10.7 Allegato 7: *Verifiche di Stabilità del Rilevato Arginale*

REPORT ELABORAZIONI

- SSAP 4.1.3 - Slope Stability Analysis Program -

by Dr. Geol. L.Borselli*,** - (1991,2012)
*CNR-IRPI, Firenze
**UASLP, San Luis Potosi, Mexico

NOTE E LEGENDA SIMBOLI

fi`_____ Angolo di attrito interno efficace(in gradi)
C` _____ Coesione efficace (in Kpa)
Cu _____ Resistenza al taglio Non drenata (in Kpa)
Gamm _____ Peso di volume terreno fuori falda (in KN/m^3)
Gamm_sat __ Peso di volume terreno immerso (in KN/m^3)
STR_IDX ___ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)

---- Per ammassi Rocciosi - Parametri Criterio di Rottura di Hoek (2002)-
sigci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)
GSI _____ Geological Strenght Index ammasso(adimensionale)
mi _____ Indice litologico ammasso(adimensionale)
D _____ Fattore di disturbo ammasso(adimensionale)

X(m) : Ascissa sinistra concio
dx(m) : Larghezza concio
alpha(gradi) : Angolo pendenza base concio
W(kN/m) : Forza peso concio
ru(-) : Coefficiente locale pressione interstiziale
U(kPa) : Pressione totale dei pori base concio
phi'(gradi) : Angolo di attrito efficace base concio
c'/Cu (kPa) : Coesione efficace / Resistenza al taglio in condizioni non drenate
ht(m) : Altezza linea di thrust da nodo sinistro base concio
yt(m) : coordinata Y linea di trust
yt'(-) : gradiente pendenza locale linea di trust
E(x)(kN/m) : Forza Normale interconcio
T(x)(kN/m) : Forza Tangenziale interconcio
E' (kN) : derivata Forza normale interconcio
Rho(x) (-) : fattore mobilizzazione resistenza al taglio verticale interconcio ZhU et al.(2003)
Fs(x) (-) : fattore di sucurezza locale stimato (locale in X)

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI ..	mi ..	D ..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_0-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

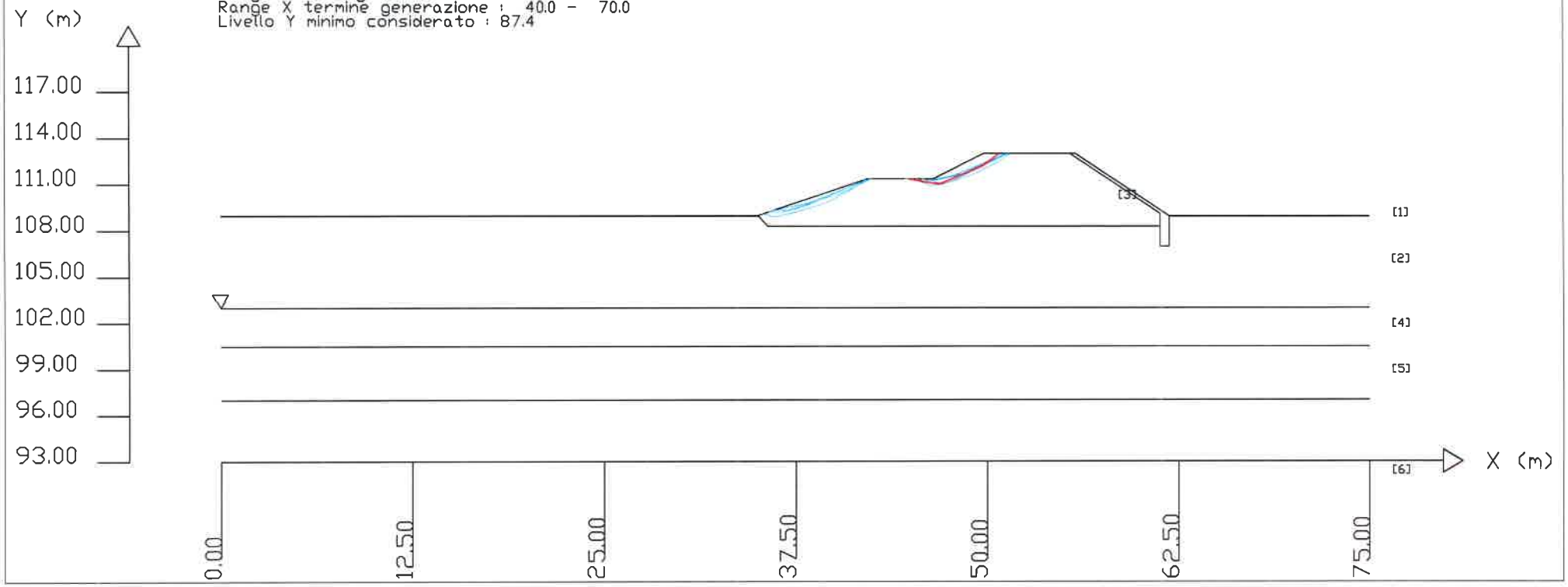
Fs minimo : 1.368
Range Fs : 1.368 1.504
Differenza % Range Fs : 9.0
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.368
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.13536
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 35.0 - 70.0
Range X termine generazione : 40.0 - 70.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-
-	-	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-
-	-	-	-	-	-	-	-

SUP FALDA

X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.65 66.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 35.00 70.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 70.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 1.368 - Min. - X Y Lambda= 0.451
44.90 111.40
45.71 111.23
46.45 111.10

			46.96	111.06		
			48.25	111.60		
			49.77	112.24		
			50.75	112.98		
			50.84	113.05		
Fattore di sicurezza (FS)	1.371	- N.2 --	X	Y	Lambda=	0.474
			45.42	111.40		
			46.03	111.23		
			46.88	111.40		
			48.39	111.72		
			49.48	112.21		
			51.03	112.91		
			51.19	113.05		
Fattore di sicurezza (FS)	1.408	- N.3 --	X	Y	Lambda=	0.466
			45.16	111.40		
			46.08	111.16		
			46.83	111.32		
			47.63	111.49		
			48.44	111.66		
			49.89	112.30		
			51.14	113.00		
			51.23	113.05		
Fattore di sicurezza (FS)	1.411	- N.4 --	X	Y	Lambda=	0.437
			45.80	111.40		
			47.17	111.04		
			49.00	111.62		
			49.48	111.86		
			50.37	112.29		
			50.85	112.55		
			51.59	113.05		
Fattore di sicurezza (FS)	1.415	- N.5 --	X	Y	Lambda=	0.496
			44.68	111.40		
			46.34	111.22		
			47.61	111.52		
			48.77	111.99		
			51.08	112.92		
			51.39	113.05		
Fattore di sicurezza (FS)	1.438	- N.6 --	X	Y	Lambda=	0.395

		45.19	111.40
		46.27	110.94
		47.07	111.00
		47.91	111.32
		49.04	111.87
		49.93	112.30
		51.47	113.05

Fattore di sicurezza (FS) 1.462 - N.7 -- X Y Lambda= 0.431

35.82	109.27
37.82	109.69
38.32	109.80
39.89	110.40
42.03	111.22
42.45	111.40

Fattore di sicurezza (FS) 1.474 - N.8 -- X Y Lambda= 0.387

35.78	109.26
36.53	109.18
38.17	109.69
40.28	110.35
40.79	110.58
41.89	111.09
42.48	111.40

Fattore di sicurezza (FS) 1.484 - N.9 -- X Y Lambda= 0.425

36.03	109.34
37.10	109.32
38.20	109.62
39.01	109.97
40.42	110.58
41.85	111.21
42.06	111.35

Fattore di sicurezza (FS) 1.504 - N.10 -- X Y Lambda= 0.399

35.34	109.11
36.14	108.91
37.25	109.16
37.85	109.31
39.35	109.76
40.88	110.51
42.30	111.40

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.368	27.0	19.8	5.3	Surplus
2	1.371	21.2	15.5	4.2	Surplus
3	1.408	24.9	17.7	5.4	Surplus
4	1.411	36.1	25.6	8.0	Surplus
5	1.415	20.7	14.6	4.6	Surplus
6	1.438	33.5	23.3	7.9	Surplus
7	1.462	11.5	7.9	2.9	Surplus
8	1.474	19.8	13.4	5.0	Surplus
9	1.484	15.7	10.6	4.1	Surplus
10	1.504	32.5	21.6	8.7	Surplus

Esito analisi: SURPLUS di RESISTENZA!
Valore minimo di SURPLUS di RESISTENZA (kN/m): 2.9

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
44.898	0.094	-11.94	0.02	0.00	0.00	26.50	0.00	0.000	111.400	-0.180	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.046	1.455
44.992	0.094	-11.94	0.06	0.00	0.00	26.50	0.00	0.003	111.383	-0.180	5.421010862E-0005	6.301300023E-0007	2.872540014E-0004	0.046	1.455
45.086	0.094	-11.94	0.09	0.00	0.00	26.50	0.00	0.006	111.366	-0.180	5.421010862E-0005	1.260260005E-0006	0.000000000E+0000	0.064	1.545
45.181	0.094	-11.94	0.13	0.00	0.00	26.50	0.00	0.009	111.349	-0.180	5.421010862E-0005	1.890390007E-0006	5.566968503E-0003	0.096	1.584
45.275	0.094	-11.94	0.17	0.00	0.00	26.50	0.00	0.012	111.332	-0.180	1.104799363E-0003	5.136807456E-0005	3.486226759E-0001	0.128	1.541
45.369	0.094	-11.94	0.21	0.00	0.00	26.50	0.00	0.015	111.315	-0.180	4.591870534E-0002	2.667189784E-0003	6.021990164E-0001	0.159	1.425
45.464	0.094	-11.94	0.25	0.00	0.00	26.50	0.00	0.018	111.298	-0.178	1.158266657E-0001	8.182752762E-0003	8.875024304E-0001	0.194	1.274
45.558	0.094	-11.94	0.28	0.00	0.00	26.50	0.00	0.021	111.282	-0.164	2.150127545E-0001	1.768807221E-0002	1.222769360E+0000	0.226	1.125
45.653	0.057	-11.94	0.19	0.00	0.00	26.50	0.00	0.027	111.267	-0.152	3.476743655E-0001	3.225981383E-0002	1.591550536E+0000	0.255	0.998
45.710	0.094	-9.84	0.34	0.00	0.00	26.50	0.00	0.030	111.258	-0.147	4.455150854E-0001	4.390039311E-0002	1.814942561E+0000	0.270	0.925
45.804	0.094	-9.84	0.37	0.00	0.00	26.50	0.00	0.033	111.245	-0.140	6.345284774E-0001	6.868574788E-0002	2.190291145E+0000	0.297	0.819
45.899	0.094	-9.84	0.40	0.00	0.00	26.50	0.00	0.037	111.232	-0.128	8.576455860E-0001	1.014185127E-0001	2.528655051E+0000	0.324	0.739
45.993	0.094	-9.84	0.44	0.00	0.00	26.50	0.00	0.042	111.221	-0.109	1.109606348E+0000	1.427990796E-0001	2.801162151E+0000	0.353	0.691
46.087	0.094	-9.84	0.47	0.00	0.00	26.50	0.00	0.049	111.212	-0.086	1.384874612E+0000	1.913789657E-0001	3.030831424E+0000	0.379	0.676
46.182	0.094	-9.84	0.50	0.00	0.00	26.50	0.00	0.058	111.205	-0.058	1.679812304E+0000	2.485837531E-0001	3.207881432E+0000	0.406	0.689
46.276	0.094	-9.84	0.53	0.00	0.00	26.50	0.00	0.071	111.201	-0.025	1.989719067E+0000	3.158569501E-0001	3.364367470E+0000	0.436	0.723
46.370	0.080	-9.84	0.47	0.00	0.00	26.50	0.00	0.086	111.200	0.010	2.315680439E+0000	3.932852998E-0001	3.547721784E+0000	0.466	0.774
46.450	0.050	-4.86	0.30	0.00	0.00	26.50	0.00	0.102	111.202	0.047	2.604642849E+0000	4.713802078E-0001	3.687508936E+0000	0.497	0.833
46.500	0.094	-4.86	0.63	0.00	0.00	26.50	0.00	0.110	111.206	0.095	2.789457802E+0000	5.283243750E-0001	3.737159086E+0000	0.520	0.876
46.594	0.094	-4.86	0.74	0.00	0.00	26.50	0.00	0.128	111.216	0.133	3.148252769E+0000	6.642752737E-0001	3.857554226E+0000	0.579	0.968
46.689	0.094	-4.86	0.84	0.00	0.00	26.50	0.00	0.151	111.231	0.184	3.509798239E+0000	8.439659299E-0001	3.745697262E+0000	0.660	1.071

46.783	0.094	-4.86	0.95	0.00	0.00	26.50	0.00	0.179	111.251	0.234	3.843281422E+0000	1.049997576E+0000	3.267982123E+0000	0.750	1.178
46.877	0.087	-4.86	0.96	0.00	0.00	26.50	0.00	0.212	111.275	0.281	4.120847706E+0000	1.237271143E+0000	2.620715275E+0000	0.824	1.288
46.964	0.094	22.91	1.10	0.00	0.00	26.50	0.00	0.245	111.302	0.329	4.324239166E+0000	1.381948192E+0000	2.048389285E+0000	0.877	1.395
47.059	0.094	22.91	1.12	0.00	0.00	26.50	0.00	0.239	111.335	0.373	4.487105981E+0000	1.498602290E+0000	1.409527435E+0000	0.916	1.522
47.153	0.094	22.91	1.13	0.00	0.00	26.50	0.00	0.236	111.372	0.412	4.592302486E+0000	1.573696677E+0000	8.334514094E-0001	0.940	1.659
47.247	0.094	22.91	1.14	0.00	0.00	26.50	0.00	0.237	111.413	0.445	4.646581533E+0000	1.618075993E+0000	3.242423495E-0001	0.956	1.797
47.342	0.094	22.91	1.16	0.00	0.00	26.50	0.00	0.240	111.456	0.467	4.652739702E+0000	1.640429407E+0000	-2.103573104E-0001	0.967	1.924
47.436	0.094	22.91	1.17	0.00	0.00	26.50	0.00	0.245	111.501	0.478	4.608226734E+0000	1.644335785E+0000	-7.011526251E-0001	0.979	2.023
47.530	0.094	22.91	1.18	0.00	0.00	26.50	0.00	0.251	111.546	0.486	4.528872115E+0000	1.635282898E+0000	-9.316528206E-0001	0.991	2.084
47.625	0.094	22.91	1.20	0.00	0.00	26.50	0.00	0.257	111.592	0.490	4.440118631E+0000	1.622121250E+0000	-9.254134187E-0001	1.003	2.108
47.719	0.094	22.91	1.21	0.00	0.00	26.50	0.00	0.263	111.639	0.491	4.354133373E+0000	1.609227699E+0000	-8.990693381E-0001	1.014	2.090
47.814	0.094	22.91	1.23	0.00	0.00	26.50	0.00	0.270	111.685	0.488	4.272409700E+0000	1.597195845E+0000	-8.317757087E-0001	1.026	2.036
47.908	0.094	22.91	1.24	0.00	0.00	26.50	0.00	0.276	111.731	0.483	4.195857253E+0000	1.586377946E+0000	-8.024080734E-0001	1.037	1.959
48.002	0.094	22.91	1.25	0.00	0.00	26.50	0.00	0.281	111.776	0.480	4.118910708E+0000	1.576102059E+0000	-8.352910850E-0001	1.050	1.877
48.097	0.094	22.91	1.27	0.00	0.00	26.50	0.00	0.286	111.821	0.476	4.038700264E+0000	1.562791872E+0000	-8.531050697E-0001	1.062	1.802
48.191	0.062	22.91	0.84	0.00	0.00	26.50	0.00	0.291	111.866	0.477	3.958954595E+0000	1.547857905E+0000	-8.372715641E-0001	1.073	1.737
48.253	0.094	23.01	1.29	0.00	0.00	26.50	0.00	0.295	111.896	0.478	3.907216260E+0000	1.537217478E+0000	-8.342064044E-0001	1.080	1.698
48.347	0.094	23.01	1.30	0.00	0.00	26.50	0.00	0.300	111.941	0.478	3.827854170E+0000	1.521217560E+0000	-8.524665618E-0001	1.091	1.642
48.442	0.094	23.01	1.32	0.00	0.00	26.50	0.00	0.305	111.986	0.483	3.745781186E+0000	1.504393678E+0000	-8.874633060E-0001	1.102	1.593
48.536	0.094	23.01	1.33	0.00	0.00	26.50	0.00	0.311	112.032	0.487	3.660578588E+0000	1.486479120E+0000	-9.208261357E-0001	1.114	1.549
48.630	0.094	23.01	1.34	0.00	0.00	26.50	0.00	0.317	112.078	0.491	3.571950001E+0000	1.465240258E+0000	-9.550765902E-0001	1.126	1.510
48.725	0.094	23.01	1.36	0.00	0.00	26.50	0.00	0.323	112.125	0.496	3.481100970E+0000	1.442385774E+0000	-9.661541714E-0001	1.137	1.473
48.819	0.094	23.01	1.37	0.00	0.00	26.50	0.00	0.330	112.172	0.510	3.390198981E+0000	1.418756862E+0000	-9.598725592E-0001	1.148	1.438
48.914	0.094	23.01	1.39	0.00	0.00	26.50	0.00	0.340	112.221	0.546	3.299426709E+0000	1.394430066E+0000	-9.683113033E-0001	1.160	1.405
49.008	0.094	23.01	1.40	0.00	0.00	26.50	0.00	0.353	112.275	0.559	3.207042674E+0000	1.368663791E+0000	-9.909678911E-0001	1.171	1.375
49.102	0.094	23.01	1.41	0.00	0.00	26.50	0.00	0.365	112.326	0.528	3.112263200E+0000	1.341100324E+0000	-1.018782566E+0000	1.182	1.348
49.197	0.094	23.01	1.43	0.00	0.00	26.50	0.00	0.373	112.374	0.488	3.014498216E+0000	1.311453202E+0000	-1.055945980E+0000	1.194	1.323
49.291	0.094	23.01	1.44	0.00	0.00	26.50	0.00	0.377	112.419	0.463	2.912303941E+0000	1.279051252E+0000	-1.109009220E+0000	1.205	1.302
49.385	0.094	23.01	1.45	0.00	0.00	26.50	0.00	0.380	112.462	0.446	2.806209693E+0000	1.244074121E+0000	-1.147025514E+0000	1.217	1.286
49.480	0.094	23.01	1.47	0.00	0.00	26.50	0.00	0.381	112.503	0.416	2.692363859E+0000	1.204918408E+0000	-1.290681172E+0000	1.228	1.276
49.574	0.094	23.01	1.48	0.00	0.00	26.50	0.00	0.378	112.540	0.380	2.558169788E+0000	1.154182111E+0000	-1.571431311E+0000	1.238	1.272
49.668	0.094	23.01	1.49	0.00	0.00	26.50	0.00	0.373	112.574	0.347	2.394921532E+0000	1.079310184E+0000	-1.877168039E+0000	1.247	1.273
49.763	0.006	23.01	0.10	0.00	0.00	26.50	0.00	0.364	112.606	0.330	2.205063771E+0000	9.802781495E-0001	-2.145340890E+0000	1.220	1.283
49.769	0.031	36.82	0.49	0.00	0.00	26.50	0.00	0.363	112.608	0.316	2.191800758E+0000	9.731781263E-0001	-2.162297112E+0000	1.218	1.283
49.800	0.094	36.82	1.42	0.00	0.00	26.50	0.00	0.350	112.617	0.311	2.123222413E+0000	9.330529416E-0001	-2.246074647E+0000	1.206	1.288
49.894	0.094	36.82	1.29	0.00	0.00	26.50	0.00	0.308	112.647	0.303	1.900178690E+0000	7.936957263E-0001	-2.473962425E+0000	1.146	1.306
49.989	0.094	36.82	1.15	0.00	0.00	26.50	0.00	0.266	112.675	0.290	1.658000386E+0000	6.334842420E-0001	-2.649395783E+0000	1.048	1.325
50.083	0.094	36.82	1.02	0.00	0.00	26.50	0.00	0.222	112.701	0.280	1.401941033E+0000	4.579477585E-0001	-2.779899708E+0000	0.896	1.341
50.177	0.094	36.82	0.88	0.00	0.00	26.50	0.00	0.177	112.728	0.290	1.131781057E+0000	3.233190888E-0001	-2.927992003E+0000	0.784	1.350
50.272	0.028	36.82	0.24	0.00	0.00	26.50	0.00	0.135	112.756	0.317	8.572512496E-0001	2.136546505E-0001	-2.835636691E+0000	0.684	1.351
50.300	0.094	36.82	0.71	0.00	0.00	26.50	0.00	0.124	112.766	0.326	7.785154413E-0001	1.855406667E-0001	-2.742869830E+0000	0.654	1.349
50.394	0.094	36.82	0.57	0.00	0.00	26.50	0.00	0.083	112.796	0.361	5.404034498E-0001	1.091385853E-0001	-2.275311045E+0000	0.554	1.330
50.489	0.094	36.82	0.44	0.00	0.00	26.50	0.00	0.051	112.835	0.497	3.489095283E-0001	5.525828313E-0002	-1.791852592E+0000	0.435	1.283
50.583	0.094	36.82	0.31	0.00	0.00	26.50	0.00	0.036	112.890	0.582	2.040031650E-0001	2.304750204E-0002	-1.282754178E+0000	0.310	1.191
50.677	0.069	36.82	0.14	0.00	0.00	26.50	0.00	0.020	112.944	0.597	1.037834291E-0001	7.652144228E-0003	-8.653684520E-0001	0.202	1.026
50.747	0.094	36.92	0.07	0.00	0.00	26.50	0.00	0.011	112.988	0.632	5.162447990E-0002	2.370681307E-0003	-6.501698453E-0001	0.126	0.825
50.841	0.003	36.92	0.00	0.00	0.00	26.50	0.00	0.000	113.048	0.639	1.406862509E-0003	3.010992499E-0005	-4.128340685E-0001	0.059	0.342

Parametri Geotecnici degli strati

N.	phi`	C`	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_0-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

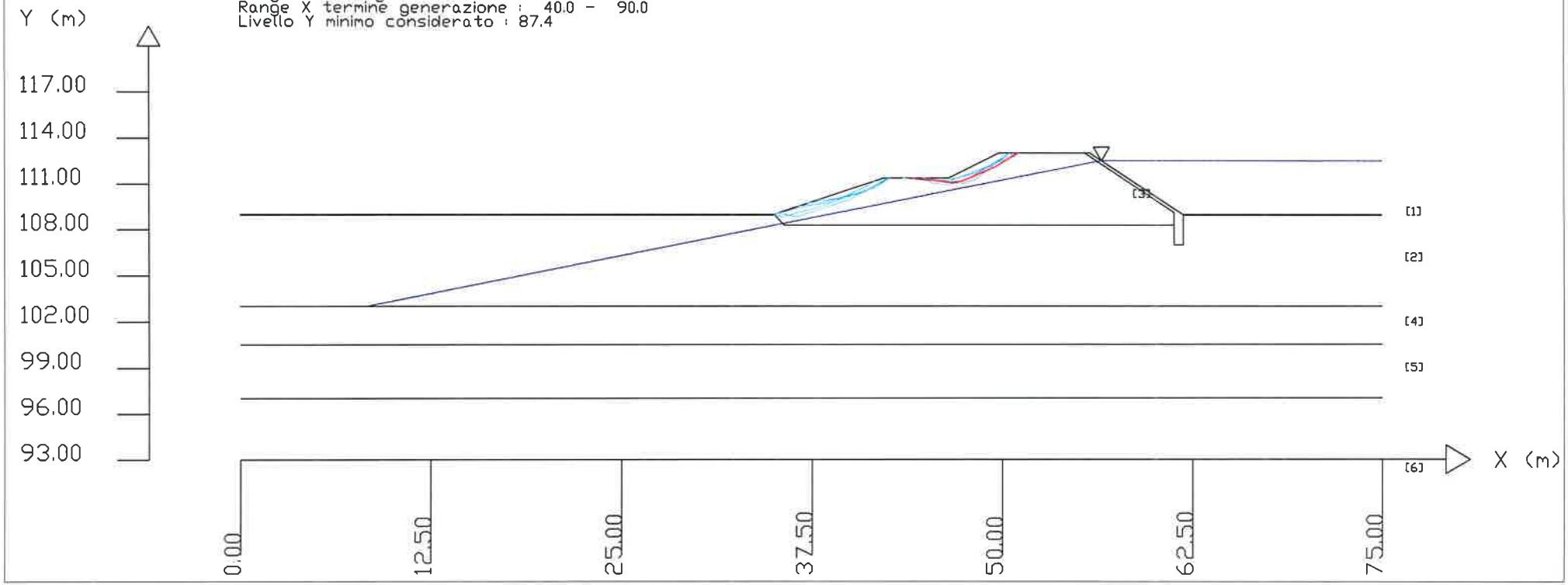
Fs minimo : 1.403
Range Fs : 1.403 1.540
Differenza % Range Fs : 8.9
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.403
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.14253
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 45.0
Range X termine generazione : 40.0 - 90.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-
-	-	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-
-	-	-	-	-	-	-	-

SUP FALDA

X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

PARAMETRI GEOMECCANICI

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.65 65.00 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 45.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 90.00

*** TOTALE SUPERFICI GENERATE : 1000
---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singol

---------- RISULTATO FINALE ELABORAZIONI ----------
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 1.403 - Min. - X Y Lambda= 0.421
44.09 111.40
45.22 111.28
46.73 111.12

			47.38	111.19		
			49.64	112.17		
			51.03	113.05		
Fattore di sicurezza (FS)	1.406	- N.2 --	X	Y	Lambda=	0.530
			44.93	111.40		
			45.95	111.25		
			46.73	111.25		
			47.21	111.43		
			48.66	111.99		
			50.83	112.82		
			51.12	113.05		
Fattore di sicurezza (FS)	1.425	- N.3 --	X	Y	Lambda=	0.477
			44.82	111.40		
			46.36	111.09		
			47.28	111.00		
			48.26	111.30		
			48.83	111.74		
			49.50	112.27		
			50.47	113.05		
Fattore di sicurezza (FS)	1.433	- N.4 --	X	Y	Lambda=	0.450
			43.51	111.40		
			44.98	111.24		
			46.21	111.21		
			47.35	111.44		
			48.38	111.75		
			50.22	112.83		
			50.52	113.05		
Fattore di sicurezza (FS)	1.474	- N.5 --	X	Y	Lambda=	0.402
			34.94	109.00		
			35.56	108.83		
			37.73	109.40		
			38.68	109.72		
			40.12	110.39		
			41.18	110.88		
			41.62	111.21		
Fattore di sicurezza (FS)	1.486	- N.6 --	X	Y	Lambda=	0.397
			44.78	111.40		

```
                                        45.44  111.06
                                        46.48  110.96
                                        47.44  111.18
                                        48.97  112.03
                                        49.85  112.51
                                        50.81  113.05

 Fattore di sicurezza (FS)     1.530  - N.7 --    X       Y       Lambda=    0.384
                                        36.65  109.55
                                        37.30  109.60
                                        38.39  109.69
                                        38.92  109.85
                                        40.92  110.44
                                        41.95  111.00
                                        42.69  111.40

 Fattore di sicurezza (FS)     1.530  - N.8 --    X       Y       Lambda=    0.368
                                        35.27  109.09
                                        36.51  108.85
                                        37.74  109.24
                                        40.06  110.00
                                        41.16  110.61
                                        42.57  111.40

 Fattore di sicurezza (FS)     1.536  - N.9 --    X       Y       Lambda=    0.436
                                        35.10  109.03
                                        36.23  109.30
                                        38.38  109.82
                                        40.37  110.37
                                        41.79  110.77
                                        42.61  111.40
 Fattore di sicurezza (FS)     1.540  - N.10 --   X       Y       Lambda=    0.421
                                        37.25  109.75
                                        38.44  109.94
                                        38.99  110.03
                                        40.39  110.27
                                        41.00  110.55
                                        41.62  110.84
                                        42.49  111.40

------------ ANALISI DEFICIT DI RESISTENZA -----------------------------------
# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
  # Analisi Deficit in riferimento a FS(progetto) = 1.100
```

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.403	28.6	20.4	6.2	Surplus
2	1.406	19.3	13.8	4.2	Surplus
3	1.425	29.7	20.8	6.8	Surplus
4	1.433	19.5	13.6	4.5	Surplus
5	1.474	23.2	15.7	5.9	Surplus
6	1.486	27.6	18.5	7.2	Surplus
7	1.530	21.0	13.7	5.9	Surplus
8	1.530	36.9	24.1	10.4	Surplus
9	1.536	20.2	13.2	5.7	Surplus
10	1.540	15.4	10.0	4.4	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 4.2

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
44.088	0.108	-6.12	0.01	0.00	0.00	26.50	0.00	0.000	111.400	-0.091	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	25876.676	2.424
44.197	0.108	-6.12	0.04	0.00	0.00	26.50	0.00	0.002	111.390	-0.091	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	25876.676	2.424
44.305	0.108	-6.12	0.06	0.00	0.00	26.50	0.00	0.003	111.380	-0.091	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	25876.676	2.584
44.413	0.108	-6.12	0.09	0.00	0.00	26.50	0.00	0.005	111.370	-0.091	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	25876.676	2.608
44.522	0.108	-6.12	0.11	0.00	0.00	26.50	0.00	0.007	111.360	-0.091	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	25876.676	2.424
44.630	0.108	-6.12	0.14	0.00	0.00	26.50	0.00	0.009	111.351	-0.091	1.440553087E-0002	4.467537060E-0004	2.095170053E-0001	0.087	2.099
44.739	0.108	-6.12	0.16	0.00	0.00	26.50	0.00	0.010	111.341	-0.091	4.300828596E-0002	1.600561172E-0003	3.210684600E-0001	0.105	1.742
44.847	0.108	-6.12	0.19	0.00	0.00	26.50	0.00	0.012	111.331	-0.091	8.462229248E-0002	3.671388001E-0003	4.494710578E-0001	0.122	1.430
44.955	0.108	-6.12	0.22	0.00	0.00	26.50	0.00	0.014	111.321	-0.091	1.409931158E-0001	7.081835816E-0003	5.928274687E-0001	0.141	1.192
45.064	0.108	-6.12	0.24	0.00	0.00	26.50	0.00	0.016	111.311	-0.090	2.135285149E-0001	1.205780791E-0002	7.467992215E-0001	0.159	1.006
45.172	0.051	-6.12	0.12	0.00	0.00	26.50	0.00	0.018	111.301	-0.089	3.031809290E-0001	1.884098702E-0002	9.089728888E-0001	0.175	0.860
45.223	0.108	-6.02	0.28	0.00	0.00	26.50	0.00	0.019	111.297	-0.087	3.514359821E-0001	2.274785938E-0002	9.885986047E-0001	0.182	0.806
45.331	0.108	-6.02	0.30	0.00	0.00	26.50	0.00	0.021	111.288	-0.086	4.681037336E-0001	3.293890604E-0002	1.165540281E+0000	0.198	0.715
45.440	0.108	-6.02	0.33	0.00	0.00	26.50	0.00	0.023	111.278	-0.088	6.043584966E-0001	4.625203491E-0002	1.349066968E+0000	0.215	0.654
45.548	0.108	-6.02	0.35	0.00	0.00	26.50	0.00	0.025	111.269	-0.087	7.604884190E-0001	6.332493894E-0002	1.529966931E+0000	0.234	0.618
45.657	0.108	-6.02	0.38	0.00	0.00	26.50	0.00	0.027	111.259	-0.086	9.359121877E-0001	8.361226392E-0002	1.707543880E+0000	0.251	0.599
45.765	0.108	-6.02	0.40	0.00	0.00	26.50	0.00	0.029	111.250	-0.081	1.130973918E+0000	1.079380199E-0001	1.892976893E+0000	0.269	0.589
45.873	0.108	-6.02	0.43	0.00	0.00	26.50	0.00	0.032	111.242	-0.070	1.346440198E+0000	1.367155299E-0001	2.081897710E+0000	0.286	0.585
45.982	0.108	-6.02	0.45	0.00	0.00	26.50	0.00	0.037	111.235	-0.054	1.581744008E+0000	1.702571875E-0001	2.256763093E+0000	0.303	0.589
46.090	0.108	-6.02	0.48	0.00	0.00	26.50	0.00	0.043	111.230	-0.034	1.835301276E+0000	2.087218374E-0001	2.417635260E+0000	0.320	0.602
46.199	0.108	-6.02	0.50	0.00	0.00	26.50	0.00	0.052	111.228	-0.008	2.104558920E+0000	2.534702528E-0001	2.543043465E+0000	0.339	0.628
46.307	0.108	-6.02	0.53	0.00	0.00	26.50	0.00	0.064	111.228	0.029	2.384971246E+0000	3.064065480E-0001	2.623787962E+0000	0.361	0.668
46.415	0.085	-6.02	0.43	0.00	0.00	26.50	0.00	0.081	111.234	0.067	2.672209966E+0000	3.786094550E-0001	2.672401927E+0000	0.399	0.721
46.500	0.108	-6.02	0.63	0.00	0.00	26.50	0.00	0.097	111.241	0.104	2.898485083E+0000	4.537288359E-0001	2.673934736E+0000	0.440	0.771
46.608	0.108	-6.02	0.77	0.00	0.00	26.50	0.00	0.122	111.254	0.136	3.187358048E+0000	5.695064269E-0001	2.657268487E+0000	0.503	0.849

46.717	0.009	-6.02	0.07	0.00	0.00	26.50	0.00	0.150	111.271	0.156	3.475252983E+0000	6.997815424E-0001	2.657463168E+0000	0.567	0.942
46.726	0.108	5.94	0.91	0.00	0.00	26.50	0.00	0.152	111.272	0.203	3.500217020E+0000	7.126229380E-0001	2.657956572E+0000	0.573	0.951
46.835	0.108	5.94	1.00	0.00	0.00	26.50	0.00	0.163	111.295	0.225	3.788099587E+0000	8.589596297E-0001	2.644949060E+0000	0.638	1.056
46.943	0.108	5.94	1.09	0.00	0.00	26.50	0.00	0.179	111.321	0.264	4.071941748E+0000	1.021508245E+0000	2.606172620E+0000	0.706	1.167
47.051	0.108	5.94	1.19	0.00	0.00	26.50	0.00	0.198	111.352	0.299	4.351497722E+0000	1.213279585E+0000	2.517500407E+0000	0.784	1.277
47.160	0.108	5.94	1.28	0.00	0.00	26.50	0.00	0.221	111.386	0.332	4.607249875E+0000	1.404500942E+0000	2.148603619E+0000	0.858	1.383
47.268	0.108	5.94	1.37	0.00	0.00	26.50	0.00	0.247	111.424	0.360	4.807951712E+0000	1.559765088E+0000	1.530469768E+0000	0.913	1.489
47.377	0.003	5.94	0.04	0.00	0.00	26.50	0.00	0.277	111.464	0.374	4.940067588E+0000	1.670250674E+0000	9.152162763E-0001	0.951	1.594
47.380	0.108	23.45	1.43	0.00	0.00	26.50	0.00	0.277	111.465	0.409	4.943124237E+0000	1.673293740E+0000	8.953505432E-0001	0.952	1.597
47.488	0.108	23.45	1.45	0.00	0.00	26.50	0.00	0.275	111.510	0.424	5.005351117E+0000	1.737840728E+0000	2.620301604E-0001	0.977	1.698
47.597	0.108	23.45	1.46	0.00	0.00	26.50	0.00	0.275	111.557	0.453	5.005284007E+0000	1.770382850E+0000	-2.295486919E-0001	0.995	1.788
47.705	0.108	23.45	1.48	0.00	0.00	26.50	0.00	0.279	111.608	0.474	4.962761805E+0000	1.782777842E+0000	-5.289831631E-0001	1.011	1.861
47.814	0.108	23.45	1.49	0.00	0.00	26.50	0.00	0.284	111.660	0.478	4.892649989E+0000	1.777991823E+0000	-7.756912262E-0001	1.022	1.910
47.922	0.108	23.45	1.51	0.00	0.00	26.50	0.00	0.289	111.712	0.484	4.793336481E+0000	1.760241751E+0000	-1.048771169E+0000	1.033	1.933
48.030	0.108	23.45	1.53	0.00	0.00	26.50	0.00	0.295	111.765	0.499	4.668888891E+0000	1.732405604E+0000	-1.225349437E+0000	1.044	1.931
48.139	0.108	23.45	1.54	0.00	0.00	26.50	0.00	0.303	111.820	0.513	4.532593321E+0000	1.699175559E+0000	-1.269484196E+0000	1.055	1.902
48.247	0.108	23.45	1.56	0.00	0.00	26.50	0.00	0.312	111.876	0.526	4.396365346E+0000	1.664928110E+0000	-1.242404725E+0000	1.066	1.852
48.355	0.108	23.45	1.57	0.00	0.00	26.50	0.00	0.323	111.934	0.528	4.263480226E+0000	1.630916924E+0000	-1.200678236E+0000	1.076	1.792
48.464	0.108	23.45	1.59	0.00	0.00	26.50	0.00	0.332	111.991	0.509	4.136301339E+0000	1.598093483E+0000	-1.150915080E+0000	1.087	1.730
48.572	0.108	23.45	1.60	0.00	0.00	26.50	0.00	0.339	112.044	0.498	4.012240017E+0000	1.565513230E+0000	-1.146964638E+0000	1.098	1.672
48.681	0.108	23.45	1.62	0.00	0.00	26.50	0.00	0.346	112.099	0.506	3.886232324E+0000	1.531216707E+0000	-1.180115220E+0000	1.109	1.620
48.789	0.108	23.45	1.63	0.00	0.00	26.50	0.00	0.355	112.154	0.514	3.757254763E+0000	1.494774386E+0000	-1.194825133E+0000	1.119	1.571
48.897	0.108	23.45	1.65	0.00	0.00	26.50	0.00	0.364	112.210	0.509	3.626983921E+0000	1.456825601E+0000	-1.214220343E+0000	1.130	1.525
49.006	0.108	23.45	1.67	0.00	0.00	26.50	0.00	0.371	112.265	0.494	3.492332796E+0000	1.416103759E+0000	-1.279013632E+0000	1.141	1.482
49.114	0.108	23.45	1.68	0.00	0.00	26.50	0.00	0.377	112.317	0.476	3.348015657E+0000	1.370395049E+0000	-1.389195236E+0000	1.152	1.444
49.223	0.108	23.45	1.70	0.00	0.00	26.50	0.00	0.380	112.368	0.460	3.190953153E+0000	1.318300481E+0000	-1.503844119E+0000	1.162	1.409
49.331	0.108	23.45	1.71	0.00	0.00	26.50	0.00	0.382	112.417	0.440	3.022699539E+0000	1.260396692E+0000	-1.603988112E+0000	1.173	1.379
49.439	0.108	23.45	1.73	0.00	0.00	26.50	0.00	0.381	112.463	0.411	2.841478505E+0000	1.194128977E+0000	-1.750136203E+0000	1.182	1.353
49.548	0.094	23.45	1.51	0.00	0.00	26.50	0.00	0.377	112.506	0.385	2.641232642E+0000	1.112180203E+0000	-1.950827954E+0000	1.185	1.330
49.642	0.108	32.33	1.73	0.00	0.00	26.50	0.00	0.372	112.541	0.358	2.449385629E+0000	1.023665463E+0000	-2.125284498E+0000	1.176	1.315
49.750	0.050	32.33	0.79	0.00	0.00	26.50	0.00	0.340	112.578	0.336	2.209024031E+0000	9.019905461E-0001	-2.310814786E+0000	1.149	1.300
49.800	0.108	32.33	1.63	0.00	0.00	26.50	0.00	0.325	112.594	0.313	2.092140788E+0000	8.386785194E-0001	-2.385161442E+0000	1.128	1.295
49.908	0.108	32.33	1.48	0.00	0.00	26.50	0.00	0.290	112.628	0.311	1.827761437E+0000	6.901944752E-0001	-2.473902549E+0000	1.062	1.286
50.017	0.108	32.33	1.33	0.00	0.00	26.50	0.00	0.255	112.661	0.301	1.559910225E+0000	5.346579151E-0001	-2.452149242E+0000	0.964	1.279
50.125	0.108	32.33	1.18	0.00	0.00	26.50	0.00	0.218	112.693	0.279	1.298130168E+0000	3.938713031E-0001	-2.378584610E+0000	0.854	1.275
50.234	0.066	32.33	0.65	0.00	0.00	26.50	0.00	0.178	112.722	0.264	1.043468769E+0000	2.807509280E-0001	-2.314238610E+0000	0.757	1.273
50.300	0.108	32.33	0.94	0.00	0.00	26.50	0.00	0.153	112.739	0.266	8.921280376E-0001	2.220214828E-0001	-2.235486438E+0000	0.700	1.274
50.408	0.108	32.33	0.79	0.00	0.00	26.50	0.00	0.114	112.768	0.284	6.613831597E-0001	1.417280589E-0001	-1.999487564E+0000	0.603	1.280
50.517	0.108	32.33	0.64	0.00	0.00	26.50	0.00	0.077	112.801	0.341	4.625136322E-0001	8.197422527E-0002	-1.660262393E+0000	0.499	1.297
50.625	0.108	32.33	0.49	0.00	0.00	26.50	0.00	0.051	112.842	0.420	3.011688891E-0001	4.149872783E-0002	-1.316361114E+0000	0.388	1.334
50.734	0.108	32.33	0.34	0.00	0.00	26.50	0.00	0.031	112.892	0.483	1.779783829E-0001	1.808947461E-0002	-9.605899119E-0001	0.286	1.416
50.842	0.108	32.33	0.19	0.00	0.00	26.50	0.00	0.018	112.947	0.526	9.069930621E-0002	5.949018053E-0003	-6.637326168E-0001	0.185	1.648
50.950	0.083	32.33	0.04	0.00	0.00	26.50	0.00	0.008	113.005	0.538	3.109801514E-0002	1.004215870E-0003	-4.470168135E-0001	0.091	3.434

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_0-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

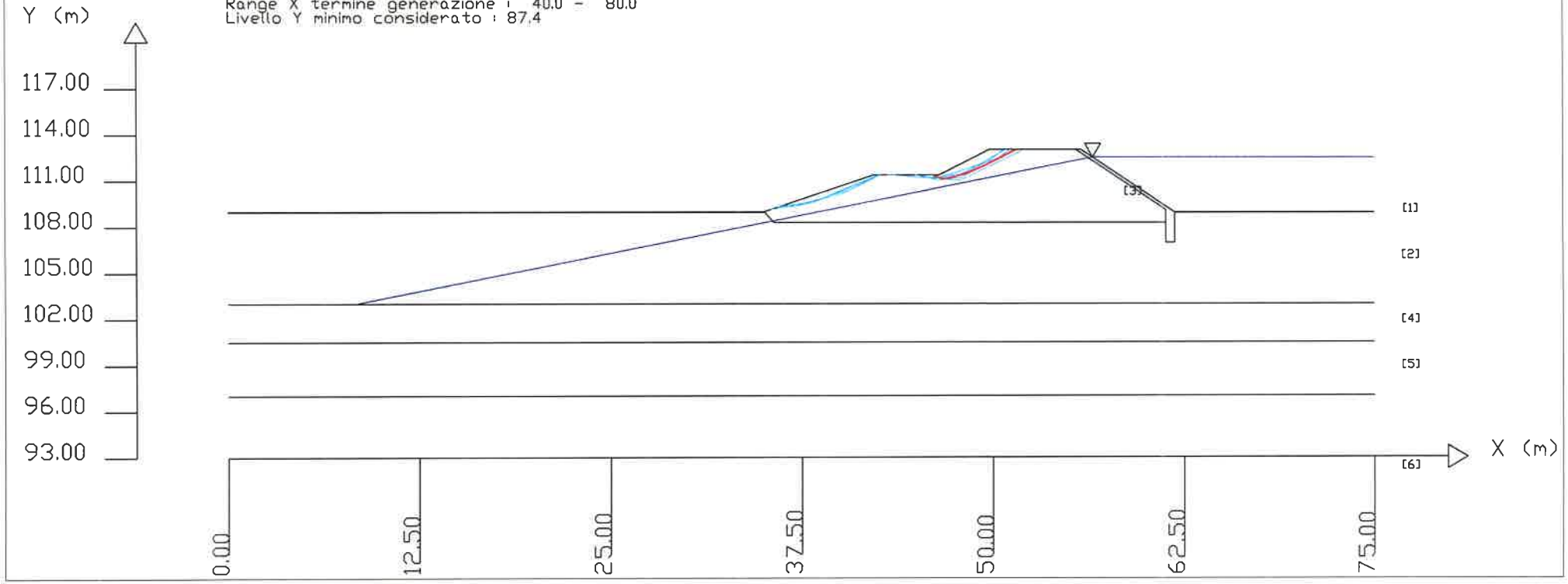
Fs minimo : 1.339
Range Fs : 1.339 1.513
Differenza % Range Fs : 11.5
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.339
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.12681
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 50.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-
-	-	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 100.00
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 50.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
---
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 1.339 - Min. - X Y Lambda= 0.458
46.10 111.40
46.76 111.12

				47.37	111.23	
				48.31	111.50	
				48.79	111.69	
				49.87	112.19	
				50.57	112.53	
				51.58	113.05	
Fattore di sicurezza (FS)	1.433	- N.2 --	X	Y	Lambda=	0.406
			45.01	111.40		
			46.44	111.04		
			47.91	111.21		
			49.67	112.13		
			50.81	112.73		
			51.42	113.05		
Fattore di sicurezza (FS)	1.436	- N.3 --	X	Y	Lambda=	0.420
			43.46	111.40		
			45.29	111.23		
			46.55	111.18		
			48.17	111.54		
			49.71	112.40		
			50.88	113.05		
Fattore di sicurezza (FS)	1.472	- N.4 --	X	Y	Lambda=	0.408
			43.18	111.40		
			44.82	111.25		
			45.56	111.19		
			47.41	111.29		
			48.06	111.40		
			49.85	112.36		
			50.74	113.05		
Fattore di sicurezza (FS)	1.479	- N.5 --	X	Y	Lambda=	0.405
			35.52	109.17		
			37.15	109.36		
			38.41	109.72		
			39.19	110.03		
			40.14	110.41		
			42.30	111.28		
			42.60	111.40		
Fattore di sicurezza (FS)	1.490	- N.6 --	X	Y	Lambda=	0.421
			36.05	109.35		

				36.72	109.30	
				38.20	109.57	
				39.12	109.94	
				40.56	110.53	
				41.05	110.74	
				42.49	111.38	
				42.53	111.40	
Fattore di sicurezza (FS)	1.491	- N.7 --	X	Y	Lambda=	0.404
			45.97	111.40		
			46.61	111.11		
			47.82	111.02		
			48.51	111.35		
			49.53	111.83		
			50.26	112.17		
			52.10	113.05		
Fattore di sicurezza (FS)	1.495	- N.8 --	X	Y	Lambda=	0.518
			44.95	111.40		
			46.24	111.15		
			47.27	111.44		
			49.07	112.04		
			50.29	112.44		
			50.71	112.73		
			51.14	113.05		
Fattore di sicurezza (FS)	1.503	- N.9 --	X	Y	Lambda=	0.396
			36.28	109.43		
			37.06	109.37		
			39.45	110.06		
			40.66	110.41		
			41.25	110.66		
			42.21	111.15		
			42.65	111.40		
Fattore di sicurezza (FS)	1.513	- N.10 --	X	Y	Lambda=	0.431
			35.89	109.30		
			37.55	109.55		
			38.20	109.68		
			38.82	109.82		
			39.40	109.95		
			40.03	110.09		
			42.22	111.23		

42.54 111.40

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.339	29.9	22.3	5.3	Surplus
2	1.433	33.9	23.6	7.9	Surplus
3	1.436	24.5	17.1	5.7	Surplus
4	1.472	27.7	18.8	7.0	Surplus
5	1.479	18.3	12.3	4.7	Surplus
6	1.490	19.7	13.2	5.2	Surplus
7	1.491	42.0	28.2	11.0	Surplus
8	1.495	23.2	15.5	6.1	Surplus
9	1.503	21.0	14.0	5.6	Surplus
10	1.513	21.4	14.1	5.8	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 4.7

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)
IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
46.098	0.088	-23.03	0.03	0.00	0.00	26.50	0.00	0.000	111.400	-0.361	0.000000000E+0000	0.000000000E+0000	9.515696844E-0002	0.052	2.210
46.186	0.088	-23.03	0.10	0.00	0.00	26.50	0.00	0.006	111.368	-0.361	8.553640331E-0003	1.649517792E-0004	7.934050295E-0002	0.052	2.210
46.274	0.088	-23.03	0.16	0.00	0.00	26.50	0.00	0.011	111.337	-0.361	2.076256772E-0002	8.007871157E-0004	2.793892139E-0001	0.104	2.238
46.361	0.088	-23.03	0.23	0.00	0.00	26.50	0.00	0.017	111.305	-0.351	7.348570073E-0002	4.568956991E-0003	1.008288404E+0000	0.167	2.239
46.449	0.051	-23.03	0.17	0.00	0.00	26.50	0.00	0.024	111.275	-0.293	2.054652692E-0001	1.742548263E-0002	1.996068474E+0000	0.228	2.199
46.500	0.088	-23.03	0.37	0.00	0.00	26.50	0.00	0.035	111.264	-0.141	3.206786684E-0001	3.202625413E-0002	2.512217345E+0000	0.268	2.157
46.588	0.088	-23.03	0.52	0.00	0.00	26.50	0.00	0.064	111.256	-0.034	5.842198807E-0001	7.635522590E-0002	3.468277493E+0000	0.351	2.060
46.675	0.081	-23.03	0.60	0.00	0.00	26.50	0.00	0.104	111.258	0.080	9.118320017E-0001	1.504156380E-0001	3.892021574E+0000	0.443	1.946
46.756	0.088	9.73	0.74	0.00	0.00	26.50	0.00	0.149	111.269	0.172	1.220310056E+0000	2.388488988E-0001	3.677224555E+0000	0.526	1.842
46.843	0.088	9.73	0.79	0.00	0.00	26.50	0.00	0.152	111.287	0.231	1.523481678E+0000	3.353469508E-0001	3.287717546E+0000	0.591	1.730
46.931	0.088	9.73	0.85	0.00	0.00	26.50	0.00	0.159	111.310	0.234	1.795843875E+0000	4.298401228E-0001	2.915330560E+0000	0.643	1.624
47.019	0.088	9.73	0.90	0.00	0.00	26.50	0.00	0.163	111.328	0.243	2.034109706E+0000	5.200662128E-0001	2.539787674E+0000	0.687	1.528
47.106	0.088	9.73	0.95	0.00	0.00	26.50	0.00	0.171	111.352	0.294	2.243634901E+0000	6.073283784E-0001	2.261506769E+0000	0.727	1.449
47.194	0.088	9.73	1.00	0.00	0.00	26.50	0.00	0.184	111.380	0.338	2.431154665E+0000	6.938320670E-0001	2.011577698E+0000	0.767	1.387
47.281	0.086	9.73	1.03	0.00	0.00	26.50	0.00	0.201	111.411	0.371	2.592738688E+0000	7.762783589E-0001	1.673096556E+0000	0.804	1.339
47.367	0.088	16.35	1.09	0.00	0.00	26.50	0.00	0.219	111.444	0.395	2.723506409E+0000	8.495703008E-0001	1.386511937E+0000	0.838	1.301
47.455	0.088	16.35	1.12	0.00	0.00	26.50	0.00	0.229	111.480	0.422	2.836852493E+0000	9.172167387E-0001	1.224160765E+0000	0.868	1.269
47.542	0.088	16.35	1.15	0.00	0.00	26.50	0.00	0.241	111.518	0.438	2.940423777E+0000	9.808057135E-0001	1.144142235E+0000	0.896	1.241
47.630	0.088	16.35	1.18	0.00	0.00	26.50	0.00	0.254	111.557	0.444	3.036074909E+0000	1.041957110E+0000	1.040895576E+0000	0.922	1.217

47.717	0.088	16.35	1.22	0.00	0.00	26.50	0.00	0.268	111.596	0.449	3.123181228E+0000	1.101182368E+0000	9.513118164E-0001	0.947	1.195
47.805	0.088	16.35	1.25	0.00	0.00	26.50	0.00	0.281	111.635	0.454	3.203068247E+0000	1.159377875E+0000	8.749557009E-0001	0.972	1.175
47.893	0.088	16.35	1.28	0.00	0.00	26.50	0.00	0.296	111.675	0.462	3.276527282E+0000	1.216684332E+0000	8.023984713E-0001	0.997	1.155
47.980	0.088	16.35	1.31	0.00	0.00	26.50	0.00	0.311	111.716	0.476	3.343649090E+0000	1.272902817E+0000	7.379095843E-0001	1.023	1.137
48.068	0.088	16.35	1.34	0.00	0.00	26.50	0.00	0.328	111.759	0.482	3.405810825E+0000	1.330179906E+0000	6.715156881E-0001	1.049	1.121
48.155	0.088	16.35	1.38	0.00	0.00	26.50	0.00	0.344	111.801	0.477	3.458394489E+0000	1.382470531E+0000	5.109166463E-0001	1.074	1.105
48.243	0.065	16.35	1.04	0.00	0.00	26.50	0.00	0.360	111.842	0.472	3.492580415E+0000	1.424384220E+0000	2.612359886E-0001	1.095	1.090
48.308	0.088	21.98	1.42	0.00	0.00	26.50	0.00	0.371	111.873	0.471	3.503436978E+0000	1.446218369E+0000	7.758814249E-0002	1.109	1.080
48.395	0.088	21.98	1.44	0.00	0.00	26.50	0.00	0.377	111.914	0.473	3.499294820E+0000	1.465456982E+0000	-1.733494984E-0001	1.125	1.065
48.483	0.088	21.98	1.45	0.00	0.00	26.50	0.00	0.384	111.955	0.473	3.473758527E+0000	1.472918650E+0000	-4.026823602E-0001	1.139	1.050
48.571	0.088	21.98	1.47	0.00	0.00	26.50	0.00	0.390	111.997	0.473	3.430182684E+0000	1.472629940E+0000	-5.854387436E-0001	1.153	1.035
48.658	0.088	21.98	1.48	0.00	0.00	26.50	0.00	0.396	112.038	0.472	3.371891657E+0000	1.461797840E+0000	-7.472553149E-0001	1.164	1.020
48.746	0.041	21.98	0.70	0.00	0.00	26.50	0.00	0.402	112.080	0.475	3.299280819E+0000	1.441794642E+0000	-9.084141563E-0001	1.174	1.006
48.787	0.088	24.48	1.50	0.00	0.00	26.50	0.00	0.405	112.099	0.480	3.260657314E+0000	1.429248327E+0000	-9.790969680E-0001	1.177	0.999
48.874	0.088	24.48	1.51	0.00	0.00	26.50	0.00	0.407	112.141	0.482	3.168523985E+0000	1.397201534E+0000	-1.123846812E+0000	1.184	0.984
48.962	0.088	24.48	1.51	0.00	0.00	26.50	0.00	0.410	112.184	0.501	3.064144943E+0000	1.358595707E+0000	-1.257863962E+0000	1.191	0.970
49.049	0.088	24.48	1.52	0.00	0.00	26.50	0.00	0.415	112.229	0.516	2.948796753E+0000	1.314457303E+0000	-1.375161405E+0000	1.197	0.956
49.137	0.088	24.48	1.53	0.00	0.00	26.50	0.00	0.420	112.274	0.508	2.823165096E+0000	1.264160234E+0000	-1.489741611E+0000	1.203	0.943
49.224	0.088	24.48	1.53	0.00	0.00	26.50	0.00	0.424	112.318	0.491	2.689592384E+0000	1.209796359E+0000	-1.548596906E+0000	1.208	0.930
49.312	0.088	24.48	1.54	0.00	0.00	26.50	0.00	0.426	112.360	0.473	2.554080030E+0000	1.154015018E+0000	-1.537115048E+0000	1.214	0.917
49.400	0.088	24.48	1.55	0.00	0.00	26.50	0.00	0.427	112.401	0.452	2.421024533E+0000	1.098799809E+0000	-1.504790349E+0000	1.219	0.904
49.487	0.088	24.48	1.56	0.00	0.00	26.50	0.00	0.426	112.439	0.427	2.291367955E+0000	1.044582229E+0000	-1.453964858E+0000	1.224	0.893
49.575	0.088	24.48	1.56	0.00	0.00	26.50	0.00	0.422	112.475	0.382	2.165509213E+0000	9.913568397E-0001	-1.430817285E+0000	1.230	0.882
49.662	0.088	24.48	1.57	0.00	0.00	26.50	0.00	0.413	112.506	0.333	2.038836912E+0000	9.337844894E-0001	-1.471989630E+0000	1.230	0.874
49.750	0.050	24.48	0.90	0.00	0.00	26.50	0.00	0.401	112.534	0.309	1.907032438E+0000	8.676246111E-0001	-1.534152745E+0000	1.222	0.866
49.800	0.070	24.48	1.24	0.00	0.00	26.50	0.00	0.393	112.549	0.281	1.829409421E+0000	8.248234192E-0001	-1.556744029E+0000	1.211	0.863
49.870	0.088	26.39	1.48	0.00	0.00	26.50	0.00	0.380	112.568	0.247	1.719353206E+0000	7.599240430E-0001	-1.587342175E+0000	1.187	0.859
49.958	0.088	26.39	1.41	0.00	0.00	26.50	0.00	0.357	112.588	0.219	1.579241006E+0000	6.710232379E-0001	-1.608814539E+0000	1.141	0.855
50.045	0.088	26.39	1.33	0.00	0.00	26.50	0.00	0.331	112.606	0.196	1.438352331E+0000	5.779690812E-0001	-1.605275666E+0000	1.079	0.852
50.133	0.088	26.39	1.25	0.00	0.00	26.50	0.00	0.304	112.622	0.180	1.298562996E+0000	4.914291117E-0001	-1.587439484E+0000	1.016	0.850
50.220	0.080	26.39	1.07	0.00	0.00	26.50	0.00	0.276	112.637	0.171	1.159905440E+0000	4.131726554E-0001	-1.577742087E+0000	0.957	0.850
50.300	0.088	26.39	1.11	0.00	0.00	26.50	0.00	0.250	112.651	0.170	1.035446046E+0000	3.478848755E-0001	-1.534561880E+0000	0.902	0.850
50.388	0.088	26.39	1.03	0.00	0.00	26.50	0.00	0.221	112.666	0.175	9.053625923E-0001	2.806342422E-0001	-1.427107676E+0000	0.833	0.852
50.475	0.088	26.39	0.95	0.00	0.00	26.50	0.00	0.193	112.681	0.187	7.864388762E-0001	2.262131441E-0001	-1.290160084E+0000	0.773	0.855
50.563	0.004	26.39	0.05	0.00	0.00	26.50	0.00	0.167	112.698	0.195	6.795939490E-0001	1.823123002E-0001	-1.143275798E+0000	0.721	0.860
50.567	0.088	27.04	0.87	0.00	0.00	26.50	0.00	0.166	112.699	0.217	6.745661304E-0001	1.801708460E-0001	-1.135386654E+0000	0.717	0.860
50.655	0.088	27.04	0.79	0.00	0.00	26.50	0.00	0.140	112.718	0.229	5.812881453E-0001	1.441444551E-0001	-1.005672008E+0000	0.666	0.867
50.742	0.088	27.04	0.71	0.00	0.00	26.50	0.00	0.116	112.740	0.239	4.961721487E-0001	1.118384765E-0001	-9.508287703E-0001	0.605	0.876
50.830	0.088	27.04	0.63	0.00	0.00	26.50	0.00	0.092	112.760	0.255	4.134848207E-0001	8.206167568E-0002	-9.370730805E-0001	0.533	0.885
50.917	0.088	27.04	0.56	0.00	0.00	26.50	0.00	0.072	112.784	0.298	3.327632177E-0001	5.817037415E-0002	-9.120944896E-0001	0.470	0.895
51.005	0.088	27.04	0.48	0.00	0.00	26.50	0.00	0.055	112.813	0.356	2.540210919E-0001	3.852374818E-0002	-8.771669975E-0001	0.407	0.908
51.092	0.088	27.04	0.40	0.00	0.00	26.50	0.00	0.045	112.847	0.382	1.813844399E-0001	2.330813720E-0002	-7.684671315E-0001	0.345	0.923
51.180	0.088	27.04	0.32	0.00	0.00	26.50	0.00	0.033	112.879	0.393	1.211458116E-0001	1.276233606E-0002	-6.042513843E-0001	0.283	0.943
51.268	0.088	27.04	0.24	0.00	0.00	26.50	0.00	0.024	112.915	0.421	7.481536101E-0002	6.154347385E-0003	-4.546753982E-0001	0.221	0.978
51.355	0.088	27.04	0.16	0.00	0.00	26.50	0.00	0.017	112.953	0.433	4.156824479E-0002	2.471760683E-0003	-3.084841690E-0001	0.160	1.051
51.443	0.088	27.04	0.08	0.00	0.00	26.50	0.00	0.010	112.991	0.434	1.966730589E-0002	7.270091967E-0004	-1.994065003E-0001	0.099	1.286
51.530	0.048	27.04	0.01	0.00	0.00	26.50	0.00	0.004	113.029	0.434	5.452215651E-0003	9.782282886E-0005	-1.298579445E-0001	0.048	19.039

Parametri Geotecnici degli strati

N.	phi`	C`	Cu	Gamm	GammSat	sgci	GSI	mi	D
"	deg	kPa	kPa	kN/m3	kN/m3	MPa	"	"	"
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S1-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

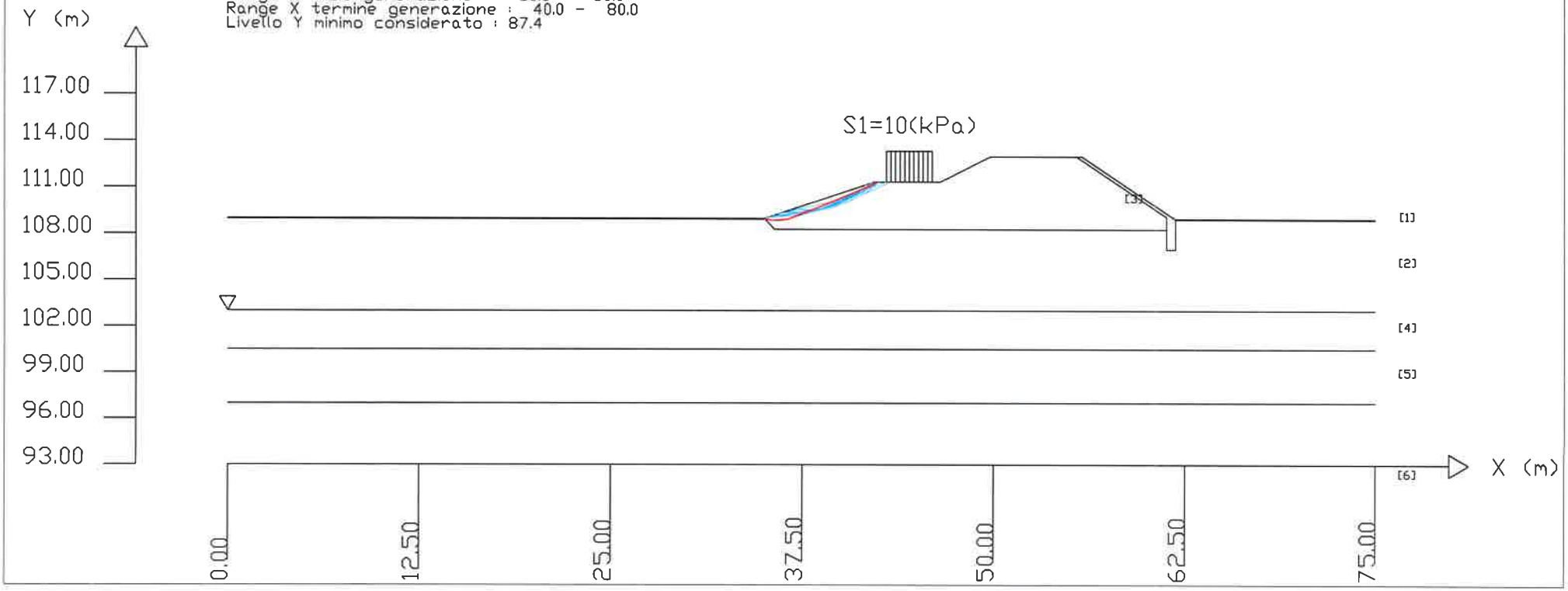
Fs minimo : 1.491
Range Fs : 1.491 1.566
Differenza % Range Fs : 4.8
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.491
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.15909
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 50.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4		SUP 5		SUP 6	
X	Y	X	Y	X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00	0.00	100.50	0.00	97.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00	100.00	100.50	100.00	97.00
42.20	111.40	35.70	108.30	55.80	113.05						
46.50	111.40	61.30	108.30	55.45	113.05						
49.80	113.05	61.30	107.00	61.30	109.15						
50.30	113.05	61.90	107.00	61.30	107.00						
55.30	113.05	61.90	108.95	61.90	107.00						
55.80	113.05	100.00	108.95	61.90	109.00						
61.90	109.00										
100.00	109.00										

SUP FALDA

X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0

STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0
0.0									
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0
0.0									
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0
0.0									
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0
0.0									

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1
carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 50.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
---
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	1.491	- Min. -	X	Y	Lambda=	0.431
			35.02	109.01		
			35.55	108.91		
			36.56	108.97		
			38.47	109.72		
			39.46	110.13		
			40.73	110.66		
			42.03	111.20		
			42.35	111.40		
Fattore di sicurezza (FS)	1.508	- N.2 --	X	Y	Lambda=	0.422
			35.18	109.06		
			37.55	109.48		
			38.75	109.69		
			39.30	109.92		
			40.89	110.58		
			41.69	111.23		
Fattore di sicurezza (FS)	1.518	- N.3 --	X	Y	Lambda=	0.398
			35.16	109.05		
			36.60	109.26		
			38.38	109.52		
			39.49	109.93		
			40.04	110.13		
			40.82	110.43		
			41.45	110.81		
			41.95	111.32		
Fattore di sicurezza (FS)	1.528	- N.4 --	X	Y	Lambda=	0.406
			35.60	109.20		
			37.94	109.37		
			39.24	109.72		
			39.79	109.97		
			41.85	111.03		
			42.56	111.40		
Fattore di sicurezza (FS)	1.528	- N.5 --	X	Y	Lambda=	0.405
			35.06	109.02		
			35.98	108.81		
			37.36	109.20		
			38.97	109.66		
			39.87	109.92		

			41.94	111.27		
			42.05	111.35		
Fattore di sicurezza (FS)	1.542	- N.6 --	X	Y	Lambda=	0.377
			35.94	109.31		
			37.07	109.57		
			39.47	110.12		
			41.07	110.67		
			42.25	111.12		
			42.80	111.33		
			42.98	111.40		
Fattore di sicurezza (FS)	1.548	- N.7 --	X	Y	Lambda=	0.397
			35.40	109.13		
			36.63	109.19		
			37.33	109.23		
			39.37	109.73		
			40.36	110.01		
			41.94	110.87		
			42.45	111.40		
Fattore di sicurezza (FS)	1.555	- N.8 --	X	Y	Lambda=	0.397
			36.23	109.41		
			37.75	109.44		
			39.10	109.67		
			40.13	110.09		
			41.39	110.65		
			42.03	111.26		
			42.14	111.38		
Fattore di sicurezza (FS)	1.562	- N.9 --	X	Y	Lambda=	0.405
			35.17	109.06		
			36.01	109.07		
			37.75	109.35		
			38.43	109.47		
			39.46	109.67		
			41.68	110.67		
			43.28	111.40		
Fattore di sicurezza (FS)	1.566	- N.10 --	X	Y	Lambda=	0.415
			36.70	109.57		
			37.75	109.56		
			38.64	109.57		

39.14 109.74
40.47 110.35
41.71 110.91
42.22 111.37
42.25 111.40

---------- ANALISI DEFICIT DI RESISTENZA ----------
DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.491	24.0	16.1	6.3	Surplus
2	1.508	20.9	13.9	5.7	Surplus
3	1.518	26.2	17.3	7.2	Surplus
4	1.528	28.5	18.7	8.0	Surplus
5	1.528	33.0	21.6	9.2	Surplus
6	1.542	16.4	10.6	4.7	Surplus
7	1.548	35.5	22.9	10.3	Surplus
8	1.555	26.3	16.9	7.7	Surplus
9	1.562	40.9	26.2	12.1	Surplus
10	1.566	22.4	14.3	6.7	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 4.7

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht	yt	yt'	E(x)	T(x)	E'	rho(x)
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)
35.020	0.080	-10.57	0.03	0.00	0.00	26.50	0.00 0.121	0.000 1.011	109.007	-0.109	0.000000000E+0000	0.000000000E+0000	5.359451147°-0001	
35.100	0.114	-10.57	0.16	0.00	0.00	26.50	0.00 0.121	0.006 1.011	108.998	-0.109	5.217409594°-0002	2.116699026°-0003	7.770784176°-0001	

local_FS (--)

35.214	0.114	-10.57	0.30	0.00	0.00	26.50	0.00	0.015	108.986	-0.086	1.607414652°-0001	1.330025354°-0002	1.127290630°+0000
							0.247	1.012					
35.327	0.114	-10.57	0.43	0.00	0.00	26.50	0.00	0.029	108.979	-0.005	3.056520856°-0001	3.949168841°-0002	1.408343431°+0000
							0.386	1.012					
35.441	0.105	-10.57	0.52	0.00	0.00	26.50	0.00	0.056	108.985	0.082	4.777733201°-0001	8.401314358°-0002	1.611737610°+0000
							0.526	1.013					
35.546	0.114	3.60	0.66	0.00	0.00	26.50	0.00	0.088	108.996	0.139	6.564953005°-0001	1.386337839°-0001	1.786295140°+0000
							0.631	1.015					
35.660	0.040	3.60	0.25	0.00	0.00	26.50	0.00	0.099	109.015	0.166	8.689327707°-0001	2.094436437°-0001	1.946530110°+0000
							0.721	1.018					
35.700	0.114	3.60	0.76	0.00	0.00	26.50	0.00	0.104	109.022	0.213	9.482249668°-0001	2.383385696°-0001	1.996048454°+0000
							0.751	1.019					
35.814	0.114	3.60	0.83	0.00	0.00	26.50	0.00	0.122	109.048	0.240	1.182352725°+0000	3.261434965°-0001	2.120656065°+0000
							0.825	1.023					
35.927	0.114	3.60	0.90	0.00	0.00	26.50	0.00	0.144	109.077	0.260	1.428978455°+0000	4.300666850°-0001	2.212284847°+0000
							0.900	1.028					
36.041	0.114	3.60	0.97	0.00	0.00	26.50	0.00	0.167	109.107	0.266	1.682884700°+0000	5.531745258°-0001	2.255812236°+0000
							0.983	1.033					
36.155	0.114	3.60	1.04	0.00	0.00	26.50	0.00	0.190	109.137	0.264	1.942692901°+0000	6.861978099°-0001	2.299741728°+0000
							1.056	1.039					
36.268	0.114	3.60	1.11	0.00	0.00	26.50	0.00	0.213	109.167	0.272	2.197592376°+0000	8.338681191°-0001	2.141222312°+0000
							1.134	1.046					
36.382	0.114	3.60	1.18	0.00	0.00	26.50	0.00	0.238	109.199	0.289	2.419371191°+0000	9.726479198°-0001	1.727397367°+0000
							1.202	1.055					
36.495	0.068	3.60	0.74	0.00	0.00	26.50	0.00	0.264	109.233	0.264	2.587024420°+0000	1.083706337°+0000	1.236394185°+0000
							1.252	1.066					
36.564	0.114	21.46	1.25	0.00	0.00	26.50	0.00	0.274	109.247	0.305	2.661636936°+0000	1.132690900°+0000	9.409554289°-0001
							1.272	1.074					
36.677	0.114	21.46	1.23	0.00	0.00	26.50	0.00	0.271	109.288	0.358	2.739878735°+0000	1.180377018°+0000	4.486454725°-0001
							1.288	1.090					
36.791	0.114	21.46	1.22	0.00	0.00	26.50	0.00	0.266	109.328	0.338	2.768736673°+0000	1.191419639°+0000	8.668651480°-0002
							1.287	1.108					
36.905	0.114	21.46	1.20	0.00	0.00	26.50	0.00	0.258	109.365	0.326	2.765142231°+0000	1.178201083°+0000	-1.336387209°-0001
							1.274	1.129					
37.018	0.114	21.46	1.19	0.00	0.00	26.50	0.00	0.251	109.402	0.332	2.738594098°+0000	1.152167860°+0000	-3.454486527°-0001
							1.258	1.154					
37.132	0.114	21.46	1.17	0.00	0.00	26.50	0.00	0.244	109.440	0.337	2.686310059°+0000	1.115472937°+0000	-5.654221723°-0001
							1.241	1.181					
37.246	0.114	21.46	1.15	0.00	0.00	26.50	0.00	0.238	109.479	0.341	2.613623590°+0000	1.070989817°+0000	-6.947902451°-0001
							1.225	1.208					
37.359	0.114	21.46	1.14	0.00	0.00	26.50	0.00	0.233	109.518	0.349	2.532608751°+0000	1.023934945°+0000	-7.158355564°-0001
							1.209	1.233					
37.473	0.114	21.46	1.12	0.00	0.00	26.50	0.00	0.228	109.558	0.355	2.452727032°+0000	9.782185468°-0001	-6.916898598°-0001
							1.192	1.257					
37.587	0.114	21.46	1.11	0.00	0.00	26.50	0.00	0.224	109.599	0.351	2.376385143°+0000	9.347687171°-0001	-6.458215710°-0001
							1.176	1.280					
37.700	0.114	21.46	1.09	0.00	0.00	26.50	0.00	0.219	109.638	0.344	2.305834968°+0000	8.944008264°-0001	-6.010453497°-0001
							1.160	1.301					
37.814	0.114	21.46	1.08	0.00	0.00	26.50	0.00	0.213	109.677	0.341	2.238193933°+0000	8.559174680°-0001	-5.963165705°-0001
							1.143	1.320					
37.927	0.114	21.46	1.06	0.00	0.00	26.50	0.00	0.207	109.715	0.341	2.169423281°+0000	8.177485093°-0001	-6.130286094°-0001
							1.127	1.337					
38.041	0.114	21.46	1.05	0.00	0.00	26.50	0.00	0.201	109.754	0.340	2.100100344°+0000	7.801527778°-0001	-6.042576233°-0001
							1.111	1.356					
38.155	0.114	21.46	1.03	0.00	0.00	26.50	0.00	0.195	109.793	0.340	2.032078236°+0000	7.432264788°-0001	-5.945207273°-0001
							1.094	1.376					
38.268	0.114	21.46	1.02	0.00	0.00	26.50	0.00	0.189	109.831	0.342	1.964455202°+0000	7.074043205°-0001	-5.981692224°-0001
							1.077	1.398					
38.382	0.090	21.46	0.79	0.00	0.00	26.50	0.00	0.183	109.871	0.346	1.895682528°+0000	6.718963202°-0001	-6.131270130°-0001
							1.060	1.422					
38.472	0.114	22.44	0.98	0.00	0.00	26.50	0.00	0.179	109.902	0.348	1.840221649°+0000	6.438049988°-0001	-6.232008993°-0001
							1.046	1.442					
38.585	0.114	22.44	0.96	0.00	0.00	26.50	0.00	0.172	109.941	0.349	1.768651804°+0000	6.073765653°-0001	-6.362733311°-0001
							1.027	1.468					
38.699	0.114	22.44	0.94	0.00	0.00	26.50	0.00	0.165	109.981	0.350	1.695851415°+0000	5.703879330°-0001	-6.433827781°-0001
							1.006	1.496					
38.813	0.114	22.44	0.92	0.00	0.00	26.50	0.00	0.158	110.021	0.351	1.622823351°+0000	5.336018437°-0001	-6.403694353°-0001
							0.983	1.526					
38.926	0.114	22.44	0.90	0.00	0.00	26.50	0.00	0.150	110.061	0.352	1.550509769°+0000	4.985388170°-0001	-6.324616826°-0001
							0.961	1.556					

39.040	0.114	22.44	0.88	0.00	0.00	26.50	0.00	0.144	110.101	0.353	1.478961441°+0000	4.647662269°-0001	-6.266984283°-0001
							0.940	1.587					
39.153	0.114	22.44	0.86	0.00	0.00	26.50	0.00	0.137	110.141	0.354	1.408198467°+0000	4.316590640°-0001	-6.178976869°-0001
							0.916	1.618					
39.267	0.114	22.44	0.84	0.00	0.00	26.50	0.00	0.130	110.181	0.355	1.338737710°+0000	4.004766887°-0001	-6.037491892°-0001
							0.894	1.649					
39.381	0.082	22.44	0.60	0.00	0.00	26.50	0.00	0.123	110.221	0.357	1.271116693°+0000	3.712960588°-0001	-5.861964936°-0001
							0.873	1.681					
39.463	0.114	22.48	0.80	0.00	0.00	26.50	0.00	0.119	110.251	0.359	1.223307247°+0000	3.513128019°-0001	-5.729650675°-0001
							0.859	1.704					
39.577	0.114	22.48	0.78	0.00	0.00	26.50	0.00	0.113	110.292	0.366	1.159467866°+0000	3.247752088°-0001	-5.510489658°-0001
							0.837	1.736					
39.690	0.114	22.48	0.76	0.00	0.00	26.50	0.00	0.108	110.334	0.378	1.097703281°+0000	2.992965265°-0001	-5.382769674°-0001
							0.815	1.769					
39.804	0.114	22.48	0.74	0.00	0.00	26.50	0.00	0.105	110.378	0.381	1.036634086°+0000	2.745612444°-0001	-5.381483513°-0001
							0.792	1.803					
39.918	0.114	22.48	0.72	0.00	0.00	26.50	0.00	0.101	110.421	0.379	9.753313388°-0001	2.511457920°-0001	-5.394355615°-0001
							0.770	1.837					
40.031	0.114	22.48	0.70	0.00	0.00	26.50	0.00	0.097	110.464	0.376	9.138549548°-0001	2.285693779°-0001	-5.431827450°-0001
							0.748	1.873					
40.145	0.114	22.48	0.68	0.00	0.00	26.50	0.00	0.092	110.506	0.373	8.522801757°-0001	2.068767571°-0001	-5.371481081°-0001
							0.726	1.910					
40.259	0.114	22.48	0.66	0.00	0.00	26.50	0.00	0.087	110.548	0.370	7.926498054°-0001	1.865508847°-0001	-5.088048416°-0001
							0.704	1.947					
40.372	0.114	22.48	0.64	0.00	0.00	26.50	0.00	0.082	110.590	0.368	7.371132840°-0001	1.680081441°-0001	-4.688029636°-0001
							0.681	1.983					
40.486	0.114	22.48	0.62	0.00	0.00	26.50	0.00	0.077	110.632	0.360	6.858604462°-0001	1.505518257°-0001	-4.317158538°-0001
							0.656	2.011					
40.600	0.114	22.48	0.59	0.00	0.00	26.50	0.00	0.070	110.672	0.352	6.389279705°-0001	1.355774286°-0001	-3.966825103°-0001
							0.634	2.028					
40.713	0.021	22.48	0.11	0.00	0.00	26.50	0.00	0.063	110.712	0.348	5.949236653°-0001	1.224156778°-0001	-3.815559312°-0001
							0.615	2.033					
40.734	0.114	22.58	0.57	0.00	0.00	26.50	0.00	0.061	110.719	0.350	5.869835436°-0001	1.199486572°-0001	-3.810873342°-0001
							0.611	2.033					
40.848	0.114	22.58	0.55	0.00	0.00	26.50	0.00	0.054	110.759	0.360	5.435274651°-0001	1.075439030°-0001	-3.844619078°-0001
							0.592	2.021					
40.961	0.114	22.58	0.53	0.00	0.00	26.50	0.00	0.048	110.801	0.377	4.998216037°-0001	9.517376283°-0002	-3.853080291°-0001
							0.569	1.992					
41.075	0.114	22.58	0.50	0.00	0.00	26.50	0.00	0.045	110.845	0.397	4.558522728°-0001	8.287435011°-0002	-3.878548139°-0001
							0.544	1.950					
41.189	0.114	22.58	0.48	0.00	0.00	26.50	0.00	0.044	110.891	0.407	4.119871481°-0001	7.176377382°-0002	-3.824874837°-0001
							0.521	1.903					
41.302	0.114	22.58	0.46	0.00	0.00	26.50	0.00	0.043	110.937	0.407	3.692395527°-0001	6.152250987°-0002	-3.691562906°-0001
							0.498	1.858					
41.416	0.114	22.58	0.44	0.00	0.00	26.50	0.00	0.042	110.984	0.427	3.280160811°-0001	5.217084304°-0002	-3.557926535°-0001
							0.476	1.820					
41.529	0.114	22.58	0.42	0.00	0.00	26.50	0.00	0.046	111.034	0.422	2.888412931°-0001	4.375362143°-0002	-3.344927190°-0001
							0.453	1.788					
41.643	0.114	22.58	0.40	0.00	0.00	26.50	0.00	0.043	111.079	0.397	2.512356062°-0001	3.616791590°-0002	-3.321222538°-0001
							0.430	1.760					
41.757	0.114	22.58	0.38	0.00	0.00	26.50	0.00	0.041	111.125	0.397	2.123354099°-0001	2.865910483°-0002	-3.556548511°-0001
							0.404	1.737					
41.870	0.114	22.58	0.35	0.00	0.00	26.50	0.00	0.039	111.170	0.392	1.703812744°-0001	2.114424052°-0002	-3.790736007°-0001
							0.371	1.719					
41.984	0.043	22.58	0.13	0.00	0.00	26.50	0.00	0.036	111.214	0.380	1.254825668°-0001	1.389492453°-0002	-4.132848770°-0001
							0.331	1.704					
42.027	0.114	32.27	0.30	0.00	0.00	26.50	0.00	0.034	111.229	0.451	1.075569471°-0001	1.140873181°-0002	-4.211403494°-0001
							0.317	1.697					
42.141	0.059	32.27	0.12	0.00	0.00	26.50	0.00	0.017	111.284	0.520	6.067289919°-0002	5.326270708°-0003	-3.899058620°-0001
							0.262	1.669					
42.200	0.114	32.27	0.14	0.00	0.00	26.50	0.00	0.014	111.319	0.554	3.885855718°-0002	2.700270736°-0003	-3.406072042°-0001
							0.208	1.641					
42.314	0.037	32.27	0.01	0.00	0.00	26.50	0.00	0.003	111.380	0.537	7.225173896°-0003	2.771160360°-0004	-2.142702857°-0001
							0.115	1.512					

