

NUOVO COLLEGAMENTO INTERNAZIONALE TORINO – LIONE

CUNICOLO ESPLORATIVO DE LA MADDALENA

PROGETTO ESECUTIVO

CUP C11J05000030001

<p>SITO DI DEPOSITO MADDALENA <u>Variante in opera per aumento deponia</u></p> <p>RELAZIONE DI CALCOLO DEL SITO DI DEPONIA Tabulati di calcolo</p>	<p>Responsabile della Progettazione Dott.Ing. Valter Peisino</p> <p>IG INGEGNERIA GEOTECNICA srl</p>
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Indice	Data	Modifiche	Concepito da	Controllato da	Validato da
0	27/05/2013	Emissione	M. C. Pepe - IG	M. Ferrero - IG	V. Peisino - IG
A	19/06/2013	Recepimento osservazioni PCM	M. C. Pepe - IG	M. Ferrero - IG	V. Peisino - IG
B	18/11/2013	Variante in opera (B3)	M. C. Pepe - IG	M. Ferrero - IG	V. Peisino - IG
C	10/02/2014	Variante in opera – Rec. prescrizioni DL/LTF (B4)	M. C. Pepe - IG	M. Ferrero - IG	V. Peisino - IG

N° DOC	M	A	D	D	E	P	B	O	R	0	0	7	4	C	A	P	N	O	T
	Fase		Sigla Studio			Emittente		Numero				Indice	Stato		Tipo				

INDIRIZZO GED	DEP	//	//	02	00	00	50	03
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SCALA
-

PCM

Raggruppamento tra:

GEODATA
ENGINEERING

(Mandataria)

SYSTRA
ITALIA

APPALTATORE

A.T.I.
BOROGIOMO s.r.l.

(Mandataria)

EUROSOL PALIMODENA s.r.l.

IG

INGEGNERIA GEOTECNICA

Ditta FRANCO ALDO & Figli s.n.c.

EUROVERDE di Greco Sergio e C. s.a.s.



LTF

Lyon Turin Ferroviaire

CUNICOLO "LA MADDALENA"

**Progetto Esecutivo – Variante in opera per aumento
deponia**

Relazione di calcolo del sito di deponia

Tabulati di calcolo

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1. VERIFICHE ALLO STATO LIMITE ULTIMO – TABULATI DEL CODICE DI CALCOLO
RESSA

1.1 Verifiche di stabilità interna - Rilevato in progetto (volume di marino 330'000 m³)

Sezione 15, 25 e 29

Sezione 15 - A2M2 Statica

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PROJECT IDENTIFICATION

Title: Sezione 15 - A2M2 Statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente.....	18.0	30.0	24.8	10.0	8.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

Phreatic line was specified.

UNIFORM SURCHARGE

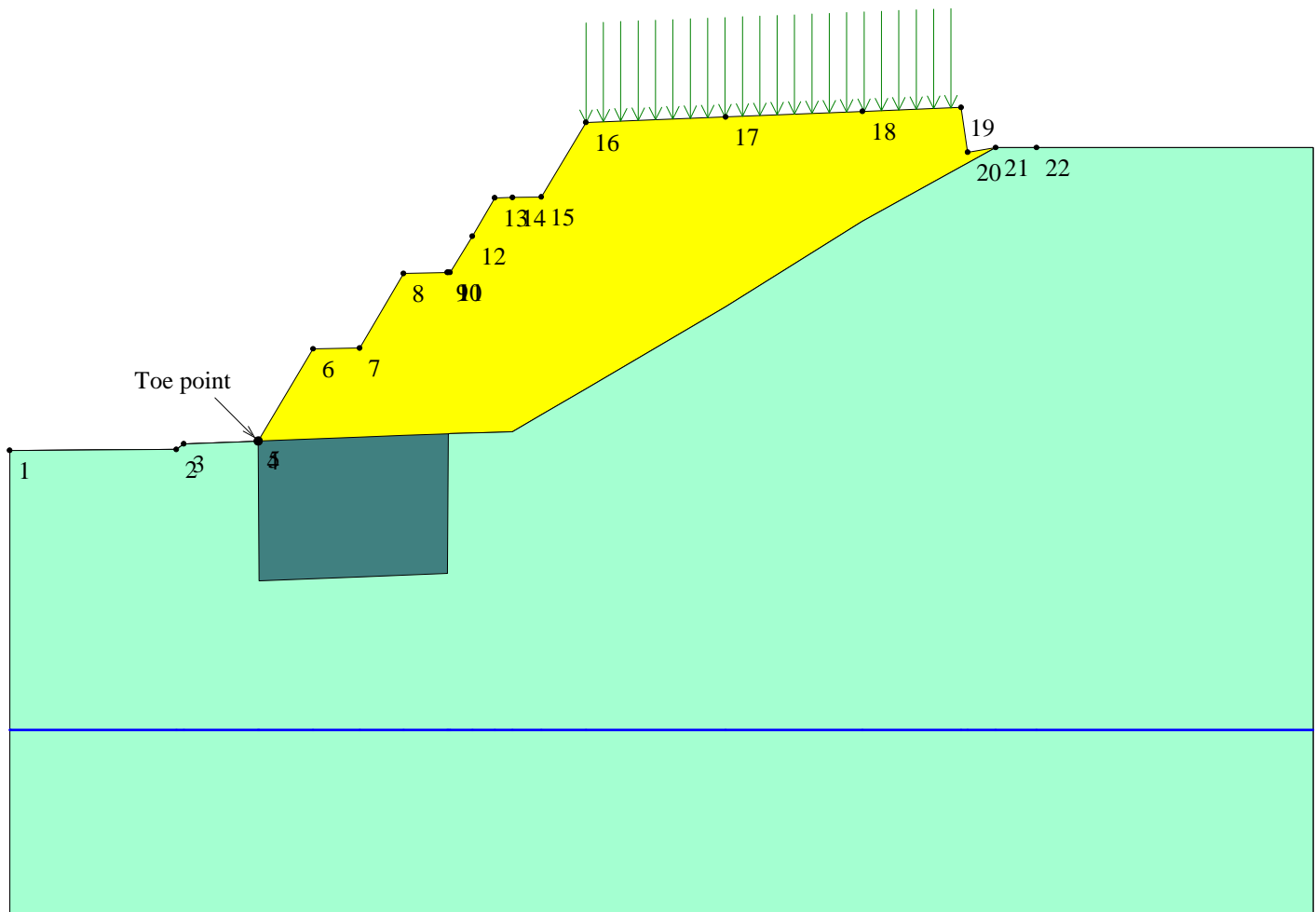
Load Q1 = 13.00 [kPa] inclined from vertical at 0.00 degrees, starts at X1s = 61.90 and ends at X1e = 102.20 [m].

Surcharge load, Q2.....None

Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [m]

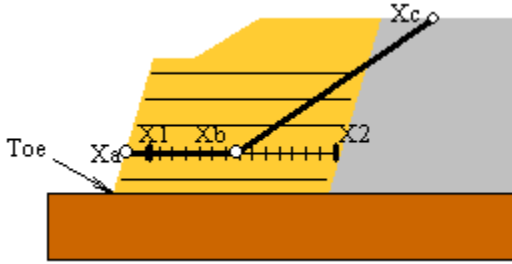


DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_{s-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	10.00	0.00	0.32	9.68	39.67	39.67
37	Geogriglia 1	22.14	14.00	0.00	0.22	13.78	39.67	39.67
38	Geogriglia 1	22.75	10.00	0.00	0.32	9.68	39.67	39.67
39	Geogriglia 1	23.37	14.00	0.00	0.24	13.76	39.67	39.67
40	Geogriglia 1	23.98	10.00	0.00	0.32	9.68	39.67	39.67
41	Geogriglia 1	24.60	14.00	0.00	0.27	13.73	39.67	39.67
42	Geogriglia 1	25.21	10.00	0.00	0.32	9.68	39.67	39.67
43	Geogriglia 1	25.83	14.00	0.00	0.31	13.69	39.67	39.67
44	Geogriglia 1	26.44	8.00	0.00	0.33	7.67	39.67	39.67
45	Geogriglia 1	27.06	8.00	0.00	0.36	7.64	39.67	39.67
46	Geogriglia 1	27.67	8.00	0.00	0.39	7.61	39.67	39.67
47	Geogriglia 1	28.29	8.00	0.00	0.43	7.57	39.67	39.67
48	Geogriglia 1	28.90	8.00	0.00	0.47	7.53	39.67	39.67
49	Geogriglia 1	29.52	8.00	0.00	0.53	7.47	39.67	39.67
50	Geogriglia 1	30.13	8.00	0.00	0.61	7.39	39.67	39.67
51	Geogriglia 1	30.75	8.00	0.00	0.71	7.29	39.67	39.67
52	Geogriglia 1	31.36	8.00	0.00	0.84	7.16	39.67	39.67
53	Geogriglia 1	31.98	8.00	0.00	1.05	6.95	39.67	39.67
54	Geogriglia 1	32.59	8.00	0.00	1.39	6.61	39.67	39.67
55	Geogriglia 1	33.21	8.00	0.00	2.08	5.92	39.67	39.67
56	Geogriglia 1	33.82	8.00	0.00	4.27	3.73	39.67	39.67

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]		(Xb, Yb) [m]		(Xc, Yc) [m]		Fs	STATUS
At toe elevation	0.00	26.70	51.00	31.22	51.00	89.99	86.32	1.30	OK
Reinf. Layer #1	0.00	26.70	51.00	31.18	51.00	89.95	86.31	1.29	OK
Reinf. Layer #2	0.61	27.06	51.61	40.33	51.61	86.19	86.16	1.18	OK
Reinf. Layer #3	1.23	27.43	52.23	40.63	52.23	85.64	86.14	1.19	OK
Reinf. Layer #4	1.84	27.80	52.84	41.03	52.84	85.21	86.13	1.20	OK
Reinf. Layer #5	2.46	28.17	53.46	41.43	53.46	84.76	86.11	1.21	OK
Reinf. Layer #6	3.07	28.53	54.07	41.73	54.07	85.89	86.15	1.21	OK
Reinf. Layer #7	3.69	28.90	54.69	42.13	54.69	85.41	86.13	1.22	OK
Reinf. Layer #8	4.31	29.27	55.31	42.53	55.31	84.93	86.11	1.23	OK
Reinf. Layer #9	4.92	29.63	55.92	47.21	55.92	83.11	86.04	1.23	OK
Reinf. Layer #10	5.54	30.00	56.54	47.61	56.54	85.49	86.14	1.23	OK
Reinf. Layer #11	6.15	30.37	57.15	48.01	57.15	82.41	86.01	1.24	OK
Reinf. Layer #12	6.77	30.73	57.77	48.31	57.77	84.57	86.10	1.23	OK
Reinf. Layer #13	7.38	31.10	58.38	48.71	58.38	81.61	85.98	1.24	OK
Reinf. Layer #14	8.00	31.47	59.00	49.11	59.00	83.76	86.07	1.24	OK
Reinf. Layer #15	8.61	31.83	59.61	49.41	59.61	83.25	86.05	1.23	OK
Reinf. Layer #16	9.23	32.20	60.23	49.81	60.23	82.84	86.03	1.23	OK
Reinf. Layer #17	9.84	32.56	60.84	50.21	60.84	83.69	86.06	1.25	OK
Reinf. Layer #18	10.46	37.87	61.46	50.71	61.46	84.63	86.10	1.26	OK
Reinf. Layer #19	11.07	38.23	62.07	51.01	62.07	82.81	86.03	1.28	OK
Reinf. Layer #20	11.69	38.59	62.69	51.41	62.69	83.58	86.06	1.30	OK
Reinf. Layer #21	12.30	38.95	63.30	48.63	63.30	80.99	85.96	1.31	OK
Reinf. Layer #22	12.92	39.32	63.92	48.93	63.92	81.65	85.98	1.32	OK
Reinf. Layer #23	13.53	39.67	64.53	49.33	64.53	82.42	86.01	1.32	OK
Reinf. Layer #24	14.15	40.04	65.15	49.63	65.15	80.45	85.94	1.34	OK
Reinf. Layer #25	14.76	40.40	65.76	50.03	65.76	81.15	85.96	1.35	OK
Reinf. Layer #26	15.38	40.76	66.38	56.79	66.38	81.89	85.99	1.36	Minimum on Edge
Reinf. Layer #27	15.99	41.12	66.99	57.09	66.99	80.49	85.94	1.37	Minimum on Edge
Reinf. Layer #28	16.60	41.48	67.60	57.49	67.60	80.99	85.96	1.38	Minimum on Edge
Reinf. Layer #29	17.22	41.84	68.22	57.79	68.22	79.63	85.90	1.39	Minimum on Edge
Reinf. Layer #30	17.83	42.20	68.83	58.19	68.83	80.07	85.92	1.40	Minimum on Edge
Reinf. Layer #31	18.45	47.52	69.45	58.71	69.45	78.26	85.85	1.42	OK
Reinf. Layer #32	19.06	47.89	70.06	57.89	70.06	78.88	85.87	1.40	Minimum on Edge
Reinf. Layer #33	19.68	48.27	70.68	59.51	70.68	77.56	85.82	1.45	OK
Reinf. Layer #34	20.29	48.65	71.29	58.59	71.29	77.89	85.83	1.42	Minimum on Edge
Reinf. Layer #35	20.91	49.03	71.91	57.43	71.91	77.29	85.81	1.46	OK
Reinf. Layer #36	21.52	49.40	72.52	59.39	72.52	75.13	85.73	1.42	Minimum on Edge
Reinf. Layer #37	22.14	49.78	73.14	58.23	73.14	77.00	85.80	1.50	OK
Reinf. Layer #38	22.75	50.14	73.75	60.09	73.75	76.66	85.79	1.46	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]		(Xb, Yb) [m]		(Xc, Yc) [m]		Fs	STATUS
Reinf. Layer #39	23.37	50.50	74.37	61.71	74.37	74.76	85.71	1.55	OK
Reinf. Layer #40	23.98	50.86	74.98	60.89	74.98	75.71	85.75	1.52	Minimum on Edge
Reinf. Layer #41	24.60	51.22	75.60	59.63	75.60	75.89	85.76	1.64	OK
Reinf. Layer #42	25.21	51.58	76.21	61.59	76.21	76.31	85.77	1.62	Minimum on Edge
Reinf. Layer #43	25.83	51.94	76.83	60.33	76.83	75.14	85.73	1.68	OK
Reinf. Layer #44	26.44	57.24	77.44	60.46	77.44	70.46	85.54	1.77	OK
Reinf. Layer #45	27.06	57.62	78.06	60.86	78.06	74.06	85.68	1.82	OK
Reinf. Layer #46	27.67	57.98	78.67	61.26	78.67	73.35	85.65	1.93	OK
Reinf. Layer #47	28.29	58.35	79.29	61.66	79.29	72.63	85.63	2.07	OK
Reinf. Layer #48	28.90	58.72	79.90	61.96	79.90	67.89	85.44	2.24	OK
Reinf. Layer #49	29.52	59.09	80.52	60.78	80.52	67.53	85.42	2.40	OK
Reinf. Layer #50	30.13	59.46	81.13	61.18	81.13	66.23	85.37	2.57	OK
Reinf. Layer #51	30.75	59.83	81.75	61.48	81.75	65.77	85.35	2.79	OK
Reinf. Layer #52	31.36	60.20	82.36	61.88	82.36	64.73	85.31	2.99	OK
Reinf. Layer #53	31.98	60.57	82.98	62.28	82.98	65.41	85.34	3.60	OK
Reinf. Layer #54	32.59	60.93	83.59	62.58	83.59	65.06	85.33	4.30	OK
Reinf. Layer #55	33.21	61.31	84.21	62.98	84.21	64.74	85.31	5.61	OK
Reinf. Layer #56	33.82	61.67	84.82	61.80	84.82	62.50	85.22	8.17	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.13

Critical Circle: $X_c = 22.37[m]$, $Y_c = 109.18[m]$, $R = 57.29[m]$. (Number of slices used = 59)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.18

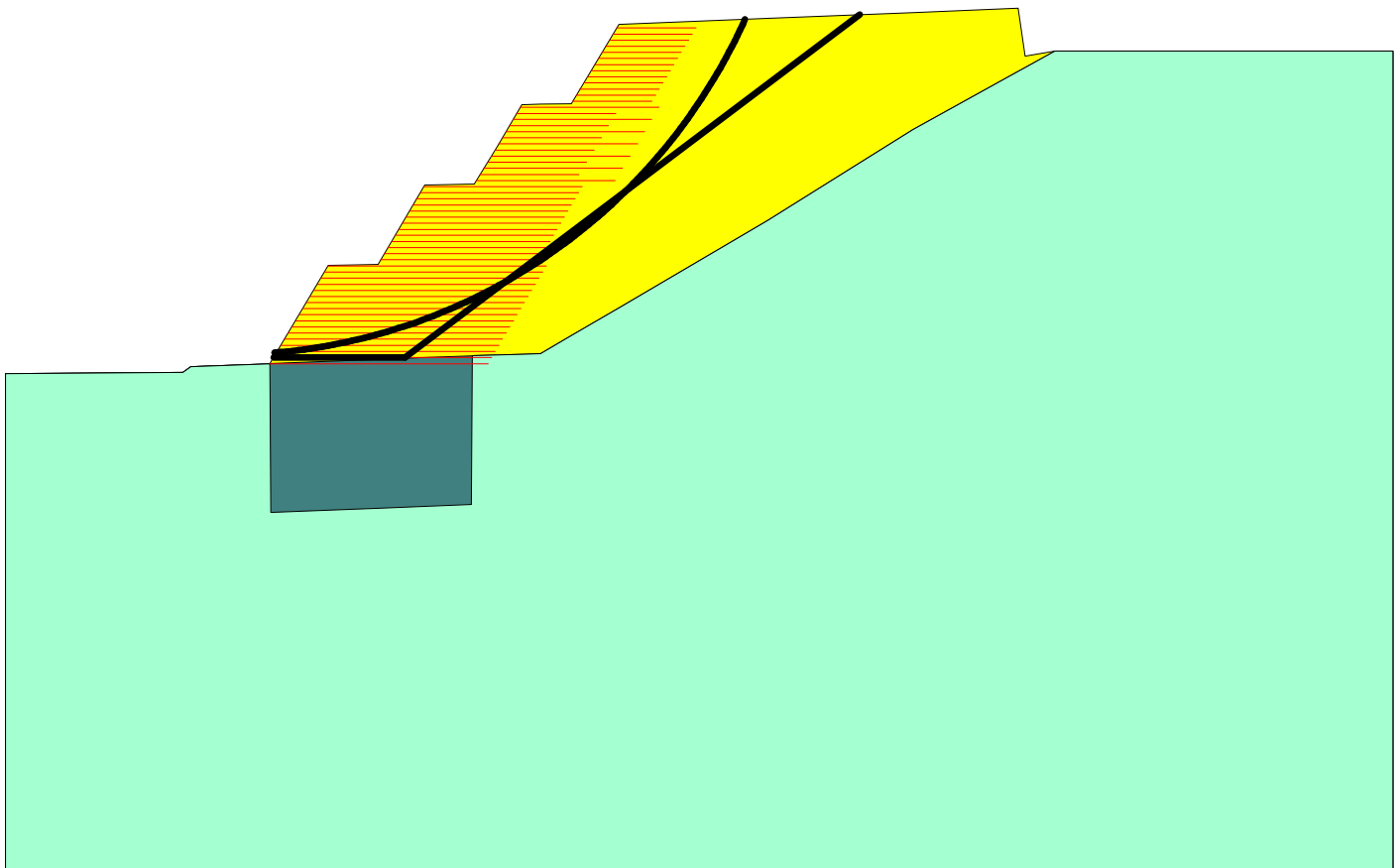
Critical Two-Part Wedge: ($X_a = 27.06$, $Y_a = 51.61$) [m]

($X_b = 40.33$, $Y_b = 51.61$) [m]

($X_c = 86.19$, $Y_c = 86.16$) [m]

(Number of slices used = 30)

Interslice resultant force inclination = 31.97 [degrees]



SCALE:

0 2 4 6 [m]



Sezione 15 - A2M2 sismica

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PROJECT IDENTIFICATION

Title: Sezione 15 - A2M2 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFCoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente.....	18.0	30.0	24.8	10.0	8.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

Phreatic line was specified.

UNIFORM SURCHARGE

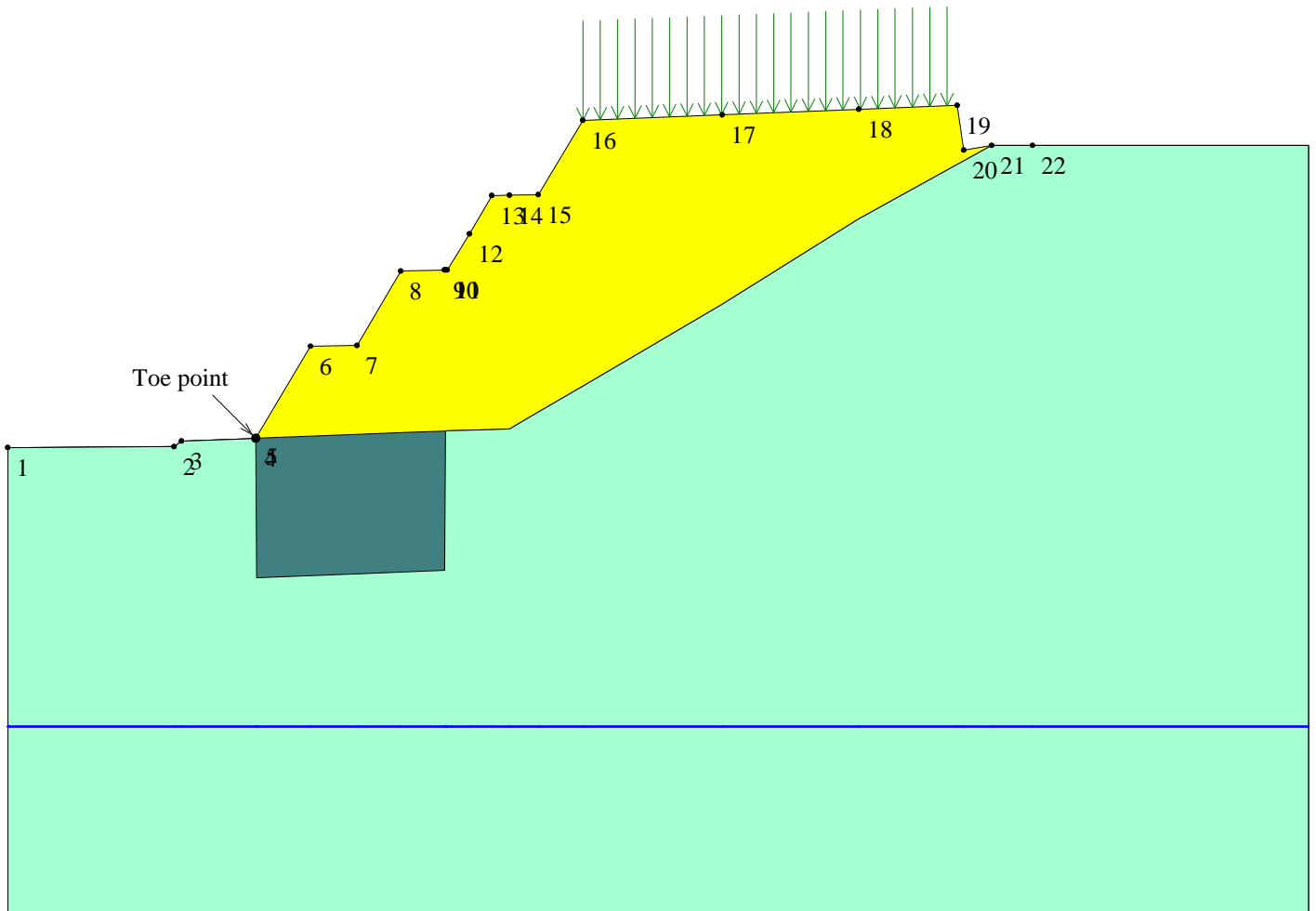
Load Q1 = 10.00 [kPa] inclined from vertical at 0.00 degrees, starts at X1s = 61.90 and ends at X1e = 102.20 [m].

Surcharge load, Q2.....None

Surcharge load, Q3.....None

STRIP LOAD

.....None.....

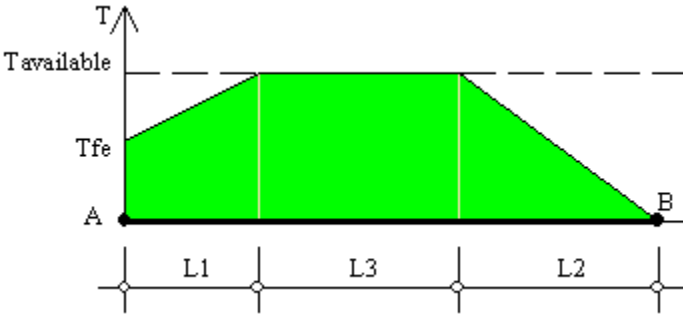


SCALE:

0 2 4 6 [m]



DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 $AB = L1 + L2 + L3 =$ Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, $F_{s-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	22.00	0.00	0.38	21.62	99.17	99.17
2	Geogriglia 1	0.61	22.00	0.00	0.38	21.62	99.17	99.17
3	Geogriglia 1	1.23	22.00	0.00	0.32	21.68	99.17	99.17
4	Geogriglia 1	1.84	22.00	0.00	0.32	21.68	99.17	99.17
5	Geogriglia 1	2.46	22.00	0.00	0.32	21.68	99.17	99.17
6	Geogriglia 1	3.07	22.00	0.00	0.32	21.68	99.17	99.17
7	Geogriglia 1	3.69	22.00	0.00	0.32	21.68	99.17	99.17
8	Geogriglia 1	4.31	22.00	0.00	0.32	21.68	99.17	99.17
9	Geogriglia 1	4.92	22.00	0.00	0.32	21.68	99.17	99.17
10	Geogriglia 1	5.54	22.00	0.00	0.32	21.68	99.17	99.17
11	Geogriglia 1	6.15	22.00	0.00	0.32	21.68	99.17	99.17
12	Geogriglia 1	6.77	22.00	0.00	0.33	21.67	99.17	99.17
13	Geogriglia 1	7.38	22.00	0.00	0.34	21.66	99.17	99.17
14	Geogriglia 1	8.00	22.00	0.00	0.35	21.65	99.17	99.17
15	Geogriglia 1	8.61	22.00	0.00	0.36	21.64	99.17	99.17
16	Geogriglia 1	9.23	22.00	0.00	0.37	21.63	99.17	99.17
17	Geogriglia 1	9.84	22.00	0.00	0.39	21.61	99.17	99.17
18	Geogriglia 1	10.46	16.00	0.00	0.40	15.60	99.17	99.17
19	Geogriglia 1	11.07	16.00	0.00	0.42	15.58	99.17	99.17
20	Geogriglia 1	11.69	16.00	0.00	0.44	15.56	99.17	99.17
21	Geogriglia 1	12.30	16.00	0.00	0.46	15.54	99.17	99.17
22	Geogriglia 1	12.92	16.00	0.00	0.48	15.52	99.17	99.17
23	Geogriglia 1	13.53	16.00	0.00	0.50	15.50	99.17	99.17
24	Geogriglia 1	14.15	16.00	0.00	0.53	15.47	99.17	99.17
25	Geogriglia 1	14.76	16.00	0.00	0.55	15.45	99.17	99.17
26	Geogriglia 1	15.38	16.00	0.00	0.58	15.42	99.17	99.17
27	Geogriglia 1	15.99	16.00	0.00	0.62	15.38	99.17	99.17
28	Geogriglia 1	16.60	16.00	0.00	0.64	15.36	99.17	99.17
29	Geogriglia 1	17.22	16.00	0.00	0.65	15.35	99.17	99.17
30	Geogriglia 1	17.83	16.00	0.00	0.65	15.35	99.17	99.17
31	Geogriglia 1	18.45	14.00	0.00	0.43	13.57	99.17	99.17
32	Geogriglia 1	19.06	10.00	0.00	0.81	9.19	99.17	99.17
33	Geogriglia 1	19.68	14.00	0.00	0.44	13.56	99.17	99.17
34	Geogriglia 1	20.29	10.00	0.00	0.81	9.19	99.17	99.17
35	Geogriglia 1	20.91	14.00	0.00	0.47	13.53	99.17	99.17

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_{s-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	10.00	0.00	0.80	9.20	99.17	99.17
37	Geogriglia 1	22.14	14.00	0.00	0.52	13.48	99.17	99.17
38	Geogriglia 1	22.75	10.00	0.00	0.80	9.20	99.17	99.17
39	Geogriglia 1	23.37	14.00	0.00	0.58	13.42	99.17	99.17
40	Geogriglia 1	23.98	10.00	0.00	0.81	9.19	99.17	99.17
41	Geogriglia 1	24.60	14.00	0.00	0.65	13.35	99.17	99.17
42	Geogriglia 1	25.21	10.00	0.00	0.81	9.19	99.17	99.17
43	Geogriglia 1	25.83	14.00	0.00	0.74	13.26	99.17	99.17
44	Geogriglia 1	26.44	8.00	0.00	0.80	7.20	99.17	99.17
45	Geogriglia 1	27.06	8.00	0.00	0.87	7.13	99.17	99.17
46	Geogriglia 1	27.67	8.00	0.00	0.94	7.06	99.17	99.17
47	Geogriglia 1	28.29	8.00	0.00	1.04	6.96	99.17	99.17
48	Geogriglia 1	28.90	8.00	0.00	1.15	6.85	99.17	99.17
49	Geogriglia 1	29.52	8.00	0.00	1.29	6.71	99.17	99.17
50	Geogriglia 1	30.13	8.00	0.00	1.47	6.53	99.17	99.17
51	Geogriglia 1	30.75	8.00	0.00	1.72	6.28	99.17	99.17
52	Geogriglia 1	31.36	8.00	0.00	2.06	5.94	99.17	99.17
53	Geogriglia 1	31.98	8.00	0.00	2.58	5.42	99.17	99.17
54	Geogriglia 1	32.59	8.00	0.00	3.44	4.56	99.17	99.17
55	Geogriglia 1	33.21	8.00	0.00	5.31	2.69	99.17	99.17
56	Geogriglia 1	33.82	8.00	0.00	8.00	0.00	66.47	66.47 (*)

(*) This Tavailable is dictated by the pullout resistance capacity, which is smaller than the long-term strength of the reinforcement that is related to its specified ultimate strength

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]		(Xb, Yb) [m]		(Xc, Yc) [m]		Fs	STATUS
Reinf. Layer #39	23.37	50.50	74.37	61.71	74.37	81.00	85.96	1.54	OK
Reinf. Layer #40	23.98	50.86	74.98	60.89	74.98	79.82	85.91	1.49	Minimum on Edge
Reinf. Layer #41	24.60	51.22	75.60	62.41	75.60	78.19	85.85	1.58	OK
Reinf. Layer #42	25.21	51.58	76.21	61.59	76.21	78.29	85.85	1.66	Minimum on Edge
Reinf. Layer #43	25.83	51.94	76.83	65.89	76.83	77.84	85.83	1.73	Minimum on Edge
Reinf. Layer #44	26.44	57.24	77.44	65.19	77.44	76.24	85.77	1.66	Minimum on Edge
Reinf. Layer #45	27.06	57.62	78.06	65.59	78.06	75.80	85.75	1.74	Minimum on Edge
Reinf. Layer #46	27.67	57.98	78.67	65.99	78.67	75.37	85.73	1.82	Minimum on Edge
Reinf. Layer #47	28.29	58.35	79.29	66.39	79.29	75.25	85.73	1.92	Minimum on Edge
Reinf. Layer #48	28.90	58.72	79.90	66.69	79.90	74.68	85.71	2.03	Minimum on Edge
Reinf. Layer #49	29.52	59.09	80.52	67.09	80.52	74.49	85.70	2.16	Minimum on Edge
Reinf. Layer #50	30.13	59.46	81.13	67.49	81.13	73.99	85.68	2.32	Minimum on Edge
Reinf. Layer #51	30.75	59.83	81.75	67.79	81.75	73.59	85.66	2.52	Minimum on Edge
Reinf. Layer #52	31.36	60.20	82.36	68.19	82.36	73.26	85.65	2.76	Minimum on Edge
Reinf. Layer #53	31.98	60.57	82.98	68.59	82.98	71.48	85.58	3.16	Minimum on Edge
Reinf. Layer #54	32.59	60.93	83.59	67.31	83.59	70.71	85.55	4.26	OK
Reinf. Layer #55	33.21	61.31	84.21	66.13	84.21	68.20	85.45	6.12	OK
Reinf. Layer #56	33.82	61.67	84.82	64.96	84.82	65.89	85.36	8.86	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.17

Critical Circle: Xc = 30.91[m], Yc = 102.87[m], R = 50.88[m]. (Number of slices used = 56)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.10

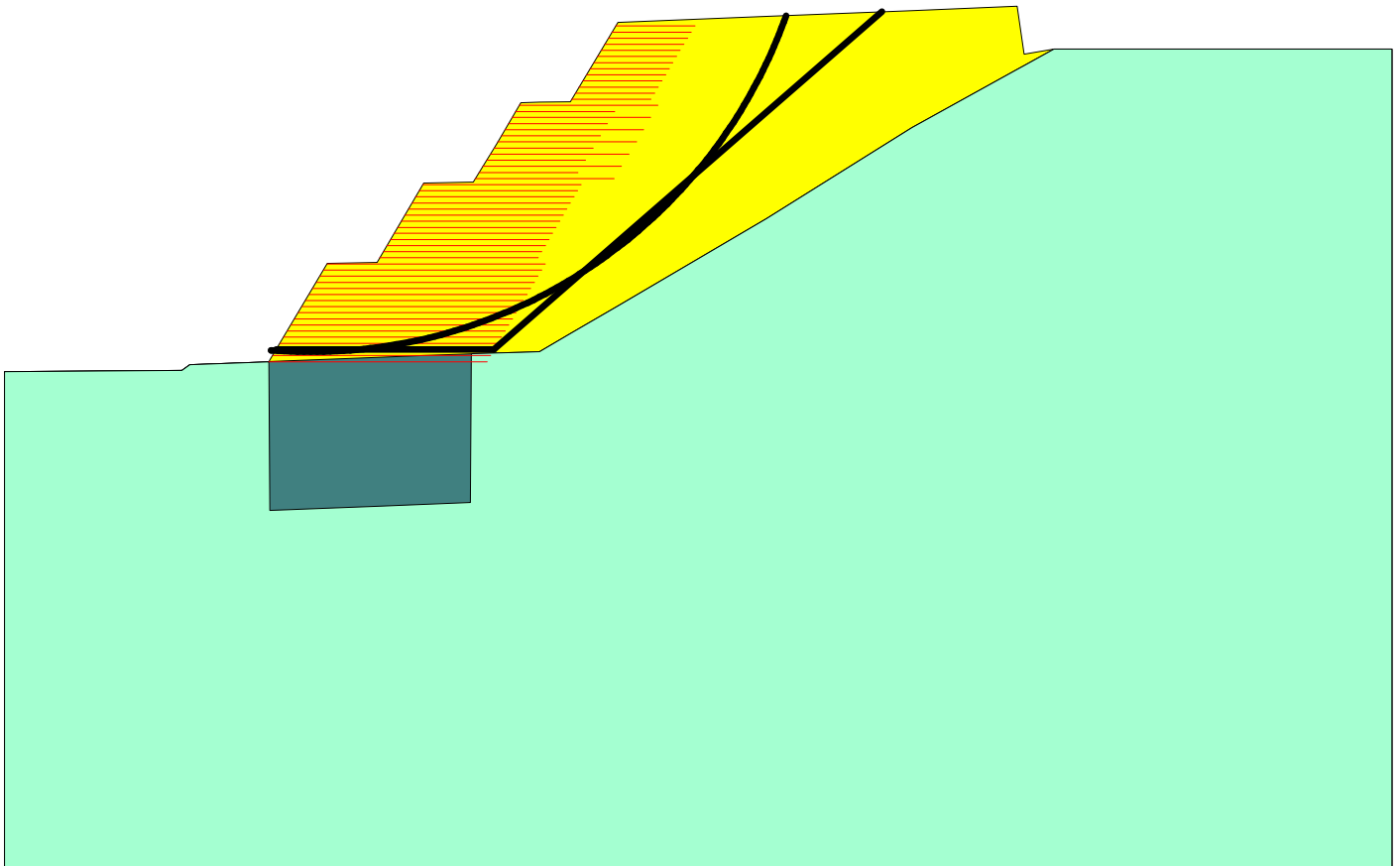
Critical Two-Part Wedge: (Xa = 27.43, Ya = 52.23) [m]

(Xb = 49.39, Yb = 52.23) [m]

(Xc = 88.53, Yc = 86.26) [m]

(Number of slices used = 30)

Interslice resultant force inclination = 29.28 [degrees]



SCALE:

0 2 4 6[m]



Sezione 25 - A2M2 statica

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente.....	18.0	30.0	24.8	10.0	8.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	-7.40	35.60
	2	-5.10	37.10
	3	5.30	36.60
	4	12.00	46.80
	5	17.00	46.90
	6	21.70	54.90
	7	26.70	55.00
	8	31.50	63.00
	9	36.50	63.10
	10	37.40	64.60
	11	41.80	71.10
	12	48.50	71.20
	13	54.60	79.30
	14	87.40	80.60
	15	88.10	79.30
	16	91.30	79.30
	17	95.90	71.10
	18	100.80	71.10
	19	103.70	67.20
	20	105.20	65.40
	Top of Layer 2	21	120.80
22		-7.40	35.60
23		-5.10	37.10
24		5.30	36.60
25		41.80	37.90
26		46.40	43.50
27		52.80	43.70
28		54.10	45.00
29		69.20	45.00
30		105.20	65.40
31		120.80	74.10
Top of Layer 3	32	-7.40	35.60
	33	-5.10	37.10
	34	5.30	36.60
	35	5.40	21.60
	36	41.70	21.60
	37	41.80	37.90
	38	46.40	43.50
	39	52.80	43.70
	40	54.10	45.00
	41	69.20	45.00
	42	105.20	65.40
	43	120.80	74.10
Top of Phreatic Line	45	0.00	20.00
	46	110.30	20.00

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
Water was described by phreatic line. Y values are tabulated in the right most column.
(phreatic)

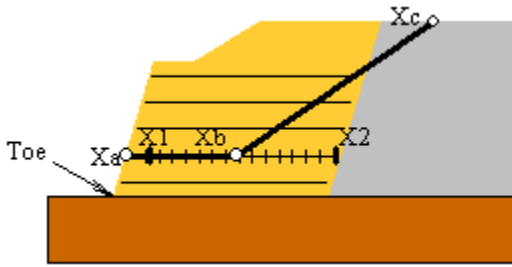
#	X	Y1	Y2	Y3	Yw
1	-7.40	35.60	35.60	35.60	20.00
2	-5.10	37.10	37.10	37.10	20.00
3	0.00	36.85	36.85	36.85	20.00
4	5.30	36.60	36.60	36.60	20.00
5	5.40	36.75	36.60	21.60	20.00
6	12.00	46.80	36.84	21.60	20.00
7	17.00	46.90	37.02	21.60	20.00
8	21.70	54.90	37.18	21.60	20.00
9	26.70	55.00	37.36	21.60	20.00
10	31.50	63.00	37.53	21.60	20.00
11	36.50	63.10	37.71	21.60	20.00
12	37.40	64.60	37.74	21.60	20.00
13	41.70	70.95	37.90	21.60	20.00
14	41.80	71.10	37.90	37.90	20.00
15	46.40	71.17	43.50	43.50	20.00
16	48.50	71.20	43.57	43.57	20.00
17	52.80	76.91	43.70	43.70	20.00
18	54.10	78.64	45.00	45.00	20.00
19	54.60	79.30	45.00	45.00	20.00
20	69.20	79.88	45.00	45.00	20.00
21	87.40	80.60	55.31	55.31	20.00
22	88.10	79.30	55.71	55.71	20.00
23	91.30	79.30	57.52	57.52	20.00
24	95.90	71.10	60.13	60.13	20.00
25	100.80	71.10	62.91	62.91	20.00
26	103.70	67.20	64.55	64.55	20.00
27	105.20	65.40	65.40	65.40	20.00
28	110.30	68.24	68.24	68.24	20.00
29	120.80	74.10	74.10	74.10	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.20	15.80	39.67	39.67
37	Geogriglia 1	22.14	16.00	0.00	0.21	15.79	39.67	39.67
38	Geogriglia 1	22.75	16.00	0.00	0.22	15.78	39.67	39.67
39	Geogriglia 1	23.37	16.00	0.00	0.24	15.76	39.67	39.67
40	Geogriglia 1	23.98	16.00	0.00	0.25	15.75	39.67	39.67
41	Geogriglia 1	24.60	16.00	0.00	0.26	15.74	39.67	39.67
42	Geogriglia 1	25.21	16.00	0.00	0.28	15.72	39.67	39.67
43	Geogriglia 1	25.83	16.00	0.00	0.30	15.70	39.67	39.67
44	Geogriglia 1	26.44	14.00	0.00	0.32	13.68	39.67	39.67
45	Geogriglia 1	27.06	10.00	0.00	0.35	9.65	39.67	39.67
46	Geogriglia 1	27.67	14.00	0.00	0.25	13.75	39.67	39.67
47	Geogriglia 1	28.29	10.00	0.00	0.41	9.59	39.67	39.67
48	Geogriglia 1	28.90	14.00	0.00	0.26	13.74	39.67	39.67
49	Geogriglia 1	29.52	10.00	0.00	0.51	9.49	39.67	39.67
50	Geogriglia 1	30.13	14.00	0.00	0.26	13.74	39.67	39.67
51	Geogriglia 1	30.75	10.00	0.00	0.58	9.42	39.67	39.67
52	Geogriglia 1	31.36	14.00	0.00	0.26	13.74	39.67	39.67
53	Geogriglia 1	31.98	10.00	0.00	0.60	9.40	39.67	39.67
54	Geogriglia 1	32.59	14.00	0.00	0.27	13.73	39.67	39.67
55	Geogriglia 1	33.21	10.00	0.00	0.62	9.38	39.67	39.67
56	Geogriglia 1	33.82	14.00	0.00	0.29	13.71	39.67	39.67
57	Geogriglia 1	34.44	10.00	0.00	0.64	9.36	39.67	39.67
58	Geogriglia 1	35.05	8.00	0.00	0.34	7.66	39.67	39.67
59	Geogriglia 1	35.66	8.00	0.00	0.37	7.63	39.67	39.67
60	Geogriglia 1	36.28	8.00	0.00	0.40	7.60	39.67	39.67
61	Geogriglia 1	36.89	8.00	0.00	0.44	7.56	39.67	39.67
62	Geogriglia 1	37.51	8.00	0.00	0.49	7.51	39.67	39.67
63	Geogriglia 1	38.12	8.00	0.00	0.55	7.45	39.67	39.67
64	Geogriglia 1	38.74	8.00	0.00	0.63	7.37	39.67	39.67
65	Geogriglia 1	39.35	8.00	0.00	0.73	7.27	39.67	39.67
66	Geogriglia 1	39.97	8.00	0.00	0.88	7.12	39.67	39.67
67	Geogriglia 1	40.58	8.00	0.00	1.10	6.90	39.67	39.67
68	Geogriglia 1	41.20	8.00	0.00	1.48	6.52	39.67	39.67
69	Geogriglia 1	41.81	8.00	0.00	2.27	5.73	39.67	39.67

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by X_a , X_b and X_c where X_a is the front end of the passive wedge (slope face), X_b is where the passive wedge ends and the active one starts, and X_c is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(X_a , Y_a) [m]	(X_b , Y_b) [m]	(X_c , Y_c) [m]	F_s	STATUS
At toe elevation	0.00	5.30 36.60	11.02 36.60	81.03 80.35	1.28	OK
Reinf. Layer #1	0.00	5.30 36.60	10.98 36.60	78.17 80.23	1.26	OK
Reinf. Layer #2	0.61	5.70 37.21	20.13 37.21	75.04 80.11	1.18	OK
Reinf. Layer #3	1.23	6.11 37.83	17.36 37.83	77.90 80.22	1.18	OK
Reinf. Layer #4	1.84	6.51 38.44	20.93 38.44	76.30 80.16	1.18	OK
Reinf. Layer #5	2.46	6.92 39.06	18.16 39.06	79.26 80.28	1.19	OK
Reinf. Layer #6	3.07	7.32 39.67	21.73 39.67	77.53 80.21	1.20	OK
Reinf. Layer #7	3.69	7.72 40.29	18.96 40.29	78.18 80.23	1.20	OK
Reinf. Layer #8	4.31	8.13 40.91	22.53 40.91	78.73 80.26	1.21	OK
Reinf. Layer #9	4.92	8.53 41.52	19.76 41.52	77.09 80.19	1.22	OK
Reinf. Layer #10	5.54	8.94 42.14	23.33 42.14	77.71 80.22	1.22	OK
Reinf. Layer #11	6.15	9.34 42.75	26.13 42.75	75.75 80.14	1.22	OK
Reinf. Layer #12	6.77	9.75 43.37	28.91 43.37	74.24 80.08	1.23	OK
Reinf. Layer #13	7.38	10.15 43.98	26.93 43.98	78.74 80.26	1.22	OK
Reinf. Layer #14	8.00	10.55 44.60	29.81 44.60	73.59 80.05	1.22	OK
Reinf. Layer #15	8.61	10.96 45.21	27.83 45.21	75.92 80.14	1.22	OK
Reinf. Layer #16	9.23	11.36 45.83	30.61 45.83	76.16 80.15	1.22	OK
Reinf. Layer #17	9.84	11.76 46.44	28.63 46.44	74.97 80.11	1.22	OK
Reinf. Layer #18	10.46	17.09 47.06	30.33 47.06	75.87 80.14	1.22	OK
Reinf. Layer #19	11.07	17.45 47.67	30.73 47.67	75.40 80.12	1.23	OK
Reinf. Layer #20	11.69	17.82 48.29	31.03 48.29	74.82 80.10	1.24	OK
Reinf. Layer #21	12.30	18.17 48.90	31.43 48.90	76.06 80.15	1.25	OK
Reinf. Layer #22	12.92	18.54 49.52	31.73 49.52	75.44 80.13	1.26	OK
Reinf. Layer #23	13.53	18.90 50.13	32.13 50.13	74.94 80.11	1.27	OK
Reinf. Layer #24	14.15	19.26 50.75	32.53 50.75	74.43 80.09	1.27	OK
Reinf. Layer #25	14.76	19.62 51.36	32.83 51.36	73.82 80.06	1.28	OK
Reinf. Layer #26	15.38	19.98 51.98	37.61 51.98	73.54 80.05	1.29	OK
Reinf. Layer #27	15.99	20.34 52.59	37.91 52.59	73.03 80.03	1.29	OK
Reinf. Layer #28	16.60	20.70 53.20	38.31 53.20	72.63 80.01	1.30	OK
Reinf. Layer #29	17.22	21.07 53.82	38.71 53.82	72.22 80.00	1.30	OK
Reinf. Layer #30	17.83	21.42 54.43	39.01 54.43	71.71 79.98	1.30	OK
Reinf. Layer #31	18.45	26.73 55.05	39.51 55.05	72.64 80.02	1.31	OK
Reinf. Layer #32	19.06	27.10 55.66	39.91 55.66	72.21 80.00	1.32	OK
Reinf. Layer #33	19.68	27.47 56.28	40.31 56.28	73.00 80.03	1.34	OK
Reinf. Layer #34	20.29	27.83 56.89	40.61 56.89	75.04 80.11	1.35	OK
Reinf. Layer #35	20.91	28.21 57.51	41.01 57.51	74.49 80.09	1.37	OK
Reinf. Layer #36	21.52	28.57 58.12	41.41 58.12	72.68 80.02	1.39	OK
Reinf. Layer #37	22.14	28.94 58.74	44.89 58.74	71.09 79.95	1.41	Minimum on Edge
Reinf. Layer #38	22.75	29.31 59.35	45.29 59.35	71.69 79.98	1.41	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	29.68	59.97	45.69	59.97	71.28	79.96	1.42	Minimum on Edge
Reinf. Layer #40	23.98	30.05	60.58	45.99	60.58	73.81	80.06	1.43	Minimum on Edge
Reinf. Layer #41	24.60	30.42	61.20	46.39	61.20	71.29	79.96	1.44	Minimum on Edge
Reinf. Layer #42	25.21	30.79	61.81	46.79	61.81	72.80	80.02	1.45	Minimum on Edge
Reinf. Layer #43	25.83	31.16	62.43	47.19	62.43	70.41	79.93	1.45	Minimum on Edge
Reinf. Layer #44	26.44	33.50	63.04	47.49	63.04	71.68	79.98	1.46	Minimum on Edge
Reinf. Layer #45	27.06	36.84	63.66	46.79	63.66	70.00	79.91	1.49	Minimum on Edge
Reinf. Layer #46	27.67	37.20	64.27	51.19	64.27	68.49	79.85	1.47	Minimum on Edge
Reinf. Layer #47	28.29	37.60	64.89	47.59	64.89	68.98	79.87	1.51	Minimum on Edge
Reinf. Layer #48	28.90	38.01	65.50	51.99	65.50	67.90	79.83	1.49	Minimum on Edge
Reinf. Layer #49	29.52	38.43	66.12	48.39	66.12	70.49	79.93	1.53	Minimum on Edge
Reinf. Layer #50	30.13	38.84	66.73	50.01	66.73	68.77	79.86	1.50	OK
Reinf. Layer #51	30.75	39.26	67.35	49.29	67.35	69.35	79.88	1.56	Minimum on Edge
Reinf. Layer #52	31.36	39.67	67.96	53.69	67.96	66.35	79.77	1.52	Minimum on Edge
Reinf. Layer #53	31.98	40.09	68.58	50.09	68.58	68.87	79.87	1.59	Minimum on Edge
Reinf. Layer #54	32.59	40.51	69.19	54.49	69.19	65.81	79.74	1.55	Minimum on Edge
Reinf. Layer #55	33.21	40.93	69.81	50.89	69.81	68.27	79.84	1.64	Minimum on Edge
Reinf. Layer #56	33.82	41.34	70.42	55.29	70.42	67.30	79.80	1.61	Minimum on Edge
Reinf. Layer #57	34.44	41.76	71.04	51.79	71.04	66.94	79.79	1.68	Minimum on Edge
Reinf. Layer #58	35.05	48.84	71.65	53.63	71.65	67.79	79.82	1.77	OK
Reinf. Layer #59	35.66	49.30	72.26	54.13	72.26	67.19	79.80	1.87	OK
Reinf. Layer #60	36.28	49.77	72.88	54.63	72.88	66.58	79.77	2.00	OK
Reinf. Layer #61	36.89	50.22	73.49	55.03	73.49	65.87	79.75	2.17	OK
Reinf. Layer #62	37.51	50.69	74.11	53.96	74.11	63.56	79.66	2.33	OK
Reinf. Layer #63	38.12	51.15	74.72	52.88	74.72	59.45	79.49	2.49	OK
Reinf. Layer #64	38.74	51.62	75.34	53.28	75.34	58.97	79.47	2.61	OK
Reinf. Layer #65	39.35	52.08	75.95	53.78	75.95	58.25	79.44	2.73	OK
Reinf. Layer #66	39.97	52.54	76.57	54.18	76.57	57.84	79.43	2.89	OK
Reinf. Layer #67	40.58	53.00	77.18	54.68	77.18	56.27	79.37	2.97	OK
Reinf. Layer #68	41.20	53.47	77.80	55.18	77.80	56.45	79.37	3.59	OK
Reinf. Layer #69	41.81	53.93	78.41	55.58	78.41	57.16	79.40	4.27	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.13

Critical Circle: $X_c = -3.04[m]$, $Y_c = 111.85[m]$, $R = 74.65[m]$. (Number of slices used = 58)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.18

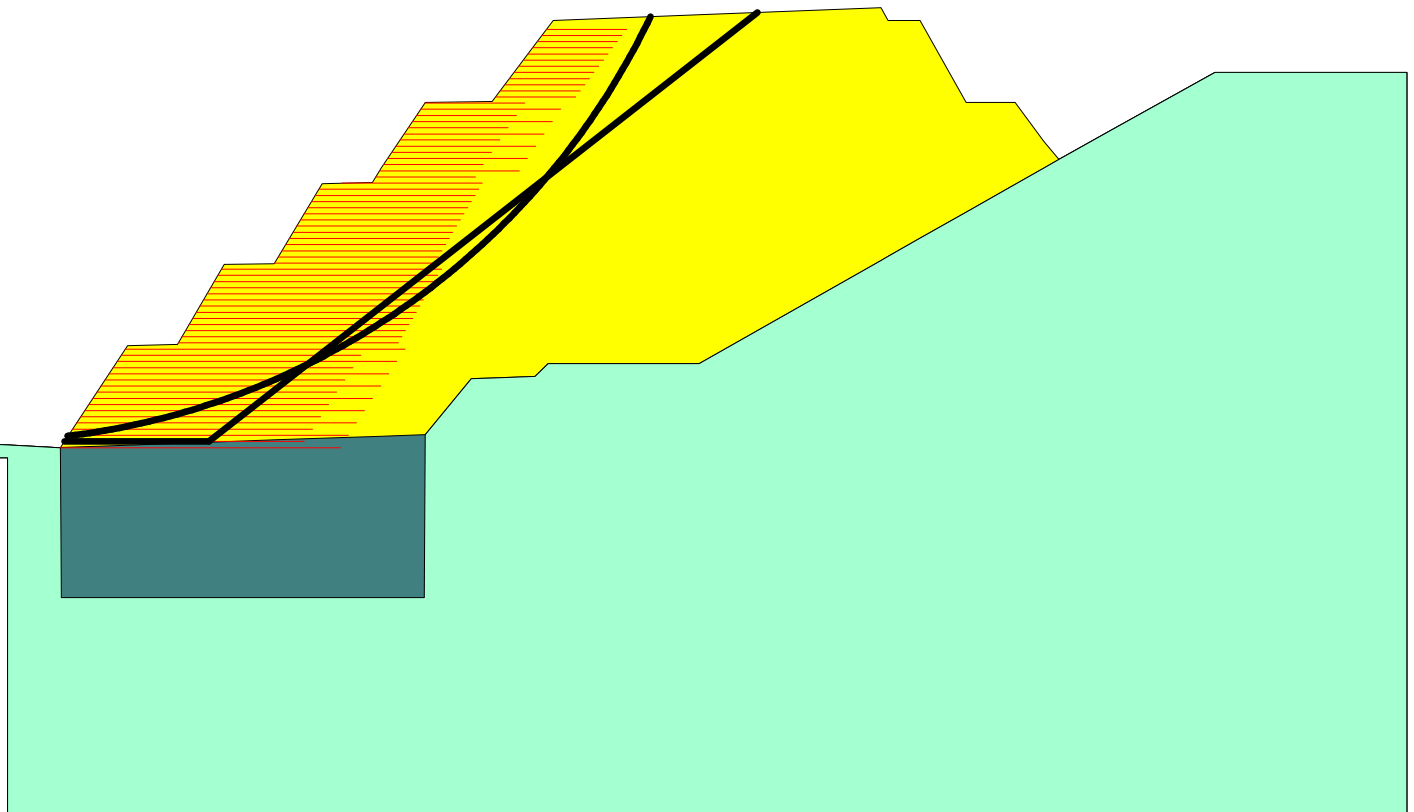
Critical Two-Part Wedge: ($X_a = 5.70$, $Y_a = 37.21$) [m]

($X_b = 20.13$, $Y_b = 37.21$) [m]

($X_c = 75.04$, $Y_c = 80.11$) [m]

(Number of slices used = 30)

Interslice resultant force inclination = 33.63 [degrees]



SCALE:

0 2 4 6[m]



Sezione 25 - A2M2 sismica

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
Torino, 10136
Telephone #: 011 561 18 11
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]	
			RFTan=1.25	RFcoh=1.25
....1.....Rilevato Marino	18.0	36.0	30.2	0.0 0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0 40.0
....3.....Riporto persistente	18.0	30.0	24.8	10.0 8.0

REINFORCEMENT

Reinforcement		Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
Type #	Geosynthetic Designated Name						
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]

Water was described by phreatic line. Y values are tabulated in the right most column.

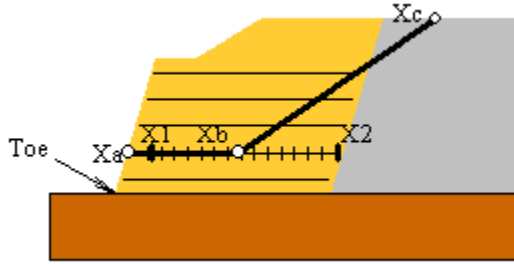
#	X	Y1	Y2	Y3	Yw (phreatic)
1	-7.40	35.60	35.60	35.60	20.00
2	-5.10	37.10	37.10	37.10	20.00
3	0.00	36.85	36.85	36.85	20.00
4	5.30	36.60	36.60	36.60	20.00
5	5.40	36.75	36.60	21.60	20.00
6	12.00	46.80	36.84	21.60	20.00
7	17.00	46.90	37.02	21.60	20.00
8	21.70	54.90	37.18	21.60	20.00
9	26.70	55.00	37.36	21.60	20.00
10	31.50	63.00	37.53	21.60	20.00
11	36.50	63.10	37.71	21.60	20.00
12	37.40	64.60	37.74	21.60	20.00
13	41.70	70.95	37.90	21.60	20.00
14	41.80	71.10	37.90	37.90	20.00
15	46.40	71.17	43.50	43.50	20.00
16	48.50	71.20	43.57	43.57	20.00
17	52.80	76.91	43.70	43.70	20.00
18	54.10	78.64	45.00	45.00	20.00
19	54.60	79.30	45.00	45.00	20.00
20	69.20	79.88	45.00	45.00	20.00
21	87.40	80.60	55.31	55.31	20.00
22	88.10	79.30	55.71	55.71	20.00
23	91.30	79.30	57.52	57.52	20.00
24	95.90	71.10	60.13	60.13	20.00
25	100.80	71.10	62.91	62.91	20.00
26	103.70	67.20	64.55	64.55	20.00
27	105.20	65.40	65.40	65.40	20.00
28	110.30	68.24	68.24	68.24	20.00
29	120.80	74.10	74.10	74.10	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-}p_o = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.49	15.51	99.17	99.17
37	Geogriglia 1	22.14	16.00	0.00	0.51	15.49	99.17	99.17
38	Geogriglia 1	22.75	16.00	0.00	0.54	15.46	99.17	99.17
39	Geogriglia 1	23.37	16.00	0.00	0.56	15.44	99.17	99.17
40	Geogriglia 1	23.98	16.00	0.00	0.60	15.40	99.17	99.17
41	Geogriglia 1	24.60	16.00	0.00	0.63	15.37	99.17	99.17
42	Geogriglia 1	25.21	16.00	0.00	0.67	15.33	99.17	99.17
43	Geogriglia 1	25.83	16.00	0.00	0.72	15.28	99.17	99.17
44	Geogriglia 1	26.44	14.00	0.00	0.77	13.23	99.17	99.17
45	Geogriglia 1	27.06	10.00	0.00	0.84	9.16	99.17	99.17
46	Geogriglia 1	27.67	14.00	0.00	0.62	13.38	99.17	99.17
47	Geogriglia 1	28.29	10.00	0.00	1.00	9.00	99.17	99.17
48	Geogriglia 1	28.90	14.00	0.00	0.63	13.37	99.17	99.17
49	Geogriglia 1	29.52	10.00	0.00	1.24	8.76	99.17	99.17
50	Geogriglia 1	30.13	14.00	0.00	0.64	13.36	99.17	99.17
51	Geogriglia 1	30.75	10.00	0.00	1.53	8.47	99.17	99.17
52	Geogriglia 1	31.36	14.00	0.00	0.65	13.35	99.17	99.17
53	Geogriglia 1	31.98	10.00	0.00	1.75	8.25	99.17	99.17
54	Geogriglia 1	32.59	14.00	0.00	0.66	13.34	99.17	99.17
55	Geogriglia 1	33.21	10.00	0.00	1.86	8.14	99.17	99.17
56	Geogriglia 1	33.82	14.00	0.00	0.71	13.29	99.17	99.17
57	Geogriglia 1	34.44	10.00	0.00	1.98	8.02	99.17	99.17
58	Geogriglia 1	35.05	8.00	0.00	0.81	7.19	99.17	99.17
59	Geogriglia 1	35.66	8.00	0.00	0.88	7.12	99.17	99.17
60	Geogriglia 1	36.28	8.00	0.00	0.96	7.04	99.17	99.17
61	Geogriglia 1	36.89	8.00	0.00	1.06	6.94	99.17	99.17
62	Geogriglia 1	37.51	8.00	0.00	1.18	6.82	99.17	99.17
63	Geogriglia 1	38.12	8.00	0.00	1.33	6.67	99.17	99.17
64	Geogriglia 1	38.74	8.00	0.00	1.52	6.48	99.17	99.17
65	Geogriglia 1	39.35	8.00	0.00	1.78	6.22	99.17	99.17
66	Geogriglia 1	39.97	8.00	0.00	2.14	5.86	99.17	99.17
67	Geogriglia 1	40.58	8.00	0.00	2.70	5.30	99.17	99.17
68	Geogriglia 1	41.20	8.00	0.00	3.69	4.31	99.17	99.17
69	Geogriglia 1	41.81	8.00	0.00	5.89	2.11	99.17	99.17

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS
At toe elevation	0.00	5.30 36.60	22.06 36.60	90.39 79.30	1.31	OK
Reinf. Layer #1	0.00	5.30 36.60	27.71 36.60	88.69 79.30	1.27	OK
Reinf. Layer #2	0.61	5.70 37.21	24.91 37.21	86.85 80.58	1.17	OK
Reinf. Layer #3	1.23	6.11 37.83	34.09 37.83	84.95 80.50	1.12	Minimum on Edge
Reinf. Layer #4	1.84	6.51 38.44	30.49 38.44	84.29 80.48	1.11	Minimum on Edge
Reinf. Layer #5	2.46	6.92 39.06	34.89 39.06	84.25 80.48	1.12	Minimum on Edge
Reinf. Layer #6	3.07	7.32 39.67	31.29 39.67	83.48 80.44	1.12	Minimum on Edge
Reinf. Layer #7	3.69	7.72 40.29	35.69 40.29	83.55 80.45	1.14	Minimum on Edge
Reinf. Layer #8	4.31	8.13 40.91	32.09 40.91	80.78 80.34	1.12	Minimum on Edge
Reinf. Layer #9	4.92	8.53 41.52	36.49 41.52	82.85 80.42	1.14	Minimum on Edge
Reinf. Layer #10	5.54	8.94 42.14	32.89 42.14	81.83 80.38	1.12	Minimum on Edge
Reinf. Layer #11	6.15	9.34 42.75	37.29 42.75	82.15 80.39	1.15	Minimum on Edge
Reinf. Layer #12	6.77	9.75 43.37	33.69 43.37	82.86 80.42	1.14	Minimum on Edge
Reinf. Layer #13	7.38	10.15 43.98	38.09 43.98	81.45 80.36	1.16	Minimum on Edge
Reinf. Layer #14	8.00	10.55 44.60	34.59 44.60	83.95 80.46	1.15	Minimum on Edge
Reinf. Layer #15	8.61	10.96 45.21	38.99 45.21	80.86 80.34	1.17	Minimum on Edge
Reinf. Layer #16	9.23	11.36 45.83	35.39 45.83	83.01 80.43	1.17	Minimum on Edge
Reinf. Layer #17	9.84	11.76 46.44	39.79 46.44	80.16 80.31	1.17	Minimum on Edge
Reinf. Layer #18	10.46	17.09 47.06	39.09 47.06	78.65 80.25	1.15	Minimum on Edge
Reinf. Layer #19	11.07	17.45 47.67	39.49 47.67	78.30 80.24	1.16	Minimum on Edge
Reinf. Layer #20	11.69	17.82 48.29	39.79 48.29	77.84 80.22	1.16	Minimum on Edge
Reinf. Layer #21	12.30	18.17 48.90	40.19 48.90	77.50 80.21	1.17	Minimum on Edge
Reinf. Layer #22	12.92	18.54 49.52	40.49 49.52	77.04 80.19	1.17	Minimum on Edge
Reinf. Layer #23	13.53	18.90 50.13	40.89 50.13	76.70 80.18	1.18	Minimum on Edge
Reinf. Layer #24	14.15	19.26 50.75	41.29 50.75	77.68 80.21	1.19	Minimum on Edge
Reinf. Layer #25	14.76	19.62 51.36	41.59 51.36	77.20 80.20	1.19	Minimum on Edge
Reinf. Layer #26	15.38	19.98 51.98	41.99 51.98	76.81 80.18	1.20	Minimum on Edge
Reinf. Layer #27	15.99	20.34 52.59	42.29 52.59	76.34 80.16	1.21	Minimum on Edge
Reinf. Layer #28	16.60	20.70 53.20	42.69 53.20	77.25 80.20	1.21	Minimum on Edge
Reinf. Layer #29	17.22	21.07 53.82	43.09 53.82	76.83 80.18	1.22	Minimum on Edge
Reinf. Layer #30	17.83	21.42 54.43	43.39 54.43	76.32 80.16	1.22	Minimum on Edge
Reinf. Layer #31	18.45	26.73 55.05	42.69 55.05	74.75 80.10	1.19	Minimum on Edge
Reinf. Layer #32	19.06	27.10 55.66	43.09 55.66	74.35 80.08	1.20	Minimum on Edge
Reinf. Layer #33	19.68	27.47 56.28	43.49 56.28	73.94 80.07	1.21	Minimum on Edge
Reinf. Layer #34	20.29	27.83 56.89	43.79 56.89	73.43 80.05	1.22	Minimum on Edge
Reinf. Layer #35	20.91	28.21 57.51	44.19 57.51	73.01 80.03	1.23	Minimum on Edge
Reinf. Layer #36	21.52	28.57 58.12	44.59 58.12	72.61 80.01	1.24	Minimum on Edge
Reinf. Layer #37	22.14	28.94 58.74	44.89 58.74	73.15 80.04	1.24	Minimum on Edge
Reinf. Layer #38	22.75	29.31 59.35	45.29 59.35	72.72 80.02	1.25	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	29.68	59.97	45.69	59.97	72.27	80.00	1.25	Minimum on Edge
Reinf. Layer #40	23.98	30.05	60.58	45.99	60.58	73.81	80.06	1.26	Minimum on Edge
Reinf. Layer #41	24.60	30.42	61.20	46.39	61.20	75.54	80.13	1.28	Minimum on Edge
Reinf. Layer #42	25.21	30.79	61.81	46.79	61.81	72.80	80.02	1.30	Minimum on Edge
Reinf. Layer #43	25.83	31.16	62.43	47.19	62.43	74.37	80.08	1.32	Minimum on Edge
Reinf. Layer #44	26.44	33.50	63.04	47.49	63.04	72.66	80.02	1.35	Minimum on Edge
Reinf. Layer #45	27.06	36.84	63.66	46.79	63.66	72.99	80.03	1.41	Minimum on Edge
Reinf. Layer #46	27.67	37.20	64.27	51.19	64.27	69.14	79.88	1.30	Minimum on Edge
Reinf. Layer #47	28.29	37.60	64.89	47.59	64.89	71.74	79.98	1.44	Minimum on Edge
Reinf. Layer #48	28.90	38.01	65.50	51.99	65.50	68.50	79.85	1.32	Minimum on Edge
Reinf. Layer #49	29.52	38.43	66.12	48.39	66.12	70.49	79.93	1.47	Minimum on Edge
Reinf. Layer #50	30.13	38.84	66.73	52.79	66.73	67.31	79.80	1.33	Minimum on Edge
Reinf. Layer #51	30.75	39.26	67.35	49.29	67.35	71.12	79.95	1.52	Minimum on Edge
Reinf. Layer #52	31.36	39.67	67.96	53.69	67.96	66.82	79.78	1.35	Minimum on Edge
Reinf. Layer #53	31.98	40.09	68.58	50.09	68.58	69.69	79.90	1.64	Minimum on Edge
Reinf. Layer #54	32.59	40.51	69.19	54.49	69.19	66.23	79.76	1.37	Minimum on Edge
Reinf. Layer #55	33.21	40.93	69.81	50.89	69.81	68.27	79.84	1.80	Minimum on Edge
Reinf. Layer #56	33.82	41.34	70.42	55.29	70.42	67.30	79.80	1.42	Minimum on Edge
Reinf. Layer #57	34.44	41.76	71.04	51.79	71.04	66.94	79.79	2.00	Minimum on Edge
Reinf. Layer #58	35.05	48.84	71.65	56.79	71.65	67.22	79.80	1.59	Minimum on Edge
Reinf. Layer #59	35.66	49.30	72.26	57.29	72.26	67.30	79.80	1.67	Minimum on Edge
Reinf. Layer #60	36.28	49.77	72.88	57.79	72.88	66.96	79.79	1.77	Minimum on Edge
Reinf. Layer #61	36.89	50.22	73.49	58.19	73.49	66.86	79.79	1.87	Minimum on Edge
Reinf. Layer #62	37.51	50.69	74.11	58.69	74.11	66.48	79.77	1.99	Minimum on Edge
Reinf. Layer #63	38.12	51.15	74.72	59.19	74.72	66.40	79.77	2.14	Minimum on Edge
Reinf. Layer #64	38.74	51.62	75.34	59.59	75.34	65.88	79.75	2.30	Minimum on Edge
Reinf. Layer #65	39.35	52.08	75.95	60.09	75.95	65.71	79.74	2.51	Minimum on Edge
Reinf. Layer #66	39.97	52.54	76.57	60.49	76.57	65.35	79.73	2.78	Minimum on Edge
Reinf. Layer #67	40.58	53.00	77.18	60.99	77.18	65.05	79.71	3.14	Minimum on Edge
Reinf. Layer #68	41.20	53.47	77.80	61.49	77.80	64.65	79.70	3.68	Minimum on Edge
Reinf. Layer #69	41.81	53.93	78.41	60.31	78.41	62.14	79.60	5.10	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.13

Critical Circle: $X_c = 9.38[m]$, $Y_c = 101.15[m]$, $R = 63.48[m]$. (Number of slices used = 61)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.11

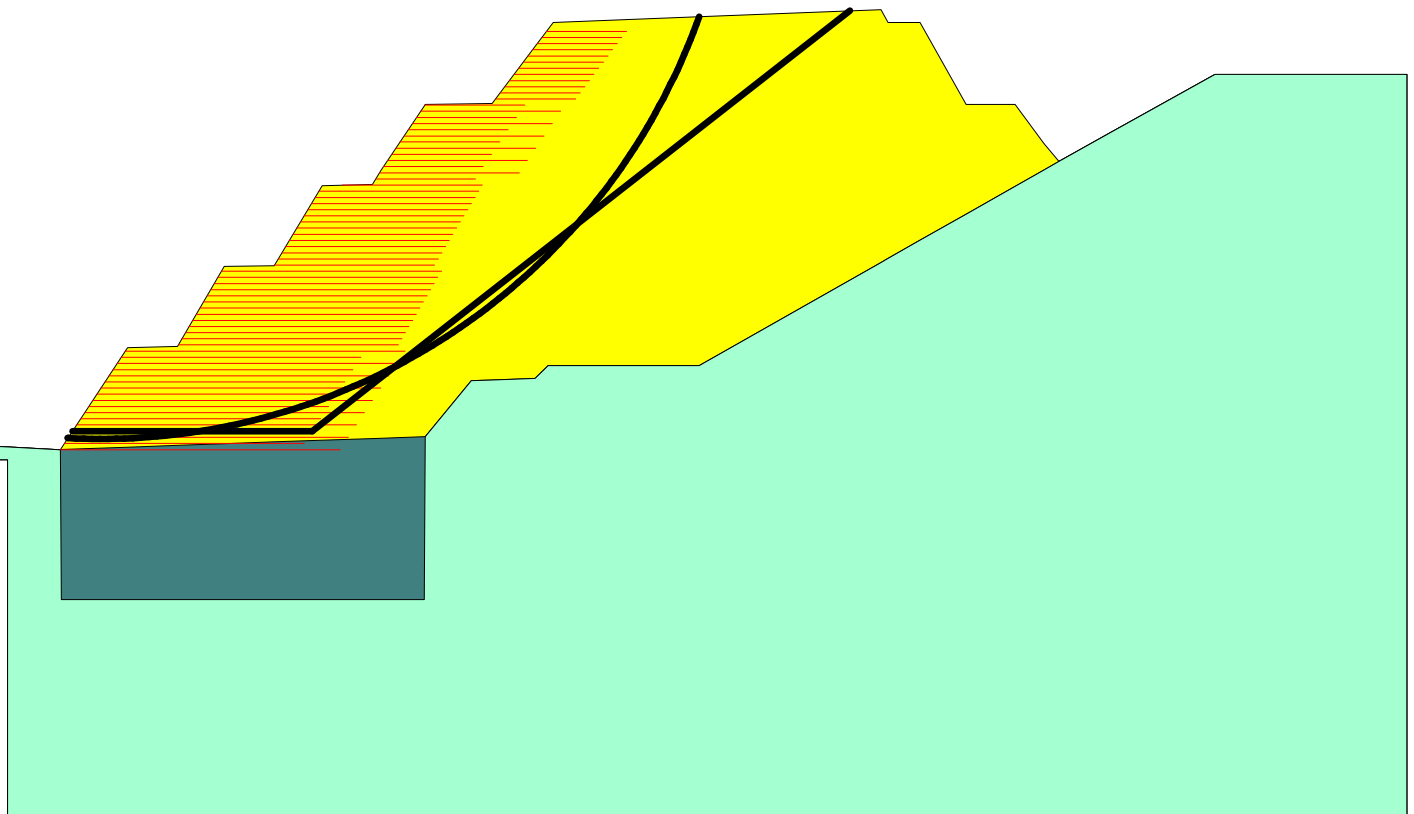
Critical Two-Part Wedge: ($X_a = 6.51$, $Y_a = 38.44$) [m]

($X_b = 30.49$, $Y_b = 38.44$) [m]

($X_c = 84.29$, $Y_c = 80.48$) [m]

(Number of slices used = 30)

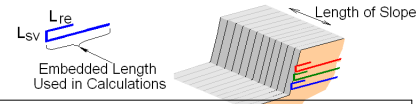
Interslice resultant force inclination = 29.67 [degrees]



SCALE:

0 2 4 6[m]



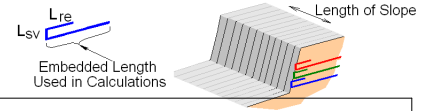


REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
1	1	Geogriglia 1	0.00	28.00	1.00	5.30 36.60	33.30 36.60	0.61	1.50
2	1	Geogriglia 1	0.61	24.00	1.00	5.70 37.21	29.70 37.21	0.62	1.50
3	1	Geogriglia 1	1.23	28.00	1.00	6.11 37.83	34.11 37.83	0.61	1.50
4	1	Geogriglia 1	1.84	24.00	1.00	6.51 38.44	30.51 38.44	0.62	1.50
5	1	Geogriglia 1	2.46	28.00	1.00	6.92 39.06	34.92 39.06	0.61	1.50
6	1	Geogriglia 1	3.07	24.00	1.00	7.32 39.67	31.32 39.67	0.62	1.50
7	1	Geogriglia 1	3.69	28.00	1.00	7.72 40.29	35.72 40.29	0.62	1.50
8	1	Geogriglia 1	4.31	24.00	1.00	8.13 40.91	32.13 40.91	0.61	1.50
9	1	Geogriglia 1	4.92	28.00	1.00	8.53 41.52	36.53 41.52	0.62	1.50
10	1	Geogriglia 1	5.54	24.00	1.00	8.94 42.14	32.94 42.14	0.61	1.50
11	1	Geogriglia 1	6.15	28.00	1.00	9.34 42.75	37.34 42.75	0.62	1.50
12	1	Geogriglia 1	6.77	24.00	1.00	9.75 43.37	33.75 43.37	0.61	1.50
13	1	Geogriglia 1	7.38	28.00	1.00	10.15 43.98	38.15 43.98	0.62	1.50
14	1	Geogriglia 1	8.00	24.00	1.00	10.55 44.60	34.55 44.60	0.61	1.50
15	1	Geogriglia 1	8.61	28.00	1.00	10.96 45.21	38.96 45.21	0.62	1.50
16	1	Geogriglia 1	9.23	24.00	1.00	11.36 45.83	35.36 45.83	0.61	1.50
17	1	Geogriglia 1	9.84	28.00	1.00	11.76 46.44	39.76 46.44	0.62	1.50
18	1	Geogriglia 1	10.46	22.00	1.00	17.09 47.06	39.09 47.06	0.61	1.50
19	1	Geogriglia 1	11.07	22.00	1.00	17.45 47.67	39.45 47.67	0.62	1.50
20	1	Geogriglia 1	11.69	22.00	1.00	17.82 48.29	39.82 48.29	0.61	1.50
21	1	Geogriglia 1	12.30	22.00	1.00	18.17 48.90	40.17 48.90	0.62	1.50
22	1	Geogriglia 1	12.92	22.00	1.00	18.54 49.52	40.54 49.52	0.61	1.50
23	1	Geogriglia 1	13.53	22.00	1.00	18.90 50.13	40.90 50.13	0.62	1.50
24	1	Geogriglia 1	14.15	22.00	1.00	19.26 50.75	41.26 50.75	0.61	1.50
25	1	Geogriglia 1	14.76	22.00	1.00	19.62 51.36	41.62 51.36	0.62	1.50
26	1	Geogriglia 1	15.38	22.00	1.00	19.98 51.98	41.98 51.98	0.61	1.50
27	1	Geogriglia 1	15.99	22.00	1.00	20.34 52.59	42.34 52.59	0.61	1.50
28	1	Geogriglia 1	16.60	22.00	1.00	20.70 53.20	42.70 53.20	0.62	1.50
29	1	Geogriglia 1	17.22	22.00	1.00	21.07 53.82	43.07 53.82	0.61	1.50
30	1	Geogriglia 1	17.83	22.00	1.00	21.42 54.43	43.42 54.43	0.62	1.50
31	1	Geogriglia 1	18.45	16.00	1.00	26.73 55.05	42.73 55.05	0.61	1.50
32	1	Geogriglia 1	19.06	16.00	1.00	27.10 55.66	43.10 55.66	0.62	1.50
33	1	Geogriglia 1	19.68	16.00	1.00	27.47 56.28	43.47 56.28	0.61	1.50
34	1	Geogriglia 1	20.29	16.00	1.00	27.83 56.89	43.83 56.89	0.62	1.50
35	1	Geogriglia 1	20.91	16.00	1.00	28.21 57.51	44.21 57.51	0.61	1.50
36	1	Geogriglia 1	21.52	16.00	1.00	28.57 58.12	44.57 58.12	0.62	1.50
37	1	Geogriglia 1	22.14	16.00	1.00	28.94 58.74	44.94 58.74	0.61	1.50
38	1	Geogriglia 1	22.75	16.00	1.00	29.31 59.35	45.31 59.35	0.62	1.50
39	1	Geogriglia 1	23.37	16.00	1.00	29.68 59.97	45.68 59.97	0.61	1.50
40	1	Geogriglia 1	23.98	16.00	1.00	30.05 60.58	46.05 60.58	0.62	1.50
41	1	Geogriglia 1	24.60	16.00	1.00	30.42 61.20	46.42 61.20	0.61	1.50
42	1	Geogriglia 1	25.21	16.00	1.00	30.79 61.81	46.79 61.81	0.62	1.50
43	1	Geogriglia 1	25.83	16.00	1.00	31.16 62.43	47.16 62.43	0.61	1.50
44	1	Geogriglia 1	26.44	14.00	1.00	33.50 63.04	47.50 63.04	0.62	1.50
45	1	Geogriglia 1	27.06	10.00	1.00	36.84 63.66	46.84 63.66	0.61	1.50
46	1	Geogriglia 1	27.67	14.00	1.00	37.20 64.27	51.20 64.27	0.62	1.50
47	1	Geogriglia 1	28.29	10.00	1.00	37.60 64.89	47.60 64.89	0.61	1.50
48	1	Geogriglia 1	28.90	14.00	1.00	38.01 65.50	52.01 65.50	0.62	1.50
49	1	Geogriglia 1	29.52	10.00	1.00	38.43 66.12	48.43 66.12	0.61	1.50
50	1	Geogriglia 1	30.13	14.00	1.00	38.84 66.73	52.84 66.73	0.62	1.50

* Vertical distance between layers.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	30.75	10.00	1.00	39.26	67.35	49.26	67.35	0.61	1.50
52	1	Geogriglia 1	31.36	14.00	1.00	39.67	67.96	53.67	67.96	0.62	1.50
53	1	Geogriglia 1	31.98	10.00	1.00	40.09	68.58	50.09	68.58	0.61	1.50
54	1	Geogriglia 1	32.59	14.00	1.00	40.51	69.19	54.51	69.19	0.62	1.50
55	1	Geogriglia 1	33.21	10.00	1.00	40.93	69.81	50.93	69.81	0.61	1.50
56	1	Geogriglia 1	33.82	14.00	1.00	41.34	70.42	55.34	70.42	0.62	1.50
57	1	Geogriglia 1	34.44	10.00	1.00	41.76	71.04	51.76	71.04	0.61	1.50
58	1	Geogriglia 1	35.05	8.00	1.00	48.84	71.65	56.84	71.65	0.61	1.50
59	1	Geogriglia 1	35.66	8.00	1.00	49.30	72.26	57.30	72.26	0.62	1.50
60	1	Geogriglia 1	36.28	8.00	1.00	49.77	72.88	57.77	72.88	0.61	1.50
61	1	Geogriglia 1	36.89	8.00	1.00	50.22	73.49	58.22	73.49	0.62	1.50
62	1	Geogriglia 1	37.51	8.00	1.00	50.69	74.11	58.69	74.11	0.61	1.50
63	1	Geogriglia 1	38.12	8.00	1.00	51.15	74.72	59.15	74.72	0.62	1.50
64	1	Geogriglia 1	38.74	8.00	1.00	51.62	75.34	59.62	75.34	0.61	1.50
65	1	Geogriglia 1	39.35	8.00	1.00	52.08	75.95	60.08	75.95	0.62	1.50
66	1	Geogriglia 1	39.97	8.00	1.00	52.54	76.57	60.54	76.57	0.61	1.50
67	1	Geogriglia 1	40.58	8.00	1.00	53.00	77.18	61.00	77.18	0.62	1.50
68	1	Geogriglia 1	41.20	8.00	1.00	53.47	77.80	61.47	77.80	0.61	1.50
69	1	Geogriglia 1	41.81	8.00	1.00	53.93	78.41	61.93	78.41	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m ²] / length of slope [m] (including Lsv & Lre)
1	Geogriglia 1	1.00	1347.92

Sezione 29 - A2M2 statica

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PROJECT IDENTIFICATION

Title: Sezione 29 - A2M2 statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente.....	18.0	30.0	24.8	10.0	8.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line.

