anas
GRUPPO FS ITALIANE

Direzione Tecnica

E45 - SISTEMAZIONE STRADALE DEL NODO DI PERUGIA
Tratto Madonna del Piano - Collestrada

PROGETTO DEFINITIVO | PG 372

ANAS - DIREZIONE TECNICA

IL GEOLOGO

Dott. Geol. Marco Leonardi
Ordine Geologi
Regione Lazio n. 1541

COORDINATORE PER LA SICUREZZA IN FASE DI PROGETTAZIONE

Arch. Santo Salvatore Vermiglio
Ordine Architetti
Provincia di Reggio Calabria n. 1270

VISTO: IL RESP. DEL PROCEDIMENTO

Ing. Alessandro Micheli

VISTO: IL RESP. DEL PROGETTO

Arch. Pianif. Marco Colazza

I PROGETTISTI SPECIALISTICI

Ing. Ambrogio Signorelli
Ordine Ingegneri
Provincia di Roma n. A3511

Ing. Moreno Panfili
Ordine Ingegneri
Provincia di Perugia n. A2657

Ing. Giovanni C. Alfredo Dalenz Cultrera
Ordine Ingegneri
Provincia di Roma n. 14069

Ing. Giuseppe Resta
Ordine Ingegneri
Provincia di Roma n. 20629

PROGETTAZIONE ATI:
(Mandataria)
GPI INGEGNERIA
GESTIONE PROGETTI INGEGNERIA srl
(Mandante)
cooprogetti
(Mandante)
engeko
(Mandante)
SAIM
Studio di Architettura e Ingegneria Moderna

IL PROGETTISTA RESPONSABILE DELL'INNTEGRAZIONE DELLE PRESTAZIONI SPECIALISTICHE. (DPR207/10 ART 15 COMMA 12) :

Dott. Ing. GIORGIO GUIDUCCI
Ordine Ingegneri Provincia di Roma n. 14035

Dott. Ing. GIORGIO GUIDUCCI
ORDINE INGEGNERI
ROMA
N° 14035

STUDI ED INDAGINI

Geologia e geotecnica

Geotecnica

Relazione Geotecnica Generale

CODICE PROGETTO			NOME FILE	REVISIONE	SCALA
PROGETTO	LIV.PROG.	ANNO			
DTPG372	D	22	T00GE02GETRE01_B	B	-

REV.	DESCRIZIONE	DATA	REDATTO	VERIFICATO	APPROVATO
D					
C					
B	Rev. a seguito istruttorie Prot. U.0834569 e U.0862037	Gen. '23	Diletto	Signorelli	Guiducci
A	Emissione	Ottobre'22	Tartaglia	Signorelli	Guiducci

INDICE

1. PREMESSA

La presente relazione ha come scopo la caratterizzazione geotecnica delle unità dei terreni e delle rocce presenti nelle aree interessate dal Progetto Definitivo denominato “E45 – Sistemazione stradale del Nodo di Perugia Tratto Madonna del Piano – Collestrada, ed individua le problematiche legate all’interazione tra la medesima ed il territorio.

Nella presente relazione vengono esaminati e sviluppati i seguenti aspetti:

- Descrizione delle campagne di indagini eseguite e delle analisi di laboratorio;
- Caratterizzazione geotecnica delle formazioni individuate lungo il tracciato in esame;
- Schematizzazione stratigrafica e geotecnica di progetto;
- Descrizione delle problematiche geotecniche e delle soluzioni tecniche adottate;
- Definizione delle metodologie per il dimensionamento delle opere geotecniche.

2. DOCUMENTAZIONE DI RIFERIMENTO

2.1. NORMATIVA E RACCOMANDAZIONI TECNICHE

[1] D.M. 17/01/2018 Aggiornamento delle “Norme tecniche per le costruzioni”;

[2] Circolare 21/01/2019 “Istruzioni per l’applicazione dell’Aggiornamento delle Nuove norme tecniche per le costruzioni di cui al DM17/01/2018;

[3] UNI EN 1997-1:2013, Eurocode 7 – Geotechnical design - Part 1: General rules

[4] UNI EN 1997-1:2007, Eurocode 7 – Geotechnical design - Part 2: Ground investigation and testing

[5] UNI EN 1998-5:2005, Eurocode 8 – Design of structures for earthquake – Part 5: Foundations, retaining structures and geotechnica aspects

[6] AGI – Associazione Geotecnica Italiana (2005) “Aspetti geotecnici della progettazione in zona sismica”.

3. INQUADRAMENTO GEOLOGICO, GEOMORFOLOGICO, IDROGEOLOGICO

3.1. INQUADRAMENTO GEOLOGICO

Il tracciato, muovendosi da ovest verso est, corre all'interno della Val Tiberina lungo i depositi alluvionali del Tevere, attraversandone l'alveo (viadotto sul Fiume Tevere), attraversa le aree di raccordo tra fondovalle e rilievo in cui si incontrano depositi di conoide-terrazzo fluviale, per poi entrare in galleria naturale nel settore settentrionale della dorsale collinare di Brufa, impostata in una monoclinale immergente a medio-basso angolo verso est, costituita dalle arenarie e marne siltitiche mioceniche della Formazione Marnoso Arenacea Umbra.
Segue un tratto in galleria artificiale che attraversa dapprima i depositi eluvio-colluviali poggianti sul substrato litoide miocenico, poi nuovamente il substrato a piena sezione ed infine le sabbie ed i limi della litofacies di Sant'Egidio, lungo un versante orientato OSO-ENE immergente verso NNO, su cui insistono fenomeni di instabilità gravitativa superficiale.
Al termine della galleria artificiale il tracciato corre sul rilevato del tracciato esistente, poggiante sulle litologie della litofacies di Sant'Egidio.
Per la descrizione dettagliata delle principali litologie d'interesse per il tracciato di progetto si rimanda alla relazione geologica (Elab. T00GE01GEORE01).

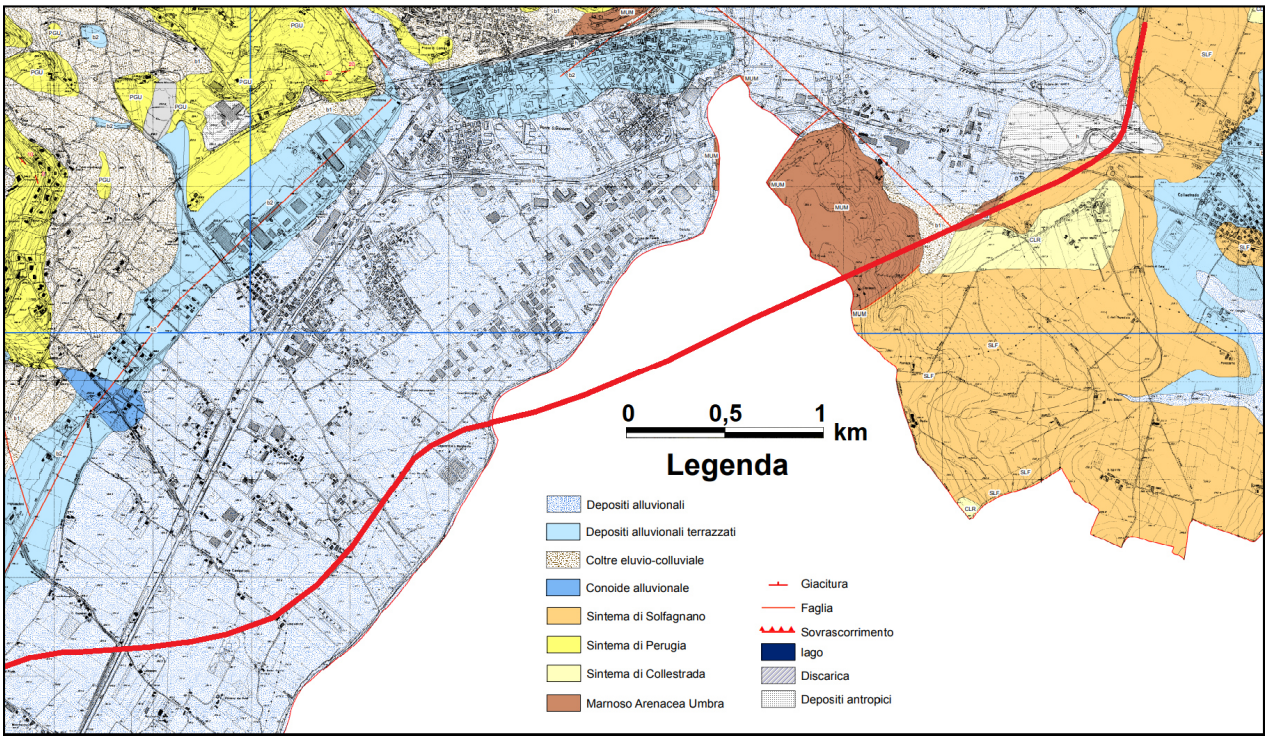


Figura 3-1: Stralcio della Carta Geologica in scala 1:10.000 del nuovo Piano Regolatore Generale, Parte Strutturale, del Comune di Perugia (2013). Linea rossa: andamento indicativo del tracciato.

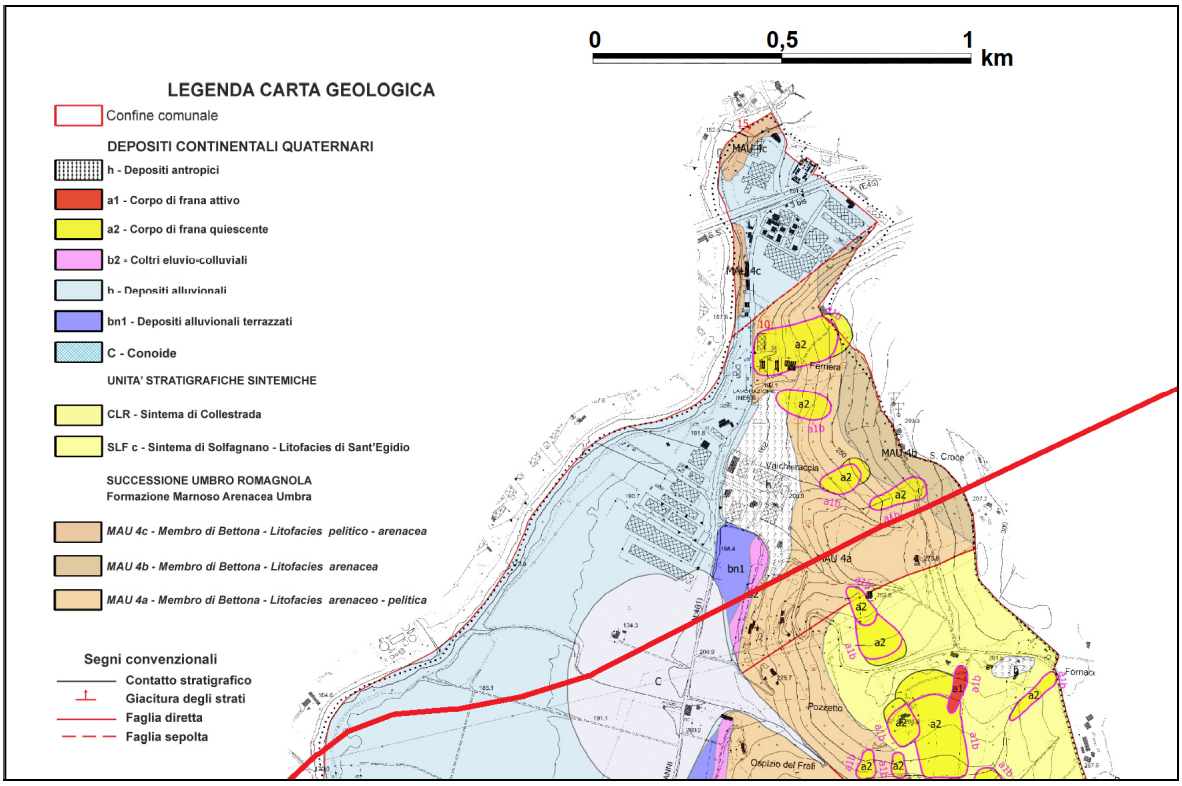


Figura 3-2Stralcio della Carta Geolitologica in scala 1:10.000 della Variante al Piano Regolatore Generale, Parte Strutturale, del Comune di Torgiano (2021). Linea rossa: andamento indicativo del tracciato.

3.2. INQUADRAMENTO GEOMORFOLOGICO

L'area attraversata dal tracciato si trova a cavallo tra la Media Valle del Tevere e la Valle Umbra, separate dalla dorsale collinare di Brufa, che assume un andamento a mezza luna, orientata circa SO-NE nel tratto Torgiano-Brufa e SSE-NNO da Brufa a Perugia in località Ferriera.

Il tratto iniziale è costituito da una vasta area subpianeggiante, interessata dalle alluvioni del Tevere, con pendenze rotte esclusivamente da terrazzi morfologici e dagli alvei fluviali, oltre alle opere di canalizzazione ed ai rilevati antropici, con quote comprese tra i 160 e i 180 m.
In questa zona i corsi d'acqua provengono dalle colline poste ai bordi della Valle, con un andamento ortogonale al collettore principale rappresentato dal Fiume Tevere, sul quale confluiscono direttamente. Le colline sono spesso bordate da terrazzi fluviali con quote sommitali
Dato l'assetto pianeggiante della zona, non si rilevano elementi di predisposizione al dissesto.

L'area collinare di Brufa si estende dalla zona industriale di Torgiano al confine con il Comune di Perugia. Tutta l'area funge da spartiacque tra il bacino del Tevere ad occidente e il bacino del Chiascio ad oriente. I versanti sono caratterizzati da una pendenza media che varia tra il 10 ed il 20%. È Costituita da una monoclinale costruita in un'alternanza di arenarie e marne siltitiche mioceniche, con strati immergenti a medio-bassa pendenza verso est.
I movimenti franosi che interessano la dorsale non sono di rilevante interesse per l'opera in oggetto, dal momento che il tracciato attraversa la dorsale in galleria naturale a profondità superiori a quelle di interferenza con i movimenti.

La collina di Collestrada, situata nella parte più occidentale del Comune di Perugia, nei pressi del nucleo storico di Collestrada, è un *plateau* a debole pendenza (6%) immergente verso OSO, che

poggia nella sua parte occidentale sul versante orientale della dorsale di Brufa, lungo una linea di impluvio in forte approfondimento operato da un'asta a direzione NO-SE.
La sommità pianeggiante è occupata da uno spessore di alcuni metri di ghiaie, sabbie e conglomerati, poggianti sui limi e limi sabbiosi di Sant'Egidio, che costituiscono il versante esposto a NO del rilievo.
Il versante, su cui fonda la galleria artificiale in progetto, è caratterizzato da pendenze del 18-20% ed è interessato da un'instabilità gravitativa di diversa natura, che è stata oggetto di altre relazioni specialistiche specifiche (Variante al PRG del Comune di Perugia – parte strutturale, Canile Pubblico di Collestrada - "Sezione Sanitaria", gennaio 20013). L'instabilità viene qui attribuita alle mediocri caratteristiche geomeccaniche dei terreni ed alla scarsa regimazione superficiale delle acque lungo il pendio, che provocano lenti movimenti stagionali delle coltri clastiche eluvio-colluviali superficiali, innescati da piogge intense.

3.2.1. RISCHIO GEOMORFOLOGICO

Il PAI comprende la caratterizzazione geomorfologica delle aree in frana (Carta Inventario dei fenomeni franosi) e la definizione del livello di rischio ad esse associato.

Si riporta di seguito uno stralcio della cartografia vigente di cui sopra, come rielaborata ai sensi della Determina Dirigenziale ADS del 29 novembre 2021, n. 31.

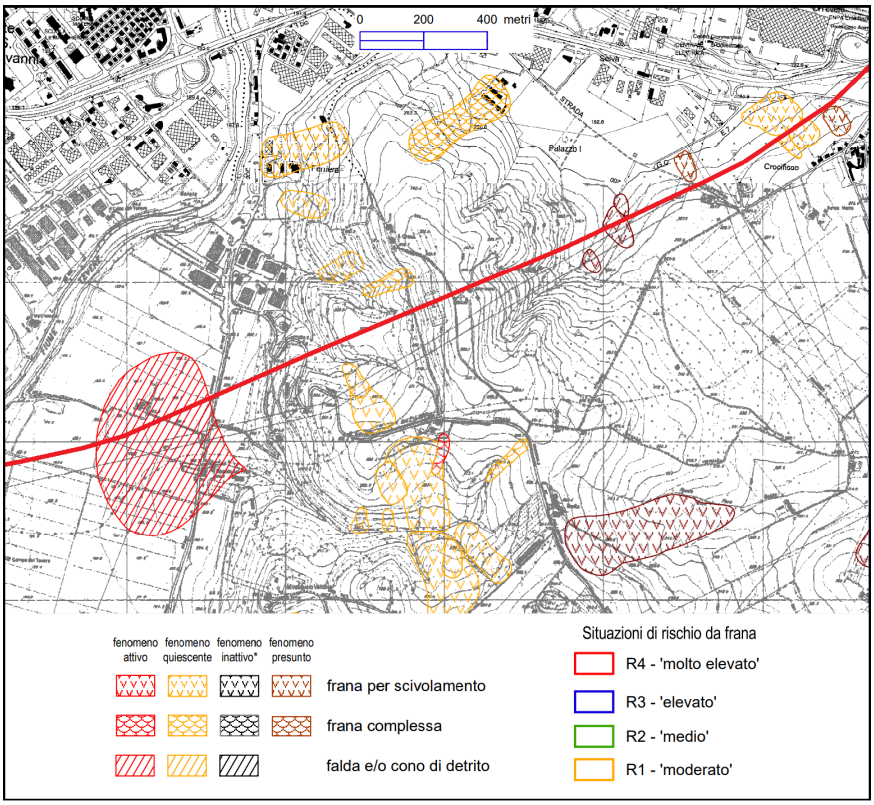


Figura 3-3: Stralcio dalla Carta dell'Inventario dei fenomeni franosi e situazioni a rischio di frana, Tavv. 232 e 242, scala 1:10.000, del Piano stralcio di Assetto Idrogeologico - Bacino del Fiume Tevere (Autorità di Bacino Distrettuale dell'appennino Centrale) (2021). Linea rossa: andamento indicativo del tracciato.

Non sono riportate aree perimetrate come "situazioni di rischio da frana".

L'Inventario dei Fenomeni Franosi in Italia (IFFI) è la banca dati nazionale e ufficiale sulle frane. È realizzato dal ISPRA in collaborazione con le Regioni e Province Autonome (art. 6 comma g della

L. 132/2016). L'Inventario è uno strumento conoscitivo di base utilizzato per la valutazione della pericolosità da frana dei Piani di Assetto Idrogeologico (PAI), la progettazione preliminare di interventi di difesa del suolo e di reti infrastrutturali e la redazione dei Piani di Emergenza di Protezione Civile.

Le frane con potenziale interferenza con l'opera in oggetto, riportate nell'Inventario, sono tabellate di seguito e rappresentate nella figura sotto.
Le frane considerate sono riportate anche nella cartografia PAI precedentemente esaminata, ad eccezione di quella, di piccola entità, identificata col codice *0541535100*, in località Collestrada, riportata come un evento certo, osservato nel 1997, con tipo di movimento non determinato e stato di attività "attivo/riattivato/sospeso".
Le frane con id. *0541535000* e *0541535200*, che interessano ancora il versante a valle del Castello di Collestrada, rappresentano anch'esse eventi certi, osservati nel 1994, e sono descritte come scivolamento "rotazionale/traslativo" con stato di attività "Quiescente", la prima, e tipo di movimento e stato di attività "non determinati", la seconda.
In particolare, parte del piede dello scivolmento *0541535000* si trova attualmente arginato da un muro composto da due file di gabbioni.

Tabella 3-1: dati riportati nelle schede descrittive delle frane censite nell'inventario IFFI.

Id frana	tipo di movimento	stato di attività	distribuzione	area (m^2)	litologia
0541535000	scivolamento rotazionale/traslativo	Quiescente	n.d.	17.104	n.d.
0541535100	n.d.	Attivo/riattivato/sospeso	n.d.	455	n.d.
0541535200	n.d.	n.d.	n.d.	9.003	n.d.

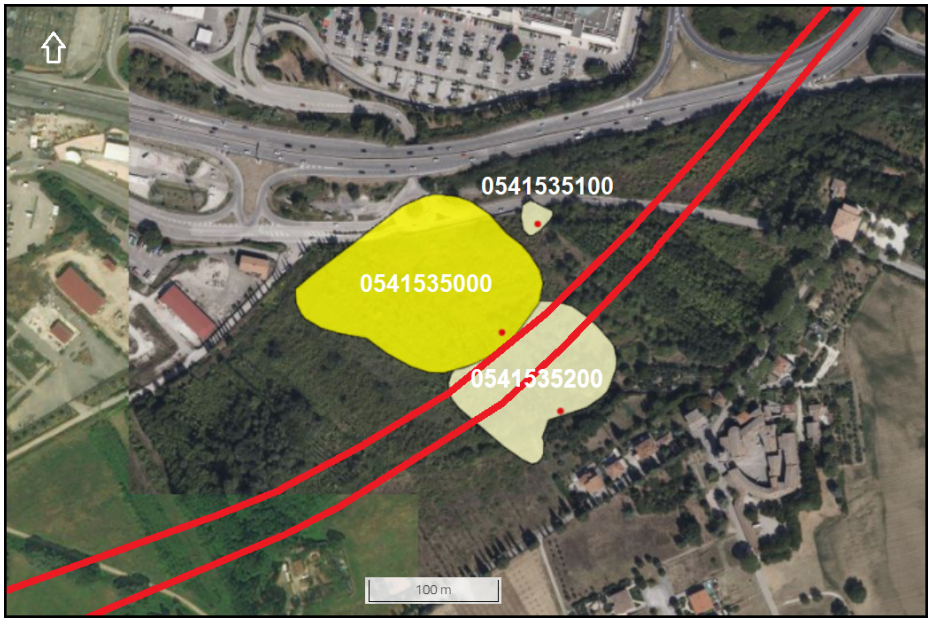


Figura 3-4: Estratto dal portale Idrogeo delle frane censite nell'inventario IFFI, con riportati i codici identificativi delle frane che interessano il tracciato a NO del borgo medievale del Castello di Collestrada. Linee rosse: tracciato.

3.3. INQUADRAMENTO IDROGEOLOGICO

In questo settore dell'Appennino centrale, le risorse idriche sotterranee ed i corpi idrici sotterranei sono rappresentati principalmente dagli acquiferi regionali contenuti nei calcari Mesozoici (acquiferi carbonatici, non presenti nell'area indagata) e dagli acquiferi delle grandi pianure alluvionali.
La circolazione idrica sotterranea dell'area di interesse progettuale rientra nel più ampio contesto della Media Valle del Tevere, che si estende da Città di Castello a Todi, per una lunghezza complessiva di circa 85 km e con un'ampiezza piuttosto ridotta (massimo 2-3 km nel tratto Città di Castello-Ponte S. Giovanni, e intorno ai 4 km da Ponte S. Giovanni a Todi).
Questo settore della Valle del Tevere è rappresentativo di una situazione idrogeologica omogenea e distinta dall'Alta Valle del Tevere, che risulta più grande e sede di più ampie risorse idriche

L'acquifero principale è rappresentato dai sedimenti alluvionali recenti del fiume Tevere; tale acquifero con bassa estensione verticale, è bordato dai depositi fluvio-lacustri plio-pleistocenici, costituiti prevalentemente da limi e argille con frequenti paleostrutture deltizie a conglomerati e sabbie (Colle di Perugia e di Montemigiano, collina di Collestrada).

3.3.1. SUPERFICIE PIEZOMETRICA

All'interno della piana, lungo il settore occidentale del tracciato, sia presente una falda libera, circolante nello spessore inferiore più grossolano delle alluvioni recenti, con asse di drenaggio principale coincidente grossomodo con l'asse del Tevere, ad andamento NE-SO.
La falda si trova generalmente entro i primi 6 metri dal piano campagna ed è sospesa sul tetto delle argille grigie inferiori, che fungono da *aquitard* e che verosimilmente mettono in pressione la falda presente nel sottostante *bedrock* miocenico, che si trova in connessione idraulica con la falda libera riscontrata nel rilevo collinare di Brufa.
Quest'ultimo mostra gradienti idraulici del 10%, ed è caratterizzato da una permeabilità prevalente di tipo secondario per fratturazione.
L'acquifero è in connessione idraulica con i livelli sabbiosi della litofacies di Sant'Egidio all'interno del rilievo di Collestrada, che vanno così a costituire un acquifero multifalda, limitato inferiormente dall'*aquitard* delle argille grigie inferiori.
Da qui la falda muove radialmente rispetto all'asse della collina, raccordandosi verso valle col livello della falda libera all'interno della piana.
Si rimanda alla relazione geologica (Elab. T00GE01GEORE01) per lo studio di individuazione della falda.

4. INDAGINI ESEGUITE

Le conoscenze geologiche e geotecniche pregresse delle aree interessate dal tracciato di progetto derivano da indagini eseguite nel corso di diverse campagne risalenti al 2005, 2014 e 2019.
Nella seguente tabella sono riassunte le indagini in foro ed i campioni prelevati in fase di perforazione nel corso di tali campagne.

Tabella 4-1: Indagini pregresse.

Sond.	Anno	Profondità	Attrezzatura
		m da p.c.	
S1	2003	25,0	PIEZ APERTO
S2	2003	25,50	PIEZ APERTO
S3	2003	20,0	PIEZ APERTO
S4	2003	25,0	PIEZ APERTO
S5	2003	25,0	PIEZ APERTO
S6	2003	25,0	
S7	2003	24,5	PIEZ APERTO

In corrispondenza dei sondaggi eseguiti sono state effettuate complessivamente n. 22 prove S.P.T., prelevati n. 5 campioni litoidi di marna, n. 2 campioni rimaneggiati di terre, n. 14 campioni indisturbati di terre; inoltre sono stati eseguiti di routine nel corso della perforazione tests speditivi con pocket penetrometer sulle carote di tipo coesivo e semicoesivo immediatamente dopo l'estrazione dal tubo carotiere.

Tra i mesi di novembre 2020 e aprile 2021, a supporto del progetto in esame, è stata condotta una nuova campagna di indagini geognostiche a cura della Geo Gav srl, su incarico di ANAS S.p.A. Struttura territoriale Umbria.

La campagna ha compreso le seguenti attività:

- n. 21 sondaggio a carotaggio continuo (S1÷S21), per un totale di 770 ml circa di perforazione. Nel corso della perforazione sono state eseguite n. 79 prove penetrometriche statiche (SPT). Nei sondaggi sono stati installati n.12 piezometri a tubo aperto ed è stato rilevato il livello di falda e n.1 inclinometro;
- n.2 prove di permeabilità a carico variabile tipo Lugeon nei sondaggi S12, S13;
- n. 6 prove pressiometriche in foro;
- n. 6 prove dilatometriche in foro;
- n. 8 indagini sismiche *down hole*
- n.4 prove penetrometriche dinamiche DPSH;
- n. 9 pozzetti geognostici, in corrispondenza dei quali sono state eseguite n. 9 prove di carico su piastra.

Nel corso della perforazione sono stati prelevati n. 90 campioni indisturbti e/o rimaneggiati. Sui campioni prelevati nel corso delle indagini sono state eseguite prove di laboratorio di classificazione e granulometrie.
Nella seguente tabella sono riassunte le indagini in foro ed i campioni prelevati in fase di perforazione nel corso della campagna indagini 2020-2021.

Tabella 4-2: Campagna indagini 2020-2021.

Id. Sondaggio	anno	Profon.	Quota boccaforo (m s.l.m.)	Metodo	Campioni Prelevati		Strumentazione Installata	Prove in foro
		(m)			Rim.	Ind.		
S01	2021	15,0	182,3	Carotaggio continuo	1	2	Piezometro in PVC 3”	n° 3 Prove SPT
S02	2021	30,0	181,8	Carotaggio continuo	1	4	Piezometro in PVC 3”	n° 5 Prove SPT
S03	2021	35,0	182,7	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT
S04	2021	35,0	181,6	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT
S06	2021	15,0	180,7	Carotaggio continuo	1	2	Piezometro in PVC 2”	n° 3 Prove SPT
S07	2021	50,0	183,1	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT
S08	2021	45,0	182,1	Carotaggio continuo	2	3	Piezometro in PVC 3”	n° 3 Prove SPT
S09	2021	50,0	180,0	Carotaggio continuo	1	5	Tubazione per Down Hole	n° 5 Prove SPT
S10	2021	45,0	181,5	Carotaggio continuo	1	4	Piezometro in PVC 2”	n° 5 Prove SPT
S11	2021	35,0	199,1	Carotaggio continuo	3	2	Tubazione per Down Hole	n° 2 Prove SPT
S12	2021	45,0	234,0	Distruzione di nucleo da 0,0 a 15 m, Carotaggio	4	-	Piezometro in PVC 2”	n°3 Dilatometriche, n°1 permeabilità Lugeon
	2021			continuo da 15 a 45 m				
S13	2021	105,0	304,0	Distruzione di nucleo da 0,0 a 75 m, Carotaggio	4	-	Piezometro in PVC 2”	n°3 Dilatometriche, n°1 permeabilità Lugeon.
	2021			continuo da 75, a 105 m				
S15 bis	2021	30,0	198,0	Carotaggio continuo	-	3	Piezometro in PVC 2”	n° 3 Prove SPT
S15	2021	14,0	205,0	Carotaggio continuo	-	3	Piezometro in PVC 3”	n° 2 Prove SPT, n° 2
	2021							pressiometriche.
S16	2021	35,0	203,0	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT, n° 2 pressiometriche.
S17 bis	2021	25,0	232,8	Carotaggio continuo	-	-	Piezometro in PVC 2”	n° 4 Prove SPT, n° 2 pressiometriche.

Id. Sondaggio	anno	Profon.	Quota boccaforo (m s.l.m.)	Metodo	Campioni Prelevati		Strumentazione Installata	Prove in foro
		(m)			Rim.	Ind.		
S17	2021	35,0	235,0	Carotaggio continuo	1	4	Tubo Inclinometrico	n° 5 Prove SPT
S18	2021	25,0	204,1	Carotaggio continuo	1	3	Piezometro in PVC 3”	n° 4 Prove SPT
S19	2021	35,0	196,7	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT
S20	2021	35,0	201,3	Carotaggio continuo	1	4	Tubazione per Down Hole	n° 5 Prove SPT
S21	2021	35,0	197,0	Carotaggio continuo	1	4	Piezometro in PVC 3”	n° 5 Prove SPT

4.1. PROVE IN SITO

4.1.1. PROVE PENETROMETRICHE DINAMICHE (SPT)

Nel corso delle perforazioni di sondaggio sono state eseguite prove di resistenza dinamica tipo SPT a profondità variabile.
I risultati delle prove, riassunte nel grafico in Figura 4-1, sono stati interpretati con i criteri che seguono.

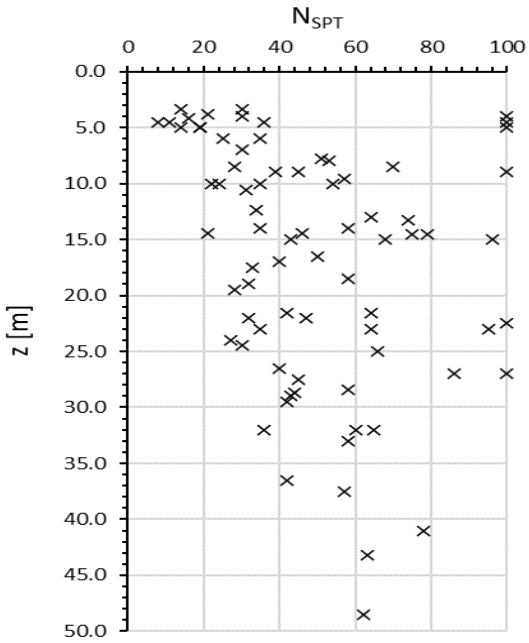


Figura 4-1: Risultati prove SPT.

Densità relativa

Per la valutazione della densità relativa si è utilizzata la correlazione proposta da Skempton (1986):

$$D_r = \left(\frac{N_1}{60}\right)^{0,5}$$

in cui:

$$N_1 = \left(\frac{98}{\sigma'_{v0}}\right)^{0,5} N_{SPT}$$

Angolo di resistenza al taglio

Per la valutazione dell'angolo di resistenza al taglio si sono impiegati i seguenti diagrammi proposti da:

Correlazione di De Mello (1971) tra il valore di N_{SPT}, la tensione verticale efficace e l'angolo di resistenza al taglio di picco. Detta correlazione, in linea generale, sovrastima il valore dell'angolo di resistenza al taglio, soprattutto per bassi valori della tensione efficace verticale. Nella figura seguente vengono riportati nel grafico i dati suddivisi per ogni unità geotecnica.

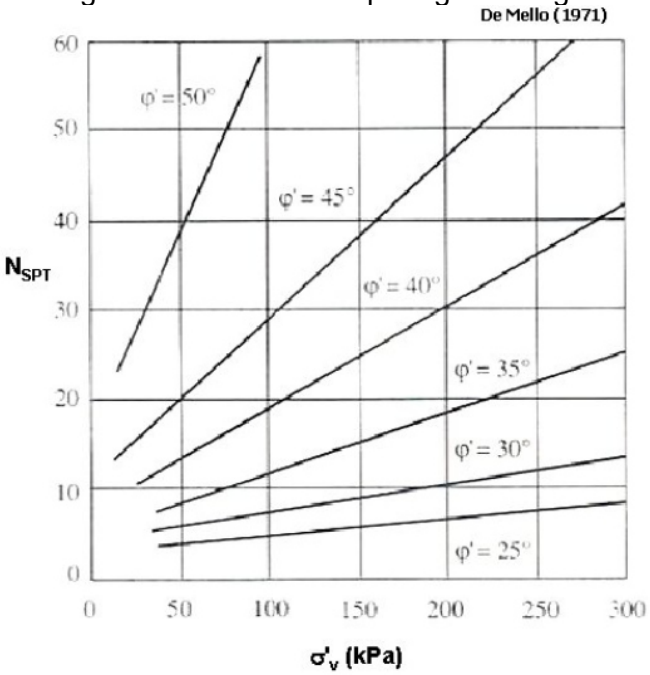


Figura 4-2: Correlazione di De Mello, fra il valore N_{SPT}, la tensione verticale efficace e l'angolo di resistenza al taglio di picco.

Correlazione di Schmertmann (1977) in funzione della granulometria e della densità relativa, valutata in accordo con Skempton.

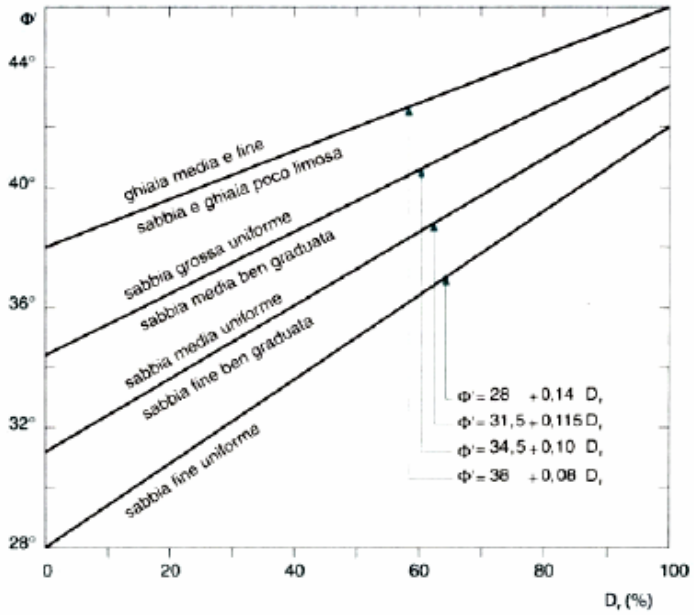


Figura 4-3: Correlazione di Schnertmann (1977) – Stima di ϕ' da D_R per differenti granulometrie.

Modulo di Young (E')

I risultati delle prove SPT sono stati interpretati adottando la correlazione di Denver, per la determinazione di un valore operativo del modulo di Young (E'):

$E = s_1 \cdot N_{SPT} + s_2$ (in MPa)

nella quale i parametri s_1 ed s_2 sono scelti in funzione del litotipo.

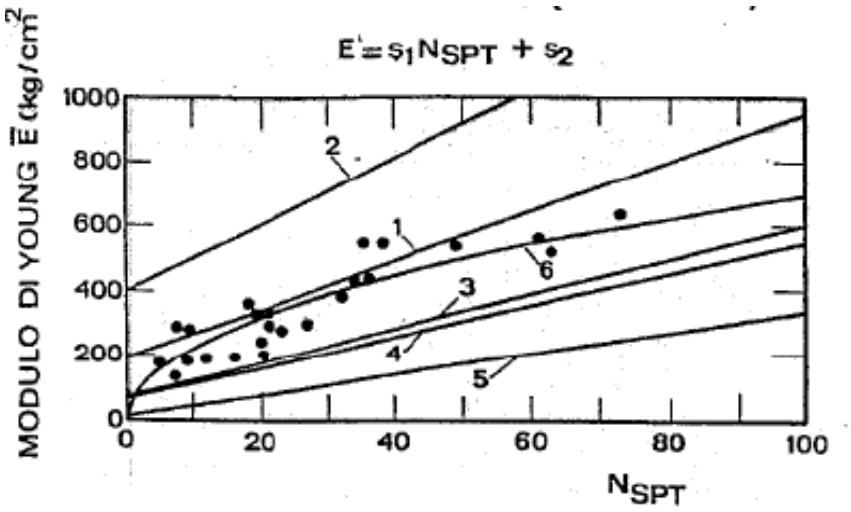


Figura 4-4: Correlazione di Denver – Stima del modulo di Young da N_{SPT} per differenti granulometrie.

Tabella 4-3: Correlazione di Denver – Valori dei parametri s_1 e s_2 per differenti granulometrie.

Curva	Note	Riferimento	s_1	s_2
1	Sabbie e ghiaie NC	D'Apollonia et al, 1970	0,756	18,75
2	Sabbie OC	D'Apollonia et al, 1970	1,043	36,79
3	Sabbie	Schulze & Menzenbach, 1961	0,517	7,46

4	Sabbia satura	Webb, 1970	0,478	7,17
5	Sabbia argillosa	Webb, 1970	0,316	1,58

4.1.2. PROVA DI PERMEABILITÀ

Sono state eseguite n.2 prove di permeabilità Lugeon:

Tabella 4-4: Tabella 4-5: risultati delle prove di permeabilità Lugeon.

Ubicazione prova (foro di sondaggio)	Profondità dal p.c. (m)	Formazione	Coeff. di perm. k (m/s)
S12	29,0	UGR	$4{,}69 \times 10^{-8}$
S13	97,5	UGR	2.60×10^{-8}

4.1.3. RILIEVO DEI LIVELLI DI FALDA

Nella tabella che segue sono riportate le letture piezometriche dei 12 sondaggi equipaggiati con piezometro a tubo aperto.
Nei profili geologico e geotecnico (relativamente Elab. T00GE01GEOFG01-10 e T00GE02GETFG01-10) è riportato il livello di falda.

Tabella 4-6: Livelli di falda rilevati in sito

DATA	S01_Piez	S02_Piez	S21_Piez	S18_Piez	S12_Piez	S17Bis_Piez	S13_Piez	S06_Piez	S15Bis_Piez	S10_Piez	S08_Piez	S16_Piez*
29/11/2021	-4.50	-4.50	-	-	-	-	-	-	-	-	-	-
01/12/2021	-	-4.50	-	-	-	-	-	-	-	-	-	-
13/12/2021	-	-	-4.00	-	-	-	-	-	-	-	-	-
14/12/2021	-4.00	-3.70	-4.00	-	-	-	-	-	-	-	-	-
15/12/2021	-	-	-	-12.50	-	-	-	-	-	-	-	-
20/12/2021	-	-	-	-	-10.50	-	-	-	-	-	-	-
30/12/2021	-4.00	-3.70	-3.00	-11.20	-10.50	-	-	-	-	-	-	-
03/01/2022	-4.00	-3.70	-3.00	-11.20	-10.50	-	-	-	-	-	-	-
21/01/2022	-3.90	-3.70	-3.00	-10.70	-10.50	-	-	-	-	-	-	-
28/02/2022	-4.10	-4.00	-3.00	-10.70	-10.50	-15.50	-	-	-	-	-	-1.50
24/03/2022	-4.10	-4.00	-3.10	-10.80	-10.50	-15.90	-34.20	-	-	-	-	-1.25
06/04/2022	-	-	-	-	-	-	-34.20	-6.00	-15.50	-	-	-
08/04/2022	-	-	-	-	-	-	-	-	-	-9.20	-	-
14/04/2022	-	-	-2.70	-10.30	-10.50	-16.00	-34.30	-6.00	-14.80	-9.20	-8.30	-1.40
28/04/2022	-4.10	-4.00	-3.10	-10.40	-10.30	-16.00	-34.40	-6.50	-14.50	-9.20	-8.40	-1.70

4.1.4. PROVE DI CARICO SU PIASTRA

In Tabella 4-7 sono riportati, per ogni prova di carico su piastra, i codici identificativi dei pozzetti di esecuzione della prova, la profondità da p.c. di esecuzione della prova e i valori del modulo di deformazione al primo ciclo di carico su piastra M_{D1} (nell'intervallo compreso tra 0,5 – 0,15 daN/mm^2).

Tabella 4-7: Valori del modulo di deformazione M_{D1} al primo ciclo di carico su piastra

Pozzetto	z	M_{D1}
	m da p.c.	MPa
PZ01	0,50	40
PZ02	0,50	56
PZ03	0,50	74
PZ04	0,50	60
PZ08	0,50	27
PZ09	0,50	11
PZ09bis	0,50	32
PZ11	0,50	21
PZ12	0,50	24

4.2. INDAGINI GEOFISICHE

4.2.1. PROVE SISMICHE IN FORO (DOWN HOLE)

Nel corso della campagna di indagini sono state eseguite n°8 prove sismiche Down Hole in fori opportunamente attrezzati.

In Tabella 4-8 vengono riportati l'elenco delle indagini eseguire, l'opera di riferimento e le categorie di sottosuolo, valutate a partire dai valori delle onde di taglio V_s misurati in sito, secondo le prescrizioni delle NTC18.

Tabella 4-8: Elenco delle Down Hole eseguite e categorie di sottosuolo.

Sondaggio	Opera WBS	Lunghezza tratto prova (m da p.c.)	V_{seq} (m/s) (NTC2018)	Categoria di sottosuolo NTC2018
S03-DH		35	346	C
S04-DH		35	321	C
S07-DH	Viadotto fiume Tevere (spalla Sud)	50	402	B
S09-DH	Viadotto fiume Tevere (spalla Nord)	50	378	B
S11-DH	Imbocco Sud Galleria	35	448	B
S16-DH	Galleria artificiale	35	446	B
S17-DH	Galleria artificiale/Imbocco Sud	35	400	B
S19-DH	Viadotto	35	475	B
S20-DH	Viadotto	35	466	B

4.2.2. MASW

In Tabella 4-9 sono riportate le velocità equivalenti $V_{s,eq}$ e le categorie stratigrafiche relative per le due prove MASW eseguite.

Tabella 4-9: Elenco indagini geofisiche MASW e categorie di sottosuolo secondo le NTC18.

MASW	H (m)	Vs,eq (m/sec)	Categoria di sottosuolo NTC2018
MASW1	35,00	357	C
MASW2	35,00	260	C

4.2.3. ANALISI DI RISPOSTA SISMICA LOCALE

Tutti i profili di velocità delle onde di taglio ottenuti dalle prove Down-Hole presentano inversione di velocità secondo i criteri delle linee guida per la microzonazione sismica della Protezione Civile. Si riporta come esempio il profilo di velocità ottenuto dal sondaggio S04-DH in Figura 4-5.
Per tale motivo sono state condotte analisi di risposta sismica locale per tutte le verticali di indagine considerando le specifiche stratigrafie.

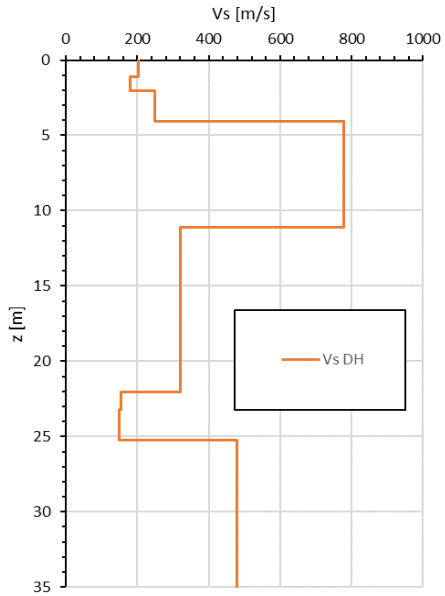


Figura 4-5: Esempio di profilo di velocità delle onde di taglio con inversione (S04-DH).

Le analisi di risposta sismica locale sono state condotte definendo sette accelerogrammi spettrocompatibili a partire dalle coordinate geografiche del sondaggio, studiando gli effetti di amplificazione legati alla stratigrafia specifica ricavata dall'interpretazione delle prove DH e confrontando lo spettro di risposta al freefeald ottenuto dall'analisi con quello elastico da normativa. Si sono allora definite le accelerazioni di progetto per periodi T nell'intervallo 0-4 secondi come inviluppo tra gli spettri delle analisi e quelli di normativa. Tali spettri di risposta inviluppo sono stati utilizzati per costruire la carta sismica (Elab. T00GE03GEOCS01-02) che suddivide l'area interessata dal tracciato di progetto in 4 zone.

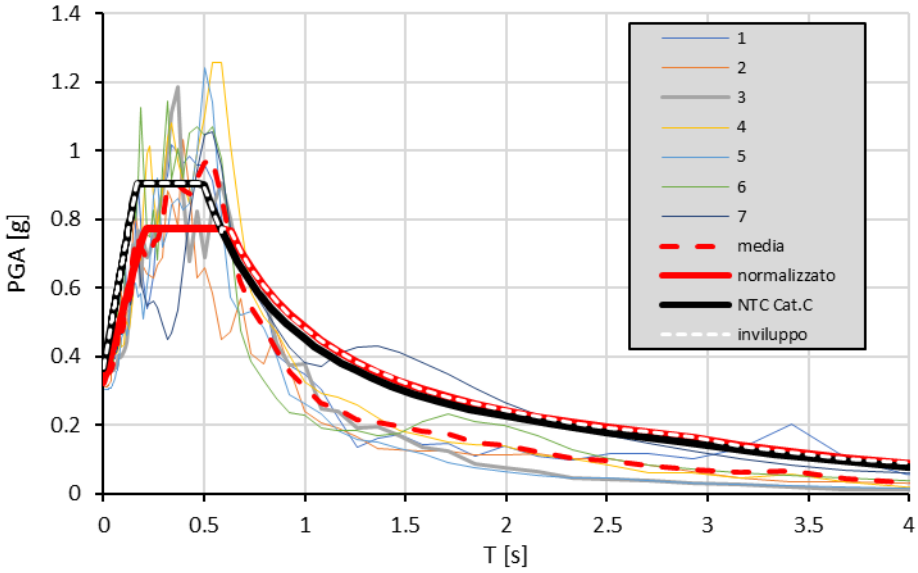


Figura 4-6: Confronto tra spettro di risposta dell'analisi normalizzato (in rosso) con quello elastico da normativa (in nero) e definizione dello spettro inviluppo (in bianco tratteggiato) per lo stato limite SLC della stratigrafia S04-DH.

Si rimanda alla relazione sismica (Elab. T00GE03GEORE01) per i risultati delle analisi di risposta sismica locale condotte.

4.3. PROVE DI LABORATORIO

Nel corso delle prove di laboratorio sono state eseguite:
Determinazione della composizione granulometrica;
Determinazione del peso di volume;
Determinazione del contenuto d'acqua e dei limini di Atterberg;
Determinazione del peso specifico dei grani;
Prove di taglio diretto TD;
Prove triassiali (UU, CD e CU);
Prove edometriche;
Prove di colonna risonante;
Prove di compressione monoassiale su roccia.

Si riportano in allegato i risultati delle prove di laboratorio suddivisi per campagna d'indagine.

4.4. CLASSIFICAZIONE DELL'AMMASSO ROCCIOSO

Nell'area interessata dal tracciato di progetto, alle progressive della galleria naturale, è presente l'ammasso roccioso della formazione marnoso-arenacea umbra (Membro di Bettona).
Per la definizione della qualità dell'ammasso roccioso non è stato possibile eseguire stazioni geomeccaniche data l'assenza di affioramenti nell'area di interesse per il tracciato di progetto, quindi, si è fatto riferimento alla qualità dell'ammasso desumibile dai campioni litoidi estratti.
Ai fini della caratterizzazione geomeccanica dei terreni per la progettazione della galleria, sono stati utilizzati i dati desunti da bibliografia integrati con i parametri ottenuti dai risultati di indagini eseguite in sito. Attraverso l'applicazione della classificazione G.S.I. (Hoek & Marinos, 2001), per le formazioni a carattere litoide strutturalmente complesse e attraverso l'uso dei parametri di resistenza che caratterizzano il modello di Hoek-Brown, si sono ricavati, attraverso interpolazione, gli intervalli equivalenti dei parametri relativi al modello di Mohr-Coulomb.
Si rimanda alla relazione di calcolo delle gallerie T00GN00OSTRE01-02-03.

5. INQUADRAMENTO GEOTECNICO

Nel seguito si riporta la definizione del modello geotecnico di sottosuolo necessario alla progettazione. Il modello geotecnico è stato definito con riferimento al modello geologico illustrato negli elaborati specifici, considerando gli aspetti stratigrafici, strutturali, idrogeologici e geomorfologici individuati. Sono stati, inoltre, analizzati tutti i dati disponibili (rilievo geologico e geomeccanico, risultati delle indagini in sito ed in laboratorio, rilievo della falda) per la definizione delle unità omogenee sotto il profilo fisico-meccanico, del regime delle pressioni interstiziali e dei valori caratteristici dei parametri geotecnici.

Dal punto di vista delle caratteristiche fisico-meccaniche delle unità riscontrate si osserva una certa uniformità nei risultati delle prove. Sono state individuate n.5 unità geotecniche, che comprendono i terreni interessati dalla realizzazione delle opere all'aperto. Per la definizione delle 3 unità geologico-tecniche e delle caratteristiche fisico meccaniche dei materiali interferenti con le opere in sotterraneo si rimanda alla specifica *Relazione geotecnica delle opere in sotterraneo* (COD.ELAB. T00GN00OSTRE03):

- **R**
  Nell'ultimo tratto del tracciato di progetto è presente in superficie con uno strato di altezza media 3,5 metri un materiale di riporto costituito da detriti con pezzame grossolano in matrice sabbioso-limosa e rilevati stradali. Non è stato possibile caratterizzare geotecnicamente tale unità data la scarsità dei campioni prelevati, quindi, la definizione dei parametri presentati nei successici paragrafi deriva da considerazioni cautelative.

- **UG1**
  Unità geotecnica costituita da depositi alluvionali fini (**bf**), dai depositi di conoide (**c**) e dai depositi alluvionali terrazzati (**bn1**). Si presenta come un limo con argilla sabbioso. È presente in superficie, con uno strato variabile da 0,5 m a 12,0 m circa, nel primo tratto del tracciato di progetto fino all' imbocco Sud della galleria naturale.

- **UG2**
  Unità geotecnica costituita da depositi alluvionali grossolani (**bg**). Si presenta come una sabbia con ghiaia limosa debolmente argillosa. È presente al di sotto di UG1, con uno strato variabile da 1,5 m a 8,0 m circa, nel primo tratto del tracciato di progetto fino alla progressiva pk 4+200.

- **UG3**
  Unità geotecnica costituita dalle argille grigie inferiori (**AGI**). Si presenta come un limo-argilla con sabbia/sabbioso. È presente nel primo tratto del tracciato di progetto, al di sotto delle UG1 e UG2, fino alla progressiva pk 4+300 a profondità maggiori di 10,0 m circa e nell'ultimo tratto, al di sotto di UG4, dalle progressive della galleria artificiale a profondità superiori a 15,0 m circa.

- **UG4**
  Unità geotecnica costituita dalla litofacies di Sant'Egidio (**SLFc**) e depositi gravitativi (**a**). Si presenta come un limo con argilla sabbioso. È presente in superficie, con uno strato di 15,0 m circa, nell'ultimo tratto del tracciato di progetto dall' imbocco Nord della galleria artificiale fino alla progressiva finale.

- **UG5**
  Unità geotecnica costituita da depositi eluvio colluviali (**b2**). Si presenta come uno strato di depositi in prevalenza limo-argilloso-sabbioso con clasti prevalentemente arenacei e pelitici. Lo strato è presente al di sopra della formazione rocciosa (UGR) dala pk 5+820 alla pk 5+980 circa. Tale unità geotecnica interferisce con le sole opere in sotterraneo.

- **UGR**
  Unità geotecnica costituita dalla Formazione marnosa arenacea Umbra, ovvero Membro di Bettona (**MAU**). Tale unità geotecnica interferisce con le sole opere in sotterraneo.

- **UGR-Alt**
  Unità geotecnica che costituisce una fascia di alterazione della formazione marnosa arenacea (**MAU**). Tale unità geotecnica interferisce con le sole opere in sotterraneo.

6. CARATTERIZZAZIONE GEOTECNICA

Le osservazioni sperimentali ottenute dalle prove in sito e in laboratorio sono esaminate nel seguito per ciascuna unità litologica individuata. L'elaborazione e l'interpretazione delle prove geotecniche in sito ed in laboratorio è finalizzata alla definizione dei valori caratteristici dei parametri geotecnici.

6.1. CARATTERIZZAZIONE DEI TERRENI

6.1.1. UG1 (DEPOSITI ALLUVIONALI FINI , DEPOSITI DI CONOIDE E DEPOSITI ALLUVIONALI TERRAZZATI)

Per la caratterizzazione dell'unità geotecnica 1 sono state eseguite cinque prove SPT, di cui si riportano i risultati di seguito.

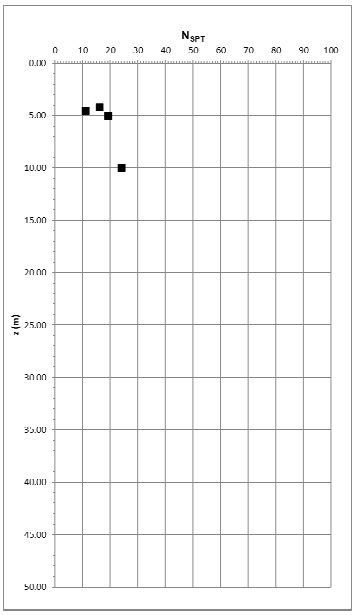


Figura 6-1 Risultati prove SPT (UG1)

Tabella 6-1 Valori parametri geotecnici da prova SPT (UG1)

Campagna	Sondaggio	Profondità	Prova SPT		
		z	φ'	C_u	E
		(m)	(°)	kPa	(MPa
2022	S06	4.55	25.4	61	20
2022	S07	5.00	27.8	107	26
2022	S09	4.20	27.3	90	24
2022	S11	5.00	27.7	107	26
2022	S11	10.00	27.5	133	29

6.1.1.1. Caratteristiche fisiche

Granulometria e peso di volume

percentuale di ghiaia di circa 1%;
percentuale di sabbia di circa 18%;
percentuale di limo di circa 45%;
percentuale di argilla di circa 36%;
Il peso di volume risulta compreso nell'intervallo 19 kN/m^3.

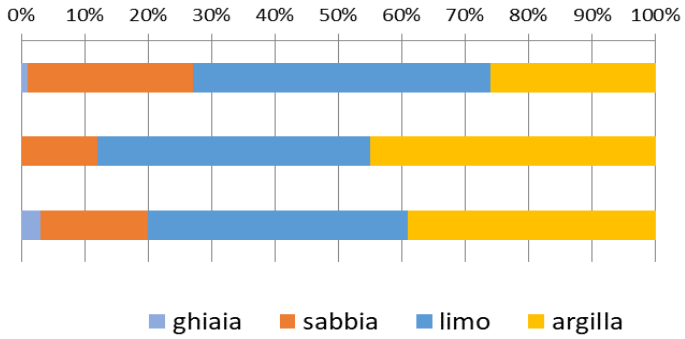


Figura 6-2: Granulometria UG1

Contenuto naturale di acqua e limiti di consistenza

Contenuto d'acqua naturale	w = 20,1÷24,7 %
Limite liquido	w_L = 47,0÷57,0 %
Limite plastico	w_P= 30,0÷31,0 %

6.1.1.2. Caratteristiche di resistenza in condizioni drenate

Prove penetrometriche dinamiche (SPT)

Angolo d'attrito φ' = 25-27°

6.1.1.3. Caratteristiche di resistenza in condizioni non drenate

Prove penetrometriche dinamiche (SPT)

Coesione non drenata C_u = 61-133 kPa

6.1.1.4. Caratteristiche di deformabilità

Per la determinazione del valore operativo del modulo elastico dei terreni sono stati considerati i risultati delle prove SPT, interpretati secondo le correlazioni di D'Apollonia e Shultze.

Prove penetrometriche dinamiche (SPT)

Modulo di Young E=20-29 Mpa

6.1.1.5. Grafici delle caratteristiche fisico-meccaniche UG1

Si riportano di seguito i grafici dei valori dei parametri caratteristici in funzione della profondità per l'unità geotecnica 1 (UG1).
In rosso tratteggiato sono indicati i range di valori utilizzati nelle verifiche progettuali.

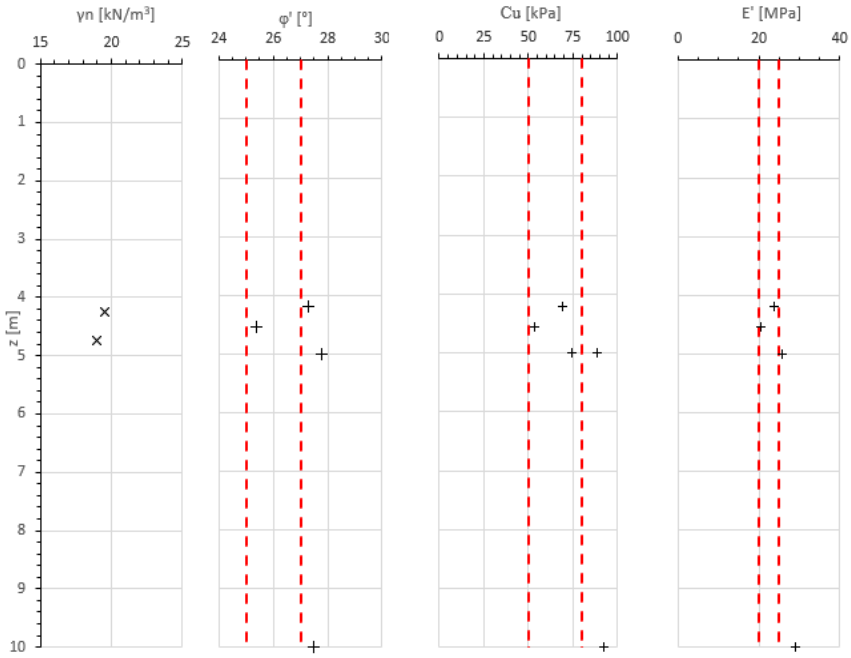


Figura 6-3: Caratteristiche fisico-meccaniche da prove in sito SPT (UG1).

In assenza di prove per la determinazione della coesione drenata per UG1, data la granulometria per un buon 70-80% fine, si adotta una coesione di 5-10 kPa.
Con riferimento ai risultati delle indagini sopra illustrati, nella tabella seguente si riportano i range di variabilità dei parametri caratteristici definiti per l'unità geotecnica.

Tabella 6-2: Parametri fisico-meccanici UG1.

U.G.	*γ [kN/m²]*	*φ' [°]*	*c' [kPa]*	*c_u [kPa]*	*E' [MPa]*
UG1	18÷19	25÷27	5÷10	50÷80	20÷25

6.1.2. UG2 (DEPOSITI ALLUVIONALI GROSSOLANI)

Per la caratterizzazione dell'unità geotecnica 2 sono stati prelevati 6 campioni rimaneggiati e 3 campioni indisturbati. Sono state eseguite 2 prove a taglio diretto e 5 prove SPT, di cui si riportano i risultati di seguito.

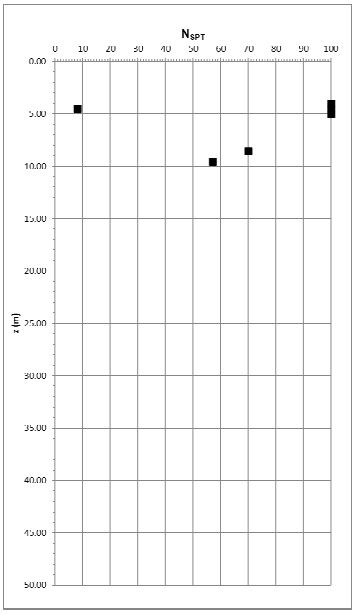


Figura 6-4 Risultati prove SPT (UG2)

Tabella 6-3 Valori parametri geotecnici da prova SPT (UG2)

Campagna	Sondaggio	Profondità	Prova SPT		
		z	φ'	E	Note
		(m)	(°)	(MPa	
2022	S01	4.50	27.7	18	
2022	S02	5.00	38	80	R
2022	S03	4.50	38.2	80	R
2022	S04	5.00	38.4	80	R
2022	S07	9.55	33.3	51	
2022	S10	8.55	34.6	60	

(R = rifiuto – n° colpi > 100)

Tabella 6-4 Valori parametri geotecnici da prova a taglio diretto TD (UG2)

Campagna	Sondaggio	Campione	Profondità	Prova TAGLIO DIRETTO	
			z	c'	φ'
			(m)	(kPa)	(°)
2022	S06	C1	4.00 ÷ 4.55	0	32.0
2022	S09	V1	3.70 ÷ 4.20	10	31.0

6.1.2.1. Caratteristiche fisiche

Granulometria e peso di volume

percentuale di ghiaia 30-50%;
percentuale di sabbia 40-70%;
percentuale di limo 10-30%;
percentuale di argilla 5-15%;
Il peso di volume risulta compreso nell'intervallo 15,5÷21,5 kN/m^3.

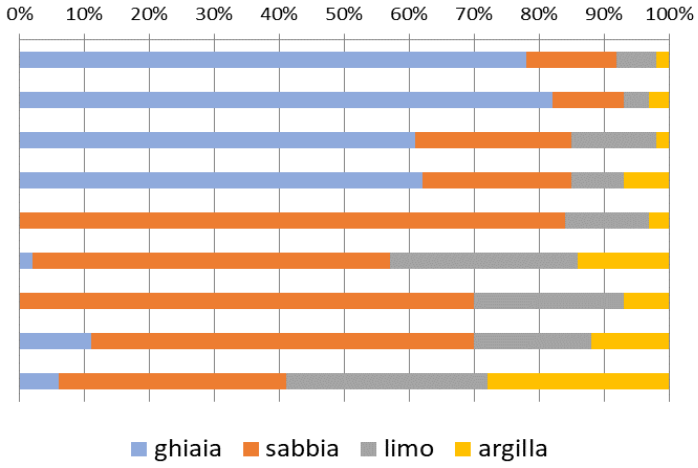


Figura 6-5: Granulometria UG2.

6.1.2.2. Caratteristiche di resistenza drenate

Prove di taglio diretto

Dalle n.2 prove di taglio diretto si ottengono i seguenti valori delle caratteristiche di resistenza al taglio:

Angolo d'attrito φ' = 31 ÷ 32°
Coesione efficace c' = 0 ÷ 10 kPa

Prove penetrometriche dinamiche (SPT)

Angolo d'attrito φ' = 27-38°

6.1.2.3. Caratteristiche di deformabilità

Per la determinazione del valore operativo del modulo elastico dei terreni sono stati considerati i risultati delle prove SPT, interpretati secondo le correlazioni di D'Apollonia e Shultze.

Prove penetrometriche dinamiche (SPT)

Modulo elastico E=18-80 MPa

6.1.2.4. Grafici delle caratteristiche fisico-meccaniche UG2

Si riportano di seguito i grafici dei valori dei parametri caratteristici in funzione della profondità per l'unità geotecnica 2 (UG2).
In rosso tratteggiato sono indicati i range di valori utilizzati nelle verifiche progettuali.

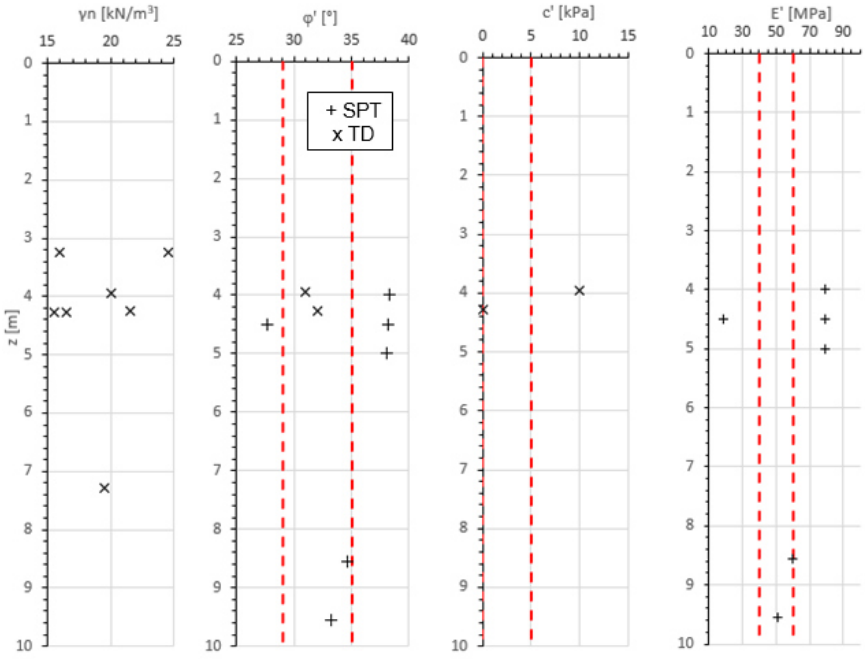


Figura 6-6: Caratteristiche fisico-meccaniche da prove in sito SPT e di laboratorio TD (UG2).

Nel grafico che segue si riportano tutti i risultati della prova di taglio diretto utilizzati per la caratterizzazione meccanica dell'UG2 e si evidenziano con linea rossa tratteggiata le superfici di rottura per il criterio di Mohr-Coulomb ottenute con i valori di φ' e c' interni al range di valori riportato in Tabella 6-5.

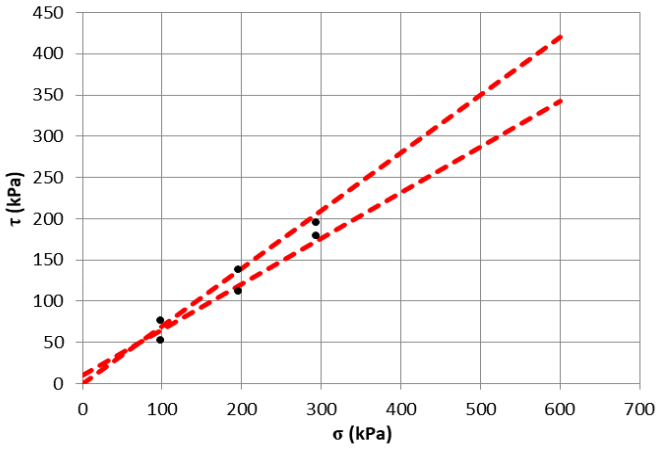


Figura 6-7: Risultati delle prove TD su campioni di UG2 e superfici di cottura alla Mohr-Coulomb.

Con riferimento ai risultati delle indagini sopra illustrati, nella tabella seguente si riportano i range di variabilità dei parametri caratteristici definiti per l'unità geotecnica.

Tabella 6-5: Parametri fisico-meccanici UG2.

U.G.	*γ [kN/m^2]*	*φ' [°]*	*c' [kPa]*	*E' [MPa]*
UG2	18÷22	29÷35	0÷5	40÷60

6.1.3. UG3 (ARGILLE GRIGIE)

Per la caratterizzazione dell'unità geotecnica 3 sono stati prelevati 48 campioni rimaneggiati e 37 campioni indisturbati. Sono state eseguite 17 prove a taglio diretto, 4 prove di compressione triassiale non consolidate non drenate (TX-UU), 1 prova di compressione triassiale consolidata drenata (TX-CU), 3 prove di compressione triassiale consolidata non drenata (TX-CU) e 49 prove SPT, di cui si riportano i risultati di seguito.

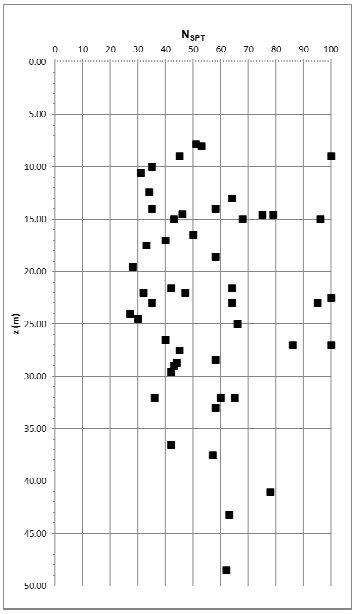


Figura 6-8 Risultati prove SPT (UG3)

Tabella 6-6 Valori parametri geotecnici da prova SPT (UG3)

Campagna	Sondaggio	Profondità	Prova SPT			
		z	φ'	E	Note	C_u
		(m)	(°)	(MPa		(kPa)
2022	S01	8.00	33.3	48		302
2022	S01	13.00	33.9	56		364
2022	S02	10.00	30.3	36		198
2022	S02	15.00	34.1	58		386
2022	S02	23.00	36.2	76		540
2022	S02	27.00	34.9	70		487
2022	S03	7.80	33.1	47		290
2022	S03	14.00	33.1	52		329
2022	S03	23.00	32.8	56		361
2022	S03	33.00	31.3	52		324
2022	S04	9.00	34.0	79	R	572
2022	S04	15.00	37.1	77		547
2022	S04	22.50	32.0	79	R	568
2022	S04	27.00	31.6	79	R	567
2022	S06	9.00	31.7	43		255
2022	S06	14.00	29.5	36		196
2022	S07	14.55	34.7	63		426
2022	S07	25.00	32.7	57		372
2022	S07	41.00	33.0	65		437
2022	S09	10.55	28.9	34		173
2022	S09	14.55	34.9	66		448
2022	S09	37.55	30.6	51		316
2022	S09	48.50	30.6	54		342
2022	S10	18.55	32.1	52		327
2022	S10	28.70	29.4	42		244
2022	S10	36.50	28.6	41		230
2022	S10	43.20	31.0	55		349
2022	S15bis	15.00	29.8	42		240
2022	S15bis	21.55	29.2	41		232
2022	S15bis	27.50	29.2	43		248
2022	S16	12.40	29.8	36		191
2022	S16	22.00	30.7	44		264
2022	S16	28.40	31.3	52		324
2022	S16	32.00	31.9	56		364
2022	S17bis	14.50	30.9	44		259
2022	S17bis	22.00	28.0	34		177
2022	S17	23.00	28.5	36		194

2022	S17	32.00	28.0	37		197
2022	S18	16.50	31.5	46		282
2022	S18	21.55	32.8	56		361
2022	S19	17.50	28.8	35		184
2022	S19	24.00	27.1	31		148
2022	S19	29.00	29.4	42		239
2022	S20	17.00	30.3	40		225
2022	S20	19.50	28.0	32		155
2022	S20	24.50	27.9	33		166
2022	S20	29.55	29.4	41		233
2022	S21	26.50	28.6	40		220
2022	S21	32.00	30.9	53		334

(R = rifiuto – n° colpi > 100)

Tabella 6-7 Valori parametri geotecnici da prova a taglio diretto TD (UG3)

Campagna	Sondaggio	Campione	Profondità	Prova TAGLIO DIRETTO	
			z	c'	φ'
			(m)	(kPa)	(°)
2022	S01	FC2	12.00 ÷ 12.50	20.0	25.0
2022	S02	C1	11.40 ÷ 11.90	15.0	25.0
2022	S02	C3	20.00 ÷ 20.40	15.0	20.0
2022	S03	FC2	12.00 ÷ 12.40	5.0	22.0
2022	S04	C1	11.00 ÷ 11.40	3.0	25.0
2022	S04	C4	34.00 ÷ 34.40	10.0	20.0
2022	S07	C2	14.00 ÷ 14.50	15.0	25.0
2022	S08	C3	25.00 ÷ 25.50	5.0	22.0
2022	S09	C4	34.20 ÷ 34.60	25.0	32.0
2022	S10	C1	8.00 ÷ 8.55	15.0	28.0
2022	S10	C4	36.00 ÷ 36.50	15.0	35.0
2022	S15bis	C3	27.00 ÷ 27.50	5.0	27.0
2022	S16	C2	12.00 ÷ 12.40	20.0	27.0
2022	S16	RC1	34.00 ÷ 34.40	10.0	29.0
2022	S18	RC1	24.50 ÷ 25.00	15.0	18.0
2022	S20	RC1	34.50 ÷ 35.00	15.0	26.0

2022	S21	RC1	34.00 ÷ 35.00	10.0	22.0

Tabella 6-8 Valori parametri geotecnici da prova triassiale non consolidata non drenata TX-UU (UG3)

Campagna	Sondaggio	Campione	Profondità	Prova TRIASSIALE NON CONSODLIDATA NON DRENATA (TX-UU)
			z	C_u
			(m)	(kPa)
2022	S01	FC1	7.50 ÷ 8.00	170
2022	S03	C2	31.50 ÷ 32.00	380
2022	S08	C2	16.00 ÷ 16.50	311
2022	S09	C5	39.50 ÷ 40.00	394
2022	S15	FC3	13.50 ÷ 14.00	150
2022	S15bis	C1	14.00 ÷ 14.50	123
2022	S16	C4	28.00 ÷ 28.40	178
2022	S17	C4	26.00 ÷ 26.40	84
2022	S18	FC2	14.00 ÷ 14.50	227
2022	S20	FC3	21.00 ÷ 21.50	127
2022	S21	FC3	21.00 ÷ 21.50	251
2022	S21	FC4	29.00 ÷ 29.50	207

Tabella 6-9 Valori parametri geotecnici da prova triassiale consolidata drenata (TX-CD) e non drenata (TX-CU) (UG3)

Campagna	Sondaggio	Campione	Profondità	Prova TRIASSIALE CONSODLIDATA		TIPO
			z	c'	φ'	
			(m)	(kPa)	(°)	
2022	S03	C1	21.50 ÷ 22.00	12	29	Non drenata
2022	S04	C2	17.00 ÷ 17.40	10	28	Drenata
2022	S07	C3	30.00 ÷ 30.40	4	28	Non drenata
2022	S09	C3	23.60 ÷ 24.00	4	28	Non drenata
2022	S16	C3	21.60 ÷ 22.00	12	29	Non drenata
2022	S17	C5	34.60 ÷ 35.00	12	29	Non drenata

2022	S19	FC4	34.00 ÷ 34.50	12	29	Non drenata
2022	S20	FC4	26.50 ÷ 27.00	15	23	Non drenata

6.1.3.1. Caratteristiche fisiche

Granulometria e peso di volume

percentuale di ghiaia 0-5%;
percentuale di sabbia 25-50%;
percentuale di limo 40-60%;
percentuale di argilla 40-60%.
Il peso di volume risulta compreso nell'intervallo 18,0 ÷ 23,5 kN/m^3.

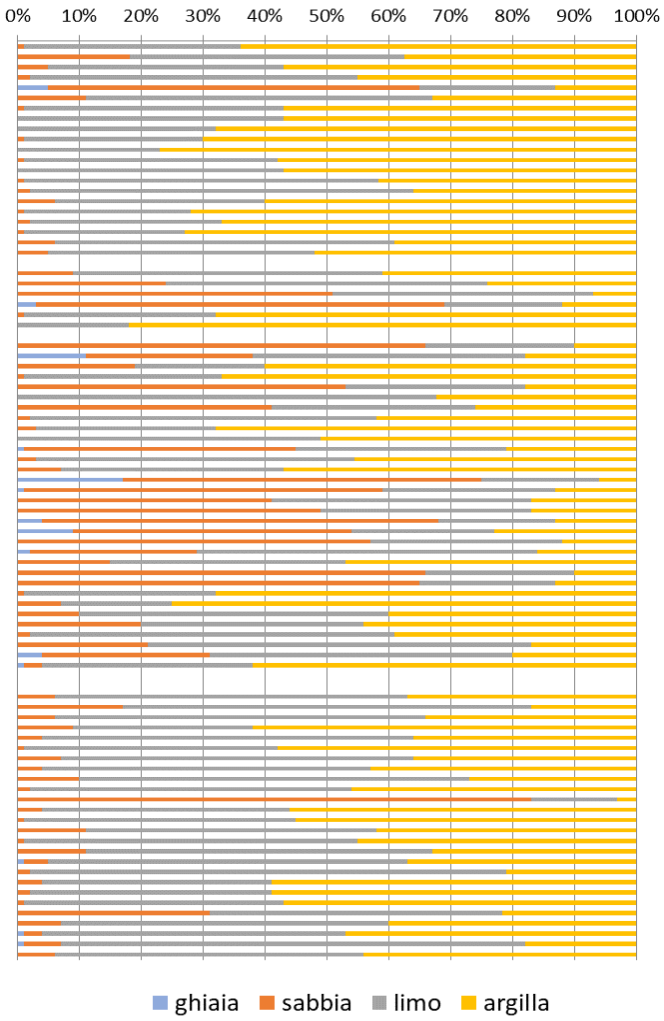


Figura 6-9: Granulometria UG3.

Contenuto naturale di acqua e limiti di consistenza

Contenuto d'acqua naturale w = 15,5÷ 24,5 %
Limite liquido w_L = 22 ÷ 71 %

Limite plastico w_P= 15 ÷ 55 %

6.1.3.2. Caratteristiche di resistenza in condizioni drenate

Prove di taglio diretto

Dalle prove di taglio diretto e dalle prove triassiali si ottengono i seguenti valori delle caratteristiche di resistenza al taglio:

Angolo d'attrito $\varphi' = 18 \div 35°$
Coesione efficace $c' = 3 \div 25$ kPa

Prove penetrometriche dinamiche (SPT)

Angolo d'attrito $\varphi' = 27\text{-}37°$

6.1.3.3. Caratteristiche di resistenza in condizioni non drenate

Prove triassiali non drenate

Coesione non drenata $C_u = 84 - 393$ kPa

Prove penetrometriche dinamiche (SPT)

Coesione non drenata $C_u = 148 – 572$ kPa

6.1.3.4. Caratteristiche di deformabilità

Per la determinazione del valore operativo del modulo elastico dei terreni sono stati considerati i risultati delle prove SPT, interpretati secondo le correlazioni di D'Apollonia e Shultze.