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgcl	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S1-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

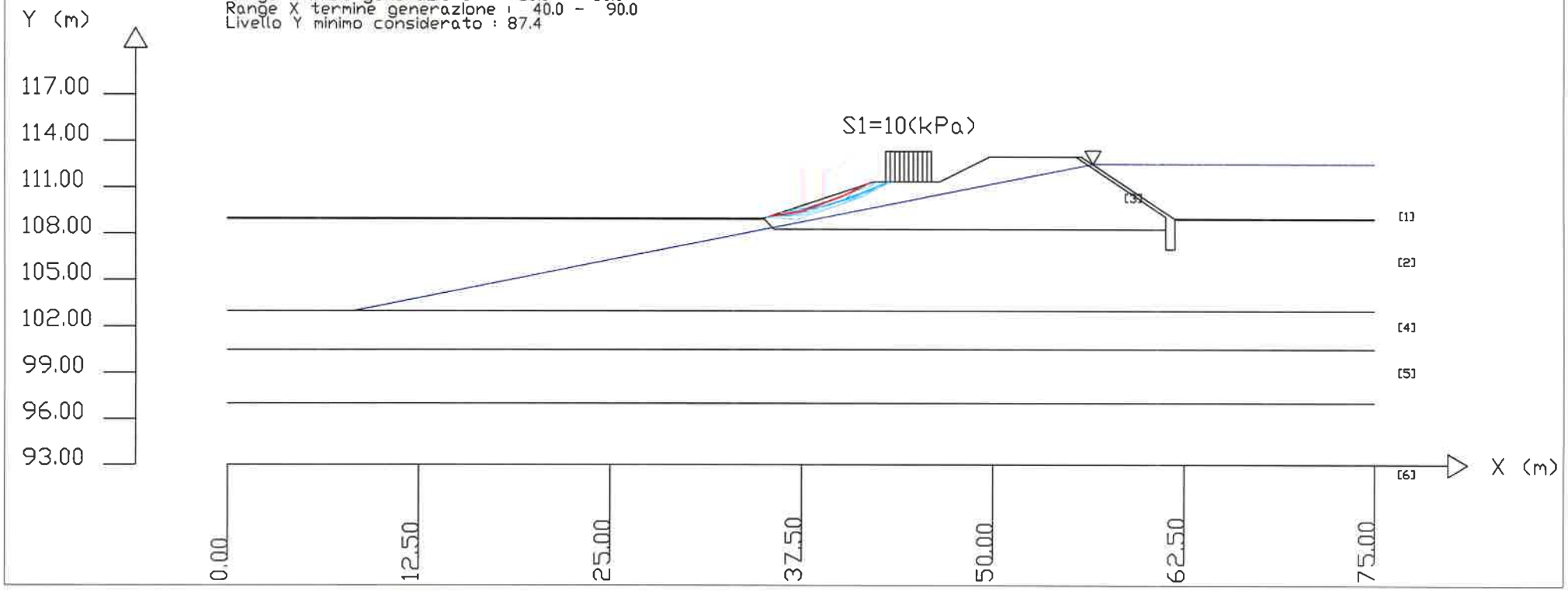
Fs minimo : 1.463
Range Fs : 1.463 1.588
Differenza % Range Fs : 7.9
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.463
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.15100
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 50.0
Range X termine generazione : 40.0 - 90.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 50.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 90.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014

COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	1.463	- Min. -	X	Y	Lambda=	0.416
			35.50	109.17		
			37.38	109.43		
			38.27	109.75		
			38.81	109.95		
			40.14	110.45		
			40.61	110.67		
			41.90	111.30		
Fattore di sicurezza (FS)	1.468	- N.2 --	X	Y	Lambda=	0.378
			36.17	109.39		
			37.23	109.48		
			38.09	109.78		
			39.00	110.09		
			39.83	110.38		
			41.50	110.96		
			42.05	111.16		
			42.41	111.40		
Fattore di sicurezza (FS)	1.537	- N.3 --	X	Y	Lambda=	0.372
			35.35	109.12		
			36.59	109.21		
			37.27	109.27		
			39.18	109.80		
			41.23	110.56		
			42.67	111.17		
			43.08	111.40		
Fattore di sicurezza (FS)	1.541	- N.4 --	X	Y	Lambda=	0.374
			35.64	109.21		

			36.24	109.24		
			36.79	109.35		
			39.15	109.87		
			40.88	110.45		
			42.08	110.95		
			43.18	111.40		
Fattore di sicurezza (FS)	1.561	- N.5 --	X	Y	Lambda=	0.427
			35.28	109.09		
			37.12	109.47		
			38.81	109.81		
			39.54	109.97		
			40.27	110.21		
			41.09	110.88		
			41.28	111.09		
Fattore di sicurezza (FS)	1.564	- N.6 --	X	Y	Lambda=	0.375
			35.40	109.13		
			37.42	109.17		
			38.27	109.40		
			39.73	109.79		
			40.85	110.25		
			42.39	110.89		
			43.17	111.40		
Fattore di sicurezza (FS)	1.568	- N.7 --	X	Y	Lambda=	0.364
			36.63	109.54		
			37.40	109.46		
			38.03	109.47		
			39.32	109.87		
			41.37	110.68		
			43.17	111.40		
Fattore di sicurezza (FS)	1.577	- N.8 --	X	Y	Lambda=	0.350
			35.21	109.07		
			37.19	108.93		
			38.32	109.31		
			40.38	110.02		
			41.59	110.44		
			42.74	111.12		
			43.21	111.40		

Fattore di sicurezza (FS) 1.582 - N.9 -- Lambda= 0.387

X	Y
36.80	109.60
38.48	109.73
40.60	110.24
41.55	110.66
42.99	111.32
43.18	111.40

Fattore di sicurezza (FS) 1.588 - N.10 -- Lambda= 0.387

X	Y
36.18	109.39
38.22	109.61
40.09	110.20
42.30	110.90
43.19	111.27
43.47	111.40

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.463	13.9	9.5	3.5	Surplus
2	1.468	12.3	8.4	3.1	Surplus
3	1.537	32.1	20.9	9.1	Surplus
4	1.541	27.1	17.6	7.8	Surplus
5	1.561	18.2	11.6	5.4	Surplus
6	1.564	42.3	27.0	12.5	Surplus
7	1.568	26.9	17.1	8.0	Surplus
8	1.577	48.9	31.0	14.8	Surplus
9	1.582	25.6	16.2	7.8	Surplus
10	1.588	29.2	18.4	9.0	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 3.1

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN

per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--) (--
35.498	0.101	7.87	0.02	0.00	0.00	26.50	0.00	0.000 1.363	109.166	0.168	0.000000000E+0000	0.000000000E+0000	3.991520608E-0002	0.067
35.599	0.101	7.87	0.06	0.00	0.00	26.50	0.00	0.003 1.363	109.183	0.168	5.424181159E-0003	1.234337136E-0004	6.764498116E-0002	0.067
35.700	0.101	7.87	0.10	0.00	0.00	26.50	0.00	0.006 1.387	109.200	0.168	1.423169747E-0002	6.476131369E-0004	1.119390873E-0001	0.134
35.801	0.101	7.87	0.14	0.00	0.00	26.50	0.00	0.009 1.394	109.217	0.170	2.911964258E-0002	1.987662768E-0003	1.885124640E-0001	0.200
35.902	0.101	7.87	0.18	0.00	0.00	26.50	0.00	0.012 1.375	109.234	0.180	5.297894138E-0002	4.821720870E-0003	2.855790657E-0001	0.267
36.003	0.101	7.87	0.22	0.00	0.00	26.50	0.00	0.017 1.333	109.253	0.194	8.656482391E-0002	9.848235804E-0003	3.816161845E-0001	0.334
36.103	0.101	7.87	0.26	0.00	0.00	26.50	0.00	0.024 1.274	109.273	0.209	1.300399260E-0001	1.775322809E-0002	4.794569088E-0001	0.401
36.204	0.101	7.87	0.30	0.00	0.00	26.50	0.00	0.032 1.209	109.295	0.223	1.829201540E-0001	2.913471418E-0002	5.669468087E-0001	0.467
36.305	0.101	7.87	0.34	0.00	0.00	26.50	0.00	0.041 1.146	109.318	0.236	2.440270709E-0001	4.442019941E-0002	6.435808835E-0001	0.534
36.406	0.101	7.87	0.38	0.00	0.00	26.50	0.00	0.051 1.085	109.343	0.249	3.126349369E-0001	6.402263948E-0002	7.137313953E-0001	0.601
36.507	0.101	7.87	0.42	0.00	0.00	26.50	0.00	0.063 1.028	109.369	0.254	3.874474859E-0001	8.815911901E-0002	7.704254003E-0001	0.668
36.608	0.101	7.87	0.46	0.00	0.00	26.50	0.00	0.075 0.981	109.394	0.258	4.686152204E-0001	1.172908558E-0001	8.427058405E-0001	0.734
36.709	0.101	7.87	0.50	0.00	0.00	26.50	0.00	0.087 0.947	109.421	0.267	5.579579179E-0001	1.523485559E-0001	9.290696175E-0001	0.801
36.809	0.101	7.87	0.54	0.00	0.00	26.50	0.00	0.101 0.925	109.448	0.275	6.552818464E-0001	1.938329578E-0001	9.971650009E-0001	0.868
36.910	0.101	7.87	0.58	0.00	0.00	26.50	0.00	0.115 0.915	109.476	0.282	7.595914273E-0001	2.419717350E-0001	1.065445508E+0000	0.935
37.011	0.101	7.87	0.62	0.00	0.00	26.50	0.00	0.130 0.911	109.505	0.289	8.672832582E-0001	2.959593972E-0001	1.050228912E+0000	1.001
37.112	0.101	7.87	0.66	0.00	0.00	26.50	0.00	0.145 0.912	109.534	0.295	9.674544176E-0001	3.532746257E-0001	9.197230563E-0001	1.071
37.213	0.101	7.87	0.70	0.00	0.00	26.50	0.00	0.161 0.919	109.564	0.296	1.051262080E+0000	4.060856924E-0001	7.462000461E-0001	1.133
37.314	0.069	7.87	0.50	0.00	0.00	26.50	0.00	0.177 0.928	109.594	0.271	1.118193494E+0000	4.502482443E-0001	5.775854182E-0001	1.181
37.383	0.101	20.21	0.74	0.00	0.00	26.50	0.00	0.184 0.935	109.611	0.304	1.154077690E+0000	4.732697710E-0001	4.566775307E-0001	1.203
37.484	0.101	20.21	0.74	0.00	0.00	26.50	0.00	0.182 0.946	109.646	0.351	1.191586676E+0000	4.952321491E-0001	2.894872610E-0001	1.219
37.585	0.101	20.21	0.73	0.00	0.00	26.50	0.00	0.180 0.957	109.681	0.343	1.212966943E+0000	5.045004494E-0001	1.363703275E-0001	1.220
37.686	0.101	20.21	0.72	0.00	0.00	26.50	0.00	0.177 0.968	109.715	0.333	1.219081746E+0000	5.034792770E-0001	-1.974667746E-0002	1.212
37.787	0.101	20.21	0.71	0.00	0.00	26.50	0.00	0.173 0.980	109.748	0.337	1.208824755E+0000	4.944351862E-0001	-1.767047339E-0001	1.200
37.888	0.101	20.21	0.71	0.00	0.00	26.50	0.00	0.171 0.993	109.783	0.346	1.185819296E+0000	4.802304587E-0001	-2.652237864E-0001	1.188
37.988	0.101	20.21	0.70	0.00	0.00	26.50	0.00	0.169 1.007	109.818	0.348	1.157949204E+0000	4.639909290E-0001	-2.780672914E-0001	1.176
38.089	0.101	20.21	0.69	0.00	0.00	26.50	0.00	0.167 1.020	109.853	0.345	1.130187783E+0000	4.482138619E-0001	-2.755398601E-0001	1.164
38.190	0.076	20.21	0.51	0.00	0.00	26.50	0.00	0.164 1.033	109.888	0.341	1.102861402E+0000	4.330105453E-0001	-2.643301715E-0001	1.152
38.266	0.101	20.31	0.68	0.00	0.00	26.50	0.00	0.162 1.042	109.913	0.335	1.083240116E+0000	4.222207330E-0001	-2.559620213E-0001	1.144
38.367	0.101	20.31	0.67	0.00	0.00	26.50	0.00	0.158 1.054	109.947	0.330	1.057509534E+0000	4.079028011E-0001	-2.565131454E-0001	1.132

38.467	0.101	20.31	0.67	0.00	0.00	26.50	0.00	0.154	109.980	0.326	1.031283309E+0000	3.933757049E-0001	-2.625444790E-0001	1.119
								1.063						
38.568	0.101	20.31	0.66	0.00	0.00	26.50	0.00	0.149	110.013	0.324	1.005098295E+0000	3.783639992E-0001	-2.551539025E-0001	1.105
								1.071						
38.669	0.101	20.31	0.65	0.00	0.00	26.50	0.00	0.145	110.045	0.322	9.798430376E-0001	3.646169501E-0001	-2.463439817E-0001	1.092
								1.078						
38.770	0.043	20.31	0.27	0.00	0.00	26.50	0.00	0.140	110.078	0.322	9.551775099E-0001	3.516634666E-0001	-2.440083984E-0001	1.080
								1.085						
38.813	0.101	20.41	0.64	0.00	0.00	26.50	0.00	0.138	110.092	0.324	9.447242176E-0001	3.462731245E-0001	-2.450253660E-0001	1.075
								1.088						
38.914	0.101	20.41	0.63	0.00	0.00	26.50	0.00	0.133	110.124	0.327	9.198364464E-0001	3.334407565E-0001	-2.480314567E-0001	1.064
								1.096						
39.014	0.101	20.41	0.62	0.00	0.00	26.50	0.00	0.129	110.158	0.333	8.947249852E-0001	3.203021368E-0001	-2.502867628E-0001	1.050
								1.105						
39.115	0.101	20.41	0.62	0.00	0.00	26.50	0.00	0.125	110.192	0.346	8.693611726E-0001	3.068618935E-0001	-2.522834681E-0001	1.036
								1.116						
39.216	0.101	20.41	0.61	0.00	0.00	26.50	0.00	0.123	110.227	0.359	8.439262462E-0001	2.940924486E-0001	-2.516623732E-0001	1.023
								1.127						
39.317	0.101	20.41	0.60	0.00	0.00	26.50	0.00	0.122	110.264	0.362	8.186223289E-0001	2.815782576E-0001	-2.503685415E-0001	1.009
								1.140						
39.418	0.101	20.41	0.59	0.00	0.00	26.50	0.00	0.121	110.301	0.361	7.933059610E-0001	2.692883451E-0001	-2.519044891E-0001	0.996
								1.155						
39.519	0.101	20.41	0.58	0.00	0.00	26.50	0.00	0.120	110.337	0.361	7.677282630E-0001	2.571395213E-0001	-2.558766415E-0001	0.983
								1.173						
39.620	0.101	20.41	0.58	0.00	0.00	26.50	0.00	0.119	110.373	0.366	7.415438200E-0001	2.450211939E-0001	-2.641230313E-0001	0.970
								1.194						
39.720	0.101	20.41	0.57	0.00	0.00	26.50	0.00	0.119	110.411	0.362	7.142953652E-0001	2.327925560E-0001	-2.768597114E-0001	0.956
								1.220						
39.821	0.101	20.41	0.56	0.00	0.00	26.50	0.00	0.117	110.446	0.348	6.856495501E-0001	2.203377856E-0001	-2.897944768E-0001	0.943
								1.250						
39.922	0.101	20.41	0.55	0.00	0.00	26.50	0.00	0.114	110.481	0.342	6.559253405E-0001	2.070195654E-0001	-3.014747672E-0001	0.926
								1.287						
40.023	0.101	20.41	0.54	0.00	0.00	26.50	0.00	0.111	110.515	0.338	6.241767618E-0001	1.932362256E-0001	-3.319422287E-0001	0.908
								1.330						
40.124	0.014	20.41	0.08	0.00	0.00	26.50	0.00	0.107	110.549	0.335	5.882996460E-0001	1.778568413E-0001	-3.814019358E-0001	0.887
								1.381						
40.138	0.101	25.75	0.52	0.00	0.00	26.50	0.00	0.107	110.554	0.341	5.827472320E-0001	1.752461437E-0001	-3.889488934E-0001	0.882
								1.389						
40.239	0.101	25.75	0.49	0.00	0.00	26.50	0.00	0.093	110.588	0.348	5.410919870E-0001	1.567610306E-0001	-4.364405676E-0001	0.850
								1.451						
40.340	0.101	25.75	0.46	0.00	0.00	26.50	0.00	0.080	110.624	0.357	4.945907001E-0001	1.351084899E-0001	-4.836306331E-0001	0.802
								1.525						
40.441	0.101	25.75	0.43	0.00	0.00	26.50	0.00	0.067	110.661	0.368	4.443655777E-0001	1.126827555E-0001	-5.069608482E-0001	0.744
								1.613						
40.542	0.065	25.75	0.26	0.00	0.00	26.50	0.00	0.056	110.698	0.379	3.933596517E-0001	9.321687359E-0002	-5.004342968E-0001	0.695
								1.727						
40.607	0.101	25.85	0.38	0.00	0.00	26.50	0.00	0.050	110.723	0.393	3.610410692E-0001	8.190152469E-0002	-4.894120838E-0001	0.666
								1.822						
40.708	0.101	25.85	0.35	0.00	0.00	26.50	0.00	0.041	110.763	0.404	3.123558808E-0001	6.565232239E-0002	-4.749360080E-0001	0.617
								2.014						
40.809	0.101	25.85	0.32	0.00	0.00	26.50	0.00	0.034	110.805	0.422	2.654945390E-0001	5.106995913E-0002	-4.530222777E-0001	0.564
								2.276						
40.910	0.101	25.85	0.29	0.00	0.00	26.50	0.00	0.029	110.848	0.447	2.212111837E-0001	3.836130855E-0002	-4.239726858E-0001	0.509
								2.619						
41.011	0.101	25.85	0.26	0.00	0.00	26.50	0.00	0.026	110.895	0.447	1.801670472E-0001	2.807526520E-0002	-3.890599086E-0001	0.457
								3.039						
41.111	0.101	25.85	0.23	0.00	0.00	26.50	0.00	0.021	110.939	0.443	1.428601782E-0001	1.974181011E-0002	-3.502269847E-0001	0.405
								3.507						
41.212	0.101	25.85	0.20	0.00	0.00	26.50	0.00	0.018	110.984	0.454	1.096165249E-0001	1.321431475E-0002	-3.084460226E-0001	0.354
								3.975						
41.313	0.101	25.85	0.17	0.00	0.00	26.50	0.00	0.015	111.030	0.452	8.073762722E-0002	8.308793509E-0003	-2.637837407E-0001	0.302
								4.186						
41.414	0.101	25.85	0.13	0.00	0.00	26.50	0.00	0.011	111.076	0.455	5.645992999E-0002	4.814434140E-0003	-2.175336383E-0001	0.250
								3.832						
41.515	0.101	25.85	0.10	0.00	0.00	26.50	0.00	0.009	111.122	0.460	3.683214988E-0002	2.491963631E-0003	-1.716483764E-0001	0.199
								2.965						
41.616	0.101	25.85	0.07	0.00	0.00	26.50	0.00	0.006	111.169	0.462	2.184677114E-0002	1.095447748E-0003	-1.260990863E-0001	0.147
								1.970						
41.717	0.101	25.85	0.04	0.00	0.00	26.50	0.00	0.004	111.215	0.462	1.116248548E-0002	3.650353877E-0004	-8.725531549E-0002	0.096
								1.137						

41.817	0.084	25.85	0.01	0.00	0.00	26.50	0.00	0.002 0.524	111.262	0.462	3.938077782E-0003	6.370562040E-0005	-5.734014072E-0002	0.049

Parametri Geotecnici degli strati

N.	phi` deg	C` kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S1_RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

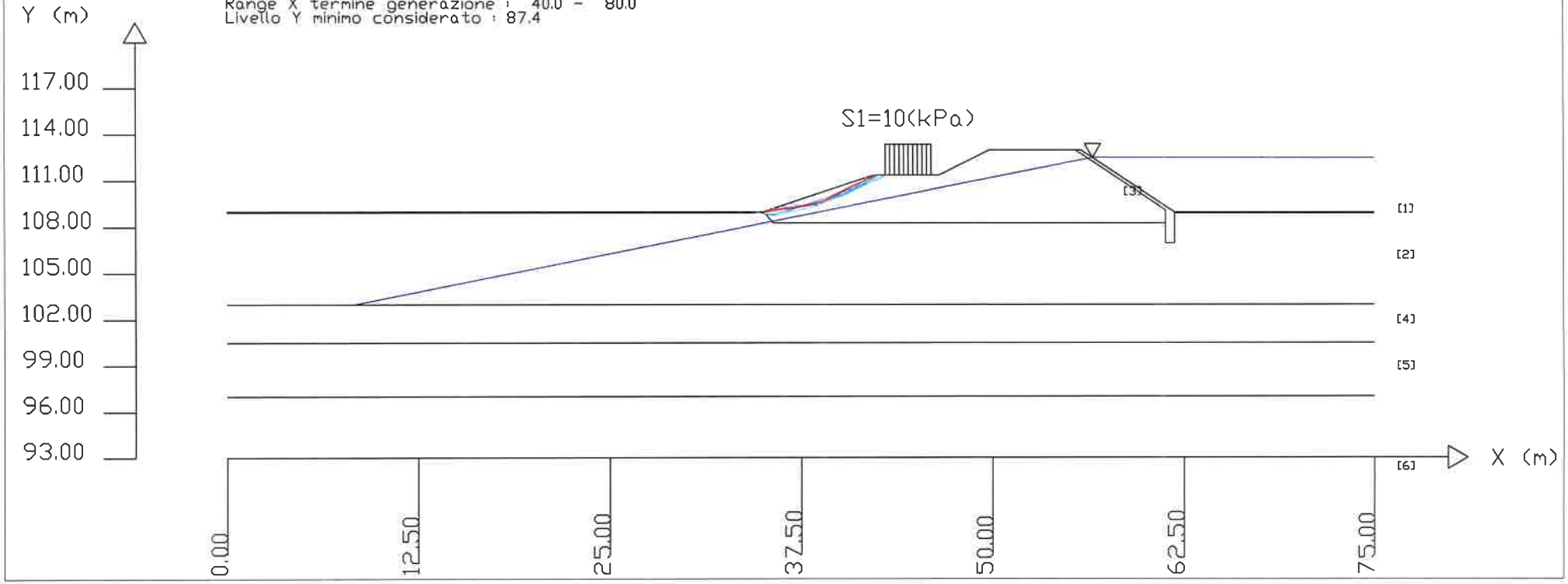
Fs minimo : 1.496
Range Fs : 1.496 1.565
Differenza % Range Fs : 4.4
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.496
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.15993
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 50.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 100.00
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 50.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	1.496	- Min. -	X	Y	Lambda=	0.435
			35.02	109.01		
			37.03	109.32		
			38.45	109.57		
			39.02	109.75		
			40.25	110.36		
			40.77	110.62		
			42.13	111.30		
			42.33	111.40		
Fattore di sicurezza (FS)	1.497	- N.2 --	X	Y	Lambda=	0.393
			34.69	109.00		
			35.77	108.74		
			37.22	109.25		
			39.07	109.90		
			39.61	110.13		
			41.68	111.09		
			42.18	111.39		
Fattore di sicurezza (FS)	1.515	- N.3 --	X	Y	Lambda=	0.371
			36.10	109.37		
			37.28	109.25		
			38.96	109.75		
			40.51	110.26		
			41.56	110.81		
			42.45	111.40		
Fattore di sicurezza (FS)	1.532	- N.4 --	X	Y	Lambda=	0.398
			34.30	109.00		

				35.75	108.81	
				37.76	109.19	
				38.30	109.31	
				39.52	109.80	
				40.73	110.29	
				42.45	111.40	
Fattore di sicurezza (FS)	1.535	- N.5 --	X	Y	Lambda=	0.353
			35.60	109.20		
			36.47	109.17		
			37.62	109.45		
			39.93	110.20		
			40.42	110.36		
			41.88	110.85		
			43.07	111.40		
Fattore di sicurezza (FS)	1.536	- N.6 --	X	Y	Lambda=	0.427
			34.60	109.00		
			35.33	108.80		
			36.33	109.05		
			38.45	109.57		
			40.36	110.05		
			42.49	111.32		
			42.61	111.40		
Fattore di sicurezza (FS)	1.548	- N.7 --	X	Y	Lambda=	0.415
			35.12	109.04		
			36.26	109.18		
			36.88	109.25		
			38.30	109.43		
			39.70	110.00		
			40.72	110.59		
			41.20	111.07		
Fattore di sicurezza (FS)	1.549	- N.8 --	X	Y	Lambda=	0.417
			35.39	109.13		
			37.41	109.34		
			39.06	109.64		
			40.37	110.24		
			40.86	110.46		
			41.52	111.00		
			41.75	111.25		

Fattore di sicurezza (FS) 1.556 - N.9 -- Lambda= 0.428

X	Y
35.68	109.23
37.35	109.31
38.78	109.48
40.46	110.28
40.95	110.51
42.21	111.22
42.53	111.40

Fattore di sicurezza (FS) 1.565 - N.10 -- Lambda= 0.382

X	Y
36.71	109.57
37.47	109.39
39.28	109.80
39.83	109.93
40.97	110.40
42.82	111.25
43.10	111.40

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.496	23.3	15.6	6.2	Surplus
2	1.497	25.8	17.2	6.8	Surplus
3	1.515	26.9	17.7	7.4	Surplus
4	1.532	39.8	26.0	11.2	Surplus
5	1.535	26.7	17.4	7.6	Surplus
6	1.536	35.8	23.3	10.1	Surplus
7	1.548	23.9	15.5	6.9	Surplus
8	1.549	26.9	17.4	7.8	Surplus
9	1.556	30.4	19.6	8.9	Surplus
10	1.565	29.7	19.0	8.8	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 6.2

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--
35.017	0.083	8.78	0.01	0.00	0.00	26.50	0.00	0.000 2.228	109.006	0.181	0.000000000E+0000	0.000000000E+0000	5.757177024E-0002	0.050
35.100	0.113	8.78	0.06	0.00	0.00	26.50	0.00	0.002 2.228	109.021	0.181	6.021071350E-0003	7.888207189E-0005	8.777440774E-0002	0.050
35.213	0.113	8.78	0.10	0.00	0.00	26.50	0.00	0.005 2.250	109.041	0.181	1.858082701E-0002	4.954142419E-0004	1.345360025E-0001	0.080
35.327	0.113	8.78	0.15	0.00	0.00	26.50	0.00	0.008 2.250	109.062	0.197	3.670837523E-0002	1.523575636E-0003	1.857084676E-0001	0.125
35.440	0.113	8.78	0.20	0.00	0.00	26.50	0.00	0.015 2.205	109.086	0.193	6.086437913E-0002	3.547840323E-0003	2.409322877E-0001	0.175
35.554	0.113	8.78	0.24	0.00	0.00	26.50	0.00	0.017 2.114	109.105	0.170	9.155822399E-0002	6.712232015E-0003	3.003551591E-0001	0.220
35.667	0.033	8.78	0.08	0.00	0.00	26.50	0.00	0.018 1.989	109.124	0.164	1.289974240E-0001	1.118227047E-0002	3.608356408E-0001	0.260
35.700	0.113	8.78	0.30	0.00	0.00	26.50	0.00	0.018 1.949	109.129	0.176	1.411495150E-0001	1.284072326E-0002	3.801487768E-0001	0.273
35.813	0.113	8.78	0.35	0.00	0.00	26.50	0.00	0.021 1.808	109.150	0.187	1.884467594E-0001	1.966393204E-0002	4.561051440E-0001	0.313
35.927	0.113	8.78	0.40	0.00	0.00	26.50	0.00	0.026 1.677	109.172	0.204	2.450484086E-0001	2.926063378E-0002	5.427211786E-0001	0.358
36.040	0.113	8.78	0.44	0.00	0.00	26.50	0.00	0.033 1.556	109.196	0.216	3.114833940E-0001	4.250502346E-0002	6.286296416E-0001	0.410
36.154	0.113	8.78	0.49	0.00	0.00	26.50	0.00	0.040 1.447	109.221	0.218	3.878629252E-0001	5.874435564E-0002	7.167574594E-0001	0.455
36.267	0.113	8.78	0.53	0.00	0.00	26.50	0.00	0.047 1.350	109.246	0.223	4.734194441E-0001	7.885606646E-0002	7.876492199E-0001	0.500
36.381	0.113	8.78	0.58	0.00	0.00	26.50	0.00	0.055 1.267	109.271	0.231	5.656696930E-0001	1.027694873E-0001	8.356725831E-0001	0.545
36.494	0.113	8.78	0.63	0.00	0.00	26.50	0.00	0.064 1.197	109.298	0.240	6.627417504E-0001	1.304196840E-0001	8.770149043E-0001	0.591
36.608	0.113	8.78	0.67	0.00	0.00	26.50	0.00	0.075 1.138	109.326	0.249	7.647222271E-0001	1.620073239E-0001	9.203587253E-0001	0.636
36.721	0.113	8.78	0.72	0.00	0.00	26.50	0.00	0.086 1.087	109.355	0.254	8.714435141E-0001	1.985625672E-0001	9.608774913E-0001	0.684
36.834	0.113	8.78	0.77	0.00	0.00	26.50	0.00	0.097 1.043	109.384	0.253	9.826711170E-0001	2.387747749E-0001	1.000008819E+0000	0.729
36.948	0.080	8.78	0.57	0.00	0.00	26.50	0.00	0.108 1.004	109.412	0.257	1.098307014E+0000	2.823345108E-0001	1.038721196E+0000	0.771
37.028	0.113	10.14	0.84	0.00	0.00	26.50	0.00	0.117 0.980	109.433	0.264	1.182275515E+0000	3.148684877E-0001	1.060205392E+0000	0.799
37.141	0.113	10.14	0.88	0.00	0.00	26.50	0.00	0.127 0.950	109.463	0.267	1.303740610E+0000	3.644888489E-0001	1.083679088E+0000	0.839
37.255	0.113	10.14	0.92	0.00	0.00	26.50	0.00	0.137 0.925	109.494	0.278	1.429310471E+0000	4.189590856E-0001	1.136706663E+0000	0.880
37.368	0.113	10.14	0.96	0.00	0.00	26.50	0.00	0.149 0.905	109.526	0.291	1.562905788E+0000	4.799470860E-0001	1.221919440E+0000	0.922
37.481	0.113	10.14	1.00	0.00	0.00	26.50	0.00	0.163 0.888	109.560	0.300	1.706250593E+0000	5.461891414E-0001	1.299760943E+0000	0.961
37.595	0.113	10.14	1.04	0.00	0.00	26.50	0.00	0.177 0.875	109.594	0.304	1.857230649E+0000	6.187730533E-0001	1.359731596E+0000	1.000
37.708	0.113	10.14	1.08	0.00	0.00	26.50	0.00	0.191 0.864	109.629	0.307	2.013817402E+0000	6.972414620E-0001	1.395690652E+0000	1.039
37.822	0.113	10.14	1.12	0.00	0.00	26.50	0.00	0.206 0.855	109.664	0.312	2.172544102E+0000	7.805684601E-0001	1.396752131E+0000	1.078
37.935	0.113	10.14	1.16	0.00	0.00	26.50	0.00	0.221 0.850	109.700	0.327	2.329461934E+0000	8.673675556E-0001	1.365302866E+0000	1.117
38.049	0.113	10.14	1.20	0.00	0.00	26.50	0.00	0.239 0.850	109.738	0.333	2.482267176E+0000	9.565084816E-0001	1.329248486E+0000	1.156

38.162	0.113	10.14	1.24	0.00	0.00	26.50	0.00	0.256	109.775	0.323	2.629206242E+0000	1.050109602E+0000	1.247100011E+0000	1.199
38.276	0.113	10.14	1.28	0.00	0.00	26.50	0.00	0.854 0.272	109.812	0.306	2.761408463E+0000	1.136344976E+0000	1.067064439E+0000	1.235
38.389	0.057	10.14	0.66	0.00	0.00	26.50	0.00	0.862 0.285	109.845	0.280	2.868395428E+0000	1.207443051E+0000	8.127788422E-0001	1.263
38.446	0.113	17.60	1.32	0.00	0.00	26.50	0.00	0.876 0.289	109.859	0.302	2.910954879E+0000	1.235989660E+0000	6.845100426E-0001	1.274
38.559	0.113	17.60	1.33	0.00	0.00	26.50	0.00	0.884 0.290	109.896	0.325	2.973963039E+0000	1.278127062E+0000	4.233179580E-0001	1.290
38.673	0.113	17.60	1.33	0.00	0.00	26.50	0.00	0.905 0.291	109.933	0.325	3.006498733E+0000	1.301909573E+0000	1.489340407E-0001	1.300
38.786	0.113	17.60	1.34	0.00	0.00	26.50	0.00	0.931 0.292	109.970	0.325	3.007610602E+0000	1.307101884E+0000	-1.292522925E-0001	1.304
38.900	0.113	17.60	1.34	0.00	0.00	26.50	0.00	0.960 0.293	110.007	0.320	2.977337165E+0000	1.291892322E+0000	-4.031781754E-0001	1.302
39.013	0.009	17.60	0.11	0.00	0.00	26.50	0.00	0.992 0.293	110.042	0.315	2.916211977E+0000	1.256622571E+0000	-6.753721285E-0001	1.293
39.022	0.113	26.34	1.32	0.00	0.00	26.50	0.00	1.026 0.293	110.045	0.320	2.910033793E+0000	1.252604524E+0000	-6.967395100E-0001	1.292
39.136	0.113	26.34	1.28	0.00	0.00	26.50	0.00	1.029 0.273	110.082	0.329	2.816532492E+0000	1.192320932E+0000	-9.436842865E-0001	1.270
39.249	0.113	26.34	1.24	0.00	0.00	26.50	0.00	1.065 0.255	110.120	0.343	2.698175265E+0000	1.112228614E+0000	-1.132599871E+0000	1.237
39.362	0.113	26.34	1.20	0.00	0.00	26.50	0.00	1.106 0.238	110.159	0.355	2.561641788E+0000	1.018183195E+0000	-1.268024994E+0000	1.193
39.476	0.113	26.34	1.16	0.00	0.00	26.50	0.00	1.152 0.223	110.200	0.360	2.410924882E+0000	9.243194355E-0001	-1.391853904E+0000	1.151
39.589	0.113	26.34	1.11	0.00	0.00	26.50	0.00	1.203 0.208	110.241	0.367	2.246660797E+0000	8.306255592E-0001	-1.493382237E+0000	1.110
39.703	0.113	26.34	1.07	0.00	0.00	26.50	0.00	1.260 0.194	110.284	0.381	2.075496603E+0000	7.389666800E-0001	-1.507773709E+0000	1.069
39.816	0.113	26.34	1.03	0.00	0.00	26.50	0.00	1.321 0.182	110.328	0.391	1.907910247E+0000	6.532658478E-0001	-1.436540538E+0000	1.028
39.930	0.113	26.34	0.99	0.00	0.00	26.50	0.00	1.385 0.170	110.372	0.399	1.750236932E+0000	5.743750656E-0001	-1.344325343E+0000	0.985
40.043	0.113	26.34	0.95	0.00	0.00	26.50	0.00	1.451 0.160	110.418	0.400	1.604203629E+0000	5.042913771E-0001	-1.228791388E+0000	0.943
40.156	0.092	26.34	0.73	0.00	0.00	26.50	0.00	1.519 0.149	110.463	0.389	1.470521655E+0000	4.426134979E-0001	-1.135852984E+0000	0.903
40.248	0.113	26.44	0.87	0.00	0.00	26.50	0.00	1.585 0.138	110.498	0.379	1.368211899E+0000	3.974583230E-0001	-1.096515109E+0000	0.872
40.362	0.113	26.44	0.83	0.00	0.00	26.50	0.00	1.637 0.125	110.541	0.383	1.245423338E+0000	3.451104002E-0001	-1.067103602E+0000	0.832
40.475	0.113	26.44	0.78	0.00	0.00	26.50	0.00	1.699 0.112	110.585	0.387	1.127203414E+0000	2.954627094E-0001	-1.016527057E+0000	0.787
40.589	0.113	26.44	0.74	0.00	0.00	26.50	0.00	1.762 0.100	110.629	0.391	1.014742227E+0000	2.511966656E-0001	-9.665041774E-0001	0.743
40.702	0.072	26.44	0.45	0.00	0.00	26.50	0.00	1.830 0.088	110.674	0.396	9.078712569E-0001	2.128102027E-0001	-9.179285827E-0001	0.703
40.774	0.113	26.54	0.67	0.00	0.00	26.50	0.00	1.903 0.081	110.702	0.404	8.429390567E-0001	1.908154063E-0001	-8.877585386E-0001	0.679
40.887	0.113	26.54	0.63	0.00	0.00	26.50	0.00	1.951 0.071	110.748	0.410	7.448976704E-0001	1.587591871E-0001	-8.408368265E-0001	0.640
41.001	0.113	26.54	0.59	0.00	0.00	26.50	0.00	2.029 0.061	110.795	0.424	6.522506124E-0001	1.297750767E-0001	-7.925326240E-0001	0.597
41.114	0.113	26.54	0.54	0.00	0.00	26.50	0.00	2.109 0.053	110.844	0.442	5.649974950E-0001	1.039016106E-0001	-7.465065057E-0001	0.552
41.228	0.113	26.54	0.50	0.00	0.00	26.50	0.00	2.189 0.048	110.896	0.448	4.827204267E-0001	8.202016795E-0002	-7.046696353E-0001	0.510
41.341	0.113	26.54	0.46	0.00	0.00	26.50	0.00	2.265 0.042	110.946	0.449	4.050911353E-0001	6.314245038E-0002	-6.635307936E-0001	0.468
41.455	0.113	26.54	0.41	0.00	0.00	26.50	0.00	2.332 0.037	110.998	0.463	3.321958079E-0001	4.711601485E-0002	-6.226521403E-0001	0.426
41.568	0.113	26.54	0.37	0.00	0.00	26.50	0.00	2.387 0.033	111.051	0.464	2.639956330E-0001	3.373650480E-0002	-5.775792561E-0001	0.384
41.682	0.113	26.54	0.33	0.00	0.00	26.50	0.00	2.424 0.029	111.103	0.463	2.017977744E-0001	2.295552446E-0002	-5.160838271E-0001	0.341
41.795	0.113	26.54	0.28	0.00	0.00	26.50	0.00	2.429 0.025	111.156	0.471	1.474137653E-0001	1.469869981E-0002	-4.417550419E-0001	0.299
								2.384						

41.908	0.113	26.54	0.24	0.00	0.00	26.50	0.00	0.022 2.263	111.210	0.474	1.013959170E-0001	8.517139214E-0003	-3.710382001E-0001	0.252
42.022	0.111	26.54	0.19	0.00	0.00	26.50	0.00	0.019 2.031	111.264	0.463	6.315583780E-0002	4.362014039E-0003	-3.027895701E-0001	0.207
42.133	0.067	26.64	0.10	0.00	0.00	26.50	0.00	0.014 1.653	111.314	0.448	3.344169794E-0002	1.819969265E-0003	-2.323945706E-0001	0.163
42.200	0.113	26.64	0.09	0.00	0.00	26.50	0.00	0.010 1.326	111.344	0.431	1.929441872E-0002	8.387796623E-0004	-1.882156421E-0001	0.130
42.313	0.019	26.64	0.00	0.00	0.00	26.50	0.00	0.001 0.564	111.392	0.426	2.097675317E-0003	5.188769563E-0005	-1.161764163E-0001	0.074

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S1S2-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

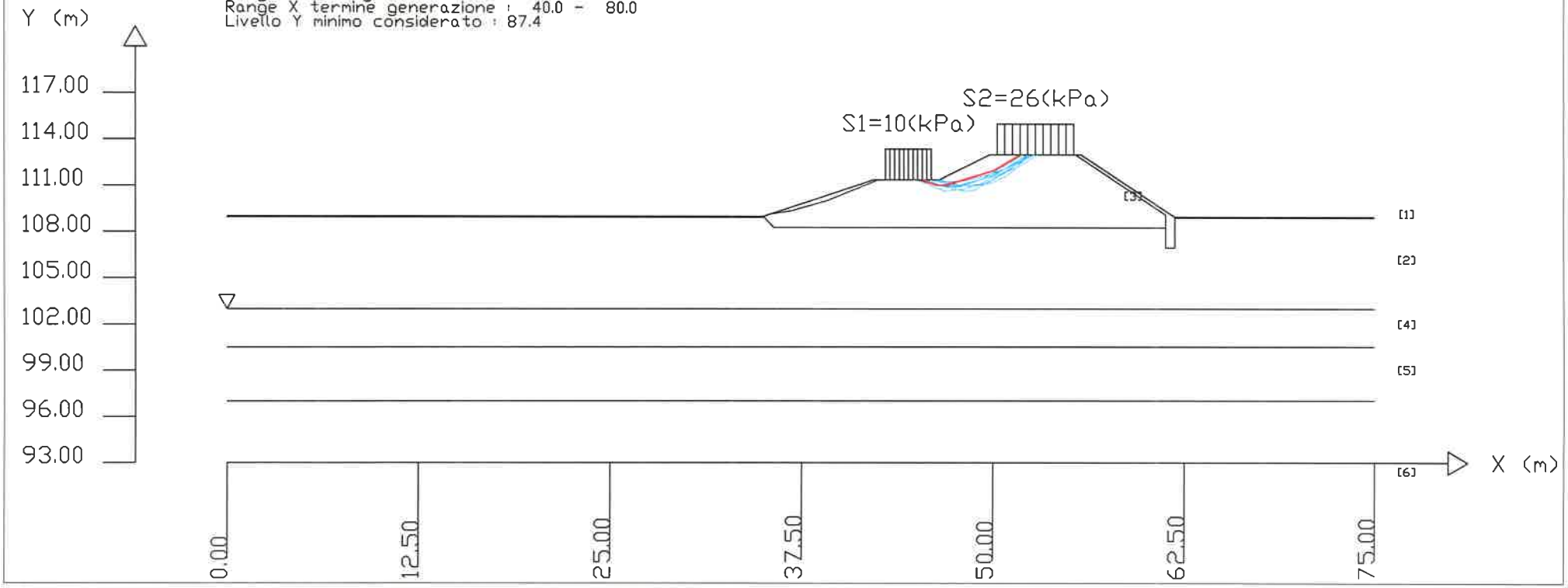
Fs minimo : 1.384
Range Fs : 1.384 1.464
Differenza % Range Fs : 5.5
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.384
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.13718
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 55.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

SOVRACCARICO N.2

carico (Kpa): 26.00
posizione da m.: 50.30
a m.: 55.30

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 55.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 1.384 - Min. - Lambda= 0.606

X	Y
45.32	111.40
46.30	111.05
46.95	111.06
49.00	111.67
50.05	111.99
51.83	113.05

Fattore di sicurezza (FS) 1.386 - N.2 -- Lambda= 0.549

X	Y
46.30	111.40
46.84	111.24
48.30	111.36
49.76	111.74
50.80	112.09
52.71	113.05

Fattore di sicurezza (FS) 1.407 - N.3 -- Lambda= 0.521

X	Y
45.98	111.40
46.77	111.18
48.57	110.95
49.90	111.19
50.91	111.65
51.39	112.03
52.40	113.05

Fattore di sicurezza (FS) 1.408 - N.4 -- Lambda= 0.507

X	Y
45.65	111.40
46.57	111.05
47.85	110.96
49.51	111.15
51.22	112.17
51.96	112.61
52.69	113.05

Fattore di sicurezza (FS) 1.412 - N.5 -- Lambda= 0.526

X	Y
45.57	111.40
46.28	111.04
47.49	110.93
49.76	111.57
51.54	112.50
52.60	113.05

Fattore di sicurezza (FS) 1.439 - N.6 -- Lambda= 0.511

X	Y
46.52	111.41
47.79	111.04
49.00	111.38
50.76	111.86
51.84	112.32
52.37	112.68
52.92	113.05

Fattore di sicurezza (FS) 1.447 - N.7 -- Lambda= 0.519

X	Y
44.82	111.40
46.49	111.07
47.64	110.86
49.37	111.49
51.23	112.56
51.84	112.97
51.96	113.05

Fattore di sicurezza (FS) 1.456 - N.8 -- Lambda= 0.512

X	Y
45.43	111.40
47.33	110.80
48.32	110.64
48.86	110.74
50.81	111.85
51.74	112.49

52.26 113.05

Fattore di sicurezza (FS) 1.462 - N.9 -- X Y Lambda= 0.415

35.52 109.17
36.79 109.37
38.08 109.74
39.18 110.06
40.42 110.55
42.20 111.27
42.50 111.40

Fattore di sicurezza (FS) 1.464 - N.10 -- X Y Lambda= 0.491

45.07 111.40
46.93 110.64
48.11 110.78
49.15 111.08
49.59 111.36
50.79 112.12
51.25 112.41
52.26 113.05

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.384	61.1	44.1	12.5	Surplus
2	1.386	74.8	53.9	15.4	Surplus
3	1.407	94.6	67.2	20.6	Surplus
4	1.408	94.7	67.2	20.7	Surplus
5	1.412	85.1	60.3	18.8	Surplus
6	1.439	88.7	61.6	20.9	Surplus
7	1.447	77.8	53.8	18.7	Surplus
8	1.456	100.9	69.3	24.7	Surplus
9	1.462	14.9	10.2	3.7	Surplus
10	1.464	95.0	64.9	23.6	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 3.7

Note: FTR --> Forza totale Resistente rispetto alla superficie

di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	(--)
45.321	0.102	-19.75	1.06	0.00	0.00	26.50	0.00	0.000 0.301	111.400	-0.305	0.000000000E+0000	0.000000000E+0000	3.028346936E+0000	0.442	
45.423	0.102	-19.75	1.13	0.00	0.00	26.50	0.00	0.006 0.301	111.369	-0.305	4.088876869E-0001	6.514865009E-0002	5.013363091E+0000	0.442	
45.526	0.102	-19.75	1.21	0.00	0.00	26.50	0.00	0.011 0.300	111.338	-0.304	1.016137035E+0000	1.730787717E-0001	6.736948882E+0000	0.473	
45.628	0.102	-19.75	1.29	0.00	0.00	26.50	0.00	0.017 0.300	111.307	-0.305	1.757561883E+0000	3.186967457E-0001	7.606836290E+0000	0.503	
45.730	0.102	-19.75	1.36	0.00	0.00	26.50	0.00	0.022 0.304	111.275	-0.307	2.551164563E+0000	4.808679686E-0001	7.867164253E+0000	0.523	
45.833	0.102	-19.75	1.44	0.00	0.00	26.50	0.00	0.028 0.311	111.244	-0.298	3.375350433E+0000	6.362184273E-0001	8.263698108E+0000	0.523	
45.935	0.065	-19.75	0.95	0.00	0.00	26.50	0.00	0.034 0.322	111.214	-0.266	4.234013649E+0000	7.980675071E-0001	8.436179194E+0000	0.523	
46.000	0.102	-19.75	0.54	0.00	0.00	26.50	0.00	0.043 0.332	111.199	-0.197	4.777852014E+0000	9.005753788E-0001	8.241109205E+0000	0.523	
46.102	0.102	-19.75	0.62	0.00	0.00	26.50	0.00	0.062 0.351	111.181	-0.151	5.585543560E+0000	1.052816829E+0000	7.467166185E+0000	0.523	
46.205	0.098	-19.75	0.66	0.00	0.00	26.50	0.00	0.086 0.377	111.168	-0.095	6.299074839E+0000	1.187310049E+0000	6.493054627E+0000	0.523	
46.303	0.102	1.24	0.72	0.00	0.00	26.50	0.00	0.115 0.411	111.162	-0.071	6.884027125E+0000	1.297567467E+0000	5.438192250E+0000	0.523	
46.405	0.095	1.24	0.67	0.00	0.00	26.50	0.00	0.104 0.459	111.154	-0.057	7.386750458E+0000	1.392325583E+0000	4.437133919E+0000	0.523	
46.500	0.102	1.24	0.77	0.00	0.00	26.50	0.00	0.099 0.521	111.151	-0.010	7.777100597E+0000	1.465902522E+0000	3.818164868E+0000	0.523	
46.602	0.102	1.24	0.87	0.00	0.00	26.50	0.00	0.098 0.607	111.152	0.034	8.143635363E+0000	1.534990510E+0000	3.347385734E+0000	0.523	
46.705	0.102	1.24	0.97	0.00	0.00	26.50	0.00	0.102 0.716	111.158	0.078	8.456785277E+0000	1.594016010E+0000	2.769988335E+0000	0.523	
46.807	0.102	1.24	1.07	0.00	0.00	26.50	0.00	0.110 0.855	111.168	0.120	8.712593716E+0000	1.642233239E+0000	2.245392589E+0000	0.523	
46.909	0.041	1.24	0.46	0.00	0.00	26.50	0.00	0.122 1.038	111.182	0.151	8.919996391E+0000	1.681326484E+0000	1.826917652E+0000	0.523	
46.950	0.102	16.62	1.18	0.00	0.00	26.50	0.00	0.128 1.126	111.190	0.196	8.991732657E+0000	1.694848024E+0000	1.689304281E+0000	0.523	
47.052	0.102	16.62	1.22	0.00	0.00	26.50	0.00	0.118 1.393	111.211	0.223	9.148963198E+0000	1.724484344E+0000	1.391191112E+0000	0.523	
47.155	0.102	16.62	1.27	0.00	0.00	26.50	0.00	0.113 1.729	111.235	0.258	9.277437243E+0000	1.748700365E+0000	1.128012024E+0000	0.523	
47.257	0.102	16.62	1.31	0.00	0.00	26.50	0.00	0.110 2.128	111.263	0.287	9.381890843E+0000	1.768388781E+0000	9.249317393E-0001	0.523	
47.359	0.102	16.62	1.35	0.00	0.00	26.50	0.00	0.110 2.561	111.294	0.312	9.469089644E+0000	1.831022330E+0000	7.903614796E-0001	0.537	
47.462	0.102	16.62	1.39	0.00	0.00	26.50	0.00	0.113 2.976	111.327	0.332	9.545552255E+0000	1.904748698E+0000	7.110895336E-0001	0.554	
47.564	0.102	16.62	1.44	0.00	0.00	26.50	0.00	0.117 3.287	111.362	0.350	9.615694475E+0000	1.978119116E+0000	6.668796154E-0001	0.571	
47.666	0.102	16.62	1.48	0.00	0.00	26.50	0.00	0.123 3.389	111.399	0.366	9.683122183E+0000	2.051780564E+0000	6.538397013E-0001	0.588	

47.769	0.102	16.62	1.52	0.00	0.00	26.50	0.00	0.131 3.278	111.437	0.380	9.749770655E+0000	2.126104778E+0000	6.492779952E-0001	0.605
47.871	0.102	16.62	1.56	0.00	0.00	26.50	0.00	0.140 3.048	111.477	0.382	9.816138821E+0000	2.201189204E+0000	6.495013344E-0001	0.622
47.973	0.102	16.62	1.61	0.00	0.00	26.50	0.00	0.148 2.799	111.515	0.385	9.883381121E+0000	2.277294652E+0000	6.688863253E-0001	0.640
48.076	0.102	16.62	1.65	0.00	0.00	26.50	0.00	0.158 2.581	111.555	0.400	9.953489865E+0000	2.354908677E+0000	7.022581672E-0001	0.657
48.178	0.102	16.62	1.69	0.00	0.00	26.50	0.00	0.169 2.399	111.597	0.404	1.002709753E+0001	2.434237922E+0000	7.358094144E-0001	0.674
48.280	0.102	16.62	1.74	0.00	0.00	26.50	0.00	0.180 2.235	111.638	0.398	1.010391859E+0001	2.515276123E+0000	7.650227129E-0001	0.691
48.383	0.102	16.62	1.78	0.00	0.00	26.50	0.00	0.189 2.088	111.679	0.392	1.018364955E+0001	2.598005379E+0000	7.947910951E-0001	0.708
48.485	0.102	16.62	1.82	0.00	0.00	26.50	0.00	0.199 1.959	111.718	0.387	1.026713122E+0001	2.682699284E+0000	8.363345033E-0001	0.725
48.587	0.102	16.62	1.86	0.00	0.00	26.50	0.00	0.208 1.849	111.758	0.381	1.035400912E+0001	2.769332512E+0000	8.557034830E-0001	0.742
48.690	0.102	16.62	1.91	0.00	0.00	26.50	0.00	0.216 1.756	111.797	0.376	1.044098585E+0001	2.858993695E+0000	8.391516730E-0001	0.760
48.792	0.102	16.62	1.95	0.00	0.00	26.50	0.00	0.223 1.679	111.835	0.374	1.052530771E+0001	2.957001086E+0000	8.110505087E-0001	0.780
48.894	0.102	16.62	1.99	0.00	0.00	26.50	0.00	0.231 1.616	111.873	0.370	1.060490268E+0001	3.043291697E+0000	7.329129954E-0001	0.796
48.997	0.007	16.62	0.14	0.00	0.00	26.50	0.00	0.238 1.565	111.910	0.365	1.067688326E+0001	3.119100053E+0000	6.949352496E-0001	0.811
49.004	0.102	16.72	2.04	0.00	0.00	26.50	0.00	0.238 1.562	111.913	0.370	1.068173898E+0001	3.125007043E+0000	6.974837558E-0001	0.812
49.106	0.102	16.72	2.08	0.00	0.00	26.50	0.00	0.246 1.523	111.951	0.375	1.075783851E+0001	3.202669232E+0000	8.114635716E-0001	0.826
49.208	0.102	16.72	2.12	0.00	0.00	26.50	0.00	0.254 1.493	111.990	0.379	1.084962542E+0001	3.294957602E+0000	9.724985903E-0001	0.843
49.311	0.102	16.72	2.16	0.00	0.00	26.50	0.00	0.262 1.468	112.028	0.394	1.095330111E+0001	3.403740948E+0000	1.053332524E+0000	0.862
49.413	0.102	16.72	2.20	0.00	0.00	26.50	0.00	0.273 1.448	112.070	0.412	1.106244923E+0001	3.507223024E+0000	1.053445490E+0000	0.880
49.515	0.102	16.72	2.25	0.00	0.00	26.50	0.00	0.285 1.429	112.113	0.420	1.116208538E+0001	3.608531428E+0000	8.583482743E-0001	0.897
49.618	0.102	16.72	2.29	0.00	0.00	26.50	0.00	0.297 1.412	112.156	0.429	1.123168777E+0001	3.689640453E+0000	4.792317433E-0001	0.912
49.720	0.080	16.72	1.82	0.00	0.00	26.50	0.00	0.311 1.398	112.201	0.440	1.125914498E+0001	3.733971495E+0000	7.739951441E-0002	0.920
49.800	0.102	16.72	2.31	0.00	0.00	26.50	0.00	0.323 1.388	112.236	0.449	1.125317667E+0001	3.731992173E+0000	-2.487753553E-0001	0.920
49.902	0.102	16.72	2.25	0.00	0.00	26.50	0.00	0.338 1.377	112.283	0.453	1.119432776E+0001	3.712475579E+0000	-9.715012565E-0001	0.920
50.005	0.049	16.72	1.05	0.00	0.00	26.50	0.00	0.354 1.366	112.329	0.448	1.104080791E+0001	3.661562411E+0000	-2.079003692E+0000	0.920
50.053	0.102	30.85	2.12	0.00	0.00	26.50	0.00	0.360 1.360	112.350	0.447	1.092540926E+0001	3.623291719E+0000	-2.665683038E+0000	0.920
50.156	0.102	30.85	2.00	0.00	0.00	26.50	0.00	0.346 1.346	112.397	0.459	1.059322432E+0001	3.515846332E+0000	-3.826830180E+0000	1.000
50.258	0.042	30.85	0.78	0.00	0.00	26.50	0.00	0.332 1.329	112.444	0.468	1.014187425E+0001	4.270411731E+0000	-4.973141229E+0000	1.169
50.300	0.102	30.85	4.50	0.00	0.00	26.50	0.00	0.327 1.322	112.464	0.470	9.923846864E+0000	4.541148632E+0000	-5.387748854E+0000	1.270
50.402	0.102	30.85	4.37	0.00	0.00	26.50	0.00	0.314 1.302	112.512	0.464	9.328632884E+0000	5.021993471E+0000	-6.199319297E+0000	1.494
50.505	0.102	30.85	4.25	0.00	0.00	26.50	0.00	0.300 1.281	112.559	0.455	8.662705142E+0000	5.093471658E+0000	-6.796094077E+0000	1.632
50.607	0.102	30.85	4.12	0.00	0.00	26.50	0.00	0.285 1.259	112.605	0.443	7.936137221E+0000	4.805303698E+0000	-7.424581640E+0000	1.681
50.709	0.102	30.85	3.99	0.00	0.00	26.50	0.00	0.268 1.235	112.650	0.426	7.148748417E+0000	4.212620025E+0000	-7.898855481E+0000	1.636
50.812	0.102	30.85	3.87	0.00	0.00	26.50	0.00	0.250 1.208	112.692	0.433	6.336840475E+0000	3.618236075E+0000	-7.882180829E+0000	1.585
50.914	0.102	30.85	3.74	0.00	0.00	26.50	0.00	0.235 1.176	112.738	0.428	5.549935736E+0000	3.067381287E+0000	-7.460413885E+0000	1.534
51.016	0.102	30.85	3.62	0.00	0.00	26.50	0.00	0.215 1.138	112.780	0.367	4.810471639E+0000	2.570673616E+0000	-6.949233271E+0000	1.483

51.119	0.102	30.85	3.49	0.00	0.00	26.50	0.00	0.187 1.095	112.813	0.302	4.135847923E+0000	2.134488977E+0000	-6.266603603E+0000	1.432
51.221	0.102	30.85	3.36	0.00	0.00	26.50	0.00	0.154 1.042	112.842	0.283	3.512394753E+0000	1.748463488E+0000	-6.017050618E+0000	1.382
51.323	0.102	30.85	3.24	0.00	0.00	26.50	0.00	0.123 0.981	112.871	0.301	2.887223429E+0000	1.384428204E+0000	-6.248058571E+0000	1.331
51.426	0.102	30.85	3.11	0.00	0.00	26.50	0.00	0.094 0.915	112.903	0.322	2.238329356E+0000	1.032351327E+0000	-6.394261646E+0000	1.280
51.528	0.102	30.85	2.99	0.00	0.00	26.50	0.00	0.067 0.851	112.937	0.344	1.568196317E+0000	6.946646748E-0001	-6.668329190E+0000	1.229
51.630	0.102	30.85	2.86	0.00	0.00	26.50	0.00	0.042 0.796	112.974	0.365	9.014332850E-0001	3.828866592E-0001	-6.167881082E+0000	1.179
51.733	0.096	30.85	2.57	0.00	0.00	26.50	0.00	0.019 0.754	113.012	0.385	3.457690890E-0001	1.406898842E-0001	-4.539635179E+0000	1.129

Parametri Geotecnici degli strati

N.	phi`	C`	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Sumulazione: CA_S1S2-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

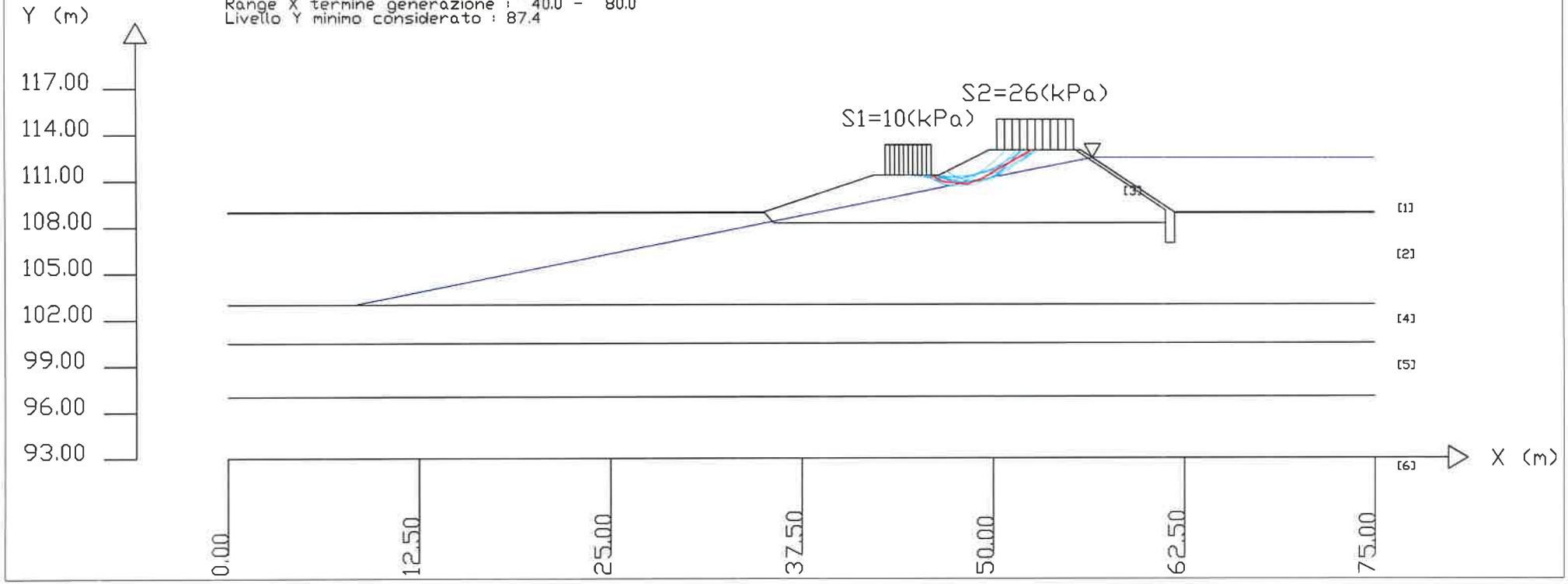
Fs minimo : 1.324
Range Fs : 1.324 1.438
Differenza % Range Fs : 7.9
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.324
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.12787
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 55.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

SOVRACCARICO N.2

carico (Kpa): 26.00
posizione da m.: 50.30
a m.: 55.30

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 55.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37

RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	1.324	- Min. -	X	Y	Lambda=	0.562
			45.95	111.40		
			46.77	110.98		
			48.31	110.81		
			49.16	111.08		
			50.84	112.06		
			52.48	113.01		
			52.55	113.05		
Fattore di sicurezza (FS)	1.335	- N.2 --	X	Y	Lambda=	0.579
			45.76	111.40		
			47.94	110.82		
			48.99	111.08		
			49.64	111.33		
			50.47	111.65		
			51.18	112.24		
			51.92	113.05		
Fattore di sicurezza (FS)	1.364	- N.3 --	X	Y	Lambda=	0.520
			45.97	111.40		
			47.23	111.08		
			47.80	110.94		
			48.38	110.99		

				49.87	111.21	
				51.80	112.40	
				52.82	113.05	
Fattore di sicurezza (FS)	1.368	- N.4 --	X	Y	Lambda=	0.580
			46.99	111.65		
			47.53	111.34		
			48.31	111.00		
			49.55	111.15		
			50.25	111.40		
			50.72	111.80		
			51.79	112.99		
			51.83	113.05		
Fattore di sicurezza (FS)	1.411	- N.5 --	X	Y	Lambda=	0.485
			45.53	111.40		
			46.86	110.78		
			47.68	110.64		
			48.89	110.81		
			50.20	111.34		
			51.10	111.79		
			51.63	112.12		
			52.84	113.05		
Fattore di sicurezza (FS)	1.417	- N.6 --	X	Y	Lambda=	0.492
			45.95	111.40		
			48.12	110.92		
			49.85	111.06		
			51.62	112.13		
			52.43	112.62		
			52.87	112.94		
			53.02	113.05		
Fattore di sicurezza (FS)	1.426	- N.7 --	X	Y	Lambda=	0.502
			45.48	111.40		
			46.23	111.33		
			47.43	111.28		
			48.23	111.34		
			48.80	111.43		
			49.52	111.55		
			50.00	111.73		
			52.18	112.75		

52.58 113.05

Fattore di sicurezza (FS) 1.434 - N.8 -- X Y Lambda= 0.533

45.04 111.40
46.98 110.90
48.20 111.26
49.97 111.80
51.20 112.49
51.85 112.86
52.18 113.05

Fattore di sicurezza (FS) 1.435 - N.9 -- X Y Lambda= 0.550

45.48 111.40
46.94 110.72
47.65 110.76
48.86 111.32
50.14 112.32
50.59 112.75
50.86 113.05

Fattore di sicurezza (FS) 1.438 - N.10 -- X Y Lambda= 0.496

44.37 111.40
45.59 111.28
47.20 111.23
48.23 111.21
50.14 111.76
50.87 112.33
51.37 112.81
51.61 113.05

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.324	89.2	67.3	15.1	Surplus
2	1.335	82.8	62.0	14.6	Surplus
3	1.364	96.3	70.6	18.6	Surplus
4	1.368	76.0	55.5	14.9	Surplus
5	1.411	111.2	78.8	24.5	Surplus
6	1.417	105.1	74.2	23.5	Surplus
7	1.426	77.8	54.6	17.8	Surplus

8	1.434	75.9	52.9	17.7	Surplus
9	1.435	56.3	39.2	13.1	Surplus
10	1.438	69.8	48.6	16.4	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 13.1

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--
45.953	0.047	-27.35	0.48	0.00	0.00	26.50	0.00	0.000 3.421	111.400	-0.440	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.120
46.000	0.104	-27.35	0.11	0.00	0.00	26.50	0.00	0.004 3.421	111.379	-0.440	5.421010862E-0005	2.451964615E-0006	3.602787558E-0004	0.120
46.104	0.104	-27.35	0.22	0.00	0.00	26.50	0.00	0.012 3.505	111.334	-0.440	5.421010862E-0005	2.451964615E-0006	2.927698242E-0004	0.120
46.207	0.104	-27.35	0.33	0.00	0.00	26.50	0.00	0.020 3.561	111.288	-0.440	1.148268015E-0004	5.193703928E-0006	3.824782160E-0002	0.120
46.311	0.104	-27.35	0.44	0.00	0.00	26.50	0.00	0.028 3.469	111.243	-0.440	7.973251836E-0003	3.613301576E-0004	1.136190993E+0000	0.120
46.414	0.086	-27.35	0.45	0.00	0.00	26.50	0.00	0.036 3.227	111.197	-0.402	1.868532897E-0001	1.100869925E-0002	2.291494069E+0000	0.156
46.500	0.104	-27.35	0.70	0.00	0.00	26.50	0.00	0.050 2.955	111.167	-0.304	4.262948195E-0001	3.155828588E-0002	3.298024662E+0000	0.197
46.604	0.104	-27.35	0.92	0.00	0.00	26.50	0.00	0.076 2.609	111.140	-0.216	8.301773739E-0001	7.753658677E-0002	4.477352729E+0000	0.248
46.707	0.061	-27.35	0.65	0.00	0.00	26.50	0.00	0.112 2.299	111.122	-0.151	1.345775030E+0000	1.519157857E-0001	5.447935160E+0000	0.300
46.768	0.104	-6.13	1.22	0.00	0.00	26.50	0.00	0.137 2.143	111.115	-0.080	1.694594523E+0000	2.102632432E-0001	5.949808142E+0000	0.330
46.872	0.104	-6.13	1.36	0.00	0.00	26.50	0.00	0.141 1.916	111.109	-0.050	2.356452827E+0000	3.324180392E-0001	6.848801738E+0000	0.375
46.975	0.104	-6.13	1.49	0.00	0.00	26.50	0.00	0.149 1.729	111.105	-0.042	3.109950427E+0000	4.900383163E-0001	7.712772840E+0000	0.418
47.079	0.104	-6.13	1.62	0.00	0.00	26.50	0.00	0.155 1.577	111.100	-0.023	3.957990860E+0000	6.888727402E-0001	8.702831278E+0000	0.462
47.182	0.104	-6.13	1.75	0.00	0.00	26.50	0.00	0.166 1.457	111.100	0.019	4.917797816E+0000	9.280298459E-0001	9.857291806E+0000	0.501
47.286	0.104	-6.13	1.88	0.00	0.00	26.50	0.00	0.181 1.363	111.104	0.063	5.997453002E+0000	1.219912381E+0000	1.096450892E+0001	0.540
47.389	0.104	-6.13	2.01	0.00	0.00	26.50	0.00	0.201 1.289	111.113	0.102	7.182465653E+0000	1.566508208E+0000	1.190910701E+0001	0.579
47.493	0.104	-6.13	2.14	0.00	0.00	26.50	0.00	0.225 1.229	111.125	0.132	8.457611327E+0000	1.968918308E+0000	1.269343057E+0001	0.618
47.596	0.104	-6.13	2.27	0.00	0.00	26.50	0.00	0.251 1.177	111.140	0.159	9.803029304E+0000	2.425663835E+0000	1.325994482E+0001	0.657

47.700	0.104	-6.13	2.40	0.00	0.00	26.50	0.00	0.280	111.158	0.180	1.119464615E+0001	2.948706142E+0000	1.358479727E+0001	0.700
								1.132						
47.803	0.104	-6.13	2.54	0.00	0.00	26.50	0.00	0.310	111.177	0.197	1.261425677E+0001	3.510606753E+0000	1.385470681E+0001	0.739
								1.095						
47.907	0.060	-6.13	1.54	0.00	0.00	26.50	0.00	0.343	111.199	0.212	1.404992184E+0001	4.105128850E+0000	1.375857267E+0001	0.776
								1.068						
47.967	0.104	-6.13	2.74	0.01	0.16	26.50	0.00	0.363	111.212	0.233	1.486897856E+0001	4.457629864E+0000	1.330975229E+0001	0.797
								1.057						
48.071	0.104	-6.13	2.88	0.02	0.47	26.50	0.00	0.399	111.237	0.250	1.617993819E+0001	5.102765416E+0000	1.191126995E+0001	0.839
								1.044						
48.174	0.104	-6.13	3.01	0.03	0.78	26.50	0.00	0.437	111.264	0.300	1.732735123E+0001	5.711003202E+0000	1.028266468E+0001	0.878
								1.038						
48.278	0.034	-6.13	1.01	0.03	0.99	26.50	0.00	0.483	111.299	0.343	1.830301596E+0001	6.250715319E+0000	8.542686420E+0000	0.908
								1.037						
48.312	0.104	17.76	3.14	0.03	0.93	26.50	0.00	0.499	111.311	0.362	1.858091855E+0001	6.400718844E+0000	7.971713346E+0000	0.918
								1.038						
48.415	0.104	17.76	3.18	0.03	0.81	26.50	0.00	0.503	111.349	0.373	1.932000437E+0001	6.793854979E+0000	6.346057910E+0000	0.937
								1.044						
48.519	0.104	17.76	3.22	0.02	0.70	26.50	0.00	0.510	111.388	0.390	1.990261679E+0001	7.115935119E+0000	4.935215125E+0000	0.952
								1.054						
48.622	0.104	17.76	3.26	0.02	0.58	26.50	0.00	0.517	111.429	0.404	2.034147306E+0001	7.381492923E+0000	3.512663379E+0000	0.966
								1.067						
48.726	0.104	17.76	3.29	0.02	0.46	26.50	0.00	0.527	111.472	0.420	2.062711742E+0001	7.571443945E+0000	2.019213949E+0000	0.976
								1.083						
48.829	0.104	17.76	3.33	0.01	0.34	26.50	0.00	0.538	111.516	0.446	2.076599049E+0001	7.709027872E+0000	7.059934649E-0001	0.987
								1.101						
48.933	0.104	17.76	3.37	0.01	0.22	26.50	0.00	0.553	111.564	0.455	2.078228195E+0001	7.824209882E+0000	-3.532877333E-0001	1.001
								1.120						
49.036	0.104	17.76	3.41	0.00	0.11	26.50	0.00	0.566	111.611	0.443	2.069751412E+0001	7.863985654E+0000	-1.283327841E+0000	1.009
								1.144						
49.140	0.019	17.76	0.64	0.00	0.04	26.50	0.00	0.578	111.656	0.443	2.051795626E+0001	7.834596579E+0000	-2.168684303E+0000	1.014
								1.172						
49.159	0.004	30.08	0.14	0.00	0.02	26.50	0.00	0.581	111.665	0.460	2.047439209E+0001	7.822900912E+0000	-2.324091321E+0000	1.015
								1.178						
49.164	0.104	30.08	3.42	0.00	0.00	26.50	0.00	0.581	111.667	0.454	2.046425409E+0001	7.819254431E+0000	-2.358404309E+0000	1.015
								1.179						
49.267	0.104	30.08	3.40	0.00	0.00	26.50	0.00	0.568	111.714	0.453	2.017902517E+0001	7.710270371E+0000	-3.140091541E+0000	1.015
								1.206						
49.371	0.104	30.08	3.39	0.00	0.00	26.50	0.00	0.554	111.761	0.461	1.981651075E+0001	7.571756037E+0000	-3.851545658E+0000	1.015
								1.227						
49.474	0.104	30.08	3.37	0.00	0.00	26.50	0.00	0.543	111.809	0.478	1.938434541E+0001	7.406628556E+0000	-4.482280046E+0000	1.015
								1.234						
49.578	0.104	30.08	3.35	0.00	0.00	26.50	0.00	0.534	111.860	0.496	1.889012900E+0001	7.217791773E+0000	-5.057286960E+0000	1.015
								1.226						
49.681	0.104	30.08	3.34	0.00	0.00	26.50	0.00	0.526	111.912	0.512	1.834090857E+0001	7.007938327E+0000	-5.529618029E+0000	1.015
								1.205						
49.785	0.015	30.08	0.49	0.00	0.00	26.50	0.00	0.520	111.966	0.520	1.775043420E+0001	6.782322027E+0000	-5.854758329E+0000	1.015
								1.173						
49.800	0.104	30.08	3.26	0.00	0.00	26.50	0.00	0.519	111.974	0.557	1.766032001E+0001	6.747889995E+0000	-5.892247777E+0000	1.015
								1.167						
49.904	0.104	30.08	3.14	0.00	0.00	26.50	0.00	0.517	112.032	0.578	1.703858847E+0001	6.510330541E+0000	-6.115994971E+0000	1.015
								1.125						
50.007	0.104	30.08	3.01	0.00	0.00	26.50	0.00	0.519	112.094	0.604	1.639692956E+0001	6.265156968E+0000	-6.256615064E+0000	1.015
								1.083						
50.111	0.104	30.08	2.89	0.00	0.00	26.50	0.00	0.522	112.157	0.589	1.574250597E+0001	6.015106096E+0000	-6.409298430E+0000	1.015
								1.044						
50.214	0.086	30.08	2.30	0.00	0.00	26.50	0.00	0.521	112.216	0.548	1.506365889E+0001	6.035020151E+0000	-6.735091073E+0000	1.064
								1.010						
50.300	0.104	30.08	5.37	0.00	0.00	26.50	0.00	0.516	112.261	0.522	1.447000950E+0001	6.573895235E+0000	-7.085532711E+0000	1.207
								0.987						
50.404	0.104	30.08	5.24	0.00	0.00	26.50	0.00	0.510	112.314	0.501	1.371814992E+0001	7.111300027E+0000	-7.440203641E+0000	1.377
								0.962						
50.507	0.104	30.08	5.12	0.00	0.00	26.50	0.00	0.500	112.365	0.470	1.292894608E+0001	7.183277566E+0000	-7.779106479E+0000	1.476
								0.940						
50.611	0.104	30.08	4.99	0.00	0.00	26.50	0.00	0.487	112.412	0.436	1.211754641E+0001	6.817360721E+0000	-7.838152933E+0000	1.494
								0.921						
50.714	0.104	30.08	4.87	0.00	0.00	26.50	0.00	0.470	112.455	0.398	1.131697490E+0001	6.235830419E+0000	-7.592489575E+0000	1.463
								0.905						
50.818	0.020	30.08	0.90	0.00	0.00	26.50	0.00	0.449	112.494	0.368	1.054655103E+0001	5.683375294E+0000	-7.305619360E+0000	1.431
								0.893						