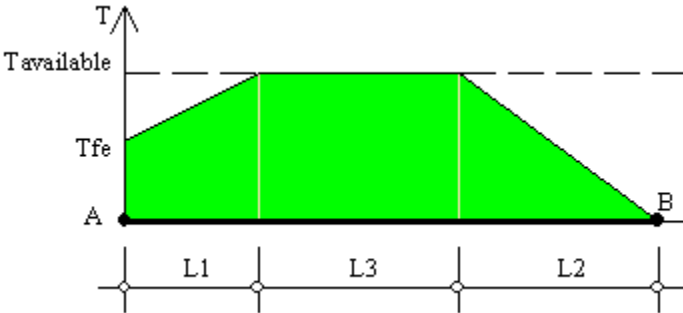
	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	0.00	50.00		51	100.20	63.50
	2	20.30	50.70		52	103.50	68.50
	3	22.20	51.90		53	105.70	68.50
	4	29.60	51.70		54	111.70	72.60
	5	31.40	54.90		55	123.00	78.80
	6	36.80	55.00		56	140.70	89.40
	7	41.40	63.10		58	0.00	20.00
	8	47.50	63.10	Top of Phreatic Line	59	110.30	20.00
	9	52.20	71.10				
	10	57.60	71.20				
	11	62.30	79.20				
	12	67.80	79.30				
	13	72.40	87.40				
	14	77.90	87.40				
	15	82.50	95.40				
	16	100.30	95.40				
	17	105.80	87.40				
	18	111.60	87.30				
	19	116.90	79.30				
	20	122.50	79.20				
	21	123.00	78.80				
	22	140.70	89.40				
Top of Layer 2	23	0.00	50.00				
	24	20.30	50.70				
	25	22.20	51.90				
	26	29.60	51.70				
	27	71.80	54.20				
	28	73.40	55.80				
	29	80.70	55.80				
	30	82.20	57.80				
	31	91.20	57.80				
	32	95.50	63.50				
	33	100.20	63.50				
	34	103.50	68.50				
	35	105.70	68.50				
	36	111.70	72.60				
	37	123.00	78.80				
	38	140.70	89.40				
Top of Layer 3	39	0.00	50.00				
	40	20.30	50.70				
	41	22.20	51.90				
	42	29.60	51.70				
	43	29.70	36.70				
	44	67.00	36.70				
	45	71.80	54.20				
	46	73.40	55.80				
	47	80.70	55.80				
	48	82.20	57.80				
	49	91.20	57.80				
	50	95.50	63.50				

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	0.00	50.00	50.00	50.00	20.00
2	20.30	50.70	50.70	50.70	20.00
3	22.20	51.90	51.90	51.90	20.00
4	29.60	51.70	51.70	51.70	20.00
5	29.70	51.88	51.71	36.70	20.00
6	31.40	54.90	51.81	36.70	20.00
7	36.80	55.00	52.13	36.70	20.00
8	41.40	63.10	52.40	36.70	20.00
9	47.50	63.10	52.76	36.70	20.00
10	52.20	71.10	53.04	36.70	20.00
11	57.60	71.20	53.36	36.70	20.00
12	62.30	79.20	53.64	36.70	20.00
13	67.00	79.29	53.92	36.70	20.00
14	67.80	79.30	53.96	39.62	20.00
15	71.80	86.34	54.20	54.20	20.00
16	72.40	87.40	54.80	54.80	20.00
17	73.40	87.40	55.80	55.80	20.00
18	77.90	87.40	55.80	55.80	20.00
19	80.70	92.27	55.80	55.80	20.00
20	82.20	94.88	57.80	57.80	20.00
21	82.50	95.40	57.80	57.80	20.00
22	91.20	95.40	57.80	57.80	20.00
23	95.50	95.40	63.50	63.50	20.00
24	100.20	95.40	63.50	63.50	20.00
25	100.30	95.40	63.65	63.65	20.00
26	103.50	90.75	68.50	68.50	20.00
27	105.70	87.55	68.50	68.50	20.00
28	105.80	87.40	68.57	68.57	20.00
29	110.30	87.32	71.64	71.64	20.00
30	111.60	87.30	72.53	72.53	20.00
31	111.70	87.15	72.60	72.60	20.00
32	116.90	79.30	75.45	75.45	20.00
33	122.50	79.20	78.53	78.53	20.00
34	123.00	78.80	78.80	78.80	20.00
35	140.70	89.40	89.40	89.40	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

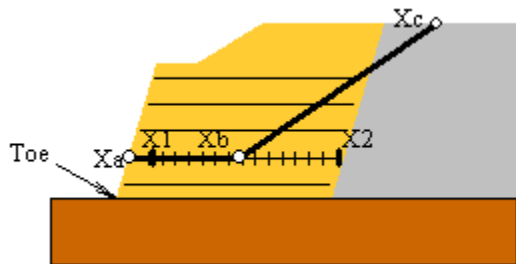
Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.10	27.90	39.67	39.67
2	Geogriglia 1	0.61	28.00	0.00	0.10	27.90	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.10	27.90	39.67	39.67
4	Geogriglia 1	1.84	28.00	0.00	0.14	27.86	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.14	27.86	39.67	39.67
6	Geogriglia 1	3.07	28.00	0.00	0.14	27.86	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.11	27.89	39.67	39.67
8	Geogriglia 1	4.31	24.00	0.00	0.12	23.88	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.12	27.88	39.67	39.67
10	Geogriglia 1	5.54	24.00	0.00	0.12	23.88	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.13	27.87	39.67	39.67
12	Geogriglia 1	6.77	24.00	0.00	0.13	23.87	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.13	27.87	39.67	39.67
14	Geogriglia 1	8.00	24.00	0.00	0.14	23.86	39.67	39.67
15	Geogriglia 1	8.61	28.00	0.00	0.14	27.86	39.67	39.67
16	Geogriglia 1	9.23	24.00	0.00	0.15	23.85	39.67	39.67
17	Geogriglia 1	9.84	28.00	0.00	0.14	27.86	39.67	39.67
18	Geogriglia 1	10.46	24.00	0.00	0.16	23.84	39.67	39.67
19	Geogriglia 1	11.07	28.00	0.00	0.14	27.86	39.67	39.67
20	Geogriglia 1	11.69	22.00	0.00	0.14	21.86	39.67	39.67
21	Geogriglia 1	12.30	22.00	0.00	0.14	21.86	39.67	39.67
22	Geogriglia 1	12.92	22.00	0.00	0.14	21.86	39.67	39.67
23	Geogriglia 1	13.53	22.00	0.00	0.14	21.86	39.67	39.67
24	Geogriglia 1	14.15	22.00	0.00	0.14	21.86	39.67	39.67
25	Geogriglia 1	14.76	22.00	0.00	0.14	21.86	39.67	39.67
26	Geogriglia 1	15.38	22.00	0.00	0.14	21.86	39.67	39.67
27	Geogriglia 1	15.99	22.00	0.00	0.14	21.86	39.67	39.67
28	Geogriglia 1	16.60	22.00	0.00	0.14	21.86	39.67	39.67
29	Geogriglia 1	17.22	22.00	0.00	0.14	21.86	39.67	39.67
30	Geogriglia 1	17.83	22.00	0.00	0.15	21.85	39.67	39.67
31	Geogriglia 1	18.45	22.00	0.00	0.15	21.85	39.67	39.67
32	Geogriglia 1	19.06	22.00	0.00	0.16	21.84	39.67	39.67
33	Geogriglia 1	19.68	16.00	0.00	0.17	15.83	39.67	39.67
34	Geogriglia 1	20.29	16.00	0.00	0.17	15.83	39.67	39.67
35	Geogriglia 1	20.91	16.00	0.00	0.18	15.82	39.67	39.67

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-}p_o = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.19	15.81	39.67	39.67
37	Geogriglia 1	22.14	16.00	0.00	0.19	15.81	39.67	39.67
38	Geogriglia 1	22.75	16.00	0.00	0.20	15.80	39.67	39.67
39	Geogriglia 1	23.37	16.00	0.00	0.21	15.79	39.67	39.67
40	Geogriglia 1	23.98	16.00	0.00	0.22	15.78	39.67	39.67
41	Geogriglia 1	24.60	16.00	0.00	0.24	15.76	39.67	39.67
42	Geogriglia 1	25.21	16.00	0.00	0.25	15.75	39.67	39.67
43	Geogriglia 1	25.83	16.00	0.00	0.27	15.73	39.67	39.67
44	Geogriglia 1	26.44	16.00	0.00	0.28	15.72	39.67	39.67
45	Geogriglia 1	27.06	16.00	0.00	0.30	15.70	39.67	39.67
46	Geogriglia 1	27.67	14.00	0.00	0.18	13.82	39.67	39.67
47	Geogriglia 1	28.29	10.00	0.00	0.34	9.66	39.67	39.67
48	Geogriglia 1	28.90	14.00	0.00	0.18	13.82	39.67	39.67
49	Geogriglia 1	29.52	10.00	0.00	0.34	9.66	39.67	39.67
50	Geogriglia 1	30.13	14.00	0.00	0.19	13.81	39.67	39.67
51	Geogriglia 1	30.75	10.00	0.00	0.34	9.66	39.67	39.67
52	Geogriglia 1	31.36	14.00	0.00	0.21	13.79	39.67	39.67
53	Geogriglia 1	31.98	10.00	0.00	0.35	9.65	39.67	39.67
54	Geogriglia 1	32.59	14.00	0.00	0.24	13.76	39.67	39.67
55	Geogriglia 1	33.21	10.00	0.00	0.35	9.65	39.67	39.67
56	Geogriglia 1	33.82	14.00	0.00	0.27	13.73	39.67	39.67
57	Geogriglia 1	34.44	10.00	0.00	0.35	9.65	39.67	39.67
58	Geogriglia 1	35.05	14.00	0.00	0.30	13.70	39.67	39.67
59	Geogriglia 1	35.66	10.00	0.00	0.35	9.65	39.67	39.67
60	Geogriglia 1	36.28	8.00	0.00	0.35	7.65	39.67	39.67
61	Geogriglia 1	36.89	8.00	0.00	0.38	7.62	39.67	39.67
62	Geogriglia 1	37.51	8.00	0.00	0.42	7.58	39.67	39.67
63	Geogriglia 1	38.12	8.00	0.00	0.47	7.53	39.67	39.67
64	Geogriglia 1	38.74	8.00	0.00	0.52	7.48	39.67	39.67
65	Geogriglia 1	39.35	8.00	0.00	0.60	7.40	39.67	39.67
66	Geogriglia 1	39.97	8.00	0.00	0.70	7.30	39.67	39.67
67	Geogriglia 1	40.58	8.00	0.00	0.83	7.17	39.67	39.67
68	Geogriglia 1	41.20	8.00	0.00	1.03	6.97	39.67	39.67
69	Geogriglia 1	41.81	8.00	0.00	1.37	6.63	39.67	39.67
70	Geogriglia 1	42.43	8.00	0.00	2.03	5.97	39.67	39.67
71	Geogriglia 1	43.05	8.00	0.00	3.97	4.03	39.67	39.67

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS
At toe elevation	0.00	29.60 51.70	40.84 51.70	103.45 90.82	1.38	OK
Reinf. Layer #1	0.00	29.60 51.70	40.86 51.70	103.45 90.81	1.36	OK
Reinf. Layer #2	0.61	29.94 52.31	41.16 52.31	102.53 92.16	1.27	OK
Reinf. Layer #3	1.23	30.29 52.93	47.13 52.93	102.06 92.84	1.22	OK
Reinf. Layer #4	1.84	30.63 53.54	58.59 53.54	102.71 91.89	1.20	Minimum on Edge
Reinf. Layer #5	2.46	30.98 54.16	58.99 54.16	103.17 91.23	1.20	Minimum on Edge
Reinf. Layer #6	3.07	31.33 54.77	59.29 54.77	103.01 91.46	1.21	Minimum on Edge
Reinf. Layer #7	3.69	37.02 55.39	48.26 55.39	101.96 92.99	1.22	OK
Reinf. Layer #8	4.31	37.37 56.01	51.83 56.01	102.83 91.72	1.22	OK
Reinf. Layer #9	4.92	37.72 56.62	60.11 56.62	102.51 92.19	1.23	OK
Reinf. Layer #10	5.54	38.07 57.24	52.53 57.24	102.49 92.22	1.23	OK
Reinf. Layer #11	6.15	38.42 57.85	60.81 57.85	102.76 91.82	1.25	OK
Reinf. Layer #12	6.77	38.77 58.47	58.01 58.47	101.49 93.67	1.24	OK
Reinf. Layer #13	7.38	39.12 59.08	55.93 59.08	102.17 92.68	1.24	OK
Reinf. Layer #14	8.00	39.47 59.70	58.71 59.70	101.73 93.31	1.23	OK
Reinf. Layer #15	8.61	39.82 60.31	56.63 60.31	101.84 93.16	1.24	OK
Reinf. Layer #16	9.23	40.17 60.93	59.41 60.93	101.96 92.99	1.23	OK
Reinf. Layer #17	9.84	40.51 61.54	57.33 61.54	101.51 93.64	1.24	OK
Reinf. Layer #18	10.46	40.87 62.16	60.11 62.16	101.64 93.45	1.23	OK
Reinf. Layer #19	11.07	41.21 62.77	58.03 62.77	101.18 94.12	1.24	OK
Reinf. Layer #20	11.69	47.67 63.39	60.93 63.39	101.36 93.86	1.24	OK
Reinf. Layer #21	12.30	48.03 64.00	61.23 64.00	101.68 93.39	1.25	OK
Reinf. Layer #22	12.92	48.39 64.62	61.63 64.62	101.53 93.61	1.26	OK
Reinf. Layer #23	13.53	48.75 65.23	62.03 65.23	101.87 93.12	1.28	OK
Reinf. Layer #24	14.15	49.12 65.85	62.33 65.85	101.20 94.09	1.29	OK
Reinf. Layer #25	14.76	49.47 66.46	62.73 66.46	101.99 92.94	1.30	OK
Reinf. Layer #26	15.38	49.84 67.08	67.41 67.08	101.47 93.69	1.31	OK
Reinf. Layer #27	15.99	50.20 67.69	67.81 67.69	101.34 93.89	1.31	OK
Reinf. Layer #28	16.60	50.56 68.30	68.21 68.30	100.79 94.68	1.31	OK
Reinf. Layer #29	17.22	50.92 68.92	68.51 68.92	101.04 94.33	1.30	OK
Reinf. Layer #30	17.83	51.28 69.53	68.91 69.53	101.30 93.94	1.30	OK
Reinf. Layer #31	18.45	51.64 70.15	69.21 70.15	101.52 93.62	1.31	OK
Reinf. Layer #32	19.06	52.00 70.76	69.61 70.76	100.99 94.40	1.31	OK
Reinf. Layer #33	19.68	57.71 71.38	70.51 71.38	101.01 94.36	1.31	OK
Reinf. Layer #34	20.29	58.06 71.99	70.91 71.99	101.24 94.03	1.33	OK
Reinf. Layer #35	20.91	58.43 72.61	71.21 72.61	100.69 94.83	1.34	OK
Reinf. Layer #36	21.52	58.79 73.22	74.79 73.22	100.30 95.40	1.36	Minimum on Edge
Reinf. Layer #37	22.14	59.15 73.84	75.19 73.84	100.84 94.61	1.37	Minimum on Edge
Reinf. Layer #38	22.75	59.51 74.45	75.49 74.45	100.36 95.32	1.39	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	59.87	75.07	75.89	75.07	100.55	95.04	1.39	Minimum on Edge
Reinf. Layer #40	23.98	60.23	75.68	76.19	75.68	100.70	94.83	1.40	Minimum on Edge
Reinf. Layer #41	24.60	60.60	76.30	76.59	76.30	100.18	95.40	1.41	Minimum on Edge
Reinf. Layer #42	25.21	60.95	76.91	70.63	76.91	97.04	95.40	1.41	OK
Reinf. Layer #43	25.83	61.32	77.53	77.29	77.53	99.36	95.40	1.42	Minimum on Edge
Reinf. Layer #44	26.44	61.68	78.14	77.69	78.14	99.78	95.40	1.42	Minimum on Edge
Reinf. Layer #45	27.06	62.04	78.76	77.99	78.76	98.54	95.40	1.43	Minimum on Edge
Reinf. Layer #46	27.67	67.84	79.37	79.01	79.37	97.45	95.40	1.44	OK
Reinf. Layer #47	28.29	68.19	79.99	78.19	79.99	97.91	95.40	1.43	Minimum on Edge
Reinf. Layer #48	28.90	68.54	80.60	79.71	80.60	96.74	95.40	1.46	OK
Reinf. Layer #49	29.52	68.89	81.22	78.89	81.22	97.04	95.40	1.44	Minimum on Edge
Reinf. Layer #50	30.13	69.24	81.83	77.63	81.83	97.01	95.40	1.49	OK
Reinf. Layer #51	30.75	69.59	82.45	79.59	82.45	95.02	95.40	1.44	Minimum on Edge
Reinf. Layer #52	31.36	69.94	83.06	81.11	83.06	94.35	95.40	1.52	OK
Reinf. Layer #53	31.98	70.29	83.68	80.29	83.68	96.42	95.40	1.46	Minimum on Edge
Reinf. Layer #54	32.59	70.63	84.29	81.81	84.29	95.05	95.40	1.54	OK
Reinf. Layer #55	33.21	70.99	84.91	80.99	84.91	95.43	95.40	1.52	Minimum on Edge
Reinf. Layer #56	33.82	71.33	85.52	82.51	85.52	95.62	95.40	1.61	OK
Reinf. Layer #57	34.44	71.68	86.14	81.69	86.14	95.42	95.40	1.59	Minimum on Edge
Reinf. Layer #58	35.05	72.03	86.75	80.43	86.75	95.42	95.40	1.72	OK
Reinf. Layer #59	35.66	72.38	87.36	82.39	87.36	95.77	95.40	1.70	Minimum on Edge
Reinf. Layer #60	36.28	78.23	87.98	81.46	87.98	94.31	95.40	1.82	OK
Reinf. Layer #61	36.89	78.58	88.59	81.86	88.59	93.65	95.40	1.92	OK
Reinf. Layer #62	37.51	78.94	89.21	82.16	89.21	92.06	95.40	2.09	OK
Reinf. Layer #63	38.12	79.29	89.82	82.56	89.82	91.84	95.40	2.24	OK
Reinf. Layer #64	38.74	79.65	90.44	81.28	90.44	87.40	95.40	2.36	OK
Reinf. Layer #65	39.35	80.00	91.05	81.68	91.05	86.86	95.40	2.49	OK
Reinf. Layer #66	39.97	80.36	91.67	82.08	91.67	86.08	95.40	2.67	OK
Reinf. Layer #67	40.58	80.71	92.28	82.38	92.28	85.00	95.40	2.74	OK
Reinf. Layer #68	41.20	81.06	92.90	82.78	92.90	85.65	95.40	3.29	OK
Reinf. Layer #69	41.81	81.41	93.51	83.08	93.51	85.50	95.40	3.85	OK
Reinf. Layer #70	42.43	81.77	94.13	81.90	94.13	84.10	95.40	4.67	Minimum on Edge
Reinf. Layer #71	43.05	82.13	94.75	82.20	94.75	83.33	95.40	5.54	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.13

Critical Circle: Xc = 37.80[m], Yc = 115.79[m], R = 61.00[m]. (Number of slices used = 60)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.20

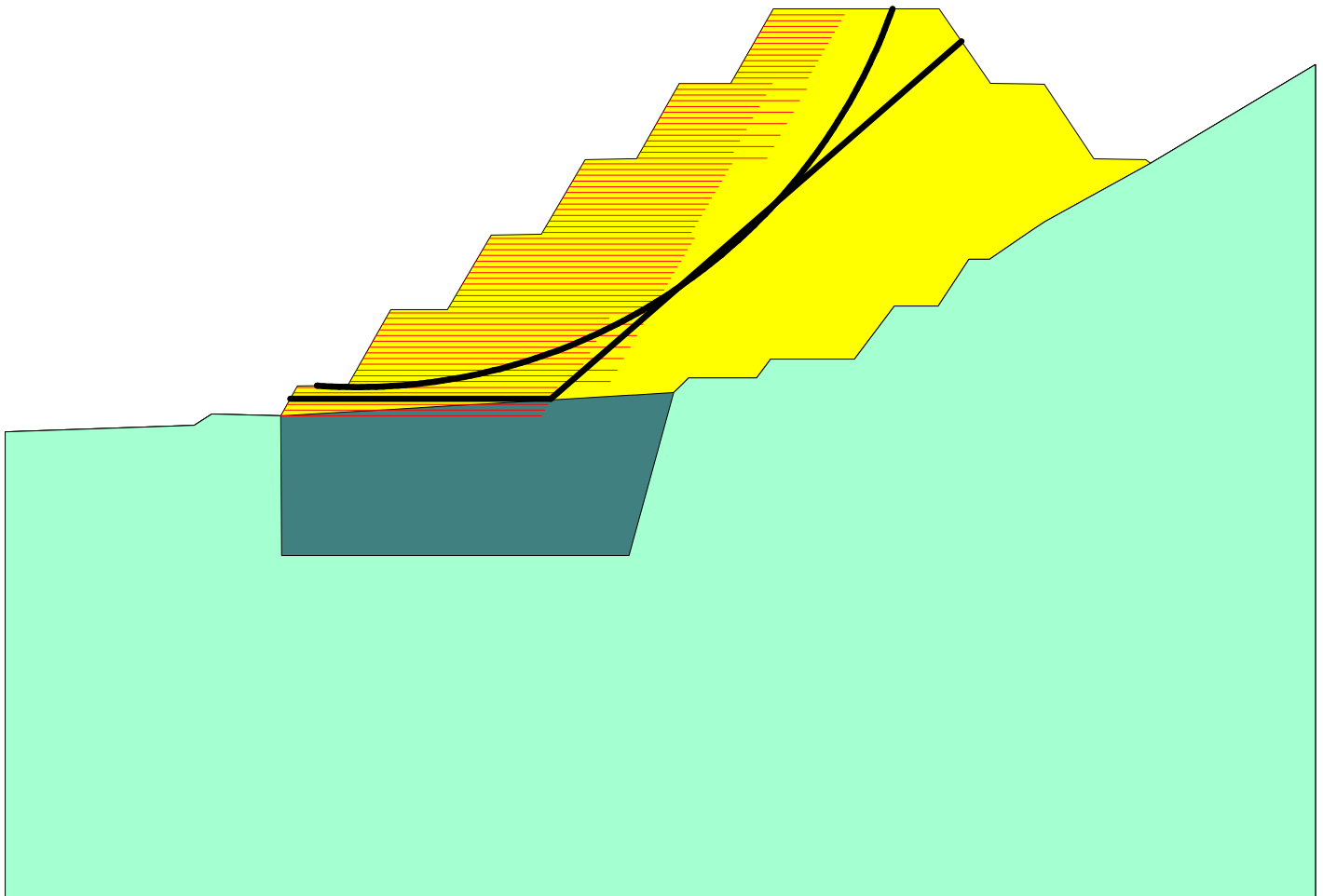
Critical Two-Part Wedge: (Xa = 30.63, Ya = 53.54) [m]

(Xb = 58.59, Yb = 53.54) [m]

(Xc = 102.71, Yc = 91.89) [m]

(Number of slices used = 30)

Interslice resultant force inclination = 30.90 [degrees]

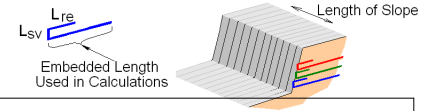


SCALE:

0 2 4 6[m]



REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	30.75	10.00	1.00	69.59	82.45	79.59	82.45	0.61	1.50
52	1	Geogriglia 1	31.36	14.00	1.00	69.94	83.06	83.94	83.06	0.62	1.50
53	1	Geogriglia 1	31.98	10.00	1.00	70.29	83.68	80.29	83.68	0.61	1.50
54	1	Geogriglia 1	32.59	14.00	1.00	70.63	84.29	84.63	84.29	0.62	1.50
55	1	Geogriglia 1	33.21	10.00	1.00	70.99	84.91	80.99	84.91	0.61	1.50
56	1	Geogriglia 1	33.82	14.00	1.00	71.33	85.52	85.33	85.52	0.62	1.50
57	1	Geogriglia 1	34.44	10.00	1.00	71.68	86.14	81.68	86.14	0.61	1.50
58	1	Geogriglia 1	35.05	14.00	1.00	72.03	86.75	86.03	86.75	0.61	1.50
59	1	Geogriglia 1	35.66	10.00	1.00	72.38	87.36	82.38	87.36	0.62	1.50
60	1	Geogriglia 1	36.28	8.00	1.00	78.23	87.98	86.23	87.98	0.61	1.50
61	1	Geogriglia 1	36.89	8.00	1.00	78.58	88.59	86.58	88.59	0.62	1.50
62	1	Geogriglia 1	37.51	8.00	1.00	78.94	89.21	86.94	89.21	0.61	1.50
63	1	Geogriglia 1	38.12	8.00	1.00	79.29	89.82	87.29	89.82	0.62	1.50
64	1	Geogriglia 1	38.74	8.00	1.00	79.65	90.44	87.65	90.44	0.61	1.50
65	1	Geogriglia 1	39.35	8.00	1.00	80.00	91.05	88.00	91.05	0.62	1.50
66	1	Geogriglia 1	39.97	8.00	1.00	80.36	91.67	88.36	91.67	0.61	1.50
67	1	Geogriglia 1	40.58	8.00	1.00	80.71	92.28	88.71	92.28	0.62	1.50
68	1	Geogriglia 1	41.20	8.00	1.00	81.06	92.90	89.06	92.90	0.61	1.50
69	1	Geogriglia 1	41.81	8.00	1.00	81.41	93.51	89.41	93.51	0.62	1.50
70	1	Geogriglia 1	42.43	8.00	1.00	81.77	94.13	89.77	94.13	0.62	1.50
71	1	Geogriglia 1	43.05	8.00	1.00	82.13	94.75	90.13	94.75	0.62	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcement [m ²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1416.17

Sezione 29 - A2M2 sismica

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PROJECT IDENTIFICATION

Title: Sezione 29 - A2M2 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFCoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente.....	18.0	30.0	24.8	10.0	8.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

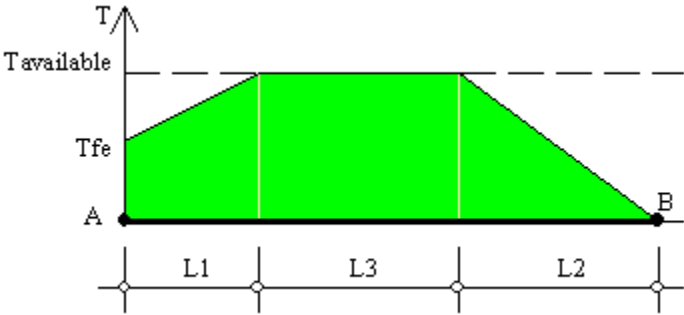
Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	0.00	50.00	50.00	50.00	20.00
2	20.30	50.70	50.70	50.70	20.00
3	22.20	51.90	51.90	51.90	20.00
4	29.60	51.70	51.70	51.70	20.00
5	29.70	51.88	51.71	36.70	20.00
6	31.40	54.90	51.81	36.70	20.00
7	36.80	55.00	52.13	36.70	20.00
8	41.40	63.10	52.40	36.70	20.00
9	47.50	63.10	52.76	36.70	20.00
10	52.20	71.10	53.04	36.70	20.00
11	57.60	71.20	53.36	36.70	20.00
12	62.30	79.20	53.64	36.70	20.00
13	67.00	79.29	53.92	36.70	20.00
14	67.80	79.30	53.96	39.62	20.00
15	71.80	86.34	54.20	54.20	20.00
16	72.40	87.40	54.80	54.80	20.00
17	73.40	87.40	55.80	55.80	20.00
18	77.90	87.40	55.80	55.80	20.00
19	80.70	92.27	55.80	55.80	20.00
20	82.20	94.88	57.80	57.80	20.00
21	82.50	95.40	57.80	57.80	20.00
22	91.20	95.40	57.80	57.80	20.00
23	95.50	95.40	63.50	63.50	20.00
24	100.20	95.40	63.50	63.50	20.00
25	100.30	95.40	63.65	63.65	20.00
26	103.50	90.75	68.50	68.50	20.00
27	105.70	87.55	68.50	68.50	20.00
28	105.80	87.40	68.57	68.57	20.00
29	110.30	87.32	71.64	71.64	20.00
30	111.60	87.30	72.53	72.53	20.00
31	111.70	87.15	72.60	72.60	20.00
32	116.90	79.30	75.45	75.45	20.00
33	122.50	79.20	78.53	78.53	20.00
34	123.00	78.80	78.80	78.80	20.00
35	140.70	89.40	89.40	89.40	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
B = Rear-end of reinforcement
AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
L2 = Rear-end pullout length
Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.24	27.76	99.17	99.17
2	Geogriglia 1	0.61	28.00	0.00	0.25	27.75	99.17	99.17
3	Geogriglia 1	1.23	28.00	0.00	0.25	27.75	99.17	99.17
4	Geogriglia 1	1.84	28.00	0.00	0.33	27.67	99.17	99.17
5	Geogriglia 1	2.46	28.00	0.00	0.33	27.67	99.17	99.17
6	Geogriglia 1	3.07	28.00	0.00	0.33	27.67	99.17	99.17
7	Geogriglia 1	3.69	28.00	0.00	0.27	27.73	99.17	99.17
8	Geogriglia 1	4.31	24.00	0.00	0.30	23.70	99.17	99.17
9	Geogriglia 1	4.92	28.00	0.00	0.28	27.72	99.17	99.17
10	Geogriglia 1	5.54	24.00	0.00	0.30	23.70	99.17	99.17
11	Geogriglia 1	6.15	28.00	0.00	0.30	27.70	99.17	99.17
12	Geogriglia 1	6.77	24.00	0.00	0.31	23.69	99.17	99.17
13	Geogriglia 1	7.38	28.00	0.00	0.31	27.69	99.17	99.17
14	Geogriglia 1	8.00	24.00	0.00	0.33	23.67	99.17	99.17
15	Geogriglia 1	8.61	28.00	0.00	0.33	27.67	99.17	99.17
16	Geogriglia 1	9.23	24.00	0.00	0.35	23.65	99.17	99.17
17	Geogriglia 1	9.84	28.00	0.00	0.34	27.66	99.17	99.17
18	Geogriglia 1	10.46	24.00	0.00	0.37	23.63	99.17	99.17
19	Geogriglia 1	11.07	28.00	0.00	0.34	27.66	99.17	99.17
20	Geogriglia 1	11.69	22.00	0.00	0.34	21.66	99.17	99.17
21	Geogriglia 1	12.30	22.00	0.00	0.34	21.66	99.17	99.17
22	Geogriglia 1	12.92	22.00	0.00	0.34	21.66	99.17	99.17
23	Geogriglia 1	13.53	22.00	0.00	0.33	21.67	99.17	99.17
24	Geogriglia 1	14.15	22.00	0.00	0.33	21.67	99.17	99.17
25	Geogriglia 1	14.76	22.00	0.00	0.33	21.67	99.17	99.17
26	Geogriglia 1	15.38	22.00	0.00	0.33	21.67	99.17	99.17
27	Geogriglia 1	15.99	22.00	0.00	0.33	21.67	99.17	99.17
28	Geogriglia 1	16.60	22.00	0.00	0.33	21.67	99.17	99.17
29	Geogriglia 1	17.22	22.00	0.00	0.34	21.66	99.17	99.17
30	Geogriglia 1	17.83	22.00	0.00	0.36	21.64	99.17	99.17
31	Geogriglia 1	18.45	22.00	0.00	0.37	21.63	99.17	99.17
32	Geogriglia 1	19.06	22.00	0.00	0.38	21.62	99.17	99.17
33	Geogriglia 1	19.68	16.00	0.00	0.40	15.60	99.17	99.17
34	Geogriglia 1	20.29	16.00	0.00	0.41	15.59	99.17	99.17
35	Geogriglia 1	20.91	16.00	0.00	0.43	15.57	99.17	99.17

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.45	15.55	99.17	99.17
37	Geogriglia 1	22.14	16.00	0.00	0.47	15.53	99.17	99.17
38	Geogriglia 1	22.75	16.00	0.00	0.49	15.51	99.17	99.17
39	Geogriglia 1	23.37	16.00	0.00	0.51	15.49	99.17	99.17
40	Geogriglia 1	23.98	16.00	0.00	0.54	15.46	99.17	99.17
41	Geogriglia 1	24.60	16.00	0.00	0.57	15.43	99.17	99.17
42	Geogriglia 1	25.21	16.00	0.00	0.60	15.40	99.17	99.17
43	Geogriglia 1	25.83	16.00	0.00	0.64	15.36	99.17	99.17
44	Geogriglia 1	26.44	16.00	0.00	0.68	15.32	99.17	99.17
45	Geogriglia 1	27.06	16.00	0.00	0.73	15.27	99.17	99.17
46	Geogriglia 1	27.67	14.00	0.00	0.44	13.56	99.17	99.17
47	Geogriglia 1	28.29	10.00	0.00	0.84	9.16	99.17	99.17
48	Geogriglia 1	28.90	14.00	0.00	0.44	13.56	99.17	99.17
49	Geogriglia 1	29.52	10.00	0.00	0.88	9.12	99.17	99.17
50	Geogriglia 1	30.13	14.00	0.00	0.47	13.53	99.17	99.17
51	Geogriglia 1	30.75	10.00	0.00	0.88	9.12	99.17	99.17
52	Geogriglia 1	31.36	14.00	0.00	0.51	13.49	99.17	99.17
53	Geogriglia 1	31.98	10.00	0.00	0.89	9.11	99.17	99.17
54	Geogriglia 1	32.59	14.00	0.00	0.57	13.43	99.17	99.17
55	Geogriglia 1	33.21	10.00	0.00	0.89	9.11	99.17	99.17
56	Geogriglia 1	33.82	14.00	0.00	0.64	13.36	99.17	99.17
57	Geogriglia 1	34.44	10.00	0.00	0.89	9.11	99.17	99.17
58	Geogriglia 1	35.05	14.00	0.00	0.73	13.27	99.17	99.17
59	Geogriglia 1	35.66	10.00	0.00	0.89	9.11	99.17	99.17
60	Geogriglia 1	36.28	8.00	0.00	0.85	7.15	99.17	99.17
61	Geogriglia 1	36.89	8.00	0.00	0.92	7.08	99.17	99.17
62	Geogriglia 1	37.51	8.00	0.00	1.02	6.98	99.17	99.17
63	Geogriglia 1	38.12	8.00	0.00	1.13	6.87	99.17	99.17
64	Geogriglia 1	38.74	8.00	0.00	1.27	6.73	99.17	99.17
65	Geogriglia 1	39.35	8.00	0.00	1.44	6.56	99.17	99.17
66	Geogriglia 1	39.97	8.00	0.00	1.68	6.32	99.17	99.17
67	Geogriglia 1	40.58	8.00	0.00	2.01	5.99	99.17	99.17
68	Geogriglia 1	41.20	8.00	0.00	2.51	5.49	99.17	99.17
69	Geogriglia 1	41.81	8.00	0.00	3.31	4.69	99.17	99.17
70	Geogriglia 1	42.43	8.00	0.00	4.93	3.07	99.17	99.17
71	Geogriglia 1	43.05	8.00	0.00	8.00	0.00	80.47	80.47 (*)

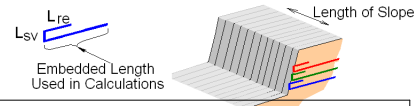
(*) This Tavailable is dictated by the pullout resistance capacity, which is smaller than the long-term strength of the reinforcement that is related to its specified ultimate strength

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	59.87	75.07	75.89	75.07	101.49	93.67	1.24	Minimum on Edge
Reinf. Layer #40	23.98	60.23	75.68	76.19	75.68	100.70	94.83	1.26	Minimum on Edge
Reinf. Layer #41	24.60	60.60	76.30	76.59	76.30	101.16	94.15	1.28	Minimum on Edge
Reinf. Layer #42	25.21	60.95	76.91	76.99	76.91	100.42	95.22	1.30	Minimum on Edge
Reinf. Layer #43	25.83	61.32	77.53	77.29	77.53	100.83	94.63	1.31	Minimum on Edge
Reinf. Layer #44	26.44	61.68	78.14	77.69	78.14	101.24	94.03	1.33	Minimum on Edge
Reinf. Layer #45	27.06	62.04	78.76	77.99	78.76	100.50	95.11	1.35	Minimum on Edge
Reinf. Layer #46	27.67	67.84	79.37	81.79	79.37	100.23	95.40	1.35	Minimum on Edge
Reinf. Layer #47	28.29	68.19	79.99	78.19	79.99	100.53	95.06	1.37	Minimum on Edge
Reinf. Layer #48	28.90	68.54	80.60	82.49	80.60	99.52	95.40	1.39	Minimum on Edge
Reinf. Layer #49	29.52	68.89	81.22	78.89	81.22	99.91	95.40	1.40	Minimum on Edge
Reinf. Layer #50	30.13	69.24	81.83	80.41	81.83	98.42	95.40	1.43	OK
Reinf. Layer #51	30.75	69.59	82.45	79.59	82.45	98.79	95.40	1.43	Minimum on Edge
Reinf. Layer #52	31.36	69.94	83.06	81.11	83.06	97.49	95.40	1.48	OK
Reinf. Layer #53	31.98	70.29	83.68	80.29	83.68	96.42	95.40	1.45	Minimum on Edge
Reinf. Layer #54	32.59	70.63	84.29	81.81	84.29	95.05	95.40	1.53	OK
Reinf. Layer #55	33.21	70.99	84.91	80.99	84.91	98.45	95.40	1.48	Minimum on Edge
Reinf. Layer #56	33.82	71.33	85.52	82.51	85.52	97.16	95.40	1.56	OK
Reinf. Layer #57	34.44	71.68	86.14	81.69	86.14	97.73	95.40	1.60	Minimum on Edge
Reinf. Layer #58	35.05	72.03	86.75	83.21	86.75	98.19	95.40	1.72	OK
Reinf. Layer #59	35.66	72.38	87.36	82.39	87.36	96.32	95.40	1.81	Minimum on Edge
Reinf. Layer #60	36.28	72.73	87.98	86.19	87.98	95.69	95.40	1.78	Minimum on Edge
Reinf. Layer #61	36.89	73.08	88.59	86.59	88.59	95.63	95.40	1.86	Minimum on Edge
Reinf. Layer #62	37.51	73.43	89.21	86.89	89.21	95.10	95.40	1.97	Minimum on Edge
Reinf. Layer #63	38.12	73.78	89.82	87.29	89.82	94.69	95.40	2.09	Minimum on Edge
Reinf. Layer #64	38.74	74.13	90.44	87.59	90.44	94.42	95.40	2.23	Minimum on Edge
Reinf. Layer #65	39.35	74.48	91.05	87.99	91.05	93.98	95.40	2.40	Minimum on Edge
Reinf. Layer #66	39.97	74.83	91.67	88.39	91.67	93.52	95.40	2.62	Minimum on Edge
Reinf. Layer #67	40.58	75.18	92.28	88.69	92.28	93.15	95.40	2.88	Minimum on Edge
Reinf. Layer #68	41.20	75.53	92.90	89.09	92.90	92.66	95.40	3.26	Minimum on Edge
Reinf. Layer #69	41.81	75.88	93.51	87.81	93.51	91.09	95.40	4.41	OK
Reinf. Layer #70	42.43	76.23	94.13	88.21	94.13	90.41	95.40	5.32	OK
Reinf. Layer #71	43.05	76.58	94.75	86.93	94.75	88.02	95.40	7.66	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	30.75	10.00	1.00	69.59	82.45	79.59	82.45	0.61	1.50
52	1	Geogriglia 1	31.36	14.00	1.00	69.94	83.06	83.94	83.06	0.62	1.50
53	1	Geogriglia 1	31.98	10.00	1.00	70.29	83.68	80.29	83.68	0.61	1.50
54	1	Geogriglia 1	32.59	14.00	1.00	70.63	84.29	84.63	84.29	0.62	1.50
55	1	Geogriglia 1	33.21	10.00	1.00	70.99	84.91	80.99	84.91	0.61	1.50
56	1	Geogriglia 1	33.82	14.00	1.00	71.33	85.52	85.33	85.52	0.62	1.50
57	1	Geogriglia 1	34.44	10.00	1.00	71.68	86.14	81.68	86.14	0.61	1.50
58	1	Geogriglia 1	35.05	14.00	1.00	72.03	86.75	86.03	86.75	0.61	1.50
59	1	Geogriglia 1	35.66	10.00	1.00	72.38	87.36	82.38	87.36	0.62	1.50
60	1	Geogriglia 1	36.28	8.00	1.00	78.23	87.98	86.23	87.98	0.61	1.50
61	1	Geogriglia 1	36.89	8.00	1.00	78.58	88.59	86.58	88.59	0.62	1.50
62	1	Geogriglia 1	37.51	8.00	1.00	78.94	89.21	86.94	89.21	0.61	1.50
63	1	Geogriglia 1	38.12	8.00	1.00	79.29	89.82	87.29	89.82	0.62	1.50
64	1	Geogriglia 1	38.74	8.00	1.00	79.65	90.44	87.65	90.44	0.61	1.50
65	1	Geogriglia 1	39.35	8.00	1.00	80.00	91.05	88.00	91.05	0.62	1.50
66	1	Geogriglia 1	39.97	8.00	1.00	80.36	91.67	88.36	91.67	0.61	1.50
67	1	Geogriglia 1	40.58	8.00	1.00	80.71	92.28	88.71	92.28	0.62	1.50
68	1	Geogriglia 1	41.20	8.00	1.00	81.06	92.90	89.06	92.90	0.61	1.50
69	1	Geogriglia 1	41.81	8.00	1.00	81.41	93.51	89.41	93.51	0.62	1.50
70	1	Geogriglia 1	42.43	8.00	1.00	81.77	94.13	89.77	94.13	0.62	1.50
71	1	Geogriglia 1	43.05	8.00	1.00	82.13	94.75	90.13	94.75	0.62	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m²] / length of slope [m] (including Lsv & Lre)
1	Geogriglia 1	1.00	1416.17

Sezione 15 - A1M1 Statica

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PROJECT IDENTIFICATION

Title: Sezione 15 - A1M1 Statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
Torino, 10129
Telephone #: 011 561 18 11
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E-Mail: ig@ingegneriageotecnica.com

Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

Phreatic line was specified.

UNIFORM SURCHARGE

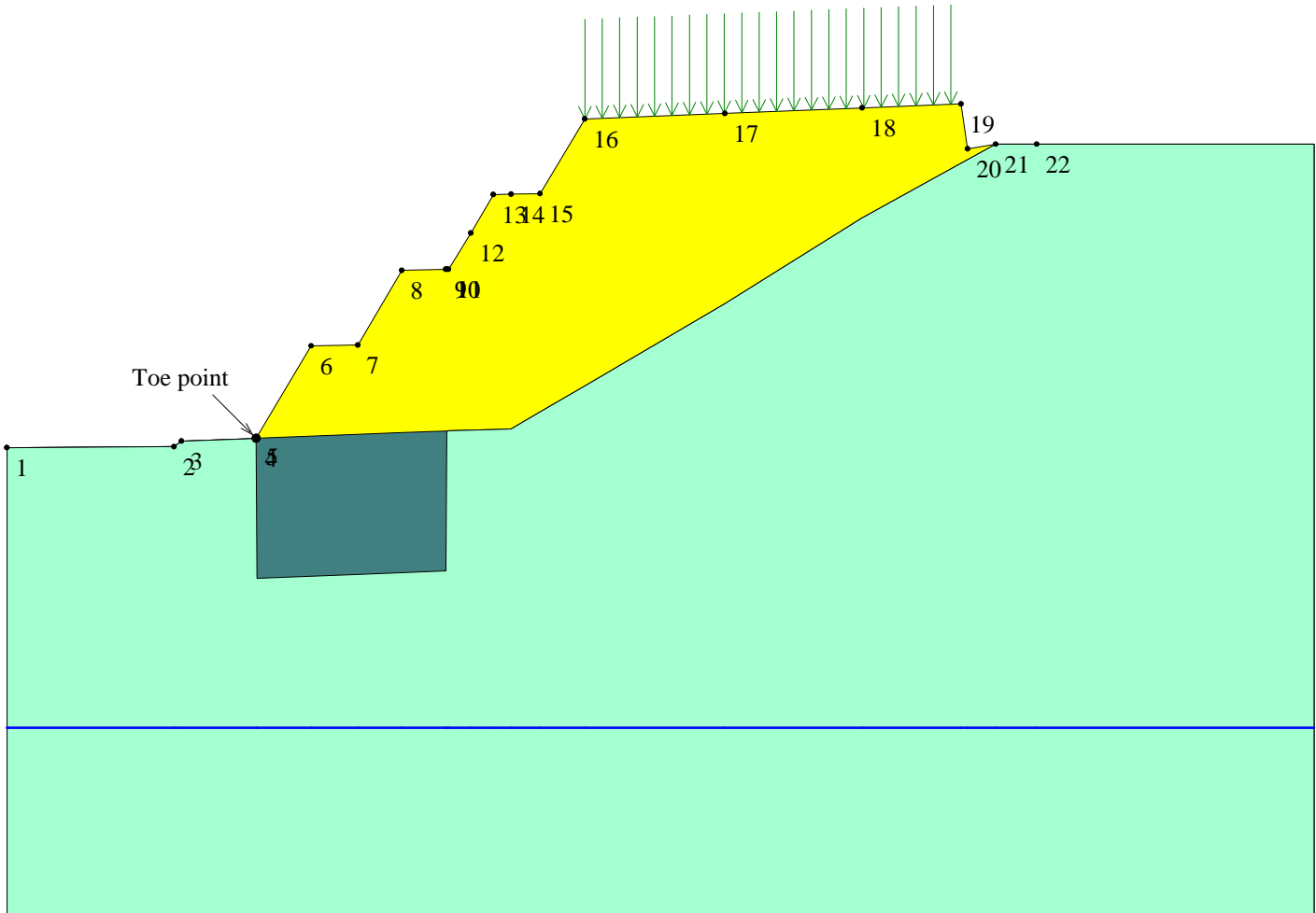
Load Q1 = 15.00 [kPa] inclined from verical at 0.00 degrees, starts at X1s = 61.90 and ends at X1e = 102.20 [m].

Surcharge load, Q2.....None

Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [m]



TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
Water was described by phreatic line. Y values are tabulated in the right most column.
(phreatic)

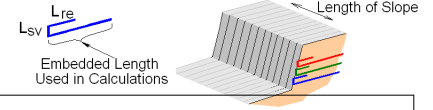
#	X	Y1	Y2	Y3	Yw
1	0.00	50.00	50.00	50.00	20.00
2	17.90	50.10	50.10	50.10	20.00
3	18.70	50.70	50.70	50.70	20.00
4	26.70	51.00	51.00	51.00	20.00
5	26.80	51.17	51.00	36.00	20.00
6	32.60	60.90	51.23	36.23	20.00
7	37.60	61.00	51.43	36.43	20.00
8	42.30	69.00	51.61	36.61	20.00
9	47.00	69.09	51.80	36.80	20.00
10	47.10	69.10	51.80	51.80	20.00
11	47.30	69.10	51.81	51.81	20.00
12	49.70	73.00	51.88	51.88	20.00
13	52.10	77.10	51.94	51.94	20.00
14	54.00	77.14	52.00	52.00	20.00
15	57.10	77.20	53.81	53.81	20.00
16	61.90	85.20	56.62	56.62	20.00
17	76.90	85.80	65.40	65.40	20.00
18	91.60	86.38	74.60	74.60	20.00
19	102.20	86.80	80.46	80.46	20.00
20	102.90	82.00	80.84	80.84	20.00
21	105.90	82.50	82.50	82.50	20.00
22	110.30	82.50	82.50	82.50	20.00

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	50.50	74.37	58.93	74.37	75.81	85.75	1.87	OK
Reinf. Layer #40	23.98	50.86	74.98	60.89	74.98	75.71	85.75	1.85	Minimum on Edge
Reinf. Layer #41	24.60	51.22	75.60	59.63	75.60	74.61	85.70	1.94	OK
Reinf. Layer #42	25.21	51.58	76.21	61.59	76.21	74.66	85.71	1.96	Minimum on Edge
Reinf. Layer #43	25.83	51.94	76.83	60.33	76.83	73.96	85.68	1.97	OK
Reinf. Layer #44	26.44	57.24	77.44	60.46	77.44	73.62	85.67	2.02	OK
Reinf. Layer #45	27.06	57.62	78.06	60.86	78.06	72.99	85.64	2.13	OK
Reinf. Layer #46	27.67	57.98	78.67	61.26	78.67	69.70	85.51	2.20	OK
Reinf. Layer #47	28.29	58.35	79.29	61.66	79.29	65.29	85.33	2.35	OK
Reinf. Layer #48	28.90	58.72	79.90	60.38	79.90	67.44	85.42	2.48	OK
Reinf. Layer #49	29.52	59.09	80.52	60.78	80.52	67.03	85.40	2.66	OK
Reinf. Layer #50	30.13	59.46	81.13	61.18	81.13	64.20	85.29	2.80	OK
Reinf. Layer #51	30.75	59.83	81.75	61.48	81.75	63.95	85.28	2.96	OK
Reinf. Layer #52	31.36	60.20	82.36	61.88	82.36	65.06	85.33	3.24	OK
Reinf. Layer #53	31.98	60.57	82.98	62.28	82.98	65.18	85.33	3.82	OK
Reinf. Layer #54	32.59	60.93	83.59	62.58	83.59	64.96	85.32	4.53	OK
Reinf. Layer #55	33.21	61.31	84.21	62.98	84.21	64.74	85.31	5.86	OK
Reinf. Layer #56	33.82	61.67	84.82	61.80	84.82	62.50	85.22	7.76	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
51	1	Geogriglia 1	30.75	8.00	1.00	59.83 81.75	67.83 81.75	0.61	1.50
52	1	Geogriglia 1	31.36	8.00	1.00	60.20 82.36	68.20 82.36	0.62	1.50
53	1	Geogriglia 1	31.98	8.00	1.00	60.57 82.98	68.57 82.98	0.61	1.50
54	1	Geogriglia 1	32.59	8.00	1.00	60.93 83.59	68.93 83.59	0.62	1.50
55	1	Geogriglia 1	33.21	8.00	1.00	61.31 84.21	69.31 84.21	0.61	1.50
56	1	Geogriglia 1	33.82	8.00	1.00	61.67 84.82	69.67 84.82	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m ²] / length of slope [m] (including Lsv & Lre)
1	Geogriglia 1	1.00	962.43

Sezione 15 - A1M1 sismica

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PROJECT IDENTIFICATION

Title: Sezione 15 - A1M1 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
Torino, 10136
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

Phreatic line was specified.

UNIFORM SURCHARGE

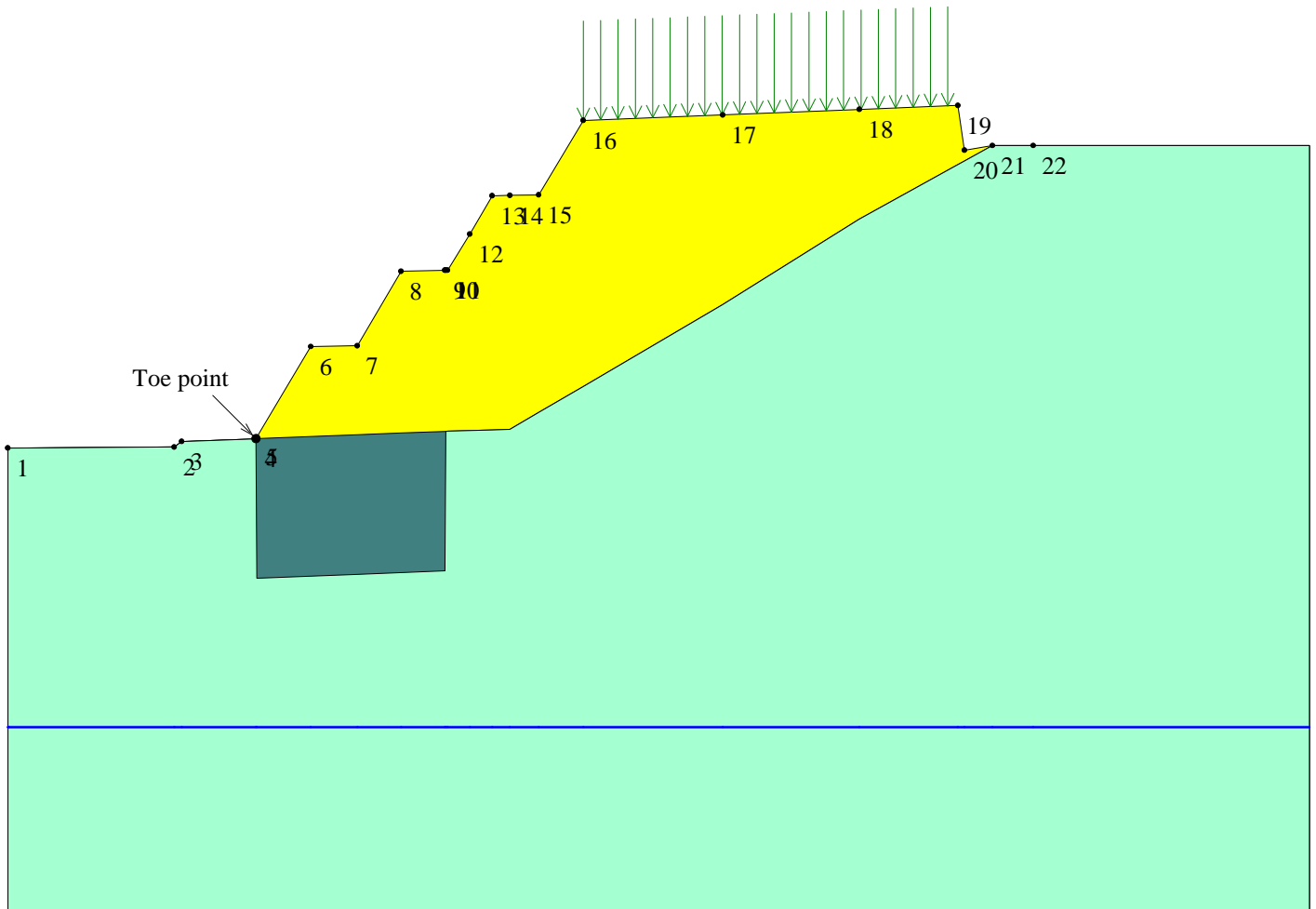
Load Q1 = 10.00 [kPa] inclined from vertical at 0.00 degrees, starts at X1s = 61.90 and ends at X1e = 102.20 [m].

Surcharge load, Q2.....None

Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [m]



TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line.

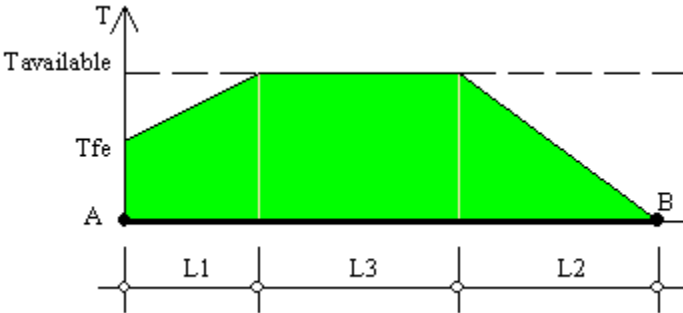
	#	Xi	Yi
Top of Layer 1	1	0.00	50.00
	2	17.90	50.10
	3	18.70	50.70
	4	26.70	51.00
	5	32.60	60.90
	6	37.60	61.00
	7	42.30	69.00
	8	47.30	69.10
	9	49.70	73.00
	10	52.10	77.10
	11	57.10	77.20
	12	61.90	85.20
	13	102.20	86.80
	14	102.90	82.00
	15	105.90	82.50
Top of Layer 2	16	0.00	50.00
	17	17.90	50.10
	18	18.70	50.70
	19	26.70	51.00
	20	47.10	51.80
	21	54.00	52.00
	22	76.90	65.40
	23	91.60	74.60
	24	105.90	82.50
Top of Layer 3	25	0.00	50.00
	26	17.90	50.10
	27	18.70	50.70
	28	26.70	51.00
	29	26.80	36.00
	30	47.00	36.80
	31	47.10	51.80
	32	54.00	52.00
	33	76.90	65.40
	34	91.60	74.60
	35	105.90	82.50
Top of Phreatic Line	37	0.00	20.00
	38	110.30	20.00

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.
 (phreatic)

#	X	Y1	Y2	Y3	Yw
1	0.00	50.00	50.00	50.00	20.00
2	17.90	50.10	50.10	50.10	20.00
3	18.70	50.70	50.70	50.70	20.00
4	26.70	51.00	51.00	51.00	20.00
5	26.80	51.17	51.00	36.00	20.00
6	32.60	60.90	51.23	36.23	20.00
7	37.60	61.00	51.43	36.43	20.00
8	42.30	69.00	51.61	36.61	20.00
9	47.00	69.09	51.80	36.80	20.00
10	47.10	69.10	51.80	51.80	20.00
11	47.30	69.10	51.81	51.81	20.00
12	49.70	73.00	51.88	51.88	20.00
13	52.10	77.10	51.94	51.94	20.00
14	54.00	77.14	52.00	52.00	20.00
15	57.10	77.20	53.81	53.81	20.00
16	61.90	85.20	56.62	56.62	20.00
17	76.90	85.80	65.40	65.40	20.00
18	91.60	86.38	74.60	74.60	20.00
19	102.20	86.80	80.46	80.46	20.00
20	102.90	82.00	80.84	80.84	20.00
21	105.90	82.50	82.50	82.50	20.00
22	110.30	82.50	82.50	82.50	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

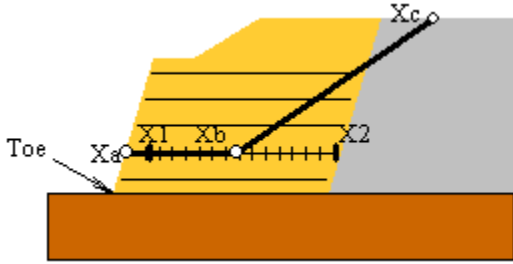
Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.35

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	22.00	0.00	0.37	21.63	99.17	99.17
2	Geogriglia 1	0.61	22.00	0.00	0.37	21.63	99.17	99.17
3	Geogriglia 1	1.23	22.00	0.00	0.31	21.69	99.17	99.17
4	Geogriglia 1	1.84	22.00	0.00	0.31	21.69	99.17	99.17
5	Geogriglia 1	2.46	22.00	0.00	0.31	21.69	99.17	99.17
6	Geogriglia 1	3.07	22.00	0.00	0.31	21.69	99.17	99.17
7	Geogriglia 1	3.69	22.00	0.00	0.31	21.69	99.17	99.17
8	Geogriglia 1	4.31	22.00	0.00	0.31	21.69	99.17	99.17
9	Geogriglia 1	4.92	22.00	0.00	0.31	21.69	99.17	99.17
10	Geogriglia 1	5.54	22.00	0.00	0.31	21.69	99.17	99.17
11	Geogriglia 1	6.15	22.00	0.00	0.31	21.69	99.17	99.17
12	Geogriglia 1	6.77	22.00	0.00	0.32	21.68	99.17	99.17
13	Geogriglia 1	7.38	22.00	0.00	0.33	21.67	99.17	99.17
14	Geogriglia 1	8.00	22.00	0.00	0.34	21.66	99.17	99.17
15	Geogriglia 1	8.61	22.00	0.00	0.36	21.64	99.17	99.17
16	Geogriglia 1	9.23	22.00	0.00	0.37	21.63	99.17	99.17
17	Geogriglia 1	9.84	22.00	0.00	0.38	21.62	99.17	99.17
18	Geogriglia 1	10.46	16.00	0.00	0.40	15.60	99.17	99.17
19	Geogriglia 1	11.07	16.00	0.00	0.41	15.59	99.17	99.17
20	Geogriglia 1	11.69	16.00	0.00	0.43	15.57	99.17	99.17
21	Geogriglia 1	12.30	16.00	0.00	0.45	15.55	99.17	99.17
22	Geogriglia 1	12.92	16.00	0.00	0.47	15.53	99.17	99.17
23	Geogriglia 1	13.53	16.00	0.00	0.49	15.51	99.17	99.17
24	Geogriglia 1	14.15	16.00	0.00	0.52	15.48	99.17	99.17
25	Geogriglia 1	14.76	16.00	0.00	0.54	15.46	99.17	99.17
26	Geogriglia 1	15.38	16.00	0.00	0.57	15.43	99.17	99.17
27	Geogriglia 1	15.99	16.00	0.00	0.61	15.39	99.17	99.17
28	Geogriglia 1	16.60	16.00	0.00	0.63	15.37	99.17	99.17
29	Geogriglia 1	17.22	16.00	0.00	0.64	15.36	99.17	99.17
30	Geogriglia 1	17.83	16.00	0.00	0.64	15.36	99.17	99.17
31	Geogriglia 1	18.45	14.00	0.00	0.42	13.58	99.17	99.17
32	Geogriglia 1	19.06	10.00	0.00	0.79	9.21	99.17	99.17
33	Geogriglia 1	19.68	14.00	0.00	0.43	13.57	99.17	99.17
34	Geogriglia 1	20.29	10.00	0.00	0.79	9.21	99.17	99.17
35	Geogriglia 1	20.91	14.00	0.00	0.47	13.53	99.17	99.17

RESULTS OF TRANSLATIONAL ANALYSIS

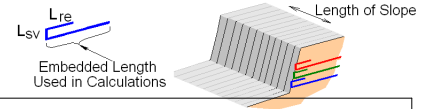


Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS
At toe elevation	0.00	26.70 51.00	35.54 51.00	97.20 86.60	1.64	OK
Reinf. Layer #1	0.00	26.70 51.00	48.69 51.00	94.10 86.48	1.58	Minimum on Edge
Reinf. Layer #2	0.61	27.06 51.61	49.09 51.61	90.47 86.33	1.45	Minimum on Edge
Reinf. Layer #3	1.23	27.43 52.23	49.39 52.23	88.53 86.26	1.38	Minimum on Edge
Reinf. Layer #4	1.84	27.80 52.84	49.79 52.84	88.22 86.24	1.38	Minimum on Edge
Reinf. Layer #5	2.46	28.17 53.46	50.19 53.46	87.89 86.23	1.39	Minimum on Edge
Reinf. Layer #6	3.07	28.53 54.07	50.49 54.07	87.47 86.22	1.40	Minimum on Edge
Reinf. Layer #7	3.69	28.90 54.69	50.89 54.69	87.14 86.20	1.40	Minimum on Edge
Reinf. Layer #8	4.31	29.27 55.31	51.29 55.31	86.81 86.19	1.41	Minimum on Edge
Reinf. Layer #9	4.92	29.63 55.92	51.59 55.92	86.39 86.17	1.41	Minimum on Edge
Reinf. Layer #10	5.54	30.00 56.54	51.99 56.54	86.06 86.16	1.43	Minimum on Edge
Reinf. Layer #11	6.15	30.37 57.15	52.39 57.15	85.75 86.15	1.44	Minimum on Edge
Reinf. Layer #12	6.77	30.73 57.77	52.69 57.77	86.55 86.18	1.44	Minimum on Edge
Reinf. Layer #13	7.38	31.10 58.38	53.09 58.38	86.20 86.16	1.45	Minimum on Edge
Reinf. Layer #14	8.00	31.47 59.00	49.11 59.00	86.52 86.18	1.46	OK
Reinf. Layer #15	8.61	31.83 59.61	49.41 59.61	85.95 86.15	1.46	OK
Reinf. Layer #16	9.23	32.20 60.23	49.81 60.23	85.47 86.14	1.46	OK
Reinf. Layer #17	9.84	32.56 60.84	50.21 60.84	85.00 86.12	1.47	OK
Reinf. Layer #18	10.46	37.87 61.46	53.89 61.46	83.19 86.05	1.44	Minimum on Edge
Reinf. Layer #19	11.07	38.23 62.07	54.19 62.07	82.74 86.03	1.46	Minimum on Edge
Reinf. Layer #20	11.69	38.59 62.69	54.59 62.69	82.39 86.01	1.46	Minimum on Edge
Reinf. Layer #21	12.30	38.95 63.30	54.99 63.30	82.04 86.00	1.47	Minimum on Edge
Reinf. Layer #22	12.92	39.32 63.92	55.29 63.92	81.58 85.98	1.48	Minimum on Edge
Reinf. Layer #23	13.53	39.67 64.53	55.69 64.53	81.24 85.97	1.48	Minimum on Edge
Reinf. Layer #24	14.15	40.04 65.15	55.99 65.15	82.71 86.03	1.49	Minimum on Edge
Reinf. Layer #25	14.76	40.40 65.76	56.39 65.76	84.38 86.09	1.51	Minimum on Edge
Reinf. Layer #26	15.38	40.76 66.38	56.79 66.38	81.89 85.99	1.53	Minimum on Edge
Reinf. Layer #27	15.99	41.12 66.99	57.09 66.99	83.32 86.05	1.55	Minimum on Edge
Reinf. Layer #28	16.60	41.48 67.60	57.49 67.60	80.99 85.96	1.57	Minimum on Edge
Reinf. Layer #29	17.22	41.84 68.22	57.79 68.22	83.25 86.05	1.59	Minimum on Edge
Reinf. Layer #30	17.83	42.20 68.83	58.19 68.83	80.92 85.95	1.62	Minimum on Edge
Reinf. Layer #31	18.45	47.52 69.45	58.71 69.45	81.46 85.98	1.64	OK
Reinf. Layer #32	19.06	47.89 70.06	57.89 70.06	82.46 86.02	1.65	Minimum on Edge
Reinf. Layer #33	19.68	48.27 70.68	59.51 70.68	80.51 85.94	1.69	OK
Reinf. Layer #34	20.29	48.65 71.29	58.59 71.29	81.19 85.97	1.69	Minimum on Edge
Reinf. Layer #35	20.91	49.03 71.91	60.21 71.91	79.46 85.90	1.74	OK
Reinf. Layer #36	21.52	49.40 72.52	59.39 72.52	79.21 85.89	1.72	Minimum on Edge
Reinf. Layer #37	22.14	49.78 73.14	61.01 73.14	77.86 85.83	1.80	OK
Reinf. Layer #38	22.75	50.14 73.75	60.09 73.75	76.66 85.79	1.75	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.



REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
1	1	Geogriglia 1	0.00	22.00	1.00	26.70 51.00	48.70 51.00	0.61	1.50
2	1	Geogriglia 1	0.61	22.00	1.00	27.06 51.61	49.06 51.61	0.62	1.50
3	1	Geogriglia 1	1.23	22.00	1.00	27.43 52.23	49.43 52.23	0.61	1.50
4	1	Geogriglia 1	1.84	22.00	1.00	27.80 52.84	49.80 52.84	0.62	1.50
5	1	Geogriglia 1	2.46	22.00	1.00	28.17 53.46	50.17 53.46	0.61	1.50
6	1	Geogriglia 1	3.07	22.00	1.00	28.53 54.07	50.53 54.07	0.62	1.50
7	1	Geogriglia 1	3.69	22.00	1.00	28.90 54.69	50.90 54.69	0.62	1.50
8	1	Geogriglia 1	4.31	22.00	1.00	29.27 55.31	51.27 55.31	0.61	1.50
9	1	Geogriglia 1	4.92	22.00	1.00	29.63 55.92	51.63 55.92	0.62	1.50
10	1	Geogriglia 1	5.54	22.00	1.00	30.00 56.54	52.00 56.54	0.61	1.50
11	1	Geogriglia 1	6.15	22.00	1.00	30.37 57.15	52.37 57.15	0.62	1.50
12	1	Geogriglia 1	6.77	22.00	1.00	30.73 57.77	52.73 57.77	0.61	1.50
13	1	Geogriglia 1	7.38	22.00	1.00	31.10 58.38	53.10 58.38	0.62	1.50
14	1	Geogriglia 1	8.00	22.00	1.00	31.47 59.00	53.47 59.00	0.61	1.50
15	1	Geogriglia 1	8.61	22.00	1.00	31.83 59.61	53.83 59.61	0.62	1.50
16	1	Geogriglia 1	9.23	22.00	1.00	32.20 60.23	54.20 60.23	0.61	1.50
17	1	Geogriglia 1	9.84	22.00	1.00	32.56 60.84	54.56 60.84	0.62	1.50
18	1	Geogriglia 1	10.46	16.00	1.00	32.87 61.46	53.87 61.46	0.61	1.50
19	1	Geogriglia 1	11.07	16.00	1.00	32.23 62.07	54.23 62.07	0.62	1.50
20	1	Geogriglia 1	11.69	16.00	1.00	32.59 62.69	54.59 62.69	0.61	1.50
21	1	Geogriglia 1	12.30	16.00	1.00	32.95 63.30	54.95 63.30	0.62	1.50
22	1	Geogriglia 1	12.92	16.00	1.00	33.32 63.92	55.32 63.92	0.61	1.50
23	1	Geogriglia 1	13.53	16.00	1.00	33.67 64.53	55.67 64.53	0.62	1.50
24	1	Geogriglia 1	14.15	16.00	1.00	40.04 65.15	56.04 65.15	0.61	1.50
25	1	Geogriglia 1	14.76	16.00	1.00	40.40 65.76	56.40 65.76	0.62	1.50
26	1	Geogriglia 1	15.38	16.00	1.00	40.76 66.38	56.76 66.38	0.61	1.50
27	1	Geogriglia 1	15.99	16.00	1.00	41.12 66.99	57.12 66.99	0.61	1.50
28	1	Geogriglia 1	16.60	16.00	1.00	41.48 67.60	57.48 67.60	0.62	1.50
29	1	Geogriglia 1	17.22	16.00	1.00	41.84 68.22	57.84 68.22	0.61	1.50
30	1	Geogriglia 1	17.83	16.00	1.00	42.20 68.83	58.20 68.83	0.62	1.50
31	1	Geogriglia 1	18.45	14.00	1.00	47.52 69.45	61.52 69.45	0.61	1.50
32	1	Geogriglia 1	19.06	10.00	1.00	47.89 70.06	57.89 70.06	0.62	1.50
33	1	Geogriglia 1	19.68	14.00	1.00	48.27 70.68	62.27 70.68	0.61	1.50
34	1	Geogriglia 1	20.29	10.00	1.00	48.65 71.29	58.65 71.29	0.62	1.50
35	1	Geogriglia 1	20.91	14.00	1.00	49.03 71.91	63.03 71.91	0.61	1.50
36	1	Geogriglia 1	21.52	10.00	1.00	49.40 72.52	59.40 72.52	0.62	1.50
37	1	Geogriglia 1	22.14	14.00	1.00	49.78 73.14	63.78 73.14	0.61	1.50
38	1	Geogriglia 1	22.75	10.00	1.00	50.14 73.75	60.14 73.75	0.62	1.50
39	1	Geogriglia 1	23.37	14.00	1.00	50.50 74.37	64.50 74.37	0.61	1.50
40	1	Geogriglia 1	23.98	10.00	1.00	50.86 74.98	60.86 74.98	0.62	1.50
41	1	Geogriglia 1	24.60	14.00	1.00	51.22 75.60	65.22 75.60	0.61	1.50
42	1	Geogriglia 1	25.21	10.00	1.00	51.58 76.21	61.58 76.21	0.62	1.50
43	1	Geogriglia 1	25.83	14.00	1.00	51.94 76.83	65.94 76.83	0.61	1.50
44	1	Geogriglia 1	26.44	8.00	1.00	57.24 77.44	65.24 77.44	0.62	1.50
45	1	Geogriglia 1	27.06	8.00	1.00	57.62 78.06	65.62 78.06	0.61	1.50
46	1	Geogriglia 1	27.67	8.00	1.00	57.98 78.67	65.98 78.67	0.62	1.50
47	1	Geogriglia 1	28.29	8.00	1.00	58.35 79.29	66.35 79.29	0.61	1.50
48	1	Geogriglia 1	28.90	8.00	1.00	58.72 79.90	66.72 79.90	0.62	1.50
49	1	Geogriglia 1	29.52	8.00	1.00	59.09 80.52	67.09 80.52	0.61	1.50
50	1	Geogriglia 1	30.13	8.00	1.00	59.46 81.13	67.46 81.13	0.62	1.50

* Vertical distance between layers.

Sezione 25 - A1M1 statica

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PROJECT IDENTIFICATION

Title: Sezione 25 - A1M1 statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

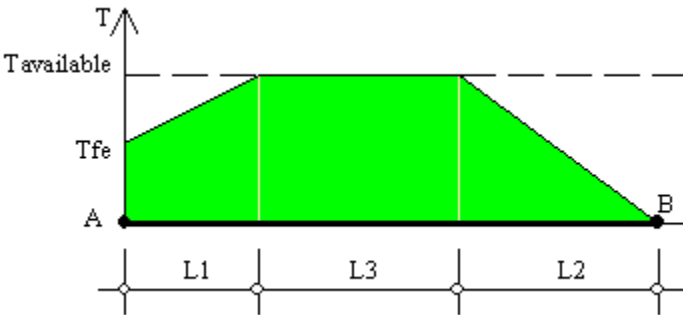
WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, $F_s-po = 1.35$

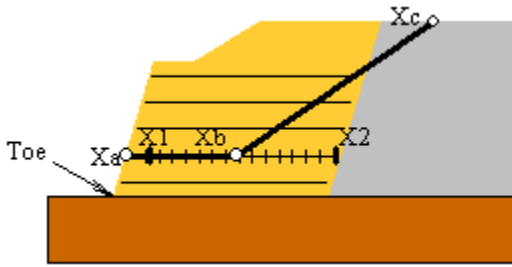
Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.08	27.92	39.67	39.67
2	Geogriglia 1	0.61	24.00	0.00	0.09	23.91	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.11	27.89	39.67	39.67
4	Geogriglia 1	1.84	24.00	0.00	0.12	23.88	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.11	27.89	39.67	39.67
6	Geogriglia 1	3.07	24.00	0.00	0.12	23.88	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.12	27.88	39.67	39.67
8	Geogriglia 1	4.31	24.00	0.00	0.12	23.88	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.12	27.88	39.67	39.67
10	Geogriglia 1	5.54	24.00	0.00	0.13	23.87	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.12	27.88	39.67	39.67
12	Geogriglia 1	6.77	24.00	0.00	0.13	23.87	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.12	27.88	39.67	39.67
14	Geogriglia 1	8.00	24.00	0.00	0.14	23.86	39.67	39.67
15	Geogriglia 1	8.61	28.00	0.00	0.12	27.88	39.67	39.67
16	Geogriglia 1	9.23	24.00	0.00	0.15	23.85	39.67	39.67
17	Geogriglia 1	9.84	28.00	0.00	0.12	27.88	39.67	39.67
18	Geogriglia 1	10.46	22.00	0.00	0.13	21.87	39.67	39.67
19	Geogriglia 1	11.07	22.00	0.00	0.13	21.87	39.67	39.67
20	Geogriglia 1	11.69	22.00	0.00	0.13	21.87	39.67	39.67
21	Geogriglia 1	12.30	22.00	0.00	0.13	21.87	39.67	39.67
22	Geogriglia 1	12.92	22.00	0.00	0.13	21.87	39.67	39.67
23	Geogriglia 1	13.53	22.00	0.00	0.13	21.87	39.67	39.67
24	Geogriglia 1	14.15	22.00	0.00	0.13	21.87	39.67	39.67
25	Geogriglia 1	14.76	22.00	0.00	0.14	21.86	39.67	39.67
26	Geogriglia 1	15.38	22.00	0.00	0.14	21.86	39.67	39.67
27	Geogriglia 1	15.99	22.00	0.00	0.14	21.86	39.67	39.67
28	Geogriglia 1	16.60	22.00	0.00	0.15	21.85	39.67	39.67
29	Geogriglia 1	17.22	22.00	0.00	0.15	21.85	39.67	39.67
30	Geogriglia 1	17.83	22.00	0.00	0.16	21.84	39.67	39.67
31	Geogriglia 1	18.45	16.00	0.00	0.16	15.84	39.67	39.67
32	Geogriglia 1	19.06	16.00	0.00	0.17	15.83	39.67	39.67
33	Geogriglia 1	19.68	16.00	0.00	0.18	15.82	39.67	39.67
34	Geogriglia 1	20.29	16.00	0.00	0.18	15.82	39.67	39.67
35	Geogriglia 1	20.91	16.00	0.00	0.19	15.81	39.67	39.67

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.35$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.20	15.80	39.67	39.67
37	Geogriglia 1	22.14	16.00	0.00	0.21	15.79	39.67	39.67
38	Geogriglia 1	22.75	16.00	0.00	0.22	15.78	39.67	39.67
39	Geogriglia 1	23.37	16.00	0.00	0.23	15.77	39.67	39.67
40	Geogriglia 1	23.98	16.00	0.00	0.24	15.76	39.67	39.67
41	Geogriglia 1	24.60	16.00	0.00	0.26	15.74	39.67	39.67
42	Geogriglia 1	25.21	16.00	0.00	0.27	15.73	39.67	39.67
43	Geogriglia 1	25.83	16.00	0.00	0.29	15.71	39.67	39.67
44	Geogriglia 1	26.44	14.00	0.00	0.32	13.68	39.67	39.67
45	Geogriglia 1	27.06	10.00	0.00	0.34	9.66	39.67	39.67
46	Geogriglia 1	27.67	14.00	0.00	0.25	13.75	39.67	39.67
47	Geogriglia 1	28.29	10.00	0.00	0.41	9.59	39.67	39.67
48	Geogriglia 1	28.90	14.00	0.00	0.25	13.75	39.67	39.67
49	Geogriglia 1	29.52	10.00	0.00	0.50	9.50	39.67	39.67
50	Geogriglia 1	30.13	14.00	0.00	0.26	13.74	39.67	39.67
51	Geogriglia 1	30.75	10.00	0.00	0.57	9.43	39.67	39.67
52	Geogriglia 1	31.36	14.00	0.00	0.26	13.74	39.67	39.67
53	Geogriglia 1	31.98	10.00	0.00	0.59	9.41	39.67	39.67
54	Geogriglia 1	32.59	14.00	0.00	0.26	13.74	39.67	39.67
55	Geogriglia 1	33.21	10.00	0.00	0.61	9.39	39.67	39.67
56	Geogriglia 1	33.82	14.00	0.00	0.29	13.71	39.67	39.67
57	Geogriglia 1	34.44	10.00	0.00	0.63	9.37	39.67	39.67
58	Geogriglia 1	35.05	8.00	0.00	0.33	7.67	39.67	39.67
59	Geogriglia 1	35.66	8.00	0.00	0.36	7.64	39.67	39.67
60	Geogriglia 1	36.28	8.00	0.00	0.39	7.61	39.67	39.67
61	Geogriglia 1	36.89	8.00	0.00	0.43	7.57	39.67	39.67
62	Geogriglia 1	37.51	8.00	0.00	0.48	7.52	39.67	39.67
63	Geogriglia 1	38.12	8.00	0.00	0.54	7.46	39.67	39.67
64	Geogriglia 1	38.74	8.00	0.00	0.61	7.39	39.67	39.67
65	Geogriglia 1	39.35	8.00	0.00	0.72	7.28	39.67	39.67
66	Geogriglia 1	39.97	8.00	0.00	0.86	7.14	39.67	39.67
67	Geogriglia 1	40.58	8.00	0.00	1.08	6.92	39.67	39.67
68	Geogriglia 1	41.20	8.00	0.00	1.45	6.55	39.67	39.67
69	Geogriglia 1	41.81	8.00	0.00	2.23	5.77	39.67	39.67

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS
At toe elevation	0.00	5.30 36.60	5.50 36.60	78.12 80.23	1.54	Minimum on Edge
Reinf. Layer #1	0.00	5.30 36.60	10.98 36.60	78.17 80.23	1.52	OK
Reinf. Layer #2	0.61	5.70 37.21	15.36 37.21	74.37 80.08	1.44	OK
Reinf. Layer #3	1.23	6.11 37.83	17.36 37.83	77.90 80.22	1.43	OK
Reinf. Layer #4	1.84	6.51 38.44	16.16 38.44	75.70 80.14	1.45	OK
Reinf. Layer #5	2.46	6.92 39.06	18.16 39.06	76.89 80.18	1.44	OK
Reinf. Layer #6	3.07	7.32 39.67	16.96 39.67	77.03 80.19	1.47	OK
Reinf. Layer #7	3.69	7.72 40.29	18.96 40.29	75.87 80.14	1.46	OK
Reinf. Layer #8	4.31	8.13 40.91	22.53 40.91	76.57 80.17	1.47	OK
Reinf. Layer #9	4.92	8.53 41.52	19.76 41.52	74.86 80.10	1.47	OK
Reinf. Layer #10	5.54	8.94 42.14	23.33 42.14	77.71 80.22	1.48	OK
Reinf. Layer #11	6.15	9.34 42.75	20.56 42.75	73.84 80.06	1.48	OK
Reinf. Layer #12	6.77	9.75 43.37	24.13 43.37	76.70 80.18	1.49	OK
Reinf. Layer #13	7.38	10.15 43.98	26.93 43.98	76.76 80.18	1.49	OK
Reinf. Layer #14	8.00	10.55 44.60	29.81 44.60	73.59 80.05	1.50	OK
Reinf. Layer #15	8.61	10.96 45.21	27.83 45.21	75.92 80.14	1.49	OK
Reinf. Layer #16	9.23	11.36 45.83	25.83 45.83	72.90 80.03	1.50	OK
Reinf. Layer #17	9.84	11.76 46.44	28.63 46.44	73.22 80.04	1.48	OK
Reinf. Layer #18	10.46	17.09 47.06	30.33 47.06	74.15 80.07	1.49	OK
Reinf. Layer #19	11.07	17.45 47.67	30.73 47.67	73.71 80.06	1.51	OK
Reinf. Layer #20	11.69	17.82 48.29	31.03 48.29	74.82 80.10	1.51	OK
Reinf. Layer #21	12.30	18.17 48.90	31.43 48.90	74.35 80.08	1.52	OK
Reinf. Layer #22	12.92	18.54 49.52	31.73 49.52	73.77 80.06	1.53	OK
Reinf. Layer #23	13.53	18.90 50.13	32.13 50.13	73.30 80.04	1.54	OK
Reinf. Layer #24	14.15	19.26 50.75	32.53 50.75	74.43 80.09	1.55	OK
Reinf. Layer #25	14.76	19.62 51.36	32.83 51.36	73.82 80.06	1.56	OK
Reinf. Layer #26	15.38	19.98 51.98	33.23 51.98	74.93 80.11	1.58	OK
Reinf. Layer #27	15.99	20.34 52.59	33.53 52.59	72.70 80.02	1.59	OK
Reinf. Layer #28	16.60	20.70 53.20	38.31 53.20	72.63 80.01	1.60	OK
Reinf. Layer #29	17.22	21.07 53.82	38.71 53.82	72.22 80.00	1.60	OK
Reinf. Layer #30	17.83	21.42 54.43	39.01 54.43	71.71 79.98	1.60	OK
Reinf. Layer #31	18.45	26.73 55.05	39.51 55.05	72.64 80.02	1.61	OK
Reinf. Layer #32	19.06	27.10 55.66	39.91 55.66	72.21 80.00	1.62	OK
Reinf. Layer #33	19.68	27.47 56.28	40.31 56.28	73.00 80.03	1.64	OK
Reinf. Layer #34	20.29	27.83 56.89	40.61 56.89	73.70 80.06	1.66	OK
Reinf. Layer #35	20.91	28.21 57.51	37.83 57.51	72.48 80.01	1.67	OK
Reinf. Layer #36	21.52	28.57 58.12	38.23 58.12	73.32 80.04	1.69	OK
Reinf. Layer #37	22.14	28.94 58.74	38.53 58.74	71.21 79.96	1.70	OK
Reinf. Layer #38	22.75	29.31 59.35	38.93 59.35	71.96 79.99	1.71	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	29.68	59.97	39.33	59.97	70.04	79.91	1.73	OK
Reinf. Layer #40	23.98	30.05	60.58	39.63	60.58	70.61	79.93	1.73	OK
Reinf. Layer #41	24.60	30.42	61.20	40.03	61.20	71.26	79.96	1.76	OK
Reinf. Layer #42	25.21	30.79	61.81	40.43	61.81	71.92	79.99	1.78	OK
Reinf. Layer #43	25.83	31.16	62.43	47.19	62.43	70.41	79.93	1.80	Minimum on Edge
Reinf. Layer #44	26.44	33.50	63.04	47.49	63.04	69.03	79.87	1.80	Minimum on Edge
Reinf. Layer #45	27.06	36.84	63.66	46.79	63.66	70.00	79.91	1.83	Minimum on Edge
Reinf. Layer #46	27.67	37.20	64.27	51.19	64.27	68.49	79.85	1.83	Minimum on Edge
Reinf. Layer #47	28.29	37.60	64.89	47.59	64.89	68.98	79.87	1.84	Minimum on Edge
Reinf. Layer #48	28.90	38.01	65.50	49.21	65.50	69.78	79.90	1.84	OK
Reinf. Layer #49	29.52	38.43	66.12	48.39	66.12	70.49	79.93	1.87	Minimum on Edge
Reinf. Layer #50	30.13	38.84	66.73	50.01	66.73	68.77	79.86	1.84	OK
Reinf. Layer #51	30.75	39.26	67.35	49.29	67.35	69.35	79.88	1.90	Minimum on Edge
Reinf. Layer #52	31.36	39.67	67.96	53.69	67.96	66.35	79.77	1.89	Minimum on Edge
Reinf. Layer #53	31.98	40.09	68.58	50.09	68.58	68.87	79.87	1.93	Minimum on Edge
Reinf. Layer #54	32.59	40.51	69.19	54.49	69.19	65.81	79.74	1.92	Minimum on Edge
Reinf. Layer #55	33.21	40.93	69.81	50.89	69.81	67.54	79.81	1.96	Minimum on Edge
Reinf. Layer #56	33.82	41.34	70.42	52.51	70.42	67.54	79.81	1.97	OK
Reinf. Layer #57	34.44	41.76	71.04	51.79	71.04	66.94	79.79	1.97	Minimum on Edge
Reinf. Layer #58	35.05	48.84	71.65	53.63	71.65	66.64	79.78	2.10	OK
Reinf. Layer #59	35.66	49.30	72.26	54.13	72.26	66.65	79.78	2.22	OK
Reinf. Layer #60	36.28	49.77	72.88	53.06	72.88	64.88	79.71	2.33	OK
Reinf. Layer #61	36.89	50.22	73.49	53.46	73.49	64.18	79.68	2.48	OK
Reinf. Layer #62	37.51	50.69	74.11	53.96	74.11	60.42	79.53	2.62	OK
Reinf. Layer #63	38.12	51.15	74.72	52.88	74.72	59.20	79.48	2.71	OK
Reinf. Layer #64	38.74	51.62	75.34	53.28	75.34	59.95	79.51	2.87	OK
Reinf. Layer #65	39.35	52.08	75.95	53.78	75.95	58.09	79.44	2.94	OK
Reinf. Layer #66	39.97	52.54	76.57	54.18	76.57	58.13	79.44	3.05	OK
Reinf. Layer #67	40.58	53.00	77.18	54.68	77.18	57.33	79.41	3.33	OK
Reinf. Layer #68	41.20	53.47	77.80	55.18	77.80	57.40	79.41	3.95	OK
Reinf. Layer #69	41.81	53.93	78.41	54.00	78.41	55.61	79.34	4.46	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis

Minimum Factor of Safety = 1.41

Critical Circle: $X_c = -3.04[m]$, $Y_c = 111.85[m]$, $R = 74.65[m]$. (Number of slices used = 58)

Translational (2-Part Wedge; Spencer), Direct Sliding, Stability Analysis

Minimum Factor of Safety = 1.43

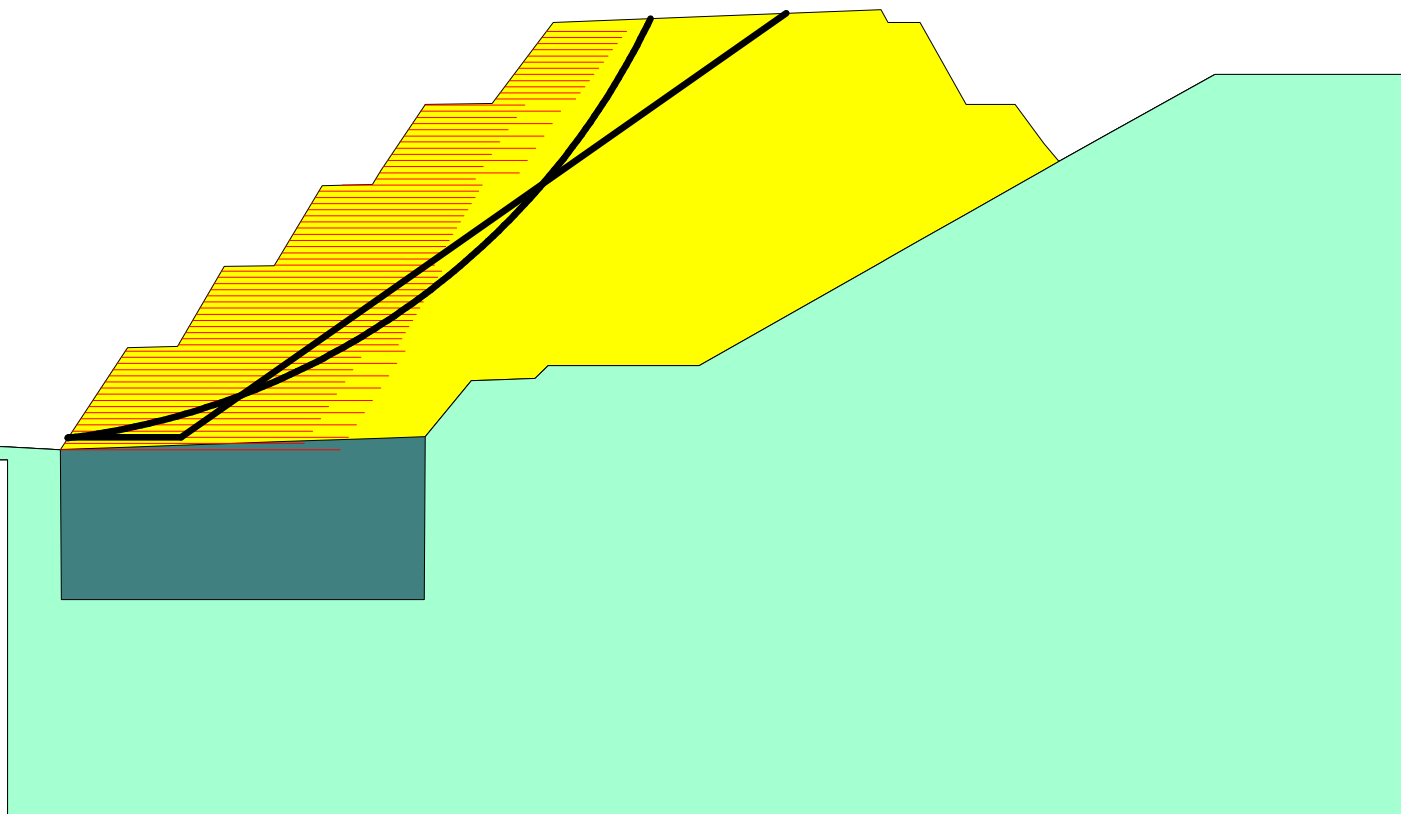
Critical Two-Part Wedge: ($X_a = 6.11$, $Y_a = 37.83$) [m]

($X_b = 17.36$, $Y_b = 37.83$) [m]

($X_c = 77.90$, $Y_c = 80.22$) [m]

(Number of slices used = 30)

Interslice resultant force inclination = 32.26 [degrees]

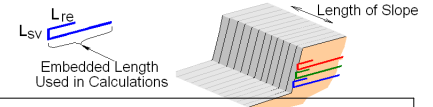


SCALE:

0 2 4 6[m]



REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, R_c	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	30.75	10.00	1.00	39.26	67.35	49.26	67.35	0.61	1.50
52	1	Geogriglia 1	31.36	14.00	1.00	39.67	67.96	53.67	67.96	0.62	1.50
53	1	Geogriglia 1	31.98	10.00	1.00	40.09	68.58	50.09	68.58	0.61	1.50
54	1	Geogriglia 1	32.59	14.00	1.00	40.51	69.19	54.51	69.19	0.62	1.50
55	1	Geogriglia 1	33.21	10.00	1.00	40.93	69.81	50.93	69.81	0.61	1.50
56	1	Geogriglia 1	33.82	14.00	1.00	41.34	70.42	55.34	70.42	0.62	1.50
57	1	Geogriglia 1	34.44	10.00	1.00	41.76	71.04	51.76	71.04	0.61	1.50
58	1	Geogriglia 1	35.05	8.00	1.00	48.84	71.65	56.84	71.65	0.61	1.50
59	1	Geogriglia 1	35.66	8.00	1.00	49.30	72.26	57.30	72.26	0.62	1.50
60	1	Geogriglia 1	36.28	8.00	1.00	49.77	72.88	57.77	72.88	0.61	1.50
61	1	Geogriglia 1	36.89	8.00	1.00	50.22	73.49	58.22	73.49	0.62	1.50
62	1	Geogriglia 1	37.51	8.00	1.00	50.69	74.11	58.69	74.11	0.61	1.50
63	1	Geogriglia 1	38.12	8.00	1.00	51.15	74.72	59.15	74.72	0.62	1.50
64	1	Geogriglia 1	38.74	8.00	1.00	51.62	75.34	59.62	75.34	0.61	1.50
65	1	Geogriglia 1	39.35	8.00	1.00	52.08	75.95	60.08	75.95	0.62	1.50
66	1	Geogriglia 1	39.97	8.00	1.00	52.54	76.57	60.54	76.57	0.61	1.50
67	1	Geogriglia 1	40.58	8.00	1.00	53.00	77.18	61.00	77.18	0.62	1.50
68	1	Geogriglia 1	41.20	8.00	1.00	53.47	77.80	61.47	77.80	0.61	1.50
69	1	Geogriglia 1	41.81	8.00	1.00	53.93	78.41	61.93	78.41	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcement [m ²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1347.92

Sezione 25 - A1M1 sismica

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PROJECT IDENTIFICATION

Title: Sezione 25 - A1M1 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi
Top of Layer 1	1	-7.40	35.60
	2	-5.10	37.10
	3	5.30	36.60
	4	12.00	46.80
	5	17.00	46.90
	6	21.70	54.90
	7	26.70	55.00
	8	31.50	63.00
	9	36.50	63.10
	10	37.40	64.60
	11	41.80	71.10
	12	48.50	71.20
	13	54.60	79.30
	14	87.40	80.60
	15	88.10	79.30
	16	91.30	79.30
	17	95.90	71.10
	18	100.80	71.10
	19	103.70	67.20
	20	105.20	65.40
	Top of Layer 2	21	120.80
22		-7.40	35.60
23		-5.10	37.10
24		5.30	36.60
25		41.80	37.90
26		46.40	43.50
27		52.80	43.70
28		54.10	45.00
29		69.20	45.00
30		105.20	65.40
31		120.80	74.10
Top of Layer 3	32	-7.40	35.60
	33	-5.10	37.10
	34	5.30	36.60
	35	5.40	21.60
	36	41.70	21.60
	37	41.80	37.90
	38	46.40	43.50
	39	52.80	43.70
	40	54.10	45.00
	41	69.20	45.00
	42	105.20	65.40
	43	120.80	74.10
Top of Phreatic Line	45	0.00	20.00
	46	110.30	20.00

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]

Water was described by phreatic line. Y values are tabulated in the right most column.