Prove penetrometriche dinamiche (SPT)

Modulo elastico E=31 - 80 Mpa 3

6.1.3.5. Grafici delle caratteristiche fisico-meccaniche UG3

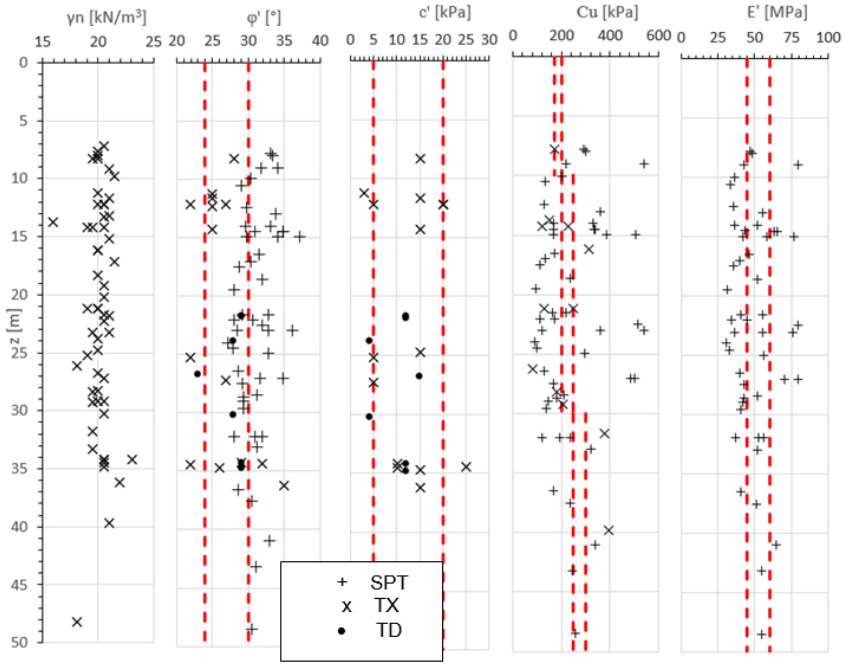


Figura 6-10: Caratteristiche fisico-meccaniche da prove in sito SPT e di laboratorio (UG3).

Nel grafico che segue si riportano tutti i risultati della prova di taglio diretto utilizzati per la caratterizzazione meccanica dell'UG3 e si evidenziano con linea rossa tratteggiata le superfici di rottura per il criterio di Mohr-Coulomb ottenute con i valori di φ' e c' interni al range di valori riportato in Tabella 6-10.

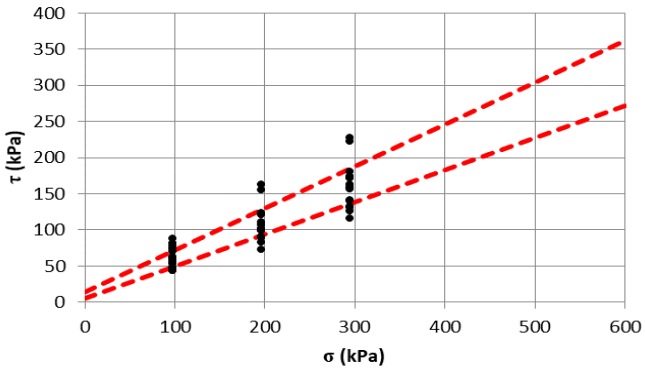


Figura 6-11: Risultati delle prove TD su campioni di UG3 e superfici di cottura alla Mohr-Coulomb.

Con riferimento ai risultati delle indagini sopra illustrati, nella tabella seguente si riportano i range di variabilità dei parametri caratteristici definiti per l'unità geotecnica.

Tabella 6-10: Parametri fisico-meccanici UG3.

U.G.	*γ [kN/m²]*	*φ' [°]*	*c' [kPa]*	*c_u [kPa]*		*E' [MPa]*
UG3	19÷21	24÷30	5÷20	z<10	170÷200	45÷60
				10<z<30	200÷250	
				z>30	250÷300	

6.1.4. UG4 (LIMI – LIMI SABBIOSO ARGILLOSI LITOFACIES SANT'EGIDIO, DEPOSITI GRAVITATIVI E DEPOSITI ELUVIO-COLLUVIALI)

Per la caratterizzazione dell'unità geotecnica 4 sono stati prelevati 13 campioni rimaneggiati e 11 campioni indisturbati. Sono state eseguite 4 prove a taglio diretto, 3 prove di taglio diretto in condizioni residue, 1 prova di compressione triassiale non consolidate non drenate (TX-UU), 2 prove di compressione triassiale consolidata non drenata (TX-CU) e 16 prove SPT, di cui si riportano i risultati di seguito.

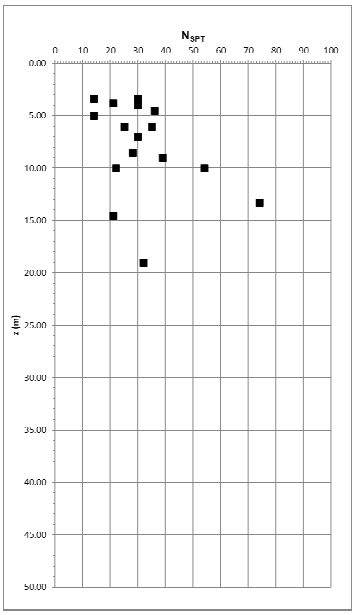


Figura 6-12 Risultati prove SPT (UG4)

Tabella 6-11 Valori parametri geotecnici da prova SPT (UG4)

Campagna	Sondaggio	Profondità	Prova SPT		
		z	φ'	E	C_u
		(m)	(°)	(MPa	(kPa)
2022	S15	3.80	28.8	27	119
2022	S15	8.50	28.6	32	157
2022	S16	3.40	27.1	22	79
2022	S17bis	4.50	31.4	37	205
2022	S17bis	9.00	30.5	39	220
2022	S17	3.40	31.0	33	171
2022	S17	7.00	29.4	33	169
2022	S17	13.30	34.5	62	420
2022	S18	4.00	30.6	33	171
2022	S18	10.00	32.8	49	307
2022	S19	5.00	26.3	22	78
2022	S19	10.00	27.5	28	123

2022	S20	6.00	31.3	36	199
2022	S21	6.00	28.8	30	141
2022	S21	14.50	25.9	27	114
2022	S21	19.00	27.8	34	176

Tabella 6-12 Valori parametri geotecnici da prova a taglio diretto TD (UG4)

Campagna	Sondaggio	Campione	Profondità	Prova TAGLIO DIRETTO			
			z	c'	φ'	c'_{res}	$φ'_{res}$
			(m)	(kPa)	(°)	(kPa)	(°)
2022	S15	FC1	3.40 ÷ 3.80	5	27.0		
2022	S17	C1	3.00 ÷ 3.40	20	24.0	10	22
2022	S17	C2	6.60 ÷ 7.00	5	25.0	5	25
2022	S17	C3	13.00 ÷ 13.30	5	32.0	5	30
2022	S19	C2	16.20 ÷ 16.70	5	27.0		
2022	S21	FC2	12.00 ÷ 12.50	0	25.0		

Tabella 6-13 Valori parametri geotecnici da prova triassiale non consolidata non drenata TX-UU (UG4)

Campagna	Sondaggio	Campione	Profondità	Prova TRIASSIALE NON CONSODLIDATA NON DRENATA (TX-UU)
			z	C_u
			(m)	(kPa)
2022	S16	C1	3.00 ÷ 3.40	178
2022	S19	C1	4.00 ÷ 4.50	111
2022	S20	FC1	3.60 ÷ 4.00	230

Tabella 6-14 Valori parametri geotecnici da prova triassiale consolidata drenata (TX-CD) e non drenata (TX-CU) (UG4)

Campagna	Sondaggio	Campione	Profondità	Prova TRIASSIALE CONSODLIDATA		TIPO
			z	c'	φ'	
			(m)	(kPa)	(°)	
2022	S20	FC2	13.50 ÷ 14.00	10	26.0	Non drenata
2022	S21	FC1	4.00 ÷ 4.50.40	10	27.0	Non drenata

6.1.4.1.

Granulometria e peso di volume

percentuale di ghiaia 0-5%;
percentuale di sabbia 10-30%;
percentuale di limo 30-50%;
percentuale di argilla 20-40%
Il peso di volume risulta compreso nell'intervallo 15,0 ÷ 20,0 kN/m^3.

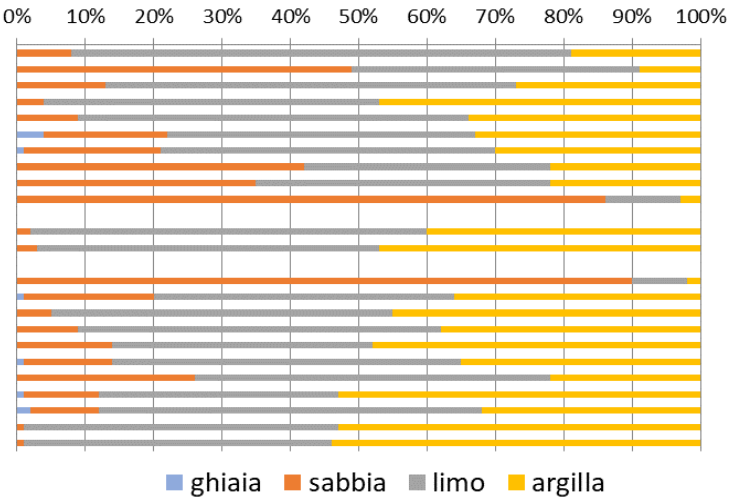


Figura 6-13: Granulometria UG4.

Contenuto naturale di acqua e limiti di consistenza

Contenuto d'acqua naturale	w = 8,5 ÷ 34,7 %
Limite liquido	w_L = 31 - 57 %
Limite plastico	w_P= 18 - 31 %

6.1.4.2. Caratteristiche di resistenza in condizioni drenate

Prove di taglio diretto e triassiali

Dalle prove di taglio diretto e dalle prove triassiali si ottengono i seguenti valori delle caratteristiche di resistenza al taglio:

Angolo d'attrito	φ' = 24 ÷ 32°
Coesione efficace	c' = 0 ÷ 20 kPa

Prove penetrometriche dinamiche (SPT)

Angolo d'attrito	φ' = 25 - 34°

6.1.4.3. Caratteristiche di resistenza in condizioni non drenate

Prove triassiali non drenate

Coesione non drenata	C_u = 111 - 230 kPa

Prove penetrometriche dinamiche (SPT)

Coesione non drenata C_u = 78 - 420 kPa

6.1.4.4. Caratteristiche di deformabilità

Per la determinazione del valore operativo del modulo elastico dei terreni sono stati considerati i risultati delle prove SPT, interpretati secondo le correlazioni di D'Apollonia e Shultze.

Prove penetrometriche dinamiche (SPT)

Modulo elastico E=22-62 Mpa

6.1.4.5. Grafici delle caratteristiche fisico-meccaniche UG4

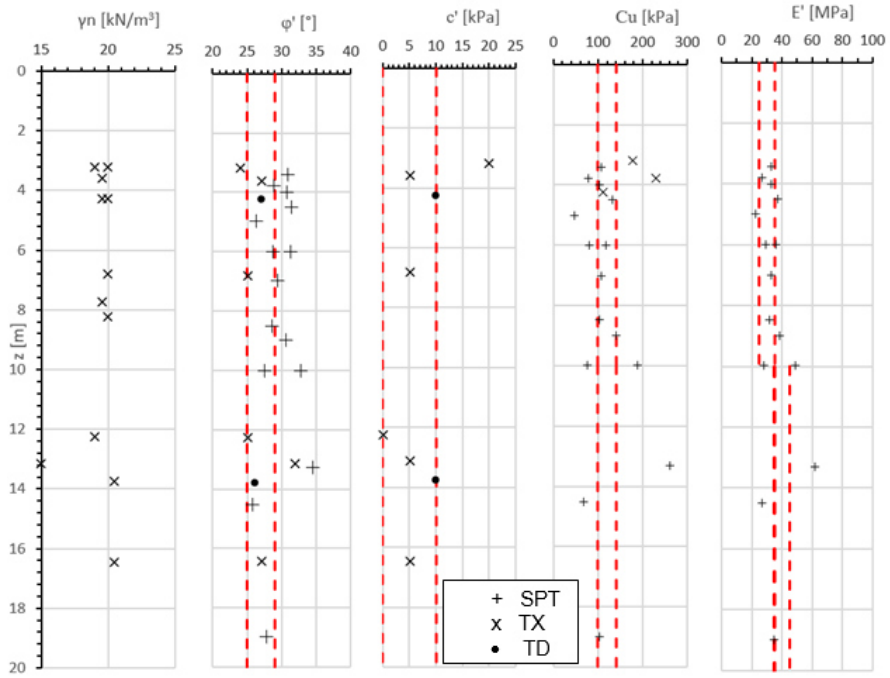


Figura 6-14: Caratteristiche fisico-meccaniche da prove in sito SPT e di laboratorio (UG3).

Nel grafico che segue si riportano tutti i risultati della prova di taglio diretto utilizzati per la caratterizzazione meccanica dell'UG4 e si evidenziano con linea rossa tratteggiata le superfici di rottura per il criterio di Mohr-Coulomb ottenute con i valori di φ' e c' interni al range di valori riportato in Tabella 6-15.

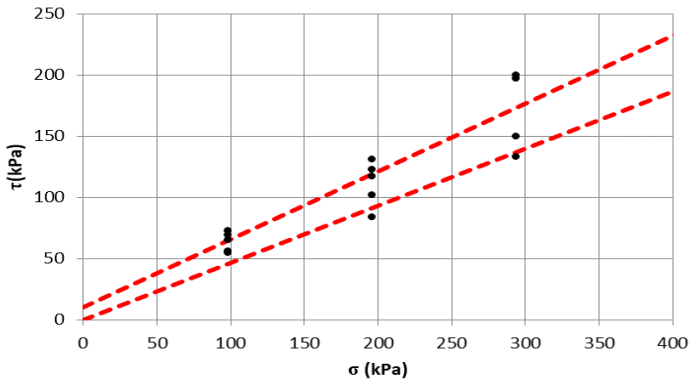


Figura 6-15: Risultati delle prove TD su campioni di UG4 e superfici di cottura alla Mohr-Coulomb.

Con riferimento ai risultati delle indagini sopra illustrati, nella tabella seguente si riportano i range di variabilità dei parametri caratteristici definiti per l'unità geotecnica.

Tabella 6-15: Parametri fisico-meccanici UG4.

U.G.	*γ [kN/m^2]*	*φ' [°]*	*c' [kPa]*	*c_u [kPa]*	*E' [MPa]*	
UG4	18÷20	25÷29 [25÷29]*	0÷10 [0÷5]*	100÷140	z<10	25÷35
					10<z<30	35÷45

[…]* Valori caratteristici residui

6.2. CARATTERIZZAZIONE DELLE ROCCE

Per la caratterizzazione geomeccanica delle rocce finalizzata al dimensionamento delle opere in sotterraneo si rimanda alle relazioni T00GN00OSTRE01-02-03.

7. PARAMETRI CARATTERISTICI

Con riferimento ai terreni precedentemente individuati si è proceduto a definire le caratteristiche fisico-meccaniche analizzando tutti i risultati delle prove di laboratorio e delle indagini in sito svolte nel corso delle diverse campagne di indagine, mediante correlazioni proposte in letteratura e già ampiamente verificate sul piano sperimentale.
Sono stati quindi definiti per ciascuna unità geotecnica i valori caratteristici dei parametri geotecnici.
I range di variabilità dei parametri caratteristici delle unità geotecniche sopra descritte sono stati riassunti nella tabella di seguito riportata. Si rimanda, inoltre, ai profili geotecnici per la definizione della stratigrafia e del livello di falda di progetto.

Tabella 7-1: Parametri fisici e meccanici delle unità geotecniche in sito.

U.G.	*γ [kN/m^2]*	*φ' [°]*	*c' [kPa]*	*c_u [kPa]*		*E' [MPa]*	
R	18÷19	28÷32	0÷5	-		15÷25	
UG1	18÷19	25÷27	5÷10	50÷80		20÷25	
UG2	18÷22	29÷35	0÷5	-		40÷60	
UG3	19÷21	24÷30	5÷20	z<10	170÷200	45÷60	
				10<z<30	200÷250		
				z>30	250÷300		
UG4	18÷20	25÷29	0÷10	100÷140		z<10	25÷35
						10<z<30	35÷45

8. PROBLEMATICHE GEOTECNICHE

8.1. RILEVATI

I rilevati sono sagomati con scarpate singola di pendenza 3(H)x2(V) fino a 5 m di altezza del rilevato oltre i quali si prevede una banca di riposo larga 2 m Figura 8-1.

Le verifiche di stabilità dei rilevati e il calcolo dei cedimenti vengono svolti per le sezioni maggiormente significative, tenendo conto dell'altezza del rilevato stradale, delle caratteristiche stratigrafiche e delle condizioni sismiche. Le differenti unità geotecniche sono caratterizzate da proprietà indice e parametri di resistenza tra loro paragonabili: l'altezza del rilevato è, perciò, la variabile che maggiormente influenza le analisi di stabilità.

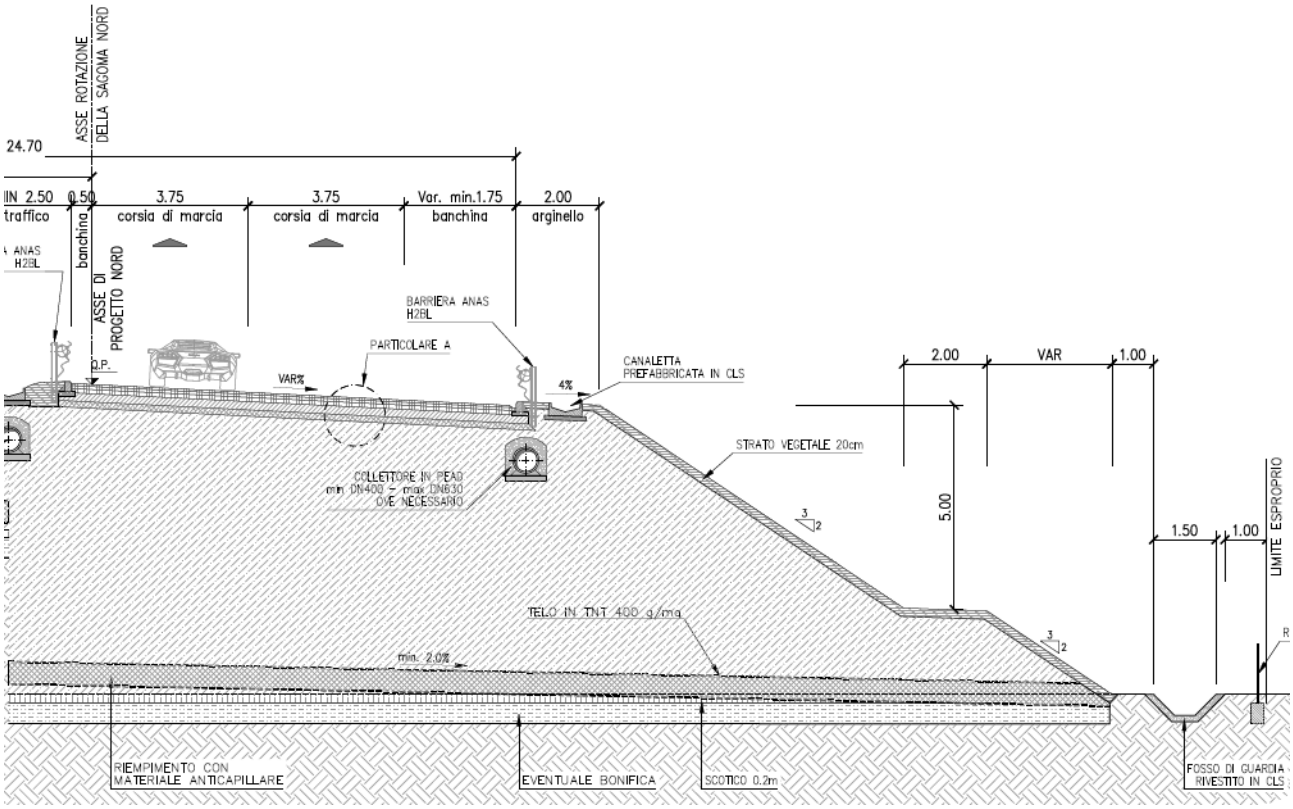


Figura 8-1: Sezione tipologica di rilevato di altezza superiore a 6 metri con banca di riposo.

8.1.1. PIANO DI POSA DEL RILEVATO

Nei tratti in rilevato, viste le caratteristiche dei terreni in sito e i risultati delle prove di carico su piastra (eseguite a 0,5 m dal piano campagna) i cui risultati sono riportati al 4.1.4, si prevede, oltre ai 20 cm di scotico, un intervento di bonifica con sostituzione dei terreni.
Per il modulo di deformazione il capitolato indica un valore minimo di 20 MPa sul piano di posa del rilevato posto a 1,0 m dalla fondazione stradale e pari a 15 MPa sul piano di posa del rilevato posto a 2,0 m da quello della fondazione stradale.
Dall'analisi dei dati in Tabella 4-7 si osserva che solo per il pozzetto PZ09 il risultato della prova di carico su piastra risulta di poco inferiore al valore da capitolato.
Nel seguente grafico sono riassunti gli spessori degli strati vegetali in funzione del sondaggio e della progressiva.

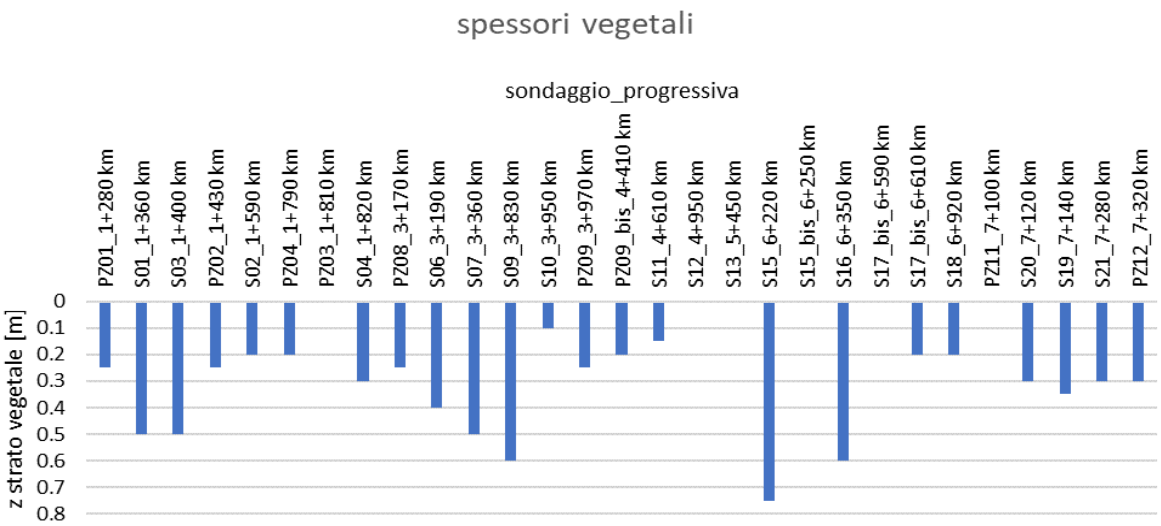


Figura 8-2: spessori dello strato vegetale in funzione del sondaggio e della progressiva.

Nella tabella che segue sono determinati gli spessori di bonifica in funzione della progressiva che andranno a sommarsi a 20 cm di scotico previsto per tutta la lunghezza del tracciato di progetto.

Tabella 8-1: Tabella riassuntiva degli spessori di bonifica in funzione della progressiva.

progressiva iniziale	progressiva finale	Md_{medio} [N/mm2]	sp. Vegetale medio [cm]	spessore di bonifica [cm]
0+000	3+280	51	30	30
3+940	4+615	21	20	30
6+840	7+695	22	25	30

Nella tabella sottostante si riportano le tratte in cui il tracciato ha un rilevato di altezza inferiore a 1 m ed in trincea.

	progressiva iniziale	progressiva finale	TIPOLOGIA
ASSE DX	4+275	4+280	Rilevato H < 1 m
	4+280	4+293	Tracciato a piano campagna
	4+293	4+309	Rilevato H < 1 m
	4+309	4+333	Tracciato a piano campagna
	4+333	4+588	Trincea
ASSE SX	4+282	4+288	Rilevato H < 1 m
	4+288	4+310	Tracciato a piano campagna
	4+310	4+615	Trincea

8.1.2. CEDIMENTI

Sezione pk 2+780

La valutazione dei cedimenti dei rilevati è stata effettuata con il metodo edometrico, con riferimento alla sezione del rilevato a pk 2+780, alla quale si osserva la massima altezza.

CARATTERISTICHE GEOMETRICHE DEL RILEVATO

h (altezza del rilevato):	8.00	(m)
a (larghezza scarpata sinistra):	16.70	(m)
a' (larghezza scarpata destra):	13.70	(m)
b (larghezza coronamento del rilevato):	29.20	(m)
γ_R (peso di unità di volume del rilevato):	19.00	(kN/m^3)

CARATTERISTICHE GEOTECNICHE DEL SOTTOSUOLO

n (numero degli strati) (max 5):	3	(-)
$\Delta\sigma_m/\sigma_{m0}$:	1	(%)

(Rapp. Tensione media indotta nel sottosuolo e tensione efficace media)

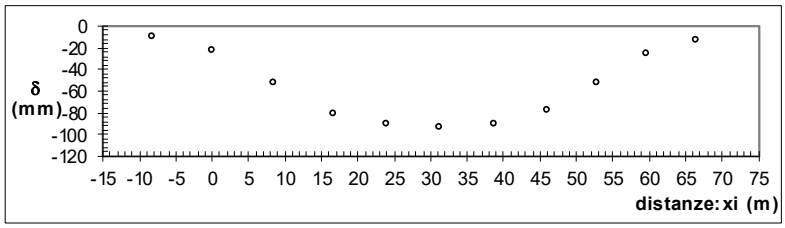
Zw (Profondità della falda):	3.00	(m)

Strato (n)	$z_{iniziale}$ (m)	z_{finale} (m)	Spessore (m)	Δ_{zi} (m)	E (Mpa)	ν (-)	φ' (°)	γ (kN/m^3)	terreno
1	0.00	1.00	1.00	1.0	20.0	0.30	26.0	19.00	UG1
2	1.00	7.00	6.00	1.0	50.0	0.30	31.0	20.00	UG2
3	7.00	50.00	43.00	1.0	50.0	0.30	27.0	20.00	UG3

ASCISSE DI CALCOLO

x1 (m)	x2 (m)	x3 (m)	x4 (m)	x5 (m)	x6 (m)	x7 (m)	x8 (m)	x9 (m)	x10 (m)	x11 (m)	
-8.35	0.00	8.35	16.70	24.00	31.30	38.60	45.90	52.75	59.60	66.45	(automatico)
											(manuale)

RISULTATI DELLE ANALISI



CEDIMENTI

δ1 (cm)	δ2 (cm)	δ3 (cm)	δ4 (cm)	δ5 (cm)	δ6 (cm)	δ7 (cm)	δ8 (cm)	δ9 (cm)	δ10 (cm)	δ11 (cm)
-0.92	-2.26	-5.17	-8.01	-9.05	-9.30	-8.95	-7.75	-5.16	-2.53	-1.23

— M. Mancina, R. Nori, P.Iasiello - Progetti e Calcoli di Geotecnica con Excel vol.2 - ed. DEI—

Il cedimento massimo calcolato è di circa 9,6 cm. Viste le caratteristiche dei terreni di fondazione, si può considerare tale cedimento come immediato o comunque scontato a breve termine. Il cedimento risulta quindi compatibile con l'opera prevista.

Sezione pk 3+200

La valutazione dei cedimenti dei rilevati è stata effettuata con il metodo edometrico, con riferimento alla sezione del rilevato a pk 3+200, alla quale si osserva una stratigrafia peggiore rispetto la precedente.

CARATTERISTICHE GEOMETRICHE DEL RILEVATO

h (altezza del rilevato):	7.00	(m)
a (larghezza scarpata sinistra):	13.00	(m)
a' (larghezza scarpata destra):	12.00	(m)
b (larghezza coronamento del rilevato):	29.20	(m)
γ_R (peso di unità di volume del rilevato):	19.00	(kN/m^3)

CARATTERISTICHE GEOTECNICHE DEL SOTTOSUOLO

n (numero degli strati) (max 5):	3	(-)
$\Delta\sigma_m/\sigma_{m0}$:	1	(%)

(Rapp. Tensione media indotta nel sottosuolo e tensione efficace media)

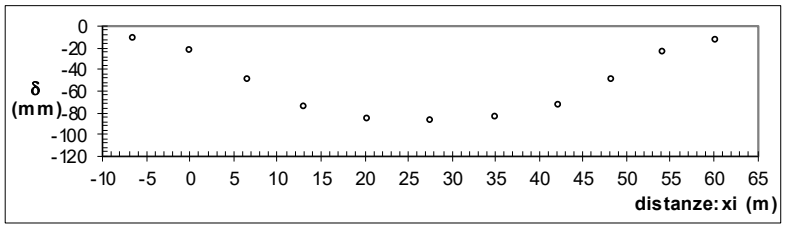
Zw (Profondità della falda):	5.50	(m)

Strato (n)	$z_{iniziale}$ (m)	z_{finale} (m)	Spessore (m)	Δ_{zi} (m)	E (Mpa)	ν (-)	φ' (°)	γ (kN/m^3)	terreno
1	0.00	4.20	4.20	1.0	20.0	0.30	26.0	19.00	UG1
2	4.20	4.60	0.40	1.0	40.0	0.30	31.0	20.00	UG2
3	4.60	50.00	45.40	1.0	50.0	0.30	27.0	20.00	UG3

ASCISSE DI CALCOLO

x1 (m)	x2 (m)	x3 (m)	x4 (m)	x5 (m)	x6 (m)	x7 (m)	x8 (m)	x9 (m)	x10 (m)	x11 (m)	
-6.50	0.00	6.50	13.00	20.30	27.60	34.90	42.20	48.20	54.20	60.20	(automatico)
											(manuale)

RISULTATI DELLE ANALISI



CEDIMENTI

δ1 (cm)	δ2 (cm)	δ3 (cm)	δ4 (cm)	δ5 (cm)	δ6 (cm)	δ7 (cm)	δ8 (cm)	δ9 (cm)	δ10 (cm)	δ11 (cm)
-1.12	-2.25	-4.84	-7.40	-8.47	-8.73	-8.43	-7.31	-4.84	-2.34	-1.23

— M. Mancina, R. Nori, P.Iasiello - Progetti e Calcoli di Geotecnica con Excel vol.2 - ed. DEI—

Il cedimento massimo calcolato è di circa 8.7 cm. Viste le caratteristiche dei terreni di fondazione, si può considerare tale cedimento come immediato o comunque scontato a breve termine. Il cedimento risulta quindi compatibile con l'opera prevista.

8.1.3. VERIFICA DI STABILITÀ DEL RILEVATO

Le verifiche di sicurezza sono state eseguite in accordo con quanto indicato nei paragrafi 6.8, 7.11.3 e 7.11.4 del DM 17/01/2018. Le verifiche di sicurezza devono essere effettuate secondo l'Approccio 1, Combinazione 2 (A2+M2+R2). Le analisi numeriche, quindi, sono state condotte applicando i coefficienti A2 + M2 per la valutazione rispettivamente delle azioni di progetto e delle resistenze di progetto e il valore di γ_r, pari a 1,1 in condizioni statiche, sarà inteso come il valore del coefficiente di sicurezza di riferimento.

Per quanto riguarda le azioni accidentali dovute al carico stradale, ci considera un carico uniformemente distribuito q_k = 20 kPa, quindi:

- in condizioni **statiche** risulta q_d = 1.3 x q_k = 26 kPa;
- in condizioni **sismiche**, con ψ = 0.2 (coeff. di combinazione), risulta q_d = 4 kPa;

In condizioni sismiche, le verifiche di sicurezza (SLV) sono eseguite ponendo pari a 1 i coefficienti parziali sulle azioni e sui parametri geotecnici e impiegando le resistenze di progetto calcolate con un coefficiente parziale pari a γ R = 1,2. Il comportamento in condizioni sismiche dei rilevati è analizzato mediante metodi pseudostatici. Nei metodi pseudostatici l' azione sismica è rappresentata da un' azione statica equivalente, costante nello spazio e nel tempo, proporzionale al peso W del volume di terreno potenzialmente instabile. Le componenti orizzontale e verticale di tale forza devono essere ricavate in funzione delle proprietà del moto atteso nel volume di terreno potenzialmente instabile e della capacità di tale volume di subire spostamenti senza significative riduzioni di resistenza.

In mancanza di studi specifici, le componenti orizzontale e verticale della forza statica equivalente possono esprimersi come *Fh* = *kh*·*W* ed *Fv* = *kv*·*W*, con kh e kv rispettivamente pari ai coefficienti sismici orizzontale e verticale:

$$k_h = \beta_s \cdot \frac{a_{max}}{g}$$

$$k_v = \pm 0{,}5 \cdot k_h$$

dove

- βs = coefficiente di riduzione dell' accelerazione massima attesa al sito;
- amax = accelerazione orizzontale massima attesa al sito;
- g = accelerazione di gravità.

Nelle verifiche dello stato limite ultimo (SLV) per rilevati il valore di βs da adottare risulta pari a 0,38. I valori di accelerazione a terra delle analisi in condizioni sismiche riportate di seguito fanno riferimento ai valori tabellati nella carta sismica, quindi, contengono l'informazione sulla stratigrafia (RSL) ma non della topografia dell'area.

ACCELERAZIONI SISMICHE NON AMPLIFICATE PER IL COEFFICIENTE TOPOGRAFICO					
ZONA	Prog. Iniziale	Prog. Finale	a_g/g (T=0)		
			SLC	SLV	SLD
1	0+000	1+940	0.365 g	0.317 g	0.159 g
2	1+940	4+020	0.372 g	0.291 g	0.135 g
3	4+020	6+320	0.392 g	0.370 g	0.140 g
4	6+320	7+695	0.380 g	0.300 g	0.150 g

Le analisi in condizioni sismiche sono state effettuate adottando il metodo pseudo-statico. Tutte le analisi di stabilità sono state eseguite con il *metodo di Bishop*.

Per i rilevati si assumono i seguenti valori dei parametri fisico-meccanici dei terreni:

Unità geotecnica	γ kN/m³	c' kPa	φ' °
Rilevato	19	0	35

Di seguito si riportano sia le verifiche di stabilità locale del rilevato stradale considerando esclusivamente le superfici di rottura che interessano il solo corpo del rilevato, che le verifiche di stabilità globale del rilevato stradale considerando le superfici di rottura che interessano il corpo del rilevato e il terreno di fondazione.

Sezione pk 2+780

Tale sezione è caratterizzata dalla massima altezza del rilevato.
Gli strati di terreno sono stati caratterizzati con i parametri medi di resistenza. La sezione ricade all'interno della zona sismica 2, perciò le analisi sono state condotte con i seguenti valori:

$$K_h = 0.01$$
$$K_v = 0.055$$

Le analisi risultano soddisfatte sia in condizioni statiche (FS > 1.1) che in condizioni sismiche (FS>1.20).

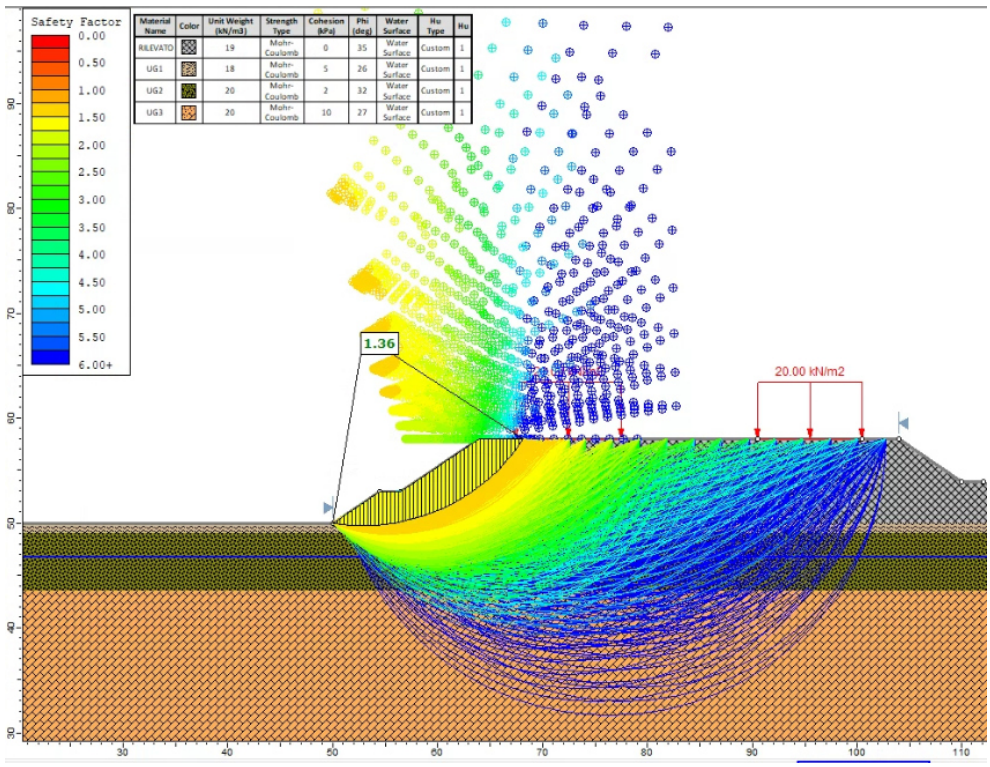


Figura 8-3: Verifica di stabilità locale in condizioni statiche (FS=1.36).

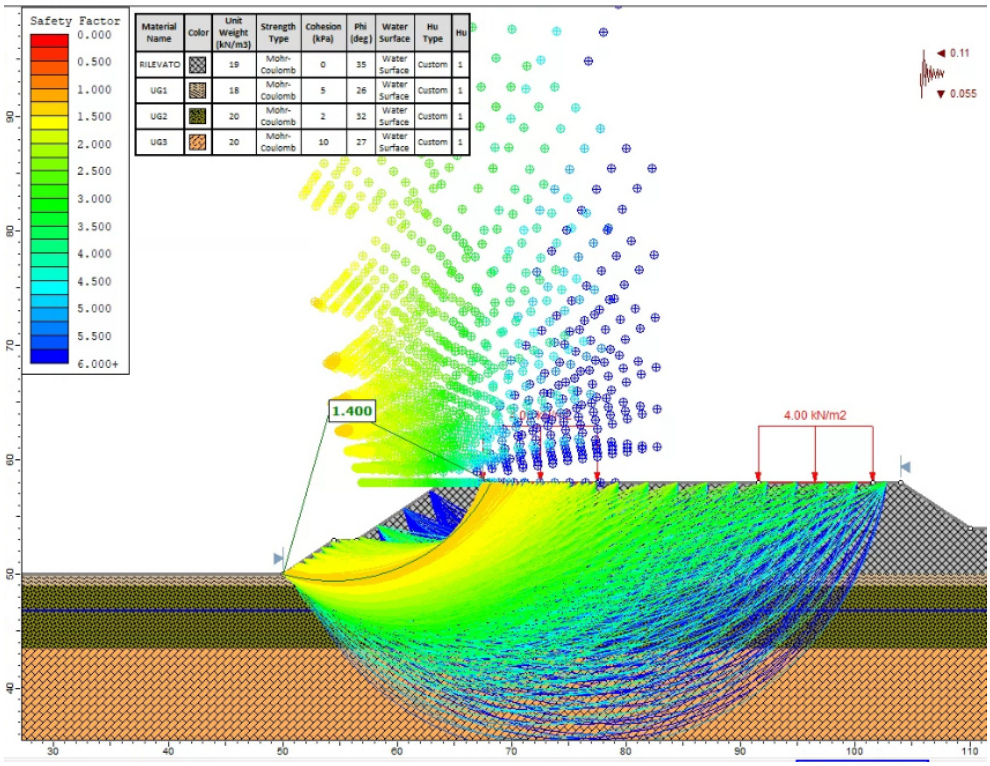


Figura 8-4: Verifica di stabilità locale in condizioni sismiche (FS=1.40)

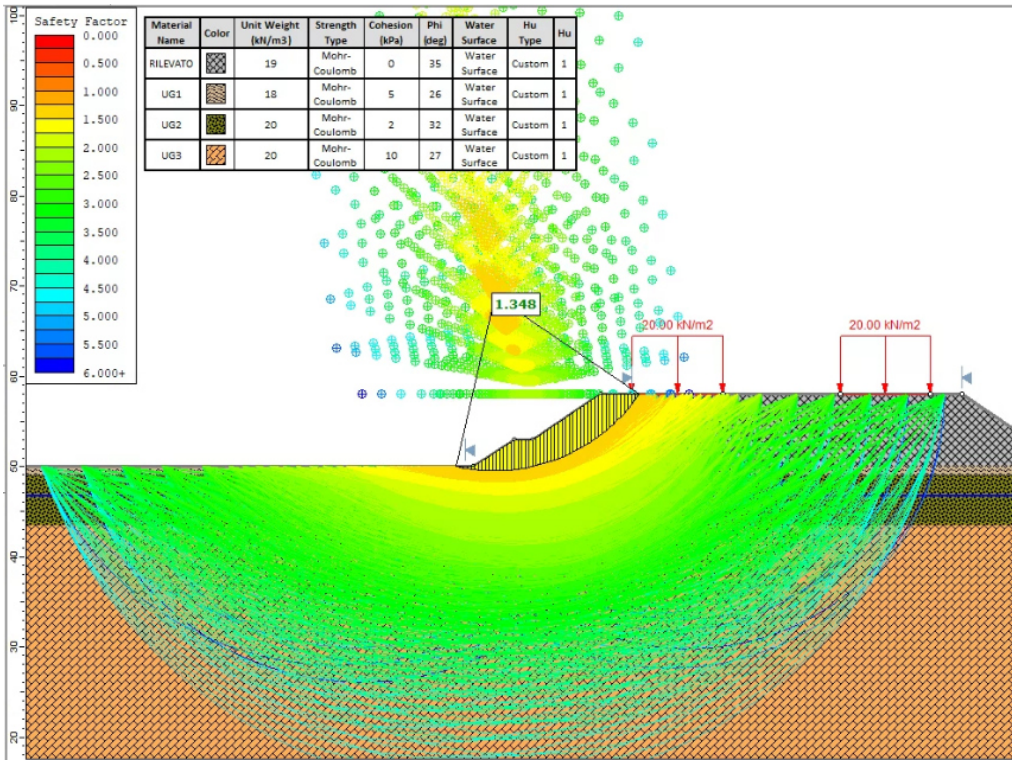


Figura 8-5: Verifica di stabilità globale in condizioni statiche (FS=1.35).

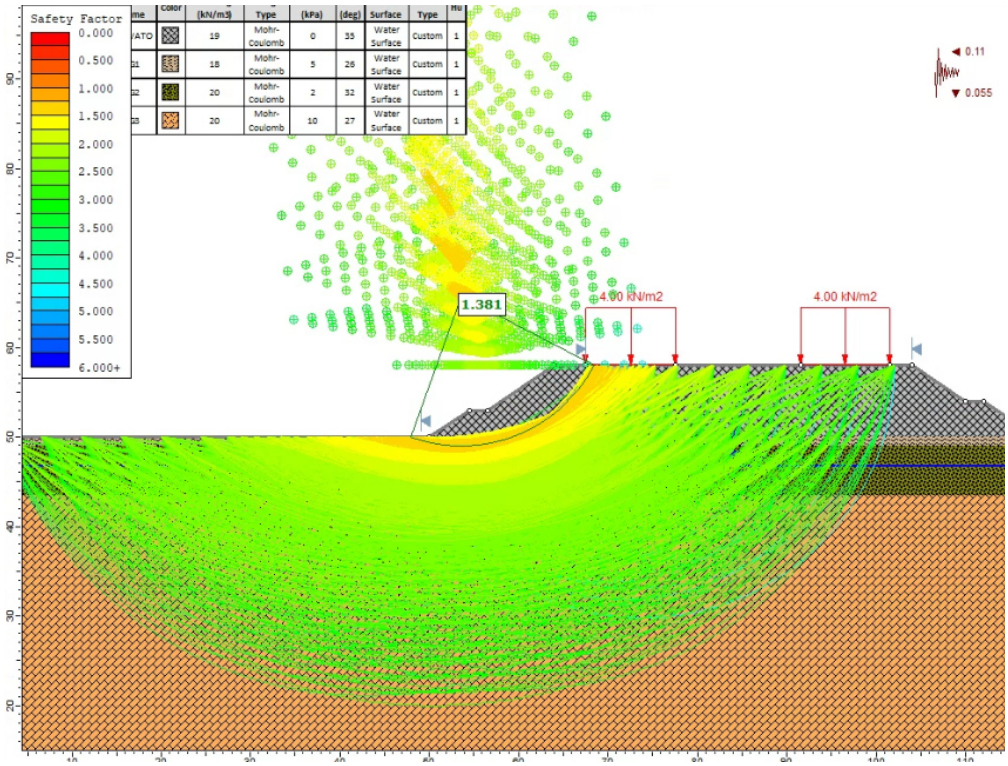


Figura 8-6: Verifica di stabilità globalein condizioni sismiche (FS=1.38)

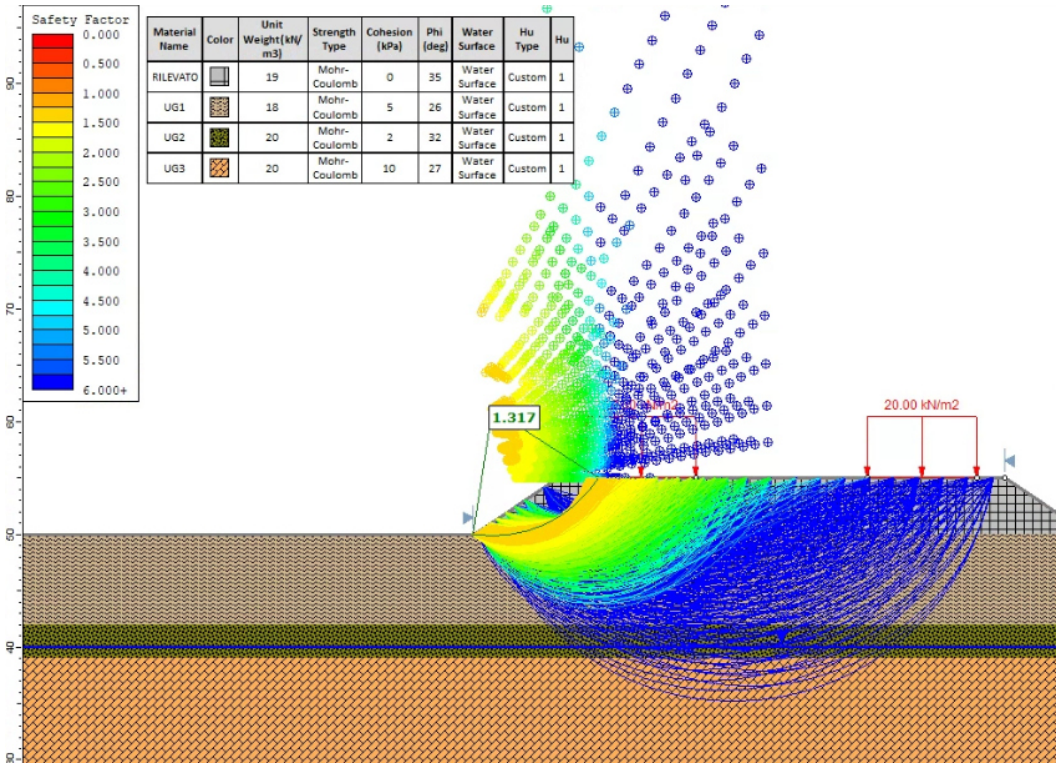
Sezione pk 4+020

Tale sezione è caratterizzata dalla più sfavorevole condizione sismica.
Gli strati di terreno sono stati caratterizzati con i parametri medi di resistenza. La sezione ricade all'interno della zona sismica 3, perciò le analisi sono state condotte con i seguenti valori:

$K_h=0.14$

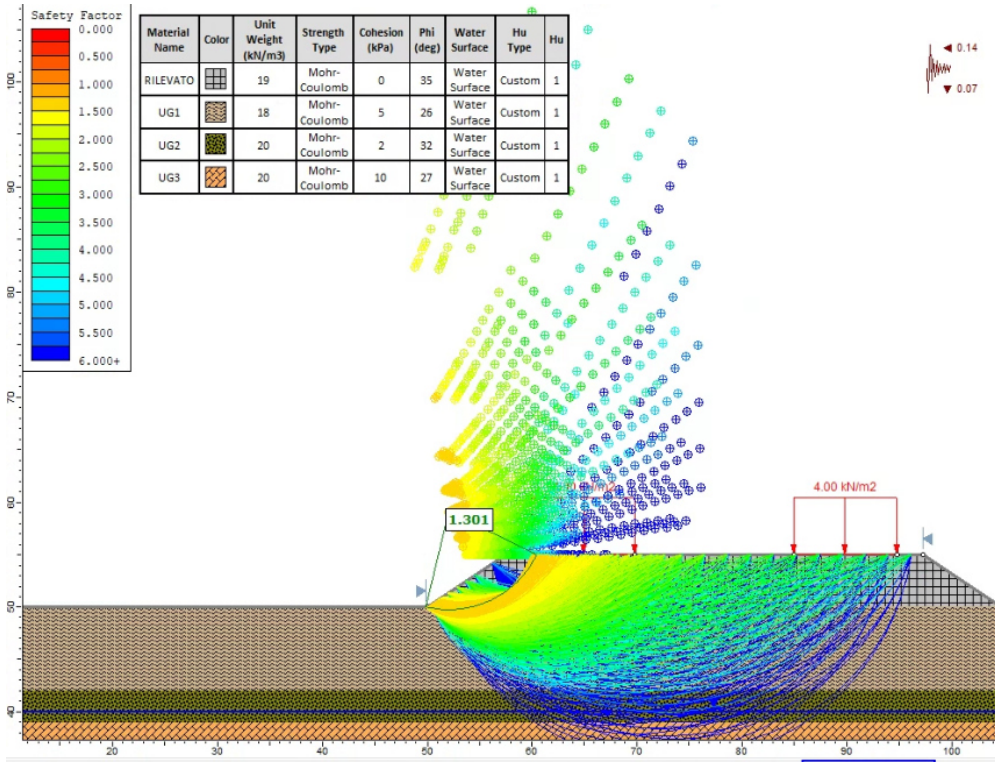
$K_v=0.07$

Le analisi risultano soddisfatte sia in condizioni statiche (FS > 1.1) che in condizioni sismiche (FS>1.20).



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
RILEVATO		19	Mohr-Coulomb	0	35	Water Surface	Custom	1
UG1		18	Mohr-Coulomb	5	26	Water Surface	Custom	1
UG2		20	Mohr-Coulomb	2	32	Water Surface	Custom	1
UG3		20	Mohr-Coulomb	10	27	Water Surface	Custom	1

Figura 8-7: Verifica di stabilità locale in condizioni statiche (FS=1.32).



Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Hu Type	Hu
RILEVATO		19	Mohr-Coulomb	0	35	Water Surface	Custom	1
UG1		18	Mohr-Coulomb	5	26	Water Surface	Custom	1
UG2		20	Mohr-Coulomb	2	32	Water Surface	Custom	1
UG3		20	Mohr-Coulomb	10	27	Water Surface	Custom	1

Figura 8-8: Verifica di stabilità locale in condizioni sismiche (FS=1.3)

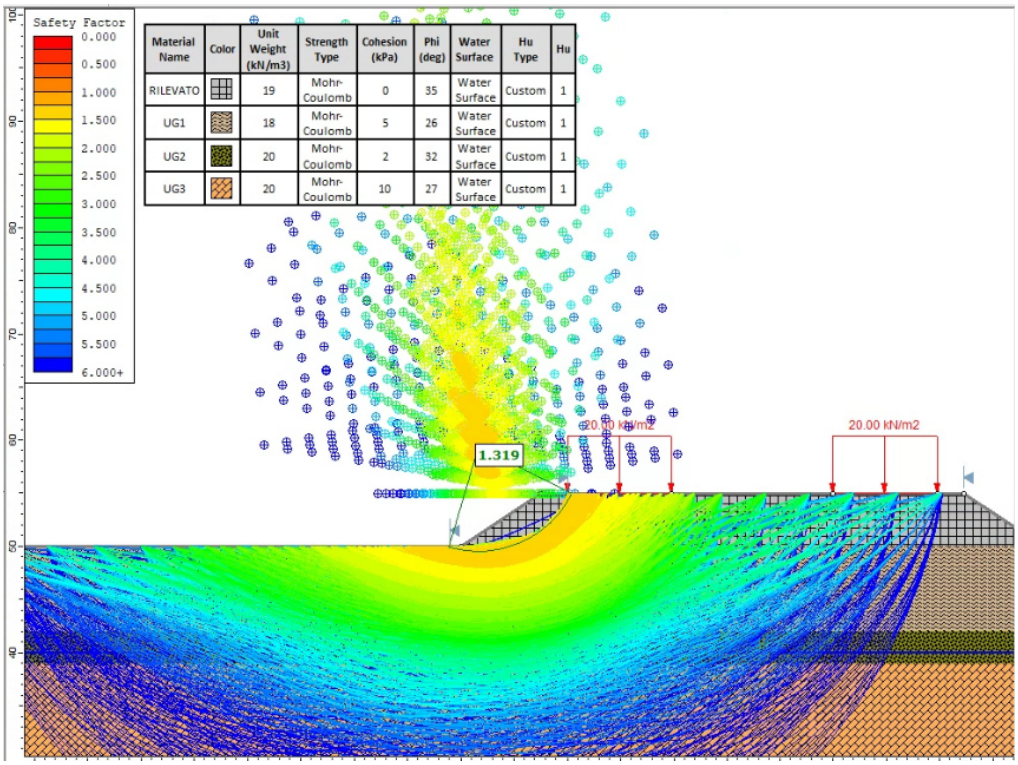


Figura 8-9: Verifica di stabilità globale in condizioni statiche (FS=1.32).

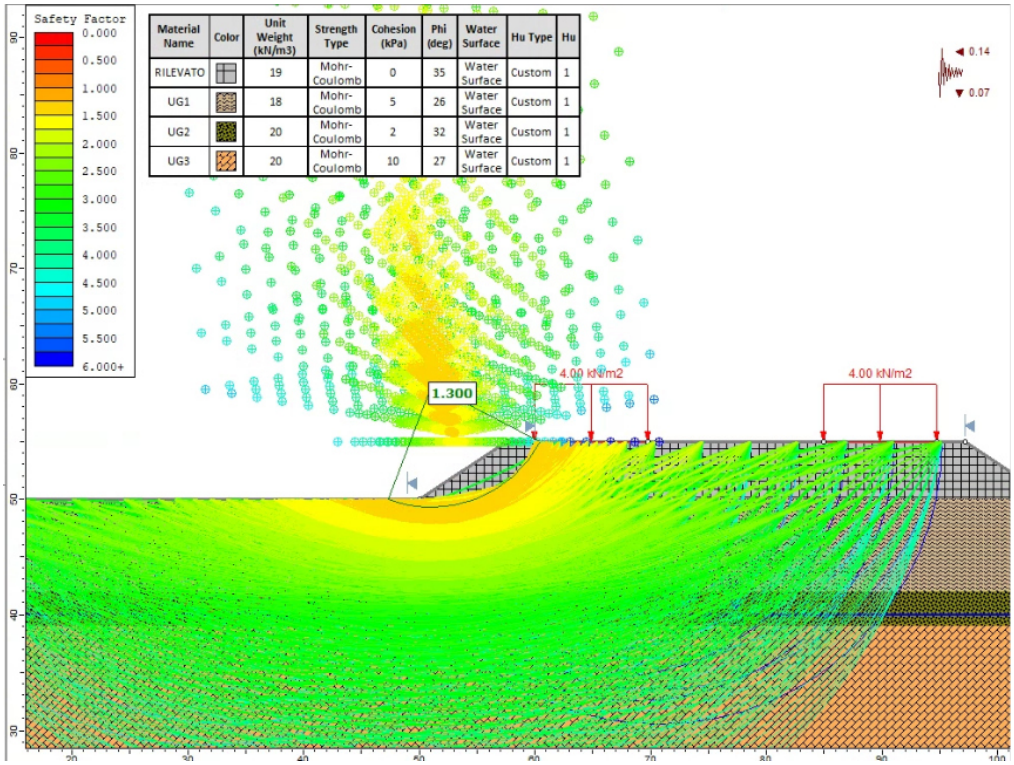


Figura 8-10: Verifica di stabilità globalein condizioni sismiche (FS=1.30)

8.2. TRINCEE

Le trincee vengono realizzate con degli scavi con scarpate di pendenza 3(H)x2(V). Data la massima altezza presente lungo il tracciato, non è prevista una banca di interruzione della scarpata.
La verifica è stata svolta per la sezione maggiormente significative in termini di altezza: il tratto in rilevato si sviluppa interamente nella medesima situazione stratigrafica (si trascurano i tratti del tracciato che precedono la pk 1+820).

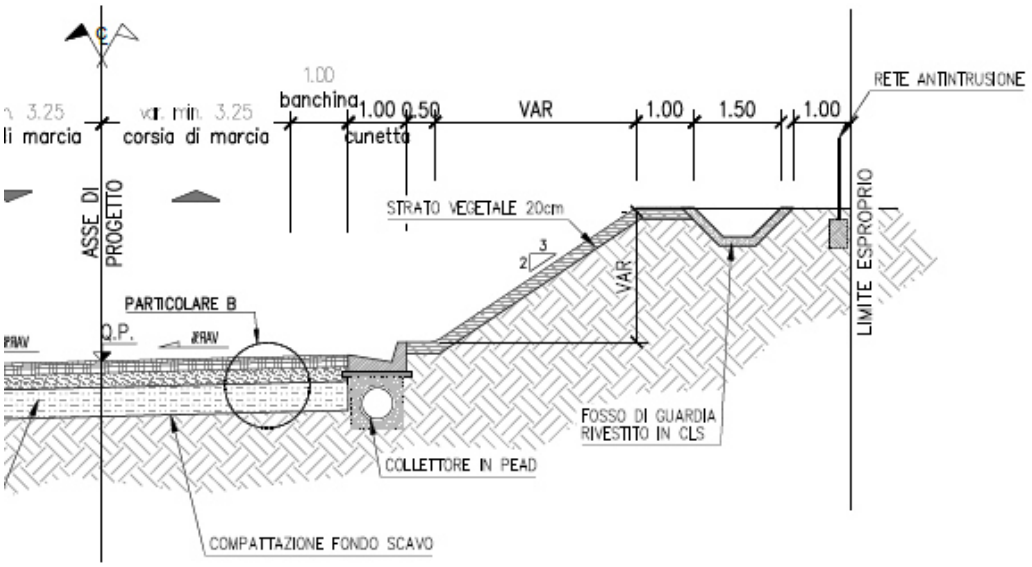


Figura 8-11: Sezione tipologica trincea

8.2.1. VERIFICA DI STABILITÀ DELLA TRINCEA

Le verifiche di sicurezza sono state eseguite in accordo con quanto indicato nei paragrafi 6.8, 7.11.3 e 7.11.4 del DM 17/01/2018. Le verifiche di sicurezza devono essere effettuate secondo l'Approccio 1, Combinazione 2 (A2+M2+R2). Le analisi numeriche, quindi, sono state condotte applicando i coefficienti A2 + M2 per la valutazione rispettivamente delle azioni di progetto e delle resistenze di progetto e il valore di γ_r, pari a 1,1 in condizioni statiche, sarà inteso come il valore del coefficiente di sicurezza di riferimento.

Sono state eseguite analisi di stabilità sia in condizioni statiche sia in condizioni sismiche, in accordo con quanto esposto nel Paragrafo 8.1.3 in riferimento ai rilevati. Le verifiche di stabilità si considerano soddisfatte con *FS > 1,1* in condizioni statiche, e con *FS > 1.2* in condizioni sismiche.
Per quanto riguarda le azioni accidentali dovute al carico stradale, si trascurano cautelativamente.

Sezione 4+500

Tale sezione è caratterizzata dalla massima altezza dell'opera.
Gli strati di terreno sono stati caratterizzati con i parametri medi di resistenza. La sezione ricade all'interno della zona sismica 3, perciò le analisi sono state condotte con i seguenti valori:

$$K_h=0.14$$
$$K_v=0.07$$

Le analisi risultano soddisfatte sia in condizioni statiche (FS > 1.1) che in condizioni sismiche (FS>1.20).

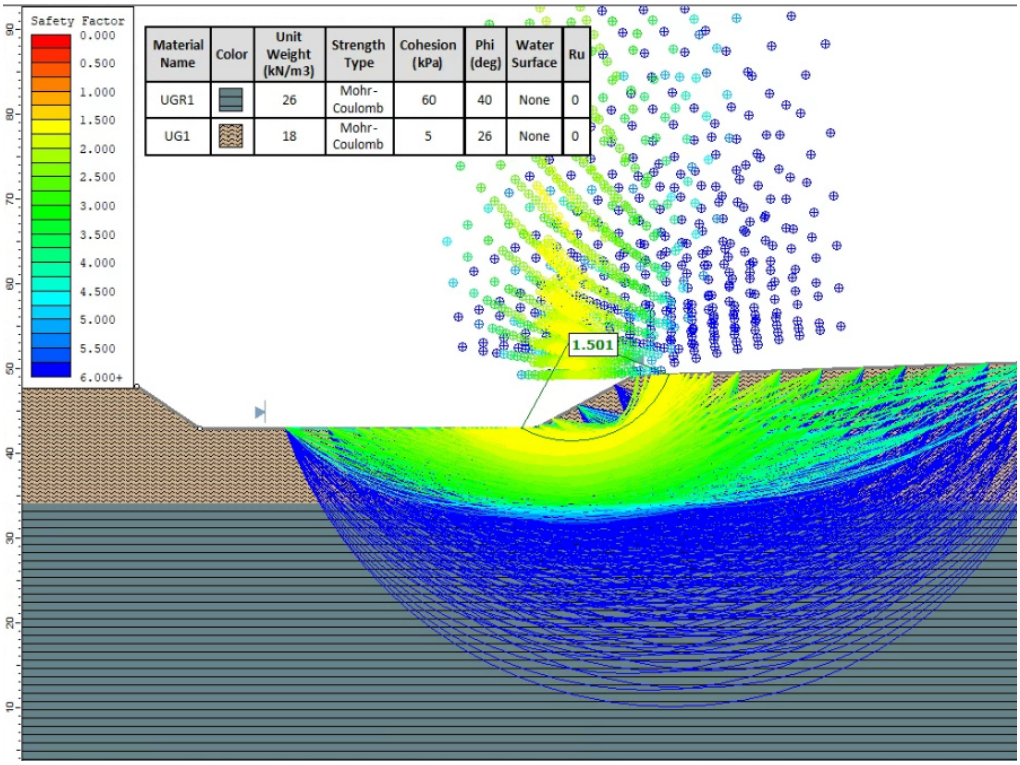


Figura 8-12 Verifica di stabilità in condizioni statiche (FS=1.50).

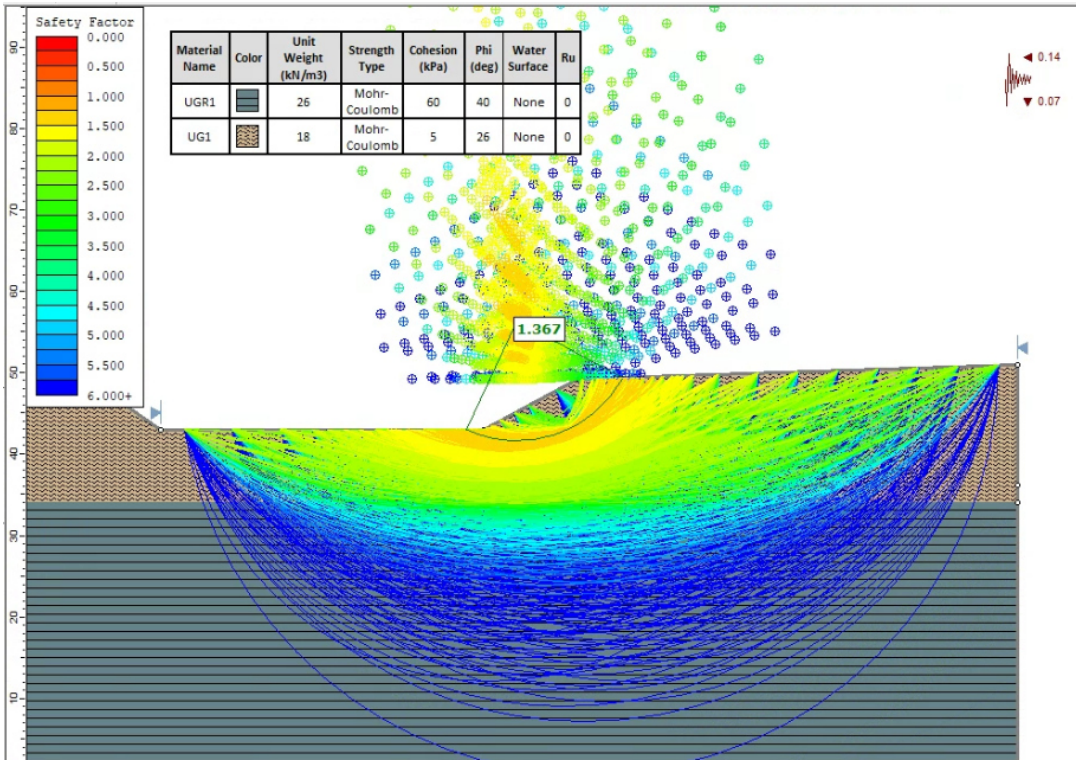


Figura 8-13 Verifica di stabilità condizioni sismiche (FS=1.37).

8.3. GALLERIA ARTIFICIALE – IMBOCCO NORD

Come illustrato nella Relazione geologica, in corrispondenza dell'area in cui verrà realizzato l'imbocco, sono presenti fossi erosivi in approfondimento che terminano in conoidi di deiezione o coni di detrito, di dimensioni e spessori variabili. Nel caso in oggetto i detriti presentano uno spessore di circa 2.00 – 2.50 m. Per la realizzazione della galleria artificiale all'imbocco nord della galleria, saranno realizzati scavi provvisionali con pendenza 3(V)/2(H). Di seguito si riporta l'analisi di stabilità dello scavo provvisionale in corrispondenza della sezione pk 6+700: a tale progressiva si prevede la realizzazione dello scavo caratterizzato dalla massima profondità. Per la stratigrafia si fa riferimento alla sezione geotecnica GET-05, rappresentativa della pk 6+641.

Le verifiche di sicurezza sono state eseguite in accordo con quanto indicato nei paragrafi 6.8, 7.11.3 e 7.11.4 del DM 17/01/2018. Le verifiche di sicurezza devono essere effettuate secondo quanto riportato per le trincee.

Nelle verifiche è stata cautelativamente trascurata la resistenza della soletta superiore dell'opera. A struttura ultimata è previsto il ritombamento della galleria, pertanto le verifiche sono state eseguite in condizioni statiche e in condizioni sismiche (con TR = 10 anni, per opere provvisionali).

L'analisi risulta soddisfatta, avendo ottenuto FS>1.1 in condizioni statiche e FS > 1.2 in condizioni sismiche.

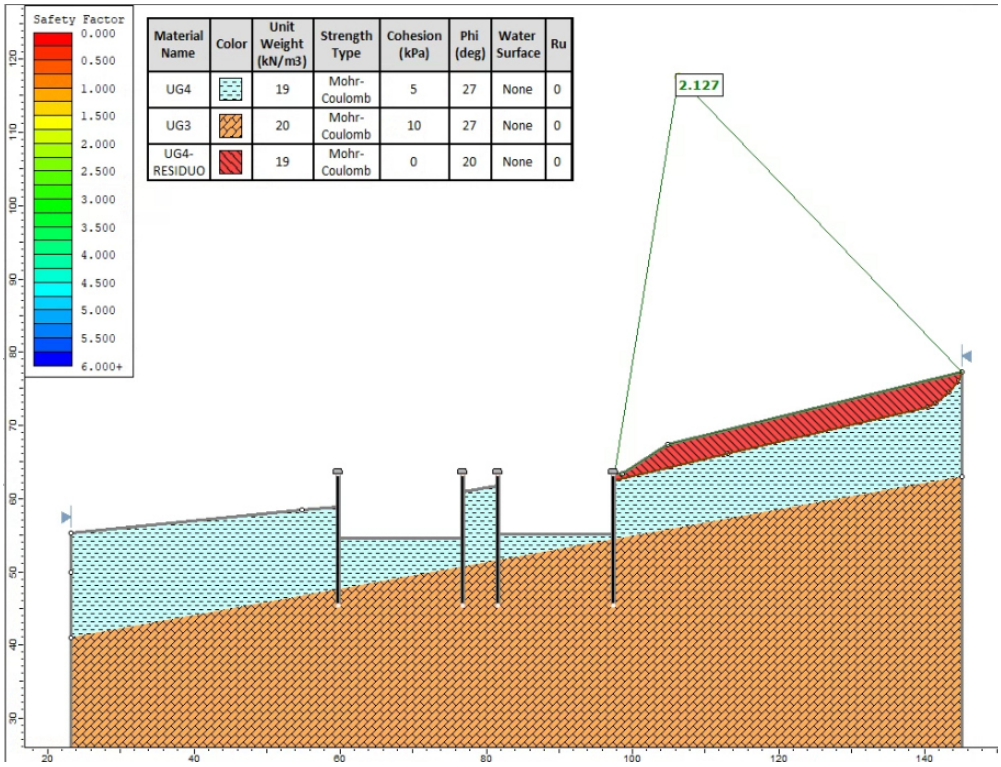


Figura 8-14 Verifica di stabilità in condizioni statiche (FS=2.13)

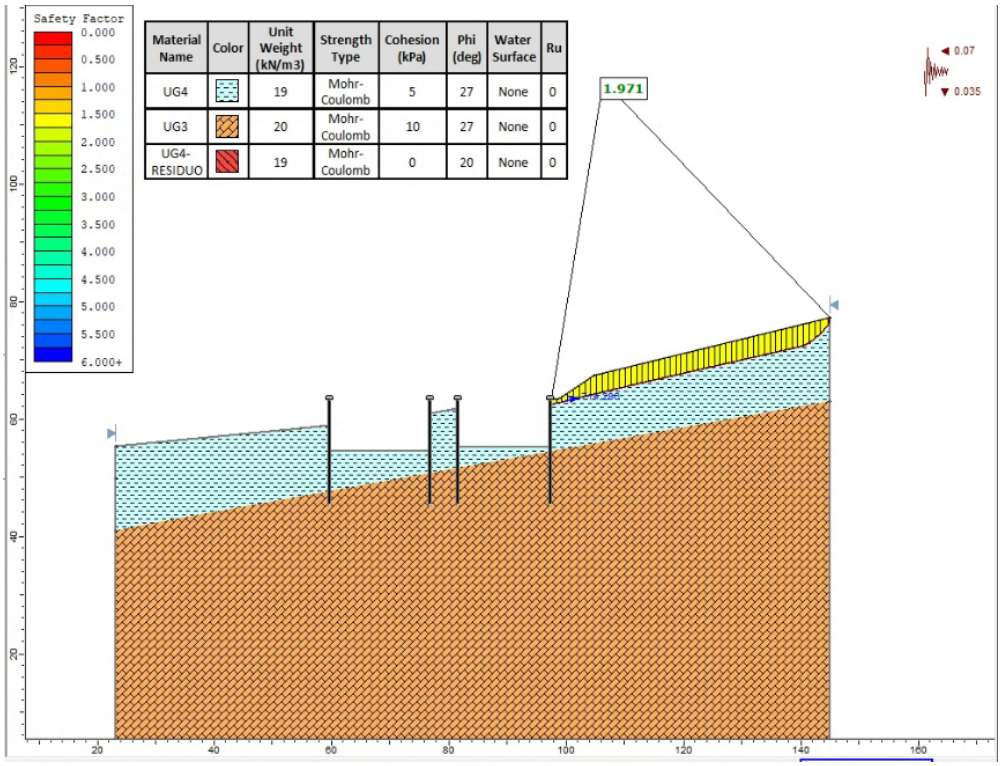


Figura 8-15: Verifica di stabilità in condizioni sismiche (FS=1.97)

9. OPERE D'ARTE

9.1.1. PALI – MODALITÀ ESECUTIVE

Il tracciato di progetto prevede n. 10 viadotti con fondazioni su pali di grande diametro (ø1200).
La tipologia di palo è stata definita con riferimento al modello geologico-geotecnico. I pali di grande diametro sono pali trivellati realizzati mediante asportazione di terreno.
Le modalità esecutive sono definite nel Capitolato Norme Tecniche per l'esecuzione del contratto.

9.1.2. VIADOTTI

Lungo il tracciato sono presenti n. 10 viadotti come riportato nella seguente tabella:

Tabella 9-1: Viadotti di progetto

	da prog.	a prog.	L (m)	n. campate
Viadotto Madonna del piano	393.80	611.20	217.4	7
Viadotto Tevere dx	3+280	3+940	660	10
Viadotto Tevere sx	3+282.30	3+942.30	660	10
Viadotto Collestrada dx	6+889.87	7+213.57	323.70	11
Viadotto Collestrada sx	6+864.12	7+204.52	340.40	11
Rampa bidirezionale	Svincolo Collestrada		161.20	5
Uscita SS75 Ovest			100	5
Rampa A Imm. SS75 Ovest			60	3
Cappio Ovest			99.45	5
Rampa Uscita Sud-Ovest			325	10

Le fondazioni dei viadotti sono di tipo profondo, realizzate su pali di grande diametro (ø1200).

9.1.3. GALLERIE

La galleria è formata da 2 fornici per una lunghezza complessiva di circa 2,2 km con tratti in artificiale vicino agli imbocchi e tratti in naturale di lunghezza 1,6 km circa. In alcuni tratti delle gallerie naturali sono previsti degli interventi di consolidamento dall'alto mediante l'esecuzione di pali plastici e una protesi a causa delle basse coperture che si intercettano lungo il tracciato.
La parte di galleria naturale si sviluppa complessivamente per una lunghezza pari a 1575m per la canna nord e 1650m per la canna sud. La pendenza longitudinale della galleria è variabile da 0.1% fino a 2.8%. La copertura massima della galleria è pari a circa 100 m.

