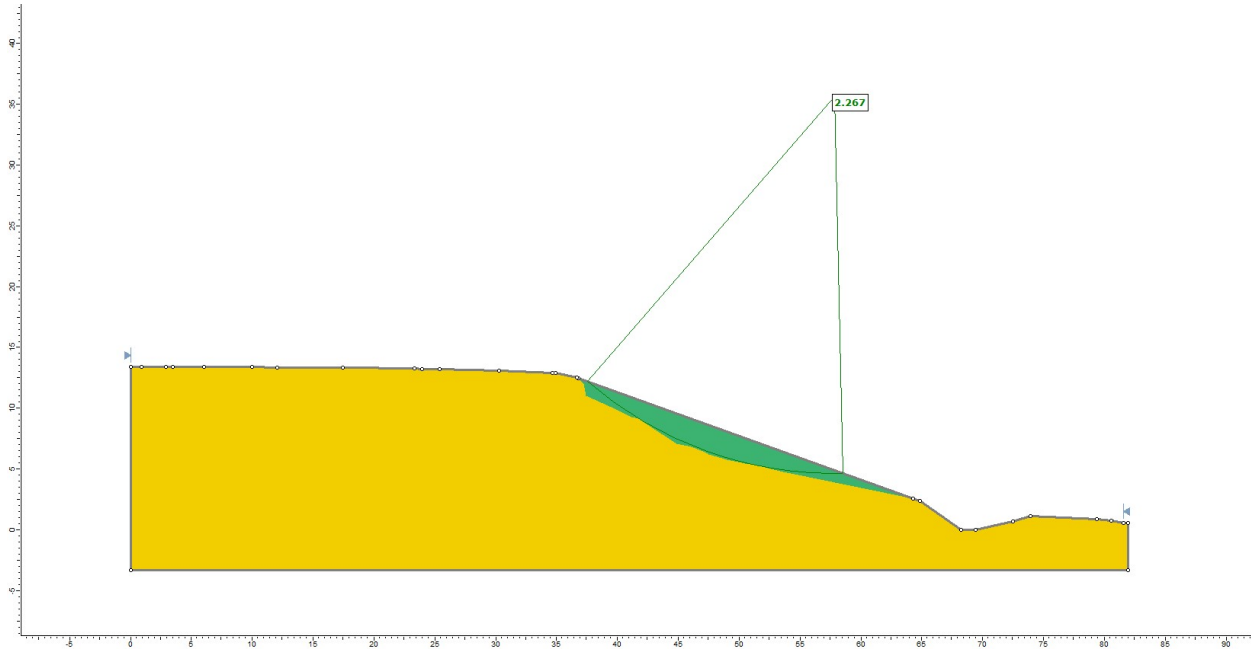
## 2: Master Scenario - Bishop simplified method



### 3: Master Scenario - Bishop simplified method



### 4: Master Scenario - Bishop simplified method



## Appendix E – Quantity Calculation of the Washout