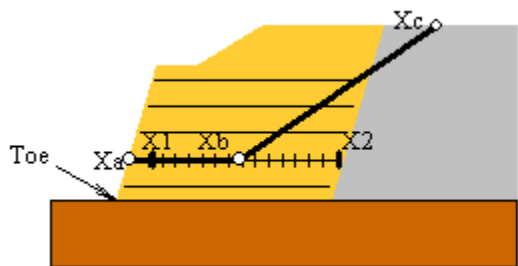
#	X	Y1	Y2	Y3	(phreatic)
					Yw
1	-7.40	35.60	35.60	35.60	20.00
2	-5.10	37.10	37.10	37.10	20.00
3	0.00	36.85	36.85	36.85	20.00
4	5.30	36.60	36.60	36.60	20.00
5	5.40	36.75	36.60	21.60	20.00
6	12.00	46.80	36.84	21.60	20.00
7	17.00	46.90	37.02	21.60	20.00
8	21.70	54.90	37.18	21.60	20.00
9	26.70	55.00	37.36	21.60	20.00
10	31.50	63.00	37.53	21.60	20.00
11	36.50	63.10	37.71	21.60	20.00
12	37.40	64.60	37.74	21.60	20.00
13	41.70	70.95	37.90	21.60	20.00
14	41.80	71.10	37.90	37.90	20.00
15	46.40	71.17	43.50	43.50	20.00
16	48.50	71.20	43.57	43.57	20.00
17	52.80	76.91	43.70	43.70	20.00
18	54.10	78.64	45.00	45.00	20.00
19	54.60	79.30	45.00	45.00	20.00
20	69.20	79.88	45.00	45.00	20.00
21	87.40	80.60	55.31	55.31	20.00
22	88.10	79.30	55.71	55.71	20.00
23	91.30	79.30	57.52	57.52	20.00
24	95.90	71.10	60.13	60.13	20.00
25	100.80	71.10	62.91	62.91	20.00
26	103.70	67.20	64.55	64.55	20.00
27	105.20	65.40	65.40	65.40	20.00
28	110.30	68.24	68.24	68.24	20.00
29	120.80	74.10	74.10	74.10	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-}po = 1.35$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.48	15.52	99.17	99.17
37	Geogriglia 1	22.14	16.00	0.00	0.50	15.50	99.17	99.17
38	Geogriglia 1	22.75	16.00	0.00	0.53	15.47	99.17	99.17
39	Geogriglia 1	23.37	16.00	0.00	0.55	15.45	99.17	99.17
40	Geogriglia 1	23.98	16.00	0.00	0.59	15.41	99.17	99.17
41	Geogriglia 1	24.60	16.00	0.00	0.62	15.38	99.17	99.17
42	Geogriglia 1	25.21	16.00	0.00	0.66	15.34	99.17	99.17
43	Geogriglia 1	25.83	16.00	0.00	0.71	15.29	99.17	99.17
44	Geogriglia 1	26.44	14.00	0.00	0.76	13.24	99.17	99.17
45	Geogriglia 1	27.06	10.00	0.00	0.82	9.18	99.17	99.17
46	Geogriglia 1	27.67	14.00	0.00	0.61	13.39	99.17	99.17
47	Geogriglia 1	28.29	10.00	0.00	0.98	9.02	99.17	99.17
48	Geogriglia 1	28.90	14.00	0.00	0.62	13.38	99.17	99.17
49	Geogriglia 1	29.52	10.00	0.00	1.22	8.78	99.17	99.17
50	Geogriglia 1	30.13	14.00	0.00	0.63	13.37	99.17	99.17
51	Geogriglia 1	30.75	10.00	0.00	1.50	8.50	99.17	99.17
52	Geogriglia 1	31.36	14.00	0.00	0.64	13.36	99.17	99.17
53	Geogriglia 1	31.98	10.00	0.00	1.71	8.29	99.17	99.17
54	Geogriglia 1	32.59	14.00	0.00	0.65	13.35	99.17	99.17
55	Geogriglia 1	33.21	10.00	0.00	1.81	8.19	99.17	99.17
56	Geogriglia 1	33.82	14.00	0.00	0.70	13.30	99.17	99.17
57	Geogriglia 1	34.44	10.00	0.00	1.92	8.08	99.17	99.17
58	Geogriglia 1	35.05	8.00	0.00	0.80	7.20	99.17	99.17
59	Geogriglia 1	35.66	8.00	0.00	0.87	7.13	99.17	99.17
60	Geogriglia 1	36.28	8.00	0.00	0.95	7.05	99.17	99.17
61	Geogriglia 1	36.89	8.00	0.00	1.04	6.96	99.17	99.17
62	Geogriglia 1	37.51	8.00	0.00	1.16	6.84	99.17	99.17
63	Geogriglia 1	38.12	8.00	0.00	1.30	6.70	99.17	99.17
64	Geogriglia 1	38.74	8.00	0.00	1.49	6.51	99.17	99.17
65	Geogriglia 1	39.35	8.00	0.00	1.74	6.26	99.17	99.17
66	Geogriglia 1	39.97	8.00	0.00	2.11	5.89	99.17	99.17
67	Geogriglia 1	40.58	8.00	0.00	2.65	5.35	99.17	99.17
68	Geogriglia 1	41.20	8.00	0.00	3.62	4.38	99.17	99.17
69	Geogriglia 1	41.81	8.00	0.00	5.77	2.23	99.17	99.17

RESULTS OF TRANSLATIONAL ANALYSIS



Results in the table below represent critical two-part wedges identified between specified starting (X1) and ending (X2) search points. Wedges along all reinforcement layers and at elevation zero are reported. The critical two-part wedge, one for each predetermined elevation, is defined by Xa, Xb and Xc where Xa is the front end of the passive wedge (slope face), Xb is where the passive wedge ends and the active one starts, and Xc is the X-ordinate at which the active wedge starts.

Critical two-part wedge along each interface:

Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS
At toe elevation	0.00	5.30 36.60	16.54 36.60	87.98 79.52	1.61	OK
Reinf. Layer #1	0.00	5.30 36.60	27.71 36.60	88.69 79.30	1.58	OK
Reinf. Layer #2	0.61	5.70 37.21	24.91 37.21	86.85 80.58	1.43	OK
Reinf. Layer #3	1.23	6.11 37.83	28.51 37.83	85.15 80.51	1.38	OK
Reinf. Layer #4	1.84	6.51 38.44	30.49 38.44	82.30 80.40	1.37	Minimum on Edge
Reinf. Layer #5	2.46	6.92 39.06	29.31 39.06	80.26 80.32	1.38	OK
Reinf. Layer #6	3.07	7.32 39.67	31.29 39.67	83.48 80.44	1.38	Minimum on Edge
Reinf. Layer #7	3.69	7.72 40.29	30.11 40.29	83.39 80.44	1.39	OK
Reinf. Layer #8	4.31	8.13 40.91	32.09 40.91	78.99 80.27	1.39	Minimum on Edge
Reinf. Layer #9	4.92	8.53 41.52	30.91 41.52	84.55 80.49	1.41	OK
Reinf. Layer #10	5.54	8.94 42.14	32.89 42.14	81.83 80.38	1.39	Minimum on Edge
Reinf. Layer #11	6.15	9.34 42.75	31.71 42.75	83.60 80.45	1.43	OK
Reinf. Layer #12	6.77	9.75 43.37	33.69 43.37	82.86 80.42	1.41	Minimum on Edge
Reinf. Layer #13	7.38	10.15 43.98	38.09 43.98	81.45 80.36	1.45	Minimum on Edge
Reinf. Layer #14	8.00	10.55 44.60	34.59 44.60	80.31 80.32	1.42	Minimum on Edge
Reinf. Layer #15	8.61	10.96 45.21	38.99 45.21	80.86 80.34	1.46	Minimum on Edge
Reinf. Layer #16	9.23	11.36 45.83	35.39 45.83	83.01 80.43	1.44	Minimum on Edge
Reinf. Layer #17	9.84	11.76 46.44	39.79 46.44	80.16 80.31	1.47	Minimum on Edge
Reinf. Layer #18	10.46	17.09 47.06	39.09 47.06	78.65 80.25	1.43	Minimum on Edge
Reinf. Layer #19	11.07	17.45 47.67	39.49 47.67	78.30 80.24	1.45	Minimum on Edge
Reinf. Layer #20	11.69	17.82 48.29	39.79 48.29	77.84 80.22	1.45	Minimum on Edge
Reinf. Layer #21	12.30	18.17 48.90	40.19 48.90	77.50 80.21	1.46	Minimum on Edge
Reinf. Layer #22	12.92	18.54 49.52	40.49 49.52	77.04 80.19	1.47	Minimum on Edge
Reinf. Layer #23	13.53	18.90 50.13	40.89 50.13	76.70 80.18	1.48	Minimum on Edge
Reinf. Layer #24	14.15	19.26 50.75	41.29 50.75	77.68 80.21	1.49	Minimum on Edge
Reinf. Layer #25	14.76	19.62 51.36	41.59 51.36	77.20 80.20	1.49	Minimum on Edge
Reinf. Layer #26	15.38	19.98 51.98	41.99 51.98	76.81 80.18	1.50	Minimum on Edge
Reinf. Layer #27	15.99	20.34 52.59	37.91 52.59	78.94 80.26	1.51	OK
Reinf. Layer #28	16.60	20.70 53.20	42.69 53.20	77.25 80.20	1.51	Minimum on Edge
Reinf. Layer #29	17.22	21.07 53.82	38.71 53.82	77.85 80.22	1.52	OK
Reinf. Layer #30	17.83	21.42 54.43	39.01 54.43	77.21 80.20	1.52	OK
Reinf. Layer #31	18.45	26.73 55.05	42.69 55.05	74.75 80.10	1.49	Minimum on Edge
Reinf. Layer #32	19.06	27.10 55.66	43.09 55.66	74.35 80.08	1.51	Minimum on Edge
Reinf. Layer #33	19.68	27.47 56.28	43.49 56.28	73.94 80.07	1.52	Minimum on Edge
Reinf. Layer #34	20.29	27.83 56.89	43.79 56.89	73.43 80.05	1.53	Minimum on Edge
Reinf. Layer #35	20.91	28.21 57.51	44.19 57.51	73.01 80.03	1.54	Minimum on Edge
Reinf. Layer #36	21.52	28.57 58.12	44.59 58.12	72.61 80.01	1.55	Minimum on Edge
Reinf. Layer #37	22.14	28.94 58.74	44.89 58.74	73.15 80.04	1.55	Minimum on Edge
Reinf. Layer #38	22.75	29.31 59.35	45.29 59.35	72.72 80.02	1.56	Minimum on Edge

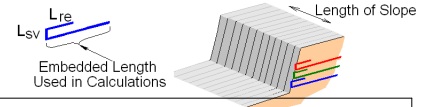
Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	29.68	59.97	45.69	59.97	72.27	80.00	1.56	Minimum on Edge
Reinf. Layer #40	23.98	30.05	60.58	45.99	60.58	73.81	80.06	1.58	Minimum on Edge
Reinf. Layer #41	24.60	30.42	61.20	46.39	61.20	75.54	80.13	1.60	Minimum on Edge
Reinf. Layer #42	25.21	30.79	61.81	46.79	61.81	72.80	80.02	1.62	Minimum on Edge
Reinf. Layer #43	25.83	31.16	62.43	47.19	62.43	74.37	80.08	1.63	Minimum on Edge
Reinf. Layer #44	26.44	33.50	63.04	47.49	63.04	71.68	79.98	1.66	Minimum on Edge
Reinf. Layer #45	27.06	36.84	63.66	46.79	63.66	72.99	80.03	1.73	Minimum on Edge
Reinf. Layer #46	27.67	37.20	64.27	51.19	64.27	69.14	79.88	1.63	Minimum on Edge
Reinf. Layer #47	28.29	37.60	64.89	47.59	64.89	71.74	79.98	1.76	Minimum on Edge
Reinf. Layer #48	28.90	38.01	65.50	51.99	65.50	68.50	79.85	1.65	Minimum on Edge
Reinf. Layer #49	29.52	38.43	66.12	48.39	66.12	70.49	79.93	1.79	Minimum on Edge
Reinf. Layer #50	30.13	38.84	66.73	52.79	66.73	67.31	79.80	1.66	Minimum on Edge
Reinf. Layer #51	30.75	39.26	67.35	49.29	67.35	71.12	79.95	1.84	Minimum on Edge
Reinf. Layer #52	31.36	39.67	67.96	53.69	67.96	66.82	79.78	1.69	Minimum on Edge
Reinf. Layer #53	31.98	40.09	68.58	50.09	68.58	69.69	79.90	1.95	Minimum on Edge
Reinf. Layer #54	32.59	40.51	69.19	54.49	69.19	66.23	79.76	1.72	Minimum on Edge
Reinf. Layer #55	33.21	40.93	69.81	50.89	69.81	68.27	79.84	2.11	Minimum on Edge
Reinf. Layer #56	33.82	41.34	70.42	55.29	70.42	67.30	79.80	1.78	Minimum on Edge
Reinf. Layer #57	34.44	41.76	71.04	51.79	71.04	66.94	79.79	2.29	Minimum on Edge
Reinf. Layer #58	35.05	48.84	71.65	56.79	71.65	67.22	79.80	1.99	Minimum on Edge
Reinf. Layer #59	35.66	49.30	72.26	57.29	72.26	67.30	79.80	2.09	Minimum on Edge
Reinf. Layer #60	36.28	49.77	72.88	57.79	72.88	66.96	79.79	2.21	Minimum on Edge
Reinf. Layer #61	36.89	50.22	73.49	58.19	73.49	66.86	79.79	2.34	Minimum on Edge
Reinf. Layer #62	37.51	50.69	74.11	58.69	74.11	66.48	79.77	2.49	Minimum on Edge
Reinf. Layer #63	38.12	51.15	74.72	59.19	74.72	66.40	79.77	2.67	Minimum on Edge
Reinf. Layer #64	38.74	51.62	75.34	59.59	75.34	65.88	79.75	2.88	Minimum on Edge
Reinf. Layer #65	39.35	52.08	75.95	60.09	75.95	65.71	79.74	3.13	Minimum on Edge
Reinf. Layer #66	39.97	52.54	76.57	60.49	76.57	65.35	79.73	3.48	Minimum on Edge
Reinf. Layer #67	40.58	53.00	77.18	60.99	77.18	63.37	79.65	4.05	Minimum on Edge
Reinf. Layer #68	41.20	53.47	77.80	59.91	77.80	63.09	79.64	5.18	OK
Reinf. Layer #69	41.81	53.93	78.41	58.73	78.41	60.69	79.54	6.65	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
1	1	Geogriglia 1	0.00	28.00	1.00	5.30 36.60	33.30 36.60	0.61	1.50
2	1	Geogriglia 1	0.61	24.00	1.00	5.70 37.21	29.70 37.21	0.62	1.50
3	1	Geogriglia 1	1.23	28.00	1.00	6.11 37.83	34.11 37.83	0.61	1.50
4	1	Geogriglia 1	1.84	24.00	1.00	6.51 38.44	30.51 38.44	0.62	1.50
5	1	Geogriglia 1	2.46	28.00	1.00	6.92 39.06	34.92 39.06	0.61	1.50
6	1	Geogriglia 1	3.07	24.00	1.00	7.32 39.67	31.32 39.67	0.62	1.50
7	1	Geogriglia 1	3.69	28.00	1.00	7.72 40.29	35.72 40.29	0.62	1.50
8	1	Geogriglia 1	4.31	24.00	1.00	8.13 40.91	32.13 40.91	0.61	1.50
9	1	Geogriglia 1	4.92	28.00	1.00	8.53 41.52	36.53 41.52	0.62	1.50
10	1	Geogriglia 1	5.54	24.00	1.00	8.94 42.14	32.94 42.14	0.61	1.50
11	1	Geogriglia 1	6.15	28.00	1.00	9.34 42.75	37.34 42.75	0.62	1.50
12	1	Geogriglia 1	6.77	24.00	1.00	9.75 43.37	33.75 43.37	0.61	1.50
13	1	Geogriglia 1	7.38	28.00	1.00	10.15 43.98	38.15 43.98	0.62	1.50
14	1	Geogriglia 1	8.00	24.00	1.00	10.55 44.60	34.55 44.60	0.61	1.50
15	1	Geogriglia 1	8.61	28.00	1.00	10.96 45.21	38.96 45.21	0.62	1.50
16	1	Geogriglia 1	9.23	24.00	1.00	11.36 45.83	35.36 45.83	0.61	1.50
17	1	Geogriglia 1	9.84	28.00	1.00	11.76 46.44	39.76 46.44	0.62	1.50
18	1	Geogriglia 1	10.46	22.00	1.00	17.09 47.06	39.09 47.06	0.61	1.50
19	1	Geogriglia 1	11.07	22.00	1.00	17.45 47.67	39.45 47.67	0.62	1.50
20	1	Geogriglia 1	11.69	22.00	1.00	17.82 48.29	39.82 48.29	0.61	1.50
21	1	Geogriglia 1	12.30	22.00	1.00	18.17 48.90	40.17 48.90	0.62	1.50
22	1	Geogriglia 1	12.92	22.00	1.00	18.54 49.52	40.54 49.52	0.61	1.50
23	1	Geogriglia 1	13.53	22.00	1.00	18.90 50.13	40.90 50.13	0.62	1.50
24	1	Geogriglia 1	14.15	22.00	1.00	19.26 50.75	41.26 50.75	0.61	1.50
25	1	Geogriglia 1	14.76	22.00	1.00	19.62 51.36	41.62 51.36	0.62	1.50
26	1	Geogriglia 1	15.38	22.00	1.00	19.98 51.98	41.98 51.98	0.61	1.50
27	1	Geogriglia 1	15.99	22.00	1.00	20.34 52.59	42.34 52.59	0.61	1.50
28	1	Geogriglia 1	16.60	22.00	1.00	20.70 53.20	42.70 53.20	0.62	1.50
29	1	Geogriglia 1	17.22	22.00	1.00	21.07 53.82	43.07 53.82	0.61	1.50
30	1	Geogriglia 1	17.83	22.00	1.00	21.42 54.43	43.42 54.43	0.62	1.50
31	1	Geogriglia 1	18.45	16.00	1.00	26.73 55.05	42.73 55.05	0.61	1.50
32	1	Geogriglia 1	19.06	16.00	1.00	27.10 55.66	43.10 55.66	0.62	1.50
33	1	Geogriglia 1	19.68	16.00	1.00	27.47 56.28	43.47 56.28	0.61	1.50
34	1	Geogriglia 1	20.29	16.00	1.00	27.83 56.89	43.83 56.89	0.62	1.50
35	1	Geogriglia 1	20.91	16.00	1.00	28.21 57.51	44.21 57.51	0.61	1.50
36	1	Geogriglia 1	21.52	16.00	1.00	28.57 58.12	44.57 58.12	0.62	1.50
37	1	Geogriglia 1	22.14	16.00	1.00	28.94 58.74	44.94 58.74	0.61	1.50
38	1	Geogriglia 1	22.75	16.00	1.00	29.31 59.35	45.31 59.35	0.62	1.50
39	1	Geogriglia 1	23.37	16.00	1.00	29.68 59.97	45.68 59.97	0.61	1.50
40	1	Geogriglia 1	23.98	16.00	1.00	30.05 60.58	46.05 60.58	0.62	1.50
41	1	Geogriglia 1	24.60	16.00	1.00	30.42 61.20	46.42 61.20	0.61	1.50
42	1	Geogriglia 1	25.21	16.00	1.00	30.79 61.81	46.79 61.81	0.62	1.50
43	1	Geogriglia 1	25.83	16.00	1.00	31.16 62.43	47.16 62.43	0.61	1.50
44	1	Geogriglia 1	26.44	14.00	1.00	33.50 63.04	47.50 63.04	0.62	1.50
45	1	Geogriglia 1	27.06	10.00	1.00	36.84 63.66	46.84 63.66	0.61	1.50
46	1	Geogriglia 1	27.67	14.00	1.00	37.20 64.27	51.20 64.27	0.62	1.50
47	1	Geogriglia 1	28.29	10.00	1.00	37.60 64.89	47.60 64.89	0.61	1.50
48	1	Geogriglia 1	28.90	14.00	1.00	38.01 65.50	52.01 65.50	0.62	1.50
49	1	Geogriglia 1	29.52	10.00	1.00	38.43 66.12	48.43 66.12	0.61	1.50
50	1	Geogriglia 1	30.13	14.00	1.00	38.84 66.73	52.84 66.73	0.62	1.50

* Vertical distance - AIM1 between layers.

Sezione 29 - A1M1 statica

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PROJECT IDENTIFICATION

Title: Sezione 29 - A1M1 statica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

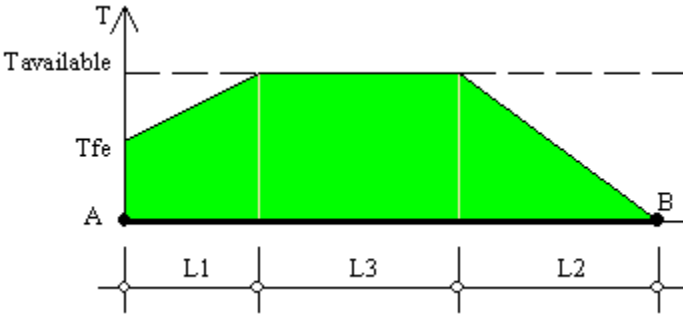
TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]

Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi	
Top of Layer 1	1	0.00	50.00	Top of Phreatic Line	51	100.20	63.50	
	2	20.30	50.70		52	103.50	68.50	
	3	22.20	51.90		53	105.70	68.50	
	4	29.60	51.70		54	111.70	72.60	
	5	31.40	54.90		55	123.00	78.80	
	6	36.80	55.00		56	140.70	89.40	
	7	41.40	63.10		58	0.00	20.00	
	8	47.50	63.10		59	110.30	20.00	
	9	52.20	71.10					
	10	57.60	71.20					
Top of Layer 2	11	62.30	79.20					
	12	67.80	79.30					
	13	72.40	87.40					
	14	77.90	87.40					
	15	82.50	95.40					
	16	100.30	95.40					
	17	105.80	87.40					
	18	111.60	87.30					
	19	116.90	79.30					
	20	122.50	79.20					
	21	123.00	78.80					
	22	140.70	89.40					
	23	0.00	50.00					
24	20.30	50.70						
25	22.20	51.90						
26	29.60	51.70						
27	71.80	54.20						
28	73.40	55.80						
29	80.70	55.80						
30	82.20	57.80						
31	91.20	57.80						
32	95.50	63.50						
33	100.20	63.50						
34	103.50	68.50						
35	105.70	68.50						
36	111.70	72.60						
37	123.00	78.80						
38	140.70	89.40						
Top of Layer 3	39	0.00	50.00					
	40	20.30	50.70					
	41	22.20	51.90					
	42	29.60	51.70					
	43	29.70	36.70					
	44	67.00	36.70					
	45	71.80	54.20					
	46	73.40	55.80					
	47	80.70	55.80					
	48	82.20	57.80					
	49	91.20	57.80					
	50	95.50	63.50					

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.35

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.10	27.90	39.67	39.67
2	Geogriglia 1	0.61	28.00	0.00	0.10	27.90	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.10	27.90	39.67	39.67
4	Geogriglia 1	1.84	28.00	0.00	0.14	27.86	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.14	27.86	39.67	39.67
6	Geogriglia 1	3.07	28.00	0.00	0.14	27.86	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.11	27.89	39.67	39.67
8	Geogriglia 1	4.31	24.00	0.00	0.12	23.88	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.12	27.88	39.67	39.67
10	Geogriglia 1	5.54	24.00	0.00	0.12	23.88	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.12	27.88	39.67	39.67
12	Geogriglia 1	6.77	24.00	0.00	0.13	23.87	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.13	27.87	39.67	39.67
14	Geogriglia 1	8.00	24.00	0.00	0.13	23.87	39.67	39.67
15	Geogriglia 1	8.61	28.00	0.00	0.14	27.86	39.67	39.67
16	Geogriglia 1	9.23	24.00	0.00	0.14	23.86	39.67	39.67
17	Geogriglia 1	9.84	28.00	0.00	0.14	27.86	39.67	39.67
18	Geogriglia 1	10.46	24.00	0.00	0.15	23.85	39.67	39.67
19	Geogriglia 1	11.07	28.00	0.00	0.14	27.86	39.67	39.67
20	Geogriglia 1	11.69	22.00	0.00	0.14	21.86	39.67	39.67
21	Geogriglia 1	12.30	22.00	0.00	0.14	21.86	39.67	39.67
22	Geogriglia 1	12.92	22.00	0.00	0.14	21.86	39.67	39.67
23	Geogriglia 1	13.53	22.00	0.00	0.14	21.86	39.67	39.67
24	Geogriglia 1	14.15	22.00	0.00	0.14	21.86	39.67	39.67
25	Geogriglia 1	14.76	22.00	0.00	0.14	21.86	39.67	39.67
26	Geogriglia 1	15.38	22.00	0.00	0.14	21.86	39.67	39.67
27	Geogriglia 1	15.99	22.00	0.00	0.14	21.86	39.67	39.67
28	Geogriglia 1	16.60	22.00	0.00	0.14	21.86	39.67	39.67
29	Geogriglia 1	17.22	22.00	0.00	0.14	21.86	39.67	39.67
30	Geogriglia 1	17.83	22.00	0.00	0.15	21.85	39.67	39.67
31	Geogriglia 1	18.45	22.00	0.00	0.15	21.85	39.67	39.67
32	Geogriglia 1	19.06	22.00	0.00	0.16	21.84	39.67	39.67
33	Geogriglia 1	19.68	16.00	0.00	0.16	15.84	39.67	39.67
34	Geogriglia 1	20.29	16.00	0.00	0.17	15.83	39.67	39.67
35	Geogriglia 1	20.91	16.00	0.00	0.18	15.82	39.67	39.67

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.35$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.18	15.82	39.67	39.67
37	Geogriglia 1	22.14	16.00	0.00	0.19	15.81	39.67	39.67
38	Geogriglia 1	22.75	16.00	0.00	0.20	15.80	39.67	39.67
39	Geogriglia 1	23.37	16.00	0.00	0.21	15.79	39.67	39.67
40	Geogriglia 1	23.98	16.00	0.00	0.22	15.78	39.67	39.67
41	Geogriglia 1	24.60	16.00	0.00	0.23	15.77	39.67	39.67
42	Geogriglia 1	25.21	16.00	0.00	0.25	15.75	39.67	39.67
43	Geogriglia 1	25.83	16.00	0.00	0.26	15.74	39.67	39.67
44	Geogriglia 1	26.44	16.00	0.00	0.28	15.72	39.67	39.67
45	Geogriglia 1	27.06	16.00	0.00	0.30	15.70	39.67	39.67
46	Geogriglia 1	27.67	14.00	0.00	0.18	13.82	39.67	39.67
47	Geogriglia 1	28.29	10.00	0.00	0.34	9.66	39.67	39.67
48	Geogriglia 1	28.90	14.00	0.00	0.18	13.82	39.67	39.67
49	Geogriglia 1	29.52	10.00	0.00	0.34	9.66	39.67	39.67
50	Geogriglia 1	30.13	14.00	0.00	0.19	13.81	39.67	39.67
51	Geogriglia 1	30.75	10.00	0.00	0.34	9.66	39.67	39.67
52	Geogriglia 1	31.36	14.00	0.00	0.21	13.79	39.67	39.67
53	Geogriglia 1	31.98	10.00	0.00	0.34	9.66	39.67	39.67
54	Geogriglia 1	32.59	14.00	0.00	0.23	13.77	39.67	39.67
55	Geogriglia 1	33.21	10.00	0.00	0.34	9.66	39.67	39.67
56	Geogriglia 1	33.82	14.00	0.00	0.26	13.74	39.67	39.67
57	Geogriglia 1	34.44	10.00	0.00	0.34	9.66	39.67	39.67
58	Geogriglia 1	35.05	14.00	0.00	0.30	13.70	39.67	39.67
59	Geogriglia 1	35.66	10.00	0.00	0.34	9.66	39.67	39.67
60	Geogriglia 1	36.28	8.00	0.00	0.35	7.65	39.67	39.67
61	Geogriglia 1	36.89	8.00	0.00	0.38	7.62	39.67	39.67
62	Geogriglia 1	37.51	8.00	0.00	0.41	7.59	39.67	39.67
63	Geogriglia 1	38.12	8.00	0.00	0.46	7.54	39.67	39.67
64	Geogriglia 1	38.74	8.00	0.00	0.51	7.49	39.67	39.67
65	Geogriglia 1	39.35	8.00	0.00	0.59	7.41	39.67	39.67
66	Geogriglia 1	39.97	8.00	0.00	0.68	7.32	39.67	39.67
67	Geogriglia 1	40.58	8.00	0.00	0.82	7.18	39.67	39.67
68	Geogriglia 1	41.20	8.00	0.00	1.02	6.98	39.67	39.67
69	Geogriglia 1	41.81	8.00	0.00	1.34	6.66	39.67	39.67
70	Geogriglia 1	42.43	8.00	0.00	2.00	6.00	39.67	39.67
71	Geogriglia 1	43.05	8.00	0.00	3.89	4.11	39.67	39.67

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	59.87	75.07	69.53	75.07	98.57	95.40	1.68	OK
Reinf. Layer #40	23.98	60.23	75.68	69.83	75.68	99.07	95.40	1.68	OK
Reinf. Layer #41	24.60	60.60	76.30	70.23	76.30	96.52	95.40	1.68	OK
Reinf. Layer #42	25.21	60.95	76.91	70.63	76.91	97.04	95.40	1.68	OK
Reinf. Layer #43	25.83	61.32	77.53	70.93	77.53	97.43	95.40	1.70	OK
Reinf. Layer #44	26.44	61.68	78.14	71.33	78.14	97.91	95.40	1.71	OK
Reinf. Layer #45	27.06	62.04	78.76	71.63	78.76	98.26	95.40	1.71	OK
Reinf. Layer #46	27.67	67.84	79.37	70.68	79.37	97.36	95.40	1.75	OK
Reinf. Layer #47	28.29	68.19	79.99	78.19	79.99	97.91	95.40	1.75	Minimum on Edge
Reinf. Layer #48	28.90	68.54	80.60	79.71	80.60	96.74	95.40	1.79	OK
Reinf. Layer #49	29.52	68.89	81.22	78.89	81.22	97.04	95.40	1.76	Minimum on Edge
Reinf. Layer #50	30.13	69.24	81.83	77.63	81.83	97.01	95.40	1.81	OK
Reinf. Layer #51	30.75	69.59	82.45	79.59	82.45	95.02	95.40	1.76	Minimum on Edge
Reinf. Layer #52	31.36	69.94	83.06	81.11	83.06	94.35	95.40	1.85	OK
Reinf. Layer #53	31.98	70.29	83.68	80.29	83.68	96.42	95.40	1.78	Minimum on Edge
Reinf. Layer #54	32.59	70.63	84.29	81.81	84.29	95.05	95.40	1.88	OK
Reinf. Layer #55	33.21	70.99	84.91	80.99	84.91	95.43	95.40	1.84	Minimum on Edge
Reinf. Layer #56	33.82	71.33	85.52	79.73	85.52	95.55	95.40	1.94	OK
Reinf. Layer #57	34.44	71.68	86.14	81.69	86.14	94.44	95.40	1.92	Minimum on Edge
Reinf. Layer #58	35.05	72.03	86.75	80.43	86.75	93.75	95.40	2.01	OK
Reinf. Layer #59	35.66	72.38	87.36	80.41	87.36	93.28	95.40	2.02	OK
Reinf. Layer #60	36.28	78.23	87.98	81.46	87.98	92.88	95.40	2.11	OK
Reinf. Layer #61	36.89	78.58	88.59	80.28	88.59	92.07	95.40	2.25	OK
Reinf. Layer #62	37.51	78.94	89.21	80.58	89.21	86.35	95.40	2.34	OK
Reinf. Layer #63	38.12	79.29	89.82	80.98	89.82	86.00	95.40	2.42	OK
Reinf. Layer #64	38.74	79.65	90.44	81.28	90.44	87.40	95.40	2.58	OK
Reinf. Layer #65	39.35	80.00	91.05	81.68	91.05	86.34	95.40	2.71	OK
Reinf. Layer #66	39.97	80.36	91.67	82.08	91.67	84.99	95.40	2.75	OK
Reinf. Layer #67	40.58	80.71	92.28	82.38	92.28	84.25	95.40	2.95	OK
Reinf. Layer #68	41.20	81.06	92.90	82.78	92.90	86.35	95.40	3.51	OK
Reinf. Layer #69	41.81	81.41	93.51	83.08	93.51	85.41	95.40	4.10	OK
Reinf. Layer #70	42.43	81.77	94.13	81.90	94.13	84.10	95.40	4.71	Minimum on Edge
Reinf. Layer #71	43.05	82.13	94.75	82.20	94.75	83.33	95.40	5.48	Minimum on Edge

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

Sezione 29 - A1M1 sismica

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PROJECT IDENTIFICATION

Title: Sezione 29 - A1M1 sismica
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]	Cohesion, c [kPa]
....1.....Rilevato Marino	18.0	36.0	0.0
....2.....Riporto jet.....	18.0	40.0	50.0
....3.....Riporto persistente.....	18.0	30.0	10.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.35
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 3 layers (see details in next page)

WATER GEOMETRY

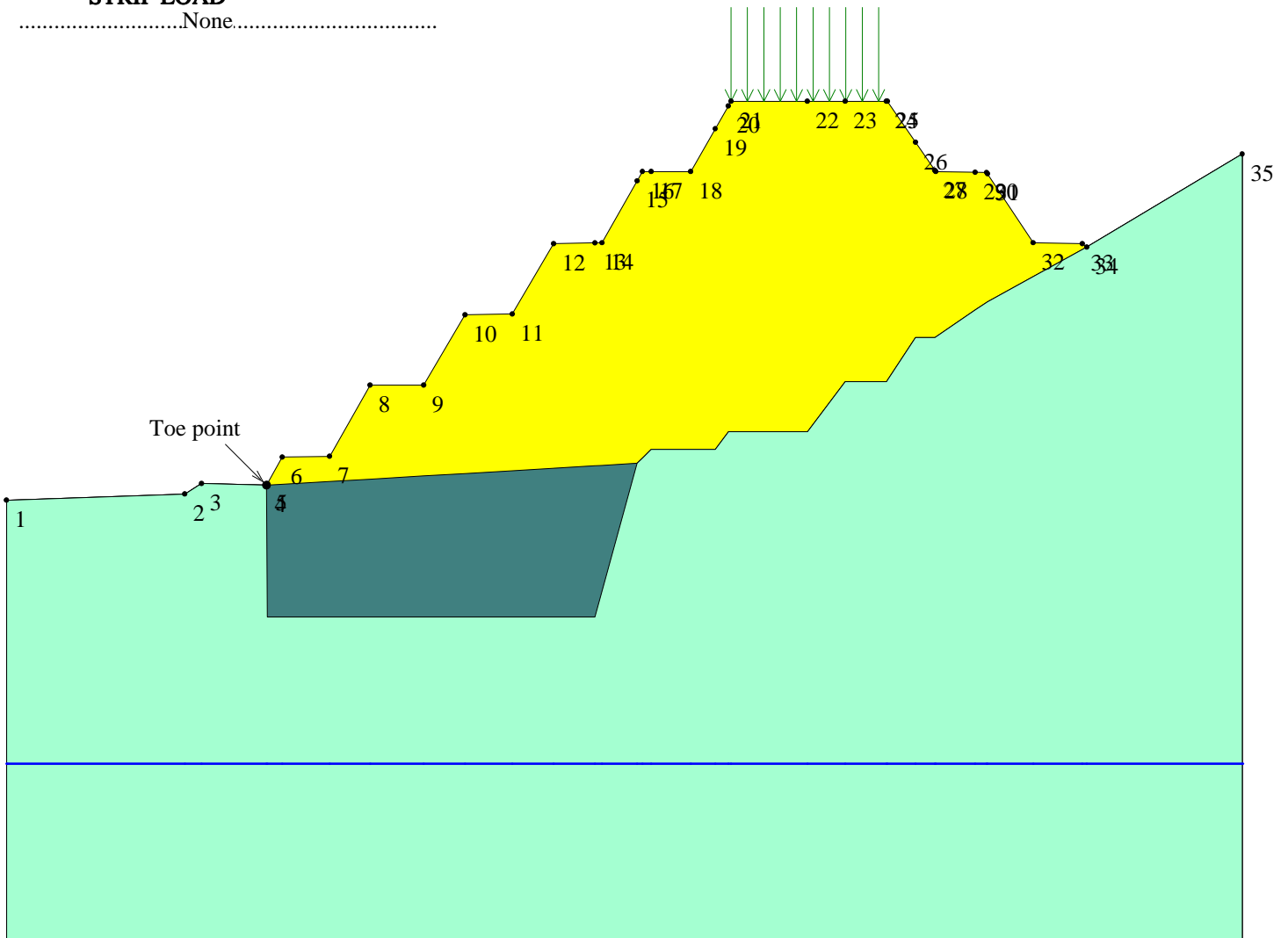
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 10.00 [kPa] inclined from vertical at 0.00 degrees, starts at X1s = 82.50 and ends at X1e = 100.30 [m].
Surcharge load, Q2.....None
Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0 2 4 6 [m]
[Scale bar graphic]

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 3 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Yw (phreatic)
1	0.00	50.00	50.00	50.00	20.00
2	20.30	50.70	50.70	50.70	20.00
3	22.20	51.90	51.90	51.90	20.00
4	29.60	51.70	51.70	51.70	20.00
5	29.70	51.88	51.71	36.70	20.00
6	31.40	54.90	51.81	36.70	20.00
7	36.80	55.00	52.13	36.70	20.00
8	41.40	63.10	52.40	36.70	20.00
9	47.50	63.10	52.76	36.70	20.00
10	52.20	71.10	53.04	36.70	20.00
11	57.60	71.20	53.36	36.70	20.00
12	62.30	79.20	53.64	36.70	20.00
13	67.00	79.29	53.92	36.70	20.00
14	67.80	79.30	53.96	39.62	20.00
15	71.80	86.34	54.20	54.20	20.00
16	72.40	87.40	54.80	54.80	20.00
17	73.40	87.40	55.80	55.80	20.00
18	77.90	87.40	55.80	55.80	20.00
19	80.70	92.27	55.80	55.80	20.00
20	82.20	94.88	57.80	57.80	20.00
21	82.50	95.40	57.80	57.80	20.00
22	91.20	95.40	57.80	57.80	20.00
23	95.50	95.40	63.50	63.50	20.00
24	100.20	95.40	63.50	63.50	20.00
25	100.30	95.40	63.65	63.65	20.00
26	103.50	90.75	68.50	68.50	20.00
27	105.70	87.55	68.50	68.50	20.00
28	105.80	87.40	68.57	68.57	20.00
29	110.30	87.32	71.64	71.64	20.00
30	111.60	87.30	72.53	72.53	20.00
31	111.70	87.15	72.60	72.60	20.00
32	116.90	79.30	75.45	75.45	20.00
33	122.50	79.20	78.53	78.53	20.00
34	123.00	78.80	78.80	78.80	20.00
35	140.70	89.40	89.40	89.40	20.00

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.35

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.52	16.00	0.00	0.44	15.56	99.17	99.17
37	Geogriglia 1	22.14	16.00	0.00	0.46	15.54	99.17	99.17
38	Geogriglia 1	22.75	16.00	0.00	0.48	15.52	99.17	99.17
39	Geogriglia 1	23.37	16.00	0.00	0.50	15.50	99.17	99.17
40	Geogriglia 1	23.98	16.00	0.00	0.53	15.47	99.17	99.17
41	Geogriglia 1	24.60	16.00	0.00	0.56	15.44	99.17	99.17
42	Geogriglia 1	25.21	16.00	0.00	0.59	15.41	99.17	99.17
43	Geogriglia 1	25.83	16.00	0.00	0.63	15.37	99.17	99.17
44	Geogriglia 1	26.44	16.00	0.00	0.67	15.33	99.17	99.17
45	Geogriglia 1	27.06	16.00	0.00	0.71	15.29	99.17	99.17
46	Geogriglia 1	27.67	14.00	0.00	0.43	13.57	99.17	99.17
47	Geogriglia 1	28.29	10.00	0.00	0.82	9.18	99.17	99.17
48	Geogriglia 1	28.90	14.00	0.00	0.43	13.57	99.17	99.17
49	Geogriglia 1	29.52	10.00	0.00	0.86	9.14	99.17	99.17
50	Geogriglia 1	30.13	14.00	0.00	0.46	13.54	99.17	99.17
51	Geogriglia 1	30.75	10.00	0.00	0.87	9.13	99.17	99.17
52	Geogriglia 1	31.36	14.00	0.00	0.50	13.50	99.17	99.17
53	Geogriglia 1	31.98	10.00	0.00	0.87	9.13	99.17	99.17
54	Geogriglia 1	32.59	14.00	0.00	0.56	13.44	99.17	99.17
55	Geogriglia 1	33.21	10.00	0.00	0.87	9.13	99.17	99.17
56	Geogriglia 1	33.82	14.00	0.00	0.63	13.37	99.17	99.17
57	Geogriglia 1	34.44	10.00	0.00	0.87	9.13	99.17	99.17
58	Geogriglia 1	35.05	14.00	0.00	0.71	13.29	99.17	99.17
59	Geogriglia 1	35.66	10.00	0.00	0.87	9.13	99.17	99.17
60	Geogriglia 1	36.28	8.00	0.00	0.83	7.17	99.17	99.17
61	Geogriglia 1	36.89	8.00	0.00	0.91	7.09	99.17	99.17
62	Geogriglia 1	37.51	8.00	0.00	1.00	7.00	99.17	99.17
63	Geogriglia 1	38.12	8.00	0.00	1.11	6.89	99.17	99.17
64	Geogriglia 1	38.74	8.00	0.00	1.24	6.76	99.17	99.17
65	Geogriglia 1	39.35	8.00	0.00	1.42	6.58	99.17	99.17
66	Geogriglia 1	39.97	8.00	0.00	1.65	6.35	99.17	99.17
67	Geogriglia 1	40.58	8.00	0.00	1.97	6.03	99.17	99.17
68	Geogriglia 1	41.20	8.00	0.00	2.46	5.54	99.17	99.17
69	Geogriglia 1	41.81	8.00	0.00	3.25	4.75	99.17	99.17
70	Geogriglia 1	42.43	8.00	0.00	4.84	3.16	99.17	99.17
71	Geogriglia 1	43.05	8.00	0.00	8.00	0.00	81.96	81.96 (*)

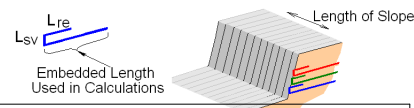
(*) This Tavailable is dictated by the pullout resistance capacity, which is smaller than the long-term strength of the reinforcement that is related to its specified ultimate strength

RESULTS OF TRANSLATIONAL ANALYSIS (continues)

Critical two-part wedge along each interface:									
Interface	Height Relative to Toe [m]	(Xa, Ya) [m]	(Xb, Yb) [m]	(Xc, Yc) [m]	Fs	STATUS			
Reinf. Layer #39	23.37	59.87	75.07	75.89	75.07	101.49	93.67	1.55	Minimum on Edge
Reinf. Layer #40	23.98	60.23	75.68	76.19	75.68	100.70	94.83	1.57	Minimum on Edge
Reinf. Layer #41	24.60	60.60	76.30	76.59	76.30	101.16	94.15	1.59	Minimum on Edge
Reinf. Layer #42	25.21	60.95	76.91	76.99	76.91	100.42	95.22	1.60	Minimum on Edge
Reinf. Layer #43	25.83	61.32	77.53	77.29	77.53	100.83	94.63	1.62	Minimum on Edge
Reinf. Layer #44	26.44	61.68	78.14	77.69	78.14	99.78	95.40	1.64	Minimum on Edge
Reinf. Layer #45	27.06	62.04	78.76	77.99	78.76	100.50	95.11	1.65	Minimum on Edge
Reinf. Layer #46	27.67	67.84	79.37	79.01	79.37	100.28	95.40	1.67	OK
Reinf. Layer #47	28.29	68.19	79.99	78.19	79.99	100.53	95.06	1.68	Minimum on Edge
Reinf. Layer #48	28.90	68.54	80.60	79.71	80.60	99.35	95.40	1.70	OK
Reinf. Layer #49	29.52	68.89	81.22	78.89	81.22	99.91	95.40	1.70	Minimum on Edge
Reinf. Layer #50	30.13	69.24	81.83	80.41	81.83	98.42	95.40	1.74	OK
Reinf. Layer #51	30.75	69.59	82.45	79.59	82.45	98.79	95.40	1.74	Minimum on Edge
Reinf. Layer #52	31.36	69.94	83.06	81.11	83.06	97.49	95.40	1.80	OK
Reinf. Layer #53	31.98	70.29	83.68	80.29	83.68	96.42	95.40	1.75	Minimum on Edge
Reinf. Layer #54	32.59	70.63	84.29	81.81	84.29	95.05	95.40	1.85	OK
Reinf. Layer #55	33.21	70.99	84.91	80.99	84.91	98.45	95.40	1.79	Minimum on Edge
Reinf. Layer #56	33.82	71.33	85.52	82.51	85.52	97.16	95.40	1.89	OK
Reinf. Layer #57	34.44	71.68	86.14	81.69	86.14	97.73	95.40	1.93	Minimum on Edge
Reinf. Layer #58	35.05	72.03	86.75	83.21	86.75	97.05	95.40	2.07	OK
Reinf. Layer #59	35.66	72.38	87.36	82.39	87.36	96.32	95.40	2.13	Minimum on Edge
Reinf. Layer #60	36.28	78.23	87.98	86.19	87.98	95.69	95.40	2.22	Minimum on Edge
Reinf. Layer #61	36.89	78.58	88.59	86.59	88.59	95.63	95.40	2.33	Minimum on Edge
Reinf. Layer #62	37.51	78.94	89.21	86.89	89.21	95.10	95.40	2.46	Minimum on Edge
Reinf. Layer #63	38.12	79.29	89.82	87.29	89.82	94.69	95.40	2.61	Minimum on Edge
Reinf. Layer #64	38.74	79.65	90.44	87.59	90.44	94.42	95.40	2.79	Minimum on Edge
Reinf. Layer #65	39.35	80.00	91.05	87.99	91.05	93.98	95.40	3.00	Minimum on Edge
Reinf. Layer #66	39.97	80.36	91.67	88.39	91.67	93.52	95.40	3.27	Minimum on Edge
Reinf. Layer #67	40.58	80.71	92.28	88.69	92.28	92.98	95.40	3.60	Minimum on Edge
Reinf. Layer #68	41.20	81.06	92.90	89.09	92.90	92.18	95.40	4.09	Minimum on Edge
Reinf. Layer #69	41.81	81.41	93.51	87.81	93.51	91.09	95.40	5.27	OK
Reinf. Layer #70	42.43	81.77	94.13	86.63	94.13	88.83	95.40	7.08	OK
Reinf. Layer #71	43.05	82.13	94.75	83.78	94.75	84.41	95.40	9.05	OK

Note: In the 'Status' column, OK means the critical two part-wedge was identified within the specified search domain. 'Minimum on Edge' means the critical result corresponds to a minimum on the edge of the search domain; i.e., either on X1 or X2 or the internally preset limits on Xc.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
51	1	Geogriglia 1	30.75	10.00	1.00	69.59	82.45	0.61	1.50
52	1	Geogriglia 1	31.36	14.00	1.00	69.94	83.06	0.62	1.50
53	1	Geogriglia 1	31.98	10.00	1.00	70.29	83.68	0.61	1.50
54	1	Geogriglia 1	32.59	14.00	1.00	70.63	84.29	0.62	1.50
55	1	Geogriglia 1	33.21	10.00	1.00	70.99	84.91	0.61	1.50
56	1	Geogriglia 1	33.82	14.00	1.00	71.33	85.52	0.62	1.50
57	1	Geogriglia 1	34.44	10.00	1.00	71.68	86.14	0.61	1.50
58	1	Geogriglia 1	35.05	14.00	1.00	72.03	86.75	0.61	1.50
59	1	Geogriglia 1	35.66	10.00	1.00	72.38	87.36	0.62	1.50
60	1	Geogriglia 1	36.28	8.00	1.00	78.23	87.98	0.61	1.50
61	1	Geogriglia 1	36.89	8.00	1.00	78.58	88.59	0.62	1.50
62	1	Geogriglia 1	37.51	8.00	1.00	78.94	89.21	0.61	1.50
63	1	Geogriglia 1	38.12	8.00	1.00	79.29	89.82	0.62	1.50
64	1	Geogriglia 1	38.74	8.00	1.00	79.65	90.44	0.61	1.50
65	1	Geogriglia 1	39.35	8.00	1.00	80.00	91.05	0.62	1.50
66	1	Geogriglia 1	39.97	8.00	1.00	80.36	91.67	0.61	1.50
67	1	Geogriglia 1	40.58	8.00	1.00	80.71	92.28	0.62	1.50
68	1	Geogriglia 1	41.20	8.00	1.00	81.06	92.90	0.61	1.50
69	1	Geogriglia 1	41.81	8.00	1.00	81.41	93.51	0.62	1.50
70	1	Geogriglia 1	42.43	8.00	1.00	81.77	94.13	0.62	1.50
71	1	Geogriglia 1	43.05	8.00	1.00	82.13	94.75	0.62	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcement [m²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1416.17

1.2 Verifiche di stabilità globale - Rilevato in progetto (volume di marino 330'000 m³)

Sezione 25 e Sezione 29

Sezione 25 - A2M2 Statica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 Statica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFCoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2 jet.....	20.0	32.0	26.6	20.0	16.0
....7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	123.80	676.00
	2	0.00	662.50		52	123.90	681.00
	3	24.20	662.90		53	136.70	681.90
	4	56.30	664.50		54	136.80	685.30
	5	60.10	666.90		55	145.10	685.70
	6	64.90	675.10		56	159.80	693.60
	7	71.60	675.20		57	160.30	693.70
	8	76.30	683.20		58	161.10	695.80
	9	81.30	683.30		59	167.50	696.00
	10	86.10	691.30		60	168.70	699.80
	11	91.10	691.40		61	185.90	708.30
	12	95.70	699.40	Top of Layer 4	62	-100.00	660.30
13	103.10	699.50	63		9.30	659.10	
14	107.70	707.50	64		44.80	655.60	
15	145.90	707.50	65		57.30	656.90	
16	150.50	699.50	66		100.80	660.30	
17	155.40	699.40	67		113.50	664.60	
18	159.80	693.60	68		123.80	676.00	
19	160.30	693.70	69		123.90	681.00	
20	161.10	695.80	70		136.70	681.90	
21	167.50	696.00	71		136.80	685.30	
22	168.70	699.80	72		145.10	685.70	
Top of Layer 2	23	185.90	708.30		73	159.80	693.60
	24	-100.00	663.00	74	160.30	693.70	
	25	0.00	662.50	75	161.10	695.80	
	26	24.20	662.90	76	167.50	696.00	
	27	56.30	664.50	77	168.70	699.80	
	28	60.10	666.90	78	185.90	708.30	
	29	72.10	666.90	Top of Layer 5	79	-100.00	660.30
	30	111.00	672.30		80	9.30	659.10
	31	111.10	675.50		81	44.80	655.60
	32	123.80	676.00		82	57.30	656.90
	33	123.90	681.00		83	57.40	648.90
	34	136.70	681.90		84	84.50	646.90
35	136.80	685.30	85		103.40	649.80	
36	145.10	685.70	86		111.00	651.70	
37	159.80	693.60	87		124.10	657.10	
38	160.30	693.70	88		124.20	663.00	
39	161.10	695.80	89		136.70	663.50	
40	167.50	696.00	90		136.80	668.50	
Top of Layer 3	41	168.70	699.80	91	145.00	668.50	
	42	185.90	708.30	92	145.10	685.70	
	43	-100.00	663.00	93	159.80	693.60	
	44	0.00	662.50	94	160.30	693.70	
	45	24.20	662.90	95	161.10	695.80	
	46	56.30	664.50	96	167.50	696.00	
	47	57.20	664.00	97	168.70	699.80	
	48	57.30	656.90	98	185.90	708.30	
	49	100.80	660.30	Top of Layer 6	99	-100.00	658.00
	50	113.50	664.60		100	9.20	656.80
					101	57.40	648.90
					102	84.50	646.90
			103		103.40	649.80	
			104		111.00	651.70	
			105		124.10	657.10	
			106		142.00	666.10	
			107		145.00	668.00	
			108		185.90	690.80	
			109		-100.00	658.00	
			110		9.20	656.80	

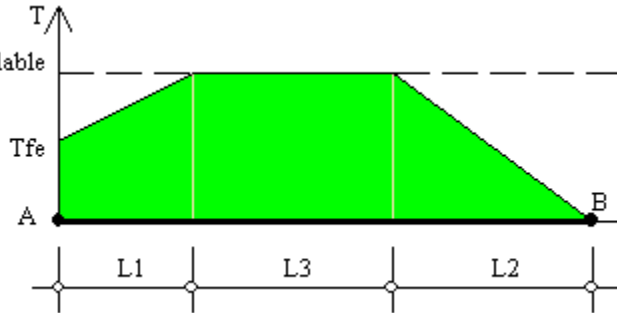
TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]

Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	150.50	699.50	688.60	688.60	688.60	688.60	671.07	671.07	623.84	609.80	644.93
52	155.40	699.40	691.24	691.24	691.24	691.24	673.80	673.80	627.06	613.22	644.72
53	159.80	693.60	693.60	693.60	693.60	693.60	676.25	676.25	629.95	616.29	644.52
54	160.30	693.70	693.70	693.70	693.70	693.70	676.53	676.53	630.28	616.64	644.50
55	161.10	695.80	695.80	695.80	695.80	695.80	676.98	676.98	630.80	617.20	644.46
56	167.50	696.00	696.00	696.00	696.00	696.00	680.54	680.54	635.01	621.66	644.18
57	168.70	699.80	699.80	699.80	699.80	699.80	681.21	681.21	635.80	622.50	644.13
58	180.60	705.68	705.68	705.68	705.68	705.68	687.85	687.85	643.62	630.80	643.60
59	185.90	708.30	708.30	708.30	708.30	708.30	690.80	690.80	647.10	634.50	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

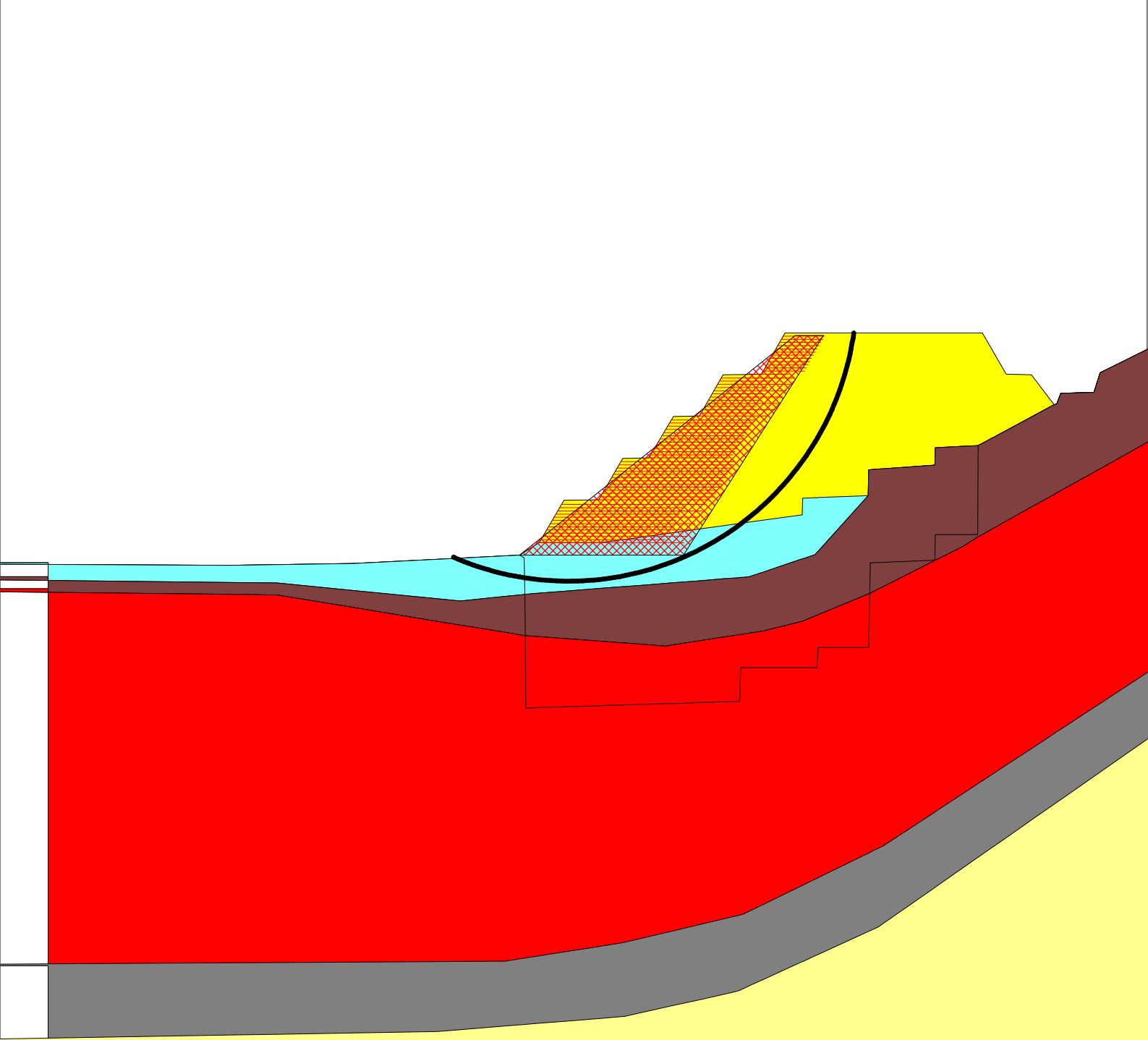
Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.14	27.86	39.67	39.67
2	Geogriglia 1	0.61	24.00	0.00	0.16	23.84	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.14	27.86	39.67	39.67
4	Geogriglia 1	1.84	24.00	0.00	0.13	23.87	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.12	27.88	39.67	39.67
6	Geogriglia 1	3.07	24.00	0.00	0.13	23.87	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.13	27.87	39.67	39.67
8	Geogriglia 1	4.30	24.00	0.00	0.13	23.87	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.14	27.86	39.67	39.67
10	Geogriglia 1	5.53	24.00	0.00	0.14	23.86	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.14	27.86	39.67	39.67
12	Geogriglia 1	6.76	24.00	0.00	0.15	23.85	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.14	27.86	39.67	39.67
14	Geogriglia 1	8.29	22.00	0.00	0.14	21.86	39.67	39.67
15	Geogriglia 1	8.90	22.00	0.00	0.13	21.87	39.67	39.67
16	Geogriglia 1	9.52	22.00	0.00	0.13	21.87	39.67	39.67
17	Geogriglia 1	10.13	22.00	0.00	0.13	21.87	39.67	39.67
18	Geogriglia 1	10.75	22.00	0.00	0.13	21.87	39.67	39.67
19	Geogriglia 1	11.36	22.00	0.00	0.13	21.87	39.67	39.67
20	Geogriglia 1	11.98	22.00	0.00	0.13	21.87	39.67	39.67
21	Geogriglia 1	12.59	22.00	0.00	0.13	21.87	39.67	39.67
22	Geogriglia 1	13.21	22.00	0.00	0.14	21.86	39.67	39.67
23	Geogriglia 1	13.82	22.00	0.00	0.14	21.86	39.67	39.67
24	Geogriglia 1	14.44	22.00	0.00	0.15	21.85	39.67	39.67
25	Geogriglia 1	15.05	22.00	0.00	0.15	21.85	39.67	39.67
26	Geogriglia 1	15.67	22.00	0.00	0.16	21.84	39.67	39.67
27	Geogriglia 1	16.39	16.00	0.00	0.16	15.84	39.67	39.67
28	Geogriglia 1	17.00	16.00	0.00	0.17	15.83	39.67	39.67
29	Geogriglia 1	17.62	16.00	0.00	0.18	15.82	39.67	39.67
30	Geogriglia 1	18.23	16.00	0.00	0.18	15.82	39.67	39.67
31	Geogriglia 1	18.85	16.00	0.00	0.19	15.81	39.67	39.67
32	Geogriglia 1	19.46	16.00	0.00	0.20	15.80	39.67	39.67
33	Geogriglia 1	20.07	16.00	0.00	0.21	15.79	39.67	39.67
34	Geogriglia 1	20.69	16.00	0.00	0.22	15.78	39.67	39.67
35	Geogriglia 1	21.30	16.00	0.00	0.23	15.77	39.67	39.67

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.08

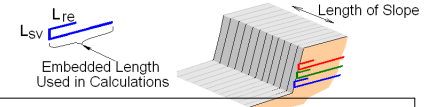
Critical Circle: $X_c = 65.75[m]$, $Y_c = 715.24[m]$, $R = 55.79[m]$. (Number of slices used = 74)



SCALE:

0246[m]

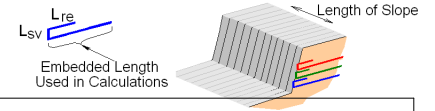




REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
1	1	Geogriglia 1	0.00	28.00	1.00	60.10	666.90	0.61	1.50
2	1	Geogriglia 1	0.61	24.00	1.00	60.46	667.51	0.62	1.50
3	1	Geogriglia 1	1.23	28.00	1.00	60.82	668.13	0.61	1.50
4	1	Geogriglia 1	1.84	24.00	1.00	61.18	668.74	0.62	1.50
5	1	Geogriglia 1	2.46	28.00	1.00	61.54	669.36	0.61	1.50
6	1	Geogriglia 1	3.07	24.00	1.00	61.90	669.97	0.62	1.50
7	1	Geogriglia 1	3.69	28.00	1.00	62.26	670.59	0.61	1.50
8	1	Geogriglia 1	4.30	24.00	1.00	62.62	671.20	0.62	1.50
9	1	Geogriglia 1	4.92	28.00	1.00	62.98	671.82	0.61	1.50
10	1	Geogriglia 1	5.53	24.00	1.00	63.34	672.43	0.62	1.50
11	1	Geogriglia 1	6.15	28.00	1.00	63.70	673.05	0.61	1.50
12	1	Geogriglia 1	6.76	24.00	1.00	64.06	673.66	0.62	1.50
13	1	Geogriglia 1	7.38	28.00	1.00	64.42	674.28	0.91	1.50
14	1	Geogriglia 1	8.29	22.00	1.00	70.93	675.19	0.61	1.50
15	1	Geogriglia 1	8.90	22.00	1.00	71.95	675.80	0.62	1.50
16	1	Geogriglia 1	9.52	22.00	1.00	72.32	676.42	0.61	1.50
17	1	Geogriglia 1	10.13	22.00	1.00	72.68	677.03	0.62	1.50
18	1	Geogriglia 1	10.75	22.00	1.00	73.04	677.65	0.61	1.50
19	1	Geogriglia 1	11.36	22.00	1.00	73.40	678.26	0.62	1.50
20	1	Geogriglia 1	11.98	22.00	1.00	73.76	678.88	0.61	1.50
21	1	Geogriglia 1	12.59	22.00	1.00	74.12	679.49	0.62	1.50
22	1	Geogriglia 1	13.21	22.00	1.00	74.48	680.11	0.61	1.50
23	1	Geogriglia 1	13.82	22.00	1.00	74.84	680.72	0.62	1.50
24	1	Geogriglia 1	14.44	22.00	1.00	75.21	681.34	0.61	1.50
25	1	Geogriglia 1	15.05	22.00	1.00	75.57	681.95	0.62	1.50
26	1	Geogriglia 1	15.67	22.00	1.00	75.93	682.57	0.72	1.50
27	1	Geogriglia 1	16.39	16.00	1.00	80.80	683.29	0.61	1.50
28	1	Geogriglia 1	17.00	16.00	1.00	81.66	683.90	0.62	1.50
29	1	Geogriglia 1	17.62	16.00	1.00	82.03	684.52	0.61	1.50
30	1	Geogriglia 1	18.23	16.00	1.00	82.40	685.13	0.62	1.50
31	1	Geogriglia 1	18.85	16.00	1.00	82.77	685.75	0.61	1.50
32	1	Geogriglia 1	19.46	16.00	1.00	83.14	686.36	0.61	1.50
33	1	Geogriglia 1	20.07	16.00	1.00	83.50	686.97	0.62	1.50
34	1	Geogriglia 1	20.69	16.00	1.00	83.87	687.59	0.61	1.50
35	1	Geogriglia 1	21.30	16.00	1.00	84.24	688.20	0.62	1.50
36	1	Geogriglia 1	21.92	16.00	1.00	84.61	688.82	0.61	1.50
37	1	Geogriglia 1	22.53	16.00	1.00	84.98	689.43	0.62	1.50
38	1	Geogriglia 1	23.15	16.00	1.00	85.35	690.05	0.61	1.50
39	1	Geogriglia 1	23.76	16.00	1.00	85.72	690.66	0.73	1.50
40	1	Geogriglia 1	24.49	14.00	1.00	90.60	691.39	0.61	1.50
41	1	Geogriglia 1	25.10	10.00	1.00	91.44	692.00	0.62	1.50
42	1	Geogriglia 1	25.72	14.00	1.00	91.80	692.62	0.61	1.50
43	1	Geogriglia 1	26.33	10.00	1.00	92.15	693.23	0.62	1.50
44	1	Geogriglia 1	26.95	14.00	1.00	92.51	693.85	0.61	1.50
45	1	Geogriglia 1	27.56	10.00	1.00	92.86	694.46	0.62	1.50
46	1	Geogriglia 1	28.18	14.00	1.00	93.22	695.08	0.61	1.50
47	1	Geogriglia 1	28.79	10.00	1.00	93.57	695.69	0.62	1.50
48	1	Geogriglia 1	29.41	14.00	1.00	93.92	696.31	0.61	1.50
49	1	Geogriglia 1	30.02	10.00	1.00	94.27	696.92	0.62	1.50
50	1	Geogriglia 1	30.64	14.00	1.00	94.63	697.54	0.61	1.50

* Vertical distance between layers.



REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	10.00	1.00	94.98	698.15	104.98	698.15	0.62	1.50
52	1	Geogriglia 1	31.87	14.00	1.00	95.34	698.77	109.34	698.77	0.72	1.50
53	1	Geogriglia 1	32.59	6.00	1.00	102.36	699.49	108.36	699.49	0.62	1.50
54	1	Geogriglia 1	33.21	8.00	1.00	103.45	700.11	111.45	700.11	0.61	1.50
55	1	Geogriglia 1	33.82	8.00	1.00	103.80	700.72	111.80	700.72	0.62	1.50
56	1	Geogriglia 1	34.44	8.00	1.00	104.16	701.34	112.16	701.34	0.61	1.50
57	1	Geogriglia 1	35.05	8.00	1.00	104.51	701.95	112.51	701.95	0.62	1.50
58	1	Geogriglia 1	35.67	8.00	1.00	104.87	702.57	112.87	702.57	0.61	1.50
59	1	Geogriglia 1	36.28	8.00	1.00	105.22	703.18	113.22	703.18	0.62	1.50
60	1	Geogriglia 1	36.90	8.00	1.00	105.57	703.80	113.57	703.80	0.61	1.50
61	1	Geogriglia 1	37.51	8.00	1.00	105.92	704.41	113.92	704.41	0.62	1.50
62	1	Geogriglia 1	38.13	8.00	1.00	106.28	705.03	114.28	705.03	0.61	1.50
63	1	Geogriglia 1	38.74	8.00	1.00	106.63	705.64	114.63	705.64	0.62	1.50
64	1	Geogriglia 1	39.36	8.00	1.00	106.99	706.26	114.99	706.26	0.61	1.50
65	1	Geogriglia 1	39.97	8.00	1.00	107.34	706.87	115.34	706.87	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m ²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1232.08

Sezione 25 - A2M2 sismica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 sismica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
Torino, 10129
Telephone #: 011 561 18 11
Fax #: 011 562 0568
E-Mail: ig@ingegneriageotecnica.com

Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] R _{Ftan} =1.25		Cohesion, c [kPa] R _{FCoh} =1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2 jet.....	20.0	32.0	26.6	20.0	16.0
....7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, R _{Fid}	Reduction Factor for Durability, R _{Fd}	Reduction Factor for Creep, R _{Fc}	Additional Reduction Factor, R _{Fa}	Coverage Ratio, R _c
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	C _{ds-phi}	C _{ds-c}	C _i	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, F_{s-po} = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, A_o = 0.116
 Design horizontal seismic coefficient, k_h = A_m = 0.5 x A_o = 0.058 & design vertical seismic coefficient, k_v (down) = 0.500 x k_h = 0.029

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	123.80	676.00
	2	0.00	662.50		52	123.90	681.00
	3	24.20	662.90		53	136.70	681.90
	4	56.30	664.50		54	136.80	685.30
	5	60.10	666.90		55	145.10	685.70
	6	64.90	675.10		56	159.80	693.60
	7	71.60	675.20		57	160.30	693.70
	8	76.30	683.20		58	161.10	695.80
	9	81.30	683.30		59	167.50	696.00
	10	86.10	691.30		60	168.70	699.80
	11	91.10	691.40		61	185.90	708.30
	12	95.70	699.40	Top of Layer 4	62	-100.00	660.30
	13	103.10	699.50		63	9.30	659.10
	14	107.70	707.50		64	44.80	655.60
	15	145.90	707.50		65	57.30	656.90
	16	150.50	699.50		66	100.80	660.30
	17	155.40	699.40		67	113.50	664.60
	18	159.80	693.60		68	123.80	676.00
	19	160.30	693.70		69	123.90	681.00
	20	161.10	695.80		70	136.70	681.90
	21	167.50	696.00		71	136.80	685.30
	22	168.70	699.80	72	145.10	685.70	
	23	185.90	708.30	73	159.80	693.60	
Top of Layer 2	24	-100.00	663.00		74	160.30	693.70
	25	0.00	662.50		75	161.10	695.80
	26	24.20	662.90		76	167.50	696.00
	27	56.30	664.50		77	168.70	699.80
	28	60.10	666.90		78	185.90	708.30
	29	72.10	666.90	Top of Layer 5	79	-100.00	660.30
	30	111.00	672.30		80	9.30	659.10
	31	111.10	675.50		81	44.80	655.60
	32	123.80	676.00		82	57.30	656.90
	33	123.90	681.00		83	57.40	648.90
34	136.70	681.90	84		84.50	646.90	
35	136.80	685.30	85		103.40	649.80	
36	145.10	685.70	86		111.00	651.70	
37	159.80	693.60	87		124.10	657.10	
38	160.30	693.70	88		124.20	663.00	
	39	161.10	695.80	89	136.70	663.50	
	40	167.50	696.00	90	136.80	668.50	
	41	168.70	699.80	91	145.00	668.50	
	42	185.90	708.30	92	145.10	685.70	
Top of Layer 3	43	-100.00	663.00		93	159.80	693.60
	44	0.00	662.50		94	160.30	693.70
	45	24.20	662.90		95	161.10	695.80
	46	56.30	664.50		96	167.50	696.00
	47	57.20	664.00		97	168.70	699.80
	48	57.30	656.90		98	185.90	708.30
	49	100.80	660.30	Top of Layer 6	99	-100.00	658.00
	50	113.50	664.60		100	9.20	656.80
					101	57.40	648.90
					102	84.50	646.90
			103		103.40	649.80	
			104		111.00	651.70	
			105		124.10	657.10	
			106		142.00	666.10	
			107		145.00	668.00	
			108		185.90	690.80	

110	0.00	658.00
111	57.40	648.90
112	57.50	634.90
113	98.90	636.20
114	99.10	642.70
115	113.90	642.70
116	114.10	646.60
117	123.90	646.60
118	124.10	657.10
119	142.00	666.10

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

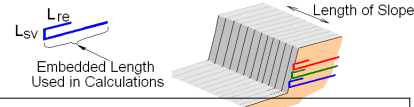
#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic)
											Yw
1	-100.00	663.00	663.00	663.00	660.30	660.30	658.00	658.00	585.00	569.90	651.20
2	0.00	662.50	662.50	662.50	659.20	659.20	656.90	656.90	585.59	571.61	651.20
3	9.20	662.65	662.65	662.65	659.10	659.10	656.80	656.80	585.64	571.77	651.20
4	9.30	662.65	662.65	662.65	659.10	659.10	656.78	656.78	585.64	571.77	651.20
5	24.20	662.90	662.90	662.90	657.63	657.63	654.34	654.34	585.73	572.02	650.53
6	40.30	663.70	663.70	663.70	656.04	656.04	651.70	651.70	585.82	572.30	649.82
7	44.80	663.93	663.93	663.93	655.60	655.60	650.97	650.97	585.85	572.66	649.62
8	53.50	664.36	664.36	664.36	656.50	656.50	649.54	649.54	585.90	573.36	649.24
9	56.30	664.50	664.50	664.50	656.80	656.80	649.08	649.08	586.34	573.58	649.11
10	57.20	665.07	665.07	664.00	656.89	656.89	648.93	648.93	586.48	573.65	649.07
11	57.30	665.13	665.13	656.90	656.90	656.90	648.92	648.92	586.50	573.66	649.07
12	57.40	665.19	665.19	656.91	656.91	648.90	648.90	648.90	586.51	573.67	649.06
13	57.50	665.26	665.26	656.92	656.92	648.89	648.89	634.90	586.53	573.68	649.06
14	60.10	666.90	666.90	657.12	657.12	648.70	648.70	634.98	586.94	573.89	648.94
15	64.90	675.10	666.90	657.49	657.49	648.35	648.35	635.13	587.69	574.27	648.73
16	71.60	675.20	666.90	658.02	658.02	647.85	647.85	635.34	588.75	574.81	648.43
17	72.10	676.05	666.90	658.06	658.06	647.82	647.82	635.36	588.82	574.85	648.41
18	76.30	683.20	667.48	658.39	658.39	647.51	647.51	635.49	589.48	575.18	648.22
19	76.40	683.20	667.50	658.39	658.39	647.50	647.50	635.49	589.50	575.19	648.22
20	76.50	683.20	667.51	658.40	658.40	647.49	647.49	635.50	589.52	575.20	648.22
21	81.30	683.30	668.18	658.78	658.78	647.14	647.14	635.65	590.66	576.27	648.00
22	84.50	688.63	668.62	659.03	659.03	646.90	646.90	635.75	591.42	576.98	647.86
23	86.10	691.30	668.84	659.15	659.15	647.15	647.15	635.80	591.80	577.34	647.79
24	91.10	691.40	669.54	659.54	659.54	647.91	647.91	635.96	592.98	578.45	647.57
25	95.70	699.40	670.18	659.90	659.90	648.62	648.62	636.10	594.08	579.48	647.36
26	98.50	699.44	670.56	660.12	660.12	649.05	649.05	636.19	594.74	580.10	647.24
27	98.90	699.44	670.62	660.15	660.15	649.11	649.11	636.20	594.83	580.28	647.22
28	99.10	699.45	670.65	660.17	660.17	649.14	649.14	642.70	594.88	580.37	647.21
29	99.60	699.45	670.72	660.21	660.21	649.22	649.22	642.70	595.00	580.60	647.19
30	100.80	699.47	670.88	660.30	660.30	649.40	649.40	642.70	595.58	581.15	647.14
31	103.10	699.50	671.20	661.08	661.08	649.75	649.75	642.70	596.70	582.20	647.04
32	103.40	700.02	671.24	661.18	661.18	649.80	649.80	642.70	596.85	582.33	647.02
33	107.70	707.50	671.84	662.64	662.64	650.88	650.88	642.70	598.95	584.29	646.83
34	111.00	707.50	672.30	663.75	663.75	651.70	651.70	642.70	600.55	585.80	646.69
35	111.10	707.50	675.50	663.79	663.79	651.74	651.74	642.70	600.60	585.84	646.68
36	113.50	707.50	675.59	664.60	664.60	652.73	652.73	642.70	601.77	586.94	646.58
37	113.90	707.50	675.61	665.04	665.04	652.90	652.90	642.70	601.97	587.12	646.56
38	114.10	707.50	675.62	665.26	665.26	652.98	652.98	646.60	602.06	587.21	646.55
39	123.80	707.50	676.00	676.00	676.00	656.98	656.98	646.60	606.79	591.63	646.12
40	123.90	707.50	681.00	681.00	681.00	657.02	657.02	646.60	606.84	591.68	646.11
41	124.10	707.50	681.01	681.01	681.01	657.10	657.10	657.10	606.93	591.77	646.11
42	124.20	707.50	681.02	681.02	681.02	663.00	657.15	657.15	606.98	591.82	646.10
43	125.70	707.50	681.13	681.13	681.13	663.06	657.90	657.90	607.71	592.50	646.03
44	126.70	707.50	681.20	681.20	681.20	663.10	658.41	658.41	608.20	593.20	645.99
45	136.70	707.50	681.90	681.90	681.90	663.50	663.44	663.44	614.77	600.17	645.55
46	136.80	707.50	685.30	685.30	685.30	668.50	663.49	663.49	614.84	600.24	645.54
47	142.00	707.50	685.55	685.55	685.55	668.50	666.10	666.10	618.25	603.87	645.31
48	145.00	707.50	685.70	685.70	685.70	668.50	668.00	668.00	620.22	605.97	645.18
49	145.10	707.50	685.70	685.70	685.70	668.50	668.06	668.06	620.29	606.03	645.17
50	145.90	707.50	686.13	686.13	686.13	668.13	668.50	668.50	620.82	606.59	645.14

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	150.50	699.50	688.60	688.60	688.60	688.60	671.07	671.07	623.84	609.80	644.93
52	155.40	699.40	691.24	691.24	691.24	691.24	673.80	673.80	627.06	613.22	644.72
53	159.80	693.60	693.60	693.60	693.60	693.60	676.25	676.25	629.95	616.29	644.52
54	160.30	693.70	693.70	693.70	693.70	693.70	676.53	676.53	630.28	616.64	644.50
55	161.10	695.80	695.80	695.80	695.80	695.80	676.98	676.98	630.80	617.20	644.46
56	167.50	696.00	696.00	696.00	696.00	696.00	680.54	680.54	635.01	621.66	644.18
57	168.70	699.80	699.80	699.80	699.80	699.80	681.21	681.21	635.80	622.50	644.13
58	180.60	705.68	705.68	705.68	705.68	705.68	687.85	687.85	643.62	630.80	643.60
59	185.90	708.30	708.30	708.30	708.30	708.30	690.80	690.80	647.10	634.50	643.60

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	10.00	1.00	94.98	698.15	104.98	698.15	0.62	1.50
52	1	Geogriglia 1	31.87	14.00	1.00	95.34	698.77	109.34	698.77	0.72	1.50
53	1	Geogriglia 1	32.59	6.00	1.00	102.36	699.49	108.36	699.49	0.62	1.50
54	1	Geogriglia 1	33.21	8.00	1.00	103.45	700.11	111.45	700.11	0.61	1.50
55	1	Geogriglia 1	33.82	8.00	1.00	103.80	700.72	111.80	700.72	0.62	1.50
56	1	Geogriglia 1	34.44	8.00	1.00	104.16	701.34	112.16	701.34	0.61	1.50
57	1	Geogriglia 1	35.05	8.00	1.00	104.51	701.95	112.51	701.95	0.62	1.50
58	1	Geogriglia 1	35.67	8.00	1.00	104.87	702.57	112.87	702.57	0.61	1.50
59	1	Geogriglia 1	36.28	8.00	1.00	105.22	703.18	113.22	703.18	0.62	1.50
60	1	Geogriglia 1	36.90	8.00	1.00	105.57	703.80	113.57	703.80	0.61	1.50
61	1	Geogriglia 1	37.51	8.00	1.00	105.92	704.41	113.92	704.41	0.62	1.50
62	1	Geogriglia 1	38.13	8.00	1.00	106.28	705.03	114.28	705.03	0.61	1.50
63	1	Geogriglia 1	38.74	8.00	1.00	106.63	705.64	114.63	705.64	0.62	1.50
64	1	Geogriglia 1	39.36	8.00	1.00	106.99	706.26	114.99	706.26	0.61	1.50
65	1	Geogriglia 1	39.97	8.00	1.00	107.34	706.87	115.34	706.87	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1232.08

Sezione 25 - A2M2 statica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 statica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] R Ftan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet	18.0	40.0	33.9	50.0	40.0
....3.....Riporto presistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1 jet	20.0	40.0	33.9	150.0	120.0
....5.....Unità 1	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2 jet	20.0	40.0	33.9	100.0	80.0
....7.....Unità 2	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

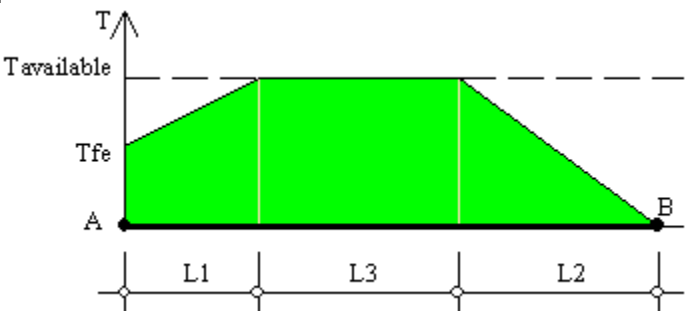
	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	123.80	676.00
	2	0.00	662.50		52	123.90	681.00
	3	24.20	662.90		53	136.70	681.90
	4	56.30	664.50		54	136.80	685.30
	5	60.10	666.90		55	145.10	685.70
	6	64.90	675.10		56	159.80	693.60
	7	71.60	675.20		57	160.30	693.70
	8	76.30	683.20		58	161.10	695.80
	9	81.30	683.30		59	167.50	696.00
	10	86.10	691.30		60	168.70	699.80
	11	91.10	691.40		61	185.90	708.30
	12	95.70	699.40	Top of Layer 4	62	-100.00	660.30
13	103.10	699.50		63	9.30	659.10	
14	107.70	707.50		64	44.80	655.60	
15	145.90	707.50		65	57.30	656.90	
16	150.50	699.50		66	100.80	660.30	
17	155.40	699.40		67	113.50	664.60	
18	159.80	693.60		68	123.80	676.00	
19	160.30	693.70		69	123.90	681.00	
20	161.10	695.80		70	136.70	681.90	
21	167.50	696.00		71	136.80	685.30	
22	168.70	699.80		72	145.10	685.70	
23	185.90	708.30		73	159.80	693.60	
Top of Layer 2	24	-100.00	663.00		74	160.30	693.70
	25	0.00	662.50		75	161.10	695.80
	26	24.20	662.90		76	167.50	696.00
	27	56.30	664.50		77	168.70	699.80
	28	60.10	666.90		78	185.90	708.30
	29	72.10	666.90	Top of Layer 5	79	-100.00	660.30
	30	111.00	672.30		80	9.30	659.10
	31	111.10	675.50		81	44.80	655.60
	32	123.80	676.00		82	57.30	656.90
	33	123.90	681.00		83	57.40	648.90
	34	136.70	681.90		84	84.50	646.90
	35	136.80	685.30		85	103.40	649.80
36	145.10	685.70		86	111.00	651.70	
37	159.80	693.60		87	124.10	657.10	
38	160.30	693.70		88	124.20	663.00	
39	161.10	695.80		89	136.70	663.50	
40	167.50	696.00		90	136.80	668.50	
41	168.70	699.80		91	145.00	668.50	
42	185.90	708.30		92	145.10	685.70	
Top of Layer 3	43	-100.00	663.00		93	159.80	693.60
	44	0.00	662.50		94	160.30	693.70
	45	24.20	662.90		95	161.10	695.80
	46	56.30	664.50		96	167.50	696.00
	47	57.20	664.00		97	168.70	699.80
	48	57.30	656.90		98	185.90	708.30
	49	100.80	660.30	Top of Layer 6	99	-100.00	658.00
	50	113.50	664.60		100	9.20	656.80
					101	57.40	648.90
					102	84.50	646.90
					103	103.40	649.80
					104	111.00	651.70

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	150.50	699.50	688.60	688.60	688.60	688.60	671.07	671.07	623.84	609.80	644.93
52	155.40	699.40	691.24	691.24	691.24	691.24	673.80	673.80	627.06	613.22	644.72
53	159.80	693.60	693.60	693.60	693.60	693.60	676.25	676.25	629.95	616.29	644.52
54	160.30	693.70	693.70	693.70	693.70	693.70	676.53	676.53	630.28	616.64	644.50
55	161.10	695.80	695.80	695.80	695.80	695.80	676.98	676.98	630.80	617.20	644.46
56	167.50	696.00	696.00	696.00	696.00	696.00	680.54	680.54	635.01	621.66	644.18
57	168.70	699.80	699.80	699.80	699.80	699.80	681.21	681.21	635.80	622.50	644.13
58	180.60	705.68	705.68	705.68	705.68	705.68	687.85	687.85	643.62	630.80	643.60
59	185.90	708.30	708.30	708.30	708.30	708.30	690.80	690.80	647.10	634.50	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
B = Rear-end of reinforcement
AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
Tfe = Available front-end strength (e.g., connection to facing)

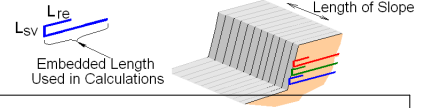
L1 = Front-end 'pullout' length
L2 = Rear-end pullout length
Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.09	27.91	39.67	39.67
2	Geogriglia 1	0.61	24.00	0.00	0.10	23.90	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.09	27.91	39.67	39.67
4	Geogriglia 1	1.84	24.00	0.00	0.13	23.87	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.12	27.88	39.67	39.67
6	Geogriglia 1	3.07	24.00	0.00	0.13	23.87	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.13	27.87	39.67	39.67
8	Geogriglia 1	4.30	24.00	0.00	0.13	23.87	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.14	27.86	39.67	39.67
10	Geogriglia 1	5.53	24.00	0.00	0.14	23.86	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.14	27.86	39.67	39.67
12	Geogriglia 1	6.76	24.00	0.00	0.15	23.85	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.14	27.86	39.67	39.67
14	Geogriglia 1	8.29	22.00	0.00	0.14	21.86	39.67	39.67
15	Geogriglia 1	8.90	22.00	0.00	0.13	21.87	39.67	39.67
16	Geogriglia 1	9.52	22.00	0.00	0.13	21.87	39.67	39.67
17	Geogriglia 1	10.13	22.00	0.00	0.13	21.87	39.67	39.67
18	Geogriglia 1	10.75	22.00	0.00	0.13	21.87	39.67	39.67
19	Geogriglia 1	11.36	22.00	0.00	0.13	21.87	39.67	39.67
20	Geogriglia 1	11.98	22.00	0.00	0.13	21.87	39.67	39.67
21	Geogriglia 1	12.59	22.00	0.00	0.13	21.87	39.67	39.67
22	Geogriglia 1	13.21	22.00	0.00	0.14	21.86	39.67	39.67
23	Geogriglia 1	13.82	22.00	0.00	0.14	21.86	39.67	39.67
24	Geogriglia 1	14.44	22.00	0.00	0.15	21.85	39.67	39.67
25	Geogriglia 1	15.05	22.00	0.00	0.15	21.85	39.67	39.67
26	Geogriglia 1	15.67	22.00	0.00	0.16	21.84	39.67	39.67
27	Geogriglia 1	16.39	16.00	0.00	0.16	15.84	39.67	39.67
28	Geogriglia 1	17.00	16.00	0.00	0.17	15.83	39.67	39.67
29	Geogriglia 1	17.62	16.00	0.00	0.18	15.82	39.67	39.67
30	Geogriglia 1	18.23	16.00	0.00	0.18	15.82	39.67	39.67
31	Geogriglia 1	18.85	16.00	0.00	0.19	15.81	39.67	39.67
32	Geogriglia 1	19.46	16.00	0.00	0.20	15.80	39.67	39.67
33	Geogriglia 1	20.07	16.00	0.00	0.21	15.79	39.67	39.67
34	Geogriglia 1	20.69	16.00	0.00	0.22	15.78	39.67	39.67
35	Geogriglia 1	21.30	16.00	0.00	0.23	15.77	39.67	39.67

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.92	16.00	0.00	0.25	15.75	39.67	39.67
37	Geogriglia 1	22.53	16.00	0.00	0.26	15.74	39.67	39.67
38	Geogriglia 1	23.15	16.00	0.00	0.28	15.72	39.67	39.67
39	Geogriglia 1	23.76	16.00	0.00	0.30	15.70	39.67	39.67
40	Geogriglia 1	24.49	14.00	0.00	0.25	13.75	39.67	39.67
41	Geogriglia 1	25.10	10.00	0.00	0.35	9.65	39.67	39.67
42	Geogriglia 1	25.72	14.00	0.00	0.23	13.77	39.67	39.67
43	Geogriglia 1	26.33	10.00	0.00	0.42	9.58	39.67	39.67
44	Geogriglia 1	26.95	14.00	0.00	0.23	13.77	39.67	39.67
45	Geogriglia 1	27.56	10.00	0.00	0.52	9.48	39.67	39.67
46	Geogriglia 1	28.18	14.00	0.00	0.23	13.77	39.67	39.67
47	Geogriglia 1	28.79	10.00	0.00	0.63	9.37	39.67	39.67
48	Geogriglia 1	29.41	14.00	0.00	0.24	13.76	39.67	39.67
49	Geogriglia 1	30.02	10.00	0.00	0.64	9.36	39.67	39.67
50	Geogriglia 1	30.64	14.00	0.00	0.26	13.74	39.67	39.67
51	Geogriglia 1	31.25	10.00	0.00	0.64	9.36	39.67	39.67
52	Geogriglia 1	31.87	14.00	0.00	0.30	13.70	39.67	39.67
53	Geogriglia 1	32.59	6.00	0.00	0.33	5.67	39.67	39.67
54	Geogriglia 1	33.21	8.00	0.00	0.35	7.65	39.67	39.67
55	Geogriglia 1	33.82	8.00	0.00	0.38	7.62	39.67	39.67
56	Geogriglia 1	34.44	8.00	0.00	0.42	7.58	39.67	39.67
57	Geogriglia 1	35.05	8.00	0.00	0.47	7.53	39.67	39.67
58	Geogriglia 1	35.67	8.00	0.00	0.53	7.47	39.67	39.67
59	Geogriglia 1	36.28	8.00	0.00	0.60	7.40	39.67	39.67
60	Geogriglia 1	36.90	8.00	0.00	0.70	7.30	39.67	39.67
61	Geogriglia 1	37.51	8.00	0.00	0.84	7.16	39.67	39.67
62	Geogriglia 1	38.13	8.00	0.00	1.05	6.95	39.67	39.67
63	Geogriglia 1	38.74	8.00	0.00	1.39	6.61	39.67	39.67
64	Geogriglia 1	39.36	8.00	0.00	2.08	5.92	39.67	39.67
65	Geogriglia 1	39.97	8.00	0.00	4.09	3.91	39.67	39.67



REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	10.00	1.00	94.98	698.15	104.98	698.15	0.62	1.50
52	1	Geogriglia 1	31.87	14.00	1.00	95.34	698.77	109.34	698.77	0.72	1.50
53	1	Geogriglia 1	32.59	6.00	1.00	102.36	699.49	108.36	699.49	0.62	1.50
54	1	Geogriglia 1	33.21	8.00	1.00	103.45	700.11	111.45	700.11	0.61	1.50
55	1	Geogriglia 1	33.82	8.00	1.00	103.80	700.72	111.80	700.72	0.62	1.50
56	1	Geogriglia 1	34.44	8.00	1.00	104.16	701.34	112.16	701.34	0.61	1.50
57	1	Geogriglia 1	35.05	8.00	1.00	104.51	701.95	112.51	701.95	0.62	1.50
58	1	Geogriglia 1	35.67	8.00	1.00	104.87	702.57	112.87	702.57	0.61	1.50
59	1	Geogriglia 1	36.28	8.00	1.00	105.22	703.18	113.22	703.18	0.62	1.50
60	1	Geogriglia 1	36.90	8.00	1.00	105.57	703.80	113.57	703.80	0.61	1.50
61	1	Geogriglia 1	37.51	8.00	1.00	105.92	704.41	113.92	704.41	0.62	1.50
62	1	Geogriglia 1	38.13	8.00	1.00	106.28	705.03	114.28	705.03	0.61	1.50
63	1	Geogriglia 1	38.74	8.00	1.00	106.63	705.64	114.63	705.64	0.62	1.50
64	1	Geogriglia 1	39.36	8.00	1.00	106.99	706.26	114.99	706.26	0.61	1.50
65	1	Geogriglia 1	39.97	8.00	1.00	107.34	706.87	115.34	706.87	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1232.08

Sezione 25 - A2M2 sismica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 25 - A2M2 sismica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

===== Soil Layer #: =====	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1 jet.....	20.0	40.0	33.9	150.0	120.0
....5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2 jet.....	20.0	40.0	33.9	100.0	80.0
....7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters Type #	Geosynthetic Designated Name	== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (down) = 0.500 x kh = 0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 9 layers (see details in next page)

WATER GEOMETRY

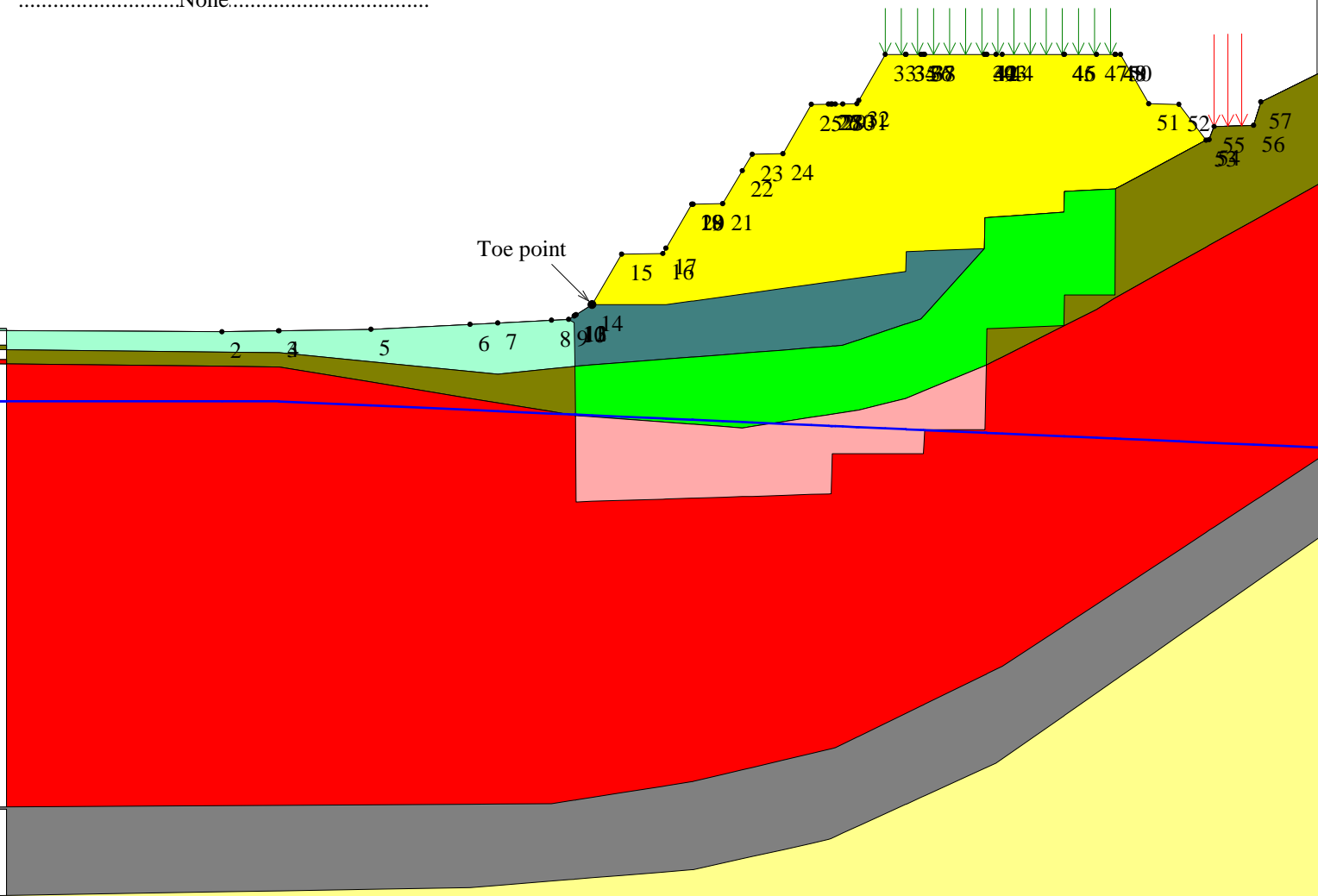
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 10.00 [kPa] inclined from verical at 0.00 degrees, starts at X1s = 107.70 and ends at X1e = 145.90 [m].
 Load Q2 = 20.00 [kPa] inclined from verical at 0.00 degrees, starts at X2s = 161.10 and ends at X2e = 167.50 [m].
 Surcharge load, Q3.....None

STRIP LOAD

.....None.....



SCALE:

0246 [m]



TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	123.80	676.00
	2	0.00	662.50		52	123.90	681.00
	3	24.20	662.90		53	136.70	681.90
	4	56.30	664.50		54	136.80	685.30
	5	60.10	666.90		55	145.10	685.70
	6	64.90	675.10		56	159.80	693.60
	7	71.60	675.20		57	160.30	693.70
	8	76.30	683.20		58	161.10	695.80
	9	81.30	683.30		59	167.50	696.00
	10	86.10	691.30		60	168.70	699.80
	11	91.10	691.40		61	185.90	708.30
	12	95.70	699.40	Top of Layer 4	62	-100.00	660.30
	13	103.10	699.50		63	9.30	659.10
14	107.70	707.50		64	44.80	655.60	
15	145.90	707.50		65	57.30	656.90	
16	150.50	699.50		66	100.80	660.30	
17	155.40	699.40		67	113.50	664.60	
18	159.80	693.60		68	123.80	676.00	
19	160.30	693.70		69	123.90	681.00	
20	161.10	695.80		70	136.70	681.90	
21	167.50	696.00		71	136.80	685.30	
22	168.70	699.80		72	145.10	685.70	
23	185.90	708.30		73	159.80	693.60	
Top of Layer 2	24	-100.00	663.00		74	160.30	693.70
	25	0.00	662.50		75	161.10	695.80
	26	24.20	662.90		76	167.50	696.00
	27	56.30	664.50		77	168.70	699.80
	28	60.10	666.90		78	185.90	708.30
	29	72.10	666.90	Top of Layer 5	79	-100.00	660.30
	30	111.00	672.30		80	9.30	659.10
	31	111.10	675.50		81	44.80	655.60
	32	123.80	676.00		82	57.30	656.90
	33	123.90	681.00		83	57.40	648.90
	34	136.70	681.90		84	84.50	646.90
	35	136.80	685.30		85	103.40	649.80
	36	145.10	685.70		86	111.00	651.70
37	159.80	693.60		87	124.10	657.10	
38	160.30	693.70		88	124.20	663.00	
39	161.10	695.80		89	136.70	663.50	
40	167.50	696.00		90	136.80	668.50	
41	168.70	699.80		91	145.00	668.50	
42	185.90	708.30		92	145.10	685.70	
Top of Layer 3	43	-100.00	663.00		93	159.80	693.60
	44	0.00	662.50		94	160.30	693.70
	45	24.20	662.90		95	161.10	695.80
	46	56.30	664.50		96	167.50	696.00
	47	57.20	664.00		97	168.70	699.80
	48	57.30	656.90		98	185.90	708.30
	49	100.80	660.30	Top of Layer 6	99	-100.00	658.00
	50	113.50	664.60		100	9.20	656.80
					101	57.40	648.90
					102	84.50	646.90
					103	103.40	649.80
					104	111.00	651.70
					105	124.10	657.10
				106	142.00	666.10	
				107	145.00	668.00	
				108	185.90	690.80	

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

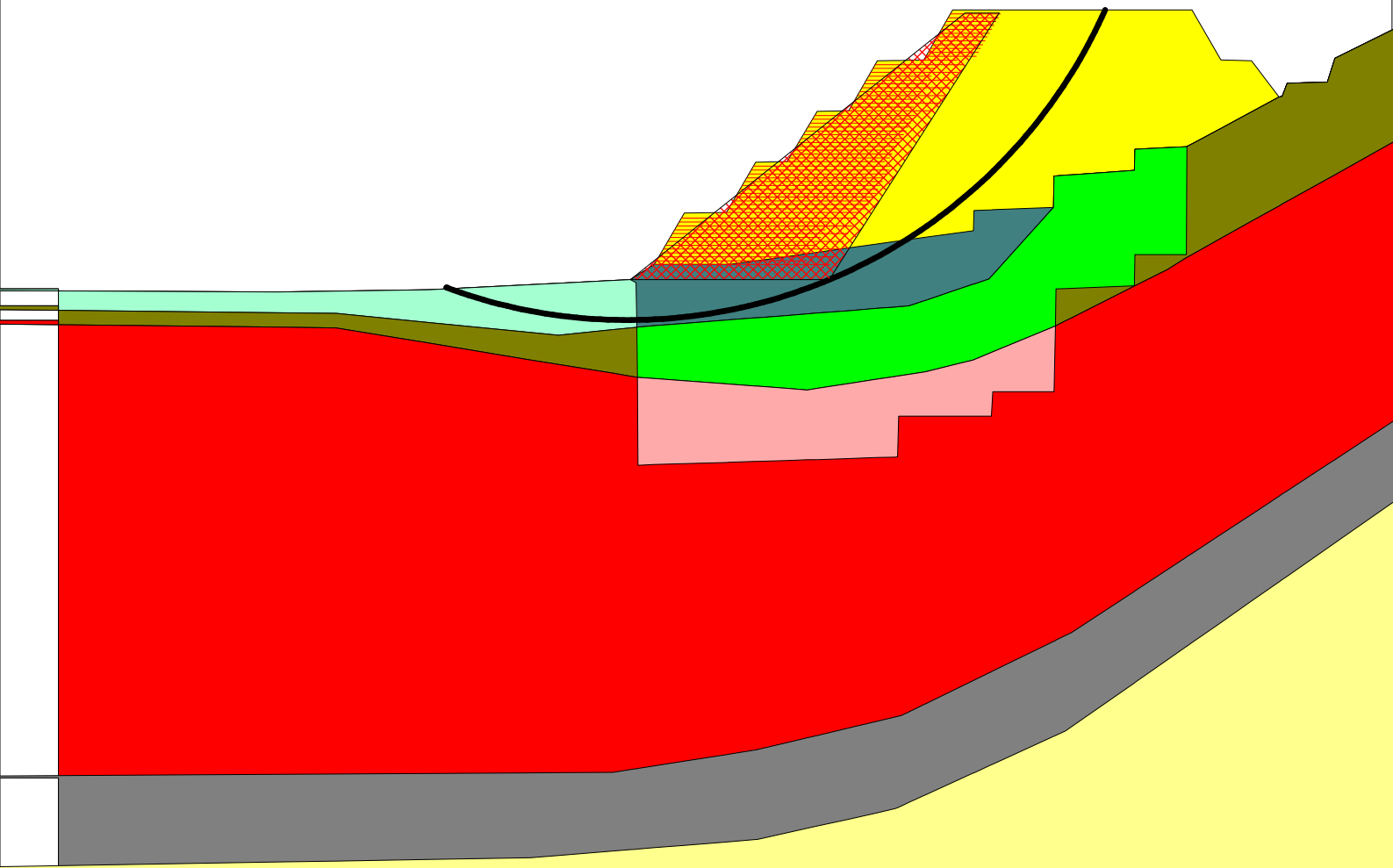
#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	150.50	699.50	688.60	688.60	688.60	688.60	671.07	671.07	623.84	609.80	644.93
52	155.40	699.40	691.24	691.24	691.24	691.24	673.80	673.80	627.06	613.22	644.72
53	159.80	693.60	693.60	693.60	693.60	693.60	676.25	676.25	629.95	616.29	644.52
54	160.30	693.70	693.70	693.70	693.70	693.70	676.53	676.53	630.28	616.64	644.50
55	161.10	695.80	695.80	695.80	695.80	695.80	676.98	676.98	630.80	617.20	644.46
56	167.50	696.00	696.00	696.00	696.00	696.00	680.54	680.54	635.01	621.66	644.18
57	168.70	699.80	699.80	699.80	699.80	699.80	681.21	681.21	635.80	622.50	644.13
58	180.60	705.68	705.68	705.68	705.68	705.68	687.85	687.85	643.62	630.80	643.60
59	185.90	708.30	708.30	708.30	708.30	708.30	690.80	690.80	647.10	634.50	643.60

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.36

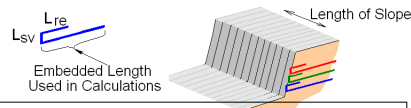
Critical Circle: $X_c = 55.88[m]$, $Y_c = 741.39[m]$, $R = 83.36[m]$. (Number of slices used = 79)



SCALE:

0246[m]





REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	10.00	1.00	94.98	698.15	104.98	698.15	0.62	1.50
52	1	Geogriglia 1	31.87	14.00	1.00	95.34	698.77	109.34	698.77	0.72	1.50
53	1	Geogriglia 1	32.59	6.00	1.00	102.36	699.49	108.36	699.49	0.62	1.50
54	1	Geogriglia 1	33.21	8.00	1.00	103.45	700.11	111.45	700.11	0.61	1.50
55	1	Geogriglia 1	33.82	8.00	1.00	103.80	700.72	111.80	700.72	0.62	1.50
56	1	Geogriglia 1	34.44	8.00	1.00	104.16	701.34	112.16	701.34	0.61	1.50
57	1	Geogriglia 1	35.05	8.00	1.00	104.51	701.95	112.51	701.95	0.62	1.50
58	1	Geogriglia 1	35.67	8.00	1.00	104.87	702.57	112.87	702.57	0.61	1.50
59	1	Geogriglia 1	36.28	8.00	1.00	105.22	703.18	113.22	703.18	0.62	1.50
60	1	Geogriglia 1	36.90	8.00	1.00	105.57	703.80	113.57	703.80	0.61	1.50
61	1	Geogriglia 1	37.51	8.00	1.00	105.92	704.41	113.92	704.41	0.62	1.50
62	1	Geogriglia 1	38.13	8.00	1.00	106.28	705.03	114.28	705.03	0.61	1.50
63	1	Geogriglia 1	38.74	8.00	1.00	106.63	705.64	114.63	705.64	0.62	1.50
64	1	Geogriglia 1	39.36	8.00	1.00	106.99	706.26	114.99	706.26	0.61	1.50
65	1	Geogriglia 1	39.97	8.00	1.00	107.34	706.87	115.34	706.87	0.61	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m ²] / length of slope [m]
1	Geogriglia 1	1.00	(including Lsv & Lre) 1232.08

Sez. 29 - A2M2 statica - no jet grouting

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PROJECT IDENTIFICATION

Title: Sez. 29 - A2M2 statica - no jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFCoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	44.80	655.60
	2	0.00	662.50		52	57.30	656.90
	3	24.20	662.90		53	100.80	660.30
	4	56.30	664.50		54	113.50	664.60
	5	58.80	668.50		55	123.80	676.00
	6	64.20	668.50		56	123.90	681.00
	7	68.80	676.60		57	136.70	681.90
	8	74.90	676.60		58	140.00	685.00
	9	79.50	684.70		59	160.30	693.70
	10	85.00	684.70		60	165.00	701.00
	11	89.70	692.60	Top of Layer 5	61	-100.00	660.30
	12	95.10	692.80		62	9.30	659.10
	13	99.80	700.80		63	44.80	655.60
	14	105.30	700.90		64	57.30	656.90
	15	109.90	708.39		65	57.40	648.90
	16	127.70	708.90		66	84.50	646.90
	17	133.20	700.90		67	103.40	649.80
	18	139.00	700.80		68	111.00	651.70
	19	144.30	692.60		69	124.10	657.10
	20	149.90	692.60		70	127.70	660.00
	21	150.40	692.20		71	127.80	667.00
	22	165.00	701.00		72	133.10	667.00
Top of Layer 2	23	-100.00	663.00		73	133.20	671.10
	24	0.00	662.50		74	139.10	671.10
	25	24.20	662.90		75	140.00	685.00
	26	56.30	664.50		76	160.30	693.70
	27	111.00	670.00		77	165.00	701.00
	28	111.10	676.00	Top of Layer 6	78	-100.00	658.00
	29	123.80	676.00		79	9.20	656.80
	30	123.90	681.00		80	57.40	648.90
	31	136.70	682.00		81	84.50	646.90
	32	140.00	685.00		82	103.40	649.80
	33	160.30	693.70		83	111.00	651.70
	34	165.00	701.00		84	124.10	657.10
Top of Layer 3	35	-100.00	663.00		85	127.70	660.00
	36	0.00	662.50		86	142.00	666.10
	37	24.20	662.90		87	145.00	668.00
	38	56.30	664.50		88	165.00	679.00
	39	57.20	664.00	Top of Layer 7	89	-100.00	658.00
	40	57.30	656.90		90	9.20	656.80
	41	100.80	660.30		91	57.40	648.90
	42	113.50	664.60		92	57.50	634.90
	43	123.80	676.00		93	97.50	637.00
	44	123.90	681.00		94	97.60	644.20
	45	136.70	681.90		95	108.10	644.20
	46	140.00	685.00		96	108.20	646.20
	47	160.30	693.70		97	118.60	646.20
	48	165.00	701.00		98	118.70	652.00
Top of Layer 4	49	-100.00	660.30		99	127.60	652.00
	50	9.30	659.10		100	127.70	660.00
					101	142.00	666.10
					102	145.00	668.00
					103	165.00	679.00
				Top of Layer 8	104	-100.00	585.00
					105	53.50	585.90
					106	76.40	589.50
					107	99.60	595.00
					108	126.70	608.20
					109	105.00	630.00
				Top of Layer 9	110	-100.00	630.00
					111	70.00	670.00
					112	76.50	575.20
					113	98.50	580.10
					114	125.70	592.50
					115	165.00	622.00
				Top of Phreatic Line	117	-100.00	651.20
					118	9.20	651.20
					119	180.60	643.60

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

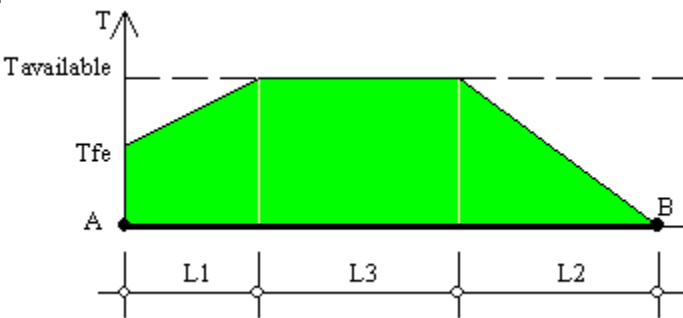
#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic)
											Yw
1	-100.00	663.00	663.00	663.00	660.30	660.30	658.00	658.00	585.00	569.90	651.20
2	0.00	662.50	662.50	662.50	659.20	659.20	656.90	656.90	585.59	571.61	651.20
3	9.20	662.65	662.65	662.65	659.10	659.10	656.80	656.80	585.64	571.77	651.20
4	9.30	662.65	662.65	662.65	659.10	659.10	656.78	656.78	585.64	571.77	651.20
5	24.20	662.90	662.90	662.90	657.63	657.63	654.34	654.34	585.73	572.02	650.53
6	40.30	663.70	663.70	663.70	656.04	656.04	651.70	651.70	585.82	572.30	649.82
7	44.80	663.93	663.93	663.93	655.60	655.60	650.97	650.97	585.85	572.66	649.62
8	53.50	664.36	664.36	664.36	656.50	656.50	649.54	649.54	585.90	573.36	649.24
9	56.30	664.50	664.50	664.50	656.80	656.80	649.08	649.08	586.34	573.58	649.11
10	57.20	665.94	664.59	664.00	656.89	656.89	648.93	648.93	586.48	573.65	649.07
11	57.30	666.10	664.60	664.60	656.90	656.90	648.92	648.92	586.50	573.66	649.07
12	57.40	666.26	664.61	656.91	656.91	648.90	648.90	648.90	586.51	573.67	649.06
13	57.50	666.42	664.62	656.92	656.92	648.89	648.89	634.90	586.53	573.68	649.06
14	58.80	668.50	664.75	657.02	657.02	648.80	648.80	634.97	586.73	573.78	649.00
15	64.20	668.50	665.29	657.44	657.44	648.40	648.40	635.25	587.58	574.21	648.76
16	68.80	676.60	665.76	657.80	657.80	648.06	648.06	635.49	588.31	574.58	648.56
17	74.90	676.60	666.37	658.28	658.28	647.61	647.61	635.81	589.26	575.07	648.29
18	76.40	679.24	666.52	658.39	658.39	647.50	647.50	635.89	589.50	575.19	648.22
19	76.50	679.42	666.53	658.40	658.40	647.49	647.49	635.90	589.52	575.20	648.22
20	79.50	684.70	666.83	658.64	658.64	647.27	647.27	636.06	590.23	575.87	648.08
21	84.50	684.70	667.34	659.03	659.03	646.90	646.90	636.32	591.42	576.98	647.86
22	85.00	684.70	667.39	659.07	659.07	646.98	646.98	636.34	591.54	577.09	647.84
23	89.70	692.60	667.86	659.43	659.43	647.70	647.70	636.59	592.65	578.14	647.63
24	95.10	692.80	668.40	659.85	659.85	648.53	648.53	636.87	593.93	579.34	647.39
25	97.50	696.89	668.64	660.04	660.04	648.89	648.89	637.00	594.50	579.88	647.28
26	97.60	697.06	668.65	660.05	660.05	648.91	648.91	644.20	594.53	579.90	647.28
27	98.50	698.59	668.74	660.12	660.12	649.05	649.05	644.20	594.74	580.10	647.24
28	99.60	700.46	668.85	660.21	660.21	649.22	649.22	644.20	595.00	580.60	647.19
29	99.80	700.80	668.87	660.22	660.22	649.25	649.25	644.20	595.10	580.69	647.18
30	100.80	700.82	668.97	660.30	660.30	649.40	649.40	644.20	595.58	581.15	647.14
31	103.40	700.87	669.24	661.18	661.18	649.80	649.80	644.20	596.85	582.33	647.02
32	105.30	700.90	669.43	661.82	661.82	650.27	650.27	644.20	597.78	583.20	646.94
33	108.10	705.46	669.71	662.77	662.77	650.98	650.98	644.20	599.14	584.48	646.81
34	108.20	705.62	669.72	662.81	662.81	651.00	651.00	646.20	599.19	584.52	646.81
35	109.90	708.39	669.89	663.38	663.38	651.43	651.43	646.20	600.02	585.30	646.73
36	111.00	708.42	670.00	663.75	663.75	651.70	651.70	646.20	600.55	585.80	646.69
37	111.10	708.42	676.00	663.79	663.79	651.74	651.74	646.20	600.60	585.84	646.68
38	113.50	708.49	676.00	664.60	664.60	652.73	652.73	646.20	601.77	586.94	646.58
39	118.60	708.64	676.00	670.24	670.24	654.83	654.83	646.20	604.25	589.26	646.35
40	118.70	708.64	676.00	670.36	670.36	654.87	654.87	652.00	604.30	589.31	646.34
41	123.80	708.79	676.00	676.00	676.00	656.98	656.98	652.00	606.79	591.63	646.12
42	123.90	708.79	681.00	681.00	681.00	657.02	657.02	652.00	606.84	591.68	646.11
43	124.10	708.80	681.02	681.01	681.01	657.10	657.10	652.00	606.93	591.77	646.11
44	125.70	708.84	681.14	681.13	681.13	658.39	658.39	652.00	607.71	592.50	646.03
45	126.70	708.87	681.22	681.20	681.20	659.19	659.19	652.00	608.20	593.25	645.99
46	127.60	708.90	681.29	681.26	681.26	659.92	659.92	652.00	608.85	593.93	645.95
47	127.70	708.90	681.30	681.27	681.27	660.00	660.00	660.00	608.93	594.00	645.95
48	127.80	708.75	681.30	681.27	681.27	667.00	660.04	660.04	609.00	594.08	645.94
49	133.10	701.05	681.72	681.65	681.65	667.00	662.30	662.30	612.85	598.05	645.71
50	133.20	700.90	681.73	681.65	681.65	671.10	662.35	662.35	612.92	598.13	645.70

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	136.70	700.84	682.00	681.90	681.90	671.10	663.84	663.84	615.46	600.76	645.55
52	139.00	700.80	684.09	684.06	684.06	671.10	664.82	664.82	617.13	602.48	645.44
53	139.10	700.65	684.18	684.15	684.15	671.10	664.86	664.86	617.20	602.56	645.44
54	140.00	699.25	685.00	685.00	685.00	685.00	665.25	665.25	617.85	603.23	645.40
55	142.00	696.16	685.86	685.86	685.86	685.86	666.10	666.10	619.31	604.74	645.31
56	144.30	692.60	686.84	686.84	686.84	686.84	667.56	667.56	620.97	606.46	645.21
57	145.00	692.60	687.14	687.14	687.14	687.14	668.00	668.00	621.48	606.99	645.18
58	149.90	692.60	689.24	689.24	689.24	689.24	670.69	670.69	625.04	610.67	644.96
59	150.40	692.20	689.46	689.46	689.46	689.46	670.97	670.97	625.40	611.04	644.94
60	160.30	698.17	693.70	693.70	693.70	693.70	676.42	676.42	632.59	618.47	644.50
61	165.00	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	644.29
62	180.60	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.17	27.83	39.67	39.67
2	Geogriglia 1	0.61	28.00	0.00	0.17	27.83	39.67	39.67
3	Geogriglia 1	1.23	28.00	0.00	0.18	27.82	39.67	39.67
4	Geogriglia 1	1.84	28.00	0.00	0.18	27.82	39.67	39.67
5	Geogriglia 1	2.46	28.00	0.00	0.18	27.82	39.67	39.67
6	Geogriglia 1	3.07	28.00	0.00	0.14	27.86	39.67	39.67
7	Geogriglia 1	3.69	28.00	0.00	0.14	27.86	39.67	39.67
8	Geogriglia 1	4.30	24.00	0.00	0.12	23.88	39.67	39.67
9	Geogriglia 1	4.92	28.00	0.00	0.12	27.88	39.67	39.67
10	Geogriglia 1	5.53	24.00	0.00	0.13	23.87	39.67	39.67
11	Geogriglia 1	6.15	28.00	0.00	0.12	27.88	39.67	39.67
12	Geogriglia 1	6.76	24.00	0.00	0.13	23.87	39.67	39.67
13	Geogriglia 1	7.38	28.00	0.00	0.13	27.87	39.67	39.67
14	Geogriglia 1	8.29	24.00	0.00	0.13	23.87	39.67	39.67
15	Geogriglia 1	8.90	28.00	0.00	0.14	27.86	39.67	39.67
16	Geogriglia 1	9.52	24.00	0.00	0.14	23.86	39.67	39.67
17	Geogriglia 1	10.13	28.00	0.00	0.14	27.86	39.67	39.67
18	Geogriglia 1	10.75	24.00	0.00	0.15	23.85	39.67	39.67
19	Geogriglia 1	11.36	28.00	0.00	0.14	27.86	39.67	39.67
20	Geogriglia 1	11.98	24.00	0.00	0.16	23.84	39.67	39.67
21	Geogriglia 1	12.59	22.00	0.00	0.14	21.86	39.67	39.67
22	Geogriglia 1	13.21	22.00	0.00	0.14	21.86	39.67	39.67
23	Geogriglia 1	13.82	22.00	0.00	0.14	21.86	39.67	39.67
24	Geogriglia 1	14.44	22.00	0.00	0.14	21.86	39.67	39.67
25	Geogriglia 1	15.05	22.00	0.00	0.14	21.86	39.67	39.67
26	Geogriglia 1	15.67	22.00	0.00	0.14	21.86	39.67	39.67
27	Geogriglia 1	16.39	22.00	0.00	0.14	21.86	39.67	39.67
28	Geogriglia 1	17.00	22.00	0.00	0.14	21.86	39.67	39.67
29	Geogriglia 1	17.62	22.00	0.00	0.14	21.86	39.67	39.67
30	Geogriglia 1	18.23	22.00	0.00	0.15	21.85	39.67	39.67
31	Geogriglia 1	18.85	22.00	0.00	0.15	21.85	39.67	39.67
32	Geogriglia 1	19.46	22.00	0.00	0.16	21.84	39.67	39.67
33	Geogriglia 1	20.07	22.00	0.00	0.16	21.84	39.67	39.67
34	Geogriglia 1	20.69	16.00	0.00	0.17	15.83	39.67	39.67
35	Geogriglia 1	21.30	16.00	0.00	0.18	15.82	39.67	39.67

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

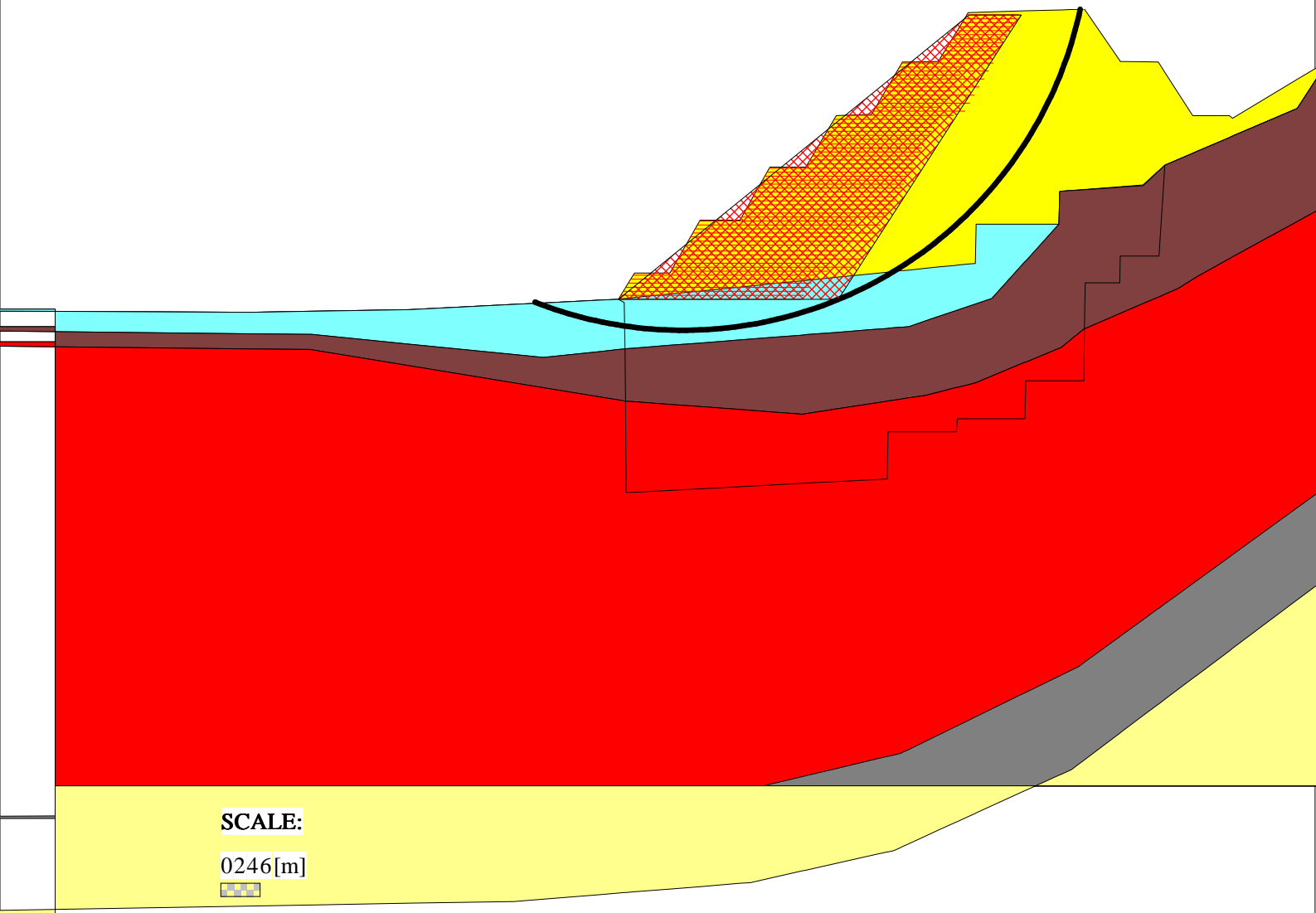
Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.92	16.00	0.00	0.18	15.82	39.67	39.67
37	Geogriglia 1	22.53	16.00	0.00	0.19	15.81	39.67	39.67
38	Geogriglia 1	23.15	16.00	0.00	0.20	15.80	39.67	39.67
39	Geogriglia 1	23.76	16.00	0.00	0.21	15.79	39.67	39.67
40	Geogriglia 1	24.49	16.00	0.00	0.22	15.78	39.67	39.67
41	Geogriglia 1	25.10	16.00	0.00	0.23	15.77	39.67	39.67
42	Geogriglia 1	25.72	16.00	0.00	0.25	15.75	39.67	39.67
43	Geogriglia 1	26.33	16.00	0.00	0.26	15.74	39.67	39.67
44	Geogriglia 1	26.95	16.00	0.00	0.28	15.72	39.67	39.67
45	Geogriglia 1	27.56	16.00	0.00	0.30	15.70	39.67	39.67
46	Geogriglia 1	28.17	16.00	0.00	0.22	15.78	39.67	39.67
47	Geogriglia 1	28.79	14.00	0.00	0.19	13.81	39.67	39.67
48	Geogriglia 1	29.40	10.00	0.00	0.35	9.65	39.67	39.67
49	Geogriglia 1	30.02	14.00	0.00	0.19	13.81	39.67	39.67
50	Geogriglia 1	30.64	10.00	0.00	0.35	9.65	39.67	39.67
51	Geogriglia 1	31.25	14.00	0.00	0.21	13.79	39.67	39.67
52	Geogriglia 1	31.87	10.00	0.00	0.36	9.64	39.67	39.67
53	Geogriglia 1	32.48	14.00	0.00	0.23	13.77	39.67	39.67
54	Geogriglia 1	33.10	10.00	0.00	0.36	9.64	39.67	39.67
55	Geogriglia 1	33.71	14.00	0.00	0.26	13.74	39.67	39.67
56	Geogriglia 1	34.33	10.00	0.00	0.36	9.64	39.67	39.67
57	Geogriglia 1	34.94	14.00	0.00	0.29	13.71	39.67	39.67
58	Geogriglia 1	35.56	10.00	0.00	0.36	9.64	39.67	39.67
59	Geogriglia 1	36.17	14.00	0.00	0.33	13.67	39.67	39.67
60	Geogriglia 1	36.79	8.00	0.00	0.36	7.64	39.67	39.67
61	Geogriglia 1	37.41	8.00	0.00	0.40	7.60	39.67	39.67
62	Geogriglia 1	38.02	8.00	0.00	0.43	7.57	39.67	39.67
63	Geogriglia 1	38.64	8.00	0.00	0.48	7.52	39.67	39.67
64	Geogriglia 1	39.25	8.00	0.00	0.54	7.46	39.67	39.67
65	Geogriglia 1	39.87	8.00	0.00	0.62	7.38	39.67	39.67
66	Geogriglia 1	40.48	8.00	0.00	0.73	7.27	39.67	39.67
67	Geogriglia 1	41.10	8.00	0.00	0.88	7.12	39.67	39.67
68	Geogriglia 1	41.71	8.00	0.00	1.10	6.90	39.67	39.67
69	Geogriglia 1	42.33	8.00	0.00	1.48	6.52	39.67	39.67
70	Geogriglia 1	42.94	8.00	0.00	2.28	5.72	39.67	39.67
71	Geogriglia 1	43.56	8.00	0.00	5.42	2.58	39.67	39.67

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.09

Critical Circle: Xc = 66.24[m], Yc = 721.96[m], R = 62.20[m]. (Number of slices used = 77)



SCALE:

0246[m]



Sez. 29 - A2M2 sismica - no jet grouting

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PROJECT IDENTIFICATION

Title: Sez. 29 - A2M2 sismica - no jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
Street: Corso Montevecchio 50
Torino, 10129
Telephone #: 011 561 18 11
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E-Mail: ig@ingegneriageotecnica.com

Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] Rftan=1.25		Cohesion, c [kPa] RFcoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFc	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (up) = -0.500 x kh = -0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 9 layers (see details in next page)

WATER GEOMETRY

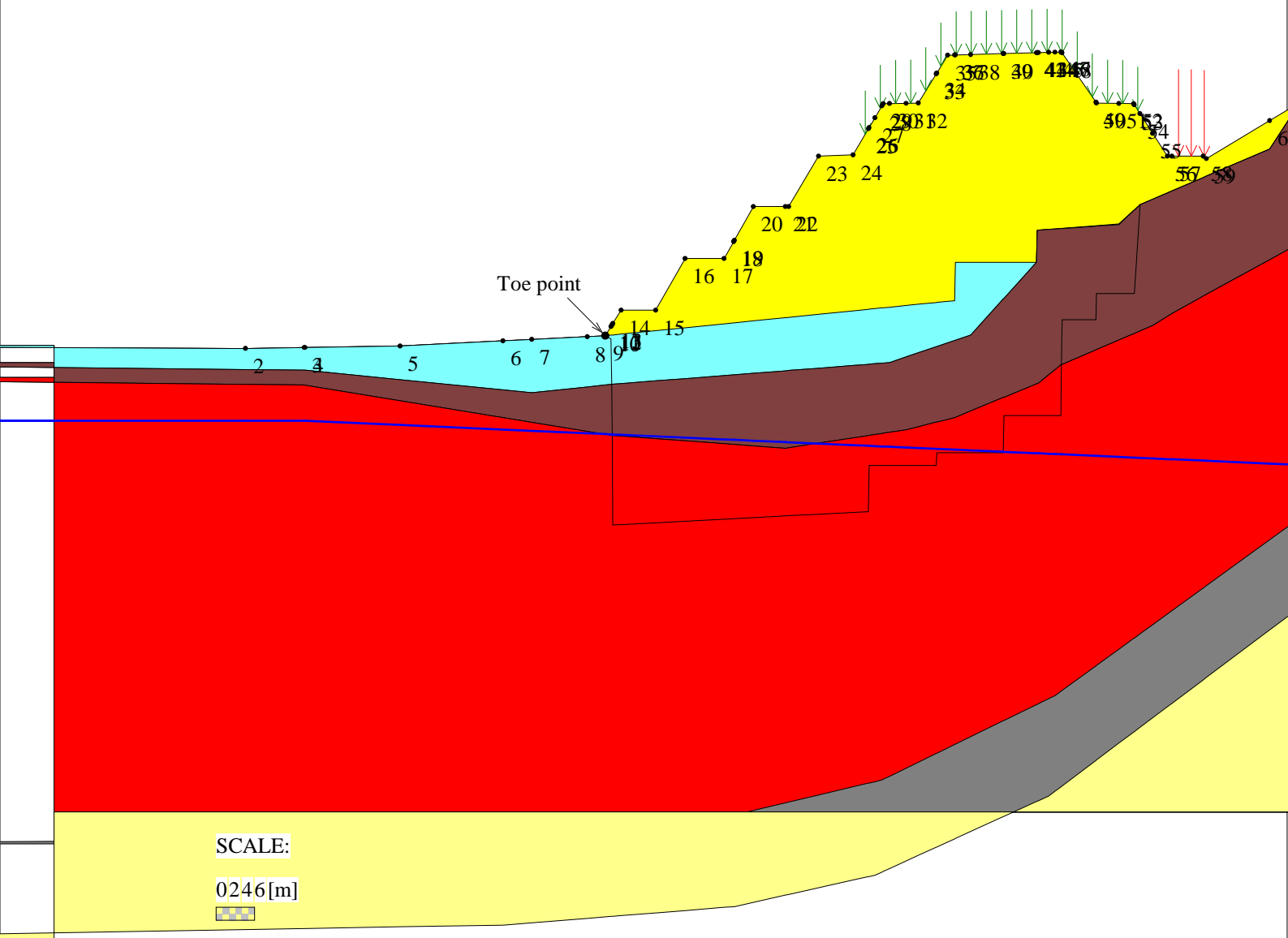
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 10.00 [kPa] inclined from verical at 0.00 degrees, starts at X1s = 97.00 and ends at X1e = 141.00 [m].
 Load Q2 = 20.00 [kPa] inclined from verical at 0.00 degrees, starts at X2s = 146.00 and ends at X2e = 152.00 [m].
 Surcharge load, Q3.....None

STRIP LOAD

.....None.....



Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0 ReSSA Version 3.0

TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00	Top of Layer 5	51	44.80	655.60
	2	0.00	662.50		52	57.30	656.90
	3	24.20	662.90		53	100.80	660.30
	4	56.30	664.50		54	113.50	664.60
	5	58.80	668.50		55	123.80	676.00
	6	64.20	668.50		56	123.90	681.00
	7	68.80	676.60		57	136.70	681.90
	8	74.90	676.60		58	140.00	685.00
	9	79.50	684.70		59	160.30	693.70
	10	85.00	684.70		60	165.00	701.00
Top of Layer 2	11	89.70	692.60	61	-100.00	660.30	
	12	95.10	692.80	62	9.30	659.10	
	13	99.80	700.80	63	44.80	655.60	
	14	105.30	700.90	64	57.30	656.90	
	15	109.90	708.39	65	57.40	648.90	
	16	127.70	708.90	66	84.50	646.90	
	17	133.20	700.90	67	103.40	649.80	
	18	139.00	700.80	68	111.00	651.70	
	19	144.30	692.60	69	124.10	657.10	
	20	149.90	692.60	70	127.70	660.00	
Top of Layer 3	21	150.40	692.20	71	127.80	667.00	
	22	165.00	701.00	72	133.10	667.00	
	23	-100.00	663.00	73	133.20	671.10	
	24	0.00	662.50	74	139.10	671.10	
	25	24.20	662.90	75	140.00	685.00	
	26	56.30	664.50	76	160.30	693.70	
	27	111.00	670.00	77	165.00	701.00	
	28	111.10	676.00	78	-100.00	658.00	
	29	123.80	676.00	79	9.20	656.80	
	30	123.90	681.00	80	57.40	648.90	
Top of Layer 4	31	136.70	682.00	81	84.50	646.90	
	32	140.00	685.00	82	103.40	649.80	
	33	160.30	693.70	83	111.00	651.70	
	34	165.00	701.00	84	124.10	657.10	
	35	-100.00	663.00	85	127.70	660.00	
	36	0.00	662.50	86	142.00	666.10	
	37	24.20	662.90	87	145.00	668.00	
	38	56.30	664.50	88	165.00	679.00	
	39	57.20	664.00	89	-100.00	658.00	
	40	57.30	656.90	90	9.20	656.80	
Top of Layer 5	41	100.80	660.30	91	57.40	648.90	
	42	113.50	664.60	92	57.50	634.90	
	43	123.80	676.00	93	97.50	637.00	
	44	123.90	681.00	94	97.60	644.20	
	45	136.70	681.90	95	108.10	644.20	
	46	140.00	685.00	96	108.20	646.20	
	47	160.30	693.70	97	118.60	646.20	
	48	165.00	701.00	98	118.70	652.00	
	49	-100.00	660.30	99	127.60	652.00	
	50	9.30	659.10	100	127.70	660.00	
Top of Layer 6				101	142.00	666.10	
				102	145.00	668.00	
				103	165.00	679.00	
				104	-100.00	585.00	
				105	53.50	585.90	
				106	76.40	589.50	
				107	99.60	595.00	
				108	126.70	608.20	
				109	165.00	630.00	
				110	-100.00	630.00	
Top of Layer 7				111	76.50	575.20	
				112	98.50	580.10	
				113	125.70	592.50	
				114	165.00	622.00	
				115	165.00	622.00	
				116	165.00	622.00	
				117	-100.00	651.20	
				118	9.20	651.20	
				119	180.60	643.60	
				120	180.60	643.60	
Top of Layer 8							
Top of Layer 9							
Top of Phreatic Line							

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic)
											Yw
1	-100.00	663.00	663.00	663.00	660.30	660.30	658.00	658.00	585.00	569.90	651.20
2	0.00	662.50	662.50	662.50	659.20	659.20	656.90	656.90	585.59	571.61	651.20
3	9.20	662.65	662.65	662.65	659.10	659.10	656.80	656.80	585.64	571.77	651.20
4	9.30	662.65	662.65	662.65	659.10	659.10	656.78	656.78	585.64	571.77	651.20
5	24.20	662.90	662.90	662.90	657.63	657.63	654.34	654.34	585.73	572.02	650.53
6	40.30	663.70	663.70	663.70	656.04	656.04	651.70	651.70	585.82	572.30	649.82
7	44.80	663.93	663.93	663.93	655.60	655.60	650.97	650.97	585.85	572.66	649.62
8	53.50	664.36	664.36	664.36	656.50	656.50	649.54	649.54	585.90	573.36	649.24
9	56.30	664.50	664.50	664.50	656.80	656.80	649.08	649.08	586.34	573.58	649.11
10	57.20	665.94	664.59	664.00	656.89	656.89	648.93	648.93	586.48	573.65	649.07
11	57.30	666.10	664.60	664.60	656.90	656.90	648.92	648.92	586.50	573.66	649.07
12	57.40	666.26	664.61	656.91	656.91	648.90	648.90	648.90	586.51	573.67	649.06
13	57.50	666.42	664.62	656.92	656.92	648.89	648.89	634.90	586.53	573.68	649.06
14	58.80	668.50	664.75	657.02	657.02	648.80	648.80	634.97	586.73	573.78	649.00
15	64.20	668.50	665.29	657.44	657.44	648.40	648.40	635.25	587.58	574.21	648.76
16	68.80	676.60	665.76	657.80	657.80	648.06	648.06	635.49	588.31	574.58	648.56
17	74.90	676.60	666.37	658.28	658.28	647.61	647.61	635.81	589.26	575.07	648.29
18	76.40	679.24	666.52	658.39	658.39	647.50	647.50	635.89	589.50	575.19	648.22
19	76.50	679.42	666.53	658.40	658.40	647.49	647.49	635.90	589.52	575.20	648.22
20	79.50	684.70	666.83	658.64	658.64	647.27	647.27	636.06	590.23	575.87	648.08
21	84.50	684.70	667.34	659.03	659.03	646.90	646.90	636.32	591.42	576.98	647.86
22	85.00	684.70	667.39	659.07	659.07	646.98	646.98	636.34	591.54	577.09	647.84
23	89.70	692.60	667.86	659.43	659.43	647.70	647.70	636.59	592.65	578.14	647.63
24	95.10	692.80	668.40	659.85	659.85	648.53	648.53	636.87	593.93	579.34	647.39
25	97.50	696.89	668.64	660.04	660.04	648.89	648.89	637.00	594.50	579.88	647.28
26	97.60	697.06	668.65	660.05	660.05	648.91	648.91	644.20	594.53	579.90	647.28
27	98.50	698.59	668.74	660.12	660.12	649.05	649.05	644.20	594.74	580.10	647.24
28	99.60	700.46	668.85	660.21	660.21	649.22	649.22	644.20	595.00	580.60	647.19
29	99.80	700.80	668.87	660.22	660.22	649.25	649.25	644.20	595.10	580.69	647.18
30	100.80	700.82	668.97	660.30	660.30	649.40	649.40	644.20	595.58	581.15	647.14
31	103.40	700.87	669.24	661.18	661.18	649.80	649.80	644.20	596.85	582.33	647.02
32	105.30	700.90	669.43	661.82	661.82	650.27	650.27	644.20	597.78	583.20	646.94
33	108.10	705.46	669.71	662.77	662.77	650.98	650.98	644.20	599.14	584.48	646.81
34	108.20	705.62	669.72	662.81	662.81	651.00	651.00	646.20	599.19	584.52	646.81
35	109.90	708.39	669.89	663.38	663.38	651.43	651.43	646.20	600.02	585.30	646.73
36	111.00	708.42	670.00	663.75	663.75	651.70	651.70	646.20	600.55	585.80	646.69
37	111.10	708.42	676.00	663.79	663.79	651.74	651.74	646.20	600.60	585.84	646.68
38	113.50	708.49	676.00	664.60	664.60	652.73	652.73	646.20	601.77	586.94	646.58
39	118.60	708.64	676.00	670.24	670.24	654.83	654.83	646.20	604.25	589.26	646.35
40	118.70	708.64	676.00	670.36	670.36	654.87	654.87	652.00	604.30	589.31	646.34
41	123.80	708.79	676.00	676.00	676.00	656.98	656.98	652.00	606.79	591.63	646.12
42	123.90	708.79	681.00	681.00	681.00	657.02	657.02	652.00	606.84	591.68	646.11
43	124.10	708.80	681.02	681.01	681.01	657.10	657.10	652.00	606.93	591.77	646.11
44	125.70	708.84	681.14	681.13	681.13	658.39	658.39	652.00	607.71	592.50	646.03
45	126.70	708.87	681.22	681.20	681.20	659.19	659.19	652.00	608.20	593.25	645.99
46	127.60	708.90	681.29	681.26	681.26	659.92	659.92	652.00	608.85	593.93	645.95
47	127.70	708.90	681.30	681.27	681.27	660.00	660.00	660.00	608.93	594.00	645.95
48	127.80	708.75	681.30	681.27	681.27	667.00	660.04	660.04	609.00	594.08	645.94
49	133.10	701.05	681.72	681.65	681.65	667.00	662.30	662.30	612.85	598.05	645.71
50	133.20	700.90	681.73	681.65	681.65	671.10	662.35	662.35	612.92	598.13	645.70

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	136.70	700.84	682.00	681.90	681.90	671.10	663.84	663.84	615.46	600.76	645.55
52	139.00	700.80	684.09	684.06	684.06	671.10	664.82	664.82	617.13	602.48	645.44
53	139.10	700.65	684.18	684.15	684.15	671.10	664.86	664.86	617.20	602.56	645.44
54	140.00	699.25	685.00	685.00	685.00	685.00	665.25	665.25	617.85	603.23	645.40
55	142.00	696.16	685.86	685.86	685.86	685.86	666.10	666.10	619.31	604.74	645.31
56	144.30	692.60	686.84	686.84	686.84	686.84	667.56	667.56	620.97	606.46	645.21
57	145.00	692.60	687.14	687.14	687.14	687.14	668.00	668.00	621.48	606.99	645.18
58	149.90	692.60	689.24	689.24	689.24	689.24	670.69	670.69	625.04	610.67	644.96
59	150.40	692.20	689.46	689.46	689.46	689.46	670.97	670.97	625.40	611.04	644.94
60	160.30	698.17	693.70	693.70	693.70	693.70	676.42	676.42	632.59	618.47	644.50
61	165.00	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	644.29
62	180.60	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-}po = 1.10$

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.92	16.00	0.00	0.46	15.54	99.17	99.17
37	Geogriglia 1	22.53	16.00	0.00	0.48	15.52	99.17	99.17
38	Geogriglia 1	23.15	16.00	0.00	0.51	15.49	99.17	99.17
39	Geogriglia 1	23.76	16.00	0.00	0.53	15.47	99.17	99.17
40	Geogriglia 1	24.49	16.00	0.00	0.56	15.44	99.17	99.17
41	Geogriglia 1	25.10	16.00	0.00	0.59	15.41	99.17	99.17
42	Geogriglia 1	25.72	16.00	0.00	0.63	15.37	99.17	99.17
43	Geogriglia 1	26.33	16.00	0.00	0.66	15.34	99.17	99.17
44	Geogriglia 1	26.95	16.00	0.00	0.71	15.29	99.17	99.17
45	Geogriglia 1	27.56	16.00	0.00	0.75	15.25	99.17	99.17
46	Geogriglia 1	28.17	16.00	0.00	0.58	15.42	99.17	99.17
47	Geogriglia 1	28.79	14.00	0.00	0.48	13.52	99.17	99.17
48	Geogriglia 1	29.40	10.00	0.00	0.93	9.07	99.17	99.17
49	Geogriglia 1	30.02	14.00	0.00	0.49	13.51	99.17	99.17
50	Geogriglia 1	30.64	10.00	0.00	0.97	9.03	99.17	99.17
51	Geogriglia 1	31.25	14.00	0.00	0.53	13.47	99.17	99.17
52	Geogriglia 1	31.87	10.00	0.00	0.98	9.02	99.17	99.17
53	Geogriglia 1	32.48	14.00	0.00	0.58	13.42	99.17	99.17
54	Geogriglia 1	33.10	10.00	0.00	0.99	9.01	99.17	99.17
55	Geogriglia 1	33.71	14.00	0.00	0.65	13.35	99.17	99.17
56	Geogriglia 1	34.33	10.00	0.00	0.99	9.01	99.17	99.17
57	Geogriglia 1	34.94	14.00	0.00	0.74	13.26	99.17	99.17
58	Geogriglia 1	35.56	10.00	0.00	1.00	9.00	99.17	99.17
59	Geogriglia 1	36.17	14.00	0.00	0.85	13.15	99.17	99.17
60	Geogriglia 1	36.79	8.00	0.00	0.93	7.07	99.17	99.17
61	Geogriglia 1	37.41	8.00	0.00	1.01	6.99	99.17	99.17
62	Geogriglia 1	38.02	8.00	0.00	1.11	6.89	99.17	99.17
63	Geogriglia 1	38.64	8.00	0.00	1.24	6.76	99.17	99.17
64	Geogriglia 1	39.25	8.00	0.00	1.40	6.60	99.17	99.17
65	Geogriglia 1	39.87	8.00	0.00	1.60	6.40	99.17	99.17
66	Geogriglia 1	40.48	8.00	0.00	1.87	6.13	99.17	99.17
67	Geogriglia 1	41.10	8.00	0.00	2.26	5.74	99.17	99.17
68	Geogriglia 1	41.71	8.00	0.00	2.85	5.15	99.17	99.17
69	Geogriglia 1	42.33	8.00	0.00	3.89	4.11	99.17	99.17
70	Geogriglia 1	42.94	8.00	0.00	6.18	1.82	99.17	99.17
71	Geogriglia 1	43.56	8.00	0.00	8.00	0.00	51.99	51.99 (*)

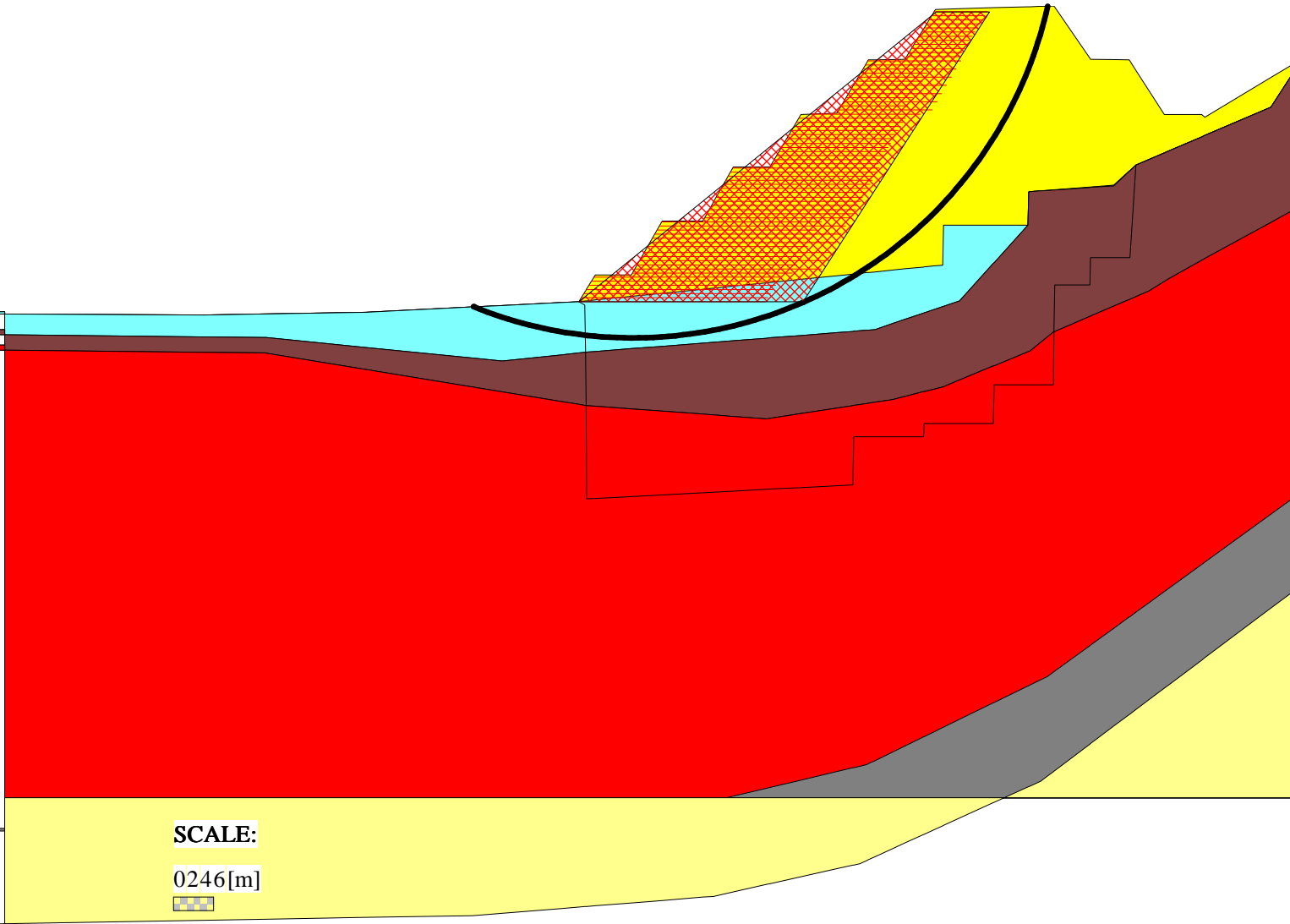
(*) This Tavailable is dictated by the pullout resistance capacity, which is smaller than the long-term strength of the reinforcement that is related to its specified ultimate strength

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

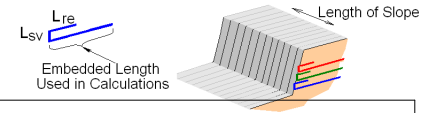
Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 0.98

Critical Circle: Xc = 64.45[m], Yc = 722.94[m], R = 63.88[m]. (Number of slices used = 79)



SCALE:
0.246[m]

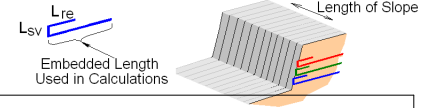


REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]
1	1	Geogriglia 1	0.00	28.00	1.00	56.30 664.50	84.30 664.50	0.61	1.50
2	1	Geogriglia 1	0.61	28.00	1.00	56.68 665.11	84.68 665.11	0.62	1.50
3	1	Geogriglia 1	1.23	28.00	1.00	57.07 665.73	85.07 665.73	0.61	1.50
4	1	Geogriglia 1	1.84	28.00	1.00	57.45 666.34	85.45 666.34	0.62	1.50
5	1	Geogriglia 1	2.46	28.00	1.00	57.84 666.96	85.84 666.96	0.61	1.50
6	1	Geogriglia 1	3.07	28.00	1.00	58.22 667.57	86.22 667.57	0.62	1.50
7	1	Geogriglia 1	3.69	28.00	1.00	58.61 668.19	86.61 668.19	0.61	1.50
8	1	Geogriglia 1	4.30	24.00	1.00	64.37 668.80	88.37 668.80	0.62	1.50
9	1	Geogriglia 1	4.92	28.00	1.00	64.72 669.42	92.72 669.42	0.61	1.50
10	1	Geogriglia 1	5.53	24.00	1.00	65.07 670.03	89.07 670.03	0.62	1.50
11	1	Geogriglia 1	6.15	28.00	1.00	65.42 670.65	93.42 670.65	0.61	1.50
12	1	Geogriglia 1	6.76	24.00	1.00	65.77 671.26	89.77 671.26	0.62	1.50
13	1	Geogriglia 1	7.38	28.00	1.00	66.12 671.88	94.12 671.88	0.91	1.50
14	1	Geogriglia 1	8.29	24.00	1.00	66.64 672.79	90.64 672.79	0.61	1.50
15	1	Geogriglia 1	8.90	28.00	1.00	66.98 673.40	94.98 673.40	0.62	1.50
16	1	Geogriglia 1	9.52	24.00	1.00	67.33 674.02	91.33 674.02	0.61	1.50
17	1	Geogriglia 1	10.13	28.00	1.00	67.68 674.63	95.68 674.63	0.62	1.50
18	1	Geogriglia 1	10.75	24.00	1.00	68.03 675.25	92.03 675.25	0.61	1.50
19	1	Geogriglia 1	11.36	28.00	1.00	68.38 675.86	96.38 675.86	0.62	1.50
20	1	Geogriglia 1	11.98	24.00	1.00	68.73 676.48	92.73 676.48	0.61	1.50
21	1	Geogriglia 1	12.59	22.00	1.00	75.18 677.09	97.18 677.09	0.62	1.50
22	1	Geogriglia 1	13.21	22.00	1.00	75.53 677.71	97.53 677.71	0.61	1.50
23	1	Geogriglia 1	13.82	22.00	1.00	75.88 678.32	97.88 678.32	0.62	1.50
24	1	Geogriglia 1	14.44	22.00	1.00	76.23 678.94	98.23 678.94	0.61	1.50
25	1	Geogriglia 1	15.05	22.00	1.00	76.58 679.55	98.58 679.55	0.62	1.50
26	1	Geogriglia 1	15.67	22.00	1.00	76.93 680.17	98.93 680.17	0.72	1.50
27	1	Geogriglia 1	16.39	22.00	1.00	77.34 680.89	99.34 680.89	0.61	1.50
28	1	Geogriglia 1	17.00	22.00	1.00	77.68 681.50	99.68 681.50	0.62	1.50
29	1	Geogriglia 1	17.62	22.00	1.00	78.03 682.12	100.03 682.12	0.61	1.50
30	1	Geogriglia 1	18.23	22.00	1.00	78.38 682.73	100.38 682.73	0.62	1.50
31	1	Geogriglia 1	18.85	22.00	1.00	78.73 683.35	100.73 683.35	0.61	1.50
32	1	Geogriglia 1	19.46	22.00	1.00	79.08 683.96	101.08 683.96	0.61	1.50
33	1	Geogriglia 1	20.07	22.00	1.00	79.43 684.57	101.43 684.57	0.62	1.50
34	1	Geogriglia 1	20.69	16.00	1.00	85.29 685.19	101.29 685.19	0.61	1.50
35	1	Geogriglia 1	21.30	16.00	1.00	85.65 685.80	101.65 685.80	0.62	1.50
36	1	Geogriglia 1	21.92	16.00	1.00	86.02 686.42	102.02 686.42	0.61	1.50
37	1	Geogriglia 1	22.53	16.00	1.00	86.39 687.03	102.39 687.03	0.62	1.50
38	1	Geogriglia 1	23.15	16.00	1.00	86.76 687.65	102.76 687.65	0.61	1.50
39	1	Geogriglia 1	23.76	16.00	1.00	87.12 688.26	103.12 688.26	0.73	1.50
40	1	Geogriglia 1	24.49	16.00	1.00	87.55 688.99	103.55 688.99	0.61	1.50
41	1	Geogriglia 1	25.10	16.00	1.00	87.92 689.60	103.92 689.60	0.62	1.50
42	1	Geogriglia 1	25.72	16.00	1.00	88.28 690.22	104.28 690.22	0.61	1.50
43	1	Geogriglia 1	26.33	16.00	1.00	88.65 690.83	104.65 690.83	0.62	1.50
44	1	Geogriglia 1	26.95	16.00	1.00	89.02 691.45	105.02 691.45	0.61	1.50
45	1	Geogriglia 1	27.56	16.00	1.00	89.38 692.06	105.38 692.06	0.61	1.50
46	1	Geogriglia 1	28.17	16.00	1.00	91.59 692.67	107.59 692.67	0.62	1.50
47	1	Geogriglia 1	28.79	14.00	1.00	95.39 693.29	109.39 693.29	0.61	1.50
48	1	Geogriglia 1	29.40	10.00	1.00	95.75 693.90	105.75 693.90	0.62	1.50
49	1	Geogriglia 1	30.02	14.00	1.00	96.11 694.52	110.11 694.52	0.62	1.50
50	1	Geogriglia 1	30.64	10.00	1.00	96.47 695.14	106.47 695.14	0.61	1.50

* Vertical distance between layers.