10. ALLEGATI

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S01	RC1	4	4,56	**4,28**	Ghiaia sabbiosa debomente limosa	**UG2**					16,5							78,0	14,0	6,0	2,0																
S01	FC1	7,5	8	**7,75**	Argilla con limo	**UG3**	24,2				20,0		67,0	55,0	12,0	3,7	0,2	0,0	1,0	35,0	64,0									150,0	170,0							
S01	SPT2	8	8,45	**8,23**	Limo e argilla sabbioso	**UG3**					20,0							0,0	18,0	44,0	37,0																
S01	FC2	12	12,5	**12,25**	Argilla con limo	**UG3**	21,7				20,0		63,0	45,0	18,0	2,3	0,3	0,0	5,0	38,0	57,0					25,0	20,0										
S01	SPT3	13	13,45	**13,23**	Limo e rgilla	**UG3**					21,0							0,0	2,0	53,0	45,0																
S02	CR1	4	4,5	**4,25**	Ghiaia sabbiosa	**UG2**					21,5							82,0	11,0	4,0	3,0																
S02	SP2	9,6	10	**9,80**	Sabbia limo-argillosa	**UG3**					21,5							5,0	60,0	22,0	13,0																
S02	C1	11,4	11,9	**11,65**	Limo con argilla sabbioso	**UG3**	20,7	105	0,5	0,3	21,0	26,5	44,0	35,0	9,0	2,5	0,3	0,0	11,0	56,0	33,0					25,0	15,0										
S02	SPT3	15	15,45	**15,23**	Argilla con limo	**UG3**												0,0	1,0	42,0	57,0																
S02	C2	16	16,4	**16,20**	Argilla con limo	**UG3**	22,0	99	0,6	0,4	20,0	26,0	58,0	39,0	19,0	1,9	0,3	0,0	0,0	43,0	57,0	6,1	196-392													
S02	C3	20	20,4	**20,20**	Argilla con limo	**UG3**	21,0	101	0,6	0,4	20,5	26,5	56,0	35,0	22,0	1,6	0,3	0,0	0,0	32,0	68,0					20,0	15,0										
S02	SPT4	23	23,45	**23,23**	Argilla con limo	**UG3**					21,0							0,0	1,0	29,0	70,0																
S02	C3	24,6	25	**24,80**	Argilla limosa	**UG3**	24,0	100	0,6	0,4	20,0	26,5	44,0	29,0	15,0	1,4	0,2	0,0	0,0	23,0	77,0															
S02	SPT3	27	27,45	**27,23**	Argilla con limo	**UG3**												0,0	1,0	41,0	58,0																
S02	C4	29	29,45	**29,23**	Argilla con limo	**UG3**	21,4	102	0,6	0,4	20,0	26,0	56,0	40,0	16,0	2,2	0,3	0,0	0,0	43,0	57,0															
S03	RC1	3	3,5	**3,25**	Ghiaia sabbiosa limosa	**UG2**					16,0							61,0	24,0	13,0	2,0																
S03	SPT2	7,8	8,25	**8,03**	Limo con argilla	**UG3**					20,0							0,0	1,0	58,0	42,0																
S03	FC1	7	7,4	**7,20**	Limo con argilla	**UG3**	21,8				20,5							0,0	2,0	62,0	36,0	12,4	196-392														
S03	FC2	12	12,4	**12,20**	Argilla con limo debolmente sabbiosa	**UG3**	24,8				20,5		71,0	53,0	18,0	2,5	0,3	0,0	6,0	34,0	60,0					22,0	5,0										
S03	SPT3	14	14,45	**14,23**	Argilla con limo	**UG3**												0,0	1,0	27,0	72,0																

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa		kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S03	C1	21,5	22	**21,75**	Argilla con limo	**UG3**	22,9				20,5		64,0	43,0	21,0	2,0	0,3	0,0	2,0	31,0	67,0													29,0	12,0	17,0	10,0	
S03	SPT4	23	23,45	**23,23**	Argilla con limo	**UG3**					19,5							0,0	1,0	26,0	73,0																	
S03	C2	31,5	32	**31,75**	Limo con sabbia debolmente sabbioso	**UG3**	24,1				19,5		64,0	45,0	19,0	2,1	0,5	0,0	6,0	55,0	39,0										450,0	380,0							
S03	SPT5	33	33,45	**33,23**	Argilla con limo	**UG3**					19,5							0,0	5,0	43,0	52,0																	
S04	CR1	3	3,5	**3,25**	Ghiaia sabbiosa debolmente limo-argillosa	**UG2**					24,5	26,5						62,0	23,0	8,0	7,0																	
S04	SPT2	9	9,4	**9,20**	Argilla con sabbia	**UG3**					21,0																											
S04	C1	11	11,4	**11,20**	Limo con argilla debolmente sabbioso	**UG3**	23,5	105	0,6	0,4	20,0	26,0	63,0	41,0	22,0	1,8	0,5	0,0	9,0	50,0	41,0					25,0	3,0											
S04	SPT3	15	15,45	**15,23**	Limo sabbioso argilloso	**UG3**					21,0							0,0	24,0	52,0	24,0																	
S04	C2	17	17,4	**17,20**	Sabbia con limo debolmente argillosa	**UG3**	19,5	111	0,5	0,3	21,5	26,0						0,0	51,0	42,0	7,0													28,0	10,0			
S04	SPT2-4?	22,5	22,95	**22,73**	Sabbia limo-argillosa	**UG3**												3,0	66,0	19,0	12,0																	
S04	SPT5	29	29,45	**29,23**	Argilla con limo	**UG3**					20,5							0,0	1,0	31,0	68,0																	
S04	C4	34	34,4	**34,20**	Argilla limosa	**UG3**	23,2	103	0,6	0,4	20,5	26,5	50,0	30,0	20,0	1,3	0,2	0,0	0,0	18,0	82,0					20,0	10,0											
S06	C1	4	4,55	**4,28**	Sabbia limosa	**UG2**	12,1	77	0,4	0,3	15,5	26,0						0,0	84,0	13,0	3,0					32,0	0,0											
S06	RC1	9,7	10	**9,85**	Sabbia limosa argillosa	**UG3**																															
S06	C2	13,5	14	**13,75**	Sabbia limosa debolmente argillosa	**UG3**	17,7	100	0,5	0,3	16,0	25,5						0,0	66,0	24,0	10,0																	
S07	C1	4,5	5	**4,75**	Limo argillo-sabbioso	**UG1**	24,7	86	0,7	0,4	19,0	25,5	47,0	30,0	17,0	1,3	0,7	1,0	26,0	47,0	26,0	5,0	98-196															
S07	C2	14	14,5	**14,25**	Limo sabbioso argilloso ghiaioso	**UG3**	18,9	78	0,6	0,4	19,0	26,0	54,0	30,0	24,0	1,5	1,3	11,0	27,0	44,0	18,0					25,0	15,0											

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S07	SPT3	14,55	15	**14,78**	Limo argilloso sabbioso	**UG3**												0,0	19,0	21,0	60,0																
S07	SPT4	25	25,45	**25,23**	Argilla con limo	**UG3**												0,0	1,0	32,0	67,0																
S07	C3	30	30,4	**30,20**	Sabbia con limo argillosa	**UG3**	17,5	95	0,5	0,3	20,5	26,5	43,0	30,0	13,0	2,0	0,7	0,0	53,0	29,0	18,0												28,0	4,0		4,0	
S07	RC1	44	44,6	**44,30**	Argilla limosa	**UG3**							50,0	31,0	19,0	1,7	0,2	0,0	0,0	174,0	83,0																
S08	C1	7	7,55	**7,28**	Sabbia con limo argillosa	**UG2**	24,2	105	0,6	0,4	19,5	26,0	39,0	22,0	17,0	0,9	1,2	2,0	55,0	29,0	14,0																
S08	SPT1	7,55	8	**7,78**	Sabbia con limo e argilla	**UG3**												0,0	41,0	33,0	26,0																
S08	C2	16	16,5	**16,25**	Limo con argilla	**UG3**	23,3	99	0,6	0,4	20,0	26,5	52,0	24,0	28,0	1,0	0,7	0,0	2,0	56,0	42,0										400,0	311,0						
S08	SPT2	16,5	16,95	**16,73**	Argilla con limo	**UG3**												0,0	3,0	29,0	68,0																
S08	C3	25	25,5	**25,25**	Limo-argilla	**UG3**	21,6	90	0,6	0,4	19,0	25,5	54,0	26,0	28,0	1,2	0,5	0,0	0,0	49,0	51,0					22,0	5,0										
S08	SPT3	25,5	25,95	**25,73**	Sabbia con limo argillosa	**UG3**												1,0	44,0	34,0	21,0																
S09	C1	3,7	4,2	**3,95**	Sabbia limosa debolmente argillosa	**UG2**	6,0	41	0,4	0,3	20,0	26,4						0,0	70,0	23,0	7,0					31,0	10,0										
S09	SPT1	4,2	4,65	**4,43**	Sabbia limosa argillosa ghiaiosa	**UG2**												11,0	59,0	18,0	12,0																
S09	SPT2	10,55	11	**10,78**	Sabbia con limo e argilla debolmente ghiaiosa	**UG2**												6,0	35,0	31,0	28,0																
S09	C2	13	13,5	**13,25**	Limo e argilla	**UG3**	18,6	98	0,5	0,3	20,5	26,0	49,0	35,0	14,0	2,2	0,3	0,0	3,0	51,0	45,0	13,0	196-392														
S09	C3	23,6	24	**23,80**	Argilla con limo debolmente sabbiosa	**UG3**	24,8	104	0,6	0,4	20,0	26,0	43,0	22,0	21,0	0,9	0,4	0,0	7,0	36,0	57,0												28,0	4,0		23,0	
S09	SPT3	25,45	25,9	**25,68**	Sabbia limosa ghiaiosa debolmente argillosa	**UG3**												17,0	58,0	19,0	6,0																
S09	C4	34,2	34,6	**34,40**	Sabbia con limo argillosa	**UG3**	13,7											1,0	58,0	28,0	13,0					32,0	25,0										

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S09	SPT4	37,55	38	**37,78**	Limo e sabbia argilloso	**UG3**												0,0	41,0	42,0	17,0																
S09	C5	39,5	40	**39,75**	Sabbia con limo argillosa	**UG3**	16,5	102	0,4	0,3	21,0	25,6	44,0	22,0	22,0	1,3	1,3	0,0	49,0	34,0	17,0									400,0	393,7							
S09	C6	48	48,5	**48,25**	Sabbia limo-argillosa	**UG3**	23,4	78	0,8	0,4	18,0	26,0						4,0	64,0	19,0	13,0																
S10	C1	8	8,55	**8,28**	Sabbia limo-argillosa debolmente ghiaiosa	**UG3**	24,3	74	0,9	0,5	19,5	26,0	42,0	23,0	19,0	1,0	0,8	9,0	45,0	23,0	23,0					28,0	15,0											
S10	SPT1	8,55	9	**8,78**	Sabbia con limo argillosa	**UG3**												0,0	57,0	31,0	12,0																
S10	C2	18	18,55	**18,28**	Limo con sabbia argilloso	**UG3**	18,6	89	0,6	0,4	20,0	26,0	48,0	21,0	27,0	1,1	1,7	2,0	27,0	55,0	16,0																
S10	C3	28,2	28,6	**28,40**	Argilla con limo sabbiosa	**UG3**	26,8	103	0,7	0,4	19,5	26,5	46,0	23,0	23,0	0,8	0,5	0,0	15,0	38,0	47,0																
S10	C4	36	36,5	**36,25**	Sabbia limosa debolmente argillosa	**UG3**	15,9	100	0,4	0,3	22,0	27,0						0,0	66,0	24,0	10,0					35,0	15,0										
S10	SPT4	36,5	36,95	**36,73**	Sabbia limosa argillosa	**UG3**												0,0	65,0	22,0	13,0																
S10	SPT5	43,2	43,65	**43,43**	Argilla limosa debolmente sabbiosa	**UGR1**												0,0	6,0	21,0	73,0																
S10	C5	41	41,3	**41,15**	Limo sabbioso ghiaioso argilloso	**UGR1**	9,5	89	0,3	0,2	22,0	26,0	63,0	33,0	30,0	1,8	1,4	23,0	23,0	32,0	22,0																
S11	C1	4	4,5	**4,25**	Limo-argilla sabbioso	**UG1**	20,1	94	0,6	0,4	19,5	25,5	57,0	31,0	26,0	1,4	0,6	0,0	12,0	43,0	45,0																
S11	SPT2	10	10,45	**10,23**	Limo-argilla sabbioso	**UG1**												3,0	17,0	41,0	39,0																
S11	C2	17,7	18	**17,85**		**UGR1**																															33,8
S11	C3	28	28,5	**28,25**		**UGR1**																															42,6
S11	C4	34	34,5	**34,25**		**UGR1**																															47,4
S12	LC1	23,25	23,6	**23,43**		**UGR1**																															4,3
S12	LC1	32,1	32,4	**32,25**		**UGR1**																															10,6

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S12	LC3	40	40,5	**40,25**		**UGR1**																															22,4
S13	C1	80	80,4	**80,20**		**UGR-ALT**																															38,9
S13	C2	91,7	92	**91,85**	Limo argilloso sabbioso	**UGR-ALT**	11,7	71	0,4	0,3	20,5	26,0	48,0	23,0	25,0	1,4	1,1	0,0	12,0	66,0	22,0												27,0	5,0	17,0	10,0	
S13	C3	96	96,4	**96,20**		**UGR-ALT**																															11,0
S13	C4	104	104,4	**#####**		**UGR-ALT**																															8,9
S15	FC1	3,4	3,8	**3,60**	Limo argilloso debolmente sabbioso	**UG4**	21,7	93	0,6	0,4	19,5	26,0	31,0	21,0	10,0	0,9	0,5	0,0	8,0	73,0	19,0					27,0	5,0										
S15	FC2	8	8,5	**8,25**	Sabbia e limo debolmente argillosa	**UG4**	22,8	100	0,6	0,4	20,0	26,0	32,0	18,0	14,0	0,7	1,6	0,0	49,0	42,0	9,0	10,5	98-196														
S15	FC3	13,5	14	**13,75**	Argilla con limo	**UG3**	22,6	109	0,5	0,4		25,5	47,0	30,0	17,0	1,5	0,3	0,0	1,0	31,0	68,0										200,0	150,0						
S15bis	C1	14	14,5	**14,25**	Argilla con limo debolmente sabbiosa	**UG3**	24,5	98	0,7	0,4	19,5	26,0	49,0	32,0	17,0	1,4	0,2	0,0	7,0	18,0	75,0										200,0	122,8						
S15bis	C2	21,00	21,50	**21,25**	Limo con argilla debolmente sabbioso	**UG3**	23,8	90	0,7	0,4	19,0	26,0	52,0	31,0	21,0	1,4	0,5	0,0	10,0	50,0	40,0	10,0	392-784														
S15bis	SPT2	21,55	22,00	**21,78**	Argilla con limo sabbiosa	**UG3**												0,0	20,0	36,0	44,0															
S15bis	C3	27,00	27,50	**27,25**	Limo con argilla	**UG3**	21,0	103	0,6	0,4	20,5	26,0	47,0	29,0	18,0	1,5	0,5	0,0	2,0	59,0	39,0					27,0	5,0										
S15bis	SPT3	27,50	27,95	**27,73**	Limo argilloso sabbioso	**UG3**												0,0	21,0	62,0	17,0															
S16	C1	3,00	3,40	**3,20**	Limo con argilla sabbioso	**UG4**	21,8	99	0,6	0,4	20,0	26,0	37,0	23,0	14,0	1,1	0,5	0,0	13,0	60,0	27,0										200,0	178,0						
S16	SPT1	3,40	3,85	**3,63**	Limo-argilla	**UG4**												0,0	4,0	49,0	47,0															
S16	C2	12,00	12,40	**12,20**	Limo con sabbia argilloso	**UG3**	20,6	105	0,5	0,3	20,5	26,0	26,0	21,0	5,0	1,1	0,3	4,0	27,0	49,0	20,0					27,0	20,0										
S16	C3	21,60	22,00	**21,80**	Argilla con limo	**UG3**	19,0	104	0,5	0,3	21,0	26,0	46,0	25,0	21,0	1,3	0,3	1,0	3,0	34,0	62,0												29,0	12,0	19,0	10,0	
S16	SPT3	22,00	22,45	**22,23**	Argilla con limo debolmente sabbiosa	**UG3**																															

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S16	SPT4	28,40	28,85	**28,63**	Limo argilloso debolmente sabbioso	**UG3**																															
S16	C4	28,00	28,40	**28,20**	Limo con argilla debolmente sabbioso	**UG3**	22,3	90	0,7	0,4	20,0	26,0	35,0	19,0	16,0	0,8	0,4	0,0	6,0	57,0	37,0									400,0	178,0							
S16	SPT5	32,00	32,45	**32,23**	Limo con argilla debolmente sabbioso	**UG4**												0,0	9,0	57,0	34,0																
S16	RC1	34,00	34,40	**34,20**	Limo argillo-sabbioso	**UG3**					23,0		23,0	21,0	2,0	0,8	0,1	0,0	17,0	66,0	17,0					29,0	10,0										
S17	C1	3,00	3,40	**3,20**	Limo con argilla debolmente sabbioso	**UG4**	21,6	88	0,7	0,4	19,0	26,0	37,0	22,0	15,0	1,0	0,5	4,0	18,0	45,0	33,0					24,0	20,0	22,0	10,0								
S17	SPT1	3,40	3,85	**3,63**	Limo con argilla sabbioso	**UG4**												1,0	20,0	49,0	30,0																
S17	C2	6,60	7,00	**6,80**	Sabbia con limo argillosa	**UG4**	24,2	102	0,6	0,4	20,0	26,5	36,0	25,0	11,0	1,0	0,5	0,0	42,0	36,0	22,0					25,0	5,0	25,0	5,0								
S17	SPT2	7,00	7,45	**7,23**	Limo con sabbia argilloso	**UG4**												0,0	35,0	43,0	22,0																
S17	C3	13,00	13,30	**13,15**	Sabbia limosa	**UG4**	8,5	26	0,9	0,5	15,0	26,0						0,0	86,0	11,0	3,0					32,0	5,0	30,0	5,0								
S17	SPT3	13,30	13,75	**13,53**	Sabbia con limo debolmente argillosa ghiaiosa	**UG4**																															
S17	SPT4	23,00	23,45	**23,23**	Limo con argilla debolmente sabbioso	**UG3**							48,0	29,0	19,0		0,6	0,0	6,0	60,0	34,0																
S17	C4	26,00	26,40	**26,20**	Argilla con limo debolmente sabbiosa	**UG3**	34,8	97	0,9	0,5	18,0	25,5	62,0	38,0	24,0	1,2	0,4	0,0	9,0	29,0	62,0									400,0	84,0							
S17	SPT5	32,00	32,45	**32,23**	Limo con argilla	**UG3**												0,0	4,0	60,0	36,0																
S17	C5	34,60	35,00	**34,80**	Argilla con limo	**UG3**	20,8	100	0,6	0,4	20,5	26,5	48,0	26,0	22,0	1,2	0,4	0,0	1,0	41,0	58,0													29,0	12,0	15,0	10,0	
S17bis	SPT1	4,50	4,95	**4,73**	Limo con argilla	**UG4**							56,0	31,0	25,0		0,6	0,0	2,0	58,0	40,0																
S17bis	SPT2	9,00	9,45	**9,23**	Limo-argilla	**UG4**							48,0	26,0	22,0		0,5	0,0	3,0	50,0	47,0																

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S17bis	SPT3	14,50	14,95	**14,73**	Limo con argilla debolmente sabbioso grigio	**UG3**							46,0	22,0	24,0		0,7	0,0	7,0	57,0	36,0																	
S17bis	SPT4	22,00	22,45	**22,23**	Limo con argilla	**UG3**							36,0	25,0	11,0		0,3	0,0	4,0	53,0	43,0																	
S18	SPT1	4,00	4,50	**4,25**	Sabbia limosa debolmente argillosa	**UG4**																															
S18	FC1	7,50	8,00	**7,75**	Sabbia debolmente limosa	**UG4**	22,1	98	0,6	0,4	19,5	25,5						0,0	90,0	8,0	2,0	12,1	98-192														
S18	SPT2	10,00	10,45	**10,23**	Limo con argilla debolmente sabbioso	**UG3**		90	0,6	0,4		26,0						0,0	10,0	63,0	27,0																
S18	FC2	14,00	14,50	**14,25**	Limo-argilla	**UG3**	22,0	101	0,6	0,4	20,5	26,5	47,0	25,0	22,0	1,2	0,5	0,0	2,0	52,0	46,0										400,0	227,0						
S18	FC3	19,00	19,50	**19,25**	Sabbia limosa	**UG3**	21,0	100	0,6	0,4	20,5	26,0						0,0	83,0	14,0	3,0																
S18	SPT4	21,55	22,00	**21,78**	Argilla con limo	**UG3**												0,0	4,0	40,0	56,0																
S18	RC1	24,50	25,00	**24,75**	Argilla con limo	**UG3**		102	0,6	0,4		26,5	48,0	27,0	21,0	1,3	0,4	0,0	1,0	44,0	55,0					18,0	15,0										
S19	C1	4,00	4,50	**4,25**	Limo con argilla sabbioso	**UG4**	26,2	99	0,7	0,4	19,5	26,0	57,0	26,0	31,0	1,0	0,9	1,0	19,0	44,0	36,0	5,3	49-98							200,0	111,0						
S19	CR3	9,00	9,30	**9,15**	Limo-argilla	**UG4**												0,0	5,0	50,0	45,0																
S19	SPT2	10,00	10,45	**10,23**	Limo con argilla debolmente sabbioso	**UG4**												0,0	9,0	53,0	38,0																
S19	C2	16,20	16,70	**16,45**	Argilla con limo sabbiosa	**UG4**	21,6	101	0,6	0,4	20,5	26,5	47,0	27,0	20,0	1,3	0,4	0,0	14,0	38,0	48,0					27,0	5,0										
S19	C3	22,00	22,50	**22,25**	Limo-argilla sabbioso	**UG3**	15,6	91	0,4	0,3	20,5	25,5	35,0	21,0	14,0	1,4	0,3	0,0	11,0	47,0	42,0				281,0												
S19	SPT4	24,00	24,45	**24,23**	Limo con argilla	**UG3**												0,0	1,0	54,0	45,0																
S19	SPT5	29,00	29,45	**29,23**	Limo con argilla sabbioso	**UG3**												0,0	11,0	56,0	33,0																
S19	FC4	34,00	34,50	**34,25**	Limo con argilla	**UG3**	17,2	96	0,5	0,3	20,5	26,0	44,0	26,0	18,0	1,5	0,5	1,0	4,0	58,0	37,0												29,0	12,0	24,0	10,0	
S20	FC1	3,60	4,00	**3,80**	Limo con argilla sabbioso	**UG4**		93	0,5	0,3		25,5	44,0	20,0	24,0	1,1	0,7	1,0	13,0	51,0	35,0										200,0	230,0						

Sondaggio	Campione	da m	a m	Quota di prelievo (da m a m)	Classificazione AGI	UG	Contenuto in acqua	Grado di saturazione	Indice dei vuoti	Porosità	Peso di volume	Peso specifico parte solida	Limiti di Atterberg			Indici		Composizione granulometrica				Compressione edometrica		Prova di compressione monoassiale ELL		Prova di taglio diretto TD		Prova di taglio diretto residuo Tdres		Prova di compressione triassiale TX-UU		Prova di compressione TX - CD		Prova di compressione TX - CU				Prova di compressione uniassiale (roccia)
							Wn	Sr	e_0	n	γ_n	γ_s	W_{LL}	Wp	Ip	IC	IA	Ghiaia	Sabbia	Limo	Argilla	E'	intervallo di carico	Prova	σ_f	ϕ'	c'	ϕr	c'_r	σ	c_u	ϕ'	c'	ϕ'	c'		Cu	σ
							%	%		%	kN/m^3	kN/m^3	%	%	%	%		%	%	%	%	MPa	kPa		MPa		kPa	ϕr	kPa	kN/m^2	kPa		MPa		kPa		kPa	MPa
S20	SPT1	6,00	6,45	**6,23**	Limo con sabbia argilloso	**UG4**		92	0,6	0,4		25,5						0,0	26,0	52,0	22,0																
S20	FC2	13,50	14,00	**13,75**	Argilla con limo sabbioso	**UG4**	25,3	106	0,7	0,4	20,5	26,5	46,0	28,0	18,0	1,1	0,3	1,0	11,0	35,0	53,0												26,0	10,0	14,0	18,0	
S20	SPT3	19,50	19,95	**19,73**	Limo argilloso	**UG3**		91	0,6	0,4		26,0						0,0	2,0	77,0	21,0																
S20	FC3	21,00	21,50	**21,25**	Argilla con limo	**UG3**	24,3	102	0,6	0,4	20,0	26,5	45,0	28,0	17,0	1,2	0,3	0,0	4,0	37,0	59,0										400,0	127,0						
S20	SPT4	24,50	24,95	**24,73**	Argilla con limo	**UG3**												0,0	2,0	39,0	59,0																
S20	FC4	26,50	27,00	**26,75**	Argilla con limo	**UG3**	24,3	102	0,6	0,4	20,0	26,5	47,0	32,0	15,0	1,5	0,3	0,0	1,0	42,0	57,0												23,0	15,0	14,0	20,0	
S20	RC1	34,50	35,00	**34,75**	Limo con sabbia argilloso	**UG3**						26,5	32,0	15,0	17,0	0,6	0,7	0,0	33,0	50,0	23,0					26,0	15,0										
S21	FC1	4,00	4,50	**4,25**	Limo con argilla debolmente sabbioso	**UG4**	25,3	100	0,7	0,4	20,0	26,5	56,0	22,0	34,0	0,9	1,1	2,0	10,0	56,0	32,0	4,1	98-196										27,0	10,0	15,0	15,0	
S21	FC2	12	12,5	**12,25**	Limo-argilla	**UG4**	34,7	108	0,9	0,5	19,0	26,5	46,0	29,0	17,0	0,7	0,3	0,0	1,0	46,0	53,0					25,0	0,0										
S21	SPT3	19,00	19,45	**19,23**	Argilla con limo	**UG4**												0,0	1,0	45,0	54,0																
S21	FC3	21,00	21,50	**21,25**	Limo con argilla debolmente sabbioso	**UG3**	15,8	87	0,5	0,3	20,0	25,0	43,0	27,0	16,0	1,7	0,4	0,0	7,0	53,0	40,0										400,0	251,0						
S21	SPT4	26,50	26,95	**26,73**	Limo-argilla	**UG3**												1,0	3,0	49,0	47,0																
S21	FC4	29,00	29,50	**29,25**	Limo argilloso debolmente sabbioso	**UG3**	20,4	90	0,6	0,4	19,5	26,0	27,0	15,0	12,0	0,5	0,7	1,0	6,0	75,0	18,0										400,0	207,0						
S21	RC1	34,00	35,00	**34,50**	Limo-argilla debolmente sabbioso	**UG3**					20,5							0,0	6,0	50,0	44,0					22,0	10,0										

rocscience

rilevato pk 4+020
SLIDE - An Interactive Slope Stability Program
Date Created: 22/09/2022, 15:11:07
Software Version: 9.02

Table of Contents

Slide Analysis Information

rilevato pk 4+020

Project Summary

File Name:	rilevato pk 4+020.slmd
Slide Modeler Version:	9.02
Project Title:	SLIDE - An Interactive Slope Stability Program
Date Created:	22/09/2022, 15:11:07

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Stabilità locale	Master Scenario	Bishop Simplified: 1.316620 Janbu Simplified: 1.185250	00h:00m:00.410s
	Statica	Bishop Simplified: 1.316620 Janbu Simplified: 1.185250	00h:00m:00.381s
	Sismica	Bishop Simplified: 1.300680 Janbu Simplified: 1.126710	00h:00m:00.359s
Stabilità globale	Master Scenario	Bishop Simplified: 1.318780 Janbu Simplified: 1.181840	00h:00m:00.424s
	Statica	Bishop Simplified: 1.318780 Janbu Simplified: 1.181840	00h:00m:00.414s
	Sismica	Bishop Simplified: 1.299980 Janbu Simplified: 1.120590	00h:00m:00.382s

General Settings

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

Design Standard

Stabilità locale - Master Scenario

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	**Partial Factor**
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Stabilità locale - Statica

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	**Partial Factor**
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Stabilità globale - Master Scenario

Selected Type: Eurocode 7 - Design Approach 1, Combination 2

Type	Partial Factor
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Stabilità globale - Statica

Selected Type: Eurocode 7 - Design Approach 1, Combination 2

Type	Partial Factor
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Analysis Options

All Open Scenarios

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

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [kN/m3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [kPa]:	0
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

All Open Scenarios

Surface Type:	Circular
Search Method:	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 [m]:	3.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Stabilità locale - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stabilità locale - Statica

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stabilità locale - Sismica

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.14
Seismic Load Coefficient (Vertical):	0.07

Stabilità globale - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stabilità globale - Statica

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stabilità globale - Sismica

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.14
Seismic Load Coefficient (Vertical):	0.07

Loading

Stabilità locale - Master Scenario

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Stabilità locale - Statica

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Stabilità locale - Sismica

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Stabilità globale - Master Scenario

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Stabilità globale - Statica

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical
Load Action:	Variable

Stabilità globale - Sismica

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Materials

RILEVATO	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	19
Cohesion [kPa]	0
Friction Angle [deg]	35
Water Surface	Assigned per scenario
Hu Value	1
UG1	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	18
Cohesion [kPa]	5
Friction Angle [deg]	26
Water Surface	Assigned per scenario
Hu Value	1
UG2	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	20
Cohesion [kPa]	2
Friction Angle [deg]	32
Water Surface	Assigned per scenario
Hu Value	1
UG3	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	20
Cohesion [kPa]	10
Friction Angle [deg]	27
Water Surface	Assigned per scenario
Hu Value	1

Materials In Use

Material	Stabilità locale	Statica	Sismica	Stabilità globale	Statica	Sismica
RILEVATO	✓	✓	✓	✓	✓	✓
UG1	✓	✓	✓	✓	✓	✓
UG2	✓	✓	✓	✓	✓	✓
UG3	✓	✓	✓	✓	✓	✓

Global Minimums

Stabilità locale - Master Scenario

Method: bishop simplified

FS	1.316620
Center:	51.646, 61.145
Radius:	11.283
Left Slip Surface Endpoint:	49.883, 50.000
Right Slip Surface Endpoint:	61.109, 55.000
Resisting Moment:	2925.49 kN-m
Driving Moment:	2221.98 kN-m
Total Slice Area:	23.8927 m2
Surface Horizontal Width:	11.2266 m
Surface Average Height:	2.12822 m

Method: janbu simplified

FS	1.185250
Center:	52.046, 59.070
Radius:	9.327
Left Slip Surface Endpoint:	49.872, 50.000
Right Slip Surface Endpoint:	60.438, 55.000
Resisting Horizontal Force:	206.523 kN
Driving Horizontal Force:	174.245 kN
Total Slice Area:	23.4507 m2
Surface Horizontal Width:	10.5666 m
Surface Average Height:	2.21933 m

Stabilità locale - Statica

Method: bishop simplified

FS	1.316620
Center:	51.646, 61.145
Radius:	11.283
Left Slip Surface Endpoint:	49.883, 50.000
Right Slip Surface Endpoint:	61.109, 55.000
Resisting Moment:	2925.49 kN-m
Driving Moment:	2221.98 kN-m
Total Slice Area:	23.8927 m2
Surface Horizontal Width:	11.2266 m
Surface Average Height:	2.12822 m

Method: janbu simplified

FS	1.185250
Center:	52.046, 59.070
Radius:	9.327
Left Slip Surface Endpoint:	49.872, 50.000
Right Slip Surface Endpoint:	60.438, 55.000
Resisting Horizontal Force:	206.523 kN
Driving Horizontal Force:	174.245 kN
Total Slice Area:	23.4507 m2
Surface Horizontal Width:	10.5666 m
Surface Average Height:	2.21933 m

Stabilità locale - Sismica

Method: bishop simplified

FS	1.300680
Center:	52.043, 59.068
Radius:	9.325
Left Slip Surface Endpoint:	49.871, 50.000
Right Slip Surface Endpoint:	60.433, 55.000
Resisting Moment:	2824.55 kN-m
Driving Moment:	2171.59 kN-m
Total Slice Area:	23.4224 m2
Surface Horizontal Width:	10.562 m
Surface Average Height:	2.21761 m

Method: janbu simplified

FS	1.126710
Center:	52.405, 57.635
Radius:	8.044
Left Slip Surface Endpoint:	49.873, 50.000
Right Slip Surface Endpoint:	60.005, 55.000
Resisting Horizontal Force:	256.675 kN
Driving Horizontal Force:	227.809 kN
Total Slice Area:	23.9667 m2
Surface Horizontal Width:	10.1319 m
Surface Average Height:	2.36547 m

Stabilità globale - Master Scenario

Method: bishop simplified

FS	1.318780
Center:	51.665, 59.405
Radius:	9.816
Left Slip Surface Endpoint:	48.853, 50.000
Right Slip Surface Endpoint:	60.438, 55.000
Resisting Moment:	2480.27 kN-m
Driving Moment:	1880.73 kN-m
Total Slice Area:	24.2805 m2
Surface Horizontal Width:	11.5847 m
Surface Average Height:	2.09592 m

Method: janbu simplified

FS	1.181840
Center:	52.376, 57.998
Radius:	8.736
Left Slip Surface Endpoint:	48.861, 50.000
Right Slip Surface Endpoint:	60.581, 55.000
Resisting Horizontal Force:	246.162 kN
Driving Horizontal Force:	208.288 kN
Total Slice Area:	29.134 m2
Surface Horizontal Width:	11.7205 m
Surface Average Height:	2.48574 m

Stabilità globale - Statica

Method: bishop simplified

FS	1.318780
Center:	51.665, 59.405
Radius:	9.816
Left Slip Surface Endpoint:	48.853, 50.000
Right Slip Surface Endpoint:	60.438, 55.000
Resisting Moment:	2480.27 kN-m
Driving Moment:	1880.73 kN-m
Total Slice Area:	24.2805 m2
Surface Horizontal Width:	11.5847 m
Surface Average Height:	2.09592 m

Method: janbu simplified

FS	1.181840
Center:	52.376, 57.998
Radius:	8.736
Left Slip Surface Endpoint:	48.861, 50.000
Right Slip Surface Endpoint:	60.581, 55.000
Resisting Horizontal Force:	246.162 kN
Driving Horizontal Force:	208.288 kN
Total Slice Area:	29.134 m2
Surface Horizontal Width:	11.7205 m
Surface Average Height:	2.48574 m

Stabilità globale - Sismica

Method: bishop simplified

FS	1.299980
Center:	51.041, 59.907
Radius:	10.579
Left Slip Surface Endpoint:	47.330, 50.000
Right Slip Surface Endpoint:	60.413, 55.000
Resisting Moment:	3564.08 kN-m
Driving Moment:	2741.65 kN-m
Total Slice Area:	26.0333 m2
Surface Horizontal Width:	13.0838 m
Surface Average Height:	1.98974 m

Method: janbu simplified

FS	1.120590
Center:	52.074, 57.839
Radius:	8.427
Left Slip Surface Endpoint:	48.979, 50.000
Right Slip Surface Endpoint:	60.009, 55.000
Resisting Horizontal Force:	268.555 kN
Driving Horizontal Force:	239.654 kN
Total Slice Area:	25.1462 m2
Surface Horizontal Width:	11.0292 m
Surface Average Height:	2.27996 m

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Stabilità locale - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	4464
Number of Invalid Surfaces:	13

Error Codes

Error Code -112 reported for 13 surfaces

Method: janbu simplified

Number of Valid Surfaces:	4474
Number of Invalid Surfaces:	3

Error Codes

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

Stabilità locale - Statica

Method: bishop simplified

Number of Valid Surfaces:	4464
Number of Invalid Surfaces:	13

Error Codes

Error Code -112 reported for 13 surfaces

Method: janbu simplified

Number of Valid Surfaces:	4474
Number of Invalid Surfaces:	3

Error Codes

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

Stabilità locale - Sismica

Method: bishop simplified

Number of Valid Surfaces:	3909
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	3862
Number of Invalid Surfaces:	47

Error Codes

Error Code -112 reported for 47 surfaces

Stabilità globale - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	5284
Number of Invalid Surfaces:	9
Error Codes	
Error Code -112 reported for 9 surfaces	

Method: janbu simplified

Number of Valid Surfaces:	5285
Number of Invalid Surfaces:	8
Error Codes	
Error Code -108 reported for 2 surfaces	
Error Code -112 reported for 6 surfaces	

Stabilità globale - Statica

Method: bishop simplified

Number of Valid Surfaces:	5284
Number of Invalid Surfaces:	9
Error Codes	
Error Code -112 reported for 9 surfaces	

Method: janbu simplified

Number of Valid Surfaces:	5285
Number of Invalid Surfaces:	8
Error Codes	
Error Code -108 reported for 2 surfaces	
Error Code -112 reported for 6 surfaces	

Stabilità globale - Sismica

Method: bishop simplified

Number of Valid Surfaces:	3883
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	3820
Number of Invalid Surfaces:	63
Error Codes	
Error Code -108 reported for 2 surfaces	
Error Code -112 reported for 61 surfaces	

Error Code Descriptions

The following errors were encountered during the computation:

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

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

Slice Data

Stabilità locale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.31662

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	0.220393	0.132054	-8.42417	UG1	4	21.3151	3.36295	4.42773	1.09622	0	1.09622	0.598174	0.598174
2	0.220393	0.780873	-7.29436	UG1	4	21.3151	4.24895	5.59425	4.08587	0	4.08587	3.54199	3.54199
3	0.220393	1.49933	-6.16739	UG1	4	21.3151	5.22104	6.87412	7.36601	0	7.36601	6.80183	6.80183
4	0.220393	2.20041	-5.04282	UG1	4	21.3151	6.15759	8.1072	10.5263	0	10.5263	9.98289	9.98289
5	0.220393	2.8842	-3.92019	UG1	4	21.3151	7.05943	9.29459	13.5694	0	13.5694	13.0856	13.0856
6	0.220393	3.55079	-2.79906	UG1	4	21.3151	7.92732	10.4373	16.4979	0	16.4979	16.1104	16.1104
7	0.220393	4.20024	-1.67901	UG1	4	21.3151	8.76194	11.5361	19.3142	0	19.3142	19.0574	19.0574
8	0.220393	4.83258	-0.559598	UG1	4	21.3151	9.5639	12.592	22.0203	0	22.0203	21.9269	21.9269
9	0.220393	5.44784	0.559598	UG1	4	21.3151	10.3337	13.6056	24.618	0	24.618	24.7189	24.7189
10	0.220393	6.04602	1.67901	UG1	4	21.3151	11.0719	14.5775	27.109	0	27.109	27.4335	27.4335
11	0.220393	6.62709	2.79906	UG1	4	21.3151	11.7789	15.5084	29.4947	0	29.4947	30.0705	30.0705
12	0.220393	7.19102	3.92019	UG1	4	21.3151	12.4552	16.3987	31.7764	0	31.7764	32.6299	32.6299
13	0.220393	7.73775	5.04282	UG1	4	21.3151	13.1008	17.2488	33.9551	0	33.9551	35.1112	35.1112
14	0.220393	8.2672	6.16739	UG1	4	21.3151	13.7163	18.0592	36.0319	0	36.0319	37.5141	37.5141
15	0.220393	8.77926	7.29436	UG1	4	21.3151	14.3018	18.83	38.0075	0	38.0075	39.8382	39.8382
16	0.220393	9.27382	8.42417	UG1	4	21.3151	14.8574	19.5616	39.8826	0	39.8826	42.083	42.083
17	0.22648	10.0222	9.57299	RILEVATO	0	29.2561	17.5692	23.132	41.295	0	41.295	44.2581	44.2581
18	0.22648	10.4973	10.7414	RILEVATO	0	29.2561	18.2499	24.0282	42.8948	0	42.8948	46.3568	46.3568
19	0.22648	10.9518	11.9144	RILEVATO	0	29.2561	18.882	24.8604	44.3805	0	44.3805	48.3645	48.3645
20	0.22648	11.3853	13.0924	RILEVATO	0	29.2561	19.4659	25.6292	45.7526	0	45.7526	50.2798	50.2798
21	0.22648	11.7977	14.2762	RILEVATO	0	29.2561	20.0018	26.3348	47.0126	0	47.0126	52.1021	52.1021
22	0.22648	12.1886	15.4662	RILEVATO	0	29.2561	20.49	26.9775	48.1596	0	48.1596	53.829	53.829
23	0.22648	12.5577	16.663	RILEVATO	0	29.2561	20.9304	27.5574	49.1952	0	49.1952	55.4599	55.4599
24	0.22648	12.9044	17.8674	RILEVATO	0	29.2561	21.3232	28.0746	50.1183	0	50.1183	56.9921	56.9921
25	0.22648	13.2285	19.08	RILEVATO	0	29.2561	21.6684	28.529	50.9294	0	50.9294	58.4243	58.4243
26	0.22648	13.5294	20.3016	RILEVATO	0	29.2561	21.9656	28.9204	51.6281	0	51.6281	59.7541	59.7541
27	0.22648	13.8066	21.5329	RILEVATO	0	29.2561	22.2148	29.2485	52.2141	0	52.2141	60.9795	60.9795
28	0.22648	14.0595	22.7747	RILEVATO	0	29.2561	22.4157	29.5129	52.686	0	52.686	62.097	62.097
29	0.22648	14.2874	24.028	RILEVATO	0	29.2561	22.5678	29.7132	53.0437	0	53.0437	63.1047	63.1047
30	0.22648	14.4896	25.2935	RILEVATO	0	29.2561	22.6707	29.8487	53.2853	0	53.2853	63.9986	63.9986

31	0.22648	14.6653	26.5725	RILEVATO	0	29.2561	22.7239	29.9187	53.4102	0	53.4102	64.7758	64.7758
32	0.22648	14.8136	27.8659	RILEVATO	0	29.2561	22.7265	29.9222	53.4166	0	53.4166	65.4323	65.4323
33	0.22648	14.9337	29.1749	RILEVATO	0	29.2561	22.6779	29.8582	53.3022	0	53.3022	65.9634	65.9634
34	0.22648	15.0243	30.5009	RILEVATO	0	29.2561	22.5771	29.7255	53.0657	0	53.0657	66.3651	66.3651
35	0.22648	14.7993	31.8452	RILEVATO	0	29.2561	21.9997	28.9652	51.7083	0	51.7083	65.3727	65.3727
36	0.22648	14.179	33.2094	RILEVATO	0	29.2561	20.8429	27.4422	48.9895	0	48.9895	62.6336	62.6336
37	0.22648	13.5239	34.5952	RILEVATO	0	29.2561	19.6507	25.8725	46.1871	0	46.1871	59.7407	59.7407
38	0.22648	12.8337	36.0046	RILEVATO	0	29.2561	18.4243	24.2578	43.3046	0	43.3046	56.6929	56.6929
39	0.22648	12.1066	37.4396	RILEVATO	0	29.2561	17.1633	22.5975	40.3406	0	40.3406	53.4817	53.4817
40	0.22648	11.3402	38.9027	RILEVATO	0	29.2561	15.8668	20.8905	37.2933	0	37.2933	50.0974	50.0974
41	0.22648	10.5323	40.3967	RILEVATO	0	29.2561	14.5342	19.136	34.1613	0	34.1613	46.5294	46.5294
42	0.22648	9.68008	41.9246	RILEVATO	0	29.2561	13.1648	17.3331	30.9428	0	30.9428	42.7652	42.7652
43	0.22648	8.78023	43.4901	RILEVATO	0	29.2561	11.7581	15.481	27.6365	0	27.6365	38.7907	38.7907
44	0.22648	7.82903	45.0974	RILEVATO	0	29.2561	10.3134	13.5788	24.2406	0	24.2406	34.5891	34.5891
45	0.22648	6.82206	46.7512	RILEVATO	0	29.2561	8.82996	11.6257	20.7541	0	20.7541	30.141	30.141
46	0.22648	5.75408	48.4576	RILEVATO	0	29.2561	14.0236	18.4637	32.9611	0	32.9611	48.7882	48.7882
47	0.22648	4.61878	50.2235	RILEVATO	0	29.2561	13.0715	17.2102	30.7233	0	30.7233	46.4253	46.4253
48	0.22648	3.40845	52.0575	RILEVATO	0	29.2561	11.3071	14.8872	26.5764	0	26.5764	41.0789	41.0789
49	0.22648	2.1135	53.9703	RILEVATO	0	29.2561	9.49143	12.4966	22.3087	0	22.3087	35.3583	35.3583
50	0.22648	0.721769	55.9757	RILEVATO	0	29.2561	7.62331	10.037	17.9179	0	17.9179	29.2096	29.2096

Global Minimum Query (janbu simplified) - Safety Factor: 1.18525

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	0.207104	0.127139	-12.8306	UG1	4	21.3151	3.86674	4.58305	1.49428	0	1.49428	0.613606	0.613606
2	0.207104	0.732667	-11.5289	UG1	4	21.3151	4.86607	5.76751	4.52993	0	4.52993	3.53735	3.53735
3	0.207104	1.4244	-10.2332	UG1	4	21.3151	5.99514	7.10574	7.95963	0	7.95963	6.87735	6.87735
4	0.207104	2.09813	-8.94282	UG1	4	21.3151	7.07636	8.38725	11.244	0	11.244	10.1305	10.1305
5	0.207104	2.75408	-7.65695	UG1	4	21.3151	8.11143	9.61407	14.3882	0	14.3882	13.2977	13.2977
6	0.207104	3.39241	-6.37496	UG1	4	21.3151	9.10186	10.788	17.3968	0	17.3968	16.3799	16.3799
7	0.207104	4.01326	-5.09617	UG1	4	21.3151	10.049	11.9106	20.2739	0	20.2739	19.3777	19.3777
8	0.207104	4.61676	-3.81992	UG1	4	21.3151	10.9541	12.9833	23.0232	0	23.0232	22.2918	22.2918
9	0.207104	5.203	-2.54556	UG1	4	21.3151	11.8181	14.0074	25.6479	0	25.6479	25.1225	25.1225
10	0.207104	5.77204	-1.27247	UG1	4	21.3151	12.6421	14.9841	28.151	0	28.151	27.8701	27.8701
11	0.207104	6.32391	0	UG1	4	21.3151	13.427	15.9143	30.5349	0	30.5349	30.5349	30.5349
12	0.207104	6.85864	1.27247	UG1	4	21.3151	14.1733	16.7989	32.8022	0	32.8022	33.117	33.117
13	0.207104	7.3762	2.54556	UG1	4	21.3151	14.8819	17.6388	34.9545	0	34.9545	35.6161	35.6161
14	0.207104	7.87657	3.81992	UG1	4	21.3151	15.5533	18.4345	36.9937	0	36.9937	38.0322	38.0322
15	0.207104	8.35967	5.09617	UG1	4	21.3151	16.1878	19.1866	38.9214	0	38.9214	40.365	40.365
16	0.207104	8.82541	6.37496	UG1	4	21.3151	16.786	19.8956	40.7385	0	40.7385	42.614	42.614
17	0.207104	9.27369	7.65695	UG1	4	21.3151	17.3482	20.562	42.4463	0	42.4463	44.7786	44.7786
18	0.207104	9.70434	8.94282	UG1	4	21.3151	17.8746	21.1859	44.0454	0	44.0454	46.8582	46.8582
19	0.207104	10.1172	10.2332	UG1	4	21.3151	18.3655	21.7677	45.5364	0	45.5364	48.8519	48.8519
20	0.207104	10.5121	11.5289	UG1	4	21.3151	18.8208	22.3074	46.9196	0	46.9196	50.7587	50.7587
21	0.207104	10.8887	12.8306	UG1	4	21.3151	19.2408	22.8051	48.195	0	48.195	52.5772	52.5772
22	0.214392	11.643	14.1623	RILEVATO	0	29.2561	22.9323	27.1805	48.5223	0	48.5223	54.309	54.309
23	0.214392	11.9937	15.5249	RILEVATO	0	29.2561	23.3719	27.7016	49.4524	0	49.4524	55.945	55.945
24	0.214392	12.322	16.8967	RILEVATO	0	29.2561	23.7541	28.1545	50.2608	0	50.2608	57.4764	57.4764
25	0.214392	12.6274	18.2785	RILEVATO	0	29.2561	24.0786	28.5392	50.9477	0	50.9477	58.9009	58.9009
26	0.214392	12.9092	19.6714	RILEVATO	0	29.2561	24.3456	28.8556	51.5127	0	51.5127	60.2159	60.2159
27	0.214392	13.1671	21.0765	RILEVATO	0	29.2561	24.5548	29.1036	51.9552	0	51.9552	61.4186	61.4186
28	0.214392	13.4002	22.495	RILEVATO	0	29.2561	24.706	29.2828	52.2753	0	52.2753	62.5064	62.5064
29	0.214392	13.6078	23.9283	RILEVATO	0	29.2561	24.7986	29.3925	52.4713	0	52.4713	63.4752	63.4752
30	0.214392	13.7891	25.3776	RILEVATO	0	29.2561	24.832	29.4321	52.5416	0	52.5416	64.3208	64.3208
31	0.214392	13.9432	26.8446	RILEVATO	0	29.2561	24.8054	29.4006	52.4856	0	52.4856	65.0399	65.0399
32	0.214392	14.069	28.3308	RILEVATO	0	29.2561	24.7179	29.2969	52.3004	0	52.3004	65.6267	65.6267
33	0.214392	14.1653	29.8382	RILEVATO	0	29.2561	24.5685	29.1198	51.9844	0	51.9844	66.0766	66.0766
34	0.214392	14.2308	31.3687	RILEVATO	0	29.2561	24.3556	28.8675	51.5339	0	51.5339	66.3823	66.3823
35	0.214392	14.2641	32.9245	RILEVATO	0	29.2561	24.078	28.5384	50.9465	0	50.9465	66.5378	66.5378
36	0.214392	14.2634	34.5082	RILEVATO	0	29.2561	23.7336	28.1303	50.2178	0	50.2178	66.5345	66.5345

37	0.214392	14.0822	36.1227	RILEVATO	0	29.2561	23.0837	27.36	48.8428	0	48.8428	65.6897	65.6897
38	0.214392	13.4506	37.7711	RILEVATO	0	29.2561	21.7048	25.7256	45.9249	0	45.9249	62.7433	62.7433
39	0.214392	12.7528	39.4571	RILEVATO	0	29.2561	20.2414	23.9911	42.8286	0	42.8286	59.4889	59.4889
40	0.214392	12.0113	41.1851	RILEVATO	0	29.2561	18.7338	22.2042	39.6385	0	39.6385	56.0301	56.0301
41	0.214392	11.2226	42.9601	RILEVATO	0	29.2561	17.1807	20.3634	36.3524	0	36.3524	52.3513	52.3513
42	0.214392	10.3826	44.7878	RILEVATO	0	29.2561	15.5808	18.4671	32.9671	0	32.9671	48.4329	48.4329
43	0.214392	9.48616	46.6756	RILEVATO	0	29.2561	13.9324	16.5134	29.4794	0	29.4794	44.2515	44.2515
44	0.214392	8.52734	48.6319	RILEVATO	0	29.2561	12.2342	14.5006	25.8863	0	25.8863	39.7789	39.7789
45	0.214392	7.49862	50.6674	RILEVATO	0	29.2561	10.485	12.4273	22.185	0	22.185	34.9803	34.9803
46	0.214392	6.39056	52.7956	RILEVATO	0	29.2561	8.68348	10.2921	18.3733	0	18.3733	29.8115	29.8115
47	0.214392	5.19098	55.0339	RILEVATO	0	29.2561	6.82933	8.09446	14.4501	0	14.4501	24.2157	24.2157
48	0.214392	3.88365	57.4056	RILEVATO	0	29.2561	5.2321	6.20135	11.0706	0	11.0706	19.2535	19.2535
49	0.214392	2.44614	59.943	RILEVATO	0	29.2561	9.73347	11.5366	20.5949	0	20.5949	37.4151	37.4151
50	0.214392	0.845779	62.6936	RILEVATO	0	29.2561	7.38981	8.75877	15.636	0	15.636	29.9496	29.9496

Stabilità locale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 1.31662

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	0.220393	0.132054	-8.42417	UG1	4	21.3151	3.36295	4.42773	1.09622	0	1.09622	0.598174	0.598174
2	0.220393	0.780873	-7.29436	UG1	4	21.3151	4.24895	5.59425	4.08587	0	4.08587	3.54199	3.54199
3	0.220393	1.49933	-6.16739	UG1	4	21.3151	5.22104	6.87412	7.36601	0	7.36601	6.80183	6.80183
4	0.220393	2.20041	-5.04282	UG1	4	21.3151	6.15759	8.1072	10.5263	0	10.5263	9.98289	9.98289
5	0.220393	2.8842	-3.92019	UG1	4	21.3151	7.05943	9.29459	13.5694	0	13.5694	13.0856	13.0856
6	0.220393	3.55079	-2.79906	UG1	4	21.3151	7.92732	10.4373	16.4979	0	16.4979	16.1104	16.1104
7	0.220393	4.20024	-1.67901	UG1	4	21.3151	8.76194	11.5361	19.3142	0	19.3142	19.0574	19.0574
8	0.220393	4.83258	-0.559598	UG1	4	21.3151	9.5639	12.592	22.0203	0	22.0203	21.9269	21.9269
9	0.220393	5.44784	0.559598	UG1	4	21.3151	10.3337	13.6056	24.618	0	24.618	24.7189	24.7189
10	0.220393	6.04602	1.67901	UG1	4	21.3151	11.0719	14.5775	27.109	0	27.109	27.4335	27.4335
11	0.220393	6.62709	2.79906	UG1	4	21.3151	11.7789	15.5084	29.4947	0	29.4947	30.0705	30.0705
12	0.220393	7.19102	3.92019	UG1	4	21.3151	12.4552	16.3987	31.7764	0	31.7764	32.6299	32.6299
13	0.220393	7.73775	5.04282	UG1	4	21.3151	13.1008	17.2488	33.9551	0	33.9551	35.1112	35.1112
14	0.220393	8.2672	6.16739	UG1	4	21.3151	13.7163	18.0592	36.0319	0	36.0319	37.5141	37.5141
15	0.220393	8.77926	7.29436	UG1	4	21.3151	14.3018	18.83	38.0075	0	38.0075	39.8382	39.8382
16	0.220393	9.27382	8.42417	UG1	4	21.3151	14.8574	19.5616	39.8826	0	39.8826	42.083	42.083
17	0.22648	10.0222	9.57299	RILEVATO	0	29.2561	17.5692	23.132	41.295	0	41.295	44.2581	44.2581
18	0.22648	10.4973	10.7414	RILEVATO	0	29.2561	18.2499	24.0282	42.8948	0	42.8948	46.3568	46.3568
19	0.22648	10.9518	11.9144	RILEVATO	0	29.2561	18.882	24.8604	44.3805	0	44.3805	48.3645	48.3645
20	0.22648	11.3853	13.0924	RILEVATO	0	29.2561	19.4659	25.6292	45.7526	0	45.7526	50.2798	50.2798
21	0.22648	11.7977	14.2762	RILEVATO	0	29.2561	20.0018	26.3348	47.0126	0	47.0126	52.1021	52.1021
22	0.22648	12.1886	15.4662	RILEVATO	0	29.2561	20.49	26.9775	48.1596	0	48.1596	53.829	53.829
23	0.22648	12.5577	16.663	RILEVATO	0	29.2561	20.9304	27.5574	49.1952	0	49.1952	55.4599	55.4599
24	0.22648	12.9044	17.8674	RILEVATO	0	29.2561	21.3232	28.0746	50.1183	0	50.1183	56.9921	56.9921
25	0.22648	13.2285	19.08	RILEVATO	0	29.2561	21.6684	28.529	50.9294	0	50.9294	58.4243	58.4243
26	0.22648	13.5294	20.3016	RILEVATO	0	29.2561	21.9656	28.9204	51.6281	0	51.6281	59.7541	59.7541
27	0.22648	13.8066	21.5329	RILEVATO	0	29.2561	22.2148	29.2485	52.2141	0	52.2141	60.9795	60.9795
28	0.22648	14.0595	22.7747	RILEVATO	0	29.2561	22.4157	29.5129	52.686	0	52.686	62.097	62.097
29	0.22648	14.2874	24.028	RILEVATO	0	29.2561	22.5678	29.7132	53.0437	0	53.0437	63.1047	63.1047
30	0.22648	14.4896	25.2935	RILEVATO	0	29.2561	22.6707	29.8487	53.2853	0	53.2853	63.9986	63.9986
31	0.22648	14.6653	26.5725	RILEVATO	0	29.2561	22.7239	29.9187	53.4102	0	53.4102	64.7758	64.7758
32	0.22648	14.8136	27.8659	RILEVATO	0	29.2561	22.7265	29.9222	53.4166	0	53.4166	65.4323	65.4323

33	0.22648	14.9337	29.1749	RILEVATO	0	29.2561	22.6779	29.8582	53.3022	0	53.3022	65.9634	65.9634
34	0.22648	15.0243	30.5009	RILEVATO	0	29.2561	22.5771	29.7255	53.0657	0	53.0657	66.3651	66.3651
35	0.22648	14.7993	31.8452	RILEVATO	0	29.2561	21.9997	28.9652	51.7083	0	51.7083	65.3727	65.3727
36	0.22648	14.179	33.2094	RILEVATO	0	29.2561	20.8429	27.4422	48.9895	0	48.9895	62.6336	62.6336
37	0.22648	13.5239	34.5952	RILEVATO	0	29.2561	19.6507	25.8725	46.1871	0	46.1871	59.7407	59.7407
38	0.22648	12.8337	36.0046	RILEVATO	0	29.2561	18.4243	24.2578	43.3046	0	43.3046	56.6929	56.6929
39	0.22648	12.1066	37.4396	RILEVATO	0	29.2561	17.1633	22.5975	40.3406	0	40.3406	53.4817	53.4817
40	0.22648	11.3402	38.9027	RILEVATO	0	29.2561	15.8668	20.8905	37.2933	0	37.2933	50.0974	50.0974
41	0.22648	10.5323	40.3967	RILEVATO	0	29.2561	14.5342	19.136	34.1613	0	34.1613	46.5294	46.5294
42	0.22648	9.68008	41.9246	RILEVATO	0	29.2561	13.1648	17.3331	30.9428	0	30.9428	42.7652	42.7652
43	0.22648	8.78023	43.4901	RILEVATO	0	29.2561	11.7581	15.481	27.6365	0	27.6365	38.7907	38.7907
44	0.22648	7.82903	45.0974	RILEVATO	0	29.2561	10.3134	13.5788	24.2406	0	24.2406	34.5891	34.5891
45	0.22648	6.82206	46.7512	RILEVATO	0	29.2561	8.82996	11.6257	20.7541	0	20.7541	30.141	30.141
46	0.22648	5.75408	48.4576	RILEVATO	0	29.2561	14.0236	18.4637	32.9611	0	32.9611	48.7882	48.7882
47	0.22648	4.61878	50.2235	RILEVATO	0	29.2561	13.0715	17.2102	30.7233	0	30.7233	46.4253	46.4253
48	0.22648	3.40845	52.0575	RILEVATO	0	29.2561	11.3071	14.8872	26.5764	0	26.5764	41.0789	41.0789
49	0.22648	2.1135	53.9703	RILEVATO	0	29.2561	9.49143	12.4966	22.3087	0	22.3087	35.3583	35.3583
50	0.22648	0.721769	55.9757	RILEVATO	0	29.2561	7.62331	10.037	17.9179	0	17.9179	29.2096	29.2096

Global Minimum Query (janbu simplified) - Safety Factor: 1.18525

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	0.207104	0.127139	-12.8306	UG1	4	21.3151	3.86674	4.58305	1.49428	0	1.49428	0.613606	0.613606
2	0.207104	0.732667	-11.5289	UG1	4	21.3151	4.86607	5.76751	4.52993	0	4.52993	3.53735	3.53735
3	0.207104	1.4244	-10.2332	UG1	4	21.3151	5.99514	7.10574	7.95963	0	7.95963	6.87735	6.87735
4	0.207104	2.09813	-8.94282	UG1	4	21.3151	7.07636	8.38725	11.244	0	11.244	10.1305	10.1305
5	0.207104	2.75408	-7.65695	UG1	4	21.3151	8.11143	9.61407	14.3882	0	14.3882	13.2977	13.2977
6	0.207104	3.39241	-6.37496	UG1	4	21.3151	9.10186	10.788	17.3968	0	17.3968	16.3799	16.3799
7	0.207104	4.01326	-5.09617	UG1	4	21.3151	10.049	11.9106	20.2739	0	20.2739	19.3777	19.3777
8	0.207104	4.61676	-3.81992	UG1	4	21.3151	10.9541	12.9833	23.0232	0	23.0232	22.2918	22.2918
9	0.207104	5.203	-2.54556	UG1	4	21.3151	11.8181	14.0074	25.6479	0	25.6479	25.1225	25.1225
10	0.207104	5.77204	-1.27247	UG1	4	21.3151	12.6421	14.9841	28.151	0	28.151	27.8701	27.8701
11	0.207104	6.32391	0	UG1	4	21.3151	13.427	15.9143	30.5349	0	30.5349	30.5349	30.5349
12	0.207104	6.85864	1.27247	UG1	4	21.3151	14.1733	16.7989	32.8022	0	32.8022	33.117	33.117
13	0.207104	7.3762	2.54556	UG1	4	21.3151	14.8819	17.6388	34.9545	0	34.9545	35.6161	35.6161
14	0.207104	7.87657	3.81992	UG1	4	21.3151	15.5533	18.4345	36.9937	0	36.9937	38.0322	38.0322
15	0.207104	8.35967	5.09617	UG1	4	21.3151	16.1878	19.1866	38.9214	0	38.9214	40.365	40.365
16	0.207104	8.82541	6.37496	UG1	4	21.3151	16.786	19.8956	40.7385	0	40.7385	42.614	42.614
17	0.207104	9.27369	7.65695	UG1	4	21.3151	17.3482	20.562	42.4463	0	42.4463	44.7786	44.7786
18	0.207104	9.70434	8.94282	UG1	4	21.3151	17.8746	21.1859	44.0454	0	44.0454	46.8582	46.8582
19	0.207104	10.1172	10.2332	UG1	4	21.3151	18.3655	21.7677	45.5364	0	45.5364	48.8519	48.8519
20	0.207104	10.5121	11.5289	UG1	4	21.3151	18.8208	22.3074	46.9196	0	46.9196	50.7587	50.7587
21	0.207104	10.8887	12.8306	UG1	4	21.3151	19.2408	22.8051	48.195	0	48.195	52.5772	52.5772
22	0.214392	11.643	14.1623	RILEVATO	0	29.2561	22.9323	27.1805	48.5223	0	48.5223	54.309	54.309
23	0.214392	11.9937	15.5249	RILEVATO	0	29.2561	23.3719	27.7016	49.4524	0	49.4524	55.945	55.945
24	0.214392	12.322	16.8967	RILEVATO	0	29.2561	23.7541	28.1545	50.2608	0	50.2608	57.4764	57.4764
25	0.214392	12.6274	18.2785	RILEVATO	0	29.2561	24.0786	28.5392	50.9477	0	50.9477	58.9009	58.9009
26	0.214392	12.9092	19.6714	RILEVATO	0	29.2561	24.3456	28.8556	51.5127	0	51.5127	60.2159	60.2159
27	0.214392	13.1671	21.0765	RILEVATO	0	29.2561	24.5548	29.1036	51.9552	0	51.9552	61.4186	61.4186
28	0.214392	13.4002	22.495	RILEVATO	0	29.2561	24.706	29.2828	52.2753	0	52.2753	62.5064	62.5064
29	0.214392	13.6078	23.9283	RILEVATO	0	29.2561	24.7986	29.3925	52.4713	0	52.4713	63.4752	63.4752
30	0.214392	13.7891	25.3776	RILEVATO	0	29.2561	24.832	29.4321	52.5416	0	52.5416	64.3208	64.3208
31	0.214392	13.9432	26.8446	RILEVATO	0	29.2561	24.8054	29.4006	52.4856	0	52.4856	65.0399	65.0399
32	0.214392	14.069	28.3308	RILEVATO	0	29.2561	24.7179	29.2969	52.3004	0	52.3004	65.6267	65.6267
33	0.214392	14.1653	29.8382	RILEVATO	0	29.2561	24.5685	29.1198	51.9844	0	51.9844	66.0766	66.0766
34	0.214392	14.2308	31.3687	RILEVATO	0	29.2561	24.3556	28.8675	51.5339	0	51.5339	66.3823	66.3823
35	0.214392	14.2641	32.9245	RILEVATO	0	29.2561	24.078	28.5384	50.9465	0	50.9465	66.5378	66.5378
36	0.214392	14.2634	34.5082	RILEVATO	0	29.2561	23.7336	28.1303	50.2178	0	50.2178	66.5345	66.5345

37	0.214392	14.0822	36.1227	RILEVATO	0	29.2561	23.0837	27.36	48.8428	0	48.8428	65.6897	65.6897
38	0.214392	13.4506	37.7711	RILEVATO	0	29.2561	21.7048	25.7256	45.9249	0	45.9249	62.7433	62.7433
39	0.214392	12.7528	39.4571	RILEVATO	0	29.2561	20.2414	23.9911	42.8286	0	42.8286	59.4889	59.4889
40	0.214392	12.0113	41.1851	RILEVATO	0	29.2561	18.7338	22.2042	39.6385	0	39.6385	56.0301	56.0301
41	0.214392	11.2226	42.9601	RILEVATO	0	29.2561	17.1807	20.3634	36.3524	0	36.3524	52.3513	52.3513
42	0.214392	10.3826	44.7878	RILEVATO	0	29.2561	15.5808	18.4671	32.9671	0	32.9671	48.4329	48.4329
43	0.214392	9.48616	46.6756	RILEVATO	0	29.2561	13.9324	16.5134	29.4794	0	29.4794	44.2515	44.2515
44	0.214392	8.52734	48.6319	RILEVATO	0	29.2561	12.2342	14.5006	25.8863	0	25.8863	39.7789	39.7789
45	0.214392	7.49862	50.6674	RILEVATO	0	29.2561	10.485	12.4273	22.185	0	22.185	34.9803	34.9803
46	0.214392	6.39056	52.7956	RILEVATO	0	29.2561	8.68348	10.2921	18.3733	0	18.3733	29.8115	29.8115
47	0.214392	5.19098	55.0339	RILEVATO	0	29.2561	6.82933	8.09446	14.4501	0	14.4501	24.2157	24.2157
48	0.214392	3.88365	57.4056	RILEVATO	0	29.2561	5.2321	6.20135	11.0706	0	11.0706	19.2535	19.2535
49	0.214392	2.44614	59.943	RILEVATO	0	29.2561	9.73347	11.5366	20.5949	0	20.5949	37.4151	37.4151
50	0.214392	0.845779	62.6936	RILEVATO	0	29.2561	7.38981	8.75877	15.636	0	15.636	29.9496	29.9496

Stabilità locale - Sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.30068

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	0.206828	0.126004	-12.8162	UG1	5	26	4.469	5.81274	1.66637	0	1.66637	0.649709	0.649709
2	0.206828	0.728582	-11.516	UG1	5	26	5.69145	7.40275	4.92635	0	4.92635	3.76676	3.76676
3	0.206828	1.4183	-10.2218	UG1	5	26	7.07277	9.19941	8.61006	0	8.61006	7.33469	7.33469
4	0.206828	2.09009	-8.93283	UG1	5	26	8.39237	10.9158	12.1292	0	12.1292	10.81	10.81
5	0.206828	2.74416	-7.64842	UG1	5	26	9.65265	12.555	15.4901	0	15.4901	14.1938	14.1938
6	0.206828	3.38067	-6.36787	UG1	5	26	10.8557	14.1198	18.6985	0	18.6985	17.487	17.487
7	0.206828	3.99979	-5.09051	UG1	5	26	12.0036	15.6128	21.7594	0	21.7594	20.6902	20.6902
8	0.206828	4.60161	-3.81568	UG1	5	26	13.0978	17.0361	24.6776	0	24.6776	23.8041	23.8041
9	0.206828	5.18624	-2.54274	UG1	5	26	14.1401	18.3917	27.457	0	27.457	26.8291	26.8291
10	0.206828	5.75373	-1.27106	UG1	5	26	15.1316	19.6814	30.1013	0	30.1013	29.7655	29.7655
11	0.206828	6.30412	0	UG1	5	26	16.0737	20.9067	32.6137	0	32.6137	32.6137	32.6137
12	0.206828	6.83743	1.27106	UG1	5	26	16.9674	22.0692	34.997	0	34.997	35.3735	35.3735
13	0.206828	7.35364	2.54274	UG1	5	26	17.8137	23.1699	37.2538	0	37.2538	38.0449	38.0449
14	0.206828	7.85272	3.81568	UG1	5	26	18.6133	24.21	39.3864	0	39.3864	40.6278	40.6278
15	0.206828	8.3346	5.09051	UG1	5	26	19.3671	25.1904	41.3965	0	41.3965	43.1217	43.1217
16	0.206828	8.79919	6.36787	UG1	5	26	20.0756	26.1119	43.2859	0	43.2859	45.5264	45.5264
17	0.206828	9.24637	7.64842	UG1	5	26	20.7393	26.9752	45.0559	0	45.0559	47.8409	47.8409
18	0.206828	9.67601	8.93283	UG1	5	26	21.3587	27.7808	46.7076	0	46.7076	50.0648	50.0648
19	0.206828	10.0879	10.2218	UG1	5	26	21.9341	28.5292	48.242	0	48.242	52.1971	52.1971
20	0.206828	10.4819	11.516	UG1	5	26	22.4656	29.2205	49.6596	0	49.6596	54.2368	54.2368
21	0.206828	10.8577	12.8162	UG1	5	26	22.9535	29.8551	50.9608	0	50.9608	56.1825	56.1825
22	0.214436	11.6283	14.1473	RILEVATO	0	35	27.5111	35.7832	51.1035	0	51.1035	58.038	58.038
23	0.214436	11.9795	15.5105	RILEVATO	0	35	28.0045	36.4249	52.0202	0	52.0202	59.792	59.792
24	0.214436	12.3081	16.8827	RILEVATO	0	35	28.4276	36.9752	52.8059	0	52.8059	61.4335	61.4335
25	0.214436	12.6138	18.265	RILEVATO	0	35	28.7807	37.4345	53.4619	0	53.4619	62.9607	62.9607
26	0.214436	12.896	19.6584	RILEVATO	0	35	29.064	37.803	53.9884	0	53.9884	64.3711	64.3711
27	0.214436	13.1542	21.064	RILEVATO	0	35	29.2775	38.0807	54.3847	0	54.3847	65.6608	65.6608
28	0.214436	13.3876	22.483	RILEVATO	0	35	29.4209	38.2672	54.6512	0	54.6512	66.8275	66.8275
29	0.214436	13.5955	23.9167	RILEVATO	0	35	29.4939	38.3621	54.7869	0	54.7869	67.8671	67.8671
30	0.214436	13.7771	25.3666	RILEVATO	0	35	29.4959	38.3647	54.7905	0	54.7905	68.775	68.775
31	0.214436	13.9315	26.834	RILEVATO	0	35	29.4261	38.274	54.6611	0	54.6611	69.5472	69.5472
32	0.214436	14.0575	28.3208	RILEVATO	0	35	29.2838	38.0889	54.3965	0	54.3965	70.1779	70.1779
33	0.214436	14.1541	29.8286	RILEVATO	0	35	29.0677	37.8078	53.9951	0	53.9951	70.6616	70.6616
34	0.214436	14.2198	31.3596	RILEVATO	0	35	28.7766	37.4291	53.4541	0	53.4541	70.9915	70.9915
35	0.214436	14.2533	32.916	RILEVATO	0	35	28.4086	36.9505	52.7707	0	52.7707	71.1603	71.1603

36	0.214436	14.2527	34.5002	RILEVATO	0	35	27.9621	36.3697	51.9414	0	51.9414	71.1594	71.1594
37	0.214436	14.0823	36.1152	RILEVATO	0	35	27.1763	35.3477	50.4818	0	50.4818	70.3102	70.3102
38	0.214436	13.4553	37.7642	RILEVATO	0	35	25.5226	33.1967	47.4099	0	47.4099	67.1817	67.1817
39	0.214436	12.7574	39.4508	RILEVATO	0	35	23.7642	30.9096	44.1435	0	44.1435	63.6989	63.6989
40	0.214436	12.0158	41.1794	RILEVATO	0	35	21.9581	28.5605	40.7887	0	40.7887	59.9976	59.9976
41	0.214436	11.2269	42.955	RILEVATO	0	35	20.1033	26.148	37.3433	0	37.3433	56.0604	56.0604
42	0.214436	10.3867	44.7834	RILEVATO	0	35	18.1985	23.6704	33.8046	0	33.8046	51.866	51.866
43	0.214436	9.49004	46.6718	RILEVATO	0	35	16.2424	21.1261	30.1712	0	30.1712	47.3902	47.3902
44	0.214436	8.53094	48.6288	RILEVATO	0	35	14.234	18.5139	26.4406	0	26.4406	42.6022	42.6022
45	0.214436	7.50189	50.6651	RILEVATO	0	35	12.1726	15.8326	22.6113	0	22.6113	37.4647	37.4647
46	0.214436	6.39346	52.7941	RILEVATO	0	35	10.0577	13.0818	18.6827	0	18.6827	31.9304	31.9304
47	0.214436	5.19343	55.0333	RILEVATO	0	35	7.89003	10.2624	14.6562	0	14.6562	25.9383	25.9383
48	0.214436	3.88557	57.406	RILEVATO	0	35	5.69498	7.40735	10.5788	0	10.5788	19.4859	19.4859
49	0.214436	2.44741	59.9447	RILEVATO	0	35	4.52589	5.88673	8.40711	0	8.40711	16.2287	16.2287
50	0.214436	0.846234	62.6966	RILEVATO	0	35	2.16917	2.8214	4.02937	0	4.02937	8.23146	8.23146

Global Minimum Query (janbu simplified) - Safety Factor: 1.12671

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	0.202561	0.153407	-17.5911	UG1	5	26	5.55018	6.25344	2.56993	0	2.56993	0.810265	0.810265
2	0.202561	0.794816	-16.0834	UG1	5	26	7.14714	8.05275	6.25906	0	6.25906	4.1984	4.1984
3	0.202561	1.51712	-14.587	UG1	5	26	8.91054	10.0396	10.3327	0	10.3327	8.01384	8.01384
4	0.202561	2.21888	-13.1008	UG1	5	26	10.577	11.9172	14.1823	0	14.1823	11.7208	11.7208
5	0.202561	2.90051	-11.6235	UG1	5	26	12.1521	13.6919	17.8211	0	17.8211	15.3214	15.3214
6	0.202561	3.56234	-10.154	UG1	5	26	13.641	15.3694	21.2605	0	21.2605	18.8174	18.8174
7	0.202561	4.20465	-8.69124	UG1	5	26	15.0479	16.9546	24.5106	0	24.5106	22.2103	22.2103
8	0.202561	4.8277	-7.23415	UG1	5	26	16.3767	18.4518	27.5803	0	27.5803	25.5015	25.5015
9	0.202561	5.4317	-5.78176	UG1	5	26	17.6307	19.8647	30.4772	0	30.4772	28.6921	28.6921
10	0.202561	6.0168	-4.33309	UG1	5	26	18.8129	21.1967	33.2082	0	33.2082	31.7828	31.7828
11	0.202561	6.58313	-2.8872	UG1	5	26	19.9259	22.4507	35.7793	0	35.7793	34.7743	34.7743
12	0.202561	7.13078	-1.44314	UG1	5	26	20.9719	23.6292	38.1956	0	38.1956	37.6673	37.6673
13	0.202561	7.65981	0	UG1	5	26	21.9529	24.7345	40.4618	0	40.4618	40.4618	40.4618
14	0.202561	8.17024	1.44314	UG1	5	26	22.8707	25.7686	42.5819	0	42.5819	43.1581	43.1581
15	0.202561	8.66204	2.8872	UG1	5	26	23.7266	26.733	44.5594	0	44.5594	45.756	45.756
16	0.202561	9.13516	4.33309	UG1	5	26	24.5222	27.6294	46.3971	0	46.3971	48.2552	48.2552
17	0.202561	9.58952	5.78176	UG1	5	26	25.2584	28.4589	48.0978	0	48.0978	50.6553	50.6553
18	0.202561	10.025	7.23415	UG1	5	26	25.9361	29.2225	49.6634	0	49.6634	52.9556	52.9556
19	0.202561	10.4414	8.69124	UG1	5	26	26.5561	29.921	51.096	0	51.096	55.1555	55.1555
20	0.202561	10.8385	10.154	UG1	5	26	27.119	30.5553	52.3961	0	52.3961	57.2531	57.2531
21	0.202561	11.2162	11.6235	UG1	5	26	27.6252	31.1256	53.5656	0	53.5656	59.2481	59.2481
22	0.202561	11.574	13.1008	UG1	5	26	28.075	31.6324	54.6043	0	54.6043	61.138	61.138
23	0.202561	11.9117	14.587	UG1	5	26	28.4685	32.0757	55.5134	0	55.5134	62.922	62.922
24	0.202561	12.2288	16.0834	UG1	5	26	28.8055	32.4555	56.2922	0	56.2922	64.5974	64.5974
25	0.202561	12.525	17.5911	UG1	5	26	29.0861	32.7716	56.9402	0	56.9402	66.1619	66.1619
26	0.202714	12.8023	19.112	RILEVATO	0	35	34.5547	38.9331	55.6023	0	55.6023	67.5761	67.5761
27	0.202714	13.0405	20.6477	RILEVATO	0	35	34.6602	39.052	55.7723	0	55.7723	68.8331	68.8331
28	0.202714	13.2546	22.1991	RILEVATO	0	35	34.6835	39.0783	55.8095	0	55.8095	69.9629	69.9629
29	0.202714	13.4438	23.7678	RILEVATO	0	35	34.6243	39.0116	55.7146	0	55.7146	70.9625	70.9625
30	0.202714	13.6074	25.3557	RILEVATO	0	35	34.482	38.8512	55.4854	0	55.4854	71.8259	71.8259
31	0.202714	13.7443	26.9647	RILEVATO	0	35	34.2556	38.5961	55.1209	0	55.1209	72.5484	72.5484
32	0.202714	13.8534	28.5971	RILEVATO	0	35	33.944	38.2451	54.6197	0	54.6197	73.1244	73.1244
33	0.202714	13.9334	30.2553	RILEVATO	0	35	33.5459	37.7965	53.979	0	53.979	73.5465	73.5465
34	0.202714	13.9828	31.942	RILEVATO	0	35	33.0593	37.2483	53.1963	0	53.1963	73.8075	73.8075
35	0.202714	14	33.6603	RILEVATO	0	35	32.4823	36.5981	52.2678	0	52.2678	73.8982	73.8982
36	0.202714	13.983	35.4136	RILEVATO	0	35	31.8121	35.843	51.1892	0	51.1892	73.8083	73.8083
37	0.202714	13.9295	37.2061	RILEVATO	0	35	31.0458	34.9796	49.9562	0	49.9562	73.5264	73.5264
38	0.202714	13.8038	39.0422	RILEVATO	0	35	30.107	33.9219	48.4456	0	48.4456	72.8625	72.8625
39	0.202714	13.2561	40.9274	RILEVATO	0	35	28.2579	31.8385	45.4701	0	45.4701	69.9716	69.9716

40	0.202714	12.5552	42.8682	RILEVATO	0	35	26.1188	29.4283	42.0281	0	42.0281	66.2722	66.2722
41	0.202714	11.8042	44.8721	RILEVATO	0	35	23.9218	26.9529	38.4927	0	38.4927	62.308	62.308
42	0.202714	10.9977	46.9486	RILEVATO	0	35	21.6644	24.4095	34.8604	0	34.8604	58.0509	58.0509
43	0.202714	10.129	49.1093	RILEVATO	0	35	19.3441	21.7952	31.1268	0	31.1268	53.4655	53.4655
44	0.202714	9.18967	51.3688	RILEVATO	0	35	16.9583	19.1071	27.2878	0	27.2878	48.5074	48.5074
45	0.202714	8.16884	53.7463	RILEVATO	0	35	14.5048	16.3427	23.3398	0	23.3398	43.1191	43.1191
46	0.202714	7.05186	56.2675	RILEVATO	0	35	11.9816	13.4998	19.2796	0	19.2796	37.2232	37.2232
47	0.202714	5.81833	58.9684	RILEVATO	0	35	9.38831	10.5779	15.1068	0	15.1068	30.712	30.712
48	0.202714	4.43824	61.9021	RILEVATO	0	35	6.7279	7.58039	10.8259	0	10.8259	23.4273	23.4273
49	0.202714	2.86397	65.1538	RILEVATO	0	35	4.0113	4.51957	6.45461	0	6.45461	15.1175	15.1175
50	0.202714	1.01044	68.876	RILEVATO	0	35	1.2945	1.45853	2.08301	0	2.08301	5.43361	5.43361

Stabilità globale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.31878

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	0.23435	0.141137	-15.9363	UG1	4	21.3151	3.50701	4.62498	1.60175	0	1.60175	0.600347	0.600347
2	0.23435	0.410274	-14.5185	UG1	4	21.3151	3.84513	5.07088	2.74454	0	2.74454	1.7488	1.7488
3	0.23435	0.653383	-13.1097	UG1	4	21.3151	4.14294	5.46362	3.75107	0	3.75107	2.78624	2.78624
4	0.23435	0.870935	-11.709	UG1	4	21.3151	4.4021	5.8054	4.627	0	4.627	3.71465	3.71465
5	0.23435	1.06724	-10.3153	UG1	4	21.3151	4.62932	6.10506	5.39501	0	5.39501	4.55244	4.55244
6	0.23435	1.65242	-8.92783	UG1	4	21.3151	5.36835	7.07967	7.89281	0	7.89281	7.04947	7.04947
7	0.23435	2.49119	-7.54557	UG1	4	21.3151	6.42978	8.47946	11.4803	0	11.4803	10.6286	10.6286
8	0.23435	3.30573	-6.16772	UG1	4	21.3151	7.44418	9.81724	14.9089	0	14.9089	14.1044	14.1044
9	0.23435	4.09624	-4.79345	UG1	4	21.3151	8.41299	11.0949	18.1833	0	18.1833	17.4778	17.4778
10	0.23435	4.86289	-3.42193	UG1	4	21.3151	9.33744	12.314	21.3079	0	21.3079	20.7495	20.7495
11	0.23435	5.60581	-2.05238	UG1	4	21.3151	10.2186	13.4761	24.2862	0	24.2862	23.92	23.92
12	0.23435	6.32507	-0.683995	UG1	4	21.3151	11.0576	14.5825	27.1217	0	27.1217	26.9896	26.9896
13	0.23435	7.02072	0.683995	UG1	4	21.3151	11.855	15.6342	29.8171	0	29.8171	29.9586	29.9586
14	0.23435	7.69276	2.05238	UG1	4	21.3151	12.6118	16.6322	32.3749	0	32.3749	32.8268	32.8268
15	0.23435	8.34114	3.42193	UG1	4	21.3151	13.3285	17.5774	34.7973	0	34.7973	35.5942	35.5942
16	0.23435	8.96579	4.79345	UG1	4	21.3151	14.0057	18.4704	37.0859	0	37.0859	38.2604	38.2604
17	0.23435	9.56657	6.16772	UG1	4	21.3151	14.6437	19.3118	39.2424	0	39.2424	40.8248	40.8248
18	0.23435	10.1433	7.54557	UG1	4	21.3151	15.243	20.1021	41.2676	0	41.2676	43.2868	43.2868
19	0.23435	10.6959	8.92783	UG1	4	21.3151	15.8036	20.8415	43.1626	0	43.1626	45.6453	45.6453
20	0.23435	11.2239	10.3153	UG1	4	21.3151	16.3259	21.5303	44.9279	0	44.9279	47.8993	47.8993
21	0.23435	11.7272	11.709	UG1	4	21.3151	16.8099	22.1686	46.5638	0	46.5638	50.0477	50.0477
22	0.23435	12.2053	13.1097	UG1	4	21.3151	17.2556	22.7564	48.0702	0	48.0702	52.0889	52.0889
23	0.23435	12.6578	14.5185	UG1	4	21.3151	17.663	23.2936	49.4469	0	49.4469	54.0209	54.0209
24	0.23435	13.0843	15.9363	UG1	4	21.3151	18.0317	23.7799	50.6934	0	50.6934	55.8422	55.8422
25	0.229242	13.1782	17.3485	RILEVATO	0	29.2561	21.562	28.4356	50.763	0	50.763	57.4989	57.4989
26	0.229242	13.5183	18.756	RILEVATO	0	29.2561	21.8958	28.8758	51.5486	0	51.5486	58.9838	58.9838
27	0.229242	13.831	20.1753	RILEVATO	0	29.2561	22.1733	29.2417	52.2019	0	52.2019	60.3492	60.3492
28	0.229242	14.1155	21.6077	RILEVATO	0	29.2561	22.3941	29.5329	52.7216	0	52.7216	61.5916	61.5916
29	0.229242	14.3709	23.0544	RILEVATO	0	29.2561	22.5577	29.7486	53.1068	0	53.1068	62.7073	62.7073
30	0.229242	14.5964	24.5169	RILEVATO	0	29.2561	22.6634	29.8881	53.356	0	53.356	63.6924	63.6924
31	0.229242	14.7909	25.9966	RILEVATO	0	29.2561	22.7107	29.9504	53.467	0	53.467	64.542	64.542
32	0.229242	14.9533	27.4952	RILEVATO	0	29.2561	22.6984	29.9342	53.4382	0	53.4382	65.2518	65.2518
33	0.229242	15.0822	29.0145	RILEVATO	0	29.2561	22.6255	29.8381	53.2664	0	53.2664	65.8154	65.8154
34	0.229242	15.1762	30.5565	RILEVATO	0	29.2561	22.4907	29.6603	52.9491	0	52.9491	66.227	66.227
35	0.229242	15.2337	32.1234	RILEVATO	0	29.2561	22.2924	29.3988	52.4823	0	52.4823	66.479	66.479
36	0.229242	15.2527	33.7177	RILEVATO	0	29.2561	22.029	29.0514	51.862	0	51.862	66.5633	66.5633
37	0.229242	15.2311	35.3423	RILEVATO	0	29.2561	21.6982	28.6152	51.0834	0	51.0834	66.4706	66.4706