50.837	0.104	30.18	4.72	0.00	0.00	26.50	0.00	0.444 0.891	112.500	0.317	1.040449102E+0001	5.577746746E+0000	-7.244158597E+0000	1.424
50.941	0.104	30.18	4.59	0.00	0.00	26.50	0.00	0.417 0.884	112.533	0.308	9.672759787E+0000	5.067965799E+0000	-6.902846088E+0000	1.391
51.044	0.104	30.18	4.47	0.00	0.00	26.50	0.00	0.388 0.880	112.564	0.293	8.968777570E+0000	4.574138756E+0000	-6.740489327E+0000	1.354
51.148	0.104	30.18	4.34	0.00	0.00	26.50	0.00	0.357 0.881	112.594	0.281	8.268964978E+0000	4.083794321E+0000	-6.806254625E+0000	1.312
51.251	0.104	30.18	4.22	0.00	0.00	26.50	0.00	0.325 0.887	112.622	0.271	7.559576605E+0000	3.627835167E+0000	-6.874661643E+0000	1.274
51.355	0.104	30.18	4.09	0.00	0.00	26.50	0.00	0.293 0.898	112.650	0.270	6.845083969E+0000	3.188619254E+0000	-6.927547304E+0000	1.237
51.458	0.104	30.18	3.97	0.00	0.00	26.50	0.00	0.261 0.909	112.678	0.281	6.128905294E+0000	2.768751896E+0000	-6.880600406E+0000	1.200
51.562	0.104	30.18	3.84	0.00	0.00	26.50	0.00	0.231 0.916	112.708	0.295	5.426622859E+0000	2.375124327E+0000	-6.661661344E+0000	1.162
51.665	0.104	30.18	3.72	0.00	0.00	26.50	0.00	0.201 0.912	112.739	0.299	4.752215581E+0000	2.013071424E+0000	-6.373865796E+0000	1.125
51.769	0.104	30.18	3.59	0.00	0.00	26.50	0.00	0.172 0.896	112.770	0.302	4.110297274E+0000	1.683305833E+0000	-5.998328185E+0000	1.088
51.872	0.104	30.18	3.46	0.00	0.00	26.50	0.00	0.144 0.867	112.802	0.315	3.507800534E+0000	1.387197463E+0000	-5.682065174E+0000	1.050
51.976	0.104	30.18	3.34	0.00	0.00	26.50	0.00	0.117 0.825	112.835	0.332	2.923572800E+0000	1.115014639E+0000	-5.650748825E+0000	1.013
52.079	0.104	30.18	3.21	0.00	0.00	26.50	0.00	0.092 0.770	112.870	0.349	2.333127781E+0000	8.570208558E-0001	-5.743028879E+0000	0.976
52.183	0.104	30.18	3.09	0.00	0.00	26.50	0.00	0.069 0.712	112.907	0.366	1.737791889E+0000	6.134655475E-0001	-5.824545335E+0000	0.938
52.286	0.104	30.18	2.96	0.00	0.00	26.50	0.00	0.047 0.658	112.946	0.381	1.130202352E+0000	3.833916594E-0001	-5.804500988E+0000	0.901
52.390	0.093	30.18	2.56	0.00	0.00	26.50	0.00	0.027 0.614	112.986	0.394	5.682788220E-0001	1.851255134E-0001	-4.882722547E+0000	0.865
52.483	0.063	30.28	1.66	0.00	0.00	26.50	0.00	0.010 0.585	113.024	0.408	1.799922013E-0001	5.660492059E-0002	-3.382182021E+0000	0.835

Parametri Geotecnici degli strati

N.	phi`	C`	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S1S2-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

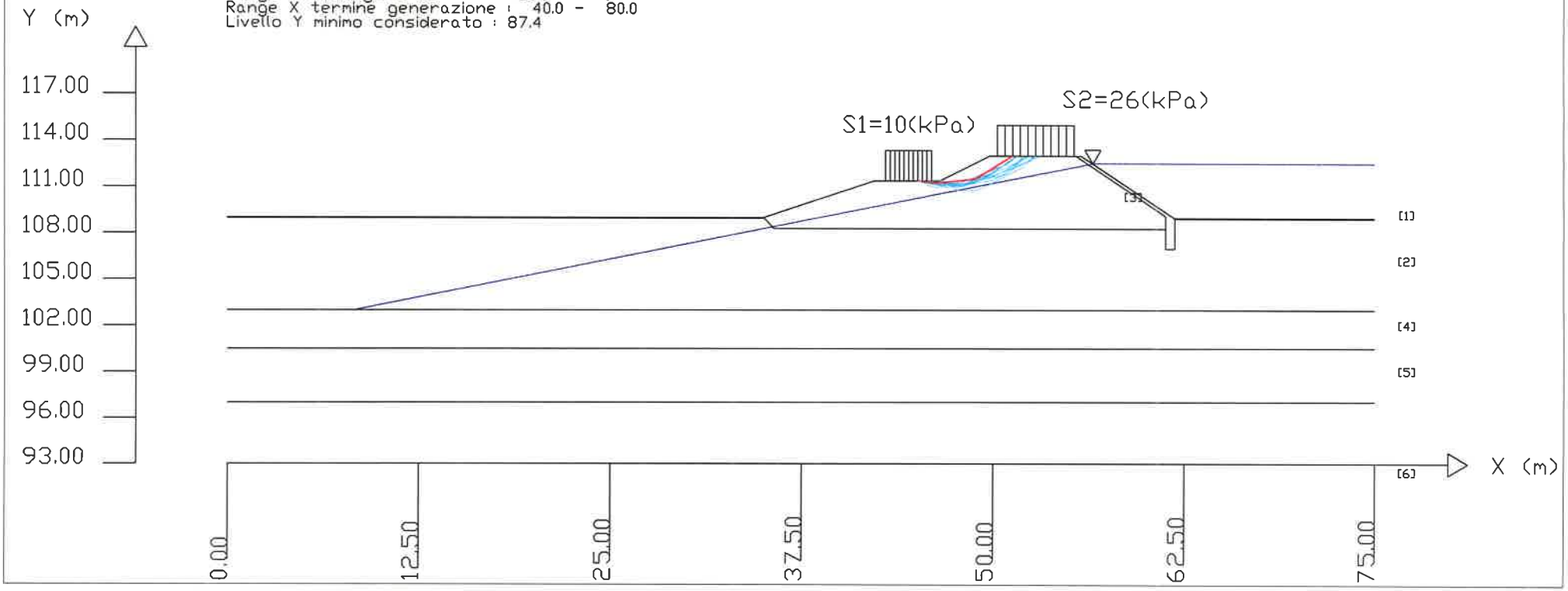
Fs minimo : 1.334
Range Fs : 1.334 1.436
Differenza % Range Fs : 7.1
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 1.334
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.12612
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 30.0 - 55.0
Range X termine generazione : 40.0 - 80.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 100.00
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

SOVRACCARICO N.2

carico (Kpa): 26.00
posizione da m.: 50.30
a m.: 55.30

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 55.45 61.90 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 30.00 55.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37

RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 40.00 80.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
---
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	1.334	- Min. -	X	Y	Lambda=	0.639
			45.25	111.40		
			45.81	111.33		
			46.49	111.28		
			48.18	111.47		
			48.90	111.55		
			50.30	112.43		
			51.29	113.05		
Fattore di sicurezza (FS)	1.336	- N.2 --	X	Y	Lambda=	0.595
			45.18	111.40		
			46.22	111.15		
			47.73	111.07		
			49.65	111.82		
			50.17	112.07		
			51.54	113.05		
Fattore di sicurezza (FS)	1.339	- N.3 --	X	Y	Lambda=	0.561
			45.78	111.40		
			46.61	111.04		
			48.45	111.28		
			49.28	111.54		
			50.36	111.88		

			50.82	112.09		
			52.40	113.05		
Fattore di sicurezza (FS)	1.347	- N.4 --	X	Y	Lambda=	0.640
			45.48	111.40		
			46.31	111.17		
			47.87	111.28		
			49.00	111.73		
			50.12	112.19		
			50.87	112.49		
			51.65	113.05		
Fattore di sicurezza (FS)	1.365	- N.5 --	X	Y	Lambda=	0.517
			46.61	111.46		
			47.78	110.79		
			48.77	110.77		
			49.34	110.95		
			50.57	111.59		
			51.98	112.32		
			52.81	113.05		
Fattore di sicurezza (FS)	1.372	- N.6 --	X	Y	Lambda=	0.512
			45.89	111.40		
			47.25	111.25		
			48.32	111.14		
			50.01	111.47		
			51.64	112.35		
			52.19	112.64		
			52.67	113.00		
			52.74	113.05		
Fattore di sicurezza (FS)	1.409	- N.7 --	X	Y	Lambda=	0.569
			46.65	111.48		
			47.55	111.10		
			48.41	111.29		
			50.69	111.78		
			51.20	112.11		
			51.65	112.59		
			51.96	113.05		
Fattore di sicurezza (FS)	1.420	- N.8 --	X	Y	Lambda=	0.548
			46.47	111.40		

				47.18	111.16	
				47.94	111.01	
				50.01	111.72	
				51.48	112.35	
				52.28	112.69	
				52.90	112.97	
				53.06	113.05	
Fattore di sicurezza (FS)	1.429	- N.9 --	X	Y	Lambda=	0.549
			45.24	111.40		
			45.73	111.14		
			46.31	110.96		
			47.87	111.03		
			48.80	111.29		
			50.39	112.23		
			51.01	112.60		
			51.54	113.05		
Fattore di sicurezza (FS)	1.436	- N.10 --	X	Y	Lambda=	0.526
			45.09	111.40		
			47.31	111.06		
			48.51	111.24		
			50.61	112.17		
			51.34	112.50		
			52.27	113.05		

---------- ANALISI DEFICIT DI RESISTENZA ----------

\# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

\# Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.334	45.6	34.2	8.0	Surplus
2	1.336	59.8	44.7	10.6	Surplus
3	1.339	76.1	56.8	13.6	Surplus
4	1.347	53.9	40.0	9.9	Surplus
5	1.365	100.8	73.9	19.6	Surplus
6	1.372	86.7	63.2	17.2	Surplus
7	1.409	73.0	51.8	16.0	Surplus
8	1.420	86.9	61.2	19.6	Surplus
9	1.429	65.9	46.1	15.2	Surplus
10	1.436	75.4	52.5	17.7	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 8.0

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
45.255	0.096	-6.93	0.97	0.00	0.00	26.50	0.00	0.000 0.215	111.400	-0.103	0.000000000E+0000	0.000000000E+0000	2.455452101E+0000	0.502	
45.351	0.096	-6.93	0.99	0.00	0.00	26.50	0.00	0.002 0.215	111.390	-0.103	3.119527583E-0001	5.856787476E-0002	4.127201969E+0000	0.502	
45.446	0.096	-6.93	1.01	0.00	0.00	26.50	0.00	0.004 0.215	111.380	-0.103	7.759105766E-0001	1.490101395E-0001	5.425101507E+0000	0.514	
45.542	0.096	-6.93	1.03	0.00	0.00	26.50	0.00	0.005 0.215	111.370	-0.103	1.313290027E+0000	2.581919077E-0001	5.636927132E+0000	0.526	
45.637	0.096	-6.93	1.05	0.00	0.00	26.50	0.00	0.007 0.217	111.361	-0.102	1.830290069E+0000	3.675220442E-0001	5.156492237E+0000	0.537	
45.733	0.073	-6.93	0.82	0.00	0.00	26.50	0.00	0.009 0.219	111.351	-0.090	2.309005232E+0000	4.636479961E-0001	4.851380418E+0000	0.537	
45.805	0.096	-4.33	1.09	0.00	0.00	26.50	0.00	0.012 0.221	111.345	-0.074	2.649935817E+0000	5.321068201E-0001	4.525562195E+0000	0.537	
45.901	0.096	-4.33	1.10	0.00	0.00	26.50	0.00	0.013 0.226	111.338	-0.070	3.057347183E+0000	6.139149775E-0001	3.980209897E+0000	0.537	
45.997	0.003	-4.33	0.04	0.00	0.00	26.50	0.00	0.013 0.232	111.332	-0.066	3.408051582E+0000	6.843363820E-0001	3.347873205E+0000	0.537	
46.000	0.096	-4.33	0.16	0.00	0.00	26.50	0.00	0.013 0.233	111.332	-0.033	3.419240331E+0000	6.865830816E-0001	3.324788351E+0000	0.537	
46.096	0.096	-4.33	0.18	0.00	0.00	26.50	0.00	0.018 0.241	111.329	-0.022	3.705051138E+0000	7.439738602E-0001	2.637687805E+0000	0.537	
46.191	0.096	-4.33	0.19	0.00	0.00	26.50	0.00	0.024 0.255	111.328	-0.012	3.919794182E+0000	7.870942397E-0001	1.870144716E+0000	0.537	
46.287	0.096	-4.33	0.21	0.00	0.00	26.50	0.00	0.030 0.275	111.326	-0.004	4.070656911E+0000	8.173874591E-0001	1.345292954E+0000	0.537	
46.382	0.096	-4.33	0.22	0.00	0.00	26.50	0.00	0.037 0.304	111.327	0.014	4.188150293E+0000	8.409801172E-0001	1.159994749E+0000	0.537	
46.478	0.012	-4.33	0.03	0.00	0.00	26.50	0.00	0.047 0.346	111.329	0.025	4.295970298E+0000	8.626303623E-0001	1.079901027E+0000	0.537	
46.490	0.010	6.28	0.02	0.00	0.00	26.50	0.00	0.048 0.352	111.330	0.043	4.308717025E+0000	8.651899037E-0001	1.064048823E+0000	0.537	
46.500	0.096	6.28	0.26	0.00	0.00	26.50	0.00	0.048 0.357	111.330	0.059	4.319486326E+0000	8.673523783E-0001	1.051026135E+0000	0.537	
46.596	0.096	6.28	0.33	0.00	0.00	26.50	0.00	0.043 0.411	111.336	0.072	4.415478339E+0000	8.866275638E-0001	9.734232979E-0001	0.537	
46.691	0.096	6.28	0.41	0.00	0.00	26.50	0.00	0.040 0.475	111.344	0.094	4.509353570E+0000	9.054776999E-0001	1.012239962E+0000	0.537	
46.787	0.096	6.28	0.48	0.00	0.00	26.50	0.00	0.040 0.544	111.354	0.116	4.612787968E+0000	9.262473156E-0001	1.168160602E+0000	0.537	
46.882	0.096	6.28	0.55	0.00	0.00	26.50	0.00	0.042 0.608	111.366	0.140	4.734456625E+0000	9.506783685E-0001	1.381214012E+0000	0.537	

46.978	0.096	6.28	0.62	0.00	0.00	26.50	0.00	0.046 0.663	111.381	0.161	4.879186561E+0000	9.797401237E-0001	1.653557786E+0000	0.537
47.074	0.096	6.28	0.69	0.00	0.00	26.50	0.00	0.051 0.711	111.397	0.168	5.049762983E+0000	1.013991850E+0000	1.904263800E+0000	0.537
47.169	0.096	6.28	0.76	0.00	0.00	26.50	0.00	0.057 0.757	111.413	0.182	5.240746033E+0000	1.052341226E+0000	2.080782165E+0000	0.537
47.265	0.096	6.28	0.84	0.00	0.00	26.50	0.00	0.065 0.801	111.431	0.210	5.446833625E+0000	1.093723592E+0000	2.238545485E+0000	0.537
47.360	0.096	6.28	0.91	0.00	0.00	26.50	0.00	0.076 0.841	111.453	0.219	5.669994714E+0000	1.138534314E+0000	2.430436992E+0000	0.537
47.456	0.096	6.28	0.98	0.00	0.00	26.50	0.00	0.086 0.876	111.473	0.213	5.911729976E+0000	1.187074728E+0000	2.630233614E+0000	0.537
47.551	0.096	6.28	1.05	0.00	0.00	26.50	0.00	0.096 0.907	111.494	0.215	6.173394250E+0000	1.239616885E+0000	2.847596195E+0000	0.537
47.647	0.096	6.28	1.12	0.00	0.00	26.50	0.00	0.106 0.935	111.514	0.223	6.456439052E+0000	1.350468120E+0000	3.074877961E+0000	0.559
47.743	0.096	6.28	1.20	0.00	0.00	26.50	0.00	0.117 0.962	111.536	0.232	6.760004257E+0000	1.507262612E+0000	3.262660447E+0000	0.596
47.838	0.096	6.28	1.27	0.00	0.00	26.50	0.00	0.129 0.991	111.559	0.240	7.080062038E+0000	1.676025607E+0000	3.445903031E+0000	0.633
47.934	0.096	6.28	1.34	0.00	0.00	26.50	0.00	0.142 1.020	111.582	0.254	7.421979514E+0000	1.868454749E+0000	3.725417727E+0000	0.673
48.029	0.096	6.28	1.41	0.00	0.00	26.50	0.00	0.157 1.051	111.607	0.268	7.794173945E+0000	2.071089413E+0000	4.060461410E+0000	0.711
48.125	0.055	6.28	0.85	0.00	0.00	26.50	0.00	0.172 1.083	111.633	0.273	8.194951471E+0000	2.283582357E+0000	4.307948556E+0000	0.745
48.180	0.096	6.38	1.52	0.00	0.00	26.50	0.00	0.181 1.101	111.649	0.283	8.437076283E+0000	2.410056581E+0000	4.414390742E+0000	0.764
48.276	0.096	6.38	1.60	0.00	0.00	26.50	0.00	0.198 1.137	111.676	0.296	8.864661546E+0000	2.646643682E+0000	4.511563964E+0000	0.799
48.372	0.096	6.38	1.67	0.00	0.00	26.50	0.00	0.217 1.181	111.705	0.312	9.295128211E+0000	2.904631796E+0000	4.470762182E+0000	0.836
48.467	0.096	6.38	1.74	0.00	0.00	26.50	0.00	0.237 1.238	111.736	0.330	9.714571368E+0000	3.181012109E+0000	4.281250441E+0000	0.876
48.563	0.096	6.38	1.81	0.00	0.00	26.50	0.00	0.258 1.312	111.768	0.349	1.011604854E+0001	3.450451354E+0000	4.140395380E+0000	0.912
48.658	0.096	6.38	1.88	0.00	0.00	26.50	0.00	0.282 1.406	111.803	0.370	1.049632017E+0001	3.735617933E+0000	3.714334419E+0000	0.952
48.754	0.096	6.38	1.95	0.00	0.00	26.50	0.00	0.308 1.529	111.839	0.393	1.080333930E+0001	3.977026239E+0000	2.595862217E+0000	0.985
48.850	0.046	6.38	0.96	0.00	0.00	26.50	0.00	0.336 1.691	111.878	0.414	1.097828611E+0001	4.134808401E+0000	1.051549892E+0000	1.007
48.895	0.096	32.10	2.01	0.00	0.00	26.50	0.00	0.350 1.783	111.897	0.466	1.101071206E+0001	4.173810469E+0000	3.758285687E-0001	1.014
48.991	0.096	32.10	1.99	0.00	0.00	26.50	0.00	0.336 2.009	111.943	0.495	1.097242045E+0001	4.180123765E+0000	-1.177309707E+0000	1.019
49.086	0.096	32.10	1.96	0.00	0.00	26.50	0.00	0.325 2.269	111.992	0.512	1.079672418E+0001	4.113189383E+0000	-2.402964187E+0000	1.019
49.182	0.096	32.10	1.94	0.00	0.00	26.50	0.00	0.314 2.542	112.041	0.521	1.053285988E+0001	4.012665947E+0000	-3.026963948E+0000	1.019
49.277	0.096	32.10	1.92	0.00	0.00	26.50	0.00	0.305 2.809	112.092	0.533	1.022728586E+0001	3.896252504E+0000	-3.381586724E+0000	1.019
49.373	0.096	32.10	1.89	0.00	0.00	26.50	0.00	0.296 3.059	112.143	0.578	9.881448372E+0000	3.764500034E+0000	-3.841776251E+0000	1.019
49.469	0.096	32.10	1.87	0.00	0.00	26.50	0.00	0.295 3.273	112.202	0.617	9.498421587E+0000	3.618579690E+0000	-4.132904157E+0000	1.019
49.564	0.096	32.10	1.85	0.00	0.00	26.50	0.00	0.294 3.416	112.261	0.605	9.099340934E+0000	3.466543362E+0000	-4.179276843E+0000	1.019
49.660	0.096	32.10	1.82	0.00	0.00	26.50	0.00	0.291 3.448	112.318	0.587	8.704428402E+0000	3.316094947E+0000	-4.075700635E+0000	1.019
49.755	0.045	32.10	0.84	0.00	0.00	26.50	0.00	0.287 3.347	112.373	0.568	8.320180979E+0000	3.169709581E+0000	-3.948396858E+0000	1.019
49.800	0.096	32.10	1.74	0.00	0.00	26.50	0.00	0.283 3.259	112.398	0.527	8.145470088E+0000	3.103150598E+0000	-3.876369222E+0000	1.019
49.896	0.096	32.10	1.63	0.00	0.00	26.50	0.00	0.272 3.009	112.447	0.508	7.779538330E+0000	2.963742885E+0000	-3.805421107E+0000	1.019
49.991	0.096	32.10	1.51	0.00	0.00	26.50	0.00	0.260 2.722	112.495	0.489	7.412680765E+0000	2.823982471E+0000	-3.895773618E+0000	1.019
50.087	0.096	32.10	1.40	0.00	0.00	26.50	0.00	0.246 2.433	112.541	0.471	7.031993232E+0000	2.678953304E+0000	-4.067605193E+0000	1.019

50.182	0.096	32.10	1.28	0.00	0.00	26.50	0.00	0.230	112.585	0.454	6.642013880E+0000	2.530384265E+0000	-4.079938728E+0000	1.019
50.278	0.020	32.10	0.25	0.00	0.00	26.50	0.00	2.170 0.213	112.627	0.442	6.244162909E+0000	2.579688551E+0000	-4.321134008E+0000	1.105
50.298	0.002	32.20	0.03	0.00	0.00	26.50	0.00	1.947 0.209	112.636	0.422	6.157883245E+0000	2.651556832E+0000	-4.433151633E+0000	1.152
50.300	0.096	32.20	3.64	0.00	0.00	26.50	0.00	1.906 0.208	112.637	0.440	6.147424000E+0000	2.663402221E+0000	-4.448032097E+0000	1.159
50.396	0.096	32.20	3.53	0.00	0.00	26.50	0.00	1.901 0.190	112.679	0.459	5.685804863E+0000	2.951915862E+0000	-5.272324633E+0000	1.389
50.491	0.096	32.20	3.41	0.00	0.00	26.50	0.00	1.724 0.176	112.725	0.482	5.136825671E+0000	3.032191720E+0000	-6.167113425E+0000	1.579
50.587	0.096	32.20	3.29	0.00	0.00	26.50	0.00	1.573 0.162	112.771	0.490	4.507975779E+0000	2.880487547E+0000	-6.991508230E+0000	1.709
50.682	0.096	32.20	3.18	0.00	0.00	26.50	0.00	1.439 0.149	112.818	0.537	3.809457936E+0000	2.370645020E+0000	-7.542145540E+0000	1.665
50.778	0.096	32.20	3.06	0.00	0.00	26.50	0.00	1.315 0.145	112.874	0.480	3.084013720E+0000	1.850473297E+0000	-7.546881586E+0000	1.605
50.874	0.096	32.20	2.95	0.00	0.00	26.50	0.00	1.192 0.120	112.910	0.340	2.378989189E+0000	1.374430354E+0000	-7.181517003E+0000	1.545
50.969	0.096	32.20	2.83	0.00	0.00	26.50	0.00	1.070 0.089	112.939	0.311	1.704556139E+0000	9.469977075E-0001	-6.964399770E+0000	1.486
51.065	0.096	32.20	2.71	0.00	0.00	26.50	0.00	0.955 0.059	112.969	0.333	1.057708247E+0000	5.643979734E-0001	-6.453649649E+0000	1.427
51.160	0.096	32.20	2.60	0.00	0.00	26.50	0.00	0.855 0.032	113.002	0.359	4.975119787E-0001	2.547873326E-0001	-5.131921445E+0000	1.370
51.256	0.031	32.20	0.83	0.00	0.00	26.50	0.00	0.776 0.008	113.038	0.375	9.414361213E-0002	4.670358960E-0002	-3.287809988E+0000	1.327
								0.721					

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S2-F Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

Fs minimo : 1.604
Range Fs : 1.604 1.764
Differenza % Range Fs : 9.1
Coefficiente Sismico orizzontale - Kh: 0.014

GENERAZIONE SUPERFICI RANDOM

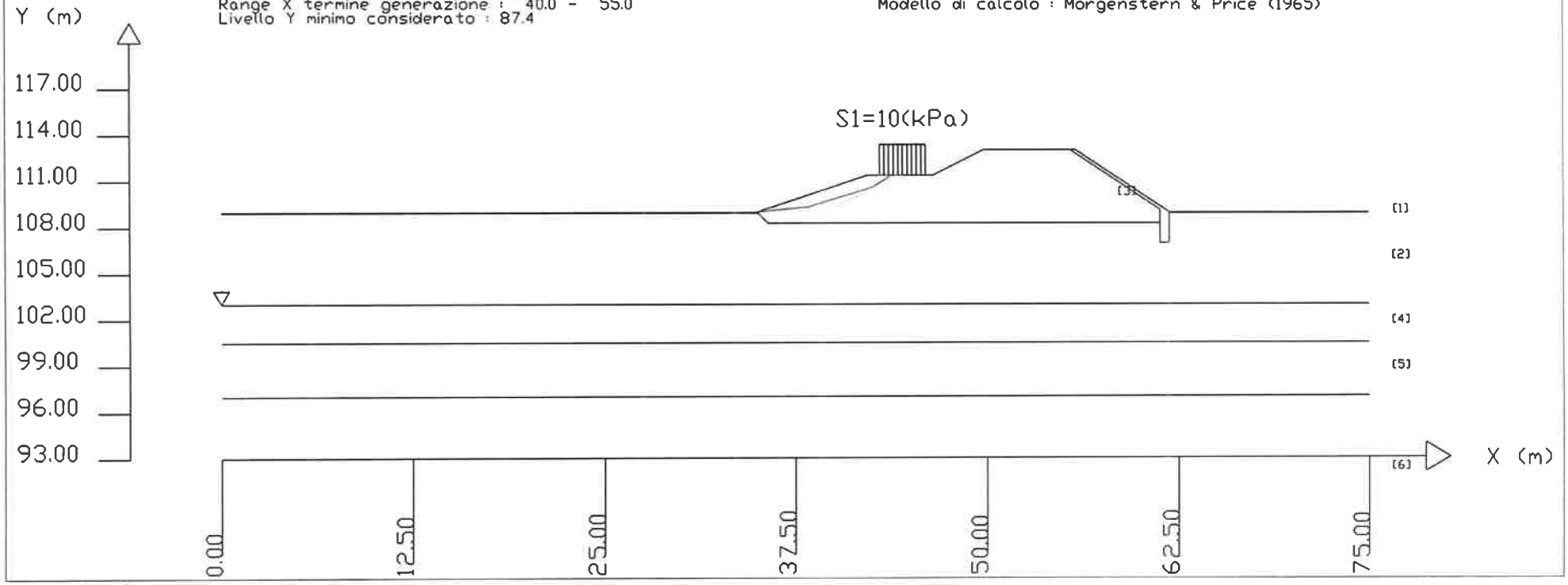
Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 25.0 - 40.0
Range X termine generazione : 40.0 - 55.0
Livello Y minimo considerato : 87.4

SSAP 4.1.3 (2012) - Slope Stability Analysis Program
Software by Dr.Geol. L.Borselli - www.lorenzo-borselli.eu
SSAP/DXF generator rel. 1.0.4 (2012)

Data : 08/12/2012
Localita' :
Descrizione :
n = No. strato o lente

Sn --> Sovraccarico

Modello di calcolo : Morgenstern & Price (1965)



File report: E:\ssap2010\1775\xstampa\CA_S2-F\CA_S2-F_report.txt
Data: 08/12/2012
Localita' :
Descrizione:

---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA
X Y (in m)

0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

Note: fi`_____ Angolo di attrito interno efficace(in gradi)
C` _____ Coesione efficace (in Kpa)
Cu _____ Resistenza al taglio Non drenata (in Kpa)
Gamm _____ Peso di volume terreno fuori falda (in KN/m^3)
Gamm_sat __ Peso di volume terreno immerso (in KN/m^3)
STR_IDX ___ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)
---- Per ammassi Rocciosi - Parametri Criterio di Rottura di Hoek (2002)-
sigci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)
GSI _____ Geological Strenght Index ammasso(adimensionale)
mi _____ Indice litologico ammasso(adimensionale)
D _____ Fattore di disturbo ammasso(adimensionale)

_____ SOVRACCARICHI PRESENTI _____
SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Fattore di sicurezza (FS) 1.604 - Min. - X Y Lambda= 0.354

X	Y
35.11	109.04
38.33	109.34
42.53	110.64
43.47	111.21
43.67	111.40

Coofficiente Sismico Critico (Kh) per ottnere FS=1 ---> Khcrit=0.18154

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.604	52.8	32.9	16.6	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 16.6

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
35.113	0.130	5.37	0.04	0.00	0.00	26.50	0.00	0.000	109.038	0.130	0.000000000E+0000	0.000000000E+0000	2.142803709E-0001	0.053	3.386
35.243	0.130	5.37	0.12	0.00	0.00	26.50	0.00	0.005	109.055	0.130	3.706626028E-0002	4.765786486E-0004	3.631653191E-0001	0.053	3.386
35.373	0.130	5.37	0.20	0.00	0.00	26.50	0.00	0.009	109.071	0.139	9.374825632E-0002	2.410732474E-0003	5.048874152E-0001	0.083	3.446
35.502	0.130	5.37	0.28	0.00	0.00	26.50	0.00	0.016	109.091	0.133	1.656934416E-0001	6.674159113E-0003	5.964111861E-0001	0.130	3.449
35.632	0.068	5.37	0.18	0.00	0.00	26.50	0.00	0.020	109.106	0.118	2.467821759E-0001	1.274154495E-0002	6.535050258E-0001	0.166	3.362
35.700	0.130	5.37	0.41	0.00	0.00	26.50	0.00	0.021	109.114	0.125	2.925944894E-0001	1.696962166E-0002	6.916276840E-0001	0.187	3.281
35.830	0.130	5.37	0.49	0.00	0.00	26.50	0.00	0.026	109.131	0.134	3.869615836E-0001	2.706802430E-0002	7.638597876E-0001	0.225	3.077
35.959	0.130	5.37	0.57	0.00	0.00	26.50	0.00	0.031	109.149	0.146	4.913056973E-0001	4.071990025E-0002	8.512141771E-0001	0.267	2.839
36.089	0.130	5.37	0.65	0.00	0.00	26.50	0.00	0.039	109.169	0.161	6.091118190E-0001	5.899419850E-0002	9.720771944E-0001	0.312	2.604
36.218	0.130	5.37	0.73	0.00	0.00	26.50	0.00	0.049	109.190	0.174	7.442478278E-0001	8.159025260E-0002	1.113970677E+0000	0.353	2.394
36.348	0.130	5.37	0.81	0.00	0.00	26.50	0.00	0.060	109.214	0.180	8.975002499E-0001	1.099305698E-0001	1.251552873E+0000	0.394	2.202
36.478	0.130	5.37	0.89	0.00	0.00	26.50	0.00	0.071	109.237	0.184	1.068863741E+0000	1.446629688E-0001	1.392188560E+0000	0.435	2.034
36.607	0.130	5.37	0.97	0.00	0.00	26.50	0.00	0.083	109.261	0.194	1.258085091E+0000	1.864485121E-0001	1.526047328E+0000	0.477	1.893
36.737	0.130	5.37	1.06	0.00	0.00	26.50	0.00	0.097	109.287	0.205	1.464110818E+0000	2.358063492E-0001	1.652258234E+0000	0.518	1.780
36.867	0.130	5.37	1.14	0.00	0.00	26.50	0.00	0.112	109.314	0.215	1.686381229E+0000	2.932873270E-0001	1.773647641E+0000	0.560	1.693
36.996	0.130	5.37	1.22	0.00	0.00	26.50	0.00	0.128	109.343	0.229	1.921592675E+0000	3.589010112E-0001	1.856043482E+0000	0.601	1.625
37.126	0.130	5.37	1.30	0.00	0.00	26.50	0.00	0.147	109.374	0.242	2.169889490E+0000	4.331753824E-0001	1.989723109E+0000	0.642	1.571
37.255	0.130	5.37	1.38	0.00	0.00	26.50	0.00	0.167	109.406	0.249	2.441097669E+0000	5.187030777E-0001	2.205778307E+0000	0.684	1.525
37.385	0.130	5.37	1.46	0.00	0.00	26.50	0.00	0.187	109.438	0.254	2.742089417E+0000	6.179164621E-0001	2.427538937E+0000	0.725	1.486
37.515	0.130	5.37	1.54	0.00	0.00	26.50	0.00	0.208	109.472	0.259	3.069314941E+0000	7.311187907E-0001	2.631241118E+0000	0.766	1.455
37.644	0.130	5.37	1.62	0.00	0.00	26.50	0.00	0.230	109.505	0.264	3.420570397E+0000	8.587686668E-0001	2.756848796E+0000	0.808	1.429
37.774	0.130	5.37	1.70	0.00	0.00	26.50	0.00	0.252	109.540	0.269	3.773588537E+0000	9.959162662E-0001	2.648905104E+0000	0.849	1.409
37.903	0.130	5.37	1.78	0.00	0.00	26.50	0.00	0.275	109.575	0.273	4.098691282E+0000	1.134309933E+0000	2.349749408E+0000	0.890	1.393
38.033	0.130	5.37	1.87	0.00	0.00	26.50	0.00	0.299	109.611	0.276	4.383589356E+0000	1.274541239E+0000	2.053545096E+0000	0.935	1.381
38.163	0.130	5.37	1.95	0.00	0.00	26.50	0.00	0.322	109.647	0.280	4.629730997E+0000	1.399102835E+0000	1.739038534E+0000	0.972	1.372
38.292	0.036	5.37	0.55	0.00	0.00	26.50	0.00	0.347	109.683	0.278	4.833351670E+0000	1.501430878E+0000	1.400292353E+0000	0.999	1.367
38.328	0.130	17.17	2.01	0.00	0.00	26.50	0.00	0.353	109.693	0.287	4.881482453E+0000	1.526842113E+0000	1.305257617E+0000	1.006	1.366
38.457	0.130	17.17	2.02	0.00	0.00	26.50	0.00	0.351	109.730	0.296	5.028169701E+0000	1.596615672E+0000	9.586972735E-0001	1.022	1.363
38.587	0.130	17.17	2.03	0.00	0.00	26.50	0.00	0.350	109.770	0.306	5.130206295E+0000	1.644877619E+0000	6.102384397E-0001	1.032	1.360
38.717	0.130	17.17	2.04	0.00	0.00	26.50	0.00	0.350	109.810	0.314	5.184734132E+0000	1.673482140E+0000	2.391414373E-0001	1.039	1.358
38.846	0.130	17.17	2.05	0.00	0.00	26.50	0.00	0.351	109.851	0.322	5.197305201E+0000	1.684460894E+0000	-1.828500564E-0002	1.043	1.354
38.976	0.130	17.17	2.05	0.00	0.00	26.50	0.00	0.353	109.893	0.329	5.187060622E+0000	1.687917437E+0000	-1.166850809E-0001	1.047	1.349
39.106	0.130	17.17	2.06	0.00	0.00	26.50	0.00	0.356	109.936	0.335	5.170209309E+0000	1.689188688E+0000	-1.466599249E-0001	1.051	1.345
39.235	0.130	17.17	2.07	0.00	0.00	26.50	0.00	0.360	109.980	0.341	5.148425676E+0000	1.688797996E+0000	-1.822764864E-0001	1.055	1.339
39.365	0.130	17.17	2.08	0.00	0.00	26.50	0.00	0.364	110.025	0.347	5.123895548E+0000	1.687445884E+0000	-1.953309090E-0001	1.060	1.334
39.494	0.130	17.17	2.09	0.00	0.00	26.50	0.00	0.370	110.070	0.351	5.097661910E+0000	1.685466435E+0000	-2.104882468E-0001	1.064	1.328
39.624	0.130	17.17	2.10	0.00	0.00	26.50	0.00	0.375	110.116	0.342	5.069270073E+0000	1.682702042E+0000	-2.261864313E-0001	1.068	1.321
39.754	0.130	17.17	2.10	0.00	0.00	26.50	0.00	0.378	110.159	0.332	5.040070275E+0000	1.679594211E+0000	-2.193241676E-0001	1.072	1.314
39.883	0.130	17.17	2.11	0.00	0.00	26.50	0.00	0.381	110.202	0.332	5.012980318E+0000	1.677115938E+0000	-1.991167847E-0001	1.076	1.307
40.013	0.130	17.17	2.12	0.00	0.00	26.50	0.00	0.384	110.245	0.332	4.987933226E+0000	1.675252998E+0000	-1.902571451E-0001	1.081	1.300
40.142	0.130	17.17	2.13	0.00	0.00	26.50	0.00	0.387	110.288	0.332	4.962957090E+0000	1.673348535E+0000	-1.969772124E-0001	1.085	1.292
40.272	0.130	17.17	2.14	0.00	0.00	26.50	0.00	0.390	110.331	0.332	4.936887726E+0000	1.671008780E+0000	-2.030961712E-0001	1.089	1.284
40.402	0.130	17.17	2.14	0.00	0.00	26.50	0.00	0.393	110.374	0.332	4.910512814E+0000	1.668497088E+0000	-2.039265054E-0001	1.093	1.277
40.531	0.130	17.17	2.15	0.00	0.00	26.50	0.00	0.396	110.417	0.332	4.884037778E+0000	1.665882328E+0000	-2.044836783E-0001	1.097	1.272
40.661	0.130	17.17	2.16	0.00	0.00	26.50	0.00	0.399	110.460	0.332	4.857535336E+0000	1.663189005E+0000	-2.043764333E-0001	1.102	1.269
40.791	0.130	17.17	2.17	0.00	0.00	26.50	0.00	0.402	110.503	0.333	4.831057184E+0000	1.660434780E+0000	-2.043203785E-0001	1.106	1.269
40.920	0.130	17.17	2.18	0.00	0.00	26.50	0.00	0.406	110.546	0.334	4.804100609E+0000	1.657446309E+0000	-2.160642535E-0001	1.110	1.270
41.050	0.130	17.17	2.19	0.00	0.00	26.50	0.00	0.409	110.590	0.332	4.774926229E+0000	1.653619346E+0000	-2.308961347E-0001	1.114	1.272
41.179	0.130	17.17	2.19	0.00	0.00	26.50	0.00	0.412	110.632	0.331	4.745526518E+0000	1.649637823E+0000	-2.174234118E-0001	1.118	1.275
41.309	0.130	17.17	2.20	0.00	0.00	26.50	0.00	0.415	110.676	0.326	4.719529152E+0000	1.646766644E+0000	-1.829482328E-0001	1.123	1.280
41.439	0.130	17.17	2.21	0.00	0.00	26.50	0.00	0.416	110.717	0.312	4.697114852E+0000	1.645082442E+0000	-1.690598836E-0001	1.127	1.290
41.568	0.130	17.17	2.22	0.00	0.00	26.50	0.00	0.415	110.756	0.298	4.674816152E+0000	1.643380310E+0000	-1.791835820E-0001	1.131	1.306

41.698	0.130	17.17	2.23	0.00	0.00	26.50	0.00	0.413	110.794	0.288	4.649230072E+0000	1.640449647E+0000	-2.222024911E-0001	1.135	1.328
41.827	0.130	17.17	2.24	0.00	0.00	26.50	0.00	0.410	110.831	0.277	4.615367067E+0000	1.633848666E+0000	-3.076670646E-0001	1.139	1.356
41.957	0.130	17.17	2.24	0.00	0.00	26.50	0.00	0.405	110.866	0.263	4.567641354E+0000	1.617975950E+0000	-4.352271475E-0001	1.140	1.395
42.087	0.113	17.17	1.97	0.00	0.00	26.50	0.00	0.398	110.899	0.253	4.502966159E+0000	1.586714302E+0000	-5.613497267E-0001	1.134	1.444
42.200	0.130	17.17	2.20	0.00	0.00	26.50	0.00	0.391	110.928	0.247	4.430968882E+0000	1.534082302E+0000	-7.253781832E-0001	1.114	1.493
42.330	0.130	17.17	2.10	0.00	0.00	26.50	0.00	0.383	110.959	0.237	4.317353840E+0000	1.445288538E+0000	-1.054077794E+0000	1.077	1.543
42.459	0.066	17.17	1.03	0.00	0.00	26.50	0.00	0.373	110.989	0.226	4.152206146E+0000	1.322249672E+0000	-1.506448078E+0000	1.025	1.576
42.526	0.130	31.34	1.89	0.00	0.00	26.50	0.00	0.367	111.004	0.214	4.044118600E+0000	1.243356895E+0000	-1.744007532E+0000	0.989	1.582
42.655	0.130	31.34	1.68	0.00	0.00	26.50	0.00	0.315	111.031	0.214	3.794538043E+0000	1.090125176E+0000	-2.085741541E+0000	0.924	1.571
42.785	0.130	31.34	1.48	0.00	0.00	26.50	0.00	0.264	111.059	0.230	3.500860701E+0000	9.715021332E-0001	-2.477440017E+0000	0.893	1.530
42.915	0.085	31.34	0.86	0.00	0.00	26.50	0.00	0.217	111.091	0.264	3.142306013E+0000	8.720018463E-0001	-3.091100119E+0000	0.893	1.448
43.000	0.130	31.34	2.43	0.00	0.00	26.50	0.00	0.190	111.116	0.326	2.857611340E+0000	7.929979939E-0001	-3.570781280E+0000	0.893	1.373
43.130	0.130	31.34	2.22	0.00	0.00	26.50	0.00	0.156	111.161	0.360	2.352982259E+0000	6.529615083E-0001	-4.189585969E+0000	0.893	1.235
43.259	0.130	31.34	2.02	0.00	0.00	26.50	0.00	0.126	111.210	0.384	1.757139796E+0000	4.876129633E-0001	-4.988625309E+0000	0.893	1.087
43.389	0.083	31.34	1.19	0.00	0.00	26.50	0.00	0.098	111.261	0.378	1.090323694E+0000	3.025689637E-0001	-5.116590352E+0000	0.893	0.951
43.472	0.130	43.29	1.62	0.00	0.00	26.50	0.00	0.077	111.290	0.456	6.834745939E-0001	1.896667942E-0001	-4.579754574E+0000	0.893	0.877
43.602	0.069	43.29	0.73	0.00	0.00	26.50	0.00	0.022	111.358	0.555	1.829196044E-0001	4.463380564E-0002	-3.069601236E+0000	0.785	0.788

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI ..	mi ..	D ..	..
1	26.50	0	0	20.00	21.00	0	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0	0

Simulazione: CA_S2-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

Fs minimo : 1.541
Range Fs : 1.541 1.744
Differenza % Range Fs : 11.6
Coefficiente Sismico orizzontale - Kh: 0.014

GENERAZIONE SUPERFICI RANDOM

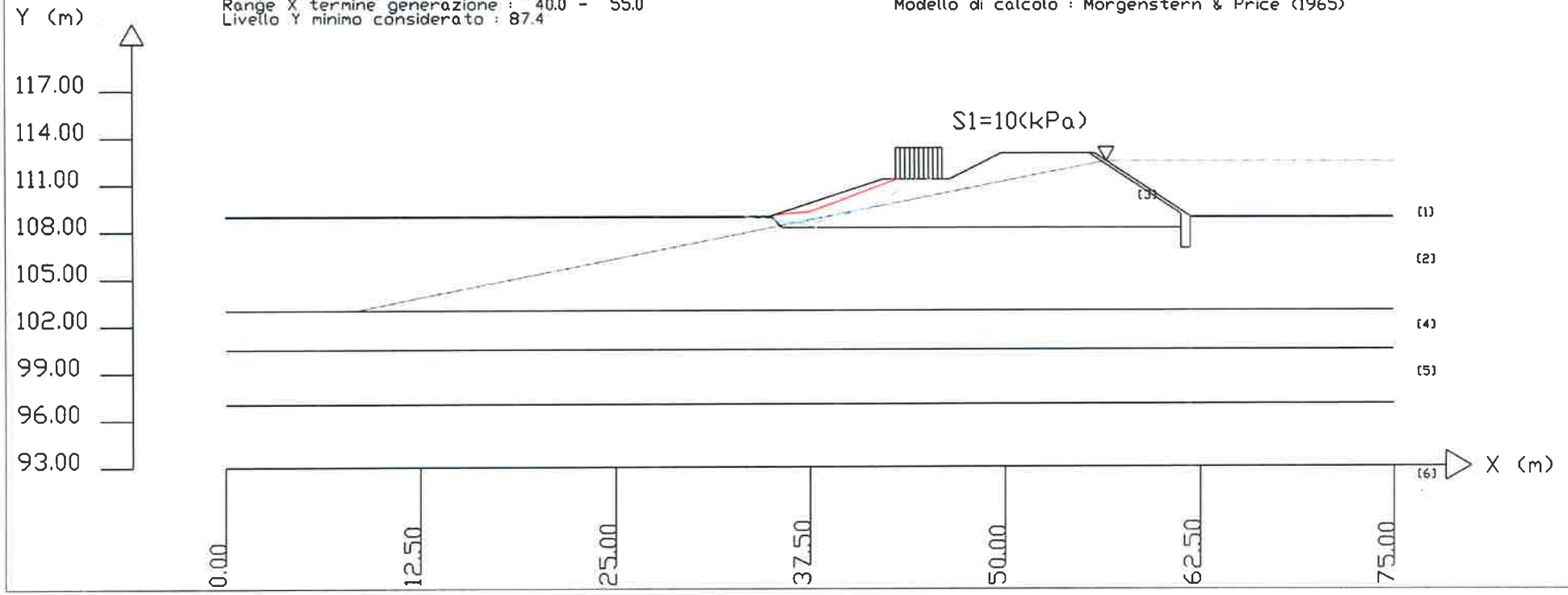
Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 25.0 - 45.0
Range X termine generazione : 40.0 - 55.0
Livello Y minimo considerato : 87.4

SSAP 4.1.3 (2012) - Slope Stability Analysis Program
Software by Dr.Geol. L.Borselli - www.lorenzo-borselli.eu
SSAP/DXF generator rel. 1.0.4 (2012)

Data : 08/12/2012
Localita' :
Descrizione :
n = No. strato o lente

Sn --> Sovraccarico

Modello di calcolo : Morgenstern & Price (1965)



File report: E:\ssap2010\1775\xstampa\CA_S2-P\CA_S2-P_report.txt
Data: 08/12/2012
Localita' :
Descrizione:

---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA

X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55

100.00 112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

Note: fi`_____ Angolo di attrito interno efficace(in gradi)
C` _____ Coesione efficace (in Kpa)
Cu _____ Resistenza al taglio Non drenata (in Kpa)
Gamm _____ Peso di volume terreno fuori falda (in KN/m^3)
Gamm_sat __ Peso di volume terreno immerso (in KN/m^3)
STR_IDX ___ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)
---- Per ammassi Rocciosi - Parametri Criterio di Rottura di Hoek (2002)-
sigci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)
GSI _____ Geological Strenght Index ammasso(adimensionale)
mi _____ Indice litologico ammasso(adimensionale)
D _____ Fattore di disturbo ammasso(adimensionale)

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

---------- RISULTATO FINALE ELABORAZIONI ----------
---
* DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Fattore di sicurezza (FS) 1.541 - Min. - X Y Lambda= 0.386

X	Y
35.29	109.10
36.31	109.19
37.55	109.30
39.82	110.15
41.98	110.96
43.13	111.40

Coofficiente Sismico Critico (Kh) per ottnere FS=1 ---> Khcrit=0.16798

---------- ANALISI DEFICIT DI RESISTENZA ----------
DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *
Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.541	28.6	18.6	8.2	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 8.2

Note: FTR --> Forza totale Resistente rispetto alla superficie

di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi* (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
35.287	0.120	5.01	0.04	0.00	0.00	26.50	0.00	0.000	109.096	0.136	0.000000000E+0000	0.000000000E+0000	4.373366202E-0002	0.065	2.225
35.408	0.120	5.01	0.11	0.00	0.00	26.50	0.00	0.004	109.111	0.136	7.095990273E-0003	1.496009878E-0004	7.302084490E-0002	0.065	2.225
35.528	0.120	5.01	0.18	0.00	0.00	26.50	0.00	0.012	109.128	0.129	1.902544410E-0002	8.633493880E-0004	1.358588700E-0001	0.140	2.259
35.649	0.051	5.01	0.10	0.00	0.00	26.50	0.00	0.014	109.142	0.110	4.287148992E-0002	2.762984169E-0003	2.723181326E-0001	0.199	2.271
35.700	0.120	5.01	0.28	0.00	0.00	26.50	0.00	0.015	109.147	0.129	5.874129025E-0002	4.224511408E-0003	3.492677636E-0001	0.222	2.266
35.820	0.120	5.01	0.35	0.00	0.00	26.50	0.00	0.022	109.164	0.156	1.123223194E-0001	1.023551522E-0002	5.370372830E-0001	0.282	2.226
35.941	0.120	5.01	0.43	0.00	0.00	26.50	0.00	0.032	109.185	0.171	1.882177814E-0001	2.128503730E-0002	7.252968732E-0001	0.350	2.155
36.061	0.120	5.01	0.50	0.00	0.00	26.50	0.00	0.042	109.205	0.172	2.868719774E-0001	3.995559874E-0002	9.091837746E-0001	0.431	2.062
36.182	0.120	5.01	0.57	0.00	0.00	26.50	0.00	0.052	109.227	0.183	4.062461196E-0001	6.488731510E-0002	1.068053242E+0000	0.494	1.963
36.302	0.012	5.01	0.06	0.00	0.00	26.50	0.00	0.065	109.249	0.191	5.434245880E-0001	9.649579466E-0002	1.207993830E+0000	0.549	1.867
36.315	0.120	5.11	0.65	0.00	0.00	26.50	0.00	0.066	109.252	0.217	5.585888019E-0001	1.003752086E-0001	1.222481895E+0000	0.555	1.857
36.435	0.120	5.11	0.72	0.00	0.00	26.50	0.00	0.082	109.278	0.226	7.134913685E-0001	1.409131202E-0001	1.339679882E+0000	0.610	1.762
36.556	0.120	5.11	0.79	0.00	0.00	26.50	0.00	0.099	109.306	0.237	8.809850622E-0001	1.920270683E-0001	1.445735803E+0000	0.674	1.675
36.676	0.120	5.11	0.86	0.00	0.00	26.50	0.00	0.117	109.335	0.248	1.063656014E+0000	2.571655241E-0001	1.594320665E+0000	0.747	1.603
36.797	0.120	5.11	0.93	0.00	0.00	26.50	0.00	0.137	109.366	0.260	1.266020542E+0000	3.336268692E-0001	1.762255189E+0000	0.815	1.550
36.917	0.120	5.11	1.00	0.00	0.00	26.50	0.00	0.159	109.398	0.268	1.486034189E+0000	4.227107890E-0001	1.894066784E+0000	0.879	1.514
37.038	0.120	5.11	1.08	0.00	0.00	26.50	0.00	0.181	109.431	0.278	1.723056926E+0000	5.261995301E-0001	2.019863638E+0000	0.944	1.494
37.158	0.120	5.11	1.15	0.00	0.00	26.50	0.00	0.204	109.465	0.288	1.963711797E+0000	6.408261052E-0001	1.929072390E+0000	1.009	1.482
37.279	0.120	5.11	1.22	0.00	0.00	26.50	0.00	0.228	109.500	0.297	2.177456451E+0000	7.601218073E-0001	1.586785439E+0000	1.079	1.478
37.399	0.120	5.11	1.29	0.00	0.00	26.50	0.00	0.254	109.537	0.275	2.343580253E+0000	8.599358621E-0001	1.185756373E+0000	1.134	1.481
37.520	0.027	5.11	0.30	0.00	0.00	26.50	0.00	0.273	109.567	0.242	2.462421514E+0000	9.329595331E-0001	7.810673820E-0001	1.171	1.488
37.546	0.120	20.56	1.34	0.00	0.00	26.50	0.00	0.276	109.572	0.328	2.482079173E+0000	9.457981036E-0001	6.912720243E-0001	1.178	1.490
37.667	0.120	20.56	1.32	0.00	0.00	26.50	0.00	0.274	109.615	0.338	2.542869601E+0000	9.800579756E-0001	3.330948287E-0001	1.191	1.499
37.787	0.120	20.56	1.31	0.00	0.00	26.50	0.00	0.268	109.654	0.319	2.566288205E+0000	9.895551472E-0001	6.997445991E-0002	1.192	1.507
37.908	0.120	20.56	1.30	0.00	0.00	26.50	0.00	0.261	109.692	0.320	2.561482372E+0000	9.809561563E-0001	-1.527978148E-0001	1.184	1.516
38.028	0.120	20.56	1.29	0.00	0.00	26.50	0.00	0.254	109.731	0.328	2.527463793E+0000	9.590101579E-0001	-4.116826923E-0001	1.173	1.524
38.149	0.120	20.56	1.27	0.00	0.00	26.50	0.00	0.249	109.771	0.335	2.465007921E+0000	9.264884776E-0001	-6.061772912E-0001	1.162	1.534
38.269	0.120	20.56	1.26	0.00	0.00	26.50	0.00	0.245	109.812	0.342	2.386605933E+0000	8.884775626E-0001	-6.745196429E-0001	1.151	1.543
38.390	0.120	20.56	1.25	0.00	0.00	26.50	0.00	0.241	109.853	0.348	2.306109881E+0000	8.502558647E-0001	-6.558799846E-0001	1.140	1.553
38.510	0.120	20.56	1.24	0.00	0.00	26.50	0.00	0.238	109.895	0.354	2.228134780E+0000	8.135308937E-0001	-6.328871173E-0001	1.129	1.563
38.631	0.120	20.56	1.23	0.00	0.00	26.50	0.00	0.236	109.939	0.357	2.154637801E+0000	7.789831692E-0001	-5.887156154E-0001	1.117	1.571
38.751	0.120	20.56	1.21	0.00	0.00	26.50	0.00	0.234	109.982	0.348	2.085086838E+0000	7.463741304E-0001	-5.725379228E-0001	1.106	1.576
38.872	0.120	20.56	1.20	0.00	0.00	26.50	0.00	0.230	110.022	0.338	2.015326622E+0000	7.141888631E-0001	-5.883690344E-0001	1.095	1.580
38.992	0.120	20.56	1.19	0.00	0.00	26.50	0.00	0.225	110.063	0.338	1.943890806E+0000	6.819152211E-0001	-5.915919337E-0001	1.084	1.582
39.113	0.120	20.56	1.18	0.00	0.00	26.50	0.00	0.221	110.104	0.338	1.873227862E+0000	6.504213553E-0001	-5.812673067E-0001	1.073	1.581
39.233	0.120	20.56	1.16	0.00	0.00	26.50	0.00	0.216	110.145	0.338	1.803786735E+0000	6.198532420E-0001	-5.719770701E-0001	1.062	1.578
39.353	0.120	20.56	1.15	0.00	0.00	26.50	0.00	0.212	110.185	0.337	1.735284678E+0000	5.901081943E-0001	-5.656536844E-0001	1.051	1.573
39.474	0.120	20.56	1.14	0.00	0.00	26.50	0.00	0.207	110.226	0.337	1.667456459E+0000	5.609569509E-0001	-5.600739178E-0001	1.040	1.567
39.594	0.120	20.56	1.13	0.00	0.00	26.50	0.00	0.203	110.267	0.337	1.600463294E+0000	5.326456563E-0001	-5.518719568E-0001	1.029	1.561
39.715	0.110	20.56	1.02	0.00	0.00	26.50	0.00	0.198	110.307	0.338	1.534416492E+0000	5.051868270E-0001	-5.451673237E-0001	1.018	1.554
39.825	0.120	20.66	1.10	0.00	0.00	26.50	0.00	0.194	110.344	0.338	1.474773682E+0000	4.807864155E-0001	-5.427161259E-0001	1.008	1.548
39.945	0.120	20.66	1.09	0.00	0.00	26.50	0.00	0.189	110.385	0.338	1.409397161E+0000	4.543343612E-0001	-5.427555473E-0001	0.996	1.540

40.066	0.120	20.66	1.08	0.00	0.00	26.50	0.00	0.185	110.426	0.339	1.344043398E+0000	4.282381876E-0001	-5.423332821E-0001	0.985	1.531
40.186	0.120	20.66	1.07	0.00	0.00	26.50	0.00	0.180	110.467	0.340	1.278690174E+0000	4.025389598E-0001	-5.422370404E-0001	0.973	1.521
40.306	0.120	20.66	1.05	0.00	0.00	26.50	0.00	0.176	110.508	0.341	1.213550866E+0000	3.774872308E-0001	-5.383134167E-0001	0.961	1.510
40.427	0.120	20.66	1.04	0.00	0.00	26.50	0.00	0.172	110.549	0.343	1.149160697E+0000	3.531481172E-0001	-5.301228234E-0001	0.950	1.498
40.547	0.120	20.66	1.03	0.00	0.00	26.50	0.00	0.168	110.590	0.344	1.085825920E+0000	3.296123653E-0001	-5.215768571E-0001	0.938	1.484
40.668	0.120	20.66	1.02	0.00	0.00	26.50	0.00	0.164	110.632	0.345	1.023558039E+0000	3.068715497E-0001	-5.120734750E-0001	0.927	1.469
40.788	0.120	20.66	1.00	0.00	0.00	26.50	0.00	0.160	110.673	0.348	9.623406114E-0001	2.849087978E-0001	-5.049076000E-0001	0.915	1.451
40.909	0.120	20.66	0.99	0.00	0.00	26.50	0.00	0.157	110.716	0.350	9.017159538E-0001	2.635785066E-0001	-5.021560542E-0001	0.904	1.433
41.029	0.120	20.66	0.98	0.00	0.00	26.50	0.00	0.153	110.758	0.349	8.412819785E-0001	2.427579810E-0001	-5.008191034E-0001	0.892	1.414
41.150	0.120	20.66	0.96	0.00	0.00	26.50	0.00	0.150	110.800	0.347	7.811152636E-0001	2.224668857E-0001	-4.981893078E-0001	0.880	1.399
41.270	0.120	20.66	0.95	0.00	0.00	26.50	0.00	0.146	110.841	0.343	7.213008948E-0001	2.027261273E-0001	-4.941901889E-0001	0.869	1.386
41.391	0.120	20.66	0.94	0.00	0.00	26.50	0.00	0.141	110.882	0.336	6.622213193E-0001	1.836377964E-0001	-4.857924286E-0001	0.857	1.377
41.511	0.120	20.66	0.93	0.00	0.00	26.50	0.00	0.136	110.922	0.329	6.044023892E-0001	1.653414963E-0001	-4.736935247E-0001	0.846	1.370
41.632	0.120	20.66	0.91	0.00	0.00	26.50	0.00	0.130	110.962	0.321	5.480763424E-0001	1.478117597E-0001	-4.614922723E-0001	0.834	1.370
41.752	0.120	20.66	0.90	0.00	0.00	26.50	0.00	0.123	111.000	0.318	4.932383434E-0001	1.311580191E-0001	-4.486041519E-0001	0.822	1.374
41.873	0.102	20.66	0.76	0.00	0.00	26.50	0.00	0.116	111.038	0.314	4.400610268E-0001	1.151842037E-0001	-4.338518705E-0001	0.809	1.377
41.975	0.120	20.76	0.88	0.00	0.00	26.50	0.00	0.109	111.070	0.308	3.963149510E-0001	1.018788097E-0001	-4.198960619E-0001	0.795	1.371
42.096	0.104	20.76	0.75	0.00	0.00	26.50	0.00	0.100	111.107	0.304	3.467573044E-0001	8.608033471E-0002	-4.027537608E-0001	0.767	1.348
42.200	0.120	20.76	0.80	0.00	0.00	26.50	0.00	0.092	111.138	0.290	3.057542544E-0001	7.209352992E-0002	-3.817984372E-0001	0.729	1.312
42.320	0.120	20.76	0.69	0.00	0.00	26.50	0.00	0.080	111.172	0.275	2.611491172E-0001	5.587384213E-0002	-3.606725787E-0001	0.661	1.260
42.441	0.120	20.76	0.58	0.00	0.00	26.50	0.00	0.067	111.204	0.262	2.182325855E-0001	4.059401271E-0002	-3.542805596E-0001	0.575	1.204
42.561	0.120	20.76	0.47	0.00	0.00	26.50	0.00	0.052	111.235	0.253	1.754267932E-0001	2.704973538E-0002	-3.561684274E-0001	0.477	1.149
42.682	0.120	20.76	0.36	0.00	0.00	26.50	0.00	0.036	111.265	0.262	1.327026998E-0001	1.744199141E-0002	-3.560356080E-0001	0.406	1.102
42.802	0.120	20.76	0.25	0.00	0.00	26.50	0.00	0.024	111.299	0.285	8.942661108E-0002	1.081510432E-0002	-3.576807178E-0001	0.374	1.067
42.923	0.077	20.76	0.10	0.00	0.00	26.50	0.00	0.014	111.334	0.297	4.847298572E-0002	5.862241575E-0003	-3.125128011E-0001	0.374	1.042
43.000	0.120	20.76	1.27	0.00	0.00	26.50	0.00	0.008	111.357	0.313	2.644451916E-0002	3.198155784E-0003	-2.556892438E-0001	0.374	1.031
43.120	0.012	20.76	0.12	0.00	0.00	26.50	0.00	0.001	111.396	0.322	1.864056466E-0003	2.254358619E-0004	-1.544699233E-0001	0.374	1.018

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: CA_S2-RS Modello di calcolo : Morgenstern & Price (1965)

SSAP 4.1.3 (2012) - Slope Stability Analysis Program
Software by Dr.Geol. L.Borselli - www.lorenzo-borselli.eu
SSAP/DXF generator rel. 1.0.4 (2012)

Data : 08/12/2012
Localita' :
Descrizione :
n = No. strato o lente

Sn --> Sovraccarico

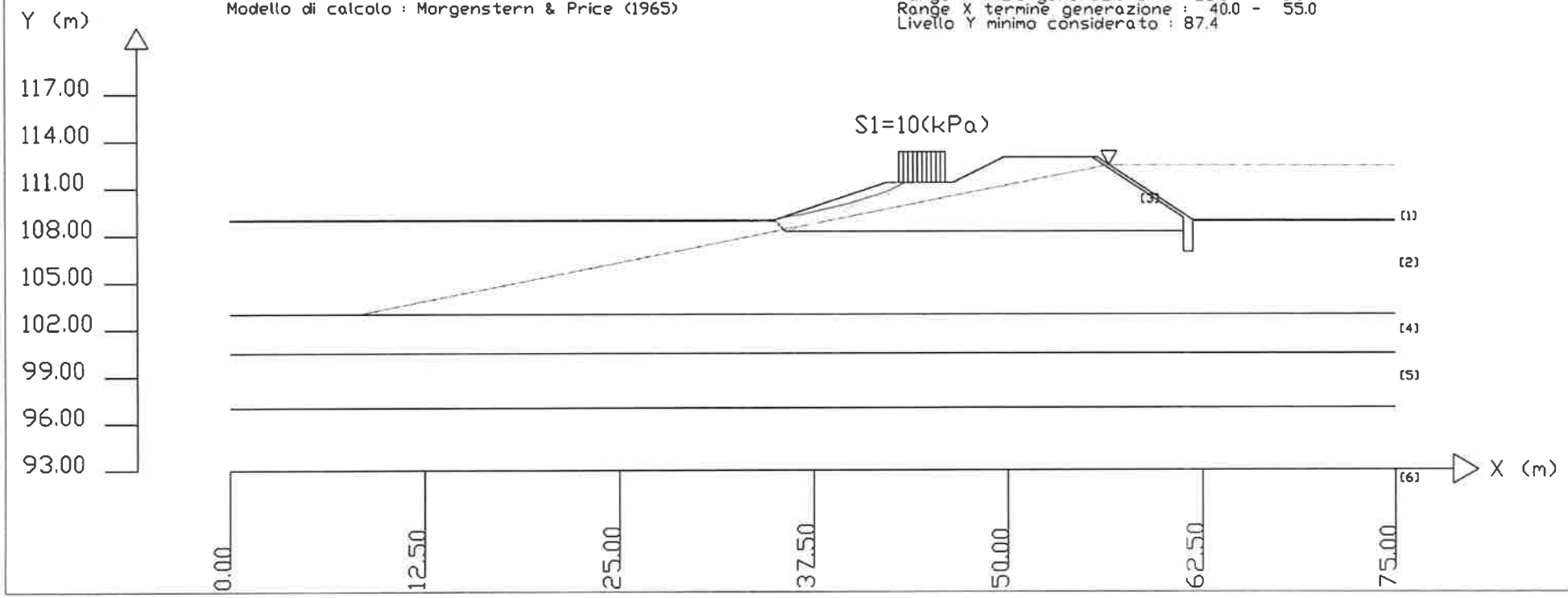
Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

Fs minimo : 1.571
Range Fs : 1.571 1.705
Differenza % Range Fs : 7.9
Coefficiente Sismico orizzontale - Kh: 0.014

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 25.0 - 45.0
Range X termine generazione : 40.0 - 55.0
Livello Y minimo considerato : 87.4



File report: E:\ssap2010\1775\xstampa\CA_S2-RS\CA_S2-RS_report.txt
Data: 08/12/2012
Localita' :
Descrizione:

---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	61.90	109.00	0.00	103.00
35.00	109.00	35.10	108.95	56.55	112.55	100.00	103.00
42.20	111.40	35.70	108.30	55.80	113.05	-	-
46.50	111.40	61.30	108.30	55.45	113.05	-	-
49.80	113.05	61.30	107.00	61.30	109.15	-	-
50.30	113.05	61.90	107.00	61.30	107.00	-	-
55.30	113.05	61.90	108.95	61.90	107.00	-	-
55.80	113.05	100.00	108.95	61.90	109.00	-	-
61.90	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
8.35	103.00
56.55	112.55
100.00	112.55

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 100.00

Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

Note: fi`_____ Angolo di attrito interno efficace(in gradi)
C` _____ Coesione efficace (in Kpa)
Cu _____ Resistenza al taglio Non drenata (in Kpa)
Gamm _____ Peso di volume terreno fuori falda (in KN/m^3)
Gamm_sat __ Peso di volume terreno immerso (in KN/m^3)
STR_IDX ___ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)
---- Per ammassi Rocciosi - Parametri Criterio di Rottura di Hoek (2002)-
sigci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)
GSI _____ Geological Strenght Index ammasso(adimensionale)
mi _____ Indice litologico ammasso(adimensionale)
D _____ Fattore di disturbo ammasso(adimensionale)

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 43.00
a m.: 46.00

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Fattore di sicurezza (FS) 1.571 - Min. - X Y Lambda= 0.375

X	Y
35.55	109.18
36.77	109.35
39.83	110.08
42.20	110.81
43.15	111.30
43.34	111.40

Coofficiente Sismico Critico (Kh) per ottnere FS=1 ---> Khcrit=0.17273

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	1.571	30.3	19.3	9.1	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 9.1

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt* (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
35.550	0.120	7.82	0.03	0.00	0.00	26.50	0.00	0.000	109.183	0.167	0.000000000E+0000	0.000000000E+0000	8.080198344E-0002	0.052	2.821
.669	0.031	7.82	0.02	0.00	0.00	26.50	0.00	0.006	109.205	0.167	1.257109941E-0002	2.023160432E-0004	1.290703155E-0001	0.052	2.821
35.700	0.120	7.82	0.10	0.00	0.00	26.50	0.00	0.004	109.208	0.152	1.671474389E-0002	3.298727155E-0004	1.421541725E-0001	0.062	2.825
35.820	0.120	7.82	0.16	0.00	0.00	26.50	0.00	0.008	109.228	0.167	3.719632779E-0002	1.219034044E-0003	2.025086789E-0001	0.103	2.837
35.940	0.120	7.82	0.21	0.00	0.00	26.50	0.00	0.011	109.248	0.167	6.583650165E-0002	3.149060788E-0003	2.776496083E-0001	0.151	2.828
36.059	0.120	7.82	0.27	0.00	0.00	26.50	0.00	0.015	109.268	0.167	1.038348290E-0001	6.757379523E-0003	3.554726118E-0001	0.205	2.792
36.179	0.120	7.82	0.33	0.00	0.00	26.50	0.00	0.019	109.288	0.172	1.510551667E-0001	1.211570017E-0002	4.355096264E-0001	0.253	2.731
36.299	0.120	7.82	0.38	0.00	0.00	26.50	0.00	0.023	109.309	0.191	2.075344256E-0001	1.981109650E-0002	5.010686960E-0001	0.301	2.647
36.419	0.120	7.82	0.44	0.00	0.00	26.50	0.00	0.031	109.334	0.213	2.691191506E-0001	2.983240789E-0002	5.188251085E-0001	0.349	2.550
36.538	0.120	7.82	0.50	0.00	0.00	26.50	0.00	0.041	109.360	0.229	3.302658324E-0001	4.153499816E-0002	4.991451594E-0001	0.396	2.449
36.658	0.113	7.82	0.52	0.00	0.00	26.50	0.00	0.053	109.389	0.239	3.889890049E-0001	5.429655541E-0002	4.820245135E-0001	0.440	2.343
36.771	0.120	13.36	0.59	0.00	0.00	26.50	0.00	0.065	109.416	0.246	4.423033814E-0001	6.678512024E-0002	4.613689773E-0001	0.476	2.242
36.891	0.120	13.36	0.62	0.00	0.00	26.50	0.00	0.067	109.446	0.250	4.962902990E-0001	8.004432913E-0002	4.408825017E-0001	0.508	2.140
37.011	0.120	13.36	0.65	0.00	0.00	26.50	0.00	0.068	109.476	0.255	5.481261928E-0001	9.321484759E-0002	4.253569548E-0001	0.536	2.048
37.131	0.120	13.36	0.67	0.00	0.00	26.50	0.00	0.071	109.507	0.264	5.982002719E-0001	1.064758167E-0001	4.098501207E-0001	0.561	1.971
37.250	0.120	13.36	0.70	0.00	0.00	26.50	0.00	0.074	109.539	0.272	6.459794752E-0001	1.198226699E-0001	3.880847532E-0001	0.584	1.905
37.370	0.120	13.36	0.73	0.00	0.00	26.50	0.00	0.079	109.572	0.279	6.915761790E-0001	1.334391062E-0001	3.760640296E-0001	0.608	1.847
37.490	0.120	13.36	0.76	0.00	0.00	26.50	0.00	0.084	109.606	0.284	7.367951131E-0001	1.476600777E-0001	3.817853264E-0001	0.631	1.796
37.610	0.120	13.36	0.79	0.00	0.00	26.50	0.00	0.090	109.640	0.289	7.834471605E-0001	1.628535551E-0001	3.973540148E-0001	0.655	1.749
37.729	0.120	13.36	0.81	0.00	0.00	26.50	0.00	0.097	109.675	0.293	8.318506420E-0001	1.791201520E-0001	4.116744547E-0001	0.678	1.707
37.849	0.120	13.36	0.84	0.00	0.00	26.50	0.00	0.103	109.710	0.295	8.821537507E-0001	1.965320773E-0001	4.281616403E-0001	0.702	1.668
37.969	0.120	13.36	0.87	0.00	0.00	26.50	0.00	0.110	109.746	0.296	9.343242986E-0001	2.151244300E-0001	4.424962060E-0001	0.725	1.631
38.089	0.120	13.36	0.90	0.00	0.00	26.50	0.00	0.118	109.781	0.298	9.880726590E-0001	2.348701537E-0001	4.549638513E-0001	0.749	1.596
38.208	0.120	13.36	0.92	0.00	0.00	26.50	0.00	0.125	109.817	0.300	1.043391971E+0000	2.558028750E-0001	4.685834034E-0001	0.772	1.564
38.328	0.120	13.36	0.95	0.00	0.00	26.50	0.00	0.133	109.853	0.302	1.100248228E+0000	2.779491575E-0001	4.812483868E-0001	0.796	1.533
38.568	0.120	13.36	1.01	0.00	0.00	26.50	0.00	0.148	109.926	0.309	1.220130999E+0000	3.264371942E-0001	5.234910137E-0001	0.843	1.479
38.688	0.120	13.36	1.03	0.00	0.00	26.50	0.00	0.157	109.964	0.316	1.284239829E+0000	3.531686397E-0001	5.456737056E-0001	0.866	1.455
38.807	0.120	13.36	1.06	0.00	0.00	26.50	0.00	0.167	110.002	0.319	1.350555101E+0000	3.814797403E-0001	5.608592658E-0001	0.890	1.433
38.927	0.120	13.36	1.09	0.00	0.00	26.50	0.00	0.177	110.040	0.318	1.418444666E+0000	4.112365988E-0001	5.722004362E-0001	0.913	1.413
39.047	0.120	13.36	1.12	0.00	0.00	26.50	0.00	0.187	110.078	0.317	1.487466701E+0000	4.423430550E-0001	5.794463648E-0001	0.937	1.395
39.167	0.120	13.36	1.14	0.00	0.00	26.50	0.00	0.196	110.116	0.316	1.556947374E+0000	4.746190413E-0001	5.789738942E-0001	0.960	1.378
39.286	0.120	13.36	1.17	0.00	0.00	26.50	0.00	0.205	110.154	0.315	1.626114030E+0000	5.078335217E-0001	5.781663916E-0001	0.984	1.363
39.406	0.120	13.36	1.20	0.00	0.00	26.50	0.00	0.215	110.192	0.314	1.694863195E+0000	5.418817269E-0001	5.634541396E-0001	1.007	1.349
39.526	0.120	13.36	1.23	0.00	0.00	26.50	0.00	0.224	110.229	0.313	1.759142316E+0000	5.764584838E-0001	5.014110611E-0001	1.032	1.336
39.646	0.120	13.36	1.26	0.00	0.00	26.50	0.00	0.233	110.267	0.312	1.813384537E+0000	6.069797102E-0001	4.009407381E-0001	1.054	1.325
39.766	0.068	13.36	0.72	0.00	0.00	26.50	0.00	0.242	110.304	0.312	1.855435743E+0000	6.316600329E-0001	3.018883219E-0001	1.072	1.314
39.833	0.120	17.31	1.29	0.00	0.00	26.50	0.00	0.247	110.325	0.314	1.873854235E+0000	6.428049003E-0001	2.431325798E-0001	1.081	1.308
39.953	0.120	17.31	1.29	0.00	0.00	26.50	0.00	0.247	110.363	0.317	1.897095152E+0000	6.575106860E-0001	1.483739532E-0001	1.092	1.298
40.073	0.120	17.31	1.30	0.00	0.00	26.50	0.00	0.248	110.401	0.321	1.910430463E+0000	6.672255269E-0001	7.867420932E-0002	1.100	1.289
40.192	0.120	17.31	1.31	0.00	0.00	26.50	0.00	0.250	110.440	0.325	1.916709644E+0000	6.735658711E-0001	2.739184350E-0002	1.107	1.281
40.312	0.120	17.31	1.31	0.00	0.00	26.50	0.00	0.251	110.479	0.329	1.916673049E+0000	6.768068981E-0001	-2.961348308E-0002	1.112	1.273
40.432	0.120	17.31	1.32	0.00	0.00	26.50	0.00	0.254	110.519	0.333	1.909900341E+0000	6.776479598E-0001	-8.005725850E-0002	1.118	1.266
40.552	0.120	17.31	1.33	0.00	0.00	26.50	0.00	0.256	110.559	0.336	1.898582119E+0000	6.768456172E-0001	-1.040275928E-0001	1.123	1.259
40.672	0.120	17.31	1.33	0.00	0.00	26.50	0.00	0.260	110.599	0.339	1.885975968E+0000	6.755436341E-0001	-1.038124750E-0001	1.128	1.254
40.791	0.120	17.31	1.34	0.00	0.00	26.50	0.00	0.263	110.640	0.343	1.873755314E+0000	6.743377124E-0001	-1.018903836E-0001	1.134	1.248
40.911	0.120	17.31	1.34	0.00	0.00	26.50	0.00	0.267	110.681	0.342	1.861500272E+0000	6.730779885E-0001	-1.022276526E-0001	1.139	1.243
41.031	0.120	17.31	1.35	0.00	0.00	26.50	0.00	0.270	110.722	0.354	1.849449514E+0000	6.718509904E-0001	-9.820413739E-0002	1.144	1.236
41.151	0.120	17.31	1.36	0.00	0.00	26.50	0.00	0.277	110.766	0.360	1.838093260E+0000	6.708366675E-0001	-9.144902537E-0002	1.150	1.230
41.270	0.120	17.31	1.36	0.00	0.00	26.50	0.00	0.282	110.808	0.337	1.827333871E+0000	6.700027465E-0001	-9.009546915E-0002	1.155	1.227
41.390	0.120	17.31	1.37	0.00	0.00	26.50	0.00	0.283	110.847	0.322	1.816416590E+0000	6.690742448E-0001	-9.300658593E-0002	1.160	1.227
41.510	0.120	17.31	1.38	0.00	0.00	26.50	0.00	0.285	110.885	0.322	1.804246157E+0000	6.676450691E-0001	-1.154271869E-0001	1.166	1.231
41.630	0.120	17.31	1.38	0.00	0.00	26.50	0.00	0.286	110.924	0.322	1.787338468E+0000	6.644136984E-0001	-1.728751922E-0001	1.171	1.239

41.750	0.120	17.31	1.39	0.00	0.00	26.50	0.00	0.287	110.963	0.322	1.761658913E+0000	6.578398338E-0001	-2.590250492E-0001	1.176	1.252
41.869	0.120	17.31	1.40	0.00	0.00	26.50	0.00	0.289	111.001	0.320	1.725449671E+0000	6.462215047E-0001	-3.410314190E-0001	1.180	1.273
41.989	0.120	17.31	1.40	0.00	0.00	26.50	0.00	0.289	111.039	0.307	1.679511026E+0000	6.290164013E-0001	-4.344364607E-0001	1.180	1.297
42.109	0.087	17.31	1.02	0.00	0.00	26.50	0.00	0.287	111.075	0.290	1.618599932E+0000	6.062037634E-0001	-5.952117938E-0001	1.180	1.314
42.196	0.004	27.05	0.05	0.00	0.00	26.50	0.00	0.285	111.099	0.282	1.560273625E+0000	5.843591886E-0001	-7.514706220E-0001	1.180	1.315
42.200	0.120	27.05	1.33	0.00	0.00	26.50	0.00	0.284	111.101	0.269	1.557043297E+0000	5.831493550E-0001	-7.596126496E-0001	1.180	1.315
42.320	0.120	27.05	1.19	0.00	0.00	26.50	0.00	0.255	111.133	0.267	1.452697197E+0000	5.440692850E-0001	-9.757744415E-0001	1.180	1.295
42.440	0.120	27.05	1.04	0.00	0.00	26.50	0.00	0.226	111.164	0.265	1.324625625E+0000	4.961034675E-0001	-1.160152823E+0000	1.180	1.252
42.559	0.120	27.05	0.89	0.00	0.00	26.50	0.00	0.196	111.196	0.275	1.175344182E+0000	4.401940541E-0001	-1.330032929E+0000	1.180	1.189
42.679	0.120	27.05	0.74	0.00	0.00	26.50	0.00	0.169	111.230	0.271	1.006813454E+0000	3.770753309E-0001	-1.479513092E+0000	1.180	1.110
42.799	0.120	27.05	0.60	0.00	0.00	26.50	0.00	0.139	111.261	0.256	8.224771820E-0001	3.080370591E-0001	-1.589729345E+0000	1.180	1.023
42.919	0.081	27.05	0.32	0.00	0.00	26.50	0.00	0.108	111.292	0.255	6.256029175E-0001	2.343030142E-0001	-1.717754649E+0000	1.180	0.944
43.000	0.120	27.05	1.54	0.00	0.00	26.50	0.00	0.087	111.313	0.254	4.823894158E-0001	1.806661877E-0001	-1.787852968E+0000	1.180	0.898
43.120	0.027	27.05	0.32	0.00	0.00	26.50	0.00	0.057	111.343	0.244	2.731849355E-0001	1.023141869E-0001	-1.648739500E+0000	1.180	0.845
43.146	0.120	27.15	1.36	0.00	0.00	26.50	0.00	0.048	111.348	0.251	2.302515981E-0001	8.647363543E-0002	-1.571753276E+0000	1.183	0.836
43.266	0.076	27.15	0.78	0.00	0.00	26.50	0.00	0.018	111.380	0.265	6.957917969E-0002	2.467812393E-0002	-1.083761952E+0000	1.117	0.803

