Committente: **INTERPROGETTI**

PIATTAFORMA INTERMODALE DI TREMESTIERI IN PROVINCIA DI MESSINA

CONSULENZA GEOTECNICA

Relazione n. 28 *del* 14.05.2010

ALLEGATO 1

Responsabile scientifico
Prof. Ing. Giuseppe Scarpelli

Il Direttore del Dipartimento
Prof. Ing. Giacomo Moriconi

Collaboratori
Ing. Paolo Ruggeri
Ing. Viviene Fruzzetti
Ing. David Segato

SIGENCO
SISTEMI GENERALI COSTRUZIONE

REPORT

08/05/2010

User: Università Politecnica delle Marche

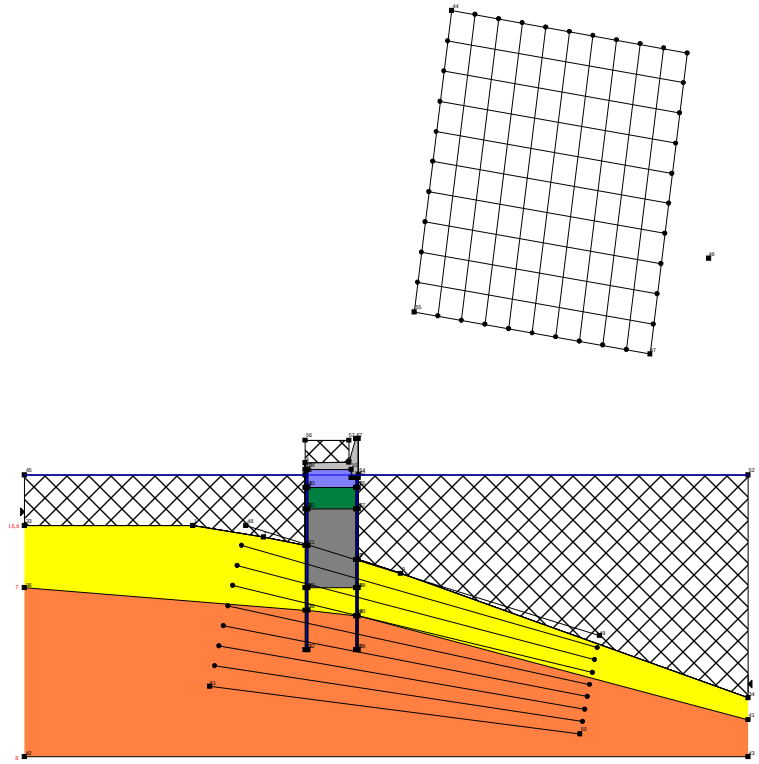
Title: Analisi di stabilità globale delle opere in progetto

Indice

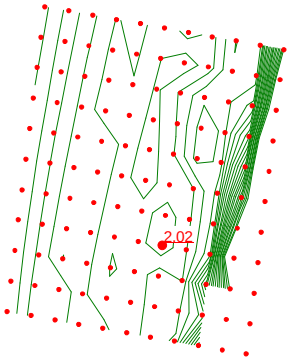
MOLO FORANEO DI TESTATA - CONDIZIONI STATICHE

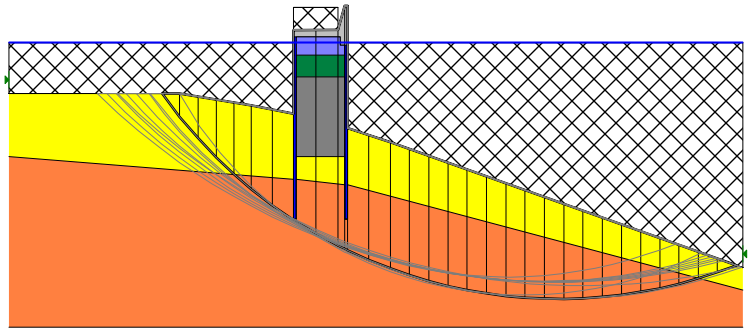
PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10


2.02



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: molo testata statica.slz
Last Saved Date: 07/05/2010
Last Saved Time: 22.07.43
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

Soil: 1
Description: cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: palancole
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: massi
Soil Model: Mohr-Coulomb
Unit Weight: 18
Cohesion: 0
Phi: 38.7
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: riempimento
Soil Model: Mohr-Coulomb
Unit Weight: 20
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 5
Description: jet
Soil Model: Undrained (Phi=0)
Unit Weight: 20

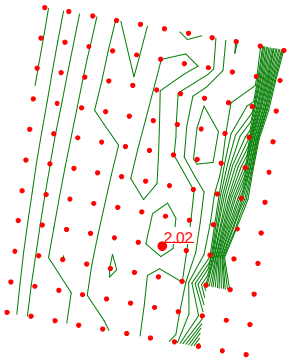
Cohesion: 1000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

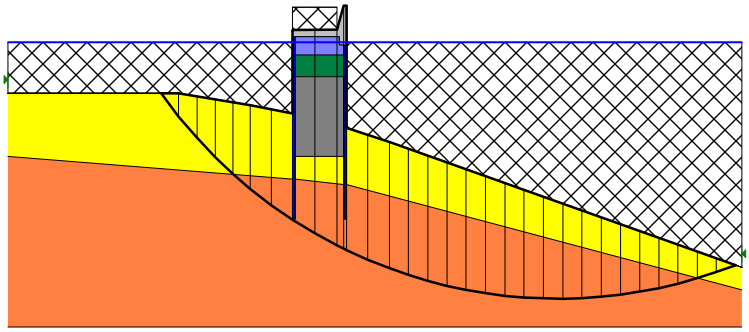
Soil: 6
Description: sabbie
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 7
Description: ghiaie + ciottoli
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

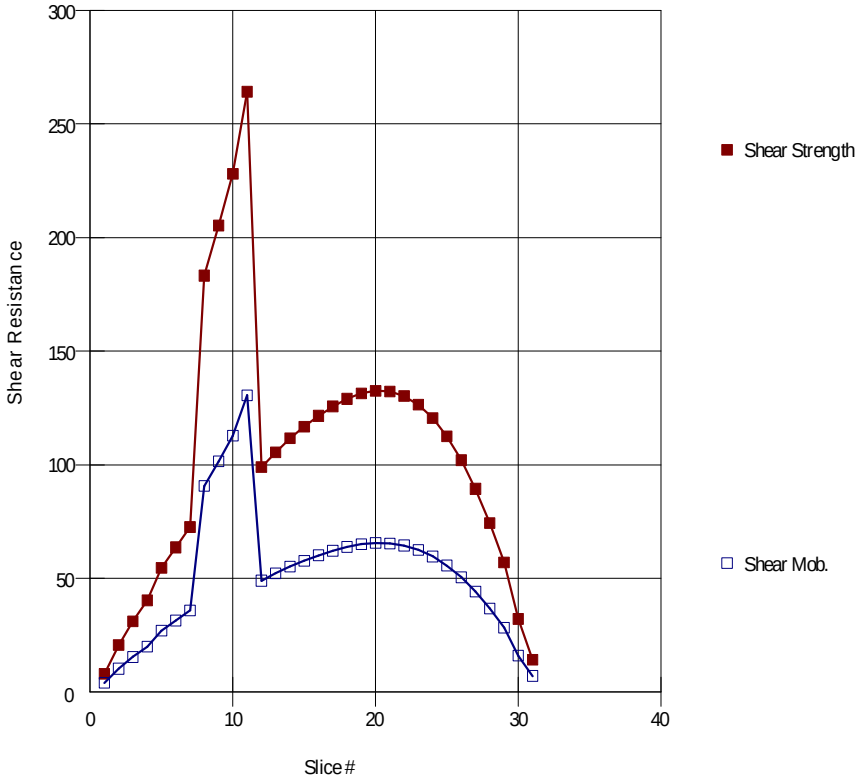
Factor of Safety: 2.02
Total Volume: 1671.9
Total Mass: 32754
Total Resisting Moment: 9.1901e+005
Total Activating Moment: 4.5433e+005
Total Resisting Force: 9966.8
Total Activating Force: 4930.3

Superficie di scorrimento critica





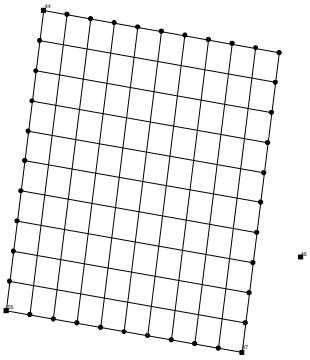
Shear Resistance vs. Slice #

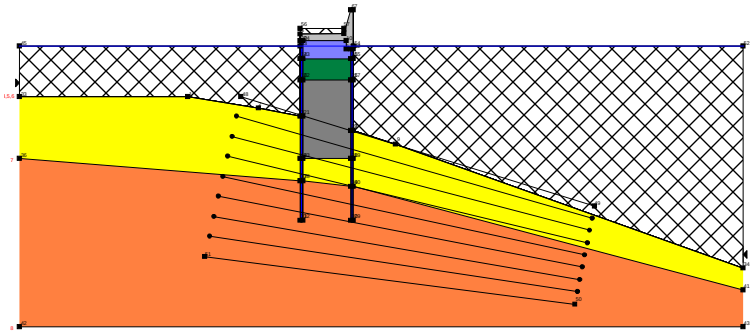


MOLO FORANEO DI TESTATA - CONDIZIONI SISMICHE

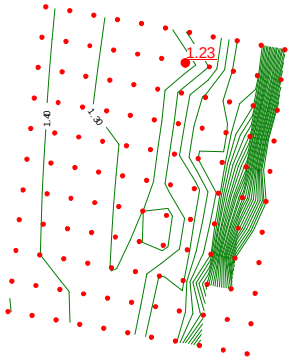
PARAMETRI RIDOTTI

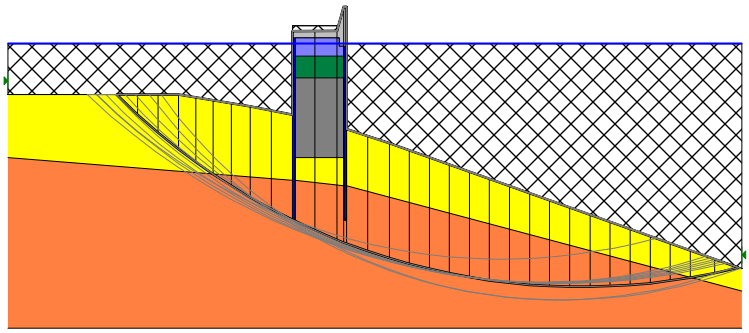
Schema di Analisi





Superfici di scorrimento critiche: prime 10


1.23
1.40
1.39



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
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Last Saved Date: 07/05/2010
Last Saved Time: 22.08.29
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

Soil: 1
Description: cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: palancole
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: massi
Soil Model: Mohr-Coulomb
Unit Weight: 18
Cohesion: 0
Phi: 38.7
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: riempimento
Soil Model: Mohr-Coulomb
Unit Weight: 20
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 5
Description: jet
Soil Model: Undrained (Phi=0)
Unit Weight: 20

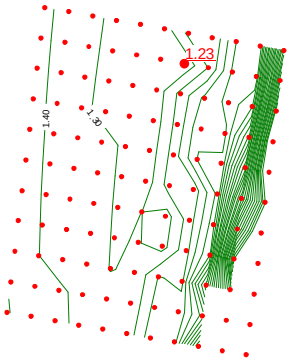
Cohesion: 1000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

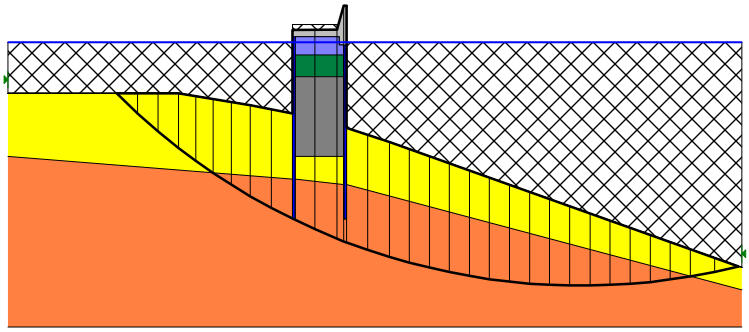
Soil: 6
Description: sabbie
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

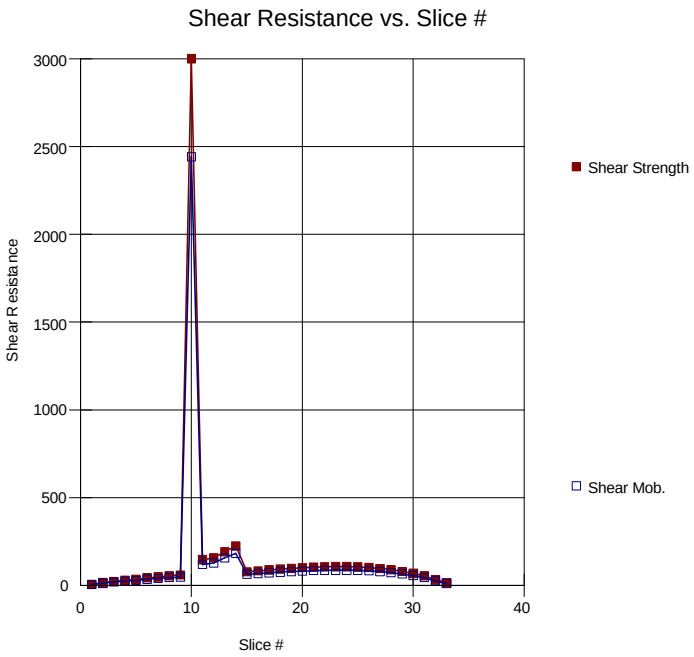
Soil: 7
Description: ghiaie + ciottoli
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.23
Total Volume: 1629.7
Total Mass: 31932
Total Resisting Moment: 1.0258e+006
Total Activating Moment: 8.3477e+005
Total Resisting Force: 8445.5
Total Activating Force: 6855.8