38	0.229242	14.9455	37.0002	RILEVATO	0	29.2561	20.9874	27.6778	49.4101	0	49.4101	65.2254	65.2254
39	0.229242	14.1808	38.6952	RILEVATO	0	29.2561	19.6145	25.8672	46.1777	0	46.1777	61.8892	61.8892
40	0.229242	13.3555	40.4314	RILEVATO	0	29.2561	18.1796	23.9749	42.7995	0	42.7995	58.2887	58.2887
41	0.229242	12.4772	42.2137	RILEVATO	0	29.2561	16.6973	22.02	39.3097	0	39.3097	54.4571	54.4571
42	0.229242	11.5414	44.0478	RILEVATO	0	29.2561	15.1657	20.0002	35.7042	0	35.7042	50.374	50.374
43	0.229242	10.5426	45.9408	RILEVATO	0	29.2561	13.5833	17.9134	31.9787	0	31.9787	46.0156	46.0156
44	0.229242	9.47414	47.9009	RILEVATO	0	29.2561	11.9483	15.7572	28.1295	0	28.1295	41.3533	41.3533
45	0.229242	8.32793	49.9384	RILEVATO	0	29.2561	10.2588	13.5291	24.152	0	24.152	36.3513	36.3513
46	0.229242	7.09373	52.0663	RILEVATO	0	29.2561	8.51332	11.2272	20.0425	0	20.0425	30.9651	30.9651
47	0.229242	5.7584	54.3012	RILEVATO	0	29.2561	6.71043	8.84958	15.7981	0	15.7981	25.1371	25.1371
48	0.229242	4.30458	56.6654	RILEVATO	0	29.2561	4.8499	6.39595	11.4179	0	11.4179	18.7915	18.7915
49	0.229242	2.70844	59.1892	RILEVATO	0	29.2561	8.80397	11.6105	20.7268	0	20.7268	35.4893	35.4893
50	0.229242	0.935655	61.9168	RILEVATO	0	29.2561	7.12012	9.38987	16.7627	0	16.7627	30.1069	30.1069

Global Minimum Query (janbu simplified) - Safety Factor: 1.18184

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	0.234323	0.208644	-22.8902	UG1	4	21.3151	4.27387	5.05103	2.69366	0	2.69366	0.889162	0.889162
2	0.234323	0.609277	-21.2317	UG1	4	21.3151	4.86683	5.75181	4.48967	0	4.48967	2.59885	2.59885
3	0.234323	0.977149	-19.5917	UG1	4	21.3151	5.39481	6.3758	6.08888	0	6.08888	4.16876	4.16876
4	0.234323	1.31329	-17.9682	UG1	4	21.3151	5.86216	6.92813	7.50443	0	7.50443	5.6033	5.6033
5	0.234323	1.62527	-16.3595	UG1	4	21.3151	6.28298	7.42548	8.77908	0	8.77908	6.93472	6.93472
6	0.234323	2.33785	-14.764	UG1	4	21.3151	7.31446	8.64452	11.9033	0	11.9033	9.9757	9.9757
7	0.234323	3.27929	-13.1801	UG1	4	21.3151	8.67521	10.2527	16.0249	0	16.0249	13.9934	13.9934
8	0.234323	4.19201	-11.6064	UG1	4	21.3151	9.96625	11.7785	19.9354	0	19.9354	17.8885	17.8885
9	0.234323	5.0765	-10.0415	UG1	4	21.3151	11.1909	13.2259	23.6448	0	23.6448	21.6632	21.6632
10	0.234323	5.9332	-8.48423	UG1	4	21.3151	12.3521	14.5982	27.1619	0	27.1619	25.3194	25.3194
11	0.234323	6.7625	-6.9332	UG1	4	21.3151	13.4523	15.8985	30.4944	0	30.4944	28.8586	28.8586
12	0.234323	7.56469	-5.38727	UG1	4	21.3151	14.4938	17.1294	33.649	0	33.649	32.2822	32.2822
13	0.234323	8.33999	-3.84527	UG1	4	21.3151	15.4785	18.2931	36.6315	0	36.6315	35.5912	35.5912
14	0.234323	9.0886	-2.30605	UG1	4	21.3151	16.408	19.3916	39.4469	0	39.4469	38.7862	38.7862
15	0.234323	9.81062	-0.768499	UG1	4	21.3151	17.2838	20.4267	42.0996	0	42.0996	41.8678	41.8678
16	0.234323	10.5061	0.768499	UG1	4	21.3151	18.1071	21.3997	44.5934	0	44.5934	44.8363	44.8363
17	0.234323	11.1751	2.30605	UG1	4	21.3151	18.879	22.3119	46.9313	0	46.9313	47.6916	47.6916
18	0.234323	11.8174	3.84527	UG1	4	21.3151	19.6002	23.1643	49.1157	0	49.1157	50.4331	50.4331
19	0.234323	12.4331	5.38727	UG1	4	21.3151	20.2716	23.9578	51.1496	0	51.1496	53.0613	53.0613
20	0.234323	13.0219	6.9332	UG1	4	21.3151	20.8937	24.693	53.0335	0	53.0335	55.5742	55.5742
21	0.234323	13.5836	8.48423	UG1	4	21.3151	21.4669	25.3704	54.7697	0	54.7697	57.9719	57.9719
22	0.234323	14.1179	10.0415	UG1	4	21.3151	21.9913	25.9902	56.3584	0	56.3584	60.2525	60.2525
23	0.234323	14.6244	11.6064	UG1	4	21.3151	22.4673	26.5527	57.8001	0	57.8001	62.4146	62.4146
24	0.234323	15.1026	13.1801	UG1	4	21.3151	22.8946	27.0578	59.0944	0	59.0944	64.4559	64.4559
25	0.234323	15.5522	14.764	UG1	4	21.3151	23.2734	27.5054	60.2414	0	60.2414	66.3748	66.3748
26	0.234323	15.9724	16.3595	UG1	4	21.3151	23.603	27.895	61.2403	0	61.2403	68.1689	68.1689
27	0.234323	16.3625	17.9682	UG1	4	21.3151	23.8833	28.2262	62.0889	0	62.0889	69.8344	69.8344
28	0.234323	16.7219	19.5917	UG1	4	21.3151	24.1135	28.4983	62.7861	0	62.7861	71.3686	71.3686
29	0.234323	17.0495	21.2317	UG1	4	21.3151	24.2928	28.7102	63.3293	0	63.3293	72.7673	72.7673
30	0.234323	17.3444	22.8902	UG1	4	21.3151	24.4203	28.8609	63.7155	0	63.7155	74.0261	74.0261
31	0.234538	17.609	24.5701	RILEVATO	0	29.2561	29.2515	34.5706	61.7148	0	61.7148	75.0887	75.0887
32	0.234538	17.8089	26.2736	RILEVATO	0	29.2561	29.1695	34.4737	61.5419	0	61.5419	75.9416	75.9416
33	0.234538	17.9698	28.0024	RILEVATO	0	29.2561	29.0087	34.2836	61.2026	0	61.2026	76.6284	76.6284
34	0.234538	18.0899	29.7596	RILEVATO	0	29.2561	28.7672	33.9982	60.693	0	60.693	77.1412	77.1412
35	0.234538	18.167	31.5481	RILEVATO	0	29.2561	28.4426	33.6146	60.0084	0	60.0084	77.4709	77.4709
36	0.234538	18.1988	33.3716	RILEVATO	0	29.2561	28.0323	33.1297	59.1428	0	59.1428	77.6068	77.6068
37	0.234538	18.1756	35.2343	RILEVATO	0	29.2561	27.5232	32.528	58.0686	0	58.0686	77.5087	77.5087
38	0.234538	17.6699	37.1408	RILEVATO	0	29.2561	26.2808	31.0597	55.4473	0	55.4473	75.3528	75.3528
39	0.234538	16.8494	39.0968	RILEVATO	0	29.2561	24.5877	29.0587	51.8751	0	51.8751	71.8547	71.8547
40	0.234538	15.9688	41.1087	RILEVATO	0	29.2561	22.8337	26.9858	48.1746	0	48.1746	68.0998	68.0998
41	0.234538	15.0223	43.1844	RILEVATO	0	29.2561	21.016	24.8375	44.3397	0	44.3397	64.0642	64.0642
42	0.234538	14.0031	45.3334	RILEVATO	0	29.2561	19.1313	22.6101	40.3634	0	40.3634	59.7186	59.7186

43	0.234538	12.9028	47.5675	RILEVATO	0	29.2561	17.1759	20.2992	36.238	0	36.238	55.0266	55.0266
44	0.234538	11.7105	49.9016	RILEVATO	0	29.2561	15.146	17.9001	31.9551	0	31.9551	49.9426	49.9426
45	0.234538	10.4124	52.3552	RILEVATO	0	29.2561	13.037	15.4077	27.5054	0	27.5054	44.407	44.407
46	0.234538	8.98989	54.954	RILEVATO	0	29.2561	10.8444	12.8164	22.8797	0	22.8797	38.3408	38.3408
47	0.234538	7.41711	57.7344	RILEVATO	0	29.2561	8.5641	10.1214	18.0686	0	18.0686	31.6337	31.6337
48	0.234538	5.65626	60.7495	RILEVATO	0	29.2561	9.3863	11.0931	19.8032	0	19.8032	36.5633	36.5633
49	0.234538	3.64772	64.0837	RILEVATO	0	29.2561	9.97352	11.7871	21.0422	0	21.0422	41.567	41.567
50	0.234538	1.28614	67.8874	RILEVATO	0	29.2561	6.89036	8.1433	14.5373	0	14.5373	31.4955	31.4955

Stabilità globale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 1.31878

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	0.23435	0.141137	-15.9363	UG1	4	21.3151	3.50701	4.62498	1.60175	0	1.60175	0.600347	0.600347
2	0.23435	0.410274	-14.5185	UG1	4	21.3151	3.84513	5.07088	2.74454	0	2.74454	1.7488	1.7488
3	0.23435	0.653383	-13.1097	UG1	4	21.3151	4.14294	5.46362	3.75107	0	3.75107	2.78624	2.78624
4	0.23435	0.870935	-11.709	UG1	4	21.3151	4.4021	5.8054	4.627	0	4.627	3.71465	3.71465
5	0.23435	1.06724	-10.3153	UG1	4	21.3151	4.62932	6.10506	5.39501	0	5.39501	4.55244	4.55244
6	0.23435	1.65242	-8.92783	UG1	4	21.3151	5.36835	7.07967	7.89281	0	7.89281	7.04947	7.04947
7	0.23435	2.49119	-7.54557	UG1	4	21.3151	6.42978	8.47946	11.4803	0	11.4803	10.6286	10.6286
8	0.23435	3.30573	-6.16772	UG1	4	21.3151	7.44418	9.81724	14.9089	0	14.9089	14.1044	14.1044
9	0.23435	4.09624	-4.79345	UG1	4	21.3151	8.41299	11.0949	18.1833	0	18.1833	17.4778	17.4778
10	0.23435	4.86289	-3.42193	UG1	4	21.3151	9.33744	12.314	21.3079	0	21.3079	20.7495	20.7495
11	0.23435	5.60581	-2.05238	UG1	4	21.3151	10.2186	13.4761	24.2862	0	24.2862	23.92	23.92
12	0.23435	6.32507	-0.683995	UG1	4	21.3151	11.0576	14.5825	27.1217	0	27.1217	26.9896	26.9896
13	0.23435	7.02072	0.683995	UG1	4	21.3151	11.855	15.6342	29.8171	0	29.8171	29.9586	29.9586
14	0.23435	7.69276	2.05238	UG1	4	21.3151	12.6118	16.6322	32.3749	0	32.3749	32.8268	32.8268
15	0.23435	8.34114	3.42193	UG1	4	21.3151	13.3285	17.5774	34.7973	0	34.7973	35.5942	35.5942
16	0.23435	8.96579	4.79345	UG1	4	21.3151	14.0057	18.4704	37.0859	0	37.0859	38.2604	38.2604
17	0.23435	9.56657	6.16772	UG1	4	21.3151	14.6437	19.3118	39.2424	0	39.2424	40.8248	40.8248
18	0.23435	10.1433	7.54557	UG1	4	21.3151	15.243	20.1021	41.2676	0	41.2676	43.2868	43.2868
19	0.23435	10.6959	8.92783	UG1	4	21.3151	15.8036	20.8415	43.1626	0	43.1626	45.6453	45.6453
20	0.23435	11.2239	10.3153	UG1	4	21.3151	16.3259	21.5303	44.9279	0	44.9279	47.8993	47.8993
21	0.23435	11.7272	11.709	UG1	4	21.3151	16.8099	22.1686	46.5638	0	46.5638	50.0477	50.0477
22	0.23435	12.2053	13.1097	UG1	4	21.3151	17.2556	22.7564	48.0702	0	48.0702	52.0889	52.0889
23	0.23435	12.6578	14.5185	UG1	4	21.3151	17.663	23.2936	49.4469	0	49.4469	54.0209	54.0209
24	0.23435	13.0843	15.9363	UG1	4	21.3151	18.0317	23.7799	50.6934	0	50.6934	55.8422	55.8422
25	0.229242	13.1782	17.3485	RILEVATO	0	29.2561	21.562	28.4356	50.763	0	50.763	57.4989	57.4989
26	0.229242	13.5183	18.756	RILEVATO	0	29.2561	21.8958	28.8758	51.5486	0	51.5486	58.9838	58.9838
27	0.229242	13.831	20.1753	RILEVATO	0	29.2561	22.1733	29.2417	52.2019	0	52.2019	60.3492	60.3492
28	0.229242	14.1155	21.6077	RILEVATO	0	29.2561	22.3941	29.5329	52.7216	0	52.7216	61.5916	61.5916
29	0.229242	14.3709	23.0544	RILEVATO	0	29.2561	22.5577	29.7486	53.1068	0	53.1068	62.7073	62.7073
30	0.229242	14.5964	24.5169	RILEVATO	0	29.2561	22.6634	29.8881	53.356	0	53.356	63.6924	63.6924
31	0.229242	14.7909	25.9966	RILEVATO	0	29.2561	22.7107	29.9504	53.467	0	53.467	64.542	64.542
32	0.229242	14.9533	27.4952	RILEVATO	0	29.2561	22.6984	29.9342	53.4382	0	53.4382	65.2518	65.2518
33	0.229242	15.0822	29.0145	RILEVATO	0	29.2561	22.6255	29.8381	53.2664	0	53.2664	65.8154	65.8154
34	0.229242	15.1762	30.5565	RILEVATO	0	29.2561	22.4907	29.6603	52.9491	0	52.9491	66.227	66.227
35	0.229242	15.2337	32.1234	RILEVATO	0	29.2561	22.2924	29.3988	52.4823	0	52.4823	66.479	66.479
36	0.229242	15.2527	33.7177	RILEVATO	0	29.2561	22.029	29.0514	51.862	0	51.862	66.5633	66.5633
37	0.229242	15.2311	35.3423	RILEVATO	0	29.2561	21.6982	28.6152	51.0834	0	51.0834	66.4706	66.4706

38	0.229242	14.9455	37.0002	RILEVATO	0	29.2561	20.9874	27.6778	49.4101	0	49.4101	65.2254	65.2254
39	0.229242	14.1808	38.6952	RILEVATO	0	29.2561	19.6145	25.8672	46.1777	0	46.1777	61.8892	61.8892
40	0.229242	13.3555	40.4314	RILEVATO	0	29.2561	18.1796	23.9749	42.7995	0	42.7995	58.2887	58.2887
41	0.229242	12.4772	42.2137	RILEVATO	0	29.2561	16.6973	22.02	39.3097	0	39.3097	54.4571	54.4571
42	0.229242	11.5414	44.0478	RILEVATO	0	29.2561	15.1657	20.0002	35.7042	0	35.7042	50.374	50.374
43	0.229242	10.5426	45.9408	RILEVATO	0	29.2561	13.5833	17.9134	31.9787	0	31.9787	46.0156	46.0156
44	0.229242	9.47414	47.9009	RILEVATO	0	29.2561	11.9483	15.7572	28.1295	0	28.1295	41.3533	41.3533
45	0.229242	8.32793	49.9384	RILEVATO	0	29.2561	10.2588	13.5291	24.152	0	24.152	36.3513	36.3513
46	0.229242	7.09373	52.0663	RILEVATO	0	29.2561	8.51332	11.2272	20.0425	0	20.0425	30.9651	30.9651
47	0.229242	5.7584	54.3012	RILEVATO	0	29.2561	6.71043	8.84958	15.7981	0	15.7981	25.1371	25.1371
48	0.229242	4.30458	56.6654	RILEVATO	0	29.2561	4.8499	6.39595	11.4179	0	11.4179	18.7915	18.7915
49	0.229242	2.70844	59.1892	RILEVATO	0	29.2561	8.80397	11.6105	20.7268	0	20.7268	35.4893	35.4893
50	0.229242	0.935655	61.9168	RILEVATO	0	29.2561	7.12012	9.38987	16.7627	0	16.7627	30.1069	30.1069

Global Minimum Query (janbu simplified) - Safety Factor: 1.18184

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	0.234323	0.208644	-22.8902	UG1	4	21.3151	4.27387	5.05103	2.69366	0	2.69366	0.889162	0.889162
2	0.234323	0.609277	-21.2317	UG1	4	21.3151	4.86683	5.75181	4.48967	0	4.48967	2.59885	2.59885
3	0.234323	0.977149	-19.5917	UG1	4	21.3151	5.39481	6.3758	6.08888	0	6.08888	4.16876	4.16876
4	0.234323	1.31329	-17.9682	UG1	4	21.3151	5.86216	6.92813	7.50443	0	7.50443	5.6033	5.6033
5	0.234323	1.62527	-16.3595	UG1	4	21.3151	6.28298	7.42548	8.77908	0	8.77908	6.93472	6.93472
6	0.234323	2.33785	-14.764	UG1	4	21.3151	7.31446	8.64452	11.9033	0	11.9033	9.9757	9.9757
7	0.234323	3.27929	-13.1801	UG1	4	21.3151	8.67521	10.2527	16.0249	0	16.0249	13.9934	13.9934
8	0.234323	4.19201	-11.6064	UG1	4	21.3151	9.96625	11.7785	19.9354	0	19.9354	17.8885	17.8885
9	0.234323	5.0765	-10.0415	UG1	4	21.3151	11.1909	13.2259	23.6448	0	23.6448	21.6632	21.6632
10	0.234323	5.9332	-8.48423	UG1	4	21.3151	12.3521	14.5982	27.1619	0	27.1619	25.3194	25.3194
11	0.234323	6.7625	-6.9332	UG1	4	21.3151	13.4523	15.8985	30.4944	0	30.4944	28.8586	28.8586
12	0.234323	7.56469	-5.38727	UG1	4	21.3151	14.4938	17.1294	33.649	0	33.649	32.2822	32.2822
13	0.234323	8.33999	-3.84527	UG1	4	21.3151	15.4785	18.2931	36.6315	0	36.6315	35.5912	35.5912
14	0.234323	9.0886	-2.30605	UG1	4	21.3151	16.408	19.3916	39.4469	0	39.4469	38.7862	38.7862
15	0.234323	9.81062	-0.768499	UG1	4	21.3151	17.2838	20.4267	42.0996	0	42.0996	41.8678	41.8678
16	0.234323	10.5061	0.768499	UG1	4	21.3151	18.1071	21.3997	44.5934	0	44.5934	44.8363	44.8363
17	0.234323	11.1751	2.30605	UG1	4	21.3151	18.879	22.3119	46.9313	0	46.9313	47.6916	47.6916
18	0.234323	11.8174	3.84527	UG1	4	21.3151	19.6002	23.1643	49.1157	0	49.1157	50.4331	50.4331
19	0.234323	12.4331	5.38727	UG1	4	21.3151	20.2716	23.9578	51.1496	0	51.1496	53.0613	53.0613
20	0.234323	13.0219	6.9332	UG1	4	21.3151	20.8937	24.693	53.0335	0	53.0335	55.5742	55.5742
21	0.234323	13.5836	8.48423	UG1	4	21.3151	21.4669	25.3704	54.7697	0	54.7697	57.9719	57.9719
22	0.234323	14.1179	10.0415	UG1	4	21.3151	21.9913	25.9902	56.3584	0	56.3584	60.2525	60.2525
23	0.234323	14.6244	11.6064	UG1	4	21.3151	22.4673	26.5527	57.8001	0	57.8001	62.4146	62.4146
24	0.234323	15.1026	13.1801	UG1	4	21.3151	22.8946	27.0578	59.0944	0	59.0944	64.4559	64.4559
25	0.234323	15.5522	14.764	UG1	4	21.3151	23.2734	27.5054	60.2414	0	60.2414	66.3748	66.3748
26	0.234323	15.9724	16.3595	UG1	4	21.3151	23.603	27.895	61.2403	0	61.2403	68.1689	68.1689
27	0.234323	16.3625	17.9682	UG1	4	21.3151	23.8833	28.2262	62.0889	0	62.0889	69.8344	69.8344
28	0.234323	16.7219	19.5917	UG1	4	21.3151	24.1135	28.4983	62.7861	0	62.7861	71.3686	71.3686
29	0.234323	17.0495	21.2317	UG1	4	21.3151	24.2928	28.7102	63.3293	0	63.3293	72.7673	72.7673
30	0.234323	17.3444	22.8902	UG1	4	21.3151	24.4203	28.8609	63.7155	0	63.7155	74.0261	74.0261
31	0.234538	17.609	24.5701	RILEVATO	0	29.2561	29.2515	34.5706	61.7148	0	61.7148	75.0887	75.0887
32	0.234538	17.8089	26.2736	RILEVATO	0	29.2561	29.1695	34.4737	61.5419	0	61.5419	75.9416	75.9416
33	0.234538	17.9698	28.0024	RILEVATO	0	29.2561	29.0087	34.2836	61.2026	0	61.2026	76.6284	76.6284
34	0.234538	18.0899	29.7596	RILEVATO	0	29.2561	28.7672	33.9982	60.693	0	60.693	77.1412	77.1412
35	0.234538	18.167	31.5481	RILEVATO	0	29.2561	28.4426	33.6146	60.0084	0	60.0084	77.4709	77.4709
36	0.234538	18.1988	33.3716	RILEVATO	0	29.2561	28.0323	33.1297	59.1428	0	59.1428	77.6068	77.6068
37	0.234538	18.1756	35.2343	RILEVATO	0	29.2561	27.5232	32.528	58.0686	0	58.0686	77.5087	77.5087
38	0.234538	17.6699	37.1408	RILEVATO	0	29.2561	26.2808	31.0597	55.4473	0	55.4473	75.3528	75.3528
39	0.234538	16.8494	39.0968	RILEVATO	0	29.2561	24.5877	29.0587	51.8751	0	51.8751	71.8547	71.8547
40	0.234538	15.9688	41.1087	RILEVATO	0	29.2561	22.8337	26.9858	48.1746	0	48.1746	68.0998	68.0998
41	0.234538	15.0223	43.1844	RILEVATO	0	29.2561	21.016	24.8375	44.3397	0	44.3397	64.0642	64.0642
42	0.234538	14.0031	45.3334	RILEVATO	0	29.2561	19.1313	22.6101	40.3634	0	40.3634	59.7186	59.7186

43	0.234538	12.9028	47.5675	RILEVATO	0	29.2561	17.1759	20.2992	36.238	0	36.238	55.0266	55.0266
44	0.234538	11.7105	49.9016	RILEVATO	0	29.2561	15.146	17.9001	31.9551	0	31.9551	49.9426	49.9426
45	0.234538	10.4124	52.3552	RILEVATO	0	29.2561	13.037	15.4077	27.5054	0	27.5054	44.407	44.407
46	0.234538	8.98989	54.954	RILEVATO	0	29.2561	10.8444	12.8164	22.8797	0	22.8797	38.3408	38.3408
47	0.234538	7.41711	57.7344	RILEVATO	0	29.2561	8.5641	10.1214	18.0686	0	18.0686	31.6337	31.6337
48	0.234538	5.65626	60.7495	RILEVATO	0	29.2561	9.3863	11.0931	19.8032	0	19.8032	36.5633	36.5633
49	0.234538	3.64772	64.0837	RILEVATO	0	29.2561	9.97352	11.7871	21.0422	0	21.0422	41.567	41.567
50	0.234538	1.28614	67.8874	RILEVATO	0	29.2561	6.89036	8.1433	14.5373	0	14.5373	31.4955	31.4955

Stabilità globale - Sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.29998

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	0.265094	0.22738	-19.774	UG1	5	26	4.84254	6.29521	2.65557	0	2.65557	0.914634	0.914634
2	0.265094	0.663382	-18.2552	UG1	5	26	5.5345	7.19474	4.49988	0	4.49988	2.67432	2.67432
3	0.265094	1.06235	-16.7496	UG1	5	26	6.14794	7.9922	6.13493	0	6.13493	4.28466	4.28466
4	0.265094	1.4252	-15.2558	UG1	5	26	6.68757	8.69371	7.57323	0	7.57323	5.74926	5.74926
5	0.265094	1.75273	-13.7726	UG1	5	26	7.15753	9.30464	8.82581	0	8.82581	7.07138	7.07138
6	0.265094	2.04565	-12.2988	UG1	5	26	7.56143	9.82971	9.90238	0	9.90238	8.25389	8.25389
7	0.265094	2.30457	-10.8331	UG1	5	26	7.90249	10.2731	10.8114	0	10.8114	9.29919	9.29919
8	0.265094	2.53001	-9.37463	UG1	5	26	8.18354	10.6384	11.5605	0	11.5605	10.2095	10.2095
9	0.265094	2.72244	-7.92224	UG1	5	26	8.40711	10.9291	12.1564	0	12.1564	10.9865	10.9865
10	0.265094	2.88224	-6.47497	UG1	5	26	8.57545	11.1479	12.6051	0	12.6051	11.6319	11.6319
11	0.265094	3.39167	-5.03184	UG1	5	26	9.28871	12.0751	14.5062	0	14.5062	13.6883	13.6883
12	0.265094	4.37479	-3.5919	UG1	5	26	10.7233	13.9401	18.3299	0	18.3299	17.6568	17.6568
13	0.265094	5.32843	-2.15424	UG1	5	26	12.0856	15.7111	21.961	0	21.961	21.5064	21.5064
14	0.265094	6.2503	-0.717929	UG1	5	26	13.3742	17.3862	25.3954	0	25.3954	25.2278	25.2278
15	0.265094	7.14044	0.717929	UG1	5	26	14.5909	18.9679	28.6385	0	28.6385	28.8213	28.8213
16	0.265094	7.99887	2.15424	UG1	5	26	15.7377	20.4587	31.695	0	31.695	32.287	32.287
17	0.265094	8.82553	3.5919	UG1	5	26	16.816	21.8604	34.5688	0	34.5688	35.6244	35.6244
18	0.265094	9.62029	5.03184	UG1	5	26	17.827	23.1747	37.2636	0	37.2636	38.8332	38.8332
19	0.265094	10.383	6.47497	UG1	5	26	18.7719	24.4031	39.7821	0	39.7821	41.9126	41.9126
20	0.265094	11.1133	7.92224	UG1	5	26	19.6516	25.5467	42.1269	0	42.1269	44.8616	44.8616
21	0.265094	11.811	9.37463	UG1	5	26	20.4669	26.6066	44.2999	0	44.2999	47.6789	47.6789
22	0.265094	12.4757	10.8331	UG1	5	26	21.2183	27.5834	46.3028	0	46.3028	50.3631	50.3631
23	0.265094	13.107	12.2988	UG1	5	26	21.9063	28.4777	48.1364	0	48.1364	52.9122	52.9122
24	0.265094	13.7042	13.7726	UG1	5	26	22.531	29.2898	49.8015	0	49.8015	55.3242	55.3242
25	0.265094	14.2668	15.2558	UG1	5	26	23.0925	30.0198	51.2983	0	51.2983	57.5966	57.5966
26	0.265094	14.7941	16.7496	UG1	5	26	23.5908	30.6676	52.6266	0	52.6266	59.7264	59.7264
27	0.265094	15.2853	18.2552	UG1	5	26	24.0257	31.2329	53.7853	0	53.7853	61.7102	61.7102
28	0.265094	15.7394	19.774	UG1	5	26	24.3966	31.7151	54.774	0	54.774	63.5448	63.5448
29	0.257325	15.6638	21.2847	RILEVATO	0	35	29.0067	37.7081	53.8526	0	53.8526	65.1529	65.1529
30	0.257325	15.9932	22.7884	RILEVATO	0	35	29.2198	37.9852	54.2484	0	54.2484	66.5243	66.5243
31	0.257325	16.2835	24.3088	RILEVATO	0	35	29.3438	38.1464	54.4788	0	54.4788	67.7335	67.7335
32	0.257325	16.5334	25.8478	RILEVATO	0	35	29.3779	38.1907	54.5421	0	54.5421	68.7742	68.7742
33	0.257325	16.7412	27.407	RILEVATO	0	35	29.3212	38.117	54.4367	0	54.4367	69.64	69.64
34	0.257325	16.9052	28.9886	RILEVATO	0	35	29.1726	37.9238	54.1608	0	54.1608	70.3238	70.3238
35	0.257325	17.0235	30.5948	RILEVATO	0	35	28.9305	37.6091	53.7115	0	53.7115	70.8174	70.8174
36	0.257325	17.0937	32.2281	RILEVATO	0	35	28.5933	37.1707	53.0853	0	53.0853	71.111	71.111
37	0.257325	17.1133	33.8913	RILEVATO	0	35	28.1587	36.6058	52.2784	0	52.2784	71.1941	71.1941
38	0.257325	17.0793	35.5877	RILEVATO	0	35	27.6243	35.911	51.2863	0	51.2863	71.0544	71.0544
39	0.257325	16.945	37.3208	RILEVATO	0	35	26.9182	34.9931	49.9755	0	49.9755	70.4971	70.4971
40	0.257325	16.1473	39.0949	RILEVATO	0	35	25.1695	32.7199	46.7289	0	46.7289	67.18	67.18

41	0.257325	15.091	40.915	RILEVATO	0	35	23.0558	29.9721	42.8048	0	42.8048	62.7869	62.7869
42	0.257325	13.9635	42.7866	RILEVATO	0	35	20.8823	27.1466	38.7693	0	38.7693	58.0975	58.0975
43	0.257325	12.7584	44.7168	RILEVATO	0	35	18.6477	24.2416	34.6207	0	34.6207	53.0849	53.0849
44	0.257325	11.4677	46.7138	RILEVATO	0	35	16.3509	21.2558	30.3563	0	30.3563	47.7159	47.7159
45	0.257325	10.0816	48.7879	RILEVATO	0	35	13.9908	18.1878	25.975	0	25.975	41.9498	41.9498
46	0.257325	8.58785	50.9518	RILEVATO	0	35	11.5673	15.0373	21.4755	0	21.4755	35.7354	35.7354
47	0.257325	6.97083	53.2219	RILEVATO	0	35	9.08091	11.805	16.8593	0	16.8593	29.0077	29.0077
48	0.257325	5.20989	55.6199	RILEVATO	0	35	6.53406	8.49415	12.1309	0	12.1309	21.6808	21.6808
49	0.257325	3.27689	58.1755	RILEVATO	0	35	4.63236	6.02198	8.60027	0	8.60027	16.0644	16.0644
50	0.257325	1.13165	60.9314	RILEVATO	0	35	2.3836	3.09863	4.42531	0	4.42531	8.71332	8.71332

Global Minimum Query (janbu simplified) - Safety Factor: 1.12059

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	0.22103	0.166488	-20.7391	UG1	5	26	5.76233	6.45721	2.98773	0	2.98773	0.80583	0.80583
2	0.22103	0.485579	-19.1403	UG1	5	26	6.461	7.24013	4.59292	0	4.59292	2.35051	2.35051
3	0.22103	0.777294	-17.5568	UG1	5	26	7.07375	7.92677	6.00079	0	6.00079	3.76274	3.76274
4	0.22103	1.04238	-15.987	UG1	5	26	7.60673	8.52402	7.22533	0	7.22533	5.046	5.046
5	0.22103	1.32674	-14.4295	UG1	5	26	8.17259	9.15812	8.52544	0	8.52544	6.42258	6.42258
6	0.22103	2.04125	-12.8829	UG1	5	26	9.73158	10.9051	12.1073	0	12.1073	9.88152	9.88152
7	0.22103	2.84886	-11.3457	UG1	5	26	11.4658	12.8484	16.0917	0	16.0917	13.7911	13.7911
8	0.22103	3.63199	-9.81674	UG1	5	26	13.1012	14.6811	19.8491	0	19.8491	17.5822	17.5822
9	0.22103	4.391	-8.29483	UG1	5	26	14.6429	16.4087	23.3914	0	23.3914	21.2565	21.2565
10	0.22103	5.12619	-6.7788	UG1	5	26	16.0955	18.0365	26.7288	0	26.7288	24.8156	24.8156
11	0.22103	5.83781	-5.26752	UG1	5	26	17.4629	19.5688	29.8705	0	29.8705	28.2605	28.2605
12	0.22103	6.52607	-3.75991	UG1	5	26	18.7487	21.0096	32.8245	0	32.8245	31.5924	31.5924
13	0.22103	7.1911	-2.25491	UG1	5	26	19.9556	22.3621	35.5976	0	35.5976	34.8118	34.8118
14	0.22103	7.833	-0.751464	UG1	5	26	21.0866	23.6294	38.1958	0	38.1958	37.9193	37.9193
15	0.22103	8.45183	0.751464	UG1	5	26	22.1436	24.8139	40.6245	0	40.6245	40.915	40.915
16	0.22103	9.04757	2.25491	UG1	5	26	23.1289	25.918	42.8883	0	42.8883	43.799	43.799
17	0.22103	9.62018	3.75991	UG1	5	26	24.044	26.9435	44.991	0	44.991	46.5711	46.5711
18	0.22103	10.1696	5.26752	UG1	5	26	24.8906	27.8922	46.9361	0	46.9361	49.2309	49.2309
19	0.22103	10.6956	6.7788	UG1	5	26	25.6697	28.7652	48.7258	0	48.7258	51.7771	51.7771
20	0.22103	11.1981	8.29483	UG1	5	26	26.3824	29.5638	50.3633	0	50.3633	54.2096	54.2096
21	0.22103	11.6767	9.81674	UG1	5	26	27.0293	30.2888	51.8499	0	51.8499	56.5268	56.5268
22	0.22103	12.1312	11.3457	UG1	5	26	27.6113	30.941	53.1867	0	53.1867	58.7269	58.7269
23	0.22103	12.5612	12.8829	UG1	5	26	28.1287	31.5207	54.3756	0	54.3756	60.809	60.809
24	0.22103	12.9664	14.4295	UG1	5	26	28.5816	32.0282	55.416	0	55.416	62.7702	62.7702
25	0.22103	13.3461	15.987	UG1	5	26	28.97	32.4635	56.3084	0	56.3084	64.6084	64.6084
26	0.22103	13.6998	17.5568	UG1	5	26	29.2939	32.8264	57.0527	0	57.0527	66.321	66.321
27	0.22103	14.0269	19.1403	UG1	5	26	29.5528	33.1166	57.6477	0	57.6477	67.9045	67.9045
28	0.22103	14.3267	20.7391	UG1	5	26	29.7463	33.3334	58.0922	0	58.0922	69.3556	69.3556
29	0.220017	14.5208	22.3513	RILEVATO	0	35	35.1069	39.3404	56.1839	0	56.1839	70.619	70.619
30	0.220017	14.7403	23.9786	RILEVATO	0	35	35.0521	39.279	56.0962	0	56.0962	71.6867	71.6867
31	0.220017	14.9283	25.6268	RILEVATO	0	35	34.9034	39.1124	55.8581	0	55.8581	72.6011	72.6011
32	0.220017	15.0835	27.2981	RILEVATO	0	35	34.6598	38.8394	55.4685	0	55.4685	73.3563	73.3563
33	0.220017	15.2045	28.9949	RILEVATO	0	35	34.32	38.4586	54.9245	0	54.9245	73.9444	73.9444
34	0.220017	15.2895	30.7201	RILEVATO	0	35	33.8823	37.9682	54.2243	0	54.2243	74.3582	74.3582
35	0.220017	15.3367	32.4768	RILEVATO	0	35	33.3447	37.3657	53.3637	0	53.3637	74.5876	74.5876
36	0.220017	15.3438	34.2685	RILEVATO	0	35	32.7045	36.6483	52.3391	0	52.3391	74.6222	74.6222
37	0.220017	15.3083	36.0993	RILEVATO	0	35	31.9587	35.8126	51.1459	0	51.1459	74.4499	74.4499
38	0.220017	15.2272	37.9738	RILEVATO	0	35	31.1037	34.8545	49.7774	0	49.7774	74.0554	74.0554
39	0.220017	15.0474	39.8976	RILEVATO	0	35	30.0362	33.6583	48.0688	0	48.0688	73.1809	73.1809
40	0.220017	14.3603	41.8771	RILEVATO	0	35	27.9705	31.3435	44.7632	0	44.7632	69.8396	69.8396
41	0.220017	13.5052	43.9201	RILEVATO	0	35	25.6228	28.7127	41.0059	0	41.0059	65.6806	65.6806

42	0.220017	12.5855	46.0359	RILEVATO	0	35	23.2095	26.0083	37.1438	0	37.1438	61.2081	61.2081
43	0.220017	11.5937	48.2364	RILEVATO	0	35	20.7278	23.2274	33.1723	0	33.1723	56.3847	56.3847
44	0.220017	10.5201	50.5362	RILEVATO	0	35	18.1751	20.3668	29.0869	0	29.0869	51.1635	51.1635
45	0.220017	9.35228	52.9547	RILEVATO	0	35	15.5488	17.4238	24.8838	0	24.8838	45.4838	45.4838
46	0.220017	8.07346	55.5175	RILEVATO	0	35	12.8469	14.3961	20.5598	0	20.5598	39.2644	39.2644
47	0.220017	6.66045	58.2606	RILEVATO	0	35	10.0691	11.2833	16.1142	0	16.1142	32.3924	32.3924
48	0.220017	5.07921	61.237	RILEVATO	0	35	7.21836	8.08882	11.552	0	11.552	24.7023	24.7023
49	0.220017	3.27593	64.5311	RILEVATO	0	35	4.30619	4.82547	6.89147	0	6.89147	15.9322	15.9322
50	0.220017	1.15522	68.2934	RILEVATO	0	35	1.40426	1.5736	2.24733	0	2.24733	5.77489	5.77489

Interslice Data

Stabilità locale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.31662

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8827	50	0	0	0
2	50.1031	49.9674	0.77546	0	0
3	50.3235	49.9391	1.82528	0	0
4	50.5439	49.9153	3.14907	0	0
5	50.7643	49.8959	4.70814	0	0
6	50.9847	49.8808	6.4658	0	0
7	51.2051	49.87	8.38718	0	0
8	51.4255	49.8635	10.4391	0	0
9	51.6458	49.8614	12.5901	0	0
10	51.8662	49.8635	14.81	0	0
11	52.0866	49.87	17.0702	0	0
12	52.307	49.8808	19.3431	0	0
13	52.5274	49.8959	21.6027	0	0
14	52.7478	49.9153	23.8239	0	0
15	52.9682	49.9391	25.9827	0	0
16	53.1886	49.9674	28.0561	0	0
17	53.409	50	30.0222	0	0
18	53.6355	50.0382	32.416	0	0
19	53.862	50.0812	34.698	0	0
20	54.0884	50.1289	36.845	0	0
21	54.3149	50.1816	38.8349	0	0
22	54.5414	50.2392	40.6465	0	0
23	54.7679	50.3019	42.2598	0	0
24	54.9944	50.3697	43.6557	0	0
25	55.2208	50.4427	44.8162	0	0
26	55.4473	50.521	45.7241	0	0
27	55.6738	50.6048	46.3632	0	0
28	55.9003	50.6942	46.7183	0	0
29	56.1268	50.7893	46.7751	0	0
30	56.3532	50.8902	46.5202	0	0
31	56.5797	50.9973	45.9415	0	0
32	56.8062	51.1105	45.0274	0	0
33	57.0327	51.2303	43.7679	0	0
34	57.2592	51.3567	42.1539	0	0
35	57.4856	51.4901	40.1773	0	0
36	57.7121	51.6308	37.8759	0	0
37	57.9386	51.7791	35.3239	0	0
38	58.1651	51.9353	32.5505	0	0
39	58.3916	52.0999	29.5879	0	0
40	58.618	52.2733	26.472	0	0
41	58.8445	52.456	23.2423	0	0
42	59.071	52.6488	19.9436	0	0
43	59.2975	52.8521	16.6259	0	0
44	59.524	53.067	13.3459	0	0
45	59.7504	53.2942	10.1682	0	0
46	59.9769	53.535	7.16714	0	0
47	60.2034	53.7906	1.9117	0	0
48	60.4299	54.0627	-3.49232	0	0
49	60.6564	54.3532	-8.65659	0	0
50	60.8828	54.6645	-13.4579	0	0
51	61.1093	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.18525

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8716	50	0	0	0
2	50.0787	49.9528	0.871044	0	0
3	50.2858	49.9106	2.06987	0	0
4	50.4929	49.8732	3.60868	0	0
5	50.7	49.8406	5.4402	0	0
6	50.9071	49.8128	7.52018	0	0
7	51.1142	49.7896	9.80715	0	0
8	51.3213	49.7712	12.2621	0	0
9	51.5284	49.7573	14.8484	0	0
10	51.7355	49.7481	17.5313	0	0
11	51.9426	49.7435	20.2782	0	0
12	52.1497	49.7435	23.0581	0	0
13	52.3568	49.7481	25.8416	0	0
14	52.5639	49.7573	28.6009	0	0
15	52.771	49.7712	31.3095	0	0
16	52.9782	49.7896	33.9421	0	0
17	53.1853	49.8128	36.4748	0	0
18	53.3924	49.8406	38.8847	0	0
19	53.5995	49.8732	41.1499	0	0
20	53.8066	49.9106	43.2498	0	0
21	54.0137	49.9528	45.1643	0	0
22	54.2208	50	46.8745	0	0
23	54.4352	50.0541	49.1644	0	0
24	54.6496	50.1137	51.2283	0	0
25	54.864	50.1788	53.0462	0	0
26	55.0783	50.2496	54.599	0	0
27	55.2927	50.3262	55.8688	0	0
28	55.5071	50.4089	56.8386	0	0
29	55.7215	50.4976	57.4925	0	0
30	55.9359	50.5928	57.8158	0	0
31	56.1503	50.6945	57.7944	0	0
32	56.3647	50.803	57.4158	0	0
33	56.5791	50.9186	56.6681	0	0
34	56.7935	51.0415	55.5411	0	0
35	57.0079	51.1722	54.0253	0	0
36	57.2223	51.3111	52.1131	0	0
37	57.4367	51.4585	49.798	0	0
38	57.6511	51.6149	47.1031	0	0
39	57.8654	51.7811	44.1256	0	0
40	58.0798	51.9575	40.9062	0	0
41	58.2942	52.1451	37.4855	0	0
42	58.5086	52.3448	33.9102	0	0
43	58.723	52.5576	30.2338	0	0
44	58.9374	52.7849	26.5187	0	0
45	59.1518	53.0283	22.8387	0	0
46	59.3662	53.29	19.2816	0	0
47	59.5806	53.5724	15.9539	0	0
48	59.795	53.8789	12.9876	0	0
49	60.0094	54.2142	10.397	0	0
50	60.2238	54.5847	4.85292	0	0
51	60.4382	55	0	0	0

Stabilità locale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 1.31662

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8827	50	0	0	0
2	50.1031	49.9674	0.77546	0	0
3	50.3235	49.9391	1.82528	0	0
4	50.5439	49.9153	3.14907	0	0
5	50.7643	49.8959	4.70814	0	0
6	50.9847	49.8808	6.4658	0	0
7	51.2051	49.87	8.38718	0	0
8	51.4255	49.8635	10.4391	0	0
9	51.6458	49.8614	12.5901	0	0
10	51.8662	49.8635	14.81	0	0
11	52.0866	49.87	17.0702	0	0
12	52.307	49.8808	19.3431	0	0
13	52.5274	49.8959	21.6027	0	0
14	52.7478	49.9153	23.8239	0	0
15	52.9682	49.9391	25.9827	0	0
16	53.1886	49.9674	28.0561	0	0
17	53.409	50	30.0222	0	0
18	53.6355	50.0382	32.416	0	0
19	53.862	50.0812	34.698	0	0
20	54.0884	50.1289	36.845	0	0
21	54.3149	50.1816	38.8349	0	0
22	54.5414	50.2392	40.6465	0	0
23	54.7679	50.3019	42.2598	0	0
24	54.9944	50.3697	43.6557	0	0
25	55.2208	50.4427	44.8162	0	0
26	55.4473	50.521	45.7241	0	0
27	55.6738	50.6048	46.3632	0	0
28	55.9003	50.6942	46.7183	0	0
29	56.1268	50.7893	46.7751	0	0
30	56.3532	50.8902	46.5202	0	0
31	56.5797	50.9973	45.9415	0	0
32	56.8062	51.1105	45.0274	0	0
33	57.0327	51.2303	43.7679	0	0
34	57.2592	51.3567	42.1539	0	0
35	57.4856	51.4901	40.1773	0	0
36	57.7121	51.6308	37.8759	0	0
37	57.9386	51.7791	35.3239	0	0
38	58.1651	51.9353	32.5505	0	0
39	58.3916	52.0999	29.5879	0	0
40	58.618	52.2733	26.472	0	0
41	58.8445	52.456	23.2423	0	0
42	59.071	52.6488	19.9436	0	0
43	59.2975	52.8521	16.6259	0	0
44	59.524	53.067	13.3459	0	0
45	59.7504	53.2942	10.1682	0	0
46	59.9769	53.535	7.16714	0	0
47	60.2034	53.7906	1.9117	0	0
48	60.4299	54.0627	-3.49232	0	0
49	60.6564	54.3532	-8.65659	0	0
50	60.8828	54.6645	-13.4579	0	0
51	61.1093	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.18525

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8716	50	0	0	0
2	50.0787	49.9528	0.871044	0	0
3	50.2858	49.9106	2.06987	0	0
4	50.4929	49.8732	3.60868	0	0
5	50.7	49.8406	5.4402	0	0
6	50.9071	49.8128	7.52018	0	0
7	51.1142	49.7896	9.80715	0	0
8	51.3213	49.7712	12.2621	0	0
9	51.5284	49.7573	14.8484	0	0
10	51.7355	49.7481	17.5313	0	0
11	51.9426	49.7435	20.2782	0	0
12	52.1497	49.7435	23.0581	0	0
13	52.3568	49.7481	25.8416	0	0
14	52.5639	49.7573	28.6009	0	0
15	52.771	49.7712	31.3095	0	0
16	52.9782	49.7896	33.9421	0	0
17	53.1853	49.8128	36.4748	0	0
18	53.3924	49.8406	38.8847	0	0
19	53.5995	49.8732	41.1499	0	0
20	53.8066	49.9106	43.2498	0	0
21	54.0137	49.9528	45.1643	0	0
22	54.2208	50	46.8745	0	0
23	54.4352	50.0541	49.1644	0	0
24	54.6496	50.1137	51.2283	0	0
25	54.864	50.1788	53.0462	0	0
26	55.0783	50.2496	54.599	0	0
27	55.2927	50.3262	55.8688	0	0
28	55.5071	50.4089	56.8386	0	0
29	55.7215	50.4976	57.4925	0	0
30	55.9359	50.5928	57.8158	0	0
31	56.1503	50.6945	57.7944	0	0
32	56.3647	50.803	57.4158	0	0
33	56.5791	50.9186	56.6681	0	0
34	56.7935	51.0415	55.5411	0	0
35	57.0079	51.1722	54.0253	0	0
36	57.2223	51.3111	52.1131	0	0
37	57.4367	51.4585	49.798	0	0
38	57.6511	51.6149	47.1031	0	0
39	57.8654	51.7811	44.1256	0	0
40	58.0798	51.9575	40.9062	0	0
41	58.2942	52.1451	37.4855	0	0
42	58.5086	52.3448	33.9102	0	0
43	58.723	52.5576	30.2338	0	0
44	58.9374	52.7849	26.5187	0	0
45	59.1518	53.0283	22.8387	0	0
46	59.3662	53.29	19.2816	0	0
47	59.5806	53.5724	15.9539	0	0
48	59.795	53.8789	12.9876	0	0
49	60.0094	54.2142	10.397	0	0
50	60.2238	54.5847	4.85292	0	0
51	60.4382	55	0	0	0

Stabilità locale - Sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.30068

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8711	50	0	0	0
2	50.0779	49.9529	0.983118	0	0
3	50.2847	49.9108	2.26337	0	0
4	50.4915	49.8735	3.84566	0	0
5	50.6984	49.841	5.67946	0	0
6	50.9052	49.8132	7.71771	0	0
7	51.112	49.7901	9.91653	0	0
8	51.3189	49.7717	12.2349	0	0
9	51.5257	49.7579	14.6343	0	0
10	51.7325	49.7487	17.0788	0	0
11	51.9393	49.7442	19.5344	0	0
12	52.1462	49.7442	21.9692	0	0
13	52.353	49.7487	24.3533	0	0
14	52.5598	49.7579	26.6582	0	0
15	52.7666	49.7717	28.8571	0	0
16	52.9735	49.7901	30.9247	0	0
17	53.1803	49.8132	32.8371	0	0
18	53.3871	49.841	34.5715	0	0
19	53.594	49.8735	36.1066	0	0
20	53.8008	49.9108	37.4221	0	0
21	54.0076	49.9529	38.4986	0	0
22	54.2144	50	39.3181	0	0
23	54.4289	50.0541	40.8148	0	0
24	54.6433	50.1136	42.0344	0	0
25	54.8578	50.1786	42.9576	0	0
26	55.0722	50.2494	43.5666	0	0
27	55.2866	50.326	43.8446	0	0
28	55.5011	50.4086	43.7763	0	0
29	55.7155	50.4974	43.3474	0	0
30	55.9299	50.5925	42.5449	0	0
31	56.1444	50.6941	41.3572	0	0
32	56.3588	50.8026	39.7739	0	0
33	56.5732	50.9182	37.7858	0	0
34	56.7877	51.0411	35.3855	0	0
35	57.0021	51.1718	32.5667	0	0
36	57.2165	51.3106	29.325	0	0
37	57.431	51.458	25.6579	0	0
38	57.6454	51.6144	21.6034	0	0
39	57.8599	51.7806	17.3053	0	0
40	58.0743	51.957	12.8149	0	0
41	58.2887	52.1446	8.17983	0	0
42	58.5032	52.3443	3.45423	0	0
43	58.7176	52.5571	-1.30014	0	0
44	58.932	52.7844	-6.01199	0	0
45	59.1465	53.0279	-10.5982	0	0
46	59.3609	53.2896	-14.9603	0	0
47	59.5753	53.572	-18.9801	0	0
48	59.7898	53.8786	-22.5129	0	0
49	60.0042	54.214	-25.3862	0	0
50	60.2187	54.5846	-27.8759	0	0
51	60.4331	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.12671

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	49.8732	50	0	0	0
2	50.0757	49.9358	1.26776	0	0
3	50.2783	49.8774	2.9697	0	0
4	50.4809	49.8247	5.10682	0	0
5	50.6834	49.7775	7.60712	0	0
6	50.886	49.7359	10.405	0	0
7	51.0885	49.6996	13.4406	0	0
8	51.2911	49.6686	16.6589	0	0
9	51.4937	49.6429	20.0093	0	0
10	51.6962	49.6224	23.4451	0	0
11	51.8988	49.607	26.923	0	0
12	52.1014	49.5968	30.4029	0	0
13	52.3039	49.5917	33.8474	0	0
14	52.5065	49.5917	37.2216	0	0
15	52.709	49.5968	40.493	0	0
16	52.9116	49.607	43.6309	0	0
17	53.1142	49.6224	46.6069	0	0
18	53.3167	49.6429	49.394	0	0
19	53.5193	49.6686	51.9669	0	0
20	53.7218	49.6996	54.302	0	0
21	53.9244	49.7359	56.3767	0	0
22	54.127	49.7775	58.1701	0	0
23	54.3295	49.8247	59.6623	0	0
24	54.5321	49.8774	60.8346	0	0
25	54.7346	49.9358	61.6696	0	0
26	54.9372	50	62.1508	0	0
27	55.1399	50.0702	63.4571	0	0
28	55.3426	50.1466	64.3969	0	0
29	55.5454	50.2294	64.9551	0	0
30	55.7481	50.3186	65.1177	0	0
31	55.9508	50.4147	64.8722	0	0
32	56.1535	50.5178	64.2071	0	0
33	56.3562	50.6283	63.1122	0	0
34	56.5589	50.7466	61.5787	0	0
35	56.7616	50.873	59.5992	0	0
36	56.9644	51.008	57.1679	0	0
37	57.1671	51.1521	54.2806	0	0
38	57.3698	51.306	50.9353	0	0
39	57.5725	51.4704	47.141	0	0
40	57.7752	51.6462	43.0211	0	0
41	57.9779	51.8343	38.6496	0	0
42	58.1806	52.0361	34.0777	0	0
43	58.3834	52.2531	29.3651	0	0
44	58.5861	52.4872	24.5815	0	0
45	58.7888	52.7409	19.8108	0	0
46	58.9915	53.0173	15.1556	0	0
47	59.1942	53.3209	10.7441	0	0
48	59.3969	53.6578	6.74228	0	0
49	59.5996	54.0375	3.37427	0	0
50	59.8024	54.4753	0.960683	0	0
51	60.0051	55	0	0	0

Stabilità globale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.31878

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.8531	50	0	0	0
2	49.0874	49.9331	0.92749	0	0
3	49.3218	49.8724	1.99344	0	0
4	49.5561	49.8178	3.16721	0	0
5	49.7905	49.7692	4.42162	0	0
6	50.0248	49.7266	5.73455	0	0
7	50.2592	49.6898	7.2808	0	0
8	50.4935	49.6587	9.14113	0	0
9	50.7279	49.6334	11.2599	0	0
10	50.9622	49.6138	13.5851	0	0
11	51.1966	49.5997	16.0678	0	0
12	51.4309	49.5914	18.6619	0	0
13	51.6653	49.5886	21.3242	0	0
14	51.8996	49.5914	24.0137	0	0
15	52.134	49.5997	26.6918	0	0
16	52.3683	49.6138	29.3218	0	0
17	52.6027	49.6334	31.869	0	0
18	52.837	49.6587	34.3004	0	0
19	53.0714	49.6898	36.5847	0	0
20	53.3057	49.7266	38.6922	0	0
21	53.5401	49.7692	40.5946	0	0
22	53.7744	49.8178	42.2649	0	0
23	54.0088	49.8724	43.6776	0	0
24	54.2431	49.9331	44.8082	0	0
25	54.4775	50	45.6336	0	0
26	54.7067	50.0716	46.9318	0	0
27	54.9359	50.1495	47.929	0	0
28	55.1652	50.2337	48.6053	0	0
29	55.3944	50.3245	48.9421	0	0
30	55.6237	50.4221	48.9222	0	0
31	55.8529	50.5266	48.5292	0	0
32	56.0821	50.6384	47.7484	0	0
33	56.3114	50.7577	46.5661	0	0
34	56.5406	50.8849	44.9703	0	0
35	56.7699	51.0202	42.9503	0	0
36	56.9991	51.1641	40.497	0	0
37	57.2283	51.3171	37.6031	0	0
38	57.4576	51.4797	34.2634	0	0
39	57.6868	51.6524	30.53	0	0
40	57.9161	51.8361	26.5385	0	0
41	58.1453	52.0314	22.3386	0	0
42	58.3746	52.2393	17.9841	0	0
43	58.6038	52.4611	13.5368	0	0
44	58.833	52.698	9.06914	0	0
45	59.0623	52.9517	4.66613	0	0
46	59.2915	53.2243	0.429482	0	0
47	59.5208	53.5184	-3.51747	0	0
48	59.75	53.8374	-7.02228	0	0
49	59.9792	54.186	-9.89207	0	0
50	60.2085	54.5704	-15.8449	0	0
51	60.4377	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.18184

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.8608	50	0	0	0
2	49.0951	49.9011	1.26727	0	0
3	49.3294	49.81	2.81561	0	0
4	49.5638	49.7266	4.58668	0	0
5	49.7981	49.6506	6.52964	0	0
6	50.0324	49.5819	8.60474	0	0
7	50.2667	49.5201	11.0526	0	0
8	50.5011	49.4652	13.9633	0	0
9	50.7354	49.4171	17.2564	0	0
10	50.9697	49.3756	20.858	0	0
11	51.204	49.3406	24.6998	0	0
12	51.4383	49.3122	28.7187	0	0
13	51.6727	49.2901	32.8561	0	0
14	51.907	49.2743	37.0575	0	0
15	52.1413	49.2649	41.2719	0	0
16	52.3756	49.2617	45.4514	0	0
17	52.61	49.2649	49.5512	0	0
18	52.8443	49.2743	53.529	0	0
19	53.0786	49.2901	57.3451	0	0
20	53.3129	49.3122	60.9616	0	0
21	53.5473	49.3406	64.3429	0	0
22	53.7816	49.3756	67.4552	0	0
23	54.0159	49.4171	70.2663	0	0
24	54.2502	49.4652	72.7455	0	0
25	54.4845	49.5201	74.8638	0	0
26	54.7189	49.5819	76.5934	0	0
27	54.9532	49.6506	77.9079	0	0
28	55.1875	49.7266	78.7821	0	0
29	55.4218	49.81	79.1921	0	0
30	55.6562	49.9011	79.1152	0	0
31	55.8905	50	78.5298	0	0
32	56.125	50.1072	78.7679	0	0
33	56.3596	50.223	78.4791	0	0
34	56.5941	50.3477	77.6449	0	0
35	56.8286	50.4818	76.2482	0	0
36	57.0632	50.6258	74.2735	0	0
37	57.2977	50.7803	71.707	0	0
38	57.5322	50.946	68.5382	0	0
39	57.7668	51.1236	64.848	0	0
40	58.0013	51.3142	60.7243	0	0
41	58.2359	51.5189	56.2164	0	0
42	58.4704	51.739	51.3817	0	0
43	58.7049	51.9763	46.2881	0	0
44	58.9395	52.2328	41.0166	0	0
45	59.174	52.5114	35.6657	0	0
46	59.4086	52.8154	30.3578	0	0
47	59.6431	53.1498	25.2489	0	0
48	59.8776	53.5213	20.5437	0	0
49	60.1122	53.9401	14.4503	0	0
50	60.3467	54.4228	6.63152	0	0
51	60.5812	55	0	0	0

Stabilità globale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 1.31878

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.8531	50	0	0	0
2	49.0874	49.9331	0.92749	0	0
3	49.3218	49.8724	1.99344	0	0
4	49.5561	49.8178	3.16721	0	0
5	49.7905	49.7692	4.42162	0	0
6	50.0248	49.7266	5.73455	0	0
7	50.2592	49.6898	7.2808	0	0
8	50.4935	49.6587	9.14113	0	0
9	50.7279	49.6334	11.2599	0	0
10	50.9622	49.6138	13.5851	0	0
11	51.1966	49.5997	16.0678	0	0
12	51.4309	49.5914	18.6619	0	0
13	51.6653	49.5886	21.3242	0	0
14	51.8996	49.5914	24.0137	0	0
15	52.134	49.5997	26.6918	0	0
16	52.3683	49.6138	29.3218	0	0
17	52.6027	49.6334	31.869	0	0
18	52.837	49.6587	34.3004	0	0
19	53.0714	49.6898	36.5847	0	0
20	53.3057	49.7266	38.6922	0	0
21	53.5401	49.7692	40.5946	0	0
22	53.7744	49.8178	42.2649	0	0
23	54.0088	49.8724	43.6776	0	0
24	54.2431	49.9331	44.8082	0	0
25	54.4775	50	45.6336	0	0
26	54.7067	50.0716	46.9318	0	0
27	54.9359	50.1495	47.929	0	0
28	55.1652	50.2337	48.6053	0	0
29	55.3944	50.3245	48.9421	0	0
30	55.6237	50.4221	48.9222	0	0
31	55.8529	50.5266	48.5292	0	0
32	56.0821	50.6384	47.7484	0	0
33	56.3114	50.7577	46.5661	0	0
34	56.5406	50.8849	44.9703	0	0
35	56.7699	51.0202	42.9503	0	0
36	56.9991	51.1641	40.497	0	0
37	57.2283	51.3171	37.6031	0	0
38	57.4576	51.4797	34.2634	0	0
39	57.6868	51.6524	30.53	0	0
40	57.9161	51.8361	26.5385	0	0
41	58.1453	52.0314	22.3386	0	0
42	58.3746	52.2393	17.9841	0	0
43	58.6038	52.4611	13.5368	0	0
44	58.833	52.698	9.06914	0	0
45	59.0623	52.9517	4.66613	0	0
46	59.2915	53.2243	0.429482	0	0
47	59.5208	53.5184	-3.51747	0	0
48	59.75	53.8374	-7.02228	0	0
49	59.9792	54.186	-9.89207	0	0
50	60.2085	54.5704	-15.8449	0	0
51	60.4377	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.18184

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.8608	50	0	0	0
2	49.0951	49.9011	1.26727	0	0
3	49.3294	49.81	2.81561	0	0
4	49.5638	49.7266	4.58668	0	0
5	49.7981	49.6506	6.52964	0	0
6	50.0324	49.5819	8.60474	0	0
7	50.2667	49.5201	11.0526	0	0
8	50.5011	49.4652	13.9633	0	0
9	50.7354	49.4171	17.2564	0	0
10	50.9697	49.3756	20.858	0	0
11	51.204	49.3406	24.6998	0	0
12	51.4383	49.3122	28.7187	0	0
13	51.6727	49.2901	32.8561	0	0
14	51.907	49.2743	37.0575	0	0
15	52.1413	49.2649	41.2719	0	0
16	52.3756	49.2617	45.4514	0	0
17	52.61	49.2649	49.5512	0	0
18	52.8443	49.2743	53.529	0	0
19	53.0786	49.2901	57.3451	0	0
20	53.3129	49.3122	60.9616	0	0
21	53.5473	49.3406	64.3429	0	0
22	53.7816	49.3756	67.4552	0	0
23	54.0159	49.4171	70.2663	0	0
24	54.2502	49.4652	72.7455	0	0
25	54.4845	49.5201	74.8638	0	0
26	54.7189	49.5819	76.5934	0	0
27	54.9532	49.6506	77.9079	0	0
28	55.1875	49.7266	78.7821	0	0
29	55.4218	49.81	79.1921	0	0
30	55.6562	49.9011	79.1152	0	0
31	55.8905	50	78.5298	0	0
32	56.125	50.1072	78.7679	0	0
33	56.3596	50.223	78.4791	0	0
34	56.5941	50.3477	77.6449	0	0
35	56.8286	50.4818	76.2482	0	0
36	57.0632	50.6258	74.2735	0	0
37	57.2977	50.7803	71.707	0	0
38	57.5322	50.946	68.5382	0	0
39	57.7668	51.1236	64.848	0	0
40	58.0013	51.3142	60.7243	0	0
41	58.2359	51.5189	56.2164	0	0
42	58.4704	51.739	51.3817	0	0
43	58.7049	51.9763	46.2881	0	0
44	58.9395	52.2328	41.0166	0	0
45	59.174	52.5114	35.6657	0	0
46	59.4086	52.8154	30.3578	0	0
47	59.6431	53.1498	25.2489	0	0
48	59.8776	53.5213	20.5437	0	0
49	60.1122	53.9401	14.4503	0	0
50	60.3467	54.4228	6.63152	0	0
51	60.5812	55	0	0	0

Stabilità globale - Sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.29998

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	47.3295	50	0	0	0
2	47.5946	49.9047	1.50267	0	0
3	47.8597	49.8173	3.26778	0	0
4	48.1248	49.7375	5.23535	0	0
5	48.3899	49.6652	7.35302	0	0
6	48.655	49.6002	9.57512	0	0
7	48.9201	49.5424	11.8619	0	0
8	49.1852	49.4917	14.1788	0	0
9	49.4503	49.4479	16.4961	0	0
10	49.7154	49.411	18.788	0	0
11	49.9805	49.3809	21.033	0	0
12	50.2456	49.3576	23.3547	0	0
13	50.5107	49.3409	25.8848	0	0
14	50.7758	49.331	28.5558	0	0
15	51.0409	49.3277	31.3042	0	0
16	51.306	49.331	34.0704	0	0
17	51.571	49.3409	36.7989	0	0
18	51.8361	49.3576	39.4378	0	0
19	52.1012	49.3809	41.9385	0	0
20	52.3663	49.411	44.2553	0	0
21	52.6314	49.4479	46.3455	0	0
22	52.8965	49.4917	48.169	0	0
23	53.1616	49.5424	49.6883	0	0
24	53.4267	49.6002	50.868	0	0
25	53.6918	49.6652	51.6755	0	0
26	53.9569	49.7375	52.0798	0	0
27	54.222	49.8173	52.0525	0	0
28	54.4871	49.9047	51.567	0	0
29	54.7522	50	50.599	0	0
30	55.0095	50.1002	50.4582	0	0
31	55.2668	50.2084	49.8599	0	0
32	55.5242	50.3246	48.7851	0	0
33	55.7815	50.4493	47.2173	0	0
34	56.0388	50.5827	45.1418	0	0
35	56.2961	50.7252	42.5466	0	0
36	56.5535	50.8774	39.4222	0	0
37	56.8108	51.0396	35.762	0	0
38	57.0681	51.2125	31.5622	0	0
39	57.3254	51.3966	26.8227	0	0
40	57.5828	51.5928	21.5606	0	0
41	57.8401	51.8019	15.9948	0	0
42	58.0974	52.0249	10.2579	0	0
43	58.3547	52.2631	4.43296	0	0
44	58.6121	52.5179	-1.3845	0	0
45	58.8694	52.7911	-7.08342	0	0
46	59.1267	53.0849	-12.533	0	0
47	59.384	53.4021	-17.5766	0	0
48	59.6414	53.7464	-22.0238	0	0
49	59.8987	54.1225	-25.6372	0	0
50	60.156	54.5371	-28.472	0	0
51	60.4133	55	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.12059

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.9794	50	0	0	0
2	49.2004	49.9163	1.50032	0	0
3	49.4214	49.8396	3.21266	0	0
4	49.6425	49.7697	5.0869	0	0
5	49.8635	49.7063	7.07973	0	0
6	50.0845	49.6495	9.18513	0	0
7	50.3056	49.5989	11.6623	0	0
8	50.5266	49.5546	14.5112	0	0
9	50.7476	49.5163	17.6574	0	0
10	50.9687	49.4841	21.0328	0	0
11	51.1897	49.4578	24.5748	0	0
12	51.4107	49.4374	28.2258	0	0
13	51.6317	49.4229	31.9327	0	0
14	51.8528	49.4142	35.6463	0	0
15	52.0738	49.4113	39.3209	0	0
16	52.2948	49.4142	42.914	0	0
17	52.5159	49.4229	46.3859	0	0
18	52.7369	49.4374	49.6997	0	0
19	52.9579	49.4578	52.8208	0	0
20	53.179	49.4841	55.7167	0	0
21	53.4	49.5163	58.3569	0	0
22	53.621	49.5546	60.7132	0	0
23	53.842	49.5989	62.7585	0	0
24	54.0631	49.6495	64.468	0	0
25	54.2841	49.7063	65.8181	0	0
26	54.5051	49.7697	66.7867	0	0
27	54.7262	49.8396	67.3534	0	0
28	54.9472	49.9163	67.499	0	0
29	55.1682	50	67.2058	0	0
30	55.3882	50.0905	67.8138	0	0
31	55.6083	50.1883	67.9722	0	0
32	55.8283	50.2939	67.6658	0	0
33	56.0483	50.4074	66.881	0	0
34	56.2683	50.5293	65.6058	0	0
35	56.4883	50.6601	63.8302	0	0
36	56.7084	50.8001	61.5458	0	0
37	56.9284	50.95	58.7467	0	0
38	57.1484	51.1105	55.429	0	0
39	57.3684	51.2822	51.5917	0	0
40	57.5884	51.4662	47.2509	0	0
41	57.8084	51.6634	42.5645	0	0
42	58.0285	51.8753	37.6227	0	0
43	58.2485	52.1034	32.4937	0	0
44	58.4685	52.3498	27.2574	0	0
45	58.6885	52.617	22.0098	0	0
46	58.9085	52.9085	16.8679	0	0
47	59.1285	53.2289	11.9779	0	0
48	59.3486	53.5846	7.529	0	0
49	59.5686	53.9854	3.77565	0	0
50	59.7886	54.4473	1.08107	0	0
51	60.0086	55	0	0	0

Discharge Sections

Entity Information

Stabilità locale

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 0 154.7, 0 154.7, 39 154.7, 42 154.7, 50 104.7, 50 97.2, 55 94.7, 55 84.95, 55 69.75, 55 60, 55 57.5, 55 50, 50 0, 50 0, 42 0, 39
Material Boundary	50, 50 104.7, 50
Material Boundary	0, 42 154.7, 42
Material Boundary	0, 39 154.7, 39

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Statica	Sismica
Water Table	0, 40 154.7, 40	Assigned to: RILEVATO UG1 UG2 UG3		
Distributed Load	60, 55 69.75, 55	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Distributed Load	84.95, 55 94.7, 55	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Water Table	0, 40 154.7, 40		Assigned to: RILEVATO UG1 UG2 UG3	
Water Table	0, 40 154.7, 40			Assigned to: RILEVATO UG1 UG2 UG3

Stabilità globale

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 0 154.7, 0 154.7, 39 154.7, 42 154.7, 50 104.7, 50 97.2, 55 94.7, 55 84.95, 55 69.75, 55 60, 55 57.5, 55 50, 50 0, 50 0, 42 0, 39
Material Boundary	50, 50 104.7, 50
Material Boundary	0, 42 154.7, 42
Material Boundary	0, 39 154.7, 39

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Statica	Sismica
Water Table	0, 40 154.7, 40	Assigned to: RILEVATO UG1 UG2 UG3		
Distributed Load	60, 55 69.75, 55	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Distributed Load	84.95, 55 94.7, 55	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Water Table	0, 40 154.7, 40		Assigned to: RILEVATO UG1 UG2 UG3	
Water Table	0, 40 154.7, 40			Assigned to: RILEVATO UG1 UG2 UG3

rocscience

Galleria artificiale
SLIDE - An Interactive Slope Stability Program
Date Created: 17/01/2023, 10:55:40
Software Version: 9.02

Table of Contents

Slide Analysis Information

Galleria artificiale

Project Summary

File Name:	Galleria artificiale.slmd
Slide Modeler Version:	9.02
Project Title:	SLIDE - An Interactive Slope Stability Program
Date Created:	17/01/2023, 10:55:40

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Galleria artificiale	Master Scenario	Bishop Simplified: 0.363043 Janbu Simplified: 0.410757	00h:00m:00.628s
	Statica	Bishop Simplified: 2.126790 Janbu Simplified: 2.011260	00h:00m:00.43s
	sismica	Bishop Simplified: 1.970530 Janbu Simplified: 1.839070	00h:00m:00.46s

General Settings

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

Design Standard

Galleria artificiale - Statica

Selected Type: Eurocode 7 - Design Approach 1, Combination 1

Type	Partial Factor
Permanent Actions: Unfavourable	1.35
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.5
Variable Actions: Favourable	0
Effective cohesion	1
Coefficient of shearing resistance	1
Undrained strength	1
Weight density	1
Shear strength (other models)	1
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Analysis Options

All Open Scenarios

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

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [kN/m3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [kPa]:	0
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

Galleria artificiale - Statica

Surface Type:	Non-Circular Block Search
Number of Surfaces:	5000
Multiple Groups:	Disabled
Pseudo-Random Surfaces:	Enabled
Convex Surfaces Only:	Disabled
Left Projection Angle (Start Angle) [deg]:	135
Left Projection Angle (End Angle) [deg]:	135
Right Projection Angle (Start Angle) [deg]:	45
Right Projection Angle (End Angle) [deg]:	45
Minimum Elevation:	Not Defined
Minimum Depth:	Not Defined
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

All other 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

Seismic Loading

Galleria artificiale - sismica

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.07
Seismic Load Coefficient (Vertical):	0.035

All other Scenarios

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Materials

UG4	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	19
Cohesion [kPa]	5
Friction Angle [deg]	27
Water Surface	Assigned per scenario
Ru Value	0
UG3	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	20
Cohesion [kPa]	10
Friction Angle [deg]	27
Water Surface	Assigned per scenario
Ru Value	0
UG4-RESIDUO	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	19
Cohesion [kPa]	0
Friction Angle [deg]	20
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material	Galleria artificiale	Statica	sismica
UG4 	✓	✓	✓
UG3 	✗	✓	✓
UG4-RESIDUO 	✗	✓	✓

Support

Paratia	
Color	
Type	Pile/Micro Pile
Force Application	Passive (Method B)
Force Orientation	Parallel to surface
Out-Of-Plane Spacing	1.4 m
Failure Mode	Shear
Pile Shear Strength	1000 kN

Global Minimums

Galleria artificiale - Master Scenario

Method: bishop simplified

FS	0.363043
Center:	77.157, 63.610
Radius:	21.808
Left Slip Surface Endpoint:	97.280, 55.204
Right Slip Surface Endpoint:	98.965, 63.610
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	98.965 63.610
Resisting Moment:	1310.54 kN-m
Driving Moment:	3609.88 kN-m
Total Slice Area:	9.13648 m2
Surface Horizontal Width:	1.6852 m
Surface Average Height:	5.42161 m

Method: janbu simplified

FS	0.410757
Center:	73.893, 65.567
Radius:	25.580
Left Slip Surface Endpoint:	97.280, 55.204
Right Slip Surface Endpoint:	99.420, 63.913
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	99.420 63.913
Resisting Horizontal Force:	23.9718 kN
Driving Horizontal Force:	58.3601 kN
Total Slice Area:	10.7328 m2
Surface Horizontal Width:	2.13957 m
Surface Average Height:	5.01637 m

Galleria artificiale - Statica

Method: bishop simplified

FS	2.126790
Axis Location:	106.320, 117.630
Left Slip Surface Endpoint:	97.280, 62.500
Right Slip Surface Endpoint:	145.000, 77.320
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	145.000 77.320
Resisting Moment:	103393 kN-m
Driving Moment:	48614.5 kN-m
Passive Support Moment:	33470.6 kN-m
Maximum Single Support Force:	649.351 kN
Total Support Force:	649.351 kN
Total Slice Area:	144.78 m2
Surface Horizontal Width:	47.72 m
Surface Average Height:	3.03395 m

Method: janbu simplified

FS	2.011260
Axis Location:	106.320, 117.630
Left Slip Surface Endpoint:	97.280, 62.500
Right Slip Surface Endpoint:	145.000, 77.320
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	145.000 77.320
Resisting Horizontal Force:	1913.22 kN
Driving Horizontal Force:	951.253 kN
Passive Horizontal Support Force:	631.746 kN
Maximum Single Support Force:	649.351 kN
Total Support Force:	649.351 kN
Total Slice Area:	144.78 m2
Surface Horizontal Width:	47.72 m
Surface Average Height:	3.03395 m

Galleria artificiale - sismica

Method: bishop simplified

FS	1.970530
Axis Location:	106.320, 117.630
Left Slip Surface Endpoint:	97.280, 62.500
Right Slip Surface Endpoint:	145.000, 77.320
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	145.000 77.320
Resisting Moment:	90226.4 kN-m
Driving Moment:	45787.8 kN-m
Passive Support Moment:	36817.6 kN-m
Maximum Single Support Force:	714.286 kN
Total Support Force:	714.286 kN
Total Slice Area:	144.78 m2
Surface Horizontal Width:	47.72 m
Surface Average Height:	3.03395 m

Method: janbu simplified

FS	1.839070
Axis Location:	106.320, 117.630
Left Slip Surface Endpoint:	97.280, 62.500
Right Slip Surface Endpoint:	145.000, 77.320
Left Slope Intercept:	97.280 63.360
Right Slope Intercept:	145.000 77.320
Resisting Horizontal Force:	1673.1 kN
Driving Horizontal Force:	909.75 kN
Passive Horizontal Support Force:	694.921 kN
Maximum Single Support Force:	714.286 kN
Total Support Force:	714.286 kN
Total Slice Area:	144.78 m2
Surface Horizontal Width:	47.72 m
Surface Average Height:	3.03395 m

Global Minimum Coordinates

Galleria artificiale - Statica

Method: bishop simplified

X	Y
97.28	62.5
112.956	66.2265
140.407	72.527
141.45	73
143.272	74.523
144.574	76.061
145	77.32

Method: janbu simplified

X	Y
97.28	62.5
112.956	66.2265
140.407	72.527
141.45	73
143.272	74.523
144.574	76.061
145	77.32

Galleria artificiale - sismica

Method: bishop simplified

X	Y
97.28	62.5
112.956	66.2265
140.407	72.527
141.45	73
143.272	74.523
144.574	76.061
145	77.32

Method: janbu simplified

X	Y
97.28	62.5
112.956	66.2265
140.407	72.527
141.45	73
143.272	74.523
144.574	76.061
145	77.32

Global Minimum Support Data

Galleria artificiale - Master Scenario

Method: bishop simplified

Number of Supports: 1

Paratia

Support Type: Pile/Micro Pile

Start (x, y)	Length (m)	L Inside SS (m)	L Outside SS (m)	Li (m)	Lo (m)	Force (kN)
59.65, 62.167	18	Not Effective	Not Effective	Not Effective	Not Effective	0