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	14.00	1.00	96.83	695.75	110.83	695.75	0.62	1.50
52	1	Geogriglia 1	31.87	10.00	1.00	97.20	696.37	107.20	696.37	0.61	1.50
53	1	Geogriglia 1	32.48	14.00	1.00	97.56	696.98	111.56	696.98	0.62	1.50
54	1	Geogriglia 1	33.10	10.00	1.00	97.92	697.60	107.92	697.60	0.61	1.50
55	1	Geogriglia 1	33.71	14.00	1.00	98.28	698.21	112.28	698.21	0.62	1.50
56	1	Geogriglia 1	34.33	10.00	1.00	98.64	698.83	108.64	698.83	0.61	1.50
57	1	Geogriglia 1	34.94	14.00	1.00	99.00	699.44	113.00	699.44	0.62	1.50
58	1	Geogriglia 1	35.56	10.00	1.00	99.37	700.06	109.37	700.06	0.61	1.50
59	1	Geogriglia 1	36.17	14.00	1.00	99.72	700.67	113.72	700.67	0.62	1.50
60	1	Geogriglia 1	36.79	8.00	1.00	105.54	701.29	113.54	701.29	0.62	1.50
61	1	Geogriglia 1	37.41	8.00	1.00	105.92	701.91	113.92	701.91	0.61	1.50
62	1	Geogriglia 1	38.02	8.00	1.00	106.29	702.52	114.29	702.52	0.62	1.50
63	1	Geogriglia 1	38.64	8.00	1.00	106.68	703.14	114.68	703.14	0.61	1.50
64	1	Geogriglia 1	39.25	8.00	1.00	107.05	703.75	115.05	703.75	0.62	1.50
65	1	Geogriglia 1	39.87	8.00	1.00	107.43	704.37	115.43	704.37	0.61	1.50
66	1	Geogriglia 1	40.48	8.00	1.00	107.81	704.98	115.81	704.98	0.62	1.50
67	1	Geogriglia 1	41.10	8.00	1.00	108.19	705.60	116.19	705.60	0.61	1.50
68	1	Geogriglia 1	41.71	8.00	1.00	108.56	706.21	116.56	706.21	0.62	1.50
69	1	Geogriglia 1	42.33	8.00	1.00	108.94	706.83	116.94	706.83	0.61	1.50
70	1	Geogriglia 1	42.94	8.00	1.00	109.32	707.44	117.32	707.44	0.62	1.50
71	1	Geogriglia 1	43.56	8.00	1.00	109.70	708.06	117.70	708.06	0.62	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcemnt [m ²] / length of slope [m] (including Lsv & Lre)
1	Geogriglia 1	1.00	1430.68

Sezione 29 - A2M2 statica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 29 - A2M2 statica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.]		Cohesion, c [kPa]	
		R _{Ftan} =1.25	R _{Ftan} =1.25	R _{FCoh} =1.25	R _{FCoh} =1.25
1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
2.....Riporto jet.....	18.0	40.0	33.9	50.0	40.0
3.....Riporto persistente.....	18.0	30.0	24.8	0.0	0.0
4.....Unità 1 jet.....	20.0	40.0	33.9	150.0	120.0
5.....Unità 1.....	20.0	35.0	29.3	20.0	16.0
6.....Unità 2 jet.....	20.0	40.0	33.9	100.0	80.0
7.....Unità 2.....	20.0	32.0	26.6	20.0	16.0
8.....Bed rock alterato.....	27.0	40.0	33.9	250.0	200.0
9.....Bed rock.....	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, R _{Fc}	Additional Reduction Factor, R _{Fa}	Coverage Ratio, R _c
1	Geogriglia 1	150.00	1.10	1.10	2.50	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout =====	
Type #	Geosynthetic Designated Name	C _{ds-phi}	C _{ds-c}	C _i	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, F_{s-po} = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Not Applicable

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 9 layers (see details in next page)

WATER GEOMETRY

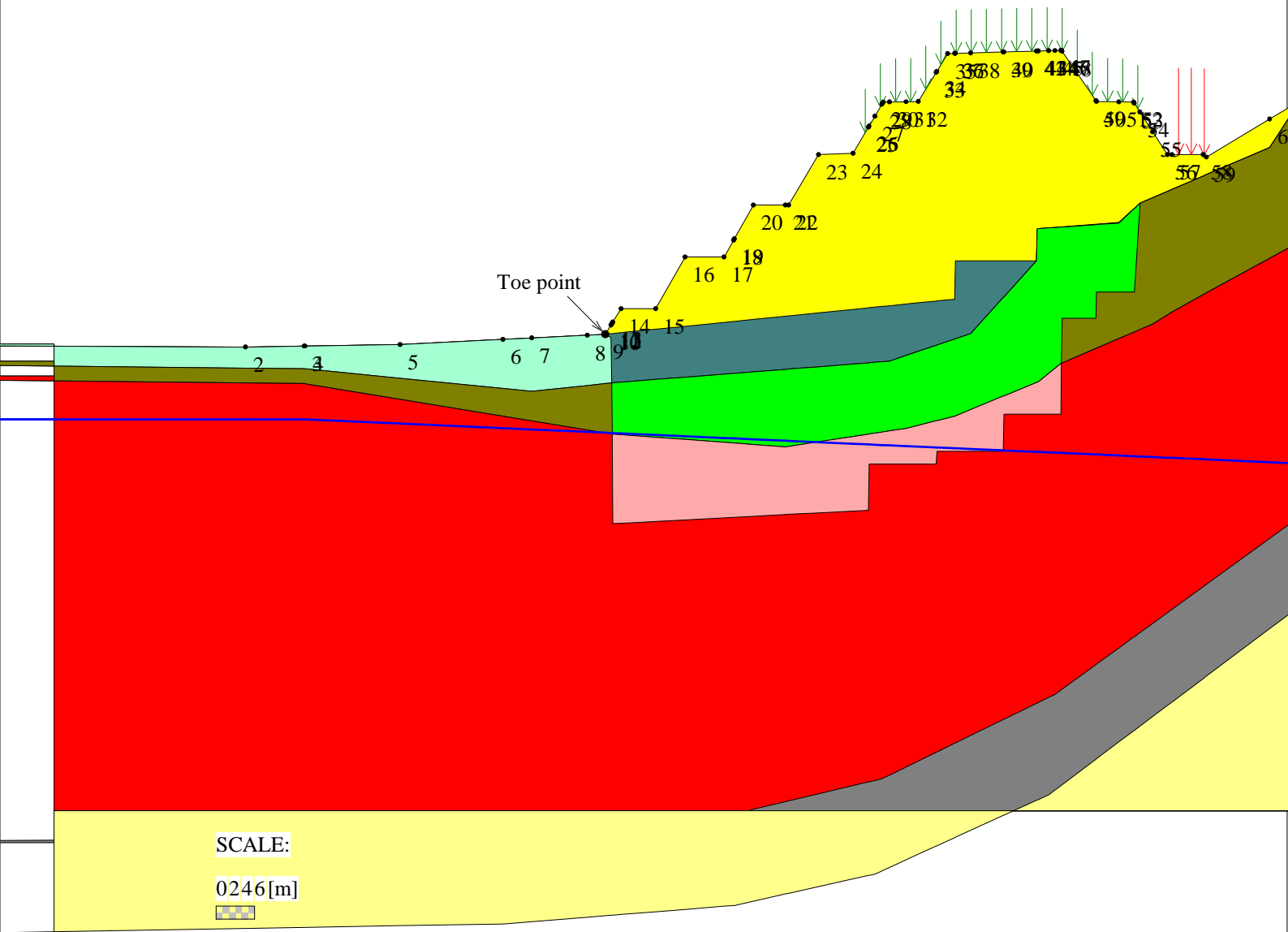
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 13.00 [kPa] inclined from verical at 0.00 degrees, starts at X1s = 97.00 and ends at X1e = 141.00 [m].
 Load Q2 = 26.00 [kPa] inclined from verical at 0.00 degrees, starts at X2s = 146.00 and ends at X2e = 152.00 [m].
 Surcharge load, Q3.....None

STRIP LOAD

.....None.....



TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	44.80	655.60
	2	0.00	662.50		52	57.30	656.90
	3	24.20	662.90		53	100.80	660.30
	4	56.30	664.50		54	113.50	664.60
	5	58.80	668.50		55	123.80	676.00
	6	64.20	668.50		56	123.90	681.00
	7	68.80	676.60		57	136.70	681.90
	8	74.90	676.60		58	140.00	685.00
	9	79.50	684.70		59	160.30	693.70
	10	85.00	684.70		60	165.00	701.00
	11	89.70	692.60	Top of Layer 5	61	-100.00	660.30
	12	95.10	692.80		62	9.30	659.10
	13	99.80	700.80		63	44.80	655.60
	14	105.30	700.90		64	57.30	656.90
	15	109.90	708.39		65	57.40	648.90
	16	127.70	708.90		66	84.50	646.90
	17	133.20	700.90		67	103.40	649.80
	18	139.00	700.80		68	111.00	651.70
	19	144.30	692.60		69	124.10	657.10
	20	149.90	692.60		70	127.70	660.00
	21	150.40	692.20		71	127.80	667.00
	22	165.00	701.00		72	133.10	667.00
Top of Layer 2	23	-100.00	663.00		73	133.20	671.10
	24	0.00	662.50		74	139.10	671.10
	25	24.20	662.90		75	140.00	685.00
	26	56.30	664.50		76	160.30	693.70
	27	111.00	670.00		77	165.00	701.00
	28	111.10	676.00	Top of Layer 6	78	-100.00	658.00
	29	123.80	676.00		79	9.20	656.80
	30	123.90	681.00		80	57.40	648.90
	31	136.70	682.00		81	84.50	646.90
	32	140.00	685.00		82	103.40	649.80
	33	160.30	693.70		83	111.00	651.70
	34	165.00	701.00		84	124.10	657.10
Top of Layer 3	35	-100.00	663.00		85	127.70	660.00
	36	0.00	662.50		86	142.00	666.10
	37	24.20	662.90		87	145.00	668.00
	38	56.30	664.50		88	165.00	679.00
	39	57.20	664.00	Top of Layer 7	89	-100.00	658.00
	40	57.30	656.90		90	9.20	656.80
	41	100.80	660.30		91	57.40	648.90
	42	113.50	664.60		92	57.50	634.90
	43	123.80	676.00		93	97.50	637.00
	44	123.90	681.00		94	97.60	644.20
	45	136.70	681.90		95	108.10	644.20
	46	140.00	685.00		96	108.20	646.20
	47	160.30	693.70		97	118.60	646.20
	48	165.00	701.00		98	118.70	652.00
Top of Layer 4	49	-100.00	660.30		99	127.60	652.00
	50	9.30	659.10		100	127.70	660.00
					101	142.00	666.10
					102	145.00	668.00
					103	165.00	679.00
				Top of Layer 8	104	-100.00	585.00
					105	53.50	585.90
					106	76.40	589.50
					107	99.60	595.00
					108	126.70	608.20
					109	105.00	610.00
				Top of Layer 9	110	-100.00	610.00
					111	70.00	612.00
					112	76.50	575.20
					113	98.50	580.10
					114	125.70	592.50
					115	165.00	622.00
				Top of Phreatic Line	117	-100.00	651.20
					118	9.20	651.20
					119	180.60	643.60

TABULATED DETAILS OF SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic)
											Yw
1	-100.00	663.00	663.00	663.00	660.30	660.30	658.00	658.00	585.00	569.90	651.20
2	0.00	662.50	662.50	662.50	659.20	659.20	656.90	656.90	585.59	571.61	651.20
3	9.20	662.65	662.65	662.65	659.10	659.10	656.80	656.80	585.64	571.77	651.20
4	9.30	662.65	662.65	662.65	659.10	659.10	656.78	656.78	585.64	571.77	651.20
5	24.20	662.90	662.90	662.90	657.63	657.63	654.34	654.34	585.73	572.02	650.53
6	40.30	663.70	663.70	663.70	656.04	656.04	651.70	651.70	585.82	572.30	649.82
7	44.80	663.93	663.93	663.93	655.60	655.60	650.97	650.97	585.85	572.66	649.62
8	53.50	664.36	664.36	664.36	656.50	656.50	649.54	649.54	585.90	573.36	649.24
9	56.30	664.50	664.50	664.50	656.80	656.80	649.08	649.08	586.34	573.58	649.11
10	57.20	665.94	664.59	664.00	656.89	656.89	648.93	648.93	586.48	573.65	649.07
11	57.30	666.10	664.60	656.90	656.90	656.90	648.92	648.92	586.50	573.66	649.07
12	57.40	666.26	664.61	656.91	656.91	648.90	648.90	648.90	586.51	573.67	649.06
13	57.50	666.42	664.62	656.92	656.92	648.89	648.89	634.90	586.53	573.68	649.06
14	58.80	668.50	664.75	657.02	657.02	648.80	648.80	634.97	586.73	573.78	649.00
15	64.20	668.50	665.29	657.44	657.44	648.40	648.40	635.25	587.58	574.21	648.76
16	68.80	676.60	665.76	657.80	657.80	648.06	648.06	635.49	588.31	574.58	648.56
17	74.90	676.60	666.37	658.28	658.28	647.61	647.61	635.81	589.26	575.07	648.29
18	76.40	679.24	666.52	658.39	658.39	647.50	647.50	635.89	589.50	575.19	648.22
19	76.50	679.42	666.53	658.40	658.40	647.49	647.49	635.90	589.52	575.20	648.22
20	79.50	684.70	666.83	658.64	658.64	647.27	647.27	636.06	590.23	575.87	648.08
21	84.50	684.70	667.34	659.03	659.03	646.90	646.90	636.32	591.42	576.98	647.86
22	85.00	684.70	667.39	659.07	659.07	646.98	646.98	636.34	591.54	577.09	647.84
23	89.70	692.60	667.86	659.43	659.43	647.70	647.70	636.59	592.65	578.14	647.63
24	95.10	692.80	668.40	659.85	659.85	648.53	648.53	636.87	593.93	579.34	647.39
25	97.50	696.89	668.64	660.04	660.04	648.89	648.89	637.00	594.50	579.88	647.28
26	97.60	697.06	668.65	660.05	660.05	648.91	648.91	644.20	594.53	579.90	647.28
27	98.50	698.59	668.74	660.12	660.12	649.05	649.05	644.20	594.74	580.10	647.24
28	99.60	700.46	668.85	660.21	660.21	649.22	649.22	644.20	595.00	580.60	647.19
29	99.80	700.80	668.87	660.22	660.22	649.25	649.25	644.20	595.10	580.69	647.18
30	100.80	700.82	668.97	660.30	660.30	649.40	649.40	644.20	595.58	581.15	647.14
31	103.40	700.87	669.24	661.18	661.18	649.80	649.80	644.20	596.85	582.33	647.02
32	105.30	700.90	669.43	661.82	661.82	650.27	650.27	644.20	597.78	583.20	646.94
33	108.10	705.46	669.71	662.77	662.77	650.98	650.98	644.20	599.14	584.48	646.81
34	108.20	705.62	669.72	662.81	662.81	651.00	651.00	646.20	599.19	584.52	646.81
35	109.90	708.39	669.89	663.38	663.38	651.43	651.43	646.20	600.02	585.30	646.73
36	111.00	708.42	670.00	663.75	663.75	651.70	651.70	646.20	600.55	585.80	646.69
37	111.10	708.42	676.00	663.79	663.79	651.74	651.74	646.20	600.60	585.84	646.68
38	113.50	708.49	676.00	664.60	664.60	652.73	652.73	646.20	601.77	586.94	646.58
39	118.60	708.64	676.00	670.24	670.24	654.83	654.83	646.20	604.25	589.26	646.35
40	118.70	708.64	676.00	670.36	670.36	654.87	654.87	652.00	604.30	589.31	646.34
41	123.80	708.79	676.00	676.00	676.00	656.98	656.98	652.00	606.79	591.63	646.12
42	123.90	708.79	681.00	681.00	681.00	657.02	657.02	652.00	606.84	591.68	646.11
43	124.10	708.80	681.02	681.01	681.01	657.10	657.10	652.00	606.93	591.77	646.11
44	125.70	708.84	681.14	681.13	681.13	658.39	658.39	652.00	607.71	592.50	646.03
45	126.70	708.87	681.22	681.20	681.20	659.19	659.19	652.00	608.20	593.25	645.99
46	127.60	708.90	681.29	681.26	681.26	659.92	659.92	652.00	608.85	593.93	645.95
47	127.70	708.90	681.30	681.27	681.27	660.00	660.00	660.00	608.93	594.00	645.95
48	127.80	708.75	681.30	681.27	681.27	667.00	660.04	660.04	609.00	594.08	645.94
49	133.10	701.05	681.72	681.65	681.65	667.00	662.30	662.30	612.85	598.05	645.71
50	133.20	700.90	681.73	681.65	681.65	671.10	662.35	662.35	612.92	598.13	645.70

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]

Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic) Yw
51	136.70	700.84	682.00	681.90	681.90	671.10	663.84	663.84	615.46	600.76	645.55
52	139.00	700.80	684.09	684.06	684.06	671.10	664.82	664.82	617.13	602.48	645.44
53	139.10	700.65	684.18	684.15	684.15	671.10	664.86	664.86	617.20	602.56	645.44
54	140.00	699.25	685.00	685.00	685.00	685.00	665.25	665.25	617.85	603.23	645.40
55	142.00	696.16	685.86	685.86	685.86	685.86	666.10	666.10	619.31	604.74	645.31
56	144.30	692.60	686.84	686.84	686.84	686.84	667.56	667.56	620.97	606.46	645.21
57	145.00	692.60	687.14	687.14	687.14	687.14	668.00	668.00	621.48	606.99	645.18
58	149.90	692.60	689.24	689.24	689.24	689.24	670.69	670.69	625.04	610.67	644.96
59	150.40	692.20	689.46	689.46	689.46	689.46	670.97	670.97	625.40	611.04	644.94
60	160.30	698.17	693.70	693.70	693.70	693.70	676.42	676.42	632.59	618.47	644.50
61	165.00	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	644.29
62	180.60	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER (continues)

Factor of safety on resistance to pullout on either end of reinforcement, $F_s\text{-po} = 1.10$

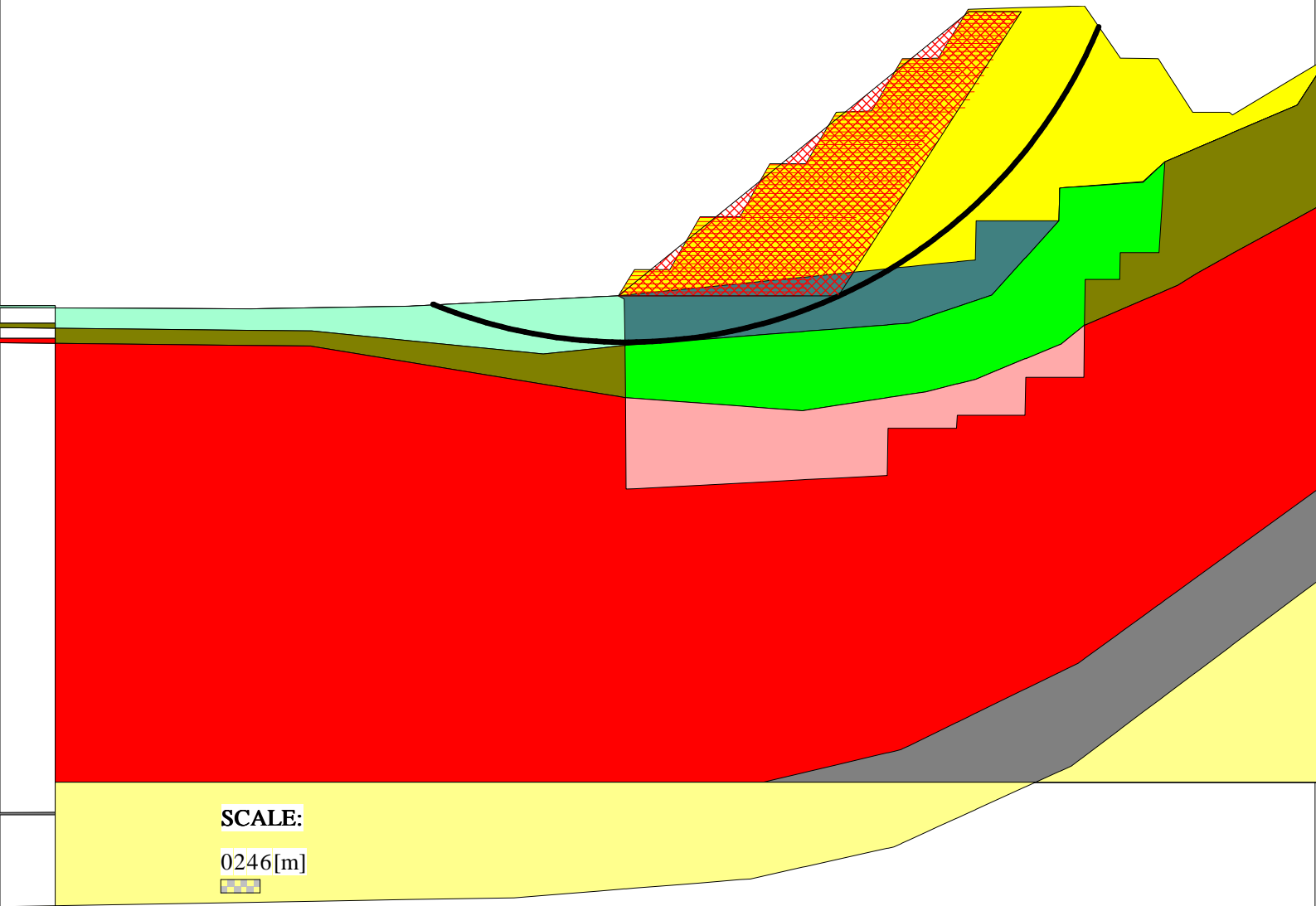
Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
36	Geogriglia 1	21.92	16.00	0.00	0.18	15.82	39.67	39.67
37	Geogriglia 1	22.53	16.00	0.00	0.19	15.81	39.67	39.67
38	Geogriglia 1	23.15	16.00	0.00	0.20	15.80	39.67	39.67
39	Geogriglia 1	23.76	16.00	0.00	0.21	15.79	39.67	39.67
40	Geogriglia 1	24.49	16.00	0.00	0.22	15.78	39.67	39.67
41	Geogriglia 1	25.10	16.00	0.00	0.23	15.77	39.67	39.67
42	Geogriglia 1	25.72	16.00	0.00	0.25	15.75	39.67	39.67
43	Geogriglia 1	26.33	16.00	0.00	0.26	15.74	39.67	39.67
44	Geogriglia 1	26.95	16.00	0.00	0.28	15.72	39.67	39.67
45	Geogriglia 1	27.56	16.00	0.00	0.30	15.70	39.67	39.67
46	Geogriglia 1	28.17	16.00	0.00	0.22	15.78	39.67	39.67
47	Geogriglia 1	28.79	14.00	0.00	0.19	13.81	39.67	39.67
48	Geogriglia 1	29.40	10.00	0.00	0.35	9.65	39.67	39.67
49	Geogriglia 1	30.02	14.00	0.00	0.19	13.81	39.67	39.67
50	Geogriglia 1	30.64	10.00	0.00	0.35	9.65	39.67	39.67
51	Geogriglia 1	31.25	14.00	0.00	0.21	13.79	39.67	39.67
52	Geogriglia 1	31.87	10.00	0.00	0.36	9.64	39.67	39.67
53	Geogriglia 1	32.48	14.00	0.00	0.23	13.77	39.67	39.67
54	Geogriglia 1	33.10	10.00	0.00	0.36	9.64	39.67	39.67
55	Geogriglia 1	33.71	14.00	0.00	0.26	13.74	39.67	39.67
56	Geogriglia 1	34.33	10.00	0.00	0.36	9.64	39.67	39.67
57	Geogriglia 1	34.94	14.00	0.00	0.29	13.71	39.67	39.67
58	Geogriglia 1	35.56	10.00	0.00	0.36	9.64	39.67	39.67
59	Geogriglia 1	36.17	14.00	0.00	0.33	13.67	39.67	39.67
60	Geogriglia 1	36.79	8.00	0.00	0.36	7.64	39.67	39.67
61	Geogriglia 1	37.41	8.00	0.00	0.40	7.60	39.67	39.67
62	Geogriglia 1	38.02	8.00	0.00	0.43	7.57	39.67	39.67
63	Geogriglia 1	38.64	8.00	0.00	0.48	7.52	39.67	39.67
64	Geogriglia 1	39.25	8.00	0.00	0.54	7.46	39.67	39.67
65	Geogriglia 1	39.87	8.00	0.00	0.62	7.38	39.67	39.67
66	Geogriglia 1	40.48	8.00	0.00	0.73	7.27	39.67	39.67
67	Geogriglia 1	41.10	8.00	0.00	0.88	7.12	39.67	39.67
68	Geogriglia 1	41.71	8.00	0.00	1.10	6.90	39.67	39.67
69	Geogriglia 1	42.33	8.00	0.00	1.48	6.52	39.67	39.67
70	Geogriglia 1	42.94	8.00	0.00	2.28	5.72	39.67	39.67
71	Geogriglia 1	43.56	8.00	0.00	5.42	2.58	39.67	39.67

CRITICAL RESULTS OF ROTATIONAL AND TRANSLATIONAL STABILITY ANALYSES

Rotational (Circular Arc; Bishop) Stability Analysis with slip surfaces excluded from this polygon:

Minimum Factor of Safety = 1.49

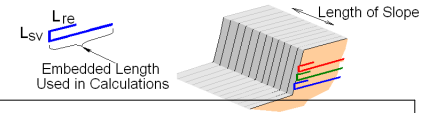
Critical Circle: $X_c = 57.52[m]$, $Y_c = 735.76[m]$, $R = 78.37[m]$. (Number of slices used = 82)



SCALE:

0246[m]





REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES

Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]	
1	1	Geogriglia 1	0.00	28.00	1.00	56.30	664.50	0.61	1.50	
2	1	Geogriglia 1	0.61	28.00	1.00	56.68	665.11	0.62	1.50	
3	1	Geogriglia 1	1.23	28.00	1.00	57.07	665.73	0.61	1.50	
4	1	Geogriglia 1	1.84	28.00	1.00	57.45	666.34	0.62	1.50	
5	1	Geogriglia 1	2.46	28.00	1.00	57.84	666.96	0.61	1.50	
6	1	Geogriglia 1	3.07	28.00	1.00	58.22	667.57	0.62	1.50	
7	1	Geogriglia 1	3.69	28.00	1.00	58.61	668.19	0.61	1.50	
8	1	Geogriglia 1	4.30	24.00	1.00	64.37	668.80	0.62	1.50	
9	1	Geogriglia 1	4.92	28.00	1.00	64.72	669.42	0.61	1.50	
10	1	Geogriglia 1	5.53	24.00	1.00	65.07	670.03	0.62	1.50	
11	1	Geogriglia 1	6.15	28.00	1.00	65.42	670.65	0.61	1.50	
12	1	Geogriglia 1	6.76	24.00	1.00	65.77	671.26	0.62	1.50	
13	1	Geogriglia 1	7.38	28.00	1.00	66.12	671.88	0.91	1.50	
14	1	Geogriglia 1	8.29	24.00	1.00	66.64	672.79	0.61	1.50	
15	1	Geogriglia 1	8.90	28.00	1.00	66.98	673.40	0.62	1.50	
16	1	Geogriglia 1	9.52	24.00	1.00	67.33	674.02	0.61	1.50	
17	1	Geogriglia 1	10.13	28.00	1.00	67.68	674.63	0.62	1.50	
18	1	Geogriglia 1	10.75	24.00	1.00	68.03	675.25	0.61	1.50	
19	1	Geogriglia 1	11.36	28.00	1.00	68.38	675.86	0.62	1.50	
20	1	Geogriglia 1	11.98	24.00	1.00	68.73	676.48	0.61	1.50	
21	1	Geogriglia 1	12.59	22.00	1.00	75.18	677.09	0.62	1.50	
22	1	Geogriglia 1	13.21	22.00	1.00	75.53	677.71	0.61	1.50	
23	1	Geogriglia 1	13.82	22.00	1.00	75.88	678.32	0.62	1.50	
24	1	Geogriglia 1	14.44	22.00	1.00	76.23	678.94	0.61	1.50	
25	1	Geogriglia 1	15.05	22.00	1.00	76.58	679.55	0.62	1.50	
26	1	Geogriglia 1	15.67	22.00	1.00	76.93	680.17	0.72	1.50	
27	1	Geogriglia 1	16.39	22.00	1.00	77.34	680.89	0.61	1.50	
28	1	Geogriglia 1	17.00	22.00	1.00	77.68	681.50	0.62	1.50	
29	1	Geogriglia 1	17.62	22.00	1.00	78.03	682.12	100.03	0.61	1.50
30	1	Geogriglia 1	18.23	22.00	1.00	78.38	682.73	100.38	0.62	1.50
31	1	Geogriglia 1	18.85	22.00	1.00	78.73	683.35	100.73	0.61	1.50
32	1	Geogriglia 1	19.46	22.00	1.00	79.08	683.96	101.08	0.61	1.50
33	1	Geogriglia 1	20.07	22.00	1.00	79.43	684.57	101.43	0.62	1.50
34	1	Geogriglia 1	20.69	16.00	1.00	85.29	685.19	101.29	0.61	1.50
35	1	Geogriglia 1	21.30	16.00	1.00	85.65	685.80	101.65	0.62	1.50
36	1	Geogriglia 1	21.92	16.00	1.00	86.02	686.42	102.02	0.61	1.50
37	1	Geogriglia 1	22.53	16.00	1.00	86.39	687.03	102.39	0.62	1.50
38	1	Geogriglia 1	23.15	16.00	1.00	86.76	687.65	102.76	0.61	1.50
39	1	Geogriglia 1	23.76	16.00	1.00	87.12	688.26	103.12	0.73	1.50
40	1	Geogriglia 1	24.49	16.00	1.00	87.55	688.99	103.55	0.61	1.50
41	1	Geogriglia 1	25.10	16.00	1.00	87.92	689.60	103.92	0.62	1.50
42	1	Geogriglia 1	25.72	16.00	1.00	88.28	690.22	104.28	0.61	1.50
43	1	Geogriglia 1	26.33	16.00	1.00	88.65	690.83	104.65	0.62	1.50
44	1	Geogriglia 1	26.95	16.00	1.00	89.02	691.45	105.02	0.61	1.50
45	1	Geogriglia 1	27.56	16.00	1.00	89.38	692.06	105.38	0.61	1.50
46	1	Geogriglia 1	28.17	16.00	1.00	91.59	692.67	107.59	0.62	1.50
47	1	Geogriglia 1	28.79	14.00	1.00	95.39	693.29	109.39	0.61	1.50
48	1	Geogriglia 1	29.40	10.00	1.00	95.75	693.90	105.75	0.62	1.50
49	1	Geogriglia 1	30.02	14.00	1.00	96.11	694.52	110.11	0.62	1.50
50	1	Geogriglia 1	30.64	10.00	1.00	96.47	695.14	106.47	0.61	1.50

* Vertical distance between layers.

Sezione 29 - A2M2 sismica - jet grouting

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PROJECT IDENTIFICATION

Title: Sezione 29 - A2M2 sismica - jet grouting
Project Number: -
Client:
Designer: Ingegneria Geotecnica srl

Description:

Company's information:

Name: IG - Ingegneria Geotecnica srl
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Torino, 10129
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Original file path and name:

Original date and time of creating this file: Thu Apr 11 20:25:01 2013

PROGRAM MODE: Analysis of a General Slope using GEOSYNTHETIC as reinforcing material.

INPUT DATA (EXCLUDING REINFORCEMENT LAYOUT)

SOIL DATA

Soil Layer #:	Unit weight, γ [kN/m ³]	Internal angle of friction, ϕ [deg.] RFTan=1.25		Cohesion, c [kPa] RFCoh=1.25	
....1.....Rilevato Marino	18.0	36.0	30.2	0.0	0.0
....2.....Riporto jet	18.0	40.0	33.9	50.0	40.0
....3.....Riporto persistente	18.0	30.0	24.8	0.0	0.0
....4.....Unità 1 jet	20.0	40.0	33.9	150.0	120.0
....5.....Unità 1	20.0	35.0	29.3	20.0	16.0
....6.....Unità 2 jet	20.0	40.0	33.9	100.0	80.0
....7.....Unità 2	20.0	32.0	26.6	20.0	16.0
....8.....Bed rock alterato	27.0	40.0	33.9	250.0	200.0
....9.....Bed rock	27.0	40.0	33.9	500.0	400.0

REINFORCEMENT

Reinforcement Type #	Geosynthetic Designated Name	Ultimate Strength, Tult [kN/m]	Reduction Factor for Installation Damage, RFid	Reduction Factor for Durability, RFd	Reduction Factor for Creep, RFC	Additional Reduction Factor, RFa	Coverage Ratio, Rc
1	Geogriglia 1	150.00	1.10	1.10	1.00	1.25	1.00

Interaction Parameters		== Direct Sliding ==		==== Pullout ====	
Type #	Geosynthetic Designated Name	Cds-phi	Cds-c	Ci	Alpha
1	Geogriglia 1	0.90	0.90	0.90	0.90

Relative Orientation of Reinforcement Force, ROR = 0.00. Assigned Factor of Safety to resist pullout, Fs-po = 1.10
 Design method for Global Stability: Comprehensive Bishop.

WATER

Unit weight of water = 9.81 [kN/m³]
 Water pressure is defined by phreatic surface in Effective Stress Analysis.

SEISMICITY

Horizontal peak ground acceleration coefficient, Ao = 0.116
 Design horizontal seismic coefficient, kh = Am = 0.5 x Ao = 0.058 & design vertical seismic coefficient, kv (up) = -0.500 x kh = -0.029

DRAWING OF SPECIFIED GEOMETRY - COMPLEX - Quick Input

- Problem geometry is defined along sections selected by user at x,y coordinates.
- X1,Y1 represents the coordinates of soil surface. X2,Y2 represent the coordinates of the end of soil layer 1 and start of soil layer 2, and so on.
- Xw,Yw represents the coordinates of phreatic surface.

GEOMETRY

Soil profile contains 9 layers (see details in next page)

WATER GEOMETRY

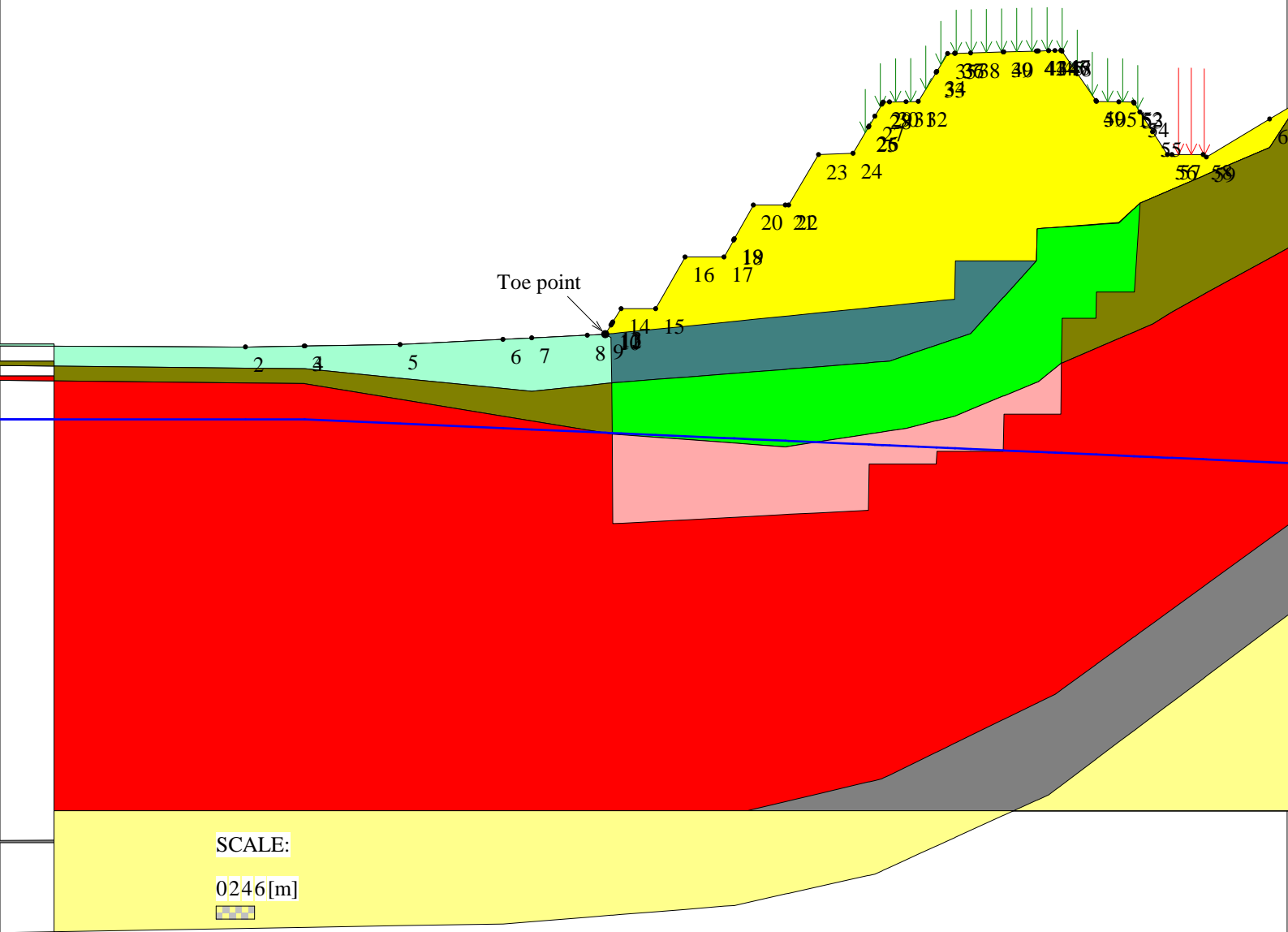
Phreatic line was specified.

UNIFORM SURCHARGE

Load Q1 = 10.00 [kPa] inclined from vertical at 0.00 degrees, starts at X1s = 97.00 and ends at X1e = 141.00 [m].
 Load Q2 = 20.00 [kPa] inclined from vertical at 0.00 degrees, starts at X2s = 146.00 and ends at X2e = 152.00 [m].
 Surcharge load, Q3.....None

STRIP LOAD

.....None.....



TABULATED DETAILS OF QUICK SPECIFIED GEOMETRY

Soil profile contains 9 layers. Coordinates in [m.]
 Water was described by phreatic line.

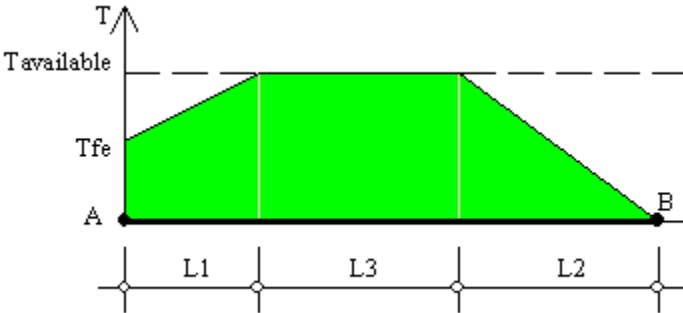
	#	Xi	Yi		#	Xi	Yi
Top of Layer 1	1	-100.00	663.00		51	44.80	655.60
	2	0.00	662.50		52	57.30	656.90
	3	24.20	662.90		53	100.80	660.30
	4	56.30	664.50		54	113.50	664.60
	5	58.80	668.50		55	123.80	676.00
	6	64.20	668.50		56	123.90	681.00
	7	68.80	676.60		57	136.70	681.90
	8	74.90	676.60		58	140.00	685.00
	9	79.50	684.70		59	160.30	693.70
	10	85.00	684.70		60	165.00	701.00
	11	89.70	692.60	Top of Layer 5	61	-100.00	660.30
	12	95.10	692.80		62	9.30	659.10
	13	99.80	700.80		63	44.80	655.60
	14	105.30	700.90		64	57.30	656.90
	15	109.90	708.39		65	57.40	648.90
	16	127.70	708.90		66	84.50	646.90
	17	133.20	700.90		67	103.40	649.80
	18	139.00	700.80		68	111.00	651.70
	19	144.30	692.60		69	124.10	657.10
	20	149.90	692.60		70	127.70	660.00
	21	150.40	692.20		71	127.80	667.00
	22	165.00	701.00		72	133.10	667.00
Top of Layer 2	23	-100.00	663.00		73	133.20	671.10
	24	0.00	662.50		74	139.10	671.10
	25	24.20	662.90		75	140.00	685.00
	26	56.30	664.50		76	160.30	693.70
	27	111.00	670.00		77	165.00	701.00
	28	111.10	676.00	Top of Layer 6	78	-100.00	658.00
	29	123.80	676.00		79	9.20	656.80
	30	123.90	681.00		80	57.40	648.90
	31	136.70	682.00		81	84.50	646.90
	32	140.00	685.00		82	103.40	649.80
	33	160.30	693.70		83	111.00	651.70
	34	165.00	701.00		84	124.10	657.10
Top of Layer 3	35	-100.00	663.00		85	127.70	660.00
	36	0.00	662.50		86	142.00	666.10
	37	24.20	662.90		87	145.00	668.00
	38	56.30	664.50		88	165.00	679.00
	39	57.20	664.00	Top of Layer 7	89	-100.00	658.00
	40	57.30	656.90		90	9.20	656.80
	41	100.80	660.30		91	57.40	648.90
	42	113.50	664.60		92	57.50	634.90
	43	123.80	676.00		93	97.50	637.00
	44	123.90	681.00		94	97.60	644.20
	45	136.70	681.90		95	108.10	644.20
	46	140.00	685.00		96	108.20	646.20
	47	160.30	693.70		97	118.60	646.20
	48	165.00	701.00		98	118.70	652.00
Top of Layer 4	49	-100.00	660.30		99	127.60	652.00
	50	9.30	659.10		100	127.70	660.00
					101	142.00	666.10
					102	145.00	668.00
					103	165.00	679.00
				Top of Layer 8	104	-100.00	585.00
					105	53.50	585.90
					106	76.40	589.50
					107	99.60	595.00
					108	126.70	608.20
					109	165.00	630.00
				Top of Layer 9	110	-100.00	630.00
					111	70.00	572.00
					112	76.50	575.20
					113	98.50	580.10
					114	125.70	592.50
					115	165.00	622.00
				Top of Phreatic Line	117	-100.00	651.20
					118	9.20	651.20
					119	180.60	643.60

TABULATED DETAILS OF SPECIFIED GEOMETRY (Continues)

Soil profile contains 9 layers. Coordinates in [m.]
Water was described by phreatic line. Y values are tabulated in the right most column.

#	X	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	(phreatic)
											Yw
51	136.70	700.84	682.00	681.90	681.90	671.10	663.84	663.84	615.46	600.76	645.55
52	139.00	700.80	684.09	684.06	684.06	671.10	664.82	664.82	617.13	602.48	645.44
53	139.10	700.65	684.18	684.15	684.15	671.10	664.86	664.86	617.20	602.56	645.44
54	140.00	699.25	685.00	685.00	685.00	685.00	665.25	665.25	617.85	603.23	645.40
55	142.00	696.16	685.86	685.86	685.86	685.86	666.10	666.10	619.31	604.74	645.31
56	144.30	692.60	686.84	686.84	686.84	686.84	667.56	667.56	620.97	606.46	645.21
57	145.00	692.60	687.14	687.14	687.14	687.14	668.00	668.00	621.48	606.99	645.18
58	149.90	692.60	689.24	689.24	689.24	689.24	670.69	670.69	625.04	610.67	644.96
59	150.40	692.20	689.46	689.46	689.46	689.46	670.97	670.97	625.40	611.04	644.94
60	160.30	698.17	693.70	693.70	693.70	693.70	676.42	676.42	632.59	618.47	644.50
61	165.00	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	644.29
62	180.60	701.00	701.00	701.00	701.00	701.00	679.00	679.00	636.00	622.00	643.60

DISTRIBUTION OF AVAILABLE STRENGTH ALONG EACH REINFORCEMENT LAYER



A = Front-end of reinforcement (at face of slope)
 B = Rear-end of reinforcement
 AB = L1 + L2 + L3 = Embedded length of reinforcement

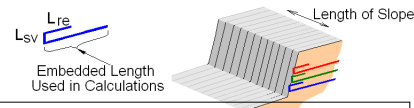
Tavailable = Long-term strength of reinforcement
 Tfe = Available front-end strength (e.g., connection to facing)

L1 = Front-end 'pullout' length
 L2 = Rear-end pullout length
 Tavailable prevails along L3

Factor of safety on resistance to pullout on either end of reinforcement, Fs-po = 1.10

Reinforcement Layer #	Designated Name	Height Relative to Toe [m]	L [m]	L1 [m]	L2 [m]	L3 [m]	Tfe [kN/m]	Tavailable [kN/m]
1	Geogriglia 1	0.00	28.00	0.00	0.25	27.75	99.17	99.17
2	Geogriglia 1	0.61	28.00	0.00	0.25	27.75	99.17	99.17
3	Geogriglia 1	1.23	28.00	0.00	0.26	27.74	99.17	99.17
4	Geogriglia 1	1.84	28.00	0.00	0.26	27.74	99.17	99.17
5	Geogriglia 1	2.46	28.00	0.00	0.26	27.74	99.17	99.17
6	Geogriglia 1	3.07	28.00	0.00	0.36	27.64	99.17	99.17
7	Geogriglia 1	3.69	28.00	0.00	0.36	27.64	99.17	99.17
8	Geogriglia 1	4.30	24.00	0.00	0.32	23.68	99.17	99.17
9	Geogriglia 1	4.92	28.00	0.00	0.29	27.71	99.17	99.17
10	Geogriglia 1	5.53	24.00	0.00	0.32	23.68	99.17	99.17
11	Geogriglia 1	6.15	28.00	0.00	0.31	27.69	99.17	99.17
12	Geogriglia 1	6.76	24.00	0.00	0.32	23.68	99.17	99.17
13	Geogriglia 1	7.38	28.00	0.00	0.32	27.68	99.17	99.17
14	Geogriglia 1	8.29	24.00	0.00	0.34	23.66	99.17	99.17
15	Geogriglia 1	8.90	28.00	0.00	0.35	27.65	99.17	99.17
16	Geogriglia 1	9.52	24.00	0.00	0.36	23.64	99.17	99.17
17	Geogriglia 1	10.13	28.00	0.00	0.36	27.64	99.17	99.17
18	Geogriglia 1	10.75	24.00	0.00	0.39	23.61	99.17	99.17
19	Geogriglia 1	11.36	28.00	0.00	0.36	27.64	99.17	99.17
20	Geogriglia 1	11.98	24.00	0.00	0.41	23.59	99.17	99.17
21	Geogriglia 1	12.59	22.00	0.00	0.35	21.65	99.17	99.17
22	Geogriglia 1	13.21	22.00	0.00	0.36	21.64	99.17	99.17
23	Geogriglia 1	13.82	22.00	0.00	0.36	21.64	99.17	99.17
24	Geogriglia 1	14.44	22.00	0.00	0.36	21.64	99.17	99.17
25	Geogriglia 1	15.05	22.00	0.00	0.36	21.64	99.17	99.17
26	Geogriglia 1	15.67	22.00	0.00	0.36	21.64	99.17	99.17
27	Geogriglia 1	16.39	22.00	0.00	0.36	21.64	99.17	99.17
28	Geogriglia 1	17.00	22.00	0.00	0.36	21.64	99.17	99.17
29	Geogriglia 1	17.62	22.00	0.00	0.36	21.64	99.17	99.17
30	Geogriglia 1	18.23	22.00	0.00	0.37	21.63	99.17	99.17
31	Geogriglia 1	18.85	22.00	0.00	0.38	21.62	99.17	99.17
32	Geogriglia 1	19.46	22.00	0.00	0.40	21.60	99.17	99.17
33	Geogriglia 1	20.07	22.00	0.00	0.41	21.59	99.17	99.17
34	Geogriglia 1	20.69	16.00	0.00	0.43	15.57	99.17	99.17
35	Geogriglia 1	21.30	16.00	0.00	0.45	15.55	99.17	99.17

REINFORCEMENT LAYOUT: TABULATED DATA & QUANTITIES



Layer #	Reinf. Type #	Geosynthetic Designated Name	Height Relative to Toe [m]	Embedded Length [m]	Covergae Ratio, Rc	(X, Y) front [m]	(X, Y) rear [m]	Lsv * [m]	Lre [m]		
51	1	Geogriglia 1	31.25	14.00	1.00	96.83	695.75	110.83	695.75	0.62	1.50
52	1	Geogriglia 1	31.87	10.00	1.00	97.20	696.37	107.20	696.37	0.61	1.50
53	1	Geogriglia 1	32.48	14.00	1.00	97.56	696.98	111.56	696.98	0.62	1.50
54	1	Geogriglia 1	33.10	10.00	1.00	97.92	697.60	107.92	697.60	0.61	1.50
55	1	Geogriglia 1	33.71	14.00	1.00	98.28	698.21	112.28	698.21	0.62	1.50
56	1	Geogriglia 1	34.33	10.00	1.00	98.64	698.83	108.64	698.83	0.61	1.50
57	1	Geogriglia 1	34.94	14.00	1.00	99.00	699.44	113.00	699.44	0.62	1.50
58	1	Geogriglia 1	35.56	10.00	1.00	99.37	700.06	109.37	700.06	0.61	1.50
59	1	Geogriglia 1	36.17	14.00	1.00	99.72	700.67	113.72	700.67	0.62	1.50
60	1	Geogriglia 1	36.79	8.00	1.00	105.54	701.29	113.54	701.29	0.62	1.50
61	1	Geogriglia 1	37.41	8.00	1.00	105.92	701.91	113.92	701.91	0.61	1.50
62	1	Geogriglia 1	38.02	8.00	1.00	106.29	702.52	114.29	702.52	0.62	1.50
63	1	Geogriglia 1	38.64	8.00	1.00	106.68	703.14	114.68	703.14	0.61	1.50
64	1	Geogriglia 1	39.25	8.00	1.00	107.05	703.75	115.05	703.75	0.62	1.50
65	1	Geogriglia 1	39.87	8.00	1.00	107.43	704.37	115.43	704.37	0.61	1.50
66	1	Geogriglia 1	40.48	8.00	1.00	107.81	704.98	115.81	704.98	0.62	1.50
67	1	Geogriglia 1	41.10	8.00	1.00	108.19	705.60	116.19	705.60	0.61	1.50
68	1	Geogriglia 1	41.71	8.00	1.00	108.56	706.21	116.56	706.21	0.62	1.50
69	1	Geogriglia 1	42.33	8.00	1.00	108.94	706.83	116.94	706.83	0.61	1.50
70	1	Geogriglia 1	42.94	8.00	1.00	109.32	707.44	117.32	707.44	0.62	1.50
71	1	Geogriglia 1	43.56	8.00	1.00	109.70	708.06	117.70	708.06	0.62	1.50

* Vertical distance between layers.

QUANTITIES

Reinf. Type #	Designated Name	Coverage Ratio	Area of reinforcement [m ²] / length of slope [m] (including Lsv & Lre)
1	Geogriglia 1	1.00	1430.68

LTF01ST.OUT
** PCSTABL5M **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer's Method of Slices

Run Date:
Time of Run:
Run By:
Input Data Filename: C:LTF01ST.SI
Output Filename: C:LTF01ST.OUT
Unit: SI
Plotted Output Filename: C:LTF01ST.PLT

PROBLEM DESCRIPTION Deposito marino - Zona di monte
Verifiche in condizioni statiche

BOUNDARY COORDINATES

16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (m)	Y-Left (m)	X-Right (m)	Y-Right (m)	Soil Type Below Bnd
1	.00	36.63	16.00	36.63	1
2	16.00	36.63	16.53	36.63	2
3	16.53	36.63	27.05	42.61	2
4	27.05	42.61	30.05	42.61	2
5	30.05	42.61	39.79	49.10	2
6	39.79	49.10	66.38	47.96	2
7	66.38	47.96	72.94	40.00	2
8	72.94	40.00	79.69	39.90	2
9	79.69	39.90	84.96	31.88	2
10	84.96	31.88	90.00	31.80	2
11	90.00	31.80	94.70	23.80	2
12	94.70	23.80	99.75	23.70	2
13	99.75	23.70	104.50	15.70	2
14	104.50	15.70	109.50	15.60	2
15	109.50	15.60	115.40	5.70	2
16	115.40	5.70	130.00	5.70	1
17	16.00	36.63	16.10	34.59	1
18	16.10	34.59	30.60	27.07	1
19	30.60	27.07	68.50	12.40	1
20	68.50	12.40	77.90	11.80	1
21	77.90	11.80	84.00	5.90	1
22	84.00	5.90	115.40	5.70	1

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of soil

Soil Type No.	Total Unit wt. (KN/m3)	Saturated Unit wt. (KN/m3)	LTF01ST.OUT Cohesion Intercept (KPa)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (KPa)	Piez. Surface No.
1	20.0	20.0	16.0	29.3	.00	.0	0
2	18.0	18.0	.0	30.2	.00	.0	0

1

BOUNDARY LOAD(S)

2 Load(s) Specified

Load No.	X-Left (m)	X-Right (m)	Intensity (KPa)	Deflection (deg)
1	27.05	30.05	13.0	.0
2	39.79	66.38	13.0	.0

NOTE - Intensity Is Specified As A Uniformly Distributed Force Acting On A Horizontally Projected Surface.

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

100 Surfaces Initiate From Each Of 10 Points Equally Spaced Along The Ground Surface Between X = 16.00 m and X = 18.00 m

Each Surface Terminates Between X = 45.00 m and X = 66.00 m

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 m

11.00 m Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83

LTF01ST.OUT

2	27.22	40.61
3	37.33	44.94
4	45.27	48.87

Circle Center At X = -45.6 ; Y = 223.6 and Radius, 196.9

*** 1.329 ***

Individual data on the 6 slices

Slice No.	width (m)	weight (N)	Water Force		Tie Force		Earthquake Force		Surcharge Load (N)
			Top (N)	Bot (N)	Norm (N)	Tan (N)	Hor (N)	Ver (N)	
1	10.2	57416.0	.0	.0	.0	.0	.0	.0	.0
2	.2	1891.2	.0	.0	.0	.0	.0	.0	673.2
3	2.8	21606.5	.0	.0	.0	.0	.0	.0	11214.3
4	7.3	65964.2	.0	.0	.0	.0	.0	.0	.0
5	2.5	36816.5	.0	.0	.0	.0	.0	.0	.0
6	5.5	44175.5	.0	.0	.0	.0	.0	.0	21699.6

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.11	36.96
2	27.66	40.07
3	37.79	44.37
4	45.64	48.85

Circle Center At X = -3.6 ; Y = 127.0 and Radius, 92.4

*** 1.340 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.07	40.99
3	37.19	45.32
4	45.09	48.87

Circle Center At X = -209.2 ; Y = 605.6 and Radius, 612.1

*** 1.345 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.78	37.34
2	28.15	41.01
3	38.28	45.29
4	45.45	48.86

Circle Center At X = -35.2 ; Y = 203.7 and Radius, 174.6

*** 1.354 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.78	37.34
2	28.47	39.91
3	38.56	44.30
4	45.44	48.86

Circle Center At X = 9.0 ; Y = 97.5 and Radius, 60.8

*** 1.356 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.45	39.91
3	37.61	44.14
4	46.09	48.83

Circle Center At X = -5.0 ; Y = 131.8 and Radius, 97.5

*** 1.356 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.01	41.14
3	37.12	45.47
4	45.03	48.88

Circle Center At X = ***** ; Y = 5486.5 and Radius, 5921.1

*** 1.358 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.36	40.21
3	37.53	44.40
4	46.22	48.82

Circle Center At X = -19.5 ; Y = 167.7 and Radius, 135.8

*** 1.367 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.67	36.71
2	26.91	40.72
3	37.05	44.97
4	45.71	48.85

Circle Center At X = -140.8 ; Y = 454.2 and Radius, 446.2

*** 1.367 ***

Failure Surface Specified By 4 Coordinate Points

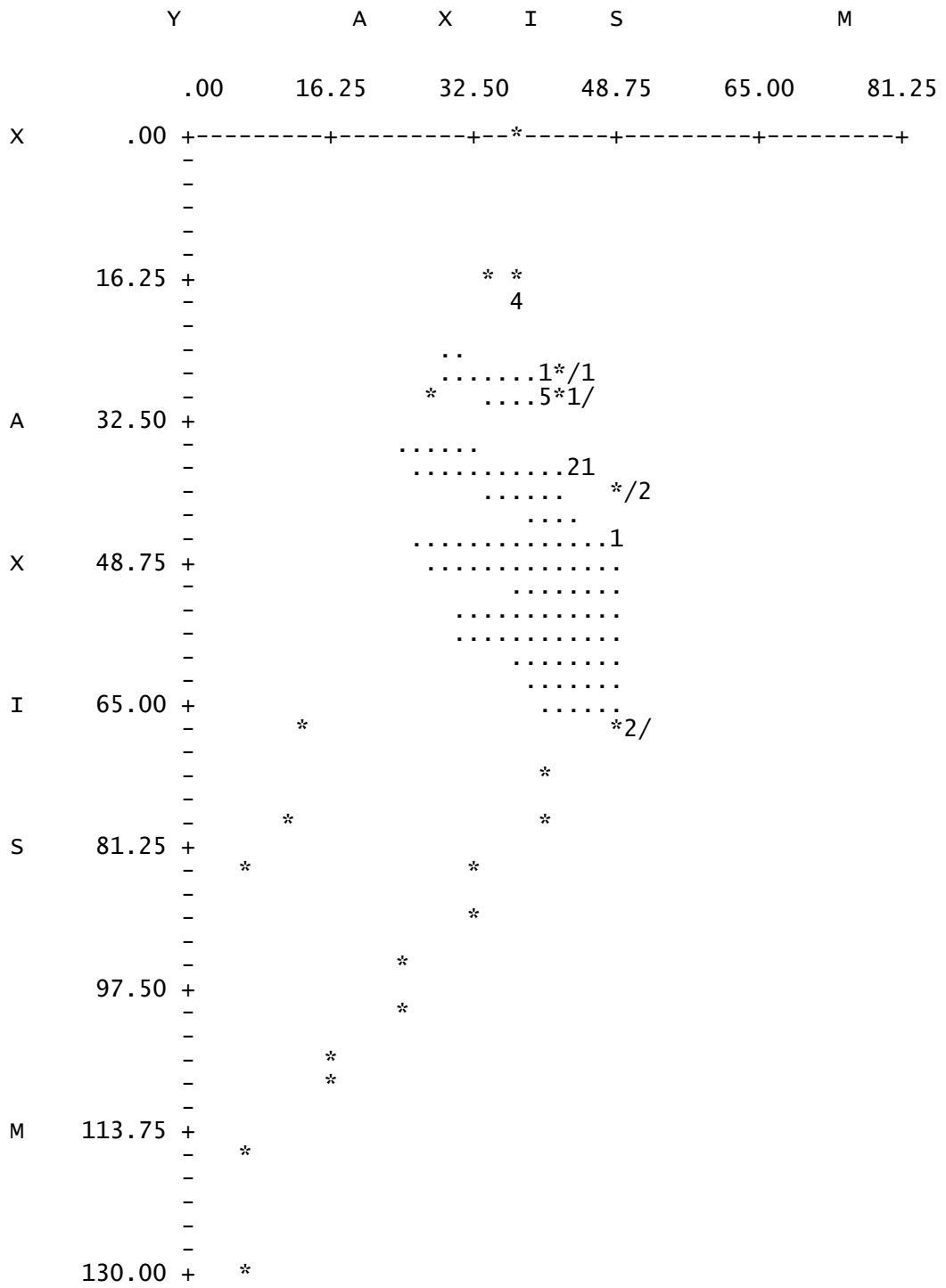
Point No.	X-Surf (m)	Y-Surf (m)
1	17.56	37.21
2	27.69	41.50
3	37.81	45.80
4	45.03	48.88

Circle Center At X = ***** ; Y = 6221.1 and Radius, 6711.7

*** 1.370 ***

1

LTF01ST.OUT



LTF01SIS.OUT
** PCSTABL5M **

by
Purdue University

1

--Slope Stability Analysis--
Simplified Janbu, Simplified Bishop
or Spencer's Method of Slices

Run Date:
Time of Run:
Run By:
Input Data Filename: C:LTF01SIS.SI
Output Filename: C:LTF01SIS.OUT
Unit: SI
Plotted Output Filename: C:LTF01SIS.PLT

PROBLEM DESCRIPTION Deposito marino - Zona di monte
Verifiche in condizioni sismiche

BOUNDARY COORDINATES

16 Top Boundaries
22 Total Boundaries

Boundary No.	X-Left (m)	Y-Left (m)	X-Right (m)	Y-Right (m)	Soil Type Below Bnd
1	.00	36.63	16.00	36.63	1
2	16.00	36.63	16.53	36.63	2
3	16.53	36.63	27.05	42.61	2
4	27.05	42.61	30.05	42.61	2
5	30.05	42.61	39.79	49.10	2
6	39.79	49.10	66.38	47.96	2
7	66.38	47.96	72.94	40.00	2
8	72.94	40.00	79.69	39.90	2
9	79.69	39.90	84.96	31.88	2
10	84.96	31.88	90.00	31.80	2
11	90.00	31.80	94.70	23.80	2
12	94.70	23.80	99.75	23.70	2
13	99.75	23.70	104.50	15.70	2
14	104.50	15.70	109.50	15.60	2
15	109.50	15.60	115.40	5.70	2
16	115.40	5.70	130.00	5.70	1
17	16.00	36.63	16.10	34.59	1
18	16.10	34.59	30.60	27.07	1
19	30.60	27.07	68.50	12.40	1
20	68.50	12.40	77.90	11.80	1
21	77.90	11.80	84.00	5.90	1
22	84.00	5.90	115.40	5.70	1

1

ISOTROPIC SOIL PARAMETERS

2 Type(s) of soil

LTF01SIS.OUT							
Soil Type No.	Total Unit wt. (KN/m3)	Saturated Unit wt. (KN/m3)	Cohesion Intercept (KPa)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (KPa)	Piez. Surface No.
1	20.0	20.0	16.0	29.3	.00	.0	0
2	18.0	18.0	.0	30.2	.00	.0	0

A Horizontal Earthquake Loading Coefficient Of .058 Has Been Assigned

A Vertical Earthquake Loading Coefficient Of .029 Has Been Assigned

Cavitation Pressure = .0 (KPa)

1

A Critical Failure Surface Searching Method, Using A Random Technique For Generating Circular Surfaces, Has Been Specified.

1000 Trial Surfaces Have Been Generated.

100 Surfaces Initiate From Each Of 10 Points Equally Spaced Along The Ground Surface Between X = 16.00 m and X = 18.00 m

Each Surface Terminates Between X = 45.00 m and X = 66.00 m

Unless Further Limitations Were Imposed, The Minimum Elevation At Which A Surface Extends Is Y = .00 m

11.00 m Line Segments Define Each Trial Failure Surface.

1

Following Are Displayed The Ten Most Critical Of The Trial Failure Surfaces Examined. They Are Ordered - Most Critical First.

* * Safety Factors Are Calculated By The Modified Bishop Method * *

Failure surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.22	40.61
3	37.33	44.94
4	45.27	48.87

Circle Center At X = -45.6 ; Y = 223.6 and Radius, 196.9

*** 1.150 ***

Individual data on the 6 slices

Slice No.	width (m)	weight (N)	Water Force		Tie Force		Earthquake Force		Surcharge Load (N)
			Top (N)	Bot (N)	Norm (N)	Tan (N)	Hor (N)	Ver (N)	
1	10.2	57416.0	.0	.0	.0	.0	3330.1	1665.1	.0
2	.2	1891.2	.0	.0	.0	.0	109.7	54.8	.0
3	2.8	21606.5	.0	.0	.0	.0	1253.2	626.6	.0
4	7.3	65964.2	.0	.0	.0	.0	3825.9	1913.0	.0
5	2.5	36816.5	.0	.0	.0	.0	2135.4	1067.7	.0
6	5.5	44175.5	.0	.0	.0	.0	2562.2	1281.1	.0

Failure surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.07	40.99
3	37.19	45.32
4	45.09	48.87

Circle Center At X = -209.2 ; Y = 605.6 and Radius, 612.1

*** 1.155 ***

1

Failure surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.01	41.14
3	37.12	45.47
4	45.03	48.88

Circle Center At X = ***** ; Y = 5486.5 and Radius, 5921.1

*** 1.162 ***

Failure surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.11	36.96
2	27.66	40.07
3	37.79	44.37
4	45.64	48.85

LTF01SIS.OUT

Circle Center At X = -3.6 ; Y = 127.0 and Radius, 92.4

*** 1.169 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.56	37.21
2	27.69	41.50
3	37.81	45.80
4	45.03	48.88

Circle Center At X = ***** ; Y = 6221.1 and Radius, 6711.7

*** 1.171 ***

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	17.78	37.34
2	28.15	41.01
3	38.28	45.29
4	45.45	48.86

Circle Center At X = -35.2 ; Y = 203.7 and Radius, 174.6

*** 1.171 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	16.67	36.71
2	26.91	40.72
3	37.05	44.97
4	45.71	48.85

Circle Center At X = -140.8 ; Y = 454.2 and Radius, 446.2

*** 1.174 ***

Failure Surface Specified By 4 Coordinate Points
Pagina 4

LTF01SIS.OUT

Point No.	X-Surf (m)	Y-Surf (m)
1	17.56	37.21
2	27.70	41.47
3	37.83	45.75
4	45.15	48.87

Circle Center At X = ***** ; Y = 3583.7 and Radius, 3843.7

*** 1.175 ***

1

Failure Surface Specified By 4 Coordinate Points

Point No.	X-Surf (m)	Y-Surf (m)
1	18.00	37.47
2	28.21	41.55
3	38.36	45.81
4	45.32	48.86

Circle Center At X = -213.1 ; Y = 629.7 and Radius, 635.7

*** 1.181 ***

Failure Surface Specified By 4 Coordinate Points

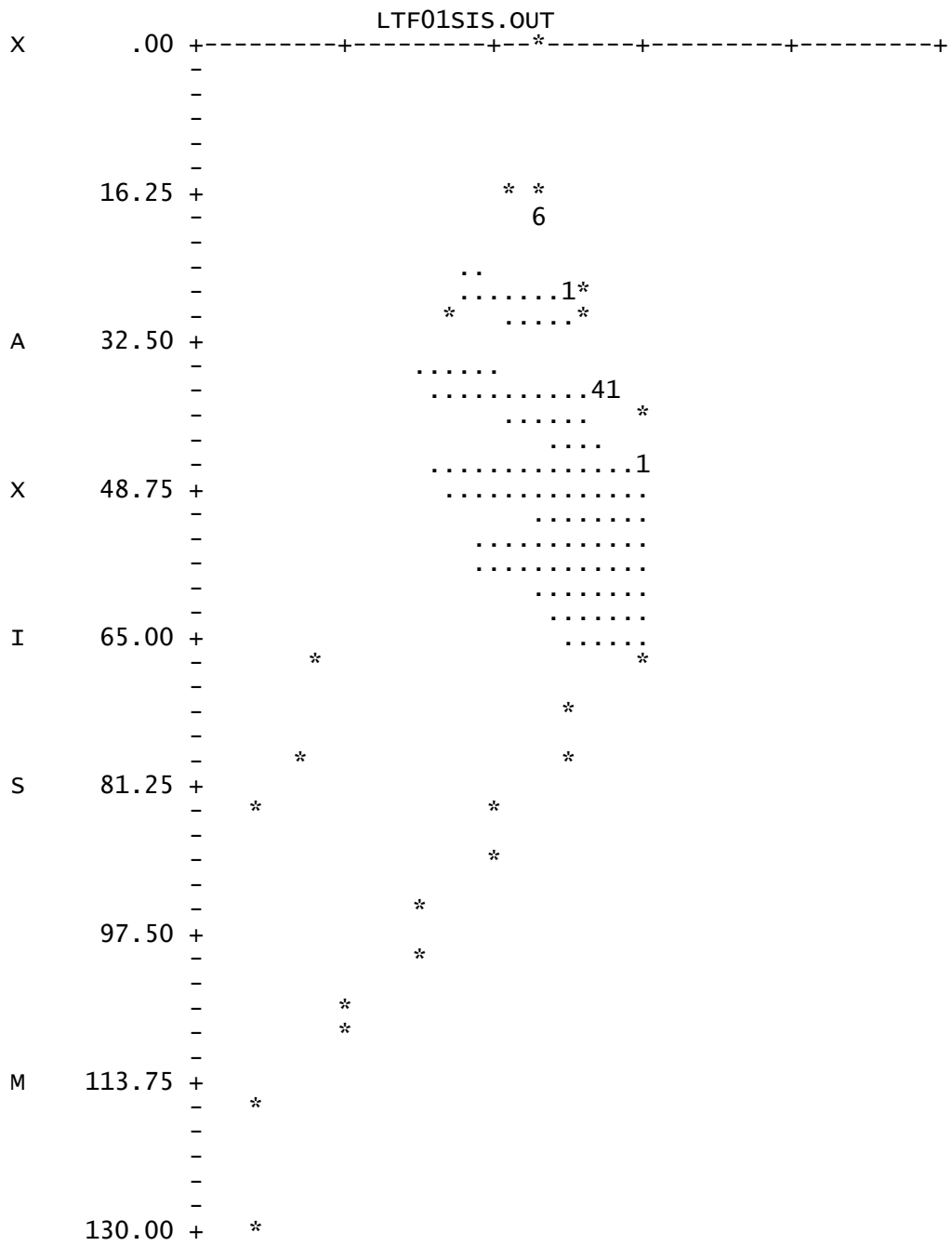
Point No.	X-Surf (m)	Y-Surf (m)
1	16.89	36.83
2	27.45	39.91
3	37.61	44.14
4	46.09	48.83

Circle Center At X = -5.0 ; Y = 131.8 and Radius, 97.5

*** 1.181 ***

1

Y	A	X	I	S	M
.00	16.25	32.50	48.75	65.00	81.25



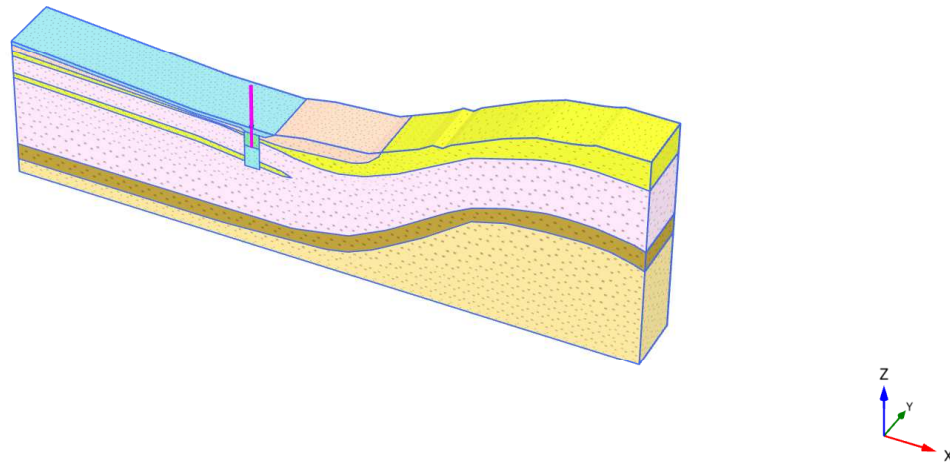
2. VERIFICHE ALLO STATO LIMITE DI ESERCIZIO – TABULATI DEL CODICE DI
CALCOLO PLAXIS

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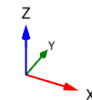
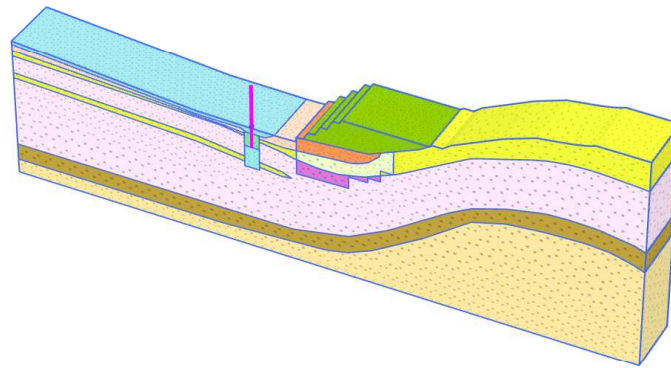
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1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Connectivity plot



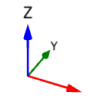
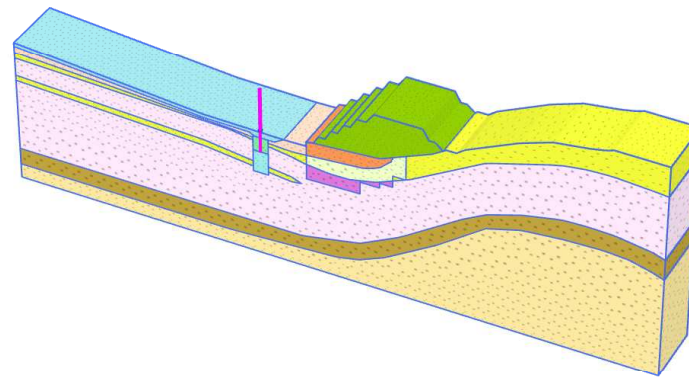
Connectivity plot

1.1.1.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Connectivity plot



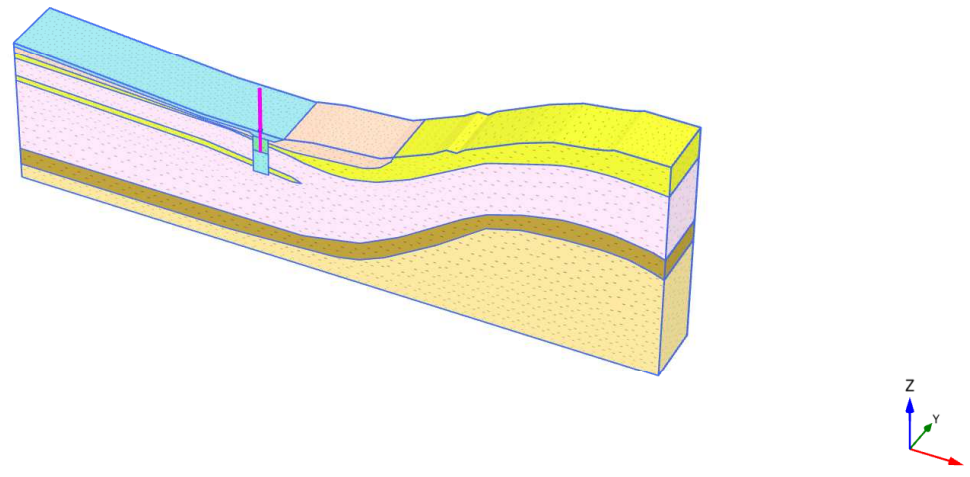
Connectivity plot

1.1.1.3 Calculation results, 5° balza [Phase_20] (20/56), Connectivity plot



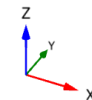
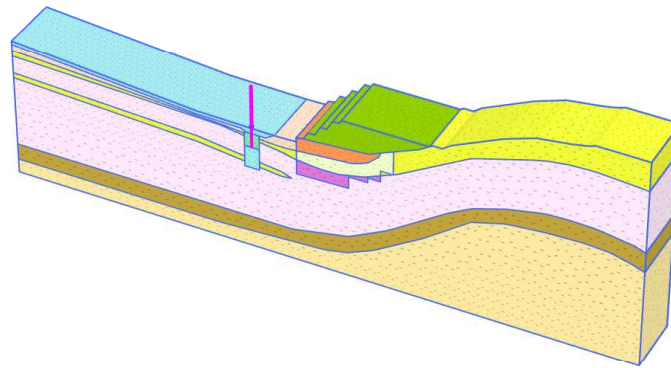
Connectivity plot

1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Materials plot



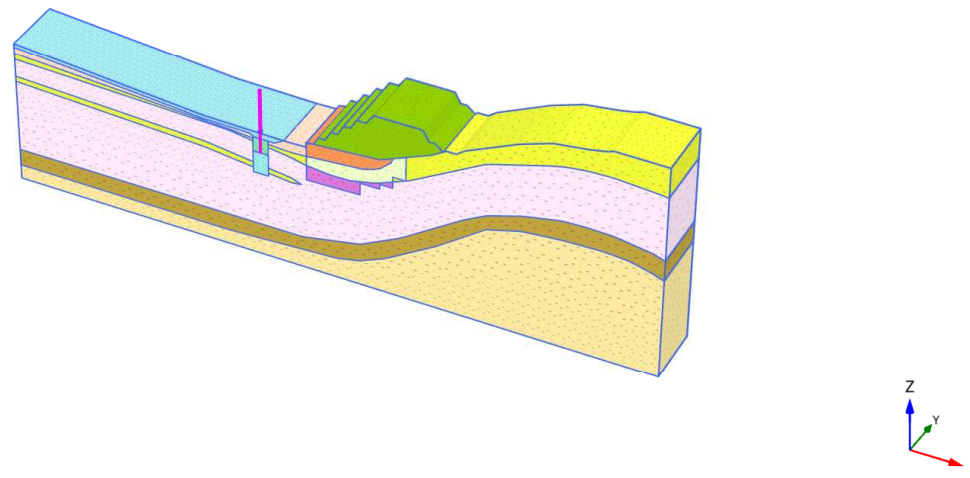
Materials plot

1.1.2.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Materials plot








Materials plot

1.1.2.3 Calculation results, 5° balza [Phase_20] (20/56), Materials plot








Materials plot

1.1.3.1.1.1 Materials - Soil and interfaces - Mohr-Coulomb (1/2)

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
Identification number		1	2	3	4	5
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Y _{sat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E	kN/m ²	50,00E3	269,0E3	150,0E3	338,0E3	20,00E3
ν (nu)		0,3000	0,2000	0,3000	0,2000	0,3000
G	kN/m ²	19,23E3	112,1E3	57,69E3	140,8E3	7692
E _{ced}	kN/m ²	67,31E3	298,9E3	201,9E3	375,6E3	26,92E3
c _{ref}	kN/m ²	20,00	150,0	20,00	100,0	10,00
ϕ (phi)	°	35,00	40,00	32,00	40,00	30,00
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
V _s	m/s	97,07	234,4	168,1	262,7	64,72
V _p	m/s	181,6	382,7	314,6	429,0	121,1
Set to default values		Yes	Yes	Yes	Yes	Yes





Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000	0,000
C_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000	0,000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes	Yes
$K_{0,x}$		0,4264	0,3572	0,4701	0,3572	0,5000
$K_{0,y}$		0,4264	0,3572	0,4701	0,3572	0,5000
k_x	m/day	0,000	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.1.1.2 Materials - Soil and interfaces - Mohr-Coulomb (2/2)

Identification		Rc_Rilevato	JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato	Rm_Riporto costituito dal marino
Identification number		6	7	8	9	10
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	18,00	18,00	27,00	27,00	18,00
Y _{sat}	kN/m ³	18,00	18,00	27,00	27,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E	kN/m ²	10,00E3	249,0E3	300,0E3	250,0E3	10,00E3
ν (nu)		0,3000	0,2000	0,2000	0,2000	0,3000
G	kN/m ²	3846	103,8E3	125,0E3	104,2E3	3846
E _{ced}	kN/m ²	13,46E3	276,7E3	333,3E3	277,8E3	13,46E3
c _{ref}	kN/m ²	10,00	50,00	500,0	250,0	0,000
φ (phi)	°	35,00	40,00	40,00	40,00	35,00
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
V _s	m/s	45,76	237,7	213,0	194,4	45,76
V _p	m/s	85,61	388,1	347,8	317,5	85,61
Set to default values		Yes	Yes	Yes	Yes	Yes


Identification		Rc_Rilevato	JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato	Rm_Riporto costituito dal marino
E _{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z _{ref}	m	0,000	0,000	0,000	0,000	0,000
C _{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z _{ref}	m	0,000	0,000	0,000	0,000	0,000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R _{inter}		1,000	1,000	1,000	1,000	1,000
δ _{inter}		0,000	0,000	0,000	0,000	0,000
K ₀ determination		Automatic	Automatic	Automatic	Automatic	Automatic
K _{0,x} = K _{0,y}		Yes	Yes	Yes	Yes	Yes
K _{0,x}		0,4264	0,3572	0,3572	0,3572	0,4264
K _{0,y}		0,4264	0,3572	0,3572	0,3572	0,4264
k _x	m/day	0,000	0,000	0,000	0,000	0,000
k _y	m/day	0,000	0,000	0,000	0,000	0,000
k _z	m/day	0,000	0,000	0,000	0,000	0,000
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C _k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.1.2 Materials - Soil and interfaces - Linear elastic

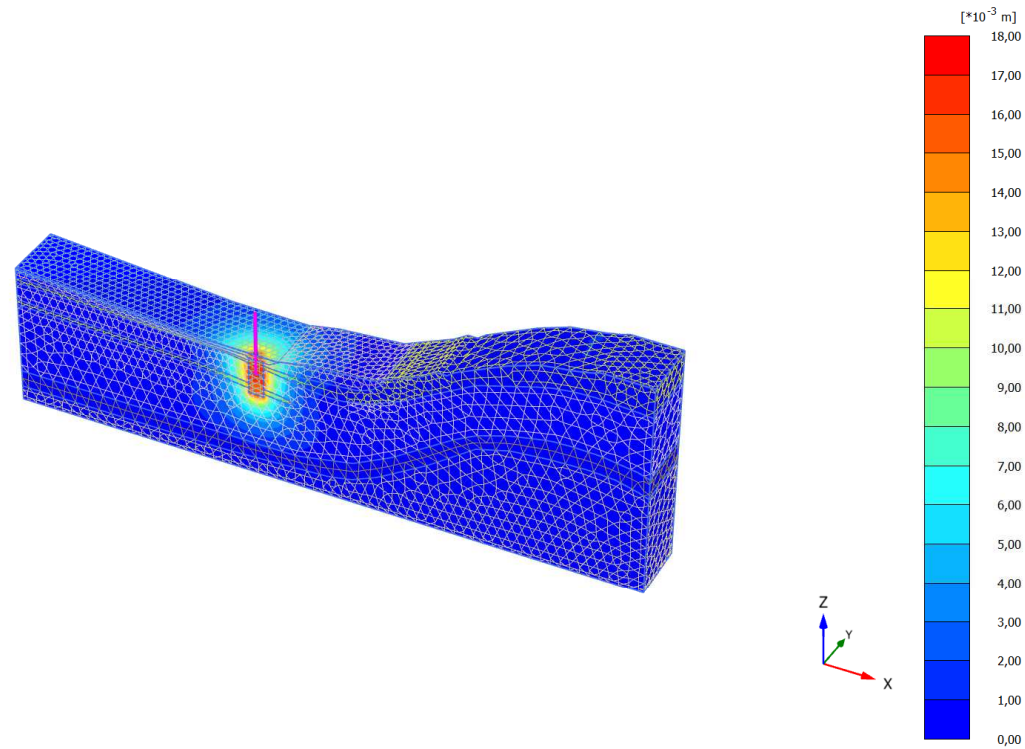
Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
Identification number		11	12	13	14
Drainage type		Drained	Drained	Drained	Drained
Colour					
Comments					
γ_{unsat}	kN/m ³	25,00	25,00	18,00	0,000
γ_{sat}	kN/m ³	25,00	25,00	18,00	0,000
Dilatancy cut-off		No	No	No	No
e_{init}		0,5000	0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000	0,000
e_{max}		999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000
E	kN/m ²	30,20E6	15,00E6	3000	1,000
ν (nu)		0,1500	0,1000	0,3500	0,3000
G	kN/m ²	13,13E6	6,818E6	1111	0,3846
E_{oed}	kN/m ²	31,89E6	15,34E6	4815	1,346
V_s	m/s	2269	1635	24,60	0,000

Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
V_p	m/s	3536	2452	51,20	0,000
Set to default values		Yes	Yes	Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000
$\bar{\sigma}_{inter}$		0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes
$K_{0,x}$		1,000	1,000	1,000	1,000
$K_{0,y}$		1,000	1,000	1,000	1,000
k_x	m/day	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.2 Materials - Beams -

Identification		Pila
Identification number		1
Comments		
Colour		
A	m ²	1,000
γ	kN/m ³	0,000
Linear		Yes
E	kN/m ²	1,000E6
I ₃	m ⁴	1,000
I ₂	m ⁴	1,000
Rayleigh α		0,000
Rayleigh β		0,000

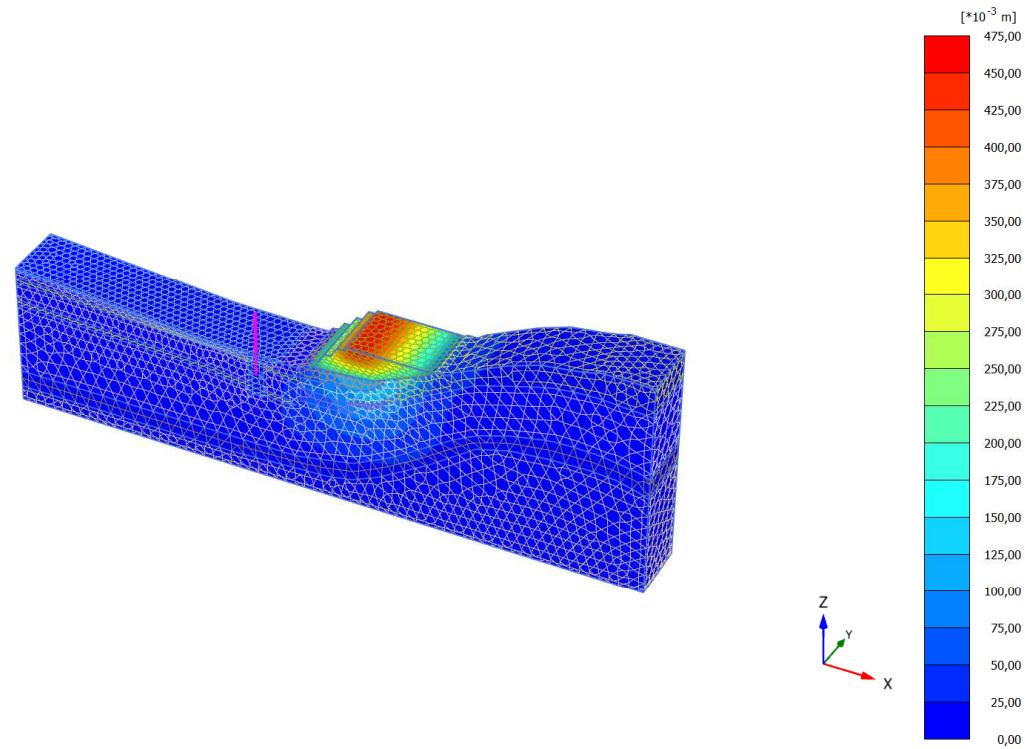
2.1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,01769 m (Element 31513 at Node 56603)

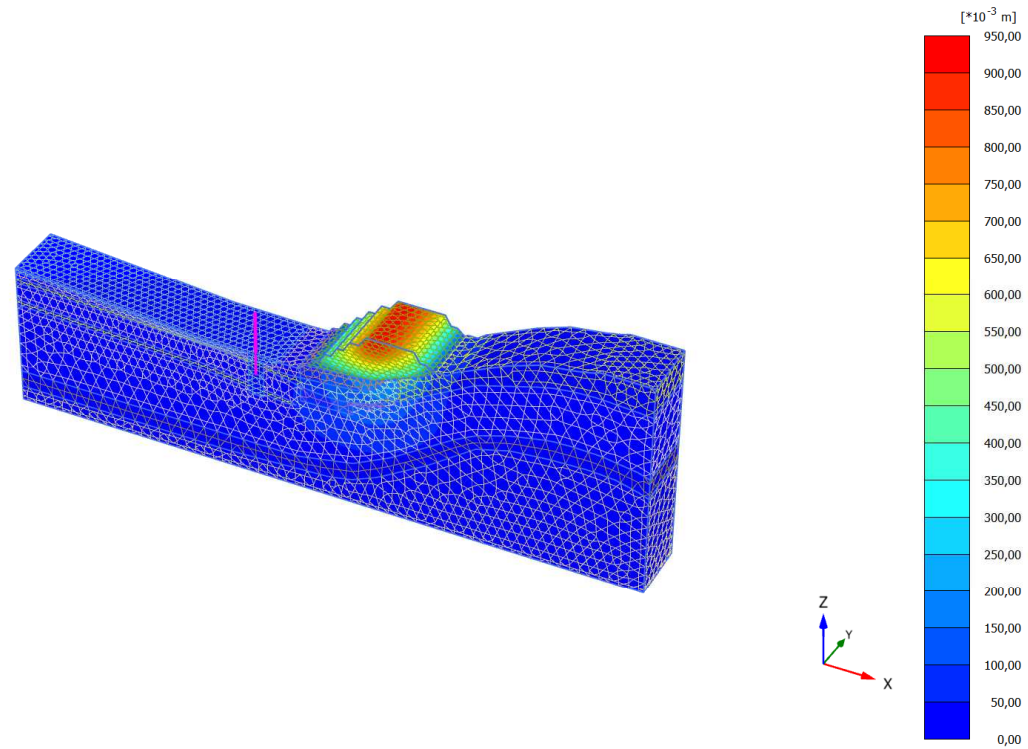
2.1.1.1.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,4659 m (Element 25889 at Node 42734)

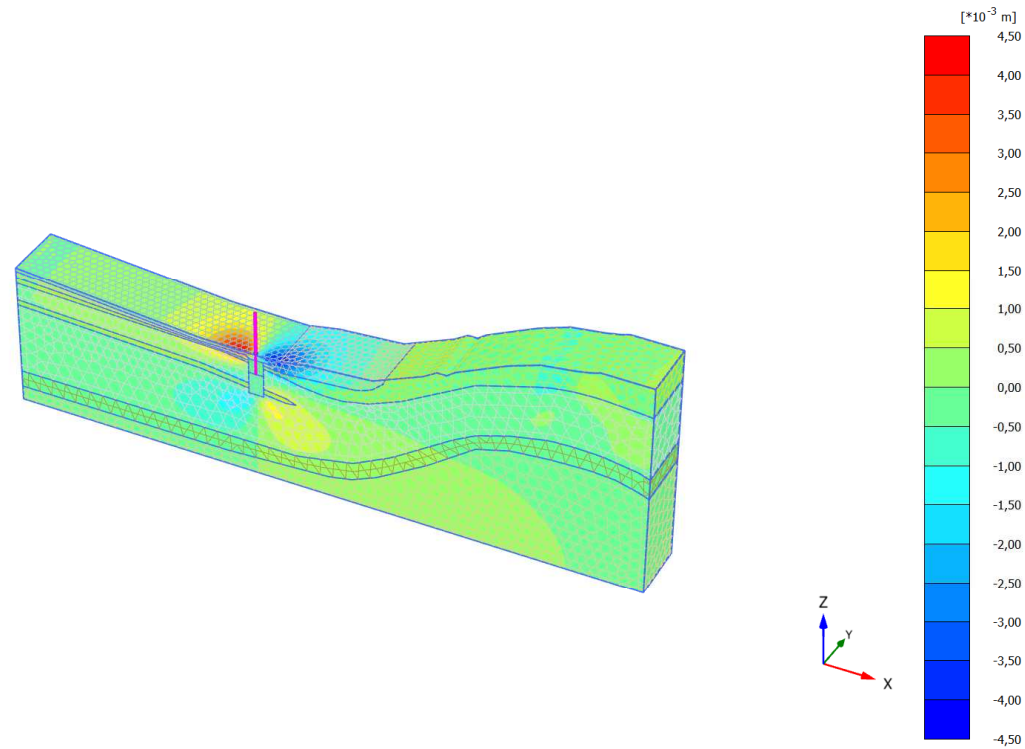
2.1.1.1.3 Calculation results, 5° balza [Phase_20] (20/56), Total displacements |u|



Total displacements |u|

Maximum value = 0,9235 m (Element 23271 at Node 39397)

2.1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Total displacements u_x

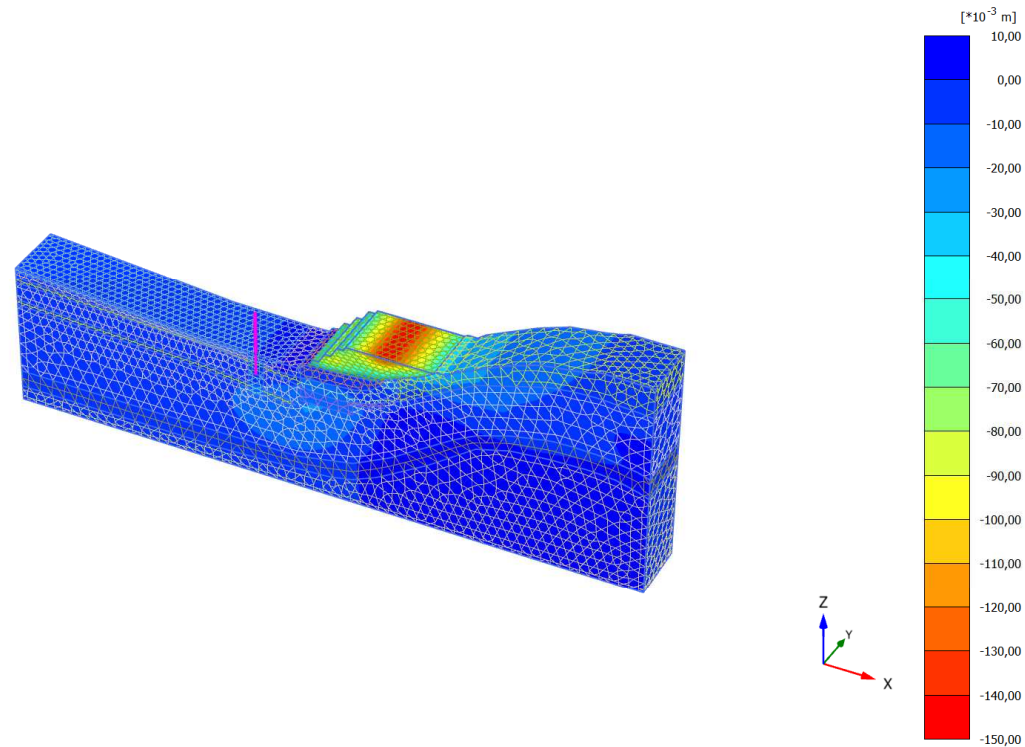


Total displacements u_x

Maximum value = $4,280 \cdot 10^{-3}$ m (Element 31579 at Node 59215)

Minimum value = $-4,050 \cdot 10^{-3}$ m (Element 31516 at Node 56691)

2.1.1.2.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_x

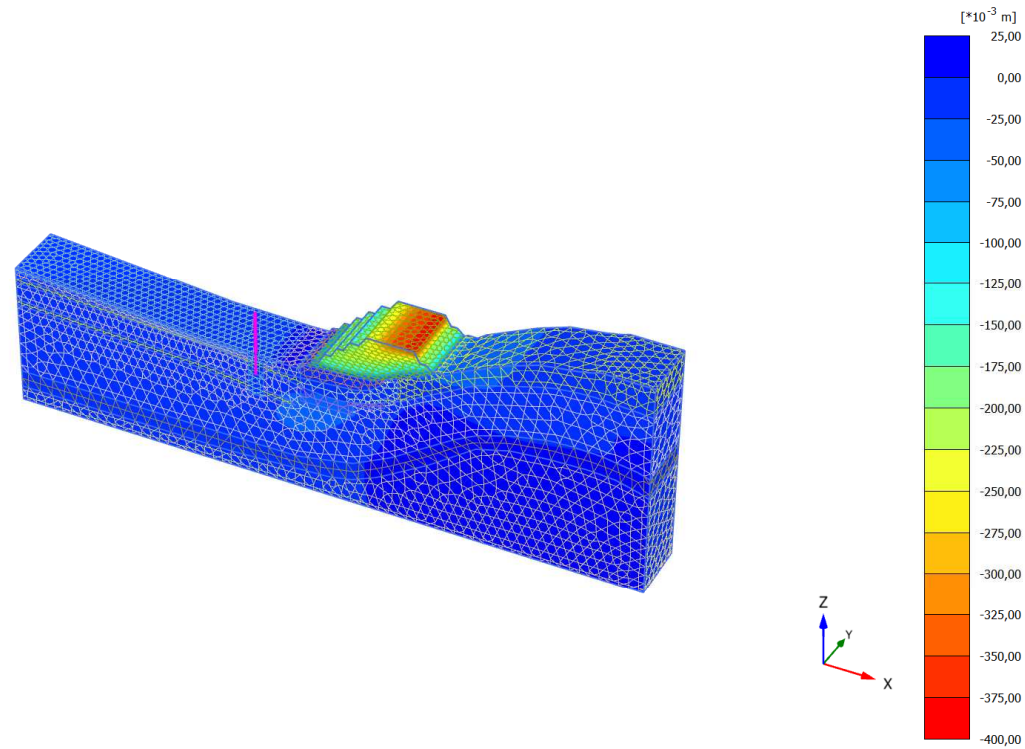


Total displacements u_x

Maximum value = $8,689 \cdot 10^{-3}$ m (Element 46157 at Node 14567)

Minimum value = -0,1484 m (Element 25754 at Node 37489)

2.1.1.2.3 Calculation results, 5° balza [Phase_20] (20/56), Total displacements u_x

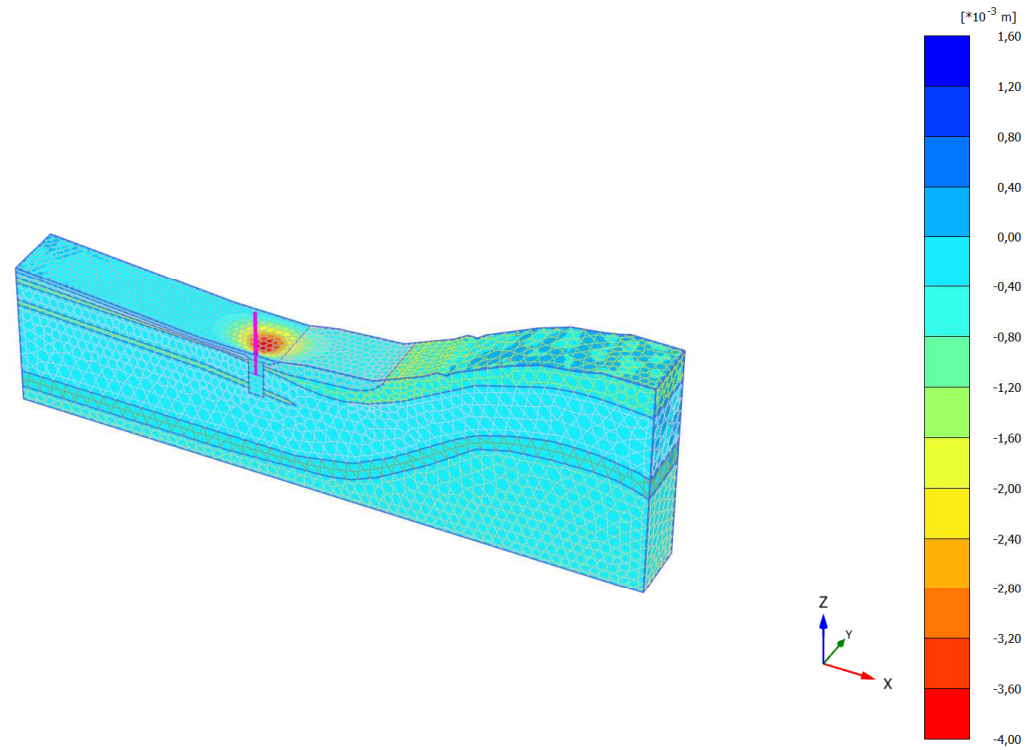


Total displacements u_x

Maximum value = 0,01245 m (Element 54973 at Node 12212)

Minimum value = -0,3941 m (Element 23089 at Node 30142)

2.1.1.3.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Total displacements u_y

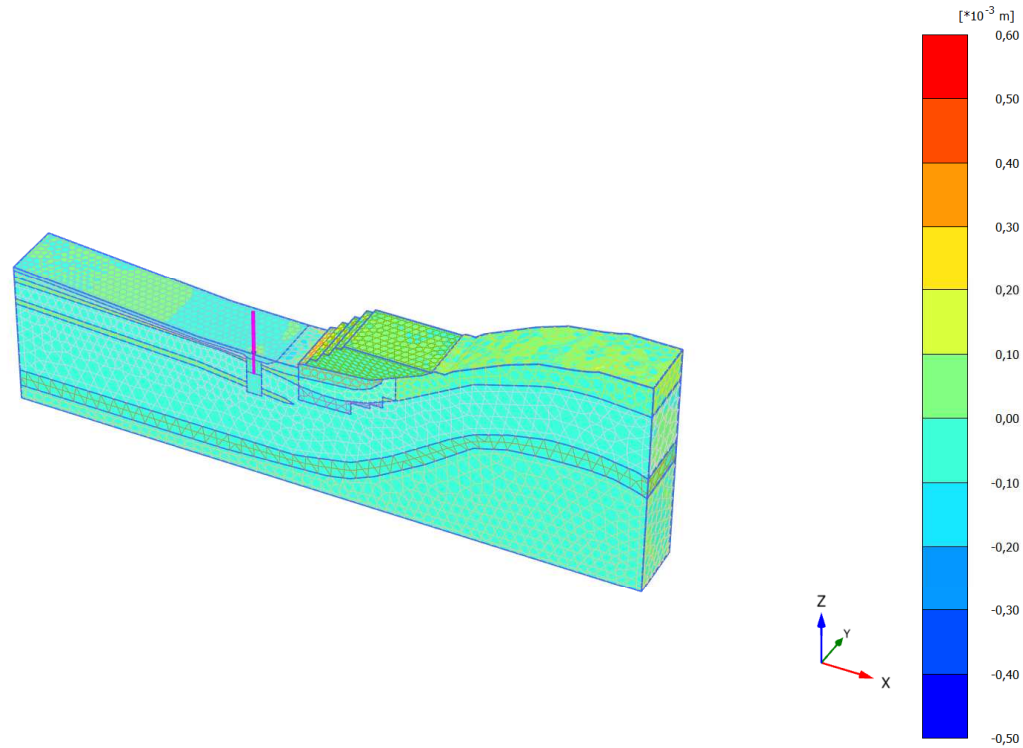


Total displacements u_y

Maximum value = $1,387 \cdot 10^{-3}$ m (Element 48766 at Node 38546)

Minimum value = $-3,987 \cdot 10^{-3}$ m (Element 33243 at Node 59374)

2.1.1.3.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_y

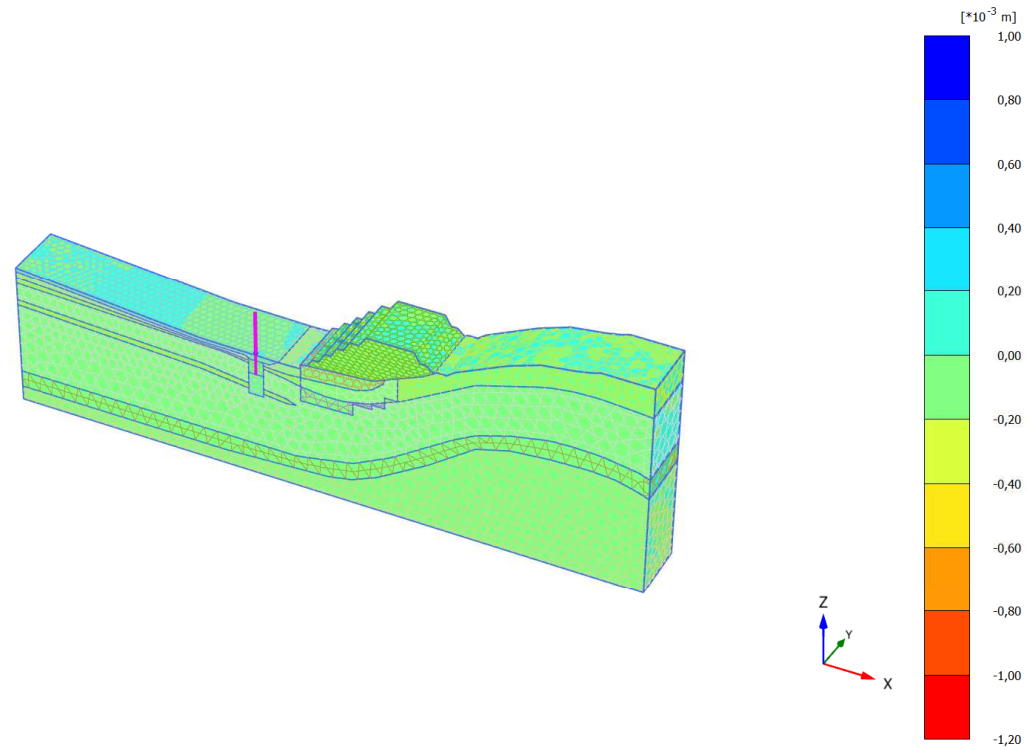


Total displacements u_y

Maximum value = $0,5739 \cdot 10^{-3}$ m (Element 29091 at Node 60319)

Minimum value = $-0,4679 \cdot 10^{-3}$ m (Element 27694 at Node 54861)

2.1.1.3.3 Calculation results, 5° balza [Phase_20] (20/56), Total displacements u_y

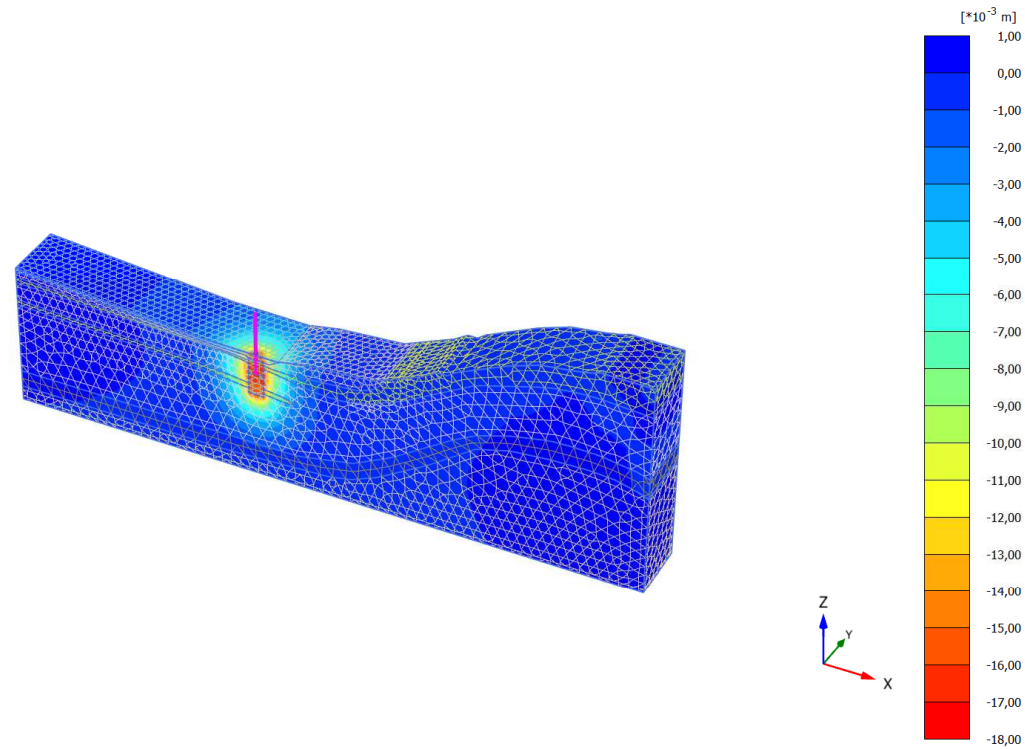


Total displacements u_y

Maximum value = $0,9830 \times 10^{-3}$ m (Element 29670 at Node 60598)

Minimum value = $-1,045 \times 10^{-3}$ m (Element 27694 at Node 54861)

2.1.1.4.1 Calculation results, Carico Impalcato [Phase_3] (3/11), Total displacements u_z

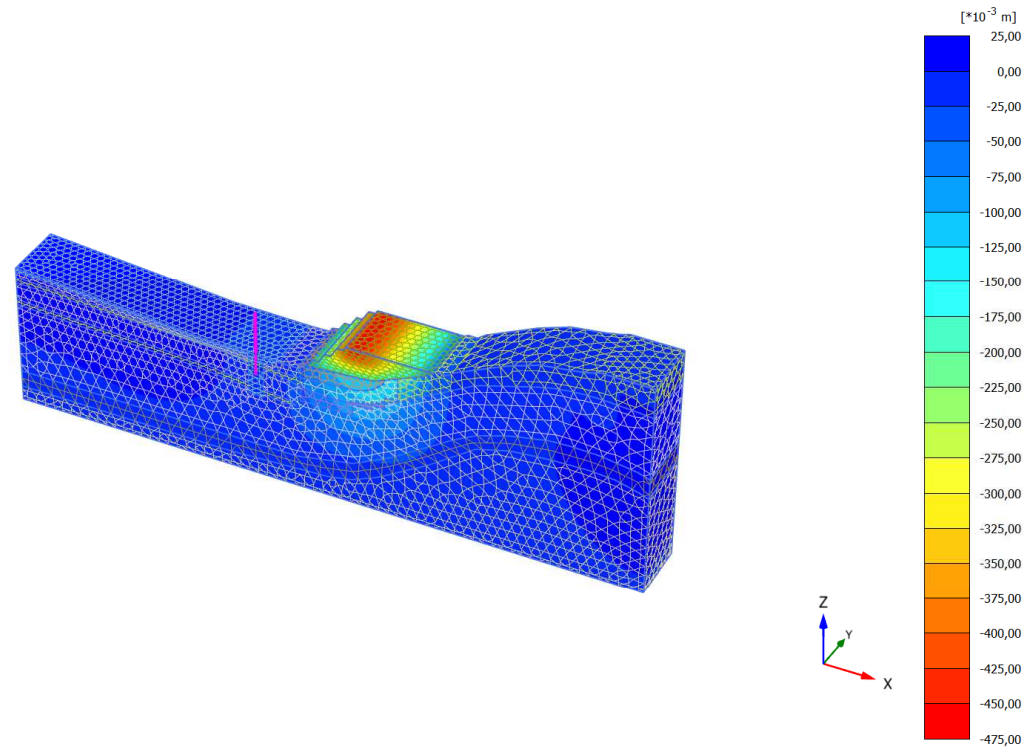


Total displacements u_z

Maximum value = 0,2392 $\times 10^{-3}$ m (Element 44198 at Node 11871)

Minimum value = -0,01769 m (Element 31513 at Node 56603)

2.1.1.4.2 Calculation results, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_z

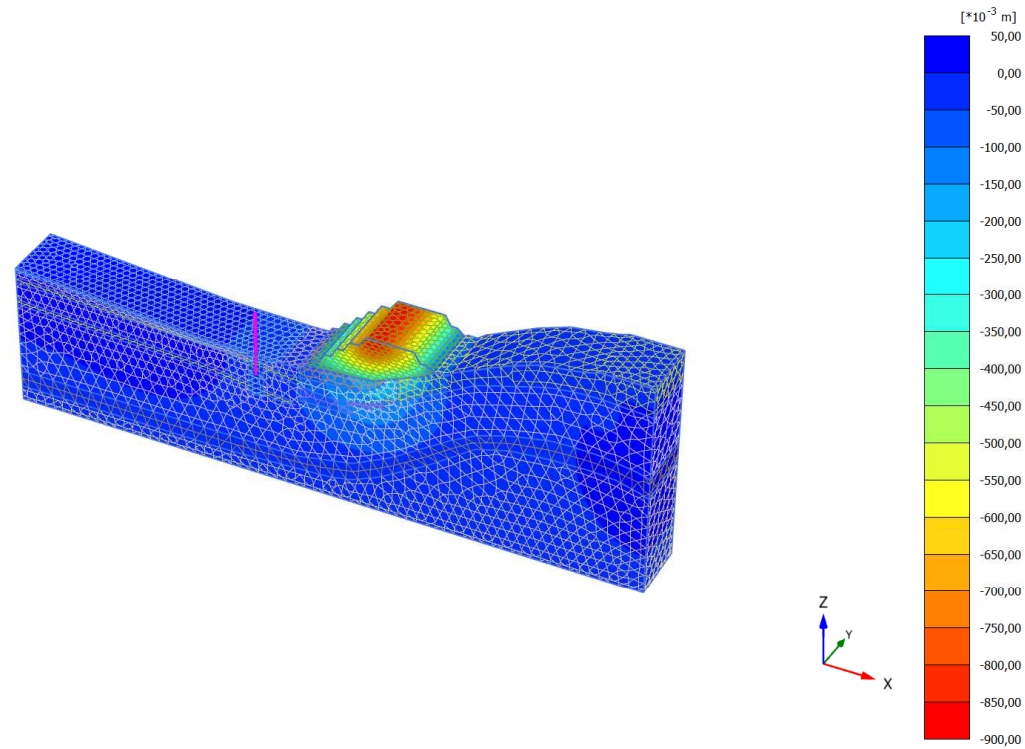


Total displacements u_z

Maximum value = $1,620 \cdot 10^{-3}$ m (Element 31531 at Node 77410)

Minimum value = -0,4591 m (Element 25773 at Node 45817)

2.1.1.4.3 Calculation results, 5° balza [Phase_20] (20/56), Total displacements u_z

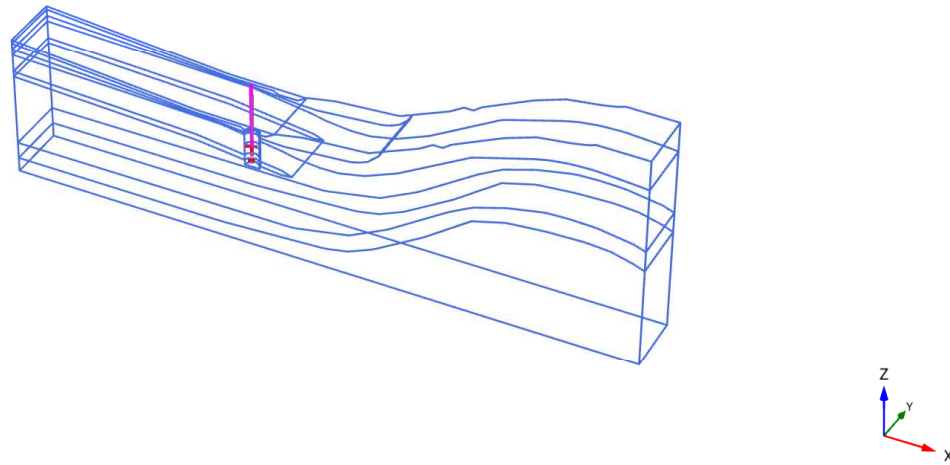


Total displacements u_z

Maximum value = $2,466 \cdot 10^{-3}$ m (Element 31531 at Node 77412)

Minimum value = -0,8856 m (Element 23588 at Node 42261)

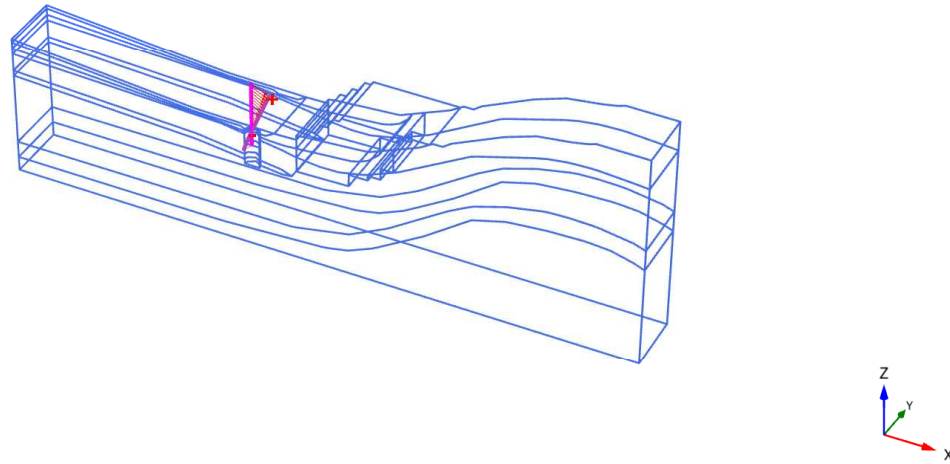
3.1.1.1.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/11), Total displacements |u|



Total displacements |u| (scaled up 500 times)

Maximum value = 0,01769 m (Element 3 at Node 56603)

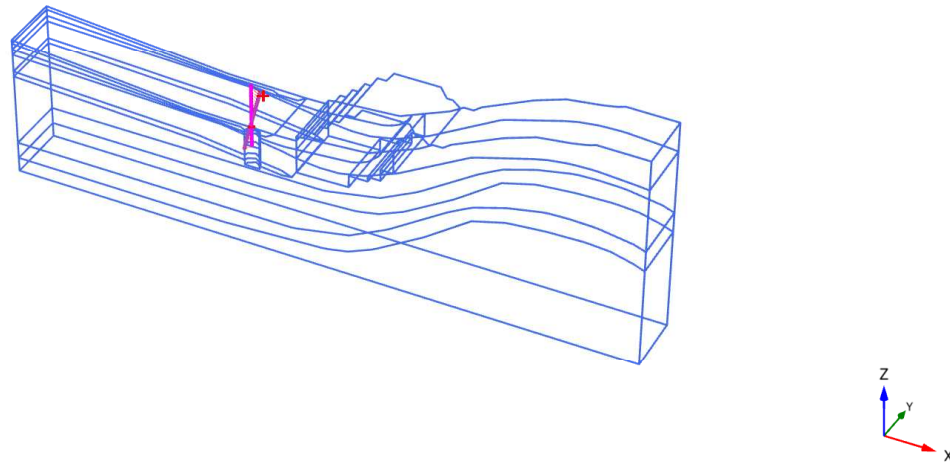
3.1.1.1.1.2 Calculation results, Beam, Costruzione bancata 6 [Phase_15] (15/41), Total displacements $|u|$



Total displacements $|u|$ (scaled up $1,00 \cdot 10^3$ times)

Maximum value = 0,01557 m (Element 11 at Node 70976)

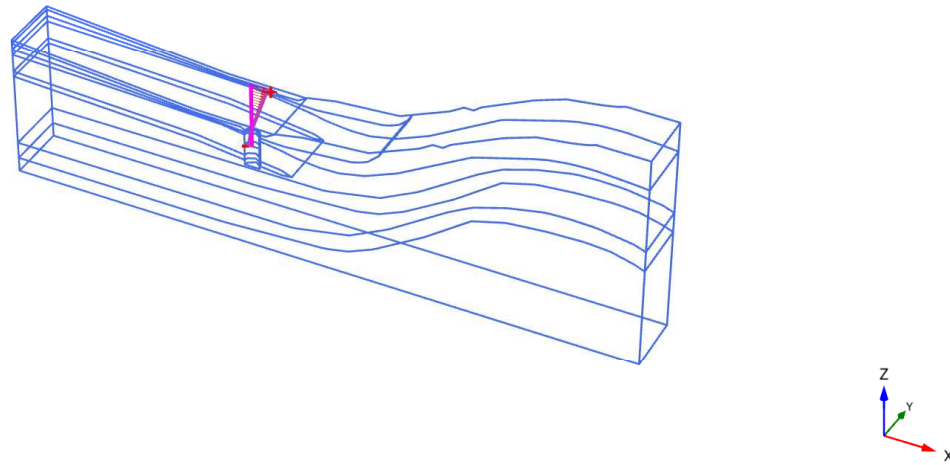
3.1.1.1.1.3 Calculation results, Beam, 5° balza [Phase_20] (20/56), Total displacements $|u|$



Total displacements $|u|$ (scaled up 500 times)

Maximum value = 0,01685 m (Element 11 at Node 70976)

3.1.1.1.2.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/11), Total displacements u_x

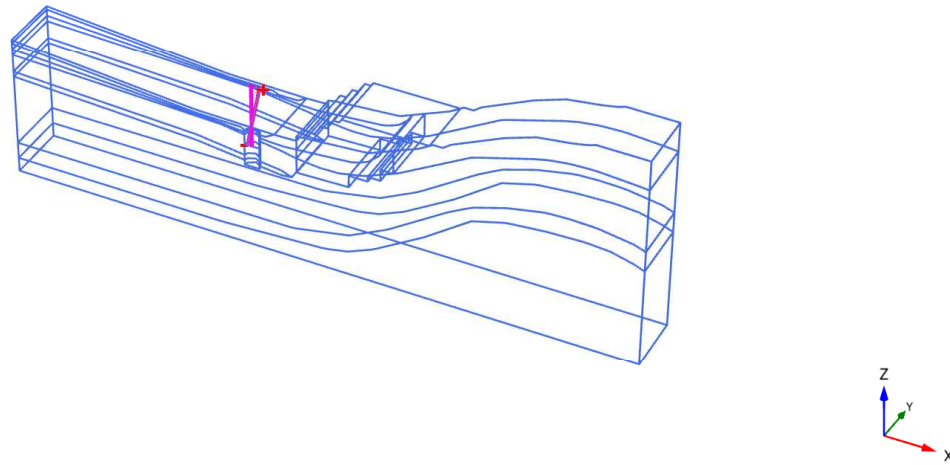


Total displacements u_x (scaled up $10,0 \cdot 10^3$ times)

Maximum value = $1,310 \cdot 10^{-3}$ m (Element 11 at Node 70976)

Minimum value = $-0,2206 \cdot 10^{-3}$ m (Element 1 at Node 50840)

3.1.1.1.2.2 Calculation results, Beam, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_x

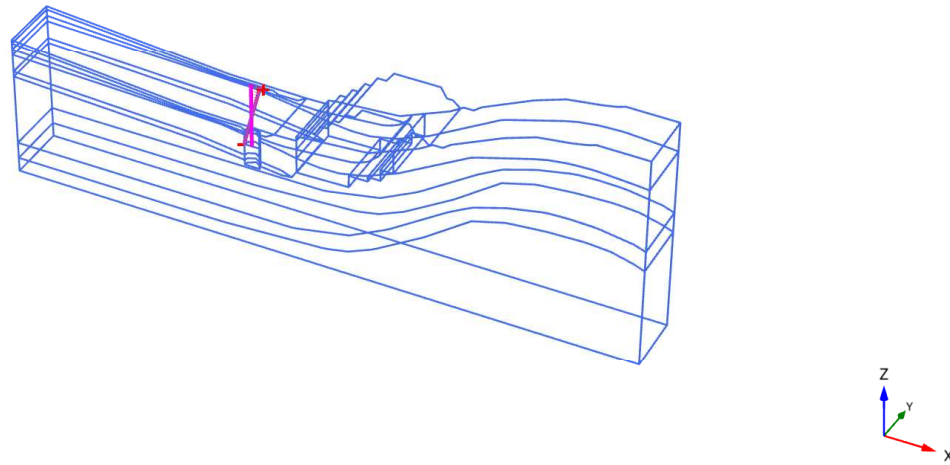


Total displacements u_x (scaled up 500 times)

Maximum value = 0,01429 m (Element 11 at Node 70976)

Minimum value = $-6,814 \cdot 10^{-3}$ m (Element 1 at Node 50840)

3.1.1.1.2.3 Calculation results, Beam, 5° balza [Phase_20] (20/56), Total displacements u_x

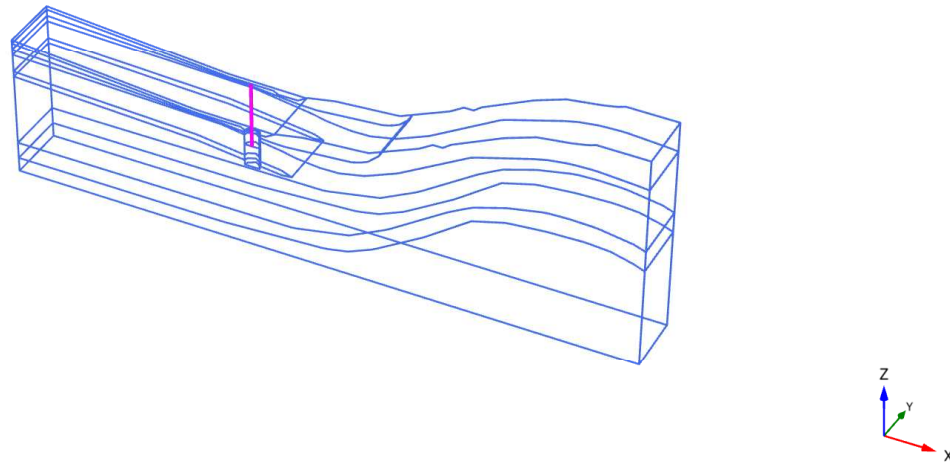


Total displacements u_x (scaled up 500 times)

Maximum value = 0,01472 m (Element 11 at Node 70976)

Minimum value = -0,01240 m (Element 1 at Node 50840)

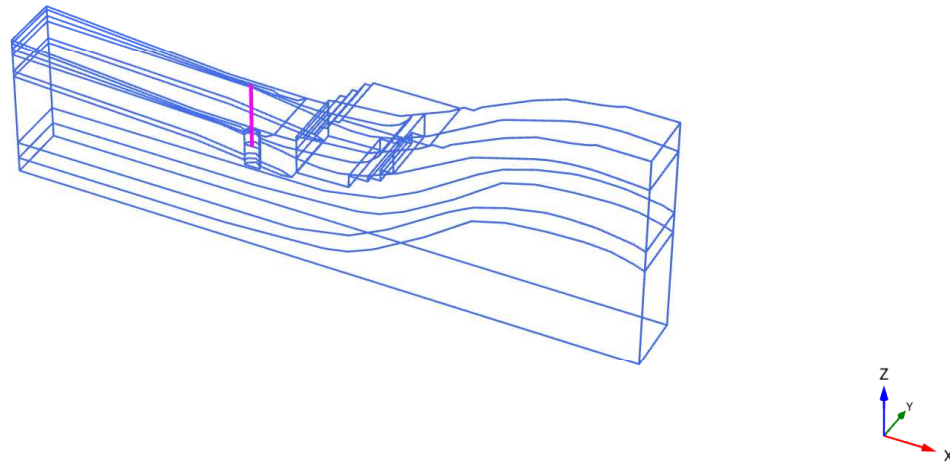
3.1.1.1.3.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/11), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,3053 \cdot 10^{-15}$ m

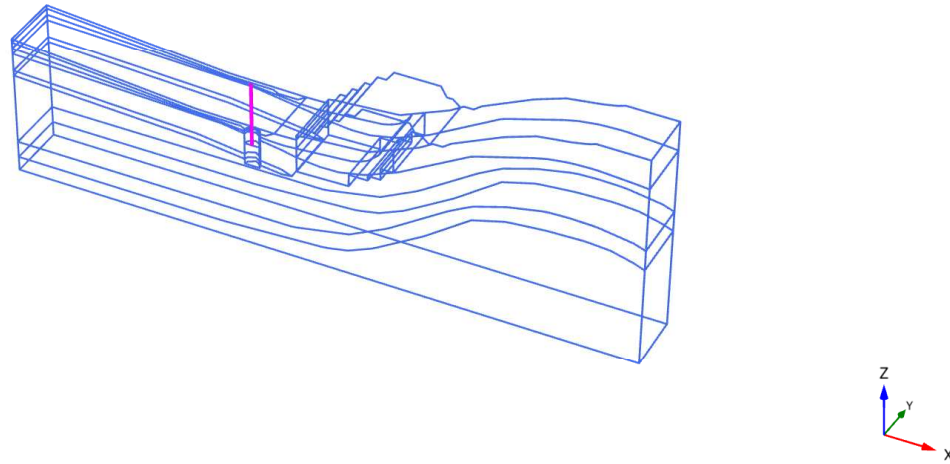
3.1.1.1.3.2 Calculation results, Beam, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,01995 \cdot 10^{-12}$ m

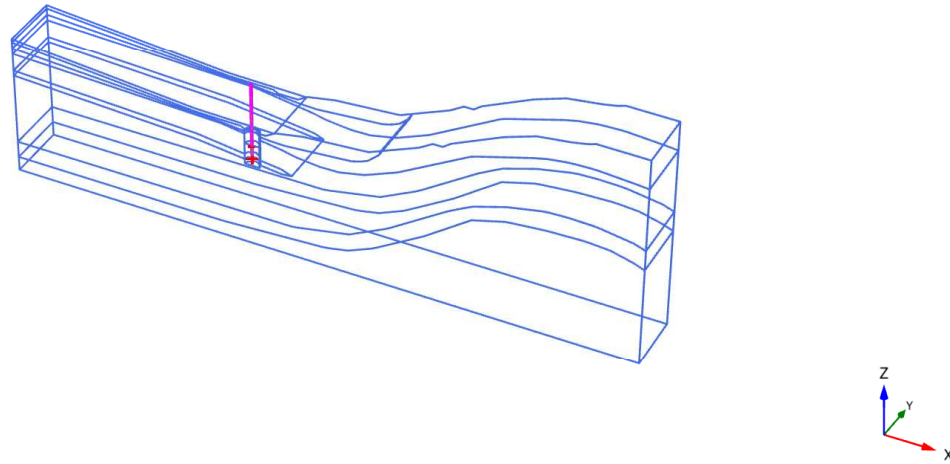
3.1.1.1.3.3 Calculation results, Beam, 5° balza [Phase_20] (20/56), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,01657 \cdot 10^{-12}$ m

3.1.1.1.4.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/11), Total displacements u_z

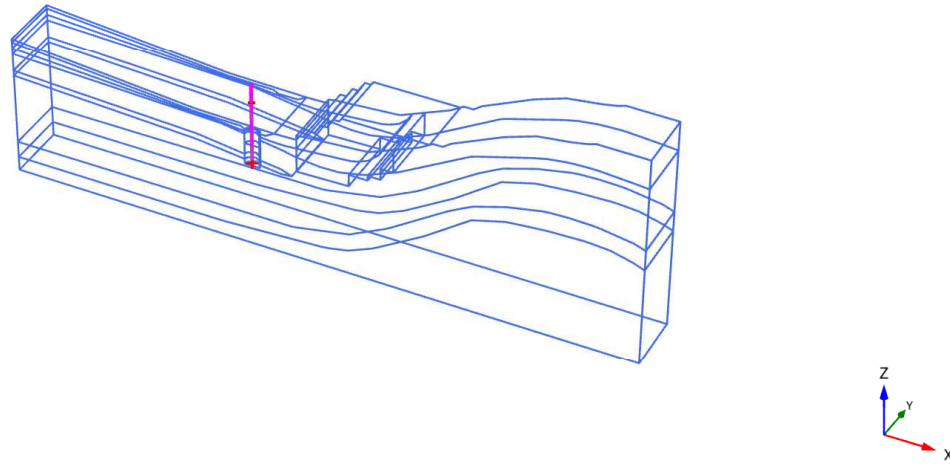


Total displacements u_z (scaled up 500 times)

Maximum value = -0,01632 m (Element 1 at Node 50840)

Minimum value = -0,01769 m (Element 3 at Node 56603)

3.1.1.1.4.2 Calculation results, Beam, Costruzione bancata 6 [Phase_15] (15/41), Total displacements u_z

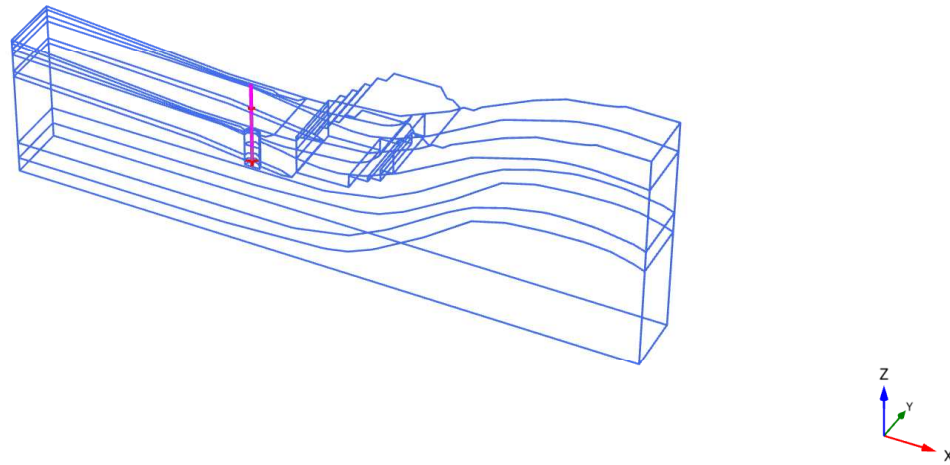


Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $-6,181 \cdot 10^{-3}$ m (Element 1 at Node 50840)

Minimum value = $-6,189 \cdot 10^{-3}$ m (Element 11 at Node 70976)

3.1.1.1.4.3 Calculation results, Beam, 5° balza [Phase_20] (20/56), Total displacements u_z



Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $-8,212 \cdot 10^{-3}$ m (Element 1 at Node 50888)

Minimum value = $-8,218 \cdot 10^{-3}$ m (Element 11 at Node 70976)

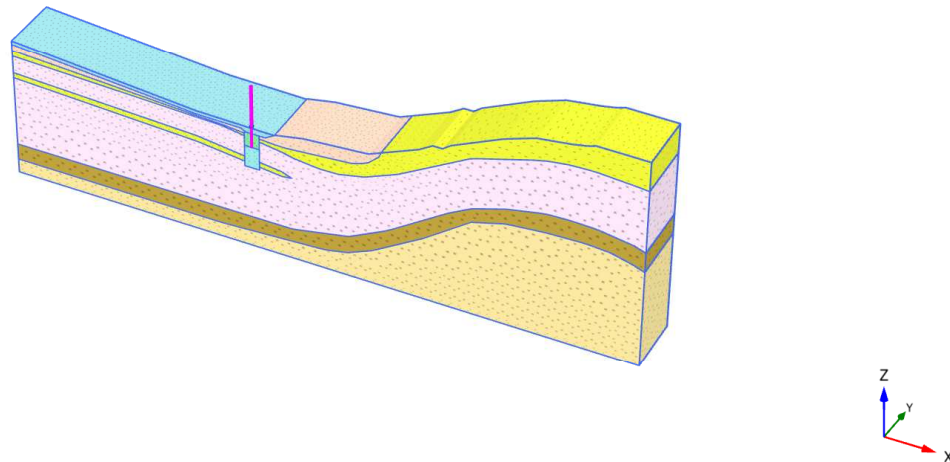
Sezione 25 Hardening soil PLAXIS Report

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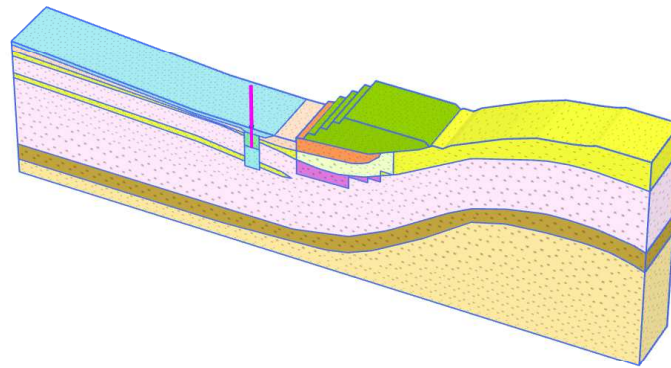
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1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Connectivity plot



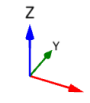
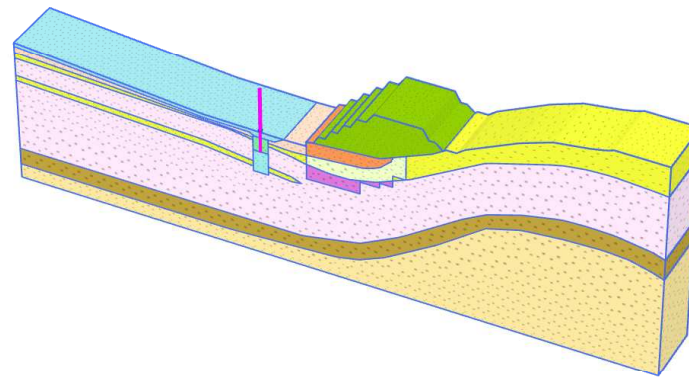
Connectivity plot

1.1.1.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Connectivity plot



Connectivity plot

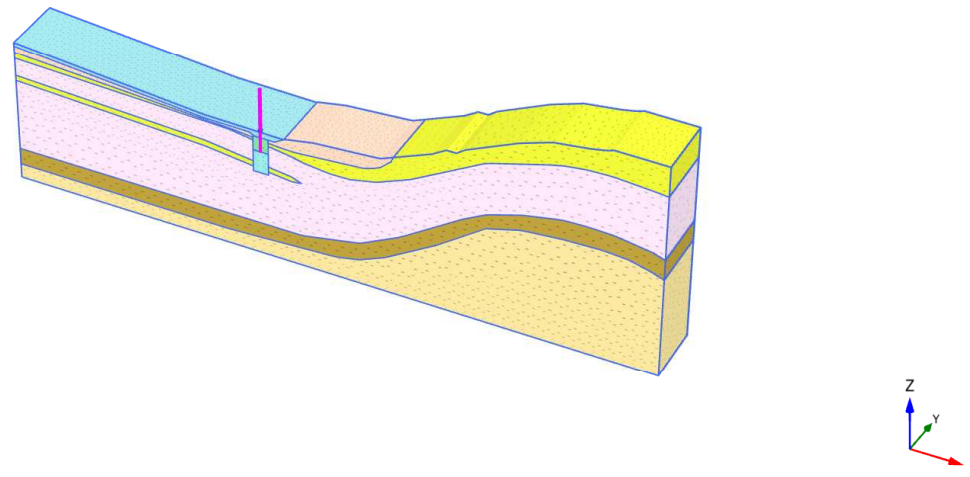
1.1.1.3 Calculation results, 5° balza [Phase_20] (20/60), Connectivity plot



Connectivity plot

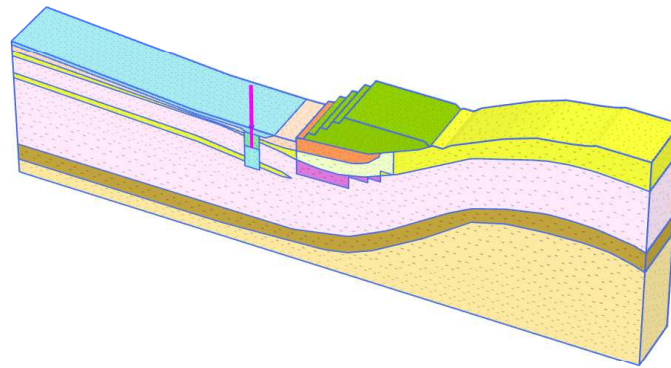


1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Materials plot



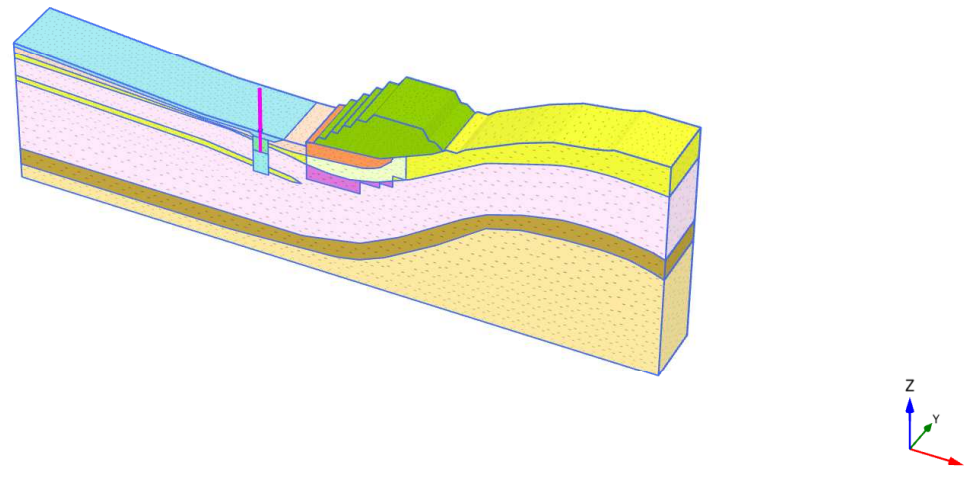
Materials plot

1.1.2.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Materials plot








Materials plot

1.1.2.3 Calculation results, 5° balza [Phase_20] (20/60), Materials plot






Materials plot

1.1.3.1.1.1 Materials - Soil and interfaces - Hardening soil (1/2)

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
Identification number		1	2	3	4	5
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Y _{sat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E ₅₀ ^{ref}	kN/m ²	105,0E3	150,0E3	227,0E3	234,0E3	59,00E3
E _{oed} ^{ref}	kN/m ²	105,0E3	150,0E3	227,0E3	234,0E3	59,00E3
E _{ur} ^{ref}	kN/m ²	313,9E3	451,0E3	679,7E3	702,0E3	176,1E3
power (m)		0,5000	0,5000	0,5000	0,5000	0,5000
Use alternatives		No	No	No	No	No
C _c		3,286E-3	2,300E-3	1,520E-3	1,474E-3	5,847E-3
C _s		0,8165E-3	0,6885E-3	0,3771E-3	0,4423E-3	1,455E-3
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C _{ref}	kN/m ²	20,00	150,0	20,00	100,0	10,00
φ (phi)	°	35,00	40,00	32,00	40,00	30,00

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
Set to default values		No	No	No	No	No
V_{ur}		0,3000	0,2000	0,3000	0,2000	0,3000
p_{ref}	kN/m ²	100,0	100,0	100,0	100,0	100,0
K_0^{nc}		0,4264	0,3572	0,4701	0,3572	0,5000
C_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
z_{ref}	m	0,000	0,000	0,000	0,000	0,000
R_f		0,9000	0,9000	0,9000	0,9000	0,9000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000	0,000	0,000
K_0 determination		Manual	Manual	Manual	Manual	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes	Yes
$K_{0,x}$		0,4264	0,3572	0,4701	0,3572	0,5000
$K_{0,y}$		0,4264	0,3572	0,4701	0,3572	0,5000
OCR		1,000	1,000	1,000	1,000	1,000
POP	kN/m ²	0,000	0,000	0,000	0,000	0,000
k_x	m/day	0,000	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15



1.1.3.1.1.2 Materials - Soil and interfaces - Hardening soil (2/2)

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
Identification number		7	8	9
Drainage type		Drained	Drained	Drained
Colour				
Comments				
γ_{unsat}	kN/m ³	18,00	27,00	27,00
γ_{sat}	kN/m ³	18,00	27,00	27,00
Dilatancy cut-off		No	No	No
e_{init}		0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000
e_{max}		999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000
E_{50}^{ref}	kN/m ²	119,0E3	358,0E3	233,0E3
E_{oed}^{ref}	kN/m ²	119,0E3	358,0E3	233,0E3
E_{ur}^{ref}	kN/m ²	356,0E3	1,075E6	698,5E3
power (m)		0,5000	0,5000	0,5000

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
Use alternatives		No	No	No
C_c		2,899E-3	0,9637E-3	1,481E-3
C_s		0,8722E-3	0,3039E-3	0,4445E-3
e_{init}		0,5000	0,5000	0,5000
C_{ref}	kN/m ²	50,00	500,0	250,0
φ (phi)	°	40,00	40,00	40,00
ψ (psi)	°	0,000	0,000	0,000
Set to default values		No	No	No
v_{ur}		0,2000	0,1500	0,2000
p_{ref}	kN/m ²	100,0	100,0	100,0
K_0^{nc}		0,3572	0,3572	0,3572
C_{inc}	kN/m ² /m	0,000	0,000	0,000
z_{ref}	m	0,000	0,000	0,000
R_f		0,9000	0,9000	0,9000
Tension cut-off		Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
K ₀ determination		Manual	Manual	Manual
K _{0,x} = K _{0,y}		Yes	Yes	Yes
K _{0,x}		0,3572	0,3572	0,3572
K _{0,y}		0,3572	0,3572	0,3572
OCR		1,000	1,000	1,000
POP	kN/m ²	0,000	0,000	0,000
k _x	m/day	0,000	0,000	0,000
k _y	m/day	0,000	0,000	0,000
k _z	m/day	0,000	0,000	0,000
e _{init}		0,5000	0,5000	0,5000
c _k		1,000E15	1,000E15	1,000E15




1.1.3.1.2 Materials - Soil and interfaces - Mohr-Coulomb

Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
Identification number		6	10
Drainage type		Drained	Drained
Colour			
Comments			
γ_{unsat}	kN/m ³	18,00	18,00
γ_{sat}	kN/m ³	18,00	18,00
Dilatancy cut-off		No	No
e_{init}		0,5000	0,5000
e_{min}		0,000	0,000
e_{max}		999,0	999,0
Rayleigh α		0,000	0,000
Rayleigh β		0,000	0,000
E	kN/m ²	10,00E3	10,00E3
ν (nu)		0,3000	0,3000
G	kN/m ²	3846	3846
E_{oed}	kN/m ²	13,46E3	13,46E3
c_{ref}	kN/m ²	10,00	0,000

Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
ϕ (phi)	°	35,00	35,00
ψ (psi)	°	0,000	0,000
V_s	m/s	45,76	45,76
V_p	m/s	85,61	85,61
Set to default values		Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000
Z_{ref}	m	0,000	0,000
C_{inc}	kN/m ² /m	0,000	0,000
Z_{ref}	m	0,000	0,000
Tension cut-off		Yes	Yes
Tensile strength	kN/m ²	0,000	0,000
Strength		Rigid	Rigid
R_{inter}		1,000	1,000
δ_{inter}		0,000	0,000
K_0 determination		Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes
$K_{0,x}$		0,4264	0,4264
$K_{0,y}$		0,4264	0,4264
k_x	m/day	0,000	0,000


Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
k_y	m/day	0,000	0,000
k_z	m/day	0,000	0,000
e_{init}		0,5000	0,5000
C_k		1,000E15	1,000E15

1.1.3.1.3 Materials - Soil and interfaces - Linear elastic

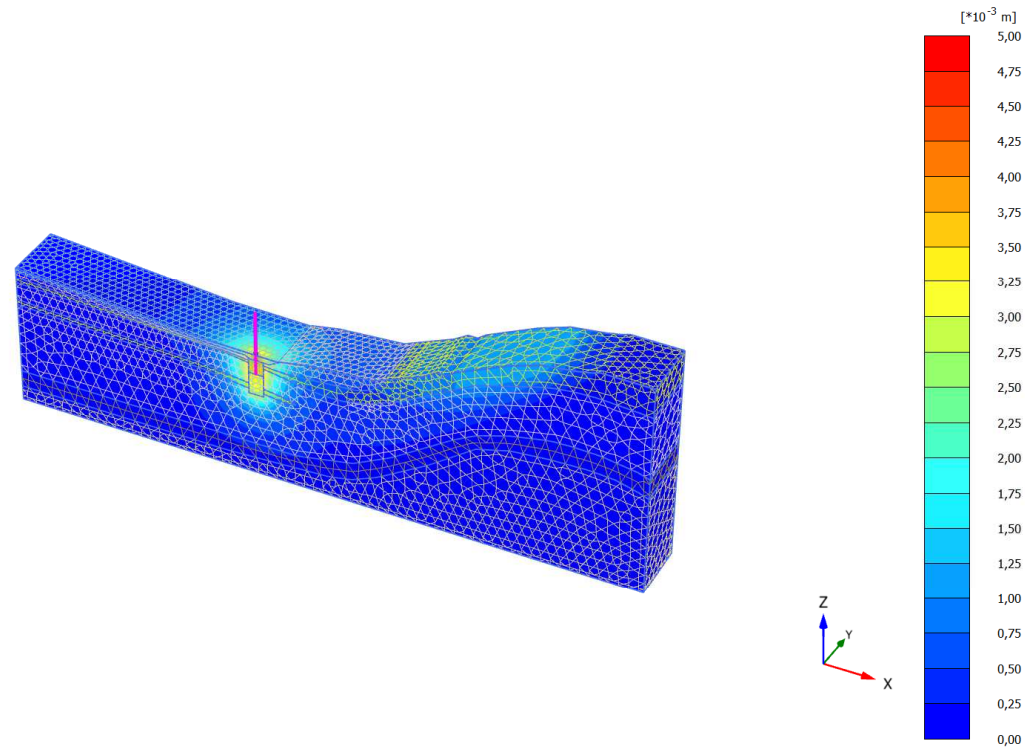
Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
Identification number		11	12	13	14
Drainage type		Drained	Drained	Drained	Drained
Colour					
Comments					
γ_{unsat}	kN/m ³	25,00	25,00	18,00	0,000
γ_{sat}	kN/m ³	25,00	25,00	18,00	0,000
Dilatancy cut-off		No	No	No	No
e_{init}		0,5000	0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000	0,000
e_{max}		999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000
E	kN/m ²	30,20E6	15,00E6	3000	1,000
ν (nu)		0,1500	0,1000	0,3500	0,3000
G	kN/m ²	13,13E6	6,818E6	1111	0,3846
E_{oed}	kN/m ²	31,89E6	15,34E6	4815	1,346
V_s	m/s	2269	1635	24,60	0,000

Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
V_p	m/s	3536	2452	51,20	0,000
Set to default values		Yes	Yes	Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000
$\bar{\sigma}_{inter}$		0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes
$K_{0,x}$		1,000	1,000	1,000	1,000
$K_{0,y}$		1,000	1,000	1,000	1,000
k_x	m/day	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.2 Materials - Beams -

Identification		Pila
Identification number		1
Comments		
Colour		
A	m ²	1,000
γ	kN/m ³	0,000
Linear		Yes
E	kN/m ²	1,000E6
I ₃	m ⁴	1,000
I ₂	m ⁴	1,000
Rayleigh α		0,000
Rayleigh β		0,000

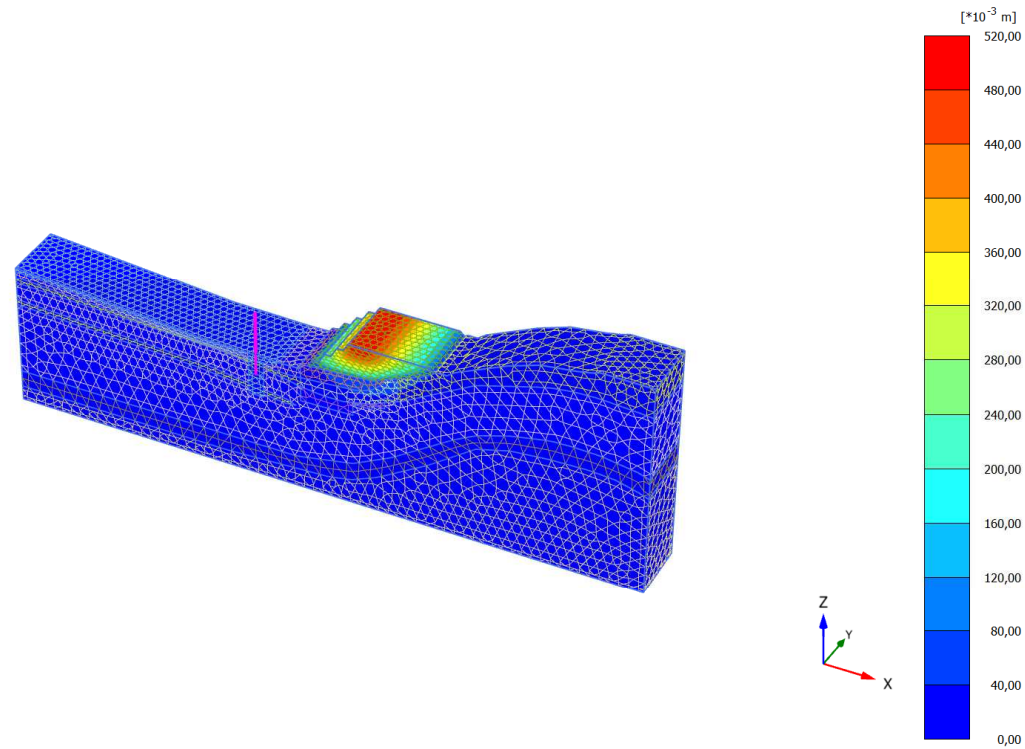
2.1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Total displacements |u|



Total displacements |u|

Maximum value = $4,882 \cdot 10^{-3}$ m (Element 31513 at Node 56603)

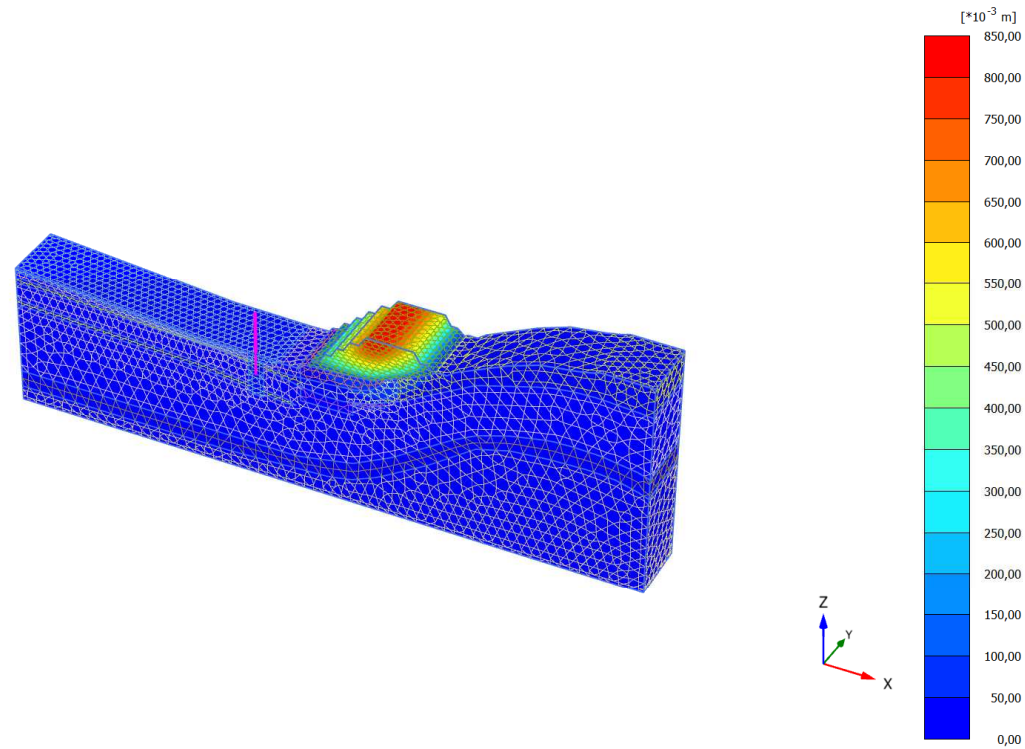
2.1.1.1.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,5103 m (Element 25111 at Node 48950)

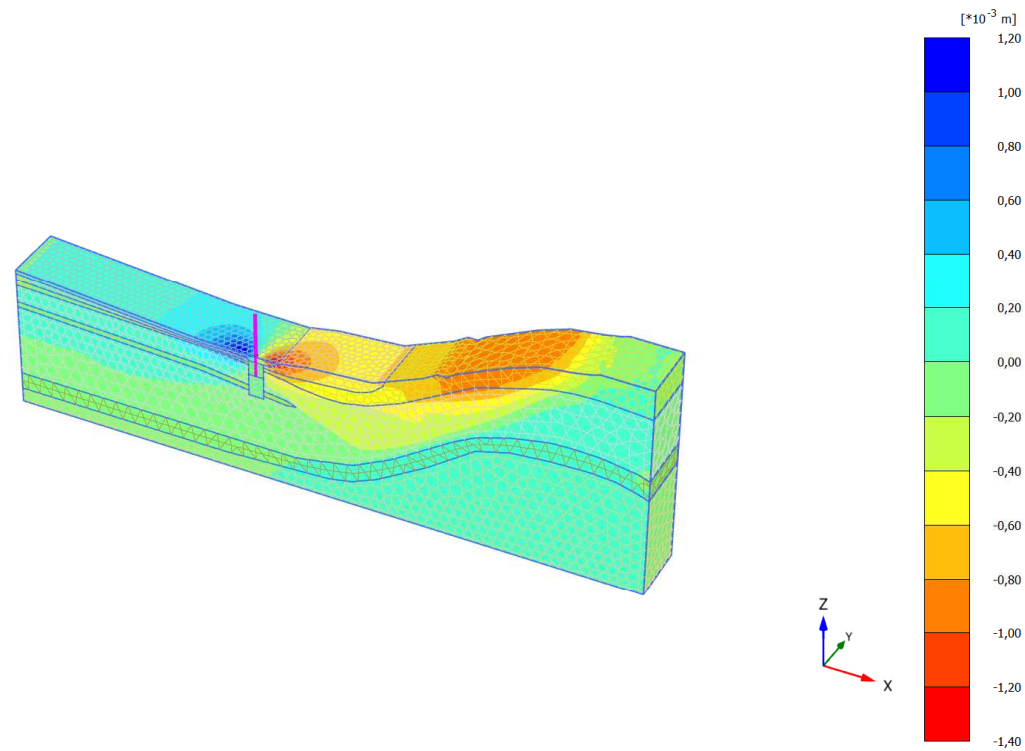
2.1.1.1.3 Calculation results, 5° balza [Phase_20] (20/60), Total displacements |u|



Total displacements |u|

Maximum value = 0,8409 m (Element 23271 at Node 39397)

2.1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Total displacements u_x

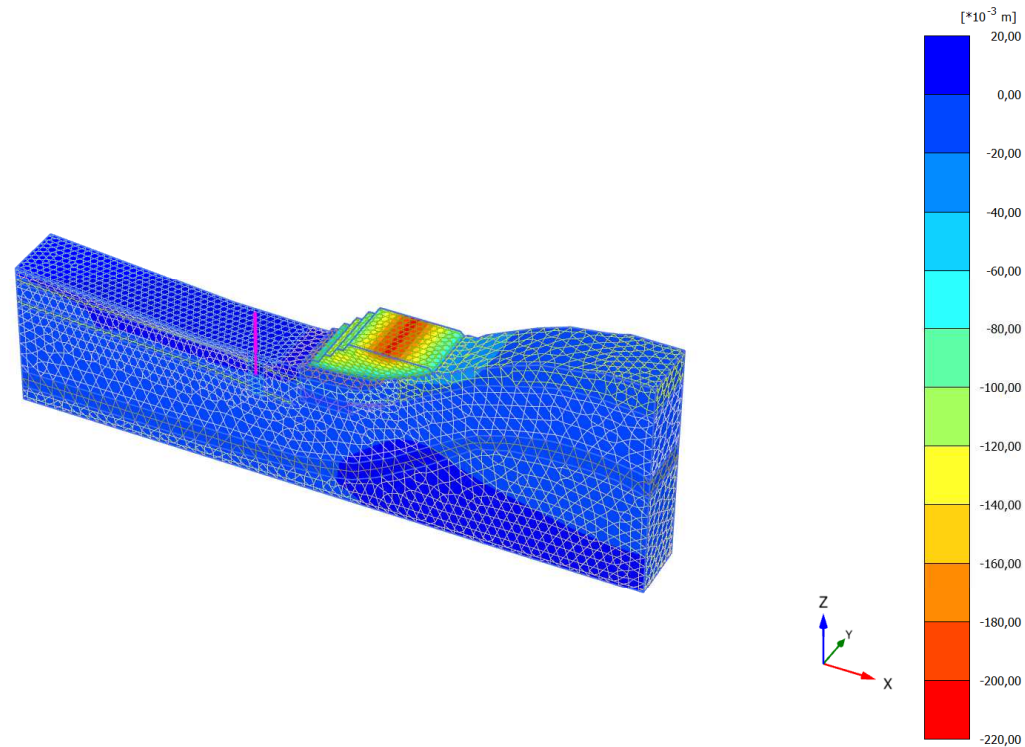


Total displacements u_x

Maximum value = $1,141 \cdot 10^{-3}$ m (Element 33641 at Node 59254)

Minimum value = $-1,285 \cdot 10^{-3}$ m (Element 31515 at Node 56669)

2.1.1.2.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_x

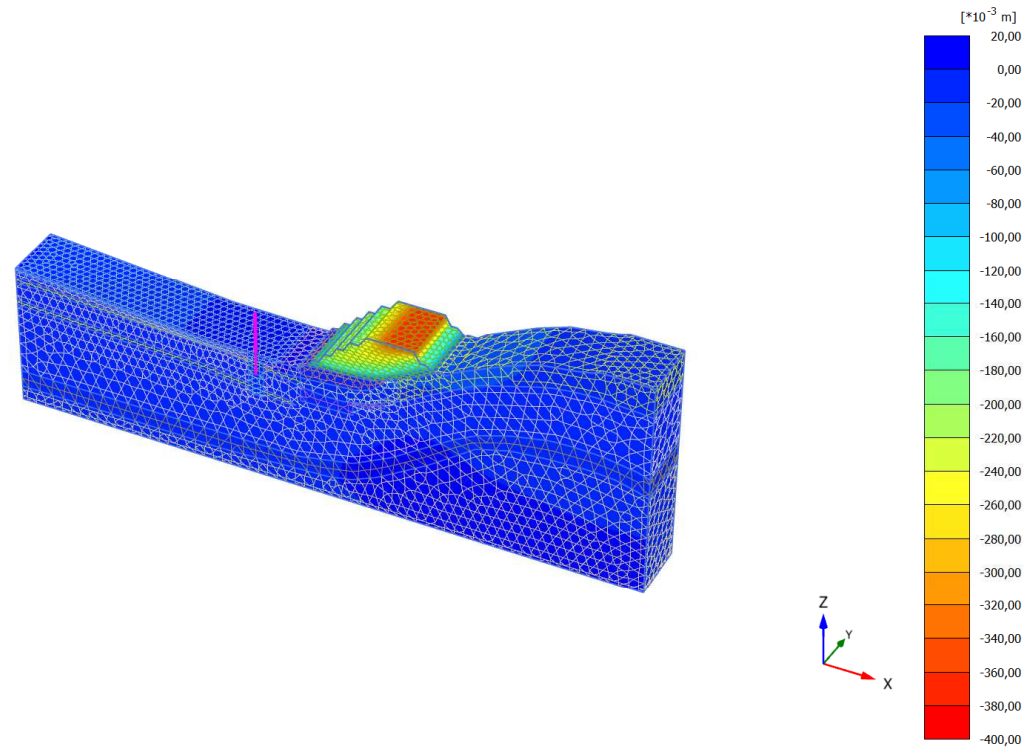


Total displacements u_x

Maximum value = $4,001 \cdot 10^{-3}$ m (Element 33787 at Node 52925)

Minimum value = -0,2027 m (Element 25083 at Node 39723)

2.1.1.2.3 Calculation results, 5° balza [Phase_20] (20/60), Total displacements u_x

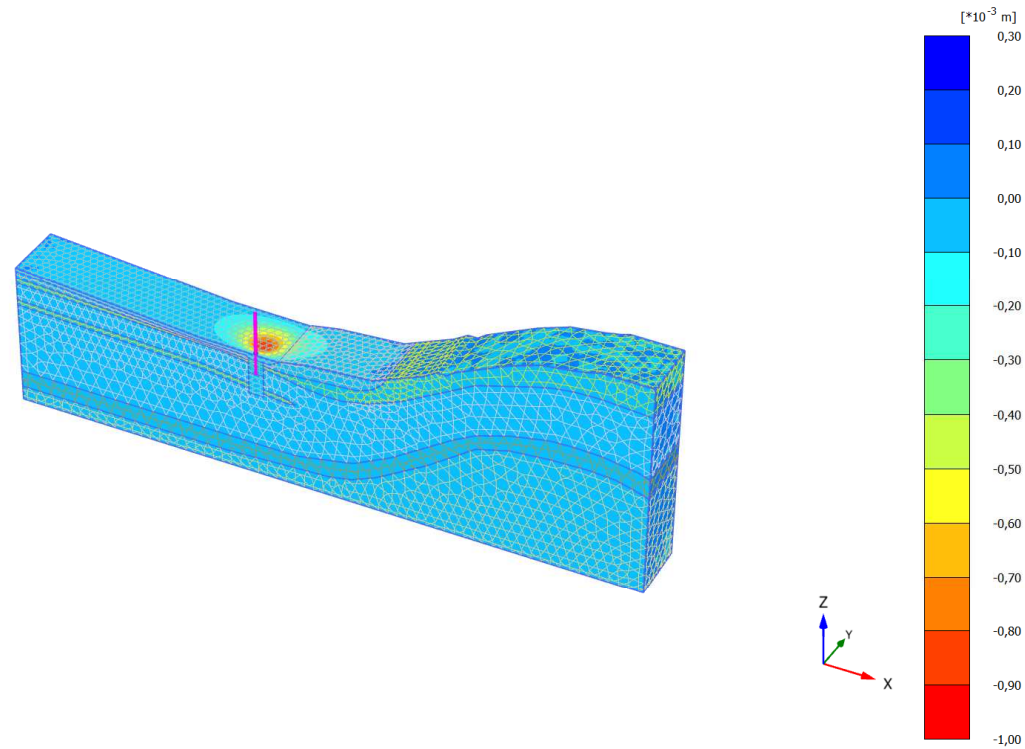


Total displacements u_x

Maximum value = $3,601 \cdot 10^{-3}$ m (Element 43450 at Node 15943)

Minimum value = $-0,3805$ m (Element 23099 at Node 30295)

2.1.1.3.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Total displacements u_y