Superficie di scorrimento critica



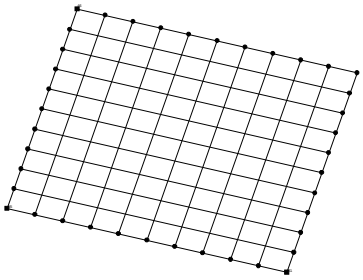


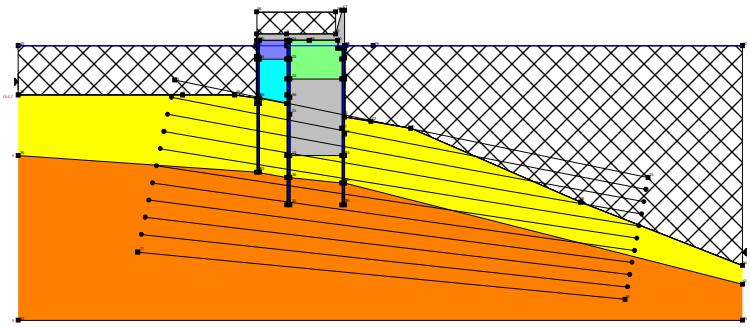


MOLO FORANEO DI RADICE - CONDIZIONI STATICHE

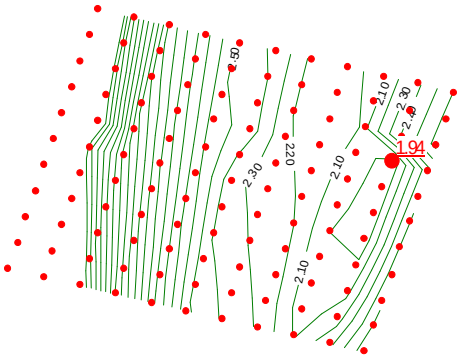
PARAMETRI RIDOTTI

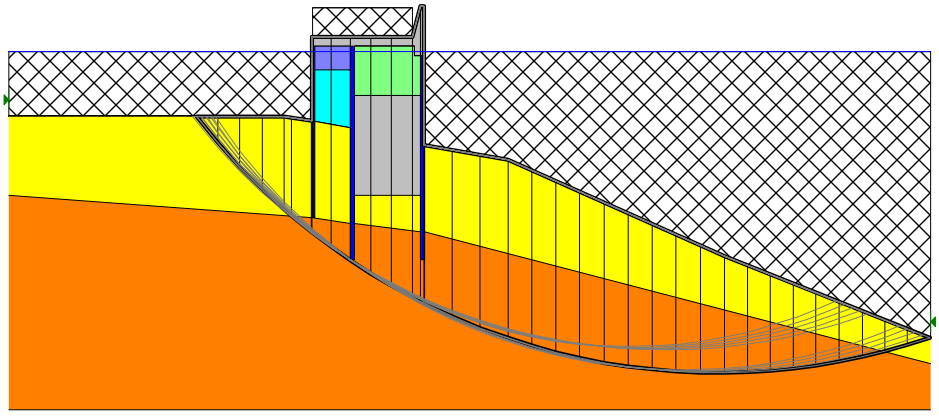
Schema di Analisi





Superfici di scorrimento critiche: prime 10


1.94
2.10
2.30
2.20
2.10
2.30
2.10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: molo radice statica.slz
Last Saved Date: 07/05/2010
Last Saved Time: 22.01.26
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

Soil: 1
Description: cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: palancole
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: cella
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: acqua
Soil Model: No Strength
Unit Weight: 10
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0
Soil: 5
Description: riempimento
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0

Pore-Air Pressure: 0

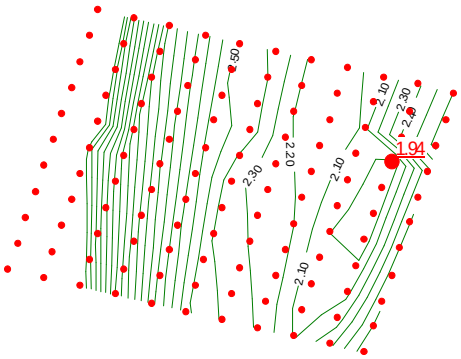
Soil: 6
Description: jet
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 1000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

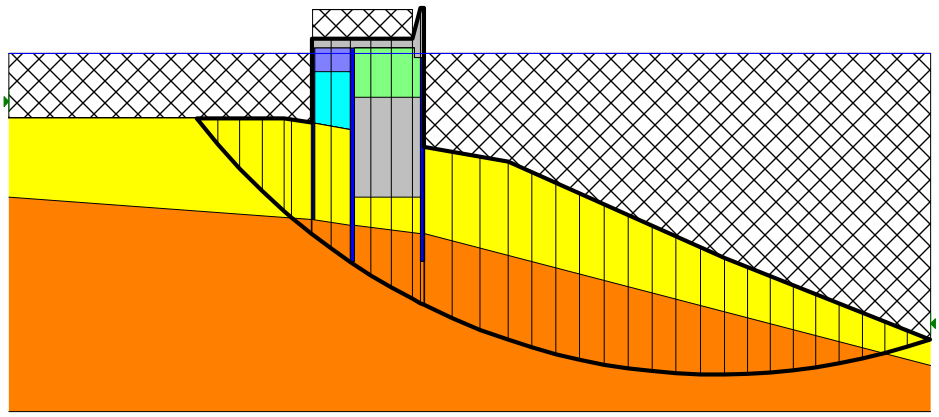
Soil: 7
Description: sabbie
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

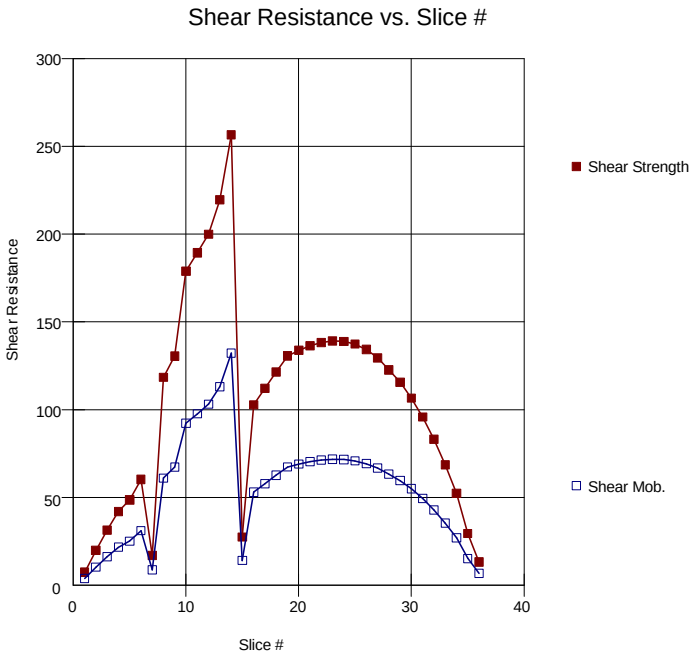
Soil: 8
Description: ghiaie + ciottoli
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.94
Total Volume: 1885.5
Total Mass: 36572
Total Resisting Moment: 1.1428e+006
Total Activating Moment: 5.8908e+005
Total Resisting Force: 11073
Total Activating Force: 5709.9

Superficie di scorrimento critica



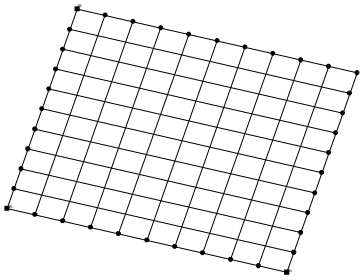


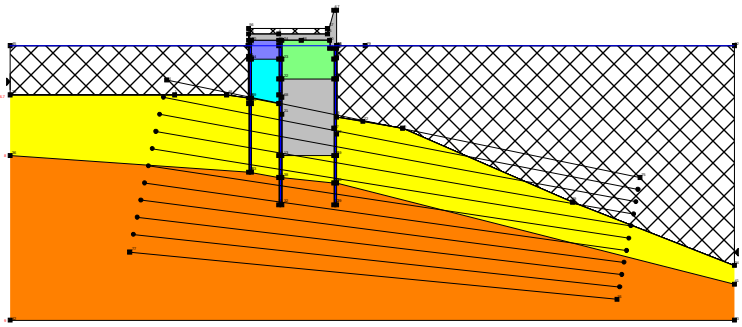


MOLO FORANEO DI RADICE - CONDIZIONI SISMICHE

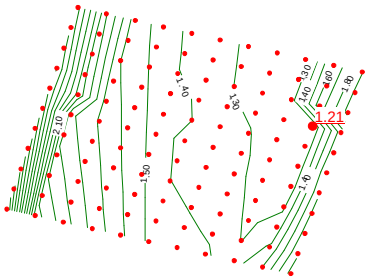
PARAMETRI RIDOTTI

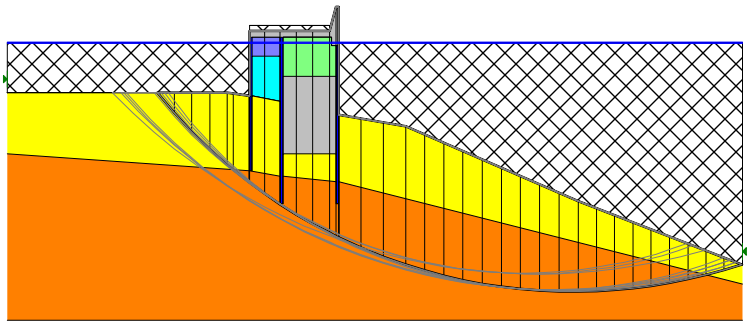
Schema di Analisi





Superfici di scorrimento critiche: prime 10





Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

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Comments:
File Name: molo radice sismica.slz
Last Saved Date: 11/05/2010
Last Saved Time: 19.04.12
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

Soil: 1
Description: cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: palancole
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: cella
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: acqua
Soil Model: No Strength
Unit Weight: 10
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0
Soil: 5
Description: riempimento
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1

Ru: 0
Pore-Air Pressure: 0

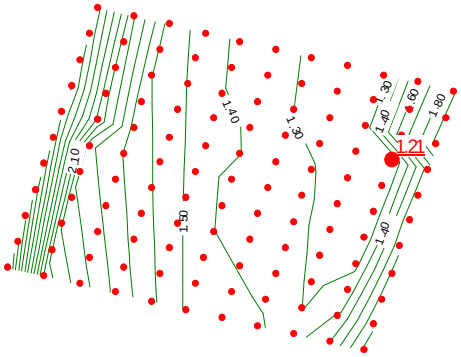
Soil: 6
Description: jet
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 1000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

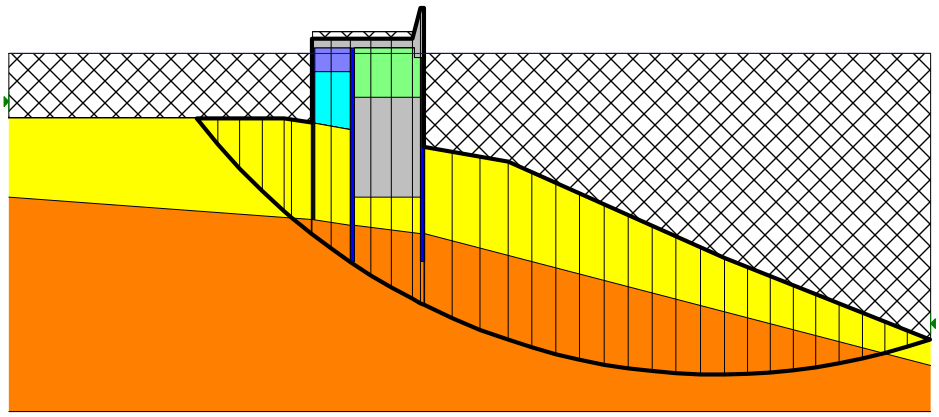
Soil: 7
Description: sabbie
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 28.4
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 8
Description: ghiaie + ciottoli
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

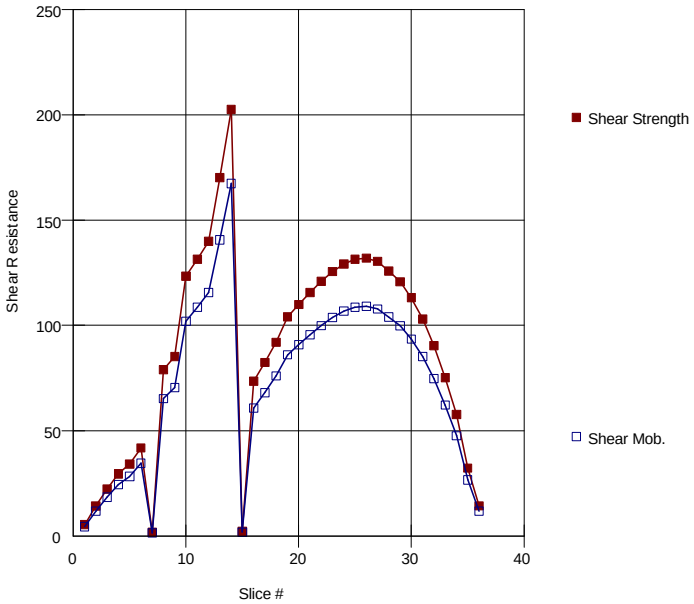
Factor of Safety: 1.21
Total Volume: 1885.5
Total Mass: 36595
Total Resisting Moment: 9.6669e+005
Total Activating Moment: 7.9905e+005
Total Resisting Force: 9471.4
Total Activating Force: 7829.4Total Activating Force: 5709.9