Method: janbu simplified

Number of Supports: 1

Paratia

Support Type: Pile/Micro Pile

Start (x, y)	Length (m)	L Inside SS (m)	L Outside SS (m)	Li (m)	Lo (m)	Force (kN)
59.65, 62.167	18	Not Effective	Not Effective	Not Effective	Not Effective	0

Galleria artificiale - Statica

Method: bishop simplified

Number of Supports: 4

Paratia

Support Type: Pile/Micro Pile

Start (x, y)	Length (m)	L Inside SS (m)	L Outside SS (m)	Li (m)	Lo (m)	Force (kN)
59.65, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
76.72, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
81.46, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
97.28, 63.36	18	0.86	17.14	0.86	17.14	649.351

Method: janbu simplified

Number of Supports: 4

Paratia

Support Type: Pile/Micro Pile

Start (x, y)	Length (m)	L Inside SS (m)	L Outside SS (m)	Li (m)	Lo (m)	Force (kN)
59.65, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
76.72, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
81.46, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
97.28, 63.36	18	0.86	17.14	0.86	17.14	649.351

Galleria artificiale - sismica

Method: bishop simplified

Number of Supports: 4

Paratia						
Support Type: Pile/Micro Pile						
Start (x, y)	**Length (m)**	**L Inside SS (m)**	**L Outside SS (m)**	**Li (m)**	**Lo (m)**	**Force (kN)**
59.65, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
76.72, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
81.46, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
97.28, 63.36	18	0.86	17.14	0.86	17.14	714.286

Method: janbu simplified

Number of Supports: 4

Paratia						
Support Type: Pile/Micro Pile						
Start (x, y)	**Length (m)**	**L Inside SS (m)**	**L Outside SS (m)**	**Li (m)**	**Lo (m)**	**Force (kN)**
59.65, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
76.72, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
81.46, 63.36	18	Not Effective	Not Effective	Not Effective	Not Effective	0
97.28, 63.36	18	0.86	17.14	0.86	17.14	714.286

Valid and Invalid Surfaces

Galleria artificiale - Statica

Method: bishop simplified

Number of Valid Surfaces:	1
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	1
Number of Invalid Surfaces:	0

All other Scenarios

Method: bishop simplified

Number of Valid Surfaces:	12031
Number of Invalid Surfaces:	12

Error Codes
Error Code -108 reported for 2 surfaces
Error Code -112 reported for 10 surfaces

Method: janbu simplified

Number of Valid Surfaces:	8737
Number of Invalid Surfaces:	3306

Error Codes
Error Code -108 reported for 276 surfaces
Error Code -111 reported for 3030 surfaces

Slice Data

Galleria artificiale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 0.363043

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	0.033704	5.19684	67.4432	UG4	5	27	52.9979	19.2405	27.9486	0	27.9486	155.539	155.539
2	0.033704	5.14458	67.6752	UG4	5	27	52.0346	18.8908	27.2622	0	27.2622	153.979	153.979
3	0.033704	5.09171	67.9095	UG4	5	27	51.0689	18.5402	26.5741	0	26.5741	152.401	152.401
4	0.033704	5.03822	68.1461	UG4	5	27	50.1007	18.1887	25.8842	0	25.8842	150.804	150.804
5	0.033704	4.98407	68.3853	UG4	5	27	49.13	17.8363	25.1927	0	25.1927	149.188	149.188
6	0.033704	4.92926	68.627	UG4	5	27	48.1568	17.483	24.4993	0	24.4993	147.551	147.551
7	0.033704	4.87376	68.8713	UG4	5	27	47.1812	17.1288	23.8041	0	23.8041	145.895	145.895
8	0.033704	4.81755	69.1183	UG4	5	27	46.2028	16.7736	23.107	0	23.107	144.216	144.216
9	0.033704	4.7606	69.3682	UG4	5	27	45.2219	16.4175	22.4081	0	22.4081	142.517	142.517
10	0.033704	4.70289	69.621	UG4	5	27	44.238	16.0603	21.7071	0	21.7071	140.793	140.793
11	0.033704	4.64438	69.8768	UG4	5	27	43.2516	15.7022	21.0042	0	21.0042	139.047	139.047
12	0.033704	4.58506	70.1358	UG4	5	27	42.2619	15.3429	20.2991	0	20.2991	137.275	137.275
13	0.033704	4.52489	70.3981	UG4	5	27	41.2696	14.9826	19.592	0	19.592	135.478	135.478
14	0.033704	4.46383	70.6638	UG4	5	27	40.2741	14.6212	18.8827	0	18.8827	133.655	133.655
15	0.033704	4.40186	70.933	UG4	5	27	39.2755	14.2587	18.1713	0	18.1713	131.804	131.804
16	0.033704	4.33892	71.206	UG4	5	27	38.2738	13.895	17.4575	0	17.4575	129.925	129.925
17	0.033704	4.27499	71.4828	UG4	5	27	37.2687	13.5301	16.7414	0	16.7414	128.015	128.015
18	0.033704	4.21002	71.7637	UG4	5	27	36.2603	13.164	16.0229	0	16.0229	126.074	126.074
19	0.033704	4.14396	72.0489	UG4	5	27	35.2484	12.7967	15.3018	0	15.3018	124.101	124.101
20	0.033704	4.07675	72.3385	UG4	5	27	34.233	12.428	14.5784	0	14.5784	122.094	122.094
21	0.033704	4.00835	72.6327	UG4	5	27	33.2138	12.058	13.8522	0	13.8522	120.05	120.05
22	0.033704	3.9387	72.9319	UG4	5	27	32.1909	11.6867	13.1234	0	13.1234	117.969	117.969
23	0.033704	3.86773	73.2363	UG4	5	27	31.1641	11.3139	12.3918	0	12.3918	115.849	115.849
24	0.033704	3.79536	73.5461	UG4	5	27	30.1333	10.9397	11.6573	0	11.6573	113.687	113.687
25	0.033704	3.72153	73.8617	UG4	5	27	29.0982	10.5639	10.9198	0	10.9198	111.481	111.481
26	0.033704	3.64614	74.1834	UG4	5	27	28.0589	10.1866	10.1792	0	10.1792	109.228	109.228
27	0.033704	3.5691	74.5117	UG4	5	27	27.015	9.80761	9.43547	0	9.43547	106.925	106.925
28	0.033704	3.49031	74.8468	UG4	5	27	25.9665	9.42696	8.68841	0	8.68841	104.571	104.571
29	0.033704	3.40965	75.1894	UG4	5	27	24.9132	9.04455	7.93791	0	7.93791	102.16	102.16
30	0.033704	3.32698	75.5399	UG4	5	27	23.8548	8.66031	7.18376	0	7.18376	99.6893	99.6893
31	0.033704	3.24218	75.899	UG4	5	27	22.7911	8.27415	6.42588	0	6.42588	97.1542	97.1542
32	0.033704	3.15506	76.2672	UG4	5	27	21.7219	7.88599	5.66408	0	5.66408	94.5499	94.5499
33	0.033704	3.06544	76.6454	UG4	5	27	20.647	7.49574	4.89817	0	4.89817	91.8708	91.8708
34	0.033704	2.97311	77.0344	UG4	5	27	19.5659	7.10328	4.12792	0	4.12792	89.1103	89.1103
35	0.033704	2.87782	77.4353	UG4	5	27	18.4785	6.7085	3.35311	0	3.35311	86.2611	86.2611
36	0.033704	2.77928	77.8492	UG4	5	27	17.3843	6.31126	2.57348	0	2.57348	83.3145	83.3145
37	0.033704	2.67715	78.2774	UG4	5	27	16.2829	5.9114	1.78873	0	1.78873	80.2603	80.2603
38	0.033704	2.57103	78.7217	UG4	5	27	15.1739	5.50877	0.998512	0	0.998512	77.0865	77.0865
39	0.033704	2.46056	79.1841	UG4	5	27	14.0572	5.10338	0.202891	0	0.202891	73.7823	73.7823
40	0.033704	2.35385	79.6668	UG4	5	27	12.9744	4.71027	-0.568632	0	-0.568632	70.5908	70.5908
41	0.033704	2.24675	80.1731	UG4	5	27	11.9031	4.32134	-1.33194	0	-1.33194	67.3873	67.3873
42	0.033704	2.13289	80.7067	UG4	5	27	10.8145	3.92614	-2.10756	0	-2.10756	63.9812	63.9812
43	0.033704	2.01103	81.2727	UG4	5	27	9.70678	3.52398	-2.89684	0	-2.89684	60.3354	60.3354
44	0.033704	1.8795	81.8778	UG4	5	27	8.57744	3.11398	-3.70152	0	-3.70152	56.4	56.4
45	0.033704	1.73595	82.5319	UG4	5	27	7.4232	2.69494	-4.52395	0	-4.52395	52.1041	52.1041
46	0.033704	1.57685	83.2492	UG4	5	27	6.2394	2.26517	-5.36742	0	-5.36742	47.3423	47.3423
47	0.033704	1.39648	84.0531	UG4	5	27	5.01872	1.82201	-6.23715	0	-6.23715	41.9426	41.9426
48	0.033704	1.18423	84.9872	UG4	5	27	3.74804	1.3607	-7.14252	0	-7.14252	35.5879	35.5879
49	0.033704	0.915063	86.154	UG4	5	27	2.39545	0.86965	-8.10627	0	-8.10627	27.5265	27.5265
50	0.033704	0.380865	88.4071	UG4	5	27	0.581749	0.2112	-9.39854	0	-9.39854	11.5208	11.5208

Global Minimum Query (janbu simplified) - Safety Factor: 0.410757

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	0.0427913	6.59173	66.2205	UG4	5	27	53.3934	21.9317	33.2303	0	33.2303	154.407	154.407
2	0.0427913	6.51232	66.4593	UG4	5	27	52.3485	21.5025	32.388	0	32.388	152.548	152.548
3	0.0427913	6.432	66.7005	UG4	5	27	51.3016	21.0725	31.544	0	31.544	150.668	150.668
4	0.0427913	6.35074	66.944	UG4	5	27	50.2526	20.6416	30.6985	0	30.6985	148.765	148.765
5	0.0427913	6.2685	67.19	UG4	5	27	49.2018	20.21	29.8513	0	29.8513	146.841	146.841
6	0.0427913	6.18527	67.4385	UG4	5	27	48.1489	19.7775	29.0025	0	29.0025	144.892	144.892
7	0.0427913	6.10101	67.6897	UG4	5	27	47.0938	19.3441	28.1519	0	28.1519	142.919	142.919
8	0.0427913	6.01569	67.9435	UG4	5	27	46.0367	18.9099	27.2997	0	27.2997	140.922	140.922
9	0.0427913	5.92926	68.2002	UG4	5	27	44.9777	18.4749	26.4459	0	26.4459	138.899	138.899
10	0.0427913	5.8417	68.4598	UG4	5	27	43.9162	18.0389	25.5904	0	25.5904	136.849	136.849
11	0.0427913	5.75296	68.7224	UG4	5	27	42.8528	17.6021	24.733	0	24.733	134.772	134.772
12	0.0427913	5.663	68.9881	UG4	5	27	41.7872	17.1644	23.874	0	23.874	132.666	132.666
13	0.0427913	5.57178	69.257	UG4	5	27	40.7195	16.7258	23.0132	0	23.0132	130.53	130.53
14	0.0427913	5.47925	69.5294	UG4	5	27	39.6495	16.2863	22.1506	0	22.1506	128.364	128.364
15	0.0427913	5.38536	69.8052	UG4	5	27	38.5773	15.8459	21.2863	0	21.2863	126.166	126.166
16	0.0427913	5.29006	70.0848	UG4	5	27	37.503	15.4046	20.4201	0	20.4201	123.935	123.935
17	0.0427913	5.19327	70.3681	UG4	5	27	36.4262	14.9623	19.5521	0	19.5521	121.669	121.669
18	0.0427913	5.09496	70.6554	UG4	5	27	35.3472	14.5191	18.6823	0	18.6823	119.367	119.367
19	0.0427913	4.99504	70.9469	UG4	5	27	34.266	14.075	17.8106	0	17.8106	117.027	117.027
20	0.0427913	4.89345	71.2427	UG4	5	27	33.1824	13.6299	16.9372	0	16.9372	114.649	114.649
21	0.0427913	4.79011	71.5431	UG4	5	27	32.0966	13.1839	16.0618	0	16.0618	112.229	112.229
22	0.0427913	4.68493	71.8483	UG4	5	27	31.0085	12.737	15.1847	0	15.1847	109.766	109.766
23	0.0427913	4.57782	72.1586	UG4	5	27	29.918	12.289	14.3056	0	14.3056	107.258	107.258
24	0.0427913	4.46869	72.4742	UG4	5	27	28.8253	11.8402	13.4246	0	13.4246	104.703	104.703
25	0.0427913	4.35743	72.7953	UG4	5	27	27.7302	11.3904	12.5419	0	12.5419	102.098	102.098
26	0.0427913	4.24391	73.1224	UG4	5	27	26.6329	10.9396	11.6572	0	11.6572	99.4398	99.4398
27	0.0427913	4.12802	73.4558	UG4	5	27	25.5332	10.488	10.7707	0	10.7707	96.7259	96.7259
28	0.0427913	4.0096	73.7958	UG4	5	27	24.4314	10.0354	9.88247	0	9.88247	93.9529	93.9529
29	0.0427913	3.8885	74.1429	UG4	5	27	23.3273	9.58185	8.99239	0	8.99239	91.1171	91.1171
30	0.0427913	3.76454	74.4976	UG4	5	27	22.221	9.12745	8.10061	0	8.10061	88.2143	88.2143
31	0.0427913	3.63926	74.8604	UG4	5	27	21.1217	8.67589	7.2143	0	7.2143	85.2805	85.2805
32	0.0427913	3.5278	75.2319	UG4	5	27	20.107	8.2591	6.39636	0	6.39636	82.6705	82.6705
33	0.0427913	3.4172	75.6128	UG4	5	27	19.1079	7.84869	5.59088	0	5.59088	80.0803	80.0803
34	0.0427913	3.30279	76.0038	UG4	5	27	18.1014	7.43528	4.77951	0	4.77951	77.4011	77.4011
35	0.0427913	3.18426	76.4059	UG4	5	27	17.0875	7.01881	3.96214	0	3.96214	74.6252	74.6252
36	0.0427913	3.06123	76.82	UG4	5	27	16.066	6.59923	3.13867	0	3.13867	71.744	71.744
37	0.0427913	2.93328	77.2473	UG4	5	27	15.0368	6.17649	2.309	0	2.309	68.7475	68.7475
38	0.0427913	2.79991	77.6891	UG4	5	27	13.9999	5.75055	1.47304	0	1.47304	65.6238	65.6238
39	0.0427913	2.66051	78.1472	UG4	5	27	12.955	5.32137	0.630728	0	0.630728	62.3589	62.3589
40	0.0427913	2.51436	78.6235	UG4	5	27	11.9023	4.88894	-0.217975	0	-0.217975	58.9358	58.9358
41	0.0427913	2.36059	79.1204	UG4	5	27	10.8415	4.45324	-1.07307	0	-1.07307	55.3342	55.3342
42	0.0427913	2.19812	79.6408	UG4	5	27	9.77297	4.01432	-1.93451	0	-1.93451	51.5285	51.5285
43	0.0427913	2.02556	80.1885	UG4	5	27	8.69672	3.57224	-2.80213	0	-2.80213	47.4864	47.4864
44	0.0427913	1.84114	80.7685	UG4	5	27	7.61319	3.12717	-3.67564	0	-3.67564	43.1663	43.1663
45	0.0427913	1.64246	81.3872	UG4	5	27	6.52301	2.67937	-4.55451	0	-4.55451	38.512	38.512
46	0.0427913	1.42618	82.0539	UG4	5	27	5.42732	2.22931	-5.43779	0	-5.43779	33.4451	33.4451
47	0.0427913	1.18739	82.782	UG4	5	27	4.32816	1.77782	-6.32388	0	-6.32388	27.8507	27.8507
48	0.0427913	0.918323	83.5929	UG4	5	27	3.22916	1.3264	-7.20984	0	-7.20984	21.5466	21.5466
49	0.0427913	0.60513	84.5246	UG4	5	27	2.1374	0.87795	-8.08998	0	-8.08998	14.2082	14.2082
50	0.0427913	0.217626	85.6602	UG4	5	27	1.06849	0.43889	-8.9517	0	-8.9517	5.12801	5.12801

Galleria artificiale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 2.12679

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	0.979763	18.686	13.372	UG4-RESIDUO	0	20	0	0	-52.9973	0	-52.9973	-52.9973	-52.9973
2	0.979763	16.44	13.372	UG4-RESIDUO	0	20	2.75932	5.8685	16.1236	0	16.1236	16.7795	16.7795
3	0.979763	26.0693	13.372	UG4-RESIDUO	0	20	4.37553	9.30584	25.5675	0	25.5675	26.6077	26.6077
4	0.979763	36.631	13.372	UG4-RESIDUO	0	20	6.14823	13.076	35.926	0	35.926	37.3876	37.3876
5	0.979763	47.1927	13.372	UG4-RESIDUO	0	20	7.92095	16.8462	46.2846	0	46.2846	48.1675	48.1675
6	0.979763	57.7544	13.372	UG4-RESIDUO	0	20	9.69367	20.6164	56.6431	0	56.6431	58.9474	58.9474
7	0.979763	68.3162	13.372	UG4-RESIDUO	0	20	11.4664	24.3866	67.0016	0	67.0016	69.7273	69.7273
8	0.979763	77.8413	13.372	UG4-RESIDUO	0	20	13.0651	27.7867	76.3433	0	76.3433	79.4491	79.4491
9	0.979763	79.6184	13.372	UG4-RESIDUO	0	20	13.3634	28.4211	78.0862	0	78.0862	81.263	81.263
10	0.979763	79.8109	13.372	UG4-RESIDUO	0	20	13.3957	28.4898	78.275	0	78.275	81.4594	81.4594
11	0.979763	80.0033	13.372	UG4-RESIDUO	0	20	13.428	28.5585	78.4638	0	78.4638	81.6558	81.6558
12	0.979763	80.1958	13.372	UG4-RESIDUO	0	20	13.4603	28.6272	78.6525	0	78.6525	81.8523	81.8523
13	0.979763	80.3883	13.372	UG4-RESIDUO	0	20	13.4926	28.6959	78.8414	0	78.8414	82.0488	82.0488
14	0.979763	80.5808	13.372	UG4-RESIDUO	0	20	13.5249	28.7646	79.0302	0	79.0302	82.2453	82.2453
15	0.979763	80.7733	13.372	UG4-RESIDUO	0	20	13.5572	28.8333	79.2189	0	79.2189	82.4417	82.4417
16	0.979763	80.9658	13.372	UG4-RESIDUO	0	20	13.5895	28.902	79.4077	0	79.4077	82.6382	82.6382
17	0.946579	78.5005	12.9266	UG4-RESIDUO	0	20	13.6561	29.0436	79.7965	0	79.7965	82.9309	82.9309
18	0.946579	78.8686	12.9266	UG4-RESIDUO	0	20	13.7201	29.1798	80.1707	0	80.1707	83.3197	83.3197
19	0.946579	79.2367	12.9266	UG4-RESIDUO	0	20	13.7841	29.3159	80.5449	0	80.5449	83.7086	83.7086
20	0.946579	79.6049	12.9266	UG4-RESIDUO	0	20	13.8481	29.4521	80.9191	0	80.9191	84.0975	84.0975
21	0.946579	79.973	12.9266	UG4-RESIDUO	0	20	13.9122	29.5883	81.2933	0	81.2933	84.4864	84.4864
22	0.946579	80.3411	12.9266	UG4-RESIDUO	0	20	13.9762	29.7245	81.6674	0	81.6674	84.8752	84.8752
23	0.946579	80.7092	12.9266	UG4-RESIDUO	0	20	14.0403	29.8607	82.0416	0	82.0416	85.2641	85.2641
24	0.946579	81.0773	12.9266	UG4-RESIDUO	0	20	14.1043	29.9969	82.4158	0	82.4158	85.653	85.653
25	0.946579	81.4454	12.9266	UG4-RESIDUO	0	20	14.1683	30.1331	82.79	0	82.79	86.0419	86.0419
26	0.946579	81.8135	12.9266	UG4-RESIDUO	0	20	14.2324	30.2693	83.1641	0	83.1641	86.4308	86.4308
27	0.946579	82.1816	12.9266	UG4-RESIDUO	0	20	14.2964	30.4055	83.5383	0	83.5383	86.8196	86.8196
28	0.946579	82.5497	12.9266	UG4-RESIDUO	0	20	14.3605	30.5417	83.9125	0	83.9125	87.2085	87.2085
29	0.946579	82.9178	12.9266	UG4-RESIDUO	0	20	14.4245	30.6778	84.2867	0	84.2867	87.5974	87.5974
30	0.946579	83.2859	12.9266	UG4-RESIDUO	0	20	14.4885	30.814	84.6609	0	84.6609	87.9863	87.9863
31	0.946579	83.654	12.9266	UG4-RESIDUO	0	20	14.5525	30.9502	85.035	0	85.035	88.3751	88.3751
32	0.946579	84.0221	12.9266	UG4-RESIDUO	0	20	14.6166	31.0864	85.4092	0	85.4092	88.764	88.764

33	0.946579	84.3902	12.9266	UG4-RESIDUO	0	20	14.6806	31.2226	85.7834	0	85.7834	89.1529	89.1529
34	0.946579	84.7583	12.9266	UG4-RESIDUO	0	20	14.7447	31.3588	86.1576	0	86.1576	89.5418	89.5418
35	0.946579	85.1264	12.9266	UG4-RESIDUO	0	20	14.8087	31.495	86.5318	0	86.5318	89.9306	89.9306
36	0.946579	85.4945	12.9266	UG4-RESIDUO	0	20	14.8727	31.6312	86.9059	0	86.9059	90.3195	90.3195
37	0.946579	85.8626	12.9266	UG4-RESIDUO	0	20	14.9368	31.7674	87.2801	0	87.2801	90.7084	90.7084
38	0.946579	86.2307	12.9266	UG4-RESIDUO	0	20	15.0008	31.9036	87.6543	0	87.6543	91.0973	91.0973
39	0.946579	86.5988	12.9266	UG4-RESIDUO	0	20	15.0648	32.0397	88.0285	0	88.0285	91.4861	91.4861
40	0.946579	86.9669	12.9266	UG4-RESIDUO	0	20	15.1289	32.1759	88.4027	0	88.4027	91.875	91.875
41	0.946579	87.335	12.9266	UG4-RESIDUO	0	20	15.1929	32.3121	88.7768	0	88.7768	92.2639	92.2639
42	0.946579	87.7031	12.9266	UG4-RESIDUO	0	20	15.2569	32.4483	89.151	0	89.151	92.6528	92.6528
43	0.946579	88.0712	12.9266	UG4-RESIDUO	0	20	15.321	32.5845	89.5252	0	89.5252	93.0417	93.0417
44	0.946579	88.4393	12.9266	UG4-RESIDUO	0	20	15.385	32.7207	89.8994	0	89.8994	93.4305	93.4305
45	0.946579	88.8074	12.9266	UG4-RESIDUO	0	20	15.4491	32.8569	90.2736	0	90.2736	93.8194	93.8194
46	1.043	95.1549	24.3943	UG4-RESIDUO	0	20	14.4886	30.8143	84.6615	0	84.6615	91.2321	91.2321
47	0.911	74.2944	39.8921	UG4-RESIDUO	0	20	12.21	25.968	71.3466	0	71.3466	81.5528	81.5528
48	0.911	61.7272	39.8921	UG4-RESIDUO	0	20	10.1446	21.5754	59.278	0	59.278	67.7578	67.7578
49	1.302	58.8963	49.7503	UG4-RESIDUO	0	20	6.43961	13.6957	37.6286	0	37.6286	45.2354	45.2354
50	0.426	6.30702	71.306	UG4-RESIDUO	0	20	1.68267	3.57868	9.83238	0	9.83238	14.8053	14.8053

Global Minimum Query (janbu simplified) - Safety Factor: 2.01126

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	0.979763	18.686	13.372	UG4-RESIDUO	0	20	0	0	-56.9526	0	-56.9526	-56.9526	-56.9526
2	0.979763	16.44	13.372	UG4-RESIDUO	0	20	2.91158	5.85594	16.0891	0	16.0891	16.7812	16.7812
3	0.979763	26.0693	13.372	UG4-RESIDUO	0	20	4.61697	9.28592	25.5128	0	25.5128	26.6104	26.6104
4	0.979763	36.631	13.372	UG4-RESIDUO	0	20	6.48748	13.048	35.8492	0	35.8492	37.3914	37.3914
5	0.979763	47.1927	13.372	UG4-RESIDUO	0	20	8.35799	16.8101	46.1855	0	46.1855	48.1723	48.1723
6	0.979763	57.7544	13.372	UG4-RESIDUO	0	20	10.2285	20.5722	56.5218	0	56.5218	58.9533	58.9533
7	0.979763	68.3162	13.372	UG4-RESIDUO	0	20	12.0991	24.3344	66.8581	0	66.8581	69.7342	69.7342
8	0.979763	77.8413	13.372	UG4-RESIDUO	0	20	13.786	27.7272	76.1799	0	76.1799	79.4571	79.4571
9	0.979763	79.6184	13.372	UG4-RESIDUO	0	20	14.1007	28.3602	77.919	0	77.919	81.271	81.271
10	0.979763	79.8109	13.372	UG4-RESIDUO	0	20	14.1348	28.4288	78.1074	0	78.1074	81.4675	81.4675
11	0.979763	80.0033	13.372	UG4-RESIDUO	0	20	14.1689	28.4973	78.2958	0	78.2958	81.664	81.664
12	0.979763	80.1958	13.372	UG4-RESIDUO	0	20	14.203	28.5659	78.4842	0	78.4842	81.8605	81.8605
13	0.979763	80.3883	13.372	UG4-RESIDUO	0	20	14.2371	28.6345	78.6726	0	78.6726	82.057	82.057
14	0.979763	80.5808	13.372	UG4-RESIDUO	0	20	14.2712	28.703	78.861	0	78.861	82.2535	82.2535
15	0.979763	80.7733	13.372	UG4-RESIDUO	0	20	14.3053	28.7716	79.0493	0	79.0493	82.45	82.45
16	0.979763	80.9658	13.372	UG4-RESIDUO	0	20	14.3394	28.8402	79.2377	0	79.2377	82.6464	82.6464
17	0.946579	78.5005	12.9266	UG4-RESIDUO	0	20	14.4106	28.9834	79.6314	0	79.6314	82.9389	82.9389
18	0.946579	78.8686	12.9266	UG4-RESIDUO	0	20	14.4782	29.1194	80.0047	0	80.0047	83.3278	83.3278
19	0.946579	79.2367	12.9266	UG4-RESIDUO	0	20	14.5458	29.2553	80.3782	0	80.3782	83.7167	83.7167
20	0.946579	79.6049	12.9266	UG4-RESIDUO	0	20	14.6133	29.3912	80.7515	0	80.7515	84.1056	84.1056
21	0.946579	79.973	12.9266	UG4-RESIDUO	0	20	14.6809	29.5271	81.125	0	81.125	84.4946	84.4946
22	0.946579	80.3411	12.9266	UG4-RESIDUO	0	20	14.7485	29.663	81.4984	0	81.4984	84.8834	84.8834
23	0.946579	80.7092	12.9266	UG4-RESIDUO	0	20	14.816	29.7989	81.8718	0	81.8718	85.2724	85.2724
24	0.946579	81.0773	12.9266	UG4-RESIDUO	0	20	14.8836	29.9348	82.2452	0	82.2452	85.6612	85.6612
25	0.946579	81.4454	12.9266	UG4-RESIDUO	0	20	14.9512	30.0707	82.6186	0	82.6186	86.0502	86.0502
26	0.946579	81.8135	12.9266	UG4-RESIDUO	0	20	15.0187	30.2066	82.992	0	82.992	86.4391	86.4391
27	0.946579	82.1816	12.9266	UG4-RESIDUO	0	20	15.0863	30.3425	83.3654	0	83.3654	86.828	86.828
28	0.946579	82.5497	12.9266	UG4-RESIDUO	0	20	15.1539	30.4784	83.7388	0	83.7388	87.2169	87.2169
29	0.946579	82.9178	12.9266	UG4-RESIDUO	0	20	15.2215	30.6143	84.1123	0	84.1123	87.6059	87.6059
30	0.946579	83.2859	12.9266	UG4-RESIDUO	0	20	15.2891	30.7503	84.4856	0	84.4856	87.9948	87.9948
31	0.946579	83.654	12.9266	UG4-RESIDUO	0	20	15.3566	30.8862	84.8591	0	84.8591	88.3837	88.3837
32	0.946579	84.0221	12.9266	UG4-RESIDUO	0	20	15.4242	31.0221	85.2324	0	85.2324	88.7726	88.7726
33	0.946579	84.3902	12.9266	UG4-RESIDUO	0	20	15.4918	31.158	85.6059	0	85.6059	89.1616	89.1616

34	0.946579	84.7583	12.9266	UG4-RESIDUO	0	20	15.5594	31.2939	85.9792	0	85.9792	89.5504	89.5504
35	0.946579	85.1264	12.9266	UG4-RESIDUO	0	20	15.6269	31.4298	86.3526	0	86.3526	89.9393	89.9393
36	0.946579	85.4945	12.9266	UG4-RESIDUO	0	20	15.6945	31.5657	86.7261	0	86.7261	90.3283	90.3283
37	0.946579	85.8626	12.9266	UG4-RESIDUO	0	20	15.7621	31.7016	87.0994	0	87.0994	90.7171	90.7171
38	0.946579	86.2307	12.9266	UG4-RESIDUO	0	20	15.8296	31.8375	87.4729	0	87.4729	91.1061	91.1061
39	0.946579	86.5988	12.9266	UG4-RESIDUO	0	20	15.8972	31.9734	87.8462	0	87.8462	91.4949	91.4949
40	0.946579	86.9669	12.9266	UG4-RESIDUO	0	20	15.9648	32.1093	88.2197	0	88.2197	91.8839	91.8839
41	0.946579	87.335	12.9266	UG4-RESIDUO	0	20	16.0323	32.2452	88.593	0	88.593	92.2728	92.2728
42	0.946579	87.7031	12.9266	UG4-RESIDUO	0	20	16.1	32.3812	88.9665	0	88.9665	92.6618	92.6618
43	0.946579	88.0712	12.9266	UG4-RESIDUO	0	20	16.1675	32.5171	89.3399	0	89.3399	93.0506	93.0506
44	0.946579	88.4393	12.9266	UG4-RESIDUO	0	20	16.2351	32.653	89.7133	0	89.7133	93.4396	93.4396
45	0.946579	88.8074	12.9266	UG4-RESIDUO	0	20	16.3027	32.7889	90.0867	0	90.0867	93.8285	93.8285
46	1.043	95.1549	24.3943	UG4-RESIDUO	0	20	15.2606	30.693	84.3282	0	84.3282	91.2488	91.2488
47	0.911	74.2944	39.8921	UG4-RESIDUO	0	20	12.8233	25.7909	70.8599	0	70.8599	81.5788	81.5788
48	0.911	61.7272	39.8921	UG4-RESIDUO	0	20	10.6541	21.4282	58.8736	0	58.8736	67.7794	67.7794
49	1.302	58.8963	49.7503	UG4-RESIDUO	0	20	6.74721	13.5704	37.2845	0	37.2845	45.2547	45.2547
50	0.426	6.30702	71.306	UG4-RESIDUO	0	20	1.74712	3.51391	9.65437	0	9.65437	14.8178	14.8178

Galleria artificiale - sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.97053

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	0.979763	13.8415	13.372	UG4-RESIDUO	0	20	0	0	-70.9382	0	-70.9382	-70.9382	-70.9382
2	0.979763	12.1777	13.372	UG4-RESIDUO	0	20	2.27618	4.48529	12.3232	0	12.3232	12.8643	12.8643
3	0.979763	19.3106	13.372	UG4-RESIDUO	0	20	3.6094	7.11244	19.5412	0	19.5412	20.3992	20.3992
4	0.979763	27.1341	13.372	UG4-RESIDUO	0	20	5.07172	9.99398	27.4583	0	27.4583	28.6639	28.6639
5	0.979763	34.9576	13.372	UG4-RESIDUO	0	20	6.53403	12.8755	35.3752	0	35.3752	36.9285	36.9285
6	0.979763	42.7811	13.372	UG4-RESIDUO	0	20	7.99638	15.7571	43.2922	0	43.2922	45.1931	45.1931
7	0.979763	50.6046	13.372	UG4-RESIDUO	0	20	9.45867	18.6386	51.2092	0	51.2092	53.4577	53.4577
8	0.979763	57.6602	13.372	UG4-RESIDUO	0	20	10.7775	21.2373	58.3491	0	58.3491	60.9111	60.9111
9	0.979763	58.9766	13.372	UG4-RESIDUO	0	20	11.0235	21.7222	59.6812	0	59.6812	62.3017	62.3017
10	0.979763	59.1192	13.372	UG4-RESIDUO	0	20	11.0502	21.7747	59.8255	0	59.8255	62.4523	62.4523
11	0.979763	59.2617	13.372	UG4-RESIDUO	0	20	11.0768	21.8272	59.9698	0	59.9698	62.6029	62.6029
12	0.979763	59.4043	13.372	UG4-RESIDUO	0	20	11.1035	21.8797	60.114	0	60.114	62.7535	62.7535
13	0.979763	59.5469	13.372	UG4-RESIDUO	0	20	11.1301	21.9322	60.2583	0	60.2583	62.9041	62.9041
14	0.979763	59.6895	13.372	UG4-RESIDUO	0	20	11.1568	21.9848	60.4026	0	60.4026	63.0548	63.0548
15	0.979763	59.8321	13.372	UG4-RESIDUO	0	20	11.1834	22.0373	60.5469	0	60.5469	63.2054	63.2054
16	0.979763	59.9747	13.372	UG4-RESIDUO	0	20	11.2101	22.0898	60.6912	0	60.6912	63.356	63.356
17	0.946579	58.1486	12.9266	UG4-RESIDUO	0	20	11.2661	22.2002	60.9946	0	60.9946	63.5804	63.5804
18	0.946579	58.4212	12.9266	UG4-RESIDUO	0	20	11.3189	22.3043	61.2806	0	61.2806	63.8785	63.8785
19	0.946579	58.6939	12.9266	UG4-RESIDUO	0	20	11.3718	22.4084	61.5667	0	61.5667	64.1767	64.1767
20	0.946579	58.9666	12.9266	UG4-RESIDUO	0	20	11.4246	22.5125	61.8527	0	61.8527	64.4749	64.4749
21	0.946579	59.2392	12.9266	UG4-RESIDUO	0	20	11.4774	22.6166	62.1386	0	62.1386	64.7729	64.7729
22	0.946579	59.5119	12.9266	UG4-RESIDUO	0	20	11.5302	22.7207	62.4247	0	62.4247	65.0711	65.0711
23	0.946579	59.7846	12.9266	UG4-RESIDUO	0	20	11.5831	22.8248	62.7107	0	62.7107	65.3693	65.3693
24	0.946579	60.0572	12.9266	UG4-RESIDUO	0	20	11.6359	22.9289	62.9968	0	62.9968	65.6674	65.6674
25	0.946579	60.3299	12.9266	UG4-RESIDUO	0	20	11.6887	23.033	63.2827	0	63.2827	65.9655	65.9655
26	0.946579	60.6026	12.9266	UG4-RESIDUO	0	20	11.7416	23.1371	63.5687	0	63.5687	66.2636	66.2636
27	0.946579	60.8752	12.9266	UG4-RESIDUO	0	20	11.7944	23.2412	63.8548	0	63.8548	66.5618	66.5618
28	0.946579	61.1479	12.9266	UG4-RESIDUO	0	20	11.8472	23.3453	64.1408	0	64.1408	66.86	66.86
29	0.946579	61.4206	12.9266	UG4-RESIDUO	0	20	11.9	23.4494	64.4267	0	64.4267	67.158	67.158
30	0.946579	61.6932	12.9266	UG4-RESIDUO	0	20	11.9529	23.5535	64.7128	0	64.7128	67.4562	67.4562
31	0.946579	61.9659	12.9266	UG4-RESIDUO	0	20	12.0057	23.6576	64.9988	0	64.9988	67.7544	67.7544
32	0.946579	62.2386	12.9266	UG4-RESIDUO	0	20	12.0585	23.7617	65.2849	0	65.2849	68.0525	68.0525

33	0.946579	62.5112	12.9266	UG4-RESIDUO	0	20	12.1114	23.8658	65.5708	0	65.5708	68.3506	68.3506
34	0.946579	62.7839	12.9266	UG4-RESIDUO	0	20	12.1642	23.9699	65.8568	0	65.8568	68.6488	68.6488
35	0.946579	63.0566	12.9266	UG4-RESIDUO	0	20	12.217	24.074	66.1429	0	66.1429	68.9469	68.9469
36	0.946579	63.3292	12.9266	UG4-RESIDUO	0	20	12.2698	24.1781	66.4289	0	66.4289	69.2451	69.2451
37	0.946579	63.6019	12.9266	UG4-RESIDUO	0	20	12.3227	24.2822	66.7149	0	66.7149	69.5432	69.5432
38	0.946579	63.8746	12.9266	UG4-RESIDUO	0	20	12.3755	24.3863	67.0009	0	67.0009	69.8413	69.8413
39	0.946579	64.1473	12.9266	UG4-RESIDUO	0	20	12.4283	24.4904	67.2869	0	67.2869	70.1395	70.1395
40	0.946579	64.4199	12.9266	UG4-RESIDUO	0	20	12.4812	24.5945	67.573	0	67.573	70.4377	70.4377
41	0.946579	64.6926	12.9266	UG4-RESIDUO	0	20	12.534	24.6986	67.8589	0	67.8589	70.7357	70.7357
42	0.946579	64.9653	12.9266	UG4-RESIDUO	0	20	12.5868	24.8027	68.145	0	68.145	71.0339	71.0339
43	0.946579	65.2379	12.9266	UG4-RESIDUO	0	20	12.6396	24.9068	68.431	0	68.431	71.332	71.332
44	0.946579	65.5106	12.9266	UG4-RESIDUO	0	20	12.6925	25.0109	68.7169	0	68.7169	71.6301	71.6301
45	0.946579	65.7833	12.9266	UG4-RESIDUO	0	20	12.7453	25.115	69.003	0	69.003	71.9283	71.9283
46	1.043	70.4851	24.3943	UG4-RESIDUO	0	20	11.9208	23.4902	64.5387	0	64.5387	69.9448	69.9448
47	0.911	55.0329	39.8921	UG4-RESIDUO	0	20	10.0041	19.7133	54.1618	0	54.1618	62.5242	62.5242
48	0.911	45.7238	39.8921	UG4-RESIDUO	0	20	8.31182	16.3787	45.0001	0	45.0001	51.9479	51.9479
49	1.302	43.6269	49.7503	UG4-RESIDUO	0	20	5.25843	10.3619	28.4691	0	28.4691	34.6807	34.6807
50	0.426	4.67186	71.306	UG4-RESIDUO	0	20	1.35623	2.6725	7.34264	0	7.34264	11.3509	11.3509

Query 1 (bishop simplified) - Safety Factor: 1.97053

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	0.979763	13.8415	13.372	UG4-RESIDUO	0	20	0	0	-70.9382	0	-70.9382	-70.9382	-70.9382
2	0.979763	12.1777	13.372	UG4-RESIDUO	0	20	2.27618	4.48529	12.3232	0	12.3232	12.8643	12.8643
3	0.979763	19.3106	13.372	UG4-RESIDUO	0	20	3.6094	7.11244	19.5412	0	19.5412	20.3992	20.3992
4	0.979763	27.1341	13.372	UG4-RESIDUO	0	20	5.07172	9.99398	27.4583	0	27.4583	28.6639	28.6639
5	0.979763	34.9576	13.372	UG4-RESIDUO	0	20	6.53403	12.8755	35.3752	0	35.3752	36.9285	36.9285
6	0.979763	42.7811	13.372	UG4-RESIDUO	0	20	7.99638	15.7571	43.2922	0	43.2922	45.1931	45.1931
7	0.979763	50.6046	13.372	UG4-RESIDUO	0	20	9.45867	18.6386	51.2092	0	51.2092	53.4577	53.4577
8	0.979763	57.6602	13.372	UG4-RESIDUO	0	20	10.7775	21.2373	58.3491	0	58.3491	60.9111	60.9111
9	0.979763	58.9766	13.372	UG4-RESIDUO	0	20	11.0235	21.7222	59.6812	0	59.6812	62.3017	62.3017
10	0.979763	59.1192	13.372	UG4-RESIDUO	0	20	11.0502	21.7747	59.8255	0	59.8255	62.4523	62.4523
11	0.979763	59.2617	13.372	UG4-RESIDUO	0	20	11.0768	21.8272	59.9698	0	59.9698	62.6029	62.6029
12	0.979763	59.4043	13.372	UG4-RESIDUO	0	20	11.1035	21.8797	60.114	0	60.114	62.7535	62.7535
13	0.979763	59.5469	13.372	UG4-RESIDUO	0	20	11.1301	21.9322	60.2583	0	60.2583	62.9041	62.9041
14	0.979763	59.6895	13.372	UG4-RESIDUO	0	20	11.1568	21.9848	60.4026	0	60.4026	63.0548	63.0548
15	0.979763	59.8321	13.372	UG4-RESIDUO	0	20	11.1834	22.0373	60.5469	0	60.5469	63.2054	63.2054
16	0.979763	59.9747	13.372	UG4-RESIDUO	0	20	11.2101	22.0898	60.6912	0	60.6912	63.356	63.356
17	0.946579	58.1486	12.9266	UG4-RESIDUO	0	20	11.2661	22.2002	60.9946	0	60.9946	63.5804	63.5804
18	0.946579	58.4212	12.9266	UG4-RESIDUO	0	20	11.3189	22.3043	61.2806	0	61.2806	63.8785	63.8785
19	0.946579	58.6939	12.9266	UG4-RESIDUO	0	20	11.3718	22.4084	61.5667	0	61.5667	64.1767	64.1767
20	0.946579	58.9666	12.9266	UG4-RESIDUO	0	20	11.4246	22.5125	61.8527	0	61.8527	64.4749	64.4749
21	0.946579	59.2392	12.9266	UG4-RESIDUO	0	20	11.4774	22.6166	62.1386	0	62.1386	64.7729	64.7729
22	0.946579	59.5119	12.9266	UG4-RESIDUO	0	20	11.5302	22.7207	62.4247	0	62.4247	65.0711	65.0711
23	0.946579	59.7846	12.9266	UG4-RESIDUO	0	20	11.5831	22.8248	62.7107	0	62.7107	65.3693	65.3693
24	0.946579	60.0572	12.9266	UG4-RESIDUO	0	20	11.6359	22.9289	62.9968	0	62.9968	65.6674	65.6674
25	0.946579	60.3299	12.9266	UG4-RESIDUO	0	20	11.6887	23.033	63.2827	0	63.2827	65.9655	65.9655
26	0.946579	60.6026	12.9266	UG4-RESIDUO	0	20	11.7416	23.1371	63.5687	0	63.5687	66.2636	66.2636
27	0.946579	60.8752	12.9266	UG4-RESIDUO	0	20	11.7944	23.2412	63.8548	0	63.8548	66.5618	66.5618
28	0.946579	61.1479	12.9266	UG4-RESIDUO	0	20	11.8472	23.3453	64.1408	0	64.1408	66.86	66.86
29	0.946579	61.4206	12.9266	UG4-RESIDUO	0	20	11.9	23.4494	64.4267	0	64.4267	67.158	67.158
30	0.946579	61.6932	12.9266	UG4-RESIDUO	0	20	11.9529	23.5535	64.7128	0	64.7128	67.4562	67.4562
31	0.946579	61.9659	12.9266	UG4-RESIDUO	0	20	12.0057	23.6576	64.9988	0	64.9988	67.7544	67.7544
32	0.946579	62.2386	12.9266	UG4-RESIDUO	0	20	12.0585	23.7617	65.2849	0	65.2849	68.0525	68.0525
33	0.946579	62.5112	12.9266	UG4-RESIDUO	0	20	12.1114	23.8658	65.5708	0	65.5708	68.3506	68.3506

34	0.946579	62.7839	12.9266	UG4-RESIDUO	0	20	12.1642	23.9699	65.8568	0	65.8568	68.6488	68.6488
35	0.946579	63.0566	12.9266	UG4-RESIDUO	0	20	12.217	24.074	66.1429	0	66.1429	68.9469	68.9469
36	0.946579	63.3292	12.9266	UG4-RESIDUO	0	20	12.2698	24.1781	66.4289	0	66.4289	69.2451	69.2451
37	0.946579	63.6019	12.9266	UG4-RESIDUO	0	20	12.3227	24.2822	66.7149	0	66.7149	69.5432	69.5432
38	0.946579	63.8746	12.9266	UG4-RESIDUO	0	20	12.3755	24.3863	67.0009	0	67.0009	69.8413	69.8413
39	0.946579	64.1473	12.9266	UG4-RESIDUO	0	20	12.4283	24.4904	67.2869	0	67.2869	70.1395	70.1395
40	0.946579	64.4199	12.9266	UG4-RESIDUO	0	20	12.4812	24.5945	67.573	0	67.573	70.4377	70.4377
41	0.946579	64.6926	12.9266	UG4-RESIDUO	0	20	12.534	24.6986	67.8589	0	67.8589	70.7357	70.7357
42	0.946579	64.9653	12.9266	UG4-RESIDUO	0	20	12.5868	24.8027	68.145	0	68.145	71.0339	71.0339
43	0.946579	65.2379	12.9266	UG4-RESIDUO	0	20	12.6396	24.9068	68.431	0	68.431	71.332	71.332
44	0.946579	65.5106	12.9266	UG4-RESIDUO	0	20	12.6925	25.0109	68.7169	0	68.7169	71.6301	71.6301
45	0.946579	65.7833	12.9266	UG4-RESIDUO	0	20	12.7453	25.115	69.003	0	69.003	71.9283	71.9283
46	1.043	70.4851	24.3943	UG4-RESIDUO	0	20	11.9208	23.4902	64.5387	0	64.5387	69.9448	69.9448
47	0.911	55.0329	39.8921	UG4-RESIDUO	0	20	10.0041	19.7133	54.1618	0	54.1618	62.5242	62.5242
48	0.911	45.7238	39.8921	UG4-RESIDUO	0	20	8.31182	16.3787	45.0001	0	45.0001	51.9479	51.9479
49	1.302	43.6269	49.7503	UG4-RESIDUO	0	20	5.25843	10.3619	28.4691	0	28.4691	34.6807	34.6807
50	0.426	4.67186	71.306	UG4-RESIDUO	0	20	1.35623	2.6725	7.34264	0	7.34264	11.3509	11.3509

Global Minimum Query (janbu simplified) - Safety Factor: 1.83907

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	0.979763	13.8415	13.372	UG4-RESIDUO	0	20	0	0	-76.9155	0	-76.9155	-76.9155	-76.9155
2	0.979763	12.1777	13.372	UG4-RESIDUO	0	20	2.43175	4.47215	12.2871	0	12.2871	12.8651	12.8651
3	0.979763	19.3106	13.372	UG4-RESIDUO	0	20	3.85608	7.0916	19.484	0	19.484	20.4007	20.4007
4	0.979763	27.1341	13.372	UG4-RESIDUO	0	20	5.41834	9.9647	27.3777	0	27.3777	28.6658	28.6658
5	0.979763	34.9576	13.372	UG4-RESIDUO	0	20	6.98059	12.8378	35.2716	0	35.2716	36.931	36.931
6	0.979763	42.7811	13.372	UG4-RESIDUO	0	20	8.54285	15.7109	43.1654	0	43.1654	45.1962	45.1962
7	0.979763	50.6046	13.372	UG4-RESIDUO	0	20	10.1051	18.584	51.0591	0	51.0591	53.4613	53.4613
8	0.979763	57.6602	13.372	UG4-RESIDUO	0	20	11.514	21.1751	58.1781	0	58.1781	60.9152	60.9152
9	0.979763	58.9766	13.372	UG4-RESIDUO	0	20	11.7769	21.6585	59.5063	0	59.5063	62.3059	62.3059
10	0.979763	59.1192	13.372	UG4-RESIDUO	0	20	11.8054	21.7109	59.6502	0	59.6502	62.4566	62.4566
11	0.979763	59.2617	13.372	UG4-RESIDUO	0	20	11.8339	21.7633	59.7941	0	59.7941	62.6072	62.6072
12	0.979763	59.4043	13.372	UG4-RESIDUO	0	20	11.8623	21.8156	59.9379	0	59.9379	62.7578	62.7578
13	0.979763	59.5469	13.372	UG4-RESIDUO	0	20	11.8908	21.868	60.0818	0	60.0818	62.9084	62.9084
14	0.979763	59.6895	13.372	UG4-RESIDUO	0	20	11.9192	21.9203	60.2256	0	60.2256	63.0591	63.0591
15	0.979763	59.8321	13.372	UG4-RESIDUO	0	20	11.9477	21.9727	60.3695	0	60.3695	63.2097	63.2097
16	0.979763	59.9747	13.372	UG4-RESIDUO	0	20	11.9762	22.0251	60.5134	0	60.5134	63.3604	63.3604
17	0.946579	58.1486	12.9266	UG4-RESIDUO	0	20	12.0372	22.1373	60.8218	0	60.8218	63.5846	63.5846
18	0.946579	58.4212	12.9266	UG4-RESIDUO	0	20	12.0937	22.2411	61.107	0	61.107	63.8827	63.8827
19	0.946579	58.6939	12.9266	UG4-RESIDUO	0	20	12.1501	22.3449	61.3922	0	61.3922	64.1809	64.1809
20	0.946579	58.9666	12.9266	UG4-RESIDUO	0	20	12.2066	22.4488	61.6774	0	61.6774	64.4791	64.4791
21	0.946579	59.2392	12.9266	UG4-RESIDUO	0	20	12.263	22.5526	61.9627	0	61.9627	64.7773	64.7773
22	0.946579	59.5119	12.9266	UG4-RESIDUO	0	20	12.3195	22.6564	62.2479	0	62.2479	65.0754	65.0754
23	0.946579	59.7846	12.9266	UG4-RESIDUO	0	20	12.3759	22.7602	62.5331	0	62.5331	65.3736	65.3736
24	0.946579	60.0572	12.9266	UG4-RESIDUO	0	20	12.4324	22.864	62.8182	0	62.8182	65.6717	65.6717
25	0.946579	60.3299	12.9266	UG4-RESIDUO	0	20	12.4888	22.9678	63.1034	0	63.1034	65.9698	65.9698
26	0.946579	60.6026	12.9266	UG4-RESIDUO	0	20	12.5453	23.0716	63.3886	0	63.3886	66.268	66.268
27	0.946579	60.8752	12.9266	UG4-RESIDUO	0	20	12.6017	23.1754	63.6739	0	63.6739	66.5662	66.5662
28	0.946579	61.1479	12.9266	UG4-RESIDUO	0	20	12.6581	23.2792	63.9591	0	63.9591	66.8644	66.8644
29	0.946579	61.4206	12.9266	UG4-RESIDUO	0	20	12.7146	23.383	64.2443	0	64.2443	67.1625	67.1625
30	0.946579	61.6932	12.9266	UG4-RESIDUO	0	20	12.771	23.4868	64.5295	0	64.5295	67.4607	67.4607
31	0.946579	61.9659	12.9266	UG4-RESIDUO	0	20	12.8275	23.5906	64.8146	0	64.8146	67.7588	67.7588
32	0.946579	62.2386	12.9266	UG4-RESIDUO	0	20	12.8839	23.6944	65.0998	0	65.0998	68.0569	68.0569
33	0.946579	62.5112	12.9266	UG4-RESIDUO	0	20	12.9403	23.7982	65.3851	0	65.3851	68.3551	68.3551

34	0.946579	62.7839	12.9266	UG4-RESIDUO	0	20	12.9968	23.902	65.6703	0	65.6703	68.6533	68.6533
35	0.946579	63.0566	12.9266	UG4-RESIDUO	0	20	13.0532	24.0058	65.9555	0	65.9555	68.9515	68.9515
36	0.946579	63.3292	12.9266	UG4-RESIDUO	0	20	13.1097	24.1096	66.2407	0	66.2407	69.2496	69.2496
37	0.946579	63.6019	12.9266	UG4-RESIDUO	0	20	13.1661	24.2134	66.5259	0	66.5259	69.5478	69.5478
38	0.946579	63.8746	12.9266	UG4-RESIDUO	0	20	13.2226	24.3173	66.8111	0	66.8111	69.846	69.846
39	0.946579	64.1473	12.9266	UG4-RESIDUO	0	20	13.279	24.4211	67.0963	0	67.0963	70.1441	70.1441
40	0.946579	64.4199	12.9266	UG4-RESIDUO	0	20	13.3355	24.5249	67.3815	0	67.3815	70.4422	70.4422
41	0.946579	64.6926	12.9266	UG4-RESIDUO	0	20	13.3919	24.6287	67.6667	0	67.6667	70.7404	70.7404
42	0.946579	64.9653	12.9266	UG4-RESIDUO	0	20	13.4484	24.7325	67.9519	0	67.9519	71.0386	71.0386
43	0.946579	65.2379	12.9266	UG4-RESIDUO	0	20	13.5048	24.8363	68.2371	0	68.2371	71.3367	71.3367
44	0.946579	65.5106	12.9266	UG4-RESIDUO	0	20	13.5613	24.9401	68.5223	0	68.5223	71.6349	71.6349
45	0.946579	65.7833	12.9266	UG4-RESIDUO	0	20	13.6177	25.0439	68.8076	0	68.8076	71.9331	71.9331
46	1.043	70.4851	24.3943	UG4-RESIDUO	0	20	12.7042	23.364	64.1921	0	64.1921	69.9535	69.9535
47	0.911	55.0329	39.8921	UG4-RESIDUO	0	20	10.6199	19.5308	53.6604	0	53.6604	62.5376	62.5376
48	0.911	45.7238	39.8921	UG4-RESIDUO	0	20	8.82354	16.2271	44.5835	0	44.5835	51.9591	51.9591
49	1.302	43.6269	49.7503	UG4-RESIDUO	0	20	5.56471	10.2339	28.1173	0	28.1173	34.6907	34.6907
50	0.426	4.67186	71.306	UG4-RESIDUO	0	20	1.4182	2.60816	7.16587	0	7.16587	11.3572	11.3572

Query 1 (janbu simplified) - Safety Factor: 1.83907

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	0.979763	13.8415	13.372	UG4-RESIDUO	0	20	0	0	-76.9155	0	-76.9155	-76.9155	-76.9155
2	0.979763	12.1777	13.372	UG4-RESIDUO	0	20	2.43175	4.47215	12.2871	0	12.2871	12.8651	12.8651
3	0.979763	19.3106	13.372	UG4-RESIDUO	0	20	3.85608	7.0916	19.484	0	19.484	20.4007	20.4007
4	0.979763	27.1341	13.372	UG4-RESIDUO	0	20	5.41834	9.9647	27.3777	0	27.3777	28.6658	28.6658
5	0.979763	34.9576	13.372	UG4-RESIDUO	0	20	6.98059	12.8378	35.2716	0	35.2716	36.931	36.931
6	0.979763	42.7811	13.372	UG4-RESIDUO	0	20	8.54285	15.7109	43.1654	0	43.1654	45.1962	45.1962
7	0.979763	50.6046	13.372	UG4-RESIDUO	0	20	10.1051	18.584	51.0591	0	51.0591	53.4613	53.4613
8	0.979763	57.6602	13.372	UG4-RESIDUO	0	20	11.514	21.1751	58.1781	0	58.1781	60.9152	60.9152
9	0.979763	58.9766	13.372	UG4-RESIDUO	0	20	11.7769	21.6585	59.5063	0	59.5063	62.3059	62.3059
10	0.979763	59.1192	13.372	UG4-RESIDUO	0	20	11.8054	21.7109	59.6502	0	59.6502	62.4566	62.4566
11	0.979763	59.2617	13.372	UG4-RESIDUO	0	20	11.8339	21.7633	59.7941	0	59.7941	62.6072	62.6072
12	0.979763	59.4043	13.372	UG4-RESIDUO	0	20	11.8623	21.8156	59.9379	0	59.9379	62.7578	62.7578
13	0.979763	59.5469	13.372	UG4-RESIDUO	0	20	11.8908	21.868	60.0818	0	60.0818	62.9084	62.9084
14	0.979763	59.6895	13.372	UG4-RESIDUO	0	20	11.9192	21.9203	60.2256	0	60.2256	63.0591	63.0591
15	0.979763	59.8321	13.372	UG4-RESIDUO	0	20	11.9477	21.9727	60.3695	0	60.3695	63.2097	63.2097
16	0.979763	59.9747	13.372	UG4-RESIDUO	0	20	11.9762	22.0251	60.5134	0	60.5134	63.3604	63.3604
17	0.946579	58.1486	12.9266	UG4-RESIDUO	0	20	12.0372	22.1373	60.8218	0	60.8218	63.5846	63.5846
18	0.946579	58.4212	12.9266	UG4-RESIDUO	0	20	12.0937	22.2411	61.107	0	61.107	63.8827	63.8827
19	0.946579	58.6939	12.9266	UG4-RESIDUO	0	20	12.1501	22.3449	61.3922	0	61.3922	64.1809	64.1809
20	0.946579	58.9666	12.9266	UG4-RESIDUO	0	20	12.2066	22.4488	61.6774	0	61.6774	64.4791	64.4791
21	0.946579	59.2392	12.9266	UG4-RESIDUO	0	20	12.263	22.5526	61.9627	0	61.9627	64.7773	64.7773
22	0.946579	59.5119	12.9266	UG4-RESIDUO	0	20	12.3195	22.6564	62.2479	0	62.2479	65.0754	65.0754
23	0.946579	59.7846	12.9266	UG4-RESIDUO	0	20	12.3759	22.7602	62.5331	0	62.5331	65.3736	65.3736
24	0.946579	60.0572	12.9266	UG4-RESIDUO	0	20	12.4324	22.864	62.8182	0	62.8182	65.6717	65.6717
25	0.946579	60.3299	12.9266	UG4-RESIDUO	0	20	12.4888	22.9678	63.1034	0	63.1034	65.9698	65.9698
26	0.946579	60.6026	12.9266	UG4-RESIDUO	0	20	12.5453	23.0716	63.3886	0	63.3886	66.268	66.268
27	0.946579	60.8752	12.9266	UG4-RESIDUO	0	20	12.6017	23.1754	63.6739	0	63.6739	66.5662	66.5662
28	0.946579	61.1479	12.9266	UG4-RESIDUO	0	20	12.6581	23.2792	63.9591	0	63.9591	66.8644	66.8644
29	0.946579	61.4206	12.9266	UG4-RESIDUO	0	20	12.7146	23.383	64.2443	0	64.2443	67.1625	67.1625
30	0.946579	61.6932	12.9266	UG4-RESIDUO	0	20	12.771	23.4868	64.5295	0	64.5295	67.4607	67.4607
31	0.946579	61.9659	12.9266	UG4-RESIDUO	0	20	12.8275	23.5906	64.8146	0	64.8146	67.7588	67.7588
32	0.946579	62.2386	12.9266	UG4-RESIDUO	0	20	12.8839	23.6944	65.0998	0	65.0998	68.0569	68.0569
33	0.946579	62.5112	12.9266	UG4-RESIDUO	0	20	12.9403	23.7982	65.3851	0	65.3851	68.3551	68.3551

34	0.946579	62.7839	12.9266	UG4-RESIDUO	0	20	12.9968	23.902	65.6703	0	65.6703	68.6533	68.6533
35	0.946579	63.0566	12.9266	UG4-RESIDUO	0	20	13.0532	24.0058	65.9555	0	65.9555	68.9515	68.9515
36	0.946579	63.3292	12.9266	UG4-RESIDUO	0	20	13.1097	24.1096	66.2407	0	66.2407	69.2496	69.2496
37	0.946579	63.6019	12.9266	UG4-RESIDUO	0	20	13.1661	24.2134	66.5259	0	66.5259	69.5478	69.5478
38	0.946579	63.8746	12.9266	UG4-RESIDUO	0	20	13.2226	24.3173	66.8111	0	66.8111	69.846	69.846
39	0.946579	64.1473	12.9266	UG4-RESIDUO	0	20	13.279	24.4211	67.0963	0	67.0963	70.1441	70.1441
40	0.946579	64.4199	12.9266	UG4-RESIDUO	0	20	13.3355	24.5249	67.3815	0	67.3815	70.4422	70.4422
41	0.946579	64.6926	12.9266	UG4-RESIDUO	0	20	13.3919	24.6287	67.6667	0	67.6667	70.7404	70.7404
42	0.946579	64.9653	12.9266	UG4-RESIDUO	0	20	13.4484	24.7325	67.9519	0	67.9519	71.0386	71.0386
43	0.946579	65.2379	12.9266	UG4-RESIDUO	0	20	13.5048	24.8363	68.2371	0	68.2371	71.3367	71.3367
44	0.946579	65.5106	12.9266	UG4-RESIDUO	0	20	13.5613	24.9401	68.5223	0	68.5223	71.6349	71.6349
45	0.946579	65.7833	12.9266	UG4-RESIDUO	0	20	13.6177	25.0439	68.8076	0	68.8076	71.9331	71.9331
46	1.043	70.4851	24.3943	UG4-RESIDUO	0	20	12.7042	23.364	64.1921	0	64.1921	69.9535	69.9535
47	0.911	55.0329	39.8921	UG4-RESIDUO	0	20	10.6199	19.5308	53.6604	0	53.6604	62.5376	62.5376
48	0.911	45.7238	39.8921	UG4-RESIDUO	0	20	8.82354	16.2271	44.5835	0	44.5835	51.9591	51.9591
49	1.302	43.6269	49.7503	UG4-RESIDUO	0	20	5.56471	10.2339	28.1173	0	28.1173	34.6907	34.6907
50	0.426	4.67186	71.306	UG4-RESIDUO	0	20	1.4182	2.60816	7.16587	0	7.16587	11.3572	11.3572

Interslice Data

Galleria artificiale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 0.363043

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	55.2041	0	0	0
2	97.3137	55.2853	-0.500406	0	0
3	97.3474	55.3673	-1.00277	0	0
4	97.3811	55.4504	-1.50651	0	0
5	97.4148	55.5344	-2.01098	0	0
6	97.4485	55.6195	-2.51556	0	0
7	97.4822	55.7056	-3.01955	0	0
8	97.5159	55.7928	-3.52225	0	0
9	97.5496	55.8812	-4.02291	0	0
10	97.5833	55.9707	-4.52076	0	0
11	97.617	56.0614	-5.01497	0	0
12	97.6507	56.1534	-5.5047	0	0
13	97.6844	56.2467	-5.98902	0	0
14	97.7182	56.3413	-6.46699	0	0
15	97.7519	56.4374	-6.9376	0	0
16	97.7856	56.5349	-7.39977	0	0
17	97.8193	56.6339	-7.85239	0	0
18	97.853	56.7346	-8.29424	0	0
19	97.8867	56.8368	-8.72406	0	0
20	97.9204	56.9409	-9.14048	0	0
21	97.9541	57.0467	-9.54206	0	0
22	97.9878	57.1545	-9.92723	0	0
23	98.0215	57.2643	-10.2943	0	0
24	98.0552	57.3762	-10.6416	0	0
25	98.0889	57.4903	-10.967	0	0
26	98.1226	57.6068	-11.2686	0	0
27	98.1563	57.7257	-11.5439	0	0
28	98.19	57.8474	-11.7907	0	0
29	98.2237	57.9718	-12.006	0	0
30	98.2574	58.0993	-12.1871	0	0
31	98.2911	58.23	-12.3305	0	0
32	98.3248	58.3642	-12.4326	0	0
33	98.3585	58.5021	-12.4894	0	0
34	98.3922	58.644	-12.4963	0	0
35	98.4259	58.7904	-12.4481	0	0
36	98.4596	58.9417	-12.3389	0	0
37	98.4933	59.0982	-12.162	0	0
38	98.527	59.2606	-11.9096	0	0
39	98.5608	59.4296	-11.5723	0	0
40	98.5945	59.606	-11.1393	0	0
41	98.6282	59.7909	-10.6015	0	0
42	98.6619	59.9855	-9.94542	0	0
43	98.6956	60.1914	-9.15069	0	0
44	98.7293	60.411	-8.19097	0	0
45	98.763	60.6472	-7.03078	0	0
46	98.7967	60.9043	-5.62007	0	0
47	98.8304	61.189	-3.88375	0	0
48	98.8641	61.5126	-1.69831	0	0
49	98.8978	61.8968	1.1712	0	0
50	98.9315	62.3982	5.31519	0	0
51	98.9652	63.6101	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 0.410757

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	55.2039	0	0	0
2	97.3228	55.301	-0.949227	0	0
3	97.3656	55.3992	-1.8971	0	0
4	97.4084	55.4986	-2.84271	0	0
5	97.4512	55.5991	-3.78509	0	0
6	97.494	55.7009	-4.72325	0	0
7	97.5367	55.8039	-5.65616	0	0
8	97.5795	55.9081	-6.58274	0	0
9	97.6223	56.0138	-7.50186	0	0
10	97.6651	56.1207	-8.41234	0	0
11	97.7079	56.2291	-9.31294	0	0
12	97.7507	56.339	-10.2024	0	0
13	97.7935	56.4504	-11.0793	0	0
14	97.8363	56.5634	-11.9423	0	0
15	97.8791	56.6781	-12.7898	0	0
16	97.9219	56.7944	-13.6204	0	0
17	97.9647	56.9125	-14.4322	0	0
18	98.0075	57.0325	-15.2237	0	0
19	98.0502	57.1544	-15.9928	0	0
20	98.093	57.2783	-16.7377	0	0
21	98.1358	57.4043	-17.4562	0	0
22	98.1786	57.5325	-18.1461	0	0
23	98.2214	57.663	-18.8051	0	0
24	98.2642	57.7959	-19.4307	0	0
25	98.307	57.9314	-20.02	0	0
26	98.3498	58.0696	-20.5701	0	0
27	98.3926	58.2107	-21.078	0	0
28	98.4354	58.3547	-21.5403	0	0
29	98.4782	58.502	-21.9531	0	0
30	98.5209	58.6526	-22.3126	0	0
31	98.5637	58.8069	-22.6143	0	0
32	98.6065	58.9651	-22.8542	0	0
33	98.6493	59.1274	-23.0346	0	0
34	98.6921	59.2942	-23.1521	0	0
35	98.7349	59.4659	-23.2003	0	0
36	98.7777	59.6428	-23.1725	0	0
37	98.8205	59.8256	-23.0606	0	0
38	98.8633	60.0146	-22.8556	0	0
39	98.9061	60.2107	-22.5472	0	0
40	98.9489	60.4146	-22.1231	0	0
41	98.9917	60.6273	-21.5689	0	0
42	99.0344	60.8499	-20.8675	0	0
43	99.0772	61.084	-19.9977	0	0
44	99.12	61.3314	-18.9333	0	0
45	99.1628	61.5947	-17.6407	0	0
46	99.2056	61.8772	-16.0757	0	0
47	99.2484	62.1838	-14.1771	0	0
48	99.2912	62.5217	-11.8558	0	0
49	99.334	62.9028	-8.97058	0	0
50	99.3768	63.3492	-5.2679	0	0
51	99.4196	63.913	0	0	0

Galleria artificiale - Statica

Global Minimum Query (bishop simplified) - Safety Factor: 2.12679

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	309.385	0	0
3	99.2395	62.9658	308.333	0	0
4	100.219	63.1987	306.665	0	0
5	101.199	63.4316	304.321	0	0
6	102.179	63.6645	301.302	0	0
7	103.159	63.8974	297.607	0	0
8	104.138	64.1304	293.235	0	0
9	105.118	64.3633	288.255	0	0
10	106.098	64.5962	283.161	0	0
11	107.078	64.8291	278.054	0	0
12	108.057	65.062	272.936	0	0
13	109.037	65.2949	267.804	0	0
14	110.017	65.5278	262.661	0	0
15	110.997	65.7607	257.505	0	0
16	111.976	65.9936	252.337	0	0
17	112.956	66.2265	247.157	0	0
18	113.903	66.4438	242.747	0	0
19	114.849	66.661	238.316	0	0
20	115.796	66.8783	233.864	0	0
21	116.743	67.0955	229.392	0	0
22	117.689	67.3128	224.899	0	0
23	118.636	67.5301	220.386	0	0
24	119.582	67.7473	215.851	0	0
25	120.529	67.9646	211.296	0	0
26	121.475	68.1818	206.721	0	0
27	122.422	68.3991	202.125	0	0
28	123.369	68.6164	197.508	0	0
29	124.315	68.8336	192.87	0	0
30	125.262	69.0509	188.212	0	0
31	126.208	69.2681	183.533	0	0
32	127.155	69.4854	178.833	0	0
33	128.101	69.7026	174.113	0	0
34	129.048	69.9199	169.372	0	0
35	129.995	70.1372	164.61	0	0
36	130.941	70.3544	159.828	0	0
37	131.888	70.5717	155.024	0	0
38	132.834	70.7889	150.201	0	0
39	133.781	71.0062	145.356	0	0
40	134.728	71.2235	140.491	0	0
41	135.674	71.4407	135.605	0	0
42	136.621	71.658	130.699	0	0
43	137.567	71.8752	125.772	0	0
44	138.514	72.0925	120.824	0	0
45	139.46	72.3097	115.855	0	0
46	140.407	72.527	110.866	0	0
47	141.45	73	85.9327	0	0
48	142.361	73.7615	42.7253	0	0
49	143.272	74.523	6.82666	0	0
50	144.574	76.061	-42.6619	0	0
51	145	77.32	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 2.01126

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	327.369	0	0
3	99.2395	62.9658	326.468	0	0
4	100.219	63.1987	325.038	0	0
5	101.199	63.4316	323.029	0	0
6	102.179	63.6645	320.441	0	0
7	103.159	63.8974	317.274	0	0
8	104.138	64.1304	313.528	0	0
9	105.118	64.3633	309.259	0	0
10	106.098	64.5962	304.893	0	0
11	107.078	64.8291	300.516	0	0
12	108.057	65.062	296.128	0	0
13	109.037	65.2949	291.73	0	0
14	110.017	65.5278	287.322	0	0
15	110.997	65.7607	282.903	0	0
16	111.976	65.9936	278.473	0	0
17	112.956	66.2265	274.033	0	0
18	113.903	66.4438	270.34	0	0
19	114.849	66.661	266.63	0	0
20	115.796	66.8783	262.902	0	0
21	116.743	67.0955	259.157	0	0
22	117.689	67.3128	255.395	0	0
23	118.636	67.5301	251.615	0	0
24	119.582	67.7473	247.818	0	0
25	120.529	67.9646	244.004	0	0
26	121.475	68.1818	240.172	0	0
27	122.422	68.3991	236.323	0	0
28	123.369	68.6164	232.457	0	0
29	124.315	68.8336	228.573	0	0
30	125.262	69.0509	224.672	0	0
31	126.208	69.2681	220.754	0	0
32	127.155	69.4854	216.818	0	0
33	128.101	69.7026	212.866	0	0
34	129.048	69.9199	208.895	0	0
35	129.995	70.1372	204.908	0	0
36	130.941	70.3544	200.903	0	0
37	131.888	70.5717	196.881	0	0
38	132.834	70.7889	192.842	0	0
39	133.781	71.0062	188.785	0	0
40	134.728	71.2235	184.711	0	0
41	135.674	71.4407	180.619	0	0
42	136.621	71.658	176.511	0	0
43	137.567	71.8752	172.385	0	0
44	138.514	72.0925	168.241	0	0
45	139.46	72.3097	164.081	0	0
46	140.407	72.527	159.903	0	0
47	141.45	73	135.893	0	0
48	142.361	73.7615	93.587	0	0
49	143.272	74.523	58.437	0	0
50	144.574	76.061	9.85689	0	0
51	145	77.32	0	0	0

Galleria artificiale - sismica

Global Minimum Query (bishop simplified) - Safety Factor: 1.97053

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	368.21	0	0
3	99.2395	62.9658	366.717	0	0
4	100.219	63.1987	364.35	0	0
5	101.199	63.4316	361.024	0	0
6	102.179	63.6645	356.74	0	0
7	103.159	63.8974	351.496	0	0
8	104.138	64.1304	345.294	0	0
9	105.118	64.3633	338.226	0	0
10	106.098	64.5962	330.998	0	0
11	107.078	64.8291	323.752	0	0
12	108.057	65.062	316.488	0	0
13	109.037	65.2949	309.207	0	0
14	110.017	65.5278	301.908	0	0
15	110.997	65.7607	294.592	0	0
16	111.976	65.9936	287.259	0	0
17	112.956	66.2265	279.908	0	0
18	113.903	66.4438	273.25	0	0
19	114.849	66.661	266.56	0	0
20	115.796	66.8783	259.839	0	0
21	116.743	67.0955	253.088	0	0
22	117.689	67.3128	246.304	0	0
23	118.636	67.5301	239.49	0	0
24	119.582	67.7473	232.645	0	0
25	120.529	67.9646	225.768	0	0
26	121.475	68.1818	218.86	0	0
27	122.422	68.3991	211.92	0	0
28	123.369	68.6164	204.95	0	0
29	124.315	68.8336	197.948	0	0
30	125.262	69.0509	190.915	0	0
31	126.208	69.2681	183.851	0	0
32	127.155	69.4854	176.756	0	0
33	128.101	69.7026	169.629	0	0
34	129.048	69.9199	162.472	0	0
35	129.995	70.1372	155.283	0	0
36	130.941	70.3544	148.062	0	0
37	131.888	70.5717	140.811	0	0
38	132.834	70.7889	133.528	0	0
39	133.781	71.0062	126.214	0	0
40	134.728	71.2235	118.869	0	0
41	135.674	71.4407	111.493	0	0
42	136.621	71.658	104.085	0	0
43	137.567	71.8752	96.6467	0	0
44	138.514	72.0925	89.1767	0	0
45	139.46	72.3097	81.6755	0	0
46	140.407	72.527	74.143	0	0
47	141.45	73	51.1149	0	0
48	142.361	73.7615	15.1317	0	0
49	143.272	74.523	-14.7648	0	0
50	144.574	76.061	-54.7581	0	0
51	145	77.32	0	0	0

Query 1 (bishop simplified) - Safety Factor: 1.97053

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	368.21	0	0
3	99.2395	62.9658	366.717	0	0
4	100.219	63.1987	364.35	0	0
5	101.199	63.4316	361.024	0	0
6	102.179	63.6645	356.74	0	0
7	103.159	63.8974	351.496	0	0
8	104.138	64.1304	345.294	0	0
9	105.118	64.3633	338.226	0	0
10	106.098	64.5962	330.998	0	0
11	107.078	64.8291	323.752	0	0
12	108.057	65.062	316.488	0	0
13	109.037	65.2949	309.207	0	0
14	110.017	65.5278	301.908	0	0
15	110.997	65.7607	294.592	0	0
16	111.976	65.9936	287.259	0	0
17	112.956	66.2265	279.908	0	0
18	113.903	66.4438	273.25	0	0
19	114.849	66.661	266.56	0	0
20	115.796	66.8783	259.839	0	0
21	116.743	67.0955	253.088	0	0
22	117.689	67.3128	246.304	0	0
23	118.636	67.5301	239.49	0	0
24	119.582	67.7473	232.645	0	0
25	120.529	67.9646	225.768	0	0
26	121.475	68.1818	218.86	0	0
27	122.422	68.3991	211.92	0	0
28	123.369	68.6164	204.95	0	0
29	124.315	68.8336	197.948	0	0
30	125.262	69.0509	190.915	0	0
31	126.208	69.2681	183.851	0	0
32	127.155	69.4854	176.756	0	0
33	128.101	69.7026	169.629	0	0
34	129.048	69.9199	162.472	0	0
35	129.995	70.1372	155.283	0	0
36	130.941	70.3544	148.062	0	0
37	131.888	70.5717	140.811	0	0
38	132.834	70.7889	133.528	0	0
39	133.781	71.0062	126.214	0	0
40	134.728	71.2235	118.869	0	0
41	135.674	71.4407	111.493	0	0
42	136.621	71.658	104.085	0	0
43	137.567	71.8752	96.6467	0	0
44	138.514	72.0925	89.1767	0	0
45	139.46	72.3097	81.6755	0	0
46	140.407	72.527	74.143	0	0
47	141.45	73	51.1149	0	0
48	142.361	73.7615	15.1317	0	0
49	143.272	74.523	-14.7648	0	0
50	144.574	76.061	-54.7581	0	0
51	145	77.32	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.83907

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	394.81	0	0
3	99.2395	62.9658	393.474	0	0
4	100.219	63.1987	391.357	0	0
5	101.199	63.4316	388.381	0	0
6	102.179	63.6645	384.548	0	0
7	103.159	63.8974	379.856	0	0
8	104.138	64.1304	374.307	0	0
9	105.118	64.3633	367.984	0	0
10	106.098	64.5962	361.517	0	0
11	107.078	64.8291	355.034	0	0
12	108.057	65.062	348.536	0	0
13	109.037	65.2949	342.021	0	0
14	110.017	65.5278	335.491	0	0
15	110.997	65.7607	328.946	0	0
16	111.976	65.9936	322.385	0	0
17	112.956	66.2265	315.808	0	0
18	113.903	66.4438	309.9	0	0
19	114.849	66.661	303.964	0	0
20	115.796	66.8783	298.001	0	0
21	116.743	67.0955	292.01	0	0
22	117.689	67.3128	285.991	0	0
23	118.636	67.5301	279.944	0	0
24	119.582	67.7473	273.87	0	0
25	120.529	67.9646	267.768	0	0
26	121.475	68.1818	261.638	0	0
27	122.422	68.3991	255.481	0	0
28	123.369	68.6164	249.296	0	0
29	124.315	68.8336	243.083	0	0
30	125.262	69.0509	236.843	0	0
31	126.208	69.2681	230.575	0	0
32	127.155	69.4854	224.279	0	0
33	128.101	69.7026	217.955	0	0
34	129.048	69.9199	211.604	0	0
35	129.995	70.1372	205.225	0	0
36	130.941	70.3544	198.818	0	0
37	131.888	70.5717	192.384	0	0
38	132.834	70.7889	185.921	0	0
39	133.781	71.0062	179.432	0	0
40	134.728	71.2235	172.914	0	0
41	135.674	71.4407	166.369	0	0
42	136.621	71.658	159.796	0	0
43	137.567	71.8752	153.195	0	0
44	138.514	72.0925	146.567	0	0
45	139.46	72.3097	139.911	0	0
46	140.407	72.527	133.227	0	0
47	141.45	73	111.16	0	0
48	142.361	73.7615	76.1051	0	0
49	143.272	74.523	46.9797	0	0
50	144.574	76.061	7.91536	0	0
51	145	77.32	0	0	0