Parametri Geotecnici degli strati

N.	phi` deg	C` kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgcl MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P□_0-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

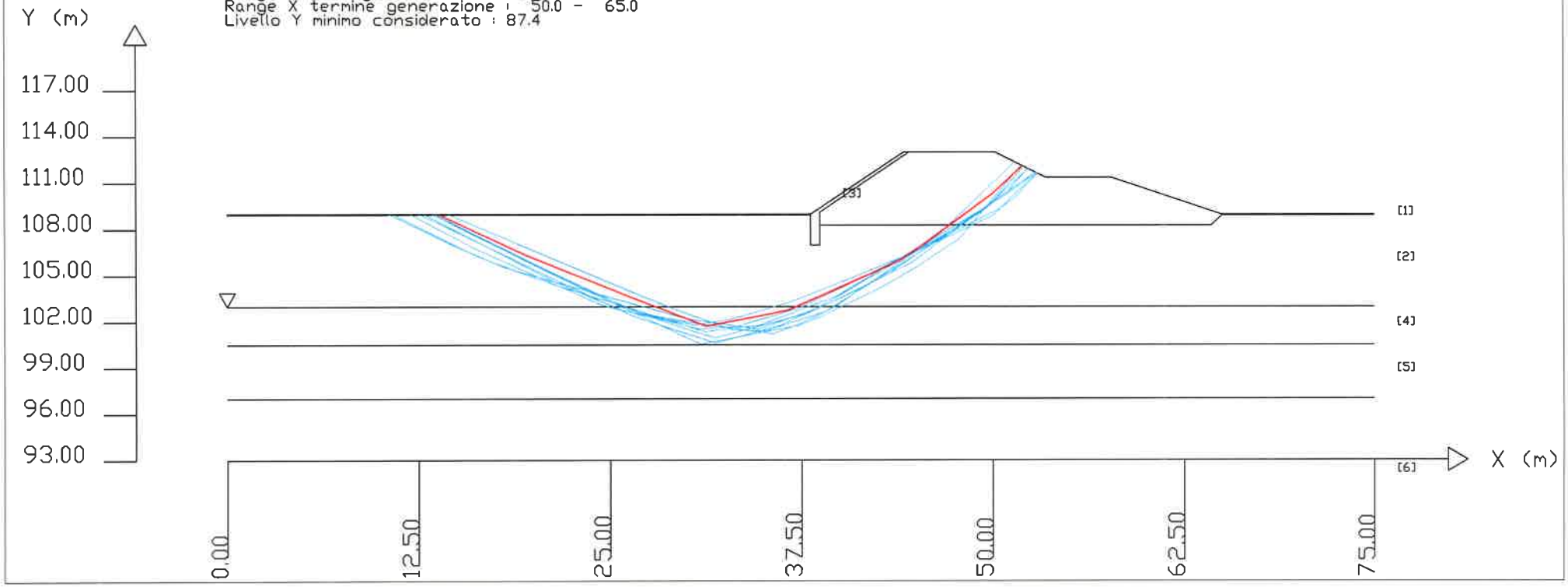
Fs minimo : 5.569
Range Fs : 5.569 6.318
Differenza % Range Fs : 11.9
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.569
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.64513
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 5.0 - 20.0
Range X termine generazione : 50.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 5.00 20.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 50.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 5.569 - Min. - Lambda= 0.163

X	Y
13.81	109.00
18.20	106.96
19.55	106.34
23.15	104.90
26.88	103.41
31.26	101.72
35.38	102.52
36.62	102.76
40.92	104.65
43.86	105.96
44.76	106.56
45.59	107.12
47.65	108.62
50.02	110.34
51.60	111.80
51.98	112.16

Fattore di sicurezza (FS) 5.700 - N.2 -- Lambda= 0.153

X	Y
14.42	109.00
15.64	108.48
19.50	106.86
23.09	105.36
27.56	103.49
29.16	102.86
33.05	101.47
35.23	101.42
37.48	102.16
39.04	102.68
40.44	103.54
41.95	104.47
45.59	106.73
47.29	107.80
49.66	109.42
51.28	111.23
52.04	112.13

Fattore di sicurezza (FS) 5.966 - N.3 -- Lambda= 0.152

X	Y
13.39	109.00
16.06	107.64
20.39	105.61
23.39	104.20
26.99	102.53
30.58	101.35
31.87	100.98
35.03	101.81
37.97	102.58
40.90	104.00
44.72	105.85
46.01	106.81
47.52	107.96
50.05	109.86
52.35	111.97

Fattore di sicurezza (FS) 6.093 - N.4 -- Lambda= 0.150

X	Y
13.60	109.00
15.88	107.80
17.11	107.15
19.75	105.85
21.42	105.04
24.24	103.70
27.86	101.99
30.90	100.56
34.72	101.28
37.43	101.79
38.88	102.41
42.66	104.21
45.01	105.56
47.86	107.43
50.28	110.29
51.89	112.20

Fattore di sicurezza (FS) 6.161 - N.5 -- Lambda= 0.151

X	Y
12.84	109.00
17.29	106.72
21.57	104.54
25.75	102.78
27.58	102.33
29.31	101.91

			30.80	101.55		
			33.17	101.68		
			37.32	102.90		
			40.22	104.28		
			43.10	105.70		
			44.77	106.52		
			45.96	107.11		
			50.42	109.33		
			51.40	110.01		
			52.97	111.67		
Fattore di sicurezza (FS)	6.196	- N.6 --	X	Y	Lambda=	0.138
			13.57	109.00		
			16.76	107.41		
			21.11	105.25		
			23.97	103.93		
			26.90	102.58		
			30.52	101.92		
			34.20	101.42		
			35.61	101.23		
			37.17	101.78		
			39.46	102.85		
			41.74	104.38		
			45.15	106.68		
			46.61	107.82		
			49.82	110.84		
			51.48	112.41		
Fattore di sicurezza (FS)	6.211	- N.7 --	X	Y	Lambda=	0.136
			11.95	109.00		
			16.20	106.77		
			17.91	106.00		
			20.47	104.87		
			24.35	103.16		
			25.35	102.84		
			26.65	102.57		
			28.85	102.12		
			30.50	101.79		
			32.83	102.16		
			34.58	102.67		
			36.56	103.24		
			40.25	104.65		

				44.79	106.49	
				46.85	107.41	
				50.03	108.93	
				52.92	111.69	
Fattore di sicurezza (FS)	6.229	- N.8 --	X	Y	Lambda=	0.127
			10.55	109.00		
			14.73	106.99		
			18.07	105.56		
			22.73	104.24		
			25.45	103.48		
			29.99	102.21		
			34.66	101.52		
			36.17	102.05		
			38.40	102.84		
			40.37	103.96		
			44.68	106.43		
			47.88	108.27		
			51.75	110.85		
			52.85	111.73		
Fattore di sicurezza (FS)	6.315	- N.9 --	X	Y	Lambda=	0.143
			10.83	109.00		
			14.66	107.09		
			16.39	106.24		
			18.73	105.37		
			21.02	104.55		
			25.46	103.15		
			29.68	101.84		
			31.20	101.37		
			34.74	101.79		
			36.13	102.30		
			39.81	103.70		
			43.87	106.08		
			45.33	106.94		
			47.18	108.03		
			49.41	109.36		
			51.06	110.53		
			52.32	111.99		
Fattore di sicurezza (FS)	6.318	- N.10 --	X	Y	Lambda=	0.165
			12.55	109.00		

```
                                                15.86  107.42
                                                20.00  105.45
                                                22.98  104.04
                                                24.84  103.16
                                                26.04  102.60
                                                27.28  102.12
                                                31.90  100.63
                                                34.77  101.42
                                                36.15  101.80
                                                38.57  102.90
                                                40.20  103.64
                                                41.27  104.14
                                                43.18  105.12
                                                45.35  106.60
                                                46.84  107.61
                                                50.22  109.92
                                                52.84  111.73

------------ ANALISI DEFICIT DI RESISTENZA ----------------------------------
# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
  # Analisi Deficit in riferimento a FS(progetto) = 1.100

   Sup N.     FS        FTR(kN/m)     FTA(kN/m)  Bilancio(kN/m)    ESITO
      1     5.569         2524.2         453.3        2025.6        Surplus
      2     5.700         2661.8         467.0        2148.1        Surplus
      3     5.966         2885.4         483.7        2353.4        Surplus
      4     6.093         3097.9         508.4        2538.6        Surplus
      5     6.161         2801.6         454.7        2301.4        Surplus
      6     6.196         2807.3         453.1        2308.9        Surplus
      7     6.211         2726.5         439.0        2243.6        Surplus
      8     6.229         2814.4         451.8        2317.4        Surplus
      9     6.315         2879.3         456.0        2377.8        Surplus
     10     6.318         3060.9         484.4        2528.0        Surplus

   Esito analisi:  SURPLUS di RESISTENZA!

   Valore minimo di SURPLUS di RESISTENZA (kN/m):       2025.6

   Note: FTR --> Forza totale Resistente rispetto alla superficie
                 di scivolamento (componente Orizzontale)
         FTA --> Forza totale Agente rispetto alla superficie
                 di scivolamento (componente Orizzontale)
```

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
13.815	0.108	-24.94	0.05	0.00	0.00	26.50	0.00	0.000 16.021	109.000	-0.395	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.186	
13.922	0.349	-24.94	0.86	0.00	0.00	34.00	0.00	0.007 16.021	108.957	-0.395	5.421010862E-0005	1.313618579E-0007	1.188112998E-0004	0.186	
14.271	0.349	-24.94	1.88	0.00	0.00	34.00	0.00	0.032 16.176	108.820	-0.395	5.421010862E-0005	2.677837229E-0007	0.000000000E+0000	0.186	
14.620	0.349	-24.94	2.89	0.00	0.00	34.00	0.00	0.056 16.993	108.682	-0.395	5.421010862E-0005	4.522260920E-0007	7.072987137E-0004	0.186	
14.969	0.349	-24.94	3.91	0.00	0.00	34.00	0.00	0.080 17.799	108.544	-0.395	5.475206285E-0004	6.480816562E-0006	2.122732556E-0002	0.186	
15.317	0.349	-24.94	4.93	0.00	0.00	34.00	0.00	0.105 18.098	108.406	-0.395	1.485935934E-0002	2.281128956E-0004	2.886010670E-0001	0.186	
15.666	0.349	-24.94	5.94	0.00	0.00	34.00	0.00	0.129 17.618	108.268	-0.395	2.018343880E-0001	3.809234002E-0003	3.185210454E+0000	0.186	
16.015	0.349	-24.94	6.96	0.00	0.00	34.00	0.00	0.153 16.392	108.131	-0.395	1.745245433E+0000	3.907305960E-0002	5.708742004E+0000	0.187	
16.364	0.349	-24.94	7.98	0.00	0.00	34.00	0.00	0.178 14.681	107.993	-0.395	4.179210245E+0000	1.087533590E-0001	8.188182334E+0000	0.217	
16.712	0.349	-24.94	8.99	0.00	0.00	34.00	0.00	0.202 12.806	107.855	-0.395	7.449078341E+0000	2.224164859E-0001	1.061671282E+0001	0.249	
17.061	0.349	-24.94	10.01	0.00	0.00	34.00	0.00	0.226 11.008	107.717	-0.395	1.160170667E+0001	3.888782854E-0001	1.320176325E+0001	0.279	
17.410	0.349	-24.94	11.03	0.00	0.00	34.00	0.00	0.251 9.419	107.579	-0.370	1.664625012E+0001	6.161378691E-0001	1.569999426E+0001	0.308	
17.758	0.349	-24.94	12.05	0.00	0.00	34.00	0.00	0.293 8.088	107.459	-0.329	2.252499456E+0001	9.105798853E-0001	1.797124344E+0001	0.336	
18.107	0.098	-24.94	3.56	0.00	0.00	34.00	0.00	0.346 7.016	107.350	-0.311	2.914933760E+0001	1.272563477E+0000	1.997852526E+0001	0.363	
18.205	0.349	-24.67	13.34	0.00	0.00	34.00	0.00	0.362 6.759	107.320	-0.301	3.112971160E+0001	1.387558322E+0000	2.050077990E+0001	0.370	
18.554	0.349	-24.67	14.35	0.00	0.00	34.00	0.00	0.417 5.961	107.216	-0.300	3.859162431E+0001	1.842247897E+0000	2.228077756E+0001	0.396	
18.902	0.349	-24.67	15.35	0.00	0.00	34.00	0.00	0.473 5.307	107.111	-0.289	4.667357466E+0001	2.378854934E+0000	2.409842068E+0001	0.423	
19.251	0.296	-24.67	13.80	0.00	0.00	34.00	0.00	0.535 4.763	107.014	-0.273	5.542721743E+0001	3.007338669E+0000	2.613061029E+0001	0.450	
19.547	0.349	-21.85	17.14	0.00	0.00	34.00	0.00	0.593 4.372	106.936	-0.273	6.341042325E+0001	3.619701044E+0000	2.787856254E+0001	0.474	
19.895	0.349	-21.85	18.02	0.00	0.00	34.00	0.00	0.635 3.980	106.838	-0.276	7.347162975E+0001	4.446270245E+0000	2.978371828E+0001	0.502	
20.244	0.349	-21.85	18.90	0.00	0.00	34.00	0.00	0.680 3.652	106.743	-0.266	8.415004201E+0001	5.371340178E+0000	3.140615021E+0001	0.529	
20.593	0.349	-21.85	19.77	0.00	0.00	34.00	0.00	0.729 3.377	106.652	-0.256	9.534008559E+0001	6.382701646E+0000	3.272229036E+0001	0.555	
20.942	0.349	-21.85	20.65	0.00	0.00	34.00	0.00	0.782 3.148	106.565	-0.247	1.069451943E+0002	7.492367335E+0000	3.380737028E+0001	0.581	
21.290	0.349	-21.85	21.53	0.00	0.00	34.00	0.00	0.837 2.957	106.480	-0.238	1.189122645E+0002	8.709204179E+0000	3.483542103E+0001	0.607	
21.639	0.349	-21.85	22.40	0.00	0.00	34.00	0.00	0.895 2.798	106.399	-0.228	1.312567187E+0002	1.004541958E+0001	3.593284812E+0001	0.634	
21.988	0.349	-21.85	23.28	0.00	0.00	34.00	0.00	0.957 2.665	106.321	-0.220	1.439393360E+0002	1.147011112E+0001	3.678783889E+0001	0.660	
22.337	0.349	-21.85	24.16	0.00	0.00	34.00	0.00	1.021 2.552	106.245	-0.214	1.569269935E+0002	1.297943870E+0001	3.774308432E+0001	0.685	
22.685	0.349	-21.85	25.04	0.00	0.00	34.00	0.00	1.088 2.454	106.172	-0.206	1.703080406E+0002	1.457988851E+0001	3.907547938E+0001	0.709	

23.034	0.115	-21.85	8.47	0.00	0.00	34.00	0.00	1.158	106.102	-0.200	1.842367448E+0002	1.628481539E+0001	4.088617759E+0001	0.732
23.149	0.349	-21.75	26.20	0.00	0.00	34.00	0.00	2.366 1.181	106.079	-0.190	1.889895822E+0002	1.688872093E+0001	4.158218194E+0001	0.740
23.498	0.349	-21.75	27.07	0.00	0.00	34.00	0.00	2.340 1.255	106.014	-0.183	2.038854176E+0002	1.878631971E+0001	4.388361979E+0001	0.763
23.847	0.349	-21.75	27.94	0.00	0.00	34.00	0.00	2.264 1.331	105.951	-0.170	2.196009247E+0002	2.086927880E+0001	4.621704808E+0001	0.787
24.195	0.349	-21.75	28.82	0.00	0.00	34.00	0.00	2.196 1.414	105.895	-0.157	2.360771307E+0002	2.314605142E+0001	4.823931650E+0001	0.812
24.544	0.349	-21.75	29.69	0.00	0.00	34.00	0.00	2.139 1.500	105.842	-0.149	2.532406636E+0002	2.562414567E+0001	5.018554239E+0001	0.838
24.893	0.349	-21.75	30.56	0.00	0.00	34.00	0.00	2.093 1.589	105.791	-0.141	2.710682672E+0002	2.831482586E+0001	5.203668161E+0001	0.865
25.242	0.349	-21.75	31.43	0.00	0.00	34.00	0.00	2.058 1.680	105.744	-0.133	2.895162156E+0002	3.117124253E+0001	5.373531386E+0001	0.891
25.590	0.349	-21.75	32.31	0.00	0.00	34.00	0.00	2.034 1.775	105.699	-0.126	3.085240857E+0002	3.417009899E+0001	5.524309987E+0001	0.917
25.939	0.349	-21.75	33.18	0.00	0.00	34.00	0.00	2.023 1.871	105.656	-0.119	3.280214116E+0002	3.732113684E+0001	5.654078148E+0001	0.942
26.288	0.349	-21.75	34.05	0.00	0.00	34.00	0.00	2.024 1.970	105.616	-0.111	3.479343384E+0002	4.072633620E+0001	5.762818160E+0001	0.969
26.637	0.247	-21.75	24.65	0.00	0.00	34.00	0.00	2.035 2.072	105.579	-0.103	3.681920585E+0002	4.425569291E+0001	5.851760096E+0001	0.995
26.884	0.349	-21.09	35.53	0.00	0.00	34.00	0.00	2.056 2.146	105.555	-0.095	3.827088673E+0002	4.682133057E+0001	5.898326906E+0001	1.012
27.232	0.349	-21.09	36.37	0.00	0.00	34.00	0.00	2.076 2.248	105.522	-0.089	4.033586512E+0002	5.050305611E+0001	5.940129742E+0001	1.036
27.581	0.349	-21.09	37.21	0.00	0.00	34.00	0.00	2.112 2.353	105.493	-0.080	4.241088449E+0002	5.427621732E+0001	5.956142888E+0001	1.059
27.930	0.013	-21.09	1.44	0.00	0.00	34.00	0.00	2.156 2.461	105.466	-0.076	4.448704345E+0002	5.813128090E+0001	5.946470386E+0001	1.081
27.943	0.349	-21.09	38.13	0.01	0.62	38.00	0.00	2.210 2.465	105.465	-0.066	4.456650422E+0002	5.827979705E+0001	5.945563949E+0001	1.082
28.292	0.349	-21.09	39.06	0.02	1.86	38.00	0.00	2.212 2.577	105.442	-0.062	4.663398032E+0002	6.227774714E+0001	5.906600007E+0001	1.102
28.641	0.349	-21.09	39.98	0.03	3.09	38.00	0.00	2.274 2.691	105.422	-0.053	4.868223574E+0002	6.647996246E+0001	5.834270172E+0001	1.124
28.989	0.349	-21.09	40.91	0.04	4.32	38.00	0.00	2.345 2.809	105.405	-0.042	5.069837680E+0002	7.080734150E+0001	5.720934547E+0001	1.146
29.338	0.349	-21.09	41.83	0.05	5.55	38.00	0.00	2.422 2.930	105.392	-0.033	5.267077629E+0002	7.530567156E+0001	5.604828524E+0001	1.171
29.687	0.349	-21.09	42.76	0.06	6.78	38.00	0.00	2.507 3.055	105.383	-0.024	5.461168467E+0002	8.010065988E+0001	5.520263696E+0001	1.198
30.036	0.349	-21.09	43.68	0.07	8.01	38.00	0.00	2.598 3.183	105.376	-0.015	5.650977614E+0002	8.476975190E+0001	5.341724914E+0001	1.222
30.384	0.349	-21.09	44.61	0.08	9.24	38.00	0.00	2.695 3.313	105.372	-0.007	5.831727852E+0002	8.906718556E+0001	4.992795814E+0001	1.242
30.733	0.349	-21.09	45.54	0.09	10.47	38.00	0.00	2.800 3.447	105.371	0.003	5.996983009E+0002	9.290730137E+0001	4.454749926E+0001	1.257
31.082	0.181	-21.09	23.97	0.09	11.41	38.00	0.00	2.912 3.584	105.374	-0.021	6.140659776E+0002	9.608210512E+0001	3.766550675E+0001	1.264
31.263	0.349	10.94	46.25	0.09	12.01	38.00	0.00	3.033 3.640	105.360	0.024	6.205269935E+0002	9.741977529E+0001	3.380332708E+0001	1.269
31.611	0.349	10.94	45.78	0.09	11.36	38.00	0.00	3.102 3.599	105.387	0.057	6.310438127E+0002	9.927898675E+0001	2.667998565E+0001	1.273
31.960	0.349	10.94	45.32	0.08	10.71	38.00	0.00	3.244 3.545	105.400	0.043	6.391442561E+0002	1.005533892E+0002	1.955110642E+0001	1.274
32.309	0.349	10.94	44.85	0.08	10.07	38.00	0.00	3.404 3.495	105.417	0.054	6.446244637E+0002	1.014155631E+0002	1.192951095E+0001	1.275
32.657	0.349	10.94	44.39	0.08	9.42	38.00	0.00	3.582 3.448	105.438	0.066	6.475698761E+0002	1.018789502E+0002	5.193462229E+0000	1.277
33.006	0.349	10.94	43.93	0.07	8.77	38.00	0.00	3.779 3.406	105.463	0.078	6.484419298E+0002	1.020161460E+0002	1.167819793E-0001	1.278
33.355	0.349	10.94	43.46	0.07	8.12	38.00	0.00	3.994 3.368	105.492	0.090	6.478657499E+0002	1.019254985E+0002	-3.135578310E+0000	1.279
33.704	0.349	10.94	43.00	0.06	7.47	38.00	0.00	4.224 3.334	105.526	0.102	6.464178194E+0002	1.016977028E+0002	-5.007537378E+0000	1.281
34.052	0.349	10.94	42.54	0.06	6.82	38.00	0.00	4.468 3.304	105.563	0.114	6.444136491E+0002	1.013823967E+0002	-6.551884197E+0000	1.282
								4.720						

34.401	0.349	10.94	42.07	0.05	6.17	38.00	0.00	3.279 4.975	105.605	0.127	6.417426540E+0002	1.009621823E+0002	-8.788867465E+0000	1.284
34.750	0.349	10.94	41.61	0.05	5.52	38.00	0.00	3.258 5.230	105.652	0.141	6.383206157E+0002	1.004238100E+0002	-1.079439035E+0001	1.285
35.099	0.279	10.94	33.00	0.04	4.94	38.00	0.00	3.243 5.484	105.704	0.161	6.342334041E+0002	9.978078931E+0001	-1.263102896E+0001	1.287
35.378	0.349	11.04	40.77	0.04	4.35	38.00	0.00	3.238 5.687	105.753	0.140	6.305028492E+0002	9.919387965E+0001	-1.407105691E+0001	1.288
35.727	0.349	11.04	40.30	0.03	3.69	38.00	0.00	3.208 5.934	105.792	0.104	6.252800326E+0002	9.837219987E+0001	-1.588648017E+0001	1.290
36.075	0.349	11.04	39.83	0.03	3.04	38.00	0.00	3.174 6.168	105.826	0.098	6.194176007E+0002	9.744989260E+0001	-1.773564947E+0001	1.292
36.424	0.196	11.04	22.21	0.02	2.53	38.00	0.00	3.140 6.385	105.860	0.098	6.129128855E+0002	9.642653808E+0001	-1.955731176E+0001	1.293
36.620	0.349	23.79	38.81	0.01	1.49	38.00	0.00	3.121 6.498	105.879	0.176	6.089782080E+0002	9.580751483E+0001	-2.052835831E+0001	1.295
36.969	0.201	23.79	21.84	0.00	0.41	38.00	0.00	3.044 6.681	105.956	0.220	6.015511806E+0002	9.463905752E+0001	-2.198715206E+0001	1.299
37.170	0.349	23.79	37.19	0.00	0.00	34.00	0.00	3.000 6.776	106.000	0.220	5.970720136E+0002	9.393437244E+0001	-2.266971465E+0001	1.302
37.518	0.349	23.79	36.22	0.00	0.00	34.00	0.00	2.923 6.922	106.077	0.220	5.889605406E+0002	9.265823470E+0001	-2.387669315E+0001	1.302
37.867	0.233	23.79	23.65	0.00	0.00	34.00	0.00	2.846 7.045	106.154	0.220	5.808852235E+0002	9.130912269E+0001	-2.536876526E+0001	1.302
38.100	0.349	23.79	40.61	0.00	0.00	34.00	0.00	2.795 7.114	106.205	0.419	5.743383343E+0002	9.035779567E+0001	-2.660292727E+0001	0.186
38.449	0.251	23.79	27.98	0.00	0.00	34.00	0.00	2.834 7.201	106.398	0.552	5.646881514E+0002	8.883958034E+0001	-2.880669594E+0001	0.186
38.700	0.349	23.79	36.14	0.00	0.00	34.00	0.00	2.862 7.251	106.536	0.552	5.572286094E+0002	8.766600768E+0001	-3.058482309E+0001	1.299
39.049	0.349	23.79	37.25	0.00	0.00	34.00	0.00	2.901 7.300	106.729	0.552	5.461234492E+0002	8.591888801E+0001	-3.308362432E+0001	0.186
39.397	0.349	23.79	37.73	0.00	0.00	34.00	0.00	2.939 7.322	106.921	0.552	5.341933525E+0002	8.404198520E+0001	-3.530213239E+0001	0.186
39.746	0.349	23.79	38.21	0.00	0.00	34.00	0.00	2.978 7.309	107.114	0.552	5.214767343E+0002	8.204134285E+0001	-3.764367373E+0001	0.186
40.095	0.349	23.79	38.70	0.00	0.00	34.00	0.00	3.017 7.255	107.307	0.552	5.079544287E+0002	7.991394573E+0001	-3.985426452E+0001	0.186
40.444	0.349	23.79	39.18	0.00	0.00	34.00	0.00	3.056 7.161	107.499	0.552	4.937333179E+0002	7.767660903E+0001	-4.161302751E+0001	0.186
40.792	0.126	23.79	14.25	0.00	0.00	34.00	0.00	3.095 7.034	107.692	0.552	4.790005852E+0002	7.535878143E+0001	-4.278030118E+0001	0.186
40.918	0.349	23.89	39.84	0.00	0.00	34.00	0.00	3.109 6.982	107.761	0.553	4.736017248E+0002	7.450940555E+0001	-4.305859039E+0001	0.186
41.267	0.349	23.89	40.32	0.00	0.00	34.00	0.00	3.147 6.827	107.954	0.550	4.584939952E+0002	7.213258154E+0001	-4.352277274E+0001	0.186
41.616	0.349	23.89	40.80	0.00	0.00	34.00	0.00	3.183 6.666	108.144	0.515	4.432706819E+0002	6.973757331E+0001	-4.378459954E+0001	0.186
41.964	0.349	23.89	45.98	0.00	0.00	26.50	0.00	3.198 6.510	108.313	0.481	4.279319805E+0002	6.732441167E+0001	-4.419541569E+0001	0.186
42.313	0.349	23.89	46.52	0.00	0.00	26.50	0.00	3.210 6.368	108.480	0.465	4.124753707E+0002	6.489270006E+0001	-4.442254284E+0001	0.186
42.662	0.349	23.89	47.05	0.00	0.00	26.50	0.00	3.213 6.245	108.637	0.436	3.969524733E+0002	6.343484049E+0001	-4.461747560E+0001	0.186
43.011	0.349	23.89	47.59	0.00	0.00	26.50	0.00	3.205 6.143	108.784	0.409	3.813371541E+0002	6.188821898E+0001	-4.497594301E+0001	0.186
43.359	0.091	23.89	12.47	0.00	0.00	26.50	0.00	3.189 6.061	108.922	0.393	3.655544211E+0002	5.967972012E+0001	-4.558242265E+0001	0.186
43.450	0.349	23.89	48.28	0.00	0.00	26.50	0.00	3.183 6.042	108.957	0.368	3.614087141E+0002	5.903195280E+0001	-4.578016159E+0001	0.186
43.799	0.066	23.89	9.19	0.00	0.00	26.50	0.00	3.156 5.980	109.084	0.361	3.452965261E+0002	5.614135858E+0001	-4.664732024E+0001	0.186
43.865	0.335	33.98	46.78	0.00	0.00	26.50	0.00	3.149 5.970	109.107	0.333	3.422149509E+0002	5.554672215E+0001	-4.682147351E+0001	0.186
44.200	0.349	33.98	47.61	0.00	0.00	26.50	0.00	3.034 5.934	109.218	0.320	3.263691025E+0002	5.228667556E+0001	-4.766525464E+0001	0.186
44.549	0.001	33.98	0.17	0.00	0.00	26.50	0.00	2.907 5.924	109.325	0.309	3.096326196E+0002	4.871329894E+0001	-4.824108842E+0001	1.757
44.550	0.150	33.98	19.29	0.00	0.00	34.00	0.00	2.906 5.924	109.326	0.296	3.095712830E+0002	4.869982437E+0001	-4.824234161E+0001	1.597

44.700	0.056	33.98	7.09	0.00	0.00	34.00	0.00	2.850	109.370	0.295	3.023252633E+0002	4.713551879E+0001	-4.836340043E+0001	1.589
44.756	0.349	34.08	43.55	0.00	0.00	34.00	0.00	5.928 2.828	109.386	0.281	2.996308271E+0002	4.654103412E+0001	-4.839883914E+0001	1.585
45.104	0.349	34.08	42.07	0.00	0.00	34.00	0.00	5.930 2.690	109.484	0.276	2.827166939E+0002	4.277276288E+0001	-4.861601922E+0001	1.558
45.453	0.133	34.08	15.63	0.00	0.00	34.00	0.00	5.960 2.549	109.579	0.271	2.657018713E+0002	3.884139605E+0001	-4.901153322E+0001	1.520
45.586	0.349	35.92	39.97	0.00	0.00	34.00	0.00	6.006 2.494	109.614	0.270	2.591792551E+0002	3.735575065E+0001	-4.924125922E+0001	1.504
45.935	0.349	35.92	38.39	0.00	0.00	34.00	0.00	6.026 2.337	109.709	0.280	2.418730579E+0002	3.336030204E+0001	-5.006094816E+0001	1.457
46.283	0.349	35.92	36.80	0.00	0.00	34.00	0.00	6.079 2.184	109.809	0.280	2.242382094E+0002	2.940085631E+0001	-5.109608222E+0001	1.403
46.632	0.349	35.92	35.22	0.00	0.00	34.00	0.00	6.120 2.027	109.904	0.262	2.062405557E+0002	2.560575712E+0001	-5.208423627E+0001	1.348
46.981	0.234	35.92	22.79	0.00	0.00	34.00	0.00	6.134 1.862	109.992	0.249	1.879642454E+0002	2.229496522E+0001	-5.266347234E+0001	1.309
47.215	0.349	35.92	32.47	0.00	0.00	26.50	0.00	6.108 1.749	110.049	0.251	1.755550410E+0002	2.018180889E+0001	-5.321289087E+0001	1.284
47.564	0.087	35.92	7.87	0.00	0.00	26.50	0.00	6.062 1.585	110.138	0.259	1.568480908E+0002	1.717388836E+0001	-5.399917221E+0001	1.223
47.652	0.349	36.02	30.25	0.00	0.00	26.50	0.00	5.951 1.546	110.162	0.271	1.521200002E+0002	1.645771886E+0001	-5.409249705E+0001	1.208
48.000	0.349	36.02	28.47	0.00	0.00	26.50	0.00	5.915 1.387	110.256	0.284	1.332811611E+0002	1.368999340E+0001	-5.373657732E+0001	1.147
48.349	0.349	36.02	26.69	0.00	0.00	26.50	0.00	5.743 1.237	110.360	0.292	1.148065053E+0002	1.109377995E+0001	-5.197123543E+0001	1.079
48.698	0.349	36.02	24.91	0.00	0.00	26.50	0.00	5.513 1.083	110.459	0.298	9.719725221E+0001	8.736715379E+0000	-4.881078797E+0001	1.004
49.046	0.349	36.02	23.13	0.00	0.00	26.50	0.00	5.209 0.937	110.568	0.334	8.087636882E+0001	6.691379852E+0000	-4.468970603E+0001	0.924
49.395	0.305	36.02	18.76	0.00	0.00	26.50	0.00	4.827 0.809	110.692	0.381	6.604204958E+0001	4.980174833E+0000	-4.046261519E+0001	0.842
49.700	0.319	36.02	18.15	0.00	0.00	26.50	0.00	4.367 0.711	110.816	0.408	5.421464150E+0001	3.742302062E+0000	-3.712176205E+0001	0.771
50.019	0.181	42.81	9.60	0.00	0.00	26.50	0.00	3.910 0.609	110.946	0.410	4.296261742E+0001	2.611276681E+0000	-3.348242311E+0001	0.679
50.200	0.349	42.81	16.13	0.00	0.00	26.50	0.00	3.391 0.517	111.022	0.463	3.708215451E+0001	2.094234644E+0000	-3.135821930E+0001	0.631
50.549	0.349	42.81	12.63	0.00	0.00	26.50	0.00	3.083 0.364	111.192	0.566	2.686833261E+0001	1.282565919E+0000	-2.720886137E+0001	0.533
50.897	0.349	42.81	9.14	0.00	0.00	26.50	0.00	2.482 0.265	111.416	0.700	1.810851631E+0001	6.583010583E-0001	-2.303040295E+0001	0.406
51.246	0.349	42.81	5.65	0.00	0.00	26.50	0.00	1.893 0.206	111.680	0.666	1.080136718E+0001	2.530154059E-0001	-1.888842037E+0001	0.262
51.595	0.004	42.81	0.05	0.00	0.00	26.50	0.00	1.342 0.084	111.881	0.577	4.922992966E+0000	6.780423595E-0002	-1.484668644E+0001	0.186
51.599	0.349	42.91	2.11	0.00	0.00	26.50	0.00	0.850 0.082	111.883	0.714	4.860281110E+0000	6.606809182E-0002	-1.479852405E+0001	0.186
51.948	0.036	42.91	0.02	0.00	0.00	26.50	0.00	0.844 0.008	112.133	0.715	3.812731787E-0001	2.552071548E-0003	-1.092134924E+0001	0.186
								0.417						

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: PO_0-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

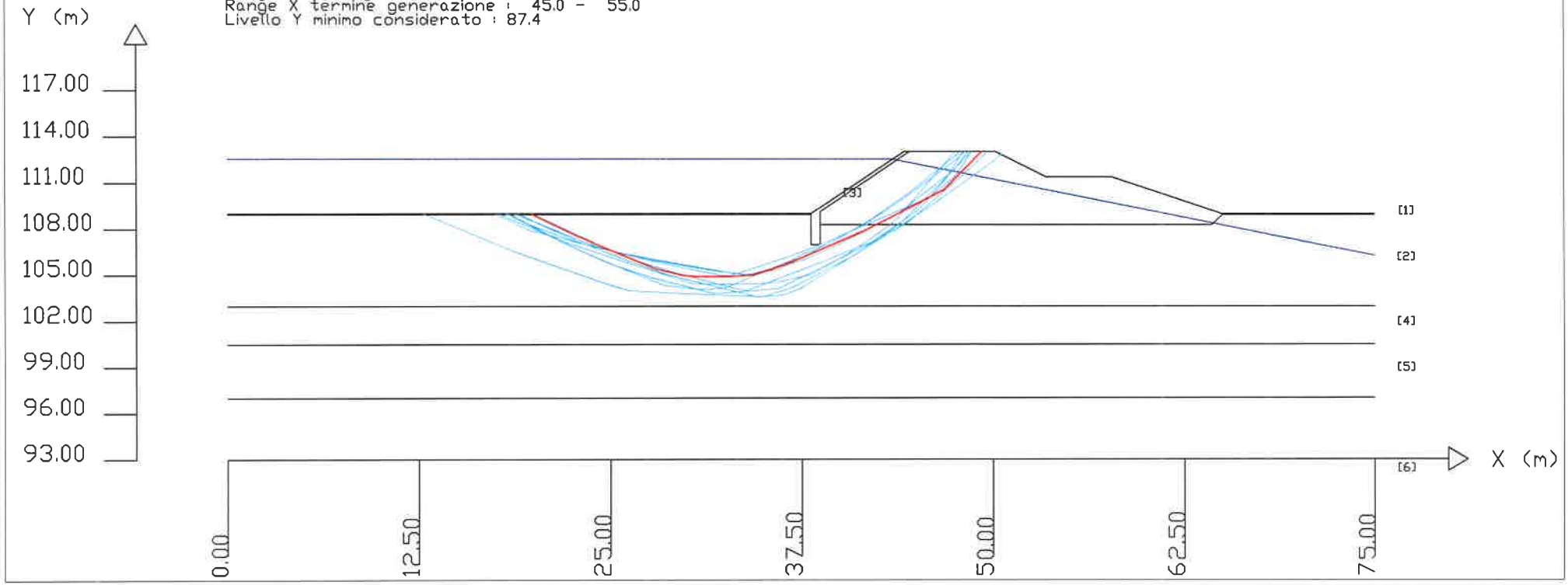
Fs minimo : 5.198
Range Fs : 5.198 6.338
Differenza % Range Fs : 18.0
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.198
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.43974
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 1.0
Range X inizio generazione : 10.0 - 20.0
Range X termine generazione : 45.0 - 55.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

METODO DI RICERCA: CONVEX RANDOM - Chen (1992)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00

LUNGHEZZA MEDIA SEGMENTI (m): 1.0 (+/-) 50%

RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 10.00 20.00

LIVELLO MINIMO CONSIDERATO (Ymin): 87.37

RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 45.00 55.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014

COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007

FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00

FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0

durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

---

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 5.198 - Min. - Lambda= 0.139

X	Y
19.83	109.00
20.50	108.68
22.55	107.69
24.78	106.73
26.03	106.21
27.96	105.42
29.74	104.99
30.75	104.91
32.70	104.92
34.32	105.02
34.94	105.21
36.27	105.65
37.70	106.23
39.70	107.09
41.13	107.70
41.63	107.93
43.80	109.02
44.85	109.56
46.80	110.56
48.56	112.32
49.29	113.05

Fattore di sicurezza (FS) 5.339 - N.2 -- Lambda= 0.123

X	Y
18.76	109.00
21.03	108.09
22.16	107.64
23.31	107.19
24.21	106.83
25.18	106.55
26.79	106.23
28.57	105.91
29.70	105.71
31.77	105.35
33.81	105.00
36.17	105.59

				36.74	105.75	
				37.71	106.03	
				38.81	106.52	
				39.82	106.97	
				41.68	107.92	
				43.67	108.92	
				44.20	109.33	
				45.70	110.48	
				47.45	111.83	
				47.76	112.23	
				48.40	113.05	
Fattore di sicurezza (FS)	5.343	- N.3 --	X	Y	Lambda=	0.121
			18.27	109.00		
			20.21	108.00		
			22.09	107.04		
			23.95	106.21		
			25.52	105.55		
			27.74	104.83		
			28.48	104.64		
			29.78	104.32		
			31.76	103.82		
			33.30	103.91		
			34.51	104.01		
			35.24	104.07		
			35.96	104.14		
			38.02	105.13		
			39.13	105.67		
			41.02	106.59		
			41.72	106.95		
			43.58	107.91		
			44.51	108.49		
			46.08	109.84		
			47.26	110.86		
			48.02	111.51		
			48.69	112.09		
			49.65	113.05		
Fattore di sicurezza (FS)	5.365	- N.4 --	X	Y	Lambda=	0.125
			19.93	109.00		
			21.25	108.38		
			23.00	107.56		

			25.02	106.63	
			26.24	106.16	
			27.26	105.76	
			29.31	105.15	
			31.02	104.69	
			32.79	104.22	
			33.89	104.00	
			35.95	104.77	
			36.67	105.04	
			38.45	105.72	
			40.52	106.55	
			42.04	107.16	
			43.16	107.90	
			44.99	109.12	
			45.93	110.14	
			46.89	111.21	
			47.77	112.62	
			48.04	113.05	
Fattore di sicurezza (FS)	5.576	- N.5 --	X	Y	Lambda= 0.125
			17.47	109.00	
			19.64	107.96	
			20.26	107.80	
			21.48	107.49	
			23.77	106.91	
			25.91	106.37	
			27.89	105.88	
			30.02	105.44	
			32.18	104.99	
			32.85	104.99	
			33.44	105.17	
			35.43	105.81	
			36.67	106.21	
			38.47	106.90	
			39.40	107.30	
			41.52	108.20	
			42.46	108.60	
			44.15	109.33	
			45.80	110.05	
			47.42	111.34	
			47.79	111.79	
			48.10	112.27	

			48.43	112.79		
			48.60	113.05		
Fattore di sicurezza (FS)	6.089	- N.6 --	X	Y	Lambda=	0.095
			17.69	109.00		
			19.35	108.29		
			21.41	107.42		
			22.70	106.95		
			25.06	106.17		
			25.69	105.97		
			27.32	105.43		
			28.98	104.90		
			30.29	104.47		
			31.36	104.41		
			33.26	104.43		
			34.44	104.44		
			35.79	104.54		
			38.01	105.01		
			38.74	105.37		
			40.70	106.51		
			41.72	107.21		
			43.28	108.28		
			43.82	108.77		
			44.48	109.52		
			45.63	110.85		
			47.02	112.46		
			47.53	113.05		
Fattore di sicurezza (FS)	6.151	- N.7 --	X	Y	Lambda=	0.095
			12.80	109.00		
			14.69	108.21		
			16.03	107.66		
			17.78	106.94		
			18.83	106.51		
			21.09	105.72		
			22.75	105.14		
			24.53	104.52		
			26.21	103.99		
			28.52	103.87		
			29.07	103.84		
			30.40	103.78		
			32.77	103.69		

			34.98	103.61		
			36.25	104.01		
			36.85	104.20		
			38.73	105.16		
			40.72	106.18		
			41.33	106.54		
			42.79	107.46		
			44.07	108.29		
			45.79	109.40		
			47.56	110.66		
			47.97	110.95		
			48.96	111.65		
			50.01	112.40		
			50.57	112.87		
Fattore di sicurezza (FS)	6.190	- N.8 --	X	Y	Lambda=	0.120
			18.17	109.00		
			19.72	108.31		
			21.34	107.70		
			22.15	107.40		
			22.90	107.13		
			24.56	106.72		
			26.44	106.25		
			27.48	106.03		
			29.60	105.66		
			31.85	105.28		
			33.86	105.05		
			36.00	105.39		
			37.26	106.04		
			38.99	106.94		
			40.15	107.54		
			41.96	108.59		
			42.96	109.29		
			44.63	110.45		
			45.85	111.41		
			46.81	112.17		
			47.49	112.71		
			47.91	113.05		
Fattore di sicurezza (FS)	6.219	- N.9 --	X	Y	Lambda=	0.110
			18.98	109.00		
			20.35	108.36		

				21.41	107.86	
				22.78	107.25	
				23.40	107.01	
				24.54	106.57	
				25.89	106.06	
				27.26	105.56	
				27.74	105.38	
				28.44	105.13	
				29.98	104.73	
				31.96	104.24	
				33.26	103.92	
				34.65	103.58	
				36.33	103.73	
				37.41	104.15	
				38.19	104.63	
				39.80	105.61	
				40.40	105.99	
				41.21	106.48	
				41.63	106.77	
				43.50	108.04	
				44.22	108.63	
				45.00	109.41	
				45.48	109.89	
				47.09	111.50	
				48.63	113.05	
Fattore di sicurezza (FS)	6.338	- N.10 --	X	Y	Lambda=	0.145
			18.39	109.00		
			20.22	108.05		
			22.06	107.10		
			24.10	106.13		
			26.37	105.21		
			28.50	104.34		
			30.75	104.08		
			32.34	104.13		
			33.74	104.70		
			36.04	105.66		
			36.53	105.86		
			37.90	106.49		
			40.01	107.47		
			40.86	107.93		
			41.74	108.41		

43.42 109.46
45.28 110.79
47.25 112.24
48.00 112.88
48.20 113.05

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	5.198	1200.7	231.0	946.6	Surplus
2	5.339	1153.5	216.1	915.8	Surplus
3	5.343	1365.1	255.5	1084.0	Surplus
4	5.365	1211.3	225.8	963.0	Surplus
5	5.576	1169.1	209.7	938.4	Surplus
6	6.089	1266.3	208.0	1037.6	Surplus
7	6.151	1653.3	268.8	1357.6	Surplus
8	6.190	1148.3	185.5	944.3	Surplus
9	6.219	1355.3	217.9	1115.6	Surplus
10	6.338	1319.9	208.3	1090.8	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 915.8
Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)
IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m))	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
19.833	0.104	-25.74	3.69	0.49	0.23	26.50	0.00	0.000 1.447	109.000	-0.404	0.000000000E+0000	0.000000000E+0000	7.442949430E+0000	0.674	
19.936	0.297	-25.74	11.12	0.51	1.08	34.00	0.00	0.008 1.447	108.958	-0.404	8.258140624E-0001	3.799861491E-0002	8.488785392E+0000	0.674	
20.233	0.268	-25.74	10.74	0.52	2.29	34.00	0.00	0.031 1.452	108.838	-0.384	3.800786791E+0000	1.842094566E-0001	1.158954339E+0001	0.455	
20.502	0.297	-25.64	12.63	0.52	3.49	34.00	0.00	0.064 1.459	108.741	-0.364	7.302766805E+0000	3.746283976E-0001	1.453502957E+0001	0.460	

20.798	0.297	-25.64	13.42	0.52	4.75	34.00	0.00	0.098	108.633	-0.360	1.211690502E+0001	6.609576198E-0001	1.793376299E+0001	0.473
								1.466						
21.095	0.297	-25.64	14.21	0.52	6.01	34.00	0.00	0.135	108.527	-0.352	1.795666063E+0001	1.038719930E+0000	2.143790762E+0001	0.492
								1.471						
21.392	0.297	-25.64	15.00	0.53	7.27	34.00	0.00	0.174	108.424	-0.337	2.484330831E+0001	1.520746131E+0000	2.497529103E+0001	0.513
								1.471						
21.689	0.297	-25.64	15.79	0.53	8.53	34.00	0.00	0.220	108.327	-0.315	3.277248754E+0001	2.115616714E+0000	2.844530718E+0001	0.535
								1.468						
21.985	0.297	-25.64	16.58	0.53	9.79	34.00	0.00	0.272	108.237	-0.295	4.172185752E+0001	2.830541458E+0000	3.196179378E+0001	0.558
								1.462						
22.282	0.271	-25.64	15.84	0.53	11.00	34.00	0.00	0.329	108.152	-0.289	5.177549917E+0001	3.677913788E+0000	3.576937171E+0001	0.578
								1.451						
22.553	0.297	-23.36	18.05	0.53	12.36	34.00	0.00	0.380	108.073	-0.279	6.190056605E+0001	4.573871176E+0000	3.875513720E+0001	0.601
								1.439						
22.850	0.297	-23.36	18.76	0.53	13.52	34.00	0.00	0.430	107.994	-0.265	7.375937672E+0001	5.677568362E+0000	4.096641535E+0001	0.623
								1.424						
23.147	0.297	-23.36	19.47	0.53	14.67	34.00	0.00	0.479	107.915	-0.254	8.609224705E+0001	6.889633674E+0000	4.196775654E+0001	0.646
								1.407						
23.443	0.297	-23.36	20.18	0.53	15.82	34.00	0.00	0.535	107.843	-0.232	9.857804823E+0001	8.210428091E+0000	4.208987407E+0001	0.670
								1.389						
23.740	0.297	-23.36	20.89	0.53	16.98	34.00	0.00	0.598	107.778	-0.215	1.110607403E+0002	9.601720830E+0000	4.211473384E+0001	0.694
								1.368						
24.037	0.297	-23.36	21.60	0.53	18.13	34.00	0.00	0.664	107.716	-0.207	1.235759366E+0002	1.105706058E+0001	4.209464020E+0001	0.717
								1.346						
24.334	0.297	-23.36	22.31	0.53	19.29	34.00	0.00	0.731	107.655	-0.206	1.360068314E+0002	1.255975134E+0001	4.169950739E+0001	0.739
								1.323						
24.630	0.150	-23.36	11.57	0.53	20.16	34.00	0.00	0.798	107.593	-0.202	1.483619461E+0002	1.412541040E+0001	4.167608849E+0001	0.749
								1.300						
24.781	0.297	-22.46	23.37	0.53	21.14	34.00	0.00	0.834	107.564	-0.189	1.546396689E+0002	1.494984881E+0001	4.193427090E+0001	0.772
								1.289						
25.077	0.297	-22.46	24.05	0.53	22.25	34.00	0.00	0.901	107.509	-0.181	1.672256972E+0002	1.665248090E+0001	4.301092716E+0001	0.794
								1.270						
25.374	0.297	-22.46	24.73	0.53	23.37	34.00	0.00	0.971	107.456	-0.173	1.802170894E+0002	1.845555113E+0001	4.459180029E+0001	0.816
								1.256						
25.671	0.297	-22.46	25.41	0.53	24.48	34.00	0.00	1.044	107.406	-0.164	1.936773333E+0002	2.036732964E+0001	4.602981377E+0001	0.837
								1.248						
25.968	0.063	-22.46	5.44	0.53	25.15	34.00	0.00	1.119	107.359	-0.158	2.074756110E+0002	2.237591991E+0001	4.699707652E+0001	0.840
								1.247						
26.030	0.297	-22.36	26.23	0.53	25.84	34.00	0.00	1.135	107.349	-0.146	2.104198122E+0002	2.280875904E+0001	4.721569508E+0001	0.862
								1.248						
26.327	0.297	-22.36	26.91	0.53	26.95	34.00	0.00	1.215	107.306	-0.141	2.245700450E+0002	2.493605385E+0001	4.809130400E+0001	0.882
								1.254						
26.624	0.297	-22.36	27.59	0.53	28.06	34.00	0.00	1.296	107.266	-0.133	2.389047436E+0002	2.721863046E+0001	4.840462971E+0001	0.904
								1.265						
26.920	0.297	-22.36	28.27	0.53	29.16	34.00	0.00	1.380	107.228	-0.122	2.532206120E+0002	2.959815148E+0001	4.795026397E+0001	0.927
								1.286						
27.217	0.297	-22.36	28.94	0.53	30.27	34.00	0.00	1.468	107.193	-0.112	2.672892023E+0002	3.203201287E+0001	4.676409414E+0001	0.950
								1.317						
27.514	0.297	-22.36	29.62	0.53	31.38	34.00	0.00	1.558	107.161	-0.102	2.809285170E+0002	3.447523573E+0001	4.512330320E+0001	0.973
								1.359						
27.811	0.148	-22.36	15.00	0.53	32.21	34.00	0.00	1.651	107.132	-0.095	2.940732756E+0002	3.676484491E+0001	4.350988338E+0001	0.978
								1.408						
27.958	0.297	-13.48	30.49	0.53	34.50	34.00	0.00	1.698	107.119	-0.086	3.004445751E+0002	3.785357973E+0001	4.274462905E+0001	0.998
								1.433						
28.255	0.297	-13.48	30.89	0.53	35.17	34.00	0.00	1.745	107.094	-0.079	3.128840552E+0002	4.004351484E+0001	4.104237780E+0001	1.013
								1.485						
28.552	0.297	-13.48	31.28	0.53	35.85	34.00	0.00	1.793	107.072	-0.072	3.247598896E+0002	4.225097795E+0001	3.891458187E+0001	1.029
								1.533						
28.849	0.297	-13.48	31.68	0.53	36.53	34.00	0.00	1.844	107.052	-0.064	3.359259359E+0002	4.433820384E+0001	3.625383298E+0001	1.044
								1.574						
29.145	0.297	-13.48	32.07	0.53	37.21	34.00	0.00	1.898	107.034	-0.055	3.462277568E+0002	4.627430383E+0001	3.311163250E+0001	1.057
								1.607						
29.442	0.297	-13.48	32.46	0.53	37.89	34.00	0.00	1.954	107.019	-0.062	3.555497749E+0002	4.805271355E+0001	2.969839149E+0001	1.068
								1.631						
29.739	0.004	-13.48	0.39	0.53	38.23	34.00	0.00	2.003	106.997	-0.074	3.638606559E+0002	4.956766184E+0001	2.632264000E+0001	1.053
								1.652						
29.742	0.297	-4.67	32.73	0.53	39.31	34.00	0.00	2.004	106.996	-0.042	3.639547980E+0002	4.958412414E+0001	2.628021964E+0001	1.076
								1.652						
30.039	0.297	-4.67	32.87	0.53	39.55	34.00	0.00	2.016	106.984	-0.041	3.712067486E+0002	5.087309443E+0001	2.255134143E+0001	1.082
								1.665						

30.336	0.297	-4.67	33.00	0.53	39.78	34.00	0.00	2.028	106.972	-0.041	3.773470752E+0002	5.195518981E+0001	1.889724681E+0001	1.087
30.633	0.119	-4.67	13.29	0.53	39.95	34.00	0.00	1.662 2.040	106.960	-0.041	3.824793916E+0002	5.284334238E+0001	1.581338486E+0001	1.077
30.752	0.297	0.18	33.12	0.53	40.12	34.00	0.00	1.645 2.045	106.955	-0.011	3.843007582E+0002	5.314540315E+0001	1.478608292E+0001	1.092
31.048	0.297	0.18	33.12	0.53	40.11	34.00	0.00	1.635 2.044	106.956	0.002	3.883665059E+0002	5.381571305E+0001	1.272462591E+0001	1.094
31.345	0.297	0.18	33.11	0.53	40.11	34.00	0.00	1.613 2.044	106.956	0.002	3.918984872E+0002	5.436740528E+0001	1.111641150E+0001	1.095
31.642	0.297	0.18	33.11	0.53	40.10	34.00	0.00	1.608 2.043	106.957	0.002	3.949511954E+0002	5.480770643E+0001	9.374525962E+0000	1.095
31.939	0.297	0.18	33.10	0.53	40.09	34.00	0.00	1.647 2.043	106.957	0.002	3.974626002E+0002	5.514735337E+0001	7.599006787E+0000	1.094
32.235	0.297	0.18	33.10	0.53	40.08	34.00	0.00	1.755 2.042	106.958	0.002	3.994672618E+0002	5.539168306E+0001	5.892033538E+0000	1.094
32.532	0.169	0.18	18.84	0.53	40.07	34.00	0.00	1.955 2.042	106.958	0.002	4.009346464E+0002	5.553831866E+0001	3.940590630E+0000	1.083
32.701	0.297	3.65	33.04	0.53	39.90	34.00	0.00	2.261 2.042	106.958	0.021	4.014942009E+0002	5.557468553E+0001	2.661708047E+0000	1.092
32.998	0.297	3.65	32.93	0.53	39.71	34.00	0.00	2.481 2.032	106.968	0.032	4.019159771E+0002	5.551272837E+0001	1.254296398E-0001	1.089
33.295	0.297	3.65	32.83	0.53	39.52	34.00	0.00	2.938 2.023	106.977	0.032	4.015456060E+0002	5.529905764E+0001	-2.637756371E+0000	1.086
33.591	0.297	3.65	32.72	0.53	39.34	34.00	0.00	3.470 2.013	106.987	0.032	4.003597925E+0002	5.488758831E+0001	-5.301437408E+0000	1.081
33.888	0.297	3.65	32.62	0.53	39.15	34.00	0.00	4.070 2.004	106.996	0.032	3.984280577E+0002	5.428318196E+0001	-7.696487638E+0000	1.074
34.185	0.134	3.65	14.75	0.53	39.02	34.00	0.00	4.719 1.994	107.006	0.032	3.957981641E+0002	5.352586389E+0001	-1.002761569E+0001	1.055
34.319	0.297	16.93	32.27	0.53	36.94	34.00	0.00	5.395 1.990	107.010	0.099	3.943785132E+0002	5.314700610E+0001	-1.108971891E+0001	1.062
34.616	0.297	16.93	31.77	0.53	36.09	34.00	0.00	5.703 1.938	107.048	0.106	3.907357278E+0002	5.214821721E+0001	-1.347129059E+0001	1.052
34.913	0.023	16.93	2.45	0.53	35.63	34.00	0.00	6.375 1.872	107.073	0.083	3.863794833E+0002	5.093935917E+0001	-1.589162857E+0001	1.021
34.936	0.297	18.39	31.20	0.53	34.85	34.00	0.00	7.022 1.867	107.075	0.097	3.860098046E+0002	5.083599068E+0001	-1.608017763E+0001	1.038
35.233	0.297	18.39	30.66	0.53	33.94	34.00	0.00	7.071 1.798	107.104	0.109	3.808828195E+0002	4.943329911E+0001	-1.845769366E+0001	1.023
35.529	0.297	18.39	30.11	0.53	33.02	34.00	0.00	7.678 1.735	107.139	0.127	3.750740237E+0002	4.785631316E+0001	-2.064557937E+0001	1.005
35.826	0.297	18.39	29.56	0.53	32.10	34.00	0.00	8.242 1.676	107.179	0.143	3.686136851E+0002	4.614178729E+0001	-2.298848198E+0001	0.986
36.123	0.150	18.39	14.76	0.53	31.41	34.00	0.00	8.761 1.622	107.224	0.156	3.614303606E+0002	4.436090443E+0001	-2.534860477E+0001	0.958
36.273	0.297	21.93	28.68	0.53	29.93	34.00	0.00	9.235 1.597	107.249	0.175	3.575498026E+0002	4.341591750E+0001	-2.627627304E+0001	0.956
36.570	0.297	21.93	28.02	0.53	28.84	34.00	0.00	9.459 1.531	107.303	0.192	3.495737985E+0002	4.153164995E+0001	-2.728532888E+0001	0.936
36.867	0.297	21.93	27.35	0.53	27.76	34.00	0.00	9.876 1.472	107.363	0.214	3.414726019E+0002	3.971903184E+0001	-2.713487140E+0001	0.916
37.163	0.297	21.93	26.69	0.53	26.67	34.00	0.00	10.262 1.419	107.429	0.236	3.335550309E+0002	3.818673830E+0001	-2.613689810E+0001	0.901
37.460	0.238	21.93	20.93	0.53	25.69	34.00	0.00	10.616 1.373	107.503	0.257	3.259711175E+0002	3.688291995E+0001	-2.504960918E+0001	0.888
37.698	0.297	23.29	25.47	0.53	24.43	34.00	0.00	10.932 1.341	107.567	0.280	3.200852401E+0002	3.595137868E+0001	-2.432533911E+0001	0.884
37.995	0.105	23.29	8.87	0.53	23.65	34.00	0.00	11.156 1.300	107.653	0.297	3.130657748E+0002	3.502880128E+0001	-2.298195967E+0001	0.872
38.100	0.297	23.29	28.77	0.41	23.76	34.00	0.00	11.398 1.288	107.686	0.328	3.106688424E+0002	3.476060950E+0001	-2.256626846E+0001	0.173
38.397	0.297	23.29	28.96	0.41	24.38	34.00	0.00	11.473 1.258	107.785	0.343	3.040874551E+0002	3.397234253E+0001	-2.195243822E+0001	0.173
38.693	0.007	23.29	0.65	0.00	0.00	0.00	10000.00	11.658 1.236	107.890	0.353	2.975319956E+0002	3.303231803E+0001	-2.241927087E+0001	0.173
38.700	0.297	23.29	24.34	0.53	25.02	34.00	0.00	11.804 1.235	107.892	0.371	2.973858030E+0002	3.300770100E+0001	-2.244199334E+0001	0.871
38.997	0.297	23.29	24.63	0.51	25.64	34.00	0.00	11.806 1.218	108.002	0.387	2.905247232E+0002	3.200172887E+0001	-2.393604802E+0001	0.173
								11.914						

39.293	0.297	23.29	26.38	0.46	26.26	26.50	0.00	1.209 11.988	108.122	0.416	2.831345528E+0002	3.105157812E+0001	-2.587552333E+0001	0.173
39.590	0.109	23.29	9.65	0.46	26.69	26.50	0.00	1.209 12.033	108.249	0.430	2.752187119E+0002	3.005830015E+0001	-2.737896270E+0001	0.173
39.699	0.297	23.39	26.18	0.46	27.09	26.50	0.00	1.209 12.041	108.297	0.459	2.722079490E+0002	2.968577561E+0001	-2.789874820E+0001	0.173
39.996	0.297	23.39	26.03	0.46	27.71	26.50	0.00	1.220 12.035	108.436	0.482	2.637131573E+0002	2.865527990E+0001	-2.935462058E+0001	0.173
40.293	0.297	23.39	25.88	0.46	28.33	26.50	0.00	1.239 11.983	108.583	0.514	2.547953455E+0002	2.762861903E+0001	-3.072369523E+0001	0.173
40.589	0.297	23.39	25.73	0.46	28.95	26.50	0.00	1.268 11.879	108.741	0.526	2.454996118E+0002	2.654316919E+0001	-3.188890209E+0001	0.173
40.886	0.239	23.39	20.63	0.46	29.50	26.50	0.00	1.294 11.722	108.895	0.518	2.358939625E+0002	2.536274807E+0001	-3.281291382E+0001	0.173
41.125	0.297	23.49	25.46	0.46	30.03	26.50	0.00	1.314 11.554	109.018	0.512	2.279727292E+0002	2.435731675E+0001	-3.340835707E+0001	0.173
41.422	0.213	23.49	18.15	0.46	30.56	26.50	0.00	1.336 11.296	109.170	0.507	2.179619348E+0002	2.311674920E+0001	-3.405852842E+0001	0.173
41.635	0.297	26.89	25.13	0.46	30.13	26.50	0.00	1.351 11.080	109.276	0.499	2.106579395E+0002	2.221482706E+0001	-3.468056255E+0001	0.173
41.931	0.297	26.89	24.85	0.46	30.54	26.50	0.00	1.348 10.745	109.424	0.489	2.002128444E+0002	2.092994702E+0001	-3.568971381E+0001	0.173
42.228	0.145	26.89	12.03	0.46	30.84	26.50	0.00	1.340 10.384	109.567	0.481	1.895242833E+0002	1.961446277E+0001	-3.622970567E+0001	0.173
42.373	0.297	26.89	24.42	0.46	31.14	26.50	0.00	1.336 10.202	109.636	0.464	1.842743920E+0002	1.896971002E+0001	-3.619623652E+0001	0.173
42.670	0.297	26.89	24.13	0.46	31.55	26.50	0.00	1.321 9.816	109.772	0.448	1.736223744E+0002	1.769518387E+0001	-3.544847743E+0001	0.173
42.967	0.297	26.89	23.85	0.46	31.96	26.50	0.00	1.301 9.400	109.902	0.426	1.633120917E+0002	1.649529216E+0001	-3.394659998E+0001	0.173
43.263	0.187	26.89	14.74	0.47	32.83	26.50	0.00	1.273 8.999	110.025	0.406	1.535022519E+0002	1.537564732E+0001	-3.218760376E+0001	0.173
43.450	0.297	26.89	23.67	0.45	31.50	26.50	0.00	1.252 8.783	110.098	0.387	1.475808838E+0002	1.469275867E+0001	-3.127222052E+0001	0.173
43.747	0.055	26.89	4.43	0.43	30.41	26.50	0.00	1.215 8.542	110.212	0.380	1.385867845E+0002	1.366606679E+0001	-2.923319099E+0001	0.173
43.802	0.297	27.19	23.96	0.41	29.24	26.50	0.00	1.207 8.515	110.232	0.369	1.369873042E+0002	1.348173823E+0001	-2.881716377E+0001	0.173
44.099	0.101	27.19	8.23	0.39	28.01	26.50	0.00	1.165 8.469	110.342	0.368	1.287385477E+0002	1.251763144E+0001	-2.690842098E+0001	0.173
44.200	0.297	27.19	23.50	0.38	26.77	26.50	0.00	1.150 8.493	110.379	0.363	1.260325443E+0002	1.219204779E+0001	-2.648333629E+0001	0.173
44.497	0.053	27.19	4.08	0.38	25.68	26.50	0.00	1.105 8.656	110.486	0.363	1.182583924E+0002	1.121991844E+0001	-2.614715555E+0001	0.998
44.550	0.150	27.19	11.32	0.38	25.05	26.50	0.00	1.097 8.695	110.506	0.360	1.168636979E+0002	1.104519532E+0001	-2.623431219E+0001	1.010
44.700	0.154	27.19	11.35	0.37	24.11	26.50	0.00	1.074 8.816	110.559	0.359	1.128975480E+0002	1.052434594E+0001	-2.669879226E+0001	0.996
44.854	0.297	27.19	21.15	0.36	22.71	26.50	0.00	1.050 8.938	110.615	0.355	1.087332769E+0002	9.985710112E+0000	-2.745128406E+0001	1.004
45.151	0.297	27.19	20.18	0.35	20.86	26.50	0.00	1.002 9.103	110.720	0.351	1.003245664E+0002	8.874445619E+0000	-2.922990242E+0001	0.967
45.447	0.297	27.19	19.20	0.33	19.02	26.50	0.00	0.953 9.066	110.823	0.345	9.145001030E+0001	7.689165652E+0000	-3.044246657E+0001	0.919
45.744	0.297	27.19	18.23	0.32	17.18	26.50	0.00	0.902 8.738	110.925	0.339	8.221272573E+0001	6.504244285E+0000	-3.186992580E+0001	0.865
46.041	0.297	27.19	17.25	0.30	15.33	26.50	0.00	0.849 8.138	111.024	0.351	7.256329795E+0001	5.351669016E+0000	-3.303684846E+0001	0.807
46.338	0.297	27.19	16.28	0.28	13.49	26.50	0.00	0.805 7.309	111.133	0.381	6.271594211E+0001	4.318397195E+0000	-3.310940864E+0001	0.754
46.634	0.166	27.19	8.68	0.26	12.05	26.50	0.00	0.771 6.257	111.250	0.407	5.305317614E+0001	3.377348330E+0000	-3.178709188E+0001	0.683
46.800	0.297	44.92	14.31	0.23	7.95	26.50	0.00	0.756 5.608	111.321	0.443	4.787680809E+0001	2.903750417E+0000	-3.050324513E+0001	0.663
47.097	0.297	44.92	12.44	0.19	5.49	26.50	0.00	0.595 4.435	111.455	0.466	3.923678616E+0001	2.142172454E+0000	-2.766869591E+0001	0.592
47.394	0.297	44.92	10.56	0.12	3.03	26.50	0.00	0.441 3.358	111.597	0.534	3.143230983E+0001	1.482793116E+0000	-2.505917268E+0001	0.505
47.691	0.215	44.92	6.49	0.04	0.90	26.50	0.00	0.320 2.460	111.772	0.637	2.434483989E+0001	9.674460716E-0001	-2.268998531E+0001	0.417

47.906	0.297	44.92	7.38	0.00	0.00	26.50	0.00	0.256	111.924	0.749	1.965337983E+0001	6.710846465E-0001	-2.087185441E+0001	0.356
48.203	0.297	44.92	5.61	0.00	0.00	26.50	0.00	1.933 0.192	112.155	0.778	1.385349926E+0001	3.682996949E-0001	-1.818150618E+0001	0.277
48.499	0.061	44.92	0.93	0.00	0.00	26.50	0.00	1.370 0.126	112.385	0.765	8.884036691E+0000	1.749059989E-0001	-1.528055019E+0001	0.205
48.560	0.297	45.02	3.48	0.00	0.00	26.50	0.00	0.970 0.110	112.429	0.828	7.972468050E+0000	1.470585943E-0001	-1.466430190E+0001	0.192
48.857	0.297	45.02	1.70	0.00	0.00	26.50	0.00	0.905 0.065	112.681	0.850	4.073214056E+0000	4.827003899E-0002	-1.160686076E+0001	0.173
49.154	0.137	45.02	0.19	0.00	0.00	26.50	0.00	0.658 0.020	112.934	0.850	1.080972502E+0000	5.871894123E-0003	-8.582347541E+0000	0.173
								0.499						

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI ..	mi ..	D ..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P□_0-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

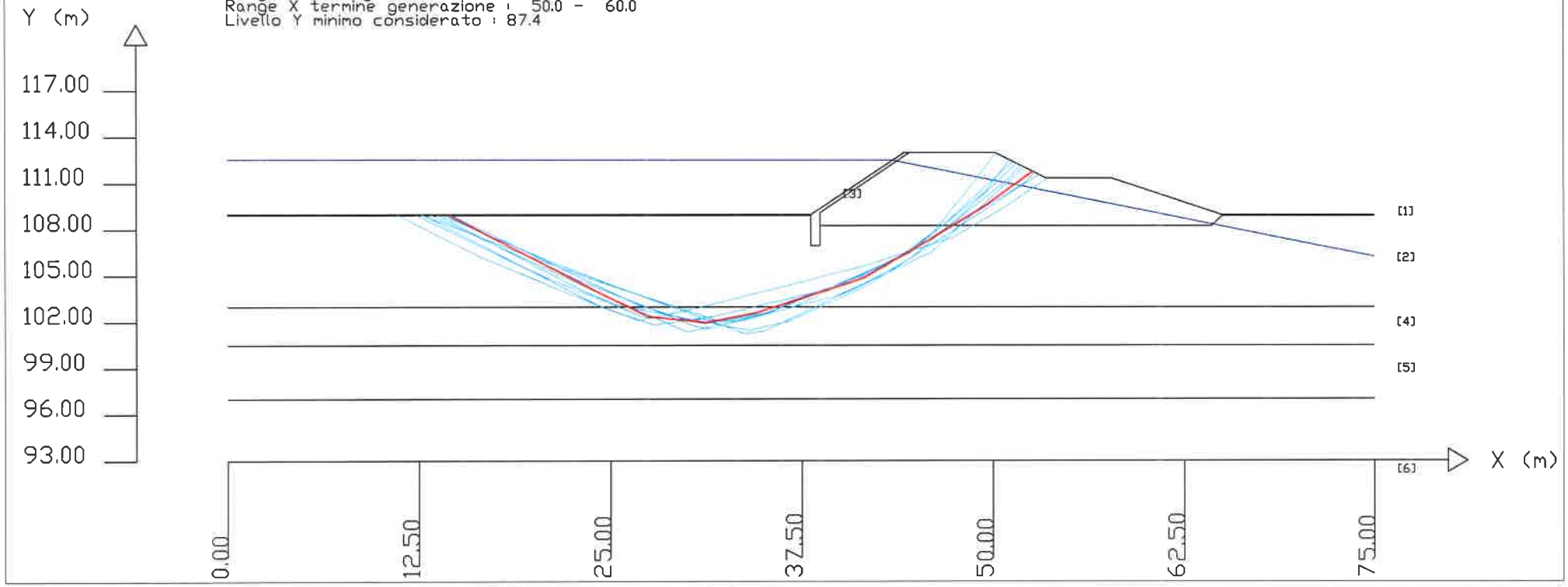
Fs minimo : 2.669
Range Fs : 2.669 2.949
Differenza % Range Fs : 9.5
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 2.672
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.28968
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 5.0 - 15.0
Range X termine generazione : 50.0 - 60.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 43.45
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A	0
Coefficiente K	0.000800
Pressione minima fluidi Uo_Min (kPa)	0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 5.00 15.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 50.00 60.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0

durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 2.669 - Min. - Lambda= 0.181

X	Y
14.47	109.00
16.03	108.19
20.36	105.95
24.64	103.74
27.42	102.39
31.24	101.99
34.55	102.62
37.14	103.45
39.72	104.28
41.54	104.88
44.95	106.85
45.85	107.37
46.83	107.96
49.51	109.58
52.62	111.84

Fattore di sicurezza (FS) 2.718 - N.2 -- Lambda= 0.186

X	Y
12.62	109.00
16.15	107.66
18.96	106.60
23.08	105.05
26.94	103.76
30.56	102.56
32.24	102.02
35.34	102.65
38.01	103.68
41.88	105.19
42.95	105.61
44.86	106.97
46.63	108.23
48.68	110.06
49.94	111.18
51.37	112.47

Fattore di sicurezza (FS) 2.805 - N.3 -- Lambda= 0.190

X	Y
13.25	109.00
16.61	107.44
19.88	105.93
24.25	103.91
27.70	102.38
30.02	101.36
32.55	101.95
36.72	102.93
39.58	103.65
41.62	104.55
43.61	105.59
44.64	106.18
47.35	108.47
48.37	109.33
50.68	111.51
51.58	112.36

Fattore di sicurezza (FS) 2.870 - N.4 -- Lambda= 0.159

X	Y
11.08	109.00
13.49	107.78
16.53	106.25
17.53	105.84
21.15	104.35
24.90	102.81
27.84	101.83
31.75	102.38
34.42	103.00
37.23	103.67
40.54	104.48
44.68	106.64
47.72	108.66
50.90	111.24
51.85	112.22

Fattore di sicurezza (FS) 2.885 - N.5 -- Lambda= 0.181

X	Y
14.59	109.00
19.06	106.82
21.56	105.61
23.20	104.83
26.88	103.11
30.05	102.11

			31.17	101.90		
			34.53	102.57		
			38.30	103.92		
			40.87	104.84		
			44.59	106.50		
			45.97	107.71		
			48.49	110.78		
			50.22	113.04		
Fattore di sicurezza (FS)	2.899	- N.6 --	X	Y	Lambda=	0.159
			12.77	109.00		
			14.92	107.88		
			18.51	106.02		
			21.34	104.57		
			24.21	103.09		
			26.86	102.11		
			30.18	102.81		
			32.84	103.47		
			36.69	104.43		
			41.28	105.58		
			45.12	106.79		
			47.42	107.54		
			50.71	109.44		
			53.63	111.40		
Fattore di sicurezza (FS)	2.902	- N.7 --	X	Y	Lambda=	0.169
			13.71	109.00		
			15.98	107.81		
			19.26	106.10		
			23.33	104.00		
			25.40	103.13		
			29.23	102.39		
			34.02	101.47		
			36.75	102.09		
			39.98	103.58		
			42.08	104.55		
			45.51	106.75		
			49.55	109.35		
			51.22	110.43		
			52.96	111.56		
			53.05	111.62		

Fattore di sicurezza (FS) 2.913 - N.8 -- Lambda= 0.207

X	Y
14.23	109.00
18.58	106.86
22.86	104.76
26.14	103.46
30.47	101.76
31.50	101.56
34.77	102.46
38.59	103.99
40.89	104.91
43.76	106.19
44.81	106.73
46.30	107.61
48.59	108.96
52.05	111.03
52.78	111.76

Fattore di sicurezza (FS) 2.941 - N.9 -- Lambda= 0.166

X	Y
12.30	109.00
15.33	107.51
18.05	106.17
20.77	104.93
24.55	103.39
27.27	102.31
28.81	102.25
32.36	102.11
33.62	102.07
37.07	103.05
40.80	104.79
41.74	105.25
44.60	106.65
47.45	108.87
49.53	110.49
51.12	112.59

Fattore di sicurezza (FS) 2.949 - N.10 -- Lambda= 0.192

X	Y
13.94	109.00
16.40	107.95
20.98	105.99
25.23	104.37
29.86	102.67
32.67	101.65

33.74	101.27
35.03	101.42
37.51	102.58
40.25	103.86
43.35	105.31
46.03	106.60
49.10	109.39
51.07	111.19
52.08	112.11

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	2.669	1275.7	477.9	750.0	Surplus
2	2.718	1200.7	441.8	714.7	Surplus
3	2.805	1370.2	488.6	832.8	Surplus
4	2.870	1355.5	472.3	835.9	Surplus
5	2.885	1205.9	418.0	746.1	Surplus
6	2.899	1260.7	434.9	782.4	Surplus
7	2.902	1426.8	491.6	886.0	Surplus
8	2.913	1336.7	458.9	831.9	Surplus
9	2.941	1329.7	452.2	832.3	Surplus
10	2.949	1375.4	466.5	862.3	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 714.7

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m))	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--

14.467	0.096	-27.45	0.05	0.49	0.23	26.50	0.00	0.000 1.112	109.000	-0.442	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.089
14.563	0.349	-27.45	0.96	0.51	1.23	34.00	0.00	0.007 1.112	108.957	-0.442	5.572958332E-0005	1.663301526E-0007	1.505719968E-0002	0.089
14.912	0.349	-27.45	2.14	0.52	2.81	34.00	0.00	0.035 1.107	108.804	-0.442	6.698976813E-0003	4.075175620E-0005	5.863138137E-0002	0.089
15.261	0.349	-27.45	3.32	0.52	4.39	34.00	0.00	0.062 1.094	108.650	-0.442	4.094095922E-0002	4.262650103E-0004	1.738336685E-0001	0.089
15.609	0.349	-27.45	4.50	0.52	5.96	34.00	0.00	0.089 1.082	108.496	-0.442	1.279178410E-0001	1.961959187E-0003	4.884577645E-0001	0.089
15.958	0.076	-27.45	1.14	0.52	6.92	34.00	0.00	0.116 1.076	108.342	-0.436	2.943276480E-0001	5.652301519E-0003	4.270292957E-0001	0.226
16.034	0.349	-27.35	5.94	0.53	7.89	34.00	0.00	0.124 1.075	108.310	-0.400	3.251912586E-0001	6.547124715E-0003	3.847106824E-0001	0.089
16.383	0.349	-27.35	7.11	0.53	9.46	34.00	0.00	0.166 1.078	108.172	-0.408	4.145014330E-0001	1.000273760E-0002	1.140962488E-0001	0.089
16.731	0.349	-27.35	8.29	0.53	11.03	34.00	0.00	0.200 1.088	108.026	-0.422	4.096302514E-0001	1.159581577E-0002	-1.101641201E-0001	0.089
17.080	0.349	-27.35	9.46	0.53	12.60	34.00	0.00	0.233 1.108	107.878	-0.423	3.811618476E-0001	1.246351827E-0002	2.009276453E-0002	0.089
17.429	0.349	-27.35	10.64	0.53	14.17	34.00	0.00	0.266 1.137	107.731	-0.430	4.002726673E-0001	1.493336702E-0002	6.196611678E-0002	0.089
17.777	0.349	-27.35	11.81	0.53	15.75	34.00	0.00	0.294 1.175	107.578	-0.421	4.499628106E-0001	1.896735444E-0002	3.144025001E-0001	0.089
18.126	0.349	-27.35	12.99	0.53	17.32	34.00	0.00	0.333 1.224	107.437	-0.390	7.112400989E-0001	3.326271638E-0002	1.346453639E+0000	0.089
18.475	0.349	-27.35	14.16	0.53	18.89	34.00	0.00	0.382 1.283	107.306	-0.364	1.513189078E+0000	7.752222669E-0002	3.438464324E+0000	0.090
18.823	0.349	-27.35	15.34	0.53	20.46	34.00	0.00	0.440 1.351	107.183	-0.341	3.232309484E+0000	1.809991585E-0001	6.582072408E+0000	0.339
19.172	0.349	-27.35	16.51	0.53	22.03	34.00	0.00	0.505 1.428	107.068	-0.321	6.191854717E+0000	3.751236598E-0001	1.048020881E+0001	3.503
19.521	0.349	-27.35	17.69	0.53	23.60	34.00	0.00	0.577 1.521	106.959	-0.313	1.056117030E+0001	6.864759848E-0001	1.454709752E+0001	0.623
19.869	0.349	-27.35	18.86	0.53	25.18	34.00	0.00	0.648 1.633	106.850	-0.304	1.628077497E+0001	1.127528902E+0000	1.821088751E+0001	0.463
20.218	0.143	-27.35	8.09	0.53	26.28	34.00	0.00	0.726 1.765	106.747	-0.300	2.326186910E+0001	1.706424552E+0000	2.188132107E+0001	0.332
20.361	0.349	-27.25	20.52	0.53	27.41	34.00	0.00	0.755 1.825	106.702	-0.313	2.651251904E+0001	1.992879172E+0000	2.350846585E+0001	0.409
20.710	0.349	-27.25	21.69	0.53	28.98	34.00	0.00	0.825 1.983	106.593	-0.307	3.545865678E+0001	2.810627025E+0000	2.792547857E+0001	0.401
21.058	0.349	-27.25	22.86	0.53	30.55	34.00	0.00	0.900 2.153	106.489	-0.294	4.607072154E+0001	3.847386254E+0000	3.306606213E+0001	0.401
21.407	0.349	-27.25	24.03	0.53	32.11	34.00	0.00	0.980 2.323	106.388	-0.282	5.858870188E+0001	5.150709542E+0000	3.881987734E+0001	0.408
21.756	0.349	-27.25	25.20	0.53	33.68	34.00	0.00	1.063 2.477	106.292	-0.263	7.317246584E+0001	6.767153926E+0000	4.483767651E+0001	0.417
22.104	0.349	-27.25	26.37	0.53	35.25	34.00	0.00	1.155 2.602	106.205	-0.242	8.981846294E+0001	8.732913166E+0000	5.053166324E+0001	0.430
22.453	0.349	-27.25	27.54	0.53	36.81	34.00	0.00	1.253 2.687	106.123	-0.227	1.084245325E+0002	1.102387827E+0001	5.630653735E+0001	0.443
22.802	0.349	-27.25	28.71	0.53	38.38	34.00	0.00	1.356 2.732	106.046	-0.212	1.290824359E+0002	1.371148719E+0001	6.209583650E+0001	0.457
23.150	0.349	-27.25	29.88	0.53	39.94	34.00	0.00	1.464 2.747	105.975	-0.198	1.516085701E+0002	1.683159324E+0001	6.689313090E+0001	0.473
23.499	0.349	-27.25	31.05	0.53	41.51	34.00	0.00	1.577 2.734	105.908	-0.184	1.755475057E+0002	2.029155629E+0001	7.014560020E+0001	0.489
23.848	0.349	-27.25	32.22	0.53	43.08	34.00	0.00	1.695 2.694	105.847	-0.170	2.003301434E+0002	2.402772486E+0001	7.175403349E+0001	0.504
24.196	0.349	-27.25	33.39	0.53	44.64	34.00	0.00	1.818 2.634	105.790	-0.157	2.254318711E+0002	2.796956123E+0001	7.207282929E+0001	0.519
24.545	0.096	-27.25	9.42	0.53	45.64	34.00	0.00	1.945 2.562	105.737	-0.148	2.505307211E+0002	3.215283514E+0001	7.190999555E+0001	0.516
24.641	0.349	-25.97	34.86	0.53	47.13	34.00	0.00	1.982 2.541	105.724	-0.135	2.574471960E+0002	3.333726679E+0001	7.193777691E+0001	0.539
24.990	0.349	-25.97	35.96	0.53	48.62	34.00	0.00	2.105 2.466	105.677	-0.129	2.825406756E+0002	3.773115022E+0001	7.191484623E+0001	0.554
25.339	0.349	-25.97	37.07	0.53	50.12	34.00	0.00	2.231 2.398	105.634	-0.118	3.075373650E+0002	4.231602517E+0001	7.139263374E+0001	0.570