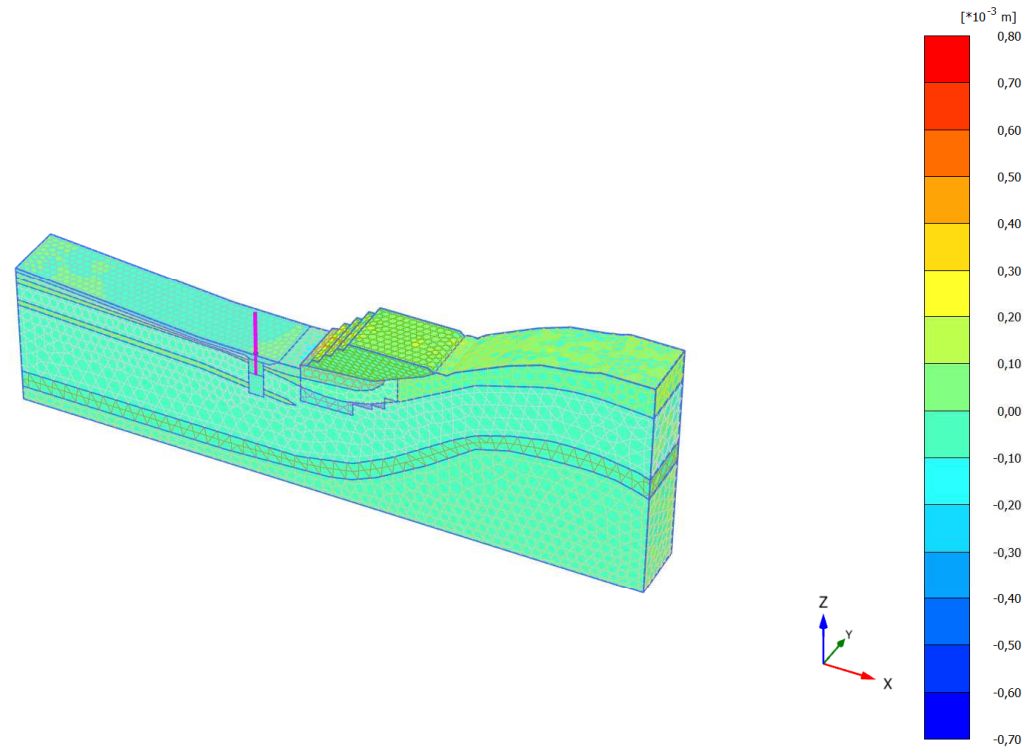


Total displacements u_y

Maximum value = $0,2364 \cdot 10^{-3}$ m (Element 48766 at Node 38546)

Minimum value = $-0,9038 \cdot 10^{-3}$ m (Element 33302 at Node 59401)

2.1.1.3.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_y

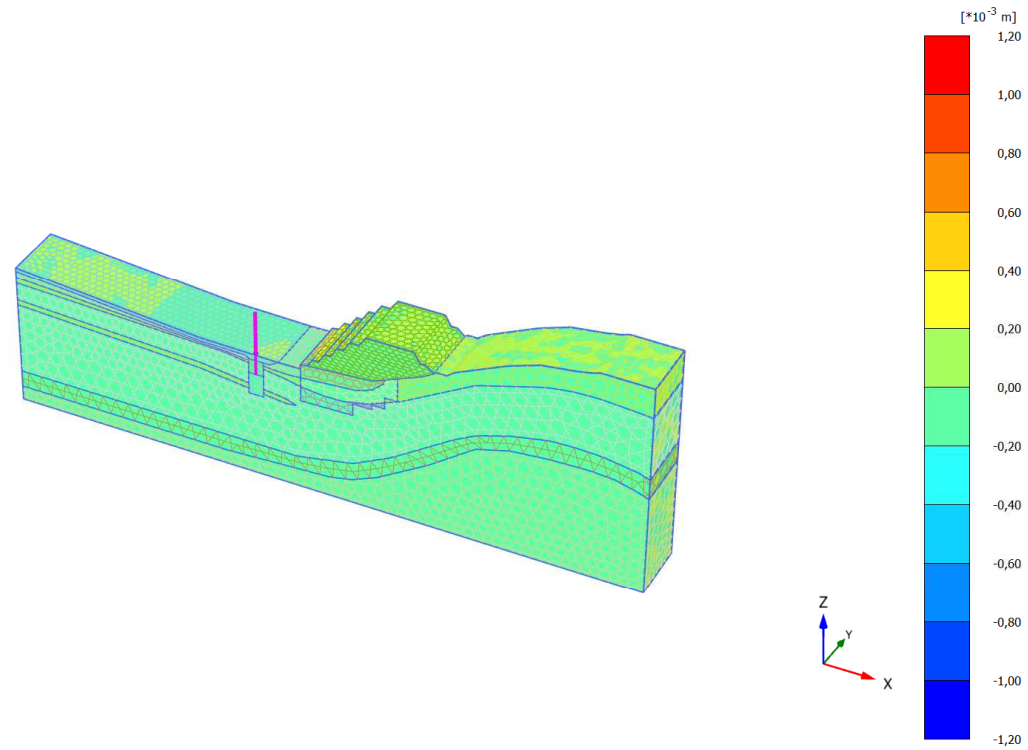


Total displacements u_y

Maximum value = 0,7183 $\times 10^{-3}$ m (Element 29091 at Node 60319)

Minimum value = -0,6005 $\times 10^{-3}$ m (Element 27694 at Node 54861)

2.1.1.3.3 Calculation results, 5° balza [Phase_20] (20/60), Total displacements u_y

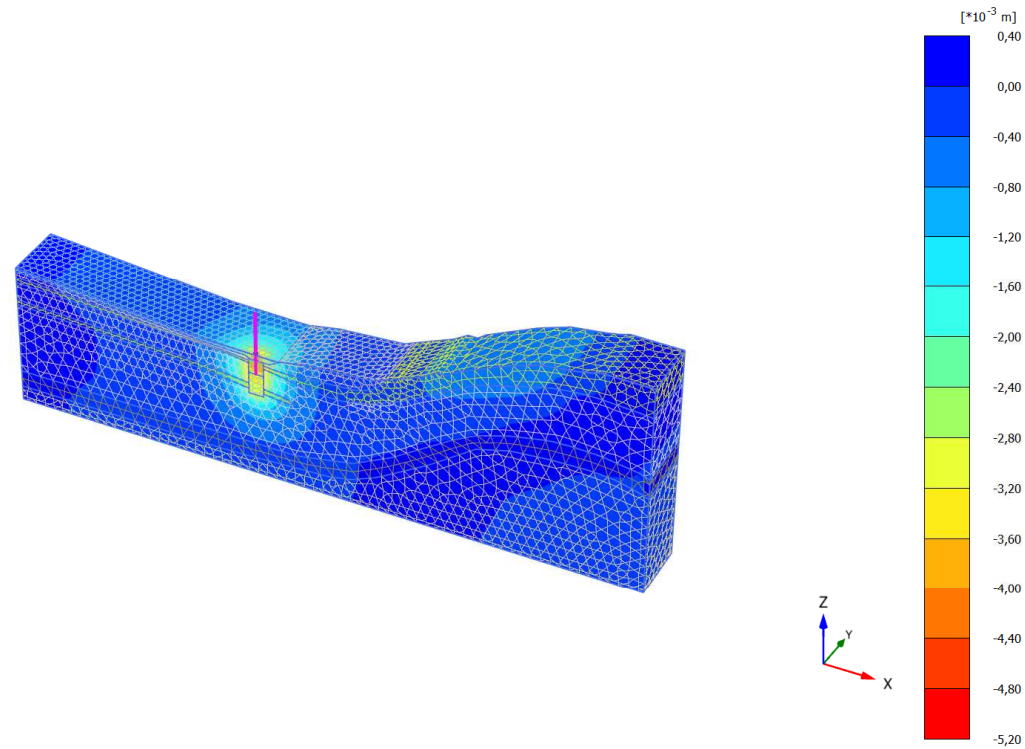


Total displacements u_y

Maximum value = $1,071 \cdot 10^{-3}$ m (Element 29670 at Node 60598)

Minimum value = $-1,027 \cdot 10^{-3}$ m (Element 27694 at Node 54861)

2.1.1.4.1 Calculation results, Carico Impalcato [Phase_3] (3/12), Total displacements u_z

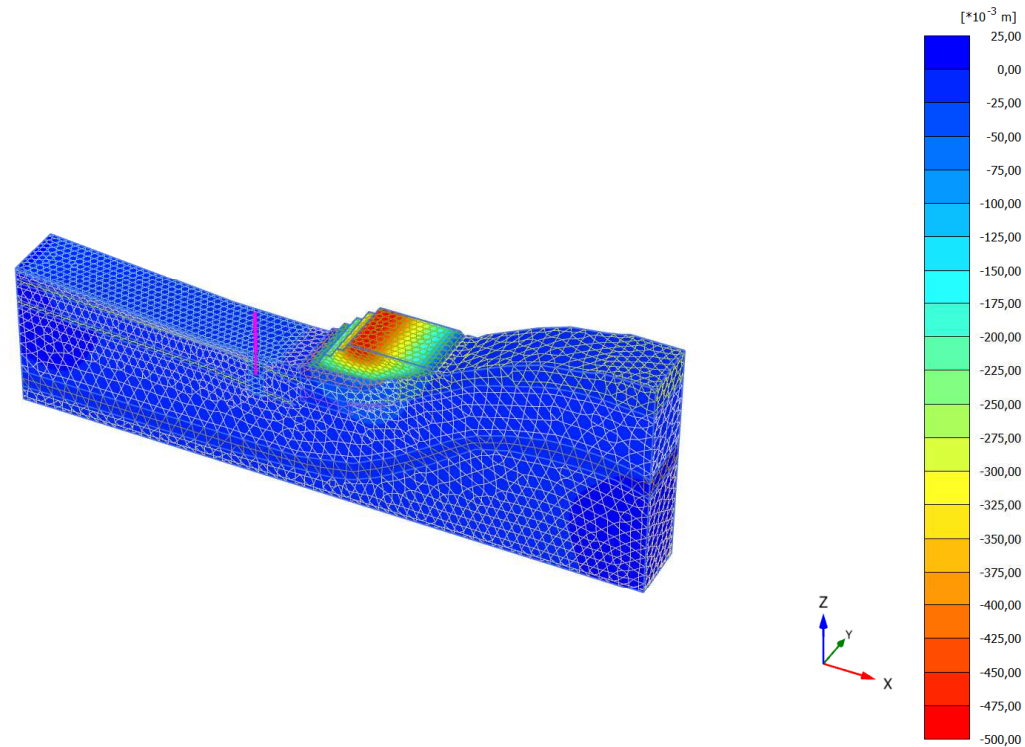


Total displacements u_z

Maximum value = $0,1708 \cdot 10^{-3}$ m (Element 74 at Node 18651)

Minimum value = $-4,881 \cdot 10^{-3}$ m (Element 31513 at Node 56603)

2.1.1.4.2 Calculation results, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_z

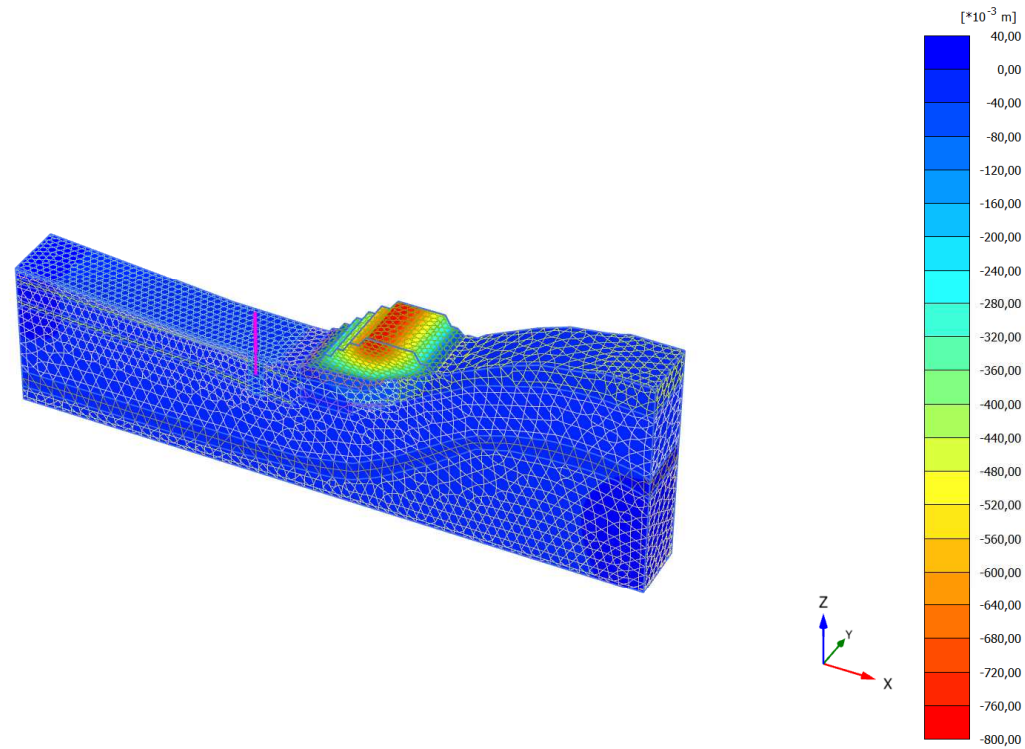


Total displacements u_z

Maximum value = $0,2863 \cdot 10^{-3}$ m (Element 56734 at Node 2826)

Minimum value = -0,4941 m (Element 24985 at Node 48967)

2.1.1.4.3 Calculation results, 5° balza [Phase_20] (20/60), Total displacements u_z

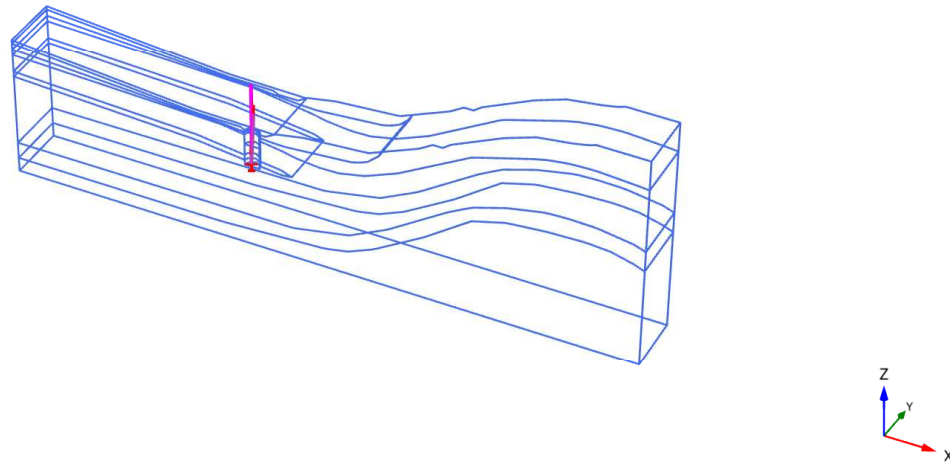


Total displacements u_z

Maximum value = $0,3191 \cdot 10^{-3}$ m (Element 56732 at Node 2823)

Minimum value = $-0,7888$ m (Element 23085 at Node 42284)

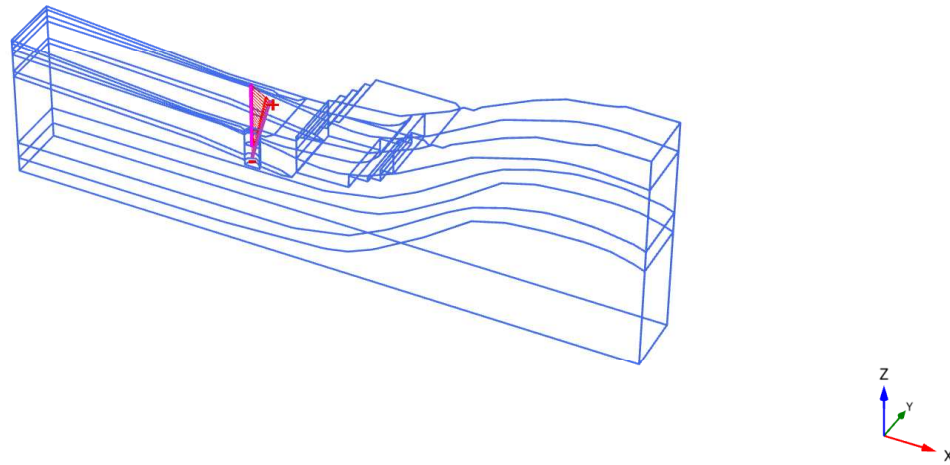
3.1.1.1.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/12), Total displacements $|u|$



Total displacements $|u|$ (scaled up $5,00 \cdot 10^3$ times)

Maximum value = $4,882 \cdot 10^{-3}$ m (Element 3 at Node 56603)

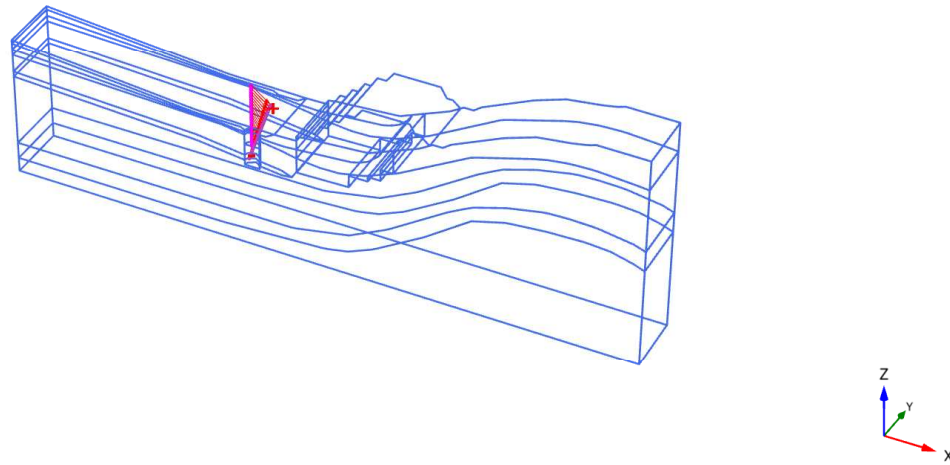
3.1.1.1.2 Calculation results, Beam, Costruzione bancata 7 [Phase_16] (16/48), Total displacements $|u|$



Total displacements $|u|$ (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $8,846 \cdot 10^{-3}$ m (Element 11 at Node 70976)

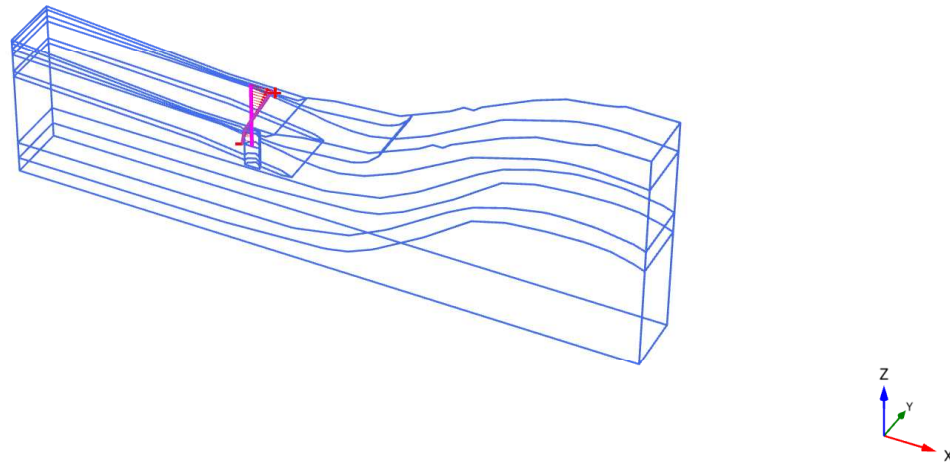
3.1.1.1.1.3 Calculation results, Beam, 5° balza [Phase_20] (20/60), Total displacements |u|



Total displacements |u| (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $9,837 \cdot 10^{-3}$ m (Element 11 at Node 70976)

3.1.1.1.2.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/12), Total displacements u_x

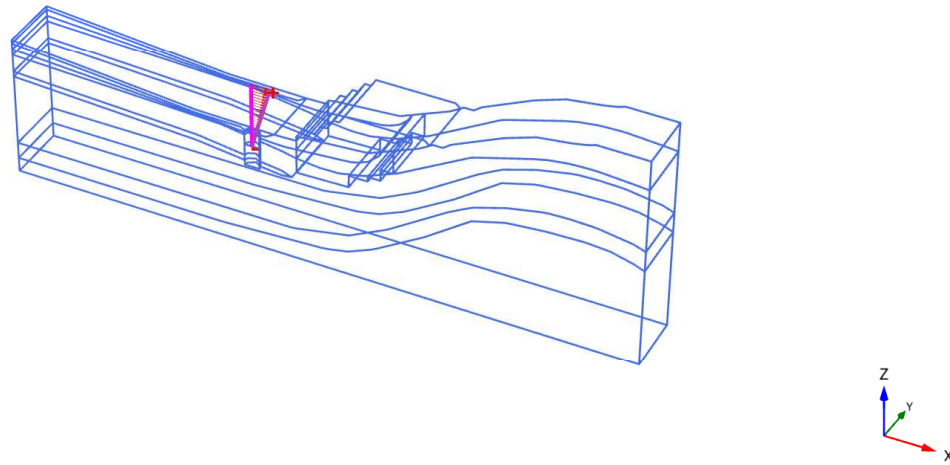


Total displacements u_x (scaled up $50,0 \cdot 10^3$ times)

Maximum value = $0,3353 \cdot 10^{-3}$ m (Element 11 at Node 70976)

Minimum value = $-0,1509 \cdot 10^{-3}$ m (Element 1 at Node 50840)

3.1.1.1.2.2 Calculation results, Beam, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_x

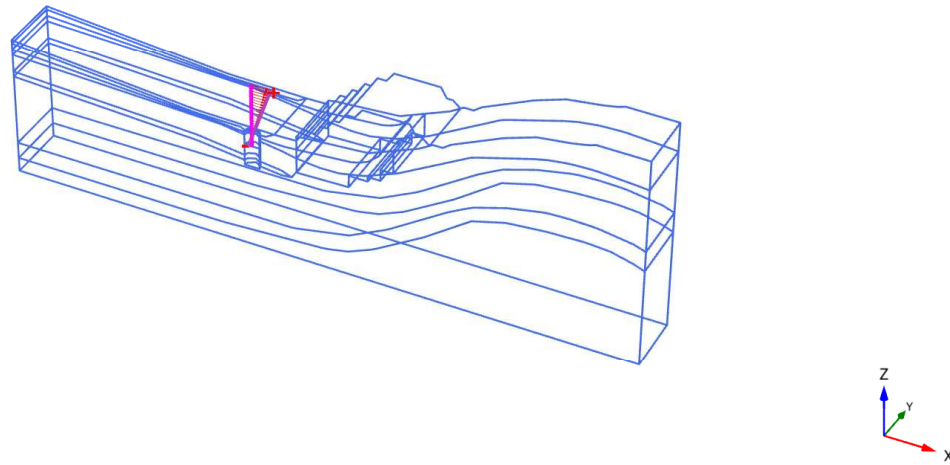


Total displacements u_x (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $7,543 \cdot 10^{-3}$ m (Element 11 at Node 70976)

Minimum value = $0,06835 \cdot 10^{-3}$ m (Element 1 at Node 50840)

3.1.1.1.2.3 Calculation results, Beam, 5° balza [Phase_20] (20/60), Total displacements u_x

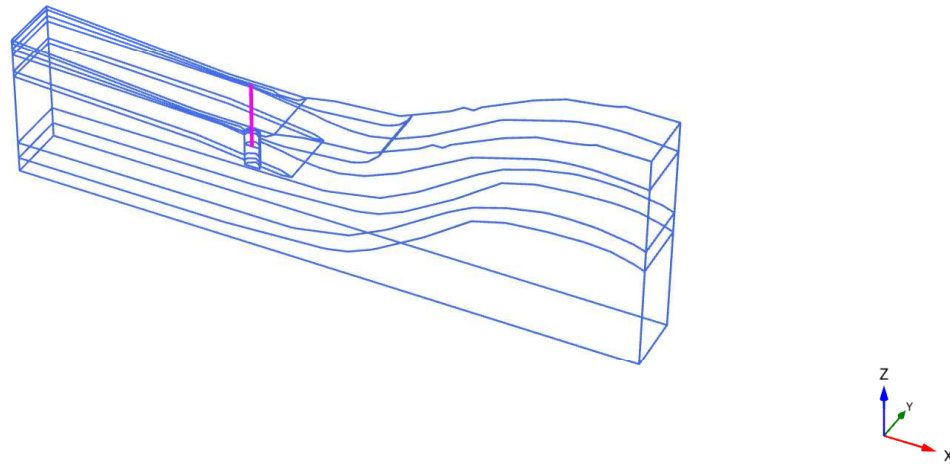


Total displacements u_x (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $7,778 \cdot 10^{-3}$ m (Element 11 at Node 70976)

Minimum value = $-1,269 \cdot 10^{-3}$ m (Element 1 at Node 50840)

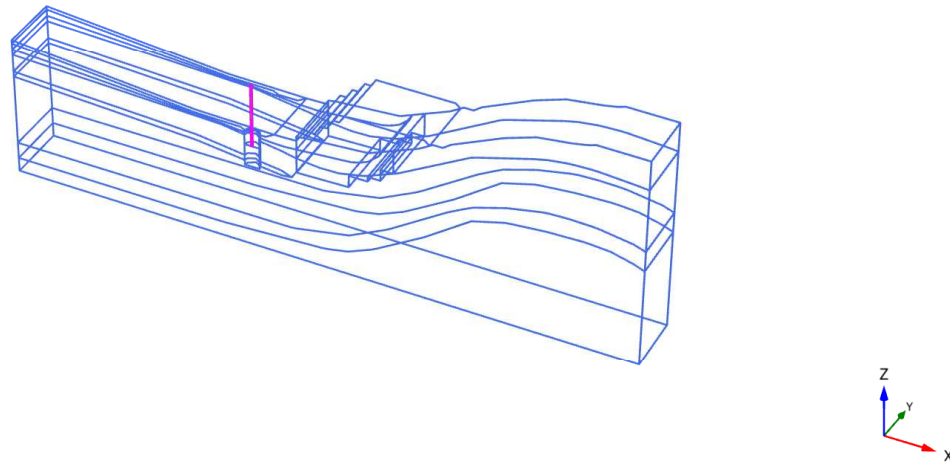
3.1.1.1.3.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/12), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,02894 \cdot 10^{-12}$ m

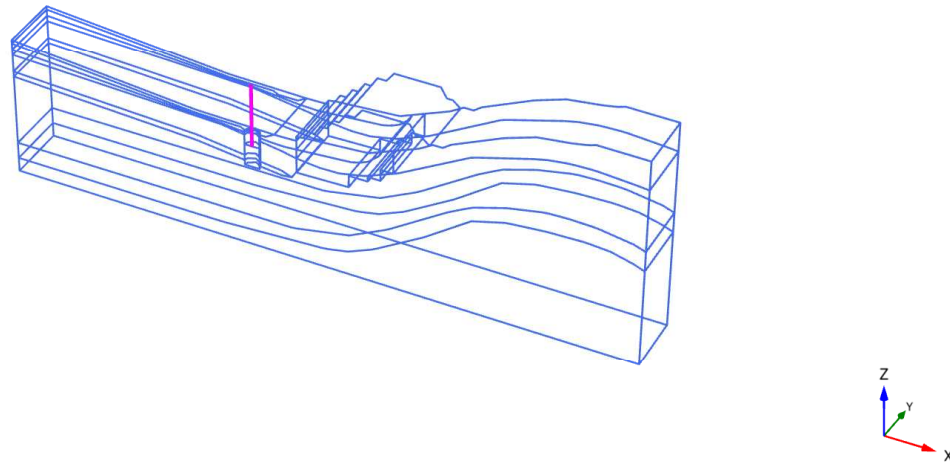
3.1.1.1.3.2 Calculation results, Beam, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of 0,000 m

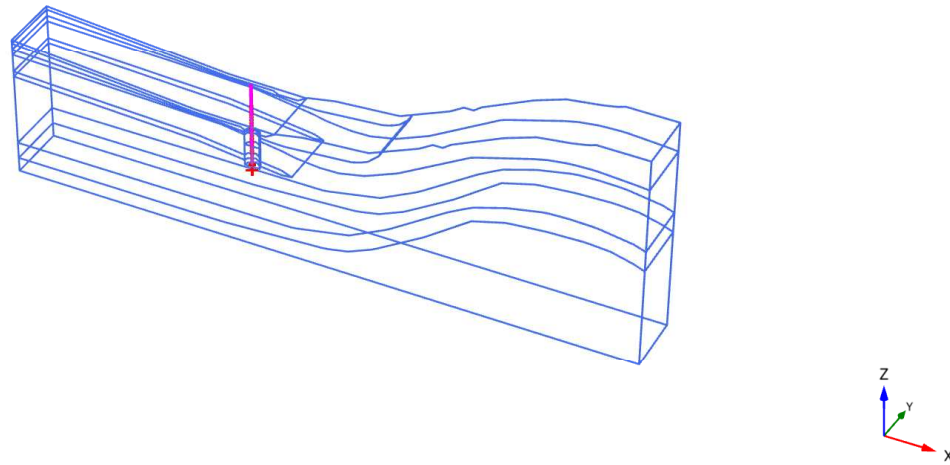
3.1.1.1.3.3 Calculation results, Beam, 5° balza [Phase_20] (20/60), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,02536 \cdot 10^{-12}$ m

3.1.1.1.4.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/12), Total displacements u_z

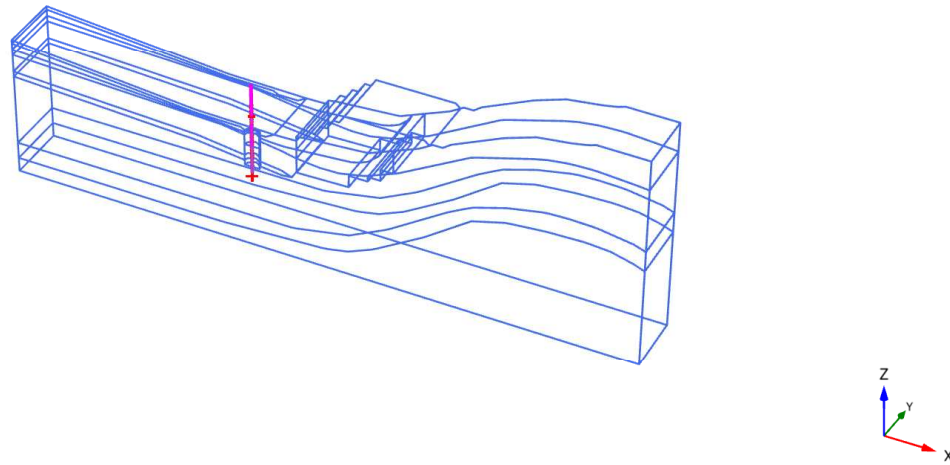


Total displacements u_z (scaled up $5,00 \cdot 10^3$ times)

Maximum value = $-3,520 \cdot 10^{-3}$ m (Element 1 at Node 50840)

Minimum value = $-4,881 \cdot 10^{-3}$ m (Element 3 at Node 56603)

3.1.1.1.4.2 Calculation results, Beam, Costruzione bancata 7 [Phase_16] (16/48), Total displacements u_z

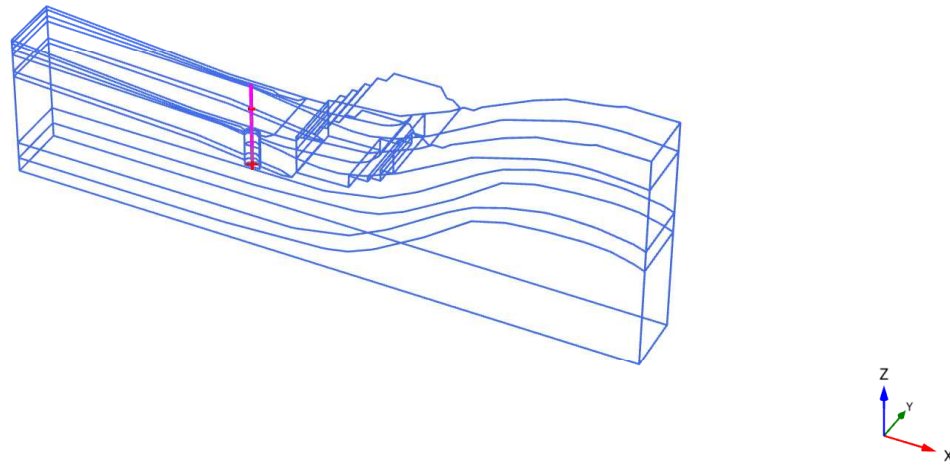


Total displacements u_z (scaled up $5,00 \cdot 10^3$ times)

Maximum value = $-4,613 \cdot 10^{-3}$ m (Element 1 at Node 50840)

Minimum value = $-4,621 \cdot 10^{-3}$ m (Element 11 at Node 70976)

3.1.1.1.4.3 Calculation results, Beam, 5° balza [Phase_20] (20/60), Total displacements u_z



Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $-6,015 \cdot 10^{-3}$ m (Element 1 at Node 50840)

Minimum value = $-6,022 \cdot 10^{-3}$ m (Element 10 at Node 70845)

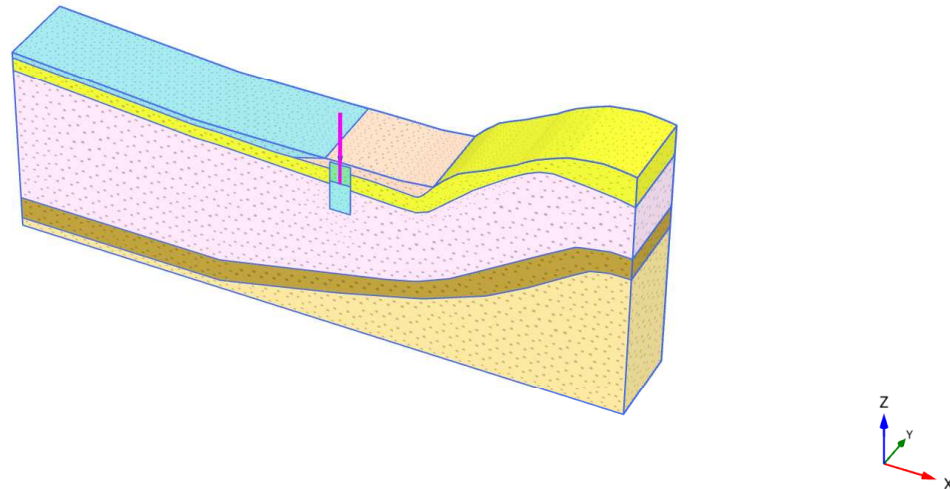
Sezione 8 – Mohr Coulomb

PLAXIS Report

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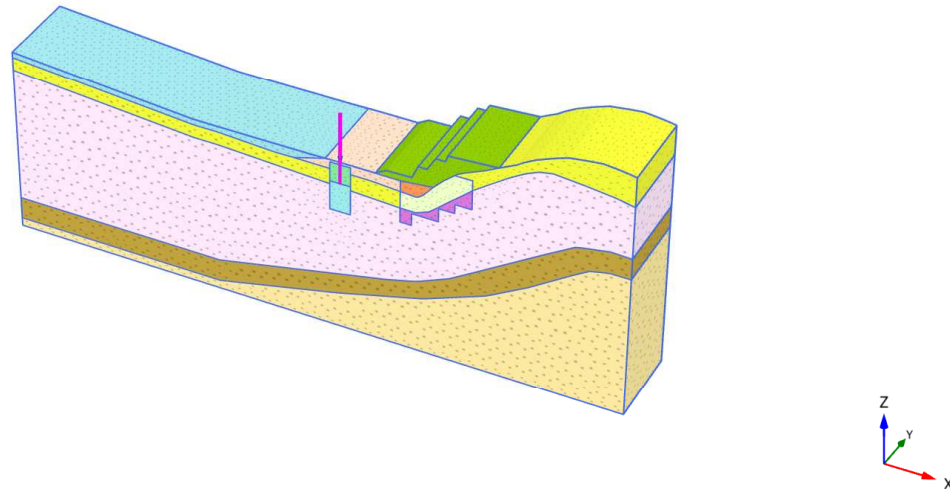
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1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Connectivity plot



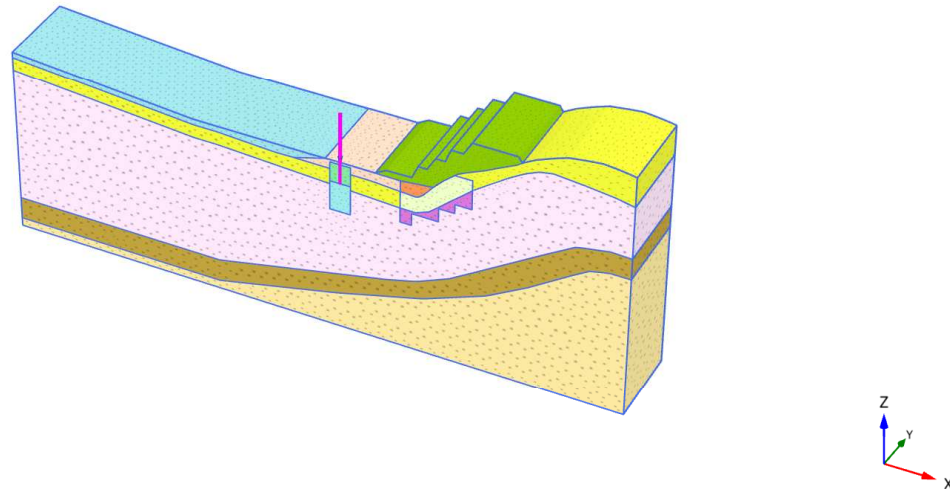
Connectivity plot

1.1.1.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Connectivity plot



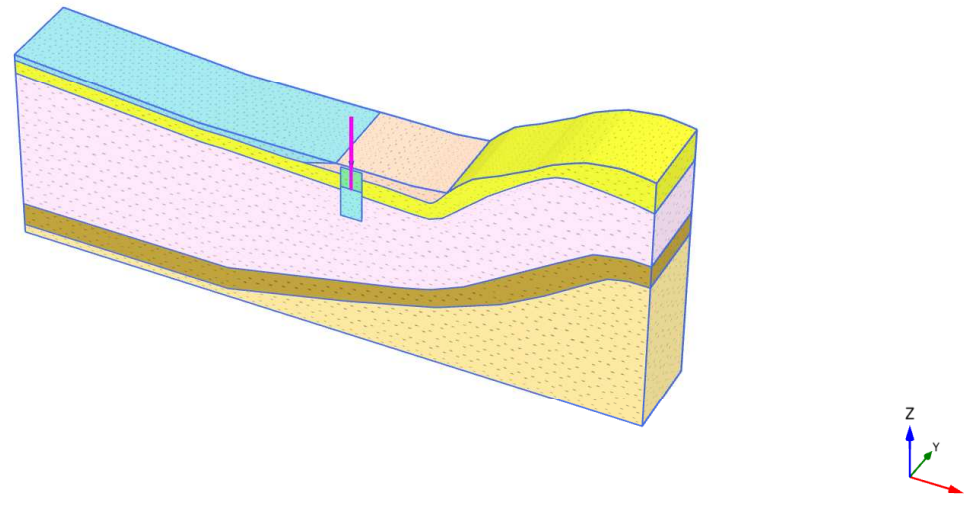
Connectivity plot

1.1.1.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Connectivity plot



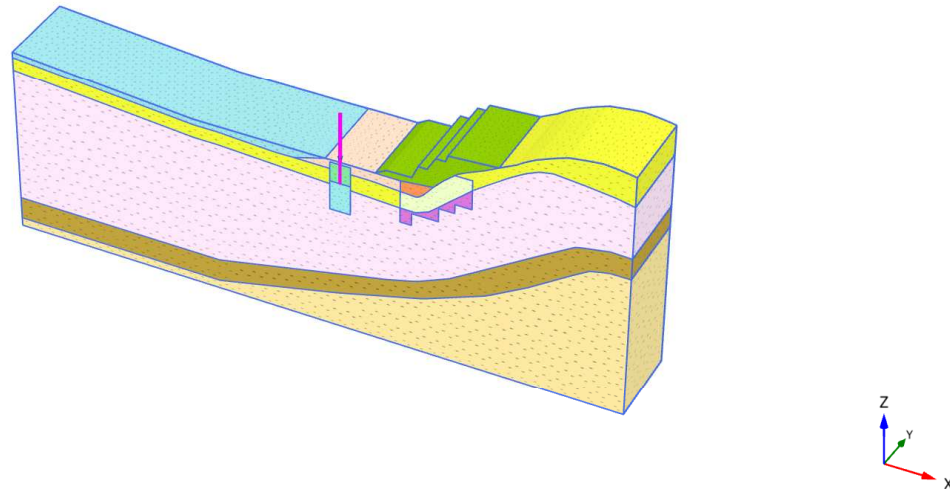
Connectivity plot

1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Materials plot



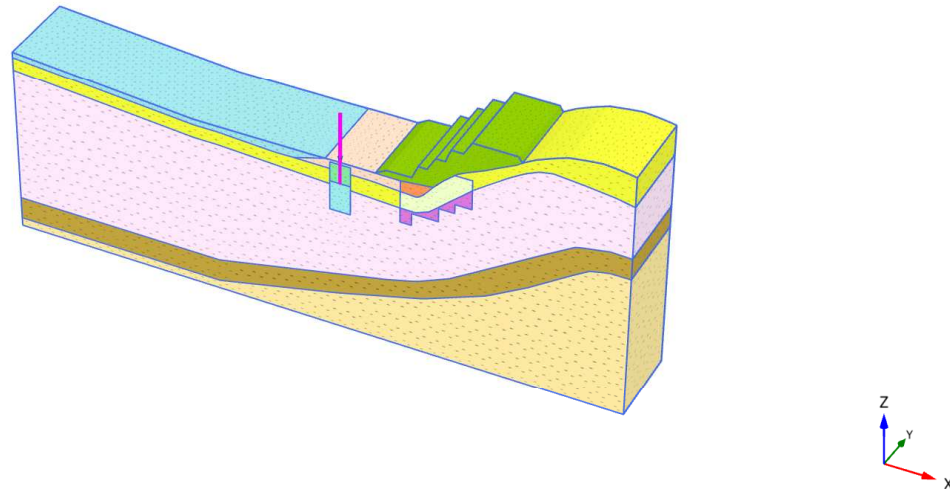
Materials plot

1.1.2.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Materials plot








Materials plot

1.1.2.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Materials plot








Materials plot

1.1.3.1.1.1 Materials - Soil and interfaces - Mohr-Coulomb (1/2)

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
Identification number		1	2	3	4	5
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Y _{sat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E	kN/m ²	50,00E3	269,0E3	150,0E3	338,0E3	20,00E3
ν (nu)		0,3000	0,2000	0,3000	0,2000	0,3000
G	kN/m ²	19,23E3	112,1E3	57,69E3	140,8E3	7692
E _{ced}	kN/m ²	67,31E3	298,9E3	201,9E3	375,6E3	26,92E3
c _{ref}	kN/m ²	20,00	150,0	20,00	100,0	10,00
ϕ (phi)	°	35,00	40,00	32,00	40,00	30,00
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
V _s	m/s	97,07	234,4	168,1	262,7	64,72
V _p	m/s	181,6	382,7	314,6	429,0	121,1
Set to default values		Yes	Yes	Yes	Yes	Yes





Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000	0,000
C_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000	0,000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes	Yes
$K_{0,x}$		0,4264	0,3572	0,4701	0,3572	0,5000
$K_{0,y}$		0,4264	0,3572	0,4701	0,3572	0,5000
k_x	m/day	0,000	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.1.1.2 Materials - Soil and interfaces - Mohr-Coulomb (2/2)

Identification		Rc_Rilevato	JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato	Rm_Riporto costituito dal marino
Identification number		6	7	8	9	10
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	18,00	18,00	27,00	27,00	18,00
Y _{sat}	kN/m ³	18,00	18,00	27,00	27,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E	kN/m ²	10,00E3	249,0E3	300,0E3	250,0E3	10,00E3
ν (nu)		0,3000	0,2000	0,1500	0,2000	0,3000
G	kN/m ²	3846	103,8E3	130,4E3	104,2E3	3846
E _{ced}	kN/m ²	13,46E3	276,7E3	316,8E3	277,8E3	13,46E3
c _{ref}	kN/m ²	10,00	50,00	500,0	250,0	0,000
ϕ (phi)	°	35,00	40,00	40,00	40,00	35,00
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
V _s	m/s	45,76	237,7	217,6	194,4	45,76
V _p	m/s	85,61	388,1	339,1	317,5	85,61
Set to default values		Yes	Yes	Yes	Yes	Yes


Identification		Rc_Rilevato	JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato	Rm_Riporto costituito dal marino
E _{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z _{ref}	m	0,000	0,000	0,000	0,000	0,000
C _{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
Z _{ref}	m	0,000	0,000	0,000	0,000	0,000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R _{inter}		1,000	1,000	1,000	1,000	1,000
δ _{inter}		0,000	0,000	0,000	0,000	0,000
K ₀ determination		Automatic	Automatic	Automatic	Automatic	Automatic
K _{0,x} = K _{0,y}		Yes	Yes	Yes	Yes	Yes
K _{0,x}		0,4264	0,3572	0,3572	0,3572	0,4264
K _{0,y}		0,4264	0,3572	0,3572	0,3572	0,4264
k _x	m/day	0,000	0,000	0,000	0,000	0,000
k _y	m/day	0,000	0,000	0,000	0,000	0,000
k _z	m/day	0,000	0,000	0,000	0,000	0,000
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C _k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.1.2 Materials - Soil and interfaces - Linear elastic

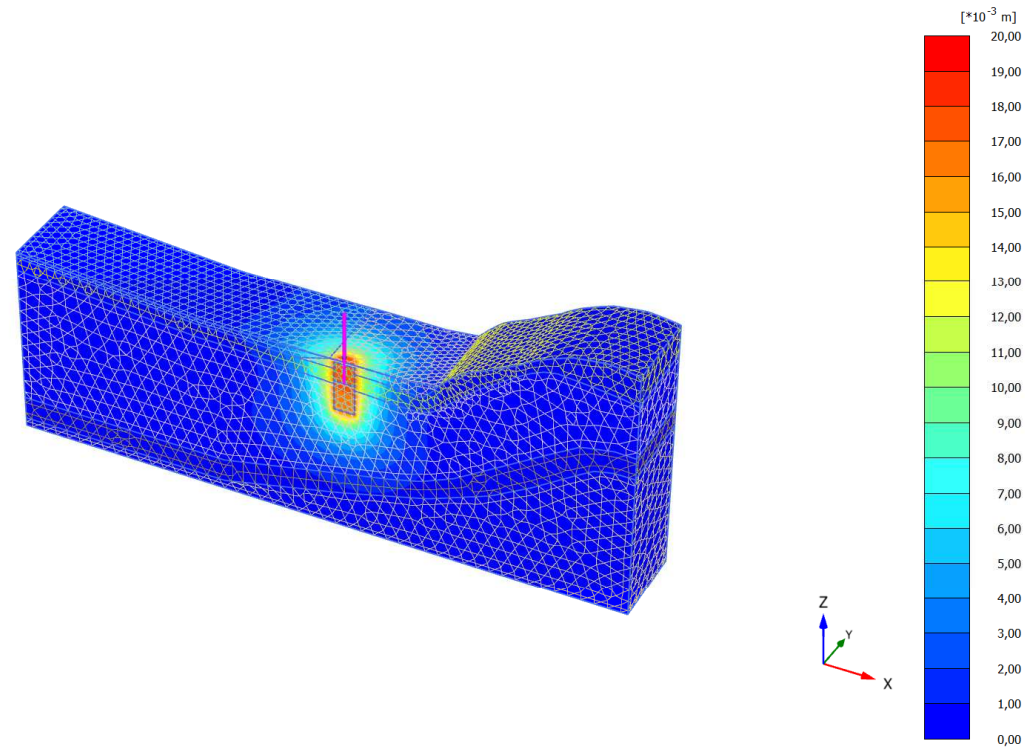
Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
Identification number		11	12	13	14
Drainage type		Drained	Drained	Drained	Drained
Colour					
Comments					
γ_{unsat}	kN/m ³	25,00	25,00	18,00	0,000
γ_{sat}	kN/m ³	25,00	25,00	18,00	0,000
Dilatancy cut-off		No	No	No	No
e_{init}		0,5000	0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000	0,000
e_{max}		999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000
E	kN/m ²	30,20E6	15,00E6	3000	1,000
ν (nu)		0,1500	0,1000	0,3500	0,3000
G	kN/m ²	13,13E6	6,818E6	1111	0,3846
E_{oed}	kN/m ²	31,89E6	15,34E6	4815	1,346
V_s	m/s	2269	1635	24,60	0,000

Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
V_p	m/s	3536	2452	51,20	0,000
Set to default values		Yes	Yes	Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000
$\bar{\sigma}_{inter}$		0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes
$K_{0,x}$		1,000	1,000	1,000	1,000
$K_{0,y}$		1,000	1,000	1,000	1,000
k_x	m/day	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.2 Materials - Beams -

Identification		Pila
Identification number		1
Comments		
Colour		
A	m ²	1,000
γ	kN/m ³	0,000
Linear		Yes
E	kN/m ²	1,000E6
I ₃	m ⁴	1,000
I ₂	m ⁴	1,000
Rayleigh α		0,000
Rayleigh β		0,000

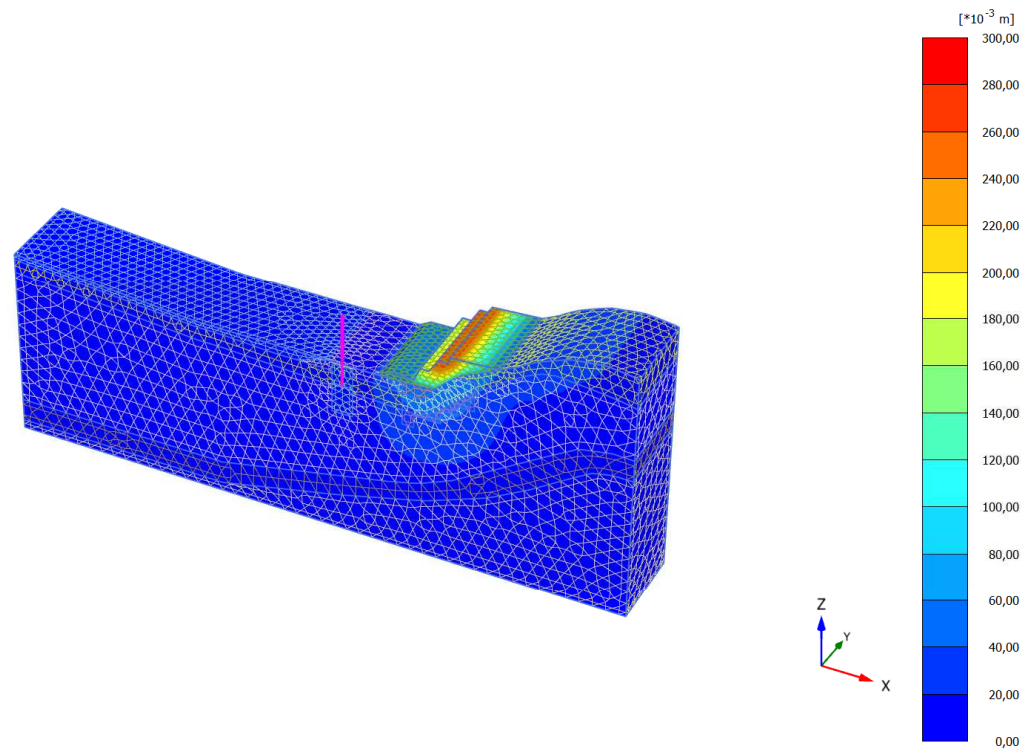
2.1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,01944 m (Element 46753 at Node 62385)

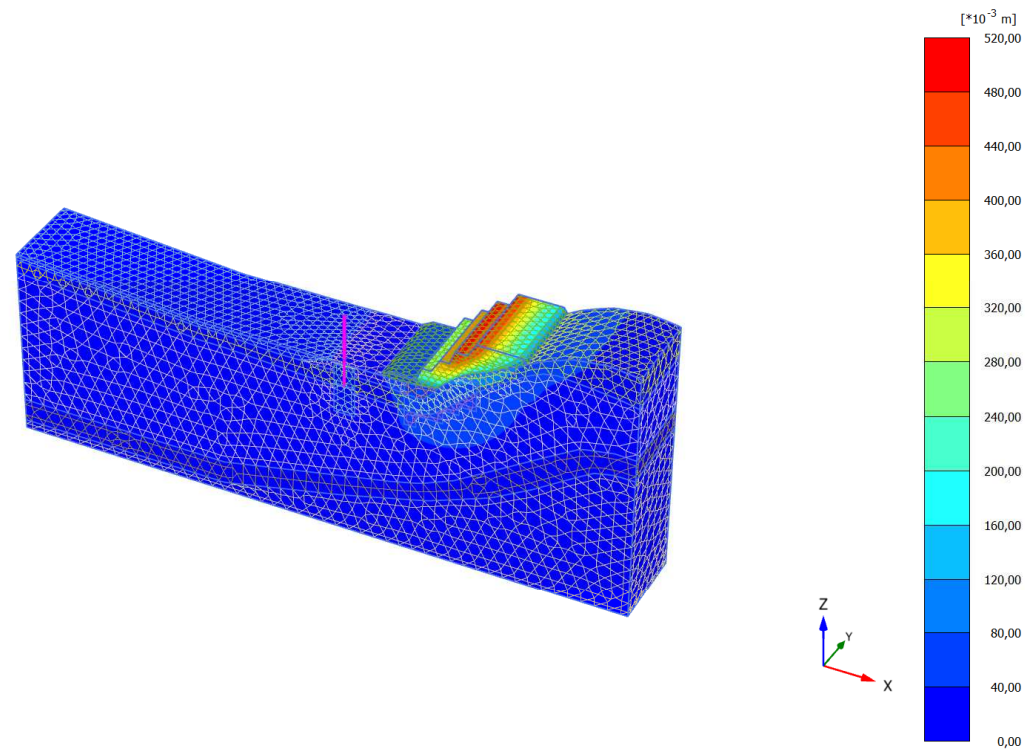
2.1.1.1.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,2816 m (Element 36733 at Node 23202)

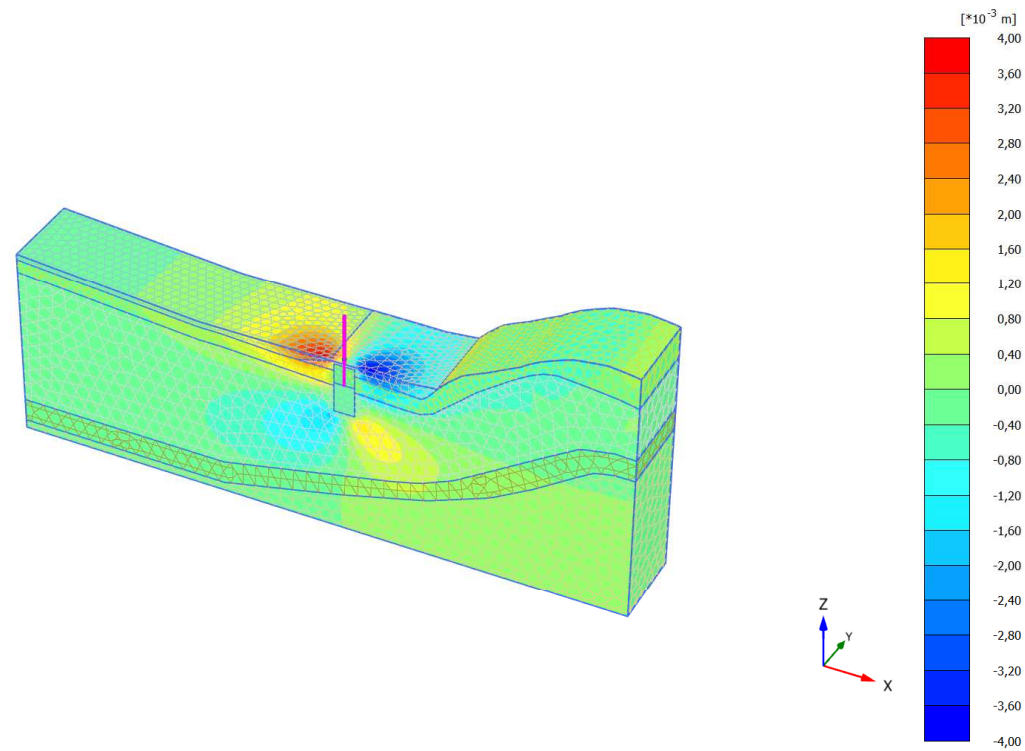
2.1.1.1.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,5002 m (Element 3287 at Node 26260)

2.1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Total displacements u_x

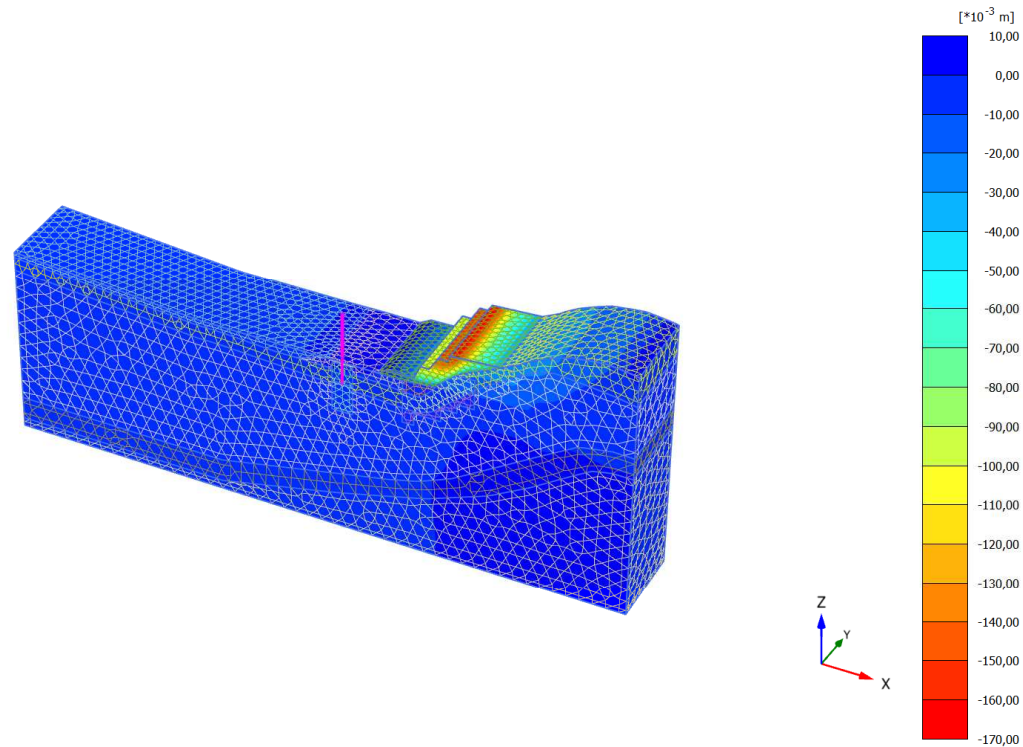


Total displacements u_x

Maximum value = $3,771 \cdot 10^{-3}$ m (Element 42336 at Node 64160)

Minimum value = $-3,920 \cdot 10^{-3}$ m (Element 46518 at Node 52246)

2.1.1.2.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Total displacements u_x

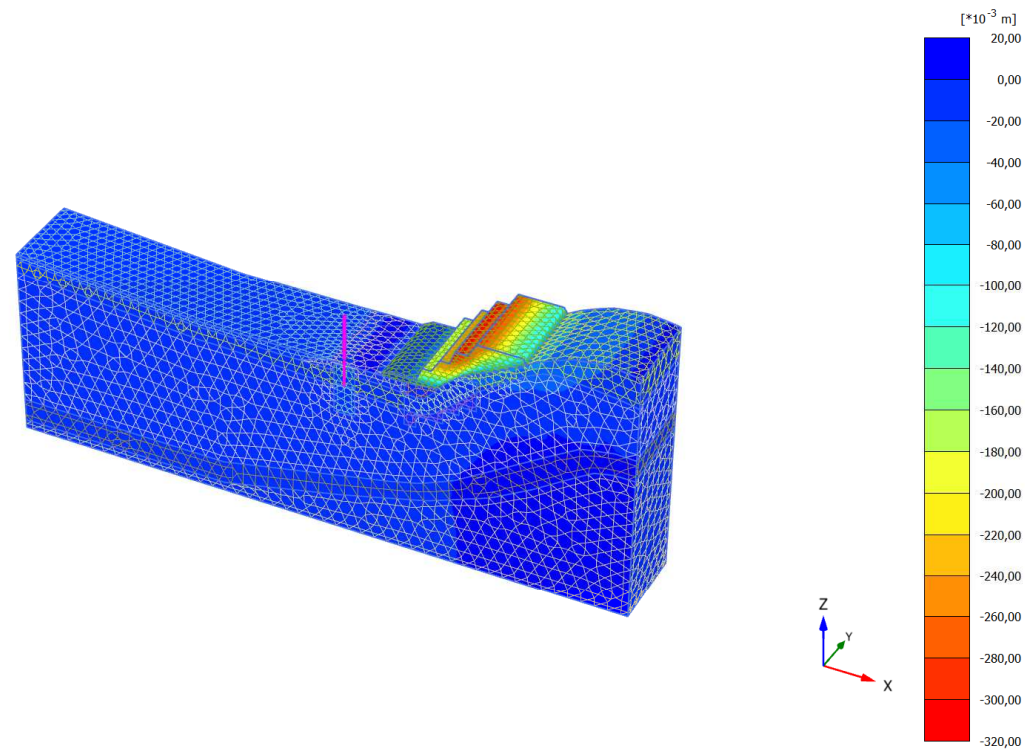


Total displacements u_x

Maximum value = $2,720 \cdot 10^{-3}$ m (Element 64133 at Node 18794)

Minimum value = -0,1651 m (Element 36751 at Node 23079)

2.1.1.2.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Total displacements u_x

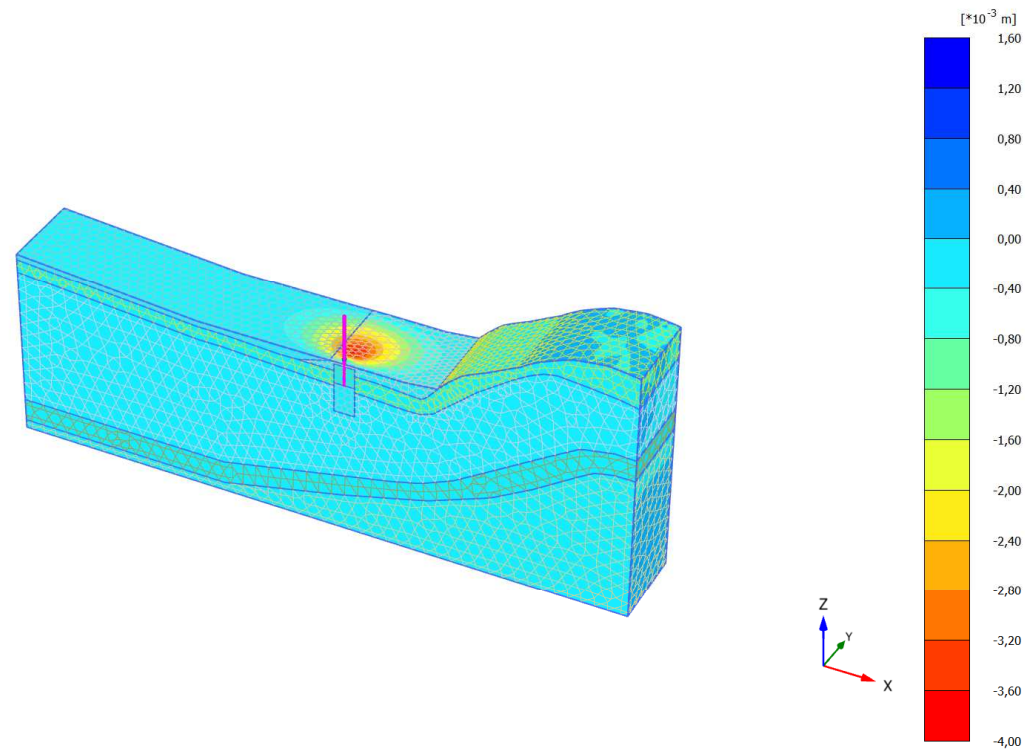


Total displacements u_x

Maximum value = 3,283 $\times 10^{-3}$ m (Element 63553 at Node 14210)

Minimum value = -0,3080 m (Element 3287 at Node 22650)

2.1.1.3.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Total displacements u_y

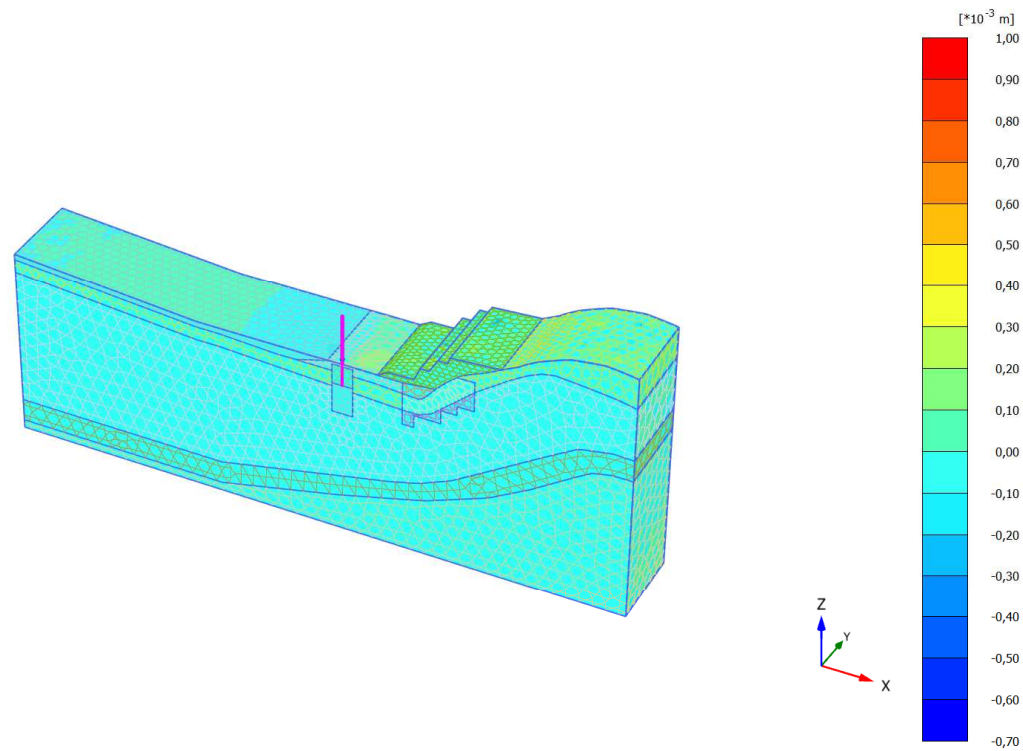


Total displacements u_y

Maximum value = $1,413 \cdot 10^{-3}$ m (Element 55618 at Node 42104)

Minimum value = $-3,638 \cdot 10^{-3}$ m (Element 46543 at Node 52104)

2.1.1.3.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Total displacements u_y

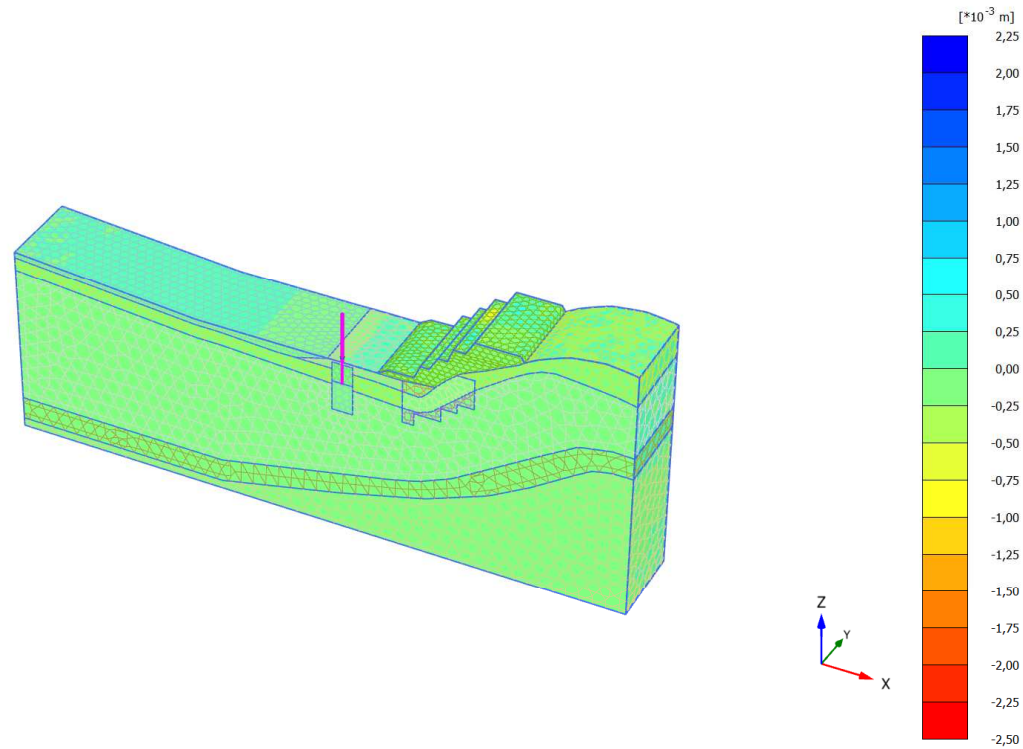


Total displacements u_y

Maximum value = $0,9323 \cdot 10^{-3}$ m (Element 40406 at Node 34245)

Minimum value = $-0,6630 \cdot 10^{-3}$ m (Element 39629 at Node 37270)

2.1.1.3.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Total displacements u_y

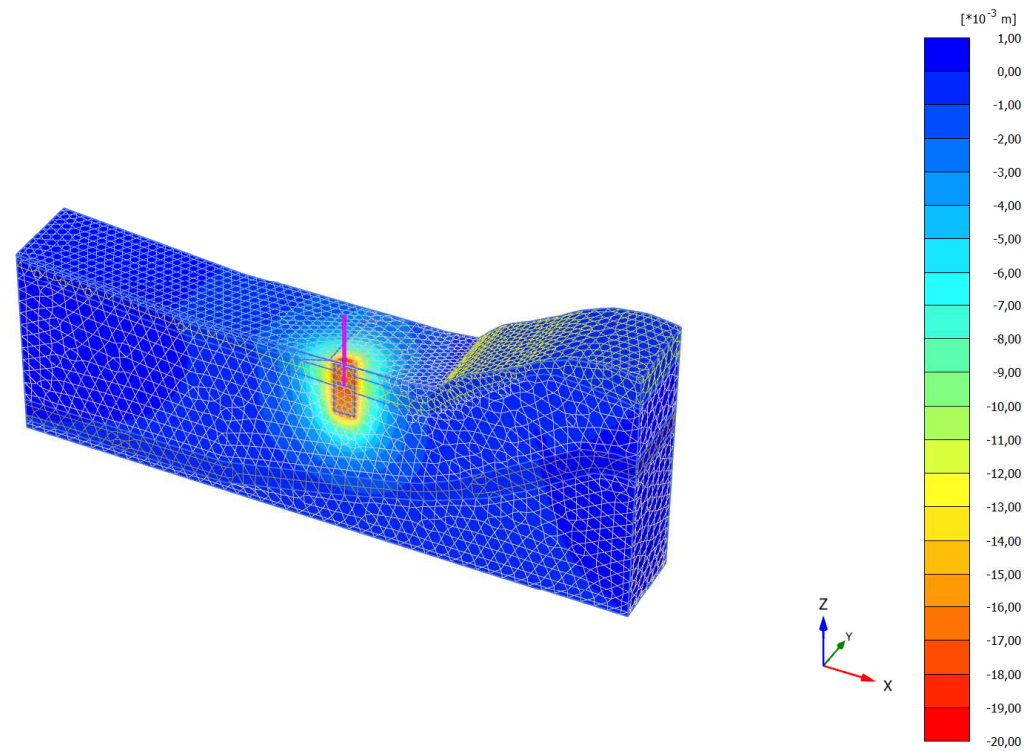


Total displacements u_y

Maximum value = $2,046 \times 10^{-3}$ m (Element 39847 at Node 34113)

Minimum value = $-2,314 \times 10^{-3}$ m (Element 39822 at Node 34218)

2.1.1.4.1 Calculation results, Carico Impalcato [Phase_3] (3/18), Total displacements u_z

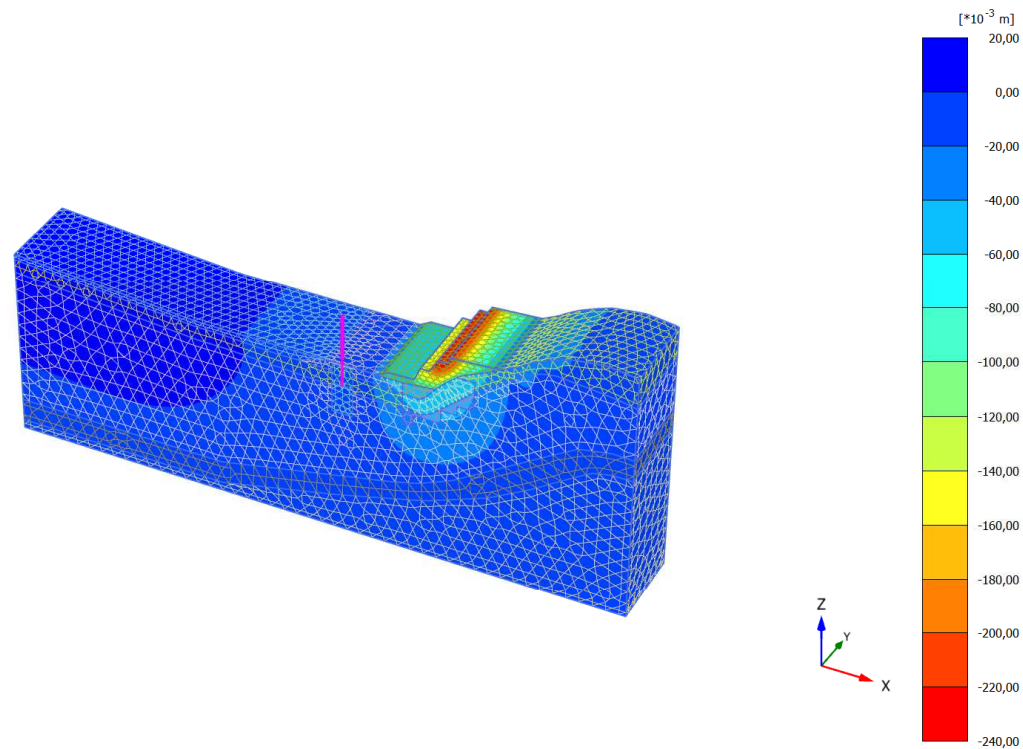


Total displacements u_z

Maximum value = $0,09577 \cdot 10^{-3}$ m (Element 51059 at Node 4458)

Minimum value = $-0,01944$ m (Element 46753 at Node 62385)

2.1.1.4.2 Calculation results, Fine rilevato basso [Phase_14] (14/52), Total displacements u_z

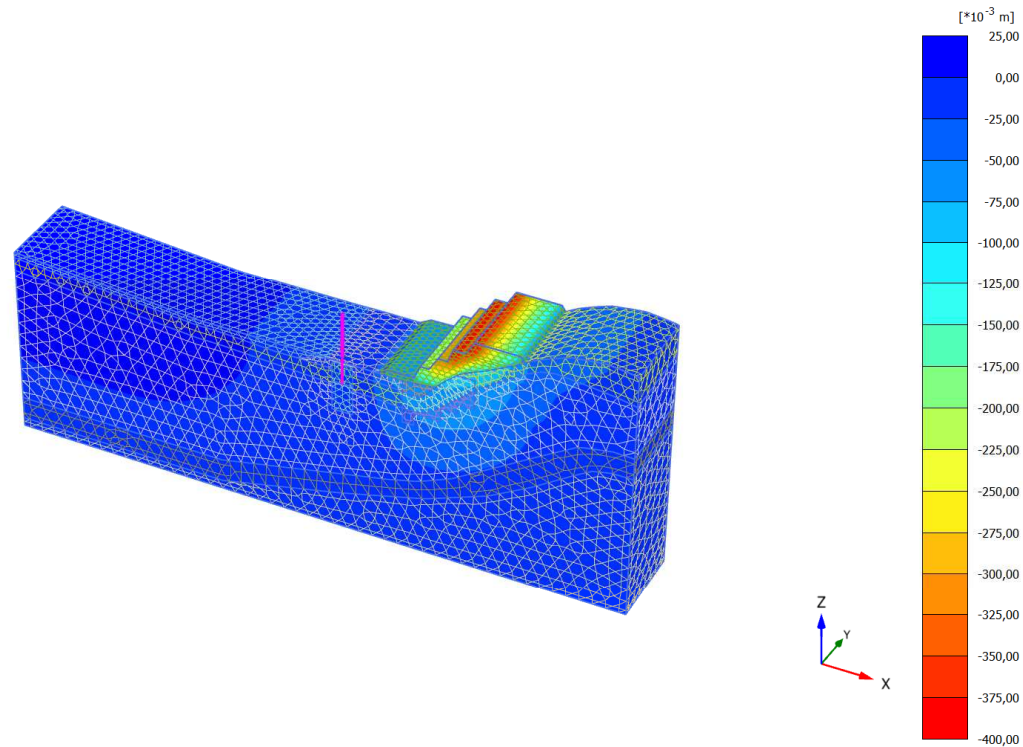


Total displacements u_z

Maximum value = 0,5250 $\times 10^{-3}$ m (Element 42766 at Node 80650)

Minimum value = -0,2343 m (Element 37696 at Node 30005)

2.1.1.4.3 Calculation results, Fine rilevato alto [Phase_19] (19/68), Total displacements u_z

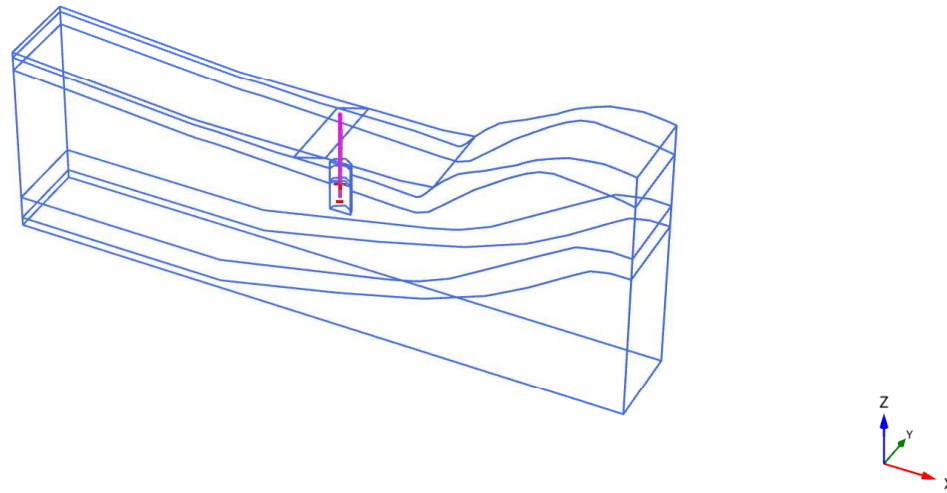


Total displacements u_z

Maximum value = $0,8205 \cdot 10^{-3}$ m (Element 42699 at Node 77924)

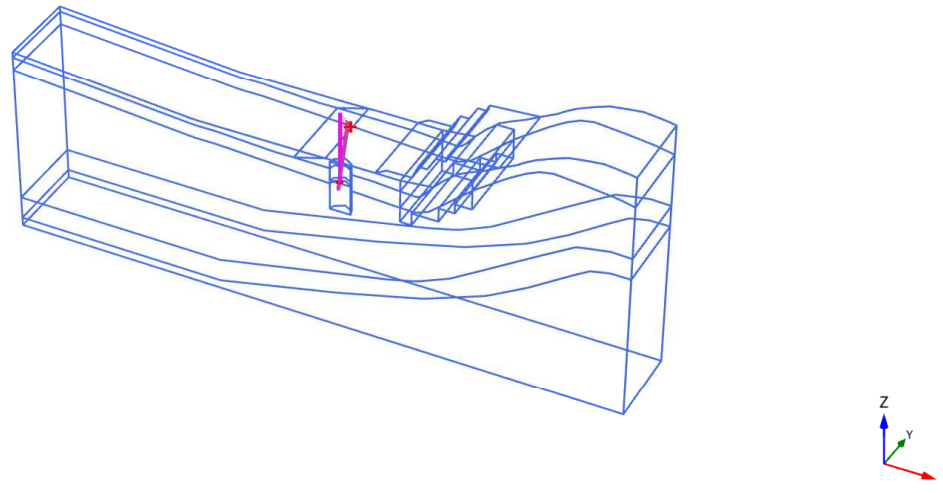
Minimum value = -0,3987 m (Element 1438 at Node 20270)

3.1.1.1.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/18), Total displacements $|u|$



Total displacements $|u|$ (scaled up 500 times)
Maximum value = 0,01944 m (Element 3 at Node 62385)

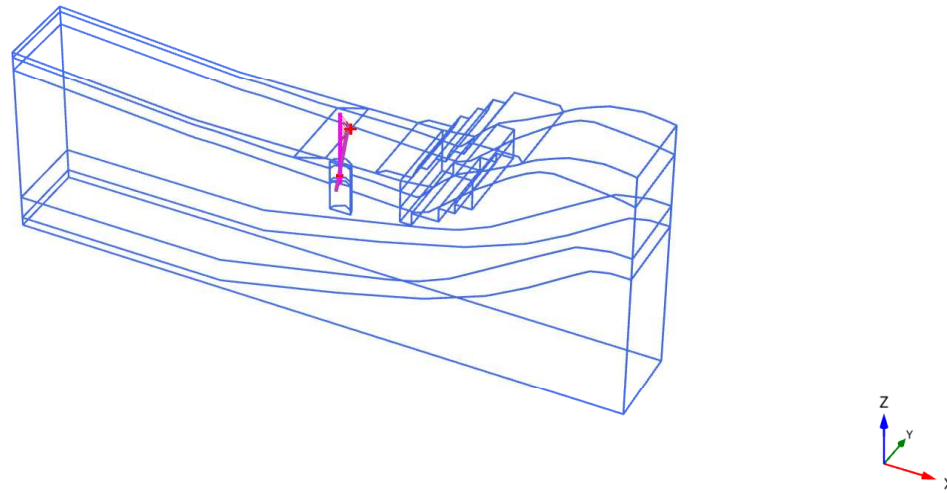
3.1.1.1.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/52), Total displacements |u|



Total displacements |u| (scaled up 500 times)

Maximum value = 0,01219 m (Element 11 at Node 63518)

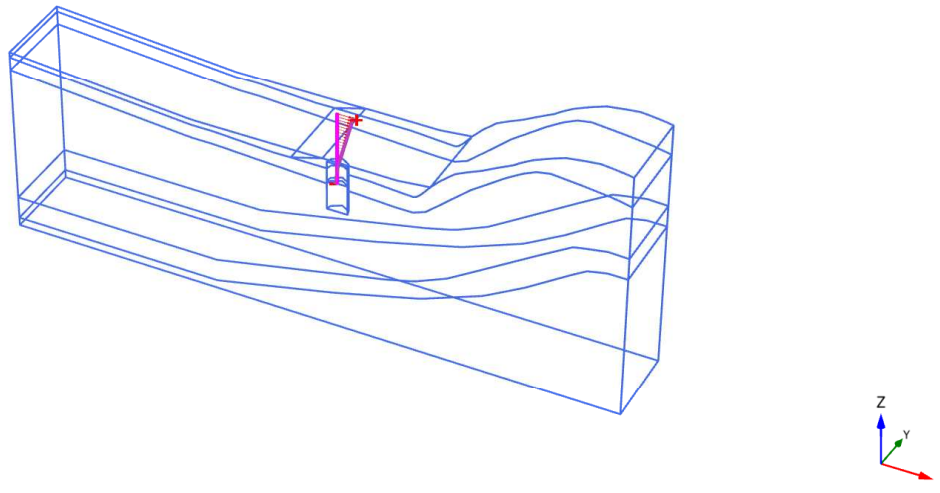
3.1.1.1.1.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/68), Total displacements |u|