Query 1 (janbu simplified) - Safety Factor: 1.83907

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.28	62.5	0	0	0
2	98.2598	62.7329	394.81	0	0
3	99.2395	62.9658	393.474	0	0
4	100.219	63.1987	391.357	0	0
5	101.199	63.4316	388.381	0	0
6	102.179	63.6645	384.548	0	0
7	103.159	63.8974	379.856	0	0
8	104.138	64.1304	374.307	0	0
9	105.118	64.3633	367.984	0	0
10	106.098	64.5962	361.517	0	0
11	107.078	64.8291	355.034	0	0
12	108.057	65.062	348.536	0	0
13	109.037	65.2949	342.021	0	0
14	110.017	65.5278	335.491	0	0
15	110.997	65.7607	328.946	0	0
16	111.976	65.9936	322.385	0	0
17	112.956	66.2265	315.808	0	0
18	113.903	66.4438	309.9	0	0
19	114.849	66.661	303.964	0	0
20	115.796	66.8783	298.001	0	0
21	116.743	67.0955	292.01	0	0
22	117.689	67.3128	285.991	0	0
23	118.636	67.5301	279.944	0	0
24	119.582	67.7473	273.87	0	0
25	120.529	67.9646	267.768	0	0
26	121.475	68.1818	261.638	0	0
27	122.422	68.3991	255.481	0	0
28	123.369	68.6164	249.296	0	0
29	124.315	68.8336	243.083	0	0
30	125.262	69.0509	236.843	0	0
31	126.208	69.2681	230.575	0	0
32	127.155	69.4854	224.279	0	0
33	128.101	69.7026	217.955	0	0
34	129.048	69.9199	211.604	0	0
35	129.995	70.1372	205.225	0	0
36	130.941	70.3544	198.818	0	0
37	131.888	70.5717	192.384	0	0
38	132.834	70.7889	185.921	0	0
39	133.781	71.0062	179.432	0	0
40	134.728	71.2235	172.914	0	0
41	135.674	71.4407	166.369	0	0
42	136.621	71.658	159.796	0	0
43	137.567	71.8752	153.195	0	0
44	138.514	72.0925	146.567	0	0
45	139.46	72.3097	139.911	0	0
46	140.407	72.527	133.227	0	0
47	141.45	73	111.16	0	0
48	142.361	73.7615	76.1051	0	0
49	143.272	74.523	46.9797	0	0
50	144.574	76.061	7.91536	0	0
51	145	77.32	0	0	0

Discharge Sections

Entity Information

Galleria artificiale

Shared Entities

Type	Coordinates (x,y)
External Boundary	23.08, 50 23.08, 41 23.08, 5 145, 5 145, 63 145, 77.32 104.68, 67.42 98.59, 63.36 97.28, 63.36 97.28, 62.5 97.28, 55.2 81.46, 55.2 81.46, 60.4262 81.46, 61.81 76.72, 60.92 76.72, 59.655 76.72, 54.59 59.65, 54.59 59.65, 57.1161 59.65, 58.94 54.695, 58.4536 23.08, 55.35
Material Boundary	23.08, 41 34.7059, 43.0978 145, 63
Material Boundary	97.28, 62.5 112.956, 66.2265 140.407, 72.527 141.45, 73 143.272, 74.523 144.574, 76.061 145, 77.32
Material Boundary	76.72, 59.655 81.46, 60.4262
Material Boundary	52.5133, 56.0546 59.65, 57.1161
Material Boundary	34.7059, 43.0978 43.864, 47.037 51.136, 54.54 52.5133, 56.0546 54.695, 58.4536

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	Statica	sismica
Non-Circular Failure Surface	97.28, 62.5 112.956, 66.2265 140.407, 72.527 141.45, 73 143.272, 74.523 144.574, 76.061 145, 77.32			

rocscience

rilevato pk 2+780
SLIDE - An Interactive Slope Stability Program
Date Created: 22/09/2022, 16:00:47
Software Version: 9.02

Table of Contents

Slide Analysis Information

rilevato pk 2+780

Project Summary

File Name:	rilevato pk 2+780.slmd
Slide Modeler Version:	9.02
Project Title:	SLIDE - An Interactive Slope Stability Program
Date Created:	22/09/2022, 16:00:47

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Stab locale	Master Scenario	Bishop Simplified: 1.659600 Janbu Simplified: 1.603900	00h:00m:00.425s
	statico	Bishop Simplified: 1.355390 Janbu Simplified: 1.245010	00h:00m:00.431s
	sismico	Bishop Simplified: 1.399740 Janbu Simplified: 1.223980	00h:00m:00.387s
Stab globale	Master Scenario	Bishop Simplified: 1.658720 Janbu Simplified: 1.543850	00h:00m:00.359s
	statico	Bishop Simplified: 1.348310 Janbu Simplified: 1.231910	00h:00m:00.375s
	sismico	Bishop Simplified: 1.380750 Janbu Simplified: 1.228610	00h:00m:00.356s

General Settings

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

Design Standard

Stab locale - statico

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	**Partial Factor**
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Stab globale - statico

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	**Partial Factor**
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Analysis Options

All Open Scenarios

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

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [kN/m3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [kPa]:	0
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

Stab locale - Master Scenario

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 [m]:	3.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Stab locale - statico

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 [m]:	4.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Stab locale - sismico

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 [m]:	5.2
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Stab globale - Master Scenario

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 [m]:	3.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Stab globale - statico

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 [m]:	4.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Stab globale - sismico

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 [m]:	5.2
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Stab locale - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stab locale - statico

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stab locale - sismico

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.11
Seismic Load Coefficient (Vertical):	0.055

Stab globale - Master Scenario

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stab globale - statico

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Stab globale - sismico

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.11
Seismic Load Coefficient (Vertical):	0.055

Loading

Stab locale - Master Scenario

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Vertical

Stab locale - statico

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Stab locale - sismico

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Normal to boundary

Stab globale - Master Scenario

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Stab globale - statico

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Stab globale - sismico

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Vertical

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Normal to boundary

Materials

RILEVATO	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	19
Cohesion [kPa]	0
Friction Angle [deg]	35
Water Surface	Assigned per scenario
Hu Value	1
UG1	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	18
Cohesion [kPa]	5
Friction Angle [deg]	26
Water Surface	Assigned per scenario
Hu Value	1
UG2	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	20
Cohesion [kPa]	2
Friction Angle [deg]	32
Water Surface	Assigned per scenario
Hu Value	1
UG3	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	20
Cohesion [kPa]	10
Friction Angle [deg]	27
Water Surface	Assigned per scenario
Hu Value	1

Materials In Use

Material	Stab locale	statico	sismico	Stab globale	statico	sismico
RILEVATO	✓	✓	✓	✓	✓	✓
UG1	✓	✓	✓	✓	✓	✓
UG2	✓	✓	✓	✓	✓	✓
UG3	✓	✓	✓	✓	✓	✓

Global Minimums

Stab locale - Master Scenario

Method: bishop simplified

FS	1.659600
Center:	48.829, 80.194
Radius:	30.216
Left Slip Surface Endpoint:	50.000, 50.000
Right Slip Surface Endpoint:	69.334, 58.000
Resisting Moment:	17848.3 kN-m
Driving Moment:	10754.5 kN-m
Total Slice Area:	45.5553 m2
Surface Horizontal Width:	19.3339 m
Surface Average Height:	2.35625 m

Method: janbu simplified

FS	1.603900
Center:	54.986, 65.313
Radius:	16.104
Left Slip Surface Endpoint:	50.000, 50.000
Right Slip Surface Endpoint:	69.334, 58.000
Resisting Horizontal Force:	790.137 kN
Driving Horizontal Force:	492.634 kN
Total Slice Area:	74.5969 m2
Surface Horizontal Width:	19.3339 m
Surface Average Height:	3.85836 m

Stab locale - statico

Method: bishop simplified

FS	1.355390
Center:	52.944, 67.918
Radius:	18.158
Left Slip Surface Endpoint:	50.001, 50.001
Right Slip Surface Endpoint:	68.153, 58.000
Resisting Moment:	9974.03 kN-m
Driving Moment:	7358.79 kN-m
Total Slice Area:	54.2604 m2
Surface Horizontal Width:	18.1522 m
Surface Average Height:	2.98918 m

Method: janbu simplified

FS	1.245010
Center:	54.265, 64.921
Radius:	15.517
Left Slip Surface Endpoint:	50.001, 50.001
Right Slip Surface Endpoint:	68.153, 58.000
Resisting Horizontal Force:	533.962 kN
Driving Horizontal Force:	428.882 kN
Total Slice Area:	63.1926 m2
Surface Horizontal Width:	18.1522 m
Surface Average Height:	3.48126 m

Stab locale - sismico

Method: bishop simplified

FS	1.399740
Center:	54.265, 64.921
Radius:	15.517
Left Slip Surface Endpoint:	50.001, 50.001
Right Slip Surface Endpoint:	68.153, 58.000
Resisting Moment:	12147.7 kN-m
Driving Moment:	8678.54 kN-m
Total Slice Area:	63.1925 m2
Surface Horizontal Width:	18.1522 m
Surface Average Height:	3.48126 m

Method: janbu simplified

FS	1.223980
Center:	54.875, 62.507
Radius:	13.414
Left Slip Surface Endpoint:	50.011, 50.007
Right Slip Surface Endpoint:	67.509, 58.000
Resisting Horizontal Force:	677.672 kN
Driving Horizontal Force:	553.66 kN
Total Slice Area:	65.9293 m2
Surface Horizontal Width:	17.4985 m
Surface Average Height:	3.76771 m

Stab globale - Master Scenario

Method: bishop simplified

FS	1.658720
Center:	50.357, 72.601
Radius:	22.648
Left Slip Surface Endpoint:	48.907, 50.000
Right Slip Surface Endpoint:	67.669, 58.000
Resisting Moment:	12053 kN-m
Driving Moment:	7266.48 kN-m
Total Slice Area:	41.6481 m2
Surface Horizontal Width:	18.7618 m
Surface Average Height:	2.21983 m

Method: janbu simplified

FS	1.543850
Center:	53.227, 65.262
Radius:	16.027
Left Slip Surface Endpoint:	48.335, 50.000
Right Slip Surface Endpoint:	67.514, 58.000
Resisting Horizontal Force:	624.855 kN
Driving Horizontal Force:	404.737 kN
Total Slice Area:	59.7597 m2
Surface Horizontal Width:	19.1792 m
Surface Average Height:	3.11586 m

Stab globale - statico

Method: bishop simplified

FS	1.348310
Center:	52.279, 68.858
Radius:	19.321
Left Slip Surface Endpoint:	48.072, 50.000
Right Slip Surface Endpoint:	68.260, 58.000
Resisting Moment:	11062.3 kN-m
Driving Moment:	8204.62 kN-m
Total Slice Area:	56.5548 m2
Surface Horizontal Width:	20.1884 m
Surface Average Height:	2.80134 m

Method: janbu simplified

FS	1.231910
Center:	53.343, 65.472
Radius:	16.345
Left Slip Surface Endpoint:	48.072, 50.000
Right Slip Surface Endpoint:	67.880, 58.000
Resisting Horizontal Force:	534.624 kN
Driving Horizontal Force:	433.98 kN
Total Slice Area:	63.8948 m2
Surface Horizontal Width:	19.8082 m
Surface Average Height:	3.22567 m

Stab globale - sismico

Method: bishop simplified

FS	1.380750
Center:	53.530, 65.679
Radius:	16.662
Left Slip Surface Endpoint:	47.892, 50.000
Right Slip Surface Endpoint:	68.317, 58.000
Resisting Moment:	14002.6 kN-m
Driving Moment:	10141.3 kN-m
Total Slice Area:	68.703 m2
Surface Horizontal Width:	20.4252 m
Surface Average Height:	3.36363 m

Method: janbu simplified

FS	1.228610
Center:	53.530, 65.679
Radius:	16.662
Left Slip Surface Endpoint:	47.892, 50.000
Right Slip Surface Endpoint:	68.317, 58.000
Resisting Horizontal Force:	722.944 kN
Driving Horizontal Force:	588.426 kN
Total Slice Area:	68.703 m2
Surface Horizontal Width:	20.4252 m
Surface Average Height:	3.36363 m

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Stab locale - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	6924
Number of Invalid Surfaces:	17
Error Codes	
Error Code -108 reported for 2 surfaces	
Error Code -112 reported for 15 surfaces	

Method: janbu simplified

Number of Valid Surfaces:	6936
Number of Invalid Surfaces:	5
Error Codes	
Error Code -108 reported for 3 surfaces	
Error Code -112 reported for 2 surfaces	

Stab locale - statico

Method: bishop simplified

Number of Valid Surfaces:	5300
Number of Invalid Surfaces:	13
Error Codes	
Error Code -112 reported for 13 surfaces	

Method: janbu simplified

Number of Valid Surfaces:	5306
Number of Invalid Surfaces:	7
Error Codes	
Error Code -108 reported for 3 surfaces	
Error Code -112 reported for 4 surfaces	

Stab locale - sismico

Method: bishop simplified

Number of Valid Surfaces:	4798
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	4774
Number of Invalid Surfaces:	24
Error Codes	
Error Code -112 reported for 24 surfaces	

Stab globale - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	4358
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	4340
Number of Invalid Surfaces:	18

Error Codes

Error Code -112 reported for 18 surfaces

Stab globale - statico

Method: bishop simplified

Number of Valid Surfaces:	4405
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	4383
Number of Invalid Surfaces:	22

Error Codes

Error Code -112 reported for 22 surfaces

Stab globale - sismico

Method: bishop simplified

Number of Valid Surfaces:	4372
Number of Invalid Surfaces:	0

Method: janbu simplified

Number of Valid Surfaces:	4313
Number of Invalid Surfaces:	59

Error Codes

Error Code -112 reported for 59 surfaces

Error Code Descriptions

The following errors were encountered during the computation:
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

Slice Data

Stab locale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.6596

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	0.386677	0.881239	2.64892	RILEVATO	0	35	0.943155	1.56526	2.23542	0	2.23542	2.27906	2.27906
2	0.386677	2.62698	3.32196	RILEVATO	0	35	2.79794	4.64346	6.63154	0	6.63154	6.79394	6.79394
3	0.386677	4.33771	4.05672	RILEVATO	0	35	4.59565	7.62694	10.8924	0	10.8924	11.2183	11.2183
4	0.386677	6.0118	4.79216	RILEVATO	0	35	6.3358	10.5149	15.0169	0	15.0169	15.548	15.548
5	0.386677	7.64914	5.52839	RILEVATO	0	35	8.0191	13.3085	19.0066	0	19.0066	19.7828	19.7828
6	0.386677	9.24962	6.26553	RILEVATO	0	35	9.64624	16.0089	22.8631	0	22.8631	23.9222	23.9222
7	0.386677	10.8131	7.00372	RILEVATO	0	35	11.2178	18.617	26.5878	0	26.5878	27.9659	27.9659
8	0.386677	12.3393	7.74307	RILEVATO	0	35	12.7342	21.1337	30.182	0	30.182	31.9135	31.9135
9	0.386677	13.8282	8.48373	RILEVATO	0	35	14.1961	23.5599	33.6471	0	33.6471	35.7646	35.7646
10	0.386677	15.2796	9.22582	RILEVATO	0	35	15.604	25.8964	36.9838	0	36.9838	39.5183	39.5183
11	0.386677	16.6931	9.96947	RILEVATO	0	35	16.9582	28.1439	40.1935	0	40.1935	43.1744	43.1744
12	0.386677	17.9442	10.7148	RILEVATO	0	35	18.1336	30.0945	42.9793	0	42.9793	46.4105	46.4105
13	0.386677	17.7724	11.462	RILEVATO	0	35	17.8655	29.6496	42.3441	0	42.3441	45.9666	45.9666
14	0.386677	17.177	12.2112	RILEVATO	0	35	17.176	28.5053	40.7097	0	40.7097	44.4268	44.4268
15	0.386677	16.5426	12.9625	RILEVATO	0	35	16.4542	27.3074	38.9991	0	38.9991	42.7865	42.7865
16	0.386677	15.869	13.7161	RILEVATO	0	35	15.7004	26.0564	37.2122	0	37.2122	41.0442	41.0442
17	0.386677	15.1899	14.4721	RILEVATO	0	35	14.9484	24.8084	35.4299	0	35.4299	39.2881	39.2881
18	0.386677	15.7093	15.2307	RILEVATO	0	35	15.3768	25.5193	36.4454	0	36.4454	40.632	40.632
19	0.386677	16.8094	15.992	RILEVATO	0	35	16.365	27.1593	38.7874	0	38.7874	43.4775	43.4775
20	0.386677	17.8686	16.7562	RILEVATO	0	35	17.3018	28.7141	41.008	0	41.008	46.2173	46.2173

21	0.386677	18.8863	17.5236	RILEVATO	0	35	18.1876	30.1841	43.1073	0	43.1073	48.8501	48.8501
22	0.386677	19.8621	18.2942	RILEVATO	0	35	19.0222	31.5692	45.0856	0	45.0856	51.3744	51.3744
23	0.386677	20.7954	19.0682	RILEVATO	0	35	19.8058	32.8697	46.9428	0	46.9428	53.7888	53.7888
24	0.386677	21.6857	19.8458	RILEVATO	0	35	20.5383	34.0854	48.6791	0	48.6791	56.0919	56.0919
25	0.386677	22.5323	20.6273	RILEVATO	0	35	21.2199	35.2165	50.2942	0	50.2942	58.2818	58.2818
26	0.386677	23.3345	21.4129	RILEVATO	0	35	21.8503	36.2627	51.7885	0	51.7885	60.3572	60.3572
27	0.386677	24.0916	22.2026	RILEVATO	0	35	22.4296	37.2241	53.1615	0	53.1615	62.3161	62.3161
28	0.386677	24.8029	22.9969	RILEVATO	0	35	22.9576	38.1004	54.413	0	54.413	64.1565	64.1565
29	0.386677	25.4676	23.7958	RILEVATO	0	35	23.4341	38.8913	55.5427	0	55.5427	65.8763	65.8763
30	0.386677	26.0849	24.5997	RILEVATO	0	35	23.8591	39.5966	56.5499	0	56.5499	67.4733	67.4733
31	0.386677	26.6537	25.4088	RILEVATO	0	35	24.2323	40.2159	57.4342	0	57.4342	68.9451	68.9451
32	0.386677	27.1732	26.2233	RILEVATO	0	35	24.5533	40.7487	58.1952	0	58.1952	70.2894	70.2894
33	0.386677	27.6424	27.0436	RILEVATO	0	35	24.8221	41.1947	58.8322	0	58.8322	71.5035	71.5035
34	0.386677	28.06	27.87	RILEVATO	0	35	25.0381	41.5532	59.3442	0	59.3442	72.5844	72.5844
35	0.386677	28.4251	28.7027	RILEVATO	0	35	25.2011	41.8237	59.7303	0	59.7303	73.529	73.529
36	0.386677	28.7362	29.542	RILEVATO	0	35	25.3106	42.0054	59.9899	0	59.9899	74.3345	74.3345
37	0.386677	28.395	30.3884	RILEVATO	0	35	24.8437	41.2306	58.8833	0	58.8833	73.4523	73.4523
38	0.386677	26.7405	31.2422	RILEVATO	0	35	23.2375	38.5649	55.0763	0	55.0763	69.1728	69.1728
39	0.386677	24.9876	32.1038	RILEVATO	0	35	21.564	35.7876	51.1099	0	51.1099	64.639	64.639
40	0.386677	23.175	32.9736	RILEVATO	0	35	19.8583	32.9568	47.0672	0	47.0672	59.9503	59.9503
41	0.386677	21.3007	33.8521	RILEVATO	0	35	18.1203	30.0725	42.9479	0	42.9479	55.1023	55.1023
42	0.386677	19.3629	34.7397	RILEVATO	0	35	16.35	27.1344	38.7518	0	38.7518	50.0898	50.0898
43	0.386677	17.3596	35.6369	RILEVATO	0	35	14.5471	24.1424	34.4789	0	34.4789	44.9078	44.9078
44	0.386677	15.2885	36.5444	RILEVATO	0	35	12.7118	21.0965	30.129	0	30.129	39.5505	39.5505
45	0.386677	13.1473	37.4626	RILEVATO	0	35	10.8439	17.9966	25.7018	0	25.7018	34.0114	34.0114

46	0.386677	10.9333	38.3922	RILEVATO	0	35	13.6414	22.6393	32.3322	0	32.3322	43.1412	43.1412
47	0.386677	8.64377	39.3339	RILEVATO	0	35	13.2831	22.0446	31.4829	0	31.4829	42.3681	42.3681
48	0.386677	6.27563	40.2885	RILEVATO	0	35	11.2628	18.6917	26.6944	0	26.6944	36.242	36.242
49	0.386677	3.82552	41.2568	RILEVATO	0	35	9.20872	15.2828	21.8261	0	21.8261	29.9039	29.9039
50	0.386677	1.28977	42.2397	RILEVATO	0	35	7.12105	11.8181	16.878	0	16.878	23.3439	23.3439

Global Minimum Query (janbu simplified) - Safety Factor: 1.6039

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	0.383481	1.3419	-17.2332	UG1	5	26	4.61723	7.40557	4.93216	0	4.93216	3.49995	3.49995
2	0.383481	3.99215	-15.8984	UG1	5	26	6.87919	11.0335	12.3706	0	12.3706	10.4112	10.4112
3	0.383481	6.57375	-14.4844	UG1	5	26	9.04077	14.5005	19.4789	0	19.4789	17.1434	17.1434
4	0.383481	9.08587	-13.0794	UG1	5	26	11.1074	17.8151	26.2749	0	26.2749	23.6944	23.6944
5	0.383481	11.5298	-11.6824	UG1	5	26	13.0832	20.9842	32.7726	0	32.7726	30.0673	30.0673
6	0.383481	13.9065	-10.2924	UG1	5	26	14.9721	24.0138	38.984	0	38.984	36.2651	36.2651
7	0.383481	16.217	-8.90852	UG1	5	26	16.7772	26.909	44.92	0	44.92	42.2902	42.2902
8	0.383481	18.4622	-7.52985	UG1	5	26	18.5015	29.6746	50.5904	0	50.5904	48.1448	48.1448
9	0.383481	20.6426	-6.15555	UG1	5	26	20.1476	32.3147	56.0035	0	56.0035	53.8305	53.8305
10	0.383481	22.7588	-4.7848	UG1	5	26	21.7177	34.833	61.1667	0	61.1667	59.3488	59.3488
11	0.383481	24.8114	-3.41679	UG1	5	26	23.2139	37.2328	66.0872	0	66.0872	64.7012	64.7012
12	0.383481	26.7349	-2.05072	UG1	5	26	24.5854	39.4325	70.5971	0	70.5971	69.7168	69.7168
13	0.383481	27.3008	-0.685827	UG1	5	26	24.8568	39.8678	71.4897	0	71.4897	71.1921	71.1921
14	0.383481	27.3009	0.67868	UG1	5	26	24.6775	39.5802	70.9	0	70.9	71.1923	71.1923
15	0.383481	27.238	2.04357	UG1	5	26	24.4511	39.2171	70.1554	0	70.1554	71.0279	71.0279
16	0.383481	27.112	3.40963	UG1	5	26	24.1783	38.7796	69.2585	0	69.2585	70.699	70.699
17	0.383481	26.9248	4.77763	UG1	5	26	23.8614	38.2713	68.2164	0	68.2164	70.2107	70.2107
18	0.383481	27.6938	6.14836	UG1	5	26	24.2821	38.9461	69.5998	0	69.5998	72.2155	72.2155
19	0.383481	29.2392	7.52264	UG1	5	26	25.2875	40.5586	72.9058	0	72.9058	76.2451	76.2451
20	0.383481	30.7198	8.90129	UG1	5	26	26.2278	42.0668	75.9981	0	75.9981	80.1059	80.1059
21	0.383481	32.1351	10.2852	UG1	5	26	27.1035	43.4713	78.8778	0	78.8778	83.796	83.796
22	0.383481	33.4842	11.6751	UG1	5	26	27.9147	44.7724	81.5455	0	81.5455	87.3137	87.3137
23	0.383481	34.7661	13.0721	UG1	5	26	28.6615	45.9701	84.0011	0	84.0011	90.6562	90.6562
24	0.383481	35.9798	14.477	UG1	5	26	29.3436	47.0642	86.2445	0	86.2445	93.8207	93.8207
25	0.383481	37.124	15.8909	UG1	5	26	29.961	48.0544	88.2744	0	88.2744	96.8039	96.8039
26	0.383481	38.1974	17.3148	UG1	5	26	30.513	48.9398	90.09	0	90.09	99.6024	99.6024
27	0.39014	39.8612	18.7624	RILEVATO	0	35	38.8416	62.2981	88.971	0	88.971	102.165	102.165
28	0.39014	40.765	20.2351	RILEVATO	0	35	39.29	63.0172	89.998	0	89.998	104.481	104.481
29	0.39014	41.5838	21.7219	RILEVATO	0	35	39.6354	63.5712	90.7892	0	90.7892	106.58	106.58
30	0.39014	42.3153	23.2243	RILEVATO	0	35	39.877	63.9587	91.3424	0	91.3424	108.454	108.454
31	0.39014	42.9564	24.7438	RILEVATO	0	35	40.0135	64.1776	91.6551	0	91.6551	110.096	110.096
32	0.39014	43.5038	26.2821	RILEVATO	0	35	40.0435	64.2257	91.7238	0	91.7238	111.499	111.499
33	0.39014	43.954	27.8411	RILEVATO	0	35	39.9651	64.1001	91.5445	0	91.5445	112.652	112.652
34	0.39014	44.3028	29.4228	RILEVATO	0	35	39.7763	63.7972	91.1118	0	91.1118	113.545	113.545
35	0.39014	44.5454	31.0296	RILEVATO	0	35	39.4744	63.313	90.4203	0	90.4203	114.167	114.167
36	0.39014	44.6765	32.664	RILEVATO	0	35	39.0565	62.6427	89.4631	0	89.4631	114.502	114.502
37	0.39014	44.2551	34.3289	RILEVATO	0	35	38.1441	61.1794	87.3732	0	87.3732	113.422	113.422
38	0.39014	42.3199	36.0276	RILEVATO	0	35	35.9395	57.6434	82.3233	0	82.3233	108.461	108.461
39	0.39014	40.1481	37.7637	RILEVATO	0	35	33.5679	53.8395	76.8908	0	76.8908	102.895	102.895

40	0.39014	37.8342	39.5417	RILEVATO	0	35	31.1164	49.9076	71.2754	0	71.2754	96.9639	96.9639
41	0.39014	35.3672	41.3665	RILEVATO	0	35	28.5826	45.8436	65.4715	0	65.4715	90.6407	90.6407
42	0.39014	32.7339	43.2442	RILEVATO	0	35	25.9636	41.643	59.4723	0	59.4723	83.8914	83.8914
43	0.39014	29.9187	45.1817	RILEVATO	0	35	23.2566	37.3012	53.2717	0	53.2717	76.6762	76.6762
44	0.39014	26.9027	47.1876	RILEVATO	0	35	20.4586	32.8135	46.8625	0	46.8625	68.9462	68.9462
45	0.39014	23.6624	49.2727	RILEVATO	0	35	17.5666	28.175	40.238	0	40.238	60.6413	60.6413
46	0.39014	20.1683	51.4502	RILEVATO	0	35	18.5287	29.7182	42.442	0	42.442	65.6943	65.6943
47	0.39014	16.3825	53.7374	RILEVATO	0	35	16.9632	27.2073	38.856	0	38.856	61.9803	61.9803
48	0.39014	12.2548	56.1572	RILEVATO	0	35	13.5912	21.799	31.1322	0	31.1322	51.4018	51.4018
49	0.39014	7.71621	58.7411	RILEVATO	0	35	10.0991	16.198	23.1332	0	23.1332	39.7702	39.7702
50	0.39014	2.66707	61.5351	RILEVATO	0	35	6.4885	10.4069	14.8627	0	14.8627	26.8305	26.8305

Stab locale - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.35539

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	0.00428285	0.00014477	-9.32009	RILEVATO	0	29.2561	0.014984	0.0203092	0.0362557	0	0.0362557	0.0337966	0.0337966
2	0.367311	1.0657	-8.72692	UG1	4	21.3151	3.96105	5.36877	3.508	0	3.508	2.89997	2.89997
3	0.367311	3.12212	-7.556	UG1	4	21.3151	5.61192	7.60634	9.24263	0	9.24263	8.49823	8.49823
4	0.367311	5.12809	-6.38825	UG1	4	21.3151	7.20188	9.76135	14.7656	0	14.7656	13.9593	13.9593
5	0.367311	7.08399	-5.22316	UG1	4	21.3151	8.73249	11.8359	20.0825	0	20.0825	19.2843	19.2843
6	0.367311	8.99014	-4.06023	UG1	4	21.3151	10.2052	13.832	25.1983	0	25.1983	24.4739	24.4739
7	0.367311	10.8468	-2.89897	UG1	4	21.3151	11.6213	15.7514	30.1173	0	30.1173	29.5288	29.5288
8	0.367311	12.6541	-1.73891	UG1	4	21.3151	12.9819	17.5956	34.8438	0	34.8438	34.4496	34.4496
9	0.367311	14.4122	-0.579557	UG1	4	21.3151	14.2881	19.366	39.3812	0	39.3812	39.2367	39.2367
10	0.367311	16.1211	0.579557	UG1	4	21.3151	15.5408	21.0639	43.7329	0	43.7329	43.8901	43.8901
11	0.367311	17.781	1.73891	UG1	4	21.3151	16.7409	22.6904	47.9013	0	47.9013	48.4096	48.4096
12	0.367311	19.3916	2.89897	UG1	4	21.3151	17.8889	24.2465	51.8894	0	51.8894	52.7953	52.7953
13	0.367311	20.9528	4.06023	UG1	4	21.3151	18.9858	25.7331	55.6991	0	55.6991	57.0468	57.0468
14	0.367311	21.9667	5.22316	UG1	4	21.3151	19.6515	26.6354	58.0117	0	58.0117	59.8081	59.8081
15	0.367311	21.7676	6.38825	UG1	4	21.3151	19.3879	26.2782	57.0962	0	57.0962	59.2669	59.2669
16	0.367311	21.4706	7.556	UG1	4	21.3151	19.0527	25.8238	55.932	0	55.932	58.4593	58.4593
17	0.367311	21.1231	8.72692	UG1	4	21.3151	18.6826	25.3222	54.6463	0	54.6463	57.5141	57.5141
18	0.371848	20.9659	9.90881	RILEVATO	0	29.2561	21.7366	29.4616	52.5945	0	52.5945	56.3916	56.3916
19	0.371848	20.5792	11.1023	RILEVATO	0	29.2561	21.1604	28.6806	51.2002	0	51.2002	55.3526	55.3526
20	0.371848	21.4037	12.3006	RILEVATO	0	29.2561	21.8266	29.5835	52.8119	0	52.8119	57.5711	57.5711
21	0.371848	22.5532	13.5044	RILEVATO	0	29.2561	22.808	30.9137	55.1866	0	55.1866	60.6641	60.6641
22	0.371848	23.6442	14.7144	RILEVATO	0	29.2561	23.7116	32.1384	57.3729	0	57.3729	63.5999	63.5999
23	0.371848	24.6757	15.9311	RILEVATO	0	29.2561	24.5376	33.258	59.3716	0	59.3716	66.3757	66.3757
24	0.371848	25.6467	17.1552	RILEVATO	0	29.2561	25.2862	34.2727	61.183	0	61.183	68.9888	68.9888
25	0.371848	26.556	18.3875	RILEVATO	0	29.2561	25.9575	35.1826	62.8073	0	62.8073	71.436	71.436
26	0.371848	27.4023	19.6286	RILEVATO	0	29.2561	26.5514	35.9875	64.2444	0	64.2444	73.7139	73.7139
27	0.371848	28.1842	20.8794	RILEVATO	0	29.2561	27.0677	36.6873	65.4936	0	65.4936	75.8186	75.8186
28	0.371848	28.9001	22.1407	RILEVATO	0	29.2561	27.506	37.2813	66.5539	0	66.5539	77.7457	77.7457
29	0.371848	29.5483	23.4134	RILEVATO	0	29.2561	27.8657	37.7689	67.4244	0	67.4244	79.4907	79.4907
30	0.371848	30.1268	24.6985	RILEVATO	0	29.2561	28.1464	38.1493	68.1035	0	68.1035	81.0485	81.0485
31	0.371848	30.6335	25.997	RILEVATO	0	29.2561	28.3471	38.4214	68.5892	0	68.5892	82.4132	82.4132
32	0.371848	31.066	27.31	RILEVATO	0	29.2561	28.4669	38.5838	68.8793	0	68.8793	83.5785	83.5785

33	0.371848	31.4218	28.6388	RILEVATO	0	29.2561	28.5049	38.6352	68.9709	0	68.9709	84.5373	84.5373
34	0.371848	31.698	29.9846	RILEVATO	0	29.2561	28.4595	38.5737	68.8611	0	68.8611	85.282	85.282
35	0.371848	31.8913	31.3489	RILEVATO	0	29.2561	28.3293	38.3972	68.5462	0	68.5462	85.8038	85.8038
36	0.371848	31.9982	32.7334	RILEVATO	0	29.2561	28.1126	38.1035	68.0218	0	68.0218	86.0929	86.0929
37	0.371848	32.0145	34.1397	RILEVATO	0	29.2561	27.8075	37.69	67.2837	0	67.2837	86.1388	86.1388
38	0.371848	31.9359	35.5698	RILEVATO	0	29.2561	27.4117	37.1536	66.326	0	66.326	85.929	85.929
39	0.371848	31.7321	37.0259	RILEVATO	0	29.2561	26.9016	36.4621	65.0915	0	65.0915	85.3824	85.3824
40	0.371848	30.3003	38.5106	RILEVATO	0	29.2561	25.3569	34.3685	61.3543	0	61.3543	81.5317	81.5317
41	0.371848	28.1518	40.0265	RILEVATO	0	29.2561	23.2404	31.4998	56.233	0	56.233	75.7523	75.7523
42	0.371848	25.8832	41.5769	RILEVATO	0	29.2561	21.0629	28.5484	50.9643	0	50.9643	69.6496	69.6496
43	0.371848	23.4859	43.1656	RILEVATO	0	29.2561	18.8233	25.5129	45.5452	0	45.5452	63.2002	63.2002
44	0.371848	20.9495	44.7968	RILEVATO	0	29.2561	16.5203	22.3914	39.973	0	39.973	56.3764	56.3764
45	0.371848	18.2622	46.4755	RILEVATO	0	29.2561	14.1529	19.1827	34.2447	0	34.2447	49.146	49.146
46	0.371848	15.4096	48.2078	RILEVATO	0	29.2561	11.7202	15.8855	28.3586	0	28.3586	41.4705	41.4705
47	0.371848	12.3746	50.0009	RILEVATO	0	29.2561	9.22177	12.4991	22.3133	0	22.3133	33.3037	33.3037
48	0.371848	9.13599	51.8637	RILEVATO	0	29.2561	6.65758	9.02362	16.1088	0	16.1088	24.5885	24.5885
49	0.371848	5.66766	53.8074	RILEVATO	0	29.2561	9.23055	12.511	22.3344	0	22.3344	34.9498	34.9498
50	0.371848	1.9362	55.846	RILEVATO	0	29.2561	8.02182	10.8727	19.4098	0	19.4098	31.234	31.234

Global Minimum Query (janbu simplified) - Safety Factor: 1.24501

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	0.370657	1.20723	-15.2395	UG1	4	21.3151	4.6285	5.76253	4.51714	0	4.51714	3.25618	3.25618
2	0.370657	3.58861	-13.8255	UG1	4	21.3151	6.7688	8.42722	11.3464	0	11.3464	9.68066	9.68066
3	0.370657	5.90544	-12.42	UG1	4	21.3151	8.81397	10.9735	17.8722	0	17.8722	15.9311	15.9311
4	0.370657	8.15881	-11.0221	UG1	4	21.3151	10.7682	13.4065	24.1079	0	24.1079	22.0104	22.0104
5	0.370657	10.3497	-9.63081	UG1	4	21.3151	12.6353	15.7311	30.0653	0	30.0653	27.9212	27.9212
6	0.370657	12.4789	-8.24524	UG1	4	21.3151	14.4184	17.9511	35.7551	0	35.7551	33.6658	33.6658
7	0.370657	14.5472	-6.8645	UG1	4	21.3151	16.1207	20.0704	41.1866	0	41.1866	39.2459	39.2459
8	0.370657	16.5551	-5.48777	UG1	4	21.3151	17.7445	22.0921	46.3679	0	46.3679	44.6631	44.6631
9	0.370657	18.503	-4.1142	UG1	4	21.3151	19.2922	24.019	51.3064	0	51.3064	49.9187	49.9187
10	0.370657	20.3914	-2.74301	UG1	4	21.3151	20.7659	25.8538	56.0087	0	56.0087	55.0138	55.0138
11	0.370657	22.2205	-1.37338	UG1	4	21.3151	22.1673	27.5985	60.4801	0	60.4801	59.9487	59.9487
12	0.370657	23.9905	-0.00454257	UG1	4	21.3151	23.498	29.2553	64.7262	0	64.7262	64.7243	64.7243
13	0.370657	25.0545	1.36429	UG1	4	21.3151	24.2164	30.1497	67.0185	0	67.0185	67.5952	67.5952
14	0.370657	24.9825	2.73391	UG1	4	21.3151	23.9776	29.8524	66.2565	0	66.2565	67.4015	67.4015
15	0.370657	24.8347	4.1051	UG1	4	21.3151	23.679	29.4806	65.3037	0	65.3037	67.0031	67.0031
16	0.370657	24.6274	5.47864	UG1	4	21.3151	23.335	29.0523	64.206	0	64.206	66.4441	66.4441
17	0.370657	24.3602	6.85535	UG1	4	21.3151	22.946	28.568	62.9649	0	62.9649	65.7235	65.7235
18	0.370657	24.2218	8.23606	UG1	4	21.3151	22.6655	28.2188	62.0697	0	62.0697	65.3504	65.3504
19	0.370657	25.3257	9.62159	UG1	4	21.3151	23.3848	29.1143	64.3647	0	64.3647	68.329	68.329
20	0.370657	26.6157	11.0128	UG1	4	21.3151	24.2396	30.1786	67.0927	0	67.0927	71.81	71.81
21	0.370657	27.8432	12.4107	UG1	4	21.3151	25.0298	31.1624	69.6141	0	69.6141	75.1221	75.1221
22	0.370657	29.0072	13.8161	UG1	4	21.3151	25.7555	32.0658	71.9292	0	71.9292	78.263	78.263
23	0.370657	30.1067	15.2301	UG1	4	21.3151	26.4163	32.8886	74.0381	0	74.0381	81.2301	81.2301
24	0.356561	29.9195	16.6263	RILEVATO	0	29.2561	33.2851	41.4403	73.9786	0	73.9786	83.918	83.918
25	0.356561	30.7767	18.0055	RILEVATO	0	29.2561	33.8839	42.1858	75.3093	0	75.3093	86.3225	86.3225
26	0.356561	31.5692	19.3956	RILEVATO	0	29.2561	34.3916	42.8179	76.438	0	76.438	88.5462	88.5462
27	0.356561	32.2957	20.7977	RILEVATO	0	29.2561	34.8081	43.3364	77.3635	0	77.3635	90.5843	90.5843
28	0.356561	32.9541	22.213	RILEVATO	0	29.2561	35.1326	43.7405	78.0848	0	78.0848	92.4314	92.4314
29	0.356561	33.5425	23.6426	RILEVATO	0	29.2561	35.3648	44.0295	78.6006	0	78.6006	94.0825	94.0825
30	0.356561	34.0587	25.0881	RILEVATO	0	29.2561	35.5034	44.2021	78.909	0	78.909	95.5311	95.5311
31	0.356561	34.5001	26.5509	RILEVATO	0	29.2561	35.5475	44.257	79.007	0	79.007	96.7698	96.7698
32	0.356561	34.8639	28.0326	RILEVATO	0	29.2561	35.4955	44.1923	78.8915	0	78.8915	97.7907	97.7907
33	0.356561	35.1469	29.5351	RILEVATO	0	29.2561	35.3459	44.006	78.5588	0	78.5588	98.5851	98.5851
34	0.356561	35.3455	31.0602	RILEVATO	0	29.2561	35.0965	43.6955	78.0046	0	78.0046	99.1429	99.1429
35	0.356561	35.4558	32.6101	RILEVATO	0	29.2561	34.7452	43.2581	77.2236	0	77.2236	99.4527	99.4527
36	0.356561	35.473	34.1874	RILEVATO	0	29.2561	34.2891	42.6903	76.21	0	76.21	99.5019	99.5019
37	0.356561	35.392	35.7949	RILEVATO	0	29.2561	33.7252	41.9882	74.9567	0	74.9567	99.2755	99.2755

38	0.356561	35.2069	37.4355	RILEVATO	0	29.2561	33.0499	41.1475	73.4557	0	73.4557	98.7568	98.7568
39	0.356561	34.5724	39.113	RILEVATO	0	29.2561	31.9465	39.7737	71.0034	0	71.0034	96.9777	96.9777
40	0.356561	32.6463	40.8315	RILEVATO	0	29.2561	29.6677	36.9366	65.9388	0	65.9388	91.5757	91.5757
41	0.356561	30.4922	42.5958	RILEVATO	0	29.2561	27.2228	33.8927	60.5049	0	60.5049	85.5339	85.5339
42	0.356561	28.1985	44.4117	RILEVATO	0	29.2561	24.7016	30.7537	54.9011	0	54.9011	79.1005	79.1005
43	0.356561	25.752	46.2858	RILEVATO	0	29.2561	22.1014	27.5165	49.1221	0	49.1221	72.2385	72.2385
44	0.356561	23.1366	48.2266	RILEVATO	0	29.2561	19.4199	24.178	43.1623	0	43.1623	64.9026	64.9026
45	0.356561	20.3326	50.2442	RILEVATO	0	29.2561	16.6547	20.7353	37.0164	0	37.0164	57.0374	57.0374
46	0.356561	17.3151	52.3514	RILEVATO	0	29.2561	13.8038	17.1859	30.6801	0	30.6801	48.5733	48.5733
47	0.356561	14.0522	54.5646	RILEVATO	0	29.2561	10.866	13.5283	24.1505	0	24.1505	39.4205	39.4205
48	0.356561	10.5018	56.9058	RILEVATO	0	29.2561	7.84178	9.7631	17.429	0	17.429	29.4609	29.4609
49	0.356561	6.60597	59.4049	RILEVATO	0	29.2561	10.2651	12.7802	22.815	0	22.815	40.1758	40.1758
50	0.356561	2.28165	62.1056	RILEVATO	0	29.2561	7.88211	9.8133	17.5185	0	17.5185	32.4087	32.4087

Stab locale - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.39974

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	0.370639	1.2072	-15.2401	UG1	5	26	5.268	7.37383	4.86707	0	4.86707	3.43183	3.43183
2	0.370639	3.58838	-13.8261	UG1	5	26	7.7978	10.9149	12.1273	0	12.1273	10.2082	10.2082
3	0.370639	5.90502	-12.4207	UG1	5	26	10.21	14.2913	19.0501	0	19.0501	16.8014	16.8014
4	0.370639	8.15822	-11.0229	UG1	5	26	12.5102	17.511	25.6513	0	25.6513	23.2144	23.2144
5	0.370639	10.3489	-9.63162	UG1	5	26	14.7032	20.5807	31.9451	0	31.9451	29.4499	29.4499
6	0.370639	12.478	-8.24609	UG1	5	26	16.7935	23.5066	37.9441	0	37.9441	35.5103	35.5103
7	0.370639	14.5461	-6.8654	UG1	5	26	18.785	26.2941	43.6593	0	43.6593	41.3975	41.3975
8	0.370639	16.5538	-5.48871	UG1	5	26	20.6809	28.9479	49.1005	0	49.1005	47.1133	47.1133
9	0.370639	18.5016	-4.1152	UG1	5	26	22.4845	31.4724	54.2765	0	54.2765	52.6588	52.6588
10	0.370639	20.3899	-2.74405	UG1	5	26	24.1982	33.8712	59.1948	0	59.1948	58.035	58.035
11	0.370639	22.2189	-1.37447	UG1	5	26	25.8247	36.1478	63.8623	0	63.8623	63.2427	63.2427
12	0.370639	23.9887	-0.0056785	UG1	5	26	27.3657	38.3049	68.285	0	68.285	68.2823	68.2823
13	0.370639	25.0525	1.36311	UG1	5	26	28.1868	39.4542	70.6417	0	70.6417	71.3124	71.3124
14	0.370639	24.9805	2.73268	UG1	5	26	27.886	39.0332	69.7785	0	69.7785	71.1095	71.1095
15	0.370639	24.8328	4.10381	UG1	5	26	27.5161	38.5154	68.7168	0	68.7168	70.691	70.691
16	0.370639	24.6256	5.4773	UG1	5	26	27.0939	37.9244	67.5048	0	67.5048	70.1028	70.1028
17	0.370639	24.3584	6.85396	UG1	5	26	26.6199	37.2609	66.1448	0	66.1448	69.3444	69.3444
18	0.370639	24.22	8.23461	UG1	5	26	26.2733	36.7758	65.15	0	65.15	68.9523	68.9523
19	0.370639	25.3238	9.6201	UG1	5	26	27.0936	37.924	67.504	0	67.504	72.0964	72.0964
20	0.370639	26.6137	11.0113	UG1	5	26	28.0708	39.2918	70.3086	0	70.3086	75.7708	75.7708
21	0.370639	27.8412	12.4091	UG1	5	26	28.9712	40.5522	72.8928	0	72.8928	79.2674	79.2674
22	0.370639	29.0052	13.8144	UG1	5	26	29.7951	41.7054	75.2574	0	75.2574	82.5837	82.5837
23	0.370639	30.1047	15.2283	UG1	5	26	30.5424	42.7514	77.402	0	77.402	85.7164	85.7164
24	0.356573	29.9199	16.6246	RILEVATO	0	35	38.5443	53.952	77.0512	0	77.0512	88.5598	88.5598
25	0.356573	30.7772	18.0038	RILEVATO	0	35	39.1992	54.8687	78.3606	0	78.3606	91.1001	91.1001
26	0.356573	31.57	19.394	RILEVATO	0	35	39.7476	55.6363	79.4569	0	79.4569	93.4495	93.4495
27	0.356573	32.2965	20.7961	RILEVATO	0	35	40.1892	56.2544	80.3395	0	80.3395	95.6028	95.6028
28	0.356573	32.9551	22.2114	RILEVATO	0	35	40.5238	56.7228	81.0086	0	81.0086	97.5555	97.5555
29	0.356573	33.5436	23.6412	RILEVATO	0	35	40.7508	57.0405	81.4621	0	81.4621	99.3006	99.3006
30	0.356573	34.0599	25.0867	RILEVATO	0	35	40.8693	57.2064	81.6992	0	81.6992	100.832	100.832
31	0.356573	34.5014	26.5495	RILEVATO	0	35	40.8782	57.2189	81.7172	0	81.7172	102.142	102.142
32	0.356573	34.8653	28.0313	RILEVATO	0	35	40.7763	57.0762	81.5133	0	81.5133	103.223	103.223
33	0.356573	35.1484	29.5338	RILEVATO	0	35	40.5616	56.7757	81.084	0	81.084	104.064	104.064
34	0.356573	35.3471	31.0589	RILEVATO	0	35	40.2323	56.3148	80.4258	0	80.4258	104.656	104.656
35	0.356573	35.4574	32.6089	RILEVATO	0	35	39.7859	55.6899	79.5333	0	79.5333	104.986	104.986
36	0.356573	35.4747	34.1863	RILEVATO	0	35	39.2195	54.8971	78.4012	0	78.4012	105.041	105.041

37	0.356573	35.3938	35.7938	RILEVATO	0	35	38.53	53.932	77.0229	0	77.0229	104.805	104.805
38	0.356573	35.2087	37.4345	RILEVATO	0	35	37.7136	52.7892	75.3907	0	75.3907	104.261	104.261
39	0.356573	34.5741	39.112	RILEVATO	0	35	36.4093	50.9636	72.7835	0	72.7835	102.385	102.385
40	0.356573	32.6479	40.8306	RILEVATO	0	35	33.7688	47.2676	67.5052	0	67.5052	96.6851	96.6851
41	0.356573	30.4937	42.5949	RILEVATO	0	35	30.9445	43.3142	61.8592	0	61.8592	90.3091	90.3091
42	0.356573	28.1999	44.4108	RILEVATO	0	35	28.0391	39.2474	56.0512	0	56.0512	83.5194	83.5194
43	0.356573	25.7533	46.2851	RILEVATO	0	35	25.0504	35.0641	50.0766	0	50.0766	76.2767	76.2767
44	0.356573	23.1378	48.2259	RILEVATO	0	35	21.9764	30.7613	43.9317	0	43.9317	68.5334	68.5334
45	0.356573	20.3337	50.2436	RILEVATO	0	35	18.8154	26.3367	37.6127	0	37.6127	60.2307	60.2307
46	0.356573	17.3161	52.3508	RILEVATO	0	35	15.5662	21.7887	31.1176	0	31.1176	51.295	51.295
47	0.356573	14.053	54.5641	RILEVATO	0	35	12.229	17.1174	24.4463	0	24.4463	41.6313	41.6313
48	0.356573	10.5024	56.9054	RILEVATO	0	35	8.80606	12.3262	17.6036	0	17.6036	31.1149	31.1149
49	0.356573	6.60635	59.4046	RILEVATO	0	35	6.208	8.68958	12.41	0	12.41	22.9091	22.9091
50	0.356573	2.28179	62.1054	RILEVATO	0	35	2.76923	3.8762	5.53578	0	5.53578	10.7671	10.7671

Global Minimum Query (janbu simplified) - Safety Factor: 1.22398

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	0.0180994	0.0032833	-21.2236	RILEVATO	0	35	0.14074	0.172263	0.246017	0	0.246017	0.191361	0.191361
2	0.359021	1.37719	-20.3642	UG1	5	26	6.68628	8.18387	6.52788	0	6.52788	4.04604	4.04604
3	0.359021	3.83396	-18.7366	UG1	5	26	9.91392	12.1344	14.6278	0	14.6278	11.2651	11.2651
4	0.359021	6.21755	-17.1245	UG1	5	26	12.9555	15.8573	22.2608	0	22.2608	18.2691	18.2691
5	0.359021	8.52994	-15.5263	UG1	5	26	15.8244	19.3688	29.4604	0	29.4604	25.0641	25.0641
6	0.359021	10.7729	-13.9404	UG1	5	26	18.5319	22.6827	36.255	0	36.255	31.655	31.655
7	0.359021	12.9478	-12.3653	UG1	5	26	21.0879	25.8112	42.6691	0	42.6691	38.046	38.046
8	0.359021	15.0561	-10.7997	UG1	5	26	23.5007	28.7644	48.7244	0	48.7244	44.2416	44.2416
9	0.359021	17.0988	-9.24215	UG1	5	26	25.7779	31.5516	54.4388	0	54.4388	50.2442	50.2442
10	0.359021	19.077	-7.69151	UG1	5	26	27.9256	34.1804	59.8286	0	59.8286	56.0571	56.0571
11	0.359021	20.9912	-6.14652	UG1	5	26	29.9496	36.6577	64.9078	0	64.9078	61.6826	61.6826
12	0.359021	22.8423	-4.60601	UG1	5	26	31.8546	38.9894	69.6886	0	69.6886	67.1222	67.1222
13	0.359021	24.6306	-3.06883	UG1	5	26	33.6449	41.1807	74.1814	0	74.1814	72.3776	72.3776
14	0.359021	26.1135	-1.53387	UG1	5	26	35.0365	42.884	77.6735	0	77.6735	76.7353	76.7353
15	0.359021	26.3131	0	UG1	5	26	34.8965	42.7126	77.3223	0	77.3223	77.3223	77.3223
16	0.359021	26.282	1.53387	UG1	5	26	34.4921	42.2177	76.3075	0	76.3075	77.2311	77.2311
17	0.359021	26.1887	3.06883	UG1	5	26	34.0242	41.645	75.1334	0	75.1334	76.9576	76.9576
18	0.359021	26.0331	4.60601	UG1	5	26	33.4938	40.9957	73.802	0	73.802	76.5004	76.5004
19	0.359021	25.8147	6.14652	UG1	5	26	32.9015	40.2708	72.3158	0	72.3158	75.859	75.859
20	0.359021	26.3091	7.69151	UG1	5	26	33.1106	40.5267	72.8406	0	72.8406	77.3123	77.3123
21	0.359021	27.5958	9.24215	UG1	5	26	34.1829	41.8392	75.5314	0	75.5314	81.0936	81.0936
22	0.359021	28.8185	10.7997	UG1	5	26	35.1587	43.0335	77.9802	0	77.9802	84.6868	84.6868
23	0.359021	29.9755	12.3653	UG1	5	26	36.0379	44.1097	80.1867	0	80.1867	88.0873	88.0873
24	0.359021	31.0659	13.9404	UG1	5	26	36.8211	45.0683	82.1522	0	82.1522	91.292	91.292
25	0.359021	32.0884	15.5263	UG1	5	26	37.5082	45.9093	83.8767	0	83.8767	94.2972	94.2972
26	0.359021	33.0413	17.1245	UG1	5	26	38.0991	46.6325	85.3593	0	85.3593	97.0979	97.0979
27	0.359021	33.9231	18.7366	UG1	5	26	38.5931	47.2372	86.599	0	86.599	99.6895	99.6895
28	0.359021	34.7317	20.3642	UG1	5	26	38.9895	47.7224	87.5937	0	87.5937	102.066	102.066
29	0.353948	34.9339	21.9974	RILEVATO	0	35	48.3892	59.2274	84.5855	0	84.5855	104.133	104.133
30	0.353948	35.5191	23.6379	RILEVATO	0	35	48.4413	59.2912	84.6765	0	84.6765	105.878	105.878
31	0.353948	36.0225	25.2993	RILEVATO	0	35	48.3536	59.1839	84.5232	0	84.5232	107.379	107.379
32	0.353948	36.4408	26.9838	RILEVATO	0	35	48.1247	58.9037	84.1232	0	84.1232	108.627	108.627
33	0.353948	36.7702	28.6939	RILEVATO	0	35	47.7523	58.4479	83.4722	0	83.4722	109.609	109.609
34	0.353948	37.0065	30.4325	RILEVATO	0	35	47.234	57.8135	82.5663	0	82.5663	110.314	110.314
35	0.353948	37.1447	32.2026	RILEVATO	0	35	46.5664	56.9963	81.3991	0	81.3991	110.727	110.727
36	0.353948	37.179	34.008	RILEVATO	0	35	45.7455	55.9916	79.9643	0	79.9643	110.829	110.829
37	0.353948	37.1028	35.8526	RILEVATO	0	35	44.7668	54.7937	78.2534	0	78.2534	110.603	110.603
38	0.353948	36.9084	37.7413	RILEVATO	0	35	43.6246	53.3956	76.2568	0	76.2568	110.024	110.024
39	0.353948	36.5867	39.6795	RILEVATO	0	35	42.3122	51.7893	73.9628	0	73.9628	109.066	109.066
40	0.353948	36.1268	41.6739	RILEVATO	0	35	40.8218	49.9651	71.3576	0	71.3576	107.695	107.695

41	0.353948	34.8527	43.7322	RILEVATO	0	35	38.4135	47.0173	67.1477	0	67.1477	103.898	103.898
42	0.353948	32.4934	45.8641	RILEVATO	0	35	34.8605	42.6685	60.937	0	60.937	96.8651	96.8651
43	0.353948	29.9412	48.0813	RILEVATO	0	35	31.1892	38.1749	54.5195	0	54.5195	89.2575	89.2575
44	0.353948	27.1771	50.3988	RILEVATO	0	35	27.4009	33.5381	47.8973	0	47.8973	81.0179	81.0179
45	0.353948	24.1684	52.8363	RILEVATO	0	35	23.4902	28.7515	41.0615	0	41.0615	72.0493	72.0493
46	0.353948	20.8719	55.4198	RILEVATO	0	35	19.4526	23.8096	34.0036	0	34.0036	62.2226	62.2226
47	0.353948	17.227	58.1859	RILEVATO	0	35	15.2849	18.7084	26.7184	0	26.7184	51.3569	51.3569
48	0.353948	13.1446	61.1888	RILEVATO	0	35	10.9885	13.4497	19.2082	0	19.2082	39.187	39.187
49	0.353948	8.48389	64.5147	RILEVATO	0	35	6.57644	8.04943	11.4958	0	11.4958	25.2927	25.2927
50	0.353948	2.99352	68.3184	RILEVATO	0	35	2.11737	2.59162	3.70122	0	3.70122	9.02693	9.02693

Stab globale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.65872

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	0.36235	0.0662782	-3.21025	UG1	5	26	3.11954	5.17444	0.357652	0	0.357652	0.182683	0.182683
2	0.36235	0.179862	-2.29245	UG1	5	26	3.19792	5.30446	0.624227	0	0.624227	0.496208	0.496208
3	0.36235	0.255535	-1.37523	UG1	5	26	3.24461	5.3819	0.783009	0	0.783009	0.705115	0.705115
4	0.36235	1.09872	-0.458372	UG1	5	26	3.91516	6.49416	3.06349	0	3.06349	3.03216	3.03216
5	0.36235	2.76161	0.458372	UG1	5	26	5.24305	8.69676	7.5795	0	7.5795	7.62144	7.62144
6	0.36235	4.38689	1.37523	UG1	5	26	6.52824	10.8285	11.9502	0	11.9502	12.107	12.107
7	0.36235	5.97432	2.29245	UG1	5	26	7.77108	12.89	16.177	0	16.177	16.4881	16.4881
8	0.36235	7.52384	3.21025	UG1	5	26	8.97207	14.8822	20.2614	0	20.2614	20.7647	20.7647
9	0.37769	9.44519	4.14835	RILEVATO	0	35	10.2435	16.9911	24.2658	0	24.2658	25.0087	25.0087
10	0.37769	11.0327	5.10703	RILEVATO	0	35	11.8833	19.7111	28.1504	0	28.1504	29.2124	29.2124
11	0.37769	12.5744	6.06715	RILEVATO	0	35	13.4515	22.3122	31.865	0	31.865	33.2948	33.2948
12	0.37769	14.0702	7.02899	RILEVATO	0	35	14.9489	24.7961	35.4124	0	35.4124	37.2556	37.2556
13	0.37769	15.5197	7.99282	RILEVATO	0	35	16.3767	27.1643	38.7947	0	38.7947	41.0942	41.0942
14	0.37769	16.9227	8.95893	RILEVATO	0	35	17.7354	29.4181	42.0133	0	42.0133	44.8093	44.8093
15	0.37769	18.2788	9.92762	RILEVATO	0	35	19.0259	31.5587	45.0706	0	45.0706	48.4006	48.4006
16	0.37769	18.9081	10.8992	RILEVATO	0	35	19.5465	32.4222	46.3037	0	46.3037	50.0674	50.0674
17	0.37769	18.3782	11.8739	RILEVATO	0	35	18.8685	31.2975	44.6974	0	44.6974	48.6647	48.6647
18	0.37769	17.7841	12.8522	RILEVATO	0	35	18.1328	30.0773	42.9548	0	42.9548	47.0919	47.0919
19	0.37769	17.1412	13.8343	RILEVATO	0	35	17.3565	28.7895	41.1156	0	41.1156	45.3898	45.3898
20	0.37769	16.4489	14.8205	RILEVATO	0	35	16.5396	27.4346	39.1807	0	39.1807	43.557	43.557
21	0.37769	16.002	15.8113	RILEVATO	0	35	15.9776	26.5024	37.8492	0	37.8492	42.3738	42.3738
22	0.37769	16.8501	16.8069	RILEVATO	0	35	16.7058	27.7102	39.5744	0	39.5744	44.6203	44.6203
23	0.37769	17.8124	17.8078	RILEVATO	0	35	17.5341	29.0842	41.5365	0	41.5365	47.1687	47.1687
24	0.37769	18.7223	18.8143	RILEVATO	0	35	18.2974	30.3502	43.3446	0	43.3446	49.5786	49.5786
25	0.37769	19.5788	19.8269	RILEVATO	0	35	18.9955	31.5082	44.9984	0	44.9984	51.8473	51.8473
26	0.37769	20.3811	20.846	RILEVATO	0	35	19.6286	32.5583	46.4981	0	46.4981	53.9724	53.9724
27	0.37769	21.128	21.8721	RILEVATO	0	35	20.1964	33.5001	47.8432	0	47.8432	55.9506	55.9506

28	0.37769	21.8182	22.9055	RILEVATO	0	35	20.6987	34.3334	49.0331	0	49.0331	57.7789	57.7789
29	0.37769	22.4507	23.947	RILEVATO	0	35	21.1355	35.0578	50.0676	0	50.0676	59.4543	59.4543
30	0.37769	23.0239	24.9969	RILEVATO	0	35	21.5061	35.6726	50.9459	0	50.9459	60.9729	60.9729
31	0.37769	23.5363	26.0558	RILEVATO	0	35	21.8104	36.1773	51.6666	0	51.6666	62.3305	62.3305
32	0.37769	23.9864	27.1244	RILEVATO	0	35	22.0477	36.571	52.2287	0	52.2287	63.523	63.523
33	0.37769	24.3724	28.2034	RILEVATO	0	35	22.2176	36.8527	52.6311	0	52.6311	64.5457	64.5457
34	0.37769	24.6923	29.2933	RILEVATO	0	35	22.3192	37.0213	52.8718	0	52.8718	65.3934	65.3934
35	0.37769	24.944	30.395	RILEVATO	0	35	22.3519	37.0756	52.9495	0	52.9495	66.0606	66.0606
36	0.37769	25.1252	31.5093	RILEVATO	0	35	22.3149	37.0141	52.8616	0	52.8616	66.5412	66.5412
37	0.37769	25.2334	32.637	RILEVATO	0	35	22.2071	36.8353	52.6062	0	52.6062	66.8285	66.8285
38	0.37769	25.2659	33.7792	RILEVATO	0	35	22.0274	36.5373	52.1808	0	52.1808	66.9153	66.9153
39	0.37769	25.2197	34.9368	RILEVATO	0	35	21.7748	36.1183	51.5822	0	51.5822	66.7933	66.7933
40	0.37769	25.0913	36.111	RILEVATO	0	35	21.4478	35.5759	50.8078	0	50.8078	66.4541	66.4541
41	0.37769	24.4162	37.303	RILEVATO	0	35	20.6551	34.2611	48.9299	0	48.9299	64.6666	64.6666
42	0.37769	22.379	38.5142	RILEVATO	0	35	18.7288	31.0658	44.3665	0	44.3665	59.2716	59.2716
43	0.37769	20.1735	39.7462	RILEVATO	0	35	16.6947	27.6919	39.548	0	39.548	53.431	53.431
44	0.37769	17.8685	41.0006	RILEVATO	0	35	14.6151	24.2424	34.6217	0	34.6217	47.3267	47.3267
45	0.37769	15.4583	42.2794	RILEVATO	0	35	12.4897	20.7169	29.5867	0	29.5867	40.9432	40.9432
46	0.37769	12.9362	43.5847	RILEVATO	0	35	10.3183	17.1151	24.4429	0	24.4429	34.2636	34.2636
47	0.37769	10.295	44.919	RILEVATO	0	35	8.10095	13.4372	19.1904	0	19.1904	27.2685	27.2685
48	0.37769	7.52632	46.2851	RILEVATO	0	35	5.8379	9.68344	13.8294	0	13.8294	19.9352	19.9352
49	0.37769	4.62036	47.6861	RILEVATO	0	35	3.52958	5.85458	8.3612	0	8.3612	12.2383	12.2383
50	0.37769	1.56588	49.1259	RILEVATO	0	35	1.68487	2.79473	3.99128	0	3.99128	5.93813	5.93813

Global Minimum Query (janbu simplified) - Safety Factor: 1.54385

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	0.376313	0.391338	-17.0692	UG1	5	26	3.94927	6.09708	2.24935	0	2.24935	1.03672	1.03672
2	0.376313	1.14013	-15.6669	UG1	5	26	4.60253	7.10562	4.31716	0	4.31716	3.02632	3.02632
3	0.376313	1.82183	-14.2741	UG1	5	26	5.18364	8.00277	6.1566	0	6.1566	4.83779	4.83779
4	0.376313	2.43775	-12.89	UG1	5	26	5.69589	8.7936	7.77801	0	7.77801	6.47453	6.47453
5	0.376313	3.28582	-11.5134	UG1	5	26	6.40845	9.89368	10.0335	0	10.0335	8.72815	8.72815
6	0.376313	5.40539	-10.1436	UG1	5	26	8.24112	12.7231	15.8346	0	15.8346	14.3602	14.3602
7	0.376313	7.62399	-8.77954	UG1	5	26	10.1321	15.6425	21.8204	0	21.8204	20.2556	20.2556
8	0.376313	9.78056	-7.42053	UG1	5	26	11.9396	18.4329	27.5414	0	27.5414	25.9863	25.9863
9	0.376313	11.8757	-6.06571	UG1	5	26	13.6661	21.0984	33.0065	0	33.0065	31.5543	31.5543
10	0.376313	13.91	-4.71428	UG1	5	26	15.3142	23.6429	38.2235	0	38.2235	36.9606	36.9606
11	0.376313	15.8838	-3.36548	UG1	5	26	16.8862	26.0698	43.1995	0	43.1995	42.2065	42.2065
12	0.376313	17.7974	-2.01854	UG1	5	26	18.384	28.3821	47.9405	0	47.9405	47.2925	47.2925
13	0.376313	19.651	-0.672724	UG1	5	26	19.8092	30.5825	52.452	0	52.452	52.2194	52.2194
14	0.376313	21.4448	0.672724	UG1	5	26	21.1635	32.6733	56.7388	0	56.7388	56.9873	56.9873
15	0.376313	23.1786	2.01854	UG1	5	26	22.4482	34.6566	60.805	0	60.805	61.5962	61.5962
16	0.376313	24.8525	3.36548	UG1	5	26	23.6642	36.534	64.6544	0	64.6544	66.046	66.046
17	0.376313	26.1247	4.71428	UG1	5	26	24.5332	37.8756	67.4048	0	67.4048	69.428	69.428
18	0.376313	26.0156	6.06571	UG1	5	26	24.2666	37.464	66.5611	0	66.5611	69.1397	69.1397
19	0.376313	25.7142	7.42053	UG1	5	26	23.8475	36.8169	65.2342	0	65.2342	68.3402	68.3402
20	0.376313	25.3513	8.77954	UG1	5	26	23.3836	36.1007	63.7659	0	63.7659	67.3773	67.3773
21	0.376313	24.9265	10.1436	UG1	5	26	22.8753	35.316	62.1571	0	62.1571	66.2497	66.2497
22	0.376313	24.5209	11.5134	UG1	5	26	22.3874	34.5628	60.6126	0	60.6126	65.1729	65.1729
23	0.376313	25.3268	12.89	UG1	5	26	22.8531	35.2817	62.0867	0	62.0867	67.3165	67.3165
24	0.376313	26.5047	14.2741	UG1	5	26	23.598	36.4318	64.4447	0	64.4447	70.4484	70.4484
25	0.376313	27.6167	15.6669	UG1	5	26	24.2778	37.4813	66.5965	0	66.5965	73.4055	73.4055
26	0.376313	28.6617	17.0692	UG1	5	26	24.8922	38.4299	68.5414	0	68.5414	76.1846	76.1846
27	0.39146	30.8243	18.5108	RILEVATO	0	35	31.0159	47.8839	68.3852	0	68.3852	78.7694	78.7694
28	0.39146	31.7483	19.9934	RILEVATO	0	35	31.5853	48.763	69.6407	0	69.6407	81.1326	81.1326
29	0.39146	32.5865	21.4901	RILEVATO	0	35	32.0474	49.4764	70.6596	0	70.6596	83.277	83.277
30	0.39146	33.3364	23.0023	RILEVATO	0	35	32.4015	50.0231	71.4405	0	71.4405	85.1957	85.1957
31	0.39146	33.995	24.5317	RILEVATO	0	35	32.6468	50.4018	71.9812	0	71.9812	86.881	86.881
32	0.39146	34.5591	26.08	RILEVATO	0	35	32.7821	50.6107	72.2797	0	72.2797	88.3253	88.3253
33	0.39146	35.025	27.649	RILEVATO	0	35	32.8059	50.6474	72.332	0	72.332	89.5183	89.5183
34	0.39146	35.3884	29.241	RILEVATO	0	35	32.7163	50.509	72.1343	0	72.1343	90.4495	90.4495
35	0.39146	35.6446	30.8581	RILEVATO	0	35	32.5111	50.1922	71.682	0	71.682	91.1071	91.1071
36	0.39146	35.7883	32.5029	RILEVATO	0	35	32.1876	49.6929	70.9689	0	70.9689	91.4771	91.4771
37	0.39146	35.8133	34.1785	RILEVATO	0	35	31.743	49.0064	69.9884	0	69.9884	91.5435	91.5435
38	0.39146	35.7124	35.8881	RILEVATO	0	35	31.1734	48.1271	68.7327	0	68.7327	91.2886	91.2886
39	0.39146	35.4776	37.6355	RILEVATO	0	35	30.4748	47.0485	67.1923	0	67.1923	90.6911	90.6911

40	0.39146	35.0992	39.425	RILEVATO	0	35	29.6423	45.7633	65.3567	0	65.3567	89.7268	89.7268
41	0.39146	34.5662	41.2618	RILEVATO	0	35	28.6703	44.2626	63.2137	0	63.2137	88.3673	88.3673
42	0.39146	32.9391	43.1519	RILEVATO	0	35	26.7988	41.3733	59.0872	0	59.0872	84.2107	84.2107
43	0.39146	30.1138	45.1025	RILEVATO	0	35	23.9964	37.0468	52.9083	0	52.9083	76.9907	76.9907
44	0.39146	27.085	47.1224	RILEVATO	0	35	21.1011	32.5769	46.5246	0	46.5246	69.2498	69.2498
45	0.39146	23.8293	49.2222	RILEVATO	0	35	18.1104	27.9598	39.9307	0	39.9307	60.9283	60.9283
46	0.39146	20.3167	51.4157	RILEVATO	0	35	15.0221	23.1918	33.1214	0	33.1214	51.9498	51.9498
47	0.39146	16.5088	53.7204	RILEVATO	0	35	11.8342	18.2703	26.0926	0	26.0926	42.215	42.215
48	0.39146	12.3542	56.1596	RILEVATO	0	35	8.54707	13.1954	18.845	0	18.845	31.593	31.593
49	0.39146	7.78229	58.7658	RILEVATO	0	35	5.16441	7.97307	11.3867	0	11.3867	19.9027	19.9027
50	0.39146	2.69086	61.5861	RILEVATO	0	35	1.7335	2.67627	3.8221	0	3.8221	7.02629	7.02629

Stab globale - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.34831

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	0.400624	0.306185	-11.9677	UG1	4	21.3151	3.3957	4.57845	1.48251	0	1.48251	0.762733	0.762733
2	0.400624	0.886767	-10.7558	UG1	4	21.3151	3.81659	5.14595	2.93692	0	2.93692	2.21191	2.21191
3	0.400624	1.40416	-9.54879	UG1	4	21.3151	4.18422	5.64162	4.20728	0	4.20728	3.50342	3.50342
4	0.400624	1.85906	-8.34605	UG1	4	21.3151	4.50021	6.06768	5.2992	0	5.2992	4.63899	4.63899
5	0.400624	2.28781	-7.147	UG1	4	21.3151	4.79281	6.46219	6.31032	0	6.31032	5.70935	5.70935
6	0.400624	3.98134	-5.9511	UG1	4	21.3151	6.02392	8.12211	10.5645	0	10.5645	9.93652	9.93652
7	0.400624	6.28514	-4.75779	UG1	4	21.3151	7.69158	10.3706	16.3272	0	16.3272	15.687	15.687
8	0.400624	8.52839	-3.56654	UG1	4	21.3151	9.29441	12.5318	21.8658	0	21.8658	21.2865	21.2865
9	0.400624	10.7114	-2.37684	UG1	4	21.3151	10.8339	14.6074	27.1854	0	27.1854	26.7357	26.7357
10	0.400624	12.8343	-1.18816	UG1	4	21.3151	12.3112	16.5993	32.2904	0	32.2904	32.0351	32.0351
11	0.400624	14.8972	0	UG1	4	21.3151	13.7276	18.5091	37.185	0	37.185	37.185	37.185
12	0.400624	16.9003	1.18816	UG1	4	21.3151	15.0841	20.3381	41.8727	0	41.8727	42.1855	42.1855
13	0.400624	18.8434	2.37684	UG1	4	21.3151	16.3818	22.0877	46.3565	0	46.3565	47.0364	47.0364
14	0.400624	20.7264	3.56654	UG1	4	21.3151	17.6211	23.7587	50.6393	0	50.6393	51.7376	51.7376
15	0.400624	22.5491	4.75779	UG1	4	21.3151	18.803	25.3523	54.7234	0	54.7234	56.2884	56.2884
16	0.400624	24.3113	5.9511	UG1	4	21.3151	19.928	26.8691	58.6108	0	58.6108	60.6881	60.6881
17	0.400624	25.0856	7.147	UG1	4	21.3151	20.3503	27.4385	60.0702	0	60.0702	62.6219	62.6219
18	0.400624	24.6946	8.34605	UG1	4	21.3151	19.9592	26.9112	58.7187	0	58.7187	61.6468	61.6468
19	0.400624	24.2397	9.54879	UG1	4	21.3151	19.5276	26.3292	57.2269	0	57.2269	60.5118	60.5118
20	0.400624	23.7223	10.7558	UG1	4	21.3151	19.057	25.6948	55.6012	0	55.6012	59.2213	59.2213
21	0.400624	23.1417	11.9677	UG1	4	21.3151	18.5477	25.0081	53.8412	0	53.8412	57.7727	57.7727
22	0.406046	23.7463	13.1933	RILEVATO	0	29.2561	22.1446	29.8578	53.3017	0	53.3017	58.4929	58.4929
23	0.406046	25.063	14.4333	RILEVATO	0	29.2561	23.1715	31.2423	55.7733	0	55.7733	61.7371	61.7371
24	0.406046	26.3086	15.6803	RILEVATO	0	29.2561	24.1123	32.5108	58.0377	0	58.0377	64.8064	64.8064
25	0.406046	27.4804	16.935	RILEVATO	0	29.2561	24.9658	33.6616	60.0922	0	60.0922	67.6941	67.6941
26	0.406046	28.5769	18.1981	RILEVATO	0	29.2561	25.7323	34.6951	61.9372	0	61.9372	70.3966	70.3966
27	0.406046	29.5966	19.4705	RILEVATO	0	29.2561	26.4116	35.611	63.5723	0	63.5723	72.9098	72.9098
28	0.406046	30.5378	20.7529	RILEVATO	0	29.2561	27.0036	36.4092	64.9973	0	64.9973	75.2296	75.2296
29	0.406046	31.3984	22.0463	RILEVATO	0	29.2561	27.5079	37.0892	66.211	0	66.211	77.3508	77.3508
30	0.406046	32.1763	23.3516	RILEVATO	0	29.2561	27.9241	37.6503	67.2128	0	67.2128	79.2686	79.2686
31	0.406046	32.869	24.6699	RILEVATO	0	29.2561	28.2513	38.0915	68.0004	0	68.0004	80.9766	80.9766
32	0.406046	33.474	26.0023	RILEVATO	0	29.2561	28.4888	38.4118	68.5721	0	68.5721	82.4685	82.4685
33	0.406046	33.9882	27.35	RILEVATO	0	29.2561	28.6356	38.6096	68.9252	0	68.9252	83.7367	83.7367
34	0.406046	34.4084	28.7143	RILEVATO	0	29.2561	28.6902	38.6833	69.0568	0	69.0568	84.7736	84.7736
35	0.406046	34.7309	30.0967	RILEVATO	0	29.2561	28.6514	38.631	68.9634	0	68.9634	85.5698	85.5698

36	0.406046	34.9517	31.4987	RILEVATO	0	29.2561	28.5174	38.4503	68.641	0	68.641	86.1155	86.1155
37	0.406046	35.0662	32.922	RILEVATO	0	29.2561	28.2863	38.1387	68.0846	0	68.0846	86.3992	86.3992
38	0.406046	35.0693	34.3687	RILEVATO	0	29.2561	27.9558	37.6931	67.2892	0	67.2892	86.4085	86.4085
39	0.406046	34.9551	35.8408	RILEVATO	0	29.2561	27.5235	37.1102	66.2487	0	66.2487	86.129	86.129
40	0.406046	34.464	37.3407	RILEVATO	0	29.2561	26.7897	36.1208	64.4823	0	64.4823	84.9207	84.9207
41	0.406046	32.2755	38.8713	RILEVATO	0	29.2561	24.7521	33.3735	59.5778	0	59.5778	79.5297	79.5297
42	0.406046	29.6782	40.4356	RILEVATO	0	29.2561	22.4391	30.2548	54.0104	0	54.0104	73.1316	73.1316
43	0.406046	26.9314	42.0373	RILEVATO	0	29.2561	20.0584	27.0449	48.2801	0	48.2801	66.3644	66.3644
44	0.406046	24.0235	43.6804	RILEVATO	0	29.2561	17.6089	23.7423	42.3843	0	42.3843	59.2003	59.2003
45	0.406046	20.941	45.3699	RILEVATO	0	29.2561	15.0895	20.3453	36.3201	0	36.3201	51.6057	51.6057
46	0.406046	17.6682	47.1116	RILEVATO	0	29.2561	12.4991	16.8527	30.0852	0	30.0852	43.5414	43.5414
47	0.406046	14.1857	48.9123	RILEVATO	0	29.2561	9.83743	13.2639	23.6785	0	23.6785	34.9602	34.9602
48	0.406046	10.4703	50.7807	RILEVATO	0	29.2561	7.10424	9.57872	17.0998	0	17.0998	25.8045	25.8045
49	0.406046	6.49303	52.727	RILEVATO	0	29.2561	10.4035	14.0272	25.0412	0	25.0412	38.7112	38.7112
50	0.406046	2.21748	54.7648	RILEVATO	0	29.2561	8.23653	11.1054	19.8252	0	19.8252	31.486	31.486