25.687	0.349	-25.97	38.18	0.53	51.62	34.00	0.00	2.362 2.340	105.595	-0.108	3.322729304E+0002	4.714825454E+0001	7.042480787E+0001	0.586
26.036	0.130	-25.97	14.54	0.53	52.65	34.00	0.00	2.495 2.296	105.559	-0.099	3.565993943E+0002	5.209089690E+0001	6.905151040E+0001	0.588
26.166	0.349	-25.97	39.73	0.53	53.68	38.00	0.00	2.547 2.283	105.547	-0.084	3.655491162E+0002	5.395030753E+0001	6.844064798E+0001	0.608
26.515	0.349	-25.97	40.89	0.53	55.17	38.00	0.00	2.688 2.257	105.519	-0.078	3.890930876E+0002	5.901238745E+0001	6.655110541E+0001	0.622
26.863	0.349	-25.97	42.06	0.53	56.67	38.00	0.00	2.833 2.243	105.493	-0.068	4.119146837E+0002	6.389954742E+0001	6.429717256E+0001	0.632
27.212	0.205	-25.97	25.28	0.53	57.86	38.00	0.00	2.980 2.239	105.471	-0.060	4.338862967E+0002	6.866838846E+0001	6.167461239E+0001	0.633
27.417	0.349	-6.03	43.46	0.53	64.67	38.00	0.00	3.069 2.239	105.460	-0.049	4.463645604E+0002	7.136793307E+0001	6.003933684E+0001	0.647
27.766	0.349	-6.03	43.71	0.53	65.03	38.00	0.00	3.090 2.244	105.444	-0.042	4.667978664E+0002	7.578248378E+0001	5.712532711E+0001	0.655
28.114	0.349	-6.03	43.97	0.53	65.39	38.00	0.00	3.114 2.254	105.431	-0.033	4.861560727E+0002	7.992546453E+0001	5.384082092E+0001	0.662
28.463	0.349	-6.03	44.22	0.52	65.75	38.00	0.00	3.141 2.270	105.421	-0.024	5.042837019E+0002	8.365000961E+0001	5.005414790E+0001	0.667
28.812	0.349	-6.03	44.47	0.52	66.10	38.00	0.00	3.170 2.291	105.414	-0.015	5.209994346E+0002	8.706721110E+0001	4.574874307E+0001	0.671
29.160	0.349	-6.03	44.73	0.52	66.46	38.00	0.00	3.203 2.318	105.410	-0.007	5.361362424E+0002	9.018582089E+0001	4.102314684E+0001	0.674
29.509	0.349	-6.03	44.98	0.52	66.82	38.00	0.00	3.239 2.352	105.409	0.001	5.495815207E+0002	9.297002186E+0001	3.609100500E+0001	0.677
29.858	0.349	-6.03	45.23	0.52	67.18	38.00	0.00	3.278 2.392	105.411	0.011	5.613146440E+0002	9.545468413E+0001	3.122048715E+0001	0.680
30.206	0.349	-6.03	45.49	0.52	67.54	38.00	0.00	3.320 2.440	105.417	0.021	5.713245739E+0002	9.758847231E+0001	2.617505789E+0001	0.682
30.555	0.349	-6.03	45.74	0.52	67.90	38.00	0.00	3.366 2.497	105.426	0.030	5.795716367E+0002	9.930544469E+0001	2.116342242E+0001	0.684
30.904	0.338	-6.03	44.61	0.52	68.25	38.00	0.00	3.415 2.564	105.438	0.039	5.861177655E+0002	1.005563397E+0002	1.645185197E+0001	0.683
31.242	0.349	10.84	45.88	0.52	67.26	38.00	0.00	3.465 2.639	105.452	0.050	5.909675891E+0002	1.013883918E+0002	1.229938522E+0001	0.683
31.591	0.349	10.84	45.42	0.52	66.61	38.00	0.00	3.418 2.729	105.472	0.062	5.945746886E+0002	1.020072379E+0002	8.460782070E+0000	0.684
31.939	0.349	10.84	44.96	0.52	65.97	38.00	0.00	3.375 2.835	105.496	0.072	5.969068107E+0002	1.024073446E+0002	4.955978814E+0000	0.685
32.288	0.349	10.84	44.50	0.52	65.33	38.00	0.00	3.335 2.963	105.522	0.080	5.980416105E+0002	1.026020347E+0002	1.541300007E+0000	0.685
32.637	0.349	10.84	44.04	0.52	64.68	38.00	0.00	3.297 3.118	105.552	0.088	5.979564476E+0002	1.025874239E+0002	-2.048334552E+0000	0.686
32.985	0.349	10.84	43.59	0.53	64.04	38.00	0.00	3.263 3.304	105.584	0.096	5.966281155E+0002	1.023595307E+0002	-5.515831795E+0000	0.687
33.334	0.349	10.84	43.13	0.53	63.40	38.00	0.00	3.231 3.525	105.619	0.104	5.941664961E+0002	1.019372070E+0002	-8.503923872E+0000	0.688
33.683	0.349	10.84	42.67	0.53	62.75	38.00	0.00	3.202 3.780	105.656	0.113	5.907759538E+0002	1.013555142E+0002	-1.082790923E+0001	0.689
34.031	0.349	10.84	42.21	0.53	62.11	38.00	0.00	3.176 4.067	105.698	0.123	5.866951677E+0002	1.006554007E+0002	-1.247565261E+0001	0.690
34.380	0.171	10.84	20.58	0.53	61.63	38.00	0.00	3.154 4.382	105.742	0.131	5.821369644E+0002	9.987338001E+0001	-1.360758505E+0001	0.682
34.551	0.349	17.72	41.37	0.53	59.10	38.00	0.00	3.145 4.544	105.766	0.143	5.797648423E+0002	9.946641075E+0001	-1.406961811E+0001	0.691
34.900	0.349	17.72	40.60	0.53	58.06	38.00	0.00	3.084 4.878	105.816	0.151	5.746884369E+0002	9.859548553E+0001	-1.508661884E+0001	0.693
35.249	0.349	17.72	39.83	0.53	57.02	38.00	0.00	3.028 5.207	105.871	0.163	5.692448836E+0002	9.766157117E+0001	-1.611877494E+0001	0.695
35.597	0.140	17.72	15.81	0.53	56.29	38.00	0.00	2.975 5.522	105.930	0.170	5.634638732E+0002	9.666976154E+0001	-1.701846725E+0001	0.686
35.738	0.349	17.72	38.78	0.53	55.56	34.00	0.00	2.955 5.645	105.955	0.194	5.610539930E+0002	9.625631437E+0001	-1.733971449E+0001	0.697
36.086	0.349	17.72	38.05	0.53	54.51	34.00	0.00	2.914 5.932	106.025	0.210	5.548822165E+0002	9.519746358E+0001	-1.804040888E+0001	0.697
36.435	0.349	17.72	37.33	0.53	53.47	34.00	0.00	2.878 6.174	106.101	0.203	5.484877839E+0002	9.410041318E+0001	-1.862273829E+0001	0.697
36.784	0.349	17.72	36.60	0.53	52.43	34.00	0.00	2.833 6.353	106.167	0.174	5.419044634E+0002	9.297095652E+0001	-1.913376940E+0001	0.697

37.132	0.005	17.72	0.52	0.53	51.90	34.00	0.00	2.777	106.223	0.160	5.351453905E+0002	9.181134718E+0001	-1.964478657E+0001	0.681
								6.454						
37.137	0.349	17.82	35.86	0.53	51.34	34.00	0.00	2.776	106.224	0.161	5.350472737E+0002	9.179451393E+0001	-1.965254193E+0001	0.697
								6.454						
37.486	0.349	17.82	35.13	0.53	50.30	34.00	0.00	2.720	106.280	0.161	5.280968867E+0002	9.060208212E+0001	-2.018086051E+0001	0.697
								6.471						
37.835	0.265	17.82	26.26	0.53	49.38	34.00	0.00	2.664	106.336	0.161	5.210448893E+0002	8.939221767E+0001	-2.022402960E+0001	0.693
								6.407						
38.100	0.349	17.82	39.34	0.46	49.53	34.00	0.00	2.622	106.378	0.349	5.156707029E+0002	8.847020412E+0001	-2.031142296E+0001	0.089
								6.311						
38.449	0.251	17.82	27.41	0.49	50.49	34.00	0.00	2.681	106.550	0.493	5.084888745E+0002	8.723806544E+0001	-2.103144516E+0001	0.089
								6.134						
38.700	0.349	17.82	35.89	0.53	51.45	34.00	0.00	2.724	106.674	0.493	5.030728294E+0002	8.630887048E+0001	-2.215776236E+0001	0.696
								5.979						
39.049	0.349	17.82	37.23	0.52	52.56	34.00	0.00	2.784	106.846	0.493	4.949494606E+0002	8.491519795E+0001	-2.459949350E+0001	0.089
								5.736						
39.397	0.326	17.82	35.55	0.52	53.64	34.00	0.00	2.843	107.017	0.493	4.858282630E+0002	8.335033455E+0001	-2.780977808E+0001	0.089
								5.471						
39.724	0.349	18.41	38.72	0.52	54.52	34.00	0.00	2.899	107.178	0.495	4.762282529E+0002	8.170332444E+0001	-3.097932058E+0001	0.089
								5.212						
40.072	0.349	18.41	39.46	0.52	55.59	34.00	0.00	2.957	107.352	0.498	4.649091766E+0002	7.976138555E+0001	-3.392164593E+0001	0.089
								4.924						
40.421	0.349	18.41	40.21	0.52	56.67	34.00	0.00	3.015	107.526	0.498	4.525244898E+0002	7.763662694E+0001	-3.714518854E+0001	0.089
								4.629						
40.770	0.349	18.41	40.96	0.52	57.74	34.00	0.00	3.072	107.699	0.498	4.390294246E+0002	7.532136807E+0001	-4.018396649E+0001	0.089
								4.331						
41.118	0.349	18.41	41.71	0.52	58.81	34.00	0.00	3.130	107.873	0.498	4.245837349E+0002	7.284301684E+0001	-4.253877508E+0001	0.089
								4.040						
41.467	0.071	18.41	8.63	0.52	59.46	34.00	0.00	3.188	108.047	0.498	4.094713926E+0002	7.025029246E+0001	-4.399628028E+0001	0.089
								3.764						
41.538	0.349	29.96	42.34	0.52	54.52	34.00	0.00	3.199	108.082	0.599	4.063252774E+0002	6.971053433E+0001	-4.418536569E+0001	0.089
								3.710						
41.887	0.349	29.96	42.53	0.52	54.78	34.00	0.00	3.215	108.298	0.549	3.908145289E+0002	6.704945802E+0001	-4.468415846E+0001	0.089
								3.459						
42.236	0.349	29.96	48.07	0.46	55.04	26.50	0.00	3.180	108.465	0.469	3.752085081E+0002	6.437203649E+0001	-4.482517242E+0001	0.089
								3.233						
42.584	0.349	29.96	48.29	0.46	55.30	26.50	0.00	3.140	108.626	0.451	3.595227804E+0002	6.273471928E+0001	-4.519765450E+0001	0.089
								3.031						
42.933	0.349	29.96	48.52	0.46	55.55	26.50	0.00	3.093	108.780	0.423	3.437201993E+0002	6.113916701E+0001	-4.540658968E+0001	0.089
								2.854						
43.282	0.168	29.96	23.49	0.47	56.22	26.50	0.00	3.033	108.920	0.397	3.278750456E+0002	5.892150618E+0001	-4.547900765E+0001	0.089
								2.698						
43.450	0.349	29.96	48.85	0.45	54.66	26.50	0.00	3.000	108.985	0.374	3.202187741E+0002	5.767245397E+0001	-4.552056625E+0001	0.089
								2.629						
43.799	0.349	29.96	49.01	0.43	52.36	26.50	0.00	2.928	109.114	0.362	3.043224881E+0002	5.462727290E+0001	-4.568394539E+0001	0.089
								2.500						
44.147	0.053	29.96	7.41	0.42	51.04	26.50	0.00	2.851	109.237	0.352	2.883477280E+0002	5.119203031E+0001	-4.596810752E+0001	0.089
								2.384						
44.200	0.349	29.96	48.13	0.42	49.72	26.50	0.00	2.838	109.255	0.318	2.859251071E+0002	5.065150411E+0001	-4.601884143E+0001	0.089
								2.367						
44.549	0.001	29.96	0.18	0.42	48.57	26.50	0.00	2.747	109.365	0.316	2.698201464E+0002	4.694920220E+0001	-4.635724930E+0001	0.932
								2.263						
44.550	0.150	29.96	19.55	0.43	48.07	34.00	0.00	2.747	109.366	0.299	2.697581829E+0002	4.693487538E+0001	-4.635842881E+0001	0.871
								2.263						
44.700	0.255	29.96	32.64	0.42	46.74	34.00	0.00	2.705	109.410	0.289	2.627952057E+0002	4.531385812E+0001	-4.647576268E+0001	0.879
								2.221						
44.955	0.349	30.06	43.51	0.42	44.70	34.00	0.00	2.631	109.483	0.277	2.509396553E+0002	4.251350446E+0001	-4.656381668E+0001	0.880
								2.153						
45.303	0.349	30.06	42.17	0.41	42.40	34.00	0.00	2.524	109.578	0.265	2.347179791E+0002	3.862721075E+0001	-4.647169988E+0001	0.863
								2.066						
45.652	0.202	30.06	23.83	0.40	40.59	34.00	0.00	2.412	109.668	0.259	2.185468852E+0002	3.473954247E+0001	-4.626453006E+0001	0.824
								1.986						
45.854	0.349	31.10	40.02	0.39	38.32	34.00	0.00	2.348	109.720	0.254	2.092166629E+0002	3.254269064E+0001	-4.606927927E+0001	0.829
								1.943						
46.203	0.349	31.10	38.63	0.38	35.98	34.00	0.00	2.224	109.807	0.247	1.932339564E+0002	2.882695888E+0001	-4.557597406E+0001	0.804
								1.873						
46.551	0.274	31.10	29.36	0.37	33.88	34.00	0.00	2.099	109.893	0.244	1.774602583E+0002	2.537982728E+0001	-4.486885465E+0001	0.772
								1.808						
46.825	0.349	31.20	36.14	0.36	31.75	34.00	0.00	2.001	109.959	0.243	1.652676420E+0002	2.295391861E+0001	-4.416452134E+0001	0.766
								1.761						

47.174	0.215	31.20	21.61	0.35	29.85	34.00	0.00	1.874 1.704	110.044	0.233	1.500500302E+0002	2.005929339E+0001	-4.309750375E+0001	0.733
47.389	0.349	31.20	33.78	0.34	27.95	26.50	0.00	1.791 1.671	110.091	0.210	1.408518203E+0002	1.835779625E+0001	-4.236100826E+0001	0.738
47.738	0.349	31.20	32.20	0.33	25.60	26.50	0.00	1.651 1.620	110.162	0.205	1.262997673E+0002	1.569530209E+0001	-4.111888087E+0001	0.704
48.087	0.349	31.20	30.62	0.31	23.24	26.50	0.00	1.511 1.572	110.233	0.207	1.121777724E+0002	1.319242002E+0001	-3.986865630E+0001	0.667
48.435	0.349	31.20	29.04	0.30	20.89	26.50	0.00	1.373 1.525	110.307	0.211	9.852349173E+0001	1.091135003E+0001	-3.840478131E+0001	0.629
48.784	0.349	31.20	27.46	0.28	18.54	26.50	0.00	1.236 1.480	110.380	0.213	8.543844965E+0001	8.901230636E+0000	-3.658826563E+0001	0.593
49.133	0.349	31.20	25.88	0.26	16.19	26.50	0.00	1.099 1.436	110.455	0.219	7.305581943E+0001	7.152804817E+0000	-3.437655636E+0001	0.558
49.481	0.025	31.20	1.79	0.24	14.93	26.50	0.00	0.966 1.392	110.533	0.225	6.150679884E+0001	5.666561786E+0000	-3.182353796E+0001	0.496
49.506	0.194	35.88	13.59	0.24	13.35	26.50	0.00	0.957 1.388	110.539	0.245	6.071366778E+0001	5.567499319E+0000	-3.163077350E+0001	0.509
49.700	0.349	35.88	22.98	0.21	11.37	26.50	0.00	0.865 1.363	110.587	0.254	5.473058205E+0001	4.803842587E+0000	-3.011041569E+0001	0.500
50.049	0.151	35.88	9.39	0.19	9.53	26.50	0.00	0.703 1.313	110.677	0.261	4.471311522E+0001	3.601217439E+0000	-2.736645429E+0001	0.443
50.200	0.349	35.88	19.67	0.17	7.70	26.50	0.00	0.634 1.289	110.717	0.289	4.065848886E+0001	3.143484449E+0000	-2.622126028E+0001	0.438
50.549	0.349	35.88	16.56	0.13	5.15	26.50	0.00	0.485 1.227	110.821	0.339	3.197067674E+0001	2.191585781E+0000	-2.361467388E+0001	0.385
50.897	0.349	35.88	13.46	0.08	2.60	26.50	0.00	0.366 1.150	110.954	0.422	2.419594396E+0001	1.403185367E+0000	-2.097018037E+0001	0.320
51.246	0.179	35.88	5.70	0.03	0.66	26.50	0.00	0.275 1.051	111.115	0.464	1.735871567E+0001	7.917136551E-0001	-1.823178471E+0001	0.246
51.425	0.349	35.88	8.81	0.00	0.00	26.50	0.00	0.229 0.988	111.199	0.498	1.422338103E+0001	5.575508989E-0001	-1.678501050E+0001	0.210
51.774	0.349	35.88	5.81	0.00	0.00	26.50	0.00	0.156 0.837	111.378	0.527	8.870760958E+0000	2.528451566E-0001	-1.390889590E+0001	0.153
52.122	0.349	35.88	2.82	0.00	0.00	26.50	0.00	0.092 0.639	111.566	0.540	4.526248550E+0000	7.638282703E-0002	-1.101798556E+0001	0.090
52.471	0.154	35.88	0.29	0.00	0.00	26.50	0.00	0.028 0.379	111.755	0.540	1.175714300E+0000	9.567996138E-0003	-8.231218614E+0000	0.089

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI ..	mi ..	D ..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P□_S1-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

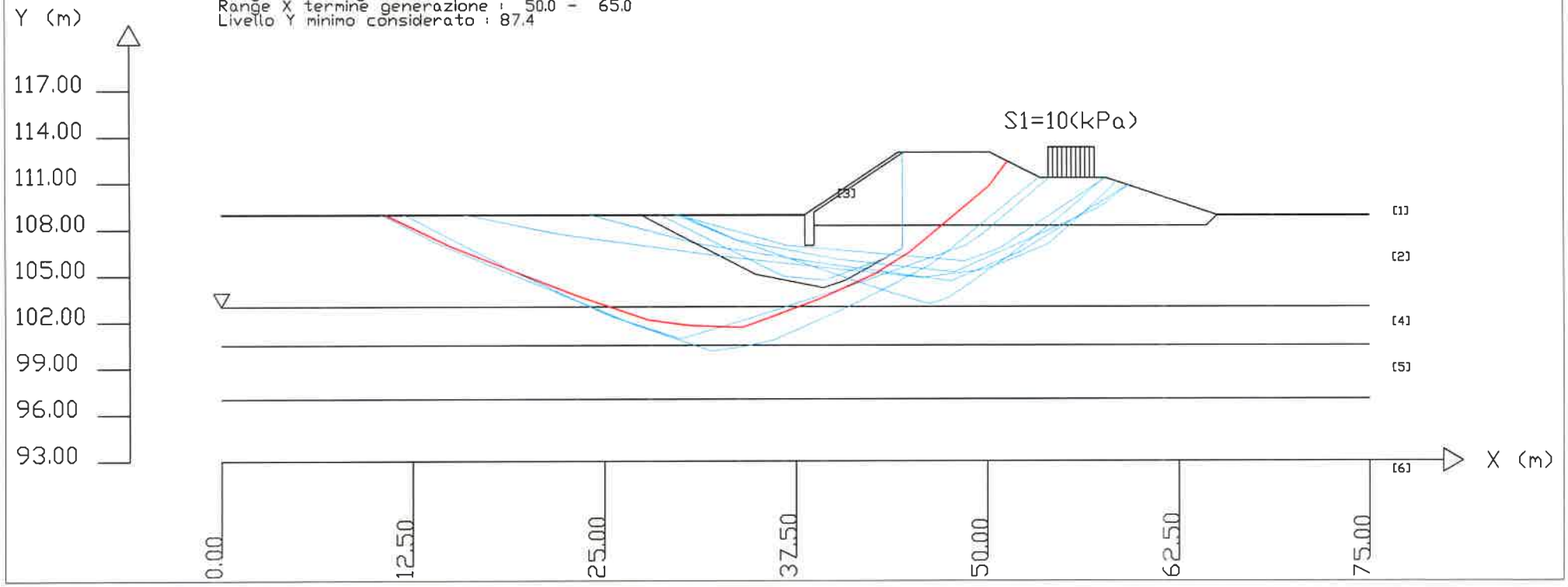
Fs minimo : 6.229
Range Fs : 6.229 7.815
Differenza % Range Fs : 20.3
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 6.228
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.65918
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 10.0 - 30.0
Range X termine generazione : 50.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 54.00
a m.: 57.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 10.00 30.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 50.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)

COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 6.229 - Min. - Lambda= 0.131

X	Y
10.75	109.00
15.07	106.92
19.20	105.31
23.42	103.66
27.83	102.17
30.55	101.80
34.00	101.67
35.92	102.36
39.03	103.52
42.67	105.15
44.89	106.54
47.16	108.40
50.14	110.86
51.35	112.47

Fattore di sicurezza (FS) 6.554 - N.2 -- Lambda= 0.134

X	Y
11.93	109.00
15.88	106.96
19.14	105.30
22.91	103.52
25.40	102.38
29.92	100.93
33.62	101.99
36.85	102.99
40.65	104.21
42.82	104.96
45.53	105.90
48.56	106.96

			49.74	107.77		
			50.93	108.76		
			52.99	110.49		
			54.04	111.38		
			54.06	111.40		
Fattore di sicurezza (FS)	6.796	- N.3 --	X	Y	Lambda=	0.134
			10.44	109.00		
			14.12	107.13		
			17.08	105.90		
			19.00	105.11		
			23.59	103.22		
			26.99	101.83		
			30.01	100.79		
			31.97	100.13		
			34.14	100.42		
			36.00	100.83		
			37.55	101.50		
			38.69	102.01		
			40.96	103.00		
			44.11	104.58		
			46.39	105.79		
			48.33	107.34		
			49.99	108.67		
			53.43	111.43		
Fattore di sicurezza (FS)	6.931	- N.4 --	X	Y	Lambda=	0.147
			29.89	109.00		
			33.68	107.33		
			36.60	106.77		
			38.75	106.37		
			40.27	106.08		
			43.23	105.75		
			47.85	105.24		
			51.13	106.70		
			55.53	108.66		
			57.26	109.43		
			59.25	110.92		
Fattore di sicurezza (FS)	7.271	- N.5 --	X	Y	Lambda=	0.131
			24.03	109.00		
			27.89	107.95		

			30.90	107.15		
			35.51	106.40		
			38.55	105.92		
			42.95	105.30		
			47.63	104.65		
			49.92	105.62		
			52.17	106.56		
			54.29	107.87		
			58.51	110.49		
			59.21	110.93		
Fattore di sicurezza (FS)	7.583	- N.6 --	X	Y	Lambda=	0.012
			27.38	109.00		
			31.57	106.83		
			34.88	105.12		
			37.21	104.65		
			39.29	104.24		
			40.76	104.74		
			44.46	106.80		
			44.46	113.05		
Fattore di sicurezza (FS)	7.638	- N.7 --	X	Y	Lambda=	0.107
			15.81	109.00		
			18.00	108.55		
			22.05	107.73		
			24.11	107.44		
			28.75	106.81		
			32.11	106.35		
			36.87	105.82		
			40.63	105.40		
			42.64	105.18		
			45.73	104.87		
			49.81	105.40		
			51.04	105.86		
			53.89	107.03		
			55.48	108.37		
			58.16	110.85		
			58.43	111.19		
Fattore di sicurezza (FS)	7.769	- N.8 --	X	Y	Lambda=	0.018
			28.62	109.00		
			32.88	106.86		

```
                                        36.74  104.97
                                        37.77  104.86
                                        39.36  104.71
                                        43.04  106.04
                                        44.46  106.78
                                        44.46  113.05

 Fattore di sicurezza (FS)     7.791  - N.9 --    X       Y       Lambda=    0.152
                                        29.58  109.00
                                        33.61  107.35
                                        37.56  105.98
                                        40.77  104.87
                                        43.74  103.89
                                        46.22  103.16
                                        47.48  103.57
                                        51.58  106.41
                                        54.52  108.67
                                        55.96  109.88
                                        57.62  111.40

 Fattore di sicurezza (FS)     7.815  - N.10 --    X       Y       Lambda=    0.146
                                        29.74  109.00
                                        34.40  107.69
                                        36.87  107.00
                                        40.96  106.62
                                        44.95  106.27
                                        48.49  105.96
                                        50.76  106.76
                                        52.25  107.74
                                        53.94  108.86
                                        57.75  111.40
------------ ANALISI DEFICIT DI RESISTENZA -----------------------------------
# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
  # Analisi Deficit in riferimento a FS(progetto) = 1.100

    Sup N.     FS        FTR(kN/m)      FTA(kN/m)   Bilancio(kN/m)    ESITO
       1     6.229         2798.6          449.3        2304.3         Surplus
       2     6.554         3053.7          465.9        2541.2         Surplus
       3     6.796         3511.4          516.7        2943.1         Surplus
       4     6.931         1627.3          234.8        1369.0         Surplus
       5     7.271         1807.6          248.6        1534.1         Surplus
       6     7.583          725.6           95.7         620.4         Surplus
```

7	7.638	2013.8	263.7	1723.7	Surplus
8	7.769	642.3	82.7	551.4	Surplus
9	7.791	2100.9	269.7	1804.3	Surplus
10	7.815	1577.6	201.9	1355.6	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 551.4

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--
10.749	0.104	-25.67	0.05	0.00	0.00	26.50	0.00	0.000 1.776	109.000	-0.408	0.000000000E+0000	0.000000000E+0000	7.710959286E+0000	0.208
10.853	0.363	-25.67	0.94	0.00	0.00	34.00	0.00	0.007 1.776	108.957	-0.408	8.411438101E-0001	1.706468288E-0003	8.474658383E+0000	0.208
11.217	0.363	-25.67	2.08	0.00	0.00	34.00	0.00	0.034 1.777	108.809	-0.408	4.480787865E+0000	1.855454706E-0002	1.164110839E+0001	0.208
11.580	0.363	-25.67	3.22	0.00	0.00	34.00	0.00	0.060 1.776	108.661	-0.408	9.301610817E+0000	6.552674461E-0002	1.483078695E+0001	0.208
11.943	0.363	-25.67	4.36	0.00	0.00	34.00	0.00	0.086 1.776	108.512	-0.408	1.517442300E+0001	1.521651993E-0001	1.734490264E+0001	0.208
12.307	0.363	-25.67	5.50	0.00	0.00	34.00	0.00	0.112 1.776	108.364	-0.408	2.178024862E+0001	2.837513767E-0001	1.883753678E+0001	0.208
12.670	0.363	-25.67	6.64	0.00	0.00	34.00	0.00	0.138 1.778	108.215	-0.408	2.873853418E+0001	4.607880688E-0001	1.931564338E+0001	0.208
13.033	0.363	-25.67	7.78	0.00	0.00	34.00	0.00	0.165 1.782	108.067	-0.408	3.573535706E+0001	6.798087639E-0001	1.913904918E+0001	0.208
13.397	0.363	-25.67	8.92	0.00	0.00	34.00	0.00	0.191 1.787	107.919	-0.408	4.265163396E+0001	9.459441939E-0001	1.902045361E+0001	0.208
13.760	0.363	-25.67	10.06	0.00	0.00	34.00	0.00	0.217 1.795	107.770	-0.393	4.961646571E+0001	1.252314859E+0000	1.926441633E+0001	0.235
14.123	0.363	-25.67	11.20	0.00	0.00	34.00	0.00	0.254 1.805	107.633	-0.359	5.662326581E+0001	1.596436685E+0000	1.930205211E+0001	0.262
14.487	0.363	-25.67	12.35	0.00	0.00	34.00	0.00	0.305 1.817	107.509	-0.330	6.365925405E+0001	1.975195200E+0000	1.947386258E+0001	0.289
14.850	0.221	-25.67	8.06	0.00	0.00	34.00	0.00	0.363 1.832	107.393	-0.320	7.081747314E+0001	2.388552907E+0000	1.999925226E+0001	0.314
15.071	0.363	-21.38	14.07	0.00	0.00	34.00	0.00	0.399 1.842	107.322	-0.315	7.528925951E+0001	2.666687569E+0000	2.052839356E+0001	0.329
15.434	0.363	-21.38	15.00	0.00	0.00	34.00	0.00	0.428 1.859	107.209	-0.301	8.295253909E+0001	3.150103347E+0000	2.171289402E+0001	0.353
15.797	0.363	-21.38	15.93	0.00	0.00	34.00	0.00	0.465 1.878	107.103	-0.281	9.109630663E+0001	3.690612979E+0000	2.313401087E+0001	0.376
16.161	0.363	-21.38	16.86	0.00	0.00	34.00	0.00	0.508 1.899	107.004	-0.265	9.975481315E+0001	4.294598567E+0000	2.448263652E+0001	0.400

16.524	0.363	-21.38	17.79	0.00	0.00	34.00	0.00	0.557 1.922	106.911	-0.253	1.088647796E+0002	4.964992219E+0000	2.567117449E+0001	0.423
16.887	0.363	-21.38	18.72	0.00	0.00	34.00	0.00	0.609 1.948	106.821	-0.256	1.184139093E+0002	5.707262954E+0000	2.690077520E+0001	0.447
17.251	0.363	-21.38	19.65	0.00	0.00	34.00	0.00	0.655 1.976	106.725	-0.261	1.284176355E+0002	6.514317425E+0000	2.817362137E+0001	0.471
17.614	0.363	-21.38	20.58	0.00	0.00	34.00	0.00	0.704 2.006	106.631	-0.252	1.388914850E+0002	7.411507172E+0000	2.948805220E+0001	0.495
17.977	0.363	-21.38	21.51	0.00	0.00	34.00	0.00	0.757 2.037	106.542	-0.241	1.498496844E+0002	8.375668416E+0000	3.083857173E+0001	0.518
18.341	0.363	-21.38	22.44	0.00	0.00	34.00	0.00	0.814 2.068	106.457	-0.230	1.613037666E+0002	9.408667717E+0000	3.221584885E+0001	0.541
18.704	0.363	-21.38	23.37	0.00	0.00	34.00	0.00	0.874 2.099	106.375	-0.219	1.732611777E+0002	1.051212401E+0001	3.360671726E+0001	0.562
19.067	0.132	-21.38	8.71	0.00	0.00	34.00	0.00	0.939 2.129	106.298	-0.211	1.857232753E+0002	1.168723461E+0001	3.498557820E+0001	0.583
19.199	0.363	-21.28	24.63	0.00	0.00	34.00	0.00	0.964 2.140	106.271	-0.205	1.903676808E+0002	1.213859332E+0001	3.547341210E+0001	0.591
19.563	0.363	-21.28	25.56	0.00	0.00	34.00	0.00	1.031 2.169	106.196	-0.200	2.034983314E+0002	1.343438964E+0001	3.680583151E+0001	0.612
19.926	0.363	-21.28	26.48	0.00	0.00	34.00	0.00	1.101 2.198	106.125	-0.191	2.171145724E+0002	1.484069284E+0001	3.815170232E+0001	0.633
20.289	0.363	-21.28	27.41	0.00	0.00	34.00	0.00	1.175 2.227	106.057	-0.183	2.312256402E+0002	1.636619330E+0001	3.953110914E+0001	0.656
20.653	0.363	-21.28	28.33	0.00	0.00	34.00	0.00	1.252 2.255	105.992	-0.174	2.458438652E+0002	1.802055256E+0001	4.094099761E+0001	0.679
21.016	0.363	-21.28	29.26	0.00	0.00	34.00	0.00	1.331 2.283	105.931	-0.164	2.609762643E+0002	1.981388226E+0001	4.235517431E+0001	0.703
21.379	0.363	-21.28	30.18	0.00	0.00	34.00	0.00	1.416 2.311	105.873	-0.154	2.766161343E+0002	2.169726645E+0001	4.372430683E+0001	0.726
21.743	0.363	-21.28	31.11	0.00	0.00	34.00	0.00	1.503 2.340	105.819	-0.147	2.927356257E+0002	2.371031971E+0001	4.499370290E+0001	0.750
22.106	0.363	-21.28	32.03	0.00	0.00	34.00	0.00	1.592 2.369	105.767	-0.140	3.093054437E+0002	2.582147158E+0001	4.620615165E+0001	0.773
22.469	0.363	-21.28	32.96	0.00	0.00	34.00	0.00	1.684 2.399	105.718	-0.132	3.262995849E+0002	2.802585414E+0001	4.732012585E+0001	0.795
22.832	0.363	-21.28	33.88	0.00	0.00	34.00	0.00	1.780 2.432	105.671	-0.124	3.436733004E+0002	3.031620127E+0001	4.828956533E+0001	0.817
23.196	0.222	-21.28	21.17	0.00	0.00	34.00	0.00	1.878 2.467	105.628	-0.118	3.613687230E+0002	3.268308389E+0001	4.908831679E+0001	0.837
23.418	0.363	-18.70	35.31	0.00	0.00	34.00	0.00	1.939 2.489	105.602	-0.110	3.723192124E+0002	3.422236469E+0001	4.948909540E+0001	0.851
23.781	0.363	-18.70	36.12	0.00	0.00	34.00	0.00	2.023 2.529	105.563	-0.103	3.903991763E+0002	3.678162990E+0001	5.000819040E+0001	0.872
24.145	0.363	-18.70	36.92	0.00	0.00	34.00	0.00	2.110 2.571	105.527	-0.096	4.086402963E+0002	3.941299771E+0001	5.038217002E+0001	0.893
24.508	0.363	-18.70	37.72	0.00	0.00	34.00	0.00	2.199 2.615	105.494	-0.090	4.269974081E+0002	4.211662611E+0001	5.065330059E+0001	0.913
24.871	0.363	-18.70	38.53	0.00	0.00	34.00	0.00	2.290 2.662	105.462	-0.083	4.454336914E+0002	4.489411002E+0001	5.080700877E+0001	0.933
25.235	0.144	-18.70	15.47	0.00	0.00	34.00	0.00	2.384 2.710	105.433	-0.077	4.638946546E+0002	4.774574148E+0001	5.078018660E+0001	0.953
25.378	0.363	-18.70	39.69	0.01	0.58	38.00	0.00	2.423 2.730	105.423	-0.067	4.711923175E+0002	4.888812404E+0001	5.070964011E+0001	0.960
25.742	0.363	-18.70	40.57	0.02	1.72	38.00	0.00	2.522 2.781	105.399	-0.062	4.895613725E+0002	5.180697267E+0001	5.036564975E+0001	0.977
26.105	0.363	-18.70	41.45	0.03	2.87	38.00	0.00	2.624 2.834	105.378	-0.056	5.077613878E+0002	5.487261470E+0001	4.977953077E+0001	0.995
26.468	0.363	-18.70	42.33	0.04	4.01	38.00	0.00	2.727 2.890	105.358	-0.050	5.257062454E+0002	5.800909046E+0001	4.896539750E+0001	1.014
26.832	0.363	-18.70	43.21	0.05	5.15	38.00	0.00	2.833 2.950	105.341	-0.045	5.433192162E+0002	6.118232975E+0001	4.796082007E+0001	1.032
27.195	0.363	-18.70	44.10	0.06	6.29	38.00	0.00	2.940 3.015	105.326	-0.040	5.605416403E+0002	6.435497988E+0001	4.682758172E+0001	1.050
27.558	0.269	-18.70	33.23	0.06	7.29	38.00	0.00	3.050 3.085	105.312	-0.036	5.773322162E+0002	6.738601116E+0001	4.557125096E+0001	1.064
27.827	0.363	-7.77	45.37	0.07	8.31	38.00	0.00	3.132 3.141	105.303	-0.031	5.894549928E+0002	6.954453487E+0001	4.451283688E+0001	1.075
28.191	0.363	-7.77	45.72	0.07	8.79	38.00	0.00	3.171 3.223	105.293	-0.027	6.053364710E+0002	7.230561972E+0001	4.286494112E+0001	1.087

28.554	0.363	-7.77	46.08	0.07	9.27	38.00	0.00	3.212	105.284	-0.022	6.205696574E+0002	7.493382402E+0001	4.094248935E+0001	1.098
28.917	0.363	-7.77	46.43	0.08	9.75	38.00	0.00	3.313 3.254	105.277	-0.017	6.350550288E+0002	7.744931372E+0001	3.875253140E+0001	1.108
29.281	0.363	-7.77	46.79	0.08	10.23	38.00	0.00	3.410 3.298	105.271	-0.012	6.487019238E+0002	7.979894221E+0001	3.633679887E+0001	1.117
29.644	0.363	-7.77	47.14	0.08	10.72	38.00	0.00	3.517 3.344	105.268	-0.006	6.614411436E+0002	8.198063062E+0001	3.377170514E+0001	1.124
30.007	0.363	-7.77	47.50	0.09	11.20	38.00	0.00	3.635 3.393	105.267	0.000	6.732389883E+0002	8.396342139E+0001	3.117327306E+0001	1.130
30.371	0.181	-7.77	23.73	0.09	11.56	38.00	0.00	3.765 3.444	105.268	0.004	6.840848495E+0002	8.577168119E+0001	2.850535694E+0001	1.133
30.551	0.363	-2.08	47.90	0.09	11.84	38.00	0.00	3.908 3.469	105.269	0.011	6.891053155E+0002	8.661065615E+0001	2.711139055E+0001	1.138
30.915	0.363	-2.08	48.00	0.09	11.97	38.00	0.00	3.985 3.487	105.274	0.016	6.984195899E+0002	8.812907927E+0001	2.411540871E+0001	1.142
31.278	0.363	-2.08	48.09	0.09	12.10	38.00	0.00	4.148 3.507	105.281	0.024	7.065950103E+0002	8.945572981E+0001	2.084158356E+0001	1.145
31.641	0.363	-2.08	48.18	0.09	12.23	38.00	0.00	4.325 3.531	105.291	0.031	7.135336091E+0002	9.058720152E+0001	1.731690166E+0001	1.148
32.005	0.363	-2.08	48.28	0.09	12.36	38.00	0.00	4.513 3.557	105.303	0.041	7.191587542E+0002	9.152478382E+0001	1.363181928E+0001	1.151
32.368	0.363	-2.08	48.37	0.09	12.49	38.00	0.00	4.712 3.587	105.320	0.052	7.234382086E+0002	9.226108762E+0001	9.940262306E+0000	1.153
32.731	0.363	-2.08	48.47	0.10	12.62	38.00	0.00	4.919 3.621	105.342	0.046	7.263854043E+0002	9.273620427E+0001	6.258696104E+0000	1.154
33.095	0.363	-2.08	48.56	0.10	12.75	38.00	0.00	5.135 3.646	105.354	0.008	7.279791140E+0002	9.293967007E+0001	2.519260546E+0000	1.154
33.458	0.363	-2.08	48.66	0.10	12.88	38.00	0.00	5.359 3.653	105.347	-0.018	7.282283133E+0002	9.297148485E+0001	-1.120841841E+0000	1.153
33.821	0.180	-2.08	24.13	0.10	12.97	38.00	0.00	5.593 3.660	105.340	-0.018	7.271889249E+0002	9.283878817E+0001	-4.562499765E+0000	1.151
34.001	0.363	19.60	48.29	0.09	11.66	38.00	0.00	5.840 3.663	105.337	0.113	7.262219268E+0002	9.271533342E+0001	-6.178772901E+0000	1.153
34.364	0.363	19.60	47.36	0.09	10.47	38.00	0.00	5.967 3.598	105.402	0.178	7.234087962E+0002	9.235618653E+0001	-9.270018690E+0000	1.155
34.728	0.363	19.60	46.43	0.08	9.27	38.00	0.00	6.235 3.533	105.467	0.178	7.195081703E+0002	9.185820125E+0001	-1.217868357E+0001	1.157
35.091	0.363	19.60	45.50	0.07	8.07	38.00	0.00	6.519 3.469	105.531	0.178	7.145678983E+0002	9.122748639E+0001	-1.501659454E+0001	1.160
35.454	0.363	19.60	44.58	0.06	6.88	38.00	0.00	6.818 3.404	105.596	0.178	7.085787761E+0002	9.046286686E+0001	-1.798046426E+0001	1.162
35.818	0.099	19.60	12.05	0.05	6.12	38.00	0.00	7.133 3.339	105.661	0.178	7.015035403E+0002	8.955958534E+0001	-2.093792953E+0001	1.163
35.917	0.363	20.48	43.37	0.05	5.30	38.00	0.00	7.463 3.322	105.678	0.185	6.993818926E+0002	8.928871872E+0001	-2.170636169E+0001	1.166
36.281	0.363	20.48	42.40	0.04	4.05	38.00	0.00	7.556 3.254	105.746	0.187	6.910178004E+0002	8.822089143E+0001	-2.426410210E+0001	1.169
36.644	0.363	20.48	41.43	0.03	2.80	38.00	0.00	7.905 3.186	105.814	0.187	6.818068236E+0002	8.704494403E+0001	-2.635892031E+0001	1.172
37.007	0.363	20.48	40.45	0.02	1.56	38.00	0.00	8.266 3.118	105.882	0.187	6.719195077E+0002	8.578264974E+0001	-2.799917259E+0001	1.175
37.371	0.269	20.48	29.32	0.00	0.47	38.00	0.00	8.637 3.050	105.950	0.187	6.615001358E+0002	8.445242891E+0001	-2.932106889E+0001	1.179
37.639	0.363	20.48	38.80	0.00	0.00	34.00	0.00	9.015 3.000	106.000	0.187	6.534911862E+0002	8.342994197E+0001	-3.024496457E+0001	1.181
38.003	0.097	20.48	10.23	0.00	0.00	34.00	0.00	9.297 2.932	106.068	0.187	6.422576760E+0002	8.199578169E+0001	-3.156614714E+0001	1.182
38.100	0.363	20.48	43.97	0.00	0.00	34.00	0.00	9.678 2.914	106.086	0.448	6.391749371E+0002	8.160221444E+0001	-3.185982099E+0001	0.208
38.463	0.237	20.48	27.52	0.00	0.00	34.00	0.00	9.780 2.967	106.274	0.519	6.274180521E+0002	8.010123592E+0001	-3.284900767E+0001	0.208
38.700	0.328	20.48	35.70	0.00	0.00	34.00	0.00	10.149 3.001	106.397	0.519	6.195635124E+0002	7.909846220E+0001	-3.354307459E+0001	1.179
39.028	0.363	24.18	40.74	0.00	0.00	34.00	0.00	10.376 3.049	106.567	0.538	6.083690679E+0002	7.766928936E+0001	-3.474295973E+0001	0.208
39.391	0.363	24.18	41.25	0.00	0.00	34.00	0.00	10.671 3.088	106.769	0.556	5.954407457E+0002	7.601875574E+0001	-3.650185517E+0001	0.208
39.755	0.363	24.18	41.75	0.00	0.00	34.00	0.00	10.963 3.127	106.971	0.556	5.817918510E+0002	7.427622804E+0001	-3.869200103E+0001	0.208
								11.222						

40.118	0.363	24.18	42.26	0.00	0.00	34.00	0.00	3.166	107.174	0.556	5.672953258E+0002	7.242548502E+0001	-4.112118119E+0001	0.208
								11.452						
40.481	0.363	24.18	42.77	0.00	0.00	34.00	0.00	3.205	107.376	0.556	5.519256985E+0002	7.046327475E+0001	-4.342241216E+0001	0.208
								11.662						
40.845	0.363	24.18	43.27	0.00	0.00	34.00	0.00	3.243	107.578	0.556	5.357680898E+0002	6.840046444E+0001	-4.556819896E+0001	0.208
								11.864						
41.208	0.363	24.18	43.78	0.00	0.00	34.00	0.00	3.282	107.780	0.556	5.188007078E+0002	6.623427196E+0001	-4.781562168E+0001	0.208
								12.072						
41.571	0.363	24.18	44.29	0.00	0.00	34.00	0.00	3.321	107.982	0.528	5.010530721E+0002	6.396846601E+0001	-4.981643683E+0001	0.208
								12.296						
41.935	0.363	24.18	44.79	0.00	0.00	34.00	0.00	3.340	108.163	0.477	4.826566109E+0002	6.161982578E+0001	-5.136566758E+0001	0.208
								12.542						
42.298	0.363	24.18	50.47	0.00	0.00	26.50	0.00	3.342	108.329	0.448	4.637896740E+0002	5.921112083E+0001	-5.241000438E+0001	0.208
								12.807						
42.661	0.007	24.18	0.93	0.00	0.00	26.50	0.00	3.339	108.489	0.442	4.446224274E+0002	5.758565408E+0001	-5.304780495E+0001	0.208
								13.082						
42.668	0.363	32.01	50.81	0.00	0.00	26.50	0.00	3.339	108.492	0.429	4.442697140E+0002	5.755751567E+0001	-5.305702206E+0001	0.208
								13.088						
43.031	0.363	32.01	50.91	0.00	0.00	26.50	0.00	3.268	108.648	0.422	4.249058342E+0002	5.567145580E+0001	-5.353872750E+0001	0.208
								13.394						
43.395	0.055	32.01	7.75	0.00	0.00	26.50	0.00	3.192	108.799	0.416	4.053464941E+0002	5.333373334E+0001	-5.407409371E+0001	0.208
								13.744						
43.450	0.363	32.01	51.03	0.00	0.00	26.50	0.00	3.180	108.822	0.396	4.023567422E+0002	5.294152257E+0001	-5.409046038E+0001	0.208
								13.802						
43.813	0.363	32.01	51.14	0.00	0.00	26.50	0.00	3.096	108.965	0.390	3.827266626E+0002	5.013556362E+0001	-5.392410900E+0001	0.208
								14.206						
44.177	0.023	32.01	3.29	0.00	0.00	26.50	0.00	3.010	109.106	0.388	3.631522333E+0002	4.701009788E+0001	-5.391226766E+0001	0.208
								14.644						
44.200	0.350	32.01	48.15	0.00	0.00	26.50	0.00	3.004	109.115	0.368	3.618934620E+0002	4.679858319E+0001	-5.393250142E+0001	1.615
								14.673						
44.550	0.150	32.01	19.54	0.00	0.00	34.00	0.00	2.914	109.243	0.363	3.429132276E+0002	4.342853283E+0001	-5.466708862E+0001	1.434
								15.103						
44.700	0.194	32.01	24.92	0.00	0.00	34.00	0.00	2.873	109.296	0.347	3.346715003E+0002	4.191678498E+0001	-5.524973692E+0001	1.423
								15.281						
44.894	0.363	39.40	45.25	0.00	0.00	34.00	0.00	2.818	109.363	0.340	3.238510352E+0002	3.991918324E+0001	-5.623648977E+0001	1.406
								15.498						
45.258	0.363	39.40	43.30	0.00	0.00	34.00	0.00	2.643	109.486	0.339	3.030006806E+0002	3.594834880E+0001	-5.863060102E+0001	1.369
								15.837						
45.621	0.363	39.40	41.35	0.00	0.00	34.00	0.00	2.467	109.609	0.332	2.812195685E+0002	3.181473112E+0001	-6.123667702E+0001	1.322
								16.039						
45.984	0.363	39.40	39.40	0.00	0.00	34.00	0.00	2.287	109.727	0.322	2.585875931E+0002	2.773425809E+0001	-6.315669898E+0001	1.271
								16.050						
46.347	0.363	39.40	37.45	0.00	0.00	34.00	0.00	2.105	109.843	0.318	2.352774973E+0002	2.380492617E+0001	-6.527508832E+0001	1.218
								15.833						
46.711	0.321	39.40	31.46	0.00	0.00	34.00	0.00	1.921	109.958	0.321	2.111696041E+0002	2.016265576E+0001	-6.729312206E+0001	1.171
								15.381						
47.032	0.125	39.40	11.86	0.00	0.00	26.50	0.00	1.762	110.062	0.316	1.894283377E+0002	1.726568488E+0001	-6.798964890E+0001	1.139
								14.806						
47.157	0.363	39.50	32.91	0.00	0.00	26.50	0.00	1.696	110.099	0.298	1.809138859E+0002	1.618007091E+0001	-6.786257341E+0001	1.117
								14.535						
47.520	0.363	39.50	30.72	0.00	0.00	26.50	0.00	1.506	110.208	0.309	1.565180178E+0002	1.320692188E+0001	-6.607492712E+0001	1.054
								13.578						
47.884	0.363	39.50	28.53	0.00	0.00	26.50	0.00	1.321	110.323	0.322	1.331420045E+0002	1.052009904E+0001	-6.230998379E+0001	0.987
								12.374						
48.247	0.363	39.50	26.34	0.00	0.00	26.50	0.00	1.140	110.442	0.342	1.114017262E+0002	8.108540295E+0000	-5.723018527E+0001	0.909
								10.968						
48.610	0.363	39.50	24.14	0.00	0.00	26.50	0.00	0.971	110.571	0.388	9.156549022E+0001	6.006182207E+0000	-5.208636494E+0001	0.819
								9.437						
48.974	0.363	39.50	21.95	0.00	0.00	26.50	0.00	0.823	110.724	0.443	7.346490207E+0001	4.295632823E+0000	-4.751118677E+0001	0.730
								7.867						
49.337	0.363	39.50	19.75	0.00	0.00	26.50	0.00	0.693	110.893	0.458	5.707395402E+0001	2.961254861E+0000	-4.267433845E+0001	0.648
								6.344						
49.700	0.363	39.50	17.57	0.00	0.00	26.50	0.00	0.558	111.057	0.455	4.249380182E+0001	1.957864082E+0000	-3.762315206E+0001	0.576
								4.934						
50.063	0.074	39.50	3.31	0.00	0.00	26.50	0.00	0.425	111.224	0.463	2.976690608E+0001	1.207888900E+0000	-3.241505747E+0001	0.507
								3.682						
50.137	0.063	53.10	2.71	0.00	0.00	26.50	0.00	0.400	111.259	0.470	2.740465363E+0001	1.079160032E+0000	-3.134112897E+0001	0.492
								3.449						
50.200	0.363	53.10	12.98	0.00	0.00	26.50	0.00	0.345	111.288	0.901	2.547205914E+0001	9.777954695E-0001	-3.043252379E+0001	0.480
								3.258						

50.563	0.363	53.10	8.11	0.00	0.00	26.50	0.00	0.216	111.643	1.017	1.537514330E+0001	4.730974137E-0001	-2.514929237E+0001	0.384
50.927	0.363	53.10	3.24	0.00	0.00	26.50	0.00	2.258 0.116	112.027	1.057	7.189650622E+0000	1.120249183E-0001	-1.992872131E+0001	0.208
51.290	0.060	53.10	0.07	0.00	0.00	26.50	0.00	1.441 0.017	112.411	1.057	8.723762798E-0001	6.537434412E-0003	-1.488571916E+0001	0.208
								0.783						

Parametri Geotecnici degli strati

N.	phi` deg	C` kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: PO_S1-P

Modello di calcolo : Morgenstern & Price (1965)

DATI IO SUP. CON MINOR Fs

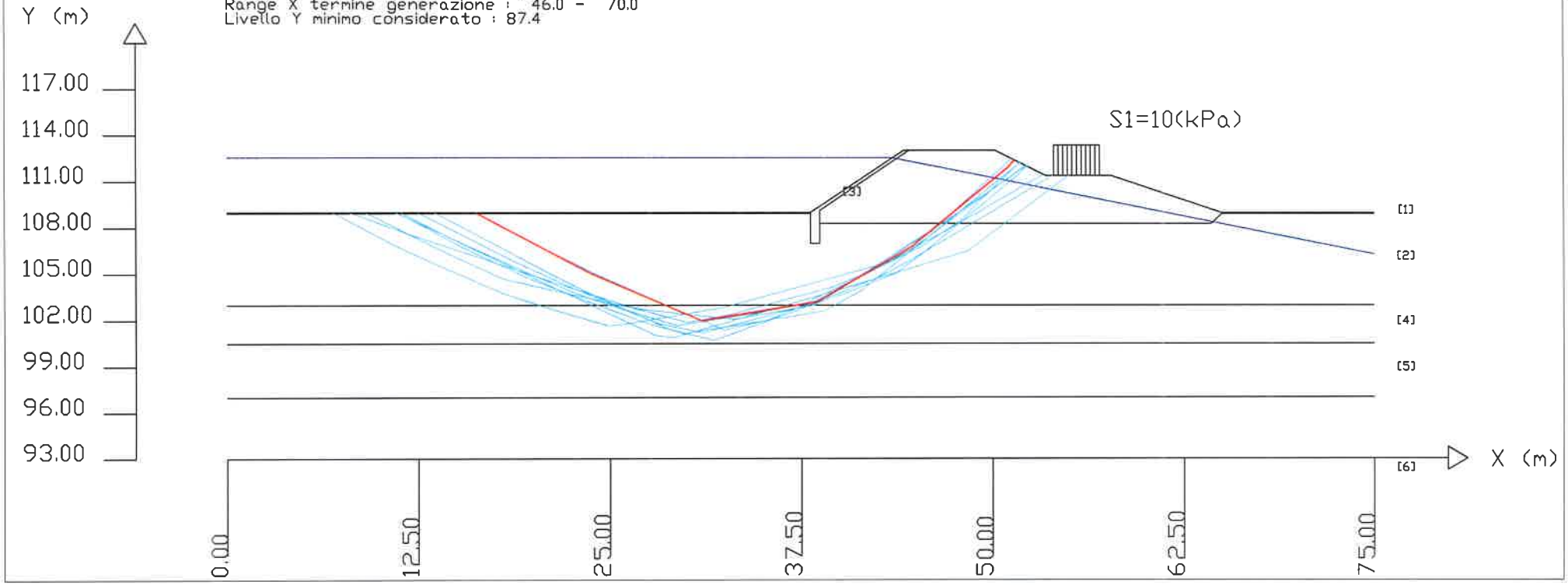
Fs minimo : 5.878
Range Fs : 5.878 7.429
Differenza % Range Fs : 20.9
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.878
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.48269
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 5.0 - 35.0
Range X termine generazione : 46.0 - 70.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A	0
Coefficiente K	0.000800
Pressione minima fluidi Uo_Min (kPa)	0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 54.00
a m.: 57.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 5.00 35.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 46.00 70.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
---
* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS)	5.878	- Min. -	X	Y	Lambda=	0.116
			16.27	109.00		
			20.23	106.91		
			23.75	105.06		
			27.34	103.54		
			30.98	101.99		
			33.63	102.42		
			38.51	103.21		
			42.61	105.58		
			44.75	106.82		
			48.58	109.94		
			51.03	111.94		
			51.45	112.42		
Fattore di sicurezza (FS)	6.563	- N.2 --	X	Y	Lambda=	0.100
			12.46	109.00		
			14.31	108.06		
			18.68	105.86		
			21.71	104.50		
			24.22	103.39		
			28.16	101.79		
			31.06	101.19		
			35.13	102.26		
			38.29	103.09		
			39.99	103.77		
			42.61	104.83		
			44.80	105.99		

			48.96	108.45		
			52.57	110.59		
			53.93	111.40		
Fattore di sicurezza (FS)	6.577	- N.3 --	X	Y	Lambda=	0.129
			16.24	109.00		
			19.81	107.11		
			24.23	104.93		
			26.98	103.73		
			29.12	102.81		
			32.45	101.37		
			35.28	102.02		
			38.71	103.40		
			39.93	104.07		
			41.41	104.96		
			42.45	105.59		
			44.58	106.90		
			46.08	107.82		
			47.44	109.04		
			48.64	110.13		
			50.99	112.25		
			51.24	112.53		
Fattore di sicurezza (FS)	6.718	- N.4 --	X	Y	Lambda=	0.093
			10.99	109.00		
			15.33	107.01		
			19.62	105.10		
			22.92	103.70		
			25.07	102.95		
			29.40	101.66		
			33.65	102.31		
			35.46	102.66		
			37.73	103.11		
			40.01	104.20		
			43.59	105.92		
			45.29	106.74		
			47.82	108.41		
			50.41	110.91		
			51.79	112.25		
Fattore di sicurezza (FS)	6.856	- N.5 --	X	Y	Lambda=	0.110
			13.55	109.00		
			17.49	106.93		

			21.16	105.00		
			23.50	103.83		
			27.41	102.07		
			28.89	101.42		
			31.74	100.70		
			32.99	101.15		
			37.28	102.66		
			40.35	103.76		
			43.68	105.06		
			45.33	106.26		
			46.85	107.49		
			50.50	110.46		
			51.88	111.59		
			52.30	112.00		
Fattore di sicurezza (FS)	6.888	- N.6 --	X	Y	Lambda=	0.082
			7.99	109.00		
			11.88	107.59		
			15.50	106.39		
			18.79	105.31		
			22.97	103.95		
			26.48	102.81		
			30.05	101.87		
			32.91	102.39		
			37.11	103.51		
			39.64	104.19		
			41.66	105.04		
			44.97	106.76		
			46.94	107.79		
			50.68	109.94		
			53.35	111.47		
Fattore di sicurezza (FS)	6.965	- N.7 --	X	Y	Lambda=	0.092
			6.91	109.00		
			10.91	106.88		
			13.43	105.73		
			18.02	103.75		
			21.25	102.71		
			24.94	101.64		
			26.46	101.84		
			27.88	102.08		
			32.42	102.84		

				36.30	103.89	
				40.63	105.06	
				43.29	105.79	
				44.69	106.62	
				47.33	108.53	
				50.81	111.05	
				52.19	112.05	
Fattore di sicurezza (FS)	7.162	- N.8 --	X	Y	Lambda=	0.099
			11.35	109.00		
			14.62	107.32		
			18.51	105.47		
			22.88	103.41		
			25.38	102.24		
			28.01	101.01		
			29.15	100.88		
			31.79	101.63		
			35.10	102.58		
			36.68	103.03		
			37.89	103.39		
			40.59	104.17		
			45.10	105.52		
			48.41	106.51		
			50.29	107.91		
			52.61	109.64		
			54.95	111.40		
Fattore di sicurezza (FS)	7.335	- N.9 --	X	Y	Lambda=	0.075
			9.04	109.00		
			10.07	108.49		
			14.43	106.33		
			18.07	104.68		
			21.07	104.01		
			25.92	102.93		
			27.24	102.70		
			31.39	102.24		
			33.06	102.06		
			35.77	102.54		
			37.27	102.80		
			38.40	103.00		
			41.97	105.27		
			44.58	106.94		

```
                                        47.50  108.81
                                        49.74  110.32
                                        52.26  112.02

 Fattore di sicurezza (FS)     7.429  - N.10 --    X       Y       Lambda=    0.083
                                        11.10  109.00
                                        15.47  106.68
                                        19.52  104.81
                                        23.57  103.23
                                        27.32  101.85
                                        29.81  101.14
                                        34.46  101.87
                                        36.90  102.26
                                        38.98  102.59
                                        41.41  103.94
                                        42.85  105.07
                                        45.19  106.93
                                        47.17  108.50
                                        50.01  110.77
                                        51.84  112.23

------------ ANALISI DEFICIT DI RESISTENZA ----------------------------------
# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
  # Analisi Deficit in riferimento a FS(progetto) = 1.100

    Sup N.     FS        FTR(kN/m)      FTA(kN/m)  Bilancio(kN/m)    ESITO
       1     5.878         1963.1          334.0       1595.7        Surplus
       2     6.563         2377.4          362.3       1978.9        Surplus
       3     6.577         2147.8          326.6       1788.6        Surplus
       4     6.718         2293.0          341.3       1917.6        Surplus
       5     6.856         2457.1          358.4       2062.8        Surplus
       6     6.888         2306.3          334.8       1937.9        Surplus
       7     6.965         2491.5          357.7       2098.0        Surplus
       8     7.162         2576.4          359.7       2180.7        Surplus
       9     7.335         2329.0          317.5       1979.8        Surplus
      10     7.429         2461.2          331.3       2096.8        Surplus

    Esito analisi:  SURPLUS di RESISTENZA!

    Valore minimo di SURPLUS di RESISTENZA (kN/m):       1595.7

    Note: FTR --> Forza totale Resistente rispetto alla superficie
```

di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m))	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--) (--
16.272	0.095	-27.82	3.37	0.49	0.23	26.50	0.00	0.000 2.651	109.000	-0.448	0.000000000E+0000	0.000000000E+0000	5.559992684E+0000	0.671
16.367	0.331	-27.82	12.49	0.51	1.20	34.00	0.00	0.007 2.651	108.957	-0.448	5.572842595E-0001	1.468328772E-0002	6.193812807E+0000	0.671
16.698	0.331	-27.82	13.57	0.52	2.71	34.00	0.00	0.034 2.661	108.809	-0.448	2.948301223E+0000	8.245293977E-0002	8.252402250E+0000	0.336
17.029	0.331	-27.82	14.65	0.52	4.23	34.00	0.00	0.060 2.680	108.661	-0.446	6.049780333E+0000	1.826435766E-0001	1.058575374E+0001	0.329
17.359	0.331	-27.82	15.73	0.52	5.74	34.00	0.00	0.088 2.697	108.514	-0.437	1.003408667E+0001	3.258535779E-0001	1.363954540E+0001	0.338
17.690	0.331	-27.82	16.81	0.53	7.26	34.00	0.00	0.120 2.708	108.372	-0.423	1.517474927E+0001	5.276608300E-0001	1.757957733E+0001	0.350
18.021	0.331	-27.82	17.89	0.53	8.77	34.00	0.00	0.157 2.710	108.234	-0.417	2.175385413E+0001	8.065086442E-0001	2.229177160E+0001	0.364
18.352	0.331	-27.82	18.97	0.53	10.29	34.00	0.00	0.193 2.701	108.096	-0.410	2.996943736E+0001	1.179841346E+0000	2.738217228E+0001	0.380
18.683	0.331	-27.82	20.05	0.53	11.80	34.00	0.00	0.235 2.682	107.963	-0.390	3.984391071E+0001	1.664769317E+0000	3.222394395E+0001	0.397
19.014	0.331	-27.82	21.13	0.53	13.32	34.00	0.00	0.285 2.653	107.838	-0.368	5.134750731E+0001	2.266856303E+0000	3.738871322E+0001	0.415
19.345	0.331	-27.82	22.21	0.53	14.83	34.00	0.00	0.341 2.615	107.719	-0.351	6.458106876E+0001	3.000443720E+0000	4.251768846E+0001	0.433
19.676	0.331	-27.82	23.29	0.53	16.35	34.00	0.00	0.402 2.570	107.606	-0.337	7.939335745E+0001	3.868198414E+0000	4.683575039E+0001	0.451
20.006	0.224	-27.82	16.40	0.53	17.62	34.00	0.00	0.467 2.519	107.497	-0.334	9.544360381E+0001	4.861338288E+0000	4.997240593E+0001	0.461
20.231	0.331	-27.72	25.10	0.53	18.90	34.00	0.00	0.509 2.483	107.421	-0.327	1.068236578E+0002	5.599900344E+0000	5.142748242E+0001	0.481
20.562	0.331	-27.72	26.17	0.53	20.41	34.00	0.00	0.577 2.430	107.315	-0.311	1.240946756E+0002	6.779468958E+0000	5.286400607E+0001	0.499
20.893	0.331	-27.72	27.25	0.53	21.92	34.00	0.00	0.651 2.374	107.215	-0.294	1.417858249E+0002	8.065893658E+0000	5.411949250E+0001	0.518
21.223	0.331	-27.72	28.32	0.53	23.43	34.00	0.00	0.730 2.316	107.120	-0.279	1.599636083E+0002	9.468748431E+0000	5.573757012E+0001	0.538
21.554	0.331	-27.72	29.40	0.53	24.94	34.00	0.00	0.814 2.256	107.030	-0.280	1.786467686E+0002	1.099556811E+0001	5.715900325E+0001	0.558
21.885	0.331	-27.72	30.47	0.53	26.45	34.00	0.00	0.893 2.198	106.935	-0.284	1.977710965E+0002	1.264721308E+0001	5.841294924E+0001	0.579
22.216	0.331	-27.72	31.55	0.53	27.96	34.00	0.00	0.974 2.143	106.842	-0.273	2.172890681E+0002	1.441928901E+0001	5.954466915E+0001	0.600
22.547	0.331	-27.72	32.62	0.53	29.47	34.00	0.00	1.060 2.093	106.754	-0.261	2.371656960E+0002	1.629500700E+0001	6.058467912E+0001	0.620
22.878	0.331	-27.72	33.70	0.53	30.98	34.00	0.00	1.149 2.052	106.669	-0.250	2.573736507E+0002	1.826615718E+0001	6.154875039E+0001	0.640
23.209	0.331	-27.72	34.77	0.53	32.49	34.00	0.00	1.242 2.019	106.589	-0.239	2.778883817E+0002	2.032495602E+0001	6.243790929E+0001	0.659
23.540	0.209	-27.72	22.53	0.53	33.72	34.00	0.00	1.338 1.996	106.511	-0.230	2.986704798E+0002	2.246134231E+0001	6.308535521E+0001	0.669
23.749	0.331	-23.06	36.43	0.53	36.18	34.00	0.00	1.402 1.985	106.465	-0.218	3.118817564E+0002	2.384919168E+0001	6.327838789E+0001	0.688

24.080	0.331	-23.06	37.30	0.53	37.45	34.00	0.00	1.471	106.393	-0.210	3.328728675E+0002	2.610211893E+0001	6.364340224E+0001	0.704
24.410	0.331	-23.06	38.17	0.53	38.72	34.00	0.00	1.976 1.544	106.326	-0.200	3.540457197E+0002	2.844597996E+0001	6.442534271E+0001	0.721
24.741	0.331	-23.06	39.04	0.53	40.00	34.00	0.00	1.972 1.621	106.261	-0.190	3.755726273E+0002	3.090042826E+0001	6.579044332E+0001	0.738
25.072	0.331	-23.06	39.91	0.53	41.27	34.00	0.00	1.972 1.701	106.200	-0.180	3.976397578E+0002	3.348913441E+0001	6.765620303E+0001	0.755
25.403	0.331	-23.06	40.78	0.53	42.54	34.00	0.00	1.977 1.783	106.142	-0.169	4.203648290E+0002	3.623034139E+0001	6.969138572E+0001	0.772
25.734	0.331	-23.06	41.65	0.53	43.81	34.00	0.00	1.985 1.870	106.088	-0.161	4.437152350E+0002	3.908664086E+0001	7.133260969E+0001	0.788
26.065	0.331	-23.06	42.52	0.53	45.08	34.00	0.00	1.999 1.959	106.036	-0.154	4.675141084E+0002	4.206490542E+0001	7.246674609E+0001	0.805
26.396	0.331	-23.06	43.40	0.53	46.35	34.00	0.00	2.019 2.050	105.987	-0.144	4.916506126E+0002	4.515351397E+0001	7.340935197E+0001	0.821
26.727	0.331	-23.06	44.27	0.53	47.62	34.00	0.00	2.047 2.145	105.941	-0.134	5.160903779E+0002	4.834825186E+0001	7.431552991E+0001	0.837
27.057	0.278	-23.06	37.87	0.53	48.79	34.00	0.00	2.084 2.243	105.898	-0.126	5.408302899E+0002	5.167584740E+0001	7.521909615E+0001	0.850
27.336	0.331	-22.96	45.87	0.53	50.00	34.00	0.00	2.131 2.328	105.864	-0.116	5.618456072E+0002	5.455438514E+0001	7.591591371E+0001	0.867
27.666	0.331	-22.96	46.73	0.53	51.26	34.00	0.00	2.180 2.431	105.827	-0.108	5.870718520E+0002	5.808053516E+0001	7.649725357E+0001	0.883
27.997	0.331	-22.96	47.60	0.53	52.53	34.00	0.00	2.249 2.537	105.792	-0.100	6.124067097E+0002	6.171353344E+0001	7.651052976E+0001	0.899
28.328	0.273	-22.96	39.92	0.53	53.68	34.00	0.00	2.331 2.645	105.761	-0.093	6.377506358E+0002	6.544660128E+0001	7.685895657E+0001	0.911
28.601	0.331	-22.96	49.21	0.53	54.84	38.00	0.00	2.426 2.736	105.736	-0.085	6.587924634E+0002	6.862413176E+0001	7.719905914E+0001	0.928
28.932	0.331	-22.96	50.12	0.53	56.11	38.00	0.00	2.518 2.850	105.709	-0.076	6.842217217E+0002	7.258199889E+0001	7.614436614E+0001	0.941
29.263	0.331	-22.96	51.04	0.53	57.37	38.00	0.00	2.647 2.967	105.686	-0.066	7.089016085E+0002	7.657952153E+0001	7.257371130E+0001	0.955
29.594	0.331	-22.96	51.95	0.53	58.64	38.00	0.00	2.800 3.086	105.666	-0.058	7.319516167E+0002	8.060970493E+0001	6.633921033E+0001	0.970
29.925	0.331	-22.96	52.87	0.53	59.90	38.00	0.00	2.976 3.208	105.648	-0.051	7.525836153E+0002	8.432813715E+0001	5.814710921E+0001	0.984
30.256	0.331	-22.96	53.78	0.52	61.17	38.00	0.00	3.175 3.333	105.632	-0.103	7.703844671E+0002	8.759987374E+0001	4.955778417E+0001	0.996
30.586	0.331	-22.96	54.70	0.52	62.44	38.00	0.00	3.397 3.421	105.579	-0.185	7.854904819E+0002	9.030804416E+0001	4.162380033E+0001	1.004
30.917	0.059	-22.96	9.81	0.52	63.18	38.00	0.00	3.639 3.491	105.509	-0.212	7.978477714E+0002	9.241355211E+0001	3.304843739E+0001	0.993
30.976	0.331	9.13	55.15	0.52	67.61	38.00	0.00	3.896 3.503	105.497	0.036	7.997451648E+0002	9.272335178E+0001	3.153904804E+0001	1.009
31.307	0.331	9.13	54.80	0.52	67.09	38.00	0.00	3.943 3.476	105.524	0.080	8.088251384E+0002	9.401600355E+0001	2.350141234E+0001	1.012
31.638	0.331	9.13	54.45	0.52	66.58	38.00	0.00	4.213 3.450	105.550	0.080	8.154284838E+0002	9.473277473E+0001	1.663466125E+0001	1.012
31.969	0.331	9.13	54.10	0.52	66.06	38.00	0.00	4.491 3.423	105.577	0.063	8.199815766E+0002	9.493600090E+0001	1.109568565E+0001	1.010
32.300	0.331	9.13	53.76	0.52	65.55	38.00	0.00	4.779 3.385	105.592	0.024	8.228847458E+0002	9.470910884E+0001	6.570158986E+0000	1.004
32.631	0.331	9.13	53.41	0.52	65.03	38.00	0.00	5.080 3.333	105.593	0.006	8.243563560E+0002	9.422563932E+0001	2.272537248E+0000	0.998
32.961	0.331	9.13	53.06	0.53	64.52	38.00	0.00	5.394 3.283	105.596	0.012	8.242983270E+0002	9.360926511E+0001	-2.744112958E+0000	0.993
33.292	0.331	9.13	52.71	0.53	64.00	38.00	0.00	5.721 3.234	105.601	0.020	8.225311694E+0002	9.284301947E+0001	-7.857771638E+0000	0.988
33.623	0.003	9.13	0.47	0.53	63.74	38.00	0.00	6.056 3.189	105.609	0.025	8.191976574E+0002	9.193570981E+0001	-1.208610022E+0001	0.967
33.626	0.331	9.23	52.36	0.53	63.46	38.00	0.00	6.395 3.189	105.609	0.032	8.191619738E+0002	9.192669206E+0001	-1.211787867E+0001	0.983
33.957	0.331	9.23	52.01	0.53	62.94	38.00	0.00	6.398 3.146	105.620	0.037	8.146461743E+0002	9.089060888E+0001	-1.492315542E+0001	0.979
34.288	0.331	9.23	51.66	0.53	62.42	38.00	0.00	6.734 3.106	105.633	0.046	8.094503569E+0002	8.975122525E+0001	-1.625661568E+0001	0.974
34.619	0.331	9.23	51.31	0.53	61.90	38.00	0.00	7.058 3.069	105.650	0.057	8.040079233E+0002	8.855531591E+0001	-1.651895903E+0001	0.969
								7.360						

34.950	0.331	9.23	50.96	0.53	61.38	38.00	0.00	3.036	105.671	0.069	7.985435222E+0002	8.732533322E+0001	-1.657127887E+0001	0.963
								7.627						
35.281	0.331	9.23	50.61	0.53	60.86	38.00	0.00	3.007	105.696	0.083	7.929860481E+0002	8.605129523E+0001	-1.692886935E+0001	0.957
								7.848						
35.611	0.331	9.23	50.25	0.53	60.34	38.00	0.00	2.983	105.726	0.098	7.873907488E+0002	8.480296349E+0001	-1.688571316E+0001	0.951
								8.016						
35.942	0.331	9.23	49.90	0.53	59.82	38.00	0.00	2.965	105.761	0.115	7.817772522E+0002	8.360181525E+0001	-1.714381689E+0001	0.945
								8.122						
36.273	0.331	9.23	49.55	0.53	59.30	38.00	0.00	2.952	105.802	0.132	7.759592613E+0002	8.239933251E+0001	-1.817362338E+0001	0.940
								8.152						
36.604	0.331	9.23	49.20	0.53	58.77	38.00	0.00	2.944	105.848	0.150	7.696475239E+0002	8.126629831E+0001	-2.012699435E+0001	0.936
								8.086						
36.935	0.259	9.23	38.23	0.53	58.31	38.00	0.00	2.944	105.901	0.169	7.625552460E+0002	8.038657349E+0001	-2.283721037E+0001	0.932
								7.930						
37.194	0.331	9.23	48.58	0.53	57.85	34.00	0.00	2.948	105.948	0.195	7.563432711E+0002	7.973172339E+0001	-2.518150180E+0001	0.937
								7.757						
37.525	0.331	9.23	48.25	0.53	57.33	34.00	0.00	2.963	106.017	0.160	7.475542724E+0002	7.880521020E+0001	-2.776921052E+0001	0.937
								7.497						
37.855	0.245	9.23	35.44	0.53	56.87	34.00	0.00	2.946	106.054	0.099	7.380730992E+0002	7.780572979E+0001	-2.950235839E+0001	0.933
								7.221						
38.100	0.331	9.23	52.48	0.47	57.48	34.00	0.00	2.926	106.074	0.272	7.306853862E+0002	7.702693648E+0001	-3.100942288E+0001	0.196
								7.024						
38.431	0.081	9.23	12.92	0.47	58.48	34.00	0.00	3.009	106.210	0.413	7.199453559E+0002	7.589475066E+0001	-3.416800583E+0001	0.196
								6.783						
38.512	0.188	29.98	28.88	0.49	51.56	34.00	0.00	3.029	106.244	0.488	7.171460865E+0002	7.559965902E+0001	-3.518928336E+0001	0.196
								6.731						
38.700	0.331	29.98	47.60	0.53	51.75	34.00	0.00	3.019	106.342	0.420	7.102636820E+0002	7.462320908E+0001	-3.797439282E+0001	0.933
								6.620						
39.031	0.331	29.98	47.59	0.52	52.00	34.00	0.00	2.948	106.462	0.383	6.967251741E+0002	7.240392890E+0001	-4.408647308E+0001	0.196
								6.465						
39.362	0.331	29.98	47.05	0.52	52.24	34.00	0.00	2.890	106.595	0.440	6.809857436E+0002	6.984773952E+0001	-5.111116036E+0001	0.196
								6.363						
39.693	0.331	29.98	46.51	0.52	52.48	34.00	0.00	2.857	106.753	0.485	6.629438108E+0002	6.693032289E+0001	-5.773128012E+0001	0.196
								6.305						
40.024	0.331	29.98	45.96	0.52	52.73	34.00	0.00	2.829	106.916	0.498	6.427965219E+0002	6.376453355E+0001	-6.438795841E+0001	0.196
								6.283						
40.354	0.331	29.98	45.42	0.52	52.97	34.00	0.00	2.805	107.082	0.506	6.202701591E+0002	6.056543808E+0001	-7.163596165E+0001	0.196
								6.306						
40.685	0.331	29.98	44.88	0.52	53.21	34.00	0.00	2.783	107.251	0.512	5.955955143E+0002	5.765552469E+0001	-7.706087541E+0001	0.196
								6.385						
41.016	0.331	29.98	44.33	0.52	53.46	34.00	0.00	2.762	107.421	0.516	5.696229361E+0002	5.488922467E+0001	-7.935882454E+0001	0.196
								6.524						
41.347	0.331	29.98	43.79	0.52	53.70	34.00	0.00	2.742	107.592	0.520	5.434457808E+0002	5.232752971E+0001	-7.836484240E+0001	0.196
								6.725						
41.678	0.331	29.98	43.25	0.52	53.94	34.00	0.00	2.724	107.765	0.518	5.180235662E+0002	4.987966511E+0001	-7.505287080E+0001	0.196
								6.986						
42.009	0.331	29.98	47.70	0.46	54.19	26.50	0.00	2.703	107.935	0.510	4.938051267E+0002	4.754771010E+0001	-7.153576003E+0001	0.196
								7.304						
42.340	0.273	29.98	38.92	0.46	54.41	26.50	0.00	2.679	108.102	0.497	4.705588740E+0002	4.530936540E+0001	-6.872133371E+0001	0.196
								7.669						
42.612	0.331	30.08	46.75	0.46	54.57	26.50	0.00	2.655	108.235	0.482	4.522359297E+0002	4.354507825E+0001	-6.563019584E+0001	0.196
								7.995						
42.943	0.331	30.08	46.22	0.46	54.81	26.50	0.00	2.621	108.393	0.469	4.310987909E+0002	4.150981678E+0001	-6.230393249E+0001	0.196
								8.410						
43.274	0.176	30.08	24.25	0.47	55.48	26.50	0.00	2.582	108.546	0.462	4.108448989E+0002	3.955960174E+0001	-6.040794715E+0001	0.196
								8.833						
43.450	0.331	30.08	45.79	0.45	53.96	26.50	0.00	2.562	108.627	0.450	4.002566874E+0002	3.854007969E+0001	-6.012826346E+0001	0.196
								9.062						
43.781	0.331	30.08	45.92	0.43	51.78	26.50	0.00	2.517	108.774	0.418	3.802828890E+0002	3.649187692E+0001	-6.083779832E+0001	0.196
								9.516						
44.112	0.088	30.08	12.26	0.42	50.39	26.50	0.00	2.455	108.904	0.389	3.598936665E+0002	3.400971534E+0001	-6.245381686E+0001	0.196
								10.010						
44.200	0.331	30.08	45.14	0.42	49.01	26.50	0.00	2.437	108.937	0.374	3.543645195E+0002	3.333721896E+0001	-6.286693908E+0001	0.196
								10.148						
44.531	0.019	30.08	2.55	0.42	47.86	26.50	0.00	2.369	109.061	0.373	3.334050083E+0002	3.074548082E+0001	-6.359057542E+0001	1.089
								10.692						
44.550	0.150	30.08	19.31	0.43	47.30	34.00	0.00	2.365	109.068	0.365	3.321892133E+0002	3.059444415E+0001	-6.360579762E+0001	1.014
								10.724						
44.700	0.047	30.08	5.95	0.43	46.65	34.00	0.00	2.333	109.122	0.360	3.226400342E+0002	2.939322841E+0001	-6.371355500E+0001	0.995
								10.983						