Superficie di scorrimento critica





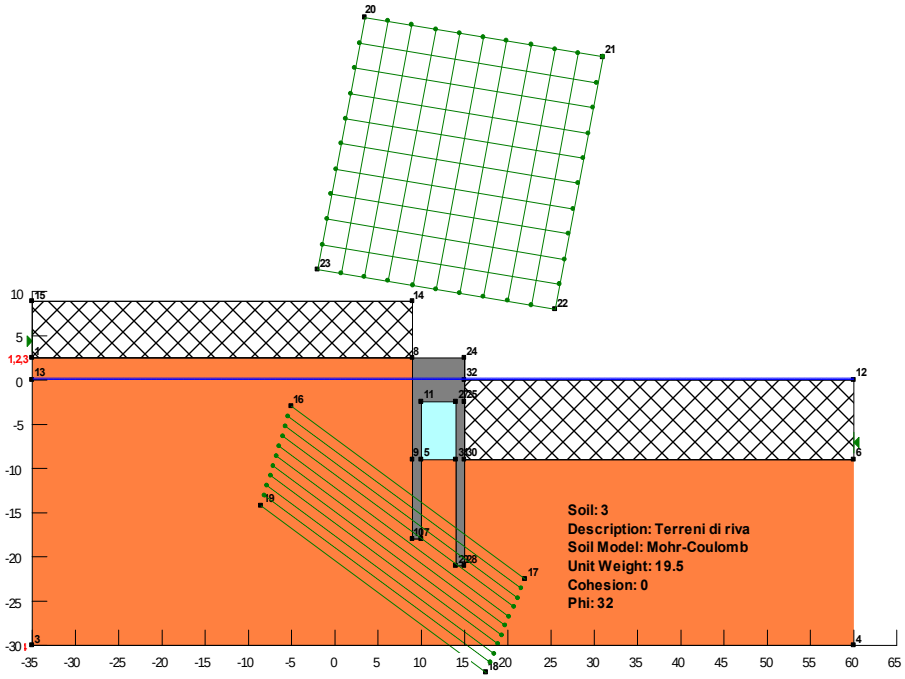
Shear Resistance vs. Slice #



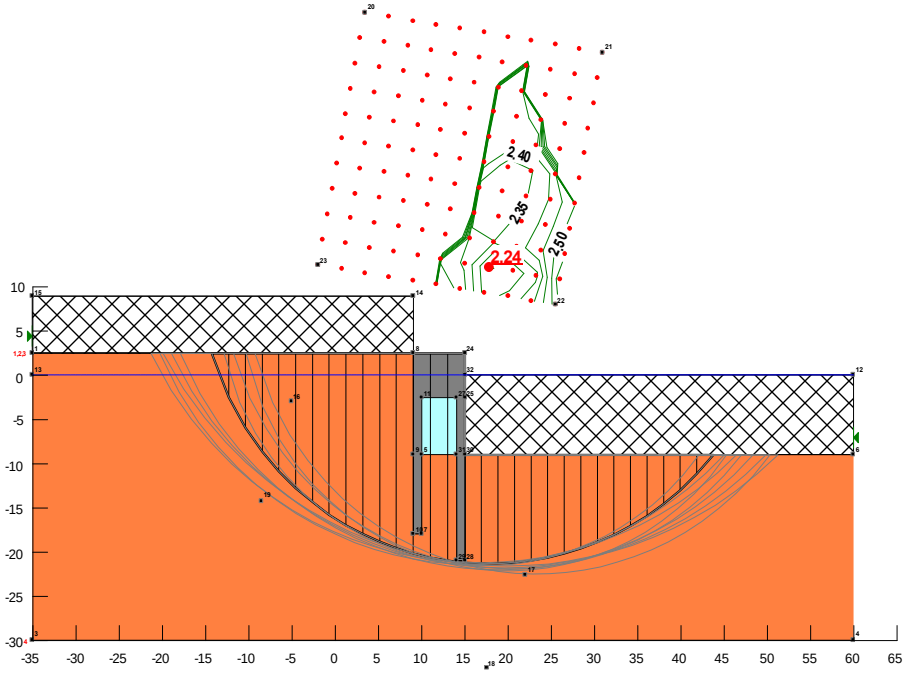
BANCHINA DI RIVA - CONDIZIONI STATICHE

PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: banchina riva.slz
Last Saved Date: 11/05/2010
Last Saved Time: 16.37.54
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

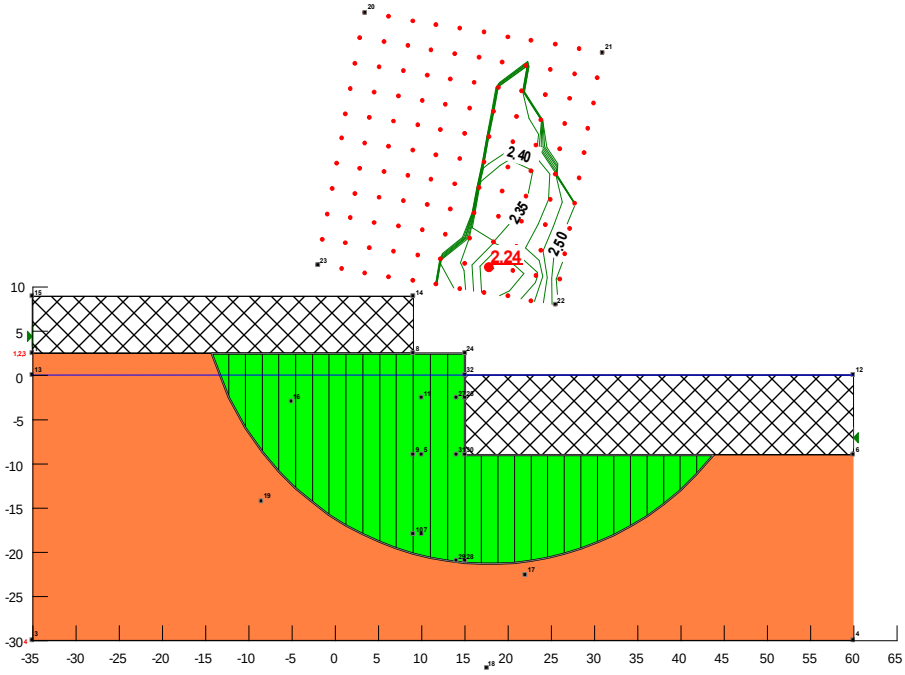
Soil: 1
Description: Paratia
Soil Model: Mohr-Coulomb
Unit Weight: 25
Cohesion: 10000
Phi: 0
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: Terreni di riva
Soil Model: No strength
Unit Weight: 10
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

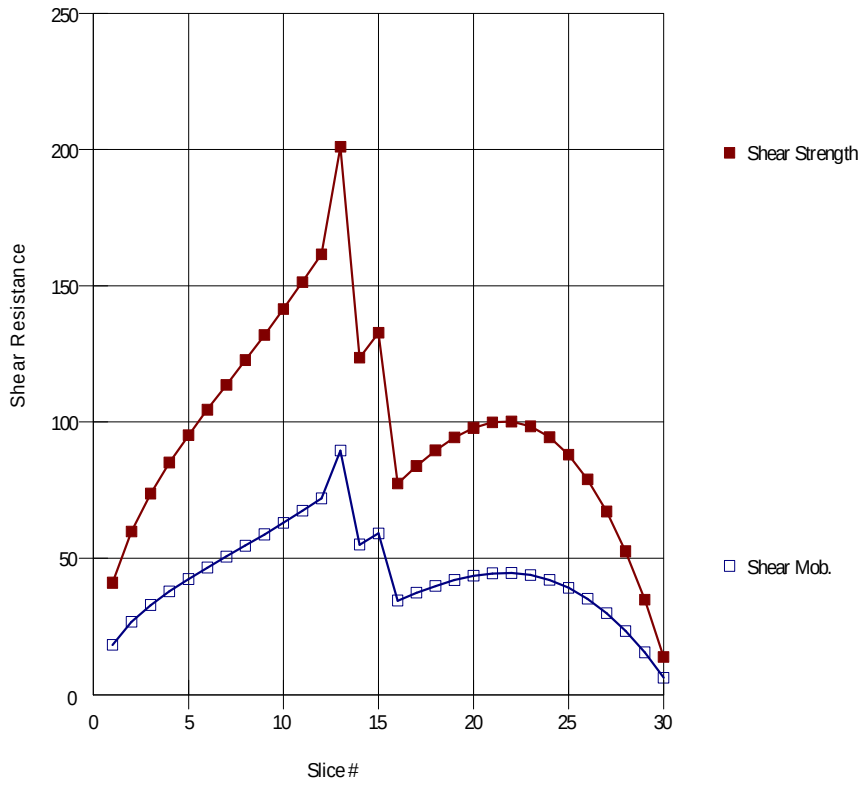
Soil: 3
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 2.24
Total Volume: 751.51
Total Mass: 14743
Total Resisting Moment: 2.2182e+005
Total Activating Moment: 98807
Total Resisting Force: 5645.9
Total Activating Force: 2517.5

Superficie di scorrimento critica



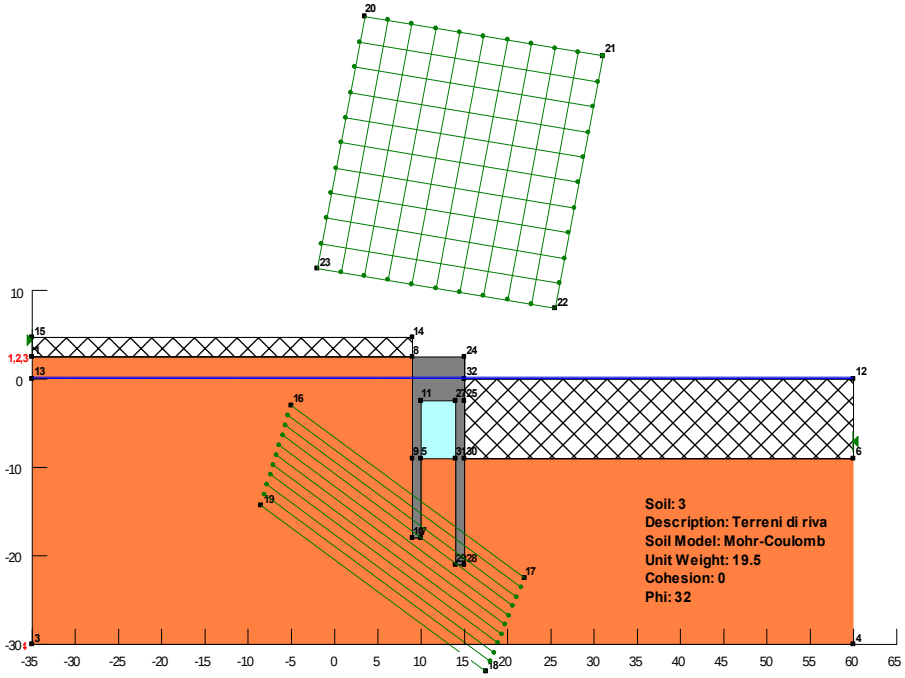
Shear Resistance vs. Slice



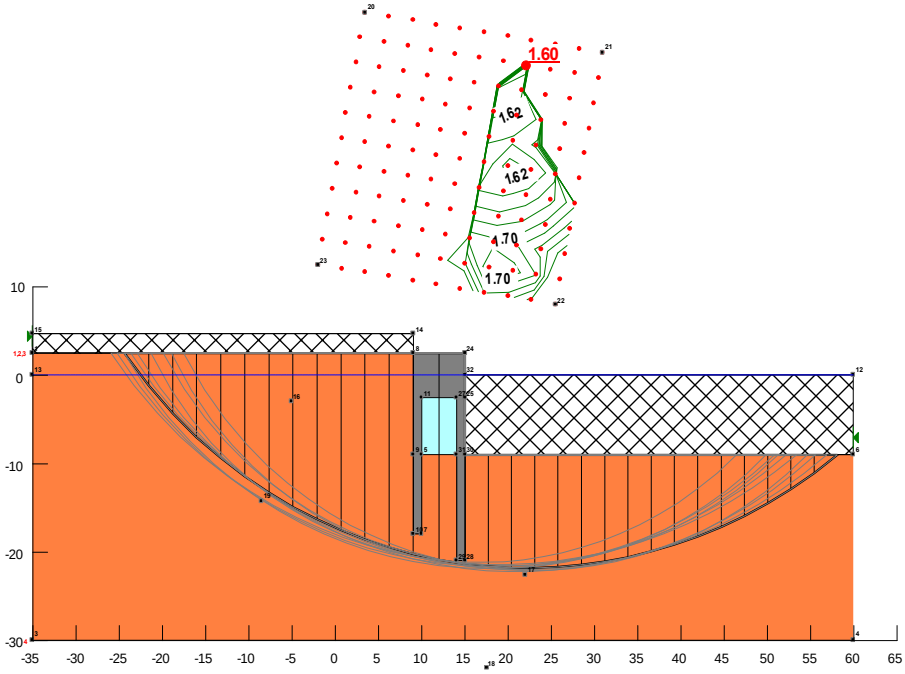
BANCHINA DI RIVA - CONDIZIONI SISMICHE

PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: banchina riva sisma.slz
Last Saved Date: 11/05/2010
Last Saved Time: 16.49.38
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