Global Minimum Query (janbu simplified) - Safety Factor: 1.23191

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	0.390431	0.448209	-18.0922	UG1	4	21.3151	4.02706	4.96098	2.46288	0	2.46288	1.14724	1.14724
2	0.390431	1.30692	-16.658	UG1	4	21.3151	4.75786	5.86126	4.7702	0	4.7702	3.34657	3.34657
3	0.390431	2.09105	-15.2345	UG1	4	21.3151	5.40971	6.66427	6.8282	0	6.8282	5.35492	5.35492
4	0.390431	2.80219	-13.8206	UG1	4	21.3151	5.98641	7.37472	8.64901	0	8.64901	7.17633	7.17633
5	0.390431	3.44539	-12.4151	UG1	4	21.3151	6.49461	8.00077	10.2535	0	10.2535	8.82377	8.82377
6	0.390431	5.09556	-11.0173	UG1	4	21.3151	7.86546	9.68954	14.5816	0	14.5816	13.0503	13.0503
7	0.390431	7.52621	-9.62604	UG1	4	21.3151	9.88316	12.1752	20.952	0	20.952	19.2757	19.2757
8	0.390431	9.88845	-8.24051	UG1	4	21.3151	11.8103	14.5492	27.0365	0	27.0365	25.3261	25.3261
9	0.390431	12.183	-6.85981	UG1	4	21.3151	13.6502	16.8158	32.8453	0	32.8453	31.2032	31.2032
10	0.390431	14.4106	-5.48311	UG1	4	21.3151	15.4056	18.9783	38.3876	0	38.3876	36.9088	36.9088
11	0.390431	16.5718	-4.10958	UG1	4	21.3151	17.0791	21.0399	43.6713	0	43.6713	42.4442	42.4442
12	0.390431	18.6668	-2.73841	UG1	4	21.3151	18.673	23.0034	48.7035	0	48.7035	47.8104	47.8104
13	0.390431	20.6961	-1.36882	UG1	4	21.3151	20.1891	24.8712	53.4905	0	53.4905	53.0081	53.0081
14	0.390431	22.6597	0	UG1	4	21.3151	21.6294	26.6455	58.0377	0	58.0377	58.0377	58.0377
15	0.390431	24.5578	1.36882	UG1	4	21.3151	22.9953	28.3281	62.3499	0	62.3499	62.8994	62.8994
16	0.390431	26.3903	2.73841	UG1	4	21.3151	24.2881	29.9207	66.4316	0	66.4316	67.5933	67.5933
17	0.390431	27.8795	4.10958	UG1	4	21.3151	25.2888	31.1535	69.5909	0	69.5909	71.4079	71.4079
18	0.390431	27.857	5.48311	UG1	4	21.3151	25.0835	30.9006	68.943	0	68.943	71.3508	71.3508
19	0.390431	27.5603	6.85981	UG1	4	21.3151	24.6657	30.3859	67.6238	0	67.6238	70.5911	70.5911
20	0.390431	27.1966	8.24051	UG1	4	21.3151	24.2005	29.8128	66.1549	0	66.1549	69.6597	69.6597
21	0.390431	26.7652	9.62604	UG1	4	21.3151	23.6882	29.1817	64.5375	0	64.5375	68.5552	68.5552
22	0.390431	26.4305	11.0173	UG1	4	21.3151	23.2552	28.6483	63.1707	0	63.1707	67.6983	67.6983
23	0.390431	27.4601	12.4151	UG1	4	21.3151	23.8609	29.3945	65.0831	0	65.0831	70.3359	70.3359
24	0.390431	28.7515	13.8206	UG1	4	21.3151	24.6516	30.3686	67.5795	0	67.5795	73.6439	73.6439
25	0.390431	29.9712	15.2345	UG1	4	21.3151	25.3734	31.2577	69.8582	0	69.8582	76.7684	76.7684
26	0.390431	31.1179	16.658	UG1	4	21.3151	26.0259	32.0616	71.9187	0	71.9187	79.706	79.706
27	0.390431	32.1901	18.0922	UG1	4	21.3151	26.609	32.7799	73.7593	0	73.7593	82.4525	82.4525
28	0.402896	34.2316	19.5615	RILEVATO	0	29.2561	33.263	40.977	73.1515	0	73.1515	84.9708	84.9708
29	0.402896	35.1458	21.0677	RILEVATO	0	29.2561	33.7564	41.5848	74.2366	0	74.2366	87.2403	87.2403
30	0.402896	35.9663	22.5893	RILEVATO	0	29.2561	34.1376	42.0544	75.0749	0	75.0749	89.2775	89.2775
31	0.402896	36.6901	24.1279	RILEVATO	0	29.2561	34.4056	42.3846	75.6644	0	75.6644	91.0748	91.0748
32	0.402896	37.3138	25.6852	RILEVATO	0	29.2561	34.5593	42.5739	76.0024	0	76.0024	92.6237	92.6237
33	0.402896	37.8336	27.2632	RILEVATO	0	29.2561	34.5971	42.6205	76.0856	0	76.0856	93.9144	93.9144
34	0.402896	38.245	28.864	RILEVATO	0	29.2561	34.5173	42.5222	75.91	0	75.91	94.9363	94.9363
35	0.402896	38.5431	30.4898	RILEVATO	0	29.2561	34.3174	42.276	75.4704	0	75.4704	95.6767	95.6767
36	0.402896	38.7223	32.1433	RILEVATO	0	29.2561	33.9949	41.8787	74.7614	0	74.7614	96.1222	96.1222
37	0.402896	38.776	33.8274	RILEVATO	0	29.2561	33.5467	41.3265	73.7754	0	73.7754	96.2561	96.2561
38	0.402896	38.6969	35.5453	RILEVATO	0	29.2561	32.9688	40.6146	72.5046	0	72.5046	96.0604	96.0604
39	0.402896	38.4765	37.301	RILEVATO	0	29.2561	32.2571	39.7379	70.9395	0	70.9395	95.5137	95.5137
40	0.402896	38.1046	39.0987	RILEVATO	0	29.2561	31.4067	38.6902	69.0692	0	69.0692	94.5915	94.5915

41	0.402896	37.1607	40.9435	RILEVATO	0	29.2561	30.0804	37.0563	66.1524	0	66.1524	92.2488	92.2488
42	0.402896	34.5329	42.8415	RILEVATO	0	29.2561	27.4188	33.7775	60.2992	0	60.2992	85.7262	85.7262
43	0.402896	31.5715	44.7998	RILEVATO	0	29.2561	24.552	30.2458	53.9944	0	53.9944	78.3753	78.3753
44	0.402896	28.3964	46.8271	RILEVATO	0	29.2561	21.5902	26.5972	47.4808	0	47.4808	70.4939	70.4939
45	0.402896	24.9828	48.9342	RILEVATO	0	29.2561	18.5307	22.8282	40.7525	0	40.7525	62.0203	62.0203
46	0.402896	21.2995	51.1346	RILEVATO	0	29.2561	15.371	18.9357	33.8038	0	33.8038	52.8769	52.8769
47	0.402896	17.3061	53.4457	RILEVATO	0	29.2561	12.1095	14.9178	26.631	0	26.631	42.9636	42.9636
48	0.402896	12.9494	55.8907	RILEVATO	0	29.2561	8.74617	10.7745	19.2345	0	19.2345	32.148	32.148
49	0.402896	8.15587	58.5017	RILEVATO	0	29.2561	5.28511	6.51078	11.6229	0	11.6229	20.248	20.248
50	0.402896	2.81962	61.3252	RILEVATO	0	29.2561	7.83151	9.64772	17.223	0	17.223	31.5425	31.5425

Stab globale - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.38075

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	0.40272	0.503887	-19.0452	UG1	5	26	4.65344	6.42524	2.92218	0	2.92218	1.31577	1.31577
2	0.40272	1.47042	-17.5863	UG1	5	26	5.60813	7.74342	5.62485	0	5.62485	3.84732	3.84732
3	0.40272	2.35545	-16.1391	UG1	5	26	6.4594	8.91882	8.03475	0	8.03475	6.16556	6.16556
4	0.40272	3.16083	-14.7024	UG1	5	26	7.21293	9.95925	10.168	0	10.168	8.27536	8.27536
5	0.40272	3.88821	-13.2751	UG1	5	26	7.87371	10.8716	12.0386	0	12.0386	10.181	10.181
6	0.40272	5.1392	-11.8562	UG1	5	26	9.04592	12.4901	15.3571	0	15.3571	13.458	13.458
7	0.40272	7.71201	-10.4446	UG1	5	26	11.5048	15.8853	22.3182	0	22.3182	20.1974	20.1974
8	0.40272	10.2676	-9.03937	UG1	5	26	13.9017	19.1948	29.1036	0	29.1036	26.892	26.892
9	0.40272	12.7499	-7.63962	UG1	5	26	16.1845	22.3467	35.566	0	35.566	33.3951	33.3951
10	0.40272	15.1598	-6.24445	UG1	5	26	18.3573	25.3468	41.7171	0	41.7171	39.7085	39.7085
11	0.40272	17.4977	-4.85298	UG1	5	26	20.424	28.2005	47.568	0	47.568	45.8339	45.8339
12	0.40272	19.7643	-3.46438	UG1	5	26	22.388	30.9123	53.1281	0	53.1281	51.7727	51.7727
13	0.40272	21.96	-2.07782	UG1	5	26	24.2523	33.4864	58.4059	0	58.4059	57.526	57.526
14	0.40272	24.0849	-0.692471	UG1	5	26	26.0195	35.9264	63.4087	0	63.4087	63.0942	63.0942
15	0.40272	26.1392	0.692471	UG1	5	26	27.6918	38.2355	68.1429	0	68.1429	68.4776	68.4776
16	0.40272	28.123	2.07782	UG1	5	26	29.2713	40.4163	72.6141	0	72.6141	73.6761	73.6761
17	0.40272	29.6779	3.46438	UG1	5	26	30.4352	42.0234	75.9092	0	75.9092	77.7517	77.7517
18	0.40272	29.638	4.85298	UG1	5	26	30.1456	41.6236	75.0897	0	75.0897	77.6491	77.6491
19	0.40272	29.3543	6.24445	UG1	5	26	29.6422	40.9285	73.6644	0	73.6644	76.9079	76.9079
20	0.40272	28.9988	7.63962	UG1	5	26	29.0817	40.1545	72.0775	0	72.0775	75.9783	75.9783
21	0.40272	28.5708	9.03937	UG1	5	26	28.4645	39.3024	70.3303	0	70.3303	74.8587	74.8587
22	0.40272	28.4697	10.4446	UG1	5	26	28.1388	38.8527	69.4084	0	69.4084	74.5955	74.5955
23	0.40272	29.8034	11.8562	UG1	5	26	29.0518	40.1133	71.9929	0	71.9929	78.0919	78.0919
24	0.40272	31.2069	13.2751	UG1	5	26	30.0052	41.4297	74.692	0	74.692	81.7712	81.7712
25	0.40272	32.5339	14.7024	UG1	5	26	30.8732	42.6282	77.1493	0	77.1493	85.2501	85.2501
26	0.40272	33.7828	16.1391	UG1	5	26	31.6557	43.7086	79.3643	0	79.3643	88.5247	88.5247
27	0.40272	34.9521	17.5863	UG1	5	26	32.3523	44.6705	81.3365	0	81.3365	91.5908	91.5908
28	0.40272	36.0399	19.0452	UG1	5	26	32.9627	45.5132	83.0643	0	83.0643	94.4434	94.4434
29	0.415867	38.2365	20.5413	RILEVATO	0	35	41.354	57.0995	81.5464	0	81.5464	97.042	97.042
30	0.415867	39.1451	22.0765	RILEVATO	0	35	41.7882	57.699	82.4027	0	82.4027	99.3512	99.3512
31	0.415867	39.9506	23.6285	RILEVATO	0	35	42.0845	58.1082	82.9872	0	82.9872	101.398	101.398
32	0.415867	40.6494	25.1992	RILEVATO	0	35	42.2422	58.3259	83.2981	0	83.2981	103.175	103.175
33	0.415867	41.2373	26.7905	RILEVATO	0	35	42.2596	58.35	83.3323	0	83.3323	104.67	104.67
34	0.415867	41.7099	28.4044	RILEVATO	0	35	42.135	58.1779	83.0865	0	83.0865	105.873	105.873
35	0.415867	42.0617	30.0433	RILEVATO	0	35	41.8659	57.8064	82.556	0	82.556	106.769	106.769
36	0.415867	42.287	31.7098	RILEVATO	0	35	41.4496	57.2316	81.7351	0	81.7351	107.345	107.345
37	0.415867	42.3789	33.4069	RILEVATO	0	35	40.8827	56.4488	80.6172	0	80.6172	107.581	107.581
38	0.415867	42.3296	35.1378	RILEVATO	0	35	40.1612	55.4526	79.1946	0	79.1946	107.46	107.46
39	0.415867	42.1301	36.9064	RILEVATO	0	35	39.2804	54.2364	77.4576	0	77.4576	106.957	106.957
40	0.415867	41.6115	38.717	RILEVATO	0	35	38.0898	52.5925	75.1099	0	75.1099	105.644	105.644

41	0.415867	39.3084	40.5748	RILEVATO	0	35	35.2869	48.7224	69.5828	0	69.5828	99.8004	99.8004
42	0.415867	36.3966	42.4858	RILEVATO	0	35	32.0007	44.185	63.1027	0	63.1027	92.4115	92.4115
43	0.415867	33.2797	44.4572	RILEVATO	0	35	28.6139	39.5086	56.4242	0	56.4242	84.501	84.501
44	0.415867	29.9364	46.4978	RILEVATO	0	35	25.1239	34.6898	49.5421	0	49.5421	76.015	76.015
45	0.415867	26.3404	48.6181	RILEVATO	0	35	21.5284	29.7254	42.4524	0	42.4524	66.8872	66.8872
46	0.415867	22.4588	50.8319	RILEVATO	0	35	17.826	24.6133	35.1515	0	35.1515	57.0332	57.0332
47	0.415867	18.2493	53.1566	RILEVATO	0	35	14.0164	19.3532	27.6393	0	27.6393	46.3459	46.3459
48	0.415867	13.6557	55.6152	RILEVATO	0	35	10.1019	13.9482	19.9201	0	19.9201	34.682	34.682
49	0.415867	8.60083	58.2399	RILEVATO	0	35	7.16585	9.89425	14.1304	0	14.1304	25.7058	25.7058
50	0.415867	2.97343	61.077	RILEVATO	0	35	3.05627	4.21995	6.02671	0	6.02671	11.5579	11.5579

Global Minimum Query (janbu simplified) - Safety Factor: 1.22861

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	0.40272	0.503887	-19.0452	UG1	5	26	5.32303	6.53993	3.15733	0	3.15733	1.31976	1.31976
2	0.40272	1.47042	-17.5863	UG1	5	26	6.40455	7.8687	5.8817	0	5.8817	3.85174	3.85174
3	0.40272	2.35545	-16.1391	UG1	5	26	7.36517	9.04892	8.30152	0	8.30152	6.17022	6.17022
4	0.40272	3.16083	-14.7024	UG1	5	26	8.21205	10.0894	10.4348	0	10.4348	8.28007	8.28007
5	0.40272	3.88821	-13.2751	UG1	5	26	8.95151	10.9979	12.2975	0	12.2975	10.1856	10.1856
6	0.40272	5.1392	-11.8562	UG1	5	26	10.27	12.6178	15.6188	0	15.6188	13.4628	13.4628
7	0.40272	7.71201	-10.4446	UG1	5	26	13.0443	16.0263	22.6073	0	22.6073	20.2027	20.2027
8	0.40272	10.2676	-9.03937	UG1	5	26	15.7416	19.3403	29.4018	0	29.4018	26.8975	26.8975
9	0.40272	12.7499	-7.63962	UG1	5	26	18.3035	22.4879	35.8556	0	35.8556	33.4005	33.4005
10	0.40272	15.1598	-6.24445	UG1	5	26	20.7358	25.4762	41.9825	0	41.9825	39.7136	39.7136
11	0.40272	17.4977	-4.85298	UG1	5	26	23.0431	28.311	47.7946	0	47.7946	45.8382	45.8382
12	0.40272	19.7643	-3.46438	UG1	5	26	25.2301	30.9979	53.3035	0	53.3035	51.7761	51.7761
13	0.40272	21.96	-2.07782	UG1	5	26	27.3003	33.5414	58.5186	0	58.5186	57.5281	57.5281
14	0.40272	24.0849	-0.692471	UG1	5	26	29.2574	35.9459	63.4484	0	63.4484	63.0948	63.0948
15	0.40272	26.1392	0.692471	UG1	5	26	31.1042	38.2149	68.1007	0	68.1007	68.4766	68.4766
16	0.40272	28.123	2.07782	UG1	5	26	32.8435	40.3518	72.4819	0	72.4819	73.6735	73.6735
17	0.40272	29.6779	3.46438	UG1	5	26	34.1138	41.9126	75.6819	0	75.6819	77.7471	77.7471
18	0.40272	29.638	4.85298	UG1	5	26	33.7545	41.4711	74.7767	0	74.7767	77.6425	77.6425
19	0.40272	29.3543	6.24445	UG1	5	26	33.157	40.737	73.2717	0	73.2717	76.8997	76.8997
20	0.40272	28.9988	7.63962	UG1	5	26	32.4971	39.9263	71.6096	0	71.6096	75.9686	75.9686
21	0.40272	28.5708	9.03937	UG1	5	26	31.7757	39.0399	69.7923	0	69.7923	74.8474	74.8474
22	0.40272	28.4697	10.4446	UG1	5	26	31.3809	38.5549	68.7979	0	68.7979	74.5826	74.5826
23	0.40272	29.8034	11.8562	UG1	5	26	32.367	39.7664	71.2816	0	71.2816	78.0766	78.0766
24	0.40272	31.2069	13.2751	UG1	5	26	33.3962	41.0309	73.8744	0	73.8744	81.7536	81.7536
25	0.40272	32.5339	14.7024	UG1	5	26	34.3284	42.1762	76.2224	0	76.2224	85.2299	85.2299
26	0.40272	33.7828	16.1391	UG1	5	26	35.1636	43.2024	78.3265	0	78.3265	88.502	88.502
27	0.40272	34.9521	17.5863	UG1	5	26	35.9018	44.1093	80.1859	0	80.1859	91.5651	91.5651
28	0.40272	36.0399	19.0452	UG1	5	26	36.5426	44.8966	81.8001	0	81.8001	94.415	94.415
29	0.415867	38.2365	20.5413	RILEVATO	0	35	45.5555	55.97	79.9335	0	79.9335	97.0035	97.0035
30	0.415867	39.1451	22.0765	RILEVATO	0	35	45.9717	56.4813	80.6635	0	80.6635	99.3087	99.3087
31	0.415867	39.9506	23.6285	RILEVATO	0	35	46.2349	56.8047	81.1256	0	81.1256	101.353	101.353
32	0.415867	40.6494	25.1992	RILEVATO	0	35	46.3446	56.9395	81.3181	0	81.3181	103.125	103.125
33	0.415867	41.2373	26.7905	RILEVATO	0	35	46.2997	56.8843	81.2391	0	81.2391	104.617	104.617
34	0.415867	41.7099	28.4044	RILEVATO	0	35	46.0985	56.6371	80.8862	0	80.8862	105.816	105.816
35	0.415867	42.0617	30.0433	RILEVATO	0	35	45.7391	56.1955	80.2554	0	80.2554	106.709	106.709
36	0.415867	42.287	31.7098	RILEVATO	0	35	45.2187	55.5562	79.3425	0	79.3425	107.281	107.281
37	0.415867	42.3789	33.4069	RILEVATO	0	35	44.5343	54.7153	78.1416	0	78.1416	107.514	107.514
38	0.415867	42.3296	35.1378	RILEVATO	0	35	43.682	53.6681	76.6461	0	76.6461	107.389	107.389
39	0.415867	42.1301	36.9064	RILEVATO	0	35	42.6572	52.4091	74.8479	0	74.8479	106.883	106.883
40	0.415867	41.6115	38.717	RILEVATO	0	35	41.2976	50.7386	72.4622	0	72.4622	105.568	105.568
41	0.415867	39.3084	40.5748	RILEVATO	0	35	38.1945	46.9261	67.0175	0	67.0175	99.725	99.725

42	0.415867	36.3966	42.4858	RILEVATO	0	35	34.577	42.4816	60.67	0	60.67	92.3382	92.3382
43	0.415867	33.2797	44.4572	RILEVATO	0	35	30.8607	37.9158	54.1493	0	54.1493	84.4309	84.4309
44	0.415867	29.9364	46.4978	RILEVATO	0	35	27.0441	33.2267	47.4526	0	47.4526	75.9489	75.9489
45	0.415867	26.3404	48.6181	RILEVATO	0	35	23.1261	28.413	40.5779	0	40.5779	66.8261	66.8261
46	0.415867	22.4588	50.8319	RILEVATO	0	35	19.1066	23.4745	33.525	0	33.525	56.9787	56.9787
47	0.415867	18.2493	53.1566	RILEVATO	0	35	14.9871	18.4133	26.297	0	26.297	46.2991	46.2991
48	0.415867	13.6557	55.6152	RILEVATO	0	35	10.7729	13.2357	18.9026	0	18.9026	34.645	34.645
49	0.415867	8.60083	58.2399	RILEVATO	0	35	7.61928	9.36112	13.3691	0	13.3691	25.6769	25.6769
50	0.415867	2.97343	61.077	RILEVATO	0	35	3.23869	3.97909	5.68274	0	5.68274	11.5441	11.5441

Interslice Data

Stab locale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.6596

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50	50	0	0	0
2	50.3867	50.0179	0.32423	0	0
3	50.7734	50.0403	1.25588	0	0
4	51.16	50.0678	2.73189	0	0
5	51.5467	50.1002	4.69181	0	0
6	51.9334	50.1376	7.07724	0	0
7	52.3201	50.1801	9.83173	0	0
8	52.7067	50.2276	12.9007	0	0
9	53.0934	50.2801	16.2314	0	0
10	53.4801	50.3378	19.7729	0	0
11	53.8668	50.4006	23.4759	0	0
12	54.2534	50.4686	27.2928	0	0
13	54.6401	50.5418	31.1509	0	0
14	55.0268	50.6202	34.7301	0	0
15	55.4135	50.7038	37.9564	0	0
16	55.8002	50.7928	40.8394	0	0
17	56.1868	50.8872	43.3905	0	0
18	56.5735	50.987	45.6273	0	0
19	56.9602	51.0923	47.7284	0	0
20	57.3469	51.2031	49.7497	0	0
21	57.7335	51.3195	51.657	0	0
22	58.1202	51.4416	53.4174	0	0
23	58.5069	51.5695	54.9996	0	0
24	58.8936	51.7031	56.3738	0	0
25	59.2803	51.8427	57.5114	0	0
26	59.6669	51.9883	58.3854	0	0
27	60.0536	52.1399	58.9704	0	0
28	60.4403	52.2977	59.2421	0	0
29	60.827	52.4618	59.178	0	0
30	61.2136	52.6323	58.757	0	0
31	61.6003	52.8094	57.9596	0	0
32	61.987	52.993	56.7679	0	0
33	62.3737	53.1835	55.1656	0	0
34	62.7603	53.3809	53.1382	0	0
35	63.147	53.5854	50.6728	0	0
36	63.5337	53.7971	47.7585	0	0
37	63.9204	54.0162	44.3862	0	0
38	64.3071	54.243	40.6279	0	0
39	64.6937	54.4776	36.6823	0	0
40	65.0804	54.7202	32.6106	0	0
41	65.4671	54.971	28.4721	0	0
42	65.8538	55.2304	24.3304	0	0
43	66.2404	55.4985	20.2532	0	0
44	66.6271	55.7758	16.313	0	0
45	67.0138	56.0623	12.5873	0	0
46	67.4005	56.3586	9.15934	0	0
47	67.7872	56.665	4.52098	0	0
48	68.1738	56.9819	-0.325584	0	0
49	68.5605	57.3097	-4.72647	0	0
50	68.9472	57.6489	-8.57347	0	0
51	69.3339	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.6039

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50	50	0	0	0
2	50.3835	49.881	2.35814	0	0
3	50.767	49.7718	6.34862	0	0
4	51.1504	49.6728	11.7469	0	0
5	51.5339	49.5837	18.3493	0	0
6	51.9174	49.5044	25.9675	0	0
7	52.3009	49.4347	34.4265	0	0
8	52.6844	49.3746	43.5634	0	0
9	53.0678	49.3239	53.2262	0	0
10	53.4513	49.2826	63.2723	0	0
11	53.8348	49.2505	73.5679	0	0
12	54.2183	49.2276	83.9874	0	0
13	54.6018	49.2139	94.3893	0	0
14	54.9853	49.2093	104.254	0	0
15	55.3687	49.2138	113.4	0	0
16	55.7522	49.2275	121.821	0	0
17	56.1357	49.2503	129.515	0	0
18	56.5192	49.2824	136.483	0	0
19	56.9027	49.3237	142.924	0	0
20	57.2861	49.3743	148.934	0	0
21	57.6696	49.4344	154.432	0	0
22	58.0531	49.504	159.342	0	0
23	58.4366	49.5832	163.59	0	0
24	58.8201	49.6723	167.107	0	0
25	59.2035	49.7713	169.826	0	0
26	59.587	49.8805	171.683	0	0
27	59.9705	50	172.62	0	0
28	60.3606	50.1325	175.989	0	0
29	60.7508	50.2763	178.382	0	0
30	61.1409	50.4318	179.742	0	0
31	61.5311	50.5992	180.015	0	0
32	61.9212	50.779	179.153	0	0
33	62.3113	50.9717	177.111	0	0
34	62.7015	51.1777	173.847	0	0
35	63.0916	51.3977	169.325	0	0
36	63.4818	51.6324	163.512	0	0
37	63.8719	51.8826	156.38	0	0
38	64.262	52.149	147.99	0	0
39	64.6522	52.4327	138.66	0	0
40	65.0423	52.735	128.524	0	0
41	65.4325	53.057	117.712	0	0
42	65.8226	53.4006	106.376	0	0
43	66.2127	53.7675	94.6882	0	0
44	66.6029	54.1601	82.8502	0	0
45	66.993	54.5813	71.1005	0	0
46	67.3832	55.0344	59.7236	0	0
47	67.7733	55.524	46.1762	0	0
48	68.1634	56.0559	32.1322	0	0
49	68.5536	56.6377	19.3232	0	0
50	68.9437	57.2804	8.39731	0	0
51	69.3339	58	0	0	0

Stab locale - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.35539

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50.0011	50.0007	0	0	0
2	50.0053	50	8.95117e-05	0	0
3	50.3726	49.9436	1.64951	0	0
4	50.74	49.8949	4.15646	0	0
5	51.1073	49.8538	7.40298	0	0
6	51.4746	49.8202	11.2775	0	0
7	51.8419	49.7941	15.6745	0	0
8	52.2092	49.7755	20.4936	0	0
9	52.5765	49.7644	25.6397	0	0
10	52.9438	49.7607	31.0222	0	0
11	53.3111	49.7644	36.555	0	0
12	53.6784	49.7755	42.156	0	0
13	54.0458	49.7941	47.7466	0	0
14	54.4131	49.8202	53.2522	0	0
15	54.7804	49.8538	58.506	0	0
16	55.1477	49.8949	63.2631	0	0
17	55.515	49.9436	67.5203	0	0
18	55.8823	50	71.2859	0	0
19	56.2542	50.065	75.9338	0	0
20	56.626	50.1379	80.0483	0	0
21	56.9979	50.219	83.8639	0	0
22	57.3697	50.3083	87.3974	0	0
23	57.7416	50.406	90.5917	0	0
24	58.1134	50.5121	93.3934	0	0
25	58.4853	50.6269	95.7515	0	0
26	58.8571	50.7505	97.6183	0	0
27	59.2289	50.8831	98.9489	0	0
28	59.6008	51.025	99.7013	0	0
29	59.9726	51.1763	99.8364	0	0
30	60.3445	51.3373	99.3182	0	0
31	60.7163	51.5083	98.1135	0	0
32	61.0882	51.6896	96.1924	0	0
33	61.46	51.8816	93.5283	0	0
34	61.8319	52.0847	90.098	0	0
35	62.2037	52.2993	85.8821	0	0
36	62.5756	52.5258	80.865	0	0
37	62.9474	52.7648	75.0357	0	0
38	63.3193	53.0169	68.3877	0	0
39	63.6911	53.2829	60.92	0	0
40	64.063	53.5633	52.6442	0	0
41	64.4348	53.8592	43.8974	0	0
42	64.8067	54.1715	34.9574	0	0
43	65.1785	54.5014	25.9599	0	0
44	65.5504	54.8502	17.0587	0	0
45	65.9222	55.2194	8.42895	0	0
46	66.2941	55.6109	0.272525	0	0
47	66.6659	56.0269	-7.17651	0	0
48	67.0378	56.4701	-13.6437	0	0
49	67.4096	56.9437	-18.8031	0	0
50	67.7814	57.4519	-26.729	0	0
51	68.1533	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.24501

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50.0011	50.0007	0	0	0
2	50.3717	49.8997	2.1706	0	0
3	50.7424	49.8085	5.71284	0	0
4	51.113	49.7269	10.4366	0	0
5	51.4837	49.6547	16.1658	0	0
6	51.8543	49.5918	22.7371	0	0
7	52.225	49.5381	29.9983	0	0
8	52.5957	49.4935	37.8074	0	0
9	52.9663	49.4578	46.0314	0	0
10	53.337	49.4312	54.5454	0	0
11	53.7076	49.4134	63.232	0	0
12	54.0783	49.4045	71.9806	0	0
13	54.4489	49.4045	80.6865	0	0
14	54.8196	49.4133	89.065	0	0
15	55.1902	49.431	96.7739	0	0
16	55.5609	49.4576	103.808	0	0
17	55.9316	49.4932	110.169	0	0
18	56.3022	49.5377	115.862	0	0
19	56.6729	49.5914	120.928	0	0
20	57.0435	49.6542	125.546	0	0
21	57.4142	49.7264	129.685	0	0
22	57.7848	49.8079	133.278	0	0
23	58.1555	49.8991	136.262	0	0
24	58.5262	50	138.575	0	0
25	58.8827	50.1065	142.559	0	0
26	59.2393	50.2224	145.905	0	0
27	59.5958	50.3479	148.564	0	0
28	59.9524	50.4833	150.49	0	0
29	60.309	50.6289	151.639	0	0
30	60.6655	50.785	151.971	0	0
31	61.0221	50.952	151.449	0	0
32	61.3786	51.1301	150.039	0	0
33	61.7352	51.32	147.71	0	0
34	62.0918	51.522	144.434	0	0
35	62.4483	51.7368	140.188	0	0
36	62.8049	51.9649	134.953	0	0
37	63.1614	52.2071	128.713	0	0
38	63.518	52.4642	121.458	0	0
39	63.8746	52.7371	113.184	0	0
40	64.2311	53.0271	103.983	0	0
41	64.5877	53.3352	94.2374	0	0
42	64.9442	53.663	84.1026	0	0
43	65.3008	54.0123	73.7268	0	0
44	65.6574	54.3852	63.2828	0	0
45	66.0139	54.7844	52.9739	0	0
46	66.3705	55.213	43.0421	0	0
47	66.7271	55.6752	33.7807	0	0
48	67.0836	56.1763	25.5514	0	0
49	67.4402	56.7234	18.8106	0	0
50	67.7967	57.3264	8.71018	0	0
51	68.1533	58	0	0	0

Stab locale - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.39974

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50.0013	50.0009	0	0	0
2	50.372	49.8999	2.30525	0	0
3	50.7426	49.8087	5.89811	0	0
4	51.1132	49.7271	10.5763	0	0
5	51.4839	49.6549	16.1535	0	0
6	51.8545	49.592	22.4574	0	0
7	52.2252	49.5382	29.3284	0	0
8	52.5958	49.4936	36.6178	0	0
9	52.9664	49.458	44.1874	0	0
10	53.3371	49.4313	51.9078	0	0
11	53.7077	49.4136	59.658	0	0
12	54.0783	49.4047	67.3242	0	0
13	54.449	49.4046	74.7999	0	0
14	54.8196	49.4135	81.8363	0	0
15	55.1903	49.4311	88.1582	0	0
16	55.5609	49.4577	93.7667	0	0
17	55.9315	49.4933	98.6702	0	0
18	56.3022	49.5378	102.88	0	0
19	56.6728	49.5915	106.43	0	0
20	57.0435	49.6543	109.415	0	0
21	57.4141	49.7264	111.789	0	0
22	57.7847	49.808	113.487	0	0
23	58.1554	49.8991	114.447	0	0
24	58.526	50	114.612	0	0
25	58.8826	50.1065	116.819	0	0
26	59.2392	50.2223	118.288	0	0
27	59.5957	50.3479	118.971	0	0
28	59.9523	50.4833	118.825	0	0
29	60.3089	50.6289	117.811	0	0
30	60.6655	50.785	115.892	0	0
31	61.022	50.9519	113.036	0	0
32	61.3786	51.1301	109.213	0	0
33	61.7352	51.3199	104.399	0	0
34	62.0917	51.5219	98.5712	0	0
35	62.4483	51.7367	91.7136	0	0
36	62.8049	51.9648	83.8137	0	0
37	63.1615	52.207	74.8645	0	0
38	63.518	52.4641	64.8647	0	0
39	63.8746	52.7371	53.8197	0	0
40	64.2312	53.027	41.8593	0	0
41	64.5878	53.3351	29.4729	0	0
42	64.9443	53.6629	16.8398	0	0
43	65.3009	54.0122	4.12582	0	0
44	65.6575	54.3852	-8.47746	0	0
45	66.014	54.7843	-20.7465	0	0
46	66.3706	55.213	-32.4167	0	0
47	66.7272	55.6752	-43.1703	0	0
48	67.0838	56.1763	-52.6185	0	0
49	67.4403	56.7234	-60.2742	0	0
50	67.7969	57.3264	-66.2778	0	0
51	68.1535	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.22398

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	50.0105	50.007	0	0	0
2	50.0286	50	0.00391443	0	0
3	50.3877	49.8667	3.12198	0	0
4	50.7467	49.745	8.03958	0	0
5	51.1057	49.6343	14.4677	0	0
6	51.4647	49.5346	22.1471	0	0
7	51.8237	49.4455	30.8439	0	0
8	52.1828	49.3668	40.3463	0	0
9	52.5418	49.2983	50.4611	0	0
10	52.9008	49.2399	61.012	0	0
11	53.2598	49.1914	71.8366	0	0
12	53.6189	49.1527	82.7857	0	0
13	53.9779	49.1238	93.721	0	0
14	54.3369	49.1045	104.514	0	0
15	54.6959	49.0949	114.963	0	0
16	55.0549	49.0949	124.592	0	0
17	55.414	49.1045	133.347	0	0
18	55.773	49.1238	141.231	0	0
19	56.132	49.1527	148.253	0	0
20	56.491	49.1914	154.425	0	0
21	56.85	49.2399	159.883	0	0
22	57.2091	49.2983	164.702	0	0
23	57.5681	49.3668	168.81	0	0
24	57.9271	49.4455	172.135	0	0
25	58.2861	49.5346	174.611	0	0
26	58.6451	49.6343	176.177	0	0
27	59.0042	49.745	176.773	0	0
28	59.3632	49.8667	176.347	0	0
29	59.7222	50	174.846	0	0
30	60.0762	50.143	176.03	0	0
31	60.4301	50.2979	176.144	0	0
32	60.784	50.4652	175.149	0	0
33	61.138	50.6454	173.008	0	0
34	61.4919	50.8392	169.687	0	0
35	61.8459	51.0471	165.161	0	0
36	62.1998	51.27	159.406	0	0
37	62.5538	51.5088	152.405	0	0
38	62.9077	51.7646	144.148	0	0
39	63.2617	52.0386	134.632	0	0
40	63.6156	52.3322	123.859	0	0
41	63.9696	52.6473	111.847	0	0
42	64.3235	52.9859	98.8666	0	0
43	64.6775	53.3507	85.3976	0	0
44	65.0314	53.7449	71.6466	0	0
45	65.3854	54.1727	57.86	0	0
46	65.7393	54.6396	44.3402	0	0
47	66.0933	55.1531	31.4677	0	0
48	66.4472	55.7236	19.7367	0	0
49	66.8012	56.3672	9.81769	0	0
50	67.1551	57.1097	2.67505	0	0
51	67.5091	58	0	0	0

Stab globale - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.65872

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.9072	50	0	0	0
2	49.2695	49.9797	1.13616	0	0
3	49.6319	49.9652	2.30246	0	0
4	49.9942	49.9565	3.48342	0	0
5	50.3566	49.9536	4.90911	0	0
6	50.7189	49.9565	6.78447	0	0
7	51.0813	49.9652	9.04294	0	0
8	51.4436	49.9797	11.6205	0	0
9	51.806	50	14.4554	0	0
10	52.1837	50.0274	17.6545	0	0
11	52.5614	50.0611	21.1867	0	0
12	52.9391	50.1013	24.9813	0	0
13	53.3168	50.1479	28.9709	0	0
14	53.6944	50.2009	33.0907	0	0
15	54.0721	50.2604	37.2789	0	0
16	54.4498	50.3265	41.476	0	0
17	54.8275	50.3993	45.4814	0	0
18	55.2052	50.4787	49.049	0	0
19	55.5829	50.5649	52.1871	0	0
20	55.9606	50.6579	54.9098	0	0
21	56.3383	50.7578	57.233	0	0
22	56.716	50.8648	59.2115	0	0
23	57.0937	50.9788	60.9982	0	0
24	57.4713	51.1002	62.5728	0	0
25	57.849	51.2288	63.8968	0	0
26	58.2267	51.365	64.9341	0	0
27	58.6044	51.5088	65.6507	0	0
28	58.9821	51.6604	66.0149	0	0
29	59.3598	51.82	65.9974	0	0
30	59.7375	51.9878	65.5712	0	0
31	60.1152	52.1639	64.712	0	0
32	60.4929	52.3485	63.3976	0	0
33	60.8706	52.542	61.6089	0	0
34	61.2483	52.7446	59.3291	0	0
35	61.6259	52.9564	56.5447	0	0
36	62.0036	53.178	53.2451	0	0
37	62.3813	53.4095	49.423	0	0
38	62.759	53.6514	45.0746	0	0
39	63.1367	53.9041	40.2002	0	0
40	63.5144	54.1679	34.8041	0	0
41	63.8921	54.4434	28.8952	0	0
42	64.2698	54.7312	22.6065	0	0
43	64.6475	55.0318	16.3352	0	0
44	65.0252	55.3458	10.2112	0	0
45	65.4028	55.6742	4.35665	0	0
46	65.7805	56.0176	-1.09307	0	0
47	66.1582	56.3771	-5.98774	0	0
48	66.5359	56.7537	-10.1596	0	0
49	66.9136	57.1487	-13.4205	0	0
50	67.2913	57.5636	-15.558	0	0
51	67.669	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.54385

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.3349	50	0	0	0
2	48.7112	49.8845	1.74213	0	0
3	49.0875	49.7789	3.92518	0	0
4	49.4638	49.6832	6.46011	0	0
5	49.8402	49.5971	9.2677	0	0
6	50.2165	49.5204	12.442	0	0
7	50.5928	49.4531	16.6011	0	0
8	50.9691	49.395	21.672	0	0
9	51.3454	49.3459	27.503	0	0
10	51.7217	49.306	33.952	0	0
11	52.098	49.2749	40.8858	0	0
12	52.4744	49.2528	48.1795	0	0
13	52.8507	49.2395	55.7151	0	0
14	53.227	49.2351	63.3816	0	0
15	53.6033	49.2395	71.0739	0	0
16	53.9796	49.2528	78.6926	0	0
17	54.3559	49.2749	86.1434	0	0
18	54.7322	49.306	93.2593	0	0
19	55.1085	49.3459	99.7053	0	0
20	55.4849	49.395	105.458	0	0
21	55.8612	49.4531	110.529	0	0
22	56.2375	49.5204	114.929	0	0
23	56.6138	49.5971	118.685	0	0
24	56.9901	49.6832	121.916	0	0
25	57.3664	49.7789	124.603	0	0
26	57.7427	49.8845	126.686	0	0
27	58.119	50	128.108	0	0
28	58.5105	50.1311	131.255	0	0
29	58.902	50.2735	133.668	0	0
30	59.2934	50.4276	135.29	0	0
31	59.6849	50.5938	136.068	0	0
32	60.0763	50.7725	135.954	0	0
33	60.4678	50.9641	134.903	0	0
34	60.8593	51.1691	132.878	0	0
35	61.2507	51.3883	129.843	0	0
36	61.6422	51.6222	125.77	0	0
37	62.0336	51.8716	120.636	0	0
38	62.4251	52.1374	114.425	0	0
39	62.8166	52.4207	107.128	0	0
40	63.208	52.7225	98.7436	0	0
41	63.5995	53.0444	89.2826	0	0
42	63.9909	53.3878	78.7658	0	0
43	64.3824	53.7548	67.5444	0	0
44	64.7739	54.1476	56.1274	0	0
45	65.1653	54.5692	44.7514	0	0
46	65.5568	55.0231	33.6989	0	0
47	65.9482	55.5138	23.3129	0	0
48	66.3397	56.0471	14.0179	0	0
49	66.7312	56.6309	6.35196	0	0
50	67.1226	57.2764	1.01804	0	0
51	67.5141	58	0	0	0

Stab globale - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.34831

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.072	50	0	0	0
2	48.4726	49.9151	1.48339	0	0
3	48.8732	49.839	3.23265	0	0
4	49.2738	49.7716	5.1889	0	0
5	49.6745	49.7128	7.2994	0	0
6	50.0751	49.6626	9.53241	0	0
7	50.4757	49.6208	12.3818	0	0
8	50.8763	49.5875	16.001	0	0
9	51.277	49.5625	20.2626	0	0
10	51.6776	49.5459	25.0457	0	0
11	52.0782	49.5376	30.2357	0	0
12	52.4788	49.5376	35.7236	0	0
13	52.8795	49.5459	41.4058	0	0
14	53.2801	49.5625	47.1839	0	0
15	53.6807	49.5875	52.9638	0	0
16	54.0813	49.6208	58.6559	0	0
17	54.482	49.6626	64.1748	0	0
18	54.8826	49.7128	69.2926	0	0
19	55.2832	49.7716	73.8206	0	0
20	55.6838	49.839	77.7704	0	0
21	56.0844	49.9151	81.1574	0	0
22	56.4851	50	84.0001	0	0
23	56.8911	50.0952	87.899	0	0
24	57.2972	50.1997	91.4589	0	0
25	57.7032	50.3137	94.6133	0	0
26	58.1093	50.4373	97.2993	0	0
27	58.5153	50.5708	99.4577	0	0
28	58.9214	50.7144	101.033	0	0
29	59.3274	50.8682	101.974	0	0
30	59.7334	51.0326	102.232	0	0
31	60.1395	51.208	101.764	0	0
32	60.5455	51.3945	100.528	0	0
33	60.9516	51.5925	98.4899	0	0
34	61.3576	51.8025	95.6164	0	0
35	61.7637	52.025	91.8804	0	0
36	62.1697	52.2603	87.2591	0	0
37	62.5758	52.5091	81.7351	0	0
38	62.9818	52.772	75.2964	0	0
39	63.3879	53.0497	67.9373	0	0
40	63.7939	53.343	59.6593	0	0
41	64.2	53.6528	50.5385	0	0
42	64.606	53.9801	41.0676	0	0
43	65.012	54.3261	31.4714	0	0
44	65.4181	54.6922	21.924	0	0
45	65.8241	55.08	12.6238	0	0
46	66.2302	55.4913	3.7984	0	0
47	66.6362	55.9284	-4.28852	0	0
48	67.0423	56.3941	-11.3288	0	0
49	67.4483	56.8916	-16.9577	0	0
50	67.8544	57.4251	-26.1028	0	0
51	68.2604	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.23191

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	48.072	50	0	0	0
2	48.4624	49.8724	1.88554	0	0
3	48.8528	49.7556	4.29938	0	0
4	49.2433	49.6493	7.13633	0	0
5	49.6337	49.5532	10.303	0	0
6	50.0241	49.4673	13.7185	0	0
7	50.4146	49.3913	17.8961	0	0
8	50.805	49.3251	23.14	0	0
9	51.1954	49.2685	29.2773	0	0
10	51.5858	49.2215	36.1464	0	0
11	51.9763	49.1841	43.5965	0	0
12	52.3667	49.156	51.486	0	0
13	52.7571	49.1373	59.6818	0	0
14	53.1476	49.128	68.0588	0	0
15	53.538	49.128	76.4988	0	0
16	53.9284	49.1373	84.8901	0	0
17	54.3189	49.156	93.1269	0	0
18	54.7093	49.1841	101.043	0	0
19	55.0997	49.2215	108.247	0	0
20	55.4902	49.2685	114.695	0	0
21	55.8806	49.3251	120.398	0	0
22	56.271	49.3913	125.367	0	0
23	56.6615	49.4673	129.64	0	0
24	57.0519	49.5532	133.357	0	0
25	57.4423	49.6493	136.485	0	0
26	57.8327	49.7556	138.958	0	0
27	58.2232	49.8724	140.712	0	0
28	58.6136	50	141.687	0	0
29	59.0165	50.1432	144.608	0	0
30	59.4194	50.2984	146.679	0	0
31	59.8223	50.466	147.841	0	0
32	60.2252	50.6464	148.04	0	0
33	60.6281	50.8402	147.229	0	0
34	61.031	51.0478	145.363	0	0
35	61.4339	51.2699	142.404	0	0
36	61.8368	51.5071	138.319	0	0
37	62.2397	51.7603	133.081	0	0
38	62.6426	52.0303	126.67	0	0
39	63.0455	52.3182	119.074	0	0
40	63.4484	52.6251	110.289	0	0
41	63.8513	52.9525	100.321	0	0
42	64.2541	53.302	89.3113	0	0
43	64.657	53.6757	77.8225	0	0
44	65.0599	54.0758	66.1061	0	0
45	65.4628	54.5052	54.4093	0	0
46	65.8657	54.9676	43.0268	0	0
47	66.2686	55.4675	32.3166	0	0
48	66.6715	56.0109	22.7213	0	0
49	67.0744	56.6058	14.8011	0	0
50	67.4773	57.2633	9.28702	0	0
51	67.8802	58	0	0	0

Stab globale - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.38075

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	47.8915	50	0	0	0
2	48.2942	49.861	2.21988	0	0
3	48.697	49.7333	5.02862	0	0
4	49.0997	49.6168	8.30029	0	0
5	49.5024	49.5111	11.9241	0	0
6	49.9051	49.4161	15.8027	0	0
7	50.3078	49.3316	20.1691	0	0
8	50.7106	49.2573	25.5985	0	0
9	51.1133	49.1933	31.9173	0	0
10	51.516	49.1392	38.9365	0	0
11	51.9187	49.0952	46.4804	0	0
12	52.3214	49.061	54.3855	0	0
13	52.7242	49.0366	62.4988	0	0
14	53.1269	49.022	70.6776	0	0
15	53.5296	49.0171	78.7876	0	0
16	53.9323	49.022	86.703	0	0
17	54.335	49.0366	94.3053	0	0
18	54.7378	49.061	101.414	0	0
19	55.1405	49.0952	107.695	0	0
20	55.5432	49.1392	113.126	0	0
21	55.9459	49.1933	117.723	0	0
22	56.3486	49.2573	121.507	0	0
23	56.7514	49.3316	124.525	0	0
24	57.1541	49.4161	126.828	0	0
25	57.5568	49.5111	128.35	0	0
26	57.9595	49.6168	129.019	0	0
27	58.3622	49.7333	128.769	0	0
28	58.765	49.861	127.536	0	0
29	59.1677	50	125.263	0	0
30	59.5835	50.1558	125.502	0	0
31	59.9994	50.3245	124.63	0	0
32	60.4153	50.5064	122.592	0	0
33	60.8311	50.7021	119.341	0	0
34	61.247	50.9121	114.834	0	0
35	61.6629	51.137	109.036	0	0
36	62.0787	51.3775	101.917	0	0
37	62.4946	51.6345	93.4561	0	0
38	62.9105	51.9087	83.6389	0	0
39	63.3263	52.2014	72.4609	0	0
40	63.7422	52.5137	59.9275	0	0
41	64.1581	52.8471	46.1087	0	0
42	64.5739	53.2032	31.6403	0	0
43	64.9898	53.5841	16.8746	0	0
44	65.4057	53.9922	2.0573	0	0
45	65.8215	54.4304	-12.5245	0	0
46	66.2374	54.9024	-26.5307	0	0
47	66.6533	55.4129	-39.5518	0	0
48	67.0691	55.9679	-51.0862	0	0
49	67.485	56.5756	-60.5039	0	0
50	67.9009	57.2474	-67.9703	0	0
51	68.3167	58	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.22861

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	47.8915	50	0	0	0
2	48.2942	49.861	2.52689	0	0
3	48.697	49.7333	5.69477	0	0
4	49.0997	49.6168	9.36878	0	0
5	49.5024	49.5111	13.4304	0	0
6	49.9051	49.4161	17.7756	0	0
7	50.3078	49.3316	22.6661	0	0
8	50.7106	49.2573	28.7485	0	0
9	51.1133	49.1933	35.8413	0	0
10	51.516	49.1392	43.7457	0	0
11	51.9187	49.0952	52.2776	0	0
12	52.3214	49.061	61.2657	0	0
13	52.7242	49.0366	70.5503	0	0
14	53.1269	49.022	79.9825	0	0
15	53.5296	49.0171	89.4228	0	0
16	53.9323	49.022	98.7404	0	0
17	54.335	49.0366	107.813	0	0
18	54.7378	49.061	116.439	0	0
19	55.1405	49.0952	124.214	0	0
20	55.5432	49.1392	131.107	0	0
21	55.9459	49.1933	137.134	0	0
22	56.3486	49.2573	142.315	0	0
23	56.7514	49.3316	146.712	0	0
24	57.1541	49.4161	150.44	0	0
25	57.5568	49.5111	153.435	0	0
26	57.9595	49.6168	155.625	0	0
27	58.3622	49.7333	156.94	0	0
28	58.765	49.861	157.316	0	0
29	59.1677	50	156.694	0	0
30	59.5835	50.1558	158.974	0	0
31	59.9994	50.3245	160.178	0	0
32	60.4153	50.5064	160.249	0	0
33	60.8311	50.7021	159.135	0	0
34	61.247	50.9121	156.792	0	0
35	61.6629	51.137	153.181	0	0
36	62.0787	51.3775	148.269	0	0
37	62.4946	51.6345	142.034	0	0
38	62.9105	51.9087	134.456	0	0
39	63.3263	52.2014	125.53	0	0
40	63.7422	52.5137	115.257	0	0
41	64.1581	52.8471	103.694	0	0
42	64.5739	53.2032	91.3854	0	0
43	64.9898	53.5841	78.6509	0	0
44	65.4057	53.9922	65.726	0	0
45	65.8215	54.4304	52.8844	0	0
46	66.2374	54.9024	40.4498	0	0
47	66.6533	55.4129	28.81	0	0
48	67.0691	55.9679	18.4389	0	0
49	67.485	56.5756	9.92901	0	0
50	67.9009	57.2474	3.17014	0	0
51	68.3167	58	0	0	0

Discharge Sections

Entity Information

Stab locale

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 0 168, 0 168, 43.5 168, 49 168, 50 118, 50 112, 54 110, 54 104, 58 77.5, 58 67.5, 58 64, 58 56.5, 53 54.5, 53 50, 50 0, 50 0, 49 0, 43.5
Material Boundary	50, 50 50.3951, 50 118, 50
Material Boundary	0, 49 168, 49
Material Boundary	0, 43.5 168, 43.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	statico	sismico
Water Table	0, 46.8 168, 46.8	Assigned to: RILEVATO UG1 UG2 UG3	Assigned to: RILEVATO UG1 UG2 UG3	Assigned to: RILEVATO UG1 UG2 UG3
Distributed Load	67.5, 58 77.5, 58	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No		
Distributed Load	91.5, 58 101.5, 58	Constant DistributionOrientation: VerticalMagnitude: 20 kN/m2Creates Excess Pore Pressure: No		Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Distributed Load	77.5, 58 67.5, 58		Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	
Distributed Load	100.5, 58 90.5, 58		Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	
Distributed Load	77.5, 58 67.5, 58			Constant DistributionOrientation: Normal to boundaryMagnitude: 4 kN/m2Creates Excess Pore Pressure: No

Stab globale

Shared Entities

Type	Coordinates (x,y)
External Boundary	168, 0 168, 30.076 168, 43.5 168, 49 168, 50 118, 50 112, 54 110, 54 104, 58 77.5, 58 67.5, 58 64, 58 56.5, 53 54.5, 53 50, 50 0, 50 0, 49 0, 43.5 5.55112e-17, 0
Material Boundary	50, 50 50.3951, 50 118, 50
Material Boundary	0, 49 168, 49
Material Boundary	0, 43.5 168, 43.5

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	statico	sismico
Water Table	0, 46.8 168, 46.8	Assigned to: RILEVATO UG1 UG2 UG3		Assigned to: RILEVATO UG1 UG2 UG3
Distributed Load	67.5, 58 77.5, 58	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No		
Distributed Load	91.5, 58 101.5, 58	Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No		Constant DistributionOrientation: VerticalMagnitude: 4 kN/m2Creates Excess Pore Pressure: No
Water Table	0, 46.8 168, 46.8		Assigned to: RILEVATO UG1 UG2 UG3	
Distributed Load	77.5, 58 67.5, 58		Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	
Distributed Load	100.5, 58 90.5, 58		Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	
Piezoline	0, 46.8 168, 46.8			Not assigned to any materials
Distributed Load	77.5, 58 67.5, 58			Constant DistributionOrientation: Normal to boundaryMagnitude: 4 kN/m2Creates Excess Pore Pressure: No

rocscience

trincea pk 4+500
SLIDE - An Interactive Slope Stability Program
Date Created: 22/09/2022, 16:15:11
Software Version: 9.02

Table of Contents

Slide Analysis Information

trincea pk 4+500

Project Summary

File Name:	trincea pk 4+500.slmd
Slide Modeler Version:	9.02
Project Title:	SLIDE - An Interactive Slope Stability Program
Date Created:	22/09/2022, 16:15:11

Currently Open Scenarios

Group Name	Scenario Name	Global Minimum	Compute Time
Group 1	Master Scenario	Bishop Simplified: 1.559570 Janbu Simplified: 1.370660	00h:00m:00.352s
	statico	Bishop Simplified: 1.500590 Janbu Simplified: 1.306200	00h:00m:00.333s
	sismico	Bishop Simplified: 1.093920 Janbu Simplified: 0.964808	00h:00m:00.321s
	Statico	Bishop Simplified: 1.367490 Janbu Simplified: 1.197680	00h:00m:00.320s
	Sismico	Bishop Simplified: 1.501060 Janbu Simplified: 1.305700	00h:00m:00.313s

General Settings

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

Design Standard

All other Scenarios

Selected Type:	Eurocode 7 - Design Approach 1, Combination 2
Type	**Partial Factor**
Permanent Actions: Unfavourable	1
Permanent Actions: Favourable	1
Variable Actions: Unfavourable	1.3
Variable Actions: Favourable	0
Effective cohesion	1.25
Coefficient of shearing resistance	1.25
Undrained strength	1.4
Weight density	1
Shear strength (other models)	1.25
Earth resistance	1
Tensile and plate strength	1.1
Shear strength	1.1
Compressive strength	1.1
Bond strength	1.1
Seismic Coefficient	1

Analysis Options

All Open Scenarios

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

Groundwater Analysis

All Open Scenarios

Groundwater Method:	Water Surfaces
Pore Fluid Unit Weight [kN/m3]:	9.81
Use negative pore pressure cutoff:	Yes
Maximum negative pore pressure [kPa]:	0
Advanced Groundwater Method:	None

Random Numbers

All Open Scenarios

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

Surface Options

All Open Scenarios

Surface Type:	Circular
Search Method:	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 [m]:	5.5
Minimum Area:	Not Defined
Minimum Weight:	Not Defined

Seismic Loading

Group 1 - sismico

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No
Seismic Load Coefficient (Horizontal):	0.14
Seismic Load Coefficient (Vertical):	0.07

All other Scenarios

Advanced seismic analysis:	No
Staged pseudostatic analysis:	No

Loading

Group 1 - Master Scenario

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Group 1 - statico

Distribution:	Constant
Magnitude [kPa]:	20
Orientation:	Normal to boundary
Load Action:	Variable

Group 1 - sismico

Distribution:	Constant
Magnitude [kPa]:	4
Orientation:	Normal to boundary
Load Action:	Variable

Materials

UGR1	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	26
Cohesion [kPa]	60
Friction Angle [deg]	40
Water Surface	Assigned per scenario
Ru Value	0
UG1	
Color	
Strength Type	Mohr-Coulomb
Unit Weight [kN/m3]	18
Cohesion [kPa]	5
Friction Angle [deg]	26
Water Surface	Assigned per scenario
Ru Value	0

Materials In Use

Material	Group 1	statico	sismico	Statico	Sismico
UGR1	✓	✓	✓	✓	✓
UG1	✓	✓	✓	✓	✓

Global Minimums

Group 1 - Master Scenario

Method: bishop simplified

FS	1.559570
Center:	105.694, 53.414
Radius:	11.541
Left Slip Surface Endpoint:	100.501, 43.107
Right Slip Surface Endpoint:	116.497, 49.353
Resisting Moment:	5755.61 kN-m
Driving Moment:	3690.51 kN-m
Total Slice Area:	58.6398 m2
Surface Horizontal Width:	15.9962 m
Surface Average Height:	3.66585 m

Method: janbu simplified

FS	1.370660
Center:	105.694, 53.414
Radius:	11.541
Left Slip Surface Endpoint:	100.501, 43.107
Right Slip Surface Endpoint:	116.497, 49.353
Resisting Horizontal Force:	433.55 kN
Driving Horizontal Force:	316.307 kN
Total Slice Area:	58.6398 m2
Surface Horizontal Width:	15.9962 m
Surface Average Height:	3.66585 m

Group 1 - statico

Method: bishop simplified

FS	1.500590
Center:	104.471, 53.805
Radius:	12.414
Left Slip Surface Endpoint:	98.358, 43.000
Right Slip Surface Endpoint:	116.054, 49.338
Resisting Moment:	6576.4 kN-m
Driving Moment:	4382.55 kN-m
Total Slice Area:	62.0116 m2
Surface Horizontal Width:	17.6959 m
Surface Average Height:	3.50429 m

Method: janbu simplified

FS	1.306200
Center:	104.576, 51.828
Radius:	10.628
Left Slip Surface Endpoint:	98.657, 43.000
Right Slip Surface Endpoint:	114.899, 49.300
Resisting Horizontal Force:	432.908 kN
Driving Horizontal Force:	331.425 kN
Total Slice Area:	58.9693 m2
Surface Horizontal Width:	16.2419 m
Surface Average Height:	3.6307 m

Group 1 - sismico

Method: bishop simplified

FS	1.093920
Center:	104.267, 56.560
Radius:	14.942
Left Slip Surface Endpoint:	97.990, 43.000
Right Slip Surface Endpoint:	117.373, 49.382
Resisting Moment:	8419.26 kN-m
Driving Moment:	7696.43 kN-m
Total Slice Area:	64.9447 m2
Surface Horizontal Width:	19.3822 m
Surface Average Height:	3.35074 m

Method: janbu simplified

FS	0.964808
Center:	104.997, 53.688
Radius:	12.160
Left Slip Surface Endpoint:	99.198, 43.000
Right Slip Surface Endpoint:	116.357, 49.348
Resisting Horizontal Force:	472.122 kN
Driving Horizontal Force:	489.343 kN
Total Slice Area:	62.0492 m2
Surface Horizontal Width:	17.1588 m
Surface Average Height:	3.61616 m

Group 1 - Statico

Method: bishop simplified

FS	1.367490
Center:	104.383, 56.481
Radius:	14.816
Left Slip Surface Endpoint:	98.236, 43.000
Right Slip Surface Endpoint:	117.388, 49.383
Resisting Moment:	10339.6 kN-m
Driving Moment:	7560.95 kN-m
Total Slice Area:	64.3883 m2
Surface Horizontal Width:	19.1519 m
Surface Average Height:	3.36199 m

Method: janbu simplified

FS	1.197680
Center:	104.678, 51.820
Radius:	10.600
Left Slip Surface Endpoint:	98.799, 43.000
Right Slip Surface Endpoint:	114.974, 49.302
Resisting Horizontal Force:	560.438 kN
Driving Horizontal Force:	467.937 kN
Total Slice Area:	59.1481 m2
Surface Horizontal Width:	16.1745 m
Surface Average Height:	3.65687 m

Group 1 - Sismico

Method: bishop simplified

FS	1.501060
Center:	104.602, 53.754
Radius:	12.307
Left Slip Surface Endpoint:	98.617, 43.000
Right Slip Surface Endpoint:	116.091, 49.339
Resisting Moment:	6458.03 kN-m
Driving Moment:	4302.3 kN-m
Total Slice Area:	61.4805 m2
Surface Horizontal Width:	17.4741 m
Surface Average Height:	3.51837 m

Method: janbu simplified

FS	1.305700
Center:	104.630, 51.814
Radius:	10.585
Left Slip Surface Endpoint:	98.767, 43.000
Right Slip Surface Endpoint:	114.912, 49.300
Resisting Horizontal Force:	430.541 kN
Driving Horizontal Force:	329.739 kN
Total Slice Area:	58.6619 m2
Surface Horizontal Width:	16.145 m
Surface Average Height:	3.63344 m

Global Minimum Support Data

All Open Scenarios

No Supports Present

Valid and Invalid Surfaces

Group 1 - Master Scenario

Method: bishop simplified

Number of Valid Surfaces:	3351
Number of Invalid Surfaces:	21
Error Codes	

Error Code -112 reported for 21 surfaces

Method: janbu simplified

Number of Valid Surfaces:	3371
Number of Invalid Surfaces:	1
Error Codes	

Error Code -108 reported for 1 surface

Group 1 - statico

Method: bishop simplified

Number of Valid Surfaces:	3071
Number of Invalid Surfaces:	31
Error Codes	

Error Code -112 reported for 31 surfaces

Method: janbu simplified

Number of Valid Surfaces:	3100
Number of Invalid Surfaces:	2
Error Codes	

Error Code -108 reported for 2 surfaces

Group 1 - sismico

Method: bishop simplified

Number of Valid Surfaces:	3632
Number of Invalid Surfaces:	22
Error Codes	

Error Code -112 reported for 22 surfaces

Method: janbu simplified

Number of Valid Surfaces:	3652
Number of Invalid Surfaces:	2
Error Codes	

Error Code -112 reported for 2 surfaces

Group 1 - Statico

Method: bishop simplified

Number of Valid Surfaces:	3728
Number of Invalid Surfaces:	35

Error Codes

Error Code -112 reported for 35 surfaces

Method: janbu simplified

Number of Valid Surfaces:	3754
Number of Invalid Surfaces:	9

Error Codes

Error Code -108 reported for 2 surfaces
Error Code -112 reported for 7 surfaces

Group 1 - Sismico

Method: bishop simplified

Number of Valid Surfaces:	3300
Number of Invalid Surfaces:	34

Error Codes

Error Code -112 reported for 34 surfaces

Method: janbu simplified

Number of Valid Surfaces:	3334
Number of Invalid Surfaces:	0

Error Code Descriptions

The following errors were encountered during the computation:
-108 = Total driving moment or total driving force < 0.1. This is to limit the calculation of extremely high safety factors if the driving force is very small (0.1 is an arbitrary number).
-112 = The coefficient M-Alpha = cos(alpha)(1+tan(alpha)tan(phi)/F) < 0.2 for the final iteration of the safety factor calculation. This screens out some slip surfaces which may not be valid in the context of the analysis, in particular, deep seated slip surfaces with many high negative base angle slices in the passive zone.

Slice Data

Group 1 - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.55957

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	0.319925	0.938866	-25.8609	UG1	4	21.3151	3.75354	5.85391	4.75134	0	4.75134	2.93189	2.93189
2	0.319925	2.7823	-24.1082	UG1	4	21.3151	5.33727	8.32384	11.0815	0	11.0815	8.6931	8.6931
3	0.319925	4.5585	-22.3793	UG1	4	21.3151	6.83243	10.6556	17.0576	0	17.0576	14.2444	14.2444
4	0.319925	6.27004	-20.6716	UG1	4	21.3151	8.24527	12.8591	22.7047	0	22.7047	19.5938	19.5938
5	0.319925	7.91918	-18.983	UG1	4	21.3151	9.5811	14.9424	28.0441	0	28.0441	24.7482	24.7482
6	0.319925	9.50786	-17.3113	UG1	4	21.3151	10.8445	16.9128	33.0939	0	33.0939	29.7138	29.7138
7	0.319925	11.0378	-15.6546	UG1	4	21.3151	12.0394	18.7763	37.87	0	37.87	34.4962	34.4962
8	0.319925	12.5105	-14.0113	UG1	4	21.3151	13.1692	20.5383	42.3858	0	42.3858	39.0996	39.0996
9	0.319925	13.9273	-12.3797	UG1	4	21.3151	14.2369	22.2034	46.6531	0	46.6531	43.5282	43.5282
10	0.319925	15.2892	-10.7583	UG1	4	21.3151	15.2449	23.7755	50.6822	0	50.6822	47.7856	47.7856
11	0.319925	16.5972	-9.14551	UG1	4	21.3151	16.1955	25.258	54.4818	0	54.4818	51.8745	51.8745
12	0.319925	17.8521	-7.54002	UG1	4	21.3151	17.0907	26.6541	58.0599	0	58.0599	55.7977	55.7977
13	0.319925	19.0546	-5.94046	UG1	4	21.3151	17.9321	27.9663	61.4226	0	61.4226	59.5567	59.5567
14	0.319925	20.2051	-4.34554	UG1	4	21.3151	18.7211	29.1968	64.5762	0	64.5762	63.1536	63.1536
15	0.319925	21.3041	-2.75399	UG1	4	21.3151	19.459	30.3476	67.5256	0	67.5256	66.5896	66.5896
16	0.319925	22.3519	-1.16457	UG1	4	21.3151	20.1468	31.4203	70.2751	0	70.2751	69.8656	69.8656
17	0.319925	23.3485	0.423957	UG1	4	21.3151	20.7854	32.4163	72.8276	0	72.8276	72.9814	72.9814
18	0.319925	24.294	2.01281	UG1	4	21.3151	21.3756	33.3367	75.1866	0	75.1866	75.9378	75.9378
19	0.319925	25.1883	3.60322	UG1	4	21.3151	21.9178	34.1824	77.3537	0	77.3537	78.7339	78.7339
20	0.319925	26.0312	5.19641	UG1	4	21.3151	22.4126	34.954	79.3316	0	79.3316	81.3699	81.3699
21	0.319925	26.8224	6.79364	UG1	4	21.3151	22.8602	35.6521	81.1206	0	81.1206	83.8439	83.8439
22	0.319925	27.5614	8.3962	UG1	4	21.3151	23.2608	36.2768	82.7215	0	82.7215	86.1548	86.1548
23	0.319925	28.2476	10.0054	UG1	4	21.3151	23.6143	36.8282	84.1348	0	84.1348	88.3009	88.3009
24	0.319925	28.8803	11.6226	UG1	4	21.3151	23.9208	37.3061	85.3595	0	85.3595	90.2796	90.2796
25	0.319925	29.4587	13.2493	UG1	4	21.3151	24.1799	37.7102	86.3952	0	86.3952	92.0885	92.0885
26	0.319925	29.9816	14.887	UG1	4	21.3151	24.3913	38.0399	87.2403	0	87.2403	93.7244	93.7244
27	0.319925	30.4479	16.5372	UG1	4	21.3151	24.5545	38.2944	87.8924	0	87.8924	95.1831	95.1831
28	0.319925	30.8562	18.2016	UG1	4	21.3151	24.6687	38.4726	88.3492	0	88.3492	96.4606	96.4606
29	0.319925	31.2048	19.8821	UG1	4	21.3151	24.7332	38.5732	88.6071	0	88.6071	97.5517	97.5517
30	0.319925	31.4921	21.5807	UG1	4	21.3151	24.7471	38.5948	88.6621	0	88.6621	98.4505	98.4505
31	0.319925	31.7157	23.2994	UG1	4	21.3151	24.7089	38.5353	88.51	0	88.51	99.1511	99.1511
32	0.319925	31.8733	25.0407	UG1	4	21.3151	24.6175	38.3927	88.1444	0	88.1444	99.645	99.645
33	0.319925	31.9622	26.807	UG1	4	21.3151	24.4711	38.1644	87.5591	0	87.5591	99.9241	99.9241
34	0.319925	31.9792	28.6014	UG1	4	21.3151	24.2678	37.8473	86.7466	0	86.7466	99.9786	99.9786
35	0.319925	31.9206	30.427	UG1	4	21.3151	24.0053	37.438	85.6977	0	85.6977	99.7967	99.7967
36	0.319925	31.719	32.2875	UG1	4	21.3151	23.6385	36.8659	84.2314	0	84.2314	99.1678	99.1678
37	0.319925	30.7558	34.187	UG1	4	21.3151	22.7552	35.4884	80.701	0	80.701	96.1579	96.1579
38	0.319925	29.5189	36.1303	UG1	4	21.3151	21.6931	33.8319	76.4556	0	76.4556	92.292	92.292
39	0.319925	28.1848	38.1232	UG1	4	21.3151	20.5729	32.0848	71.978	0	71.978	88.1226	88.1226
40	0.319925	26.7455	40.1721	UG1	4	21.3151	19.3909	30.2415	67.2539	0	67.2539	83.6243	83.6243
41	0.319925	25.1914	42.2849	UG1	4	21.3151	18.1431	28.2955	62.2664	0	62.2664	78.7667	78.7667
42	0.319925	23.5106	44.4714	UG1	4	21.3151	16.8246	26.2391	56.9961	0	56.9961	73.5131	73.5131
43	0.319925	21.6886	46.7433	UG1	4	21.3151	15.4294	24.0632	51.4196	0	51.4196	67.8177	67.8177
44	0.319925	19.7069	49.1157	UG1	4	21.3151	13.9506	21.757	45.509	0	45.509	61.623	61.623
45	0.319925	17.5416	51.6079	UG1	4	21.3151	12.3798	19.3071	39.2304	0	39.2304	54.8542	54.8542
46	0.319925	15.161	54.246	UG1	4	21.3151	10.7064	16.6974	32.5418	0	32.5418	47.4118	47.4118
47	0.319925	12.5208	57.0661	UG1	4	21.3151	8.9174	13.9073	25.3913	0	25.3913	39.1577	39.1577
48	0.319925	9.5567	60.1213	UG1	4	21.3151	6.99633	10.9113	17.7127	0	17.7127	29.8902	29.8902
49	0.319925	6.16745	63.4955	UG1	4	21.3151	4.92218	7.67648	9.42239	0	9.42239	19.2928	19.2928
50	0.319925	2.17545	67.3367	UG1	4	21.3151	2.66918	4.16277	0.417172	0	0.417172	6.80957	6.80957

Global Minimum Query (janbu simplified) - Safety Factor: 1.37066

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	0.319925	0.938866	-25.8609	UG1	4	21.3151	4.35522	5.96953	5.04766	0	5.04766	2.93655	2.93655
2	0.319925	2.7823	-24.1082	UG1	4	21.3151	6.18226	8.47378	11.4658	0	11.4658	8.69923	8.69923
3	0.319925	4.5585	-22.3793	UG1	4	21.3151	7.90146	10.8302	17.505	0	17.505	14.2516	14.2516
4	0.319925	6.27004	-20.6716	UG1	4	21.3151	9.52095	13.05	23.194	0	23.194	19.6017	19.6017
5	0.319925	7.91918	-18.983	UG1	4	21.3151	11.0476	15.1425	28.557	0	28.557	24.7567	24.7567
6	0.319925	9.50786	-17.3113	UG1	4	21.3151	12.4874	17.116	33.6146	0	33.6146	29.7225	29.7225
7	0.319925	11.0378	-15.6546	UG1	4	21.3151	13.8453	18.9772	38.3847	0	38.3847	34.5048	34.5048
8	0.319925	12.5105	-14.0113	UG1	4	21.3151	15.1256	20.7321	42.8823	0	42.8823	39.1079	39.1079
9	0.319925	13.9273	-12.3797	UG1	4	21.3151	16.3323	22.386	47.1208	0	47.1208	43.536	43.536
10	0.319925	15.2892	-10.7583	UG1	4	21.3151	17.4684	23.9432	51.1121	0	51.1121	47.793	47.793
11	0.319925	16.5972	-9.14551	UG1	4	21.3151	18.5368	25.4077	54.8654	0	54.8654	51.8811	51.8811
12	0.319925	17.8521	-7.54002	UG1	4	21.3151	19.5401	26.7829	58.3899	0	58.3899	55.8035	55.8035
13	0.319925	19.0546	-5.94046	UG1	4	21.3151	20.4804	28.0716	61.6927	0	61.6927	59.5617	59.5617
14	0.319925	20.2051	-4.34554	UG1	4	21.3151	21.3593	29.2764	64.7804	0	64.7804	63.1573	63.1573
15	0.319925	21.3041	-2.75399	UG1	4	21.3151	22.1788	30.3996	67.6589	0	67.6589	66.592	66.592
16	0.319925	22.3519	-1.16457	UG1	4	21.3151	22.94	31.4429	70.3329	0	70.3329	69.8666	69.8666
17	0.319925	23.3485	0.423957	UG1	4	21.3151	23.644	32.4079	72.806	0	72.806	72.981	72.981
18	0.319925	24.294	2.01281	UG1	4	21.3151	24.2919	33.296	75.0819	0	75.0819	75.9356	75.9356
19	0.319925	25.1883	3.60322	UG1	4	21.3151	24.8844	34.1081	77.1634	0	77.1634	78.7304	78.7304
20	0.319925	26.0312	5.19641	UG1	4	21.3151	25.4222	34.8452	79.0527	0	79.0527	81.3647	81.3647
21	0.319925	26.8224	6.79364	UG1	4	21.3151	25.9056	35.5078	80.7509	0	80.7509	83.8371	83.8371
22	0.319925	27.5614	8.3962	UG1	4	21.3151	26.335	36.0963	82.2589	0	82.2589	86.146	86.146
23	0.319925	28.2476	10.0054	UG1	4	21.3151	26.7104	36.6109	83.5779	0	83.5779	88.2903	88.2903
24	0.319925	28.8803	11.6226	UG1	4	21.3151	27.0319	37.0516	84.7071	0	84.7071	90.2671	90.2671
25	0.319925	29.4587	13.2493	UG1	4	21.3151	27.2993	37.418	85.6464	0	85.6464	92.0742	92.0742
26	0.319925	29.9816	14.887	UG1	4	21.3151	27.5121	37.7098	86.3942	0	86.3942	93.7079	93.7079
27	0.319925	30.4479	16.5372	UG1	4	21.3151	27.67	37.9262	86.9489	0	86.9489	95.1646	95.1646
28	0.319925	30.8562	18.2016	UG1	4	21.3151	27.7723	38.0664	87.3079	0	87.3079	96.4398	96.4398
29	0.319925	31.2048	19.8821	UG1	4	21.3151	27.8181	38.1291	87.4687	0	87.4687	97.5289	97.5289
30	0.319925	31.4921	21.5807	UG1	4	21.3151	27.8062	38.1129	87.4274	0	87.4274	98.4258	98.4258
31	0.319925	31.7157	23.2994	UG1	4	21.3151	27.7357	38.0162	87.1794	0	87.1794	99.1239	99.1239
32	0.319925	31.8733	25.0407	UG1	4	21.3151	27.6048	37.8368	86.7196	0	86.7196	99.6158	99.6158
33	0.319925	31.9622	26.807	UG1	4	21.3151	27.4119	37.5724	86.042	0	86.042	99.893	99.893
34	0.319925	31.9792	28.6014	UG1	4	21.3151	27.1548	37.22	85.139	0	85.139	99.9452	99.9452
35	0.319925	31.9206	30.427	UG1	4	21.3151	26.8312	36.7765	84.0024	0	84.0024	99.7611	99.7611
36	0.319925	31.719	32.2875	UG1	4	21.3151	26.3907	36.1727	82.4546	0	82.4546	99.1301	99.1301
37	0.319925	30.7558	34.187	UG1	4	21.3151	25.374	34.7791	78.883	0	78.883	96.1187	96.1187
38	0.319925	29.5189	36.1303	UG1	4	21.3151	24.1591	33.1139	74.6154	0	74.6154	92.2521	92.2521
39	0.319925	28.1848	38.1232	UG1	4	21.3151	22.8811	31.3622	70.1259	0	70.1259	88.0819	88.0819
40	0.319925	26.7455	40.1721	UG1	4	21.3151	21.5361	29.5187	65.4015	0	65.4015	83.5829	83.5829
41	0.319925	25.1914	42.2849	UG1	4	21.3151	20.12	27.5777	60.4269	0	60.4269	78.725	78.725
42	0.319925	23.5106	44.4714	UG1	4	21.3151	18.6277	25.5322	55.1843	0	55.1843	73.4714	73.4714
43	0.319925	21.6886	46.7433	UG1	4	21.3151	17.053	23.3738	49.6527	0	49.6527	67.7763	67.7763
44	0.319925	19.7069	49.1157	UG1	4	21.3151	15.3889	21.0929	43.8072	0	43.8072	61.5824	61.5824
45	0.319925	17.5416	51.6079	UG1	4	21.3151	13.6268	18.6777	37.6173	0	37.6173	54.8149	54.8149
46	0.319925	15.161	54.246	UG1	4	21.3151	11.7562	16.1138	31.0462	0	31.0462	47.3742	47.3742
47	0.319925	12.5208	57.0661	UG1	4	21.3151	9.76438	13.3836	24.0492	0	24.0492	39.123	39.123
48	0.319925	9.5567	60.1213	UG1	4	21.3151	7.6353	10.4654	16.5701	0	16.5701	29.8597	29.8597
49	0.319925	6.16745	63.4955	UG1	4	21.3151	5.34957	7.33244	8.54065	0	8.54065	19.2681	19.2681
50	0.319925	2.17545	67.3367	UG1	4	21.3151	2.88523	3.95466	-0.116192	0	-0.116192	6.79361	6.79361