44.747	0.331	39.16	41.31	0.42	40.39	34.00	0.00	2.322	109.138	0.378	3.196692591E+0002	2.901825876E+0001	-6.374394945E+0001	1.024
								11.065						
45.077	0.331	39.16	39.63	0.41	37.84	34.00	0.00	2.179	109.265	0.385	2.985436907E+0002	2.626536836E+0001	-6.394725279E+0001	1.004
								11.658						
45.408	0.331	39.16	37.94	0.40	35.30	34.00	0.00	2.038	109.393	0.387	2.773487784E+0002	2.348286249E+0001	-6.416966581E+0001	0.978
								12.266						
45.739	0.331	39.16	36.25	0.39	32.75	34.00	0.00	1.896	109.521	0.391	2.560751373E+0002	2.067207787E+0001	-6.441923289E+0001	0.946
								12.871						
46.070	0.331	39.16	34.56	0.38	30.20	34.00	0.00	1.758	109.652	0.388	2.347211060E+0002	1.791284157E+0001	-6.464122638E+0001	0.909
								13.450						
46.401	0.167	39.16	16.81	0.37	28.28	34.00	0.00	1.614	109.778	0.373	2.133135167E+0002	1.531104547E+0001	-6.471814654E+0001	0.854
								13.972						
46.568	0.331	39.16	31.91	0.36	26.36	26.50	0.00	1.538	109.838	0.370	2.025043935E+0002	1.414324497E+0001	-6.464712904E+0001	0.855
								14.202						
46.899	0.331	39.16	30.00	0.34	23.81	26.50	0.00	1.392	109.962	0.379	1.811713858E+0002	1.196624436E+0001	-6.434799389E+0001	0.809
								14.565						
47.230	0.331	39.16	28.10	0.33	21.27	26.50	0.00	1.251	110.089	0.401	1.598323702E+0002	9.870981886E+0000	-6.465513384E+0001	0.757
								14.765						
47.561	0.331	39.16	26.19	0.31	18.72	26.50	0.00	1.119	110.227	0.441	1.384544074E+0002	7.965443139E+0000	-6.435321991E+0001	0.705
								14.747						
47.892	0.331	39.16	24.28	0.29	16.17	26.50	0.00	1.003	110.381	0.455	1.174309128E+0002	6.269467972E+0000	-6.239301895E+0001	0.655
								14.424						
48.223	0.331	39.16	22.37	0.26	13.62	26.50	0.00	0.881	110.528	0.431	9.739265767E+0001	4.773896141E+0000	-5.838908376E+0001	0.602
								13.691						
48.553	0.029	39.16	1.87	0.25	12.24	26.50	0.00	0.749	110.666	0.420	7.898813359E+0001	3.540965240E+0000	-5.261975301E+0001	0.531
								12.522						
48.582	0.331	39.26	20.30	0.23	10.83	26.50	0.00	0.739	110.680	0.468	7.746651896E+0001	3.441629425E+0000	-5.205476141E+0001	0.545
								12.401						
48.913	0.331	39.26	18.38	0.19	8.28	26.50	0.00	0.624	110.834	0.470	6.133407508E+0001	2.467957132E+0000	-4.545692811E+0001	0.493
								10.848						
49.244	0.331	39.26	16.47	0.15	5.73	26.50	0.00	0.509	110.991	0.488	4.729675350E+0001	1.714514750E+0000	-3.948677395E+0001	0.443
								9.095						
49.575	0.125	39.26	5.72	0.11	3.97	26.50	0.00	0.406	111.157	0.515	3.526269590E+0001	1.132223960E+0000	-3.319611113E+0001	0.383
								7.309						
49.700	0.331	39.26	13.83	0.07	2.21	26.50	0.00	0.372	111.225	0.585	3.126772084E+0001	9.542400193E-0001	-3.080269428E+0001	0.367
								6.655						
50.031	0.120	39.26	4.54	0.00	0.00	26.50	0.00	0.300	111.424	0.601	2.208619824E+0001	5.808138437E-0001	-2.480556887E+0001	0.310
								5.034						
50.151	0.049	39.26	1.78	0.00	0.00	26.50	0.00	0.274	111.496	0.628	1.922457610E+0001	4.814057649E-0001	-2.282238740E+0001	0.295
								4.495						
50.200	0.331	39.26	10.46	0.00	0.00	26.50	0.00	0.268	111.530	0.629	1.812750188E+0001	4.435702785E-0001	-2.205197087E+0001	0.288
								4.285						
50.531	0.331	39.26	7.56	0.00	0.00	26.50	0.00	0.203	111.735	0.649	1.162463312E+0001	2.306193017E-0001	-1.742577307E+0001	0.234
								2.992						
50.862	0.171	39.26	2.77	0.00	0.00	26.50	0.00	0.157	111.960	0.620	6.488623784E+0000	8.266523208E-0002	-1.375921068E+0001	0.196
								1.934						
51.033	0.331	49.13	2.77	0.00	0.00	26.50	0.00	0.104	112.047	0.770	4.271799935E+0000	4.135584631E-0002	-1.213392136E+0001	0.196
								1.472						
51.364	0.086	49.13	0.12	0.00	0.00	26.50	0.00	0.021	112.347	0.907	7.507657275E-0001	3.688738458E-0003	-9.134748432E+0000	0.196
								0.722						

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P□_S1-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

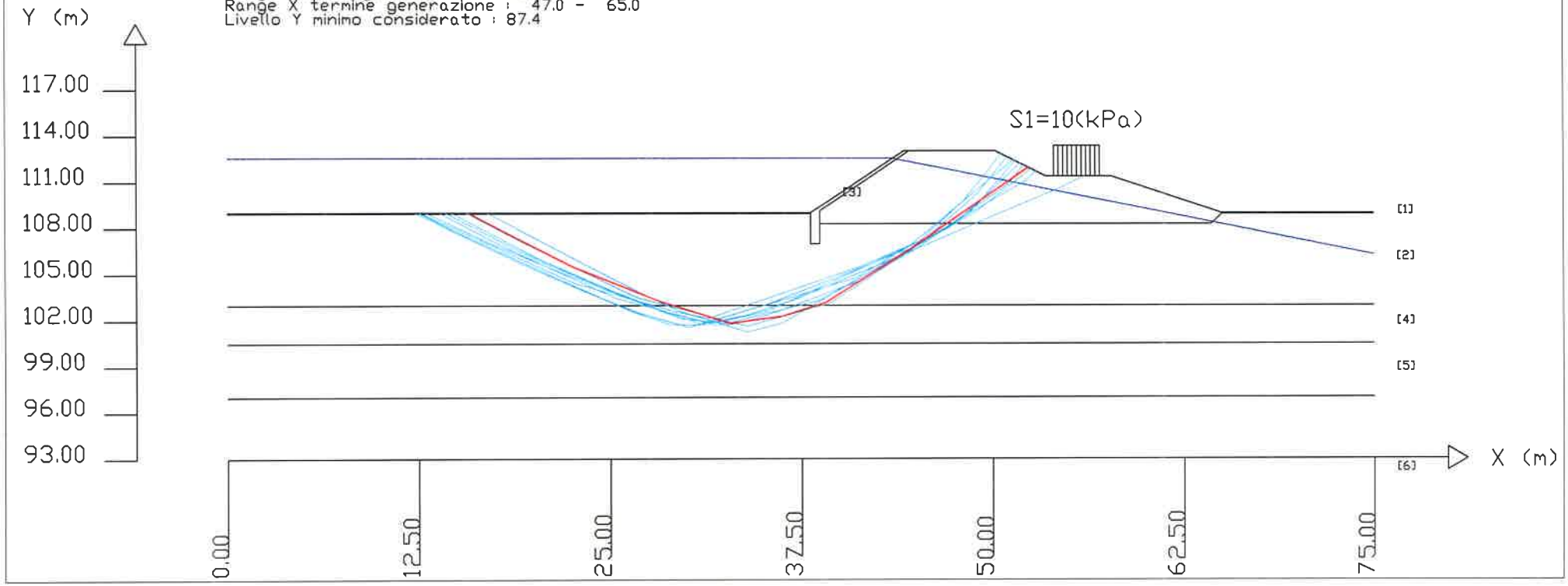
Fs minimo : 2.681
Range Fs : 2.681 2.974
Differenza % Range Fs : 9.8
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 2.681
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.30320
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 2.0 - 20.0
Range X termine generazione : 47.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 43.45
Peso unitario fluido (kN/m^3): 9.81
Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 9.91
posizione da m.: 54.00
a m.: 57.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 2.00 20.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 47.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 2.681 - Min. - Lambda= 0.191

X	Y
15.78	109.00
18.20	107.72
22.63	105.50
24.50	104.75
28.09	103.33
32.82	101.84
36.25	102.30
39.06	103.18
43.25	105.79
44.65	106.67
46.15	107.70
49.84	110.23
52.36	111.97

Fattore di sicurezza (FS) 2.765 - N.2 -- Lambda= 0.178

X	Y
14.64	109.00
16.82	107.85
20.27	106.06
23.84	104.49
26.07	103.51
28.34	102.60
29.59	102.12
32.54	101.81
33.63	102.07
36.57	102.79
38.68	103.31
40.15	104.12

				42.64	105.50	
				45.01	106.83	
				47.57	108.26	
				48.86	108.98	
				50.18	110.02	
				51.44	111.01	
				52.53	111.88	
Fattore di sicurezza (FS)	2.765	- N.3 --	X	Y	Lambda=	0.187
			15.61	109.00		
			18.22	107.65		
			21.47	106.05		
			23.08	105.27		
			26.69	103.52		
			29.87	102.69		
			33.93	101.64		
			36.25	102.28		
			39.39	103.14		
			41.34	104.41		
			42.38	105.09		
			45.11	106.88		
			48.16	109.48		
			49.03	110.24		
			50.96	112.67		
Fattore di sicurezza (FS)	2.851	- N.4 --	X	Y	Lambda=	0.164
			12.54	109.00		
			17.01	106.99		
			19.56	105.84		
			22.78	104.41		
			24.94	103.80		
			29.38	102.54		
			31.41	102.16		
			35.72	103.60		
			37.96	104.35		
			41.19	105.45		
			44.88	106.99		
			46.55	107.69		
			48.50	108.95		
			49.68	110.30		
			51.07	111.90		
			51.49	112.41		

Fattore di sicurezza (FS) 2.923 - N.5 -- Lambda= 0.169

X	Y
12.47	109.00
14.97	107.75
18.76	106.03
22.37	104.39
26.37	102.59
28.97	101.73
31.73	101.73
32.78	101.73
34.96	102.26
36.61	102.83
41.03	104.48
44.82	106.53
46.90	107.97
50.99	110.83
51.64	111.60
52.02	112.14

Fattore di sicurezza (FS) 2.950 - N.6 -- Lambda= 0.176

X	Y
12.94	109.00
17.36	106.94
20.63	105.62
22.79	104.75
24.00	104.29
28.53	102.60
31.26	101.90
35.29	103.07
37.43	103.89
39.97	104.87
41.63	105.51
44.80	106.75
46.41	108.21
48.09	109.75
50.59	112.86

Fattore di sicurezza (FS) 2.952 - N.7 -- Lambda= 0.190

X	Y
13.86	109.00
17.60	107.03
21.78	105.09
25.33	103.48
27.93	102.77
31.50	101.81

				33.04	102.12	
				35.20	102.59	
				37.65	103.69	
				38.63	104.13	
				43.17	106.18	
				44.87	106.96	
				47.17	108.01	
				49.44	109.96	
				51.80	112.25	
Fattore di sicurezza (FS)	2.952	- N.8 --	X	Y	Lambda=	0.167
			14.24	109.00		
			17.83	107.14		
			20.62	105.78		
			23.94	104.42		
			28.53	102.60		
			30.94	101.76		
			33.97	102.36		
			37.24	103.42		
			39.36	104.29		
			40.78	104.88		
			44.76	106.54		
			47.07	107.51		
			50.42	108.92		
			51.69	109.46		
			54.31	110.57		
			56.01	111.40		
Fattore di sicurezza (FS)	2.953	- N.9 --	X	Y	Lambda=	0.223
			16.95	109.00		
			20.56	107.12		
			22.63	106.04		
			26.18	104.20		
			29.55	102.60		
			33.93	101.26		
			35.08	101.55		
			36.25	101.85		
			38.89	103.36		
			40.96	104.56		
			44.97	106.88		
			47.94	108.61		
			52.18	111.09		

52.85 111.72

Fattore di sicurezza (FS) 2.974 - N.10 -- X Y Lambda= 0.197

12.24 109.00
15.95 107.20
19.24 105.69
23.46 103.84
24.96 103.25
26.83 102.51
30.15 101.56
32.99 102.38
36.75 103.48
41.05 104.76
44.58 106.84
46.03 108.04
49.52 110.92
51.39 112.46

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *
Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	2.681	1254.8	468.1	739.9	Surplus
2	2.765	1309.2	473.5	788.4	Surplus
3	2.765	1263.6	456.9	761.0	Surplus
4	2.851	1196.3	419.6	734.7	Surplus
5	2.923	1406.8	481.2	877.4	Surplus
6	2.950	1210.6	410.4	759.1	Surplus
7	2.952	1297.5	439.6	814.0	Surplus
8	2.952	1346.2	456.1	844.6	Surplus
9	2.953	1363.7	461.8	855.8	Surplus
10	2.974	1338.3	450.1	843.2	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 734.7

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m))	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
15.783	0.095	-27.82	0.05	0.49	0.23	26.50	0.00	0.000 1.658	109.000	-0.449	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000		0.089
15.878	0.339	-27.82	0.93	0.51	1.22	34.00	0.00	0.007 1.658	108.957	-0.449	5.421010862E-0005	1.680753805E-0007	1.249130347E-0004		0.089
16.217	0.339	-27.82	2.06	0.52	2.77	34.00	0.00	0.034 1.646	108.805	-0.449	5.421010862E-0005	3.425125863E-0007	0.000000000E+0000		0.089
16.556	0.339	-27.82	3.20	0.52	4.33	34.00	0.00	0.061 1.622	108.653	-0.449	5.421010862E-0005	5.835620883E-0007	2.493331813E-0004		0.089
16.895	0.339	-27.82	4.33	0.52	5.88	34.00	0.00	0.088 1.601	108.501	-0.449	2.233736870E-0004	3.422932278E-0006	4.905072665E-0003		0.089
17.235	0.339	-27.82	5.47	0.53	7.43	34.00	0.00	0.115 1.588	108.349	-0.449	3.382125148E-0003	6.796694866E-0005	4.221362419E-0002		0.089
17.574	0.339	-27.82	6.60	0.53	8.98	34.00	0.00	0.142 1.586	108.197	-0.444	2.886379645E-0002	7.105442817E-0004	2.450354464E-0001		0.089
17.913	0.287	-27.82	6.46	0.53	10.42	34.00	0.00	0.171 1.595	108.047	-0.431	1.696298452E-0001	4.927098729E-0003	1.255661631E+0000		0.089
18.200	0.339	-26.68	8.67	0.53	11.94	34.00	0.00	0.202 1.612	107.927	-0.419	6.155080485E-0001	2.017412854E-0002	1.880422697E+0000		0.089
18.539	0.339	-26.68	9.75	0.53	13.43	34.00	0.00	0.231 1.644	107.785	-0.412	1.379025396E+0000	5.126625751E-0002	2.580954385E+0000		0.102
18.878	0.339	-26.68	10.83	0.53	14.92	34.00	0.00	0.264 1.688	107.647	-0.399	2.370593641E+0000	9.858909894E-0002	3.311636914E+0000		0.281
19.217	0.339	-26.68	11.91	0.53	16.42	34.00	0.00	0.301 1.746	107.514	-0.407	3.678259656E+0000	1.692807475E-0001	4.499030554E+0000		1.421
19.557	0.339	-26.68	12.99	0.53	17.91	34.00	0.00	0.329 1.817	107.372	-0.399	5.500921926E+0000	2.777105339E-0001	6.368558309E+0000		1.148
19.896	0.339	-26.68	14.07	0.53	19.41	34.00	0.00	0.371 1.898	107.243	-0.366	8.079556886E+0000	4.441978076E-0001	8.942874898E+0000		0.561
20.235	0.339	-26.68	15.15	0.53	20.90	34.00	0.00	0.421 1.991	107.123	-0.342	1.162843343E+0001	6.903182350E-0001	1.204186676E+0001		0.435
20.574	0.339	-26.68	16.23	0.53	22.39	34.00	0.00	0.480 2.103	107.011	-0.315	1.626632743E+0001	1.037065374E+0000	1.528265204E+0001		0.391
20.914	0.339	-26.68	17.31	0.53	23.89	34.00	0.00	0.548 2.239	106.909	-0.289	2.197371681E+0001	1.502479215E+0000	1.839610965E+0001		0.377
21.253	0.339	-26.68	18.39	0.53	25.38	34.00	0.00	0.624 2.401	106.815	-0.287	2.876951846E+0001	2.106713829E+0000	2.168420751E+0001		0.376
21.592	0.339	-26.68	19.47	0.53	26.88	34.00	0.00	0.694 2.582	106.715	-0.289	3.668498964E+0001	2.852430565E+0000	2.496886973E+0001		0.381
21.931	0.339	-26.68	20.56	0.53	28.37	34.00	0.00	0.769 2.773	106.619	-0.275	4.569439940E+0001	3.745038241E+0000	2.811817915E+0001		0.388
22.271	0.339	-26.68	21.64	0.53	29.86	34.00	0.00	0.849 2.955	106.528	-0.260	5.574040763E+0001	4.784655730E+0000	3.107769598E+0001		0.396
22.610	0.025	-26.68	1.61	0.53	30.67	34.00	0.00	0.934 3.106	106.443	-0.252	6.676034794E+0001	5.967441716E+0000	3.387045782E+0001		0.360
22.634	0.339	-21.76	22.68	0.53	32.55	34.00	0.00	0.940 3.115	106.436	-0.240	6.759696804E+0001	6.059822726E+0000	3.406894151E+0001		0.405
22.974	0.339	-21.76	23.54	0.53	33.78	34.00	0.00	0.994 3.208	106.355	-0.232	7.961629305E+0001	7.424367732E+0000	3.679665196E+0001		0.415
23.313	0.339	-21.76	24.40	0.53	35.01	34.00	0.00	1.053 3.236	106.279	-0.220	9.257113304E+0001	8.963981811E+0000	3.957684015E+0001		0.425
23.652	0.339	-21.76	25.26	0.53	36.25	34.00	0.00	1.116 3.202	106.206	-0.211	1.064568232E+0002	1.068977329E+0001	4.227273566E+0001		0.437
23.991	0.339	-21.76	26.12	0.53	37.48	34.00	0.00	1.181 3.127	106.136	-0.200	1.212414709E+0002	1.261168374E+0001	4.487807608E+0001		0.449
24.331	0.170	-21.76	13.41	0.53	38.41	34.00	0.00	1.250 3.024	106.070	-0.191	1.368949102E+0002	1.474127902E+0001	4.739391819E+0001		0.445
24.500	0.339	-21.66	27.40	0.53	39.36	34.00	0.00	1.287 2.963	106.039	-0.179	1.450533748E+0002	1.589357939E+0001	4.861730001E+0001		0.468

24.840	0.339	-21.66	28.26	0.53	40.59	34.00	0.00	1.362	105.979	-0.172	1.619488534E+0002	1.827294000E+0001	5.097182142E+0001	0.479
25.179	0.339	-21.66	29.11	0.53	41.81	34.00	0.00	2.827 1.440	105.922	-0.162	1.796195994E+0002	2.087102221E+0001	5.318158206E+0001	0.491
25.518	0.339	-21.66	29.97	0.53	43.04	34.00	0.00	2.682 1.521	105.869	-0.153	1.980092043E+0002	2.369549270E+0001	5.520133207E+0001	0.504
25.857	0.339	-21.66	30.82	0.53	44.27	34.00	0.00	2.539 1.606	105.819	-0.144	2.170688521E+0002	2.675514354E+0001	5.719266655E+0001	0.517
26.197	0.339	-21.66	31.67	0.53	45.50	34.00	0.00	2.406 1.693	105.772	-0.135	2.368032617E+0002	3.006275266E+0001	5.910799876E+0001	0.531
26.536	0.339	-21.66	32.53	0.53	46.73	34.00	0.00	2.288 1.784	105.727	-0.127	2.571225561E+0002	3.358278116E+0001	6.059601893E+0001	0.545
26.875	0.339	-21.66	33.38	0.53	47.95	34.00	0.00	2.188 1.877	105.685	-0.119	2.778454033E+0002	3.727510703E+0001	6.146986038E+0001	0.558
27.214	0.339	-21.66	34.24	0.53	49.18	34.00	0.00	2.106 1.972	105.646	-0.112	2.987551509E+0002	4.109753475E+0001	6.170815015E+0001	0.571
27.554	0.339	-21.66	35.09	0.53	50.41	34.00	0.00	2.042 2.070	105.609	-0.106	3.196559660E+0002	4.511427899E+0001	6.145500893E+0001	0.585
27.893	0.193	-21.66	20.35	0.53	51.37	34.00	0.00	1.992 2.170	105.575	-0.101	3.404289767E+0002	4.916723484E+0001	6.102005111E+0001	0.588
28.086	0.339	-17.46	36.34	0.53	53.59	34.00	0.00	1.955 2.228	105.556	-0.089	3.521882616E+0002	5.149172998E+0001	6.076578753E+0001	0.604
28.425	0.339	-17.46	37.02	0.53	54.58	34.00	0.00	1.937 2.306	105.527	-0.080	3.726285558E+0002	5.555136062E+0001	5.964462761E+0001	0.615
28.764	0.339	-17.46	37.69	0.53	55.58	34.00	0.00	1.911 2.386	105.501	-0.074	3.926401004E+0002	5.960098267E+0001	5.837894883E+0001	0.626
29.104	0.025	-17.46	2.82	0.53	56.12	34.00	0.00	1.890 2.469	105.477	-0.070	4.122955391E+0002	6.365181799E+0001	5.762194958E+0001	0.616
29.129	0.339	-17.46	38.44	0.53	56.66	38.00	0.00	1.875 2.475	105.475	-0.063	4.137412949E+0002	6.395174770E+0001	5.759597417E+0001	0.636
29.468	0.339	-17.46	39.15	0.53	57.65	38.00	0.00	1.874 2.561	105.454	-0.059	4.332708289E+0002	6.810559366E+0001	5.767370355E+0001	0.645
29.807	0.339	-17.46	39.87	0.53	58.65	38.00	0.00	1.865 2.649	105.435	-0.051	4.529443014E+0002	7.247773220E+0001	5.838840287E+0001	0.654
30.146	0.339	-17.46	40.58	0.53	59.65	38.00	0.00	1.861 2.740	105.419	-0.044	4.728988605E+0002	7.701042171E+0001	5.921058799E+0001	0.663
30.486	0.339	-17.46	41.30	0.53	60.65	38.00	0.00	1.864 2.833	105.406	-0.037	4.930288601E+0002	8.177850965E+0001	5.931355879E+0001	0.673
30.825	0.339	-17.46	42.01	0.53	61.65	38.00	0.00	1.874 2.928	105.395	-0.030	5.132235208E+0002	8.677865227E+0001	5.985354670E+0001	0.684
31.164	0.339	-17.46	42.73	0.53	62.65	38.00	0.00	1.893 3.026	105.386	-0.023	5.336021326E+0002	9.187282822E+0001	6.010696587E+0001	0.695
31.503	0.339	-17.46	43.44	0.52	63.65	38.00	0.00	1.919 3.126	105.379	-0.015	5.538131858E+0002	9.691659479E+0001	5.869826836E+0001	0.704
31.843	0.339	-17.46	44.16	0.52	64.65	38.00	0.00	1.955 3.229	105.375	-0.008	5.731644300E+0002	1.017871278E+0002	5.499410705E+0001	0.712
32.182	0.339	-17.46	44.87	0.52	65.64	38.00	0.00	1.999 3.334	105.374	-0.000	5.908746521E+0002	1.062432733E+0002	4.910333573E+0001	0.720
32.521	0.297	-17.46	39.92	0.52	66.58	38.00	0.00	2.053 3.442	105.375	0.009	6.063254552E+0002	1.100610696E+0002	4.187700902E+0001	0.722
32.818	0.339	7.61	45.70	0.52	69.42	38.00	0.00	2.117 3.540	105.380	0.022	6.178338517E+0002	1.127572974E+0002	3.568336519E+0001	0.727
33.158	0.339	7.61	45.40	0.52	68.98	38.00	0.00	2.184 3.504	105.389	0.036	6.288197948E+0002	1.150606384E+0002	2.888200268E+0001	0.729
33.497	0.339	7.61	45.10	0.52	68.54	38.00	0.00	2.275 3.474	105.404	0.053	6.373628215E+0002	1.166238305E+0002	2.149751617E+0001	0.729
33.836	0.339	7.61	44.79	0.52	68.10	38.00	0.00	2.381 3.450	105.425	0.069	6.434716334E+0002	1.177416130E+0002	1.468453541E+0001	0.730
34.175	0.339	7.61	44.49	0.52	67.66	38.00	0.00	2.501 3.430	105.450	0.082	6.474678237E+0002	1.184728308E+0002	9.110970133E+0000	0.730
34.514	0.339	7.61	44.19	0.52	67.22	38.00	0.00	2.635 3.415	105.480	0.095	6.498129695E+0002	1.189019426E+0002	4.934208969E+0000	0.731
34.854	0.339	7.61	43.88	0.52	66.78	38.00	0.00	2.779 3.404	105.515	0.109	6.509354465E+0002	1.191073320E+0002	1.801119511E+0000	0.731
35.193	0.339	7.61	43.58	0.52	66.33	38.00	0.00	2.931 3.398	105.555	0.125	6.510572444E+0002	1.191296184E+0002	-1.151951711E+0000	0.732
35.532	0.339	7.61	43.28	0.52	65.89	38.00	0.00	3.087 3.398	105.600	0.101	6.500571654E+0002	1.189466252E+0002	-4.811223070E+0000	0.732
35.871	0.339	7.61	42.97	0.52	65.45	38.00	0.00	3.244 3.377	105.623	0.069	6.477924192E+0002	1.185322249E+0002	-8.515253303E+0000	0.733
								3.401						

36.211	0.037	7.61	4.62	0.53	65.21	38.00	0.00	3.354	105.646	0.067	6.443095369E+0002	1.178949316E+0002	-1.196094322E+0001	0.718
								3.561						
36.247	0.339	17.36	42.43	0.53	62.27	38.00	0.00	3.351	105.649	0.148	6.438652067E+0002	1.178136286E+0002	-1.231070308E+0001	0.734
								3.578						
36.586	0.339	17.36	41.72	0.53	61.28	38.00	0.00	3.298	105.702	0.156	6.391665949E+0002	1.169538826E+0002	-1.532088563E+0001	0.735
								3.741						
36.926	0.339	17.36	41.01	0.53	60.29	38.00	0.00	3.245	105.755	0.156	6.335158834E+0002	1.159199227E+0002	-1.793404838E+0001	0.737
								3.905						
37.265	0.339	17.36	40.30	0.53	59.29	38.00	0.00	3.192	105.808	0.156	6.270307232E+0002	1.147332764E+0002	-2.027056613E+0001	0.738
								4.068						
37.604	0.339	17.36	39.59	0.53	58.30	38.00	0.00	3.139	105.861	0.156	6.197676104E+0002	1.134042814E+0002	-2.257061333E+0001	0.740
								4.228						
37.943	0.157	17.36	18.04	0.53	57.58	38.00	0.00	3.086	105.914	0.156	6.117196286E+0002	1.119316720E+0002	-2.467296296E+0001	0.733
								4.381						
38.100	0.339	17.36	43.88	0.47	57.90	38.00	0.00	3.062	105.938	0.383	6.078100353E+0002	1.112162996E+0002	-2.523098520E+0001	0.089
								4.449						
38.439	0.056	17.36	7.42	0.47	58.55	38.00	0.00	3.121	106.104	0.488	5.990557881E+0002	1.096144587E+0002	-2.647204050E+0001	0.089
								4.584						
38.496	0.204	17.36	25.71	0.49	58.98	34.00	0.00	3.131	106.131	0.488	5.975534427E+0002	1.093395615E+0002	-2.675931543E+0001	0.089
								4.605						
38.700	0.339	17.36	40.54	0.53	59.88	34.00	0.00	3.167	106.231	0.488	5.919552839E+0002	1.083152176E+0002	-2.813467468E+0001	0.745
								4.676						
39.039	0.024	17.36	2.96	0.52	60.47	34.00	0.00	3.227	106.397	0.488	5.818362564E+0002	1.064636509E+0002	-3.183808633E+0001	0.100
								4.776						
39.063	0.339	31.99	41.55	0.52	53.83	34.00	0.00	3.231	106.408	0.634	5.810613007E+0002	1.063218505E+0002	-3.217474852E+0001	0.100
								4.782						
39.403	0.339	31.99	41.64	0.52	53.94	34.00	0.00	3.238	106.627	0.644	5.692367634E+0002	1.041582119E+0002	-3.780492688E+0001	0.099
								4.853						
39.742	0.339	31.99	41.72	0.52	54.05	34.00	0.00	3.244	106.845	0.644	5.552809498E+0002	1.016045950E+0002	-4.457009689E+0001	0.097
								4.893						
40.081	0.339	31.99	41.80	0.52	54.16	34.00	0.00	3.251	107.064	0.644	5.390227249E+0002	9.862968591E+0001	-5.108858084E+0001	0.095
								4.900						
40.420	0.339	31.99	41.88	0.52	54.27	34.00	0.00	3.257	107.282	0.629	5.207340607E+0002	9.528324962E+0001	-5.701185768E+0001	0.093
								4.869						
40.760	0.339	31.99	41.96	0.52	54.38	34.00	0.00	3.254	107.490	0.603	5.002257489E+0002	9.153066508E+0001	-6.383394411E+0001	0.090
								4.797						
41.099	0.339	31.99	42.04	0.52	54.49	34.00	0.00	3.243	107.691	0.591	4.775978108E+0002	8.739023403E+0001	-6.916514875E+0001	0.089
								4.683						
41.438	0.339	31.99	42.13	0.52	54.60	34.00	0.00	3.231	107.891	0.588	4.536424653E+0002	8.300691568E+0001	-7.150210678E+0001	0.089
								4.537						
41.777	0.339	31.99	42.21	0.52	54.71	34.00	0.00	3.218	108.090	0.571	4.294731040E+0002	7.858443698E+0001	-7.045465554E+0001	0.089
								4.366						
42.117	0.339	31.99	47.58	0.46	54.82	26.50	0.00	3.194	108.279	0.547	4.061466570E+0002	7.442780120E+0001	-6.674583454E+0001	0.089
								4.184						
42.456	0.339	31.99	47.68	0.46	54.93	26.50	0.00	3.165	108.461	0.529	3.842859598E+0002	7.193623951E+0001	-6.221188546E+0001	0.089
								3.998						
42.795	0.339	31.99	47.77	0.46	55.04	26.50	0.00	3.130	108.637	0.507	3.637693859E+0002	6.915402159E+0001	-5.871475930E+0001	0.089
								3.818						
43.134	0.120	31.99	16.86	0.46	55.12	26.50	0.00	3.086	108.806	0.489	3.446111813E+0002	6.587415628E+0001	-5.413794310E+0001	0.089
								3.647						
43.254	0.196	32.09	27.69	0.47	55.65	26.50	0.00	3.067	108.862	0.471	3.382351759E+0002	6.468916841E+0001	-5.251276330E+0001	0.089
								3.590						
43.450	0.339	32.09	47.95	0.45	53.97	26.50	0.00	3.037	108.954	0.446	3.281753246E+0002	6.264726680E+0001	-5.010989960E+0001	0.089
								3.499						
43.789	0.339	32.09	47.97	0.43	51.65	26.50	0.00	2.971	109.101	0.414	3.117158107E+0002	5.906970309E+0001	-4.724660383E+0001	0.089
								3.351						
44.128	0.072	32.09	10.12	0.42	50.24	26.50	0.00	2.892	109.235	0.389	2.958887483E+0002	5.537704571E+0001	-4.640403960E+0001	0.089
								3.212						
44.200	0.339	32.09	47.00	0.42	48.83	26.50	0.00	2.873	109.261	0.349	2.925671185E+0002	5.458465059E+0001	-4.647490148E+0001	0.089
								3.184						
44.539	0.011	32.09	1.46	0.42	47.63	26.50	0.00	2.778	109.378	0.346	2.766323102E+0002	5.054932993E+0001	-4.766351380E+0001	0.984
								3.051						
44.550	0.103	32.09	13.49	0.43	47.24	34.00	0.00	2.775	109.382	0.291	2.761187844E+0002	5.041775319E+0001	-4.771636082E+0001	0.911
								3.047						
44.653	0.047	34.38	6.08	0.43	45.50	34.00	0.00	2.740	109.411	0.287	2.711701434E+0002	4.916685127E+0001	-4.823621553E+0001	0.900
								3.008						
44.700	0.339	34.38	43.19	0.42	44.12	34.00	0.00	2.721	109.425	0.293	2.689047520E+0002	4.858400809E+0001	-4.847196323E+0001	0.934
								2.990						
45.039	0.339	34.38	41.70	0.41	41.70	34.00	0.00	2.589	109.525	0.287	2.522265997E+0002	4.430642101E+0001	-4.961056740E+0001	0.917
								2.865						

45.378	0.339	34.38	40.20	0.40	39.28	34.00	0.00	2.452 2.746	109.620	0.279	2.353463101E+0002	3.994122389E+0001	-4.997109082E+0001	0.895
45.718	0.339	34.38	38.71	0.39	36.85	34.00	0.00	2.314 2.634	109.714	0.273	2.183101887E+0002	3.558867363E+0001	-5.044997836E+0001	0.870
46.057	0.095	34.38	10.52	0.39	35.30	34.00	0.00	2.173 2.529	109.805	0.267	2.011497329E+0002	3.130463843E+0001	-5.065225557E+0001	0.813
46.151	0.339	34.48	36.79	0.38	33.71	34.00	0.00	2.133 2.501	109.830	0.262	1.963631995E+0002	3.019153943E+0001	-5.062454236E+0001	0.834
46.491	0.339	34.48	35.29	0.37	31.28	34.00	0.00	1.989 2.407	109.919	0.262	1.792513753E+0002	2.624401844E+0001	-5.016566826E+0001	0.806
46.830	0.200	34.48	20.06	0.36	29.35	34.00	0.00	1.845 2.321	110.008	0.261	1.623901153E+0002	2.284245817E+0001	-4.915958287E+0001	0.771
47.029	0.339	34.48	32.81	0.35	27.43	26.50	0.00	1.759 2.274	110.059	0.257	1.526576632E+0002	2.093748096E+0001	-4.836890794E+0001	0.776
47.369	0.339	34.48	31.12	0.33	25.00	26.50	0.00	1.613 2.200	110.146	0.258	1.364997687E+0002	1.785522318E+0001	-4.688691259E+0001	0.741
47.708	0.339	34.48	29.43	0.32	22.57	26.50	0.00	1.468 2.134	110.234	0.261	1.208210082E+0002	1.496876342E+0001	-4.563023879E+0001	0.702
48.047	0.339	34.48	27.73	0.30	20.14	26.50	0.00	1.324 2.073	110.323	0.273	1.055181471E+0002	1.227982617E+0001	-4.456409066E+0001	0.660
48.386	0.339	34.48	26.04	0.28	17.72	26.50	0.00	1.188 2.017	110.420	0.280	9.063635964E+0001	9.853931366E+0000	-4.306093362E+0001	0.618
48.726	0.339	34.48	24.34	0.26	15.29	26.50	0.00	1.048 1.967	110.513	0.280	7.639624493E+0001	7.666093307E+0000	-4.074130573E+0001	0.571
49.065	0.339	34.48	22.65	0.24	12.86	26.50	0.00	0.912 1.923	110.610	0.296	6.309919451E+0001	5.868558402E+0000	-3.750834320E+0001	0.530
49.404	0.296	34.48	18.37	0.21	10.59	26.50	0.00	0.782 1.886	110.713	0.306	5.103152603E+0001	4.360358205E+0000	-3.354778040E+0001	0.483
49.700	0.137	34.48	8.07	0.19	9.04	26.50	0.00	0.670 1.857	110.804	0.300	4.165022097E+0001	3.298718526E+0000	-2.985779108E+0001	0.436
49.837	0.339	34.58	18.79	0.16	7.32	26.50	0.00	0.615 1.845	110.843	0.298	3.767219074E+0001	2.876655171E+0000	-2.820980680E+0001	0.434
50.176	0.024	34.58	1.25	0.14	6.02	26.50	0.00	0.483 1.815	110.946	0.304	2.876049128E+0001	1.988299105E+0000	-2.428060493E+0001	0.373
50.200	0.339	34.58	16.39	0.12	4.72	26.50	0.00	0.475 1.813	110.954	0.326	2.818796895E+0001	1.934017512E+0000	-2.399297205E+0001	0.387
50.539	0.339	34.58	13.53	0.07	2.29	26.50	0.00	0.352 1.781	111.064	0.379	2.075190255E+0001	1.256829593E+0000	-1.985656124E+0001	0.336
50.878	0.149	34.58	5.03	0.02	0.54	26.50	0.00	0.265 1.740	111.211	0.457	1.468594116E+0001	7.571504316E-0001	-1.597955062E+0001	0.278
51.027	0.339	34.58	9.47	0.00	0.00	26.50	0.00	0.238 1.717	111.287	0.511	1.242736494E+0001	5.780488562E-0001	-1.444401634E+0001	0.250
51.366	0.339	34.58	6.71	0.00	0.00	26.50	0.00	0.178 1.643	111.460	0.511	8.063037955E+0000	2.787213882E-0001	-1.139532086E+0001	0.186
51.705	0.339	34.58	3.96	0.00	0.00	26.50	0.00	0.117 1.512	111.634	0.511	4.625147206E+0000	1.006520935E-0001	-8.967164479E+0000	0.117
52.045	0.317	34.58	1.21	0.00	0.00	26.50	0.00	0.057 1.256	111.807	0.511	1.929352659E+0000	2.090701772E-0002	-6.972809193E+0000	0.089

Parametri Geotecnici degli strati

N.	phi` deg	C` kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P0_S1S2-F Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

Fs minimo : 3.232
Range Fs : 3.232 4.707
Differenza % Range Fs : 31.3
Coefficiente Sismico orizzontale - Kh: 0.014

GENERAZIONE SUPERFICI RANDOM

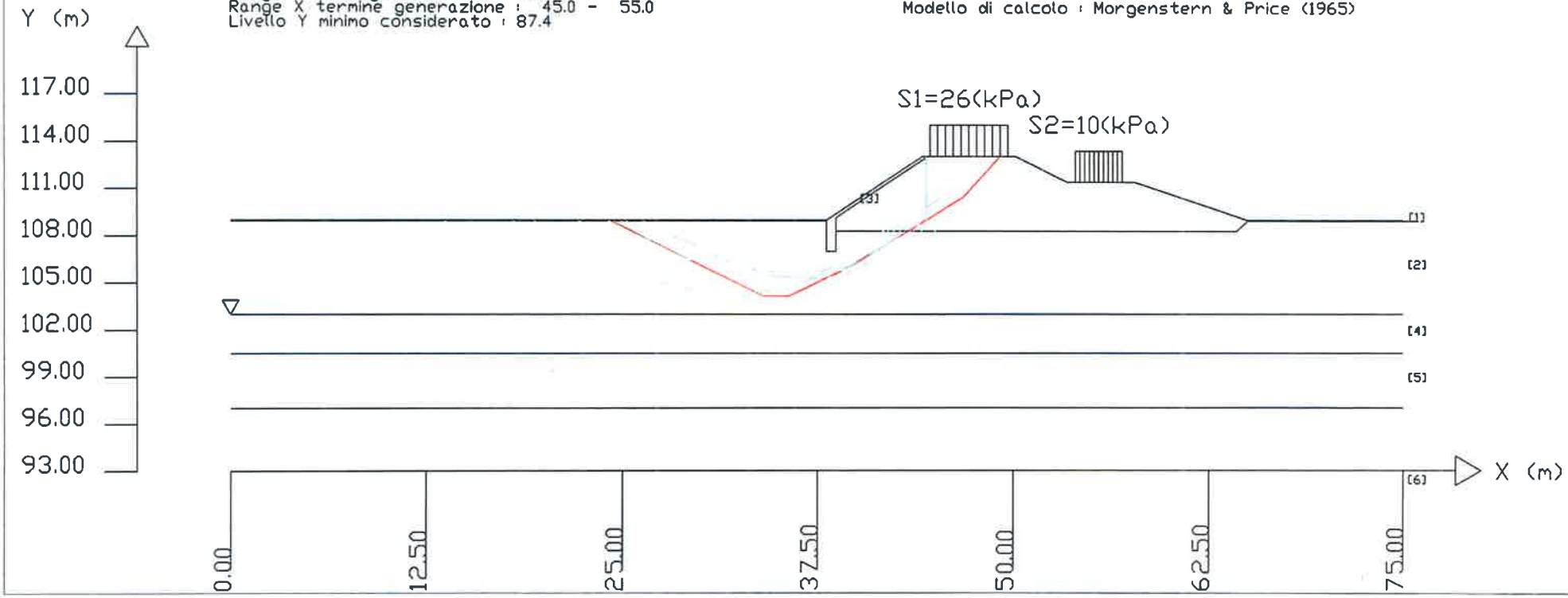
Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 0.0 - 35.0
Range X termine generazione : 45.0 - 55.0
Livello Y minimo considerato : 87.4

SSAP 4.1.3 (2012) - Slope Stability Analysis Program
Software by Dr.Geol. L.Borselli - www.lorenzo-borselli.eu
SSAP/DXF generator rel. 1.0.4 (2012)

Data : 08/12/2012
Localita' :
Descrizione :
n = No. strato o lente

Sn --> Sovraccarico

Modello di calcolo : Morgenstern & Price (1965)



File report: E:\ssap2010\1775\xstampa\PO_S1S2-F\PO_S1S2-F_report.txt
Data: 08/12/2012
Localita' :
Descrizione:

---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA
X Y (in m)

0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

Note: fi`_____ Angolo di attrito interno efficace(in gradi)
C` _____ Coesione efficace (in Kpa)
Cu _____ Resistenza al taglio Non drenata (in Kpa)
Gamm _____ Peso di volume terreno fuori falda (in KN/m^3)
Gamm_sat __ Peso di volume terreno immerso (in KN/m^3)
STR_IDX ___ Indice di resistenza (usato in solo in 'SNIFF SEARCH) (adimensionale)
---- Per ammassi Rocciosi - Parametri Criterio di Rottura di Hoek (2002)-
sigci _____ Resistenza Compressione Uniassiale Roccia Intatta (in MPa)
GSI _____ Geological Strenght Index ammasso(adimensionale)
mi _____ Indice litologico ammasso(adimensionale)
D _____ Fattore di disturbo ammasso(adimensionale)

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

```
    carico (Kpa):    26.00
 posizione da m.:    44.70
           a m.:    49.70

SOVRACCARICO N.2

    carico (Kpa):     9.91
 posizione da m.:    54.00
           a m.:    57.00

 ------------ INFORMAZIONI PARAMETRI DI CALCOLO ------------
     METODO DI CALCOLO : MORGENSTERN & PRICE  (Morgenstern & Price, 1965)
     COEFFICIENTE SISMICO UTILIZZATO Kh :  0.014
     COEFFICIENTE SISMICO UTILIZZATO Kv :  0.007
     FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
     FORZA ORIZZONTALE ADDIZIONALE ALLA BASE  (kN/m): 0.00

 ------------ RISULTATO FINALE ELABORAZIONI ------------------
   ---------------------------------------------------
   * DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *

Fattore di sicurezza (FS)     3.228  - Min. -    X       Y       Lambda=   0.307
                                               24.15  109.00
                                               27.56  107.32
                                               29.84  106.20
                                               34.07  104.13
                                               35.69  104.13
                                               39.47  105.97
                                               43.34  108.32
                                               46.83  110.44
                                               49.20  113.05

 Coofficiente Sismico Critico (Kh) per ottnere FS=1 ---> Khcrit=0.49486

------------ ANALISI DEFICIT DI RESISTENZA -----------------------------------
# DATI RELATIVI ALLA SUPERFICIE SINGOLA INDICATA *
  # Analisi Deficit in riferimento a FS(progetto) = 1.100
```

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	3.228	1197.2	370.9	789.2	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 789.2

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	local_FS (--)
24.154	0.101	-26.28	0.05	0.00	0.00	26.50	0.00	0.000	109.000	-0.420	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.108	3.907
24.255	0.270	-26.28	0.59	0.00	0.00	34.00	0.00	0.008	108.957	-0.420	5.421010862E-0005	3.103872041E-0007	1.461125054E-0004	0.108	3.907
24.525	0.270	-26.28	1.24	0.00	0.00	34.00	0.00	0.027	108.844	-0.420	5.421010862E-0005	6.298953263E-0007	0.000000000E+0000	0.108	3.894
24.795	0.270	-26.28	1.89	0.00	0.00	34.00	0.00	0.047	108.731	-0.420	5.421010862E-0005	1.042362378E-0006	0.000000000E+0000	0.108	3.917
25.064	0.270	-26.28	2.53	0.00	0.00	34.00	0.00	0.067	108.618	-0.420	5.421010862E-0005	1.465435497E-0006	4.797222724E-0004	0.133	3.909
25.334	0.270	-26.28	3.18	0.00	0.00	34.00	0.00	0.087	108.505	-0.420	3.130182336E-0004	1.091867105E-0005	1.036496784E-0002	0.171	3.838
25.604	0.270	-26.28	3.83	0.00	0.00	34.00	0.00	0.107	108.391	-0.420	5.646066158E-0003	2.411756923E-0004	1.144961080E-0001	0.208	3.697
25.874	0.270	-26.28	4.47	0.00	0.00	34.00	0.00	0.127	108.278	-0.420	6.208318136E-0002	3.141175967E-0003	1.266280712E+0000	0.246	3.496
26.143	0.270	-26.28	5.12	0.00	0.00	34.00	0.00	0.147	108.165	-0.420	4.810358887E-0001	2.812943434E-0002	1.831293829E+0000	0.284	3.254
26.413	0.270	-26.28	5.76	0.00	0.00	34.00	0.00	0.167	108.052	-0.419	1.080363224E+0000	7.231310523E-0002	2.720911349E+0000	0.324	2.992
26.683	0.270	-26.28	6.41	0.00	0.00	34.00	0.00	0.187	107.939	-0.384	2.025763857E+0000	1.528900577E-0001	4.452316873E+0000	0.365	2.729
26.953	0.270	-26.28	7.06	0.00	0.00	34.00	0.00	0.226	107.845	-0.350	3.572149230E+0000	2.981353990E-0001	7.169779819E+0000	0.403	2.485
27.222	0.270	-26.28	7.70	0.00	0.00	34.00	0.00	0.265	107.750	-0.337	5.963050748E+0000	5.423326858E-0001	1.064465542E+0001	0.439	2.272
27.492	0.064	-26.28	1.93	0.00	0.00	34.00	0.00	0.311	107.663	-0.318	9.330026975E+0000	9.141570235E-0001	1.427538473E+0001	0.473	2.093
27.556	0.270	-26.18	8.50	0.00	0.00	34.00	0.00	0.324	107.644	-0.296	1.027452733E+0001	1.023453493E+0000	1.510542414E+0001	0.480	2.055
27.826	0.270	-26.18	9.14	0.00	0.00	34.00	0.00	0.377	107.564	-0.297	1.484743548E+0001	1.583238078E+0000	1.885083101E+0001	0.514	1.906
28.096	0.270	-26.18	9.79	0.00	0.00	34.00	0.00	0.428	107.483	-0.298	2.045413488E+0001	2.333868342E+0000	2.270963700E+0001	0.550	1.772
28.366	0.270	-26.18	10.43	0.00	0.00	34.00	0.00	0.481	107.403	-0.290	2.708410745E+0001	3.305964013E+0000	2.640664080E+0001	0.588	1.648
28.635	0.270	-26.18	11.07	0.00	0.00	34.00	0.00	0.537	107.327	-0.278	3.467653875E+0001	4.536886651E+0000	2.984412976E+0001	0.630	1.531
28.905	0.270	-26.18	11.72	0.00	0.00	34.00	0.00	0.596	107.253	-0.266	4.316819512E+0001	6.034373007E+0000	3.310187984E+0001	0.673	1.421
29.175	0.270	-26.18	12.36	0.00	0.00	34.00	0.00	0.659	107.183	-0.254	5.254129634E+0001	7.763642885E+0000	3.643591432E+0001	0.711	1.319
29.445	0.270	-26.18	13.00	0.00	0.00	34.00	0.00	0.725	107.116	-0.241	6.280237721E+0001	9.757076812E+0000	3.956402383E+0001	0.747	1.227
29.714	0.121	-26.18	6.02	0.00	0.00	34.00	0.00	0.794	107.053	-0.232	7.387874040E+0001	1.201331523E+0001	4.259976853E+0001	0.782	1.145
29.835	0.270	-26.08	13.93	0.00	0.00	34.00	0.00	0.826	107.026	-0.219	7.910271477E+0001	1.312348202E+0001	4.407926821E+0001	0.798	1.112
30.105	0.270	-26.08	14.57	0.00	0.00	34.00	0.00	0.899	106.967	-0.214	9.148309896E+0001	1.583955297E+0001	4.781436662E+0001	0.832	1.042
30.375	0.270	-26.08	15.21	0.00	0.00	34.00	0.00	0.975	106.911	-0.205	1.049472012E+0002	1.896612359E+0001	5.208009929E+0001	0.868	0.977
30.644	0.270	-26.08	15.85	0.00	0.00	34.00	0.00	1.053	106.857	-0.195	1.195935730E+0002	2.256339570E+0001	5.648324255E+0001	0.906	0.919
30.914	0.270	-26.08	16.50	0.00	0.00	34.00	0.00	1.133	106.805	-0.185	1.353660761E+0002	2.666863269E+0001	6.033295525E+0001	0.946	0.870
31.184	0.270	-26.08	17.14	0.00	0.00	34.00	0.00	1.217	106.757	-0.170	1.521278373E+0002	3.119975244E+0001	6.390067294E+0001	0.985	0.831
31.454	0.270	-26.08	17.78	0.00	0.00	34.00	0.00	1.306	106.714	-0.153	1.697890386E+0002	3.614815550E+0001	6.690828744E+0001	1.022	0.805
31.723	0.270	-26.08	18.42	0.00	0.00	34.00	0.00	1.399	106.674	-0.140	1.881352452E+0002	4.152366348E+0001	6.893151625E+0001	1.060	0.791

31.993	0.270	-26.08	19.06	0.00	0.00	34.00	0.00	1.494	106.638	-0.130	2.068743141E+0002	4.727556742E+0001	6.981848698E+0001	1.097	0.789
32.263	0.270	-26.08	19.70	0.00	0.00	34.00	0.00	1.592	106.604	-0.118	2.257098760E+0002	5.334303139E+0001	6.968973735E+0001	1.135	0.798
32.533	0.270	-26.08	20.34	0.00	0.00	34.00	0.00	1.694	106.574	-0.104	2.444149000E+0002	5.967288801E+0001	6.894672179E+0001	1.172	0.816
32.802	0.270	-26.08	20.98	0.00	0.00	34.00	0.00	1.800	106.548	-0.089	2.629487022E+0002	6.624300184E+0001	6.849302413E+0001	1.209	0.842
33.072	0.270	-26.08	21.62	0.00	0.00	34.00	0.00	1.910	106.526	-0.074	2.812960740E+0002	7.312315916E+0001	6.728439266E+0001	1.248	0.877
33.342	0.270	-26.08	22.26	0.00	0.00	34.00	0.00	2.025	106.508	-0.057	2.990663355E+0002	7.998190658E+0001	6.408090152E+0001	1.283	0.922
33.611	0.270	-26.08	22.90	0.00	0.00	34.00	0.00	2.144	106.495	-0.038	3.156531649E+0002	8.650969336E+0001	5.852363252E+0001	1.315	0.976
33.881	0.191	-26.08	16.62	0.00	0.00	34.00	0.00	2.268	106.488	-0.020	3.304722477E+0002	9.237471596E+0001	5.113467518E+0001	1.341	1.039
34.072	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.360	106.486	-0.001	3.397115831E+0002	9.602936050E+0001	4.551964917E+0001	1.356	1.089
34.342	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.361	106.488	0.016	3.509799268E+0002	1.002581611E+0002	3.798314249E+0001	1.371	1.166
34.612	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.368	106.495	0.035	3.601490313E+0002	1.034901509E+0002	2.997577640E+0001	1.379	1.251
34.882	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.380	106.507	0.062	3.671768383E+0002	1.056952098E+0002	2.223335715E+0001	1.381	1.344
35.151	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.401	106.528	0.089	3.722179166E+0002	1.071463303E+0002	1.530057089E+0001	1.381	1.445
35.421	0.270	0.07	23.67	0.00	0.00	34.00	0.00	2.427	106.555	0.067	3.755159469E+0002	1.080956984E+0002	9.293436282E+0000	1.381	1.558
35.691	0.002	0.07	0.15	0.00	0.00	34.00	0.00	2.436	106.564	0.033	3.772880895E+0002	1.086058259E+0002	3.899304474E+0000	1.381	1.689
35.693	0.270	25.94	23.35	0.00	0.00	34.00	0.00	2.436	106.564	0.242	3.772949183E+0002	1.086077916E+0002	3.864746458E+0000	1.381	1.690
35.962	0.270	25.94	22.71	0.00	0.00	34.00	0.00	2.370	106.630	0.219	3.776047243E+0002	1.086969721E+0002	-1.693808129E+0000	1.381	1.843
36.232	0.270	25.94	22.07	0.00	0.00	34.00	0.00	2.292	106.682	0.205	3.763334731E+0002	1.083310308E+0002	-7.689445824E+0000	1.381	2.022
36.502	0.270	25.94	21.44	0.00	0.00	34.00	0.00	2.218	106.740	0.229	3.735400393E+0002	1.075269153E+0002	-1.277843554E+0001	1.381	2.229
36.772	0.270	25.94	20.80	0.00	0.00	34.00	0.00	2.153	106.806	0.257	3.695986777E+0002	1.063923584E+0002	-1.612246313E+0001	1.382	2.464
37.041	0.270	25.94	20.16	0.00	0.00	34.00	0.00	2.095	106.879	0.282	3.650100459E+0002	1.050714788E+0002	-1.762265056E+0001	1.382	2.724
37.311	0.270	25.94	19.53	0.00	0.00	34.00	0.00	2.042	106.958	0.268	3.602017432E+0002	1.036873649E+0002	-1.791955592E+0001	1.382	3.002
37.581	0.270	25.94	18.89	0.00	0.00	34.00	0.00	1.977	107.023	0.243	3.553309765E+0002	1.022852701E+0002	-1.829725708E+0001	1.382	3.289
37.851	0.249	25.94	16.89	0.00	0.00	34.00	0.00	1.911	107.089	0.243	3.503744731E+0002	1.008584953E+0002	-1.835919523E+0001	1.382	3.575
38.100	0.270	25.94	22.12	0.00	0.00	34.00	0.00	1.850	107.150	0.416	3.458119301E+0002	9.954512562E+0001	-1.826984629E+0001	0.108	3.836
38.370	0.270	25.94	22.70	0.00	0.00	34.00	0.00	1.874	107.305	0.575	3.408565389E+0002	9.811867094E+0001	-1.856742660E+0001	0.108	4.100
38.639	0.061	25.94	4.70	0.00	0.00	34.00	0.00	1.898	107.460	0.575	3.357380641E+0002	9.664527118E+0001	-1.948418033E+0001	0.108	4.318
38.700	0.270	25.94	18.59	0.00	0.00	34.00	0.00	1.904	107.495	0.499	3.345507739E+0002	9.630349886E+0001	-1.976608496E+0001	1.377	4.359
38.970	0.270	25.94	19.30	0.00	0.00	34.00	0.00	1.902	107.625	0.494	3.290304965E+0002	9.471443653E+0001	-2.118428164E+0001	0.114	4.502
39.239	0.231	25.94	16.68	0.00	0.00	34.00	0.00	1.908	107.761	0.518	3.231437947E+0002	9.301989558E+0001	-2.235074553E+0001	0.113	4.585
39.470	0.270	31.26	19.64	0.00	0.00	34.00	0.00	1.918	107.884	0.562	3.179260904E+0002	9.151793171E+0001	-2.286441564E+0001	0.111	4.618
39.740	0.270	31.26	19.72	0.00	0.00	34.00	0.00	1.913	108.042	0.609	3.116818487E+0002	8.972046966E+0001	-2.348286079E+0001	0.109	4.635
40.010	0.270	31.26	19.79	0.00	0.00	34.00	0.00	1.919	108.213	0.635	3.052117668E+0002	8.785799741E+0001	-2.459467677E+0001	0.108	4.650
40.279	0.270	31.26	22.04	0.00	0.00	26.50	0.00	1.928	108.385	0.644	2.983534712E+0002	8.588377434E+0001	-2.635816608E+0001	0.108	4.684
40.549	0.270	31.26	22.12	0.00	0.00	26.50	0.00	1.939	108.560	0.653	2.909495069E+0002	8.375247552E+0001	-2.857856201E+0001	0.108	4.746
40.819	0.270	31.26	22.21	0.00	0.00	26.50	0.00	1.952	108.737	0.673	2.829425764E+0002	8.144760737E+0001	-3.070802867E+0001	0.108	4.829
41.089	0.270	31.26	22.29	0.00	0.00	26.50	0.00	1.975	108.923	0.684	2.743886195E+0002	7.898527269E+0001	-3.287290096E+0001	0.108	4.926
41.358	0.270	31.26	22.37	0.00	0.00	26.50	0.00	1.994	109.106	0.670	2.651919742E+0002	7.633793426E+0001	-3.521669440E+0001	0.108	5.052
41.628	0.270	31.26	22.45	0.00	0.00	26.50	0.00	2.009	109.285	0.653	2.554899329E+0002	7.354511296E+0001	-3.646746502E+0001	0.108	5.216
41.898	0.270	31.26	22.53	0.00	0.00	26.50	0.00	2.018	109.458	0.633	2.456664851E+0002	7.071734370E+0001	-3.609157027E+0001	0.108	5.412
42.168	0.270	31.26	22.61	0.00	0.00	26.50	0.00	2.022	109.626	0.612	2.361465223E+0002	6.797693538E+0001	-3.431939275E+0001	0.108	5.629
42.437	0.270	31.26	22.70	0.00	0.00	26.50	0.00	2.021	109.788	0.573	2.271897436E+0002	6.539864475E+0001	-3.214534022E+0001	0.108	5.840
42.707	0.270	31.26	22.78	0.00	0.00	26.50	0.00	2.004	109.935	0.531	2.187418357E+0002	6.296683722E+0001	-3.038351394E+0001	0.108	6.009
42.977	0.270	31.26	22.86	0.00	0.00	26.50	0.00	1.980	110.074	0.502	2.108500238E+0002	6.069510703E+0001	-2.815877725E+0001	0.108	6.103
43.247	0.069	31.26	5.83	0.00	0.00	26.50	0.00	1.947	110.206	0.479	2.034799003E+0002	5.857354960E+0001	-2.669251914E+0001	0.108	6.098
43.315	0.027	31.26	2.32	0.00	0.00	26.50	0.00	1.936	110.236	0.447	2.016540087E+0002	5.804795001E+0001	-2.654030465E+0001	0.108	6.082
43.343	0.107	31.36	9.14	0.00	0.00	26.50	0.00	1.932	110.248	0.462	2.009284550E+0002	5.783909273E+0001	-2.650785788E+0001	0.108	6.074
43.450	0.270	31.36	23.00	0.00	0.00	26.50	0.00	1.916	110.298	0.451	1.980805012E+0002	5.701928319E+0001	-2.653817631E+0001	0.108	6.034
43.720	0.270	31.36	23.09	0.00	0.00	26.50	0.00	1.872	110.419	0.438	1.908035421E+0002	5.492454397E+0001	-2.763789295E+0001	0.108	5.884
43.989	0.211	31.36	18.07	0.00	0.00	26.50	0.00	1.824	110.535	0.424	1.830864309E+0002	5.270310298E+0001	-2.964233334E+0001	0.108	5.652
44.200	0.270	31.36	22.62	0.00	0.00	26.50	0.00	1.783	110.622	0.409	1.766911015E+0002	5.086214893E+0001	-3.101048919E+0001	0.108	5.420
44.470	0.080	31.36	6.50	0.00	0.00	26.50	0.00	1.728	110.731	0.406	1.681337765E+0002	4.871698018E+0001	-3.248705701E+0001	1.876	5.088
44.550	0.150	31.36	11.94	0.00	0.00	26.50	0.00	1.712	110.764	0.389	1.655075787E+0002	4.826957520E+0001	-3.296197286E+0001	1.888	4.986
44.700	0.270	31.36	27.84	0.00	0.00	26.50	0.00	1.677	110.821	0.384	1.604972554E+0002	4.753753726E+0001	-3.383624003E+0001	1.917	4.799
44.970	0.270	31.36	26.94	0.00	0.00	26.50	0.00	1.617	110.925	0.386	1.511746643E+0002	4.577600324E+0001	-3.523508409E+0001	1.960	4.484
45.239	0.270	31.36	26.05	0.00	0.00	26.50	0.00	1.556	111.029	0.391	1.415199860E+0002	4.328780578E+0001	-3.628470607E+0001	1.980	4.211
45.509	0.270	31.36	25.16	0.00	0.00	26.50	0.00	1.499	111.136	0.404	1.316309206E+0002	4.015673196E+0001	-3.698741496E+0001	1.975	3.989
45.779	0.270	31.36	24.26	0.00	0.00	26.50	0.00	1.446	111.247	0.420	1.215816889E+0002	3.647894381E+0001	-3.751498333E+0001	1.942	3.818
46.049	0.270	31.36	23.37	0.00	0.00	26.50	0.00	1.397	111.363	0.435	1.113917293E+0002	3.228169405E+0001	-3.797490101E+0001	1.876	3.690
46.318	0.270	31.36	22.48	0.00	0.00	26.50	0.00	1.352	111.482	0.388	1.011260340E+0002	2.809895405E+0001	-3.811066590E+0001	1.799	3.596
46.588	0.243	31.36	19.49	0.00	0.00	26.50	0.00	1.277	111.572	0.339	9.083353495E+0001	2.406576019E+0001	-3.821349196E+0001	1.715	3.528
46.831	0.270	47.70	20.42	0.00	0.00	26.50	0.00	1.213	111.656	0.328	8.152442006E+0001	2.053957785E+0001	-3.839539060E+0001	1.631	3.497
47.101	0.270	47.70	18.81	0.00	0.00	26.50	0.00	1.001	111.740	0.324	7.113311593E+0001	1.678906588E+0001	-3.864296405E+0001	1.528	3.501

47.371	0.270	47.70	17.20	0.00	0.00	26.50	0.00	0.795	111.831	0.374	6.069418223E+0001	1.326229442E+0001	-3.868934013E+0001	1.415	3.552
47.641	0.270	47.70	15.59	0.00	0.00	26.50	0.00	0.609	111.942	0.465	5.030852650E+0001	1.005077269E+0001	-3.836349180E+0001	1.293	3.663
47.910	0.270	47.70	13.98	0.00	0.00	26.50	0.00	0.453	112.081	0.558	3.989438818E+0001	7.192616272E+0000	-3.885918588E+0001	1.167	3.851
48.180	0.270	47.70	12.37	0.00	0.00	26.50	0.00	0.318	112.243	0.636	2.944771441E+0001	4.734774513E+0000	-3.824701859E+0001	1.041	4.144
48.450	0.270	47.70	10.76	0.00	0.00	26.50	0.00	0.203	112.425	0.715	1.949773207E+0001	2.753794662E+0000	-3.503788473E+0001	0.914	4.582
48.720	0.270	47.70	9.15	0.00	0.00	26.50	0.00	0.111	112.628	0.796	1.079809802E+0001	1.315949246E+0000	-2.905689144E+0001	0.789	5.215
48.989	0.215	47.70	6.13	0.00	0.00	26.50	0.00	0.040	112.854	0.871	3.972393107E+0000	4.122036243E-0001	-2.144335822E+0001	0.672	6.138

Parametri Geotecnici degli strati

N.	phi'	C'	Cu	Gamm	GammSat	sgcl	GSI	mi	D
"	deg	kPa	kPa	kN/m3	kN/m3	MPa	"	"	"
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P0_S1S2-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

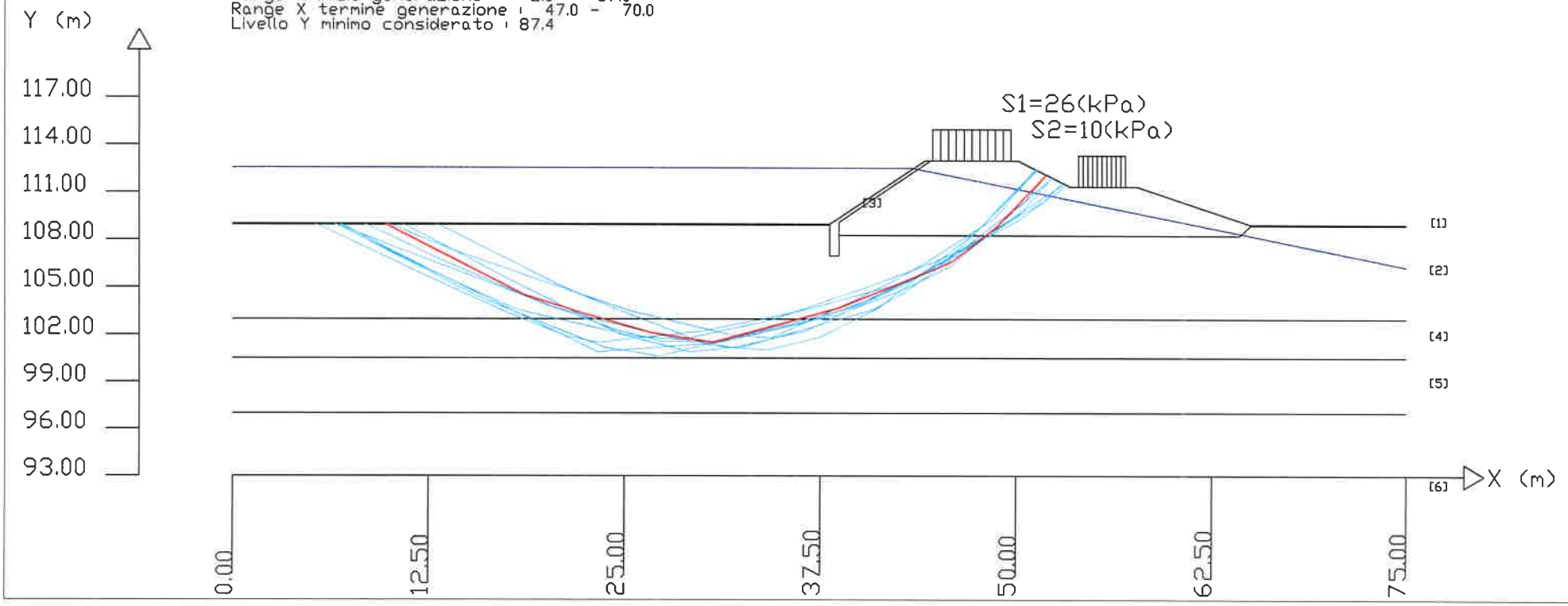
Fs minimo : 5.884
Range Fs : 5.884 6.464
Differenza % Range Fs : 9.0
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.884
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.45731
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 2.0 - 37.0
Range X termine generazione : 47.0 - 70.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 26.00
posizione da m.: 44.70
a m.: 49.70

SOVRACCARICO N.2

carico (Kpa): 9.91
posizione da m.: 54.00
a m.: 57.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 2.00 37.00

LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 47.00 70.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------
---

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 5.884 - Min. - Lambda= 0.097

X	Y
9.74	109.00
13.85	106.93
16.78	105.45
18.63	104.52
22.00	103.47
26.66	102.14
30.64	101.51
33.64	102.32
35.91	102.94
38.69	103.70
42.02	105.05
45.96	106.65
48.77	108.84
51.27	111.44
51.97	112.17

Fattore di sicurezza (FS) 6.092 - N.2 -- Lambda= 0.098

X	Y
9.91	109.00
14.09	107.30
16.37	106.53
20.97	104.97

			25.21	103.55	
			28.67	102.71	
			32.01	101.92	
			34.39	101.78	
			38.77	103.77	
			39.86	104.27	
			42.64	105.64	
			44.60	106.79	
			48.68	109.41	
			50.04	111.01	
			51.31	112.50	
Fattore di sicurezza (FS)	6.099	- N.3 --	X	Y	Lambda= 0.103
			6.86	109.00	
			9.90	107.41	
			13.29	105.75	
			17.77	103.56	
			20.88	102.06	
			23.35	100.88	
			27.44	101.19	
			31.10	101.48	
			35.32	102.47	
			38.64	103.26	
			43.09	104.98	
			45.90	106.39	
			49.67	109.65	
			52.35	111.98	
Fattore di sicurezza (FS)	6.161	- N.4 --	X	Y	Lambda= 0.104
			13.01	109.00	
			16.68	107.18	
			20.67	105.21	
			22.73	104.31	
			23.85	103.87	
			26.61	102.80	
			30.61	101.25	
			34.16	101.01	
			37.41	101.79	
			41.18	103.66	
			44.59	106.30	
			47.44	108.50	
			50.37	111.56	

			51.29	112.51		
Fattore di sicurezza (FS)	6.191	- N.5 --	X	Y	Lambda=	0.088
			6.51	109.00		
			10.08	107.61		
			12.86	106.57		
			16.34	105.28		
			20.92	103.59		
			24.45	102.29		
			27.48	101.54		
			31.37	101.57		
			35.79	102.64		
			37.47	103.05		
			41.84	104.71		
			42.95	105.24		
			45.95	106.92		
			47.34	107.99		
			50.63	110.52		
			51.45	111.54		
			51.95	112.18		
Fattore di sicurezza (FS)	6.195	- N.6 --	X	Y	Lambda=	0.109
			10.84	109.00		
			15.19	106.75		
			17.76	105.42		
			21.95	103.37		
			24.75	102.01		
			29.23	100.87		
			32.32	101.23		
			36.54	102.21		
			40.94	104.29		
			44.74	106.33		
			47.41	107.76		
			50.13	109.23		
			51.69	110.34		
			52.98	111.66		
Fattore di sicurezza (FS)	6.205	- N.7 --	X	Y	Lambda=	0.091
			5.25	109.00		
			9.26	107.13		
			12.34	105.70		
			14.46	104.75		

				17.71	103.30	
				21.36	101.88	
				23.32	101.48	
				24.48	101.60	
				26.01	101.77	
				29.77	102.19	
				30.96	102.42	
				33.84	102.99	
				36.89	103.65	
				41.46	104.93	
				43.06	105.38	
				44.97	106.22	
				47.51	107.75	
				50.18	109.58	
				51.92	111.51	
				52.31	111.99	
Fattore di sicurezza (FS)	6.371	- N.8 --	X	Y	Lambda=	0.085
			8.45	109.00		
			12.85	106.90		
			15.01	105.99		
			18.08	104.69		
			20.00	103.87		
			23.53	102.88		
			28.06	101.79		
			32.27	101.11		
			34.15	101.65		
			38.95	103.03		
			40.83	103.58		
			42.64	104.53		
			43.75	105.30		
			44.63	105.91		
			46.69	107.74		
			49.81	110.88		
			51.38	112.46		
Fattore di sicurezza (FS)	6.418	- N.9 --	X	Y	Lambda=	0.092
			6.49	109.00		
			7.63	108.44		
			8.62	107.95		
			12.93	105.88		
			16.31	104.38		

18.13	103.58
21.96	102.70
25.64	101.87
28.63	101.66
31.31	102.25
34.36	102.92
35.45	103.29
38.36	104.29
41.17	105.26
44.86	106.64
46.15	107.21
48.61	108.61
52.22	110.69
53.26	111.52

Fattore di sicurezza (FS) 6.464 - N.10 --

X	Y
6.53	109.00
10.72	106.86
15.12	104.68
16.05	104.22
19.07	103.01
23.71	101.18
27.22	100.61
31.63	101.71
33.89	102.28
34.89	102.53
39.32	103.65
43.69	105.75
45.72	106.87
46.62	107.37
49.13	108.99
52.88	111.41
53.14	111.58

Lambda= 0.103

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	5.884	2470.8	419.9	2008.9	Surplus
2	6.092	2314.3	379.9	1896.5	Surplus
3	6.099	2914.6	477.9	2388.9	Surplus
4	6.161	2486.7	403.7	2042.7	Surplus

5	6.191	2647.2	427.6	2176.9	Surplus
6	6.195	2661.9	429.7	2189.3	Surplus
7	6.205	2761.4	445.0	2271.8	Surplus
8	6.371	2622.2	411.6	2169.5	Surplus
9	6.418	2640.7	411.4	2188.1	Surplus
10	6.464	2918.5	451.5	2421.9	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 1896.5

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht	yt	yt'	E(x)	T(x)	E'	rho(x)
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)
							local_FS (--)							
9.739	0.099	-26.78	3.53	0.49	0.23	26.50	0.00	0.000	109.000	-0.429	0.000000000E+0000	0.000000000E+0000	1.056164980E+0001	
							0.365	2.377						
9.838	0.373	-26.78	14.14	0.51	1.27	34.00	0.00	0.007	108.957	-0.429	1.094701399E+0000	2.286840054E-0002	1.154250604E+0001	
							0.365	2.377						
10.211	0.373	-26.78	15.45	0.52	2.92	34.00	0.00	0.036	108.797	-0.429	6.134144674E+0000	1.364635718E-0001	1.552532600E+0001	
							0.237	2.379						
10.584	0.373	-26.78	16.76	0.52	4.57	34.00	0.00	0.064	108.637	-0.428	1.270056461E+0001	3.066169440E-0001	1.966778041E+0001	
							0.241	2.381						
10.957	0.373	-26.78	18.08	0.52	6.22	34.00	0.00	0.093	108.478	-0.421	2.079517984E+0001	5.425314934E-0001	2.367775792E+0001	
							0.254	2.383						
11.330	0.373	-26.78	19.39	0.53	7.87	34.00	0.00	0.127	108.323	-0.408	3.033329756E+0001	8.507753884E-0001	2.738690273E+0001	
							0.268	2.386						
11.703	0.373	-26.78	20.70	0.53	9.52	34.00	0.00	0.165	108.174	-0.405	4.119049281E+0001	1.236009889E+0000	3.075061457E+0001	
							0.284	2.388						
12.077	0.373	-26.78	22.02	0.53	11.17	34.00	0.00	0.201	108.021	-0.393	5.324878769E+0001	1.705240632E+0000	3.384804872E+0001	
							0.300	2.390						
12.450	0.373	-26.78	23.33	0.53	12.82	34.00	0.00	0.249	107.880	-0.368	6.644283065E+0001	2.260388133E+0000	3.688211598E+0001	
							0.317	2.393						
12.823	0.373	-26.78	24.64	0.53	14.46	34.00	0.00	0.303	107.747	-0.350	8.080003630E+0001	2.907633397E+0000	4.009965506E+0001	
							0.333	2.395						
13.196	0.373	-26.78	25.96	0.53	16.11	34.00	0.00	0.364	107.619	-0.340	9.637100216E+0001	3.654484816E+0000	4.333642937E+0001	
							0.350	2.398						
13.569	0.280	-26.78	20.36	0.53	17.56	34.00	0.00	0.426	107.493	-0.330	1.131123160E+0002	4.504909396E+0000	4.633828313E+0001	
							0.362	2.402						
13.849	0.373	-26.69	28.25	0.53	19.01	34.00	0.00	0.478	107.403	-0.317	1.263873760E+0002	5.219591631E+0000	4.833999771E+0001	
							0.378	2.405						
14.223	0.373	-26.69	29.56	0.53	20.66	34.00	0.00	0.549	107.286	-0.308	1.448628408E+0002	6.258406642E+0000	5.060756472E+0001	
							0.395	2.410						
14.596	0.373	-26.69	30.87	0.53	22.30	34.00	0.00	0.624	107.174	-0.294	1.641004909E+0002	7.406058032E+0000	5.243440382E+0001	
							0.411	2.415						
14.969	0.373	-26.69	32.18	0.53	23.95	34.00	0.00	0.704	107.067	-0.279	1.839521213E+0002	8.668860327E+0000	5.392341580E+0001	
							0.429	2.421						