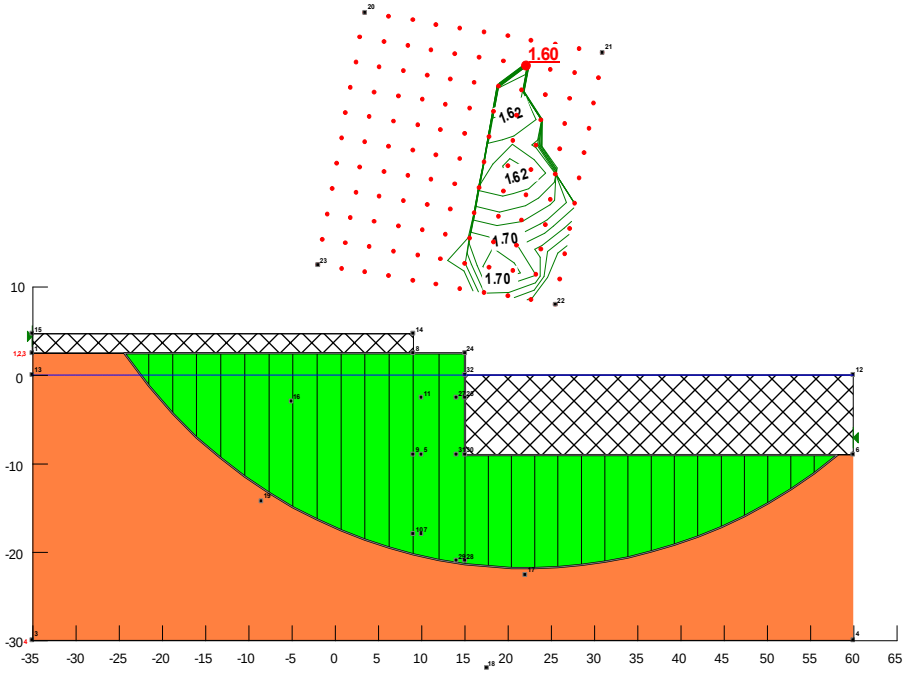
Soil: 1
Description: Paratia
Soil Model: Mohr-Coulomb
Unit Weight: 25
Cohesion: 10000
Phi: 0
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

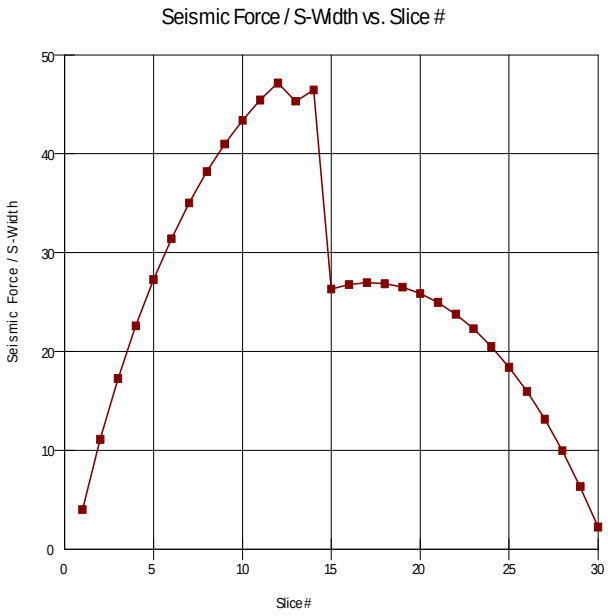
Soil: 2
Description: Terreni di riva
Soil Model: No Strength
Unit Weight: 10
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.6
Total Volume: 1025.7
Total Mass: 19819
Total Resisting Moment: 3.8449e+005
Total Activating Moment: 2.4101e+005
Total Resisting Force: 6194.4
Total Activating Force: 3892.5

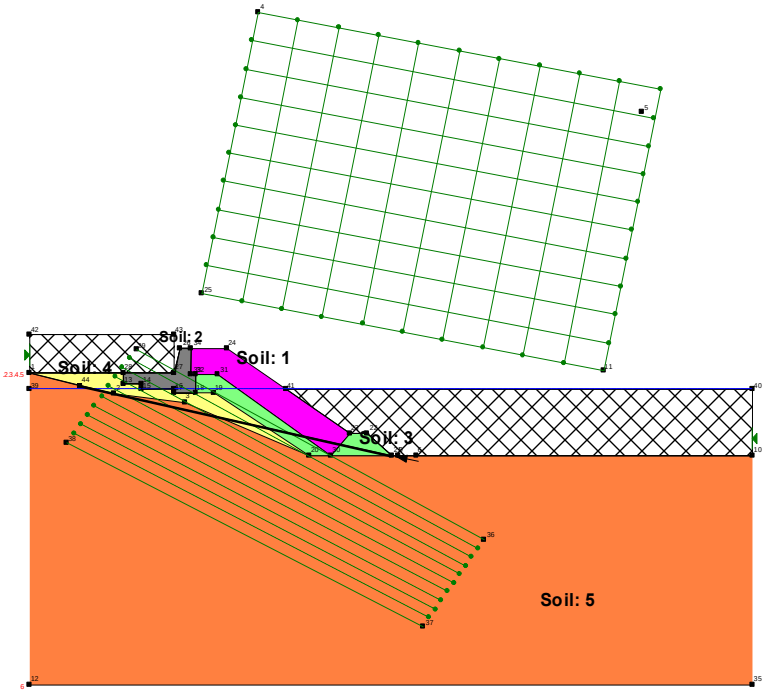
Superficie di scorrimento critica



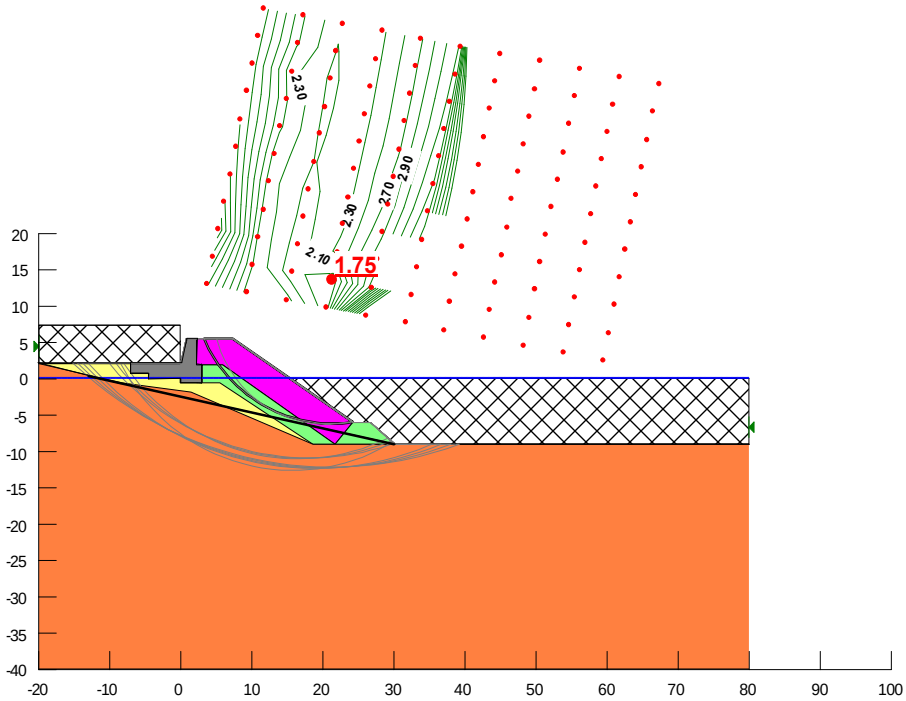


SCOGLIERA IN PROSECUZIONE DELLA BANCHINA DI RIVA - CONDIZIONI STATICHE

PARAMETRI RIDOTTI
Schema di Analisi



Superfici di scorrimento critiche: prime 10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez9-geogriglia stat.slz
Last Saved Date: 11/05/2010
Last Saved Time: 12.31.18
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

Soil: 1
Description: Tetrapodi
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 48.81
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: calcestruzzo
Soil Model: Mohr-Coulomb
Unit Weight: 25
Cohesion: 1000
Phi: 0
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Massi
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 43.63
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

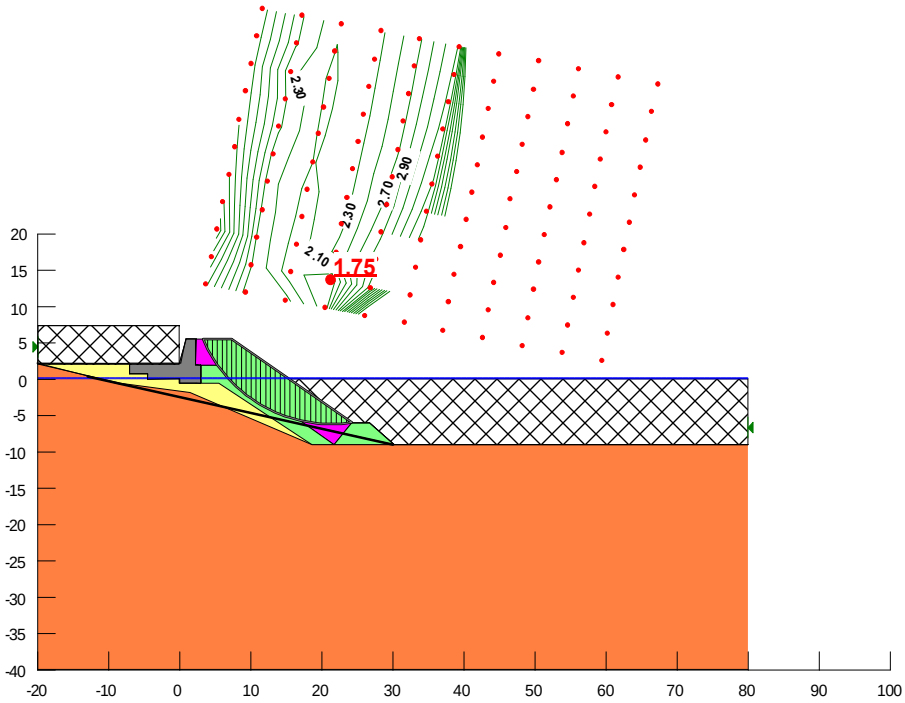
Soil: 4
Description: Tout venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 38.66
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

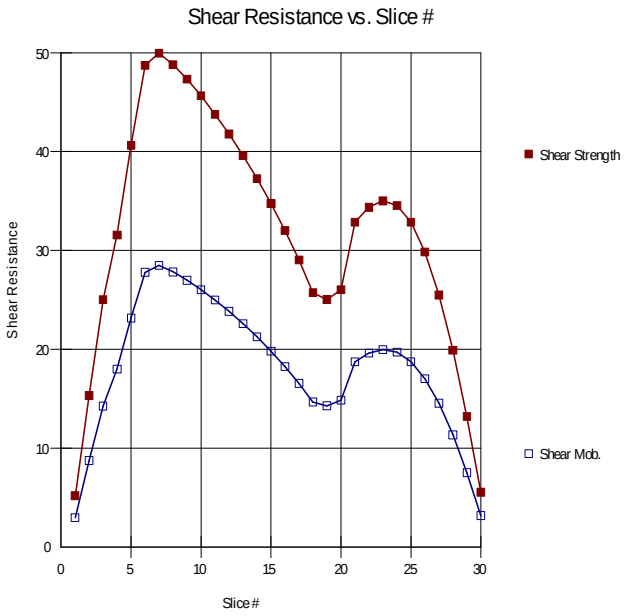
Soil: 5
Description: ghiaie e sabbie

Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32.01
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.75
Total Volume: 88.215
Total Mass: 1381.7
Total Resisting Moment: 15846
Total Activating Moment: 9037.5
Total Resisting Force: 665.36
Total Activating Force: 377.69

Superficie di scorrimento critica

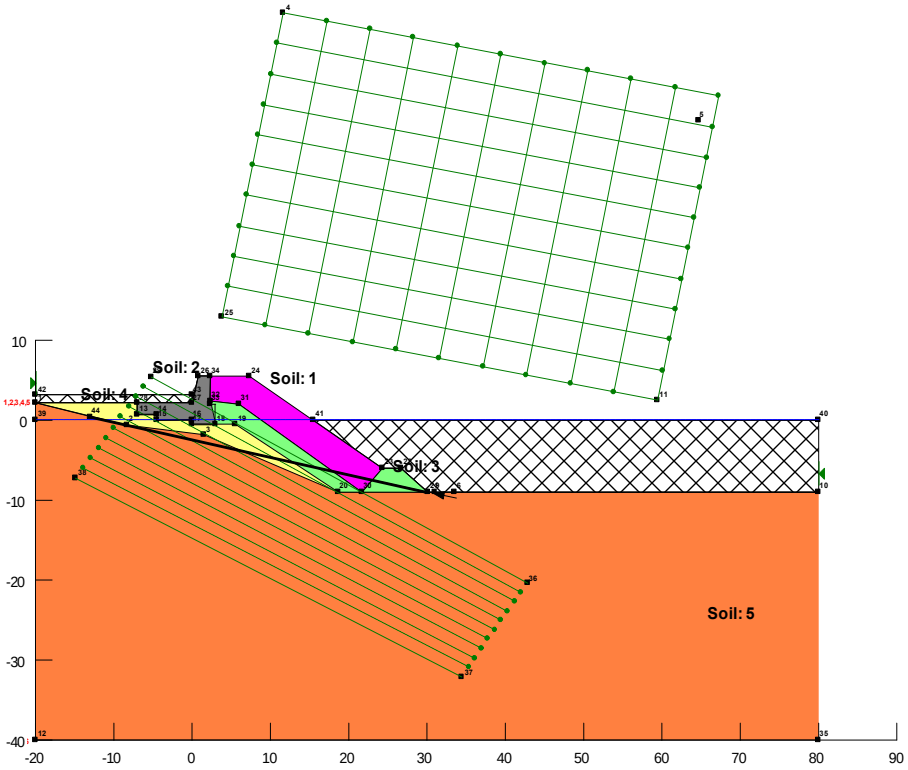



Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
10
20
30
40
50
0
5
10
15
20
25
30