Group 1 - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.50059

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	0.353918	0.613859	-28.5695	UG1	4	21.3151	3.62989	5.44697	3.70841	0	3.70841	1.73183	1.73183
2	0.353918	1.79532	-26.7251	UG1	4	21.3151	4.58396	6.87865	7.37764	0	7.37764	5.06963	5.06963
3	0.353918	2.88645	-24.9101	UG1	4	21.3151	5.44263	8.16715	10.6799	0	10.6799	8.15233	8.15233
4	0.353918	3.89132	-23.1215	UG1	4	21.3151	6.21348	9.32389	13.6445	0	13.6445	10.9915	10.9915
5	0.353918	4.81347	-21.3565	UG1	4	21.3151	6.90296	10.3585	16.2961	0	16.2961	13.5969	13.5969
6	0.353918	5.81384	-19.6124	UG1	4	21.3151	7.64434	11.471	19.1473	0	19.1473	16.4234	16.4234
7	0.353918	7.64086	-17.8872	UG1	4	21.3151	9.03667	13.5603	24.502	0	24.502	21.5855	21.5855
8	0.353918	9.53683	-16.1785	UG1	4	21.3151	10.4604	15.6967	29.9771	0	29.9771	26.9423	26.9423
9	0.353918	11.3602	-14.4845	UG1	4	21.3151	11.8037	17.7125	35.1434	0	35.1434	32.0942	32.0942
10	0.353918	13.1127	-12.8034	UG1	4	21.3151	13.0707	19.6138	40.0163	0	40.0163	37.0459	37.0459
11	0.353918	14.7958	-11.1334	UG1	4	21.3151	14.265	21.4059	44.6091	0	44.6091	41.8018	41.8018
12	0.353918	16.4108	-9.47292	UG1	4	21.3151	15.3893	23.0931	48.9333	0	48.9333	46.3655	46.3655
13	0.353918	17.9588	-7.82047	UG1	4	21.3151	16.4464	24.6793	52.9987	0	52.9987	50.7399	50.7399
14	0.353918	19.4407	-6.17454	UG1	4	21.3151	17.4385	26.168	56.8139	0	56.8139	54.9273	54.9273
15	0.353918	20.8571	-4.53372	UG1	4	21.3151	18.3674	27.5619	60.3863	0	60.3863	58.9299	58.9299
16	0.353918	22.2086	-2.89661	UG1	4	21.3151	19.2349	28.8637	63.7225	0	63.7225	62.7492	62.7492
17	0.353918	23.4955	-1.26188	UG1	4	21.3151	20.0423	30.0753	66.8278	0	66.8278	66.3863	66.3863
18	0.353918	24.7181	0.371834	UG1	4	21.3151	20.7908	31.1985	69.7065	0	69.7065	69.8414	69.8414
19	0.353918	25.8764	2.00585	UG1	4	21.3151	21.4815	32.2349	72.3628	0	72.3628	73.1151	73.1151
20	0.353918	26.9702	3.64149	UG1	4	21.3151	22.115	33.1856	74.7991	0	74.7991	76.2065	76.2065
21	0.353918	27.9993	5.28012	UG1	4	21.3151	22.692	34.0514	77.0182	0	77.0182	79.1154	79.1154
22	0.353918	28.9634	6.9231	UG1	4	21.3151	23.2129	34.8331	79.0214	0	79.0214	81.8399	81.8399
23	0.353918	29.8616	8.57182	UG1	4	21.3151	23.678	35.531	80.81	0	80.81	84.3791	84.3791
24	0.353918	30.6934	10.2277	UG1	4	21.3151	24.0873	36.1452	82.3843	0	82.3843	86.7304	86.7304
25	0.353918	31.4576	11.8923	UG1	4	21.3151	24.4408	36.6756	83.7437	0	83.7437	88.8907	88.8907
26	0.353918	32.1532	13.5672	UG1	4	21.3151	24.7382	37.1219	84.8874	0	84.8874	90.8572	90.8572
27	0.353918	32.7788	15.254	UG1	4	21.3151	24.9792	37.4835	85.814	0	85.814	92.626	92.626
28	0.353918	33.3328	16.9544	UG1	4	21.3151	25.163	37.7594	86.5212	0	86.5212	94.1925	94.1925
29	0.353918	33.8133	18.6704	UG1	4	21.3151	25.2891	37.9485	87.0058	0	87.0058	95.5511	95.5511
30	0.353918	34.2181	20.4039	UG1	4	21.3151	25.3562	38.0493	87.2644	0	87.2644	96.6962	96.6962
31	0.353918	34.5447	22.1572	UG1	4	21.3151	25.3634	38.0601	87.2918	0	87.2918	97.6203	97.6203
32	0.353918	34.7904	23.9327	UG1	4	21.3151	25.3091	37.9786	87.0829	0	87.0829	98.3156	98.3156
33	0.353918	34.9518	25.7329	UG1	4	21.3151	25.1916	37.8023	86.6311	0	86.6311	98.7728	98.7728
34	0.353918	35.0252	27.5609	UG1	4	21.3151	25.009	37.5282	85.9286	0	85.9286	98.9813	98.9813
35	0.353918	35.0061	29.4199	UG1	4	21.3151	24.7588	37.1528	84.9666	0	84.9666	98.9288	98.9288
36	0.353918	34.8897	31.3136	UG1	4	21.3151	24.4384	36.672	83.7344	0	83.7344	98.6011	98.6011
37	0.353918	34.67	33.2462	UG1	4	21.3151	24.0445	36.0809	82.2194	0	82.2194	97.9813	97.9813
38	0.353918	34.3401	35.2226	UG1	4	21.3151	23.5733	35.3739	80.4074	0	80.4074	97.0505	97.0505
39	0.353918	33.5861	37.2485	UG1	4	21.3151	22.8328	34.2627	77.5596	0	77.5596	94.9211	94.9211
40	0.353918	31.9196	39.3305	UG1	4	21.3151	21.5348	32.3149	72.5677	0	72.5677	90.2128	90.2128
41	0.353918	30.0744	41.4765	UG1	4	21.3151	20.1383	30.2194	67.1971	0	67.1971	84.9993	84.9993
42	0.353918	28.0757	43.6964	UG1	4	21.3151	18.6623	28.0044	61.5202	0	61.5202	79.352	79.352
43	0.353918	25.9061	46.0019	UG1	4	21.3151	17.1001	25.6603	55.5128	0	55.5128	73.2217	73.2217
44	0.353918	23.5436	48.4082	UG1	4	21.3151	15.4445	23.1758	49.1453	0	49.1453	66.5458	66.5458
45	0.353918	20.9596	50.9347	UG1	4	21.3151	13.686	20.5371	42.3826	0	42.3826	59.2441	59.2441
46	0.353918	18.1163	53.6074	UG1	4	21.3151	11.8136	17.7273	35.1813	0	35.1813	51.2092	51.2092
47	0.353918	14.961	56.4625	UG1	4	21.3151	9.81301	14.7253	27.4875	0	27.4875	42.2923	42.2923
48	0.353918	11.4174	59.5528	UG1	4	21.3151	7.6669	11.5049	19.2341	0	19.2341	32.2774	32.2774
49	0.353918	7.36574	62.9617	UG1	4	21.3151	5.35339	8.03324	10.3367	0	10.3367	20.826	20.826
50	0.353918	2.5972	66.8352	UG1	4	21.3151	2.84633	4.27118	0.695006	0	0.695006	7.34729	7.34729

Global Minimum Query (janbu simplified) - Safety Factor: 1.3062

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	0.324837	0.611984	-32.7984	UG1	4	21.3151	4.49077	5.86585	4.78195	0	4.78195	1.88802	1.88802
2	0.324837	1.78869	-30.7379	UG1	4	21.3151	5.72569	7.4789	8.91599	0	8.91599	5.51119	5.51119
3	0.324837	2.87379	-28.7207	UG1	4	21.3151	6.82351	8.91287	12.5911	0	12.5911	8.85211	8.85211
4	0.324837	3.87267	-26.7418	UG1	4	21.3151	7.79912	10.1872	15.8571	0	15.8571	11.9274	11.9274
5	0.324837	4.78992	-24.7967	UG1	4	21.3151	8.66455	11.3176	18.7542	0	18.7542	14.7512	14.7512
6	0.324837	6.08108	-22.8818	UG1	4	21.3151	9.90492	12.9378	22.9066	0	22.9066	18.7263	18.7263
7	0.324837	7.85983	-20.9935	UG1	4	21.3151	11.6246	15.184	28.6632	0	28.6632	24.2025	24.2025
8	0.324837	9.56881	-19.1288	UG1	4	21.3151	13.235	17.2875	34.054	0	34.054	29.4635	29.4635
9	0.324837	11.2089	-17.285	UG1	4	21.3151	14.7422	19.2563	39.1001	0	39.1001	34.5127	34.5127
10	0.324837	12.7822	-15.4595	UG1	4	21.3151	16.1531	21.0992	43.8232	0	43.8232	39.3559	39.3559
11	0.324837	14.2906	-13.6499	UG1	4	21.3151	17.4733	22.8236	48.2427	0	48.2427	43.9994	43.9994
12	0.324837	15.7358	-11.8541	UG1	4	21.3151	18.7075	24.4357	52.3741	0	52.3741	48.4475	48.4475
13	0.324837	17.1189	-10.0701	UG1	4	21.3151	19.8598	25.9409	56.2319	0	56.2319	52.705	52.705
14	0.324837	18.4412	-8.29593	UG1	4	21.3151	20.9339	27.3438	59.8272	0	59.8272	56.7748	56.7748
15	0.324837	19.7036	-6.52972	UG1	4	21.3151	21.9326	28.6483	63.1708	0	63.1708	60.6604	60.6604
16	0.324837	20.9067	-4.76973	UG1	4	21.3151	22.8585	29.8578	66.2704	0	66.2704	64.3631	64.3631
17	0.324837	22.0511	-3.01425	UG1	4	21.3151	23.7139	30.9751	69.134	0	69.134	67.8853	67.8853
18	0.324837	23.1372	-1.26159	UG1	4	21.3151	24.5005	32.0026	71.7672	0	71.7672	71.2276	71.2276
19	0.324837	24.1651	0.489884	UG1	4	21.3151	25.22	32.9423	74.1757	0	74.1757	74.3913	74.3913
20	0.324837	25.135	2.24182	UG1	4	21.3151	25.8734	33.7958	76.3629	0	76.3629	77.3757	77.3757
21	0.324837	26.0467	3.99585	UG1	4	21.3151	26.4617	34.5643	78.3328	0	78.3328	80.1812	80.1812
22	0.324837	26.8998	5.75365	UG1	4	21.3151	26.9858	35.2489	80.0871	0	80.0871	82.8062	82.8062
23	0.324837	27.694	7.5169	UG1	4	21.3151	27.4462	35.8502	81.6282	0	81.6282	85.2497	85.2497
24	0.324837	28.4285	9.28736	UG1	4	21.3151	27.843	36.3685	82.9565	0	82.9565	87.5097	87.5097
25	0.324837	29.1026	11.0668	UG1	4	21.3151	28.1764	36.804	84.0727	0	84.0727	89.5837	89.5837
26	0.324837	29.7153	12.8572	UG1	4	21.3151	28.4462	37.1564	84.9759	0	84.9759	91.4686	91.4686
27	0.324837	30.2653	14.6604	UG1	4	21.3151	28.6519	37.4251	85.6646	0	85.6646	93.1601	93.1601
28	0.324837	30.7511	16.4786	UG1	4	21.3151	28.7931	37.6095	86.137	0	86.137	94.6542	94.6542
29	0.324837	31.171	18.314	UG1	4	21.3151	28.8686	37.7082	86.3902	0	86.3902	95.9454	95.9454
30	0.324837	31.523	20.1692	UG1	4	21.3151	28.8777	37.72	86.4202	0	86.4202	97.0275	97.0275
31	0.324837	31.8047	22.0467	UG1	4	21.3151	28.8186	37.6429	86.2226	0	86.2226	97.8934	97.8934
32	0.324837	32.0135	23.9495	UG1	4	21.3151	28.6898	37.4746	85.7913	0	85.7913	98.5346	98.5346
33	0.324837	32.1461	25.8809	UG1	4	21.3151	28.4891	37.2124	85.1194	0	85.1194	98.9412	98.9412
34	0.324837	32.1989	27.8444	UG1	4	21.3151	28.2141	36.8532	84.1987	0	84.1987	99.1022	99.1022
35	0.324837	32.1675	29.8442	UG1	4	21.3151	27.8617	36.3929	83.0191	0	83.0191	99.0042	99.0042
36	0.324837	32.0471	31.8849	UG1	4	21.3151	27.4286	35.8272	81.5691	0	81.5691	98.6319	98.6319
37	0.324837	31.8316	33.972	UG1	4	21.3151	26.9104	35.1504	79.8348	0	79.8348	97.9669	97.9669
38	0.324837	31.5141	36.1117	UG1	4	21.3151	26.3025	34.3563	77.7998	0	77.7998	96.9881	96.9881
39	0.324837	31.0861	38.3116	UG1	4	21.3151	25.5988	33.4372	75.444	0	75.444	95.6691	95.6691
40	0.324837	30.5375	40.5804	UG1	4	21.3151	24.7923	32.3837	72.744	0	72.744	93.9789	93.9789
41	0.324837	29.8301	42.9293	UG1	4	21.3151	23.8558	31.1604	69.6087	0	69.6087	91.7996	91.7996
42	0.324837	28.3278	45.3717	UG1	4	21.3151	22.3418	29.1829	64.5407	0	64.5407	87.1743	87.1743
43	0.324837	26.3769	47.9249	UG1	4	21.3151	20.5193	26.8023	58.4397	0	58.4397	81.1687	81.1687
44	0.324837	24.2316	50.6116	UG1	4	21.3151	18.5773	24.2657	51.9385	0	51.9385	74.5642	74.5642
45	0.324837	21.8565	53.4623	UG1	4	21.3151	16.5002	21.5526	44.9851	0	44.9851	67.2533	67.2533
46	0.324837	19.2021	56.5207	UG1	4	21.3151	14.2673	18.636	37.5104	0	37.5104	59.0829	59.0829
47	0.324837	16.1943	59.8517	UG1	4	21.3151	11.8509	15.4796	29.4208	0	29.4208	49.825	49.825
48	0.324837	12.7124	63.5623	UG1	4	21.3151	9.21108	12.0315	20.5838	0	20.5838	39.1088	39.1088
49	0.324837	8.53247	67.8525	UG1	4	21.3151	6.28767	8.21296	10.7973	0	10.7973	26.2452	26.2452
50	0.324837	3.11543	73.2078	UG1	4	21.3151	2.9766	3.88803	-0.286952	0	-0.286952	9.5769	9.5769

Group 1 - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.09392

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	0.387644	0.602855	-24.0256	UG1	4	21.3151	5.05356	5.52819	3.91658	0	3.91658	1.66389	1.66389
2	0.387644	1.76335	-22.4079	UG1	4	21.3151	6.32248	6.91629	7.4741	0	7.4741	4.86714	4.86714
3	0.387644	2.83497	-20.8089	UG1	4	21.3151	7.45874	8.15926	10.6597	0	10.6597	7.82506	7.82506
4	0.387644	3.8206	-19.2266	UG1	4	21.3151	8.47195	9.26764	13.5003	0	13.5003	10.5457	10.5457
5	0.387644	4.72282	-17.6595	UG1	4	21.3151	9.37041	10.2505	16.0192	0	16.0192	13.036	13.036
6	0.387644	5.54515	-16.106	UG1	4	21.3151	10.1626	11.1171	18.2403	0	18.2403	15.3059	15.3059
7	0.387644	7.06916	-14.5645	UG1	4	21.3151	11.7008	12.7997	22.5526	0	22.5526	19.5125	19.5125
8	0.387644	9.17928	-13.0337	UG1	4	21.3151	13.8364	15.1359	28.54	0	28.54	25.337	25.337
9	0.387644	11.2135	-11.5123	UG1	4	21.3151	15.8481	17.3365	34.1797	0	34.1797	30.9519	30.9519
10	0.387644	13.1731	-9.99913	UG1	4	21.3151	17.7418	19.4081	39.4891	0	39.4891	36.361	36.361
11	0.387644	15.0591	-8.49297	UG1	4	21.3151	19.5228	21.3564	44.4823	0	44.4823	41.5671	41.5671
12	0.387644	16.8726	-6.99271	UG1	4	21.3151	21.1958	23.1865	49.1726	0	49.1726	46.5728	46.5728
13	0.387644	18.6144	-5.49725	UG1	4	21.3151	22.7647	24.9028	53.5712	0	53.5712	51.3803	51.3803
14	0.387644	20.2849	-4.00555	UG1	4	21.3151	24.2332	26.5092	57.6886	0	57.6886	55.9917	55.9917
15	0.387644	21.8847	-2.51656	UG1	4	21.3151	25.6045	28.0093	61.5329	0	61.5329	60.4076	60.4076
16	0.387644	23.4141	-1.02927	UG1	4	21.3151	26.8812	29.4059	65.1121	0	65.1121	64.6292	64.6292
17	0.387644	24.8733	0.457331	UG1	4	21.3151	28.0657	30.7016	68.433	0	68.433	68.6571	68.6571
18	0.387644	26.2623	1.94424	UG1	4	21.3151	29.16	31.8987	71.501	0	71.501	72.4909	72.4909
19	0.387644	27.581	3.43245	UG1	4	21.3151	30.166	32.9992	74.3216	0	74.3216	76.1309	76.1309
20	0.387644	28.829	4.92299	UG1	4	21.3151	31.0852	34.0047	76.8985	0	76.8985	79.576	79.576
21	0.387644	30.0061	6.41688	UG1	4	21.3151	31.9187	34.9165	79.2352	0	79.2352	82.825	82.825
22	0.387644	31.1117	7.91517	UG1	4	21.3151	32.6677	35.7358	81.335	0	81.335	85.8769	85.8769
23	0.387644	32.145	9.41893	UG1	4	21.3151	33.3327	36.4633	83.1994	0	83.1994	88.7289	88.7289
24	0.387644	33.1052	10.9293	UG1	4	21.3151	33.9145	37.0997	84.8305	0	84.8305	91.3794	91.3794
25	0.387644	33.9912	12.4473	UG1	4	21.3151	34.4133	37.6454	86.2291	0	86.2291	93.8252	93.8252
26	0.387644	34.8018	13.9744	UG1	4	21.3151	34.8293	38.1005	87.3953	0	87.3953	96.0627	96.0627
27	0.387644	35.5356	15.5116	UG1	4	21.3151	35.1624	38.4648	88.3293	0	88.3293	98.0883	98.0883
28	0.387644	36.1909	17.0603	UG1	4	21.3151	35.4123	38.7382	89.0298	0	89.0298	99.8972	99.8972
29	0.387644	36.7658	18.6221	UG1	4	21.3151	35.5784	38.9199	89.4954	0	89.4954	101.484	101.484
30	0.387644	37.2582	20.1983	UG1	4	21.3151	35.66	39.0092	89.7244	0	89.7244	102.844	102.844
31	0.387644	37.6657	21.7906	UG1	4	21.3151	35.6562	39.005	89.7136	0	89.7136	103.968	103.968
32	0.387644	37.9854	23.4009	UG1	4	21.3151	35.5656	38.9059	89.4597	0	89.4597	104.851	104.851
33	0.387644	38.2143	25.031	UG1	4	21.3151	35.3868	38.7103	88.9584	0	88.9584	105.483	105.483
34	0.387644	38.3488	26.6831	UG1	4	21.3151	35.1179	38.4162	88.2046	0	88.2046	105.854	105.854
35	0.387644	38.3847	28.3595	UG1	4	21.3151	34.7568	38.0212	87.1921	0	87.1921	105.953	105.953
36	0.387644	38.3083	30.0629	UG1	4	21.3151	34.2934	37.5142	85.8928	0	85.8928	105.742	105.742
37	0.387644	37.3049	31.7961	UG1	4	21.3151	33.0725	36.1787	82.4701	0	82.4701	102.973	102.973
38	0.387644	35.6593	33.5625	UG1	4	21.3151	31.3472	34.2913	77.6329	0	77.6329	98.4304	98.4304
39	0.387644	33.8921	35.3659	UG1	4	21.3151	29.5456	32.3205	72.5821	0	72.5821	93.5526	93.5526
40	0.387644	31.9953	37.2105	UG1	4	21.3151	27.6651	30.2634	67.3099	0	67.3099	88.3169	88.3169
41	0.387644	29.9592	39.1015	UG1	4	21.3151	25.7026	28.1166	61.8077	0	61.8077	82.6968	82.6968
42	0.387644	27.7726	41.0447	UG1	4	21.3151	23.6546	25.8762	56.0662	0	56.0662	76.6612	76.6612
43	0.387644	25.4219	43.0472	UG1	4	21.3151	21.5173	23.5382	50.0741	0	50.0741	70.1725	70.1725
44	0.387644	22.8907	45.1175	UG1	4	21.3151	19.2865	21.0979	43.8199	0	43.8199	63.1857	63.1857
45	0.387644	20.1588	47.2661	UG1	4	21.3151	16.9575	18.5501	37.2901	0	37.2901	55.6449	55.6449
46	0.387644	17.2012	49.5059	UG1	4	21.3151	14.5251	15.8893	30.4708	0	30.4708	47.4811	47.4811
47	0.387644	13.9854	51.8538	UG1	4	21.3151	11.9839	13.1094	23.3463	0	23.3463	38.6045	38.6045
48	0.387644	10.4692	54.3319	UG1	4	21.3151	9.32844	10.2046	15.9015	0	15.9015	28.8987	28.8987
49	0.387644	6.59476	56.9702	UG1	4	21.3151	6.554	7.16955	8.12319	0	8.12319	18.204	18.204
50	0.387644	2.2798	59.812	UG1	4	21.3151	3.65826	4.00185	0.00473064	0	0.00473064	6.29328	6.29328

Global Minimum Query (janbu simplified) - Safety Factor: 0.964808

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	0.343177	0.553476	-27.5727	UG1	4	21.3151	6.14053	5.92443	4.93208	0	4.93208	1.72561	1.72561
2	0.343177	1.6185	-25.7628	UG1	4	21.3151	7.68706	7.41654	8.75618	0	8.75618	5.04626	5.04626
3	0.343177	2.60151	-23.9802	UG1	4	21.3151	9.05518	8.73651	12.1391	0	12.1391	8.11121	8.11121
4	0.343177	3.85827	-22.2219	UG1	4	21.3151	10.7944	10.4145	16.4396	0	16.4396	12.0297	12.0297
5	0.343177	5.79497	-20.4854	UG1	4	21.3151	13.4914	13.0166	23.1085	0	23.1085	18.0682	18.0682
6	0.343177	7.68417	-18.7684	UG1	4	21.3151	16.0395	15.475	29.4088	0	29.4088	23.9584	23.9584
7	0.343177	9.50282	-17.0687	UG1	4	21.3151	18.4151	17.767	35.2833	0	35.2833	29.6291	29.6291
8	0.343177	11.2529	-15.3844	UG1	4	21.3151	20.6309	19.9049	40.7625	0	40.7625	35.0858	35.0858
9	0.343177	12.9363	-13.7136	UG1	4	21.3151	22.6978	21.899	45.873	0	45.873	40.3342	40.3342
10	0.343177	14.5543	-12.0546	UG1	4	21.3151	24.6248	23.7582	50.6377	0	50.6377	45.379	45.379
11	0.343177	16.1083	-10.4058	UG1	4	21.3151	26.4197	25.4899	55.0761	0	55.0761	50.2244	50.2244
12	0.343177	17.5994	-8.76571	UG1	4	21.3151	28.0894	27.1009	59.205	0	59.205	54.8737	54.8737
13	0.343177	19.0285	-7.13283	UG1	4	21.3151	29.6399	28.5968	63.0386	0	63.0386	59.3295	59.3295
14	0.343177	20.3964	-5.50575	UG1	4	21.3151	31.076	29.9824	66.5899	0	66.5899	63.5944	63.5944
15	0.343177	21.7035	-3.88311	UG1	4	21.3151	32.4023	31.262	69.8693	0	69.8693	67.67	67.67
16	0.343177	22.9504	-2.2636	UG1	4	21.3151	33.6226	32.4394	72.8866	0	72.8866	71.5575	71.5575
17	0.343177	24.1373	-0.645889	UG1	4	21.3151	34.7401	33.5175	75.6498	0	75.6498	75.2582	75.2582
18	0.343177	25.2643	0.971304	UG1	4	21.3151	35.7577	34.4993	78.166	0	78.166	78.7722	78.7722
19	0.343177	26.3314	2.58927	UG1	4	21.3151	36.6777	35.3869	80.4407	0	80.4407	82.0994	82.0994
20	0.343177	27.3385	4.20931	UG1	4	21.3151	37.5021	36.1823	82.4795	0	82.4795	85.2396	85.2396
21	0.343177	28.2852	5.83273	UG1	4	21.3151	38.2327	36.8872	84.2859	0	84.2859	88.1915	88.1915
22	0.343177	29.1712	7.46087	UG1	4	21.3151	38.8706	37.5027	85.8634	0	85.8634	90.9538	90.9538
23	0.343177	29.9957	9.09509	UG1	4	21.3151	39.4171	38.0299	87.2146	0	87.2146	93.5247	93.5247
24	0.343177	30.7581	10.7368	UG1	4	21.3151	39.8727	38.4695	88.3411	0	88.3411	95.9016	95.9016
25	0.343177	31.4574	12.3875	UG1	4	21.3151	40.238	38.8219	89.2444	0	89.2444	98.0821	98.0821
26	0.343177	32.0924	14.0488	UG1	4	21.3151	40.5129	39.0872	89.9243	0	89.9243	100.062	100.062
27	0.343177	32.6618	15.7221	UG1	4	21.3151	40.6975	39.2653	90.3808	0	90.3808	101.837	101.837
28	0.343177	33.1641	17.4094	UG1	4	21.3151	40.7914	39.3559	90.6129	0	90.6129	103.404	103.404
29	0.343177	33.5975	19.1124	UG1	4	21.3151	40.7938	39.3582	90.6189	0	90.6189	104.755	104.755
30	0.343177	33.9599	20.8332	UG1	4	21.3151	40.7036	39.2712	90.396	0	90.396	105.885	105.885
31	0.343177	34.2489	22.5739	UG1	4	21.3151	40.5198	39.0938	89.941	0	89.941	106.786	106.786
32	0.343177	34.4619	24.3368	UG1	4	21.3151	40.2402	38.8241	89.2499	0	89.2499	107.45	107.45
33	0.343177	34.5957	26.1247	UG1	4	21.3151	39.8631	38.4602	88.3174	0	88.3174	107.867	107.867
34	0.343177	34.6468	27.9404	UG1	4	21.3151	39.3859	37.9998	87.1373	0	87.1373	108.027	108.027
35	0.343177	34.6109	29.7872	UG1	4	21.3151	38.8054	37.4398	85.7023	0	85.7023	107.915	107.915
36	0.343177	34.4834	31.6688	UG1	4	21.3151	38.1185	36.777	84.0037	0	84.0037	107.517	107.517
37	0.343177	34.2587	33.5894	UG1	4	21.3151	37.3207	36.0073	82.031	0	82.031	106.817	106.817
38	0.343177	33.413	35.5538	UG1	4	21.3151	35.9012	34.6378	78.521	0	78.521	104.18	104.18
39	0.343177	31.9108	37.5676	UG1	4	21.3151	33.853	32.6616	73.4562	0	73.4562	99.4961	99.4961
40	0.343177	30.288	39.6376	UG1	4	21.3151	31.7134	30.5973	68.1656	0	68.1656	94.4363	94.4363
41	0.343177	28.5338	41.7716	UG1	4	21.3151	29.4775	28.4401	62.6372	0	62.6372	88.9668	88.9668
42	0.343177	26.6347	43.9793	UG1	4	21.3151	27.1396	26.1845	56.8563	0	56.8563	83.0458	83.0458
43	0.343177	24.5743	46.2727	UG1	4	21.3151	24.693	23.824	50.8064	0	50.8064	76.6215	76.6215
44	0.343177	22.3317	48.6666	UG1	4	21.3151	22.1299	21.3511	44.4687	0	44.4687	69.6291	69.6291
45	0.343177	19.8797	51.1807	UG1	4	21.3151	19.4413	18.7571	37.8207	0	37.8207	61.9842	61.9842
46	0.343177	17.1825	53.8409	UG1	4	21.3151	16.6168	16.032	30.8364	0	30.8364	53.5745	53.5745
47	0.343177	14.1901	56.6834	UG1	4	21.3151	13.6441	13.1639	23.486	0	23.486	44.2441	44.2441
48	0.343177	10.8297	59.7611	UG1	4	21.3151	10.5101	10.1402	15.7367	0	15.7367	33.7668	33.7668
49	0.343177	6.9875	63.1575	UG1	4	21.3151	7.20172	6.94828	7.55609	0	7.55609	21.7869	21.7869
50	0.343177	2.46416	67.0196	UG1	4	21.3151	3.71261	3.58195	-1.07141	0	-1.07141	7.68329	7.68329

Group 1 - Statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.36749

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	0.383037	0.579669	-23.7011	UG1	5	26	5.01889	6.86328	3.82028	0	3.82028	1.61703	1.61703
2	0.383037	1.69533	-22.0929	UG1	5	26	6.24923	8.54576	7.26989	0	7.26989	4.73324	4.73324
3	0.383037	2.72509	-20.5028	UG1	5	26	7.35079	10.0521	10.3584	0	10.3584	7.60964	7.60964
4	0.383037	3.67171	-18.9291	UG1	5	26	8.33273	11.3949	13.1115	0	13.1115	10.2539	10.2539
5	0.383037	4.5376	-17.3702	UG1	5	26	9.20296	12.5849	15.5515	0	15.5515	12.6727	12.6727
6	0.383037	5.58942	-15.8243	UG1	5	26	10.2615	14.0325	18.5193	0	18.5193	15.6109	15.6109
7	0.383037	7.6054	-14.2902	UG1	5	26	12.355	16.8954	24.3892	0	24.3892	21.2422	21.2422
8	0.383037	9.65246	-12.7666	UG1	5	26	14.4389	19.7451	30.232	0	30.232	26.9604	26.9604
9	0.383037	11.6259	-11.252	UG1	5	26	16.4022	22.4298	35.7363	0	35.7363	32.4731	32.4731
10	0.383037	13.5269	-9.7454	UG1	5	26	18.2503	24.9571	40.918	0	40.918	37.7836	37.7836
11	0.383037	15.3565	-8.24556	UG1	5	26	19.9885	27.3341	45.7916	0	45.7916	42.895	42.895
12	0.383037	17.1157	-6.7514	UG1	5	26	21.6211	29.5667	50.3692	0	50.3692	47.8096	47.8096
13	0.383037	18.8052	-5.26184	UG1	5	26	23.1521	31.6603	54.6615	0	54.6615	52.5293	52.5293
14	0.383037	20.4255	-3.77583	UG1	5	26	24.5848	33.6195	58.6787	0	58.6787	57.0562	57.0562
15	0.383037	21.977	-2.29237	UG1	5	26	25.9222	35.4484	62.4285	0	62.4285	61.3909	61.3909
16	0.383037	23.4601	-0.810451	UG1	5	26	27.1671	37.1507	65.9186	0	65.9186	65.5343	65.5343
17	0.383037	24.8748	0.67093	UG1	5	26	28.3215	38.7294	69.1554	0	69.1554	69.4871	69.4871
18	0.383037	26.2212	2.15276	UG1	5	26	29.3876	40.1872	72.1444	0	72.1444	73.2491	73.2491
19	0.383037	27.4992	3.63603	UG1	5	26	30.3669	41.5264	74.8902	0	74.8902	76.8199	76.8199
20	0.383037	28.7085	5.12175	UG1	5	26	31.2609	42.749	77.3968	0	77.3968	80.1988	80.1988
21	0.383037	29.8486	6.61094	UG1	5	26	32.0709	43.8566	79.6678	0	79.6678	83.3848	83.3848
22	0.383037	30.919	8.10462	UG1	5	26	32.7976	44.8504	81.7056	0	81.7056	86.3761	86.3761
23	0.383037	31.9191	9.60388	UG1	5	26	33.4419	45.7315	83.512	0	83.512	89.1706	89.1706
24	0.383037	32.8479	11.1098	UG1	5	26	34.0043	46.5006	85.0887	0	85.0887	91.7662	91.7662
25	0.383037	33.7044	12.6236	UG1	5	26	34.4851	47.158	86.4366	0	86.4366	94.1599	94.1599
26	0.383037	34.4874	14.1463	UG1	5	26	34.8842	47.7038	87.5559	0	87.5559	96.3482	96.3482
27	0.383037	35.1954	15.6794	UG1	5	26	35.2018	48.1381	88.4461	0	88.4461	98.3272	98.3272
28	0.383037	35.8269	17.224	UG1	5	26	35.4373	48.4601	89.1065	0	89.1065	100.092	100.092
29	0.383037	36.3801	18.7817	UG1	5	26	35.5903	48.6694	89.5355	0	89.5355	101.639	101.639
30	0.383037	36.8527	20.354	UG1	5	26	35.66	48.7647	89.7309	0	89.7309	102.96	102.96
31	0.383037	37.2424	21.9424	UG1	5	26	35.6454	48.7447	89.6898	0	89.6898	104.05	104.05
32	0.383037	37.5464	23.5488	UG1	5	26	35.5452	48.6077	89.4089	0	89.4089	104.9	104.9
33	0.383037	37.7618	25.1751	UG1	5	26	35.3579	48.3516	88.8839	0	88.8839	105.503	105.503
34	0.383037	37.885	26.8234	UG1	5	26	35.0817	47.9739	88.1095	0	88.1095	105.849	105.849
35	0.383037	37.912	28.496	UG1	5	26	34.7144	47.4716	87.0797	0	87.0797	105.925	105.925
36	0.383037	37.7671	30.1957	UG1	5	26	34.1948	46.7611	85.623	0	85.623	105.521	105.521
37	0.383037	36.5628	31.9252	UG1	5	26	32.8027	44.8574	81.7199	0	81.7199	102.158	102.158
38	0.383037	34.9478	33.6879	UG1	5	26	31.0911	42.5167	76.9207	0	76.9207	97.6464	97.6464
39	0.383037	33.2139	35.4877	UG1	5	26	29.3041	40.073	71.9105	0	71.9105	92.8033	92.8033
40	0.383037	31.3534	37.3287	UG1	5	26	27.439	37.5226	66.6813	0	66.6813	87.606	87.606
41	0.383037	29.3568	39.2161	UG1	5	26	25.4929	34.8613	61.2248	0	61.2248	82.0282	82.0282
42	0.383037	27.2129	41.1557	UG1	5	26	23.4623	32.0845	55.5315	0	55.5315	76.0392	76.0392
43	0.383037	24.9086	43.1547	UG1	5	26	21.3434	29.1869	49.5905	0	49.5905	69.6015	69.6015
44	0.383037	22.4277	45.2214	UG1	5	26	19.132	26.1628	43.3902	0	43.3902	62.6707	62.6707
45	0.383037	19.7506	47.3665	UG1	5	26	16.8234	23.0058	36.9174	0	36.9174	55.1912	55.1912
46	0.383037	16.8524	49.6028	UG1	5	26	14.4125	19.7089	30.1578	0	30.1578	47.0941	47.0941
47	0.383037	13.7017	51.9473	UG1	5	26	11.8938	16.2647	23.0961	0	23.0961	38.2907	38.2907
48	0.383037	10.2568	54.422	UG1	5	26	9.26216	12.6659	15.7174	0	15.7174	28.6651	28.6651
49	0.383037	6.46101	57.057	UG1	5	26	6.51263	8.90595	8.00839	0	8.00839	18.0588	18.0588
50	0.383037	2.23359	59.8958	UG1	5	26	3.64296	4.98171	-0.0375042	0	-0.0375042	6.24586	6.24586

Global Minimum Query (janbu simplified) - Safety Factor: 1.19768

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	0.32349	0.603317	-32.6433	UG1	5	26	6.74411	8.07729	6.30939	0	6.30939	1.98917	1.98917
2	0.32349	1.76338	-30.5892	UG1	5	26	8.62266	10.3272	10.9224	0	10.9224	5.82512	5.82512
3	0.32349	2.83315	-28.5778	UG1	5	26	10.2645	12.2936	14.9541	0	14.9541	9.36282	9.36282
4	0.32349	3.81788	-26.6043	UG1	5	26	11.7003	14.0132	18.4798	0	18.4798	12.6196	12.6196
5	0.32349	4.7877	-24.6643	UG1	5	26	13.0628	15.6451	21.8256	0	21.8256	15.8272	15.8272
6	0.32349	6.41645	-22.754	UG1	5	26	15.4531	18.5079	27.6952	0	27.6952	21.2139	21.2139
7	0.32349	8.17731	-20.8702	UG1	5	26	17.9764	21.53	33.8915	0	33.8915	27.0377	27.0377
8	0.32349	9.86763	-19.0096	UG1	5	26	20.3118	24.327	39.6262	0	39.6262	32.6285	32.6285
9	0.32349	11.4899	-17.1697	UG1	5	26	22.4751	26.918	44.9387	0	44.9387	37.9945	37.9945
10	0.32349	13.0461	-15.3479	UG1	5	26	24.4798	29.319	49.8614	0	49.8614	43.1425	43.1425
11	0.32349	14.5382	-13.5419	UG1	5	26	26.3369	31.5432	54.4216	0	54.4216	48.0783	48.0783
12	0.32349	15.9677	-11.7495	UG1	5	26	28.0559	33.602	58.6426	0	58.6426	52.8072	52.8072
13	0.32349	17.3359	-9.96872	UG1	5	26	29.6447	35.5049	62.5442	0	62.5442	57.3338	57.3338
14	0.32349	18.6439	-8.19761	UG1	5	26	31.1102	37.2601	66.143	0	66.143	61.6613	61.6613
15	0.32349	19.8926	-6.43436	UG1	5	26	32.4582	38.8745	69.453	0	69.453	65.7925	65.7925
16	0.32349	21.0826	-4.67722	UG1	5	26	33.6936	40.3542	72.4867	0	72.4867	69.7301	69.7301
17	0.32349	22.2145	-2.92448	UG1	5	26	34.8207	41.7041	75.2547	0	75.2547	73.4758	73.4758
18	0.32349	23.2887	-1.17448	UG1	5	26	35.8431	42.9286	77.7653	0	77.7653	77.0305	77.0305
19	0.32349	24.3053	0.57443	UG1	5	26	36.7638	44.0313	80.0262	0	80.0262	80.3948	80.3948
20	0.32349	25.2644	2.32387	UG1	5	26	37.5854	45.0153	82.0434	0	82.0434	83.5687	83.5687
21	0.32349	26.1659	4.07549	UG1	5	26	38.3099	45.883	83.8225	0	83.8225	86.5521	86.5521
22	0.32349	27.0094	5.83093	UG1	5	26	38.939	46.6365	85.3676	0	85.3676	89.3441	89.3441
23	0.32349	27.7944	7.59189	UG1	5	26	39.4741	47.2773	86.6815	0	86.6815	91.9428	91.9428
24	0.32349	28.5204	9.3601	UG1	5	26	39.916	47.8066	87.7664	0	87.7664	94.3459	94.3459
25	0.32349	29.1865	11.1374	UG1	5	26	40.2653	48.2249	88.6243	0	88.6243	96.5513	96.5513
26	0.32349	29.7917	12.9256	UG1	5	26	40.5223	48.5327	89.2552	0	89.2552	98.555	98.555
27	0.32349	30.3348	14.7267	UG1	5	26	40.6867	48.7297	89.6594	0	89.6594	100.354	100.354
28	0.32349	30.8143	16.5428	UG1	5	26	40.7585	48.8156	89.8353	0	89.8353	101.942	101.942
29	0.32349	31.2284	18.3762	UG1	5	26	40.7364	48.7892	89.7811	0	89.7811	103.314	103.314
30	0.32349	31.5753	20.2294	UG1	5	26	40.6195	48.6492	89.4942	0	89.4942	104.463	104.463
31	0.32349	31.8524	22.1049	UG1	5	26	40.4063	48.3938	88.9704	0	88.9704	105.382	105.382
32	0.32349	32.0572	24.0058	UG1	5	26	40.0947	48.0206	88.2051	0	88.2051	106.061	106.061
33	0.32349	32.1865	25.9352	UG1	5	26	39.6822	47.5266	87.1926	0	87.1926	106.491	106.491
34	0.32349	32.2367	27.8967	UG1	5	26	39.166	46.9083	85.9247	0	85.9247	106.659	106.659
35	0.32349	32.2034	29.8946	UG1	5	26	38.5423	46.1613	84.3933	0	84.3933	106.551	106.551
36	0.32349	32.0817	31.9334	UG1	5	26	37.8069	45.2806	82.5875	0	82.5875	106.151	106.151
37	0.32349	31.8658	34.0186	UG1	5	26	36.9548	44.26	80.495	0	80.495	105.439	105.439
38	0.32349	31.5487	36.1564	UG1	5	26	35.9797	43.0922	78.1005	0	78.1005	104.392	104.392
39	0.32349	31.122	38.3543	UG1	5	26	34.8744	41.7684	75.3864	0	75.3864	102.982	102.982
40	0.32349	30.5756	40.6212	UG1	5	26	33.6302	40.2782	72.3308	0	72.3308	101.177	101.177
41	0.32349	29.7783	42.9681	UG1	5	26	32.1198	38.4693	68.6224	0	68.6224	98.5412	98.5412
42	0.32349	28.1253	45.4085	UG1	5	26	29.7771	35.6634	62.8693	0	62.8693	93.074	93.074
43	0.32349	26.1881	47.9597	UG1	5	26	27.1886	32.5633	56.5132	0	56.5132	86.6666	86.6666
44	0.32349	24.0579	50.6443	UG1	5	26	24.4551	29.2894	49.8007	0	49.8007	79.6197	79.6197
45	0.32349	21.6997	53.4929	UG1	5	26	21.5595	25.8214	42.6902	0	42.6902	71.8187	71.8187
46	0.32349	19.0643	56.549	UG1	5	26	18.48	22.1331	35.128	0	35.128	63.1002	63.1002
47	0.32349	16.0782	59.8778	UG1	5	26	15.1877	18.19	27.0434	0	27.0434	53.2202	53.2202
48	0.32349	12.6215	63.586	UG1	5	26	11.6437	13.9454	18.3408	0	18.3408	41.7825	41.7825
49	0.32349	8.4717	67.8737	UG1	5	26	7.79268	9.33314	8.88426	0	8.88426	28.05	28.05
50	0.32349	3.09334	73.2266	UG1	5	26	3.55094	4.25289	-1.5318	0	-1.5318	10.2492	10.2492

Group 1 - Sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.50106

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	0.349483	0.588882	-28.1787	UG1	4	21.3151	3.60398	5.40979	3.61311	0	3.61311	1.6824	1.6824
2	0.349483	1.72219	-26.3479	UG1	4	21.3151	4.52786	6.79659	7.16731	0	7.16731	4.92479	4.92479
3	0.349483	2.76863	-24.5457	UG1	4	21.3151	5.35942	8.04481	10.3664	0	10.3664	7.91878	7.91878
4	0.349483	3.73202	-22.7691	UG1	4	21.3151	6.10589	9.1653	13.238	0	13.238	10.6752	10.6752
5	0.349483	4.63539	-21.0153	UG1	4	21.3151	6.78963	10.1916	15.8684	0	15.8684	13.2601	13.2601
6	0.349483	6.2252	-19.2819	UG1	4	21.3151	8.02367	12.044	20.6158	0	20.6158	17.8088	17.8088
7	0.349483	8.13281	-17.5667	UG1	4	21.3151	9.49409	14.2512	26.2726	0	26.2726	23.2669	23.2669
8	0.349483	9.96831	-15.8676	UG1	4	21.3151	10.882	16.3346	31.612	0	31.612	28.5189	28.5189
9	0.349483	11.7336	-14.1827	UG1	4	21.3151	12.1919	18.3008	36.6513	0	36.6513	33.5702	33.5702
10	0.349483	13.4304	-12.5103	UG1	4	21.3151	13.4275	20.1555	41.4046	0	41.4046	38.4252	38.4252
11	0.349483	15.06	-10.8487	UG1	4	21.3151	14.5922	21.9037	45.8849	0	45.8849	43.0885	43.0885
12	0.349483	16.6237	-9.1962	UG1	4	21.3151	15.6886	23.5495	50.1029	0	50.1029	47.563	47.563
13	0.349483	18.1224	-7.55144	UG1	4	21.3151	16.7193	25.0967	54.0685	0	54.0685	51.852	51.852
14	0.349483	19.557	-5.91291	UG1	4	21.3151	17.6866	26.5486	57.7893	0	57.7893	55.9576	55.9576
15	0.349483	20.9282	-4.27922	UG1	4	21.3151	18.592	27.9077	61.2727	0	61.2727	59.8815	59.8815
16	0.349483	22.2363	-2.64902	UG1	4	21.3151	19.4373	29.1766	64.5244	0	64.5244	63.6251	63.6251
17	0.349483	23.4818	-1.02097	UG1	4	21.3151	20.2238	30.3572	67.5503	0	67.5503	67.1899	67.1899
18	0.349483	24.6649	0.606267	UG1	4	21.3151	20.9526	31.4511	70.3541	0	70.3541	70.5758	70.5758
19	0.349483	25.7854	2.23399	UG1	4	21.3151	21.6246	32.4598	72.9393	0	72.9393	73.7829	73.7829
20	0.349483	26.8433	3.86352	UG1	4	21.3151	22.2406	33.3844	75.3089	0	75.3089	76.8109	76.8109
21	0.349483	27.8384	5.49619	UG1	4	21.3151	22.801	34.2257	77.465	0	77.465	79.6589	79.6589
22	0.349483	28.7701	7.13335	UG1	4	21.3151	23.3064	34.9843	79.4091	0	79.4091	82.3259	82.3259
23	0.349483	29.6379	8.77639	UG1	4	21.3151	23.7569	35.6605	81.1423	0	81.1423	84.8101	84.8101
24	0.349483	30.4409	10.4267	UG1	4	21.3151	24.1526	36.2545	82.6643	0	82.6643	87.1088	87.1088
25	0.349483	31.1783	12.0859	UG1	4	21.3151	24.4934	36.766	83.9754	0	83.9754	89.22	89.22
26	0.349483	31.8489	13.7554	UG1	4	21.3151	24.779	37.1947	85.074	0	85.074	91.1399	91.1399
27	0.349483	32.4513	15.437	UG1	4	21.3151	25.0089	37.5399	85.9587	0	85.9587	92.8647	92.8647
28	0.349483	32.984	17.1322	UG1	4	21.3151	25.1827	37.8007	86.6273	0	86.6273	94.3901	94.3901
29	0.349483	33.4451	18.8432	UG1	4	21.3151	25.2995	37.976	87.0764	0	87.0764	95.7103	95.7103
30	0.349483	33.8324	20.5717	UG1	4	21.3151	25.3583	38.0643	87.3028	0	87.3028	96.82	96.82
31	0.349483	34.1436	22.3201	UG1	4	21.3151	25.3579	38.0637	87.3011	0	87.3011	97.7115	97.7115
32	0.349483	34.3759	24.0906	UG1	4	21.3151	25.2969	37.9722	87.0666	0	87.0666	98.3775	98.3775
33	0.349483	34.526	25.8861	UG1	4	21.3151	25.1736	37.7871	86.5921	0	86.5921	98.8082	98.8082
34	0.349483	34.5903	27.7092	UG1	4	21.3151	24.9859	37.5054	85.8703	0	85.8703	98.9933	98.9933
35	0.349483	34.5645	29.5635	UG1	4	21.3151	24.7317	37.1237	84.8922	0	84.8922	98.9208	98.9208
36	0.349483	34.4436	31.4524	UG1	4	21.3151	24.408	36.6378	83.6469	0	83.6469	98.5762	98.5762
37	0.349483	34.2221	33.3803	UG1	4	21.3151	24.0117	36.043	82.1225	0	82.1225	97.9434	97.9434
38	0.349483	33.893	35.3521	UG1	4	21.3151	23.5391	35.3336	80.3043	0	80.3043	97.0031	97.0031
39	0.349483	32.9074	37.3732	UG1	4	21.3151	22.6499	33.9988	76.8833	0	76.8833	94.1837	94.1837
40	0.349483	31.2364	39.4505	UG1	4	21.3151	21.3396	32.032	71.8426	0	71.8426	89.4027	89.4027
41	0.349483	29.4293	41.5919	UG1	4	21.3151	19.9559	29.955	66.5195	0	66.5195	84.2321	84.2321
42	0.349483	27.4724	43.807	UG1	4	21.3151	18.4935	27.7599	60.8936	0	60.8936	78.6326	78.6326
43	0.349483	25.3486	46.1078	UG1	4	21.3151	16.9462	25.4372	54.941	0	54.941	72.5554	72.5554
44	0.349483	23.0363	48.5092	UG1	4	21.3151	15.3063	22.9757	48.6323	0	48.6323	65.9386	65.9386
45	0.349483	20.5076	51.0309	UG1	4	21.3151	13.5648	20.3616	41.9328	0	41.9328	58.7024	58.7024
46	0.349483	17.7254	53.6988	UG1	4	21.3151	11.7105	17.5782	34.7992	0	34.7992	50.7405	50.7405
47	0.349483	14.6383	56.549	UG1	4	21.3151	9.72959	14.6047	27.1785	0	27.1785	41.9057	41.9057
48	0.349483	11.1714	59.6344	UG1	4	21.3151	7.60457	11.4149	19.0036	0	19.0036	31.9831	31.9831
49	0.349483	7.20739	63.0384	UG1	4	21.3151	5.3138	7.97634	10.1909	0	10.1909	20.6371	20.6371
50	0.349483	2.5415	66.9075	UG1	4	21.3151	2.83134	4.25001	0.640747	0	0.640747	7.28114	7.28114

Global Minimum Query (janbu simplified) - Safety Factor: 1.3057

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	0.3229	0.599935	-32.592	UG1	4	21.3151	4.47482	5.84277	4.7228	0	4.7228	1.86191	1.86191
2	0.3229	1.7535	-30.54	UG1	4	21.3151	5.69105	7.43081	8.79275	0	8.79275	5.43511	5.43511
3	0.3229	2.81728	-28.5306	UG1	4	21.3151	6.77258	8.84296	12.4119	0	12.4119	8.73003	8.73003
4	0.3229	3.7965	-26.5588	UG1	4	21.3151	7.73387	10.0981	15.6287	0	15.6287	11.7628	11.7628
5	0.3229	4.72783	-24.6205	UG1	4	21.3151	8.6212	11.2567	18.5981	0	18.5981	14.6472	14.6472
6	0.3229	6.27426	-22.7118	UG1	4	21.3151	10.1401	13.24	23.681	0	23.681	19.4368	19.4368
7	0.3229	8.02713	-20.8294	UG1	4	21.3151	11.8403	15.4599	29.3705	0	29.3705	24.8658	24.8658
8	0.3229	9.7098	-18.9702	UG1	4	21.3151	13.4312	17.5371	34.6937	0	34.6937	30.0768	30.0768
9	0.3229	11.3247	-17.1316	UG1	4	21.3151	14.9203	19.4815	39.6774	0	39.6774	35.0783	35.0783
10	0.3229	12.874	-15.311	UG1	4	21.3151	16.3145	21.3018	44.3425	0	44.3425	39.8759	39.8759
11	0.3229	14.3594	-13.5062	UG1	4	21.3151	17.619	23.0051	48.7078	0	48.7078	44.4759	44.4759
12	0.3229	15.7824	-11.7149	UG1	4	21.3151	18.8386	24.5975	52.789	0	52.789	48.8826	48.8826
13	0.3229	17.1445	-9.93517	UG1	4	21.3151	19.9773	26.0843	56.5994	0	56.5994	53.1001	53.1001
14	0.3229	18.4466	-8.16508	UG1	4	21.3151	21.0384	27.4699	60.1507	0	60.1507	57.1321	57.1321
15	0.3229	19.6896	-6.40281	UG1	4	21.3151	22.0252	28.7583	63.4524	0	63.4524	60.9808	60.9808
16	0.3229	20.8743	-4.6466	UG1	4	21.3151	22.9399	29.9526	66.5133	0	66.5133	64.6488	64.6488
17	0.3229	22.0011	-2.89477	UG1	4	21.3151	23.7846	31.0556	69.3402	0	69.3402	68.1375	68.1375
18	0.3229	23.0704	-1.14564	UG1	4	21.3151	24.5613	32.0697	71.9394	0	71.9394	71.4482	71.4482
19	0.3229	24.0824	0.602414	UG1	4	21.3151	25.2714	32.9969	74.3154	0	74.3154	74.5811	74.5811
20	0.3229	25.0371	2.35103	UG1	4	21.3151	25.9161	33.8386	76.4728	0	76.4728	77.5368	77.5368
21	0.3229	25.9344	4.10185	UG1	4	21.3151	26.4963	34.5962	78.4142	0	78.4142	80.3143	80.3143
22	0.3229	26.774	5.85651	UG1	4	21.3151	27.0127	35.2705	80.1424	0	80.1424	82.9132	82.9132
23	0.3229	27.5553	7.61671	UG1	4	21.3151	27.4659	35.8622	81.6589	0	81.6589	85.3318	85.3318
24	0.3229	28.2779	9.38418	UG1	4	21.3151	27.856	36.3716	82.9647	0	82.9647	87.5683	87.5683
25	0.3229	28.9407	11.1607	UG1	4	21.3151	28.1832	36.7988	84.0593	0	84.0593	89.6197	89.6197
26	0.3229	29.5429	12.9482	UG1	4	21.3151	28.4472	37.1435	84.9429	0	84.9429	91.4834	91.4834
27	0.3229	30.0833	14.7486	UG1	4	21.3151	28.6477	37.4053	85.6138	0	85.6138	93.1554	93.1554
28	0.3229	30.5602	16.5641	UG1	4	21.3151	28.7839	37.5832	86.0697	0	86.0697	94.6309	94.6309
29	0.3229	30.9721	18.3968	UG1	4	21.3151	28.8552	37.6762	86.3081	0	86.3081	95.9051	95.9051
30	0.3229	31.3169	20.2493	UG1	4	21.3151	28.8602	37.6828	86.3249	0	86.3249	96.9716	96.9716
31	0.3229	31.5924	22.1242	UG1	4	21.3151	28.7977	37.6011	86.1156	0	86.1156	97.8232	97.8232
32	0.3229	31.7957	24.0244	UG1	4	21.3151	28.6657	37.4288	85.6739	0	85.6739	98.4513	98.4513
33	0.3229	31.9238	25.9531	UG1	4	21.3151	28.4623	37.1632	84.9933	0	84.9933	98.8465	98.8465
34	0.3229	31.973	27.9141	UG1	4	21.3151	28.185	36.8012	84.0655	0	84.0655	98.9976	98.9976
35	0.3229	31.9391	29.9113	UG1	4	21.3151	27.8309	36.3388	82.8802	0	82.8802	98.891	98.891
36	0.3229	31.8172	31.9495	UG1	4	21.3151	27.3963	35.7714	81.4264	0	81.4264	98.5119	98.5119
37	0.3229	31.6013	34.034	UG1	4	21.3151	26.8774	35.0938	79.6896	0	79.6896	97.8419	97.8419
38	0.3229	31.2846	36.1712	UG1	4	21.3151	26.2691	34.2995	77.6539	0	77.6539	96.8596	96.8596
39	0.3229	30.8587	38.3684	UG1	4	21.3151	25.5654	33.3807	75.2994	0	75.2994	95.5393	95.5393
40	0.3229	30.3136	40.6347	UG1	4	21.3151	24.7594	32.3284	72.6023	0	72.6023	93.8497	93.8497
41	0.3229	29.586	42.981	UG1	4	21.3151	23.8057	31.0831	69.4108	0	69.4108	91.5952	91.5952
42	0.3229	28.0334	45.4207	UG1	4	21.3151	22.2505	29.0525	64.2066	0	64.2066	86.7862	86.7862
43	0.3229	26.1024	47.9712	UG1	4	21.3151	20.4356	26.6827	58.133	0	58.133	80.806	80.806
44	0.3229	23.9791	50.6551	UG1	4	21.3151	18.5017	24.1577	51.6617	0	51.6617	74.2303	74.2303
45	0.3229	21.6286	53.503	UG1	4	21.3151	16.4334	21.4571	44.7405	0	44.7405	66.9515	66.9515
46	0.3229	19.0019	56.5584	UG1	4	21.3151	14.2102	18.5542	37.3008	0	37.3008	58.8176	58.8176
47	0.3229	16.0255	59.8864	UG1	4	21.3151	11.8042	15.4128	29.2496	0	29.2496	49.6018	49.6018
48	0.3229	12.5802	63.5938	UG1	4	21.3151	9.17597	11.9811	20.4545	0	20.4545	38.9343	38.9343
49	0.3229	8.44407	67.8807	UG1	4	21.3151	6.26536	8.18068	10.7146	0	10.7146	26.1294	26.1294
50	0.3229	3.08329	73.2328	UG1	4	21.3151	2.96857	3.87606	-0.317647	0	-0.317647	9.53509	9.53509

Interslice Data

Group 1 - Master Scenario

Global Minimum Query (bishop simplified) - Safety Factor: 1.55957

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	100.501	43.1075	0	0	0
2	100.821	42.9524	1.93585	0	0
3	101.141	42.8092	5.22726	0	0
4	101.461	42.6775	9.65678	0	0
5	101.781	42.5568	15.0313	0	0
6	102.101	42.4467	21.1782	0	0
7	102.421	42.347	27.9423	0	0
8	102.741	42.2574	35.1834	0	0
9	103.06	42.1775	42.7739	0	0
10	103.38	42.1073	50.5978	0	0
11	103.7	42.0465	58.5485	0	0
12	104.02	41.995	66.528	0	0
13	104.34	41.9527	74.446	0	0
14	104.66	41.9194	82.2189	0	0
15	104.98	41.8951	89.7691	0	0
16	105.3	41.8797	97.0242	0	0
17	105.62	41.8732	103.917	0	0
18	105.94	41.8756	110.384	0	0
19	106.26	41.8868	116.367	0	0
20	106.58	41.9069	121.81	0	0
21	106.9	41.936	126.661	0	0
22	107.22	41.9742	130.872	0	0
23	107.539	42.0214	134.396	0	0
24	107.859	42.0778	137.191	0	0
25	108.179	42.1436	139.215	0	0
26	108.499	42.2189	140.431	0	0
27	108.819	42.304	140.803	0	0
28	109.139	42.399	140.298	0	0
29	109.459	42.5042	138.884	0	0
30	109.779	42.6199	136.533	0	0
31	110.099	42.7464	133.219	0	0
32	110.419	42.8842	128.917	0	0
33	110.739	43.0337	123.607	0	0
34	111.059	43.1953	117.269	0	0
35	111.379	43.3698	109.89	0	0
36	111.698	43.5577	101.455	0	0
37	112.018	43.7598	91.9787	0	0
38	112.338	43.9771	81.7102	0	0
39	112.658	44.2107	70.7834	0	0
40	112.978	44.4617	59.2842	0	0
41	113.298	44.7318	47.3138	0	0
42	113.618	45.0228	34.9926	0	0
43	113.938	45.3369	22.466	0	0
44	114.258	45.6769	9.91156	0	0
45	114.578	46.0464	-2.44924	0	0
46	114.898	46.4502	-14.3342	0	0
47	115.218	46.8945	-25.3737	0	0
48	115.538	47.3884	-35.0656	0	0
49	115.857	47.9452	-42.694	0	0
50	116.177	48.5868	-47.1665	0	0
51	116.497	49.353	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.37066

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	100.501	43.1075	0	0	0
2	100.821	42.9524	2.17738	0	0
3	101.141	42.8092	5.79852	0	0
4	101.461	42.6775	10.6346	0	0
5	101.781	42.5568	16.4831	0	0
6	102.101	42.4467	23.1634	0	0
7	102.421	42.347	30.5139	0	0
8	102.741	42.2574	38.3887	0	0
9	103.06	42.1775	46.6556	0	0
10	103.38	42.1073	55.1944	0	0
11	103.7	42.0465	63.895	0	0
12	104.02	41.995	72.6565	0	0
13	104.34	41.9527	81.3861	0	0
14	104.66	41.9194	89.998	0	0
15	104.98	41.8951	98.4124	0	0
16	105.3	41.8797	106.556	0	0
17	105.62	41.8732	114.359	0	0
18	105.94	41.8756	121.758	0	0
19	106.26	41.8868	128.692	0	0
20	106.58	41.9069	135.106	0	0
21	106.9	41.936	140.946	0	0
22	107.22	41.9742	146.164	0	0
23	107.539	42.0214	150.713	0	0
24	107.859	42.0778	154.548	0	0
25	108.179	42.1436	157.63	0	0
26	108.499	42.2189	159.92	0	0
27	108.819	42.304	161.383	0	0
28	109.139	42.399	161.983	0	0
29	109.459	42.5042	161.692	0	0
30	109.779	42.6199	160.48	0	0
31	110.099	42.7464	158.321	0	0
32	110.419	42.8842	155.191	0	0
33	110.739	43.0337	151.069	0	0
34	111.059	43.1953	145.937	0	0
35	111.379	43.3698	139.781	0	0
36	111.698	43.5577	132.589	0	0
37	112.018	43.7598	124.371	0	0
38	112.338	43.9771	115.354	0	0
39	112.658	44.2107	105.663	0	0
40	112.978	44.4617	95.3843	0	0
41	113.298	44.7318	84.6162	0	0
42	113.618	45.0228	73.4774	0	0
43	113.938	45.3369	62.1102	0	0
44	114.258	45.6769	50.6884	0	0
45	114.578	46.0464	39.4278	0	0
46	114.898	46.4502	28.603	0	0
47	115.218	46.8945	18.5725	0	0
48	115.538	47.3884	9.82163	0	0
49	115.857	47.9452	3.03962	0	0
50	116.177	48.5868	-0.726563	0	0
51	116.497	49.353	0	0	0

Group 1 - statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.50059

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.3576	43	0	0	0
2	98.7116	42.8073	1.99765	0	0
3	99.0655	42.6291	4.93251	0	0
4	99.4194	42.4647	8.61152	0	0
5	99.7733	42.3136	12.8696	0	0
6	100.127	42.1752	17.5646	0	0
7	100.481	42.0491	22.6812	0	0
8	100.835	41.9349	28.6739	0	0
9	101.189	41.8322	35.449	0	0
10	101.543	41.7408	42.8341	0	0
11	101.897	41.6603	50.6724	0	0
12	102.251	41.5907	58.8214	0	0
13	102.605	41.5316	67.1504	0	0
14	102.959	41.483	75.5395	0	0
15	103.312	41.4447	83.8784	0	0
16	103.666	41.4167	92.065	0	0
17	104.02	41.3988	100.005	0	0
18	104.374	41.391	107.609	0	0
19	104.728	41.3933	114.798	0	0
20	105.082	41.4057	121.493	0	0
21	105.436	41.4282	127.625	0	0
22	105.79	41.4609	133.126	0	0
23	106.144	41.5039	137.935	0	0
24	106.498	41.5572	141.993	0	0
25	106.852	41.6211	145.246	0	0
26	107.206	41.6956	147.643	0	0
27	107.56	41.781	149.136	0	0
28	107.913	41.8775	149.683	0	0
29	108.267	41.9854	149.241	0	0
30	108.621	42.105	147.775	0	0
31	108.975	42.2367	145.248	0	0
32	109.329	42.3808	141.632	0	0
33	109.683	42.5379	136.899	0	0
34	110.037	42.7085	131.025	0	0
35	110.391	42.8932	123.992	0	0
36	110.745	43.0928	115.785	0	0
37	111.099	43.3081	106.395	0	0
38	111.453	43.5401	95.8178	0	0
39	111.807	43.7899	84.0583	0	0
40	112.16	44.059	71.2563	0	0
41	112.514	44.349	57.8236	0	0
42	112.868	44.6619	43.918	0	0
43	113.222	45.0001	29.7099	0	0
44	113.576	45.3666	15.4075	0	0
45	113.93	45.7653	1.26997	0	0
46	114.284	46.2014	-12.373	0	0
47	114.638	46.6815	-25.0907	0	0
48	114.992	47.2155	-36.2994	0	0
49	115.346	47.8176	-45.1704	0	0
50	115.7	48.511	-50.4464	0	0
51	116.054	49.3382	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.3062

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.6574	43	0	0	0
2	98.9822	42.7907	2.46182	0	0
3	99.3071	42.5975	6.04661	0	0
4	99.6319	42.4195	10.5074	0	0
5	99.9567	42.2558	15.6398	0	0
6	100.282	42.1058	21.2728	0	0
7	100.606	41.9687	27.6352	0	0
8	100.931	41.844	34.9894	0	0
9	101.256	41.7313	43.1315	0	0
10	101.581	41.6303	51.8793	0	0
11	101.906	41.5404	61.0708	0	0
12	102.231	41.4615	70.5604	0	0
13	102.555	41.3934	80.2168	0	0
14	102.88	41.3357	89.9209	0	0
15	103.205	41.2883	99.5642	0	0
16	103.53	41.2511	109.047	0	0
17	103.855	41.224	118.279	0	0
18	104.18	41.2069	127.176	0	0
19	104.504	41.1998	135.659	0	0
20	104.829	41.2025	143.657	0	0
21	105.154	41.2153	151.102	0	0
22	105.479	41.2379	157.933	0	0
23	105.804	41.2707	164.09	0	0
24	106.129	41.3135	169.519	0	0
25	106.453	41.3667	174.169	0	0
26	106.778	41.4302	177.993	0	0
27	107.103	41.5043	180.946	0	0
28	107.428	41.5893	182.987	0	0
29	107.753	41.6854	184.076	0	0
30	108.078	41.7929	184.179	0	0
31	108.402	41.9122	183.261	0	0
32	108.727	42.0438	181.292	0	0
33	109.052	42.1881	178.247	0	0
34	109.377	42.3457	174.099	0	0
35	109.702	42.5173	168.83	0	0
36	110.027	42.7036	162.421	0	0
37	110.352	42.9057	154.86	0	0
38	110.676	43.1246	146.14	0	0
39	111.001	43.3616	136.259	0	0
40	111.326	43.6182	125.224	0	0
41	111.651	43.8964	113.049	0	0
42	111.976	44.1986	99.7757	0	0
43	112.301	44.5277	85.8043	0	0
44	112.625	44.8875	71.4515	0	0
45	112.95	45.2831	56.9463	0	0
46	113.275	45.7215	42.5927	0	0
47	113.6	46.2127	28.8102	0	0
48	113.925	46.772	16.2105	0	0
49	114.25	47.4253	5.75939	0	0
50	114.574	48.2233	-0.81239	0	0
51	114.899	49.2998	0	0	0

Group 1 - sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.09392

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	97.9904	43	0	0	0
2	98.378	42.8272	2.55122	0	0
3	98.7657	42.6674	5.94969	0	0
4	99.1533	42.52	10.0143	0	0
5	99.5409	42.3848	14.5885	0	0
6	99.9286	42.2614	19.5364	0	0
7	100.316	42.1495	24.7409	0	0
8	100.704	42.0488	30.5581	0	0
9	101.092	41.9591	37.1972	0	0
10	101.479	41.8801	44.4689	0	0
11	101.867	41.8118	52.2006	0	0
12	102.254	41.7539	60.2346	0	0
13	102.642	41.7063	68.4262	0	0
14	103.03	41.669	76.6428	0	0
15	103.417	41.6419	84.762	0	0
16	103.805	41.6248	92.6713	0	0
17	104.193	41.6179	100.266	0	0
18	104.58	41.621	107.451	0	0
19	104.968	41.6341	114.136	0	0
20	105.356	41.6574	120.24	0	0
21	105.743	41.6908	125.685	0	0
22	106.131	41.7344	130.402	0	0
23	106.519	41.7883	134.326	0	0
24	106.906	41.8526	137.395	0	0
25	107.294	41.9274	139.557	0	0
26	107.681	42.013	140.759	0	0
27	108.069	42.1094	140.956	0	0
28	108.457	42.217	140.108	0	0
29	108.844	42.336	138.176	0	0
30	109.232	42.4666	135.13	0	0
31	109.62	42.6092	130.94	0	0
32	110.007	42.7642	125.585	0	0
33	110.395	42.932	119.045	0	0
34	110.783	43.113	111.309	0	0
35	111.17	43.3078	102.368	0	0
36	111.558	43.517	92.2222	0	0
37	111.946	43.7414	80.8796	0	0
38	112.333	43.9817	68.6577	0	0
39	112.721	44.2389	55.8501	0	0
40	113.108	44.514	42.5876	0	0
41	113.496	44.8084	29.0191	0	0
42	113.884	45.1234	15.3152	0	0
43	114.271	45.461	1.67337	0	0
44	114.659	45.823	-11.6761	0	0
45	115.047	46.2123	-24.4614	0	0
46	115.434	46.6319	-36.3571	0	0
47	115.822	47.0858	-46.9678	0	0
48	116.21	47.5794	-55.8035	0	0
49	116.597	48.1195	-62.2417	0	0
50	116.985	48.7157	-65.4679	0	0
51	117.373	49.3821	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 0.964808

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	99.1979	43	0	0	0
2	99.5411	42.8208	2.91358	0	0
3	99.8843	42.6552	6.77517	0	0
4	100.227	42.5025	11.3714	0	0
5	100.571	42.3623	16.8404	0	0
6	100.914	42.2341	23.6217	0	0
7	101.257	42.1175	31.4796	0	0
8	101.6	42.0121	40.1865	0	0
9	101.943	41.9177	49.54	0	0
10	102.286	41.834	59.3596	0	0
11	102.63	41.7607	69.4835	0	0
12	102.973	41.6977	79.7657	0	0
13	103.316	41.6447	90.0741	0	0
14	103.659	41.6018	100.289	0	0
15	104.002	41.5687	110.3	0	0
16	104.346	41.5454	120.009	0	0
17	104.689	41.5319	129.323	0	0
18	105.032	41.528	138.158	0	0
19	105.375	41.5338	146.437	0	0
20	105.718	41.5493	154.089	0	0
21	106.061	41.5746	161.048	0	0
22	106.405	41.6096	167.253	0	0
23	106.748	41.6546	172.649	0	0
24	107.091	41.7095	177.185	0	0
25	107.434	41.7746	180.814	0	0
26	107.777	41.85	183.491	0	0
27	108.12	41.9358	185.179	0	0
28	108.464	42.0324	185.841	0	0
29	108.807	42.1401	185.446	0	0
30	109.15	42.259	183.965	0	0
31	109.493	42.3896	181.374	0	0
32	109.836	42.5322	177.653	0	0
33	110.18	42.6874	172.784	0	0
34	110.523	42.8557	166.757	0	0
35	110.866	43.0378	159.562	0	0
36	111.209	43.2342	151.198	0	0
37	111.552	43.4459	141.668	0	0
38	111.895	43.6738	130.983	0	0
39	112.239	43.9191	119.367	0	0
40	112.582	44.183	107.126	0	0
41	112.925	44.4673	94.3906	0	0
42	113.268	44.7739	81.3114	0	0
43	113.611	45.105	68.0673	0	0
44	113.954	45.4638	54.8729	0	0
45	114.298	45.854	41.9903	0	0
46	114.641	46.2805	29.747	0	0
47	114.984	46.7501	18.5631	0	0
48	115.327	47.2722	8.99646	0	0
49	115.67	47.8609	1.82256	0	0
50	116.014	48.539	-1.80827	0	0
51	116.357	49.3483	0	0	0

Group 1 - Statico

Global Minimum Query (bishop simplified) - Safety Factor: 1.36749

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.2363	43	0	0	0
2	98.6193	42.8319	2.48168	0	0
3	99.0023	42.6764	5.7659	0	0
4	99.3854	42.5331	9.6808	0	0
5	99.7684	42.4018	14.0776	0	0
6	100.151	42.282	18.8271	0	0
7	100.534	42.1734	23.9817	0	0
8	100.918	42.0758	30.0241	0	0
9	101.301	41.989	36.8215	0	0
10	101.684	41.9128	44.1934	0	0
11	102.067	41.847	51.9749	0	0
12	102.45	41.7915	60.0153	0	0
13	102.833	41.7462	68.1763	0	0
14	103.216	41.7109	76.3308	0	0
15	103.599	41.6856	84.3619	0	0
16	103.982	41.6703	92.1614	0	0
17	104.365	41.6649	99.6295	0	0
18	104.748	41.6694	106.674	0	0
19	105.131	41.6838	113.209	0	0
20	105.514	41.7081	119.156	0	0
21	105.897	41.7424	124.442	0	0
22	106.28	41.7868	128.998	0	0
23	106.663	41.8414	132.763	0	0
24	107.046	41.9062	135.678	0	0
25	107.429	41.9814	137.69	0	0
26	107.812	42.0672	138.753	0	0
27	108.195	42.1637	138.82	0	0
28	108.578	42.2713	137.853	0	0
29	108.961	42.39	135.816	0	0
30	109.344	42.5203	132.678	0	0
31	109.727	42.6624	128.413	0	0
32	110.11	42.8167	122.999	0	0
33	110.493	42.9836	116.418	0	0
34	110.876	43.1637	108.658	0	0
35	111.26	43.3573	99.7129	0	0
36	111.643	43.5653	89.5814	0	0
37	112.026	43.7882	78.2937	0	0
38	112.409	44.0268	66.224	0	0
39	112.792	44.2822	53.5874	0	0
40	113.175	44.5552	40.5123	0	0
41	113.558	44.8473	27.1447	0	0
42	113.941	45.1599	13.6521	0	0
43	114.324	45.4947	0.228112	0	0
44	114.707	45.8539	-12.9014	0	0
45	115.09	46.2399	-25.4695	0	0
46	115.473	46.6559	-37.157	0	0
47	115.856	47.106	-47.5759	0	0
48	116.239	47.5954	-56.2447	0	0
49	116.622	48.1308	-62.5525	0	0
50	117.005	48.7219	-65.6989	0	0
51	117.388	49.3826	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.19768

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.7994	43	0	0	0
2	99.1228	42.7928	3.40141	0	0
3	99.4463	42.6015	8.02842	0	0
4	99.7698	42.4253	13.5824	0	0
5	100.093	42.2633	19.8213	0	0
6	100.417	42.1148	26.6125	0	0
7	100.74	41.9791	34.4634	0	0
8	101.064	41.8558	43.3051	0	0
9	101.387	41.7443	52.9008	0	0
10	101.711	41.6444	63.0435	0	0
11	102.034	41.5556	73.5514	0	0
12	102.358	41.4777	84.2633	0	0
13	102.681	41.4104	95.0358	0	0
14	103.005	41.3535	105.74	0	0
15	103.328	41.3069	116.262	0	0
16	103.652	41.2704	126.495	0	0
17	103.975	41.244	136.345	0	0
18	104.299	41.2274	145.726	0	0
19	104.622	41.2208	154.559	0	0
20	104.946	41.2241	162.772	0	0
21	105.269	41.2372	170.298	0	0
22	105.593	41.2602	177.078	0	0
23	105.916	41.2933	183.054	0	0
24	106.24	41.3364	188.176	0	0
25	106.563	41.3897	192.396	0	0
26	106.887	41.4534	195.672	0	0
27	107.21	41.5276	197.964	0	0
28	107.534	41.6127	199.236	0	0
29	107.857	41.7087	199.456	0	0
30	108.181	41.8162	198.594	0	0
31	108.504	41.9354	196.625	0	0
32	108.828	42.0668	193.528	0	0
33	109.151	42.2109	189.283	0	0
34	109.475	42.3682	183.878	0	0
35	109.798	42.5394	177.3	0	0
36	110.122	42.7254	169.546	0	0
37	110.445	42.927	160.616	0	0
38	110.768	43.1454	150.516	0	0
39	111.092	43.3818	139.259	0	0
40	111.415	43.6377	126.87	0	0
41	111.739	43.9152	113.382	0	0
42	112.062	44.2165	98.9108	0	0
43	112.386	44.5447	83.9618	0	0
44	112.709	44.9034	68.8028	0	0
45	113.033	45.2979	53.6903	0	0
46	113.356	45.7349	38.9581	0	0
47	113.68	46.2246	25.0579	0	0
48	114.003	46.7821	12.6346	0	0
49	114.327	47.4334	2.68382	0	0
50	114.65	48.229	-3.05352	0	0
51	114.974	49.3023	0	0	0

Group 1 - Sismico

Global Minimum Query (bishop simplified) - Safety Factor: 1.50106

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.6166	43	0	0	0
2	98.9661	42.8128	1.93429	0	0
3	99.3155	42.6397	4.75515	0	0
4	99.665	42.4801	8.28017	0	0
5	100.014	42.3334	12.353	0	0
6	100.364	42.1991	16.8532	0	0
7	100.713	42.0769	22.1741	0	0
8	101.063	41.9662	28.3944	0	0
9	101.412	41.8669	35.3327	0	0
10	101.762	41.7786	42.8249	0	0
11	102.111	41.701	50.7219	0	0
12	102.461	41.6341	58.8879	0	0
13	102.81	41.5775	67.1982	0	0
14	103.16	41.5311	75.5384	0	0
15	103.509	41.4949	83.8029	0	0
16	103.859	41.4688	91.894	0	0
17	104.208	41.4526	99.7212	0	0
18	104.558	41.4464	107.2	0	0
19	104.907	41.4501	114.253	0	0
20	105.257	41.4637	120.806	0	0
21	105.606	41.4873	126.79	0	0
22	105.956	41.521	132.143	0	0
23	106.305	41.5647	136.804	0	0
24	106.655	41.6187	140.718	0	0
25	107.004	41.683	143.831	0	0
26	107.354	41.7578	146.095	0	0
27	107.703	41.8434	147.465	0	0
28	108.053	41.9399	147.898	0	0
29	108.402	42.0476	147.355	0	0
30	108.752	42.1669	145.799	0	0
31	109.101	42.298	143.198	0	0
32	109.451	42.4415	139.523	0	0
33	109.8	42.5978	134.747	0	0
34	110.149	42.7674	128.847	0	0
35	110.499	42.9509	121.805	0	0
36	110.848	43.1491	113.608	0	0
37	111.198	43.3629	104.246	0	0
38	111.547	43.5932	93.7161	0	0
39	111.897	43.8411	82.0221	0	0
40	112.246	44.108	69.4038	0	0
41	112.596	44.3956	56.1907	0	0
42	112.945	44.7058	42.5214	0	0
43	113.295	45.0411	28.5628	0	0
44	113.644	45.4043	14.5191	0	0
45	113.994	45.7995	0.644227	0	0
46	114.343	46.2315	-12.7386	0	0
47	114.693	46.7073	-25.207	0	0
48	115.042	47.2362	-36.1884	0	0
49	115.392	47.8327	-44.8699	0	0
50	115.741	48.5198	-50.0169	0	0
51	116.091	49.3394	0	0	0

Global Minimum Query (janbu simplified) - Safety Factor: 1.3057

Slice Number	X coordinate [m]	Y coordinate - Bottom [m]	Interslice Normal Force [kN]	Interslice Shear Force [kN]	Interslice Force Angle [deg]
1	98.7674	43	0	0	0
2	99.0903	42.7936	2.42189	0	0
3	99.4132	42.6031	5.93716	0	0
4	99.7361	42.4275	10.3059	0	0
5	100.059	42.2661	15.3292	0	0
6	100.382	42.1181	20.8689	0	0
7	100.705	41.983	27.3482	0	0
8	101.028	41.8601	34.7848	0	0
9	101.351	41.7491	42.9786	0	0
10	101.673	41.6496	51.7522	0	0
11	101.996	41.5612	60.9474	0	0
12	102.319	41.4836	70.4222	0	0
13	102.642	41.4167	80.0482	0	0
14	102.965	41.3601	89.709	0	0
15	103.288	41.3138	99.2985	0	0
16	103.611	41.2776	108.719	0	0
17	103.934	41.2513	117.883	0	0
18	104.257	41.235	126.705	0	0
19	104.58	41.2285	135.112	0	0
20	104.902	41.2319	143.031	0	0
21	105.225	41.2452	150.397	0	0
22	105.548	41.2683	157.149	0	0
23	105.871	41.3015	163.229	0	0
24	106.194	41.3446	168.584	0	0
25	106.517	41.398	173.164	0	0
26	106.84	41.4617	176.922	0	0
27	107.163	41.536	179.814	0	0
28	107.486	41.621	181.799	0	0
29	107.809	41.717	182.84	0	0
30	108.131	41.8244	182.902	0	0
31	108.454	41.9435	181.95	0	0
32	108.777	42.0748	179.957	0	0
33	109.1	42.2187	176.895	0	0
34	109.423	42.3759	172.741	0	0
35	109.746	42.5469	167.473	0	0
36	110.069	42.7327	161.076	0	0
37	110.392	42.9341	153.538	0	0
38	110.715	43.1522	144.85	0	0
39	111.038	43.3882	135.012	0	0
40	111.36	43.6439	124.029	0	0
41	111.683	43.921	111.917	0	0
42	112.006	44.2219	98.7279	0	0
43	112.329	44.5496	84.8835	0	0
44	112.652	44.9078	70.6649	0	0
45	112.975	45.3017	56.299	0	0
46	113.298	45.7381	42.0869	0	0
47	113.621	46.227	28.4442	0	0
48	113.944	46.7838	15.977	0	0
49	114.267	47.4341	5.64238	0	0
50	114.589	48.2285	-0.843812	0	0
51	114.912	49.3002	0	0	0

Discharge Sections

Entity Information

Group 1

Shared Entities

Type	Coordinates (x,y)
External Boundary	0, 0 166, 0 166, 34 166, 36.1345 166, 51 111.9, 49.2 100.3, 43 60.7, 43 53.3, 48 0, 49 0, 34 0, 31.0285
Material Boundary	0, 34 30.864, 34 66.039, 34 98.755, 34 128.068, 34 166, 34

Scenario-based Entities

Type	Coordinates (x,y)	Master Scenario	statico	sismico	Statico	Sismico
Distributed Load	97, 43 87, 43	Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 20 kN/m2Creates Excess Pore Pressure: No	Constant DistributionOrientation: Normal to boundaryMagnitude: 4 kN/m2Creates Excess Pore Pressure: No		