15.342	0.373	-26.69	33.49	0.53	25.59	34.00	0.00	0.791	106.966	-0.262	2.043256021E+0002	1.003923046E+0001	5.527224891E+0001
							0.446	2.428					
15.715	0.373	-26.69	34.80	0.53	27.23	34.00	0.00	0.884	106.871	-0.253	2.252023087E+0002	1.151985904E+0001	5.660199142E+0001
							0.464	2.436					
16.088	0.373	-26.69	36.10	0.53	28.88	34.00	0.00	0.977	106.777	-0.260	2.465463693E+0002	1.308922504E+0001	5.776301525E+0001
							0.481	2.444					
16.461	0.321	-26.69	32.15	0.53	30.41	34.00	0.00	1.065	106.677	-0.262	2.682813817E+0002	1.475918508E+0001	5.868910400E+0001
							0.495	2.455					
16.783	0.373	-26.59	38.54	0.53	31.96	34.00	0.00	1.144	106.595	-0.249	2.872443849E+0002	1.628517262E+0001	5.927156824E+0001
							0.512	2.465					
17.156	0.373	-26.59	39.84	0.53	33.60	34.00	0.00	1.240	106.504	-0.240	3.094485526E+0002	1.813402404E+0001	5.969364030E+0001
							0.529	2.479					
17.529	0.373	-26.59	41.14	0.53	35.24	34.00	0.00	1.339	106.416	-0.229	3.317625772E+0002	2.006492281E+0001	5.986709044E+0001
							0.545	2.495					
17.902	0.373	-26.59	42.45	0.53	36.88	34.00	0.00	1.443	106.333	-0.216	3.541031588E+0002	2.206350020E+0001	5.984794142E+0001
							0.562	2.513					
18.275	0.357	-26.59	41.88	0.53	38.49	34.00	0.00	1.551	106.255	-0.203	3.764138622E+0002	2.411438793E+0001	5.972627139E+0001
							0.576	2.533					
18.633	0.373	-17.36	44.75	0.53	42.46	34.00	0.00	1.660	106.185	-0.189	3.977431282E+0002	2.611705929E+0001	5.960380696E+0001
							0.591	2.554					
19.006	0.373	-17.36	45.57	0.53	43.55	34.00	0.00	1.709	106.116	-0.177	4.199460684E+0002	2.821097594E+0001	5.937154886E+0001
							0.604	2.579					
19.379	0.373	-17.36	46.38	0.53	44.65	34.00	0.00	1.762	106.053	-0.165	4.420261165E+0002	3.032015094E+0001	5.893319017E+0001
							0.616	2.606					
19.752	0.373	-17.36	47.19	0.53	45.74	34.00	0.00	1.819	105.993	-0.154	4.638967100E+0002	3.244046927E+0001	5.824692075E+0001
							0.628	2.635					
20.126	0.373	-17.36	48.01	0.53	46.83	34.00	0.00	1.880	105.938	-0.143	4.854668177E+0002	3.462652118E+0001	5.733059853E+0001
							0.640	2.666					
20.499	0.373	-17.36	48.82	0.53	47.92	34.00	0.00	1.946	105.887	-0.133	5.066632046E+0002	3.682531081E+0001	5.626174947E+0001
							0.652	2.698					
20.872	0.373	-17.36	49.64	0.53	49.02	34.00	0.00	2.014	105.838	-0.124	5.274526970E+0002	3.899692707E+0001	5.517756762E+0001
							0.663	2.733					
21.245	0.373	-17.36	50.45	0.53	50.11	34.00	0.00	2.086	105.794	-0.115	5.478416106E+0002	4.114748781E+0001	5.400513990E+0001
							0.673	2.771					
21.618	0.373	-17.36	51.26	0.53	51.20	34.00	0.00	2.162	105.753	-0.106	5.676964090E+0002	4.328057701E+0001	5.239765444E+0001
							0.683	2.813					
21.991	0.011	-17.36	1.59	0.53	51.76	34.00	0.00	2.240	105.715	-0.102	5.869767383E+0002	4.539385820E+0001	5.102838275E+0001
							0.677	2.858					
22.003	0.373	-15.90	52.07	0.53	52.68	34.00	0.00	2.243	105.713	-0.094	5.875613849E+0002	4.545863934E+0001	5.099585291E+0001
							0.693	2.860					
22.376	0.373	-15.90	52.81	0.53	53.68	34.00	0.00	2.314	105.679	-0.090	6.064446833E+0002	4.755672999E+0001	5.035582647E+0001
							0.702	2.911					
22.749	0.373	-15.90	53.55	0.53	54.68	34.00	0.00	2.388	105.646	-0.084	6.252515758E+0002	4.969617381E+0001	5.058814749E+0001
							0.711	2.968					
23.122	0.373	-15.90	54.29	0.53	55.69	34.00	0.00	2.464	105.616	-0.077	6.442911494E+0002	5.190552466E+0001	5.155529292E+0001
							0.720	3.031					
23.495	0.160	-15.90	23.44	0.53	56.40	34.00	0.00	2.543	105.588	-0.072	6.637657952E+0002	5.420649281E+0001	5.282291574E+0001
							0.721	3.101					
23.655	0.373	-15.90	55.37	0.53	57.12	38.00	0.00	2.578	105.578	-0.067	6.722322336E+0002	5.523060689E+0001	5.328654885E+0001
							0.734	3.133					
24.028	0.373	-15.90	56.15	0.53	58.12	38.00	0.00	2.659	105.553	-0.065	6.922467555E+0002	5.770061879E+0001	5.395703523E+0001
							0.743	3.213					
24.401	0.373	-15.90	56.93	0.53	59.12	38.00	0.00	2.742	105.529	-0.061	7.125186940E+0002	6.020599583E+0001	5.469017571E+0001
							0.751	3.299					
24.774	0.373	-15.90	57.72	0.53	60.13	38.00	0.00	2.826	105.507	-0.058	7.330316998E+0002	6.286047041E+0001	5.518555070E+0001
							0.760	3.392					
25.147	0.373	-15.90	58.50	0.53	61.13	38.00	0.00	2.912	105.486	-0.054	7.536357013E+0002	6.560263213E+0001	5.514059089E+0001
							0.769	3.492					
25.521	0.373	-15.90	59.28	0.53	62.13	38.00	0.00	2.998	105.467	-0.050	7.740971110E+0002	6.834815772E+0001	5.441023879E+0001
							0.778	3.599					
25.894	0.373	-15.90	60.07	0.53	63.14	38.00	0.00	3.086	105.449	-0.047	7.941576012E+0002	7.100109994E+0001	5.300694881E+0001
							0.786	3.715					
26.267	0.373	-15.90	60.85	0.52	64.14	38.00	0.00	3.176	105.432	-0.043	8.135928793E+0002	7.352424682E+0001	5.110068725E+0001
							0.792	3.841					
26.640	0.020	-15.90	3.34	0.52	64.67	38.00	0.00	3.267	105.417	-0.041	8.322714636E+0002	7.592289356E+0001	4.901911835E+0001
							0.783	3.977					
26.660	0.373	-9.08	61.50	0.52	66.72	38.00	0.00	3.272	105.416	-0.036	8.332662886E+0002	7.604827260E+0001	4.891087926E+0001
							0.798	3.985					
27.034	0.373	-9.08	61.94	0.52	67.29	38.00	0.00	3.318	105.402	-0.034	8.511782960E+0002	7.833091310E+0001	4.713208032E+0001
							0.804	4.134					

27.407	0.373	-9.08	62.38	0.52	67.87	38.00	0.00	3.366	105.390	-0.030	8.684208090E+0002	8.055539923E+0001	4.520140824E+0001
							0.809	4.297					
27.780	0.373	-9.08	62.82	0.52	68.45	38.00	0.00	3.415	105.380	-0.027	8.848190969E+0002	8.271370410E+0001	4.253306913E+0001
							0.814	4.476					
28.153	0.373	-9.08	63.26	0.52	69.02	38.00	0.00	3.465	105.370	-0.022	9.000324311E+0002	8.478384391E+0001	3.882314341E+0001
							0.819	4.673					
28.526	0.373	-9.08	63.70	0.52	69.60	38.00	0.00	3.517	105.363	-0.017	9.136592666E+0002	8.673740078E+0001	3.404958590E+0001
							0.825	4.890					
28.899	0.373	-9.08	64.14	0.52	70.18	38.00	0.00	3.571	105.358	-0.013	9.253424226E+0002	8.852536527E+0001	2.847222575E+0001
							0.830	5.132					
29.272	0.373	-9.08	64.57	0.52	70.76	38.00	0.00	3.627	105.354	-0.032	9.348742638E+0002	8.999885859E+0001	2.263276644E+0001
							0.835	5.410					
29.646	0.373	-9.08	65.01	0.52	71.33	38.00	0.00	3.667	105.333	-0.067	9.422854546E+0002	9.116670605E+0001	1.710494901E+0001
							0.838	5.729					
30.019	0.373	-9.08	65.45	0.52	71.91	38.00	0.00	3.696	105.304	-0.080	9.476063138E+0002	9.197959793E+0001	1.139210098E+0001
							0.840	6.097					
30.392	0.247	-9.08	43.56	0.52	72.39	38.00	0.00	3.726	105.274	-0.080	9.507933368E+0002	9.238381057E+0001	5.723214282E+0000
							0.834	6.516					
30.639	0.373	15.15	65.59	0.52	70.47	38.00	0.00	3.746	105.254	0.050	9.517598356E+0002	9.239348607E+0001	2.132168329E+0000
							0.838	6.821					
31.012	0.373	15.15	64.85	0.52	69.51	38.00	0.00	3.695	105.305	0.135	9.515964585E+0002	9.202666680E+0001	-2.928073701E+0000
							0.836	7.322					
31.385	0.373	15.15	64.10	0.52	68.56	38.00	0.00	3.645	105.355	0.093	9.496358468E+0002	9.124418204E+0001	-7.500183436E+0000
							0.832	7.860					
31.758	0.373	15.15	63.36	0.52	67.60	38.00	0.00	3.563	105.374	0.040	9.460529734E+0002	9.001793340E+0001	-1.164316909E+0001
							0.826	8.419					
32.131	0.373	15.15	62.61	0.52	66.65	38.00	0.00	3.473	105.385	0.034	9.409777751E+0002	8.849926988E+0001	-1.553940731E+0001
							0.817	8.976					
32.505	0.373	15.15	61.87	0.52	65.69	38.00	0.00	3.387	105.400	0.044	9.344371199E+0002	8.681226776E+0001	-1.962177402E+0001
							0.809	9.507					
32.878	0.373	15.15	61.13	0.52	64.73	38.00	0.00	3.304	105.418	0.051	9.262926739E+0002	8.505307724E+0001	-2.400236011E+0001
							0.801	9.992					
33.251	0.373	15.15	60.38	0.52	63.78	38.00	0.00	3.223	105.438	0.058	9.165971381E+0002	8.321439919E+0001	-2.780883057E+0001
							0.793	10.424					
33.624	0.020	15.15	3.21	0.53	63.27	38.00	0.00	3.145	105.461	0.062	9.056834688E+0002	8.133280942E+0001	-3.046604121E+0001
							0.773	10.777					
33.644	0.373	15.25	59.60	0.53	62.73	38.00	0.00	3.141	105.463	0.071	9.050746037E+0002	8.123314570E+0001	-3.057006226E+0001
							0.786	10.793					
34.017	0.373	15.25	58.85	0.53	61.77	38.00	0.00	3.066	105.489	0.076	8.933966374E+0002	7.922894238E+0001	-3.179873001E+0001
							0.778	11.020					
34.390	0.373	15.25	58.10	0.53	60.81	38.00	0.00	2.994	105.519	0.086	8.814914540E+0002	7.712336032E+0001	-3.184831422E+0001
							0.770	11.108					
34.763	0.373	15.25	57.35	0.53	59.85	38.00	0.00	2.926	105.553	0.096	8.697085579E+0002	7.507840295E+0001	-3.126491187E+0001
							0.761	11.062					
35.137	0.373	15.25	56.60	0.53	58.88	38.00	0.00	2.862	105.591	0.108	8.581258621E+0002	7.310010471E+0001	-3.092775511E+0001
							0.753	10.906					
35.510	0.373	15.25	55.85	0.53	57.92	38.00	0.00	2.803	105.634	0.122	8.466699622E+0002	7.118136147E+0001	-3.037429512E+0001
							0.745	10.677					
35.883	0.032	15.25	4.68	0.53	57.40	38.00	0.00	2.750	105.682	0.130	8.354838925E+0002	6.938280848E+0001	-2.960063862E+0001
							0.726	10.413					
35.914	0.216	15.35	31.93	0.53	57.05	38.00	0.00	2.746	105.686	0.142	8.345519173E+0002	6.923816452E+0001	-2.954570667E+0001
							0.732	10.391					
36.130	0.373	15.35	54.62	0.53	56.29	34.00	0.00	2.717	105.717	0.153	8.282079214E+0002	6.825554876E+0001	-2.926302552E+0001
							0.733	10.238					
36.503	0.373	15.35	53.91	0.53	55.32	34.00	0.00	2.674	105.776	0.167	8.173062622E+0002	6.672772912E+0001	-2.928938638E+0001
							0.727	9.990					
36.877	0.373	15.35	53.19	0.53	54.35	34.00	0.00	2.637	105.842	0.185	8.062538880E+0002	6.535712427E+0001	-3.007421394E+0001
							0.721	9.780					
37.250	0.373	15.35	52.48	0.53	53.38	34.00	0.00	2.607	105.914	0.204	7.947802016E+0002	6.405579687E+0001	-3.150746096E+0001
							0.717	9.614					
37.623	0.373	15.35	51.76	0.53	52.41	34.00	0.00	2.584	105.994	0.226	7.827043191E+0002	6.280877819E+0001	-3.321832763E+0001
							0.714	9.484					
37.996	0.104	15.35	14.30	0.53	51.79	34.00	0.00	2.571	106.083	0.246	7.700311928E+0002	6.162183841E+0001	-3.460989960E+0001
							0.703	9.373					
38.100	0.373	15.35	56.35	0.47	52.34	34.00	0.00	2.571	106.111	0.285	7.664154336E+0002	6.133248684E+0001	-3.493073208E+0001
							0.196	9.345					
38.473	0.219	15.35	33.44	0.46	53.43	34.00	0.00	2.576	106.219	0.296	7.531691011E+0002	6.016220180E+0001	-3.607275216E+0001
							0.196	9.258					
38.692	0.008	22.03	1.11	0.49	51.76	34.00	0.00	2.583	106.287	0.308	7.451818516E+0002	5.933761538E+0001	-3.678774404E+0001
							0.196	9.218					

38.700	0.373	22.03	51.19	0.53	52.21	34.00	0.00	2.583	106.289	0.331	7.449030488E+0002	5.930553007E+0001	-3.681349286E+0001
							0.708	9.217					
39.073	0.373	22.03	51.55	0.52	53.09	34.00	0.00	2.555	106.413	0.342	7.309158310E+0002	5.774708145E+0001	-3.819369660E+0001
							0.196	9.169					
39.446	0.373	22.03	51.31	0.52	53.97	34.00	0.00	2.536	106.544	0.367	7.163676832E+0002	5.614013367E+0001	-3.982461835E+0001
							0.196	9.146					
39.819	0.373	22.03	51.07	0.52	54.85	34.00	0.00	2.527	106.687	0.388	7.011643245E+0002	5.444545313E+0001	-4.169811535E+0001
							0.196	9.144					
40.193	0.373	22.03	50.83	0.52	55.72	34.00	0.00	2.524	106.834	0.399	6.852279813E+0002	5.270487991E+0001	-4.373385696E+0001
							0.196	9.159					
40.566	0.373	22.03	50.59	0.52	56.60	34.00	0.00	2.523	106.984	0.410	6.685243234E+0002	5.112672925E+0001	-4.577932469E+0001
							0.196	9.186					
40.939	0.373	22.03	50.34	0.52	57.48	34.00	0.00	2.528	107.140	0.422	6.510708751E+0002	4.979194202E+0001	-4.784208795E+0001
							0.196	9.218					
41.312	0.373	22.03	50.10	0.52	58.36	34.00	0.00	2.536	107.299	0.431	6.327661432E+0002	4.839205119E+0001	-5.028293384E+0001
							0.196	9.252					
41.685	0.334	22.03	44.63	0.52	59.19	34.00	0.00	2.548	107.462	0.442	6.135702534E+0002	4.692400728E+0001	-5.252793283E+0001
							0.196	9.282					
42.019	0.373	22.13	55.47	0.46	59.98	26.50	0.00	2.562	107.612	0.447	5.957636314E+0002	4.556221040E+0001	-5.402664045E+0001
							0.196	9.306					
42.392	0.373	22.13	55.32	0.46	60.85	26.50	0.00	2.577	107.778	0.438	5.754023857E+0002	4.400504358E+0001	-5.497704195E+0001
							0.196	9.332					
42.765	0.373	22.13	55.16	0.46	61.72	26.50	0.00	2.586	107.938	0.428	5.548205147E+0002	4.243100399E+0001	-5.524351810E+0001
							0.196	9.364					
43.139	0.311	22.13	45.60	0.47	63.46	26.50	0.00	2.593	108.097	0.427	5.342186403E+0002	4.085543462E+0001	-5.516178979E+0001
							0.196	9.411					
43.450	0.373	22.13	55.33	0.45	61.86	26.50	0.00	2.600	108.231	0.427	5.170354412E+0002	3.954131524E+0001	-5.524944397E+0001
							0.196	9.464					
43.823	0.373	22.13	56.00	0.43	59.81	26.50	0.00	2.607	108.390	0.428	4.963960486E+0002	3.796287658E+0001	-5.508860333E+0001
							0.196	9.541					
44.196	0.004	22.13	0.56	0.42	58.77	26.50	0.00	2.616	108.550	0.431	4.760394515E+0002	3.640606526E+0001	-5.402628695E+0001
							0.196	9.628					
44.200	0.350	22.13	51.89	0.42	57.80	26.50	0.00	2.616	108.552	0.413	4.758394652E+0002	3.639077091E+0001	-5.401742696E+0001
							0.931	9.629					
44.550	0.150	22.13	21.10	0.44	56.43	34.00	0.00	2.618	108.697	0.411	4.570193950E+0002	3.495146856E+0001	-5.373512851E+0001
							0.822	9.709					
44.700	0.373	22.13	61.50	0.36	54.99	34.00	0.00	2.618	108.757	0.400	4.489381287E+0002	3.433343762E+0001	-5.406822058E+0001
							0.841	9.741					
45.073	0.373	22.13	60.41	0.36	52.94	34.00	0.00	2.615	108.906	0.383	4.284001676E+0002	3.276275613E+0001	-5.637028361E+0001
							0.845	9.806					
45.446	0.373	22.13	59.33	0.35	50.89	34.00	0.00	2.601	109.043	0.366	4.066133623E+0002	3.109656680E+0001	-6.070355085E+0001
							0.850	9.838					
45.819	0.137	22.13	21.51	0.34	49.49	34.00	0.00	2.584	109.179	0.362	3.829312321E+0002	2.928542872E+0001	-6.634654274E+0001
							0.836	9.823					
45.956	0.373	37.90	57.36	0.34	40.42	34.00	0.00	2.578	109.228	0.360	3.736922028E+0002	2.857885556E+0001	-6.848068429E+0001
							0.857	9.804					
46.330	0.373	37.90	55.30	0.32	37.60	34.00	0.00	2.421	109.362	0.358	3.471601051E+0002	2.654976054E+0001	-7.339462114E+0001
							0.866	9.708					
46.703	0.373	37.90	53.25	0.31	34.78	34.00	0.00	2.264	109.496	0.358	3.189331430E+0002	2.439104739E+0001	-7.820953518E+0001
							0.878	9.544					
47.076	0.373	37.90	51.20	0.30	31.96	34.00	0.00	2.107	109.629	0.360	2.887434987E+0002	2.208223420E+0001	-8.345030021E+0001
							0.891	9.315					
47.449	0.373	37.90	49.14	0.28	29.14	34.00	0.00	1.952	109.764	0.369	2.568906450E+0002	1.925415210E+0001	-8.682435632E+0001
							0.888	9.015					
47.822	0.254	37.90	32.24	0.27	26.77	34.00	0.00	1.802	109.905	0.389	2.243448920E+0002	1.596301346E+0001	-8.702973436E+0001
							0.850	8.625					
48.076	0.373	37.90	45.56	0.26	24.40	26.50	0.00	1.708	110.008	0.382	2.024703050E+0002	1.383136109E+0001	-8.516119380E+0001
							0.838	8.298					
48.449	0.322	37.90	37.46	0.24	21.77	26.50	0.00	1.554	110.144	0.368	1.716015336E+0002	1.087189596E+0001	-7.985092535E+0001
							0.774	7.725					
48.771	0.373	46.12	40.85	0.22	16.49	26.50	0.00	1.422	110.264	0.371	1.468434154E+0002	8.621771027E+0000	-7.376970153E+0001
							0.722	7.143					
49.144	0.373	46.12	37.76	0.19	13.34	26.50	0.00	1.173	110.402	0.365	1.206268072E+0002	6.376121707E+0000	-6.701554831E+0001
							0.650	6.377					
49.517	0.183	46.12	17.35	0.17	11.01	26.50	0.00	0.919	110.536	0.367	9.670710075E+0001	4.497676288E+0000	-6.108575570E+0001
							0.560	5.534					
49.700	0.373	46.12	23.39	0.20	8.67	26.50	0.00	0.799	110.606	0.418	8.583662010E+0001	3.700226325E+0000	-5.799090544E+0001
							0.528	5.103					
50.073	0.127	46.12	7.25	0.17	6.56	26.50	0.00	0.573	110.768	0.447	6.541512357E+0001	2.368567533E+0000	-5.142187049E+0001
							0.433	4.205					

50.200	0.373	46.12	18.55	0.13	4.46	26.50	0.00	0.503	110.830	0.538	5.903653644E+0001	1.989487689E+0000	-4.914398267E+0001
							0.409	3.900					
50.573	0.342	46.12	12.98	0.00	0.00	26.50	0.00	0.322	111.037	0.677	4.195553460E+0001	1.100613146E+0000	-4.240388847E+0001
							0.310	3.028					
50.915	0.354	46.12	9.62	0.00	0.00	26.50	0.00	0.243	111.314	0.809	2.850530872E+0001	5.453832471E-0001	-3.626370406E+0001
							0.226	2.285					
51.269	0.373	46.22	5.92	0.00	0.00	26.50	0.00	0.161	111.601	0.811	1.676997159E+0001	2.029703400E-0001	-3.002142463E+0001
							0.196	1.596					
51.643	0.324	46.22	1.63	0.00	0.00	26.50	0.00	0.075	111.904	0.812	6.768328441E+0000	4.095725214E-0002	-2.361540171E+0001
							0.196	0.965					

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI ..	mi ..	D ..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: PD_S1S2-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

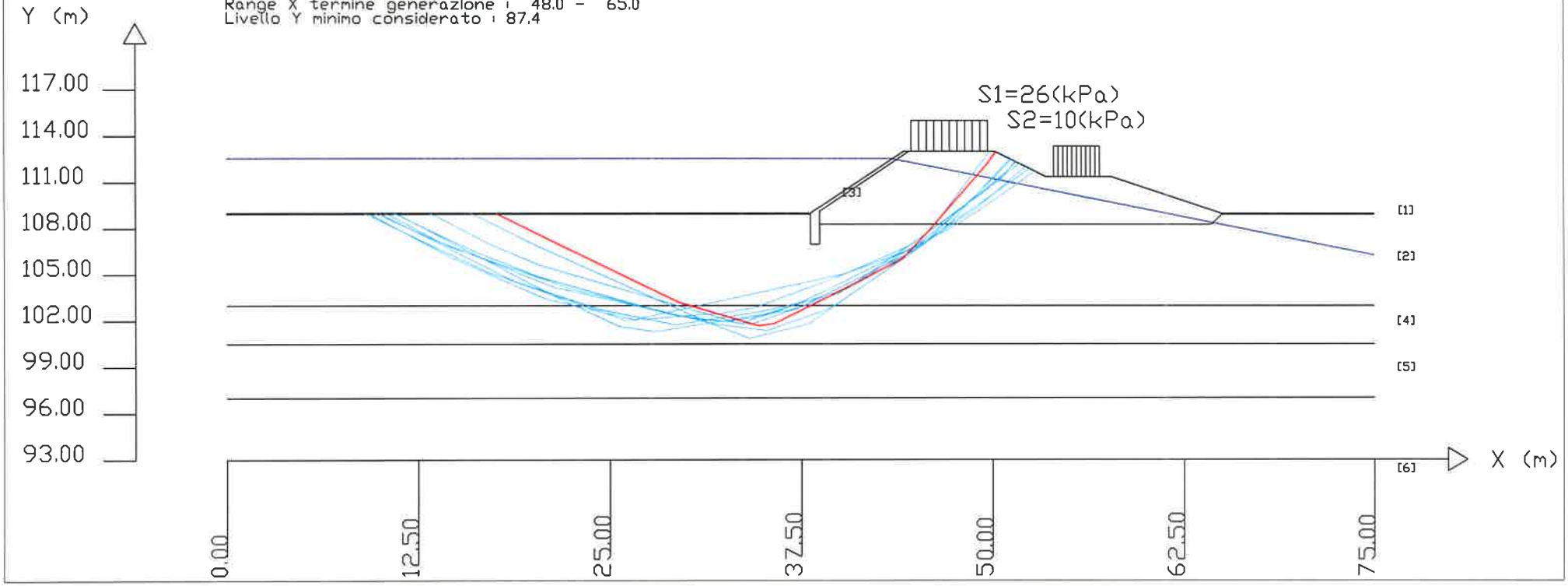
Fs minimo : 2.467
Range Fs : 2.467 2.860
Differenza % Range Fs : 13.7
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.884
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.45731
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 0.0 - 20.0
Range X termine generazione : 48.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 43.45
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 26.00
posizione da m.: 44.70
a m.: 49.70

SOVRACCARICO N.2

carico (Kpa): 9.91
posizione da m.: 54.00
a m.: 57.00

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 0.00 20.00

LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 48.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 2.467 - Min. - Lambda= 0.243

X	Y
17.60	109.00
21.98	106.86
25.44	105.17
29.49	103.21
33.02	102.18
34.72	101.69
35.75	101.84
38.87	103.38
39.86	103.88
44.08	106.04
45.74	107.76
47.05	109.24
49.62	112.16
50.25	113.03

Fattore di sicurezza (FS) 2.622 - N.2 -- Lambda= 0.192

X	Y
13.27	109.00
17.38	106.89
20.42	105.63
25.17	104.24
29.38	103.01

				33.49	101.81	
				36.28	102.72	
				38.46	103.66	
				40.37	104.60	
				44.57	106.66	
				45.88	107.31	
				47.17	107.96	
				49.28	109.28	
				51.85	111.06	
				52.79	111.76	
Fattore di sicurezza (FS)	2.641	- N.3 --	X	Y	Lambda=	0.162
			9.22	109.00		
			11.62	107.73		
			14.84	106.04		
			17.54	104.84		
			20.86	103.41		
			24.63	102.54		
			26.59	102.09		
			31.20	103.07		
			33.82	103.64		
			35.55	104.01		
			40.39	105.07		
			42.32	105.91		
			44.55	106.87		
			47.48	109.00		
			49.18	110.24		
			51.24	111.82		
			51.80	112.25		
Fattore di sicurezza (FS)	2.663	- N.4 --	X	Y	Lambda=	0.176
			10.92	109.00		
			15.02	107.05		
			16.65	106.31		
			20.34	104.88		
			25.14	103.50		
			29.13	102.36		
			31.65	102.07		
			34.16	101.77		
			37.41	102.86		
			40.72	104.17		
			42.78	105.38		

			45.35	106.90		
			46.90	108.32		
			48.78	110.04		
			50.18	111.37		
			51.25	112.52		
Fattore di sicurezza (FS)	2.747	- N.5 --	X	Y	Lambda=	0.162
			9.67	109.00		
			13.53	107.29		
			17.83	105.58		
			21.37	104.19		
			26.03	103.12		
			30.19	102.17		
			32.31	101.95		
			34.15	102.14		
			36.10	102.73		
			40.27	104.02		
			41.71	104.86		
			43.39	105.91		
			44.92	106.88		
			46.35	108.40		
			48.55	111.32		
			49.85	113.05		
Fattore di sicurezza (FS)	2.781	- N.6 --	X	Y	Lambda=	0.154
			9.94	109.00		
			14.34	106.78		
			18.62	104.64		
			21.85	103.57		
			24.39	102.72		
			29.28	101.74		
			32.04	102.16		
			35.05	102.63		
			39.87	103.73		
			42.49	105.46		
			44.62	106.95		
			47.06	108.67		
			49.08	110.10		
			50.42	111.05		
			51.51	112.39		
Fattore di sicurezza (FS)	2.818	- N.7 --	X	Y	Lambda=	0.173

			11.03	109.00		
			14.79	107.03		
			18.61	105.05		
			21.85	103.37		
			25.64	101.63		
			27.91	101.30		
			31.74	101.89		
			36.49	102.62		
			37.56	102.94		
			40.64	104.46		
			44.86	106.56		
			48.98	109.33		
			50.06	110.24		
			52.20	112.05		
Fattore di sicurezza (FS)	2.824	- N.8 --	X	Y	Lambda=	0.240
			15.93	109.00		
			19.94	107.04		
			21.68	106.25		
			25.87	104.36		
			29.22	102.87		
			30.92	102.11		
			31.84	101.71		
			34.10	100.86		
			36.10	101.34		
			37.94	101.78		
			41.51	104.23		
			43.15	105.35		
			45.06	106.91		
			47.66	109.02		
			50.91	111.67		
			51.57	112.37		
Fattore di sicurezza (FS)	2.857	- N.9 --	X	Y	Lambda=	0.165
			8.98	109.00		
			13.43	106.87		
			17.08	105.15		
			21.70	103.53		
			26.07	102.01		
			27.81	102.14		
			32.22	102.48		
			34.41	102.83		

38.31	104.28
39.99	104.90
41.92	105.63
45.13	106.84
49.08	109.56
50.08	110.25
52.35	111.84
52.47	111.92

Fattore di sicurezza (FS) 2.860 - N.10 --

X	Y
10.36	109.00
14.61	106.79
18.85	105.33
22.67	104.03
25.11	103.43
28.87	102.50
31.72	101.80
35.22	101.36
39.19	102.73
40.11	103.29
41.16	103.99
42.15	104.66
44.05	105.96
45.57	107.00
47.44	108.56
50.39	111.72
51.17	112.57

Lambda= 0.167

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	2.467	1262.5	511.8	699.5	Surplus
2	2.622	1343.2	512.3	779.6	Surplus
3	2.641	1381.1	522.9	805.9	Surplus
4	2.663	1438.2	540.1	844.1	Surplus
5	2.747	1409.4	513.1	845.0	Surplus
6	2.781	1509.1	542.7	912.2	Surplus
7	2.818	1611.7	571.8	982.6	Surplus
8	2.824	1550.6	549.1	946.5	Surplus
9	2.857	1495.0	523.2	919.4	Surplus

10 2.860 1554.4 543.6 956.5 Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 699.5

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)
17.596	0.102	-26.03	0.05	0.49	0.23	26.50	0.00	0.000 0.959	109.000	-0.415	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.082
17.698	0.316	-26.03	0.79	0.51	1.13	34.00	0.00	0.007 0.959	108.957	-0.415	5.421010862E-0005	1.845816658E-0007	1.296237632E-0004	0.082
18.014	0.316	-26.03	1.70	0.52	2.49	34.00	0.00	0.031 0.951	108.826	-0.415	5.421010862E-0005	3.750995221E-0007	0.000000000E+0000	0.082
18.330	0.316	-26.03	2.61	0.52	3.85	34.00	0.00	0.054 0.936	108.695	-0.415	5.421010862E-0005	6.296226969E-0007	0.000000000E+0000	0.082
18.646	0.316	-26.03	3.52	0.52	5.21	34.00	0.00	0.077 0.923	108.564	-0.415	5.421010862E-0005	8.909733427E-0007	0.000000000E+0000	0.082
18.962	0.316	-26.03	4.43	0.52	6.57	34.00	0.00	0.100 0.915	108.433	-0.415	5.421010862E-0005	1.153840791E-0006	0.000000000E+0000	0.082
19.278	0.316	-26.03	5.34	0.53	7.93	34.00	0.00	0.123 0.915	108.302	-0.415	5.421010862E-0005	1.416777113E-0006	0.000000000E+0000	0.082
19.593	0.316	-26.03	6.25	0.53	9.29	34.00	0.00	0.146 0.922	108.171	-0.415	5.421010862E-0005	1.680113370E-0006	5.536736734E-0005	0.082
19.909	0.316	-26.03	7.16	0.53	10.65	34.00	0.00	0.169 0.936	108.040	-0.415	8.918409503E-0005	3.198186677E-0006	1.954562795E-0003	0.082
20.225	0.316	-26.03	8.07	0.53	12.01	34.00	0.00	0.193 0.958	107.909	-0.415	1.288851666E-0003	5.248432156E-0005	2.162984290E-0002	0.082
20.541	0.316	-26.03	8.98	0.53	13.37	34.00	0.00	0.216 0.989	107.777	-0.415	1.375213879E-0002	6.314077831E-0004	1.804322103E-0001	0.082
20.857	0.316	-26.03	9.89	0.53	14.73	34.00	0.00	0.239 1.027	107.646	-0.402	1.152627315E-0001	5.873527568E-0003	1.279777010E+0000	0.082
21.173	0.316	-26.03	10.81	0.53	16.09	34.00	0.00	0.270 1.073	107.523	-0.375	7.935567754E-0001	4.431690476E-0002	3.148641186E+0000	0.082
21.488	0.316	-26.03	11.72	0.53	17.45	34.00	0.00	0.310 1.124	107.409	-0.355	2.179710823E+0000	1.320562551E-0001	5.727622923E+0000	0.255
21.804	0.179	-26.03	7.06	0.53	18.51	34.00	0.00	0.354 1.185	107.299	-0.344	4.453494725E+0000	2.902736214E-0001	8.697765300E+0000	0.537
21.984	0.316	-25.93	13.14	0.53	19.59	34.00	0.00	0.382 1.226	107.239	-0.331	6.163696038E+0000	4.172166395E-0001	1.036251715E+0001	0.974
22.299	0.316	-25.93	14.05	0.53	20.95	34.00	0.00	0.431 1.309	107.135	-0.329	9.883427499E+0000	7.143561854E-0001	1.319934370E+0001	0.528
22.615	0.316	-25.93	14.95	0.53	22.30	34.00	0.00	0.481 1.406	107.031	-0.331	1.452395149E+0001	1.118413038E+0000	1.624584428E+0001	0.442
22.931	0.316	-25.93	15.86	0.53	23.66	34.00	0.00	0.530 1.512	106.926	-0.327	2.019324408E+0001	1.653346790E+0000	1.974113325E+0001	0.415
23.247	0.316	-25.93	16.77	0.53	25.01	34.00	0.00	0.581 1.617	106.824	-0.318	2.705084369E+0001	2.350728028E+0000	2.377261012E+0001	0.408

23.563	0.316	-25.93	17.67	0.53	26.37	34.00	0.00	0.636	106.725	-0.309	3.525993418E+0001	3.246345614E+0000	2.827595957E+0001	0.410
								1.708						
23.879	0.316	-25.93	18.58	0.53	27.72	34.00	0.00	0.693	106.629	-0.299	4.493942782E+0001	4.356639313E+0000	3.303515140E+0001	0.416
								1.770						
24.194	0.316	-25.93	19.49	0.53	29.08	34.00	0.00	0.754	106.536	-0.290	5.611644560E+0001	5.713406616E+0000	3.770002488E+0001	0.425
								1.795						
24.510	0.316	-25.93	20.39	0.53	30.43	34.00	0.00	0.817	106.446	-0.281	6.875520862E+0001	7.333756643E+0000	4.234245205E+0001	0.437
								1.779						
24.826	0.316	-25.93	21.30	0.53	31.79	34.00	0.00	0.883	106.358	-0.272	8.285699967E+0001	9.238389266E+0000	4.693050553E+0001	0.450
								1.733						
25.142	0.301	-25.93	21.18	0.53	33.11	34.00	0.00	0.953	106.274	-0.264	9.837603253E+0001	1.144235841E+0001	5.129442005E+0001	0.462
								1.670						
25.443	0.316	-25.83	23.07	0.53	34.46	34.00	0.00	1.020	106.195	-0.257	1.144300099E+0002	1.383158444E+0001	5.515704335E+0001	0.477
								1.600						
25.759	0.316	-25.83	23.97	0.53	35.81	34.00	0.00	1.093	106.115	-0.247	1.324436497E+0002	1.664568968E+0001	5.885359404E+0001	0.492
								1.519						
26.075	0.316	-25.83	24.87	0.53	37.16	34.00	0.00	1.170	106.039	-0.235	1.515716607E+0002	1.978036359E+0001	6.222486506E+0001	0.508
								1.437						
26.391	0.316	-25.83	25.78	0.53	38.51	34.00	0.00	1.251	105.967	-0.223	1.717268297E+0002	2.324080587E+0001	6.541591601E+0001	0.524
								1.358						
26.707	0.316	-25.83	26.68	0.53	39.86	34.00	0.00	1.335	105.898	-0.208	1.929434191E+0002	2.704771471E+0001	6.895540414E+0001	0.540
								1.285						
27.023	0.316	-25.83	27.58	0.53	41.21	34.00	0.00	1.425	105.835	-0.193	2.152405632E+0002	3.121972981E+0001	7.209755454E+0001	0.557
								1.220						
27.338	0.316	-25.83	28.48	0.53	42.56	34.00	0.00	1.519	105.776	-0.181	2.383642950E+0002	3.572364775E+0001	7.410466298E+0001	0.574
								1.163						
27.654	0.316	-25.83	29.39	0.53	43.91	34.00	0.00	1.616	105.721	-0.170	2.618995151E+0002	4.051380437E+0001	7.469407800E+0001	0.590
								1.115						
27.970	0.316	-25.83	30.29	0.53	45.26	34.00	0.00	1.717	105.669	-0.159	2.854137137E+0002	4.556506814E+0001	7.403820094E+0001	0.608
								1.075						
28.286	0.316	-25.83	31.19	0.53	46.61	34.00	0.00	1.822	105.621	-0.148	3.086006924E+0002	5.076754091E+0001	7.276448590E+0001	0.625
								1.042						
28.602	0.316	-25.83	32.09	0.53	47.96	34.00	0.00	1.930	105.576	-0.137	3.314132711E+0002	5.608317055E+0001	7.168607161E+0001	0.642
								1.014						
28.918	0.316	-25.83	33.00	0.53	49.31	34.00	0.00	2.041	105.534	-0.126	3.537631569E+0002	6.157894331E+0001	6.973443757E+0001	0.660
								0.989						
29.233	0.261	-25.83	27.90	0.53	50.54	34.00	0.00	2.156	105.496	-0.116	3.754711199E+0002	6.698908674E+0001	6.784281372E+0001	0.671
								0.967						
29.494	0.316	-16.30	34.47	0.53	54.92	34.00	0.00	2.253	105.467	-0.106	3.930236914E+0002	7.138357540E+0001	6.706046051E+0001	0.687
								0.950						
29.810	0.316	-16.30	35.01	0.53	55.79	34.00	0.00	2.313	105.435	-0.098	4.142212626E+0002	7.668203533E+0001	6.741063360E+0001	0.699
								0.932						
30.126	0.100	-16.30	11.23	0.53	56.37	34.00	0.00	2.376	105.405	-0.093	4.357367196E+0002	8.203471271E+0001	6.898971509E+0001	0.696
								0.917						
30.226	0.316	-16.30	35.74	0.53	56.94	38.00	0.00	2.397	105.397	-0.083	4.426868463E+0002	8.379783725E+0001	6.963241631E+0001	0.714
								0.914						
30.542	0.316	-16.30	36.32	0.53	57.81	38.00	0.00	2.463	105.371	-0.078	4.649873364E+0002	8.939090238E+0001	7.146372981E+0001	0.723
								0.906						
30.858	0.316	-16.30	36.90	0.53	58.68	38.00	0.00	2.532	105.347	-0.070	4.876992022E+0002	9.523299421E+0001	7.230501205E+0001	0.732
								0.904						
31.173	0.316	-16.30	37.47	0.53	59.55	38.00	0.00	2.603	105.326	-0.063	5.106652245E+0002	1.012866533E+0002	7.307871304E+0001	0.741
								0.908						
31.489	0.316	-16.30	38.05	0.53	60.42	38.00	0.00	2.677	105.308	-0.054	5.337987906E+0002	1.076372035E+0002	7.327148836E+0001	0.751
								0.920						
31.805	0.316	-16.30	38.62	0.53	61.29	38.00	0.00	2.754	105.292	-0.045	5.568417661E+0002	1.141960112E+0002	7.245763518E+0001	0.762
								0.939						
32.121	0.316	-16.30	39.20	0.53	62.16	38.00	0.00	2.833	105.279	-0.035	5.794461519E+0002	1.206172223E+0002	7.049379617E+0001	0.771
								0.965						
32.437	0.316	-16.30	39.77	0.53	63.03	38.00	0.00	2.916	105.270	-0.025	6.012632589E+0002	1.269920715E+0002	6.751895956E+0001	0.780
								0.998						
32.753	0.264	-16.30	33.64	0.52	63.82	38.00	0.00	3.002	105.263	-0.016	6.220328827E+0002	1.332514070E+0002	6.395445910E+0001	0.786
								1.039						
33.016	0.316	-16.20	40.83	0.52	64.65	38.00	0.00	3.077	105.261	-0.003	6.385135833E+0002	1.383461128E+0002	6.119931790E+0001	0.797
								1.080						
33.332	0.316	-16.20	41.40	0.52	65.52	38.00	0.00	3.169	105.262	0.009	6.573977996E+0002	1.445648278E+0002	5.832353985E+0001	0.807
								1.140						
33.648	0.316	-16.20	41.97	0.52	66.38	38.00	0.00	3.266	105.267	0.023	6.752360797E+0002	1.505127439E+0002	5.434548819E+0001	0.816
								1.211						
33.964	0.316	-16.20	42.54	0.52	67.24	38.00	0.00	3.368	105.276	0.041	6.915034600E+0002	1.559515730E+0002	4.827717211E+0001	0.824
								1.293						

34.280	0.316	-16.20	43.12	0.52	68.11	38.00	0.00	3.475 1.386	105.292	0.060	7.054877634E+0002	1.605836281E+0002	3.992107181E+0001	0.830
34.595	0.122	-16.20	16.74	0.52	68.71	38.00	0.00	3.589 1.488	105.314	0.073	7.165392586E+0002	1.640347712E+0002	2.987013859E+0001	0.823
34.717	0.316	8.33	43.48	0.52	70.74	38.00	0.00	3.635 1.530	105.325	0.099	7.199231956E+0002	1.649882132E+0002	2.581835330E+0001	0.834
35.033	0.316	8.33	43.19	0.52	70.29	38.00	0.00	3.621 1.644	105.357	0.106	7.264666060E+0002	1.664877976E+0002	1.585721567E+0001	0.834
35.349	0.316	8.33	42.90	0.52	69.84	38.00	0.00	3.609 1.766	105.391	0.091	7.298869609E+0002	1.672716565E+0002	5.579065408E+0000	0.835
35.665	0.084	8.33	11.40	0.52	69.56	38.00	0.00	3.586 1.897	105.414	0.073	7.299761678E+0002	1.672921005E+0002	-4.867584282E+0000	0.823
35.749	0.316	26.23	42.20	0.52	62.32	38.00	0.00	3.579 1.934	105.421	0.210	7.294566146E+0002	1.671730320E+0002	-7.437593266E+0000	0.835
36.065	0.316	26.23	41.23	0.52	60.95	38.00	0.00	3.502 2.083	105.498	0.246	7.257432994E+0002	1.663220339E+0002	-1.567789496E+0001	0.838
36.380	0.316	26.23	40.26	0.52	59.58	38.00	0.00	3.424 2.250	105.576	0.246	7.198237504E+0002	1.649654228E+0002	-2.137969276E+0001	0.840
36.696	0.316	26.23	39.29	0.53	58.21	38.00	0.00	3.346 2.439	105.654	0.246	7.124794109E+0002	1.632822857E+0002	-2.482187762E+0001	0.842
37.012	0.316	26.23	38.31	0.53	56.84	38.00	0.00	3.268 2.655	105.732	0.246	7.042612309E+0002	1.613988864E+0002	-2.718513642E+0001	0.845
37.328	0.316	26.23	37.34	0.53	55.47	38.00	0.00	3.190 2.900	105.810	0.246	6.952191196E+0002	1.593266629E+0002	-3.023625672E+0001	0.848
37.644	0.316	26.23	36.37	0.53	54.10	38.00	0.00	3.113 3.175	105.887	0.246	6.851734448E+0002	1.570244480E+0002	-3.330773393E+0001	0.851
37.960	0.140	26.23	15.85	0.53	53.11	38.00	0.00	3.035 3.481	105.965	0.246	6.742327208E+0002	1.545171104E+0002	-3.587805006E+0001	0.845
38.100	0.316	26.23	39.89	0.47	53.05	34.00	0.00	3.000 3.626	106.000	0.476	6.691290217E+0002	1.533474714E+0002	-3.682894829E+0001	0.082
38.416	0.284	26.23	34.55	0.49	53.50	34.00	0.00	3.027 3.966	106.182	0.572	6.572133470E+0002	1.506166997E+0002	-3.852531581E+0001	0.082
38.700	0.175	26.23	20.00	0.53	53.84	34.00	0.00	3.048 4.282	106.343	0.518	6.461073299E+0002	1.480714811E+0002	-3.957334581E+0001	0.847
38.875	0.316	27.01	36.85	0.52	53.82	34.00	0.00	3.039 4.475	106.420	0.458	6.391416439E+0002	1.464751218E+0002	-4.004239434E+0001	0.125
39.191	0.316	27.01	37.13	0.52	54.25	34.00	0.00	3.025 4.813	106.568	0.489	6.263868070E+0002	1.435520354E+0002	-4.070422182E+0001	0.124
39.507	0.316	27.01	37.42	0.52	54.67	34.00	0.00	3.026 5.122	106.729	0.525	6.134335540E+0002	1.405834769E+0002	-4.124224289E+0001	0.122
39.822	0.035	27.01	4.22	0.52	54.91	34.00	0.00	3.035 5.370	106.900	0.544	6.004174987E+0002	1.376005258E+0002	-4.112839331E+0001	0.120
39.858	0.316	27.11	37.73	0.52	55.09	34.00	0.00	3.038 5.392	106.920	0.583	5.989586227E+0002	1.372661883E+0002	-4.110962031E+0001	0.120
40.174	0.316	27.11	38.02	0.52	55.51	34.00	0.00	3.060 5.520	107.104	0.589	5.859726337E+0002	1.342901276E+0002	-4.123368971E+0001	0.118
40.490	0.316	27.11	38.30	0.52	55.93	34.00	0.00	3.086 5.520	107.292	0.594	5.728163006E+0002	1.312750283E+0002	-4.225644578E+0001	0.116
40.805	0.316	27.11	38.58	0.52	56.35	34.00	0.00	3.112 5.404	107.480	0.602	5.591646887E+0002	1.281464237E+0002	-4.436384402E+0001	0.114
41.121	0.316	27.11	38.86	0.52	56.77	34.00	0.00	3.144 5.209	107.673	0.617	5.447045210E+0002	1.248325185E+0002	-4.729610859E+0001	0.112
41.437	0.316	27.11	39.14	0.52	57.18	34.00	0.00	3.179 4.979	107.870	0.622	5.292749560E+0002	1.212964519E+0002	-5.034773226E+0001	0.110
41.753	0.316	27.11	39.42	0.52	57.60	34.00	0.00	3.213 4.753	108.066	0.617	5.129684144E+0002	1.175594044E+0002	-5.294028922E+0001	0.107
42.069	0.316	27.11	39.70	0.52	58.02	34.00	0.00	3.245 4.555	108.259	0.614	4.958018178E+0002	1.136252541E+0002	-5.576629993E+0001	0.104
42.385	0.316	27.11	44.99	0.46	58.44	26.50	0.00	3.277 4.401	108.453	0.608	4.777696702E+0002	1.094927413E+0002	-5.834235549E+0001	0.104
42.700	0.316	27.11	45.31	0.46	58.86	26.50	0.00	3.306 4.292	108.643	0.593	4.590119007E+0002	1.072538172E+0002	-6.032605137E+0001	0.103
43.016	0.316	27.11	45.63	0.46	59.28	26.50	0.00	3.329 4.216	108.828	0.567	4.397351066E+0002	1.047822592E+0002	-6.163762201E+0001	0.101
43.332	0.118	27.11	17.11	0.47	59.90	26.50	0.00	3.341 4.163	109.002	0.543	4.201296027E+0002	1.012735465E+0002	-6.245994081E+0001	0.098
43.450	0.316	27.11	46.07	0.45	58.66	26.50	0.00	3.342 4.151	109.063	0.523	4.127515206E+0002	9.978275783E+0001	-6.272344594E+0001	0.097
43.766	0.309	27.11	45.40	0.44	56.72	26.50	0.00	3.345 4.147	109.228	0.507	3.928093834E+0002	9.538646418E+0001	-6.361427581E+0001	0.094

44.075	0.125	45.93	18.28	0.43	43.05	26.50	0.00	3.339	109.380	0.493	3.730846548E+0002	9.058804842E+0001	-6.371391264E+0001	0.089
								4.183						
44.200	0.316	45.93	44.85	0.42	41.20	26.50	0.00	3.272	109.443	0.492	3.651429852E+0002	8.849668578E+0001	-6.361287680E+0001	0.087
								4.208						
44.516	0.034	45.93	4.70	0.42	39.72	26.50	0.00	3.101	109.597	0.489	3.450480763E+0002	8.315823057E+0001	-6.379595802E+0001	1.197
								4.297						
44.550	0.150	45.93	19.70	0.43	38.95	34.00	0.00	3.082	109.614	0.478	3.428670835E+0002	8.257355744E+0001	-6.388360566E+0001	1.106
								4.308						
44.700	0.316	45.93	48.31	0.35	36.99	34.00	0.00	2.999	109.685	0.470	3.332446682E+0002	8.004386087E+0001	-6.447234769E+0001	1.129
								4.362						
45.016	0.316	45.93	46.36	0.34	34.34	34.00	0.00	2.820	109.833	0.466	3.125447539E+0002	7.435643039E+0001	-6.686767572E+0001	1.132
								4.485						
45.332	0.316	45.93	44.41	0.33	31.69	34.00	0.00	2.640	109.980	0.454	2.908637569E+0002	6.799204899E+0001	-7.059253370E+0001	1.129
								4.608						
45.648	0.092	45.93	12.55	0.32	29.98	34.00	0.00	2.454	110.120	0.441	2.679073971E+0002	6.090021715E+0001	-7.473086642E+0001	1.091
								4.706						
45.739	0.316	48.53	41.81	0.31	26.81	34.00	0.00	2.399	110.159	0.430	2.609940287E+0002	5.877397899E+0001	-7.579535212E+0001	1.112
								4.727						
46.055	0.161	48.53	20.48	0.30	24.75	34.00	0.00	2.177	110.295	0.429	2.365917827E+0002	5.124236020E+0001	-7.878260952E+0001	1.076
								4.761						
46.216	0.316	48.53	38.46	0.28	22.69	26.50	0.00	2.064	110.364	0.431	2.237570382E+0002	4.723931889E+0001	-8.077918468E+0001	1.079
								4.752						
46.532	0.316	48.53	36.05	0.27	19.96	26.50	0.00	1.843	110.500	0.447	1.976508010E+0002	3.959890136E+0001	-8.428983615E+0001	1.024
								4.685						
46.848	0.202	48.53	21.83	0.25	17.72	26.50	0.00	1.631	110.646	0.459	1.707789848E+0002	3.219343206E+0001	-8.532222446E+0001	0.953
								4.562						
47.050	0.316	48.63	32.10	0.23	15.45	26.50	0.00	1.494	110.738	0.485	1.536167875E+0002	2.772073921E+0001	-8.407980427E+0001	0.922
								4.448						
47.366	0.316	48.63	29.68	0.21	12.72	26.50	0.00	1.295	110.898	0.491	1.277590259E+0002	2.130270761E+0001	-7.907593942E+0001	0.852
								4.204						
47.682	0.316	48.63	27.27	0.18	9.99	26.50	0.00	1.087	111.048	0.518	1.039676987E+0002	1.578647680E+0001	-7.125666077E+0001	0.775
								3.874						
47.998	0.316	48.63	24.85	0.14	7.26	26.50	0.00	0.905	111.225	0.566	8.281557716E+0001	1.144046192E+0001	-6.284060803E+0001	0.703
								3.465						
48.313	0.316	48.63	22.43	0.10	4.53	26.50	0.00	0.727	111.405	0.600	6.411733122E+0001	7.868531703E+0000	-5.546400435E+0001	0.621
								2.994						
48.629	0.316	48.63	20.02	0.04	1.80	26.50	0.00	0.567	111.604	0.622	4.785471461E+0001	5.109276138E+0000	-4.747641201E+0001	0.535
								2.487						
48.945	0.049	48.63	2.89	0.01	0.22	26.50	0.00	0.403	111.799	0.613	3.411297026E+0001	3.206711281E+0000	-3.961867871E+0001	0.465
								1.974						
48.994	0.316	48.63	17.30	0.00	0.00	26.50	0.00	0.376	111.828	0.680	3.220100291E+0001	2.963517998E+0000	-3.845083164E+0001	0.455
								1.895						
49.310	0.310	48.63	14.76	0.00	0.00	26.50	0.00	0.236	112.047	0.836	2.119443592E+0001	1.646593339E+0000	-3.138953321E+0001	0.384
								1.410						
49.620	0.080	54.05	3.43	0.00	0.00	26.50	0.00	0.189	112.351	0.895	1.242513334E+0001	6.801702369E-0001	-2.529662338E+0001	0.271
								0.982						
49.700	0.316	54.05	3.56	0.00	0.00	26.50	0.00	0.123	112.396	1.123	1.046048620E+0001	5.079752732E-0001	-2.384547861E+0001	0.240
								0.881						
50.016	0.184	54.05	0.80	0.00	0.00	26.50	0.00	0.088	112.796	1.159	3.796815885E+0000	5.036606133E-0002	-1.840575308E+0001	0.082
								0.522						
50.200	0.047	54.05	0.04	0.00	0.00	26.50	0.00	0.013	112.975	0.999	6.948393453E-0001	4.258539592E-0003	-1.526632470E+0001	0.082
								0.341						

Parametri Geotecnici degli strati

N.	phi' deg	C' kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: P□_S2-F

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

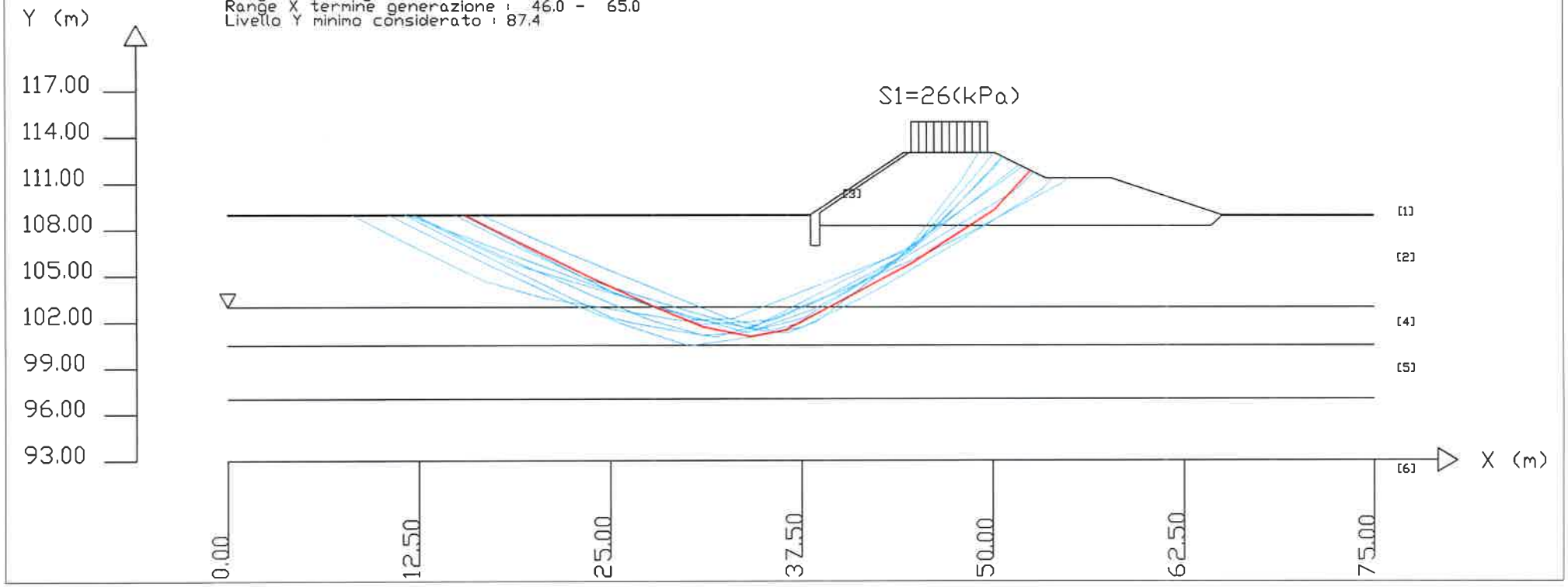
Fs minimo : 5.166
Range Fs : 5.166 5.912
Differenza % Range Fs : 12.6
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 5.167
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.65479
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 5.0 - 20.0
Range X termine generazione : 46.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:
Coefficiente A 0

Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 26.00
posizione da m.: 44.70
a m.: 49.70

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 5.00 20.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 46.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------
METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 5.166 - Min. - Lambda= 0.175

X	Y
15.51	109.00
19.87	106.83
23.83	104.88
28.11	102.92
31.00	101.72
34.17	101.09
36.41	101.50
40.60	103.66
42.18	104.51
44.70	105.85
46.18	106.79
50.12	109.32
52.50	111.89
52.50	111.90

Fattore di sicurezza (FS) 5.171 - N.2 -- Lambda= 0.163

X	Y
11.68	109.00
13.92	108.16
18.47	106.45
21.69	105.25
23.28	104.66
27.92	102.95
30.95	101.83
35.42	102.12
39.43	103.82
41.76	105.05

			43.36	105.90		
			44.59	106.57		
			47.00	108.95		
			50.13	112.04		
			50.68	112.81		
Fattore di sicurezza (FS)	5.217	- N.3 --	X	Y	Lambda=	0.173
			15.32	109.00		
			19.03	107.09		
			21.27	105.93		
			25.10	103.98		
			26.51	103.50		
			27.80	103.07		
			30.35	102.22		
			33.52	101.72		
			34.65	101.55		
			38.22	102.82		
			40.47	104.03		
			44.60	106.63		
			47.20	109.60		
			48.99	111.66		
			50.12	113.05		
Fattore di sicurezza (FS)	5.338	- N.4 --	X	Y	Lambda=	0.168
			16.52	109.00		
			20.22	107.38		
			22.54	106.38		
			24.81	105.45		
			29.29	103.61		
			32.70	102.25		
			33.86	101.93		
			35.58	101.46		
			37.43	101.96		
			38.37	102.46		
			41.15	104.04		
			43.70	105.96		
			44.58	106.89		
			46.28	109.07		
			47.95	111.21		
			49.13	113.05		
Fattore di sicurezza (FS)	5.473	- N.5 --	X	Y	Lambda=	0.153
			12.09	109.00		

			14.75	107.65		
			18.86	105.74		
			22.73	104.59		
			27.29	103.25		
			31.34	102.06		
			33.89	101.32		
			37.63	102.25		
			40.29	103.83		
			42.90	105.39		
			45.44	106.91		
			49.55	109.38		
			50.41	109.90		
			51.41	110.51		
			52.73	111.79		
Fattore di sicurezza (FS)	5.518	- N.6 --	X	Y	Lambda=	0.160
			14.84	109.00		
			19.07	106.86		
			23.39	104.86		
			27.12	103.63		
			30.22	102.68		
			34.29	101.53		
			36.47	101.28		
			38.46	102.02		
			41.76	104.52		
			44.69	106.89		
			46.57	108.42		
			47.29	109.18		
			50.30	112.36		
			50.69	112.80		
Fattore di sicurezza (FS)	5.779	- N.7 --	X	Y	Lambda=	0.142
			8.11	109.00		
			11.36	107.31		
			15.23	105.43		
			16.83	104.66		
			20.57	103.59		
			24.92	102.87		
			29.77	102.08		
			32.98	102.23		
			35.37	103.15		
			39.69	104.81		

				43.91	106.45	
				44.84	106.81	
				47.84	109.16	
				51.66	112.17	
				51.78	112.26	
Fattore di sicurezza (FS)	5.898	- N.8 --	X	Y	Lambda=	0.147
			11.56	109.00		
			14.19	107.66		
			18.41	105.56		
			21.24	104.16		
			25.12	102.27		
			26.61	101.92		
			29.01	101.49		
			31.88	101.02		
			35.96	102.24		
			40.53	104.21		
			41.80	104.75		
			45.59	106.42		
			47.65	107.41		
			48.92	108.03		
			51.93	109.66		
			54.66	111.14		
			54.90	111.40		
Fattore di sicurezza (FS)	5.904	- N.9 --	X	Y	Lambda=	0.139
			10.52	109.00		
			13.08	107.72		
			17.23	105.65		
			18.67	104.99		
			22.89	103.04		
			25.97	101.83		
			30.15	100.46		
			33.95	101.00		
			37.56	101.67		
			38.86	102.30		
			42.40	104.06		
			46.18	106.30		
			49.75	108.42		
			53.26	110.67		
			53.94	111.40		

Fattore di sicurezza (FS) 5.912 - N.10 --

X	Y
12.26	109.00
15.92	107.22
18.45	106.10
22.44	104.36
26.08	102.77
27.68	102.11
31.04	101.15
33.59	101.31
35.69	102.37
36.80	102.93
40.23	104.67
44.55	106.88
46.57	108.30
50.16	110.83
52.01	112.14

Lambda= 0.194

---------- ANALISI DEFICIT DI RESISTENZA ----------

\# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

\# Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	5.166	2832.1	548.3	2229.1	Surplus
2	5.171	2638.4	510.3	2077.1	Surplus
3	5.217	2626.0	503.3	2072.3	Surplus
4	5.338	2470.2	462.7	1961.2	Surplus
5	5.473	2836.1	518.2	2266.1	Surplus
6	5.518	2726.0	494.0	2182.6	Surplus
7	5.779	2880.2	498.4	2332.0	Surplus
8	5.898	3122.8	529.5	2540.3	Surplus
9	5.904	3454.2	585.1	2810.5	Surplus
10	5.912	2959.7	500.7	2409.0	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 1961.2

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)	
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m))	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
15.512	0.100	-26.52	0.05	0.00	0.00	26.50	0.00	0.000 13.873	109.000	-0.424	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000		0.172
15.612	0.342	-26.52	0.87	0.00	0.00	34.00	0.00	0.007 13.873	108.957	-0.424	5.421010862E-0005	1.298973954E-0007	1.226804189E-0004		0.172
15.954	0.342	-26.52	1.92	0.00	0.00	34.00	0.00	0.033 13.926	108.813	-0.424	5.421010862E-0005	2.650347500E-0007	8.438679230E-0004		0.172
16.296	0.342	-26.52	2.96	0.00	0.00	34.00	0.00	0.059 14.385	108.668	-0.424	6.309037633E-0004	5.235305559E-0006	1.144302820E-0002		0.172
16.637	0.342	-26.52	4.01	0.00	0.00	34.00	0.00	0.084 14.815	108.523	-0.424	7.874298508E-0003	9.291772804E-0005	7.231920265E-0002		0.172
16.979	0.342	-26.52	5.06	0.00	0.00	34.00	0.00	0.110 14.930	108.378	-0.424	5.005335975E-0002	7.669328745E-0004	3.039905593E-0001		0.172
17.321	0.342	-26.52	6.11	0.00	0.00	34.00	0.00	0.135 14.590	108.233	-0.424	2.156193992E-0001	4.064689199E-0003	9.815917586E-0001		0.172
17.663	0.342	-26.52	7.16	0.00	0.00	34.00	0.00	0.161 13.803	108.088	-0.424	7.208665560E-0001	1.612860069E-0002	2.634923867E+0000		0.173
18.004	0.342	-26.52	8.20	0.00	0.00	34.00	0.00	0.187 12.692	107.943	-0.424	2.016308622E+0000	5.221411335E-0002	7.324477581E+0000		0.200
18.346	0.342	-26.52	9.25	0.00	0.00	34.00	0.00	0.212 11.423	107.798	-0.424	4.940490794E+0000	1.466819777E-0001	9.830977096E+0000		0.229
18.688	0.342	-26.52	10.30	0.00	0.00	34.00	0.00	0.238 10.143	107.653	-0.424	8.754599338E+0000	2.919472981E-0001	1.251317671E+0001		0.258
19.029	0.342	-26.52	11.35	0.00	0.00	34.00	0.00	0.263 8.951	107.508	-0.405	1.350016809E+0001	4.978156631E-0001	1.526913887E+0001		0.285
19.371	0.342	-26.52	12.40	0.00	0.00	34.00	0.00	0.302 7.904	107.376	-0.377	1.919041779E+0001	7.729104895E-0001	1.803508056E+0001		0.311
19.713	0.155	-26.52	5.95	0.00	0.00	34.00	0.00	0.347 7.028	107.250	-0.368	2.582329341E+0001	1.124763279E+0000	2.078537330E+0001		0.336
19.867	0.342	-26.24	13.91	0.00	0.00	34.00	0.00	0.367 6.685	107.193	-0.360	2.913308575E+0001	1.315364781E+0000	2.202671661E+0001		0.348
20.209	0.342	-26.24	14.95	0.00	0.00	34.00	0.00	0.414 6.022	107.072	-0.348	3.712990542E+0001	1.797817894E+0000	2.478684031E+0001		0.373
20.551	0.342	-26.24	15.98	0.00	0.00	34.00	0.00	0.466 5.461	106.956	-0.331	4.608149910E+0001	2.386915462E+0000	2.762802773E+0001		0.399
20.892	0.342	-26.24	17.02	0.00	0.00	34.00	0.00	0.524 4.983	106.845	-0.323	5.602099580E+0001	3.097486629E+0000	3.055513456E+0001		0.426
21.234	0.342	-26.24	18.05	0.00	0.00	34.00	0.00	0.582 4.576	106.735	-0.324	6.696101640E+0001	3.944604392E+0000	3.346884146E+0001		0.453
21.576	0.342	-26.24	19.09	0.00	0.00	34.00	0.00	0.639 4.228	106.624	-0.320	7.888314233E+0001	4.942587219E+0000	3.629383226E+0001		0.482
21.917	0.342	-26.24	20.12	0.00	0.00	34.00	0.00	0.700 3.934	106.516	-0.309	9.174905299E+0001	6.066905357E+0000	3.898893337E+0001		0.509
22.259	0.342	-26.24	21.16	0.00	0.00	34.00	0.00	0.765 3.684	106.412	-0.303	1.055121921E+0002	7.366048571E+0000	4.154711386E+0001		0.537
22.601	0.342	-26.24	22.19	0.00	0.00	34.00	0.00	0.830 3.474	106.309	-0.301	1.201294340E+0002	8.816909755E+0000	4.399548534E+0001		0.564
22.943	0.342	-26.24	23.23	0.00	0.00	34.00	0.00	0.896 3.297	106.207	-0.292	1.355727500E+0002	1.042086819E+0001	4.639525209E+0001		0.591
23.284	0.342	-26.24	24.26	0.00	0.00	34.00	0.00	0.967 3.147	106.109	-0.279	1.518358253E+0002	1.218022075E+0001	4.878870156E+0001		0.616
23.626	0.200	-26.24	14.65	0.00	0.00	34.00	0.00	1.043 3.020	106.017	-0.268	1.689050447E+0002	1.409578481E+0001	5.109918289E+0001		0.641
23.826	0.342	-24.51	25.86	0.00	0.00	34.00	0.00	1.089 2.954	105.964	-0.255	1.792306640E+0002	1.530166876E+0001	5.238055340E+0001		0.656
24.167	0.342	-24.51	26.82	0.00	0.00	34.00	0.00	1.159 2.852	105.879	-0.245	1.974842670E+0002	1.748524891E+0001	5.442791902E+0001		0.680
24.509	0.342	-24.51	27.78	0.00	0.00	34.00	0.00	1.233 2.761	105.797	-0.233	2.164036276E+0002	1.985585035E+0001	5.627700089E+0001		0.705

24.851	0.342	-24.51	28.73	0.00	0.00	34.00	0.00	1.311	105.720	-0.221	2.359225373E+0002	2.241882577E+0001	5.794234316E+0001	0.730
								2.680						
25.192	0.342	-24.51	29.69	0.00	0.00	34.00	0.00	1.393	105.646	-0.208	2.559853990E+0002	2.518088702E+0001	5.947150957E+0001	0.755
								2.608						
25.534	0.342	-24.51	30.65	0.00	0.00	34.00	0.00	1.481	105.577	-0.194	2.765566828E+0002	2.815017624E+0001	6.091056814E+0001	0.782
								2.546						
25.876	0.342	-24.51	31.61	0.00	0.00	34.00	0.00	1.572	105.513	-0.182	2.975855904E+0002	3.124907881E+0001	6.214649264E+0001	0.806
								2.494						
26.217	0.342	-24.51	32.56	0.00	0.00	34.00	0.00	1.668	105.453	-0.170	3.190154373E+0002	3.459077896E+0001	6.327735278E+0001	0.832
								2.451						
26.559	0.342	-24.51	33.52	0.00	0.00	34.00	0.00	1.767	105.397	-0.159	3.408274543E+0002	3.825061505E+0001	6.439346745E+0001	0.862
								2.419						
26.901	0.342	-24.51	34.48	0.00	0.00	34.00	0.00	1.871	105.344	-0.149	3.630235323E+0002	4.200035981E+0001	6.552544160E+0001	0.888
								2.396						
27.242	0.342	-24.51	35.43	0.00	0.00	34.00	0.00	1.977	105.295	-0.138	3.856058174E+0002	4.583754323E+0001	6.664416623E+0001	0.912
								2.383						
27.584	0.342	-24.51	36.39	0.00	0.00	34.00	0.00	2.088	105.250	-0.128	4.085563074E+0002	4.975858128E+0001	6.766081837E+0001	0.935
								2.379						
27.926	0.014	-24.51	1.48	0.00	0.00	34.00	0.00	2.202	105.208	-0.122	4.318162954E+0002	5.375486553E+0001	6.842173987E+0001	0.955
								2.382						
27.940	0.168	-24.51	18.32	0.00	0.35	38.00	0.00	2.206	105.206	-0.114	4.327552774E+0002	5.391534157E+0001	6.844301423E+0001	0.956
								2.382						
28.108	0.342	-22.58	37.91	0.01	1.35	38.00	0.00	2.264	105.187	-0.109	4.443002858E+0002	5.596623076E+0001	6.864385177E+0001	0.966
								2.387						
28.450	0.342	-22.58	38.86	0.03	2.64	38.00	0.00	2.370	105.151	-0.104	4.677928798E+0002	6.021858885E+0001	6.882685080E+0001	0.984
								2.399						
28.791	0.342	-22.58	39.82	0.04	3.92	38.00	0.00	2.477	105.116	-0.097	4.913243337E+0002	6.472155039E+0001	6.890257879E+0001	1.004
								2.417						
29.133	0.342	-22.58	40.78	0.05	5.21	38.00	0.00	2.587	105.084	-0.089	5.148831582E+0002	6.950119001E+0001	6.899815324E+0001	1.026
								2.441						
29.475	0.342	-22.58	41.74	0.06	6.50	38.00	0.00	2.701	105.056	-0.079	5.384806166E+0002	7.472657196E+0001	6.911962865E+0001	1.052
								2.469						
29.817	0.342	-22.58	42.70	0.07	7.78	38.00	0.00	2.817	105.030	-0.071	5.621093573E+0002	8.020313124E+0001	6.915199661E+0001	1.079
								2.504						
30.158	0.342	-22.58	43.66	0.08	9.07	38.00	0.00	2.937	105.007	-0.063	5.857020474E+0002	8.535240276E+0001	6.885918572E+0001	1.099
								2.546						
30.500	0.342	-22.58	44.61	0.09	10.36	38.00	0.00	3.058	104.987	-0.055	6.091089790E+0002	9.046492182E+0001	6.817493687E+0001	1.118
								2.595						
30.842	0.157	-22.58	20.77	0.09	11.30	38.00	0.00	3.183	104.970	-0.049	6.323263760E+0002	9.548944692E+0001	6.768118293E+0001	1.131
								2.653						
30.998	0.342	-11.25	45.76	0.10	12.64	38.00	0.00	3.241	104.963	-0.040	6.428958063E+0002	9.780946796E+0001	6.726886712E+0001	1.141
								2.682						
31.340	0.342	-11.25	46.22	0.10	13.29	38.00	0.00	3.296	104.950	-0.034	6.656168516E+0002	1.026493318E+0002	6.548913268E+0001	1.155
								2.754						
31.682	0.342	-11.25	46.68	0.10	13.95	38.00	0.00	3.354	104.940	-0.025	6.874731247E+0002	1.073339741E+0002	6.216563259E+0001	1.168
								2.835						
32.023	0.342	-11.25	47.14	0.11	14.60	38.00	0.00	3.415	104.933	-0.016	7.079196932E+0002	1.117942098E+0002	5.727010260E+0001	1.180
								2.927						
32.365	0.342	-11.25	47.59	0.11	15.25	38.00	0.00	3.479	104.929	-0.006	7.264775914E+0002	1.159950783E+0002	5.121692165E+0001	1.192
								3.031						
32.707	0.342	-11.25	48.05	0.12	15.91	38.00	0.00	3.547	104.929	0.005	7.428850706E+0002	1.199456878E+0002	4.486311182E+0001	1.204
								3.150						
33.048	0.342	-11.25	48.51	0.12	16.56	38.00	0.00	3.619	104.932	0.018	7.571911390E+0002	1.233520662E+0002	3.884020020E+0001	1.214
								3.287						
33.390	0.342	-11.25	48.97	0.12	17.22	38.00	0.00	3.695	104.941	0.033	7.693951473E+0002	1.262540835E+0002	3.255165671E+0001	1.222
								3.441						
33.732	0.342	-11.25	49.43	0.13	17.87	38.00	0.00	3.777	104.955	0.051	7.794153487E+0002	1.285613571E+0002	2.607495620E+0001	1.227
								3.615						
34.073	0.093	-11.25	13.55	0.13	18.29	38.00	0.00	3.866	104.976	0.063	7.872039052E+0002	1.301979769E+0002	1.950388170E+0001	1.224
								3.807						
34.167	0.342	10.23	49.57	0.13	18.14	38.00	0.00	3.891	104.982	0.084	7.889366794E+0002	1.305145695E+0002	1.770720923E+0001	1.229
								3.862						
34.508	0.342	10.23	49.16	0.12	17.54	38.00	0.00	3.859	105.012	0.096	7.938620680E+0002	1.313293814E+0002	1.112771641E+0001	1.230
								4.076						
34.850	0.342	10.23	48.74	0.12	16.95	38.00	0.00	3.834	105.048	0.120	7.965484438E+0002	1.317737912E+0002	4.610562029E+0000	1.231
								4.303						
35.192	0.342	10.23	48.33	0.12	16.35	38.00	0.00	3.817	105.094	0.144	7.970250798E+0002	1.318526415E+0002	-1.800119707E+0000	1.232
								4.542						
35.533	0.342	10.23	47.91	0.12	15.76	38.00	0.00	3.809	105.147	0.155	7.952951567E+0002	1.315664587E+0002	-8.438167618E+0000	1.233
								4.791						