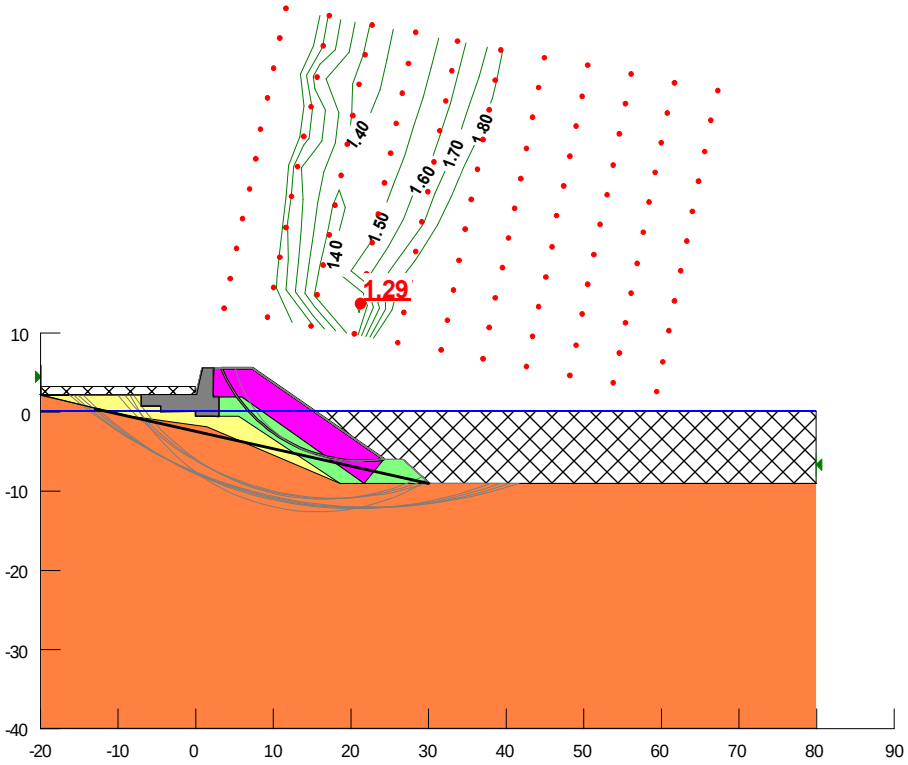
SCOGLIERA IN PROSECUZIONE DELLA BANCHINA DI RIVA - CONDIZIONI SISMICHE

PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10


1.40
1.50
1.60
1.70
1.80
1.40
1.29
10
0
-10
-20
-30
-40
-20
-10
0
10
20
30
40
50
60
70
80
90

Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez9-geogriglia sisma.slz
Last Saved Date: 11/05/2010
Last Saved Time: 15.44.00
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

Soil: 1
Description: Tetrapodi
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 48.81
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: calcestruzzo
Soil Model: Mohr-Coulomb
Unit Weight: 25
Cohesion: 1000
Phi: 0
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Massi
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 43.63
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

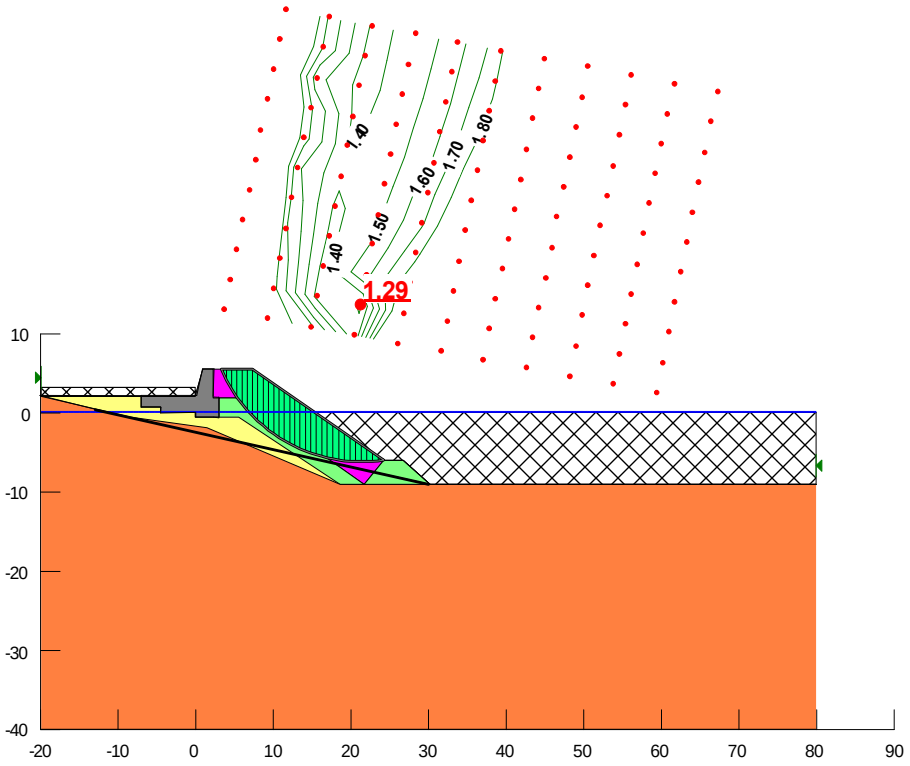
Soil: 4
Description: Tout venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 38.66
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 5
Description: ghiaie e sabbie

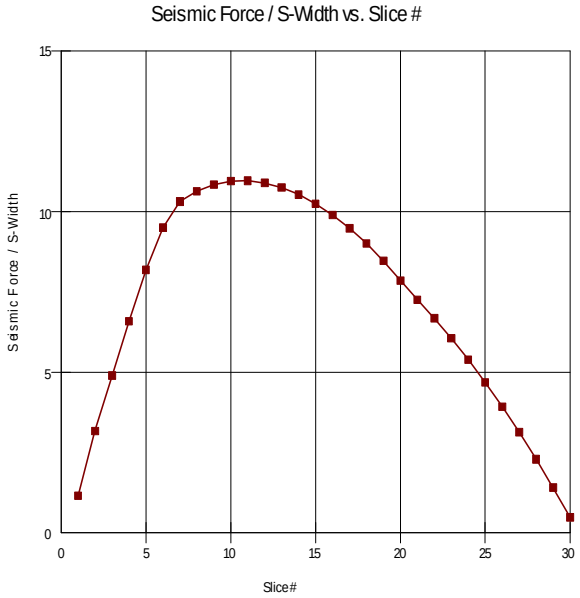
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32.01
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.29
Total Volume: 88.215
Total Mass: 1381.7
Total Resisting Moment: 13590
Total Activating Moment: 10523
Total Resisting Force: 577.08
Total Activating Force: 449.43

Superficie di scorrimento critica



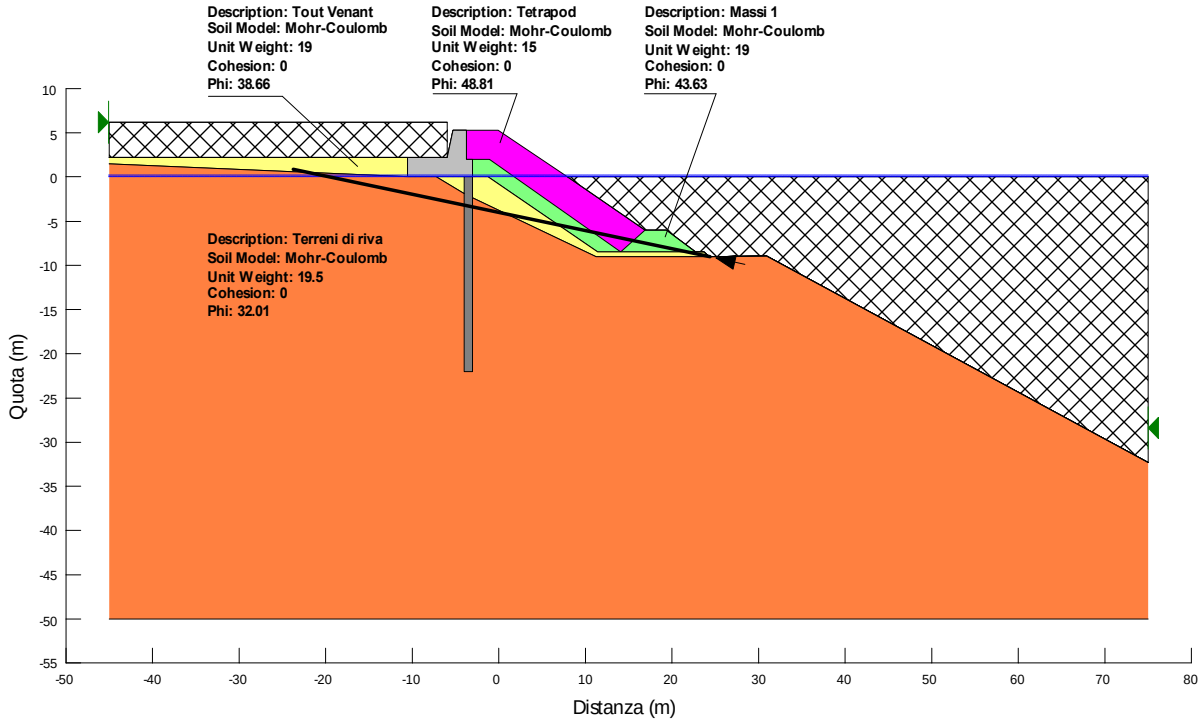

Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
10
20
30
40
50
0
5
10
15
20
25
30


Seismic Force / S-Width vs. Slice #
Seismic Force / S-Width
Slice #
0
5
10
15
0
5
10
15
20
25
30

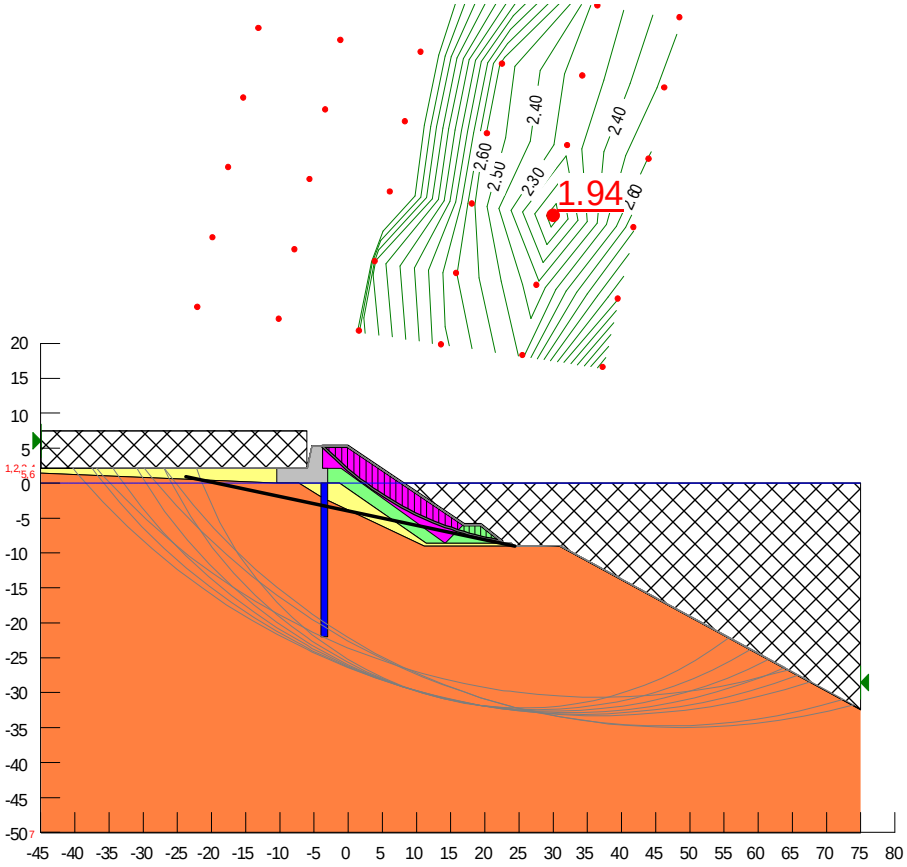
SCOGLIERA A PROTEZIONE DEI PIAZZALI - CONDIZIONI STATICHE

PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10


2.60
2.50
2.30
2.40
2.40
2.80
1.94
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez 2 statica.slz
Last Saved Date: 11/05/2010
Last Saved Time: 18.10.00
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

Soil: 1
Description: Tetrapod
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 48.81
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: Massi 1
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 43.63
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 10000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: Tout Venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 38.66
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