Total displacements |u| (scaled up 500 times)

Maximum value = 0,01444 m (Element 11 at Node 63518)

3.1.1.1.2.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/18), Total displacements u_x

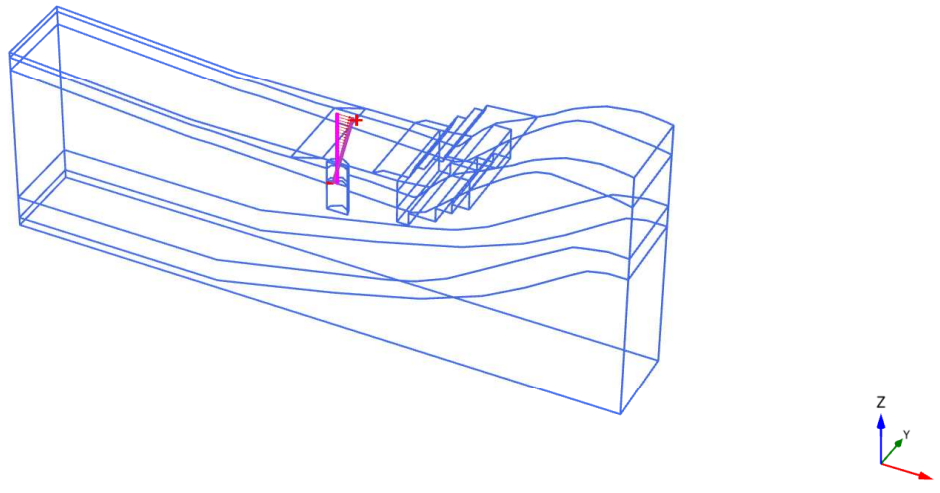


Total displacements u_x (scaled up $10,0 \cdot 10^3$ times)

Maximum value = $0,9103 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $-0,05727 \cdot 10^{-3}$ m (Element 1 at Node 55764)

3.1.1.1.2.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/52), Total displacements u_x

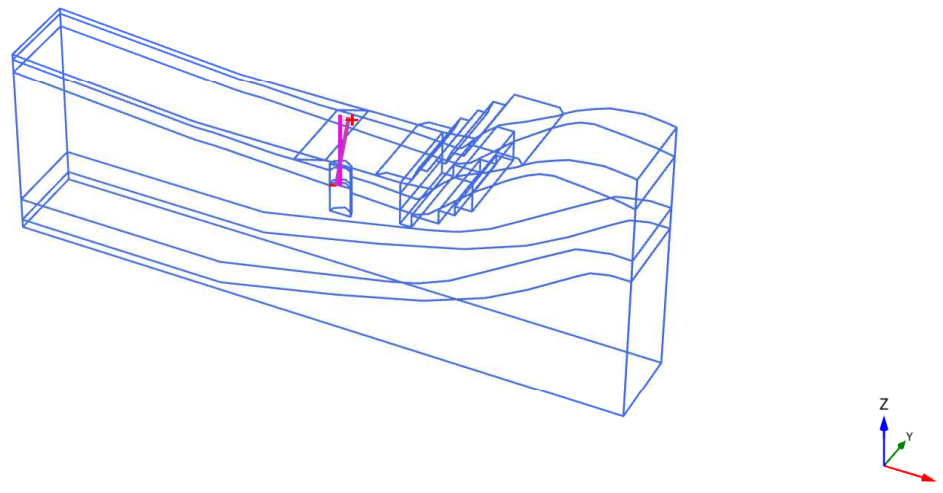


Total displacements u_x (scaled up $1,00 \cdot 10^3$ times)

Maximum value = $8,976 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $-2,149 \cdot 10^{-3}$ m (Element 1 at Node 55764)

3.1.1.1.2.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/68), Total displacements u_x

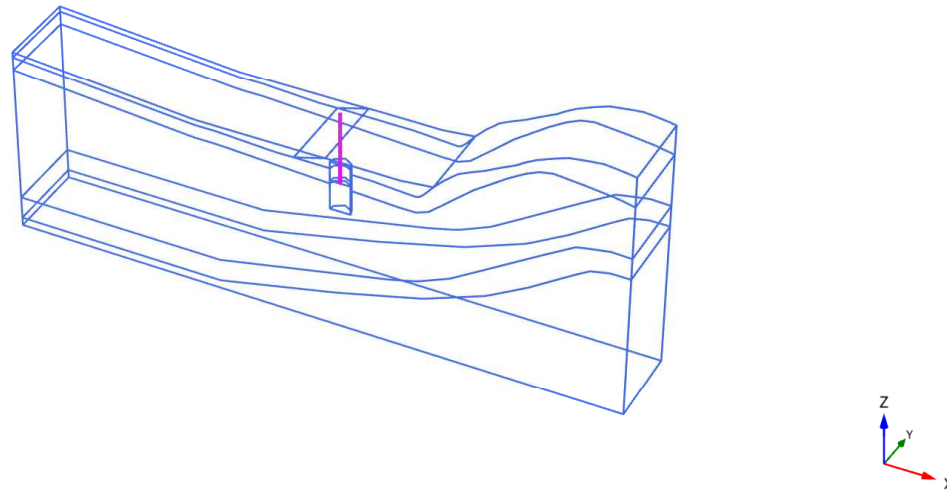


Total displacements u_x (scaled up 500 times)

Maximum value = $9,796 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $-4,650 \cdot 10^{-3}$ m (Element 1 at Node 55764)

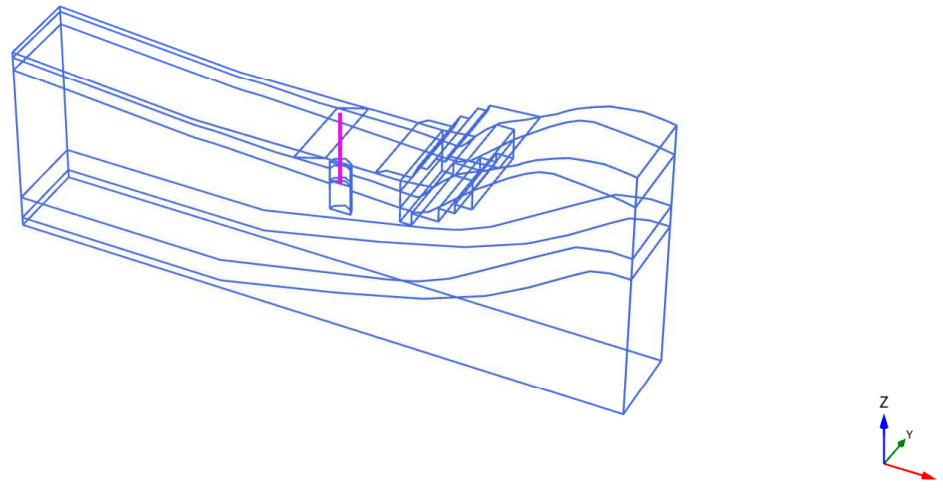
3.1.1.1.3.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/18), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of 0,000 m

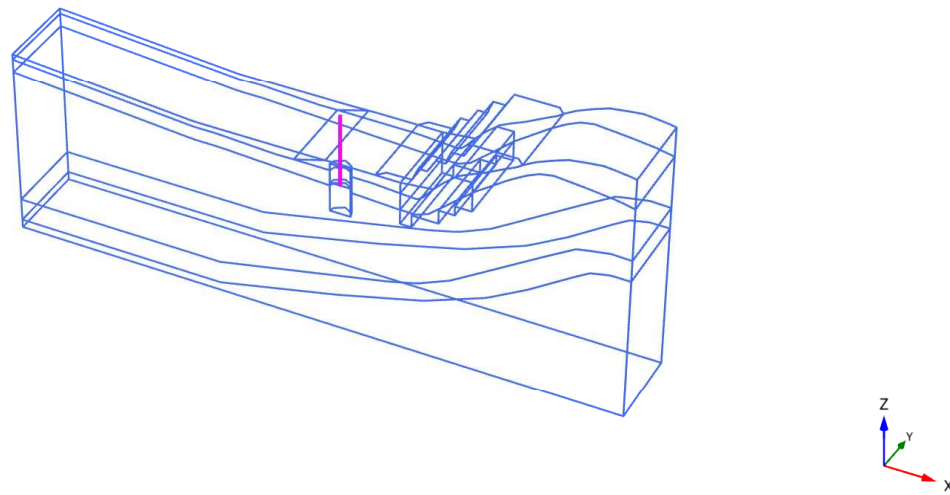
3.1.1.1.3.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/52), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $3,129 \cdot 10^{-15}$ m

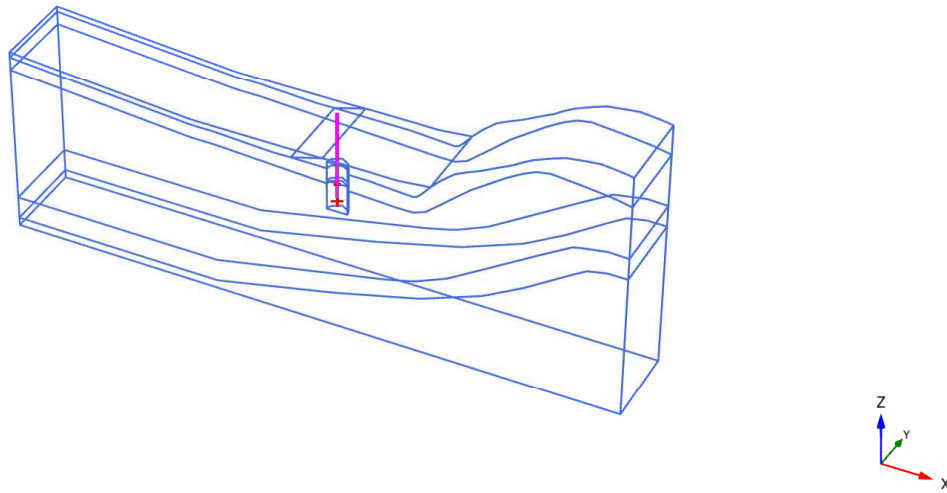
3.1.1.1.3.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/68), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of 0,000 m

3.1.1.1.4.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/18), Total displacements u_z

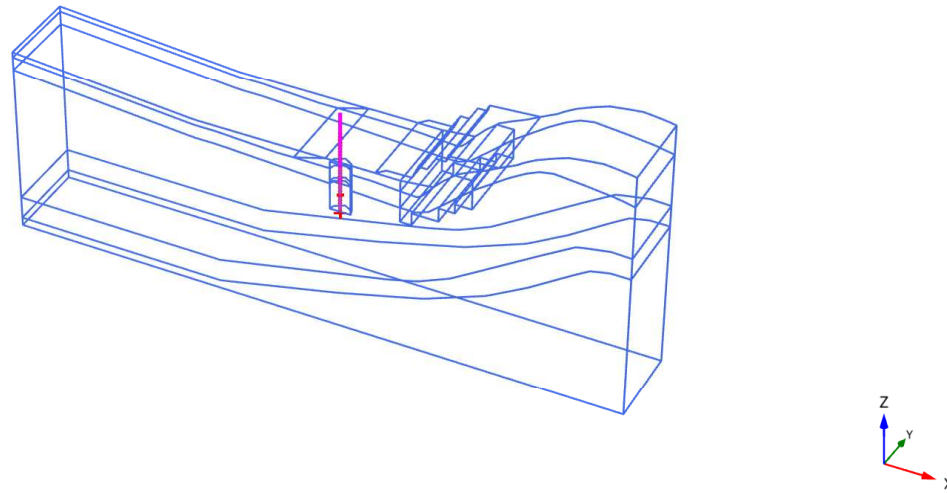


Total displacements u_z (scaled up 500 times)

Maximum value = -0,01726 m (Element 1 at Node 55764)

Minimum value = -0,01944 m (Element 3 at Node 62385)

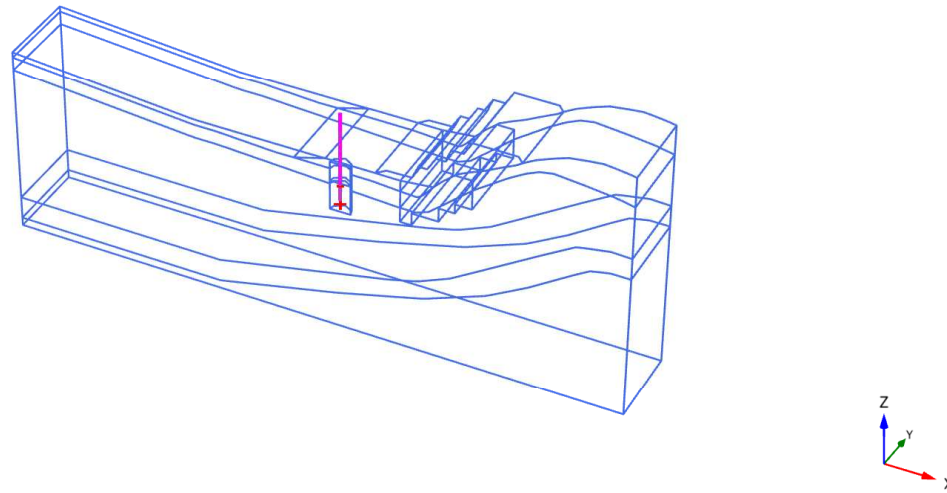
3.1.1.1.4.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/52), Total displacements u_z



Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Uniform value of $-8,246 \cdot 10^{-3}$ m

3.1.1.1.4.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/68), Total displacements u_z



Total displacements u_z (scaled up $1,00 \cdot 10^3$ times)

Uniform value of -0,01061 m

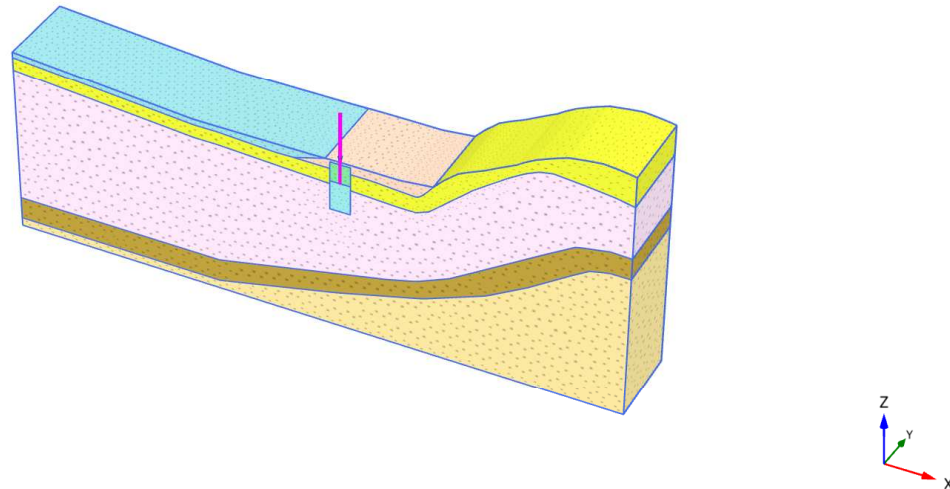
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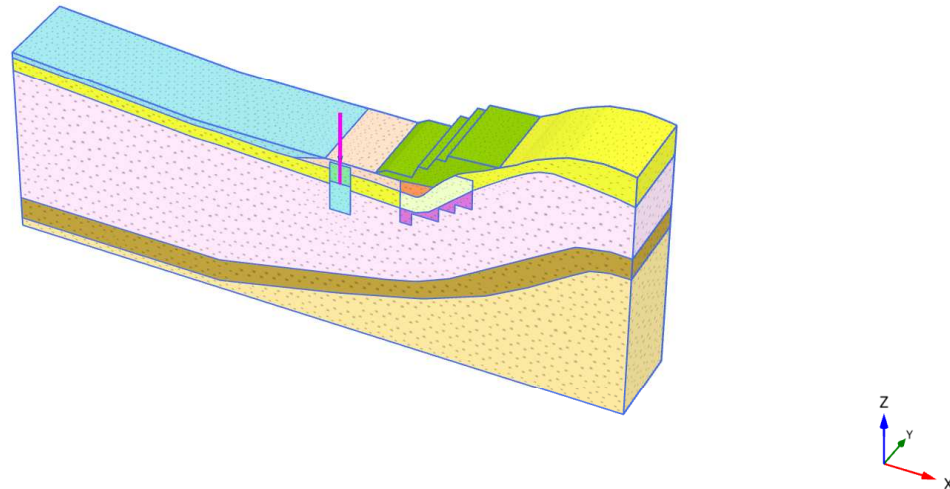
3.1.1.1.4.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/73), Total displacements u_z45

1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Connectivity plot



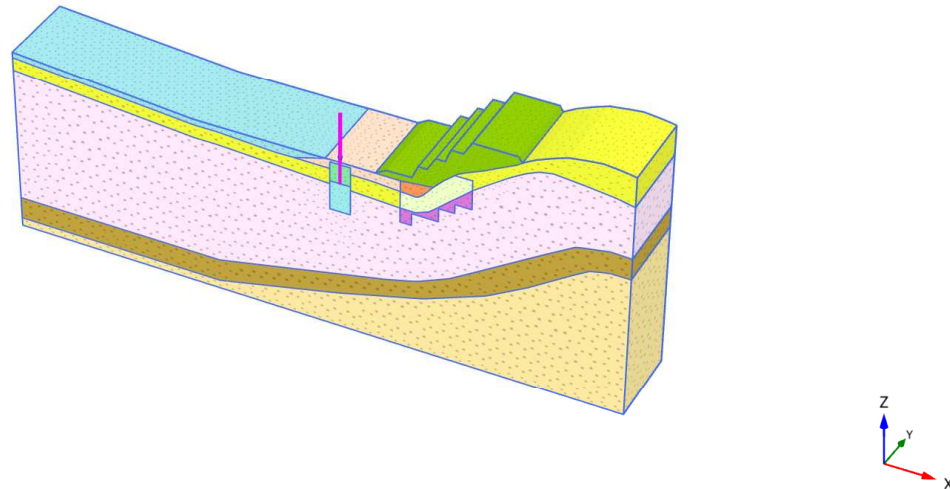
Connectivity plot

1.1.1.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Connectivity plot



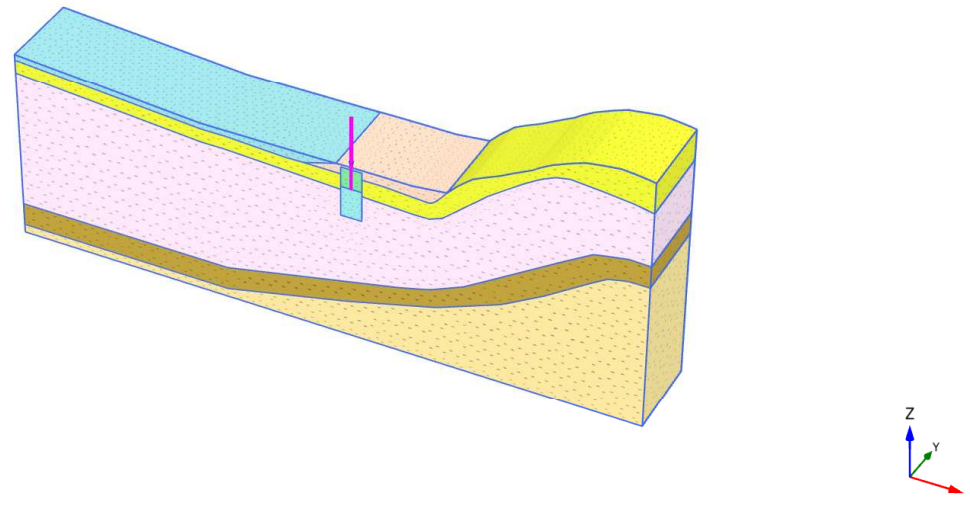
Connectivity plot

1.1.1.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Connectivity plot



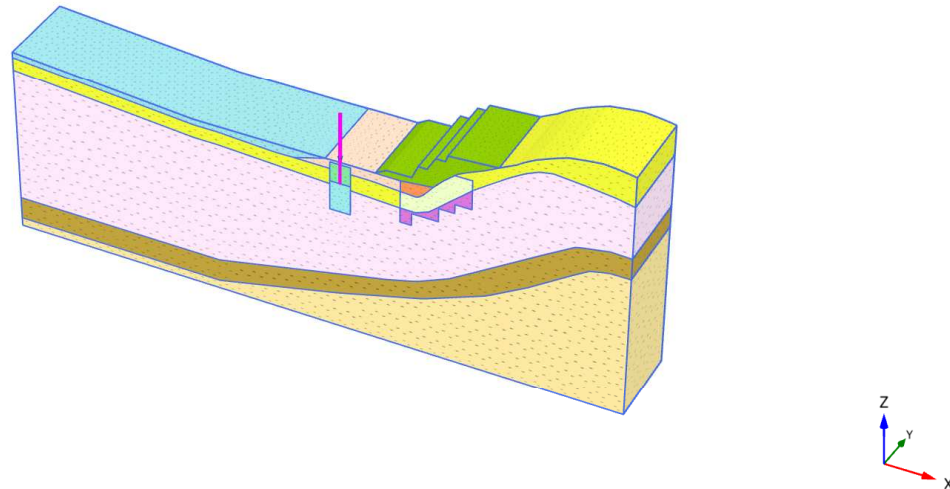
Connectivity plot

1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Materials plot



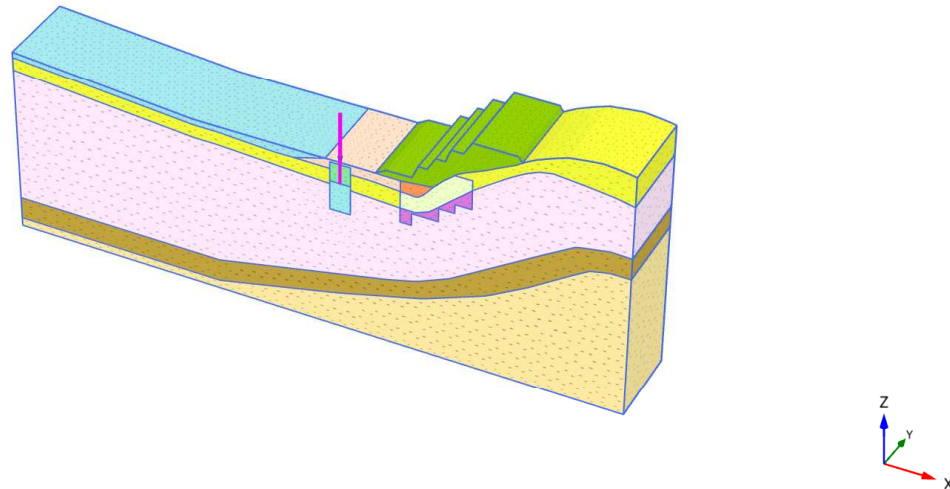
Materials plot

1.1.2.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Materials plot








Materials plot

1.1.2.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Materials plot






Materials plot

1.1.3.1.1.1 Materials - Soil and interfaces - Hardening soil (1/2)

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
Identification number		1	2	3	4	5
Drainage type		Drained	Drained	Drained	Drained	Drained
Colour						
Comments						
Y _{unsat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Y _{sat}	kN/m ³	20,00	20,00	20,00	20,00	18,00
Dilatancy cut-off		No	No	No	No	No
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
e _{min}		0,000	0,000	0,000	0,000	0,000
e _{max}		999,0	999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000	0,000
E ₅₀ ^{ref}	kN/m ²	105,0E3	150,0E3	227,0E3	234,0E3	59,00E3
E _{oed} ^{ref}	kN/m ²	105,0E3	150,0E3	227,0E3	234,0E3	59,00E3
E _{ur} ^{ref}	kN/m ²	313,9E3	451,0E3	679,7E3	702,0E3	176,1E3
power (m)		0,5000	0,5000	0,5000	0,5000	0,5000
Use alternatives		No	No	No	No	No
C _c		3,286E-3	2,300E-3	1,520E-3	1,474E-3	5,847E-3
C _s		0,8165E-3	0,6885E-3	0,3771E-3	0,4423E-3	1,455E-3
e _{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C _{ref}	kN/m ²	20,00	150,0	20,00	100,0	10,00
φ (phi)	°	35,00	40,00	32,00	40,00	30,00

Identification		Ghiaie e sabbie	J_ Ghiaie e sabbie trattate con jet	Limi e sabbie	J_ Limi e sabbie trattate con jet	Rp_Riporti preesistenti
ψ (psi)	°	0,000	0,000	0,000	0,000	0,000
Set to default values		No	No	No	No	No
V_{ur}		0,3000	0,2000	0,3000	0,2000	0,3000
p_{ref}	kN/m ²	100,0	100,0	100,0	100,0	100,0
K_0^{inc}		0,4264	0,3572	0,4701	0,3572	0,5000
C_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000	0,000
z_{ref}	m	0,000	0,000	0,000	0,000	0,000
R_f		0,9000	0,9000	0,9000	0,9000	0,9000
Tension cut-off		Yes	Yes	Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000	0,000	0,000
K_0 determination		Manual	Manual	Manual	Manual	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes	Yes
$K_{0,x}$		0,4264	0,3572	0,4701	0,3572	0,5000
$K_{0,y}$		0,4264	0,3572	0,4701	0,3572	0,5000
OCR		1,000	1,000	1,000	1,000	1,000
POP	kN/m ²	0,000	0,000	0,000	0,000	0,000
k_x	m/day	0,000	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15	1,000E15



1.1.3.1.1.2 Materials - Soil and interfaces - Hardening soil (2/2)

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
Identification number		7	8	9
Drainage type		Drained	Drained	Drained
Colour				
Comments				
γ_{unsat}	kN/m ³	18,00	27,00	27,00
γ_{sat}	kN/m ³	18,00	27,00	27,00
Dilatancy cut-off		No	No	No
e_{init}		0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000
e_{max}		999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000
E_{50}^{ref}	kN/m ²	119,0E3	358,0E3	233,0E3
E_{oed}^{ref}	kN/m ²	119,0E3	358,0E3	233,0E3
E_{ur}^{ref}	kN/m ²	356,0E3	1,075E6	698,5E3
power (m)		0,5000	0,5000	0,5000

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
Use alternatives		No	No	No
C_c		2,899E-3	0,9637E-3	1,481E-3
C_s		0,8722E-3	0,3039E-3	0,4445E-3
e_{init}		0,5000	0,5000	0,5000
C_{ref}	kN/m ²	50,00	500,0	250,0
φ (phi)	°	40,00	40,00	40,00
ψ (psi)	°	0,000	0,000	0,000
Set to default values		No	No	No
v_{ur}		0,2000	0,1500	0,2000
p_{ref}	kN/m ²	100,0	100,0	100,0
K_0^{nc}		0,3572	0,3572	0,3572
C_{inc}	kN/m ² /m	0,000	0,000	0,000
z_{ref}	m	0,000	0,000	0,000
R_f		0,9000	0,9000	0,9000
Tension cut-off		Yes	Yes	Yes
Tensile strength	kN/m ²	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000
δ_{inter}		0,000	0,000	0,000

Identification		JRp_Riporti preesistenti trattati con jet	S_Substrato roccioso	Sa_Substrato roccioso alterato
K ₀ determination		Manual	Manual	Manual
K _{0,x} = K _{0,y}		Yes	Yes	Yes
K _{0,x}		0,3572	0,3572	0,3572
K _{0,y}		0,3572	0,3572	0,3572
OCR		1,000	1,000	1,000
POP	kN/m ²	0,000	0,000	0,000
k _x	m/day	0,000	0,000	0,000
k _y	m/day	0,000	0,000	0,000
k _z	m/day	0,000	0,000	0,000
e _{init}		0,5000	0,5000	0,5000
c _k		1,000E15	1,000E15	1,000E15

1.1.3.1.2 Materials - Soil and interfaces - Mohr-Coulomb

Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
Identification number		6	10
Drainage type		Drained	Drained
Colour			
Comments			
γ_{unsat}	kN/m ³	18,00	18,00
γ_{sat}	kN/m ³	18,00	18,00
Dilatancy cut-off		No	No
e_{init}		0,5000	0,5000
e_{min}		0,000	0,000
e_{max}		999,0	999,0
Rayleigh α		0,000	0,000
Rayleigh β		0,000	0,000
E	kN/m ²	10,00E3	10,00E3
ν (nu)		0,3000	0,3000
G	kN/m ²	3846	3846
E_{oed}	kN/m ²	13,46E3	13,46E3
c_{ref}	kN/m ²	10,00	0,000

Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
ϕ (phi)	°	35,00	35,00
ψ (psi)	°	0,000	0,000
V_s	m/s	45,76	45,76
V_p	m/s	85,61	85,61
Set to default values		Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000
Z_{ref}	m	0,000	0,000
C_{inc}	kN/m ² /m	0,000	0,000
Z_{ref}	m	0,000	0,000
Tension cut-off		Yes	Yes
Tensile strength	kN/m ²	0,000	0,000
Strength		Rigid	Rigid
R_{inter}		1,000	1,000
δ_{inter}		0,000	0,000
K_0 determination		Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes
$K_{0,x}$		0,4264	0,4264
$K_{0,y}$		0,4264	0,4264
k_x	m/day	0,000	0,000

Identification		Rc_Rilevato	Rm_Riporto costituito dal marino
k_y	m/day	0,000	0,000
k_z	m/day	0,000	0,000
e_{init}		0,5000	0,5000
C_k		1,000E15	1,000E15

1.1.3.1.3 Materials - Soil and interfaces - Linear elastic

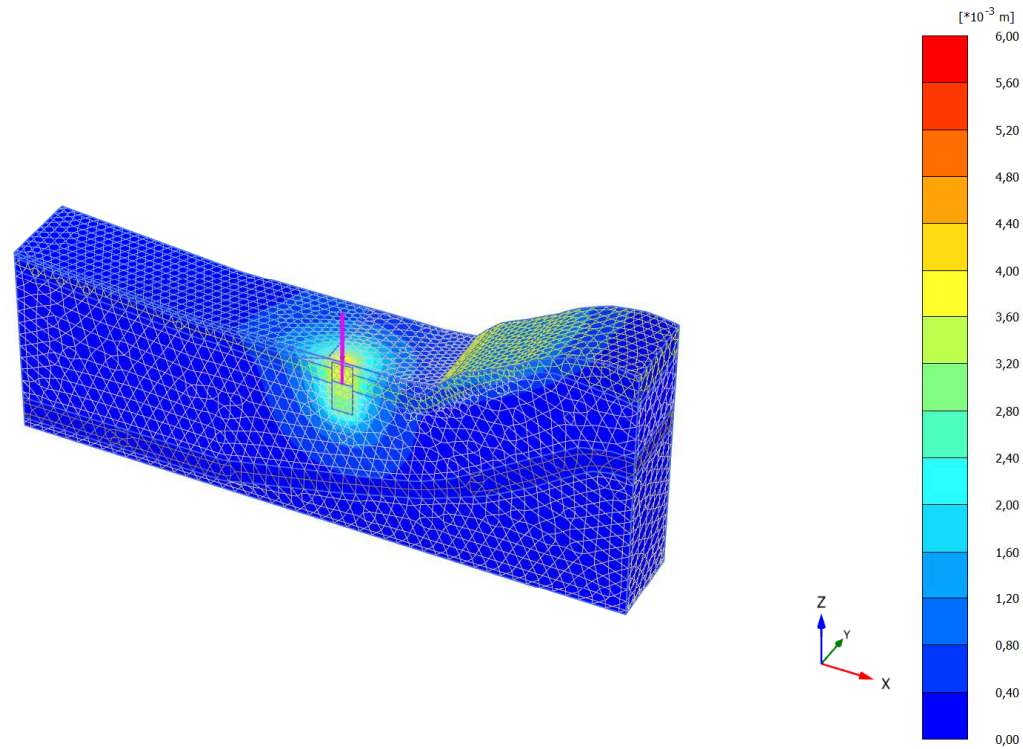
Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
Identification number		11	12	13	14
Drainage type		Drained	Drained	Drained	Drained
Colour					
Comments					
γ_{unsat}	kN/m ³	25,00	25,00	18,00	0,000
γ_{sat}	kN/m ³	25,00	25,00	18,00	0,000
Dilatancy cut-off		No	No	No	No
e_{init}		0,5000	0,5000	0,5000	0,5000
e_{min}		0,000	0,000	0,000	0,000
e_{max}		999,0	999,0	999,0	999,0
Rayleigh α		0,000	0,000	0,000	0,000
Rayleigh β		0,000	0,000	0,000	0,000
E	kN/m ²	30,20E6	15,00E6	3000	1,000
ν (nu)		0,1500	0,1000	0,3500	0,3000
G	kN/m ²	13,13E6	6,818E6	1111	0,3846
E_{oed}	kN/m ²	31,89E6	15,34E6	4815	1,346
V_s	m/s	2269	1635	24,60	0,000

Identification		Plinto pozzo	Micropali	Diaframma plastico	Vuoti
V_p	m/s	3536	2452	51,20	0,000
Set to default values		Yes	Yes	Yes	Yes
E_{inc}	kN/m ² /m	0,000	0,000	0,000	0,000
Z_{ref}	m	0,000	0,000	0,000	0,000
Strength		Rigid	Rigid	Rigid	Rigid
R_{inter}		1,000	1,000	1,000	1,000
$\bar{\sigma}_{inter}$		0,000	0,000	0,000	0,000
K_0 determination		Automatic	Automatic	Automatic	Automatic
$K_{0,x} = K_{0,y}$		Yes	Yes	Yes	Yes
$K_{0,x}$		1,000	1,000	1,000	1,000
$K_{0,y}$		1,000	1,000	1,000	1,000
k_x	m/day	0,000	0,000	0,000	0,000
k_y	m/day	0,000	0,000	0,000	0,000
k_z	m/day	0,000	0,000	0,000	0,000
e_{init}		0,5000	0,5000	0,5000	0,5000
C_k		1,000E15	1,000E15	1,000E15	1,000E15

1.1.3.2 Materials - Beams -

Identification		Pila
Identification number		1
Comments		
Colour		
A	m ²	1,000
γ	kN/m ³	0,000
Linear		Yes
E	kN/m ²	1,000E6
I ₃	m ⁴	1,000
I ₂	m ⁴	1,000
Rayleigh α		0,000
Rayleigh β		0,000

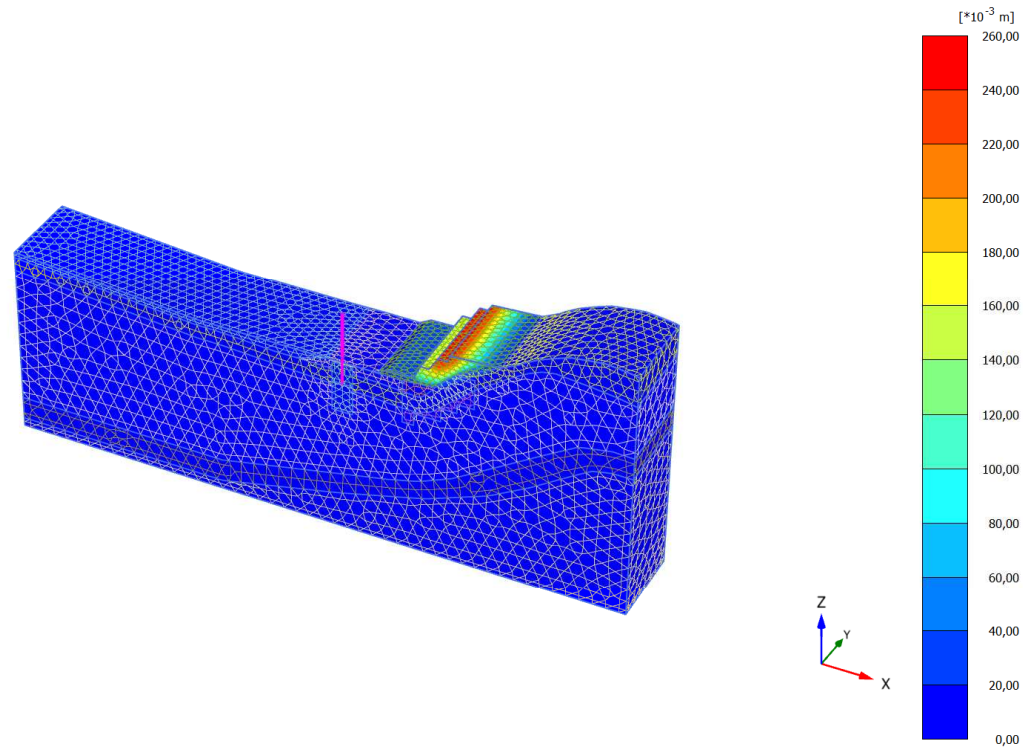
2.1.1.1.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Total displacements |u|



Total displacements |u|

Maximum value = 5,769*10⁻³ m (Element 46753 at Node 62385)

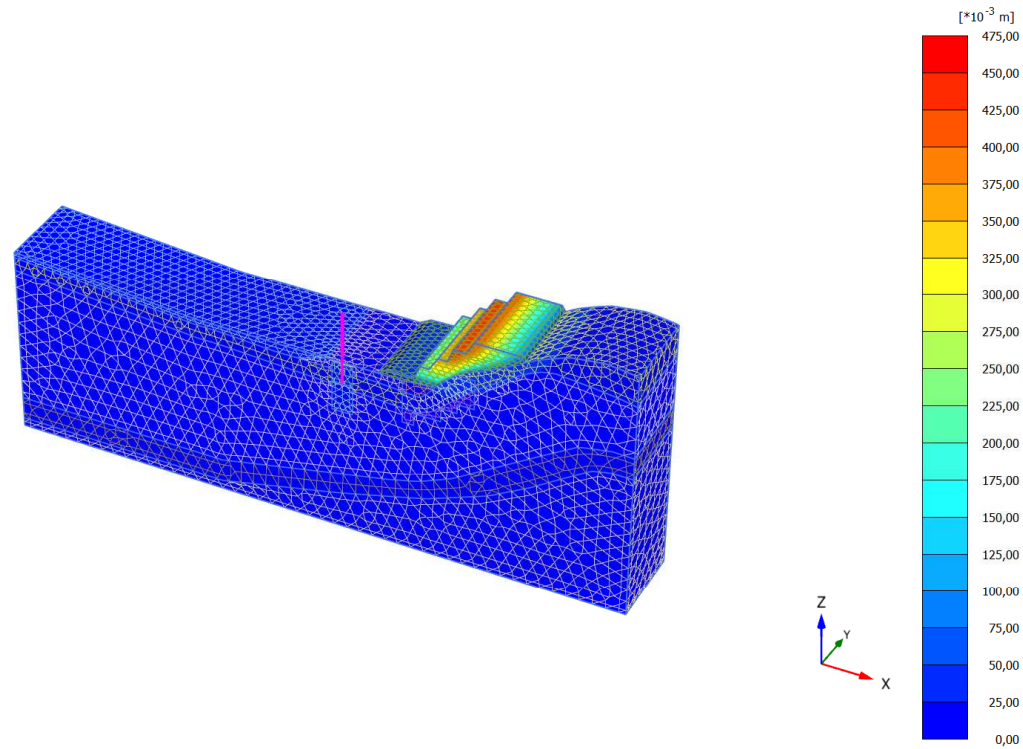
2.1.1.1.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,2497 m (Element 36737 at Node 23075)

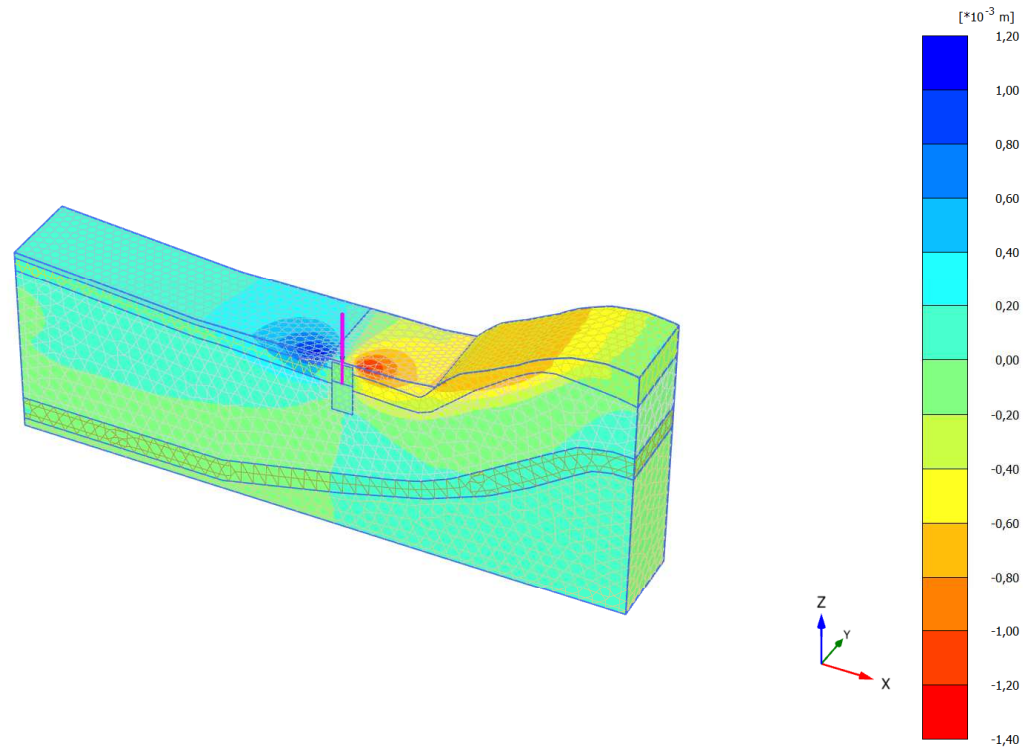
2.1.1.1.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Total displacements $|u|$



Total displacements $|u|$

Maximum value = 0,4505 m (Element 3287 at Node 26260)

2.1.1.2.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Total displacements u_x

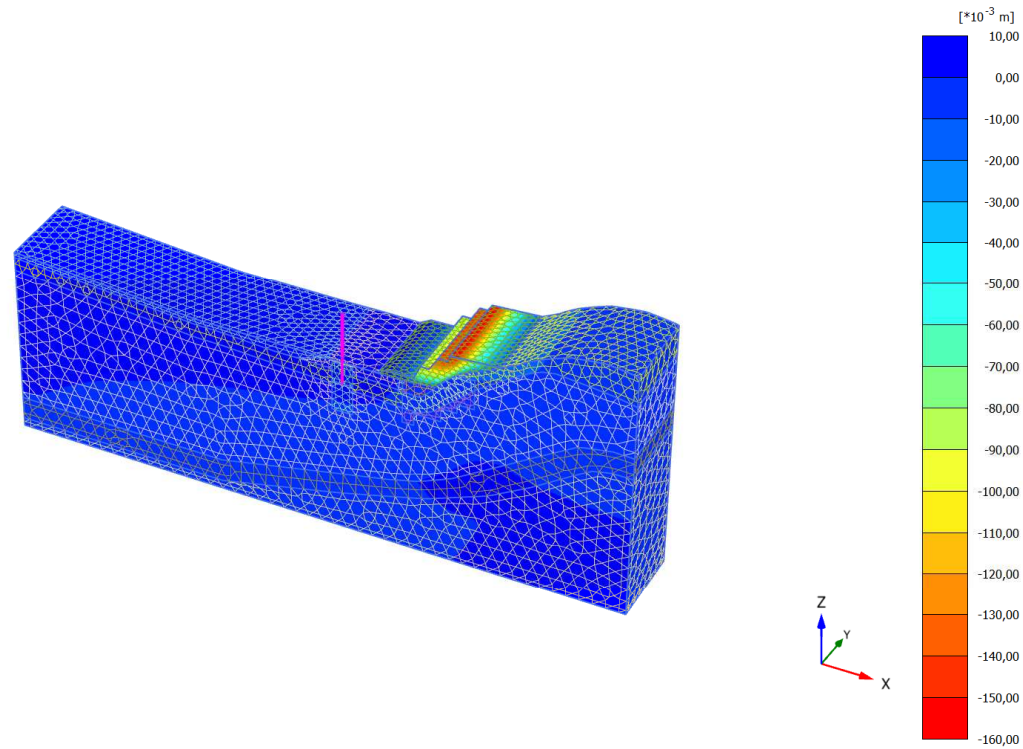


Total displacements u_x

Maximum value = $1,067 \cdot 10^{-3}$ m (Element 42335 at Node 64153)

Minimum value = $-1,230 \cdot 10^{-3}$ m (Element 46518 at Node 52246)

2.1.1.2.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Total displacements u_x

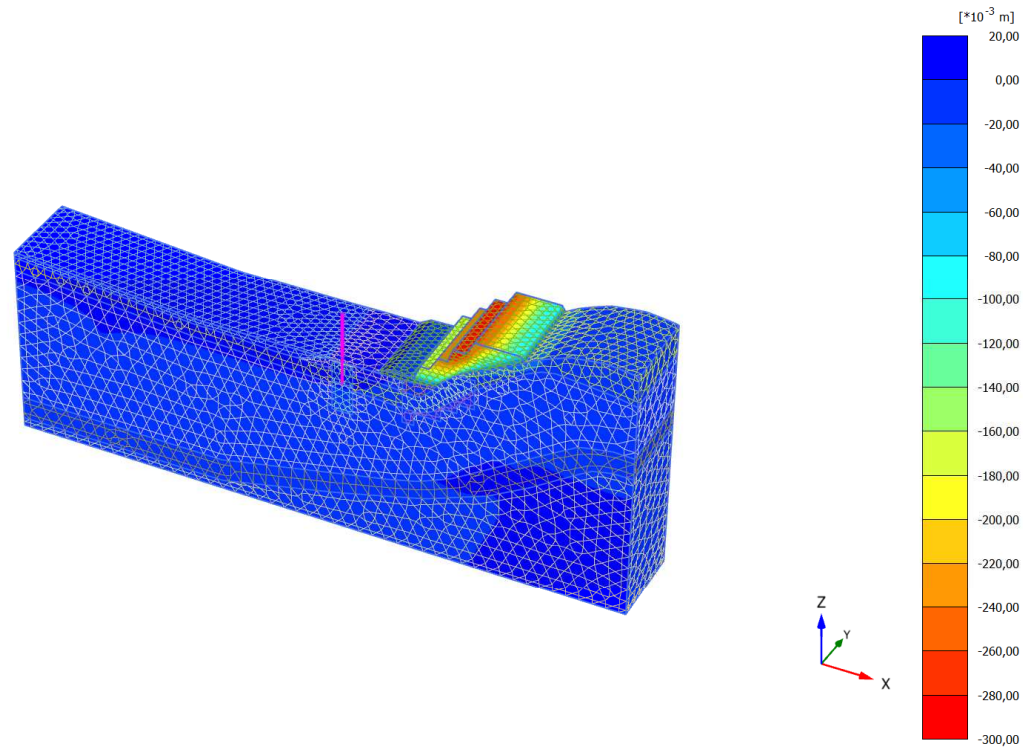


Total displacements u_x

Maximum value = $3,192 \cdot 10^{-3}$ m (Element 46548 at Node 48690)

Minimum value = -0,1563 m (Element 36751 at Node 23079)

2.1.1.2.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Total displacements u_x

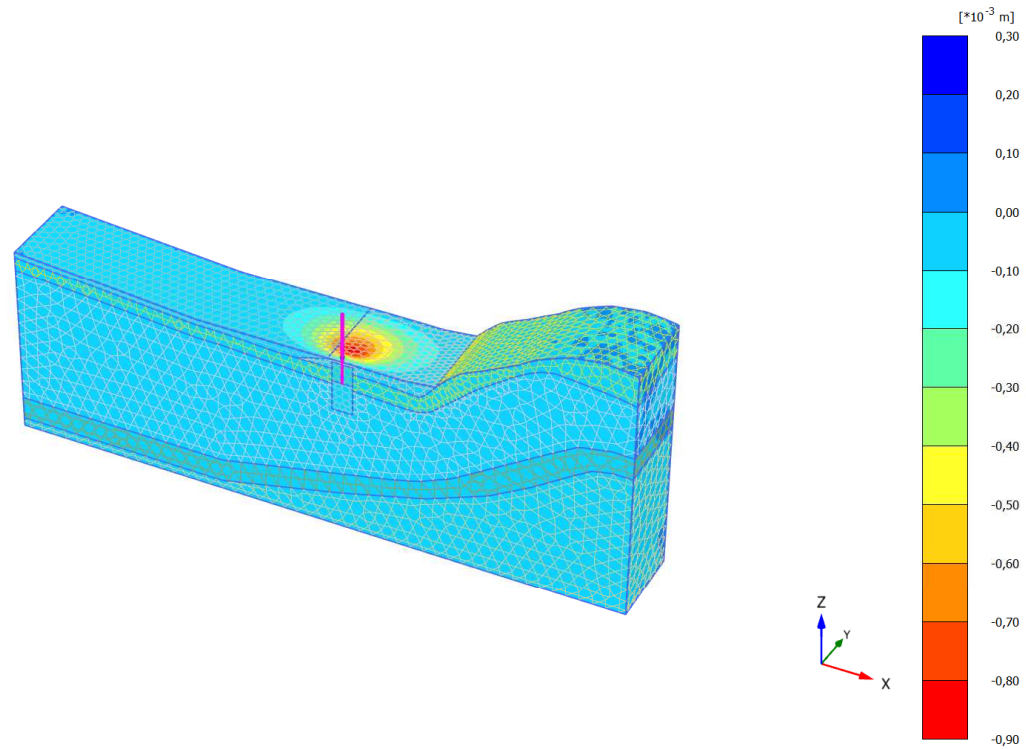


Total displacements u_x

Maximum value = $2,748 \times 10^{-3}$ m (Element 46548 at Node 48690)

Minimum value = $-0,2989$ m (Element 3287 at Node 22650)

2.1.1.3.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Total displacements u_y

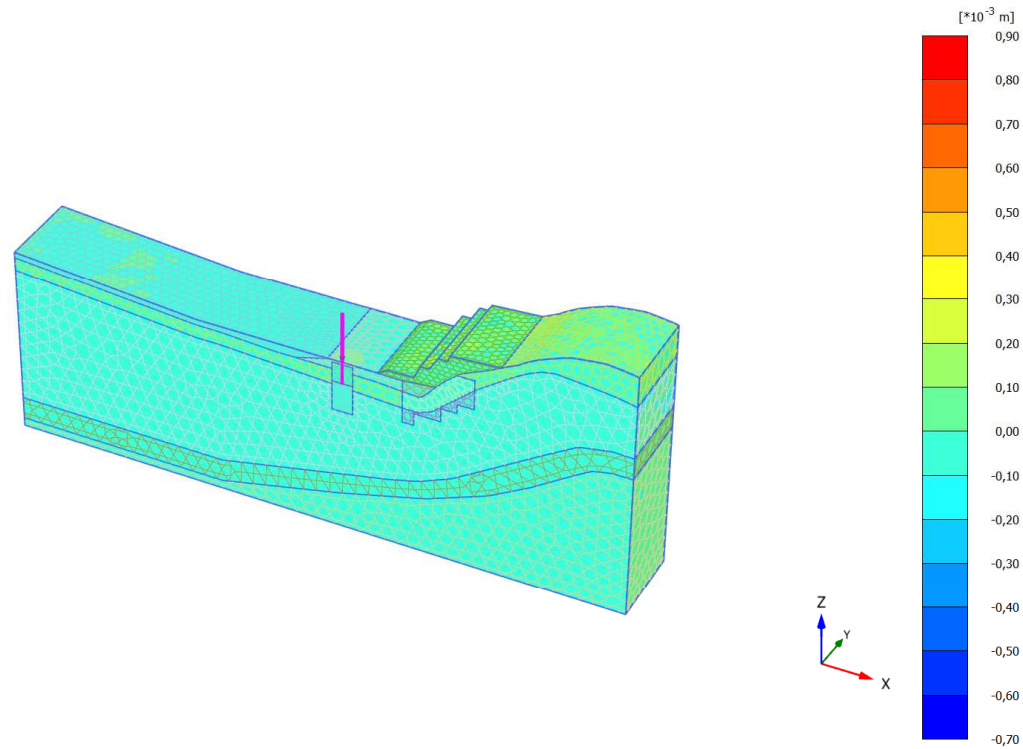


Total displacements u_y

Maximum value = $0,2579 \cdot 10^{-3}$ m (Element 57309 at Node 45727)

Minimum value = $-0,8562 \cdot 10^{-3}$ m (Element 46532 at Node 52103)

2.1.1.3.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Total displacements u_y

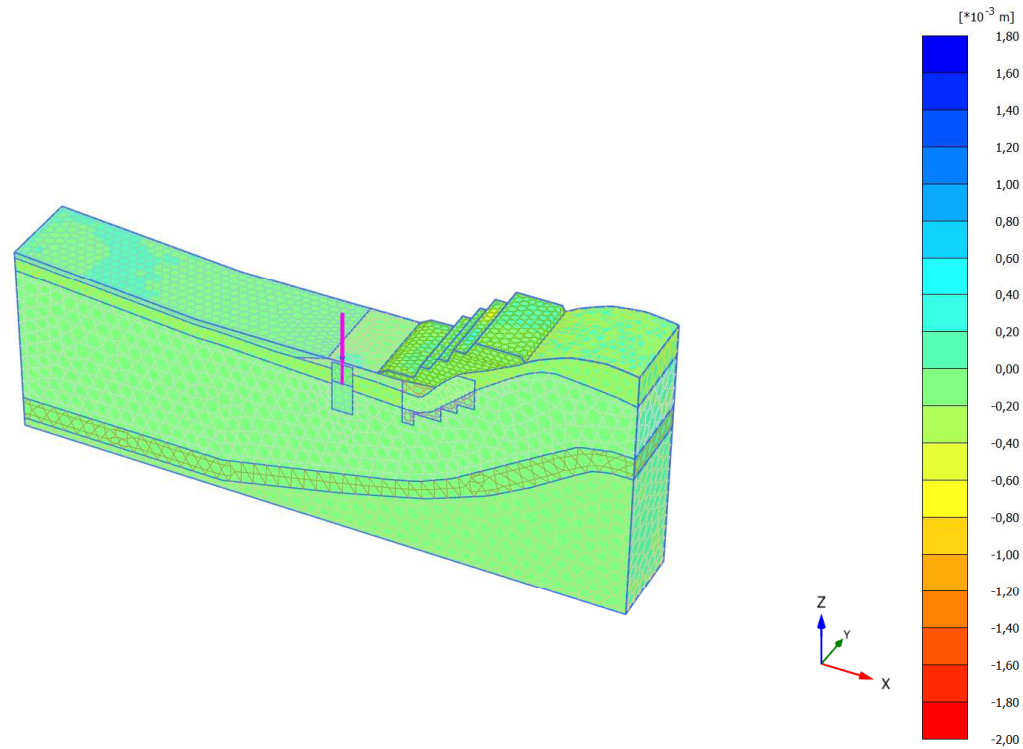


Total displacements u_y

Maximum value = $0,8656 \times 10^{-3}$ m (Element 40406 at Node 34245)

Minimum value = $-0,6429 \times 10^{-3}$ m (Element 40982 at Node 37761)

2.1.1.3.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Total displacements u_y

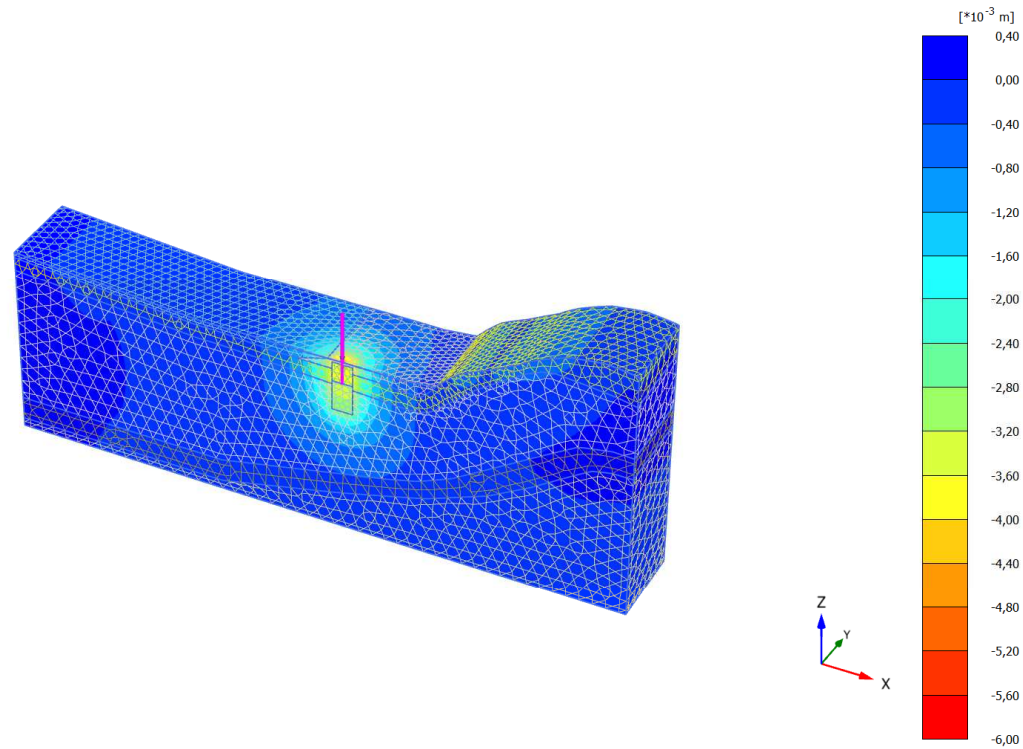


Total displacements u_y

Maximum value = $1,712 \cdot 10^{-3}$ m (Element 39847 at Node 34113)

Minimum value = $-1,849 \cdot 10^{-3}$ m (Element 39822 at Node 34218)

2.1.1.4.1 Calculation results, Carico Impalcato [Phase_3] (3/13), Total displacements u_z

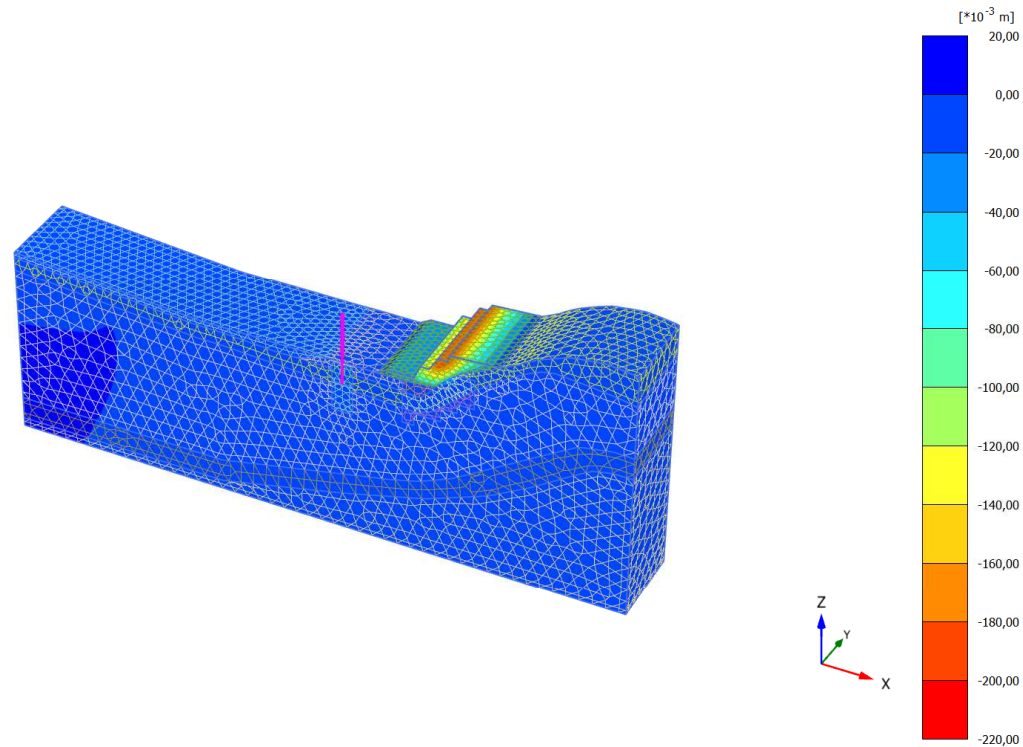


Total displacements u_z

Maximum value = $0,08665 \times 10^{-3}$ m (Element 27 at Node 1443)

Minimum value = $-5,769 \times 10^{-3}$ m (Element 46753 at Node 62385)

2.1.1.4.2 Calculation results, Fine rilevato basso [Phase_14] (14/58), Total displacements u_z

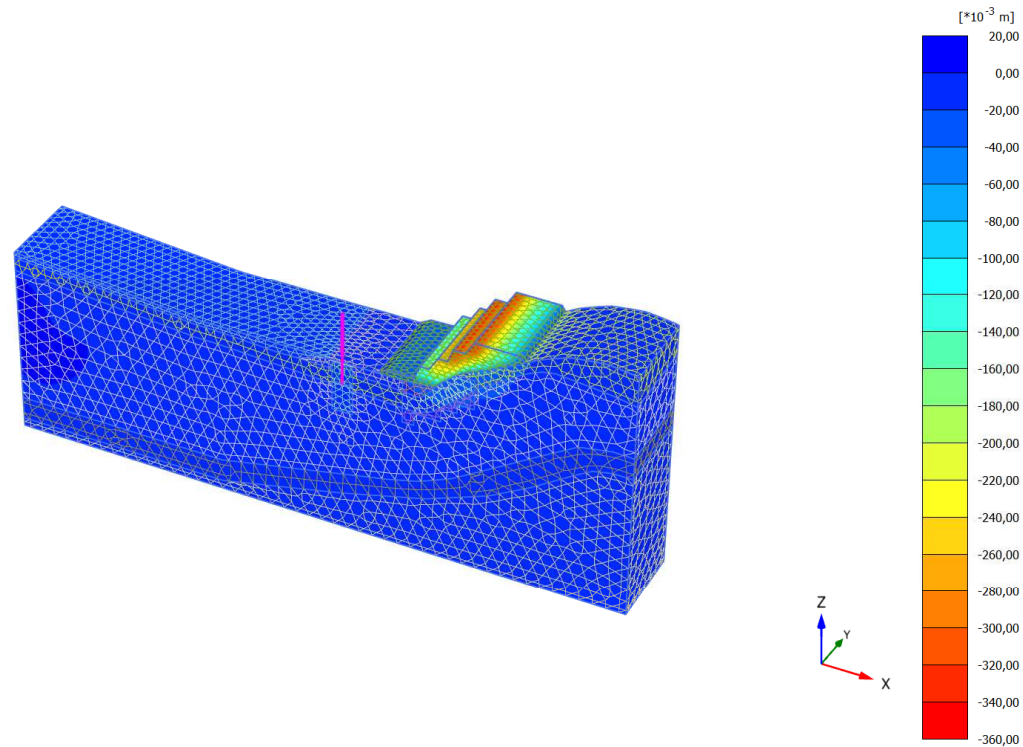


Total displacements u_z

Maximum value = $0,02119 \cdot 10^{-3}$ m (Element 51632 at Node 83949)

Minimum value = -0,2006 m (Element 37696 at Node 30005)

2.1.1.4.3 Calculation results, Fine rilevato alto [Phase_19] (19/73), Total displacements u_z

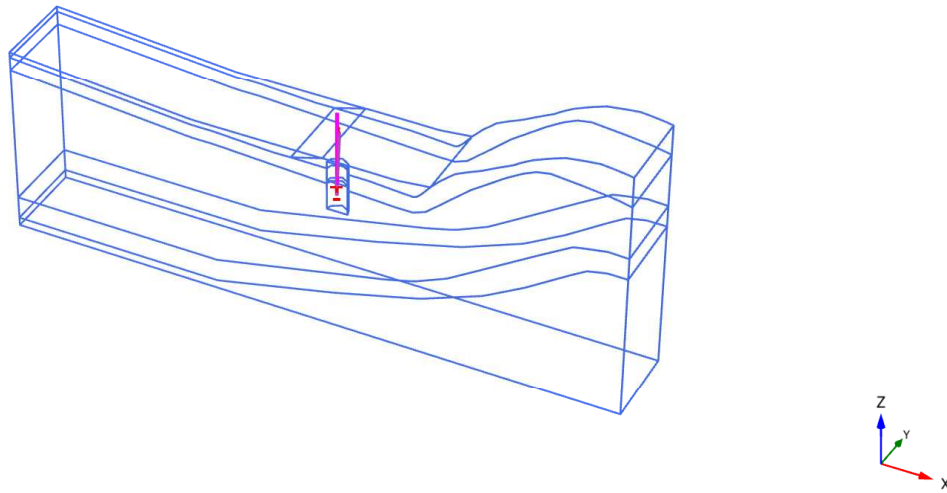


Total displacements u_z

Maximum value = $6,400 \cdot 10^{-6}$ m (Element 51553 at Node 89108)

Minimum value = -0,3401 m (Element 1438 at Node 17446)

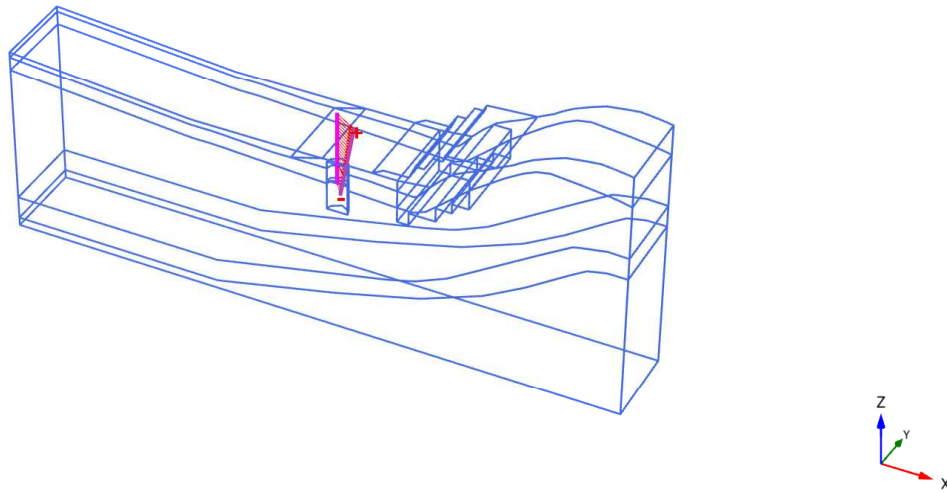
3.1.1.1.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/13), Total displacements |u|



Total displacements |u| (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $5,769 \cdot 10^{-3}$ m (Element 3 at Node 62385)

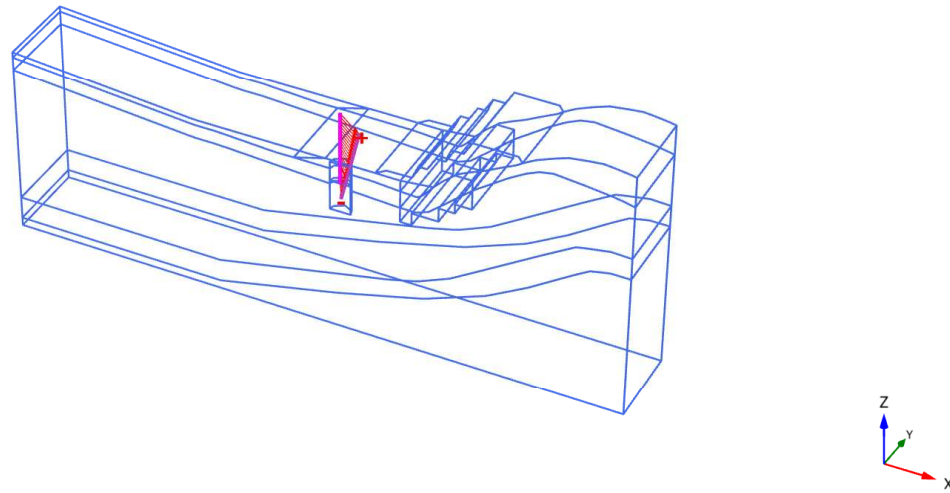
3.1.1.1.1.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/58), Total displacements $|u|$



Total displacements $|u|$ (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $5,775 \cdot 10^{-3}$ m (Element 11 at Node 63518)

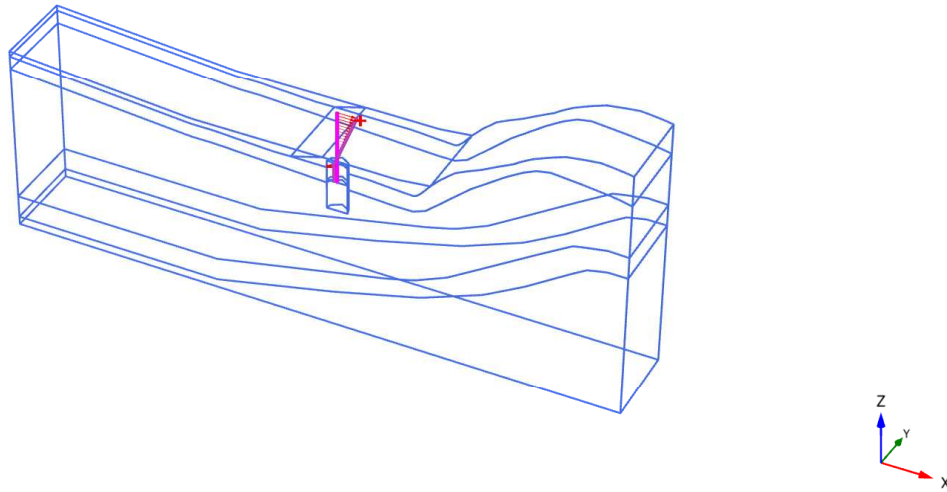
3.1.1.1.1.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/73), Total displacements $|u|$



Total displacements $|u|$ (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $7,108 \cdot 10^{-3}$ m (Element 11 at Node 63518)

3.1.1.1.2.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/13), Total displacements u_x

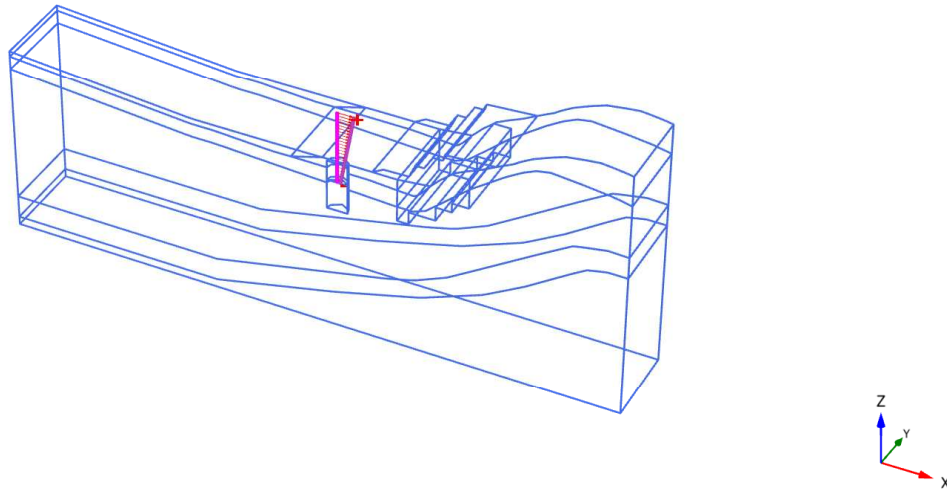


Total displacements u_x (scaled up $20,0 \cdot 10^3$ times)

Maximum value = $0,5580 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $-0,1055 \cdot 10^{-3}$ m (Element 3 at Node 62384)

3.1.1.1.2.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/58), Total displacements u_x

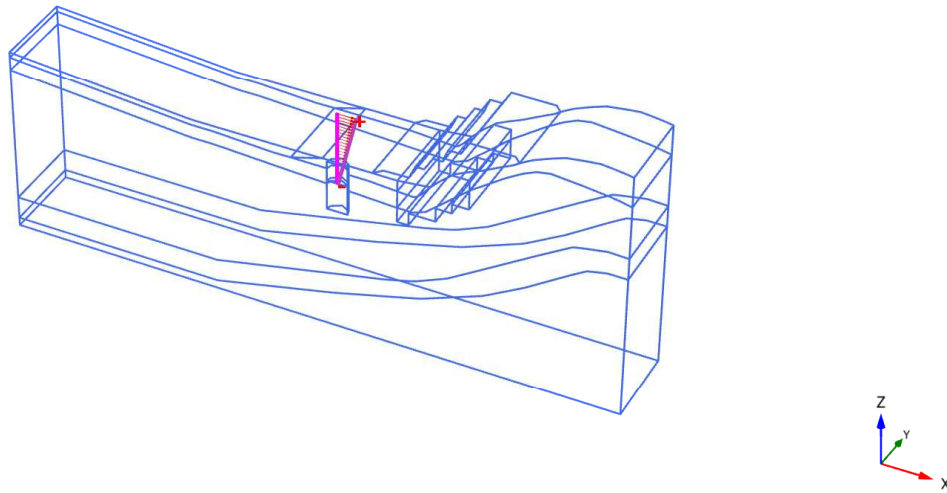


Total displacements u_x (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $4,801 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $0,9512 \cdot 10^{-3}$ m (Element 1 at Node 55764)

3.1.1.1.2.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/73), Total displacements u_x

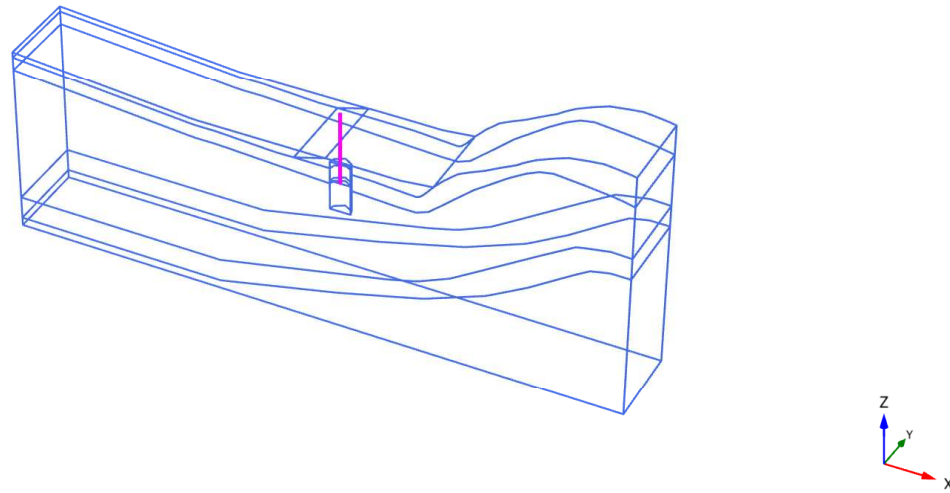


Total displacements u_x (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $5,446 \cdot 10^{-3}$ m (Element 11 at Node 63518)

Minimum value = $0,3138 \cdot 10^{-3}$ m (Element 1 at Node 55764)

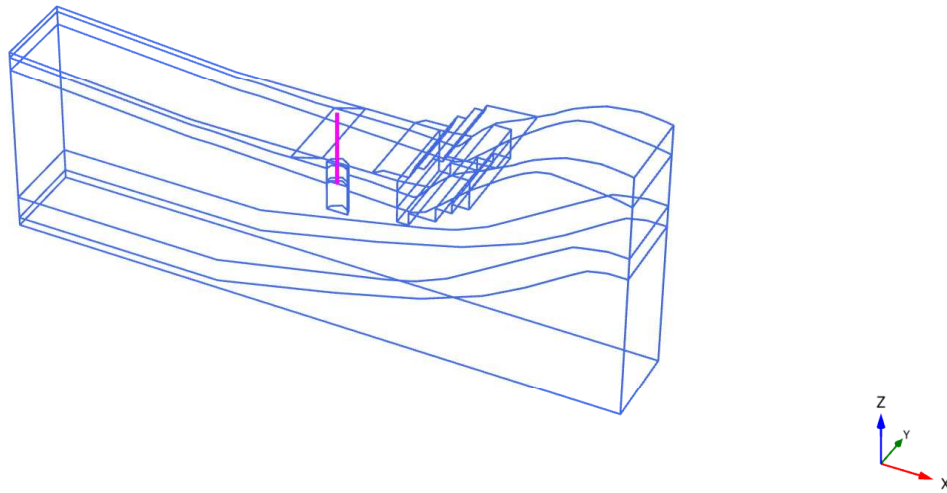
3.1.1.1.3.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/13), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of 0,000 m

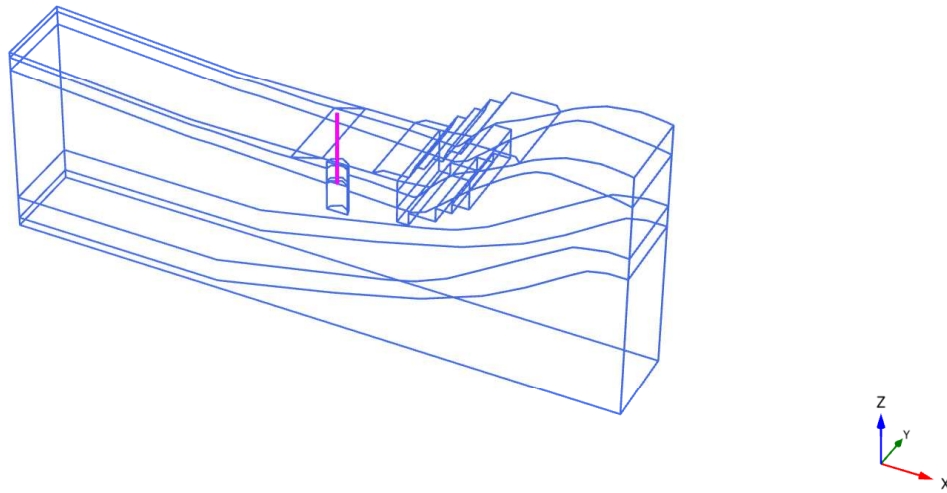
3.1.1.1.3.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/58), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,2218 \cdot 10^{-15}$ m

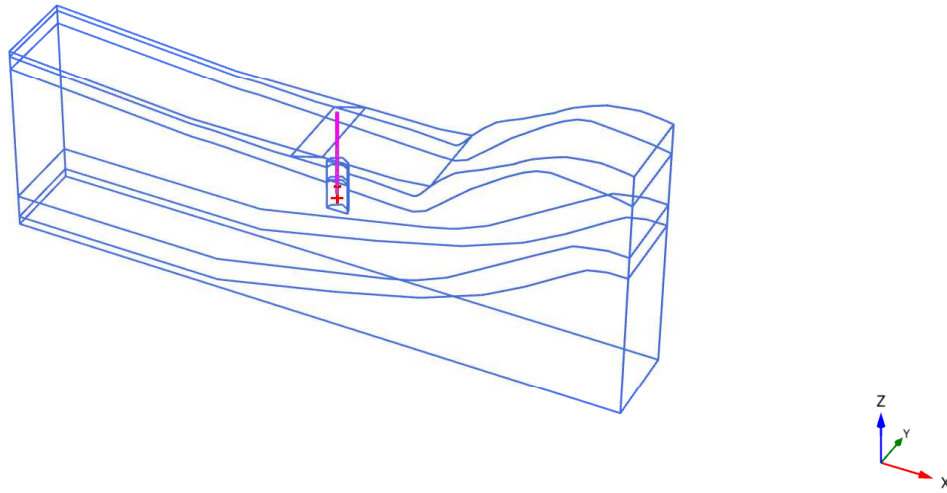
3.1.1.1.3.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/73), Total displacements u_y



Total displacements u_y (scaled up $1,00 \cdot 10^9$ times)

Uniform value of $0,4522 \cdot 10^{-15}$ m

3.1.1.1.4.1 Calculation results, Beam, Carico Impalcato [Phase_3] (3/13), Total displacements u_z

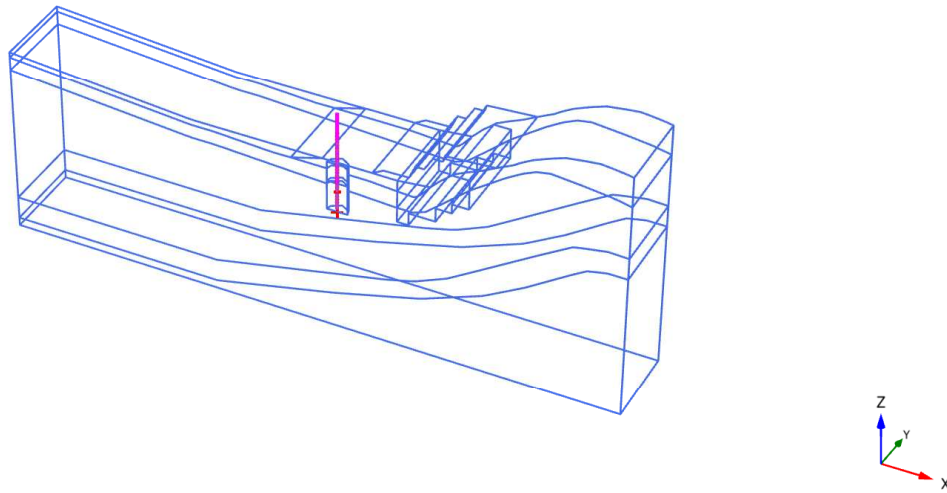


Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $-3,592 \cdot 10^{-3}$ m (Element 1 at Node 55764)

Minimum value = $-5,769 \cdot 10^{-3}$ m (Element 3 at Node 62385)

3.1.1.1.4.2 Calculation results, Beam, Fine rilevato basso [Phase_14] (14/58), Total displacements u_z

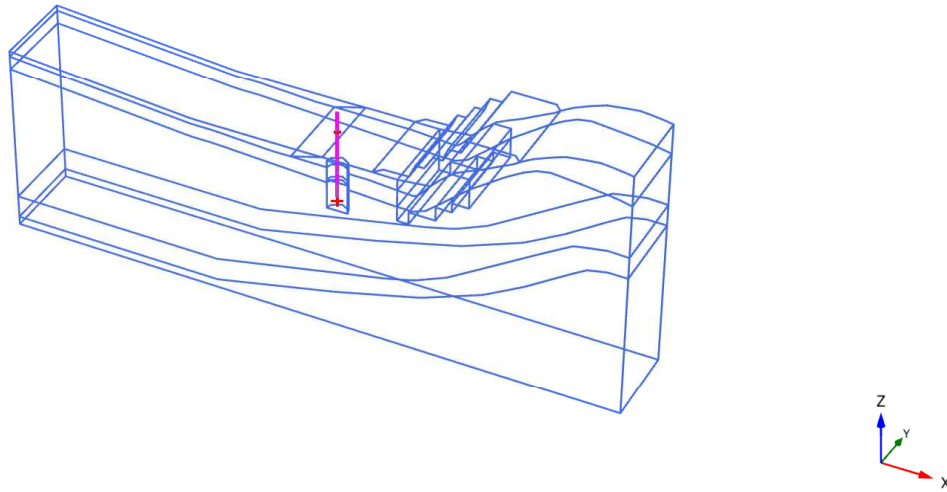


Total displacements u_z (scaled up $5,00 \cdot 10^3$ times)

Maximum value = $-3,206 \cdot 10^{-3}$ m (Element 1 at Node 55764)

Minimum value = $-3,210 \cdot 10^{-3}$ m (Element 4 at Node 55173)

3.1.1.1.4.3 Calculation results, Beam, Fine rilevato alto [Phase_19] (19/73), Total displacements u_z



Total displacements u_z (scaled up $2,00 \cdot 10^3$ times)

Maximum value = $-4,563 \cdot 10^{-3}$ m (Element 1 at Node 55764)

Minimum value = $-4,568 \cdot 10^{-3}$ m (Element 11 at Node 63518)