35.875	0.342	10.23	47.50	0.11	15.16	38.00	0.00	3.800	105.200	0.123	7.912389628E+0002	1.308954385E+0002	-1.524777797E+0001	1.234
								5.049						
36.217	0.193	10.23	26.60	0.11	14.70	38.00	0.00	3.769	105.231	0.090	7.849572624E+0002	1.298562507E+0002	-2.134754955E+0001	1.232
								5.318						
36.409	0.342	27.34	46.46	0.10	12.35	38.00	0.00	3.752	105.248	0.198	7.805556189E+0002	1.291280825E+0002	-2.426783272E+0001	1.235
								5.476						
36.751	0.342	27.34	45.27	0.09	10.81	38.00	0.00	3.664	105.336	0.259	7.715205315E+0002	1.276333991E+0002	-2.839141839E+0001	1.238
								5.770						
37.093	0.342	27.34	44.07	0.08	9.27	38.00	0.00	3.575	105.425	0.259	7.612937645E+0002	1.259415750E+0002	-3.129317393E+0001	1.242
								6.082						
37.435	0.342	27.34	42.88	0.07	7.73	38.00	0.00	3.487	105.513	0.259	7.502190151E+0002	1.241094683E+0002	-3.347022341E+0001	1.245
								6.414						
37.776	0.324	27.34	39.53	0.06	6.23	38.00	0.00	3.399	105.601	0.259	7.384043272E+0002	1.221549529E+0002	-3.576607155E+0001	1.249
								6.761						
38.100	0.342	27.34	46.41	0.04	4.73	38.00	0.00	3.315	105.685	0.429	7.264976766E+0002	1.201852240E+0002	-3.770388594E+0001	0.172
								7.100						
38.442	0.258	27.34	33.59	0.03	3.38	38.00	0.00	3.340	105.887	0.590	7.133168148E+0002	1.180047011E+0002	-3.942852455E+0001	0.172
								7.458						
38.700	0.342	27.34	41.58	0.02	2.03	38.00	0.00	3.359	106.039	0.590	7.029626490E+0002	1.162918013E+0002	-4.075869977E+0001	1.258
								7.720						
39.042	0.277	27.34	34.34	0.01	0.63	38.00	0.00	3.384	106.241	0.590	6.887061246E+0002	1.139333304E+0002	-4.273601793E+0001	0.202
								8.041						
39.319	0.342	27.34	42.60	0.00	0.00	34.00	0.00	3.404	106.404	0.590	6.766211854E+0002	1.119341071E+0002	-4.455233965E+0001	0.199
								8.267						
39.660	0.342	27.34	42.90	0.00	0.00	34.00	0.00	3.429	106.606	0.589	6.609901954E+0002	1.093482570E+0002	-4.694923172E+0001	0.196
								8.484						
40.002	0.342	27.34	43.21	0.00	0.00	34.00	0.00	3.453	106.807	0.580	6.445495667E+0002	1.066284677E+0002	-4.922390125E+0001	0.193
								8.622						
40.344	0.257	27.34	32.64	0.00	0.00	34.00	0.00	3.472	107.002	0.570	6.274083315E+0002	1.037927763E+0002	-5.110151097E+0001	0.189
								8.675						
40.600	0.342	28.05	43.73	0.00	0.00	34.00	0.00	3.485	107.148	0.578	6.140995357E+0002	1.015910892E+0002	-5.267900095E+0001	0.186
								8.652						
40.942	0.342	28.05	44.00	0.00	0.00	34.00	0.00	3.503	107.348	0.581	5.957615563E+0002	9.855741924E+0001	-5.456925229E+0001	0.182
								8.529						
41.284	0.342	28.05	44.27	0.00	0.00	34.00	0.00	3.518	107.544	0.571	5.768933991E+0002	9.543604146E+0001	-5.571413525E+0001	0.178
								8.305						
41.625	0.342	28.05	44.54	0.00	0.00	34.00	0.00	3.529	107.737	0.557	5.578011419E+0002	9.227759060E+0001	-5.586669909E+0001	0.173
								8.000						
41.967	0.216	28.05	28.31	0.00	0.00	34.00	0.00	3.535	107.925	0.540	5.388200630E+0002	8.913753209E+0001	-5.510298076E+0001	0.172
								7.640						
42.183	0.342	28.15	44.99	0.00	0.00	34.00	0.00	3.533	108.038	0.516	5.269959932E+0002	8.718146461E+0001	-5.431436064E+0001	0.172
								7.397						
42.525	0.342	28.15	45.25	0.00	0.00	34.00	0.00	3.525	108.213	0.502	5.086602231E+0002	8.414816016E+0001	-5.305851413E+0001	0.172
								7.008						
42.867	0.342	28.15	50.73	0.00	0.00	26.50	0.00	3.510	108.382	0.483	4.906964871E+0002	8.117640168E+0001	-5.193308116E+0001	0.172
								6.629						
43.208	0.242	28.15	36.08	0.00	0.00	26.50	0.00	3.489	108.544	0.466	4.732643974E+0002	7.868322151E+0001	-5.008447632E+0001	0.172
								6.274						
43.450	0.342	28.15	51.25	0.00	0.00	26.50	0.00	3.470	108.653	0.441	4.612926487E+0002	7.776361727E+0001	-4.902993453E+0001	0.172
								6.040						
43.792	0.342	28.15	51.56	0.00	0.00	26.50	0.00	3.434	108.801	0.418	4.446527024E+0002	7.608776553E+0001	-4.861663715E+0001	0.172
								5.736						
44.133	0.067	28.15	10.09	0.00	0.00	26.50	0.00	3.390	108.939	0.403	4.278828821E+0002	7.394437877E+0001	-4.981211566E+0001	0.172
								5.458						
44.200	0.342	28.15	50.95	0.00	0.00	26.50	0.00	3.381	108.965	0.372	4.245514909E+0002	7.346580988E+0001	-5.022870445E+0001	0.172
								5.407						
44.542	0.008	28.15	1.22	0.00	0.00	26.50	0.00	3.323	109.091	0.367	4.069301073E+0002	7.079107566E+0001	-5.308134782E+0001	1.802
								5.152						
44.550	0.150	28.15	21.06	0.00	0.00	34.00	0.00	3.322	109.094	0.353	4.064890217E+0002	7.072131644E+0001	-5.316129585E+0001	1.606
								5.146						
44.700	0.003	28.15	0.57	0.00	0.00	34.00	0.00	3.294	109.147	0.352	3.984045779E+0002	6.952157696E+0001	-5.463828206E+0001	1.614
								5.039						
44.703	0.342	32.53	56.00	0.00	0.00	34.00	0.00	3.294	109.148	0.332	3.982151599E+0002	6.949490078E+0001	-5.467266969E+0001	1.615
								5.037						
45.045	0.342	32.53	54.66	0.00	0.00	34.00	0.00	3.189	109.261	0.323	3.789822728E+0002	6.641299593E+0001	-5.774885088E+0001	1.632
								4.802						
45.387	0.342	32.53	53.32	0.00	0.00	34.00	0.00	3.079	109.369	0.306	3.588456897E+0002	6.282534674E+0001	-6.021176389E+0001	1.642
								4.580						
45.729	0.342	32.53	51.98	0.00	0.00	34.00	0.00	2.962	109.470	0.290	3.378000784E+0002	5.877966250E+0001	-6.293978510E+0001	1.644
								4.373						

46.070	0.107	32.53	15.95	0.00	0.00	34.00	0.00	2.841 4.180	109.567	0.281	1.158984839E+0002	5.433019097E+0001	-6.510570737E+0001	1.638
46.177	0.342	32.63	50.22	0.00	0.00	34.00	0.00	2.802 4.122	109.596	0.263	1.089283917E+0002	5.285302162E+0001	-6.557563304E+0001	1.634
46.519	0.342	32.63	48.87	0.00	0.00	34.00	0.00	2.672 3.949	109.685	0.257	2.863651472E+0002	4.797344475E+0001	-6.628307791E+0001	1.614
46.860	0.342	32.63	47.53	0.00	0.00	34.00	0.00	2.540 3.789	109.772	0.261	2.637680712E+0002	4.303517349E+0001	-6.579918915E+0001	1.588
47.202	0.342	32.63	46.18	0.00	0.00	34.00	0.00	2.413 3.642	109.863	0.260	2.414971083E+0002	3.829817199E+0001	-6.446114865E+0001	1.560
47.544	0.342	32.63	44.84	0.00	0.00	34.00	0.00	2.280 3.505	109.949	0.244	2.197341282E+0002	3.379926433E+0001	-6.297407279E+0001	1.530
47.885	0.342	32.63	43.50	0.00	0.00	34.00	0.00	2.142 3.377	110.030	0.227	1.984277629E+0002	2.950331904E+0001	-6.168894148E+0001	1.498
48.227	0.302	32.63	37.31	0.00	0.00	34.00	0.00	1.998 3.255	110.105	0.219	1.776123736E+0002	2.537625710E+0001	-6.009169088E+0001	1.460
48.529	0.342	32.63	40.88	0.00	0.00	26.50	0.00	1.871 3.149	110.171	0.181	1.597182151E+0002	2.158212358E+0001	-5.840090438E+0001	1.400
48.871	0.342	32.63	39.38	0.00	0.00	26.50	0.00	1.703 3.031	110.221	0.145	1.401349104E+0002	1.766024692E+0001	-5.616662985E+0001	1.306
49.212	0.342	32.63	37.87	0.00	0.00	26.50	0.00	1.532 2.912	110.270	0.140	1.213720097E+0002	1.416263162E+0001	-5.360196799E+0001	1.209
49.554	0.146	32.63	15.71	0.00	0.00	26.50	0.00	1.360 2.787	110.317	0.138	1.035384177E+0002	1.107617136E+0001	-5.073290614E+0001	1.108
49.700	0.342	32.63	26.78	0.00	0.00	26.50	0.00	1.287 2.731	110.337	0.149	9.623118330E+0001	9.874453780E+0000	-4.942484795E+0001	1.063
50.042	0.077	32.63	5.86	0.00	0.00	26.50	0.00	1.121 2.588	110.389	0.155	7.988821556E+0001	7.369307955E+0000	-4.619790776E+0001	0.956
50.119	0.081	47.25	6.01	0.00	0.00	26.50	0.00	1.084 2.553	110.402	0.182	7.633878371E+0001	6.858811516E+0000	-4.546836691E+0001	0.931
50.200	0.342	47.25	23.22	0.00	0.00	26.50	0.00	1.012 2.515	110.418	0.234	7.269192233E+0001	6.355606934E+0000	-4.474432888E+0001	0.906
50.542	0.342	47.25	19.50	0.00	0.00	26.50	0.00	0.726 2.337	110.501	0.307	5.790162028E+0001	4.448431842E+0000	-4.183045384E+0001	0.796
50.883	0.342	47.25	15.78	0.00	0.00	26.50	0.00	0.483 2.126	110.628	0.509	4.414106987E+0001	2.838831156E+0000	-3.861302565E+0001	0.666
51.225	0.342	47.25	12.06	0.00	0.00	26.50	0.00	0.334 1.871	110.849	0.714	3.160226764E+0001	1.545350643E+0000	-3.462908044E+0001	0.507
51.567	0.342	47.25	8.34	0.00	0.00	26.50	0.00	0.232 1.567	111.116	0.802	2.058034216E+0001	7.106386151E-0001	-2.973793542E+0001	0.358
51.908	0.342	47.25	4.62	0.00	0.00	26.50	0.00	0.143 1.215	111.397	0.836	1.136343166E+0001	2.521392537E-0001	-2.412118881E+0001	0.230
52.250	0.249	47.25	1.03	0.00	0.00	26.50	0.00	0.064 0.824	111.687	0.841	4.122561706E+0000	4.496578942E-0002	-1.828271986E+0001	0.172
52.499	0.005	47.35	0.00	0.00	0.00	26.50	0.00	0.001 0.520	111.894	0.830	6.630432259E-0002	3.091444069E-0004	-1.434500482E+0001	0.172

Parametri Geotecnici degli strati

N.	phi`	C`	Cu	Gamm	GammSat	sgci	GSI	mi	D
..	deg	kPa	kPa	kN/m3	kN/m3	MPa	..	..	..
1	26.50	0	0	20.00	21.00	0	0	0	0
2	34.00	0	0	17.86	18.56	0	0	0	0
3	0	0	10000.00	25.00	25.00	0	0	0	0
4	38.00	0	0	18.75	19.60	0	0	0	0
5	40.00	0	0	19.64	20.64	0	0	0	0
6	43.00	0	0	20.53	21.68	0	0	0	0

Simulazione: PO_S2-P

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

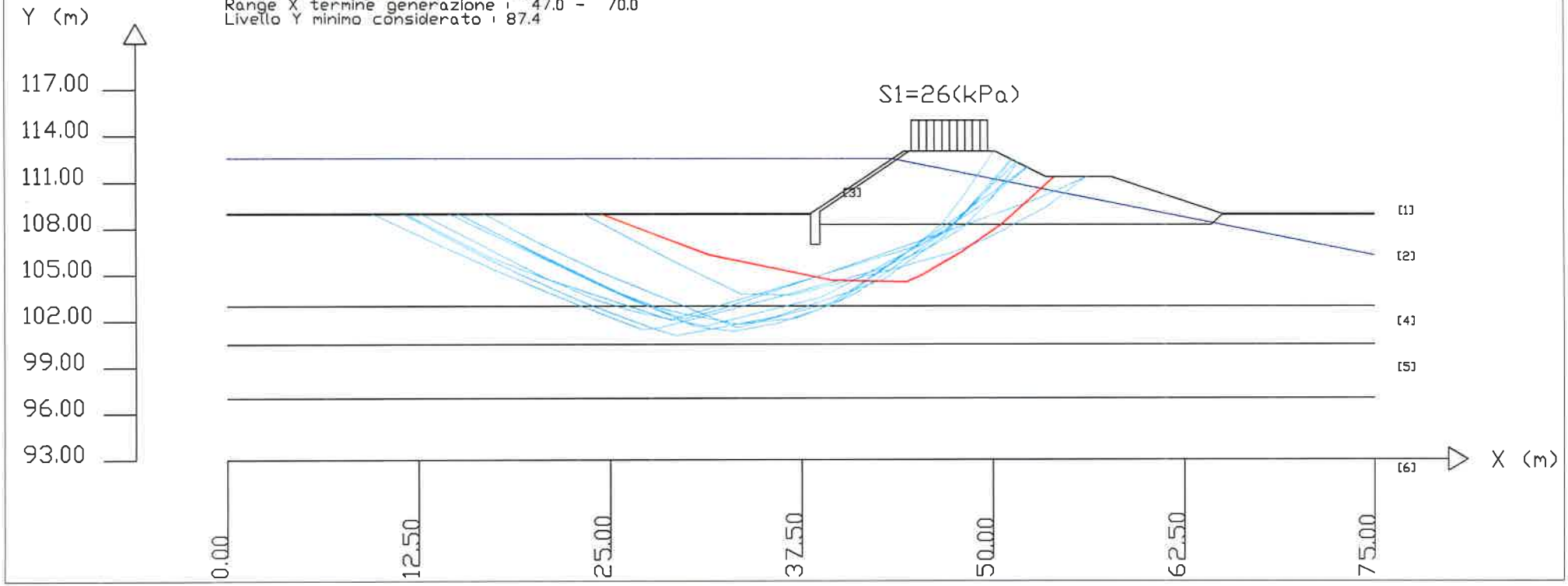
Fs minimo : 4.255
Range Fs : 4.255 5.839
Differenza % Range Fs : 27.1
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 4.255
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.41646
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 5.0 - 30.0
Range X termine generazione : 47.0 - 70.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: NON ATTIVATA
Peso unitario fluido (kN/m^3): 9.81

Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0

Coefficiente K 0.000800

Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 26.00
posizione da m.: 44.70
a m.: 49.70

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------

*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI

METODO DI RICERCA: CONVEX RANDOM - Chen (1992)

FILTRAGGIO SUPERFICI : ATTIVATO

COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00

LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%

RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 5.00 30.00

LIVELLO MINIMO CONSIDERATO (Ymin): 87.37

RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 47.00 70.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 4.255 - Min. - Lambda= 0.082

X	Y
24.40	109.00
26.97	108.02
31.41	106.34
32.47	106.12
33.77	105.85
36.51	105.29
39.49	104.69
44.38	104.58
45.41	105.05
47.91	106.48
50.59	108.32
54.02	111.40
54.02	111.40

Fattore di sicurezza (FS) 4.363 - N.2 -- Lambda= 0.112

X	Y
23.24	109.00
24.83	108.16
29.01	105.96
33.50	103.79
36.85	103.69
40.95	104.73
43.92	105.49
46.26	106.15
47.50	106.50
49.62	107.36
53.45	109.38
56.11	111.40

56.11 111.40

Fattore di sicurezza (FS) 5.381 - N.3 -- X Y Lambda= 0.120

X	Y
11.59	109.00
13.92	107.80
17.14	106.15
20.80	104.79
24.93	103.41
28.94	102.08
31.89	102.95
35.62	104.05
40.36	105.46
41.61	105.84
45.38	106.98
46.37	107.62
49.14	109.44
49.95	110.09
52.29	112.00

Fattore di sicurezza (FS) 5.450 - N.4 -- X Y Lambda= 0.112

X	Y
12.60	109.00
16.55	106.97
20.71	104.85
24.26	103.33
26.70	102.61
31.15	101.67
34.80	102.57
38.69	103.53
40.80	104.60
45.06	106.81
46.83	107.77
49.99	110.82
51.29	112.08
51.58	112.36

Fattore di sicurezza (FS) 5.455 - N.5 -- X Y Lambda= 0.127

X	Y
16.72	109.00
20.47	107.03
24.09	105.32
27.30	104.00
31.24	102.40
33.27	101.58

			35.67	102.21		
			39.95	103.33		
			42.20	104.91		
			44.60	106.61		
			46.69	108.33		
			48.10	110.16		
			50.10	113.05		
Fattore di sicurezza (FS)	5.460	- N.6 --	X	Y	Lambda=	0.120
			15.05	109.00		
			17.70	107.66		
			18.95	107.05		
			22.70	105.24		
			26.35	103.48		
			30.63	101.62		
			33.06	101.35		
			34.29	101.56		
			35.84	101.84		
			39.51	103.06		
			41.25	103.94		
			42.32	104.67		
			45.57	106.88		
			47.23	108.02		
			48.97	109.77		
			49.92	110.88		
			51.31	112.50		
Fattore di sicurezza (FS)	5.482	- N.7 --	X	Y	Lambda=	0.110
			15.10	109.00		
			16.20	108.42		
			20.65	106.14		
			24.90	104.11		
			28.04	102.90		
			29.64	102.51		
			31.20	102.21		
			33.33	101.80		
			37.07	102.17		
			39.18	102.99		
			43.24	105.70		
			44.93	106.85		
			47.06	108.32		
			50.44	110.68		

			52.26	112.02		
Fattore di sicurezza (FS)	5.779	- N.8 --	X	Y	Lambda=	0.107
			11.40	109.00		
			13.12	108.09		
			16.87	106.11		
			19.06	105.09		
			23.61	103.09		
			27.80	101.52		
			29.29	101.07		
			33.99	101.93		
			35.72	102.26		
			37.11	102.73		
			41.27	104.14		
			42.93	104.76		
			45.12	106.30		
			46.80	107.49		
			49.92	111.05		
			51.22	112.54		
Fattore di sicurezza (FS)	5.784	- N.9 --	X	Y	Lambda=	0.120
			14.44	109.00		
			17.05	107.77		
			19.74	106.50		
			23.11	104.92		
			24.20	104.41		
			26.53	103.33		
			29.81	102.14		
			32.19	102.78		
			35.24	103.80		
			36.84	104.34		
			40.82	105.69		
			42.78	106.36		
			44.56	106.97		
			48.40	108.33		
			52.62	109.82		
			54.76	110.77		
			56.17	111.40		
Fattore di sicurezza (FS)	5.839	- N.10 --	X	Y	Lambda=	0.110
			9.46	109.00		
			13.88	106.93		

```
17.55  105.31
20.37  104.12
22.86  103.09
27.09  101.45
28.26  101.58
32.40  102.64
34.01  103.07
38.57  104.28
42.42  105.31
46.01  106.84
48.02  108.05
49.94  109.96
51.13  111.60
51.65  112.32
```

---------- ANALISI DEFICIT DI RESISTENZA ----------

\# DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

\# Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	4.255	1304.0	306.5	966.9	Surplus
2	4.363	1502.8	344.4	1123.9	Surplus
3	5.381	2133.4	396.5	1697.2	Surplus
4	5.450	2282.3	418.7	1821.7	Surplus
5	5.455	2110.8	387.0	1685.2	Surplus
6	5.460	2296.8	420.7	1834.0	Surplus
7	5.482	2177.8	397.3	1740.8	Surplus
8	5.779	2511.6	434.6	2033.5	Surplus
9	5.784	2052.6	354.9	1662.2	Surplus
10	5.839	2466.9	422.5	2002.2	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 966.9

Note: FTR --> Forza totale Resistente rispetto alla superficie
di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie
di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN
per metro di LARGHEZZA rispetto al fronte della scarpata

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X	dx	alpha	W	ru	U	phi'	c'/Cu	ht local_FS	yt	yt'	E(x)	T(x)	E'	rho(x)
(m)	(m)	(gradi)	(kN/m)	(--)	(kPa)	(gradi)	(kPa)	(m)	(m)	(--)	(kN/m)	(kN/m)	(kN)	(--)	(--
24.396	0.132	-20.81	4.68	0.49	0.24	26.50	0.00	0.000 1.880	109.000	-0.323	0.000000000E+0000	0.000000000E+0000	1.384384440E+0001	0.158	
24.527	0.298	-20.81	11.07	0.50	0.99	34.00	0.00	0.007 1.880	108.957	-0.323	1.976847286E+0000	3.266970982E-0002	1.629461973E+0001	0.158	
24.825	0.298	-20.81	11.70	0.52	2.02	34.00	0.00	0.024 1.880	108.861	-0.323	7.792826649E+0000	1.345831752E-0001	2.284849524E+0001	0.142	
25.123	0.298	-20.81	12.33	0.52	3.06	34.00	0.00	0.041 1.879	108.765	-0.323	1.551039952E+0001	2.821641957E-0001	2.870734499E+0001	0.142	
25.421	0.298	-20.81	12.96	0.52	4.10	34.00	0.00	0.058 1.878	108.669	-0.323	2.465700234E+0001	4.718217208E-0001	3.227597465E+0001	0.142	
25.718	0.298	-20.81	13.59	0.52	5.14	34.00	0.00	0.075 1.879	108.573	-0.323	3.445391159E+0001	6.934419086E-0001	3.309308954E+0001	0.142	
26.016	0.298	-20.81	14.22	0.52	6.17	34.00	0.00	0.092 1.882	108.477	-0.323	4.415386262E+0001	9.364294997E-0001	3.183129465E+0001	0.142	
26.314	0.298	-20.81	14.85	0.52	7.21	34.00	0.00	0.109 1.887	108.380	-0.323	5.337866835E+0001	1.182947820E+0000	3.029709464E+0001	0.147	
26.612	0.298	-20.81	15.48	0.53	8.25	34.00	0.00	0.126 1.895	108.284	-0.310	6.230290455E+0001	1.436699512E+0000	2.946642562E+0001	0.152	
26.909	0.062	-20.81	3.28	0.53	8.88	34.00	0.00	0.151 1.905	108.196	-0.295	7.085749910E+0001	1.694069081E+0000	2.800442478E+0001	0.154	
26.971	0.298	-20.71	16.24	0.53	9.51	34.00	0.00	0.157 1.907	108.178	-0.279	7.257626588E+0001	1.746017158E+0000	2.774482995E+0001	0.158	
27.269	0.298	-20.71	16.86	0.53	10.54	34.00	0.00	0.187 1.921	108.095	-0.280	8.071437546E+0001	2.010174736E+0000	2.711776081E+0001	0.164	
27.567	0.298	-20.71	17.49	0.53	11.57	34.00	0.00	0.216 1.938	108.012	-0.279	8.886068336E+0001	2.292666263E+0000	2.783711584E+0001	0.169	
27.864	0.298	-20.71	18.12	0.53	12.60	34.00	0.00	0.245 1.957	107.929	-0.279	9.741706458E+0001	2.605902131E+0000	2.980108689E+0001	0.175	
28.162	0.298	-20.71	18.74	0.53	13.64	34.00	0.00	0.275 1.978	107.846	-0.276	1.066582784E+0002	2.960596877E+0000	3.225764090E+0001	0.182	
28.460	0.298	-20.71	19.37	0.53	14.67	34.00	0.00	0.306 2.003	107.764	-0.272	1.165469984E+0002	3.359118676E+0000	3.403463829E+0001	0.188	
28.758	0.298	-20.71	20.00	0.53	15.70	34.00	0.00	0.338 2.032	107.684	-0.269	1.269497457E+0002	3.779215758E+0000	3.586211201E+0001	0.194	
29.055	0.298	-20.71	20.62	0.53	16.74	34.00	0.00	0.371 2.065	107.604	-0.266	1.378804327E+0002	4.235240044E+0000	3.747403546E+0001	0.200	
29.353	0.298	-20.71	21.25	0.53	17.77	34.00	0.00	0.404 2.103	107.525	-0.264	1.491955251E+0002	4.724147111E+0000	3.839125872E+0001	0.206	
29.651	0.298	-20.71	21.88	0.53	18.80	34.00	0.00	0.438 2.144	107.447	-0.259	1.606569465E+0002	5.239265456E+0000	3.845788928E+0001	0.212	
29.949	0.298	-20.71	22.50	0.53	19.84	34.00	0.00	0.475 2.189	107.371	-0.250	1.720283284E+0002	5.774750296E+0000	3.784129202E+0001	0.218	
30.246	0.298	-20.71	23.13	0.53	20.87	34.00	0.00	0.515 2.236	107.298	-0.241	1.831712602E+0002	6.323090116E+0000	3.703208920E+0001	0.224	
30.544	0.298	-20.71	23.75	0.53	21.90	34.00	0.00	0.557 2.286	107.228	-0.231	1.941183206E+0002	6.880907721E+0000	3.651054083E+0001	0.230	
30.842	0.298	-20.71	24.38	0.53	22.93	34.00	0.00	0.602 2.337	107.160	-0.221	2.049048907E+0002	7.444659497E+0000	3.592398073E+0001	0.236	
31.140	0.272	-20.71	22.82	0.53	23.92	34.00	0.00	0.651 2.390	107.096	-0.211	2.154981211E+0002	8.018142234E+0000	3.520819468E+0001	0.241	
31.412	0.298	-11.77	25.44	0.53	25.83	34.00	0.00	0.697 2.442	107.040	-0.194	2.249722655E+0002	8.530912808E+0000	3.443660289E+0001	0.246	
31.709	0.298	-11.77	25.78	0.53	26.42	34.00	0.00	0.705 2.502	106.986	-0.177	2.350868106E+0002	9.076731515E+0000	3.348916132E+0001	0.250	
32.007	0.298	-11.77	26.13	0.53	27.02	34.00	0.00	0.716 2.566	106.935	-0.170	2.449102342E+0002	9.605011306E+0000	3.249414351E+0001	0.254	
32.305	0.166	-11.77	14.73	0.53	27.48	34.00	0.00	0.728 2.633	106.885	-0.164	2.544417017E+0002	1.011846838E+0001	3.154639026E+0001	0.255	
32.471	0.298	-11.67	26.67	0.53	27.96	34.00	0.00	0.736 2.672	106.858	-0.155	2.596363603E+0002	1.040608415E+0001	3.093791748E+0001	0.260	
32.769	0.298	-11.67	27.01	0.53	28.55	34.00	0.00	0.752 2.744	106.813	-0.149	2.686595807E+0002	1.091190249E+0001	2.967742105E+0001	0.263	
33.067	0.298	-11.67	27.35	0.53	29.14	34.00	0.00	0.771 2.818	106.769	-0.141	2.773406591E+0002	1.140654279E+0001	2.872343479E+0001	0.266	

33.364	0.298	-11.67	27.69	0.53	29.73	34.00	0.00	0.791	2.894	106.728	-0.134	2.858311383E+0002	1.189947260E+0001	2.843220877E+0001	0.269
33.662	0.106	-11.67	9.91	0.53	30.13	34.00	0.00	0.814	2.972	106.690	-0.131	2.943451791E+0002	1.239955011E+0001	2.886810191E+0001	0.269
33.768	0.298	-11.57	28.16	0.53	30.54	34.00	0.00	0.822	3.001	106.675	-0.127	2.974107956E+0002	1.258104860E+0001	2.916355918E+0001	0.274
34.066	0.298	-11.57	28.49	0.53	31.12	34.00	0.00	0.845	3.081	106.638	-0.122	3.062413198E+0002	1.309971446E+0001	3.016654959E+0001	0.277
34.363	0.298	-11.57	28.83	0.53	31.71	34.00	0.00	0.871	3.163	106.603	-0.116	3.153506797E+0002	1.364472903E+0001	3.095965330E+0001	0.280
34.661	0.298	-11.57	29.17	0.53	32.30	34.00	0.00	0.898	3.245	106.569	-0.108	3.246890211E+0002	1.421649589E+0001	3.178681832E+0001	0.283
34.959	0.298	-11.57	29.51	0.53	32.88	34.00	0.00	0.928	3.325	106.538	-0.099	3.342769584E+0002	1.481762148E+0001	3.259015732E+0001	0.286
35.257	0.298	-11.57	29.85	0.53	33.47	34.00	0.00	0.961	3.402	106.510	-0.090	3.440724975E+0002	1.546784980E+0001	3.315615986E+0001	0.290
35.554	0.298	-11.57	30.19	0.53	34.05	34.00	0.00	0.997	3.479	106.485	-0.079	3.539887535E+0002	1.610667082E+0001	3.339680616E+0001	0.294
35.852	0.298	-11.57	30.53	0.53	34.64	34.00	0.00	1.036	3.558	106.463	-0.067	3.639313165E+0002	1.674597163E+0001	3.334956715E+0001	0.297
36.150	0.298	-11.57	30.87	0.53	35.23	34.00	0.00	1.079	3.644	106.445	-0.054	3.738356156E+0002	1.738277979E+0001	3.317740442E+0001	0.300
36.448	0.065	-11.57	6.81	0.53	35.58	34.00	0.00	1.125	3.741	106.431	-0.046	3.837013133E+0002	1.801701117E+0001	3.311506415E+0001	0.298
36.513	0.298	-11.47	31.28	0.53	35.95	34.00	0.00	1.136	3.764	106.428	-0.030	3.858629128E+0002	1.815151819E+0001	3.311150958E+0001	0.304
36.811	0.298	-11.47	31.62	0.53	36.53	34.00	0.00	1.189	3.881	106.420	-0.018	3.957133250E+0002	1.885845479E+0001	3.302716674E+0001	0.307
37.108	0.298	-11.47	31.95	0.53	37.11	34.00	0.00	1.246	4.019	106.417	-0.000	4.055065704E+0002	1.966858665E+0001	3.270414676E+0001	0.313
37.406	0.298	-11.47	32.29	0.53	37.69	34.00	0.00	1.309	4.178	106.420	0.018	4.151558095E+0002	2.063000559E+0001	3.205363878E+0001	0.320
37.704	0.298	-11.47	32.63	0.53	38.27	34.00	0.00	1.378	4.360	106.428	0.038	4.245630689E+0002	2.165777541E+0001	3.108966449E+0001	0.329
38.002	0.098	-11.47	10.86	0.53	38.66	34.00	0.00	1.453	4.569	106.443	0.053	4.336498589E+0002	2.270438252E+0001	2.992907817E+0001	0.333
38.100	0.298	-11.47	37.35	0.45	40.00	34.00	0.00	1.480	4.646	106.449	0.080	4.365767436E+0002	2.304954205E+0001	2.953672199E+0001	0.142
38.398	0.298	-11.47	38.59	0.45	42.48	34.00	0.00	1.565	4.902	106.474	0.096	4.451961756E+0002	2.401471191E+0001	2.830828853E+0001	0.142
38.696	0.004	-11.47	0.56	0.48	43.74	34.00	0.00	1.658	5.199	106.506	0.108	4.534003996E+0002	2.482337242E+0001	2.678279786E+0001	0.142
38.700	0.298	-11.47	35.02	0.53	45.00	34.00	0.00	1.659	5.204	106.507	0.138	4.535208630E+0002	2.483348476E+0001	2.675956593E+0001	0.352
38.998	0.298	-11.47	36.35	0.52	47.48	34.00	0.00	1.761	5.540	106.548	0.160	4.612699203E+0002	2.554175873E+0001	2.533682823E+0001	0.142
39.296	0.196	-11.47	24.43	0.52	49.53	34.00	0.00	1.875	5.910	106.602	0.193	4.686456382E+0002	2.626520390E+0001	2.427634590E+0001	0.142
39.492	0.298	-1.30	37.62	0.52	52.37	34.00	0.00	1.956	6.167	106.644	0.226	4.733606320E+0002	2.674944600E+0001	2.380216529E+0001	0.142
39.789	0.298	-1.30	38.17	0.52	54.37	34.00	0.00	2.034	6.564	106.714	0.262	4.803708656E+0002	2.744653541E+0001	2.331519945E+0001	0.142
40.087	0.298	-1.30	38.72	0.52	56.37	34.00	0.00	2.126	6.954	106.799	0.312	4.872425511E+0002	2.824074309E+0001	2.279778842E+0001	0.142
40.385	0.298	-1.30	39.28	0.52	58.38	34.00	0.00	2.233	7.317	106.900	0.351	4.938993977E+0002	2.907855131E+0001	2.185841155E+0001	0.142
40.683	0.298	-1.30	39.83	0.52	60.38	34.00	0.00	2.348	7.642	107.008	0.376	5.002395852E+0002	2.990133666E+0001	2.069778107E+0001	0.142
40.980	0.298	-1.30	40.39	0.52	62.39	34.00	0.00	2.470	7.926	107.124	0.400	5.062057182E+0002	3.070882304E+0001	1.934307801E+0001	0.142
41.278	0.298	-1.30	40.94	0.52	64.39	34.00	0.00	2.600	8.163	107.247	0.420	5.117367934E+0002	3.147333603E+0001	1.777025999E+0001	0.142
41.576	0.298	-1.30	41.50	0.52	66.40	34.00	0.00	2.734	8.340	107.374	0.433	5.167624822E+0002	3.221561564E+0001	1.594073081E+0001	0.142
41.874	0.298	-1.30	42.05	0.52	68.40	34.00	0.00	2.871	8.451	107.504	0.443	5.211987972E+0002	3.301482734E+0001	1.380134041E+0001	0.142
42.172	0.298	-1.30	42.60	0.52	70.40	34.00	0.00	3.011	8.497	107.638	0.449	5.249437588E+0002	3.411842930E+0001	1.128438633E+0001	0.142
42.469	0.298	-1.30	43.16	0.52	72.41	34.00	0.00	3.152	8.482	107.772	0.444	5.279422861E+0002	3.533543181E+0001	8.939906529E+0000	0.142

42.767	0.298	-1.30	43.71	0.52	74.41	34.00	0.00	3.289	107.902	0.434	5.302472581E+0002	3.669653857E+0001	6.410764290E+0000	0.142
								8.413						
43.065	0.298	-1.30	49.80	0.46	76.42	26.50	0.00	3.425	108.031	0.418	5.316400035E+0002	3.823974869E+0001	2.692658310E+0000	0.142
								8.300						
43.363	0.087	-1.30	14.74	0.47	78.00	26.50	0.00	3.552	108.151	0.404	5.316878558E+0002	3.963148805E+0001	-2.647525931E+0000	0.142
								8.151						
43.450	0.298	-1.30	51.00	0.46	77.75	26.50	0.00	3.589	108.186	0.390	5.313752093E+0002	3.993345227E+0001	-4.519796999E+0000	0.142
								8.101						
43.748	0.298	-1.30	52.25	0.44	77.24	26.50	0.00	3.711	108.301	0.374	5.289896692E+0002	4.081864153E+0001	-1.167080875E+0001	0.142
								7.917						
44.046	0.154	-1.30	27.59	0.43	76.85	26.50	0.00	3.825	108.409	0.356	5.243779203E+0002	4.137158726E+0001	-1.927954938E+0001	0.142
								7.711						
44.200	0.184	-1.30	32.92	0.43	76.56	26.50	0.00	3.882	108.463	0.335	5.211102870E+0002	4.150368781E+0001	-2.297319596E+0001	0.142
								7.596						
44.384	0.166	24.70	29.57	0.43	68.94	26.50	0.00	3.946	108.522	0.323	5.165045024E+0002	4.149641521E+0001	-2.719873558E+0001	0.697
								7.450						
44.550	0.150	24.70	25.09	0.45	68.01	34.00	0.00	3.923	108.576	0.311	5.116606216E+0002	4.139971661E+0001	-3.100921667E+0001	0.608
								7.309						
44.700	0.298	24.70	57.00	0.39	66.70	34.00	0.00	3.899	108.620	0.293	5.067501517E+0002	4.124415408E+0001	-3.447062799E+0001	0.621
								7.176						
44.998	0.298	24.70	56.22	0.38	64.95	34.00	0.00	3.849	108.707	0.282	4.954453755E+0002	4.071047586E+0001	-4.150554933E+0001	0.629
								6.899						
45.296	0.113	24.70	21.22	0.38	63.75	34.00	0.00	3.793	108.789	0.274	4.820093149E+0002	3.973013627E+0001	-4.877870788E+0001	0.621
								6.616						
45.409	0.298	29.77	55.05	0.37	59.62	34.00	0.00	3.772	108.820	0.257	4.763152559E+0002	3.925170156E+0001	-5.158953447E+0001	0.633
								6.509						
45.707	0.298	29.77	54.09	0.37	57.66	34.00	0.00	3.676	108.894	0.243	4.598589450E+0002	3.771172199E+0001	-5.891916185E+0001	0.633
								6.240						
46.004	0.298	29.77	53.12	0.36	55.71	34.00	0.00	3.576	108.964	0.228	4.412689893E+0002	3.580630178E+0001	-6.583835285E+0001	0.629
								5.992						
46.302	0.298	29.77	52.16	0.36	53.76	34.00	0.00	3.472	109.030	0.213	4.207045555E+0002	3.357986546E+0001	-7.249518164E+0001	0.621
								5.773						
46.600	0.298	29.77	51.19	0.35	51.81	34.00	0.00	3.362	109.091	0.196	3.980081823E+0002	3.110645623E+0001	-7.985588271E+0001	0.612
								5.584						
46.898	0.298	29.77	50.23	0.34	49.85	34.00	0.00	3.248	109.147	0.179	3.733364077E+0002	2.854865383E+0001	-8.538656411E+0001	0.602
								5.426						
47.195	0.298	29.77	49.26	0.34	47.90	34.00	0.00	3.128	109.198	0.165	3.475049707E+0002	2.605338924E+0001	-8.749066712E+0001	0.594
								5.294						
47.493	0.298	29.77	48.30	0.33	45.95	34.00	0.00	3.005	109.245	0.154	3.216060104E+0002	2.364266950E+0001	-8.590816004E+0001	0.586
								5.181						
47.791	0.121	29.77	19.39	0.32	44.57	34.00	0.00	2.879	109.289	0.146	2.966101146E+0002	2.137998818E+0001	-8.171553816E+0001	0.567
								5.087						
47.912	0.298	34.52	46.84	0.32	40.87	34.00	0.00	2.827	109.306	0.135	2.868210436E+0002	2.052248106E+0001	-7.976966638E+0001	0.576
								5.056						
48.210	0.298	34.52	45.69	0.31	38.74	34.00	0.00	2.662	109.346	0.134	2.636828876E+0002	1.847001967E+0001	-7.575988552E+0001	0.569
								4.994						
48.508	0.298	34.52	44.53	0.30	36.60	34.00	0.00	2.497	109.386	0.137	2.418697572E+0002	1.638945449E+0001	-7.057974045E+0001	0.555
								4.953						
48.805	0.298	34.52	43.37	0.29	34.47	34.00	0.00	2.334	109.427	0.142	2.216502169E+0002	1.438322475E+0001	-6.539041757E+0001	0.537
								4.926						
49.103	0.298	34.52	42.21	0.28	32.34	34.00	0.00	2.172	109.470	0.153	2.027779070E+0002	1.250047326E+0001	-6.169743332E+0001	0.515
								4.907						
49.401	0.298	34.52	41.06	0.27	30.21	34.00	0.00	2.015	109.518	0.155	1.847079502E+0002	1.058850375E+0001	-6.000042983E+0001	0.485
								4.889						
49.699	0.001	34.52	0.18	0.26	29.14	34.00	0.00	1.855	109.563	0.148	1.668964500E+0002	8.924627547E+0000	-5.979317493E+0001	0.439
								4.860						
49.700	0.298	34.52	32.10	0.32	28.07	34.00	0.00	1.854	109.563	0.112	1.668194647E+0002	8.917868869E+0000	-5.979368316E+0001	0.458
								4.859						
49.998	0.202	34.52	21.14	0.31	26.28	34.00	0.00	1.683	109.596	0.115	1.490233036E+0002	7.416649433E+0000	-5.955923095E+0001	0.426
								4.811						
50.200	0.298	34.52	29.71	0.30	24.49	34.00	0.00	1.568	109.621	0.126	1.370729895E+0002	6.500947491E+0000	-5.861907305E+0001	0.416
								4.764						
50.498	0.062	34.52	5.95	0.30	23.20	34.00	0.00	1.402	109.659	0.133	1.197677329E+0002	5.288241195E+0000	-5.764160915E+0001	0.379
								4.671						
50.560	0.026	34.52	2.42	0.30	22.88	26.50	0.00	1.368	109.668	0.145	1.161905747E+0002	5.051295424E+0000	-5.741397590E+0001	0.373
								4.649						
50.585	0.298	41.90	26.77	0.29	19.40	26.50	0.00	1.355	109.672	0.170	1.147238796E+0002	4.955576044E+0000	-5.731155871E+0001	0.386
								4.639						
50.883	0.298	41.90	24.18	0.28	17.02	26.50	0.00	1.138	109.723	0.187	9.789283749E+0001	3.897258034E+0000	-5.554342821E+0001	0.356
								4.512						

51.181	0.298	41.90	21.59	0.27	14.64	26.50	0.00	0.932 4.348	109.784	0.234	8.178957399E+0001	2.937165054E+0000	-5.236612743E+0001	0.322
51.479	0.298	41.90	18.99	0.26	12.25	26.50	0.00	0.744 4.134	109.863	0.321	6.685510325E+0001	2.142199442E+0000	-4.773443796E+0001	0.288
51.776	0.298	41.90	16.40	0.24	9.87	26.50	0.00	0.588 3.864	109.974	0.441	5.345569358E+0001	1.469325583E+0000	-4.219564899E+0001	0.247
52.074	0.298	41.90	13.81	0.22	7.49	26.50	0.00	0.472 3.533	110.125	0.566	4.170654442E+0001	9.328081617E-0001	-3.687920383E+0001	0.200
52.372	0.298	41.90	11.22	0.18	5.11	26.50	0.00	0.391 3.141	110.312	0.609	3.147190993E+0001	5.680660939E-0001	-3.182406281E+0001	0.161
52.670	0.298	41.90	8.63	0.13	2.73	26.50	0.00	0.300 2.695	110.488	0.613	2.275932587E+0001	3.238851658E-0001	-2.672331612E+0001	0.142
52.967	0.191	41.90	4.18	0.05	0.77	26.50	0.00	0.222 2.207	110.677	0.626	1.552942713E+0001	1.643665051E-0001	-2.190704159E+0001	0.142
53.159	0.298	41.90	4.41	0.00	0.00	26.50	0.00	0.168 1.881	110.794	0.605	1.161189648E+0001	9.709009713E-0002	-1.904891206E+0001	0.142
53.457	0.043	41.90	0.43	0.00	0.00	26.50	0.00	0.079 1.373	110.973	0.611	6.553020189E+0000	3.477798397E-0002	-1.501251756E+0001	0.142
53.500	0.298	41.90	2.00	0.00	0.00	26.50	0.00	0.070 1.300	111.002	0.753	5.915075910E+0000	2.798550501E-0002	-1.446431201E+0001	0.142
53.798	0.224	41.90	0.45	0.00	0.00	26.50	0.00	0.030 0.813	111.230	0.763	2.147507861E+0000	4.555324561E-0003	-1.089224850E+0001	0.142

Parametri Geotecnici degli strati

N.	phi` deg	C` kPa	Cu kPa	Gamm kN/m3	GammSat kN/m3	sgci MPa	GSI	mi	D	
1	26.50	0	0	20.00	21.00	0	0	0	0	
2	34.00	0	0	17.86	18.56	0	0	0	0	
3	0	0	10000.00	25.00	25.00	0	0	0	0	
4	38.00	0	0	18.75	19.60	0	0	0	0	
5	40.00	0	0	19.64	20.64	0	0	0	0	
6	43.00	0	0	20.53	21.68	0	0	0	0	

Simulazione: PD_S2-RS

Modello di calcolo : Morgenstern & Price (1965)

DATI 10 SUP. CON MINOR Fs

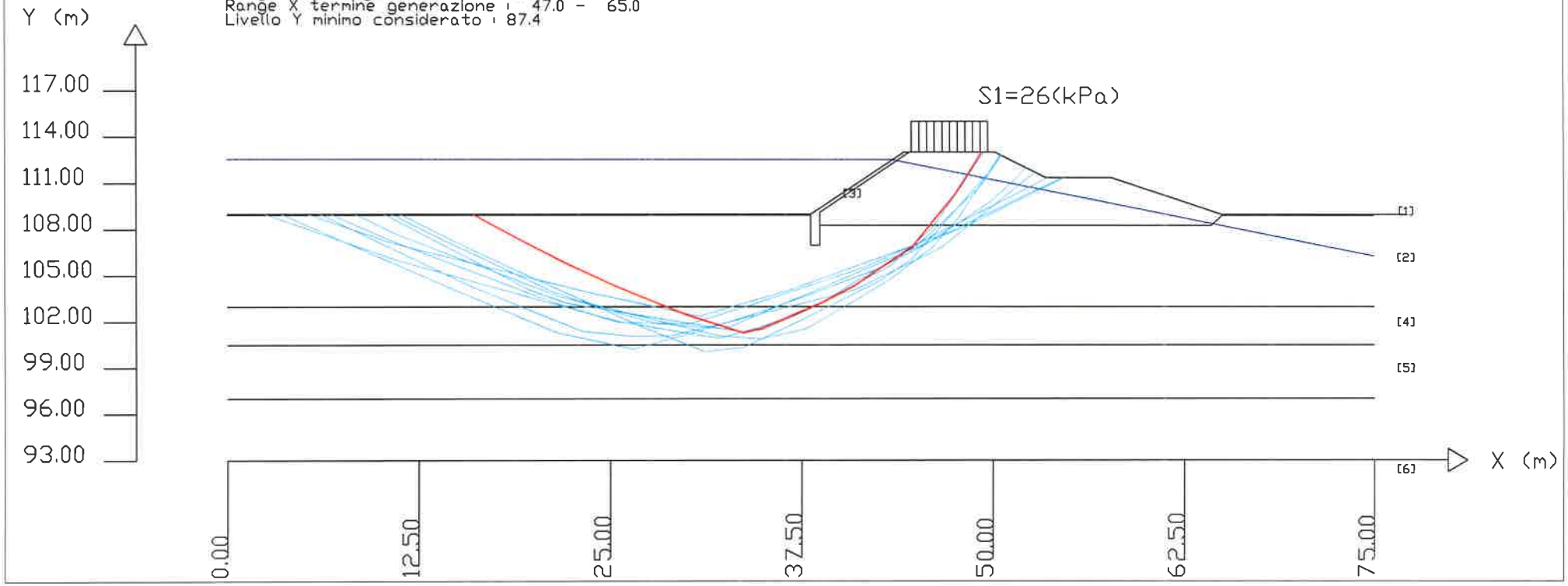
Fs minimo : 2.821
Range Fs : 2.821 3.672
Differenza % Range Fs : 23.2
Coefficiente Sismico orizzontale - Kh: 0.014

ANALISI SUPERFICIE SINGOLA
<< Risultato analisi >>

Fs : 2.824
Coefficiente Sismico Orizzontale Kh: 0.014
Coefficiente Sismico Critico (Fs=1) : 0.33194
Ea (kN/m) Forza destabilizzante di testa : 0.00
Eb (kN/m) Forza stabilizzante alla base : 0.00

GENERAZIONE SUPERFICI RANDOM

Campione Superfici - N.: 1000
Lunghezza media segmenti (m) : 2.0
Range X inizio generazione : 2.0 - 37.0
Range X termine generazione : 47.0 - 65.0
Livello Y minimo considerato : 87.4



---------- PARAMETRI DEL MODELLO DEL PENDIO ----------

__ PARAMETRI GEOMETRICI - Coordinate X Y (in m) __

SUP T.		SUP 2		SUP 3		SUP 4	
X	Y	X	Y	X	Y	X	Y
0.00	109.00	0.00	108.95	44.20	113.05	0.00	103.00
38.10	109.00	38.10	108.95	43.45	112.55	100.00	103.00
43.45	112.55	38.10	107.00	38.10	109.00	-	-
44.20	113.05	38.70	107.00	38.10	107.00	-	-
44.55	113.05	38.70	108.30	38.70	107.00	-	-
44.70	113.05	64.30	108.30	38.70	109.15	-	-
49.70	113.05	65.00	108.95	44.55	113.05	-	-
50.20	113.05	100.00	108.95	44.20	113.05	-	-
53.50	111.40	-	-	-	-	-	-
57.80	111.40	-	-	-	-	-	-
65.00	109.00	-	-	-	-	-	-
100.00	109.00	-	-	-	-	-	-

SUP 5		SUP 6		SUP 7		SUP 8	
X	Y	X	Y	X	Y	X	Y
0.00	100.50	0.00	97.00	-	-	-	-
100.00	100.50	100.00	97.00	-	-	-	-

SUP FALDA	
X	Y (in m)
0.00	112.55
43.45	112.55
91.65	103.00
100.00	103.00

_____ GESTIONE ACQUIFERI _____

Strati esclusi da acquifero:
Esclusione sovraccarico pendio sommerso: ATTIVATA fino a progressiva X(m): 43.45
Peso unitario fluido (kN/m^3): 9.81
Parametri funzione dissipazione superficiale pressione dei fluidi:

Coefficiente A 0
Coefficiente K 0.000800
Pressione minima fluidi Uo_Min (kPa) 0.01

_____ PARAMETRI GEOMECCANICI _____

	fi`	C`	Cu	Gamm	Gamm_sat	STR_IDX	sgci	GSI	mi	D
STRATO 1	26.5	0.0	0.0	20.0	21.0	1.528	0.00	0.0	0.0	0.0
STRATO 2	34.0	0.0	0.0	17.9	18.6	2.287	0.00	0.0	0.0	0.0
STRATO 3	0.0	0.0	10000.0	25.0	25.0	1000.000	0.00	0.0	0.0	0.0
STRATO 4	38.0	0.0	0.0	18.8	19.6	2.781	0.00	0.0	0.0	0.0
STRATO 5	40.0	0.0	0.0	19.6	20.6	3.055	0.00	0.0	0.0	0.0
STRATO 6	43.0	0.0	0.0	20.5	21.7	3.504	0.00	0.0	0.0	0.0

_____ SOVRACCARICHI PRESENTI _____

SOVRACCARICO N.1

carico (Kpa): 26.00
posizione da m.: 44.70
a m.: 49.70

---------- INFORMAZIONI GENERAZIONE SUPERFICI RANDOM ----------
*** PARAMETRI PER LA GENERAZIONE DELLE SUPERFICI
METODO DI RICERCA: CONVEX RANDOM - Chen (1992)
FILTRAGGIO SUPERFICI : ATTIVATO
COORDINATE X1,X2,Y OSTACOLO : 38.10 44.55 107.00
LUNGHEZZA MEDIA SEGMENTI (m): 2.0 (+/-) 50%
RANGE ASCISSE RANDOM STARTING POINT (Xmin .. Xmax): 2.00 37.00
LIVELLO MINIMO CONSIDERATO (Ymin): 87.37
RANGE ASCISSE AMMESSO PER LA TERMINAZIONE (Xmin .. Xmax): 47.00 65.00

*** TOTALE SUPERFICI GENERATE : 1000

---------- INFORMAZIONI PARAMETRI DI CALCOLO ----------

METODO DI CALCOLO : MORGENSTERN & PRICE (Morgenstern & Price, 1965)
COEFFICIENTE SISMICO UTILIZZATO Kh : 0.014
COEFFICIENTE SISMICO UTILIZZATO Kv : 0.007
FORZA ORIZZONTALE ADDIZIONALE IN TESTA (kN/m): 0.00
FORZA ORIZZONTALE ADDIZIONALE ALLA BASE (kN/m): 0.00

N.B. Le forze orizzontali addizionali in testa e alla base sono poste uguali a 0
durante le tutte le verifiche globali.
I valori >0 impostati dall'utente sono utilizzati solo in caso di verifica singola

---------- RISULTATO FINALE ELABORAZIONI ----------

* DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Fattore di sicurezza (FS) 2.821 - Min. - Lambda= 0.230

X	Y
16.06	109.00
19.07	107.40
21.96	105.92
25.05	104.48
27.58	103.43
30.02	102.45
33.70	101.30
34.92	101.60
38.89	103.28
40.97	104.37
44.79	106.96
47.54	110.31
48.54	111.87
49.28	113.05

Fattore di sicurezza (FS) 3.024 - N.2 -- Lambda= 0.174

X	Y
10.25	109.00
13.45	107.33
17.63	105.18
19.74	104.09
22.18	103.21
25.99	102.58
28.77	102.13
33.61	101.35
35.05	101.51
37.84	102.77
39.11	103.46

				40.82	104.48	
				45.04	106.99	
				46.37	108.17	
				48.30	109.95	
				49.34	110.96	
				50.59	112.86	
Fattore di sicurezza (FS)	3.091	- N.3 --	X	Y	Lambda=	0.157
			10.72	109.00		
			14.23	107.27		
			16.92	106.00		
			21.11	104.04		
			22.73	103.44		
			23.75	103.16		
			27.88	102.14		
			32.18	101.07		
			34.80	100.88		
			37.75	101.54		
			39.80	102.71		
			40.95	103.36		
			43.33	104.80		
			46.09	106.88		
			46.92	107.82		
			47.78	108.79		
			48.88	110.42		
			50.53	112.88		
Fattore di sicurezza (FS)	3.116	- N.4 --	X	Y	Lambda=	0.143
			5.27	109.00		
			6.38	108.61		
			10.79	107.11		
			15.33	105.98		
			20.04	104.80		
			23.39	103.97		
			26.03	103.39		
			30.79	102.37		
			32.31	102.80		
			36.80	104.09		
			40.97	105.59		
			44.86	107.00		
			47.03	107.79		
			49.58	109.00		

				50.90	109.63	
				54.57	111.40	
				54.58	111.40	
Fattore di sicurezza (FS)	3.174	- N.5 --	X	Y	Lambda=	0.143
			6.76	109.00		
			10.25	107.48		
			11.62	106.93		
			13.66	106.16		
			17.68	104.64		
			21.57	103.18		
			25.56	101.97		
			30.15	101.86		
			34.41	103.17		
			36.72	103.93		
			41.46	105.50		
			44.77	106.95		
			46.56	107.84		
			48.92	109.01		
			50.18	109.63		
			51.62	110.36		
			53.60	111.40		
Fattore di sicurezza (FS)	3.204	- N.6 --	X	Y	Lambda=	0.144
			6.07	109.00		
			7.39	108.37		
			10.77	106.76		
			14.65	104.91		
			16.05	104.25		
			19.22	102.98		
			23.21	101.38		
			26.26	101.07		
			28.97	101.09		
			32.48	101.92		
			36.52	102.94		
			38.39	103.42		
			40.95	104.07		
			43.77	105.44		
			46.64	106.84		
			49.02	108.73		
			51.61	110.81		
			52.79	111.75		

Fattore di sicurezza (FS) 3.319 - N.7 -- Lambda= 0.146

X	Y
8.35	109.00
11.22	107.62
14.18	106.49
16.68	105.54
17.78	105.13
21.56	103.71
24.78	102.80
28.16	101.86
32.46	101.55
34.93	102.58
38.73	104.18
42.35	105.71
45.07	106.87
48.63	108.39
52.98	110.54
54.71	111.40

Fattore di sicurezza (FS) 3.505 - N.8 -- Lambda= 0.211

X	Y
11.28	109.00
14.16	107.58
16.26	106.56
19.44	105.09
22.69	103.64
27.16	101.64
31.19	100.06
33.73	100.34
37.50	102.13
39.70	103.19
42.73	104.75
44.71	106.10
46.73	108.33
47.88	109.61
49.01	110.87
49.69	111.64
50.58	112.86

Fattore di sicurezza (FS) 3.563 - N.9 -- Lambda= 0.137

X	Y
2.43	109.00
6.50	107.59
11.18	105.97
15.58	104.75

18.11	104.05
20.93	103.28
25.50	102.03
29.99	101.27
32.16	100.93
35.18	101.79
37.78	102.74
40.65	104.25
43.37	105.69
44.70	106.90
46.06	108.15
47.23	109.80
47.89	110.73
49.42	113.05

Fattore di sicurezza (FS) 3.672 - N.10 --

X	Y
3.52	109.00
5.90	107.96
10.27	106.05
12.27	105.19
15.27	103.89
17.01	103.17
21.60	101.28
26.46	100.23
31.10	101.47
33.82	102.34
35.62	102.92
37.90	103.71
42.56	105.49
44.78	106.62
45.79	107.13
47.35	108.16
49.99	109.91
51.61	111.41
52.20	112.05

Lambda= 0.173

---------- ANALISI DEFICIT DI RESISTENZA ----------

DATI RELATIVI ALLE 10 SUPERFICI GENERATE CON MINOR Fs *

Analisi Deficit in riferimento a FS(progetto) = 1.100

Sup N.	FS	FTR(kN/m)	FTA(kN/m)	Bilancio(kN/m)	ESITO
1	2.821	1393.9	494.2	850.3	Surplus

2	3.024	1600.9	529.4	1018.5	Surplus
3	3.091	1699.5	549.8	1094.6	Surplus
4	3.116	1421.1	456.0	919.5	Surplus
5	3.174	1579.5	497.6	1032.2	Surplus
6	3.204	1876.6	585.7	1232.3	Surplus
7	3.319	1612.1	485.7	1077.8	Surplus
8	3.505	1948.8	556.0	1337.2	Surplus
9	3.563	1772.7	497.6	1225.3	Surplus
10	3.672	2044.7	556.9	1432.2	Surplus

Esito analisi: SURPLUS di RESISTENZA!

Valore minimo di SURPLUS di RESISTENZA (kN/m): 850.3

Note: FTR --> Forza totale Resistente rispetto alla superficie di scivolamento (componente Orizzontale)
FTA --> Forza totale Agente rispetto alla superficie di scivolamento (componente Orizzontale)

IMPORTANTE! : Il Deficit o il Surplus di resistenza viene espresso in kN per metro di LARGHEZZA rispetto al fronte della scarpata

---

TABELLA PARAMETRI CONCI E DIAGRAMMA DELLE FORZE DELLA SUPERFICIE INDIVIDUATA CON MINOR FS

X (m)	dx (m)	alpha (gradi)	W (kN/m)	ru (--)	U (kPa)	phi' (gradi)	c'/Cu (kPa)	ht local_FS (m)	yt (m)	yt' (--)	E(x) (kN/m)	T(x) (kN/m)	E' (kN)	rho(x) (--)	(--
16.061	0.094	-27.96	0.05	0.49	0.23	26.50	0.00	0.000 2.570	109.000	-0.451	0.000000000E+0000	0.000000000E+0000	0.000000000E+0000	0.094	
16.155	0.319	-27.96	0.84	0.51	1.18	34.00	0.00	0.007 2.570	108.957	-0.451	5.421010862E-0005	1.884317792E-0007	1.311342078E-0004	0.094	
16.474	0.319	-27.96	1.85	0.52	2.64	34.00	0.00	0.033 2.539	108.813	-0.451	5.421010862E-0005	1.836406837E-0007	0.000000000E+0000	0.094	
16.793	0.319	-27.96	2.87	0.52	4.11	34.00	0.00	0.058 2.505	108.669	-0.451	5.421010862E-0005	6.501094774E-0007	8.436760589E-0005	0.094	
17.112	0.319	-27.96	3.88	0.52	5.58	34.00	0.00	0.084 2.473	108.525	-0.451	1.080729221E-0004	1.841742561E-0006	2.896119968E-0003	0.094	
17.432	0.319	-27.96	4.89	0.52	7.05	34.00	0.00	0.109 2.442	108.381	-0.451	1.903180077E-0003	4.209830606E-0005	2.854985511E-0002	0.094	
17.751	0.319	-27.96	5.90	0.53	8.52	34.00	0.00	0.135 2.414	108.237	-0.451	1.833515788E-0002	5.113044086E-0004	1.837738350E-0001	0.094	
18.070	0.319	-27.96	6.91	0.53	9.99	34.00	0.00	0.160 2.388	108.093	-0.451	1.192299157E-0001	3.962758120E-0003	8.922388660E-0001	0.094	
18.389	0.319	-27.96	7.92	0.53	11.46	34.00	0.00	0.185 2.362	107.949	-0.451	5.879672471E-0001	2.250263284E-0002	4.712726409E+0000	0.094	
18.708	0.319	-27.96	8.93	0.53	12.92	34.00	0.00	0.211 2.335	107.805	-0.433	2.361345714E+0000	1.015446151E-0001	6.416670975E+0000	0.570	
19.028	0.039	-27.96	1.16	0.53	13.75	34.00	0.00	0.248 2.307	107.673	-0.419	4.709589880E+0000	2.234644117E-0001	8.351925494E+0000	0.219	
19.067	0.319	-27.13	10.05	0.53	14.66	34.00	0.00	0.251 2.304	107.655	-0.428	5.039348477E+0000	2.421768991E-0001	8.612702285E+0000	0.665	
19.386	0.319	-27.13	11.02	0.53	16.08	34.00	0.00	0.279 2.273	107.520	-0.408	8.157690253E+0000	4.280086847E-0001	1.099966727E+0001	0.418	

19.705	0.319	-27.13	12.00	0.53	17.51	34.00	0.00	0.317 2.239	107.394	-0.380	1.210962815E+0001	6.915836084E-0001	1.383160288E+0001	0.368
20.024	0.319	-27.13	12.98	0.53	18.94	34.00	0.00	0.364 2.202	107.277	-0.355	1.702726160E+0001	1.055936659E+0000	1.702673591E+0001	0.356
20.343	0.319	-27.13	13.95	0.53	20.37	34.00	0.00	0.417 2.169	107.167	-0.338	2.299792839E+0001	1.548146624E+0000	2.038639150E+0001	0.359
20.663	0.319	-27.13	14.93	0.53	21.80	34.00	0.00	0.475 2.141	107.062	-0.323	3.003352542E+0001	2.205937101E+0000	2.371048941E+0001	0.374
20.982	0.319	-27.13	15.90	0.53	23.22	34.00	0.00	0.538 2.115	106.961	-0.319	3.815799861E+0001	3.002176251E+0000	2.720608601E+0001	0.387
21.301	0.319	-27.13	16.88	0.53	24.65	34.00	0.00	0.599 2.085	106.858	-0.319	4.739734232E+0001	3.957408552E+0000	3.065507256E+0001	0.401
21.620	0.319	-27.13	17.85	0.53	26.08	34.00	0.00	0.661 2.044	106.757	-0.310	5.770398984E+0001	5.076910655E+0000	3.387172218E+0001	0.414
21.939	0.025	-27.13	1.43	0.53	26.85	34.00	0.00	0.728 1.989	106.660	-0.302	6.898935580E+0001	6.357755774E+0000	3.678476497E+0001	0.390
21.964	0.319	-25.07	18.86	0.53	28.05	34.00	0.00	0.734 1.984	106.653	-0.289	6.990453908E+0001	6.467211335E+0000	3.699891911E+0001	0.429
22.284	0.319	-25.07	19.75	0.53	29.37	34.00	0.00	0.791 1.912	106.561	-0.284	8.214117040E+0001	7.935219996E+0000	3.963643225E+0001	0.443
22.603	0.319	-25.07	20.65	0.53	30.70	34.00	0.00	0.851 1.826	106.471	-0.275	9.520009961E+0001	9.604286361E+0000	4.218821377E+0001	0.458
22.922	0.319	-25.07	21.54	0.53	32.03	34.00	0.00	0.914 1.732	106.385	-0.266	1.090882289E+0002	1.149674093E+0001	4.482589087E+0001	0.475
23.241	0.319	-25.07	22.43	0.53	33.35	34.00	0.00	0.979 1.634	106.301	-0.257	1.238095671E+0002	1.363742721E+0001	4.739307567E+0001	0.493
23.560	0.319	-25.07	23.32	0.53	34.68	34.00	0.00	1.048 1.540	106.221	-0.251	1.393348020E+0002	1.608635517E+0001	4.986082096E+0001	0.515
23.880	0.319	-25.07	24.21	0.53	36.01	34.00	0.00	1.118 1.451	106.141	-0.240	1.556306204E+0002	1.870070819E+0001	5.221970494E+0001	0.533
24.199	0.319	-25.07	25.10	0.53	37.33	34.00	0.00	1.194 1.367	106.068	-0.221	1.726611026E+0002	2.151860273E+0001	5.446281919E+0001	0.551
24.518	0.319	-25.07	25.99	0.53	38.66	34.00	0.00	1.276 1.290	106.001	-0.206	1.903885249E+0002	2.454911400E+0001	5.658576875E+0001	0.568
24.837	0.208	-25.07	17.46	0.53	39.76	34.00	0.00	1.361 1.219	105.937	-0.197	2.087741616E+0002	2.778522069E+0001	5.858667202E+0001	0.575
25.046	0.319	-22.44	27.41	0.53	41.61	34.00	0.00	1.419 1.177	105.896	-0.190	2.211199020E+0002	3.000020265E+0001	5.984547642E+0001	0.595
25.365	0.319	-22.44	28.20	0.53	42.81	34.00	0.00	1.491 1.120	105.836	-0.183	2.405325441E+0002	3.359605955E+0001	6.177007565E+0001	0.611
25.684	0.319	-22.44	28.99	0.53	44.00	34.00	0.00	1.566 1.070	105.780	-0.173	2.605389447E+0002	3.743746344E+0001	6.353915303E+0001	0.627
26.003	0.319	-22.44	29.77	0.53	45.20	34.00	0.00	1.644 1.027	105.726	-0.164	2.810683466E+0002	4.153913985E+0001	6.503361302E+0001	0.643
26.323	0.319	-22.44	30.56	0.53	46.39	34.00	0.00	1.725 0.992	105.675	-0.154	3.020245976E+0002	4.588711896E+0001	6.621344183E+0001	0.660
26.642	0.319	-22.44	31.35	0.53	47.59	34.00	0.00	1.809 0.963	105.627	-0.145	3.233113946E+0002	5.047472941E+0001	6.711770746E+0001	0.677
26.961	0.319	-22.44	32.13	0.53	48.78	34.00	0.00	1.896 0.939	105.583	-0.131	3.448575278E+0002	5.519053320E+0001	6.786455971E+0001	0.693
27.280	0.300	-22.44	30.87	0.53	49.94	34.00	0.00	1.989 0.920	105.544	-0.117	3.666357047E+0002	6.023552441E+0001	6.852306513E+0001	0.710
27.580	0.319	-21.83	33.65	0.53	51.31	34.00	0.00	2.079 0.905	105.510	-0.108	3.871882675E+0002	6.508912413E+0001	6.867050663E+0001	0.727
27.899	0.319	-21.83	34.41	0.53	52.47	34.00	0.00	2.174 0.890	105.477	-0.100	4.091284785E+0002	7.037066426E+0001	6.884127810E+0001	0.743
28.218	0.319	-21.83	35.17	0.53	53.64	34.00	0.00	2.271 0.878	105.446	-0.092	4.311891343E+0002	7.578212970E+0001	6.947646221E+0001	0.758
28.537	0.118	-21.83	13.23	0.53	54.43	34.00	0.00	2.371 0.868	105.418	-0.086	4.535509614E+0002	8.149883760E+0001	7.072732509E+0001	0.761
28.656	0.319	-21.83	36.24	0.53	55.23	38.00	0.00	2.409 0.865	105.409	-0.080	4.619554264E+0002	8.367214252E+0001	7.132481346E+0001	0.780
28.975	0.319	-21.83	37.04	0.53	56.40	38.00	0.00	2.511 0.860	105.383	-0.076	4.850036319E+0002	8.971684773E+0001	7.309328892E+0001	0.794
29.294	0.319	-21.83	37.85	0.53	57.56	38.00	0.00	2.616 0.860	105.360	-0.070	5.085919302E+0002	9.599966846E+0001	7.458397109E+0001	0.807
29.613	0.319	-21.83	38.66	0.53	58.72	38.00	0.00	2.723 0.865	105.339	-0.063	5.325442526E+0002	1.024878527E+0002	7.546160883E+0001	0.819
29.933	0.089	-21.83	10.88	0.53	59.47	38.00	0.00	2.831 0.876	105.320	-0.059	5.567440377E+0002	1.091364157E+0002	7.609304077E+0001	0.817

30.021	0.319	-17.40	39.60	0.53	61.76	38.00	0.00	2.862 0.881	105.315	-0.051	5.634963184E+0002	1.110105195E+0002	7.618549174E+0001	0.835
30.340	0.319	-17.40	40.23	0.53	62.70	38.00	0.00	2.946 0.901	105.299	-0.047	5.878220890E+0002	1.178599045E+0002	7.611065542E+0001	0.847
30.660	0.319	-17.40	40.86	0.52	63.64	38.00	0.00	3.032 0.928	105.285	-0.042	6.120086982E+0002	1.246849240E+0002	7.529763006E+0001	0.859
30.979	0.319	-17.40	41.49	0.52	64.57	38.00	0.00	3.120 0.962	105.272	-0.037	6.358112386E+0002	1.316272147E+0002	7.370722136E+0001	0.870
31.298	0.319	-17.40	42.12	0.52	65.51	38.00	0.00	3.209 1.004	105.261	-0.032	6.589903550E+0002	1.386612832E+0002	7.141340921E+0001	0.882
31.617	0.319	-17.40	42.75	0.52	66.45	38.00	0.00	3.299 1.055	105.252	-0.027	6.813490726E+0002	1.457704468E+0002	6.864090044E+0001	0.895
31.937	0.319	-17.40	43.38	0.52	67.38	38.00	0.00	3.391 1.118	105.244	-0.023	7.029172546E+0002	1.526086511E+0002	6.658861908E+0001	0.906
32.256	0.319	-17.40	44.01	0.52	68.32	38.00	0.00	3.485 1.193	105.237	-0.019	7.238052866E+0002	1.595776644E+0002	6.404117168E+0001	0.918
32.575	0.319	-17.40	44.64	0.52	69.26	38.00	0.00	3.579 1.280	105.232	-0.014	7.435801783E+0002	1.662402320E+0002	5.942980256E+0001	0.929
32.894	0.319	-17.40	45.27	0.52	70.19	38.00	0.00	3.676 1.380	105.228	-0.009	7.614554135E+0002	1.722614063E+0002	5.210829919E+0001	0.939
33.213	0.319	-17.40	45.90	0.52	71.13	38.00	0.00	3.774 1.491	105.226	-0.081	7.765854405E+0002	1.772793240E+0002	4.235299225E+0001	0.945
33.533	0.164	-17.40	23.86	0.52	71.84	38.00	0.00	3.824 1.612	105.176	-0.157	7.883601610E+0002	1.809542821E+0002	3.136275561E+0001	0.940
33.697	0.319	13.73	46.29	0.52	73.01	38.00	0.00	3.849 1.678	105.151	0.027	7.930548623E+0002	1.822169526E+0002	2.588427862E+0001	0.949
34.016	0.319	13.73	45.80	0.52	72.26	38.00	0.00	3.810 1.814	105.190	0.122	7.997123331E+0002	1.834919358E+0002	1.558847802E+0001	0.949
34.335	0.319	13.73	45.31	0.52	71.52	38.00	0.00	3.771 1.958	105.229	0.120	8.029045372E+0002	1.831943915E+0002	4.446030337E+0000	0.944
34.654	0.270	13.73	37.97	0.52	70.83	38.00	0.00	3.731 2.115	105.266	0.094	8.026724254E+0002	1.814174432E+0002	-5.584550241E+0000	0.933
34.925	0.319	22.95	44.22	0.52	66.24	38.00	0.00	3.683 2.261	105.284	0.073	8.002177766E+0002	1.789236897E+0002	-1.227178584E+0001	0.927
35.244	0.319	22.95	43.37	0.52	65.02	38.00	0.00	3.573 2.450	105.309	0.089	7.953618237E+0002	1.750314051E+0002	-1.772498614E+0001	0.914
35.563	0.319	22.95	42.52	0.52	63.80	38.00	0.00	3.469 2.661	105.340	0.107	7.891332806E+0002	1.706776164E+0002	-2.103202155E+0001	0.901
35.882	0.319	22.95	41.67	0.52	62.57	38.00	0.00	3.371 2.894	105.378	0.132	7.820140075E+0002	1.659724240E+0002	-2.362148492E+0001	0.886
36.202	0.319	22.95	40.82	0.52	61.35	38.00	0.00	3.283 3.153	105.425	0.159	7.739260509E+0002	1.609756663E+0002	-2.716329121E+0001	0.870
36.521	0.319	22.95	39.97	0.53	60.13	38.00	0.00	3.202 3.436	105.479	0.182	7.646856732E+0002	1.557469150E+0002	-3.065560014E+0001	0.855
36.840	0.319	22.95	39.11	0.53	58.91	38.00	0.00	3.129 3.741	105.541	0.207	7.544253299E+0002	1.509233311E+0002	-3.349143207E+0001	0.842
37.159	0.319	22.95	38.26	0.53	57.69	38.00	0.00	3.064 4.063	105.611	0.233	7.434010229E+0002	1.468161637E+0002	-3.542125933E+0001	0.833
37.478	0.319	22.95	37.41	0.53	56.47	38.00	0.00	3.007 4.394	105.690	0.261	7.319086989E+0002	1.432287670E+0002	-3.644433992E+0001	0.828
37.798	0.302	22.95	34.66	0.53	55.28	38.00	0.00	2.960 4.721	105.777	0.288	7.202048335E+0002	1.402823339E+0002	-3.680871752E+0001	0.826
38.100	0.128	22.95	16.28	0.47	54.84	38.00	0.00	2.923 5.015	105.869	0.307	7.090490550E+0002	1.381093984E+0002	-3.699358202E+0001	0.094
38.228	0.319	22.95	41.07	0.47	55.33	34.00	0.00	2.910 5.133	105.910	0.344	7.042864833E+0002	1.371817391E+0002	-3.716544072E+0001	0.094
38.548	0.152	22.95	18.85	0.49	55.84	34.00	0.00	2.888 5.392	106.023	0.362	6.924683144E+0002	1.348797825E+0002	-3.666172299E+0001	0.094
38.700	0.186	22.95	21.62	0.53	56.21	34.00	0.00	2.880 5.490	106.080	0.383	6.869189755E+0002	1.337459964E+0002	-3.620932197E+0001	0.823
38.886	0.319	27.55	37.89	0.52	54.51	34.00	0.00	2.874 5.580	106.153	0.407	6.802249325E+0002	1.323138442E+0002	-3.586158294E+0001	0.128
39.205	0.319	27.55	38.16	0.52	54.90	34.00	0.00	2.841 5.655	106.286	0.442	6.687317969E+0002	1.300782588E+0002	-3.645064003E+0001	0.127
39.524	0.319	27.55	38.43	0.52	55.30	34.00	0.00	2.823 5.626	106.435	0.503	6.567367660E+0002	1.277450472E+0002	-3.905177909E+0001	0.125
39.844	0.319	27.55	38.70	0.52	55.69	34.00	0.00	2.829 5.513	106.607	0.557	6.435971626E+0002	1.251891994E+0002	-4.353175933E+0001	0.124
40.163	0.319	27.55	38.97	0.52	56.09	34.00	0.00	2.846 5.346	106.791	0.582	6.288427823E+0002	1.223192534E+0002	-4.894321464E+0001	0.122

40.482	0.319	27.55	39.24	0.52	56.48	34.00	0.00	2.867 5.158	106.978	0.592	6.124336874E+0002	1.191274410E+0002	-5.362655277E+0001	0.119
40.801	0.170	27.55	21.04	0.52	56.78	34.00	0.00	2.891 4.973	107.169	0.604	5.945247564E+0002	1.156438881E+0002	-5.874074063E+0001	0.117
40.971	0.319	34.17	39.50	0.52	53.06	34.00	0.00	2.908 4.884	107.274	0.625	5.842789816E+0002	1.136509329E+0002	-6.157354868E+0001	0.115
41.291	0.319	34.17	39.47	0.52	53.02	34.00	0.00	2.892 4.738	107.475	0.631	5.638731910E+0002	1.096817038E+0002	-6.601824727E+0001	0.112
41.610	0.319	34.17	39.43	0.52	52.98	34.00	0.00	2.877 4.621	107.677	0.634	5.423366706E+0002	1.054925309E+0002	-6.855675392E+0001	0.109
41.929	0.319	34.17	39.40	0.52	52.94	34.00	0.00	2.863 4.525	107.879	0.634	5.203314651E+0002	1.012121919E+0002	-6.898941606E+0001	0.105
42.248	0.319	34.17	44.30	0.46	52.90	26.50	0.00	2.848 4.441	108.081	0.632	4.984531906E+0002	9.695654284E+0001	-6.793208479E+0001	0.105
42.568	0.319	34.17	44.26	0.46	52.86	26.50	0.00	2.833 4.376	108.282	0.638	4.769707139E+0002	9.277788230E+0001	-6.681611481E+0001	0.101
42.887	0.319	34.17	44.23	0.46	52.82	26.50	0.00	2.822 4.332	108.489	0.640	4.557321680E+0002	8.864666995E+0001	-6.591409601E+0001	0.098
43.206	0.244	34.17	33.79	0.47	53.45	26.50	0.00	2.808 4.309	108.691	0.624	4.350129473E+0002	8.461647402E+0001	-6.392789838E+0001	0.094
43.450	0.319	34.17	44.17	0.45	51.64	26.50	0.00	2.791 4.303	108.840	0.611	4.195360466E+0002	8.160598715E+0001	-6.310779200E+0001	0.094
43.769	0.319	34.17	44.09	0.44	49.37	26.50	0.00	2.770 4.305	109.035	0.592	3.993045172E+0002	7.767065445E+0001	-6.409258750E+0001	0.094
44.088	0.112	34.17	15.38	0.42	47.83	26.50	0.00	2.736 4.314	109.218	0.571	3.783304278E+0002	7.359088280E+0001	-6.773721891E+0001	0.094
44.200	0.319	34.17	43.08	0.42	46.30	26.50	0.00	2.723 4.317	109.281	0.553	3.706743045E+0002	7.210165319E+0001	-6.954320023E+0001	0.094
44.519	0.031	34.17	4.06	0.42	45.05	26.50	0.00	2.682 4.323	109.457	0.552	3.475446149E+0002	6.760258531E+0001	-7.546575884E+0001	1.104
44.550	0.150	34.17	19.03	0.43	44.41	34.00	0.00	2.678 4.323	109.474	0.543	3.452125186E+0002	6.714895797E+0001	-7.604170625E+0001	1.030
44.700	0.086	34.17	13.10	0.35	43.57	34.00	0.00	2.657 4.322	109.555	0.537	3.336042744E+0002	6.489098220E+0001	-7.867448042E+0001	1.028
44.786	0.319	50.60	47.02	0.34	31.78	34.00	0.00	2.645 4.320	109.601	0.547	3.267427462E+0002	6.355631314E+0001	-7.997232853E+0001	1.055
45.106	0.319	50.60	44.69	0.33	28.97	34.00	0.00	2.432 4.305	109.777	0.537	3.005491593E+0002	5.846127177E+0001	-8.434439487E+0001	1.074
45.425	0.319	50.60	42.35	0.31	26.15	34.00	0.00	2.210 4.278	109.944	0.527	2.728421457E+0002	5.307184644E+0001	-8.913340302E+0001	1.096
45.744	0.146	50.60	18.60	0.30	24.10	34.00	0.00	1.991 4.242	110.114	0.534	2.438176289E+0002	4.742614718E+0001	-9.232015692E+0001	1.103
45.890	0.319	50.60	38.78	0.29	22.05	26.50	0.00	1.892 4.223	110.192	0.561	2.302835956E+0002	4.479357686E+0001	-9.288299748E+0001	1.137
46.209	0.319	50.60	36.14	0.27	19.24	26.50	0.00	1.686 4.177	110.374	0.601	2.007143198E+0002	3.775467551E+0001	-9.186528661E+0001	1.099
46.529	0.319	50.60	33.50	0.25	16.42	26.50	0.00	1.499 4.118	110.576	0.680	1.719353901E+0002	2.996821176E+0001	-8.804761987E+0001	1.019
46.848	0.319	50.60	30.85	0.22	13.61	26.50	0.00	1.342 4.044	110.808	0.690	1.446777456E+0002	2.312917868E+0001	-8.261116075E+0001	0.934
47.167	0.319	50.60	28.21	0.19	10.80	26.50	0.00	1.162 3.949	111.016	0.619	1.191438321E+0002	1.725387490E+0001	-7.761897470E+0001	0.845
47.486	0.052	50.60	4.33	0.17	9.16	26.50	0.00	0.960 3.829	111.203	0.592	9.503538594E+0001	1.238661085E+0001	-7.341508637E+0001	0.741
47.538	0.319	57.20	24.77	0.15	6.14	26.50	0.00	0.930 3.806	111.236	0.628	9.124625360E+0001	1.168795261E+0001	-7.269272028E+0001	0.744
47.857	0.319	57.20	21.41	0.09	3.17	26.50	0.00	0.635 3.647	111.436	0.712	6.883106167E+0001	7.916709936E+0000	-6.749815111E+0001	0.663
48.177	0.181	57.20	10.63	0.03	0.85	26.50	0.00	0.393 3.450	111.690	0.885	4.834534279E+0001	4.873431789E+0000	-6.052187796E+0001	0.572
48.357	0.186	57.20	9.83	0.00	0.00	26.50	0.00	0.301 3.319	111.879	0.998	3.783598767E+0001	3.437297309E+0000	-5.569508369E+0001	0.514
48.543	0.319	58.15	14.32	0.00	0.00	26.50	0.00	0.190 3.172	112.056	1.201	2.799935854E+0001	2.293112304E+0000	-5.014219767E+0001	0.463
48.862	0.319	58.15	11.02	0.00	0.00	26.50	0.00	0.106 2.889	112.486	1.348	1.364564911E+0001	8.763189419E-0001	-3.965636809E+0001	0.363
49.181	0.097	58.15	2.70	0.00	0.00	26.50	0.00	0.023 2.573	112.917	1.355	2.688364919E+0000	1.424820492E-0001	-2.912853917E+0001	0.300