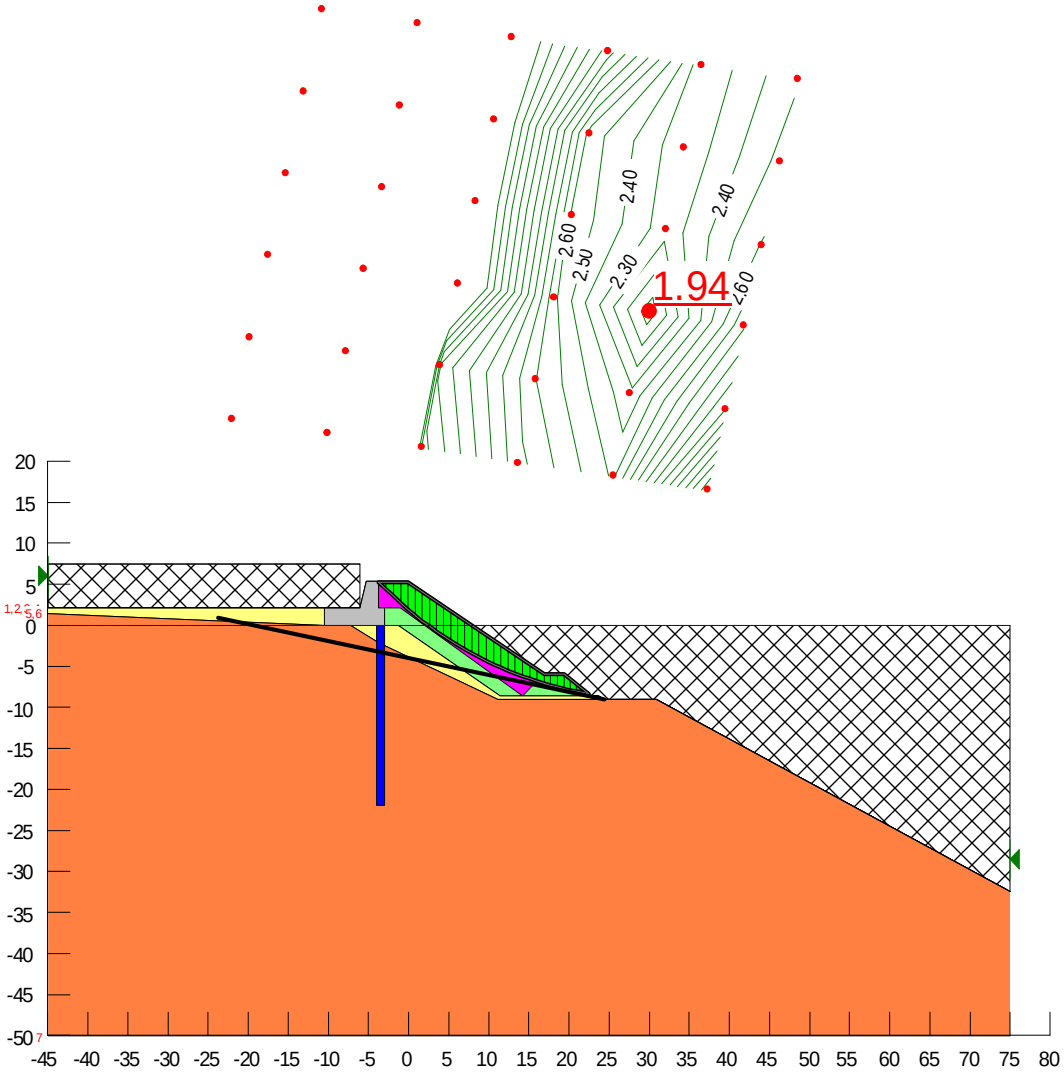
Soil: 5
Description: Palancolato
Soil Model: Undrained (Phi=0)

Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 6
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32.01
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.94
Total Volume: 62.936
Total Mass: 970.82
Total Resisting Moment: 28122
Total Activating Moment: 14459
Total Resisting Force: 507.59
Total Activating Force: 260.26

Superficie di scorrimento critica


2.60
2.50
2.30
2.40
2.40
2.60
1.94
20
15
10
5
0
-5
-10
-15
-20
-25
-30
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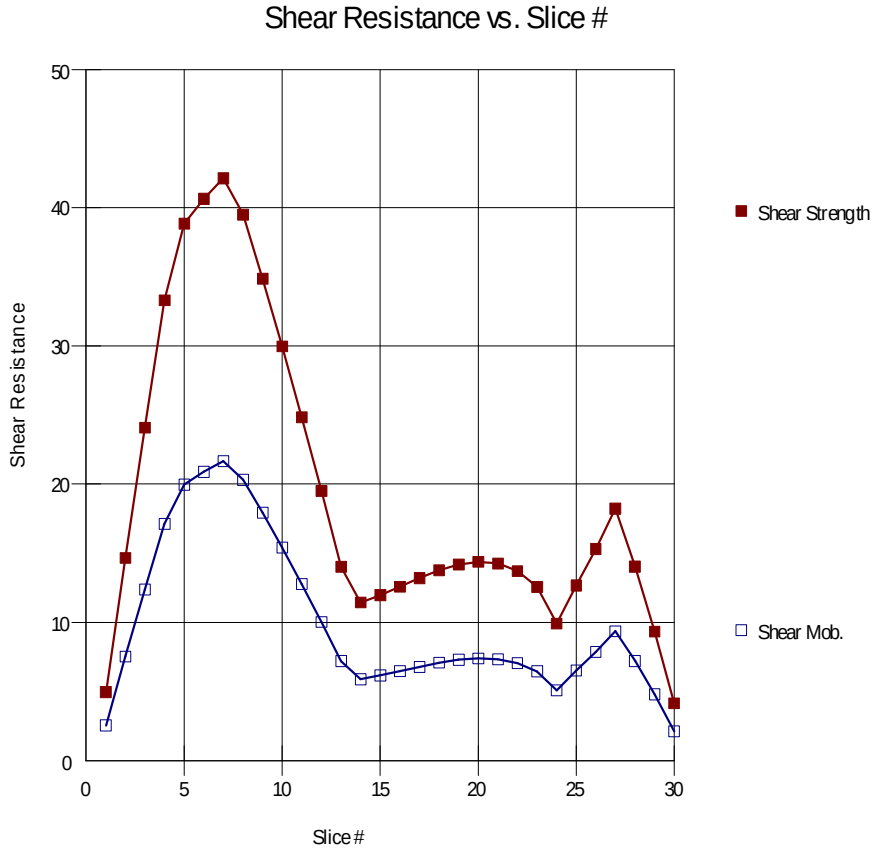
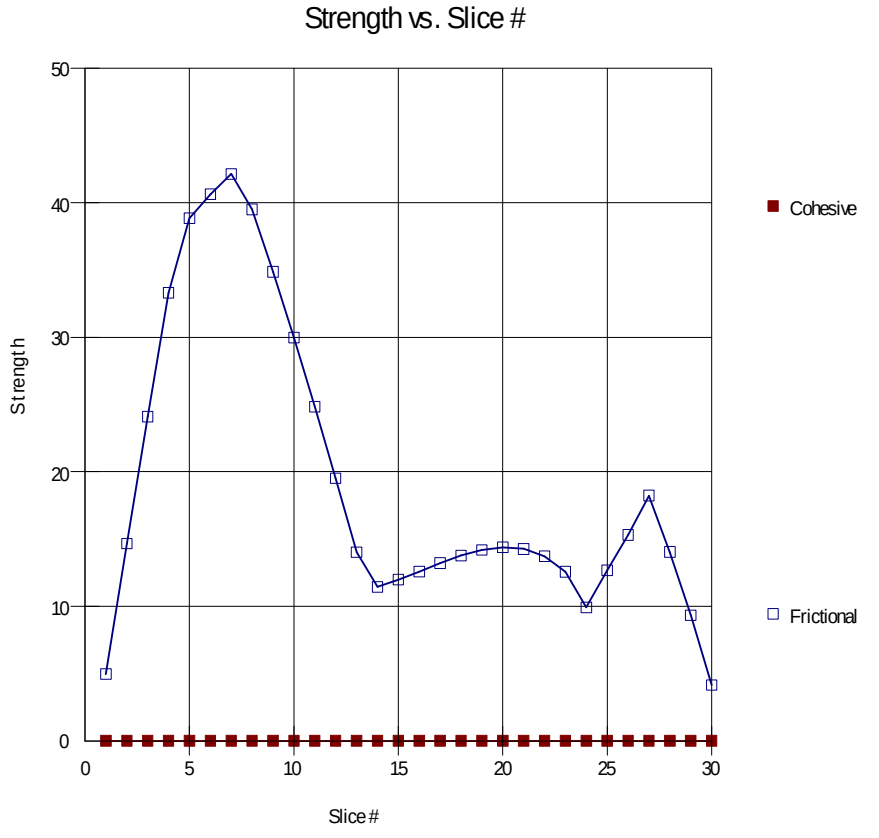
-50
-45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

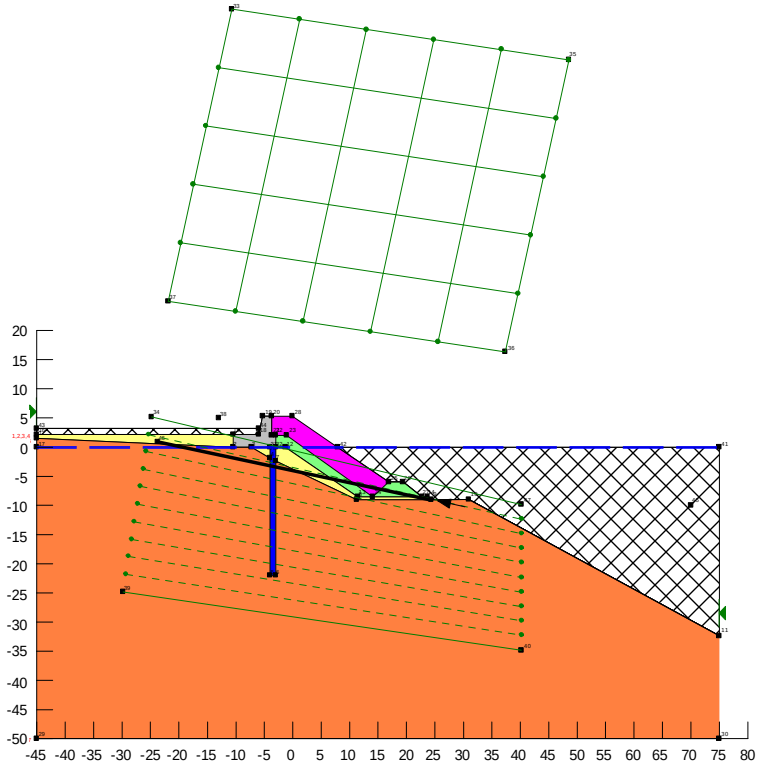

Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
10
20
30
40
50
0
5
10
15
20
25
30


Strength vs. Slice #
Strength
Slice #
Cohesive
Frictional
0
10
20
30
40
50
0
5
10
15
20
25
30

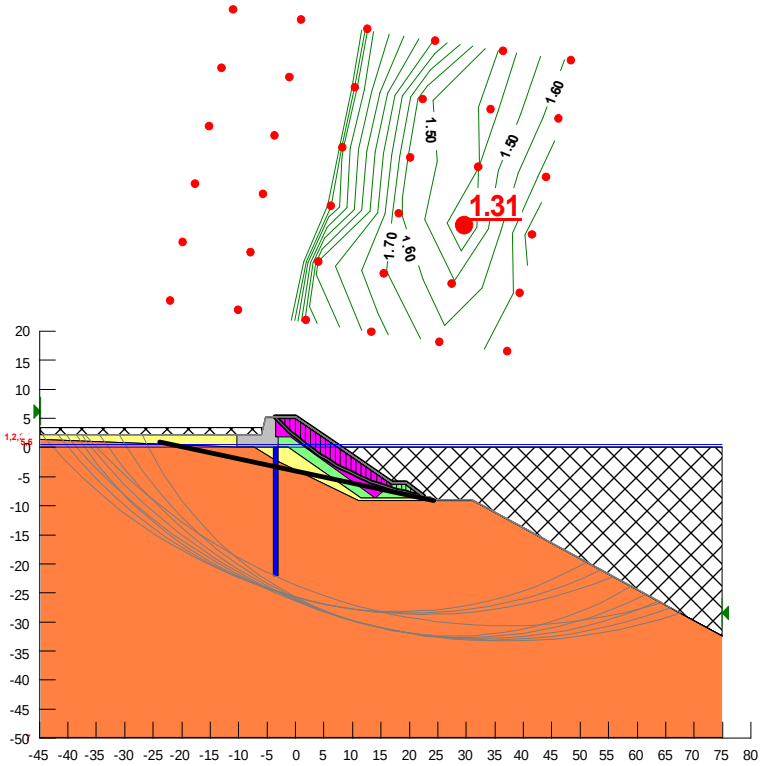
SCOGLIERA A PROTEZIONE DEI PIAZZALI - CONDIZIONI SISMICHE

PARAMETRI RIDOTTI

Schema di Analisi



Superfici di scorrimento critiche: prime 10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez 2 sismica.slz
Last Saved Date: 11/05/2010
Last Saved Time: 13.04.02
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

Soil: 1
Description: Tetrapod
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 48.81
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: Massi 1
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 43.63

Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 10000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

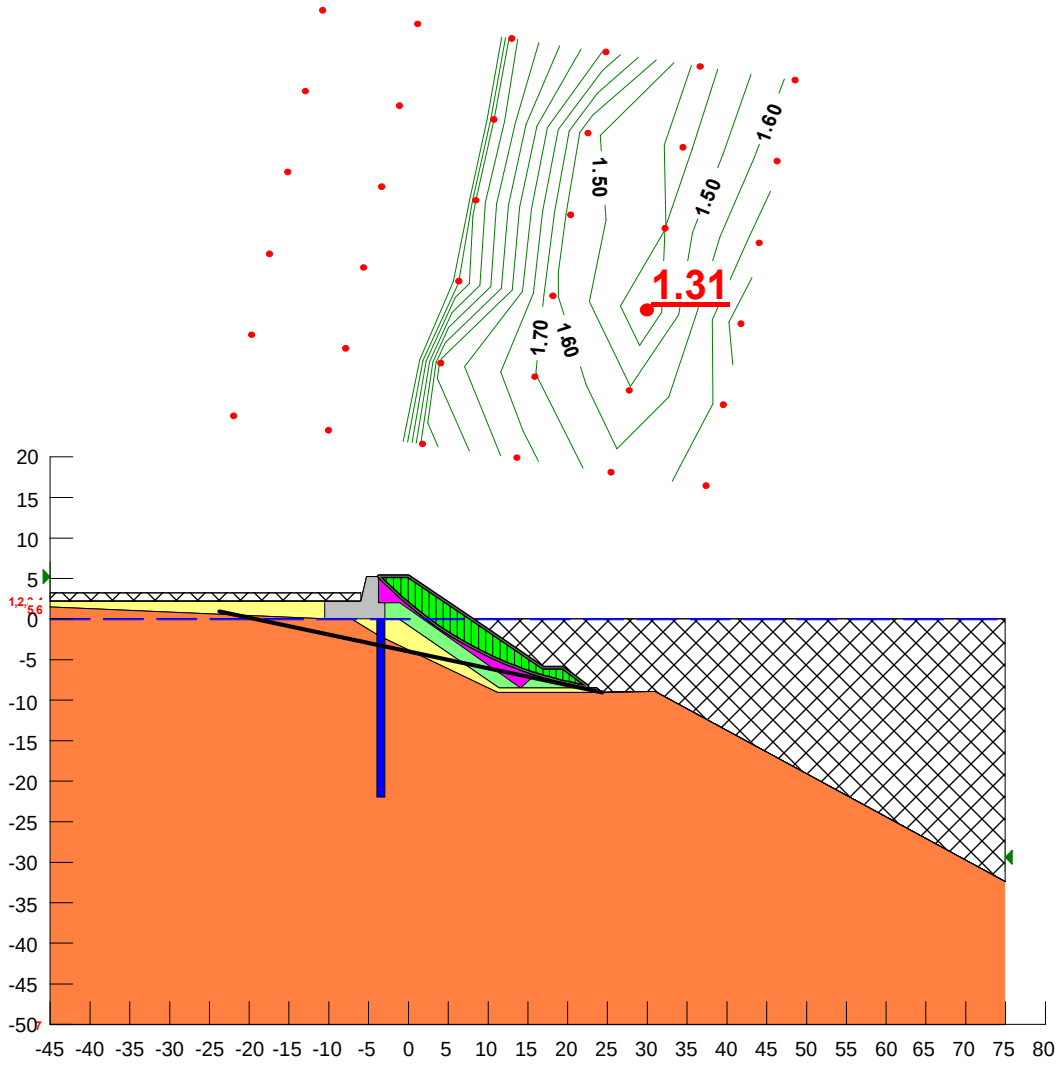
Soil: 4
Description: Tout Venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 38.66
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 5
Description: Palancolato
Soil Model: Undrained (Phi=0)
Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

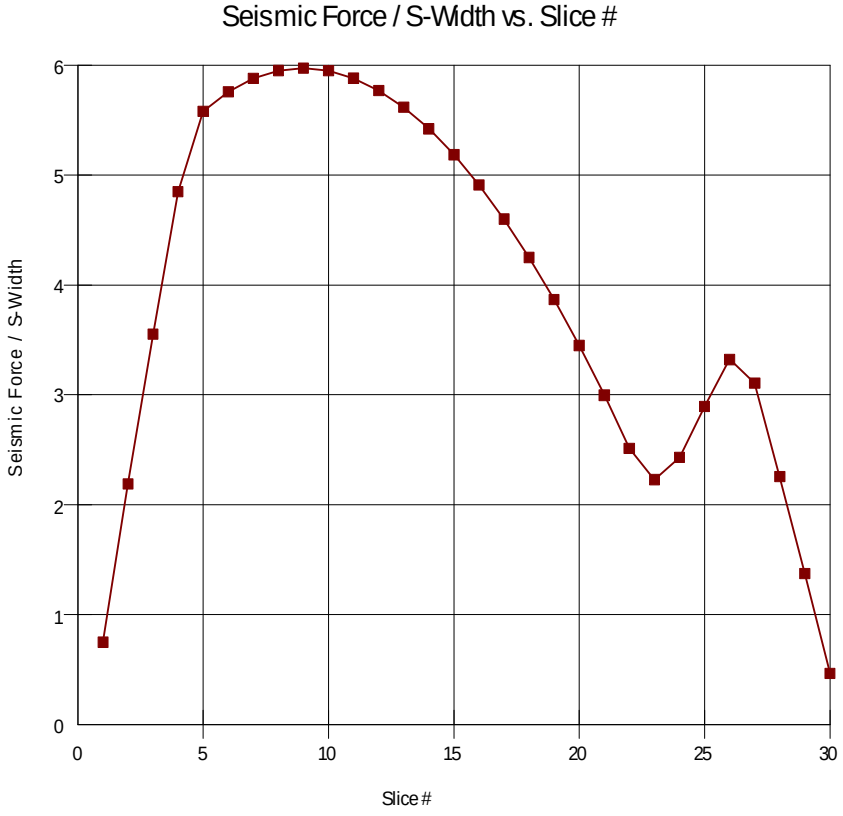
Soil: 6
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 32.01
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.31
Total Volume: 62.936
Total Mass: 970.82
Total Resisting Moment: 22909
Total Activating Moment: 17441
Total Resisting Force: 412.68
Total Activating Force: 315.17

Superficie di scorrimento critica

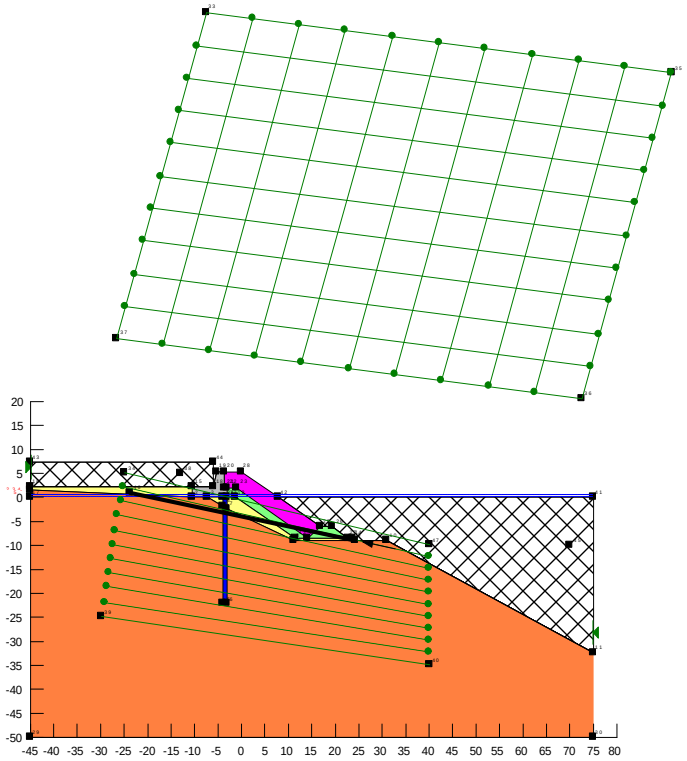

1.31
1.50
1.50
1.60
1.70
1.60
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80


Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
10
20
30
40
0
5
10
15
20
25
30

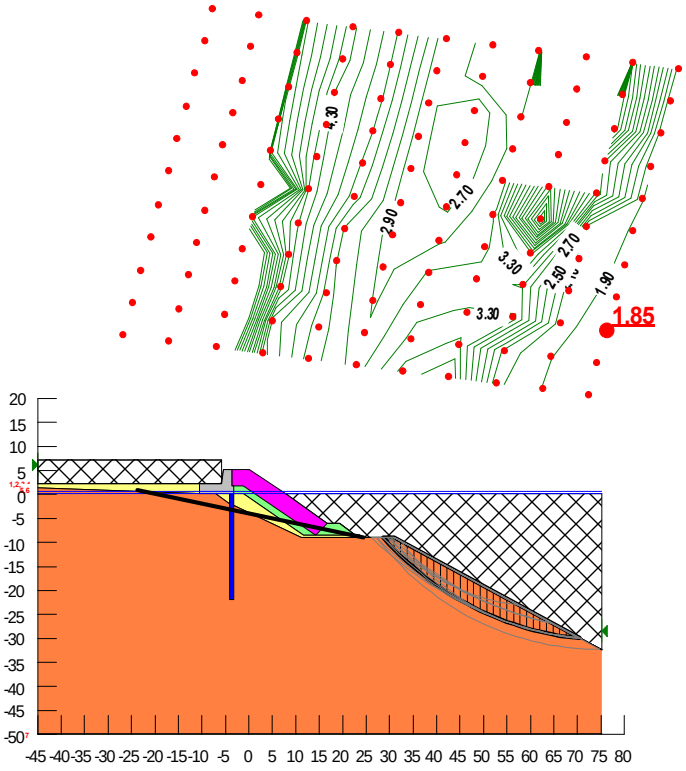

Seismic Force / S-Width vs. Slice #
Seismic Force / S-Width
Slice #
0
1
2
3
4
5
6
0
5
10
15
20
25
30

PENDIO NATURALE A VALLE DELLA SCOGLIERA A PROTEZIONE DEI PIAZZALI - CONDIZIONI STATICHE

PARAMETRI CARATTERISTICI
Schema di Analisi



Superfici di scorrimento critiche: prime 10


2.30
2.90
2.70
3.30
2.50
2.70
1.90
3.30
1.85
20
15
10
5
0
-5
-10
-15
-20
-25
-30
-35
-40
-45
-50
-45 -40 -35 -30 -25 -20 -15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80

Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez 2 statica pendio naturale.slz
Last Saved Date: 11/05/2010
Last Saved Time: 13.21.45
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: (none)

Soil: 1
Description: Tetrapod
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 55
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: Massi 1
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 47
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 10000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: Tout Venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 45
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

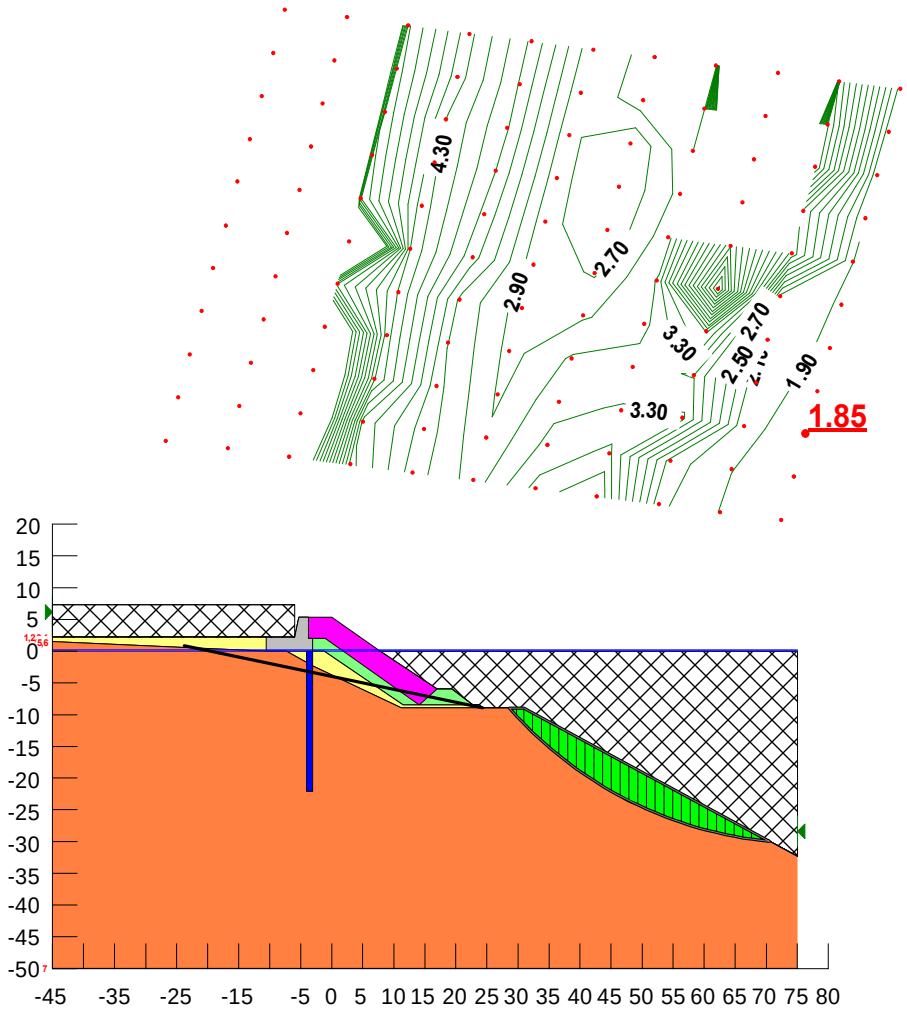
Soil: 5
Description: Palancolato
Soil Model: Undrained (Phi=0)

Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

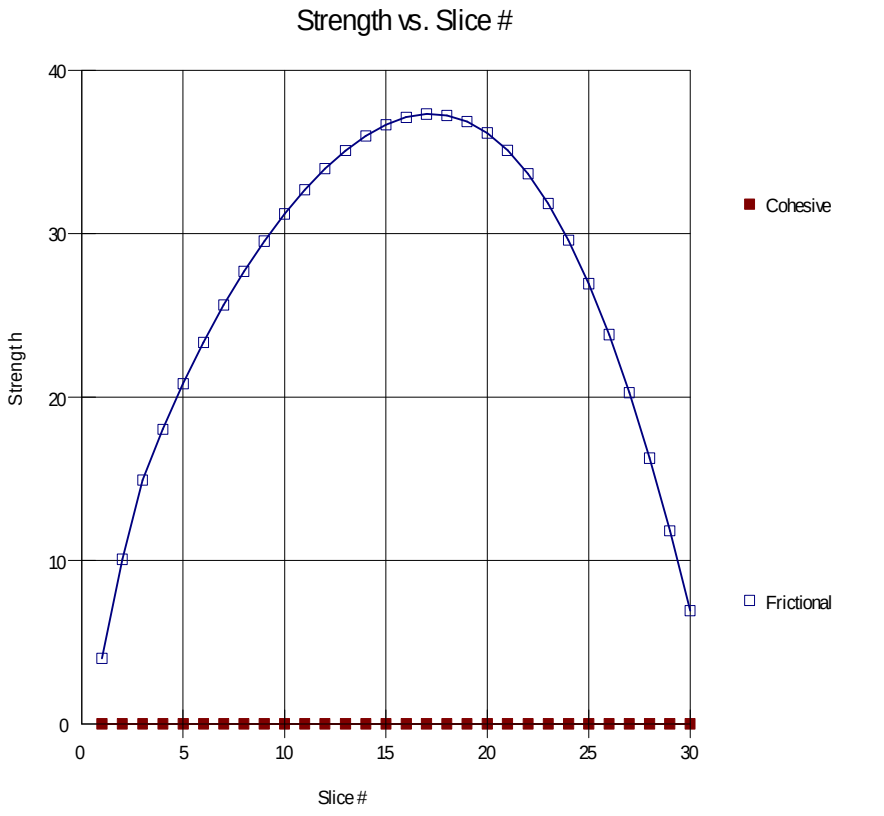
Soil: 6
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 38
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.85
Total Volume: 163.34
Total Mass: 3185.2
Total Resisting Moment: 81728
Total Activating Moment: 44248
Total Resisting Force: 1126.5
Total Activating Force: 612.9

Superficie di scorrimento critica



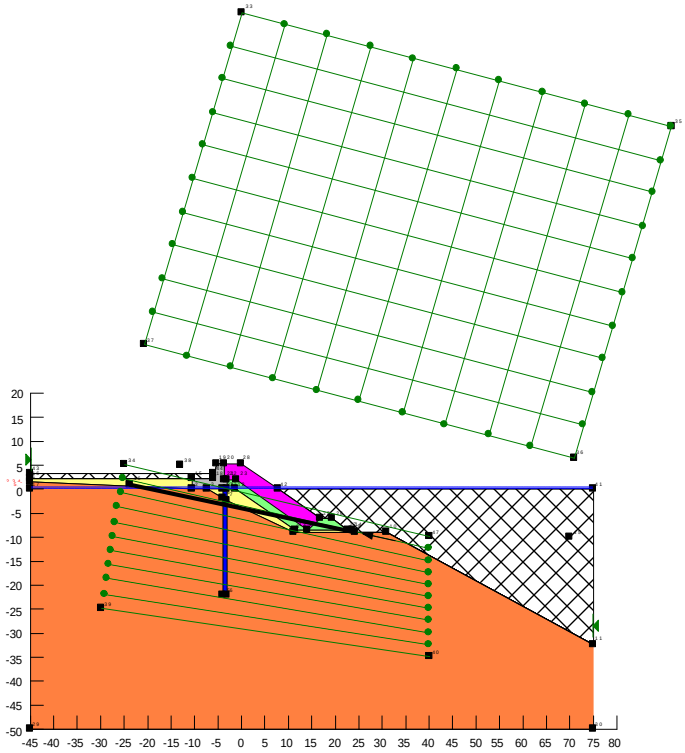

Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
10
20
30
40
0
5
10
15
20
25
30


Strength vs. Slice #
Strength
Slice #
Cohesive
Frictional
0
10
20
30
40
0
5
10
15
20
25
30

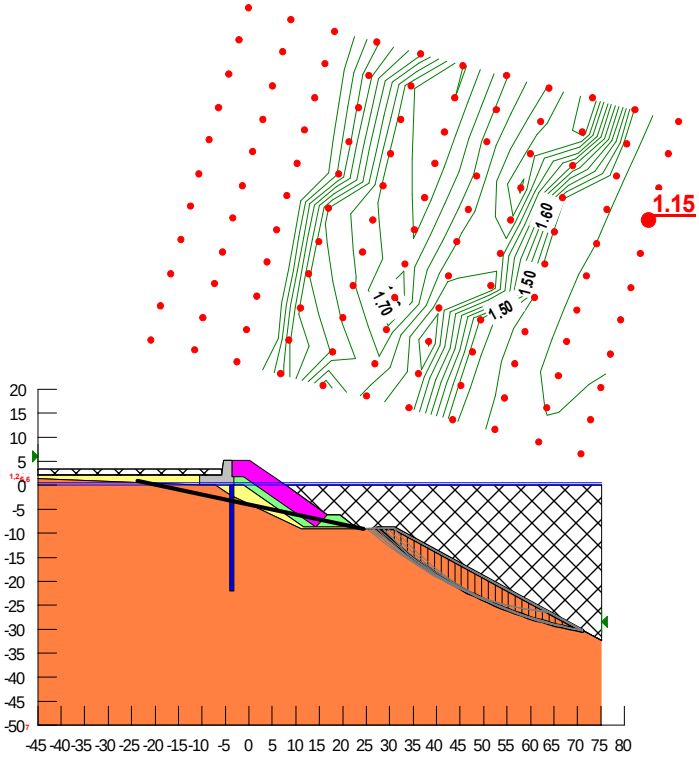
PENDIO NATURALE A VALLE DELLA SCOGLIERA A PROTEZIONE DEI PIAZZALI - CONDIZIONI SISMICHE

PARAMETRI CARATTERISTICI

Schema di Analisi



Superfici di scorrimento critiche: prime 10



Grandezze espresse in:
Unit Weight [kN/m^3]; Cohesion [kN/m^2]; Phi [°];
Factor of Safety [-]; Total Volume [m^3]; Total Mass [kN];
Total Resisting Moment [kNm]; Total Activating Moment [kNm];
Total Resisting Force [kN]; Total Activating Force [kN]

Description:
Comments:
File Name: sez 2 sismica pendio naturale.slz
Last Saved Date: 11/05/2010
Last Saved Time: 13.12.45
Analysis Method: Morgenstern-Price
Direction of Slip Movement: Left to Right
Slip Surface Option: Grid and Radius
P.W.P. Option: Piezometric lines with Ru
Tension Crack Option: (none)
Seismic Coefficient: kh=0,108 kv=-0.054

Soil: 1
Description: Tetrapod
Soil Model: Mohr-Coulomb
Unit Weight: 15
Cohesion: 0
Phi: 55
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 2
Description: Massi 1
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 47
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 3
Description: Cls
Soil Model: Undrained (Phi=0)
Unit Weight: 25
Cohesion: 10000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Soil: 4
Description: Tout Venant
Soil Model: Mohr-Coulomb
Unit Weight: 19
Cohesion: 0
Phi: 45
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

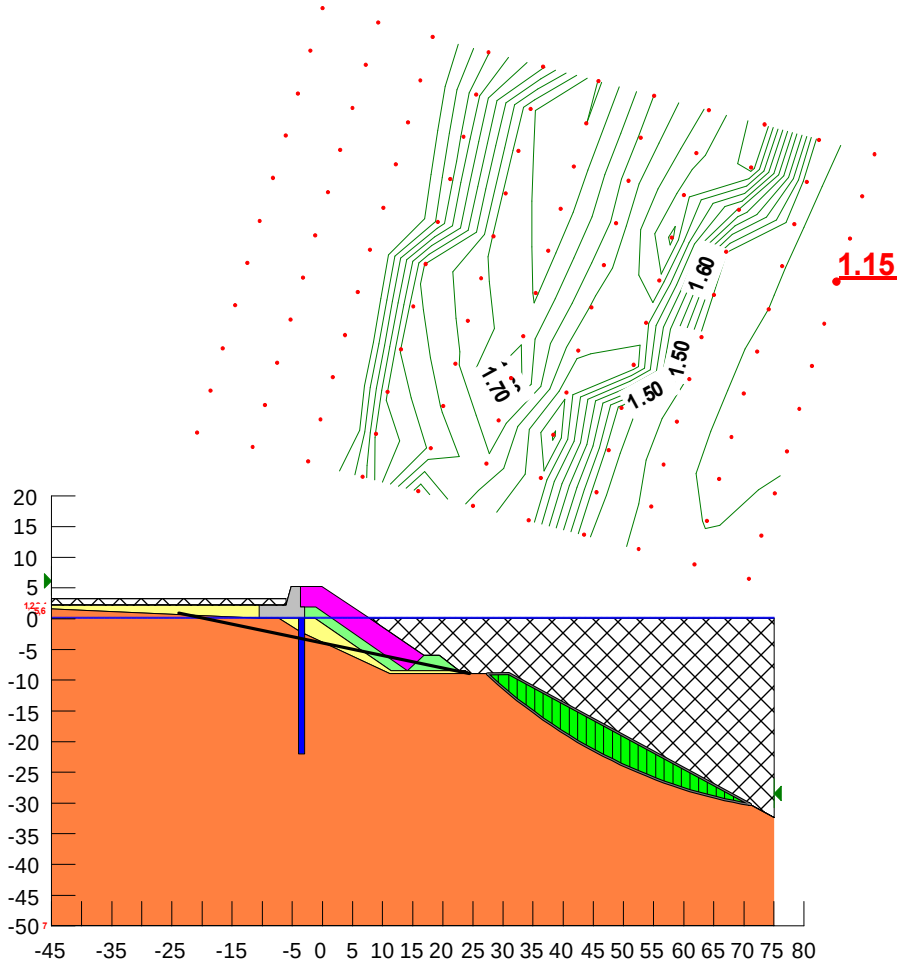
Soil: 5
Description: Palancolato
Soil Model: Undrained (Phi=0)

Unit Weight: 20
Cohesion: 3000
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

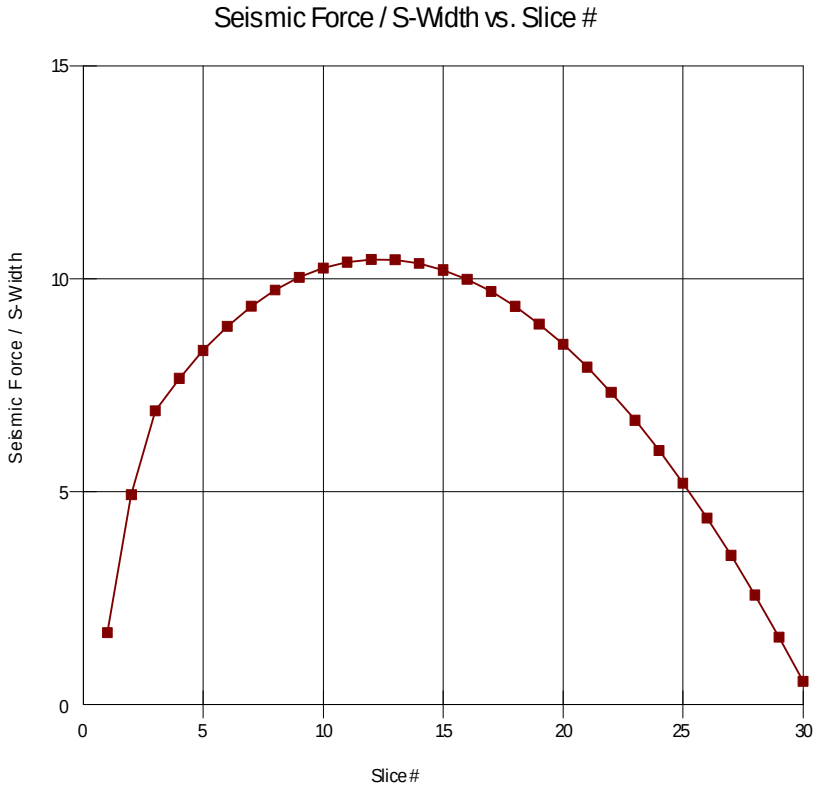
Soil: 6
Description: Terreni di riva
Soil Model: Mohr-Coulomb
Unit Weight: 19.5
Cohesion: 0
Phi: 38
Piezometric Line #: 1
Ru: 0
Pore-Air Pressure: 0

Factor of Safety: 1.15
Total Volume: 151.96
Total Mass: 2963.3
Total Resisting Moment: 83855
Total Activating Moment: 73051
Total Resisting Force: 871.14
Total Activating Force: 761.44

Superficie di scorrimento critica




Shear Resistance vs. Slice #
Shear Resistance
Slice #
Shear Strength
Shear Mob.
0
5
10
15
20
25
30


Seismic Force / S-Width vs. Slice #
Seismic Force / S-Width
Slice #
0
5
10
15
20
25
30